

BUILDING AUTOMATION  
CONTROL TECHNOLOGY  
SENSOR TECHNOLOGY

**alre**



**alre –  
simply  
control.**

**PRODUCT  
CATALOGUE  
2024**

SINCE **1994**

ZERTIFIKAT

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◆ CERTIFICATE

◆ ZERTIFIKAT



# ZERTIFIKAT

Die Zertifizierungsstelle  
der TÜV SÜD Management Service GmbH  
bescheinigt, dass das Unternehmen

**alre**

**ALRE-IT Regeltechnik GmbH**  
Richard-Tauber-Damm 10  
12277 Berlin  
Deutschland

für den Geltungsbereich

**Entwicklung, Herstellung und Vertrieb von  
elektromechanischen und elektronischen Regelgeräten  
für Heizungs-, Lüftungs-, Kälte- und Klimatechnik**

ein Qualitätsmanagementsystem  
eingeführt hat und anwendet.

Durch ein Audit, Auftrags-Nr. **707075483**,  
wurde der Nachweis erbracht, dass die Forderungen der

**ISO 9001:2015**

erfüllt sind.

Dieses Zertifikat ist gültig vom **04.07.2021** bis **03.07.2024**.

Zertifikat-Registrier-Nr.: **12 100 55966 TMS**.

*Paul Weil*

Leiter der Zertifizierungsstelle  
München, 01.07.2021



MS7014/072018

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# ALRE-IT REGELTECHNIK GMBH **YOUR RELIABLE PARTNER.**

For over 50 years, our commitment has been to develop and produce high-quality components and systems for operating, controlling, and automating heating, air conditioning, and various industrial systems. As a Berlin-based, owner-operated German business, we focus on consistently meeting the high standards of both our customers and our own.

Our approach involves staying attuned to evolving trends and introducing innovative products that integrate modern technology with our extensive experience. Delivering exceptional customer service and maintaining top-quality standards are fundamental to our business philosophy. Our long-standing ISO 9001 certification since 1994 stands as a testament to this commitment.

In this product catalogue, you will find a comprehensive range of offerings, encompassing heating and cooling solutions, plant engineering, sensor technology, and building automation. We value our ongoing collaboration and look forward to continuing to serve your needs with dedication and expertise.

**We are looking forward to continuing our successful collaboration.**



# OUR SATISFIED CUSTOMERS

## HIGH-QUALITY SOLUTIONS FOR EVERY AREA

ALRE-IT Regeltechnik GmbH takes pride in offering a diverse range of solutions tailored to various applications. Our products are ideal for a multitude of settings, including residential properties, hotels, office buildings, and public facilities. With alre controllers, you can expect optimal climate control for any space. For more than five decades, we have been dedicated to fulfilling our customers' needs, crafting professional and high-quality control technology right here in Berlin. Our expertise and commitment to maintaining high quality standards shine through in the numerous successful projects we have completed over the years.



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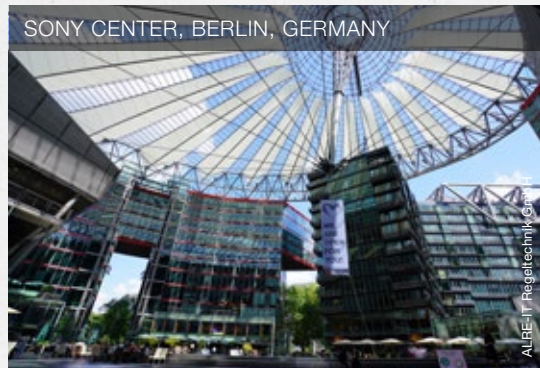
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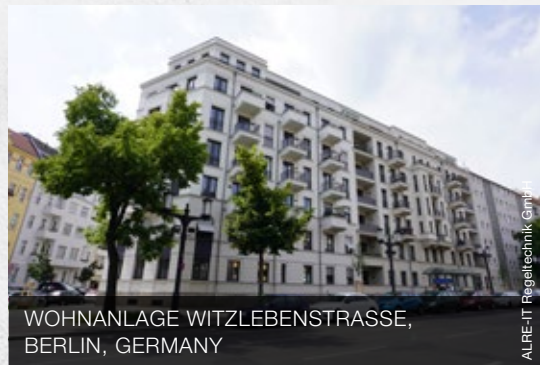
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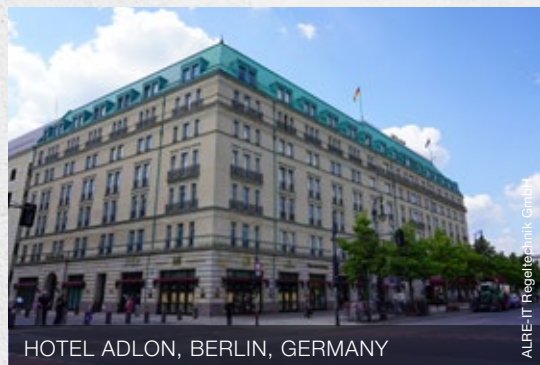
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# NEW ADDITIONS 2024

## HEATING TECHNOLOGY 'STELLA' ACTUATOR

'Stella' – the intelligent autonomous 230 VAC NC electrothermal actuator for automatic adaptive hydraulic balancing of heating manifolds' heating circuits in surface heating and surface cooling systems.



ADDITIONAL INFORMATION  
**BEGINNING ON PAGE 112**

## HEATING TECHNOLOGY ROOM TEMPERATURE CONTROLLER MECHANICAL RTBSU

Electromechanical flush-mounted room temperature controller for controlling or monitoring temperatures in offices, homes and hotels.



ADDITIONAL INFORMATION  
**BEGINNING ON PAGE 74**

## HEATING TECHNOLOGY ELECTRONIC ROOM TEMPERATURE CONTROLLER HTRRUT FLUSH-MOUNTED

Electronic surface-mounted room temperature controller for controlling or monitoring temperatures in offices, homes and hotels.



ADDITIONAL INFORMATION  
**BEGINNING ON PAGE 94**

## HEATING TECHNOLOGY ELECTRONIC ROOM TEMPERATURE CONTROLLER HTRRBD 'SURFACE-MOUNTED ULTRA-SLIM'

Electronic surface-mounted room temperature controller for controlling or monitoring temperatures in offices, homes and hotels.



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# WIRELESS SYSTEMS

FLEXIBLE AND EFFICIENT





# ALRE WIRELESS TECHNOLOGY. COMMAND THE CLIMATE **EFFORTLESSLY AND WIRELESSLY.**



Whether it's a home, an office or a hotel room, you can use our wireless systems to control your heating and cooling remotely via your home network. Thanks to intuitive, convenient programming and monitoring, you can enjoy the highest level of comfort and optimal energy consumption. Our wide range of sensors, controllers and wireless strips, as well as flush-mounted and surface-mounted solutions, guarantee flexible combination options and the perfect individual solution – for wireless retrofitting endeavours, too. Our highly communicative controllers fit perfectly into any environment, guarantee efficient indoor climate control and are easy on both your wallet and the environment.

**alre wireless – intelligent solutions for intelligent buildings.**

## APPLICATION **EXAMPLES:**

- + Hot water underfloor heating
- + Hot water radiators
- + Infrared heaters  
(e.g., natural stone heaters)
- + Cooling ceilings
- + Electric floor heating



# OVERVIEW

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## SYSTEM INFORMATION

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**WIRELESS  
ROOM TEMPERATURE  
SENSOR WITH CLOCK,  
FLUSH-MOUNTED,  
ALRE FRAME**



**WIRELESS  
ROOM TEMPERATURE  
SENSOR,  
SURFACE-MOUNTED,  
ULTRA-SLIM**



**WIRELESS  
ROOM TEMPERATURE  
SENSOR WITH CLOCK,  
SURFACE-MOUNTED**



**WIRELESS  
HEATING ACTUATOR  
FOR INSTALLATION IN  
HEATING MANIFOLDS**



# WIRELESS SYSTEMS COMPONENTS OVERVIEW

TYPE	FTRFB-			FTRFBu-		FTRFUd	HTFMA-	HTFRB-	HTFRU-	HTFRL-	CTFRB-	KTFRL-		
	280,101	280,119	280,120	180.117/V2	180.121/V2	210.123#xx	180,161	010.101	110.124	214,240	316,225	010.101	213,140	315,125
PAGE	16	16	17	17	17	17	22	22	23	23	23	26	28	28

## CONTROL FUNCTION

heating	x	x	x	x	x	x	x	x	x	x			x	x
Cooling	x	x	x	x	x	x						x	x	x

## APPLICATION

Radiator	x	x	x	x	x	x	x							
Hot water floor heating	x	x	x	x	x	x		x	x	x	x		x	x
Electric underfloor heating	x	x	x	x	x	x		x	x					
Infrared heaters	x	x	x	x	x	x		x						
Cooling ceiling	x	x	x	x	x	x						x	x	x

## SENSOR

NTC, internal	x	x	x	x	x	x								
External NTC (optional)						x								
External NTC for floor control and/or floor monitoring (optional)									x					
Dew point sensor (optional)													x	x

## FEATURES

'ECO' input														x	x
'Changeover – heating / cooling' input														x	x
'Off with frost protection monitoring' input														x	x
Central control	x	x	x	x	x	x		x	x			x	x	x	x
External antenna can be connected											x	x		x	x

## MOUNTING/ATTACHMENT

Surface / wall-mounted	x	x	x	x	x			x		x	x	x	x	x
Flush-mounted						x			x					
M30x1.5 (adapter for Danfoss RA, RAV, RAVL included)							x							

## CONNECTIVITY OF INDIVIDUAL COMPONENTS

FTRFB-280.101								x	x	x	x	x	x	x
FTRFB-280.119							x	x	x	x	x	x	x	x
FTRFB-280.120							x	x	x	x	x	x	x	x
FTRFBu-180.117/V2							x	x	x	x	x	x	x	x
FTRFBu-180.121/V2							x	x	x	x	x	x	x	x
FTRFUd 210.123#xx							x	x	x	x	x	x	x	x

# INTELLIGENT CONTROL FOR **HEATING AND COOLING SYSTEMS**







# SYSTEM CONFIGURATION FOR A WIRELESS CONTROL SYSTEM

## 1 SELECTION OF SENSORS

A minimal system consists of at least one sensor and one actuator. These are directly connected to each other without a central component. Different control functions can be implemented by combining the different sensor types. It is possible to teach any number of actuators to work with the sensors.

### INDIVIDUAL ROOM CONTROL

In each room, there is a sensor to detect and set the room temperature. Depending on the selected sensor, further functions may be available.



FTRFB-280.119

or

FTRFB-280.120  
(ECO switch for manual energy-saving operation)

### INDIVIDUAL ROOM CONTROL WITH INDIVIDUAL CLOCK PROGRAM

In each room, there is a sensor with a clock to detect and set the room temperature. An individual clock programme can therefore be set up for each room.



FTRFBu-180.1xx

or

FTRFud 210.123#xx  
(various variants for optimum integration in almost all switch ranges)

### INDIVIDUAL ROOM CONTROL WITH CENTRAL CLOCK PROGRAM (MASTER-SLAVE)

In one room, there is a sensor with a clock to detect and set the room temperature, as well as to set up the central clock program. In the other rooms (any number), there is a sensor to detect and set the room temperature. The clock program set centrally affects all rooms (any number, depending on the wireless range).

**Sensor with clock to detect and set the room temperature and set up the central clock programme**



FTRFBu-180.1xx

or

FTRFud 210.123#xx  
(various variants for optimum integration in almost all switch ranges)

**Sensor to detect and set room temperature**



FTRFB-280.119

or

FTRFB-280.120  
(ECO switch for manual energy-saving operation)

## CENTRAL CONTROL INDIVIDUAL ROOM CONTROL WITH CENTRAL TEMPERATURE SETTING

One FTRFB-280.101 sensor is required per room (any number) to detect the room temperature. Furthermore, a sensor is required to set the room temperature centrally. The room temperature set centrally applies to all rooms.

### Sensor for centrally setting room temperature



FTRFB-280.119

or



FTRFB-280.120  
(ECO switch for manual energy saving operation)

or



FTRFBu-180.1xx

or



FTRFud 210.123#xx  
(various variants for optimum integration in almost all switch ranges)



### Sensor to detect room temperature



FTRFB-280.101



FTRFB-280.101

### FINDING AVERAGES

Up to 7 additional FTRFB-280.101 sensors can be used per room for finding averages (for example in large rooms). This is possible with all listed control functions.

## 2 SELECTION OF ACTUATORS

Depending on the type of heating used, a corresponding actuator is required for each room or heating/cooling zone. Any number of actuators/ducts can be assigned to a room.

### Hot water underfloor heating



For example:  
HTFRL-214.240 (4-duct)  
HTFRL-316.225 (8-duct)

### Hot water radiators



For example:  
HTFMA-180.161

### Electrical underfloor heating



For example:  
HTFRU-110.124  
(optional external floor sensor available)

### Infrared heaters



For example:  
HTFRB 010.101  
or for cooling  
CTFRB 010.101

### Cooling ceiling



For example:  
KTFRL-213.140  
(4-channel)  
KTRFL-315.125  
(8-channel)

## OPTIONAL

If required, an external antenna (JZ-25) can be connected to the multi-channel actuators intended for installation in heating manifolds via a 1m antenna cable (JZ-26).



## WIRELESS SYSTEMS – SENSORS



## TECHNICAL DATA

<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Protection rating:</b>	IP30
<b>Safety and EMC:</b>	according to DIN EN 60730 and DIN EN 300220
<b>Radio frequency:</b>	868.3 MHz
<b>Range:</b>	150 m line-of-sight or up to 30 m in buildings, depending on the construction
<b>Transmission interval:</b>	approx. 3 min and after setpoint change


## APPLICATION

Wireless room temperature sensors for measuring temperature in home, office and hotel rooms with normal levels of cleanliness. Single-room temperature control can be implemented with alre wireless actuators. Primarily targets use in renovation applications or for heating system extensions.

**Battery change:** The sensor indicates if a battery change is required soon.



The wireless connection is restored automatically after a voltage interruption at the sensor or actuator.



TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
 <p>only 13.9 mm deep</p>	BA010409	<p><b>General features:</b> wireless room temperature sensor to detect and set room temperature; 'learning mode/battery discharge state' display; mechanical range restriction; scale: degrees Celsius; external setting</p> <p><b>Design:</b> Berlin 1000</p> <p><b>Surface finish:</b> glossy</p> <p><b>Housing colour:</b> pure white, similar to RAL 9010</p> <p><b>Housing material:</b> ABS plastic</p> <p><b>Operating voltage:</b> 2x micro AAA batteries, 1.5 V</p> <p><b>Ambient temperature:</b> -10 to +50 °C</p> <p><b>Storage temperature:</b> -10 to +50 °C</p> <p><b>Mounting/attachment:</b> direct surface/wall mounting by means of screws or adhesive pads</p> <p><b>Protection class:</b> III</p> <p><b>Sensor:</b> NTC, internal</p> <p><b>Setting range:</b> 5 to 30 °C</p> <p><b>Scope of delivery:</b> device, batteries, adhesive pads</p> <p><b>Operating elements:</b> Learn button</p>	117.50/1
 <p>only 13.9 mm deep</p>	BA010400	<p><b>General features:</b> Wireless room temperature sensor to detect the room temperature for calculating the average value or for centralised control; 'learning mode/battery discharge state' display</p> <p><b>Design:</b> Berlin 1000</p> <p><b>Surface finish:</b> glossy</p> <p><b>Housing colour:</b> pure white, similar to RAL 9010</p> <p><b>Housing material:</b> ABS plastic</p> <p><b>Operating voltage:</b> 2x micro AAA batteries, 1.5 V</p> <p><b>Ambient temperature:</b> -10 to +50 °C</p> <p><b>Storage temperature:</b> -10 to +50 °C</p> <p><b>Mounting/attachment:</b> direct surface/wall mounting by means of screws or adhesive pads</p> <p><b>Protection class:</b> III</p> <p><b>Sensor:</b> internal NTC</p> <p><b>Scope of delivery:</b> device, batteries, adhesive pads</p> <p><b>Operating elements:</b> Learn button</p>	113.40/1











## WIRELESS SYSTEMS – SENSORS







TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
 <p>only 13.9 mm deep</p>	BA010401	<p><b>General features:</b> wireless room temperature sensor to detect and set room temperature; reduction 4 K fixed; ECO function; 'learning mode/battery discharge state' display; mechanical range restriction; scale: degrees Celsius; external setting</p> <p><b>Design:</b> Berlin 1000</p> <p><b>Surface finish:</b> glossy</p> <p><b>Housing colour:</b> pure white, similar to RAL 9010</p> <p><b>Housing material:</b> ABS plastic</p> <p><b>Operating voltage:</b> 2x micro AAA batteries, 1.5 V, 1,100 mAh</p> <p><b>Ambient temperature:</b> –10 to +50 °C</p> <p><b>Storage temperature:</b> –10 to +50 °C</p> <p><b>Mounting/attachment:</b> direct surface/wall mounting by means of screws or adhesive pads</p> <p><b>Protection class:</b> III</p> <p><b>Sensor:</b> NTC, internal</p> <p><b>Setting range:</b> 5 to 30 °C</p> <p><b>Scope of delivery:</b> device, batteries, adhesive pads</p> <p><b>Operating elements:</b> 'Comfort/ECO' switch, learn button</p>	128.10/1
	BA010200	<p><b>General features:</b> wireless room temperature sensor to detect and set the room temperature with clock pilot function; ECO function, ECO value adjustable; 'ECO' display; 'on/off' display; 'learning mode/battery discharged state' display; digital actual value display; child-safe features; actual value correction/measured value correction; learning function; valve protection; holiday setting; party setting; automatic adjustment to summer/winter time; mechanical range setting; scale: degrees Celsius; reduction/comfort/automatic button; external setting; operation using direct-dial buttons; on/off button; information button; party function button; holiday setting button; master-slave operation; 'heating', 'cooling' or 'heating and cooling' mode</p> <p><b>Design:</b> Berlin 3000</p> <p><b>Surface finish:</b> matt</p> <p><b>Housing colour:</b> pure white, similar to RAL 9010</p> <p><b>Housing material:</b> ABS plastic</p> <p><b>Operating voltage:</b> 2x micro AAA batteries, 1.5 V, 1,100 mAh</p> <p><b>Ambient temperature:</b> –10 to 50 °C</p> <p><b>Storage temperature:</b> –10 to +50 °C</p> <p><b>Mounting/attachment:</b> direct surface/wall mounting by means of screws or adhesive pads</p> <p><b>Protection class:</b> III</p> <p><b>Sensor:</b> NTC, internal</p> <p><b>Setting range:</b> 5 to 30 °C</p> <p><b>Display type:</b> symbol display</p> <p><b>Scope of delivery:</b> device, batteries, adhesive pads</p> <p><b>Accessories:</b> optional adapter snap-on plate JZ-18</p>	208.20/1
	BA010201	<p>Similar to FTRFBu-180.117, but with backlighting</p> <p><b>Operating voltage:</b> 3x micro AAA batteries, 1.5 V (3rd battery for backlighting)</p>	239.60/1
	UA080000	<p><b>General features:</b> Flush-mounted wireless room temperature sensor to detect and set the room temperature with clock, holiday setting, party setting, different clock programs can be set for heating and cooling, usable as the master for master-slave operation (pilot controller); pilot function; ECO function; ECO value adjustable; 'ECO' display; 'on/off' display; digital actual value display; backlighting; child-safe features; power reserve (3 days); actual value correction/measured value correction; learning function; valve protection; holiday setting; party setting; automatic adjustment to summer/winter time; external setting; operation using direct-dial buttons</p> <p><b>Design:</b> Berlin flush-mounted</p> <p><b>Surface finish:</b> glossy</p> <p><b>Housing colour:</b> pure white, similar to RAL 9010</p> <p><b>Housing material:</b> ABS, PC, PMMA plastic</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 0 to 40 °C</p> <p><b>Storage temperature:</b> –20 to +70 °C</p> <p><b>Electrical connection:</b> pluggable screw terminals</p> <p><b>Mounting:</b> in flush-mounted socket (deep flush-mounted socket recommended); can be adapted to fit virtually any surface switch range, see page 21</p> <p><b>Protection class:</b> II, if properly mounted</p> <p><b>Average power consumption:</b> &lt;1 W</p> <p><b>Sensor:</b> NTC internal, optional external (selection option from 7 different sensors, e.g., 'Sensor 2'/'Sensor 8')</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Display type:</b> illuminated graphic display</p> <p><b>Scope of delivery:</b> controller, 50 x 50 mm cover pure white (similar to RAL 9010), glossy, alre frame 'Berlin'</p>	292.60/1



## WIRELESS SYSTEMS – SENSORS

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
	FTRFud 210.123#07 UA080001	Similar to FTRFud 210.123#21 but scope of delivery as follows: wireless room temperature sensor, 50 x 50 mm cover <b>pure white</b> (similar to RAL 9010), <b>glossy</b> , without frame	288.50/1
	FTRFud 210.123#09 UA080002	Similar to FTRFud 210.123#21 but scope of delivery as follows: wireless room temperature sensor, 50 x 50 mm cover <b>pearl white</b> (similar to RAL 1013), <b>glossy</b> , without frame	288.50/1
	FTRFud 210.123#27 UA080003	Similar to FTRFud 210.123#21 but scope of delivery as follows: wireless room temperature sensor, 50 x 50 mm cover <b>traffic white</b> (similar to RAL 9016), <b>glossy</b> , without frame	288.50/1
	FTRFud 210.123#28 UA080006	Similar to FTRFud 210.123#21 but scope of delivery as follows: wireless room temperature sensor, cover suitable for <b>BUSCH-JAEGER Reflex SI/ SI Linear pure white</b> (similar to RAL 9010), <b>glossy</b> , without frame	290.50/1
	FTRFud 210.123#55 UA080004	Similar to FTRFud 210.123#21 but scope of delivery as follows: Wireless room temperature sensor, 55 x 55 mm cover <b>pure white</b> (similar to RAL 9010), <b>glossy</b> , without frame	290.50/1
	FTRFud 210.123#56 UA080008	Similar to FTRFud 210.123#21 but scope of delivery as follows: wireless room temperature sensor, 55 x 55 mm cover <b>pure white</b> (similar to RAL 9010), <b>mat</b> , without frame	290.50/1
	FTRFud 210.123#57 UA080005	Similar to FTRFud 210.123#21 but scope of delivery as follows: wireless room temperature sensor, 55 x 55 mm cover <b>pearl white</b> (similar to RAL 1013), <b>glossy</b> , without frame	290.50/1
	FTRFud 210.123#59 UA080007	Similar to FTRFud 210.123#21 but scope of delivery as follows: wireless room temperature sensor, 55 x 55 mm cover <b>traffic white</b> (similar to RAL 9016), <b>glossy</b> , without frame	290.50/1

## WIRELESS SYSTEMS – SENSORS

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
<b>JZ-18</b> 	MN990002	<b>General features:</b> Optional adapter snap-action plate for wireless room temperature sensor FTRFBu with universal perforation pattern for mounting. The use of the adapter is recommended since the device becomes detachable as a result, which facilitates simpler battery replacement. <b>Surface finish:</b> matt <b>Housing colour:</b> pure white, similar to RAL 9010 <b>Housing material:</b> ABS plastic	7.70/II
<b>JZ-21</b> 	MN990006	<b>Adapter frame for mounting wireless sensors of the Berlin 1000 series in flush-mounted sockets up to 80 x 80 mm</b>	5.20/I
<b>JZ-090.900</b> 	VV000025	<b>General features:</b> alre frame 'Berlin' (neutral) for all flush-mounted room temperature sensors with a 50 x 50 mm cover <b>Surface finish:</b> glossy <b>Housing colour:</b> pure white, similar to RAL 9010 <b>Housing material:</b> PC plastic	4.40/I
<b>JZ-090.100</b> 	VV000048	<b>Features:</b> similar to JZ-090.900 but for all flush-mounted controllers in combination with 55 x 55 mm cover	4.40/I
<b>JZ-090.910</b> 	VV000010	<b>General features:</b> alre frame 'Berlin' (neutral) for all flush-mounted room temperature sensors with a 50 x 50 mm cover <b>Surface finish:</b> glossy <b>Housing colour:</b> pearl white, similar to RAL 1013 <b>Housing material:</b> PC plastic	4.40/I
<b>ET-01</b> 	MA990000	<b>General features:</b> Adjusting knob for B1000 series devices, Scale: degrees Celsius, pure white glossy	3.40/I

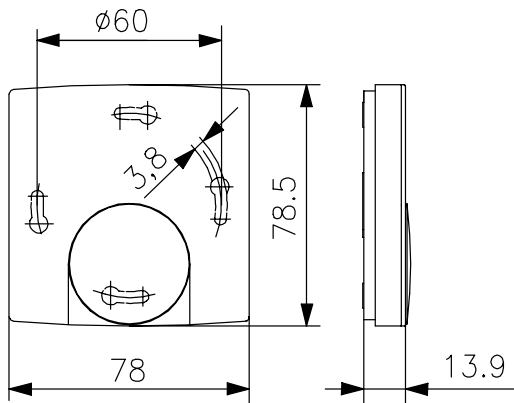




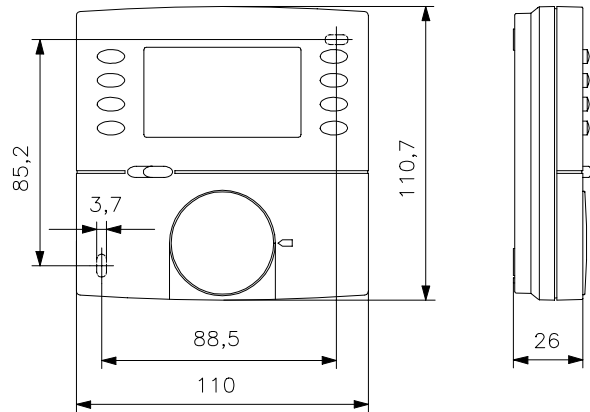
# WIRELESS SYSTEMS - SENSORS

## ILLUSTRATIONS

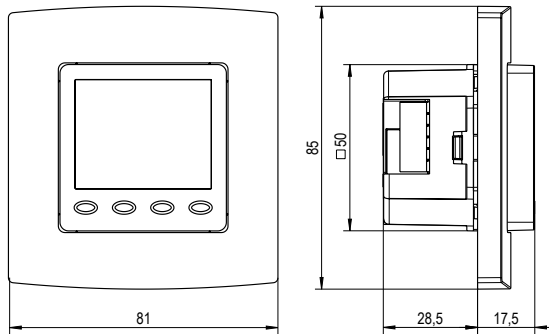
'Berlin 1000'



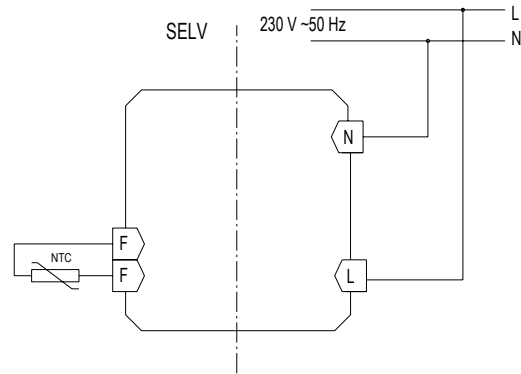
'Berlin 3000'



FTRFUd with alre frame 'Berlin'



FTRFUd



## ADAPTATION OF ALRE FTRFUD-210.123

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION in switch range (55 x 55) possible with...	'50 x 50' adaptation possible with... (insert frame from switch manufacturer required)
BERKER	S.1	polar white (matt)	FTRFUD-210.123#56	not required
BERKER	S.1	polar white (glossy)	FTRFUD-210.123#55	not required
BERKER	Arsys	polar white (glossy)		FTRFUD-210.123#07 + (1108 01 69)
BERKER	B.3	aluminium / polar white (matt)	FTRFUD-210.123#56	not required
BERKER	B.3	aluminium / polar white (glossy)	FTRFUD-210.123#55	not required
BERKER	B.7	glass / polar white (matt)	FTRFUD-210.123#56	not required
BERKER	B.7	glass / polar white (glossy)	FTRFUD-210.123#55	not required
BERKER	K.1	polar white (glossy)		FTRFUD-210.123#07 + (1108 71 09)
BUSCH-JAEGER	Reflex SI / SI Linear	alpine white (glossy)	FTRFUD-210.123#28	not required
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)	FTRFUD-210.123#55	not required
BUSCH-JAEGER	impuls	alpine white (glossy)		FTRFUD-210.123#07 + (1746 / 10-74)
BUSCH-JAEGER	solo / future / axcent etc.	studio white – see RAL 9016 below		
Elso	Joy	pure white (glossy)	FTRFUD-210.123#55	not required
Elso	Fashion / Riva / Scala	pure white (glossy)		FTRFUD-210.123#07 + 203084
GIRA	surface switch	pure white (glossy)		FTRFUD-210.123#07 + (0282 112)
GIRA (System 55)	Standard / E2	pure white (semi-gloss)	FTRFUD-210.123#56	not required
GIRA (System 55)	Standard / E2 / E3	pure white (glossy)	FTRFUD-210.123#55	not required
GIRA (System 55)	E22	pure white (glossy)	FTRFUD-210.123#55	not required
GIRA (System 55)	Event	pure white (semi-gloss) + opaque...	FTRFUD-210.123#56	not required
GIRA (System 55)	Event	pure white (glossy) + opaque...	FTRFUD-210.123#55	not required
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium...	FTRFUD-210.123#56	not required
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium...	FTRFUD-210.123#55	not required
GIRA	S-Color	pure white (high-gloss)		FTRFUD-210.123#07 + (0282 40)
JUNG	CD 500 / CD plus	alpine white (glossy)		FTRFUD-210.123#07 + (CD 590 Z WW)
JUNG	A 500 / A 550 / AS 500 / A plus / A flow	alpine white (glossy)	FTRFUD-210.123#55	not required
JUNG	LS 990	alpine white (glossy)		FTRFUD-210.123#07 + (LS 961 Z WW)
JUNG	LS plus	alpine white (glass)		FTRFUD-210.123#07 + (LS 961 Z WW)
JUNG	A creation	alpine white (glossy)	FTRFUD-210.123#55	not required
JUNG	LS Design	alpine white (glossy)		FTRFUD-210.123#07 + (LS 961 Z WW)
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	FTRFUD-210.123#56	not required
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)	FTRFUD-210.123#55	not required
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)	FTRFUD-210.123#55	not required
MERTEN (Surface System)	Artex / Antik	polar white (glossy)		FTRFUD-210.123#07 + (5160 99)
MERTEN	1-M / M-Smart / M-Plan / M-Pure / D-Life etc.	active white – see RAL 9016 below		
PEHA	Standard	pure white (glossy)		FTRFUD-210.123#07 + (80.670.02 ZV)
PEHA	Dialog	pure white (glossy)		FTRFUD-210.123#07 + (95.670.02 ZV)
PEHA	Aura	pure white (matt) / glass		FTRFUD-210.123#07 + (20.670.02 ZV)
PEHA	Badora	pure white (glossy)		FTRFUD-210.123#07 + (11.670.02 ZV)

MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION in switch range (55 x 55) possible with...	'50 x 50' adaptation possible with... (insert frame from switch manufacturer required)
BUSCH-JAEGER	solo / future / future linear	studio white (RAL 9016, glossy)		FTRFUD-210.123#27 + (1746 / 10-84)
BUSCH-JAEGER	axcent	studio white (RAL 9016, glossy)		FTRFUD-210.123#27 + (1746 / 10-84)
BUSCH-JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016, glossy)		FTRFUD-210.123#27 + (1746 / 10-84)
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016, glossy)		FTRFUD-210.123#27 + (1746 / 10-24G)
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	FTRFUD-210.123#59	not required
MERTEN	1-M / Atelier-M	active white (RAL 9016, glossy)	FTRFUD-210.123#59	not required
MERTEN	D-Life	lotus white (similar to RAL 9016)		FTRFUD-210.123#27 + (MEG4500-6035)
PEHA	Standard	arctic		FTRFUD-210.123#27 + (D 80.670 ZV AW)

\*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame

**NOTE:** Most light switches are designed in the colour 'similar to RAL 9010', although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt/glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

**'50 x 50 controller':** The housing covers of the 50 x 50 controllers are 50 x 50 mm in size. Using a 50 x 50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50 x 50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch range in question can be found in the column 'For adaptation of '50 x 50' FTRFUD'.

**'55 x 55 controller':** The housing covers of the 55 x 55 controllers are 55 x 55 mm in size. Many light switch ranges have inner dimensions of 55 x 55 mm. Therefore, the 55 x 55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column 'Adaptation in switch range (55 x 55)' to determine whether the 55 x 55 controller fits in the given light switch range (FTRFUD-210.123#xx).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12/2022 | No liability is assumed for the information provided. | Technical specifications subject to change.



## WIRELESS SYSTEMS – ACTUATORS (HEATING)





### TECHNICAL DATA

<b>Surface finish:</b>	matt
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Control function:</b>	heating
<b>Hysteresis:</b>	approx. 0.5 K
<b>Radio frequency:</b>	868.3 MHz
<b>Safety and EMC:</b>	according to DIN EN 60950-1, DIN EN 300220



### APPLICATION

Wireless actuators (wireless heating controllers) which, in conjunction with alre wireless room temperature sensors, implement individual room temperature control. Primarily targets use in renovation applications or for heating system extensions.

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
	G8000422	<p><b>General features:</b> 1-channel wireless temperature actuator for radiator valves; 'learning mode / battery discharged state' display; emergency mode; adapter for Danfoss RA, RAV, RAVL</p> <p><b>Housing colour:</b> pure white, similar to RAL 9010</p> <p><b>Housing material:</b> plastic</p> <p><b>Operating voltage:</b> 2 x Mignon AA, 1.5 V. Do not use rechargeable batteries or lithium batteries!</p> <p><b>Ambient temperature:</b> 0 to 50 °C</p> <p><b>Storage temperature:</b> -20 to +50 °C</p> <p><b>Mounting / attachment:</b> M30 x 1.5, included adapter for Danfoss RA, RAV, RAVL</p> <p><b>Protection rating:</b> IP20</p> <p><b>Protection class:</b> III</p> <p><b>Sensor:</b> NTC internal (for emergency operation control)</p> <p><b>Nominal stroke:</b> approx. 5 mm</p> <p><b>Nominal closing force:</b> approx. 100 N</p> <p><b>Control range:</b> 8 to 28 °C</p> <p><b>Display:</b> Ready to mount/mechanical adjustment/mechanical adjustment error/loss of connection/learning mode</p> <p><b>Operating elements:</b> learn button, installation button</p>	141.10/1
	BA110500	<p><b>General features:</b> 1-channel wireless temperature actuator; central control; emergency mode; 3000 W switching power for electrical direct heating systems, natural stone heating</p> <p><b>Design:</b> Berlin 2000</p> <p><b>Housing colour:</b> pure white, similar to RAL 9010</p> <p><b>Housing material:</b> ABS plastic</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 0 to 40 °C</p> <p><b>Storage temperature:</b> -20 to +70 °C</p> <p><b>Electrical connection:</b> screw-type terminals 0.5–2.5 mm<sup>2</sup></p> <p><b>Mounting / attachment:</b> surface / wall mounting (4-hole assembly on flush-mounted socket)</p> <p><b>Protection rating:</b> IP30</p> <p><b>Protection class:</b> II for loads of protection classes I and II</p> <p><b>Max. switching current:</b> 13 (2) A</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Min. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Switching power:</b> 3000 W</p> <p><b>Switching element:</b> relay</p> <p><b>Switching contact:</b> NO contact</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Display:</b> installation mode / function check / connection loss / learning mode</p> <p><b>Operating elements:</b> Learn button</p>	139.50/1









## WIRELESS SYSTEMS – ACTUATORS (HEATING)

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
	BA110201	<p><b>General features:</b> 1-channel wireless temperature actuator; for activating an (electrical) floor heating system, the controller has a sensor input to which an optionally available remote sensor can be connected, which is then embedded in the floor. The following operating modes can be used in conjunction with such a sensor: floor temperature control function or room temperature control function with floor monitoring and direct or central setpoint temperature setting (central control); if the sensor is dispensed with, the HTFRU-110.124 works as a room temperature controller with direct or central setpoint temperature setting (central control); central control; emergency operation</p> <p><b>Housing colour:</b> pure white, similar to RAL 9010</p> <p><b>Housing material:</b> PC plastic</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> –20 to +50 °C</p> <p><b>Storage temperature:</b> –20 to +70 °C</p> <p><b>Electrical connection:</b> screw-type terminals 0.5–1.5 mm<sup>2</sup></p> <p><b>Mounting / attachment:</b> in flush-mounted socket (deep flush-mounted socket recommended)</p> <p><b>Protection rating:</b> IP20</p> <p><b>Protection class:</b> II for loads of protection classes I and II</p> <p><b>Safety and EMC:</b> according to DIN EN 60950-1, DIN EN 300220</p> <p><b>Max. switching current:</b> 10 A to 30 °C ambient temperature</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz; <b>Min. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Switching power:</b> 2300 W up to 30 °C ambient temperature</p> <p><b>Switching element:</b> relay</p> <p><b>Switching contact:</b> NO contact</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Display:</b> installation mode / function check / connection loss / learning mode</p> <p><b>Operating elements:</b> Learn button</p>	190.40/1
	BA121400	<p><b>General features:</b> 4-channel radio temperature actuator for installation in the heating circuit manifold, max. 3 actuators per channel can be connected directly / max. 11 actuators in total, including pump module, one time zone per channel possible, master-slave operation, averaging with up to 8 measuring points. Upper part can be used to teach the wireless sensors (via channel selection teach-in button) in the individual rooms. Emergency operation; 4 fixing screws For wall mounting (see page 28 for implementation of central control using KTFRL)</p> <p><b>Housing colour:</b> Upper part transparent, lower part anthracite grey, similar to RAL 7016</p> <p><b>Housing material:</b> PC plastic</p> <p><b>Operating voltage:</b> 230 V AC, 50 Hz</p> <p><b>Ambient temperature:</b> –10 to +50 °C</p> <p><b>Storage temperature:</b> –20 to +70 °C</p> <p><b>Electrical connection:</b> spring-cage terminals 0.5–1.5 mm<sup>2</sup></p> <p><b>Mounting / attachment:</b> surface / wall-mounting</p> <p><b>Protection rating:</b> IP20</p> <p><b>Protection class:</b> II for loads of protection classes I and II</p> <p><b>Max. switching current:</b> 3 (1) A</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz <b>Min. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Switching power:</b> total 1150 W, of which 180 W for pump output</p> <p><b>Switching element:</b> 5 relays</p> <p><b>Switching contact:</b> 5 NO contacts</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Display:</b> installation mode, connection and status check, connection loss, learning mode are indicated per channel</p> <p><b>Operating elements:</b> channel selection button, learning button</p>	306.00/1
	BA121600	<p><b>General features:</b> 8-channel radio temperature actuator for installation in the heating circuit manifold, max. 3 actuators per channel can be connected directly / max. 20 actuators in total, including pump module, one time zone per channel possible, master-slave operation, averaging with up to 8 measuring points; 4 fixing screws for wall mounting; installation mode, connection and status check, connection loss, Teach-in mode is displayed for each channel. Upper part can be used to teach-in the wireless sensors (via channel selection and teach-in button) in the individual rooms.</p> <p>Central control see page 28 using KTFRL)</p> <p><b>Housing colour:</b> Upper part transparent, lower part anthracite grey, similar to RAL 7016</p> <p><b>Housing material:</b> PC plastic</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> –10 to +50 °C</p> <p><b>Storage temperature:</b> –20 to +70 °C</p> <p><b>Electrical connection:</b> spring-cage terminals 0.5–1.5 mm<sup>2</sup></p> <p><b>Mounting / attachment:</b> surface / wall-mounting</p> <p><b>Protection rating:</b> IP20</p> <p><b>Protection class:</b> II for loads of protection classes I and II</p> <p><b>Max. switching current:</b> 3 (1) A</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz; <b>Min. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Switching power:</b> total 1150 W, of which 180 W for pump output</p> <p><b>Switching element:</b> 9 relays</p> <p><b>Switching contact:</b> 9 NO contacts</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Operating elements:</b> channel selection button, learn button</p>	362.90/1



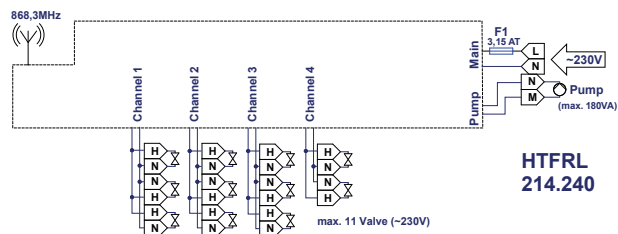
# WIRELESS SYSTEMS – ACTUATORS (HEATING)

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
<b>HF-8/4-K2</b> 	G8000370	<b>General features:</b> optional external floor sensor for HTFRU-110.124 <b>Ambient temperature:</b> -5 to +70 °C <b>Protection rating:</b> IP65 <b>Sensor:</b> NTC <b>Connecting cable:</b> 4 m, PVC	25.00/II
<b>HF-8/6-K2</b> 	G8000368	<b>General features:</b> optional external floor sensor for HTFRU-110.124 <b>Ambient temperature:</b> -5 to +70 °C <b>Protection rating:</b> IP65 <b>Sensor:</b> NTC <b>Connecting cable:</b> 6 m, PVC	27.80/II
<b>WP-01</b>	G9990180	<b>General features:</b> Heat conduction paste 2 ml; R > 1 TΩ/cm, silicone-free <b>Ambient temperature:</b> -40 to +150 °C <b>Heat conductivity:</b> > 0.7 W/mK	7.20/II
<b>JZ-32</b> 	BN990005	<b>General features:</b> Magnet mounting set for terminal strips VOOPL-216.176/VOOPL-318.178 and radio multi-channel receiver HTFRL-214.240/HTFRL-316.225	18.20/II
<b>JZ-25</b> 	BN990003	<b>General features:</b> external antenna for reception enhancement of the multi-channel actuators under difficult reception conditions (antenna cable JZ-26 is not a part of the delivery scope) <b>Design:</b> Berlin 1000 <b>Surface finish:</b> glossy <b>Housing colour:</b> pure white, similar to RAL 9010 <b>Housing material:</b> ABS plastic <b>Storage temperature:</b> -20 to +70 °C <b>Admissible humidity:</b> max. 95% rel. humidity, non-condensing <b>Protection rating:</b> IP30	68.70/II
<b>JZ-26</b> 	BN990004	<b>General features:</b> Antenna cable for connecting the external antenna (JZ-25) with multi-channel actuators <b>Connecting cable:</b> 1 m	41.30/II
<b>THF</b> 	C1809515	<b>General features:</b> Heat conduction paste 2 ml; R > 1 TΩ/cm, silicone-free	42.50/II

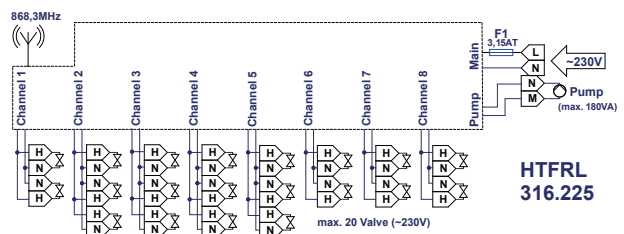
suitable valve actuators, beginning on page 113

## ILLUSTRATIONS

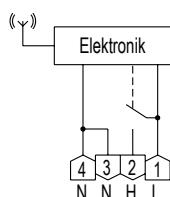
HTFRL-214.240 (4-duct)



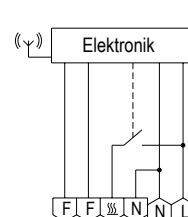
HTFRL-316.225 (8-duct)



HTFRB-010.101



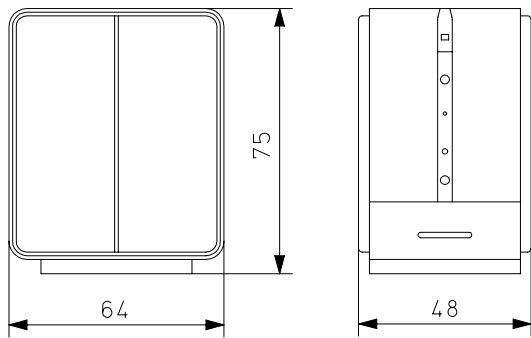
HTFRU-110.124



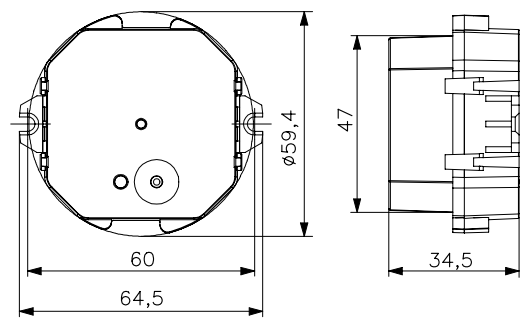
# WIRELESS SYSTEMS - ACTUATORS (HEATING)

## ILLUSTRATIONS

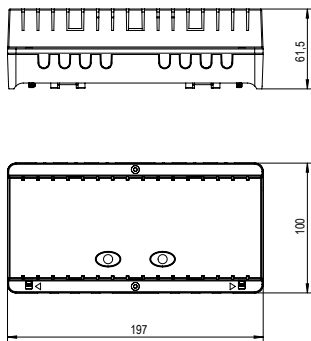
HTFMA-180.161



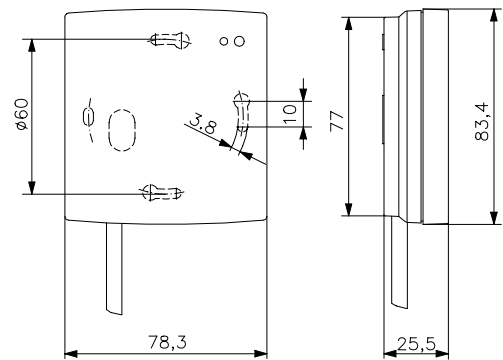
HTFRU-110.124



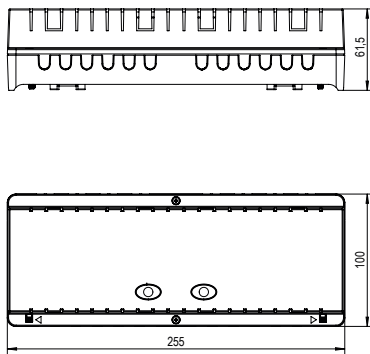
HTFRL-214.240



HTFRB-010.101



HTFRL-316.225







## WIRELESS SYSTEMS – ACTUATORS (COOLING)



### TECHNICAL DATA

<b>Design:</b>	'Berlin 2000'
<b>Surface finish:</b>	matt
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	ABS plastic
<b>Operating voltage:</b>	230 V AC, 50 Hz
<b>Ambient temperature:</b>	-20 to +45 °C
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals 0.5–2.5 mm <sup>2</sup>
<b>Mounting/attachment:</b>	surface- / wall-mounting (4-hole assembly on flush-mounted socket)
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	II for loads of protection classes I and II
<b>Safety and EMC:</b>	according to DIN EN 60950-1, DIN EN 300220
<b>Average power consumption:</b>	approx. 1.5 W
<b>Max. switching current:</b>	10 (2) A
<b>Max. /min. switching voltage:</b>	230 V AC, 50 Hz
<b>Switching power:</b>	2300 W
<b>Switching element:</b>	relay
<b>Switching contact:</b>	NO contact
<b>Output signal:</b>	switching, 230 VAC, 50 Hz
<b>Control range:</b>	18 to 40 °C
<b>Hysteresis:</b>	approx. 0.5 K
<b>Neutral zone:</b>	approx. 3 K
<b>Radio frequency:</b>	868.3 MHz
<b>General features:</b>	Central control
<b>Pipe system compatibility:</b>	2-pipe
<b>Operating elements:</b>	Learn button

### APPLICATION

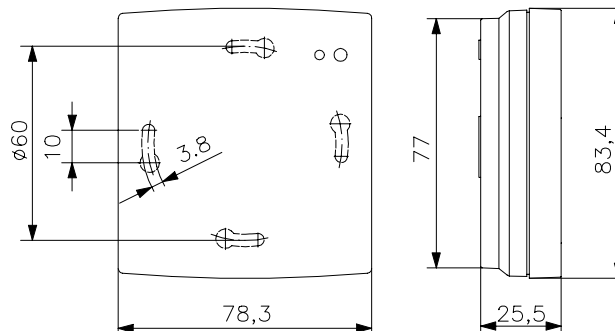
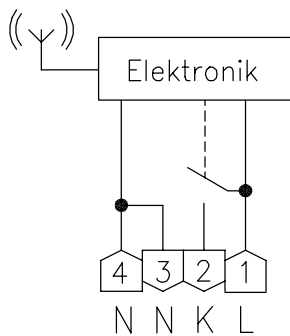
The CTFRB was specifically designed to control electrothermal valve actuators (normally closed) and works together with alre wireless room temperature sensors to establish single-room temperature control.

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
CTFRB-010.101	BA110600	<b>Control function:</b> switches on the cooling if the setpoint value + neutral zone are exceeded, centra control, display 'Installation mode/Function check/Connection loss/Learning mode'	139.60/1



Suitable valve actuators, beginning on page 113

### ILLUSTRATIONS



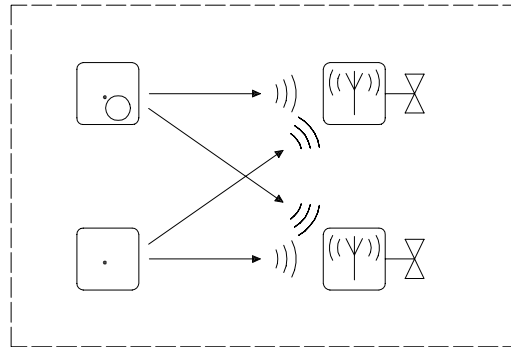
# WIRELESS SYSTEMS – ACTUATORS (COOLING)

## APPLICATION EXAMPLES (COMBINATION OPTIONS FOR SENSORS/ACTUATORS WITHOUT B@HOME GATE):

CTFRB for cooling operation, HTFRB for heating operation in a 4-pipe system

Averaging: (each actuator calculates the average value based on data from max. seven actual value sensors and a sensor with a setpoint adjuster)

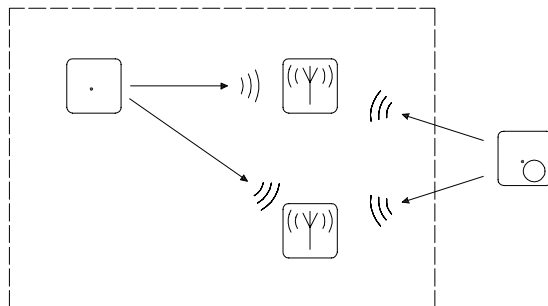
Room to be controlled



CTFRB for cooling operation, HTFRB for heating operation in a 4-pipe system

Master-slave operation: (comfort temperature through room sensor, scheduled ECO control, ON/OFF, holiday and party function in combination with a configured clock sensor)

Room to be controlled

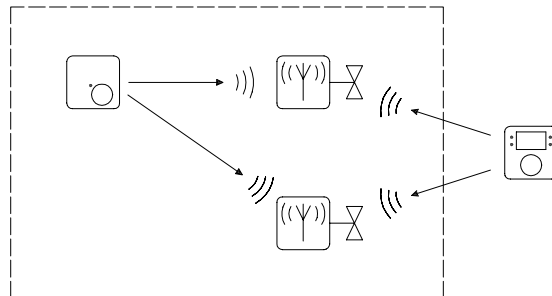


CTFRB for cooling operation, HTFRB for heating operation in a 4-pipe system

Centralised control: (one or optionally up to seven sensors without setpoint adjuster with any number of actuators; the target temperature is provided by an external sensor with setpoint adjuster)

Application: nurseries, guest accommodations, public offices and spaces

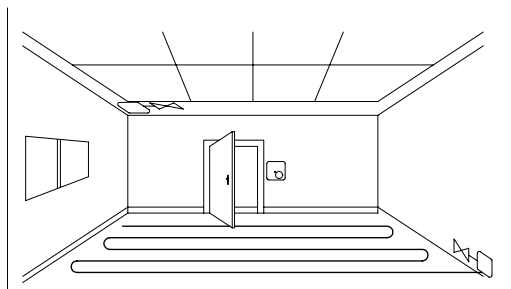
Room to be controlled



CTFRB for cooling operation, HTFRB for heating operation in a 4-pipe system

Application example: CTFRB controls the ceiling cooling system, HTFRB controls the underfloor heating system

Room to be controlled





## WIRELESS SYSTEMS – ACTUATORS (HEATING / COOLING)



### TECHNICAL DATA



<b>Surface finish:</b>	matt
<b>Housing colour:</b>	light grey, similar to RAL 7035
<b>Housing material:</b>	ABS plastic
<b>Operating voltage:</b>	230 V AC, 50 Hz
<b>Ambient temperature:</b>	-10 to +50 °C
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	spring-cage terminals 0.5–1.5 mm <sup>2</sup>
<b>Mounting / attachment:</b>	surface / wall mounting
<b>Protection class:</b>	II for loads of protection classes I and II
<b>Safety and EMC:</b>	according to DIN EN 60950-1, DIN EN 300220
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	230 V AC, 50 Hz
<b>Control function:</b>	heating or cooling
<b>Control range:</b>	5 to 30 °C
<b>Hysteresis:</b>	approx. 0.5 K
<b>Neutral zone:</b>	adjustable 0–6 K
<b>Radio frequency:</b>	868.3 MHz
<b>General features:</b>	external dew point sensor; ECO function; operating mode 'off with frost protection monitoring'; central control; emergency operation mode
<b>Factory setting:</b>	neutral zone 0 K
<b>Operating elements:</b>	Duct selection button, learn button
<b>Accessories:</b>	suitable valve actuators: ZB00A-010.1xx optional magnetic mounting set for simple installation in heating manifold: JZ-24 external antenna: JZ-25 antenna cable 1 m: JZ-26
<b>display</b>	Installation mode, connection and status check, temperature below dew point, connection loss, learning mode are indicated per duct

### APPLICATION

Wireless temperature controllers (actuators) used to implement a single-room climate control in conjunction with alre wireless room temperature sensors.




**Functions:** heating, cooling with adjustable neutral zone; H/C changeover on site or via an external contact; on/off switching by contact with frost protection function; individual channels can be excluded from cooling operation; cooling interruption if condensation occurs, via dew point sensor or contact; cooling limit 18 °C; energy-saving function centrally via external timer or centrally or locally in master-slave operation, (max. 4/8 time zones possible, i.e., up to 4/8 sensors can be connected to clock); status display of the wireless connection for each channel, automatic emergency mode if connection lost;

The upper part can be removed for configuring the wireless sensors/channels in the individual rooms. The power supply is ensured during this time with a standard commercial 9-V block battery. The sensors can be configured easily using the channel selection button and a learn button. Attachment: There are 4 screws for wall attachment that are part of the standard kit; as an option, a magnetic attachment set JZ-24 for simple attachment in the heating manifold distribution cabinet can also be supplied.

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
KTFRL-213.140 	BA121100	<b>Protection rating:</b> IP 20 <b>Max. switching current:</b> output 1-4: 3 (1) A <b>Pump output:</b> 0.75 A* <b>Total of all the outputs (4 channels + pump output):</b> 3 (1) A <b>Switching power:</b> total 920 W, of which 180 W is pump output <b>Switching element:</b> 5 relays <b>Switching contact:</b> 5 NO contacts	359.40/1
KTFRL-315.125 	BA120900	<b>Protection rating:</b> IP 20 <b>Max. switching current:</b> output 1-8: 3 (1) A <b>Pump output:</b> 0.75 A* <b>Total of all the outputs (8 channels + pump output):</b> 3 (1) A <b>Switching power:</b> total 1380 W, of which 180 W is pump output <b>Switching element:</b> 9 relays <b>Switching contact:</b> 9 NO contacts	425.30/1

\* Pump module included in scope of delivery

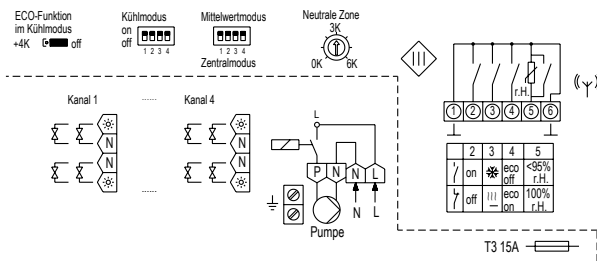
# WIRELESS SYSTEMS – ACTUATORS (HEATING / COOLING)

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
	BN990002	<b>General features:</b> Magnetic mounting set for simple and safe mounting of the multi-channel actuators on a metallic substrate (for example heating manifold)	24.30 / II
	BN990003	<b>General features:</b> external antenna for reception enhancement of the multi-channel actuators under difficult reception conditions (antenna cable JZ-26 is not a part of the delivery scope) <b>Design:</b> Berlin 1000 <b>Surface finish:</b> glossy <b>Housing colour:</b> pure white, similar to RAL 9010 <b>Housing material:</b> ABS plastic <b>Storage temperature:</b> -20 to +70 °C <b>Admissible humidity:</b> max. 95% rel. humidity, non-condensing <b>Protection rating:</b> IP30	68.70 / II
	BN990004	<b>General features:</b> Antenna cable for connecting the external antenna (JZ-25) with multi-channel actuators <b>Connecting cable:</b> 1 m	41.30 / II

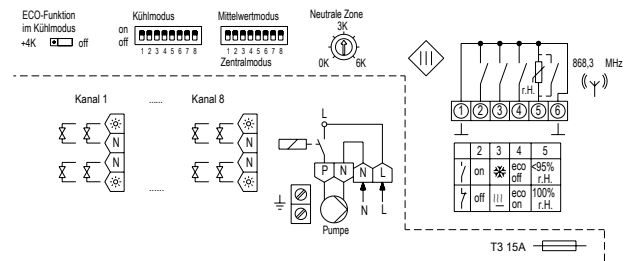
suitable valve actuators, beginning on page 113

## ILLUSTRATIONS

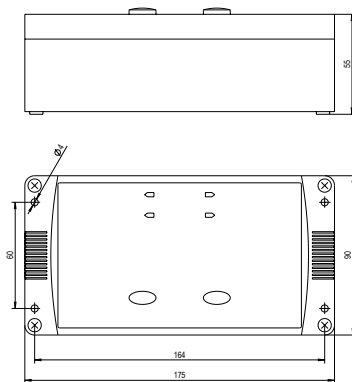
KTFRL-213.140 (4-channel)



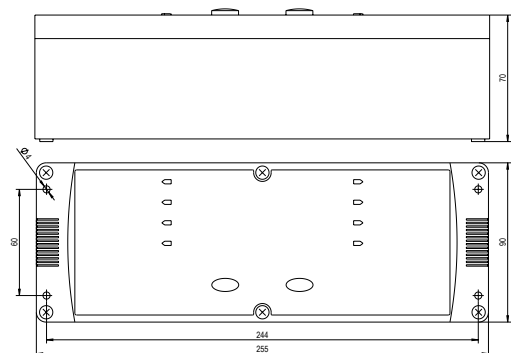
KTFRL-315.125 (8-channel)



KTFRL-213.140



KTFRL-315.125



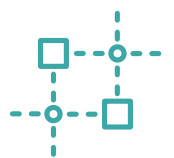






# BUILDING AUTOMATION

INTELLIGENT AND FUTURE-PROOF





# ALRE BUILDING AUTOMATION. ALWAYS **PERFECT** **INDOOR CLIMATE.**

With our BACnet room controller – the only BACnet flush-mounted controller on the market – you control, regulate, monitor and optimise all central building functions such as heating, cooling or ventilation. The comfort in the building increases, the energy and operating costs decrease. According to predefined scenarios, all sensors, actuators, operating elements and other technical components in the building are networked with each other. This ensures that all components work together intelligently.

**alre building automation:  
BACnet controller for efficient  
building management systems.**

## APPLICATION **EXAMPLES:**

- + Hot water underfloor heating
- + Electric floor heating
- + Ceiling cassettes
- + Underfloor convectors
- + Heating and cooling ceilings
- + Duct devices



# OVERVIEW

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## INDIVIDUAL COMPONENTS

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**BACNET ROOM CONTROLLER, FLUSH-MOUNTED**  
KTRBUU217.456#21



**BACNET ROOM CONTROLLER, FLUSH-MOUNTED**  
KTRBUU217.456#07



**BACNET ROOM CONTROLLER, FLUSH-MOUNTED**  
KTRBUU217.456#56



**BACNET ROOM CONTROLLER, FLUSH-MOUNTED**  
KTRBUU217.456#28







# MANAGING THE FUTURE SAFELY – **SUSTAINABLY AND EFFICIENTLY**

In an age dominated by Industry 4.0, cloud computing, artificial intelligence, and smart living, digitalization is not just a trend – it's a revolution. Building automation is evolving rapidly, propelled by the latest technologies, interconnected systems, and escalating demands. This dynamic landscape necessitates intelligent, flexible, and user-friendly solutions.

Smart systems do more than just offer convenience and functionality; they significantly reduce operating costs. Modern building automation enhances property value, making it an increasingly vital factor in property rentals and sales.

In response to this evolution, we're excited to introduce the new alre BACnet climate controller. This innovative device is specifically designed to meet the unique demands of individual room control in building automation, marking a significant leap forward in our technological offerings.



# COMMUNICATION VIA **BACNET MS/TP**

For building automation systems to fully leverage networked capabilities, it's essential for them to be interconnected and maintain an open communication framework. This is where open interfaces, like BACnet, play a pivotal role.

The alre BACnet room controller (KTRBUu 217.456) exemplifies seamless communication in this networked world. It operates in accordance with DIN EN ISO 16484-5 using the BACnet MS/TP network protocol. This ensures its compatibility with virtually all common building automation systems. Adhering to the 'B-AAC' (BACnet Advanced Application Controller) profile, it transcends the role of a mere setpoint generator.

A distinct advantage of the BACnet interface is its independence from additional gateways for implementation and communication at the management level, unlike other fieldbus interfaces like LON or KNX. This translates into significant cost savings, eliminating the need for service technicians with varied specializations for system commissioning. Additionally, by integrating the room control unit and individual room controller into a single device, it offers further cost efficiency compared to distributed solutions.



**The BACnet individual room controller is therefore extremely versatile – in residential, office and business premises, in hotels, schools, hospitals and more.**

The BACnet room controller has been awarded the BTL certificate for compliance with the BACnet standard ISO 16484-5, which has been proven by means of a BTL compliance test.

## YOUR **ADVANTAGES** FOR ALL FIELDS OF APPLICATION:

- + Individual room controller with controller function (B-AAC)
- + Flush-mounted – integration in all common switch ranges (50 mm / 55 mm / 60 mm)
- + Selectable application for various user applications
- + Cost benefit for investment and commissioning
- + No additional gateways required (BACnet MS/TP)
- + Reduction of installation and operating costs









# ALRE BACNET

## INDIVIDUAL ROOM CONTROLLER CONNECTION OPTIONS

Designed for both 2 and 4-pipe systems, the alre BACnet room controller with a graphic display is a practical solution for managing time-dependent heating and cooling operations. Its design focuses on simplicity and effectiveness, fitting seamlessly into various building environments.

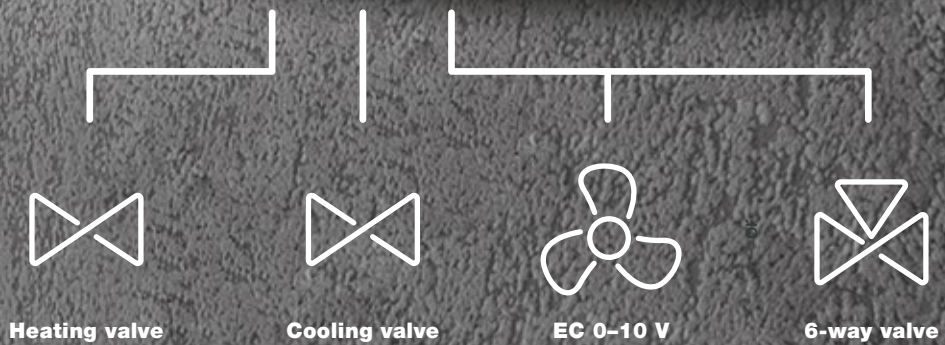
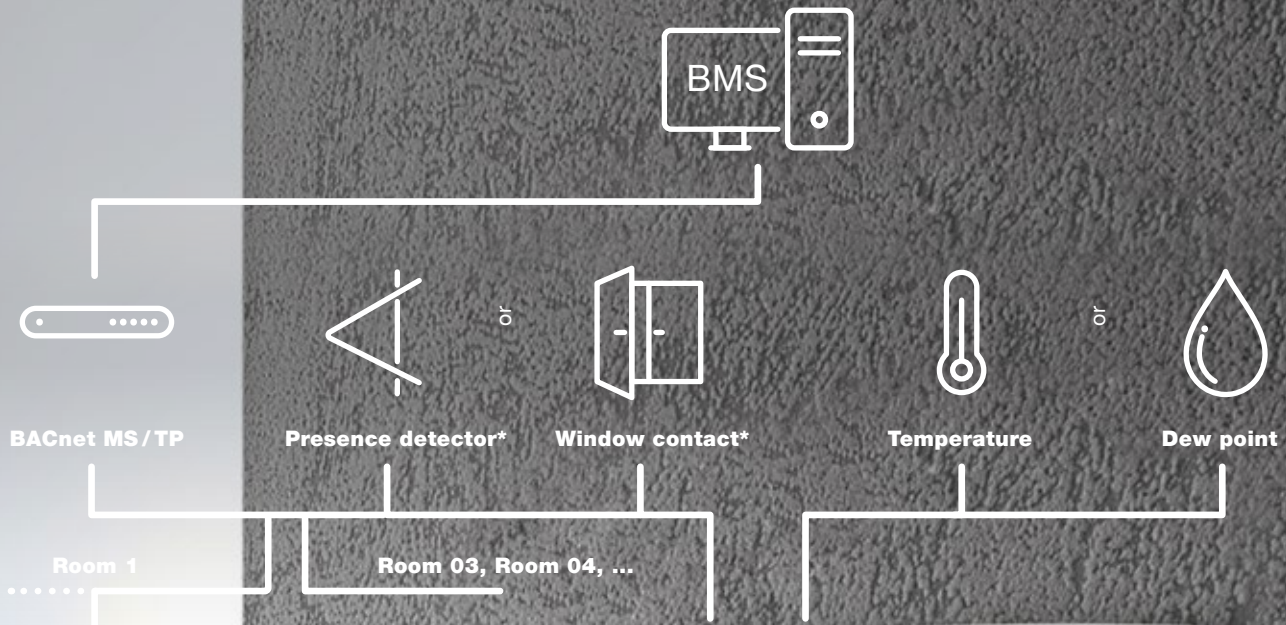
This controller features two inputs and three outputs, offering a good balance of control and functionality. The outputs include two for switching relays, supporting up to 5 actuators each, and an analogue output (0-10 V) suitable for applications like EC fan control.

For connectivity, the device uses one input specifically for BACnet communication, ensuring easy integration into building networks. The other input is configurable, allowing for the connection of different types of sensors, such as those for temperature or dew point. The system also supports the connection of windows or presence contacts through BACnet, providing a straightforward approach to building automation.

### TECHNICAL HIGHLIGHTS AND FEATURES

- + Internal temperature sensor
- + Connectible external temperature sensor
- + Connectible external dew point sensor
- + MS / TP interface
- + 0-10 V EC fan coil
- + I / O mix integrated in device
- + 6-way valve

\* depending on existing application



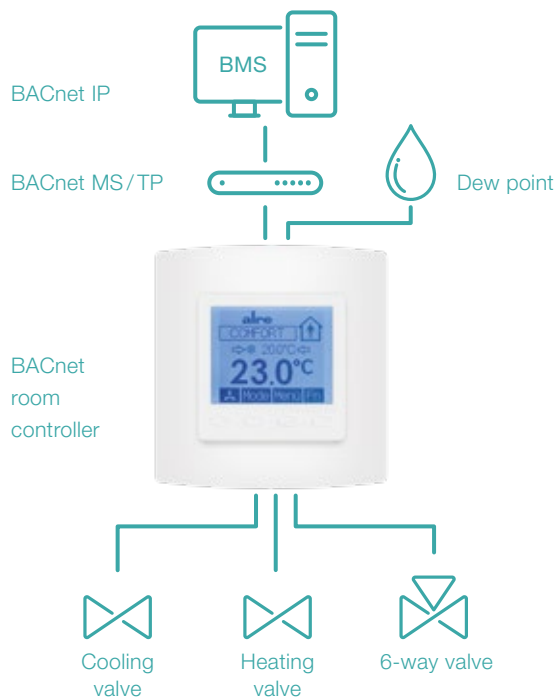


# ALRE BACNET INDIVIDUAL ROOM CONTROLLER / HEATING AND COOLING CEILING APPLICATION EXAMPLE

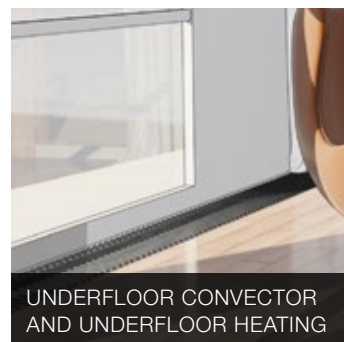
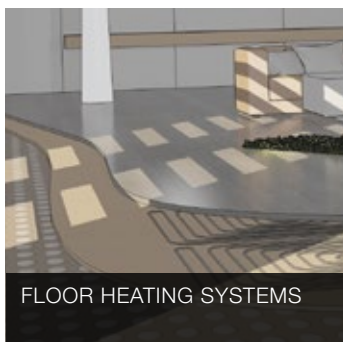
Architects and planners often choose heating and cooling ceilings for air conditioning in buildings, valuing their ability to provide comfort without the drawbacks of draughts or noise. In line with these preferences, the alre BACnet individual room controller (KTRBUu 217.456) comes with pre-configured system diagrams, supporting a wide range of common air conditioning applications.

Particularly, the 'cooling and heating ceiling in 4-pipe system' setup is adept at managing heating and cooling valves. It vigilantly monitors the dew point to prevent condensation, automatically halting cooling operations if any condensation risk arises.

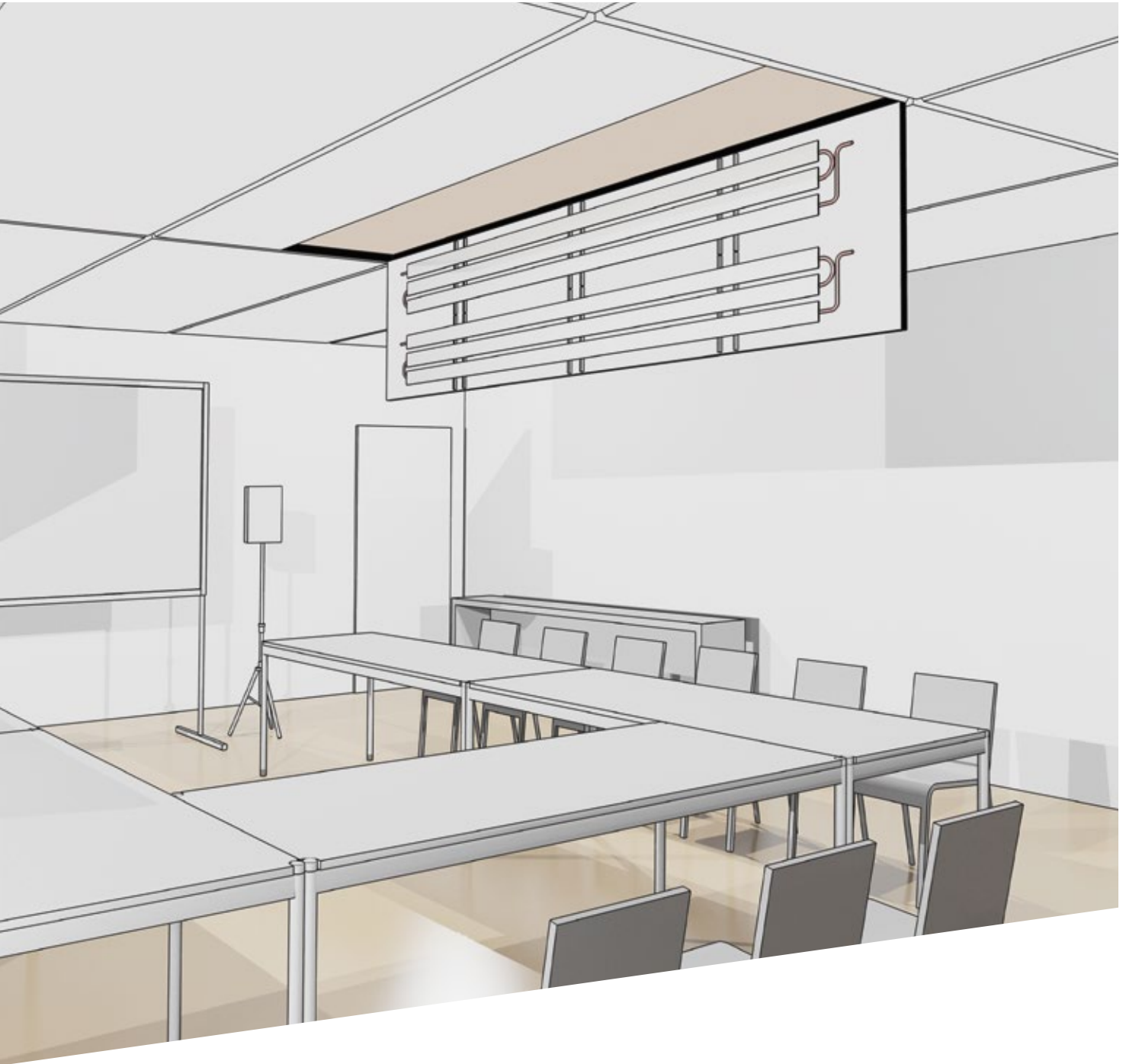
The operating parameters of the BACnet individual room controller are typically set by the building management system. However, in the event of a system failure, this controller is designed to continue functioning independently, maintaining consistent control over the room's environment.



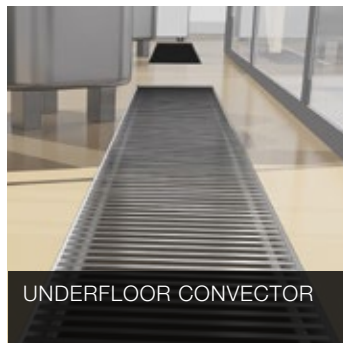
## WIDE RANGE OF APPLICATIONS







CEILING CASSETTES



UNDERFLOOR CONVECTOR



UNDERFLOOR HEATING AND CEILING CASSETTES





# SUITABLE FOR ALL **CURRENT SWITCH RANGES**

The alre BACnet individual room controller is mounted in a flush-mounted socket. The housing fits exactly into design frames of sizes 50 x 50 mm, 55 x 55 mm and 60 x 60 mm from surface switch ranges of well-known manufacturers such as Berker, Busch-Jaeger, Gira, Jung, Merten, Peha, Hager or Feller (CH).



Check out the product video now!





KTRBUu 217.456 in  
BERKER S.1



KTRBUu 217.456 in  
BUSCH-JAEGER balance SI



KTRBUu 217.456 in  
GIRA Standard 55



KTRBUu 217.456 in  
JUNG AS 500



KTRBUu 217.456 in  
MERTEN 1-M

## INTEGRATION EXAMPLES

of the BACnet individual room controller in switch ranges from various manufacturers.

All variants also fit in multiple frames from all well-known manufacturers. Special colours such as anthracite and aluminium are available depending on the project.



# OVERVIEW BACNET ROOM CONTROLLER APPLICATION

2 = 2-pipe system  
 4 = 4-pipe system  
 RA = Radiator  
 FB = Floor temperature control  
 KD = Ceiling temperature control  
 UK = Underfloor convector  
 HR = Heating coil  
 KR = Cooling coil

TYPE	APPLICATION	SYSTEMS							EXT. SENSORS					ACTUATORS						
		2-pipe system	4-pipe system	Radiator	Floor temperature control	Ceiling temperature control	Underfloor convector	Heating coil	Cooling coil	TP Dew point sensor	TB Temperature limiter	Supply air temperature	Room air temperature	Floor screed temperature	Fan 0-10 V	VAV 0-10 V	Heating valve	Cooling valve	Heating/cooling valve	6-way ball valve 0-10 V
2-pipe system underfloor heating with screed temperature sensor	2FB001	•			•								•			•				
2-pipe system underfloor heating with limiter	2FB002	•			•				•							•				
2-pipe system cooling/heating ceiling with dew point monitor	2KD001	•				•			•										•	
2-pipe system heating/cooling coil with fan and supply air temperature	2HRKR001	•								•				•					•	
2-pipe system with radiator with external room temperature sensor	2RA001	•		•									•			•				
4-pipe system radiator (heating), cooling ceiling with dew point monitor	4RAKD001		•	•		•			•							•	•			
4-pipe system radiator, cooling coil with fan and supply air temperature limitation*	4RAKR001		•	•					•					•		•	•			
2-pipe system underfloor convector with room temperature sensor and fan	2UK001	•					•						•		•				•	
4-pipe system floor temperature control with temperature limiter	4FB001		•		•					•						•	•			
4-pipe system cooling/heating ceiling with dew point monitor and 6-way ball valve	4KD001		•			•			•											•
4-pipe system cooling/heating ceiling with dew point monitor and VAV	4KD002		•			•			•						•	•	•			
4-pipe system cooling/heating ceiling with dew point monitor	4KD003		•			•			•							•	•			
4-pipe system heating and cooling coil with fan and supply air temperature	4HRKR001		•							•				•		•	•			
4-pipe system underfloor convector with dew point monitor and fan	4UK001		•				•		•					•		•	•			



# BACNET ROOM CONTROLLER KTRBUU

## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED



### TECHNICAL DATA

<b>Design:</b>	Berlin flush-mounted
<b>Housing material:</b>	PC, PMMA, ABS plastic
<b>Operating voltage:</b>	230 V AC, 50 Hz
<b>Ambient temperature:</b>	0 to 40 °C
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	pluggable screw terminals Mains voltage side 0.75–2.5 mm <sup>2</sup> low voltage side 0.08–1.5 mm <sup>2</sup>
<b>Mounting / attachment:</b>	In flush-mounted socket – can be adapted to fit virtually any switch range (deep flush-mounted socket recommended) see adaptation list on page 50
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	II
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	230 V AC, 50 Hz
<b>Switching power:</b>	690 W
<b>Max. power consumption:</b>	approx. 1 W (2.2 VA)
<b>Max. switching current:</b>	per 3 (0.5) A (max. 5 valve actuators per output)
<b>Switching element:</b>	2 relays
<b>Switching contact:</b>	2 NO contacts
<b>Output signal:</b>	Switching heating, cooling, heating/cooling, analogue 0–10 V (5 mA) to control a speed-controlled fan
<b>Sensor:</b>	internal NTC, optional external 'Sensor 2' * (NTC 47k), dew point sensor
<b>Control range:</b>	5 to 40 °C
<b>Setting range:</b>	standard setting range for heating (5 to 30 °C), second setting range for cooling (18 to 40 °C)
<b>Hysteresis:</b>	< 1 K
<b>Display type:</b>	illuminated graphical display
<b>Pipe system compatibility:</b>	2-pipe and 4-pipe


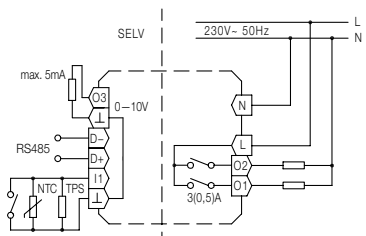
### APPLICATION

The alre BACnet individual room controller with graphic display was specially developed for time-dependent heating and cooling operation in 2 or 4-pipe systems. The controller can be used in a wide range of applications, such as hotels, residential, office and business premises as well as hospitals and schools.

The communication takes place via BACnet according to DIN EN ISO 16484-5 with the BACnet MS/TP network protocol. The room controller is therefore compatible with all common building automation systems. The controller corresponds to the BACnet profile 'B-AAC' (BACnet Advanced Application Controller).

The predefined applications cover a wide range of applications for room temperature control in room automation.









Special colours such as anthracite and aluminium are available depending on the project.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	UA230000	<b>Surface finish:</b> glossy <b>Housing colour:</b> pure white, similar to RAL 9010 <b>Scope of delivery:</b> controller, 50 x 50 mm cover, pure white (similar to RAL 9010), glossy, alre frame 'Berlin'		454.50 / IV

\* Depending on the selected system scheme, a menu setting can be used to select whether control should be based on the internal or external sensor. In the intermediate positions, if both sensors are used, a weighting is applied to the internal room sensor and the external temperature sensor. The weighting allows for compensation of different structural conditions such as large window areas or cardinal directions. For very slow controlled systems, it is recommended to assign a higher weighting to the temperature sensor than to the internal room sensor.

**BACNET ROOM CONTROLLER KTRBUU**









## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	UA230002	Similar to KTRBUu217.456#21 but scope of delivery as follows: controller, <b>50 x 50</b> mm cover <b>pure white</b> (similar to RAL 9010), <b>glossy</b> , without frame		450.60 / IV
	UA230003	Similar to KTRBUu217.456#21 but with delivery scope: controller, 50 x 50 mm cover <b>pearl white</b> (similar to RAL 1013), <b>glossy</b> , without frame		450.60 / IV
	UA230004	Similar to KTRBUu217.456#21 but scope of delivery as follows: controller, <b>50 x 50</b> mm cover <b>traffic/studio white</b> (similar to RAL 9016), <b>glossy</b> , without frame		450.60 / IV
	UA230007	Similar to KTRBUu217.456 but scope of delivery as follows: controller, cover <b>suitable for BUS-CH-JAEGER Reflex SI/SI Linear pure white</b> (similar to RAL 9010), <b>glossy</b> , without frame		452.30 / IV
	UA230005	Similar to KTRBUu217.456#21 but scope of delivery as follows: controller, <b>55 x 55</b> mm cover <b>pure white</b> (similar to RAL 9010), <b>glossy</b> , without frame		452.30 / IV
	UA230009	Similar to KTRBUu217.456#21 but scope of delivery as follows: controller, <b>55 x 55</b> mm cover <b>pure white</b> (similar to RAL 9010), <b>matt</b> without frame		452.30 / IV
	UA230006	Similar to KTRBUu217.456#21 but scope of delivery as follows: controller, <b>55 x 55</b> mm cover <b>pearl white</b> (similar to RAL 1013), <b>glossy</b> , without frame		452.30 / IV
	UA230008	Similar to KTRBUu217.456#21 but scope of delivery as follows: controller, <b>55 x 55</b> mm cover <b>traffic/studio white</b> (similar to RAL 9016), <b>glossy</b> , without frame		452.30 / IV







# BACNET ROOM CONTROLLER KTRBUU

## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
	VV00025	<b>Design:</b> Berlin <b>Surface finish:</b> glossy <b>Housing colour:</b> pure white, similar to RAL 9010 <b>Housing material:</b> PC plastic <b>General features:</b> alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50 x 50 mm cover	4.40/I
	VV00048	<b>Features:</b> similar to JZ-090.900, but for all flush-mounted controllers with 55 x 55 mm cover	4.40/I
	VV00010	<b>Design:</b> Berlin <b>Surface finish:</b> glossy <b>Housing colour:</b> pearl white, similar to RAL 1013 <b>Housing material:</b> PC plastic <b>General features:</b> alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50 x 50 mm cover	4.40/I
	G8000299	Dew point sensor to detect and report the dew point (see also 'Air conditioning technology' section, page 142) <b>Mounting / attachment:</b> using clips on cooling ceiling capillary pipe <b>Use:</b> drywall cooling ceiling (plasterboard) with hung up capillary tube mat, metal cooling ceiling with integrated capillary pipe system <b>Sensor wire extendible up to:</b> 50 m with 2 x 0.5 mm <sup>2</sup> <b>Scope of delivery:</b> sensor, 2 clips for cooling pad	65.80/I
	G8000300	Dew point sensor to detect and report the dew point (see also 'Air conditioning technology' section, page 142) <b>Mounting / attachment:</b> using clips on cooling ceiling capillary pipe or cable ties on the pipe <b>Use:</b> Pipe systems transporting cold water, plaster cooling ceiling with capillary tube system <b>Sensor wire extendible up to:</b> 50 m with 2 x 0.5 mm <sup>2</sup> <b>Scope of delivery:</b> Sensor, 2 clips for cooling pad, 2 cable ties	65.80/I
	SN120000	Dew point sensor to detect and report the dew point (see also 'Air conditioning technology' section, page 142) <b>Mounting / attachment:</b> attach to pipe by means of cable ties <b>Use:</b> piped cold-water systems <b>Sensor wire extendible up to:</b> 50 m with 2 x 0.5 mm <sup>2</sup> <b>Scope of delivery:</b> Sensor, 2 cable ties	58.90/I
	SA140014	Surface-mounted 'ultra-thin' room temperature sensor for temperature measurement in residential and business premises (see also 'Sensor technology' section, page 213) <b>Mounting / attachment:</b> surface / wall mounting (4-hole assembly on flush-mounted socket) <b>Housing colour:</b> pure white, similar to RAL 9010, glossy <b>Housing material:</b> ABS plastic <b>Ambient temperature:</b> -10 to +50 °C <b>Admissible humidity:</b> max. 95% rel. humidity, non-condensing <b>Protection rating:</b> IP30 <b>Protection class:</b> III <b>Electrical connection:</b> screw-type terminals 0.33 mm <sup>2</sup> – 1.5 mm <sup>2</sup>	28.30/III
	SN090198	Flush-mounted room temperature sensor for temperature measurement in residential and business premises (see also 'Sensor technology' section, page 213) <b>Mounting / attachment:</b> in flush-mounted box – in almost all Surface switch ranges 50 x 50 mm adaptable <b>Housing colour:</b> pure white, similar to RAL 9010, glossy <b>Housing material:</b> PC plastic <b>Ambient temperature:</b> -10 to +50 °C <b>Admissible humidity:</b> max. 95% rel. humidity, non-condensing <b>Protection rating:</b> IP30 <b>Protection class:</b> III <b>Electrical connection:</b> Screw-type terminals 0.5 mm <sup>2</sup> to 1.5 mm <sup>2</sup>	35.90/III

## BACNET ROOM CONTROLLER KTRBUU

### FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
	G9040380	Temperature sensor for temperature measurement outdoors and in humid areas, special protection against dust and humidity (see also 'Sensor technology' section, page 215) <b>Mounting/attachment:</b> surface/wall mounting <b>Housing colour:</b> pure white, similar to RAL 9010 <b>Housing material:</b> PA plastic (30% GF reinforced) <b>Ambient temperature:</b> -30 to +70 °C <b>Admissible humidity:</b> max. 95% rel. humidity, non-condensing <b>Protection rating:</b> IP65 <b>Protection class:</b> III <b>Electrical connection:</b> Screw-type terminals 0.14 mm <sup>2</sup> -2.5 mm <sup>2</sup>	25.50/III
	G9031446	Cable temperature sensor for temperature measurement/temperature limiting of the floor or supply air (see also 'Sensor technology' section, page 218) <b>Mounting/attachment:</b> in immersion sleeve, protection coil, on pipe, etc. <b>Cable material/length:</b> PE, 1.5 m <b>Sensor sleeve material:</b> V4A (1.4571) <b>Ambient temperature:</b> -35 to +100 °C <b>Admissible humidity:</b> max. 95% rel. humidity, non-condensing <b>Protection rating:</b> IP 67 <b>Protection class:</b> III <b>Electrical connection:</b> Safety extra low voltage only max. 30 V AC/42 V DC	29.60/III
	H9100010	Electro-thermal valve actuator (see also Heating/Air conditioning technology section) <b>Mounting/attachment:</b> M 30 x 1.5 <b>Housing colour:</b> pure white, similar to RAL 9010 <b>Housing material:</b> PC plastic, GF (20%) <b>Operating voltage:</b> 230 V~, 50 Hz <b>Max. power consumption:</b> 70 W <b>Max. starting current:</b> approx. 0.3 A <b>Ambient temperature:</b> 0 to 50 °C <b>Storage temperature:</b> -20 to +70 °C <b>Admissible humidity:</b> max. 95% rel. humidity, non-condensing <b>Protection rating:</b> IP42 <b>Protection class:</b> II <b>Average power consumption:</b> approx. 3 W <b>Opening/closing time:</b> approx. 4 min <b>Nominal stroke:</b> 3 mm <b>Function type:</b> normally closed <b>Nominal closing force:</b> 90 N <b>Connecting cable:</b> 0.8 m/2 x 0.5 mm <sup>2</sup>	31.80/I
	G8990010	Electrothermal valve actuator for fully automatic hydraulic balancing <b>Mounting/attachment:</b> M 30 x 1.5 <b>Housing colour:</b> grey-orange <b>Housing material:</b> PA6 plastic <b>Operating voltage:</b> 230 V~, 50 Hz <b>Max. power consumption:</b> 30 W <b>Max. starting current:</b> approx. 0.13 A <b>Ambient temperature:</b> 0 to 50 °C <b>Storage temperature:</b> -25 to +60 °C <b>Admissible humidity:</b> max. 95% rel. humidity, non-condensing <b>Protection rating:</b> IP42 <b>Protection class:</b> II <b>Average power consumption:</b> 1.7 W <b>Opening/closing time:</b> approx. 3 min <b>Nominal stroke:</b> 3.5 mm <b>Function type:</b> normally closed <b>Nominal closing force:</b> 110 N <b>Connecting cable:</b> 1 m/2 x 0.34 mm <sup>2</sup>	81.50/I

# BACNET ROOM CONTROLLER KTRBUU

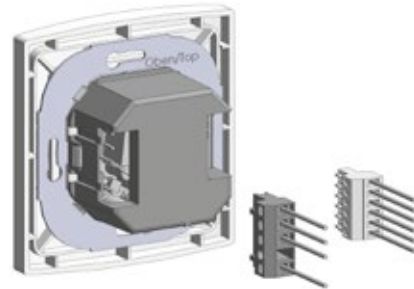
## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

### ILLUSTRATIONS

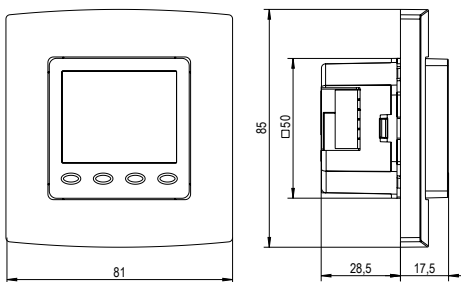
KTRBUu with alre frame 'Berlin'



Pluggable screw-type terminals



KTRBUu with alre frame 'Berlin'





# ALRE BACNET INDIVIDUAL ROOM CONTROLLER ADAPTATION

## KTRBUU217.456 – FLUSH-MOUNTED

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION in switch range (55 x 55) possible with...	'50 X 50' adaptation possible with... (insert frame from manufacturer required)
BERKER	S.1	polar white (matt)	KTRBUu217.456#56	not required
BERKER	S.1	polar white (glossy)	KTRBUu217.456#55	not required
BERKER	Arsys	polar white (glossy)		KTRBUu217.456#07 + 1108 01 69
BERKER	B.3	aluminium / polar white (matt)	KTRBUu217.456#56	not required
BERKER	B.3	aluminium / polar white (glossy)	KTRBUu217.456#55	not required
BERKER	B.7	glass / polar white (matt)	KTRBUu217.456#56	not required
BERKER	B.7	glass / polar white (glossy)	KTRBUu217.456#55	not required
BERKER	K.1	polar white (glossy)		KTRBUu217.456#07 + 1108 71 09
BUSCH-JAEGER	Reflex SI/SI Linear	alpine white (glossy)	KTRBUu217.456#28	not required
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)	KTRBUu217.456#55	not required
BUSCH-JAEGER	impuls	alpine white (glossy)		KTRBUu217.456#07 + 1746/10-74
BUSCH-JAEGER	solo / future / axcent etc.	studio white – see RAL 9016 below		
Eiso	Joy	pure white (glossy)	KTRBUu217.456#55	not required
Eiso	Fashion / Riva / Scala	pure white (glossy)		KTRBUu217.456#07 + (203084)
GIRA	surface switch	pure white (glossy)		KTRBUu217.456#07 + 0282 112
GIRA (System 55)	Standard / E2	pure white (semi-gloss)	KTRBUu217.456#56	not required
GIRA (System 55)	Standard / E2 / E3	pure white (glossy)	KTRBUu217.456#55	not required
GIRA (System 55)	E22	pure white (glossy)	KTRBUu217.456#55	not required
GIRA (System 55)	Event	pure white (semi-gloss) + opaque...	KTRBUu217.456#56	not required
GIRA (System 55)	Event	pure white (glossy) + opaque...	KTRBUu217.456#55	not required
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium...	KTRBUu217.456#56	not required
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium...	KTRBUu217.456#55	not required
GIRA	S-Color	pure white (high-gloss)		KTRBUu217.456#07 + 0282 40
JUNG	CD 500 / CD plus	alpine white (glossy)		KTRBUu217.456#07 + CD 590 Z WW
JUNG	A 500 / A 550 / AS 500 / A plus / A flow	alpine white (glossy)	KTRBUu217.456#55	not required
JUNG	LS 990	alpine white (glossy)		KTRBUu217.456#07 + LS 961 Z WW
JUNG	LS plus	alpine white (glass)		KTRBUu217.456#07 + LS 961 Z WW
JUNG	A creation	alpine white (glossy)	KTRBUu217.456#55	not required
JUNG	LS Design	alpine white (glossy)		KTRBUu217.456#07 + LS 961 Z WW
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	KTRBUu217.456#56	not required
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)	KTRBUu217.456#55	not required
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)	KTRBUu217.456#55	not required
MERTEN (Surface System)	Artec / Antik	polar white (glossy)		KTRBUu217.456#07 + 5160 99
MERTEN	1-M / M-Smart / M-Plan / M-Pure / D-Life	active white – see RAL 9016 below		
PEHA	Standard	pure white (glossy)		KTRBUu217.456#07 + 80.670.02 ZV
PEHA	Dialog	pure white (glossy)		KTRBUu217.456#07 + 95.670.02 ZV
PEHA	Aura	pure white (matt) / glass		KTRBUu217.456#07 + 20.670.02 ZV
PEHA	Badora	pure white (glossy)		KTRBUu217.456#07 + 11.670.02 ZV
MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION in switch range (55 x 55) possible with...	To ADAPT KTRBUu size 50 x 50, an insert frame from the manufacturer is required
BUSCH-JAEGER	solo / future / future linear	studio white (RAL 9016, glossy)		KTRBUu217.456#27 + 1746 / 10-84
BUSCH-JAEGER	axcent	studio white (RAL 9016, glossy)		KTRBUu217.456#27 + 1746 / 10-84
BUSCH-JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016)		KTRBUu217.456#27 + 1746 / 10-84
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016, glossy)		KTRBUu217.456#27 + 1746 / 10-24G
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	KTRBUu217.456#59	not required
MERTEN	1-M / Atelier-M	active white (RAL 9016, glossy)	KTRBUu217.456#59	not required
Merten	D-Life	lotus white (RAL 9016)		KTRBUu217.456#27 + MEG4500-6035
PEHA	Standard	arctic		KTRBUu217.456#27 + D 80.670 ZV AW

\*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame.

**NOTE:** Most light switches are designed in the colour 'similar to RAL 9010', although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt/glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

**'50 x 50 controller':** The housing covers of the 50 x 50 controllers are 50 x 50 mm in size. Using a 50 x 50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50 x 50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch range in question can be found in the column 'For adaptation of '50 x 50' KTRBUu'.

**'55 x 55 controller':** The housing covers of the 55 x 55 controllers are 55 x 55 mm in size. Many light switch ranges have inner dimensions of 55 x 55 mm. Therefore, the 55 x 55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column 'Adaptation in switch range (55 x 55)' to determine whether the 55 x 55 controller fits in the given light switch range (KTRBUu217.456#xx).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12/2022 | No liability is assumed for the information provided. | Technical specifications subject to change.






# HEATING TECHNOLOGY

ENERGY-EFFICIENT AND TIMELESS





# ALRE HEATING TECHNOLOGY, **COMFORTABLE TEMPERATURE** IN EVERY ROOM.

Our heating technology products feature a wide range of thermostats, each tailored for specific needs and focused on energy efficiency. With configurable programs and display controllers, they ensure energy-efficient heating in various settings like offices, homes, hotels, and hospitals.

Choose from our ultra-slim surface-mounted thermostats known for their sleek design and durability, or opt for our flush-mounted thermostats, developed to fit any switch frame and available in various RAL colors to ensure perfect interior matching. Whatever your needs, our collection offers the right thermostat solution.

**alre thermostats: designed and made in Germany for energy-efficient heating.**

## APPLICATION **EXAMPLES:**

- + Hot water underfloor heating
- + Electric underfloor heating systems
- + Natural stone heating systems
- + Night storage heating systems
- + Tiled stove heating systems
- + Partial air conditioners
- + Mobile radiators
- + Accessories such as terminal strips and actuators



## OVERVIEW

54

### ROOM/FLOOR TEMPERATURE CONTROLLERS

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Room temperature controller electronic with display 'Surface-mounted ultra-slim'	72
Room temperature controller, bimetal (mechanical) 'flush-mounted'	74
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Room or floor temperature controller, electronic, with clock 'flush-mounted'	96
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Floor temperature controller, electronic, with clock 'sur- face-mounted'	102
Floor temperature controller, electronic, 'flush-mounted'	104

### TERMINAL STRIPS FOR HEATING MANIFOLDS/VALVE ACTUATORS

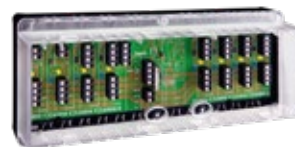
Actuator 'STELLA' 230 V NC	112
Electro-thermal valve actuators	113
Terminal strip for heating manifold	114



**ROOM TEMPERATURE  
CONTROLLER,  
SURFACE-MOUNTED,  
ULTRA-SLIM, RTBSB**



**ROOM TEMPERATURE  
CONTROLLER,  
MECHANICAL, RTBSU**



**TERMINAL STRIP FOR  
HEATING MANIFOLD**



**ROOM TEMPERATURE  
CONTROLLER  
ELECTRONIC, HTRRUT**



## HEATING CONTROLLER OVERVIEW

TYPE	RTBSB-																			HTRRBd-								
	001.000	001.002	001.010	001.026	001.045	001.048	001.062	001.065	001.086	001.096	001.110	001.202	001.500	001.910	001.910/2	001.948/1	201.000	201.002	201.010	201.034	201.062	201.065	201.202	201.500	001.401	001.411	210.100	
PAGE	58	58	59	59	59	60	60	60	60	61	61	61	61	62	62	63	64	64	65	65	65	65	65	66	68	69	72	
<b>HOUSING DESIGN</b>																												
Berlin 1000																	X	X	X	X	X	X	X	X			X	
Berlin 2000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X												
Berlin 3000																												
Berlin flush-mounted																												
Berlin 2000 with plug																									X	X		
<b>SENSOR</b>																												
Bimetal (NC contact)	X	X					X		X	X		X	X				X	X		X	X		X	X	X	X		
Bimetal (toggler)			X	X	X	X		X			X			X	X	X			X			X						
NTC, internal																											X	
NTC, external																												
NTC for floor monitoring																												
<b>CONTROL TYPE</b>																												
Heating controller	X	X	X*	X*	X*	X*	X	X*	X	X	X*	X	X	X*	X*	X*	X	X	X*	X	X	X*	X	X	X	X	X	X
Cooling function			X		X	X		X			X			X	X	X			X			X						
Fan output				X																								
Model with clock																												
<b>PIPE SYSTEM</b>																												
Air conditioning controller in 2-pipe system			X	X	X	X		X			X			X	X	X			X			X						
Air conditioning controller in 4-pipe system																												
<b>APPLICATION</b>																												
Natural stone heating									X	X																		
Tiled stove heating																												
Electric direct heating systems									X	X															X	X		
Electric floor heating																												
Night storage heater																												
Hot water floor heating	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Partial air conditioner			X	X	X	X		X			X			X	X	X			X			X						
<b>FEATURES</b>																												
Output 'temperature reduction'																												
Input 'temperature reduction'		X					X				X		X	X			X			X		X						
Switch "On / Off"				X			X													X								
Switch 'Heating / Cooling'								X													X							
Switch 'Heating / Off / Cooling'																						X						
Switch 'Reduction / Comfort / Automatic'																												
Switch 'auxiliary heating'																												
Display																											X	
Display with backlighting																												
Indicator lamp 'heating'							X			X										X	X						X	
Indicator lamp 'reduction'																												
Indicator lamp 'auxiliary heating'																												
<b>TECHNOLOGY</b>																												
Control range -20 to +30 °C					X																							
Control range 5 to 30 °C	X	X	X	X			X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Control range 10 to 42 °C																												
Control range 10 to 50 °C																												
Control range 10 to 60 °C						X										X												
Control range 20 to 80 °C																												
3000 W switching power internal setting								X	X																X	X		
2-wire connection													X														X	
24 V~											X				X												X	
230 V~	X	X	X	X	X	X	X	X	X	X			X	X			X	X	X	X	X	X	X	X	X	X	X	X
24 V~ or 230 V~											X				X													

x\* Heating controllers using normally open valve actuators



# HEATING CONTROLLER OVERVIEW

TYPE	RTBSU-															
	401.000	401.002	401.010	401.034	401.052	401.062	401.063	401.065	401.075	401.086	401.202	401.210	401.262	401.265	401.902	
PAGE	74	75	75	75	76	76	76	76	77	77	77	78	78	78	79	
<b>HOUSING DESIGN</b>																
Berlin 1000																
Berlin 2000																
Berlin 3000																
Berlin flush-mounted	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Berlin 2000 with plug																
<b>SENSOR</b>																
Bimetal (NC contact)	X	X		X	X	X			X	X	X		X			X
Bimetal (togglor)			X				X	X				X		X		
NTC, internal																
NTC, external																
NTC for floor monitoring																
<b>CONTROL TYPE</b>																
Heating controller	X	X	X*	X	X	X	X*	X*	X	X	X	X*	X	X*	X	X
Cooling function			X				X	X				X		X		
Fan output																
Model with clock																
<b>PIPE SYSTEM</b>																
Air conditioning controller in 2-pipe system			X				X	X				X		X		
Air conditioning controller in 4-pipe system																
<b>APPLICATION</b>																
Natural stone heating										X						
Tiled stove heating																
Electric direct heating systems										X						
Electric floor heating																
Night storage heater					X											
Hot water floor heating	X	X	X	X		X	X	X	X		X	X	X	X	X	X
Partial air conditioner			X				X	X				X		X		
<b>FEATURES</b>																
Output 'temperature reduction'																
Input 'temperature reduction'		X				X			X		X		X			X
Switch "On / Off"						X						X				
Switch 'Heating / Cooling'								X						X		
Switch 'Heating / Off / Cooling'							X									
Switch 'Reduction / Comfort / Automatic'									X							
Switch 'auxiliary heating'					X											
Display																
Display with backlighting																
Indicator lamp 'heating'				X		X							X			
Indicator lamp 'reduction'									X							
Indicator lamp 'auxiliary heating'					X											
<b>TECHNOLOGY</b>																
Control range -20 to +30 °C																
Control range 5 to 30 °C	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Control range 10 to 42 °C																
Control range 10 to 50 °C																
Control range 10 to 60 °C																
Control range 20 to 80 °C																
3000 W switching power										X						
internal setting																X
2-wire connection																
24 V~											X	X	X	X		
230 V~	X	X	X	X	X	X	X	X	X	X						X
24 V~ or 230 V~																



# HEATING CONTROLLER OVERVIEW

TYPE	HTRRUt		HTRRUu		HTRRB-		HTRRBu-		RTERU-		FETR		
	210.A00#31	210.A00#55	210.021	011.010	011.410	110.021	110.117/21	010.715#21	010.715#00	101.700	101.715	101.716	
PAGE	94		97	100	100	102	102	104	104	105	105	105	

## HOUSING DESIGN

Berlin 1000												
Berlin 2000				x	x							
Berlin 3000						x	x					
Berlin flush-mounted	x	x	x					x	x	x	x	x
Berlin 2000 with plug												

## SENSOR

Bimetal (NC contact)												
Bimetal (toggler)												
NTC, internal	x	x	x				x					
NTC, external			x	x	x	x		x	x	x	x	x
NTC for floor monitoring			x									

## CONTROL TYPE

Heating controller	x	x	x	x	x	x	x	x	x	x	x	x
Cooling function												
Fan output												
Model with clock			x			x	x					

## PIPE SYSTEM

Air conditioning controller in 2-pipe system												
Air conditioning controller in 4-pipe system												

## APPLICATION

Natural stone heating			x				x					
Tiled stove heating					x							
Electric direct heating systems			x				x					
Electric floor heating			x	x		x		x	x	x	x	x
Night storage heater												
Hot water floor heating	x	x	x			x	x	x	x	x	x	x
Partial air conditioner												

## FEATURES

Output 'temperature reduction'						x	x					
Input 'temperature reduction'								x	x	x	x	x
Switch "On/Off"				x	x		x	x	x		x	x
Switch 'Heating/Cooling'												
Switch 'Heating/Off/Cooling'												
Switch 'Reduction/Comfort/Automatic'			x			x	x					
Switch 'auxiliary heating'												
Illuminated ring scale	x	x										
Display							x					
Display with backlighting			x			x						
Indicator lamp 'heating'			x					x	x	x	x	x
Indicator lamp 'reduction'										x	x	x
Indicator lamp 'auxiliary heating'												

## TECHNOLOGY

Control range -20 to +30 °C												
Control range 5 to 30 °C			x				x					
Control range 17 to 26 °C	x	x										
Control range 10 to 42 °C			x			x						x
Control range 10 to 50 °C								x	x		x	
Control range 10 to 60 °C				x						x		
Control range 20 to 80 °C					x							
3000 W switching power				x	x					x	x	x
internal setting										x		
2-wire connection												
24 V~												
230 V~	x	x	x	x	x	x	x	x	x	x	x	x
24 V~ or 230 V~												



# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB

## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

**TECHNICAL DATA**

<b>Design:</b>	Berlin 2000
<b>Surface finish:</b>	matt
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	ABS plastic
<b>Storage temperature:</b>	–20 to +70 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals 0.12 mm <sup>2</sup> –2.5 mm <sup>2</sup>
<b>Mounting / attachment:</b>	surface- / wall-mounting (4-hole assembly on flush-mounted socket)
<b>Protection rating:</b>	IP30
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Average power consumption:</b>	< 0.5 W
<b>Switching element:</b>	bimetallic contact
<b>Sensor:</b>	bimetal
<b>General features:</b>	thermal feedback

**APPLICATION**


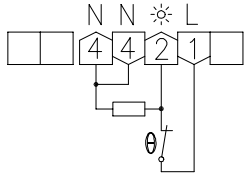


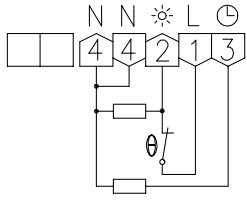
Control or monitoring of temperatures in closed spaces. Suitable for all heating systems.

Valve actuator: normally closed. If normally open heating valves are available, they should be connected with the cooling output of the changeover switch (toggler).

Up to a maximum of 10 actuators for valves can be connected (normally closed, NC); with a toggler, on the NO contact, up to 5 units (in this context, please check the switching capacity listed in the TECHNICAL DATA).

Installation note: Owing to the existing wiring space in the controller itself, installation on a flush-mounted socket is recommended, but it can also be performed on a plane, non-conducting substrate.

Explanations of technical terms can be found in the annex to the product catalogue or at [www.alre.de](http://www.alre.de).


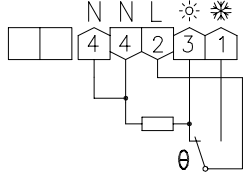

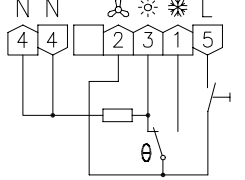

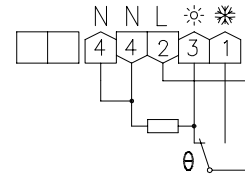
TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	MA010000	<b>General features:</b> Mechanical range limitation; scale: degrees Celsius; external setting <b>Operating voltage:</b> 230 VAC, 50 Hz <b>Ambient temperature:</b> 0 to 30 °C <b>Protection class:</b> II, if properly mounted <b>Max. switching current:</b> 10 (4) A <b>Max. switching voltage:</b> 230 VAC, 50 Hz <b>Min. switching voltage:</b> 230 VAC, 50 Hz <b>Switching power:</b> 2300 W <b>Switching contact:</b> NC contact (max. 10 actuators) <b>Output signal:</b> switching (230 VAC, 50 Hz) <b>Control function:</b> heating <b>Control range:</b> 5 to 30 °C <b>Hysteresis:</b> approx. 0.5 K at a temperature change of max. 4 K/h		38.00/1
	MA010011	Similar to RTBSB-001.000 but with multi-digit display 1 to 6		36.50/1
	MA010100	<b>General features:</b> ECO function; mechanical range limitation; scale: degrees Celsius; external setting <b>Operating voltage:</b> 230 VAC, 50 Hz <b>Ambient temperature:</b> 0 to 30 °C <b>Protection class:</b> II, if properly mounted <b>Max. switching current:</b> 10 (4) A <b>Max. switching voltage:</b> 230 VAC, 50 Hz <b>Min. switching voltage:</b> 230 VAC, 50 Hz <b>Switching power:</b> 2300 W <b>Switching contact:</b> NC contact (max. 10 actuators) <b>Output signal:</b> switching (230 VAC, 50 Hz) <b>Control function:</b> heating <b>Control range:</b> 5 to 30 °C <b>Hysteresis:</b> approx. 0.5 K at a temperature change of max. 4 K/h <b>Input 'temperature reduction':</b> approx. 4 K (230 VAC, 50 Hz)		40.40/1





# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB


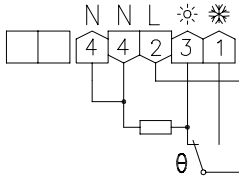

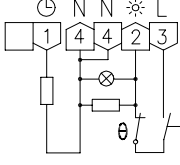

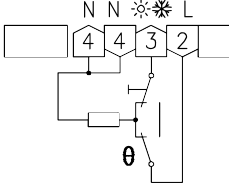

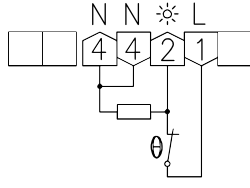
## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	MA010200	<p><b>General features:</b> Mechanical range limitation; scale: degrees Celsius; external setting</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 0 to 30 °C</p> <p><b>Protection class:</b> II, if properly mounted</p> <p><b>Max. switching current:</b> heating (terminal 3) 10 (4) A, cooling (terminal 1) 5 (2) A</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Min. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Switching power:</b> Terminal 3: 2300 W, terminal 1: 1150 W</p> <p><b>Switching contact:</b> changeover switch (toggler, max. 10 actuators output terminal 3, max. 5 actuators output terminal 1)</p> <p><b>Output signal:</b> switching (230 VAC, 50 Hz)</p> <p><b>Control function:</b> heating or cooling</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Hysteresis:</b> approx. 0.5 K at a temperature change of max. 4 K/h</p>		48.20/I
	MA010900	<p><b>General features:</b> mechanical range limitation; scale: degrees Celsius ; <b>on/off switch</b>; external setting</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 0 to 30 °C</p> <p><b>Protection class:</b> II, if properly mounted</p> <p><b>Max. switching current:</b> heating (terminal 3) 10 (4) A, cooling (terminal 1) 5 (2) A, fan (terminal 2) 5 (2) A</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Min. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Switching power:</b> terminal 3: 2300 W, terminal 1: 1150 W, terminal 2: 1150 W</p> <p><b>Switching contact:</b> changeover switch (toggler, max. 10 actuators output terminal 3, max. 5 actuators output terminal 1)</p> <p><b>Output signal:</b> switching (230 VAC, 50 Hz); fan permanently operating (230 VAC, 50 Hz) if device has been switched on</p> <p><b>Control function:</b> heating or cooling</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Hysteresis:</b> approx. 0.5 K at a temperature change of max. 4 K/h</p>		58.50/I
	MA011200	<p><b>General features:</b> mechanical range limitation; scale: degrees Celsius ; external setting</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> -20 to +30 °C</p> <p><b>Protection class:</b> II, if properly mounted</p> <p><b>Max. switching current:</b> heating (terminal 3) 10 (4) A, cooling (terminal 1) 5 (2) A</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Min. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Switching power:</b> terminal 3: 2300 W, terminal 1: 1150 W</p> <p><b>Switching contact:</b> changeover switch (toggler, max. 10 actuators output terminal 3, max. 5 actuators output terminal 1)</p> <p><b>Output signal:</b> switching (230 VAC, 50 Hz)</p> <p><b>Control function:</b> heating or cooling</p> <p><b>Control range:</b> -20 to +30 °C</p> <p><b>Hysteresis:</b> approx. 1.5 K at a temperature change of max. 4 K/h</p>		51.20/I



# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB


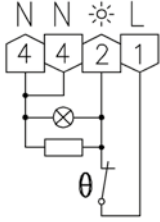

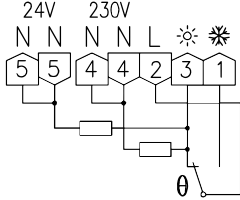

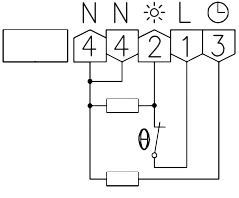

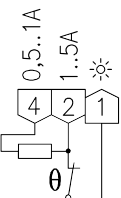
## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	MA011300	<p><b>General features:</b> Mechanical range limitation; scale: degrees Celsius; external setting</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 10 to 60 °C</p> <p><b>Protection class:</b> II, if properly mounted Max. switching current: heating (terminal 3) 10 (4) A, cooling (terminal 1) 5 (2) A</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Min. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Switching power:</b> terminal 3: 2300 W, terminal 1: 1150 W</p> <p><b>Switching contact:</b> changeover switch (toggler, max. 10 actuators output terminal 3, max. 5 actuators output terminal 1)</p> <p><b>Output signal:</b> switching (230 VAC, 50 Hz)</p> <p><b>Control function:</b> heating or cooling</p> <p><b>Control range:</b> 10 to 60 °C</p> <p><b>Hysteresis:</b> approx. 1.5 K at a temperature change of max. 4 K/h</p>		51.20/I
	MA012400	<p><b>General features:</b> ECO function; 'heating' display; mechanical range limitation; scale: degrees Celsius; on / off switch; external setting</p> <p><b>Input 'temperature reduction':</b> approx. 4 K (230 VAC, 50 Hz)</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 0 to 30 °C</p> <p><b>Protection class:</b> II, if properly mounted</p> <p><b>Max. switching current:</b> 10 (4) A</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Min. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Switching power:</b> 2300 W</p> <p><b>Switching contact:</b> NC contact (max. 10 actuators)</p> <p><b>Output signal:</b> heating, switching (230 VAC, 50 Hz)</p> <p><b>Control function:</b> heating</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Hysteresis:</b> approx. 0.5 K at a temperature change of max. 4 K/h</p>		51.20/I
	MA010600	<p><b>General features:</b> mechanical range limitation; scale: degrees Celsius; 'heating / cooling' switch; external setting</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 0 to 30 °C</p> <p><b>Protection class:</b> II, if properly mounted</p> <p><b>Max. switching current:</b> 5 (2) A</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Min. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Switching power:</b> 1150 W</p> <p><b>Switching contact:</b> Changeover switch (toggler, max. 5 actuators)</p> <p><b>Output signal:</b> switching (230 VAC, 50 Hz)</p> <p><b>Control function:</b> heating or cooling</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Hysteresis:</b> approx. 0.5 K at a temperature change of max. 4 K/h</p>		54.30/I
	MA010800	<p><b>General features:</b> mechanical range limitation; 3000 W switching power, for electric direct heating systems, natural stone heating; multi-digit display 1–6; external setting</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 0 to 30 °C</p> <p><b>Protection class:</b> II, if properly mounted</p> <p><b>Max. switching current:</b> 13 (4) A</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Min. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Switching power:</b> 3000 W</p> <p><b>Switching contact:</b> NC contact</p> <p><b>Output signal:</b> switching (230 VAC, 50 Hz)</p> <p><b>Control function:</b> heating</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Hysteresis:</b> approx. 1 K at a temperature change of max. 4 K/h</p> <p><b>Accessories:</b> can be combined with plug-in socket JZ-19</p>		42.50/I



# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB


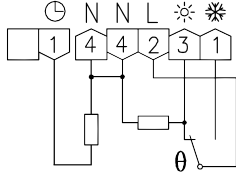

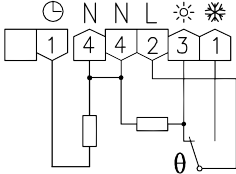
## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	MA012500	Similar to RTBSB-001.086, but with 'heating' display (LED red)		49.10/I
	MA012701	<p><b>General features:</b> Mechanical range limitation; scale: degrees Celsius; external setting</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz or 24 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 0 to 30 °C</p> <p><b>Protection class:</b> II, if properly mounted; with 24 V, protection class III</p> <p><b>Max. switching current:</b> heating (terminal 3) 230 VAC 10 (4) A or 24 VAC 2 (2) A, cooling (terminal 1) 5 (2) A or 24 VAC 2 (2) A</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Min. switching voltage:</b> 24 VAC, 50 Hz</p> <p><b>Switching power:</b> Terminal 3: 2300 W at 230 VAC, 48 W at 24 VAC, terminal 1: 1150 W at 230 VAC, 48 W at 24 VAC</p> <p><b>Switching contact:</b> changeover switch (toggle), max. 5 actuators)</p> <p><b>Output signal:</b> switching (230 VAC, 50 Hz or 24 VAC, 50 Hz)</p> <p><b>Output signal:</b> cooling, switching (230 VAC, 50 Hz or 24 VAC, 50 Hz)</p> <p><b>Control function:</b> heating or cooling</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Hysteresis:</b> approx. 0.5 K at a temperature change of max. 4 K/h</p>		54.30/I
	MA011700	<p><b>General features:</b> ECO function; mechanical range limitation; scale: degrees Celsius; external setting</p> <p><b>Operating voltage:</b> 24 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 0 to 30 °C</p> <p><b>Protection class:</b> III</p> <p><b>Max. switching current:</b> 1 (1) A</p> <p><b>Max. switching voltage:</b> 24 VAC, 50 Hz</p> <p><b>Min. switching voltage:</b> 24 VAC, 50 Hz</p> <p><b>Switching power:</b> 24 W</p> <p><b>Switching contact:</b> NC contact (max. 5 actuators)</p> <p><b>Output signal:</b> switching (24 VAC, 50 Hz)</p> <p><b>Control function:</b> heating</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Hysteresis:</b> approx. 0.5 K at a temperature change of max. 4 K/h</p> <p><b>Input 'temperature reduction':</b> approx. 4 K (24 VAC, 50 Hz)</p>		47.80/I
	MA013401	<p><b>General features:</b> 2-wire room temperature controller; mechanical range limitation; multi-digit display *–6; external setting</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 0 to 30 °C</p> <p><b>Protection class:</b> II, if properly mounted</p> <p><b>Max. switching current:</b> 1 A or 5 A (see circuit diagram)</p> <p><b>Min. switching current:</b> 0.5 A or 1 A (see circuit diagram)</p> <p><b>Min. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Switching power:</b> 230 W or 1150 W (see circuit diagram)</p> <p><b>Switching contact:</b> NC contact</p> <p><b>Output signal:</b> switching (230 VAC, 50 Hz)</p> <p><b>Control function:</b> heating</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Hysteresis:</b> approx. 1 K at a temperature change of max. 4 K/h (load-dependent)</p>		42.00/I



# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB

## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000


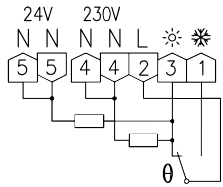
TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
RTBSB-001.910 	MA012000	<p><b>General features:</b> ECO function; scale: degrees Celsius; internal setting</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 0 to 30 °C</p> <p><b>Protection class:</b> II, if properly mounted</p> <p><b>Max. switching current:</b> heating (terminal 3) 10 (4) A, cooling (terminal 1) 5 (2) A</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Min. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Switching power:</b> Terminal 3: 2300 W, terminal 1: 1150 W</p> <p><b>Switching contact:</b> changeover switch (toggler, max. 10 actuators output terminal 3, max. 5 actuators output terminal 1)</p> <p><b>Output signal:</b> switching (230 VAC, 50 Hz)</p> <p><b>Control function:</b> heating or cooling</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Hysteresis:</b> approx. 0.5 K at a temperature change of max. 4 K/h</p> <p><b>Input 'temperature reduction':</b> approx. 4 K (230 VAC, 50 Hz)</p>		53.20/1
RTBSB-001.910/2 	MA012100	<p><b>General features:</b> ECO function; scale: degrees Celsius; internal setting</p> <p><b>Operating voltage:</b> 24 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 0 to 30 °C</p> <p><b>Protection class:</b> III</p> <p><b>Max. switching current:</b> 1 (1) A</p> <p><b>Max. switching voltage:</b> 24 VAC, 50 Hz</p> <p><b>Min. switching voltage:</b> 24 VAC, 50 Hz</p> <p><b>Switching power:</b> 24 W</p> <p><b>Switching contact:</b> changeover switch (toggler, max. 3 actuators)</p> <p><b>Output signal:</b> switching (24 VAC, 50 Hz)</p> <p><b>Control function:</b> heating or cooling</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Hysteresis:</b> approx. 0.5 K at a temperature change of max. 4 K/h</p> <p><b>Input 'temperature reduction':</b> approx. 4 K (24 VAC, 50 Hz)</p>		57.40/1





# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB

## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	MA012600	<p><b>General features:</b> Scale: degrees Celsius; internal setting</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz or 24 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 10 to 60 °C</p> <p><b>Protection class:</b> II, if properly mounted; with 24 V, protection class III</p> <p><b>Max. switching current:</b> heating (terminal 3) 230 VAC 10 (4) A or 24 VAC 2 (2) A, cooling (terminal 1) 5 (2) A or 24 VAC 2 (2) A</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Min. switching voltage:</b> 24 VAC, 50 Hz</p> <p><b>Switching power:</b> terminal 3: 2300 W at 230 VAC, 48 W at 24 VAC, terminal 1: 1150 W at 230 VAC, 48 W at 24 VAC</p> <p><b>Switching contact:</b> changeover switch (toggler, max. 10 actuators output terminal 3, max. 5 actuators output terminal 1)</p> <p><b>Output signal:</b> switching (230 VAC, 50 Hz or 24 VAC, 50 Hz)</p> <p><b>Control function:</b> heating or cooling</p> <p><b>Control range:</b> 10 to 60 °C</p> <p><b>Hysteresis:</b> approx. 1.5 K at a temperature change of max. 4 K/h</p>		60.70/1

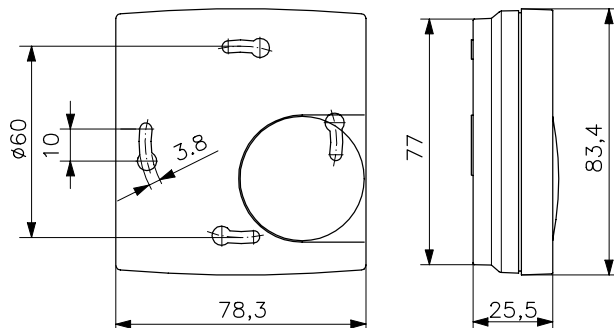
Accessories: terminal strips V00xx, suitable valve actuators ZB00A



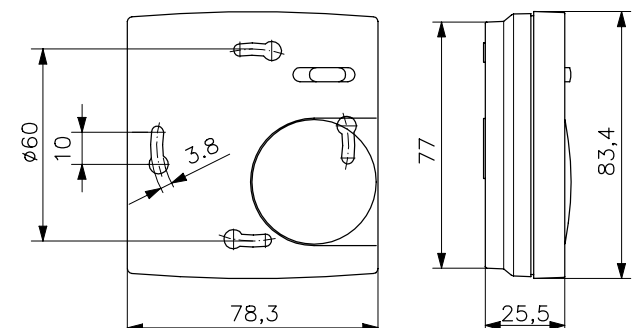
You can find other / similar controllers with outputs for heating / cooling and noiseless controllers in the Air Conditioning Technology chapter (note: applies to KTRTB, for example)


### ILLUSTRATIONS

RTBSB



RTBSB with switch



ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
	MA990002	Adjusting knob for B2000 series devices, multi-digit display 1 to 6, pure white glossy	3.20/1



# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB

## SURFACE-MOUNTED 'ULTRA-THIN' INSTALLATION – DESIGN BERLIN 1000

**TECHNICAL DATA**

<b>Design:</b>	Berlin 1000
<b>Surface finish:</b>	glossy
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	ABS plastic
<b>Ambient temperature:</b>	0 to 30 °C
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals 0.33 mm <sup>2</sup> –1.5 mm <sup>2</sup>
<b>Mounting/ attachment:</b>	Surface/ wall mounting (4-hole assembly on flush-mounted socket)
<b>Protection rating:</b>	IP30
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Average power consumption:</b>	< 0.25 W
<b>Max. switching current:</b>	2 (1) A
<b>Switching element:</b>	bimetallic contact
<b>Sensor:</b>	bimetal
<b>Control range:</b>	5 to 30 °C
<b>Hysteresis:</b>	approx. 0.5 K at a temperature change of max. 4 K/h
<b>General features:</b>	mechanical range limitation; thermal feedback; external setting

**APPLICATION**


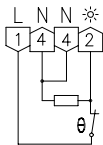



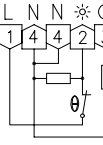
Control or monitoring of temperatures in closed spaces.

Valve actuator: normally closed. If normally open heating valves are available, they should be connected with the cooling output of the changeover switch (toggler).

Up to a maximum of 10 actuators for valves can be connected (normally closed, NC); with a toggler, on the NO contact, up to 5 units (in this context, please check the switching capacity listed in the TECHNICAL DATA).

Installation note: Owing to the existing wiring space in the controller itself, installation on a flush-mounted socket is recommended, but it can also be performed on a plane, non-conducting substrate.


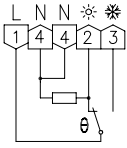

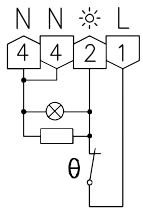

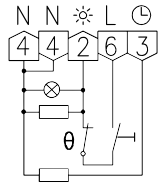

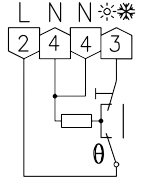


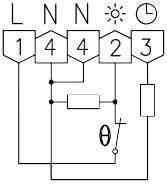
Explanations of technical terms can be found in the annex to the product catalogue or at [www.alre.de](http://www.alre.de).

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	MA300000	<b>General features:</b> scale: degrees Celsius <b>Operating voltage:</b> 230 VAC, 50 Hz <b>Protection class:</b> II, if properly mounted <b>Max. switching voltage:</b> 230 VAC, 50 Hz <b>Min. switching voltage:</b> 230 VAC, 50 Hz <b>Switching power:</b> 460 W <b>Switching contact:</b> NC contact (max. 10 actuators) <b>Output signal:</b> switching (230 VAC, 50 Hz) <b>Control function:</b> heating		41.10/1
	MA300008	Similar to RTBSB-201.000 but with multi-digit display 1–6		42.00/1
	MA300800	Similar to RTBSB-201.000 but with housing colour: traffic / studio white, similar to RAL 9016		41.10/1
	MA300100	<b>General features:</b> ECO function; scale: degrees Celsius <b>Operating voltage:</b> 230 VAC, 50 Hz <b>Protection class:</b> II, if properly mounted <b>Max. switching voltage:</b> 230 VAC, 50 Hz <b>Min. switching voltage:</b> 230 VAC, 50 Hz <b>Switching power:</b> 460 W <b>Switching contact:</b> NC contact (max. 10 actuators) <b>Output signal:</b> switching (230 VAC, 50 Hz) <b>Control function:</b> heating <b>Input 'temperature reduction':</b> approx. 3 K (230 VAC, 50 Hz)		43.60/1



# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB


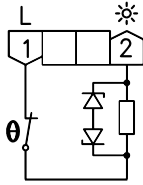
## SURFACE-MOUNTED 'ULTRA-THIN' INSTALLATION – DESIGN BERLIN 1000

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	MA300200	<p><b>General features:</b> Scale: degrees Celsius  <b>Operating voltage:</b> 230 VAC, 50 Hz  <b>Protection class:</b> II, if properly mounted  <b>Max. switching voltage:</b> 230 VAC, 50 Hz  <b>Min. switching voltage:</b> 230 VAC, 50 Hz  <b>Switching power:</b> 460 W  <b>Switching contact:</b> changeover switch (toggler, max. 10 actuators (NC contact), max. 5 actuators (NO contact))  <b>Output signal:</b> switching (230 VAC, 50 Hz)  <b>Control function:</b> Heating or cooling</p>		51.20/1
	MA301400	<p><b>General features:</b> 'heating' display; scale: degrees Celsius  <b>Operating voltage:</b> 230 VAC, 50 Hz  <b>Protection class:</b> II, if properly mounted  <b>Max. switching voltage:</b> 230 VAC, 50 Hz  <b>Min. switching voltage:</b> 230 VAC, 50 Hz  <b>Switching power:</b> 460 W  <b>Switching contact:</b> NC contact (max. 10 actuators)  <b>Output signal:</b> switching (230 VAC, 50 Hz)  <b>Control function:</b> heating</p>		45.10/1
	MA300400	<p><b>General features:</b> ECO function; 'heating' display; scale: degrees Celsius; 'on/off' switch  <b>Operating voltage:</b> 230 VAC, 50 Hz  <b>Protection class:</b> II, if properly mounted  <b>Max. switching voltage:</b> 230 VAC, 50 Hz  <b>Min. switching voltage:</b> 230 VAC, 50 Hz  <b>Switching power:</b> 460 W  <b>Switching contact:</b> NC contact (max. 10 actuators)  <b>Output signal:</b> switching (230 VAC, 50 Hz)  <b>Control function:</b> heating  <b>Input 'temperature reduction':</b> approx. 3 K (230 VAC, 50 Hz)</p>		53.90/1
	MA300500	<p><b>General features:</b> Climate controller for 2-pipe systems, especially heat pumps; scale: degrees Celsius; heating / cooling switch  <b>Operating voltage:</b> 230 VAC, 50 Hz  <b>Protection class:</b> II, if properly mounted  <b>Max. switching voltage:</b> 230 VAC, 50 Hz  <b>Min. switching voltage:</b> 230 VAC, 50 Hz  <b>Switching power:</b> 460 W  <b>Switching contact:</b> Changeover switch (toggler, max. 5 actuators)  <b>Output signal:</b> switching (230 VAC, 50 Hz)  <b>Control function:</b> heating or cooling</p>		57.70/1
	MA300502	Similar to RTBSB-201.065 but with multi-digit display 1–6		58.50/1
	MA302100	<p><b>General features:</b> ECO function; scale: degrees Celsius  <b>Operating voltage:</b> 24 VAC, 50 Hz  <b>Protection class:</b> III  <b>Max. switching voltage:</b> 24 VAC, 50 Hz  <b>Min. switching voltage:</b> 24 VAC, 50 Hz  <b>Switching power:</b> 48 W  <b>Switching contact:</b> NC contact (max. 5 actuators)  <b>Output signal:</b> switching (24 VAC, 50 Hz)  <b>Control function:</b> heating  <b>Input 'temperature reduction':</b> approx. 3 K (24 VAC, 50 Hz)</p>		50.90/1



# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB




## SURFACE-MOUNTED 'ULTRA-THIN' INSTALLATION – DESIGN BERLIN 1000

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	MA304000	<p><b>General features:</b> 2-wire room temperature controller; multi-digit display *–6</p> <p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Ambient temperature:</b> 0 to 30 °C</p> <p><b>Protection class:</b> II, if properly mounted</p> <p><b>Max. switching current:</b> 20 mA</p> <p><b>Min. switching current:</b> 5 mA</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Min. switching voltage:</b> 230 VAC, 50 Hz</p> <p><b>Switching power:</b> 4.6 W (max. 2 actuators)</p> <p><b>Switching contact:</b> NC contact</p> <p><b>Output signal:</b> switching (230 VAC, 50 Hz)</p> <p><b>Control function:</b> heating</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Hysteresis:</b> approx. 0.5 K at a temperature change of max. 4 K/h (load-dependent)</p>		45.60/1

Accessories: terminal strips V00xx, suitable valve actuators ZB00A

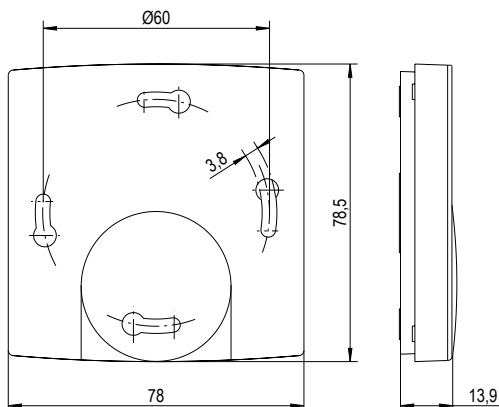


You can find other / similar controllers with outputs for heating / cooling and noiseless controllers in the Air Conditioning Technology chapter (note: applies to KTRTB, for example)

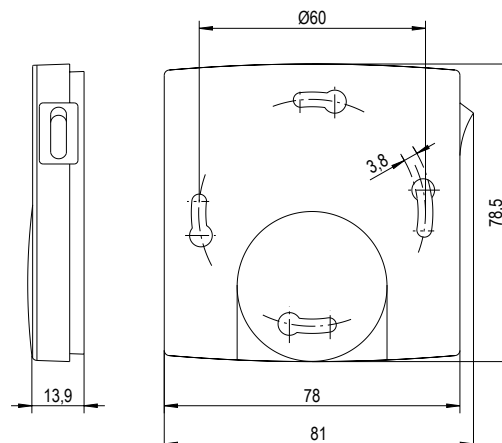
ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
	MN990006	Adapter frame for mounting room temperature controllers of the Berlin 1000 series in flush-mounted sockets up to 80 x 80 mm	5.20/1
	MA990000	Adjusting knob for B1000 series devices, scale: degrees Celsius, pure white glossy	3.40/1
	MA990001	Adjusting knob for B1000 series devices, multi-digit display 1 to 6, pure white glossy	3.40/1

### ILLUSTRATIONS

RTBSB-201.xxx / KTRTB



RTBSB-201.xxx with 'ON/OFF' switch at the side









# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB

## SURFACE-MOUNTED OR PLUG-IN INSTALLATION – DESIGN BERLIN



### TECHNICAL DATA



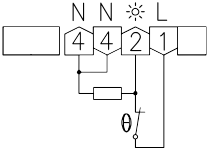

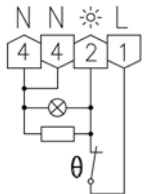

<b>Design:</b>	Berlin 2000
<b>Surface finish:</b>	matt
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	ABS plastic
<b>Operating voltage:</b>	230 V AC, 50 Hz
<b>Ambient temperature:</b>	0 to 30 °C
<b>Storage temperature:</b>	–20 to +70 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	II for loads of protection classes I and II
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	230 V AC, 50 Hz
<b>Switching element:</b>	bimetallic contact
<b>Switching contact:</b>	NC contact
<b>Output signal:</b>	switching (230 VAC, 50 Hz)
<b>Sensor:</b>	bimetal
<b>Control function:</b>	heating
<b>Control range:</b>	5 to 30 °C
<b>Hysteresis:</b>	approx. 1 K at a temperature change of max. 4 K/h

### APPLICATION

For controlling the room temperature for radiators, heating chimneys, direct electric heating systems, marble heating systems etc.

Attention! For loads > 2,300 W, the wall socket must be designed for 16 A (danger of fire).


The plugs are designed in such a way that they can also be used in sockets with a central pin (for example, as used in France).

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
JZ-19 	MN990003	<b>General features:</b> plug-in socket (as with RTBSB-001.411 / RTBSB-001.474) completely pre-wired <b>Mounting / attachment:</b> can be fitted with room thermostats RTBSB-001.xxx <b>Protection rating:</b> depends on the pre-fitted room thermostat <b>Protection class:</b> depends on the pre-fitted room thermostat <b>Max. switching current:</b> depends on the pre-fitted room thermostat <b>Switching power:</b> 3000 W		41.50/1
RTBSB-001.086 	MA010800	<b>General features:</b> mechanical range setting; 3000 W switching power for electric direct heating systems, natural stone heating; thermal feedback; multi-digit display 1–6; external setting <b>Electrical connection:</b> screw-type terminals 0.12 mm <sup>2</sup> –2.5 mm <sup>2</sup> <b>Average power consumption:</b> < 0.5 W <b>Max. switching current:</b> 13 (4) A <b>Switching power:</b> 3000 W <b>Accessories:</b> can be combined with plug-in socket JZ-19		42.50/1
RTBSB-001.096 	MA012500	Similar to RTBSB-001.086, but with 'heating' display (LED red)		49.10/1
RTBSB-001.401 	MA013100	<b>General features:</b> mechanical range limitation; 3000 W switching power for electric direct heating systems, natural stone heating; multi-digit display 1–6; external setting <b>Electrical connection:</b> Schuko adapters <b>Mounting / attachment:</b> optionally surface / wall mounting (4-hole assembly on flush-mounted socket) or with adapter plate (2-hole assembly) for wall hanging <b>Average power consumption:</b> < 0.1 W <b>Max. switching current:</b> 13 (4) A <b>Switching power:</b> 3000 W <b>Connecting cable:</b> 1.5 m		65.00/1



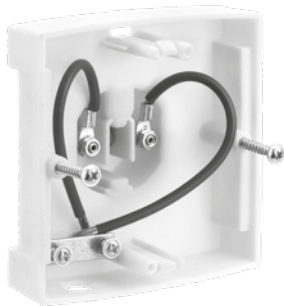
# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB

## SURFACE-MOUNTED OR PLUG-IN INSTALLATION – DESIGN BERLIN

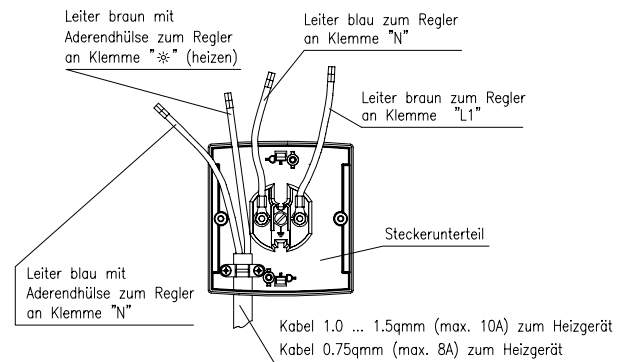
TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	MA013200	<p><b>General features:</b> mechanical range limitation; 3000 W switching power for electric direct heating systems, natural stone heating; multi-digit display 1–6; external setting</p> <p><b>Electrical connection:</b> pre-fitted Schuko plug-in socket JZ-19 at the controller, 1.5-m cable with Schuko coupling</p> <p><b>Mounting/attachment:</b> ready-to-plug</p> <p><b>Average power consumption:</b> &lt; 0.1 W</p> <p><b>Max. switching current:</b> 13 (4) A</p> <p><b>Switching power:</b> 3000 W</p> <p><b>Hysteresis:</b> approx. 1 K at a temperature change of max. 4 K/h</p>		85.00/1

### ILLUSTRATIONS

Plug-in socket



Plug-in socket

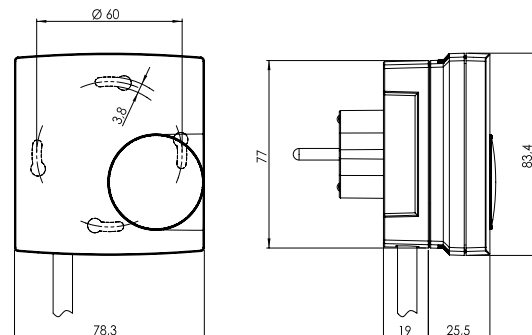


RTBSB-001.411



RTBSB-001.411

(Different from dimensions of RTBSB-001.401)



RTBSB-001.401





# ROOM TEMPERATURE CONTROLLER WITH CLOCK, ELECTRONIC, HTRRBu

## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 3000



### TECHNICAL SPECIFICATIONS

<b>Design:</b>	Berlin 3000
<b>Surface finish:</b>	matt
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	ABS plastic
<b>Operating voltage:</b>	230 V AC, 50 Hz
<b>Ambient temperature:</b>	0 to 30 °C
<b>Storage temperature:</b>	–20 to +70 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	surface / wall mounting or by means of an adapter plate on a flush-mounted socket
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	II, if properly mounted
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Max. switching current:</b>	heating (terminal 4) 8 (2) A, cooling (terminal 3) 100 mA
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	230 V AC, 50 Hz
<b>Switching power:</b>	terminal 4: 1840 W, terminal 3: 23 W
<b>Switching element:</b>	relay
<b>Switching contact:</b>	NO contact
<b>Output signal:</b>	heating, switching (230 VAC, 50 Hz)
<b>Sensor:</b>	NTC
<b>Control function:</b>	heating
<b>Control range:</b>	5 to 30 °C
<b>Hysteresis:</b>	< 1 K
<b>Display type:</b>	symbol display
<b>Output 'temperature reduction':</b>	switching (230 VAC, 50 Hz) (for pilot function)

### APPLICATION

For time-dependent control of temperatures in closed spaces. Suitable for all heating systems.

Valve actuator: normally closed.

It can be used as a master (pilot regulator) for the temperature reduction of other controllers. Controllers of series FETR, RTBSU and RTBSB are suitable as slaves (satellite controllers).

Programming procedures for every day, familiar from mechanical timers, by means of 'electronic tabs'. Shortest switching time 15 min.

**Load setting:** The control accuracy is influenced by the different levels of intrinsic heating of the controller depending on the magnitude of the heating load. By inputting the heating load, this influence is compensated and the control accuracy is retained.

**General features:** pilot function; ECO function, ECO value adjustable; 'ECO' display; 'on / off' display; 'heating' display; digital actual value display; child-safe features; power reserve (approx. 4–7 days); load setting; actual value correction / measured value correction; learning function; valve protection; holiday setting; party setting; automatic adjustment to standard / daylight savings time; mechanical range limitation; scale: degrees Celsius; reduction / comfort / automatic button; external setting; operation using direct-dial buttons; on / off button; information button; party function button; holiday setting button

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
HTRRBu 110.117/21	MA600003		188.50/I



ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-17	MN990001		7.70/II



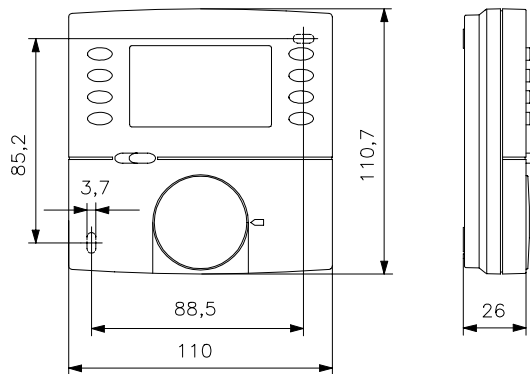
**Surface finish:** matt  
**Colour:** pure white, similar to RAL 9010  
**Material:** ABS plastic  
**General features:** adapter plate for mounting devices on flush-mounted sockets (including fastening screws for mounting the controller on the adapter plate)

# ROOM TEMPERATURE CONTROLLER WITH CLOCK, ELECTRONIC, HTRRBu

## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 3000

### ILLUSTRATIONS

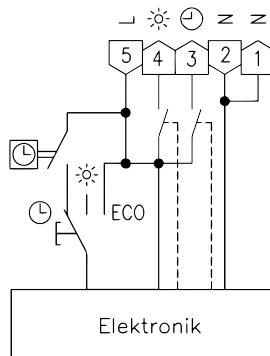
HTRRBu 110.XXX



#### Factory setting:

- Setback temperature 17 °C
- Continuous time display
- Programme display using switching segments enabled
- Child-safe features disabled
- Automatic adjustment to summer / winter time enabled
- °C display, valve and pump protection disabled
- Learning function disabled
- Heating load 0.0 kW
- Comfort times:  
Mon-Fri 5 am–9 am / 4 pm–10 pm,  
Sat/Sun 6 am–10 pm

HTRRBu 110.XXX circuit diagram







# ROOM TEMPERATURE CONTROLLER ELECTRONIC HTRRBd

## SURFACE-MOUNTED `ULTRA-THIN` INSTALLATION – DESIGN BERLIN 1000



### TECHNICAL DATA

<b>Design:</b>	Berlin 1000
<b>Surface finish:</b>	glossy
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	ABS plastic
<b>Ambient temperature:</b>	0 to 40 °C
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting/ attachment:</b>	Surface- / wall-mounting (4-hole assembly on flush-mounted socket)
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	II, if properly mounted
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Average power consumption:</b>	< 0.5 W
<b>Max. switching current:</b>	3 (0.5) A
<b>Switching element:</b>	relay
<b>Switching contact:</b>	NO contact
<b>Output signal:</b>	switching, 230 VAC, 50 Hz
<b>Sensor:</b>	NTC, internal
<b>Control range:</b>	5 to 30 °C
<b>Display:</b>	2-digit 7-segment display (white)
<b>Hysteresis:</b>	< approx. 0.5 K at a temperature change of max. 4 K/h

### APPLICATION

temperature control and monitoring in offices, homes and hotels, can be connected directly to the valve actuators for hot water heating systems.

Valve actuator: normally closed. Up to max. 10 actuators for valves can be connected.

### TYPE/IMAGE

### ITEM NO.

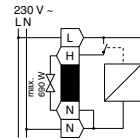
### CIRCUIT DIAGRAM

### EURO/PG

HTRRBd-210.100

MA700800

93.80/1



### ACCESSORIES

### ITEM NO.

### FEATURES

### EURO/PG

JZ-21

MN990006

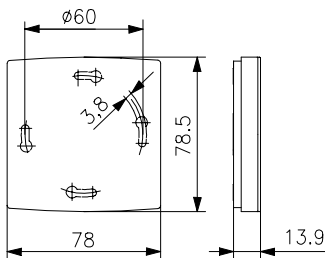
Adapter frame for mounting the room temperature controller on flush-mounted sockets up to 80 x 80 mm

5.20/1



### ILLUSTRATIONS

#### Dimension schematic







# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSU

## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED



### TECHNICAL DATA

<b>Design:</b>	Berlin flush-mounted
<b>Housing material:</b>	PA6 plastic
<b>Ambient temperature:</b>	0 to 30 °C
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	Spring-loaded terminals (lever actuation type)
<b>Mounting / attachment:</b>	In flush-mounted socket – with suitable cover set, can be adapted to fit virtually any switch range (deep flush-mounted socket recommended)
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	II, if properly mounted, with 24 VAC, protection class III according to DIN EN 60730
<b>Safety and EMC:</b>	
<b>Max. power consumption:</b>	< 0.5 W
<b>Switching element:</b>	bimetallic contact
<b>Output signal:</b>	switching
<b>Sensor:</b>	bimetal
<b>Control range:</b>	5 to 30 °C
<b>Setting range:</b>	5 to 30 °C
<b>Hysteresis:</b>	approx. 0.5 K at a temperature change of max. 4 K/h
<b>General features:</b>	thermal recirculation; multi-digit display

### APPLICATION


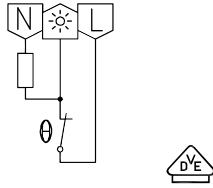

Control or monitoring of temperatures in closed, dry spaces. Suitable for all heating systems.

Valve actuator: normally closed. If normally open heating valves are available, they should be connected to the cooling output of the changeover switch (toggler), e.g., RTBSU-401.010

Up to a maximum of 10 actuators for valves can be connected (normally closed, NC); up to 5 units on the toggler with a NO contact.


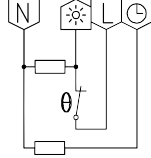


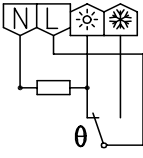


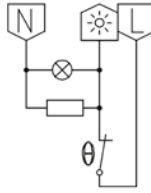

In terms of visual aesthetics, the basic controllers (RTBSU-401.xxx#00), in combination with a 55 x 55 mm / 70 x 70 mm cover set, fit perfectly in many switch ranges without the use of an insert frame.

The basic controllers (RTBSU-401.xxx#00) in combination with a 50 x 50 mm cover set fit in nearly all switch ranges with the use of an insert frame.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
RTBSU-401.000#00 Comparison type: FTR 101.000#00 	UA090000	<b>General features:</b> mechanical range limitation; external setting; protective cap; VDE-tested <b>Operating voltage:</b> 230 VAC, 50 Hz <b>Max. switching current:</b> 10 (4) A <b>Max. switching voltage:</b> 230 VAC, 50 Hz <b>Min. switching voltage:</b> 230 VAC, 50 Hz <b>Switching power:</b> 2300 W <b>Switching contact:</b> NC contact (max. 10 actuators) <b>Control function:</b> heating  Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. <b>Suitable set no.: JZ-001.xxx, (see page 80-82) e.g.:</b> 50 x 50 mm cover set, pure white, glossy: JZ-001.000 55 x 55 mm cover set, pure white, glossy: JZ-001.100 <b>BUSCH-JAEGER cover set</b> Reflex SI / SI Linear, pure white, glossy: JZ-001.200 / BJ		59.10/1
RTBSU-401.000#21 Comparison type: FTR 101.000#21 	UA090014	Similar to RTBSU-401.000#00 but scope of delivery as follows: Controller, alre frame 'Berlin' (neutral), cover 50 x 50 mm, pure white (similar to RAL 9010), glossy		74.80/1




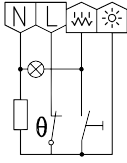

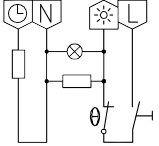


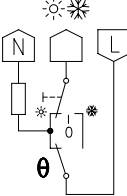


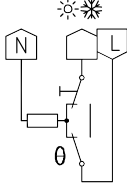

# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSU FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
<b>RTBSU-401.002#00</b> Comparison type: FTR 101.002#00 	UA090001	<b>General features:</b> ECO function; mechanical range limitation; external setting; protective cap; VDE-tested <b>Operating voltage:</b> 230 VAC, 50 Hz <b>Max. switching current:</b> 10 (4) A <b>Max. switching voltage:</b> 230 VAC, 50 Hz <b>Min. switching voltage:</b> 230 VAC, 50 Hz <b>Switching power:</b> 2300 W <b>Switching contact:</b> NC contact (max. 10 actuators) <b>Control function:</b> heating <b>Input 'temperature reduction':</b> approx. 4 K (230 VAC, 50 Hz)	 	61.50 / I
<b>RTBSU-401.010#00</b> Comparison type: FTR 101.010#00 	UA090002	<b>General features:</b> mechanical range limitation; external setting; protective cap; VDE-tested <b>Operating voltage:</b> 230 VAC, 50 Hz <b>Max. switching current:</b> heating terminal 10 (4) A, cooling terminal 5 (2) A <b>Max. switching voltage:</b> 230 VAC, 50 Hz <b>Min. switching voltage:</b> 230 VAC, 50 Hz <b>Switching power:</b> Heating terminal: 2300 W, Cooling terminal: 1150 W <b>Switching contact:</b> changeover switch (toggler, max. 10 actuators output heating, max. 5 actuators output cooling) <b>Control function:</b> heating or cooling	 	75.20 / I
<b>RTBSU-401.034#00</b> Comparison type: FTR 101.034#07 / FTR 101.034#55 	UA090004	<b>General features:</b> 'heating' display; mechanical range limitation; external setting; protective cap, <b>Operating voltage:</b> 230 VAC, 50 Hz <b>Max. switching current:</b> 10 (4) A <b>Max. switching voltage:</b> 230 VAC, 50 Hz <b>Min. switching voltage:</b> 230 VAC, 50 Hz <b>Switching power:</b> 2300 W <b>Switching contact:</b> NC contact (max. 10 actuators) <b>Control function:</b> Heating	 	61.80 / I



# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSU

## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
<b>RTBSU-401.052#21</b> Comparison type: FTR 101.052#21 	UA090015	<b>General features:</b> 'auxiliary heating' display; mechanical range limitation; <b>auxiliary heating switch</b> ; external setting <b>Operating voltage:</b> 230 VAC, 50 Hz <b>Max. switching current:</b> the total current (heating + auxiliary heating) may not exceed 10 (4) A <b>Max. switching voltage:</b> 230 VAC, 50 Hz <b>Min. switching voltage:</b> 230 VAC, 50 Hz <b>Switching power:</b> the total power output (heating + auxiliary heating) may not exceed 2300 W <b>Switching contact:</b> NC contact (max. 10 actuators) <b>Control function:</b> heating <b>Scope of delivery:</b> Controller, alre frame 'Berlin' (neutral), 50 x 50 mm cover, pure white (similar to RAL 9010), glossy		92.10/I
<b>RTBSU-401.062#00</b> Comparison type: FTR 101.062#00 	UA090003	<b>General features:</b> ECO function; 'heating' display; mechanical range limitation; <b>'on/off' switch</b> ; external setting; protective cap; VDE-tested <b>Operating voltage:</b> 230 VAC, 50 Hz <b>Max. switching current:</b> 10 (4) A <b>Max. switching voltage:</b> 230 VAC, 50 Hz <b>Min. switching voltage:</b> 230 VAC, 50 Hz <b>Switching power:</b> 2300 W <b>Switching contact:</b> NC contact (max. 10 actuators) <b>Control function:</b> heating <b>Input 'temperature reduction':</b> approx. 4 K (230 VAC, 50 Hz)	 	76.60/I
<b>RTBSU-401.063#00</b> Comparison type: FTR 101.063#00 	UA090006	<b>General features:</b> climate controller for 2-pipe systems, mechanical range limitation; <b>'heating/off/cooling' switch</b> ; external adjustment; protective cap <b>Operating voltage:</b> 230 V AC, 50 Hz <b>Max. switching current:</b> 5 (2) A <b>Max. switching voltage:</b> 230 V AC, 50 Hz <b>Min. switching voltage:</b> 230 V AC, 50 Hz <b>Switching power:</b> 1150 W <b>Switching contact:</b> changeover switch (max. 5 actuators) <b>Control function:</b> heating or cooling	 	83.80/I
<b>RTBSU-401.065#00</b> Comparison type: FTR 101.065#00 	UA090007	<b>General features:</b> climate controller for 2-pipe systems, especially heat pumps; mechanical range limitation; <b>'heating/cooling' switch</b> ; external setting; protective cap <b>Operating voltage:</b> 230 VAC, 50 Hz <b>Max. switching current:</b> 5 (2) A <b>Max. switching voltage:</b> 230 VAC, 50 Hz <b>Min. switching voltage:</b> 230 VAC, 50 Hz <b>Switching power:</b> 1150 W <b>Switching contact:</b> changeover switch (toggler, max. 5 actuators) <b>Control function:</b> heating or cooling	 	82.70/I

Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery.

**Suitable set no.: JZ-035.xxx, (see page 80-82) e.g.:**

50 x 50 mm cover set, pure white, glossy: JZ-035.000

55 x 55 mm cover set, pure white, glossy: JZ-035.100

**BUSCH-JAEGER cover set**

Reflex SI/SI Linear, pure white, glossy: JZ-035.200 /BJ

For cover sets see the separate overview 'alre flush-mounted range (cover sets)', not included in the delivery.

**Suitable set no.: JZ-038.xxx, (see page 80-82) e.g.:**

50 x 50 mm cover set, pure white, glossy: JZ-038.000

55 x 55 mm cover set, pure white, glossy: JZ-038.100

Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery.

**Suitable set no.: JZ-037.xxx, (see page 80-82) e.g.:**


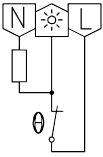
50 x 50 mm cover set, pure white, glossy: JZ-037.000

55 x 55 mm cover set, pure white, glossy: JZ-037.100






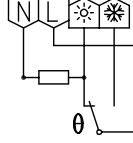

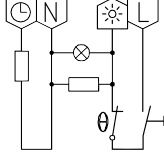

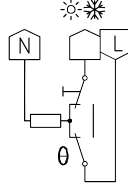
# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSU FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
<p><b>RTBSU-401.075#00</b> Comparison type: FTR 101.075#00</p> 	UA090008	<p><b>General features:</b> ECO function; 'reduction' display; mechanical range limitation; <b>switch for reduction/heating/reduction via external timer' switch</b>; external setting; protective cap; VDE-tested  <b>Operating voltage:</b> 230 VAC, 50 Hz  <b>Max. switching current:</b> 10 (4) A  <b>max. switching voltage:</b> 230 VAC, 50 Hz  <b>Min. switching voltage:</b> 230 VAC, 50 Hz  <b>Switching power:</b> 2300 W  <b>Switching contact:</b> NC contact (max. 10 actuators)  <b>Control function:</b> heating  <b>Input 'temperature reduction':</b> approx. 4 K (230 VAC, 50 Hz)</p> <p>Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery.  <b>Suitable set no.: JZ-036.xxx, (see page 80-82) e.g.:</b>                      50 x 50 mm cover set, pure white, glossy: JZ-036.000                      55 x 55 mm cover set, pure white, glossy: JZ-036.100</p>		80.50/I
<p><b>RTBSU-401.086#00</b> Comparison type: FTR 101.086#00</p> 	UA090009	<p><b>General features:</b> mechanical range limitation; 3000 W switching power, for electric direct heating systems, natural stone heating; external setting; protective cap  <b>Operating voltage:</b> 230 VAC, 50 Hz  <b>Max. switching current:</b> 13 (4) A  <b>Max. switching voltage:</b> 230 VAC, 50 Hz  <b>Min. switching voltage:</b> 230 VAC, 50 Hz  <b>Switching power:</b> 3000 W  <b>Switching contact:</b> NC contact  <b>Control function:</b> heating</p> <p>Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery.  <b>Suitable set no.: JZ-001.xxx, (see page 80-82) e.g.:</b>                      50 x 50 mm cover set, pure white, glossy: JZ-001.000                      55 x 55 mm cover set, pure white, glossy: JZ-001.100  <b>BUSCH-JAEGER cover set</b>                      Reflex SI/SI Linear, pure white, glossy: JZ-001.200 /BJ</p>		65.50/I
<p><b>RTBSU-401.086#21</b> Comparison type: FTR 101.086#21</p> 	UA090016	<p>Similar to RTBSU-401.086#00 but scope of delivery as follows:                      Controller,                      alre frame 'Berlin' (neutral), cover 50 x 50 mm, pure white (like RAL 9010), glossy</p>		81.10/I
<p><b>RTBSU-401.202#00</b> Comparison type: FTR 101.202#00</p> 	UA090010	<p><b>General features:</b> ECO function; mechanical range limitation; external setting; protective cap  <b>Operating voltage:</b> 24 VAC / 50 Hz, 24 VDC  <b>Max. switching current:</b> 1 (1) A  <b>Max. switching voltage:</b> 24 VAC / 50 Hz, 24 VDC  <b>Min. switching voltage:</b> 24 VAC / 50 Hz, 24 VDC  <b>Switching power:</b> 24 W  <b>Switching contact:</b> NC contact (max. 5 actuators)  <b>Control function:</b> heating  <b>Input 'temperature reduction':</b> approx. 4 K (24 VAC / 50 Hz, 24 VDC)</p> <p>Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery.  <b>Suitable set no.: JZ-001.xxx, (see page 80-82) e.g.:</b>                      50 x 50 mm cover set, pure white, glossy: JZ-001.000                      55 x 55 mm cover set, pure white, glossy: JZ-001.100  <b>BUSCH-JAEGER cover set</b>                      Reflex SI/SI Linear, pure white, glossy: JZ-001.200 /BJ</p>		72.30/I




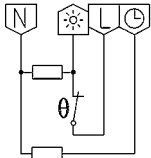
# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSU

## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
<b>RTBSU-401.210#00</b> Comparison type: FTR 101.210#00 	UA090011	<b>General features:</b> mechanical range limitation; external setting; protective cap <b>Operating voltage:</b> 24 VAC / 50 Hz, 24 VDC <b>Max. switching current:</b> 1 (1) A <b>Max. switching voltage:</b> 24 VAC / 50 Hz, 24 VDC <b>Min. switching voltage:</b> 24 VAC / 50 Hz, 24 VDC <b>Switching power:</b> 24 W <b>Switching contact:</b> changeover switch (togglers, max. 5 actuators) <b>Control function:</b> heating or cooling  Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. <b>Suitable set no.:</b> JZ-001.xxx, (see page 80-82) e.g.: 50 x 50 mm cover set, pure white, glossy: JZ-001.000 55 x 55 mm cover set, pure white, glossy: JZ-001.100 <b>BUSCH-JAEGER cover set</b> Reflex SI / SI Linear, pure white, glossy: JZ-001.200 / BJ		83.00/1
<b>RTBSU-401.262#00</b> Comparison type: FTR 101.262#00 	UA090012	<b>General features:</b> ECO function; 'heating' display; mechanical range limitation; 'on/off' switch; external setting; protective cap <b>Operating voltage:</b> 24 VAC / 50 Hz <b>Max. switching current:</b> 1 (1) A <b>Max. switching voltage:</b> 24 VAC / 50 Hz <b>Min. switching voltage:</b> 24 VAC / 50 Hz <b>Switching power:</b> 24 W <b>Switching contact:</b> NC contact (max. 5 actuators) <b>Control function:</b> heating <b>Input 'temperature reduction':</b> approx. 4 K (24 VAC / 50 Hz)  Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. <b>Suitable set no.:</b> JZ-035.xxx, (see page 80-82) e.g.: 50 x 50 mm cover set, pure white, glossy: JZ-035.000 55 x 55 mm cover set, pure white, glossy: JZ-035.100 <b>BUSCH-JAEGER cover set</b> Reflex SI / SI Linear, pure white, glossy: JZ-035.200 / BJ		84.20/1
<b>RTBSU-401.265#00</b> Comparison type: FTR 101.265#00 	UA090017	<b>General features:</b> climate controller for 2-pipe systems, especially heat pumps; mechanical range limitation; 'heating/cooling' switch; external setting; protective cap <b>Operating voltage:</b> 24 VAC / 50 Hz, 24 VDC <b>Max. switching current:</b> 1 (1) A <b>Max. switching voltage:</b> 24 VAC / 50 Hz, 24 VDC <b>Min. switching voltage:</b> 24 VAC / 50 Hz, 24 VDC <b>Switching power:</b> 24 W <b>Switching contact:</b> changeover switch (togglers, max. 5 actuators) <b>Control function:</b> heating or cooling  Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. <b>Suitable set no.:</b> JZ-037.xxx, (see 80-82) e.g.: 50 x 50 mm cover set, pure white, glossy: JZ-037.000 55 x 55 mm cover set, pure white, glossy: JZ-037.100		90.80/1




# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSU FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
RTBSU-401.902#07 Comparison type: FTR 101.902#07 	UA090013	<b>General features:</b> ECO function; internal setting <b>Operating voltage:</b> 230 VAC, 50 Hz <b>Max. switching current:</b> 10 (4) A <b>Max. switching voltage:</b> 230 VAC, 50 Hz <b>Min. switching voltage:</b> 230 VAC, 50 Hz <b>Switching power:</b> 2300 W <b>Switching contact:</b> NC contact (max. 10 actuators) <b>Control function:</b> heating <b>Input 'temperature reduction':</b> approx. 4 K (230 VAC, 50 Hz) <b>Scope of delivery:</b> Controller, 50 x 50 mm cover, pure white (similar to RAL 9010), glossy		78.10/1

For model RTBSU-401.xxx#21, the protective cap is not included in the delivery.

Accessories terminal strips VOOxx, suitable valve actuators ZBOOA, suitable cover sets: see separate overview 'alre flush-mounting range (cover sets)'

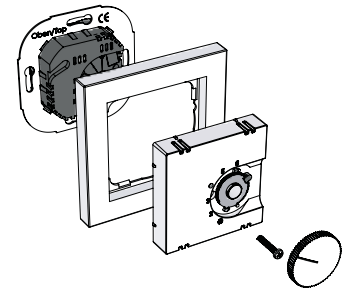
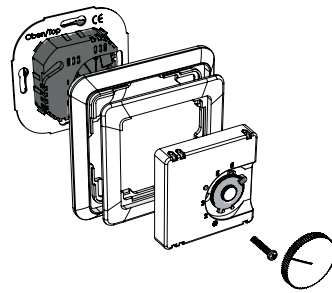
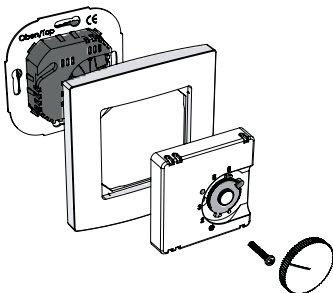
TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
JZ-090.900 	VV000025	<b>General features:</b> alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50 x 50 mm cover <b>Design:</b> Berlin <b>Surface finish:</b> glossy <b>Colour:</b> Pure white, similar to RAL 9010 <b>Material:</b> PC plastic	4.40/1
JZ-090.100	VV000048	Similar to JZ-090.900, but for all flush-mounted controllers in combination with 55 x 55 mm cover	4.40/1
JZ-090.910	VV000010	as for JZ-090.900, but colour similar to RAL 1013	4.40/1

## ILLUSTRATIONS

alre frame 'Berlin' (#21 types)

with 50 x 50 insert frame

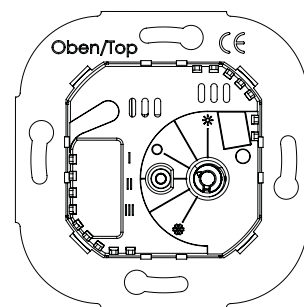
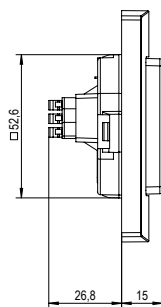
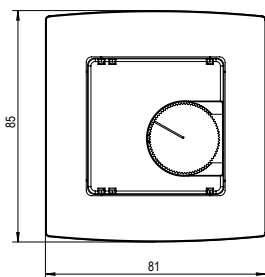
without 55 x 55 insert frame



## ILLUSTRATIONS

RTBSU with alre frame 'Berlin' (RTBSU-401.xxx#21 types)

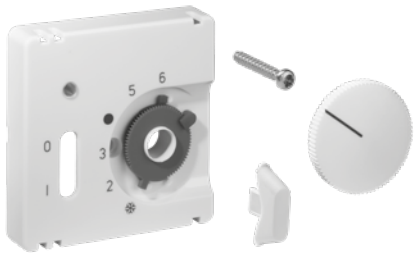
RTBSU scale for temperature adjustment without cover set



**ALRE FLUSH-MOUNTED RANGE** (50 X 50 MM COVER SETS)ALL BASIC TYPES AND SUITABLE COVER SETS **50 X 50 MM**

BASIC TYPE	50 x 50 mm cover set PURE WHITE (RAL 9010) GLOSSY		50 x 50 mm cover set PURE WHITE (RAL 9010) MATT		50 x 50 mm cover set PEARL WHITE (RAL1013) GLOSSY		EUROS/ PG
	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	
RTBSU-401.000#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	12.20/I
RTBSU-401.002#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	12.20/I
RTBSU-401.010#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	12.20/I
RTBSU-401.034#00	JZ-016.000	UN990139	–	–	–	–	12.80/I
RTBSU-401.062#00	JZ-035.000	UN990169	JZ-035.001	UN990193	JZ-035.010	UN990177	13.20/I
RTBSU-401.063#00	JZ-038.000	UN990170	JZ-038.001	UN990194	JZ-038.010	UN990178	12.80/I
RTBSU-401.065#00	JZ-037.000	UN990171	JZ-037.001	UN990195	JZ-037.010	UN990179	12.80/I
RTBSU-401.075#00	JZ-036.000	UN990172	JZ-036.001	UN990196	JZ-036.010	UN990180	13.20/I
RTBSU-401.086#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	12.20/I
RTBSU-401.202#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	12.20/I
RTBSU-401.210#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	12.20/I
RTBSU-401.262#00	JZ-035.000	UN990169	JZ-035.001	UN990193	JZ-035.010	UN990177	13.20/I
RTBSU-401.265#00	JZ-037.000	UN990171	JZ-037.001	UN990195	JZ-037.010	UN990179	12.80/I

In flush-mounted socket, it can be adapted to fit virtually any switch range.

BASIC TYPE	50 x 50 mm cover set TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY (JZ-xxx.020)		50 x 50 mm cover set TRAFFIC/STUDIO WHITE (RAL 9016) MATT (JZ-xxx.021)		EURO / PG	Cover set (example), individually foil-wrapped
	Cover set	Item no.	Cover set	Item no.		
RTBSU-401.000#00	JZ-001.020	UN990071	JZ-001.021	UN990100	14.20/I	 <p><b>SEE THE PRODUCT FINDER ON PAGE 84–90 FOR ALL COVER SOLUTIONS AND SPECIAL COLOURS</b></p>
RTBSU-401.002#00	JZ-001.020	UN990071	JZ-001.021	UN990100	14.20/I	
RTBSU-401.010#00	JZ-001.020	UN990071	JZ-001.021	UN990100	14.20/I	
RTBSU-401.062#00	JZ-035.020	UN990185	JZ-035.021	UN990201	15.40/I	
RTBSU-401.063#00	JZ-038.020	UN990186	JZ-038.021	UN990202	14.80/I	
RTBSU-401.065#00	JZ-037.020	UN990187	JZ-037.021	UN990203	14.80/I	
RTBSU-401.075#00	JZ-036.020	UN990188	JZ-036.021	UN990204	15.40/I	
RTBSU-401.086#00	JZ-001.020	UN990071	JZ-001.021	UN990100	14.20/I	
RTBSU-401.202#00	JZ-001.020	UN990071	JZ-001.021	UN990100	14.20/I	
RTBSU-401.210#00	JZ-001.020	UN990071	JZ-001.021	UN990100	14.20/I	
RTBSU-401.262#00	JZ-035.020	UN990185	JZ-035.021	UN990201	15.40/I	
RTBSU-401.265#00	JZ-037.020	UN990187	JZ-037.021	UN990203	14.80/I	



## ALRE FLUSH-MOUNTED RANGE (55 X 55 MM COVER SETS)

ALL BASIC TYPES AND SUITABLE COVER SETS **55 X 55 MM**

BASIC TYPE	55 x 55 mm cover set PURE WHITE (RAL 9010) GLOSSY (JZ-xxx.100)		55 x 55 mm cover set PURE WHITE (RAL 9010) MATT (JZ-xxx.101)		55 x 55 mm cover set PEARL WHITE (RAL1013) GLOSSY(- JZ-xxx.110)		EU- ROS/ PG	55 x 55 mm cover set TRAFFIC/ STUDIO WHITE (RAL 9016) GLOSSY (JZ-xxx.120)		EU- ROS/ PG
	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.		Cover set	Item no.	
RTBSU-401.000#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	15.00/I	JZ-001.120	UN990086	17.10/I
RTBSU-401.002#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	15.00/I	JZ-001.120	UN990086	17.10/I
RTBSU-401.010#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	15.00/I	JZ-001.120	UN990086	17.10/I
RTBSU-401.034#00	JZ-016.100	UN990140	-	-	-	-	16.20/I	-	-	
RTBSU-401.062#00	JZ-035.100	UN990173	JZ-035.101	UN990197	JZ-035.110	UN990181	16.60/I	JZ-035.120	UN990189	18.60/I
RTBSU-401.063#00	JZ-038.100	UN990174	JZ-038.101	UN990198	JZ-038.110	UN990182	16.20/I	JZ-038.120	UN990190	18.10/I
RTBSU-401.065#00	JZ-037.100	UN990175	JZ-037.101	UN990199	JZ-037.110	UN990183	16.20/I	JZ-037.120	UN990191	18.10/I
RTBSU-401.075#00	JZ-036.100	UN990176	JZ-036.101	UN990200	JZ-036.110	UN990184	16.60/I	JZ-036.120	UN990192	18.60/I
RTBSU-401.086#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	15.00/I	JZ-001.120	UN990086	17.10/I
RTBSU-401.202#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	15.00/I	JZ-001.120	UN990086	17.10/I
RTBSU-401.210#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	15.00/I	JZ-001.120	UN990086	17.10/I
RTBSU-401.262#00	JZ-035.100	UN990173	JZ-035.101	UN990197	JZ-035.110	UN990181	16.60/I	JZ-035.120	UN990189	18.60/I
RTBSU-401.265#00	JZ-037.100	UN990175	JZ-037.101	UN990199	JZ-037.110	UN990183	16.20/I	JZ-037.120	UN990191	18.10/I

Can be adapted to fit many switch ranges in flush-mounted sockets (for a current overview of the suitable frames and insert frames, see page 83).

## ALRE FLUSH-MOUNTED RANGE (70 X 70 MM COVER SETS)

ALL BASIC TYPES AND SUITABLE COVER SETS **70 X 70 MM**

BASIC TYPE	70 x 70 mm cover set PURE WHITE (RAL 9010) GLOSSY (JZ-xxx.400)		70 x 70 mm cover set PEARL WHITE (RAL1013) GLOSSY(JZ-xxx.410)		EU- ROS/ PG	70 x 70 mm cover set TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY (JZ- xxx.420)		EUROS/ PG
	Cover set	Item no.	Cover set	Item no.		Cover set	Item no.	
RTBSU-401.000#00	JZ-001.400	UN990141	JZ-001.410	UN990145	15.00/I	JZ-001.420	UN990149	17.10/I
RTBSU-401.002#00	JZ-001.400	UN990141	JZ-001.410	UN990145	15.00/I	JZ-001.420	UN990149	17.10/I
RTBSU-401.010#00	JZ-001.400	UN990141	JZ-001.410	UN990145	15.00/I	JZ-001.420	UN990149	17.10/I
RTBSU-401.034#00	JZ-016.400	UN990142	JZ-016.410	UN990146	16.20/I	JZ-016.420	UN990150	18.20/I
RTBSU-401.062#00	JZ-035.400	UN990143	JZ-035.410	UN990147	16.60/I	JZ-035.420	UN990151	18.60/I
RTBSU-401.065#00	JZ-037.400	UN990144	JZ-037.410	UN990148	16.20/I	JZ-037.420	UN990150	18.10/I
RTBSU-401.086#00	JZ-001.400	UN990141	JZ-001.410	UN990145	15.00/I	JZ-001.420	UN990149	17.10/I
RTBSU-401.202#00	JZ-001.400	UN990141	JZ-001.410	UN990145	15.00/I	JZ-001.420	UN990149	17.10/I
RTBSU-401.210#00	JZ-001.400	UN990141	JZ-001.410	UN990145	15.00/I	JZ-001.420	UN990149	17.10/I
RTBSU-401.262#00	JZ-035.400	UN990143	JZ-035.410	UN990147	16.60/I	JZ-035.420	UN990151	18.60/I
RTBSU-401.265#00	JZ-037.400	UN990144	JZ-037.410	UN990148	16.20/I	JZ-037.420	UN990150	18.10/I

Can be adapted to fit many switch ranges in flush-mounted sockets (for a current overview of the suitable frames and insert frames, see page 83).





ALL BASIC TYPES AND SUITABLE COVER SETS FOR **BUSCH-JAEGER REFLEX SI/SI LINEAR / BUSCH-DURO 2000 SI / FUTURE / SOLO / AXCENT / CARAT**  
WITHOUT INSERT FRAME

BASIC TYPE	BUSCH-JAEGER cover set <b>REFLEX SI/SI LINEAR PURE WHITE (RAL 9010) GLOSSY</b> (JZ-xxx.200 / BJ)		BUSCH-JAEGER cover set <b>BUSCH-DURO 2000 SI/SI LINEAR PEARL WHITE (RAL 1013) GLOSSY</b> (JZ-001.210 / BJ)		EURO/ PG	BUSCH-JAEGER cover set <b>FUTURE LINEAR/SOLO/ AXCENT / CARAT TRAF- FIC/STUDIO WHITE (RAL 9016) GLOSSY</b> (JZ-001.320 / BJ)		EURO/ PG
	Cover set	Item no.	Cover set	Item no.		Cover set	Item no.	
RTBSU-401.000#00	JZ-001.200 / BJ	G9990490	JZ-001.210 / BJ	G9990491	12.20 / I	JZ-001.320 / BJ	G9990493	16.60 / I
RTBSU-401.002#00	JZ-001.200 / BJ	G9990490	JZ-001.210 / BJ	G9990491	12.20 / I	JZ-001.320 / BJ	G9990493	16.60 / I
RTBSU-401.010#00	JZ-001.200 / BJ	G9990490	JZ-001.210 / BJ	G9990491	12.20 / I	JZ-001.320 / BJ	G9990493	16.60 / I
RTBSU-401.062#00	JZ-035.200 / BJ	G9990499	-	-	13.20 / I	-	-	
RTBSU-401.086#00	JZ-001.200 / BJ	G9990490	JZ-001.210 / BJ	G9990491	12.20 / I	JZ-001.320 / BJ	G9990493	16.60 / I
RTBSU-401.202#00	JZ-001.200 / BJ	G9990490	JZ-001.210 / BJ	G9990491	12.20 / I	JZ-001.320 / BJ	G9990493	16.60 / I

Can be adapted to fit the corresponding BUSCH-JAEGER switch ranges in flush-mounted sockets.

SPECIAL COLOURS **ANTHRACITE**

ALRE CON- TROLLER TYPES	MANUFACTURER SWITCH RANGE	COLOUR/ SURFACE FINISH	50 X 50 MM INSERT FRAME*	ALRE COVER SET: TYPE	(ITEM NO.)	EURO / PG
RTBSU-401.000#00 RTBSU-401.002#00 RTBSU-401.010#00 RTBSU-401.086#00 RTBSU-401.202#00 RTBSU-401.210#00	GIRA System 55	anthracite / matt	not required	JZ-001.141 / GI	(UN990111)	19.60 / I

\*) must be ordered from switch manufacturer or electronics wholesaler

Further details and information on available cover sets can be found online at [www.alre.de](http://www.alre.de) or in the catalogue.

## ADAPTATION OF ALRE FLUSH-MOUNTED CONTROLLERS

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION possible using '55 x 55', '70 x 70' or 'BJ' cover sets (without insert frame)	Only ADAPTATION with '50 x 50' cover set requires an insert frame from the manufacturer
BERKER	S.1	polar white (matt)	x	1109 19 19
BERKER	S.1	polar white (glossy)	x	1109 90 89
BERKER	Arsys	polar white (glossy)		1108 01 69
BERKER	B.3	aluminium / polar white (matt)	x	1109 19 19
BERKER	B.3	aluminium / polar white (glossy)	x	1109 90 89
BERKER	B.7	glass / polar white (matt)	x	1109 19 19
BERKER	B.7	glass / polar white (glossy)	x	1109 90 89
BERKER	Q.1 / Q.3	polar white (velvet)		1109 60 79
BERKER	K.1	polar white (glossy)		1108 71 09
BUSCH-JAEGER	Reflex SI / SI Linear	alpine white (glossy)	x	1746-214-101
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)	x	1746-914-101
BUSCH-JAEGER	impuls	alpine white (glossy)		1746 / 10-74
BUSCH-JAEGER	solo / future linear / axcent / etc.	studio white – see RAL 9016 below		
Elso	Joy	pure white (glossy)	x	363084
Elso	Fashion / Riva / Scala	pure white (glossy)		203084
GIRA	surface switch	pure white (glossy)	x	0282 112
GIRA (System 55)	Standard / E2	pure white (semi-gloss)	x	0282 27
GIRA (System 55)	Standard / E2 / E3	pure white (glossy)	x	0282 03
GIRA (System 55)	E22	pure white (glossy)	x	0282 03
GIRA (System 55)	Event	pure white (semi-gloss) + opaque...	x	0282 27
GIRA (System 55)	Event	pure white (glossy) + opaque...	x	0282 03
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium...	x	0282 27
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium...	x	0282 03
GIRA	S-Color	pure white (high-gloss)		0282 40
JUNG	CD 500 / CD plus	alpine white (glossy)		CD 590 Z WW
JUNG	A 500 / A 550 / AS 500 / A plus / A flow	alpine white (glossy)	x	A 590 Z WW
JUNG	LS 990	alpine white (glossy)	x	LS 961 Z WW
JUNG	LS plus	alpine white (glass)	x	LS 961 Z WW
JUNG	A creation	alpine white (glossy)	x	A 590 Z WW
JUNG	LS Design	alpine white (glossy)	x	LS 961 Z WW
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	x	5181 19
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)	x	5185 19
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)	x	5185 19
MERTEN (Surface System)	Artec / Antik	polar white (glossy)		5160 99
MERTEN	1-M / M-Smart / M-Plan / M-Pure / D-Life	active white – see RAL 9016 below or product finder		
PEHA	Standard	pure white (glossy)		80.670.02 ZV
PEHA	Dialog	pure white (glossy)		95.670.02 ZV
PEHA	Aura	pure white (matt) / glass		20.670.02 ZV
PEHA	Badora	pure white (glossy)		11.670.02 ZV

MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION possible using '55 x 55', '70 x 70' or 'BJ' cover sets (without insert frame)	Only ADAPTATION with '50 x 50' cover set requires an insert frame from the manufacturer
BUSCH-JAEGER	solo / future linear	studio white (RAL 9016, glossy)	x	1746 / 10-84
BUSCH-JAEGER	future linear	studio white (RAL 9016 matt)		1746 / 10-884
BUSCH-JAEGER	impuls	studio white (RAL 9016 matt)		1746 / 10-774
BUSCH-JAEGER	axcent	studio white (RAL 9016, glossy)	x	1746 / 10-84
BUSCH-JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016, glossy)	x	1746 / 10-84
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016, glossy)		1746 / 10-24G
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016 matt)		1746 / 10-24
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	x	5185 25
MERTEN	1-M / Atelier-M	active white (RAL 9016, glossy)	x	5185 25
MERTEN	D-Life	lotus white (RAL 9016)	x	MEG4500-6035
PEHA	Standard	arctic		D 80.670 ZV AW

\*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame

**NOTE:** Most switch ranges are designed in a colour similar to RAL 1013, 9016 or 1013, although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt / glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

**'50 x 50 controller':** The housing covers of the 50 x 50 controllers are 50 x 50 mm in size. Using a 50 x 50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50 x 50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch range in question can be found in the column 'Only for adaptation with '50 x 50' cover set'.

**'55 x 55/70 x 70 controller':** The housing covers of the 55 x 55/70 x 70 controllers are 55 x 55/70 x 70 mm in size. Many light switch ranges have inner dimensions of 55 x 55 mm/70 x 70 mm. Therefore, the 55 x 55/70 x 70 controllers can be installed directly in these light switch frames without the use of an insert frame. See the column 'Adaptation with '55 x 55/70 x 70' cover set' to determine whether the 55 x 55/70 x 70 controller fits in the given light switch model (x).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12/2022 | No liability is assumed for the information provided. | TECHNICAL DATA subject to change.



# PRODUCT FINDER ALRE COVER SETS

## FOR SWITCH RANGES FROM BERKER

### INTEGRATION EXAMPLES



RTBSU – in S. 1



RTBSU – in B. 3



RTBSU – in B. 7



RTBSU – in K. 1



RTBSU – in Arsys

TYPE ALRE	BERKER RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG	
<p>Standard (without switch)</p>	RTBSU-401.000#00 RTBSU-401.002#00 RTBSU-401.010#00 RTBSU-401.086#00 RTBSU-401.202#00 RTBSU-401.210#00	<b>S. 1 / B. 3 / B. 7</b>	polar white (RAL 9010) glossy	JZ-001.100 (55 x 55, glossy)	UN990050	not required	15.00/1
	<b>S. 1 / B. 3 / B. 7</b>	polar white (RAL 9010) matt	JZ-001.101 (55 x 55, matt)	UN990055	not required	15.00/1	
	<b>Arsys</b>	polar white (RAL 9010) glossy	JZ-001.000 (50 x 50, glossy)	UN990035	1108 01 69	12.20/1	
	<b>Q. 1 / Q. 3</b>	polar white (RAL 9010) velvet	JZ-001.001 (50 x 50, matt)	UN990040	1109 60 79	12.20/1	
	<b>K. 1</b>	polar white (RAL 9010) glossy	JZ-001.000 (50 x 50, glossy)	UN990035	1108 71 09	12.20/1	
	<b>S. 1</b>	white (RAL 1013) glossy	JZ-001.110 (55 x 55, glossy)	UN990060	not required	15.00/1	
	<b>Arsys</b>	white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	1108 01 02	12.20/1	
	<p>(LED)</p>	RTBSU-401.034#00	<b>S. 1 / B. 3 / B. 7</b>	polar white (RAL 9010) glossy	JZ-016.100 (50 x 55 glossy)	UN990140	not required
<b>Arsys</b>		polar white (RAL 9010) glossy	JZ-016.000 (50 x 50 glossy)	UN990139	1108 01 69	12.80/1	
<b>K.</b>		polar white (RAL 9010) glossy	JZ-016.000 (50 x 50 glossy)	UN990139	1108 71 09	12.80/1	
<p>(ON/OFF switch, LED)</p>		RTBSU-401.062#00 RTBSU-401.262#00	<b>S. 1 / B. 3 / B. 7</b>	polar white (RAL 9010) glossy	JZ-035.100 (55 x 55, glossy)	UN990173	not required
	<b>S. 1 / B. 3 / B. 7</b>	polar white (RAL 9010) matt	JZ-035.101 (55 x 55, matt)	UN990197	not required	16.60/1	
	<b>Arsys</b>	polar white (RAL 9010) glossy	JZ-035.000 (50 x 50, glossy)	UN990169	1108 01 69	13.20/1	
	<b>Q. 1 / Q. 3</b>	polar white (RAL 9010) velvet	JZ-035.001 (50 x 50, matt)	UN990193	1109 60 79	13.20/1	
	<b>K. 1</b>	polar white (RAL 9010) glossy	JZ-035.000 (50 x 50, glossy)	UN990169	1108 71 09	13.20/1	
	<b>S. 1</b>	white (RAL 1013) glossy	JZ-035.110 (55 x 55, glossy)	UN990181	not required	16.60/1	
	<b>Arsys</b>	white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	1108 01 02	13.20/1	
	<p>(Switch H / OFF / C)</p>	RTBSU-401.063#00	<b>S. 1 / B. 3 / B. 7</b>	polar white (RAL 9010) glossy	JZ-038.100 (55 x 55, glossy)	UN990174	not required
<b>S. 1 / B. 3 / B. 7</b>		polar white (RAL 9010) matt	JZ-038.101 (55 x 55, matt)	UN990198	not required	16.20/1	
<b>Arsys</b>		polar white (RAL 9010) glossy	JZ-038.000 (50 x 50, glossy)	UN990170	1108 01 69	12.80/1	
<b>Q. 1 / Q. 3</b>		polar white (RAL 9010) velvet	JZ-038.001 (50 x 50, matt)	UN990194	1109 60 79	12.80/1	
<b>K. 1</b>		polar white (RAL 9010) glossy	JZ-038.000 (50 x 50, glossy)	UN990170	1108 71 09	12.80/1	
<b>S. 1</b>		white (RAL 1013) glossy	JZ-038.110 (55 x 55, glossy)	UN990182	not required	16.20/1	
<b>Arsys</b>		white (RAL 1013) glossy	JZ-038.010 (50 x 50, glossy)	UN990178	1108 01 02	12.80/1	
<p>(H / C switch)</p>		RTBSU-401.065#00 RTBSU-401.265#00	<b>S. 1 / B. 3 / B. 7</b>	polar white (RAL 9010) glossy	JZ-037.100 (55 x 55, glossy)	UN990175	not required
	<b>S. 1 / B. 3 / B. 7</b>	polar white (RAL 9010) matt	JZ-037.101 (55 x 55, matt)	UN990199	not required	16.20/1	
	<b>Arsys</b>	polar white (RAL 9010) glossy	JZ-037.000 (50 x 50, glossy)	UN990171	1108 01 69	12.80/1	
	<b>Q. 1 / Q. 3</b>	polar white (RAL 9010) velvet	JZ-037.001 (50 x 50, matt)	UN990195	1109 60 79	12.80/1	
	<b>K. 1</b>	polar white (RAL 9010) glossy	JZ-037.000 (50 x 50, glossy)	UN990171	1108 71 09	12.80/1	
	<b>S. 1</b>	white (RAL 1013) glossy	JZ-037.110 (55 x 55, glossy)	UN990183	not required	16.20/1	
	<b>Arsys</b>	white (RAL 1013) glossy	JZ-037.010 (50 x 50, glossy)	UN990179	1108 01 02	12.80/1	
	<p>(3-way switch, LED)</p>	RTBSU-401.075#00	<b>S. 1 / B. 3 / B. 7</b>	polar white (RAL 9010) glossy	JZ-036.100 (55 x 55, glossy)	UN990176	not required
<b>S. 1 / B. 3 / B. 7</b>		polar white (RAL 9010) matt	JZ-036.101 (55 x 55, matt)	UN990200	not required	16.60/1	
<b>Arsys</b>		polar white (RAL 9010) glossy	JZ-036.000 (50 x 50, glossy)	UN990172	1108 01 69	13.20/1	
<b>Q. 1 / Q. 3</b>		polar white (RAL 9010) velvet	JZ-036.001 (50 x 50, matt)	UN990196	1109 60 79	13.20/1	
<b>K. 1</b>		polar white (RAL 9010) glossy	JZ-036.000 (50 x 50, glossy)	UN990172	1108 71 09	13.20/1	
<b>S. 1</b>		white (RAL 1013) glossy	JZ-036.110 (55 x 55, glossy)	UN990184	not required	16.60/1	
<b>Arsys</b>		white (RAL 1013) glossy	JZ-036.010 (50 x 50, glossy)	UN990180	1108 01 02	13.20/1	

\* ) must be ordered from switch manufacturer or electronics wholesaler



# PRODUCT FINDER ALRE COVER SETS

## FOR SWITCH RANGES FROM BUSCH-JAEGER

### INTEGRATION EXAMPLES



RTBSU – in Reflex SI



RTBSU – in Busch-balance SI







RTBSU – in future linear



RTBSU – in solo



RTBSU – in alpha nea

TYPE ALRE	BUSCH-JAEGER RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG		
 <p>Standard (without switch)</p>	RTBSU-401.000#00 RTBSU-401.002#00 RTBSU-401.010#00 RTBSU-401.086#00 RTBSU-401.202#00 RTBSU-401.210#00	<b>Reflex SI / SI Linear</b>	alpine white (RAL 9010) glossy	JZ-001.200 / BJ	G9990490	not required	12.20 / I	
	<b>Busch-balance SI</b>	alpine white (RAL 9010) glossy	JZ-001.100 (55 x 55, glossy)	UN990050	not required	15.00 / I		
	<b>impuls</b>	alpine white (RAL 9010) glossy	JZ-001.000 (50 x 50, glossy)	UN990035	1746 / 10-74	12.20 / I		
	<b>future linear / solo / axcent / carat</b>	studio white (RAL 9016) glossy	JZ-001.320 / BJ	G9990493	not required	16.60 / I		
	<b>future linear</b>	studio white (RAL 9016) matt	JZ-001.021 (50 x 50, matt)	UN990100	1746 / 10-884	14.20 / I		
	<b>alpha nea</b>	studio white (RAL 9016) glossy	JZ-001.020 (50 x 50, glossy)	UN990071	1746 / 10-24G	14.20 / I		
	<b>alpha nea</b>	studio white (RAL 9016) matt	JZ-001.021 (50 x 50, matt)	UN990100	1746 / 10-24	14.20 / I		
	<b>Duro 2000 SI / SI Linear</b>	white (RAL 1013) glossy	JZ-001.210 / BJ	G9990491	not required	12.20 / I		
	<b>future linear / solo / carat</b>	ivory white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	1746 / 10-82	12.20 / I		
	<b>alpha nea</b>	ivory white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	1746 / 10-22G	12.20 / I		
	<b>impuls</b>	ivory white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	1746 / 10-72	12.20 / I		
	 <p>(LED)</p>	RTBSU-401.034#00	<b>Busch-balance SI</b>	alpine white (RAL 9010) glossy	JZ-016.100 (50 x 55 glossy)	UN990140	not required	16.20 / I
		<b>impuls</b>	alpine white (RAL 9010) glossy	JZ-016.000 (50 x 50 glossy)	UN990139	1746 / 10-74	12.80 / I	
 <p>(ON / OFF switch, LED)</p>	RTBSU-401.062#00 RTBSU-401.262#00	<b>Reflex SI / SI Linear</b>	alpine white (RAL 9010) glossy	JZ-035.200 / BJ	G9990499	not required	13.20 / I	
	<b>Busch-balance SI</b>	alpine white (RAL 9010) glossy	JZ-035.100 (55 x 55, glossy)	UN990173	not required	16.60 / I		
	<b>impuls</b>	alpine white (RAL 9010) glossy	JZ-035.000 (50 x 50, glossy)	UN990169	1746 / 10-74	13.20 / I		
	<b>future linear / solo / axcent / carat</b>	studio white (RAL 9016) glossy	JZ-035.020 (50 x 50, glossy)	UN990185	1746 / 10-84	15.40 / I		
	<b>future linear</b>	studio white (RAL 9016) matt	JZ-035.021 (50 x 50, matt)	UN990201	1746 / 10-884	15.40 / I		
	<b>alpha nea</b>	studio white (RAL 9016) glossy	JZ-035.020 (50 x 50, glossy)	UN990185	1746 / 10-24G	15.40 / I		
	<b>alpha nea</b>	studio white (RAL 9016) matt	JZ-035.021 (50 x 50, matt)	UN990201	1746 / 10-24	15.40 / I		
	<b>Duro 2000 SI / SI Linear</b>	white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	1746-212-101	13.20 / I		
	<b>future linear / solo / carat</b>	ivory white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	1746 / 10-82	13.20 / I		
	<b>alpha nea</b>	ivory white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	1746 / 10-22G	13.20 / I		
	<b>impuls</b>	ivory white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	1746 / 10-72	13.20 / I		
	 <p>(Switch H / OFF / C)</p>	RTBSU-401.063#00	<b>Reflex SI / SI Linear</b>	alpine white (RAL 9010) glossy	JZ-038.000 (50 x 50, glossy)	UN990170	1746-214-101	12.80 / I
		<b>Busch-balance SI</b>	alpine white (RAL 9010) glossy	JZ-038.100 (55 x 55, glossy)	UN990174	not required	16.20 / I	
<b>impuls</b>		alpine white (RAL 9010) glossy	JZ-038.000 (50 x 50, glossy)	UN990170	1746 / 10-74	12.80 / I		
<b>future linear / solo / axcent / carat</b>		studio white (RAL 9016) glossy	JZ-038.020 (50 x 50, glossy)	UN990186	1746 / 10-84	14.80 / I		
<b>future linear</b>		studio white (RAL 9016) matt	JZ-038.021 (50 x 50, matt)	UN990202	1746 / 10-884	14.80 / I		
<b>alpha nea</b>		studio white (RAL 9016) glossy	JZ-038.020 (50 x 50, glossy)	UN990186	1746 / 10-24G	14.80 / I		
<b>alpha nea</b>		studio white (RAL 9016) matt	JZ-038.021 (50 x 50, matt)	UN990202	1746 / 10-24	14.80 / I		
<b>Duro 2000 SI / SI Linear</b>		white (RAL 1013) glossy	JZ-038.010 (50 x 50, glossy)	UN990178	1746-212-101	12.80 / I		
<b>future linear / solo / carat</b>		ivory white (RAL 1013) glossy	JZ-038.010 (50 x 50, glossy)	UN990178	1746 / 10-82	12.80 / I		
<b>alpha nea</b>		ivory white (RAL 1013) glossy	JZ-038.010 (50 x 50, glossy)	UN990178	1746 / 10-22G	12.80 / I		
<b>impuls</b>		ivory white (RAL 1013) glossy	JZ-038.010 (50 x 50, glossy)	UN990178	1746 / 10-72	12.80 / I		



# PRODUCT FINDER ALRE COVER SETS

## FOR SWITCH RANGES FROM BUSCH-JAEGER

### INTEGRATION EXAMPLES



RTBSU – in Reflex SI



RTBSU – in Busch-balance SI





RTBSU – in future linear



RTBSU – in solo



RTBSU – in alpha nea

TYPE ALRE	BUSCH-JAEGER RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG		
 (H/C switch)	RTBSU-401.065#00	<b>Reflex SI/ SI Linear</b>	alpine white (RAL 9010) glossy	JZ-037.000 (50 x 50, glossy)	UN990171	1746-214-101	12.80/1	
	RTBSU-401.265#00	<b>Busch-balance SI</b>	alpine white (RAL 9010) glossy	JZ-037.100 (55 x 55, glossy)	UN990175	not required	16.20/1	
		<b>impuls</b>	alpine white (RAL 9010) glossy	JZ-037.000 (50 x 50, glossy)	UN990171	1746/10-74	12.80/1	
		<b>future linear / solo / axcent / carat</b>	studio white (RAL 9016) glossy	JZ-037.020 (50 x 50, glossy)	UN990187	1746/10-84	14.80/1	
		<b>future linear</b>	studio white (RAL 9016) matt	JZ-037.021 (50 x 50, matt)	UN990203	1746/10-884	14.80/1	
		<b>alpha nea</b>	studio white (RAL 9016) glossy	JZ-037.020 (50 x 50, glossy)	UN990187	1746/10-24G	14.80/1	
		<b>alpha nea</b>	studio white (RAL 9016) matt	JZ-037.021 (50 x 50, matt)	UN990203	1746/10-24	14.80/1	
		<b>Duro 2000 SI/ SI Linear</b>	white (RAL 1013) glossy	JZ-037.010 (50 x 50, glossy)	UN990179	1746-212-101	12.80/1	
		<b>future linear / solo / carat</b>	ivory white (RAL 1013) glossy	JZ-037.010 (50 x 50, glossy)	UN990179	1746/10-82	12.80/1	
		<b>alpha nea</b>	ivory white (RAL 1013) glossy	JZ-037.010 (50 x 50, glossy)	UN990179	1746/10-22G	12.80/1	
		<b>impuls</b>	ivory white (RAL 1013) glossy	JZ-037.010 (50 x 50, glossy)	UN990179	1746/10-72	12.80/1	
	 (3-way switch, LED)	RTBSU-401.075#00	<b>Reflex SI/ SI Linear</b>	alpine white (RAL 9010) glossy	JZ-036.000 (50 x 50, glossy)	UN990172	1746-214-101	13.20/1
			<b>Busch-balance SI</b>	alpine white (RAL 9010) glossy	JZ-036.100 (55 x 55, glossy)	UN990176	not required	16.60/1
		<b>impuls</b>	alpine white (RAL 9010) glossy	JZ-036.000 (50 x 50, glossy)	UN990172	1746/10-74	13.20/1	
		<b>future linear / solo / axcent / carat</b>	studio white (RAL 9016) glossy	JZ-036.020 (50 x 50, glossy)	UN990188	1746/10-84	15.40/1	
		<b>future linear</b>	studio white (RAL 9016) matt	JZ-036.021 (50 x 50, matt)	UN990204	1746/10-884	15.40/1	
		<b>alpha nea</b>	studio white (RAL 9016) glossy	JZ-036.020 (50 x 50, glossy)	UN990188	1746/10-24G	15.40/1	
		<b>alpha nea</b>	studio white (RAL 9016) matt	JZ-036.021 (50 x 50, matt)	UN990204	1746/10-24	15.40/1	
		<b>Duro 2000 SI/ SI Linear</b>	white (RAL 1013) glossy	JZ-036.010 (50 x 50, glossy)	UN990180	1746-212-101	13.20/1	
		<b>future linear / solo / carat</b>	ivory white (RAL 1013) glossy	JZ-036.010 (50 x 50, glossy)	UN990180	1746/10-82	13.20/1	
		<b>alpha nea</b>	ivory white (RAL 1013) glossy	JZ-036.010 (50 x 50, glossy)	UN990180	1746/10-22G	13.20/1	
		<b>impuls</b>	ivory white (RAL 1013) glossy	JZ-036.010 (50 x 50, glossy)	UN990180	1746/10-72	13.20/1	

\*) must be ordered from switch manufacturer or electronics wholesaler

For BJ future / solo there are also 55 x 55 insert frames (for use with alre 55 x 55 cover set) – BJ item no. 1747-84 (studio white) and 1784-82 (ivory white)

Note: Busch-Jaeger central disc cannot be used with alre RTBSU.





# PRODUCT FINDER ALRE COVER SETS

## FOR SWITCH RANGES FROM ELSO

### INTEGRATION EXAMPLES



RTBSU – in Joy



RTBSU – in Fashion



RTBSU – in Riva



RTBSU – in Scala

TYPE ALRE	ELSO RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG
RTBSU-401.000#00	Joy	pure white (RAL 9010) glossy	JZ-001.100 (55 x 55, glossy)	UN990050	not required	15.00/1
RTBSU-401.002#00	Joy	pearl white (RAL 1013) glossy	JZ-001.110 (55 x 55, glossy)	UN990060	not required	15.00/1
RTBSU-401.010#00	Fashion/Riva/Scala	pure white (RAL 9010) glossy	JZ-001.000 (50 x 50, glossy)	UN990035	203084	12.20/1
RTBSU-401.086#00	Fashion/Riva/Scala	pearl white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	203080	12.20/1
RTBSU-401.202#00						
RTBSU-401.210#00						
						
Standard (without switch)						
RTBSU-401.034#00	Joy	pure white (RAL 9010) glossy	JZ-016.100 (50 x 55 glossy)	UN990140	not required	16.20/1
	Fashion/Riva/Scala	pure white (RAL 9010) glossy	JZ-016.000 (50 x 50 glossy)	UN990139	203084	12.80/1
(LED)						
RTBSU-401.062#00	Joy	pure white (RAL 9010) glossy	JZ-035.100 (55 x 55, glossy)	UN990173	not required	16.60/1
RTBSU-401.262#00	Joy	pearl white (RAL 1013) glossy	JZ-035.110 (55 x 55, glossy)	UN990181	not required	16.60/1
	Fashion/Riva/Scala	pure white (RAL 9010) glossy	JZ-035.000 (50 x 50, glossy)	UN990169	203084	13.20/1
(ON/OFF switch, LED)	Fashion/Riva/Scala	pearl white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	203080	13.20/1
RTBSU-401.063#00	Joy	pure white (RAL 9010) glossy	JZ-038.100 (55 x 55, glossy)	UN990174	not required	16.20/1
	Joy	pearl white (RAL 1013) glossy	JZ-038.110 (55 x 55, glossy)	UN990182	not required	16.20/1
(Switch H/OFF/C)	Fashion/Riva/Scala	pure white (RAL 9010) glossy	JZ-038.000 (50 x 50, glossy)	UN990170	203084	12.80/1
	Fashion/Riva/Scala	pearl white (RAL 1013) glossy	JZ-038.010 (50 x 50, glossy)	UN990178	203080	12.80/1
RTBSU-401.065#00	Joy	pure white (RAL 9010) glossy	JZ-037.100 (55 x 55, glossy)	UN990175	not required	16.20/1
RTBSU-401.265#00	Joy	pearl white (RAL 1013) glossy	JZ-037.110 (55 x 55, glossy)	UN990183	not required	16.20/1
	Fashion/Riva/Scala	pure white (RAL 9010) glossy	JZ-037.000 (50 x 50, glossy)	UN990171	203084	12.80/1
(H/C switch)	Fashion/Riva/Scala	pearl white (RAL 1013) glossy	JZ-037.010 (50 x 50, glossy)	UN990179	203080	12.80/1
RTBSU-401.075#00	Joy	pure white (RAL 9010) glossy	JZ-036.100 (55 x 55, glossy)	UN990176	not required	16.60/1
	Joy	pearl white (RAL 1013) glossy	JZ-036.110 (55 x 55, glossy)	UN990184	not required	16.60/1
(3-way switch, LED)	Fashion/Riva/Scala	pure white (RAL 9010) glossy	JZ-036.000 (50 x 50, glossy)	UN990172	203084	13.20/1
	Fashion/Riva/Scala	pearl white (RAL 1013) glossy	JZ-036.010 (50 x 50, glossy)	UN990180	203080	13.20/1

\*) must be ordered from switch manufacturer or electronics wholesaler



# PRODUCT FINDER ALRE COVER SETS

## FOR SWITCH RANGES FROM GIRA

### INTEGRATION EXAMPLES



RTBSU – in Standard 55



RTBSU – in E2



RTBSU – in Event



RTBSU – in surface switch



RTBSU – in E22

TYPE ALRE	GIRA RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG	
<p>Standard (without switch)</p>	RTBSU-401.000#00	Standard 55 / E2 / E22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-001.100 (55 x 55, glossy)	UN990050	not required	15.00/1
	RTBSU-401.002#00	Standard 55 / E2 / E22 / Event / Esprit	pure white (RAL 9010) matt	JZ-001.101 (55 x 55, matt)	UN990055	not required	15.00/1
	RTBSU-401.010#00	Surface switch <b>NEW</b>	pure white (RAL 9010) glossy	JZ-001.400 (70 x 70, glossy)	UN990141	not required	15.00/1
	RTBSU-401.086#00	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-001.110 (55 x 55, glossy)	UN990060	not required	15.00/1
	RTBSU-401.202#00	System 55	anthracite / matt	JZ-001.141 / GI	UN990111	not required	19.60/1
<p>(LED)</p>	RTBSU-401.034#00	Standard 55 / E2 / E3 / E22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-016.100 (50 x 55 glossy)	UN990140	not required	16.20/1
	Surface switch <b>NEW</b>	pure white (RAL 9010) glossy	JZ-016.400 (70 x 70, glossy)	UN990142	not required	16.20/1	
<p>(ON/OFF switch, LED)</p>	RTBSU-401.062#00	Standard 55 / E2 / E22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-035.100 (55 x 55, glossy)	UN990173	not required	16.60/1
	RTBSU-401.262#00	Standard 55 / E2 / E22 / Event / Esprit	pure white (RAL 9010) matt	JZ-035.101 (55 x 55, matt)	UN990197	not required	16.60/1
	Surface switch <b>NEW</b>	pure white (RAL 9010) glossy	JZ-035.400 (70 x 70, glossy)	UN990143	not required	16.60/1	
	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-035.110 (55 x 55, glossy)	UN990181	not required	16.60/1	
<p>(Switch H / OFF / C)</p>	RTBSU-401.063#00	Standard 55 / E2 / E22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-038.100 (55 x 55, glossy)	UN990174	not required	16.20/1
	Standard 55 / E2 / E22 / Event / Esprit	pure white (RAL 9010) matt	JZ-038.101 (55 x 55, matt)	UN990198	not required	16.20/1	
	surface switch	pure white (RAL 9010) glossy	JZ-038.000 (50 x 50, glossy)	UN990170	0282 112	12.80/1	
	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-038.110 (55 x 55, glossy)	UN990182	not required	16.20/1	
<p>(H / C switch)</p>	RTBSU-401.065#00	Standard 55 / E2 / E22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-037.100 (55 x 55, glossy)	UN990175	not required	16.20/1
	RTBSU-401.265#00	Standard 55 / E2 / E22 / Event / Esprit	pure white (RAL 9010) matt	JZ-037.101 (55 x 55, matt)	UN990199	not required	16.20/1
	Surface switch <b>NEW</b>	pure white (RAL 9010) glossy	JZ-037.400 (70 x 70, glossy)	UN990144	not required	16.20/1	
	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-037.110 (55 x 55, glossy)	UN990183	not required	16.20/1	
<p>(3-way switch, LED)</p>	RTBSU-401.075#00	Standard 55 / E2 / E22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-036.100 (55 x 55, glossy)	UN990176	not required	16.60/1
	Standard 55 / E2 / E22 / Event / Esprit	pure white (RAL 9010) matt	JZ-036.101 (55 x 55, matt)	UN990200	not required	16.60/1	
	surface switch	pure white (RAL 9010) glossy	JZ-036.000 (50 x 50, glossy)	UN990172	0282 40	13.20/1	
	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-036.110 (55 x 55, glossy)	UN990184	not required	16.60/1	

\*) must be ordered from switch manufacturer or electronics wholesaler

\*\*\*) for GIRA surface switches, there are also 55 x 55 insert frames (for the use of alre 55 x 55 cover set) – GIRA item no. 0289 112 (pure white) and 0289 111 (cream white)



# PRODUCT FINDER ALRE COVER SETS

## FOR SWITCH RANGES FROM JUNG

### INTEGRATION EXAMPLES



RTBSU – in AS 500



RTBSU – in A 500



RTBSU – in A plus



RTBSU – in A creation



RTBSU – in LS-design

NEW

TYPE ALRE	JUNG RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG	
<p>Standard (without switch)</p>	RTBSU-401.000#00 RTBSU-401.002#00 RTBSU-401.010#00 RTBSU-401.086#00 RTBSU-401.202#00 RTBSU-401.210#00	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-001.100 (55 x 55, glossy)	UN990050	not required	15.00/1
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-001.000 (50 x 50, glossy)	UN990035	CD 590 Z WW	12.20/1	
	LS 990 / LS design / LS plus	alpine white (RAL 9010) glossy	JZ-001.400 (70 x 70, glossy)	UN990141	not required	15.00/1	
	AS 500	white (RAL 1013) glossy	JZ-001.110 (55 x 55, glossy)	UN990060	not required	15.00/1	
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	590 Z	12.20/1	
	LS 990 / LS design / LS plus	white (RAL 1013) glossy	JZ-001.410 (70 x 70, glossy)	UN990145	not required	15.00/1	
	AS 550 / A flow	snow white matt	JZ-001.101 (55 x 55, matt)	UN990055	not required	15.00/1	
<p>(LED)</p>	RTBSU-401.034#00	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-016.100 (55 x 55, glossy)	UN990140	not required	16.20/1
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-016.000 (50 x 50, glossy)	UN990139	CD 590 Z WW	12.80/1	
	LS 990 / LS design / LS plus	alpine white (RAL 9010) glossy	JZ-016.400 (70 x 70, glossy)	UN990142	not required	16.20/1	
<p>(ON / OFF switch, LED)</p>	RTBSU-401.062#00 RTBSU-401.262#00	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-035.100 (55 x 55, glossy)	UN990173	not required	16.60/1
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-035.000 (50 x 50, glossy)	UN990169	CD 590 Z WW	13.20/1	
	LS 990 / LS design / LS plus	alpine white (RAL 9010) glossy	JZ-035.400 (70 x 70, glossy)	UN990143	not required	16.60/1	
	AS 500	white (RAL 1013) glossy	JZ-035.110 (55 x 55, glossy)	UN990181	not required	16.60/1	
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	590 Z	13.20/1	
	LS 990 / LS design / LS plus	white (RAL 1013) glossy	JZ-035.410 (70 x 70, glossy)	UN990147	not required	16.60/1	
	AS 550 / A flow	snow white matt	JZ-035.101 (55 x 55, matt)	UN990197	not required	16.60/1	
<p>(Switch H / OFF / C)</p>	RTBSU-401.063#00	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-038.100 (55 x 55, glossy)	UN990174	not required	16.20/1
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-038.000 (50 x 50, glossy)	UN990170	CD 590 Z WW	12.80/1	
	LS 990 / LS design / LS plus	alpine white (RAL 9010) glossy	JZ-038.000 (50 x 50, glossy)	UN990170	LS 961 Z WW**	12.80/1	
	AS 500	white (RAL 1013) glossy	JZ-038.110 (55 x 55, glossy)	UN990182	not required	16.20/1	
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-038.010 (50 x 50, glossy)	UN990178	590 Z	12.80/1	
	LS 990 / LS design / LS plus	white (RAL 1013) glossy	JZ-038.010 (50 x 50, glossy)	UN990178	LS 961 Z**	12.80/1	
	AS 550 / A flow	snow white matt	JZ-038.101 (55 x 55, matt)	UN990198	not required	16.20/1	
<p>(H / C switch)</p>	RTBSU-401.065#00 RTBSU-401.265#00	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-037.100 (55 x 55, glossy)	UN990175	not required	16.20/1
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-037.000 (50 x 50, glossy)	UN990171	CD 590 Z WW	12.80/1	
	LS 990 / LS design / LS plus	alpine white (RAL 9010) glossy	JZ-037.400 (70 x 70, glossy)	UN990144	not required	16.20/1	
	AS 500	white (RAL 1013) glossy	JZ-037.110 (55 x 55, glossy)	UN990183	not required	16.20/1	
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-037.010 (50 x 50, glossy)	UN990179	590 Z	12.80/1	
	LS 990 / LS design / LS plus	white (RAL 1013) glossy	JZ-037.410 (70 x 70, glossy)	UN990148	not required	16.20/1	
	AS 550 / A flow	snow white matt	JZ-037.101 (55 x 55, matt)	UN990199	not required	16.20/1	
<p>(3-way switch, LED)</p>	RTBSU-401.075#00	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-036.100 (55 x 55, glossy)	UN990176	not required	16.60/1
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-036.000 (50 x 50, glossy)	UN990172	CD 590 Z WW	13.20/1	
	LS 990 / LS design / LS plus	alpine white (RAL 9010) glossy	JZ-036.000 (50 x 50, glossy)	UN990172	LS 961 Z WW**	13.20/1	
	AS 500	white (RAL 1013) glossy	JZ-036.110 (55 x 55, glossy)	UN990184	not required	16.60/1	
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-036.010 (50 x 50, glossy)	UN990180	590 Z	13.20/1	
	LS 990 / LS design / LS plus	white (RAL 1013) glossy	JZ-036.010 (50 x 50, glossy)	UN990180	LS 961 Z**	13.20/1	
	AS 550 / A flow	snow white matt	JZ-036.101 (55 x 55, matt)	UN990200	not required	16.60/1	

\*) must be ordered from switch manufacturer or electronics wholesaler

\*\*\* if necessary, the manufacturer JUNG will change the colour of alpine white from RAL 9010 to RAL 9016



# PRODUCT FINDER ALRE COVER SETS

## FOR SWITCH RANGES FROM MERTEN

### INTEGRATION EXAMPLES



RTBSU – in 1-M



RTBSU – in M-Smart









RTBSU – in M-Plan



RTBSU – in Artec



RTBSU – in Antik

TYPE ALRE	MERTEN RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG	
 Standard (without switch)	RTBSU-401.000#00 RTBSU-401.002#00 RTBSU-401.010#00 RTBSU-401.086#00 RTBSU-401.202#00 RTBSU-401.210#00	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-001.100 (55 x 55, glossy)	UN990050	not required	15.00/1
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-001.101 (55 x 55, matt)	UN990055	not required	15.00/1	
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-001.120 (55 x 55, glossy)	UN990086	not required	17.10/1	
	D-Life <b>NEW</b>	lotus white (RAL 9016) glossy	JZ-001.420 (70 x 70, glossy)	UN990149	not required	17.10/1	
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-001.000 (50 x 50, glossy)	UN990035	5160 99	12.20/1	
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-001.110 (55 x 55, glossy)	UN990060	not required	15.00/1	
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	5160 94	12.20/1	
 (LED)	RTBSU-401.034#00	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-016.100 (55 x 55, glossy)	UN990140	not required	16.20/1
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-016.000 (50 x 50, glossy)	UN990139	5160 99	12.80/1	
	D-Life <b>NEW</b>	lotus white (RAL 9016) glossy	JZ-016.420 (70 x 70, glossy)	UN990150	not required	18.20/1	
 (ON/OFF switch, LED)	RTBSU-401.062#00 RTBSU-401.262#00	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-035.100 (55 x 55, glossy)	UN990173	not required	16.60/1
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-035.101 (55 x 55, matt)	UN990197	not required	16.60/1	
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-035.120 (55 x 55, glossy)	UN990189	not required	18.60/1	
	D-Life <b>NEW</b>	lotus white (RAL 9016) glossy	JZ-035.420 (70 x 70, glossy)	UN990151	not required	18.60/1	
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-035.000 (50 x 50, glossy)	UN990169	5160 99	13.20/1	
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-035.110 (55 x 55, glossy)	UN990181	not required	16.60/1	
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	5160 94	13.20/1	
 (Switch H/ OFF / C)	RTBSU-401.063#00	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-038.100 (55 x 55, glossy)	UN990174	not required	16.20/1
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-038.101 (55 x 55, matt)	UN990198	not required	16.20/1	
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-038.120 (55 x 55, glossy)	UN990190	not required	18.10/1	
	D-Life	lotus white (RAL 9016) glossy	JZ-038.020 (50 x 50, glossy)	UN990186	MEG4500-6035	14.80/1	
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-038.000 (50 x 50, glossy)	UN990170	5160 99	12.80/1	
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-038.110 (55 x 55, glossy)	UN990182	not required	16.20/1	
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-038.010 (50 x 50, glossy)	UN990178	5160 94	12.80/1	
 (H/C switch)	RTBSU-401.065#00 RTBSU-401.265#00	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-037.100 (55 x 55, glossy)	UN990175	not required	16.20/1
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-037.101 (55 x 55, matt)	UN990199	not required	16.20/1	
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-037.120 (55 x 55, glossy)	UN990191	not required	18.10/1	
	D-Life <b>NEW</b>	lotus white (RAL 9016) glossy	JZ-037.420 (70 x 70, glossy)	UN990150	not required	18.10/1	
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-037.000 (50 x 50, glossy)	UN990171	5160 99	12.80/1	
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-037.110 (55 x 55, glossy)	UN990183	not required	16.20/1	
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-037.010 (50 x 50, glossy)	UN990179	5160 94	12.80/1	
 (3-way switch, LED)	RTBSU-401.075#00	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-036.100 (55 x 55, glossy)	UN990176	not required	16.60/1
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-036.101 (55 x 55, matt)	UN990200	not required	16.60/1	
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-036.120 (55 x 55, glossy)	UN990192	not required	18.60/1	
	D-Life	lotus white (RAL 9016) glossy	JZ-036.020 (50 x 50, glossy)	UN990188	MEG4500-6035	15.40/1	
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-036.000 (50 x 50, glossy)	UN990172	5160 99	13.20/1	
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-036.110 (55 x 55, glossy)	UN990184	not required	16.60/1	
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-036.010 (50 x 50, glossy)	UN990180	5160 94	13.20/1	

\*) must be ordered from switch manufacturer or electronics wholesaler  
 Note: Merten central plates cannot be used with alre RTBSU.





# CONTROLLERS FOR ALL SWITCH RANGES

Integration examples in switch ranges with or without insert frame



**ADAPTATION EXAMPLE  
BERKER (S.1)**



**ADAPTATION EXAMPLE  
JUNG (AS 500)**



**ADAPTATION EXAMPLE  
BUSCH-JAEGER  
(REFLEX SI LINEAR)**



**ADAPTATION EXAMPLE  
BERKER B.3 ALUMINIUM**



**ADAPTATION EXAMPLE  
GIRA (SURFACE SWITCH)**



**ADAPTATION EXAMPLE  
BERKER (K.1)**



## Room temperature controller ELECTRONIC HTRRUT

## Flush-mounted installation – Design Berlin flush-mounted

## TECHNICAL DATA

<b>Design:</b>	Berlin flush-mounted
<b>Housing material:</b>	PC plastic
<b>Ambient temperature:</b>	0 to 40 °C
<b>Storage temperature:</b>	–20 to +70 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	pluggable screw terminals
<b>Mounting / attachment:</b>	in flush-mounted socket – can be adapted to many surface switch ranges (deep flush-mounted socket recommended)
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	II, if properly mounted
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Average power consumption:</b>	< 0.5 W
<b>Maximum switching current:</b>	1 A
<b>Switching element:</b>	relay
<b>Switching contact:</b>	NO contact
<b>Output signal:</b>	switching, 230 VAC, 50 Hz
<b>Sensor:</b>	NTC, internal
<b>Control range:</b>	17 to 26 °C
<b>Setting range:</b>	5 to 26 °C
<b>Hysteresis:</b>	< approx. 0.5 K at a temperature change of max. 4 K/h

## APPLICATION

temperature control and monitoring in offices, homes and hotels, can be connected directly to the valve actuators for hot water heating systems.

Valve actuator: normally closed. Up to max. 10 actuators for valves can be connected.

The HTRRut-210.A00#55 controller fits perfectly into many switch ranges.



## TYPE/IMAGE

## ITEM NO.

## FEATURES

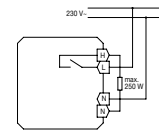
## CIRCUIT DIAGRAM

## EURO/PG

HTRRut-210.A00#55

UA120000

**General features:** Controller with 55 x 55 mm cover, pure white (similar to RAL 9010), glossy



140.30 / I



HTRRut-210.A00#31

UA120001

as HTRRut-210.A00#55 but complete device with alre frame 'Berlin', pure white (similar to RAL 9010), glossy

143.60 / I



## ACCESSORIES

## ITEM NO.

## FEATURES

## EURO/PG

JZ-090.100

VV000048

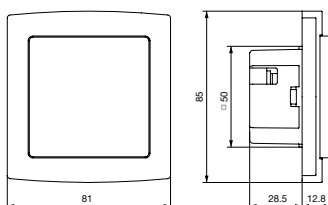
**General features:** alre frame 'Berlin' (neutral) for all flush-mounted controllers with 55 x 55 mm cover  
**Surface finish:** glossy  
**Colour:** pure white, similar to RAL 9010  
**Material:** PC plastic

4.40 / I

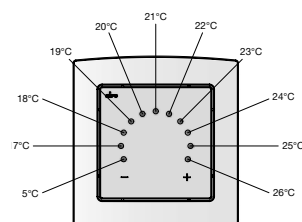


## ILLUSTRATIONS

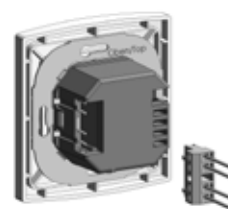
## Dimension schematic



## Temperature scale



## pluggable screw-type terminals



## ADAPTATION OF ALRE FLUSH-MOUNTED CONTROLLERS

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)
BERKER	S.1	polar white (glossy)
BERKER	B.3	aluminium / polar white (glossy)
BERKER	B.7	glass / polar white (glossy)
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)
Elsco	Joy	pure white (glossy)
GIRA	surface switch	pure white (glossy)
GIRA (System 55)	Standard / E2 / E3	pure white (glossy)
GIRA (System 55)	E22	pure white (glossy)
GIRA (System 55)	Event	pure white (glossy) + opaque...
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium...
JUNG	A 500 / A 550 / AS 500 / A plus / A flow	alpine white (glossy)
JUNG	LS 990	alpine white (glossy)
JUNG	LS plus	alpine white (glass)
JUNG	A creation	alpine white (glossy)
JUNG	LS Design	alpine white (glossy)
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)

**NOTE:** Most switch ranges are designed in the colour 'similar to RAL 9010', although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt / glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

All information regarding switch manufacturers' product lines and item numbers was last updated in 12/2022 | No liability is assumed for the information provided. | TECHNICAL DATA subject to change.





# ROOM TEMPERATURE OR FLOOR TEMPERATURE CONTROLLER ELECTRONIC WITH CLOCK HTRRUU

## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

### TECHNICAL DATA

<b>Design:</b>	Berlin flush-mounted
<b>Housing material:</b>	PC, PMMA, ABS plastic
<b>Operating voltage:</b>	230 V AC, 50 Hz
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	pluggable screw terminals
<b>Mounting / attachment:</b>	in flush-mounted socket, can be adapted to fit virtually any switch range (deep flush-mounted socket recommended) see adaptation list page 99
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	II, if properly mounted
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Max. switching current:</b>	10 (2) A
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	230 V AC, 50 Hz
<b>Switching power:</b>	2300 W
<b>Switching element:</b>	relay
<b>Switching contact:</b>	NO contact
<b>Output signal:</b>	230 V AC, 50 Hz
<b>Sensor:</b>	NTC internal, optional external floor sensor see 'Accessories', optional external room sensor see 'Sensor technology' 'Sensor 2'
<b>Sensor rupture and short-circuit protection:</b>	If the internal or external sensor is faulty or the external sensor is not connected to the functions room temperature controller with floor monitoring, floor temperature controller or room temperature controller with ext. sensor, emergency operation is triggered.
<b>Control function:</b>	heating
<b>Control range:</b>	5 to 30 °C (room) / 10 to 42 °C (floor)
<b>Setting range:</b>	The setting range varies, depending on the use of the controller as a room temperature controller (5 to 30 °C) or floor temperature controller (10 to 42 °C)
<b>Hysteresis:</b>	for room control < 1 K, for floor control < 1 K
<b>Display type:</b>	illuminated graphical display
<b>Display:</b>	setpoint, actual temperature / date, time; setpoint, actual temperature or date, time
<b>Accessories:</b>	terminal strips: VOOPL suitable valve actuators: ZB00A-010.1xx

### APPLICATION

Flush-mounted controller for time-dependent single room or floor temperature control for electrical and hot water heating systems (normally closed actuators). The device can be used as a room temperature controller with internal sensor or (in combination with an optional remote sensor) as a room temperature controller with floor monitoring or floor temperature controller. (Remote sensor is not a part of the scope of delivery)

This clock thermostat has a weekly timer with individually adjustable programs (factory setting: 'normal' daily sequences).

**Self-learning function:** Automatic adjustment of the controller to the start of the heating period. The goal is to achieve the comfort temperature at the time that has been set. The learning function is disabled upon delivery, but it can be enabled.

**Standby function:** This function disables the control; frost protection is still ensured.

**General features:**  
ECO function, adjustable ECO value; 'ECO' display; 'on / off' display; 'heating' display; digital actual value display; backlighting; standby mode with frost protection monitoring; child-safe features; load setting; power reserve (approx. 5 days); Actual value correction / measured value correction; learning function; valve protection; holiday setting; party setting; external setting; comfortable operation using touch-sensitive buttons; VDE-tested













Special colours as well as the colours anthracite and aluminium are available for projects upon request.



TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
HTRRUu 210.021#21 	UA060000	Scope of delivery: controller, 50 x 50 mm cover, <b>pure white</b> (similar to RAL 9010), <b>glossy, alre frame</b> 'Berlin'		222.40 / I
HTRRUu 210.021#21/7 	UN060011	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, 50 x 50 mm cover, <b>pure white</b> (similar to RAL 9010), <b>glossy, alre frame</b> 'Berlin', <b>external floor sensor</b> (HF-8 / 4-K2)		246.70 / I
HTRRUu 210.021#07 	UA060001	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, 50 x 50 mm cover <b>pure white</b> (similar to RAL 9010), <b>glossy, without frame</b>		218.20 / I







TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	UA060002	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, <b>50 x 50 mm cover pearl white</b> (similar to RAL 1013), <b>glossy</b> , without frame		218.20/I
	UA060003	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, <b>50 x 50 mm cover traffic/studio white</b> (similar to RAL 9016), <b>glossy</b> , without frame		218.20/I
	UA060006	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, cover <b>suitable for BUSCH JAEGER Reflex SI/SI Linear pure white</b> (similar to RAL 9010), <b>glossy</b> , without frame		219.90/I
	UA060004	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, <b>55 x 55 mm cover pure white</b> (similar to RAL 9010), <b>glossy</b> , without frame		219.90/I
	UA060020	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, <b>55 x 55 mm cover, pure white</b> (similar to RAL 9010), <b>mat</b> , without a frame		219.90/I
	UA060005	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, <b>55 x 55 mm cover pearl white</b> (similar to RAL 1013), <b>glossy</b> , without frame		219.90/I
	UA060014	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, <b>55 x 55 mm cover traffic/studio white</b> (similar to RAL 9016), <b>glossy</b> , without frame		219.90/I
ACCESSORIES	ITEM NO.	FEATURES		EURO/PG
	G8000370	<b>General features:</b> optional, external floor sensor <b>Ambient temperature:</b> -5 to +70 °C <b>Protection rating:</b> IP65 <b>Sensor:</b> NTC <b>Connecting cable:</b> 4 m, PVC		25.00/II
	G8000368	<b>General features:</b> optional, external floor sensor <b>Ambient temperature:</b> -5 to +70 °C <b>Protection rating:</b> IP65 <b>Sensor:</b> NTC <b>Connecting cable:</b> 6 m, PVC		27.80/II
	G9990180	<b>General features:</b> Heat conduction paste 2 ml; R > 1 TQ/cm, silicone-free <b>Ambient temperature:</b> -40 to +150 °C <b>Heat conductivity:</b> > 0.7 W/mK		7.20/II
	C1809515	<b>General features:</b> protective sleeve for screed mounting (for sleeve sensor HF Ø 7.7, for example, HF-8/4-K2 or HF-8/6-K2), copper		42.50/II
	VV000025	<b>General features:</b> alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50 x 50 mm cover <b>Design:</b> Berlin <b>Surface finish:</b> glossy <b>Colour:</b> Pure white, similar to RAL 9010 <b>Material:</b> PC plastic		4.40/I



# ROOM TEMPERATURE OR FLOOR TEMPERATURE CONTROLLER, ELECTRONIC, WITH CLOCK HTRRUU

## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

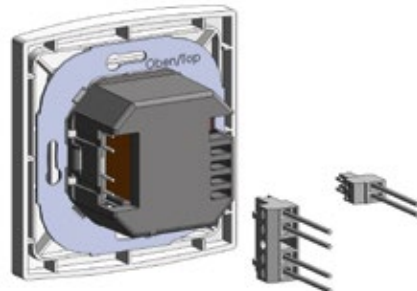
ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
	JZ-090.100	VW000048 <b>Features:</b> similar to JZ-090.900 but for all flush-mounted controllers in combination with 55 x 55 mm cover <b>Surface finish:</b> glossy <b>Colour:</b> pure white, similar to RAL 9010 <b>Material:</b> PC plastic	4.40/1
	JZ-090.910	VW000010 <b>General features:</b> alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50 x 50 mm cover <b>Design:</b> Berlin <b>Surface finish:</b> glossy <b>Colour:</b> pearl white, similar to RAL 1013 <b>Material:</b> PC plastic	4.40/1
	BTF2-C47-0000	SA140014 Surface-mounted 'ultra-thin' room temperature sensor for temperature measurement in residential and business premises (see also 'Sensor technology' section page 212)	28.30/III
	FUFC 47-0000	SN090198 Flush-mounted room temperature sensor for temperature measurement in residential and business premises (see also 'Sensor technology' section page 213)	35.90/III

### ILLUSTRATIONS

HTRRUu with alre frame 'Berlin'



Pluggable screw-type terminals



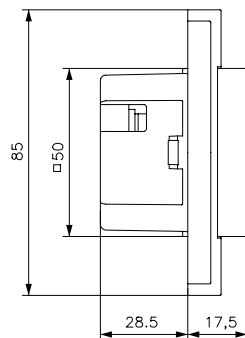
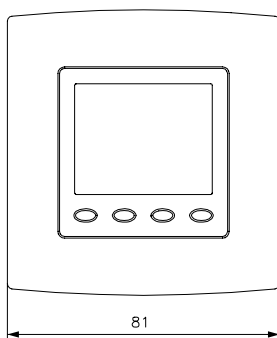
#### additional benefits:

- Pluggable screw-type terminals facilitate quick and easy assembly
- Illuminated, graphics-capable display
- Choice of 8 different external floor sensors (e.g., 2 kOhm – alre, 12 kOhm – OJ/AEG, 15 kOhm – DEVI, 33 kOhm – Eberle), meaning they are also ideal for retrofitting
- VDE mark
- Automatic adjustment to standard/daylight saving time
- Learn function
- Correction of measurement values
- Open window detection
- Configurable display content during installation, choice of various languages including German, English, French, Dutch, Polish, Spanish, Czech, Russian, Italian and Hungarian
- Limit setting for floor temperature
- Standby with frost protection
- Key lock
- Valve protection function
- Configurable control method (PI-PWM or 2-point control)
- Holiday and party function
- Power reserve
- 'Heating mode' indication (orange LED)
- Load setting for improved control

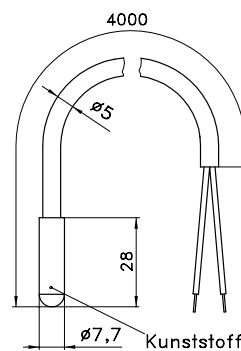
#### Factory setting:

- Holiday temperature 17 °C
- Setback temperature 17 °C
- Comfort temperature 20 °C
- Comfort times: Mon–Fri 5 am–9 pm / 4 pm–10 pm, Sat/Sun 6 am–10 pm
- Key lock disabled
- Automatic adjustment to summer/winter time enabled
- Valve and pump protection disabled
- Learning function disabled
- Display lighting (10 s)
- Heating load 0.1 kW
- 2-point control method
- External sensor
- 2 kOhm and max. floor temperature 42 °C (if configured as floor temperature controller)

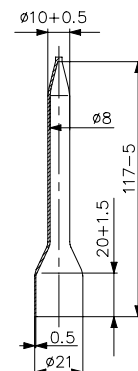
HTRRUu with alre frame 'Berlin'



HF-8/4-K2



THF





## ADAPTATION OF

### ALRE FLUSH-MOUNTED CONTROLLERS – HTRRUU 210.021

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION in switch range (55 x 55) possible with...	'50 x 50' adaptation possible with... (insert frame from switch manufacturer required)
BERKER	S.1	polar white (matt)	HTRRUu 210.021#56	not required
BERKER	S.1	polar white (glossy)	HTRRUu 210.021#55	not required
BERKER	Arsys	polar white (glossy)		HTRRUu 210.021#07 + (1108 01 69)
BERKER	B.3	aluminium / polar white (matt)	HTRRUu 210.021#56	not required
BERKER	B.3	aluminium / polar white (glossy)	HTRRUu 210.021#55	not required
BERKER	B.7	glass / polar white (matt)	HTRRUu 210.021#56	not required
BERKER	B.7	glass / polar white (glossy)	HTRRUu 210.021#55	not required
BERKER	K.1	polar white (glossy)		HTRRUu 210.021#07 + (1108 71 09)
BUSCH-JAEGER	Reflex SI / SI Linear	alpine white (glossy)	HTRRUu 210.021#28	not required
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)	HTRRUu 210.021#55	not required
BUSCH-JAEGER	impuls	alpine white (glossy)		HTRRUu 210.021#07 + (1746 / 10-74)
BUSCH-JAEGER	solo / future / axcent etc.	studio white – see RAL 9016 below		
Elso	Joy	pure white (glossy)	HTRRUu 210.021#55	not required
Elso	Fashion / Riva / Scala	pure white (glossy)		HTRRUu 210.021#07 + 203084
GIRA	surface switch	pure white (glossy)		HTRRUu 210.021#07 + (0282 112)
GIRA (System 55)	Standard / E2	pure white (semi-gloss)	HTRRUu 210.021#56	not required
GIRA (System 55)	Standard / E2 / E3	pure white (glossy)	HTRRUu 210.021#55	not required
GIRA (System 55)	E22	pure white (glossy)	HTRRUu 210.021#55	not required
GIRA (System 55)	Event	pure white (semi-gloss) + opaque...	HTRRUu 210.021#56	not required
GIRA (System 55)	Event	pure white (glossy) + opaque...	HTRRUu 210.021#55	not required
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium...	HTRRUu 210.021#56	not required
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium...	HTRRUu 210.021#55	not required
GIRA	S-Color	pure white (high-gloss)		HTRRUu 210.021#07 + (0282 40)
JUNG	CD 500 / CD plus	alpine white (glossy) **		HTRRUu 210.021#07 + (CD 590 Z WW)
JUNG	A 500 / AS 500 / A plus	alpine white (glossy) **	HTRRUu 210.021#55	not required
JUNG	LS 990	alpine white (glossy) **		HTRRUu 210.021#07 + (LS 961 Z WW)
JUNG	LS plus	alpine white (glass) **		HTRRUu 210.021#07 + (LS 961 Z WW)
JUNG	A creation	alpine white (glossy)	HTRRUu 210.021#55	not required
JUNG	LS Design	alpine white (glossy)		HTRRUu 210.021#07 + (LS 961 Z WW)
JUNG	AS 550 / A flow	snow white matt	HTRRUu-210.021#56	not required
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	HTRRUu 210.021#56	not required
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)	HTRRUu 210.021#55	not required
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)	HTRRUu 210.021#55	not required
MERTEN (Surface System)	Artec / Antik	polar white (glossy)		HTRRUu 210.021#07 + (5160 99)
MERTEN	1-M / M-Smart / M-Plan / M-Pure / D-Life	active white – see RAL 9016 below		
PEHA	Standard	pure white (glossy)		HTRRUu 210.021#07 + (80.670.02 ZV)
PEHA	Dialog	pure white (glossy)		HTRRUu 210.021#07 + (95.670.02 ZV)
PEHA	Aura	pure white (matt) / glass		HTRRUu 210.021#07 + (20.670.02 ZV)
PEHA	Badora	pure white (glossy)		HTRRUu 210.021#07 + (11.670.02 ZV)

MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION in switch range (55 x 55) possible with...	'50 x 50' adaptation possible with... (insert frame from switch manufacturer required)
BUSCH-JAEGER	solo / future / future linear	studio white (RAL 9016, glossy)		HTRRUu 210.021#27 + (1746 / 10-84)
BUSCH-JAEGER	axcent	studio white (RAL 9016, glossy)		HTRRUu 210.021#27 + (1746 / 10-84)
BUSCH-JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016, glossy)		HTRRUu 210.021#27 + (1746 / 10-84)
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016, glossy)		HTRRUu 210.021#27 + (1746 / 10-24G)
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	HTRRUu 210.021#59	not required
MERTEN	1-M / Atelier-M	active white (RAL 9016, glossy)	HTRRUu 210.021#59	not required
MERTEN	D-Life	lotus white (RAL 9016)		HTRRUu 210.021#27 + MEG4500-6035
PEHA	Standard	arctic		HTRRUu 210.021#27 + (D 80.670 ZV AW)

\*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame

\*\* if necessary, the manufacturer JUNG will change the colour from RAL 9010 to RAL 9016

**NOTE:** Most light switches are designed in the colour 'similar to RAL 9010', although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt/glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

**'50 x 50 controller':** The housing covers of the 50 x 50 controllers are 50 x 50 mm in size. Using a 50 x 50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50 x 50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch range in question can be found in the column 'For adaptation of size '50 x 50' HTRRUu.

**'55 x 55 controller':** The housing covers of the 55 x 55 controllers are 55 x 55 mm in size. Many light switch ranges have inner dimensions of 55 x 55 mm. Therefore, the 55 x 55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column 'Adaptation in switch range (55 x 55)' to determine whether the 55 x 55 controller fits in the given light switch range (HTRRUu 210.021#xx).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12/2022 | No liability is assumed for the information provided. TECHNICAL DATA subject to change.



# FLOOR OR SURFACE TEMPERATURE CONTROLLER, ELECTRONIC, WITH REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING / TILED STOVE) HTRRB SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

**TECHNICAL DATA**


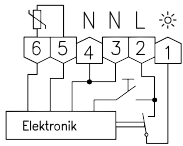

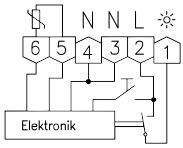
<b>Design:</b>	Berlin 2000
<b>Surface finish:</b>	matt
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	ABS plastic
<b>Operating voltage:</b>	230 V AC, 50 Hz
<b>Ambient temperature:</b>	0 to 30 °C
<b>Storage temperature:</b>	–20 to +70 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	surface- / wall-mounting (4-hole assembly on flush-mounted socket)
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	II, if properly mounted
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Max. switching current:</b>	13 (2) A
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	230 V AC, 50 Hz
<b>Switching power:</b>	3000 W
<b>Switching element:</b>	relay
<b>Switching contact:</b>	NO contact
<b>Output signal:</b>	230 V AC, 50 Hz
<b>Sensor:</b>	external, NTC
<b>Sensor rupture and short-circuit protection:</b>	heating is switched off
<b>Control function:</b>	heating
<b>Hysteresis:</b>	approx. 1 K
<b>General features:</b>	'heating' display; mechanical range limitation; 3000 W switching power for electric direct heating systems, natural stone heating; 'on/off' switch; external setting

**APPLICATION**

Temperature control (e.g., of electrical heating systems) for floor, fringe zone, bathroom, ceiling, tiled stove, marble and wall heating systems or tempering systems.






Note: The sensor line must be routed in a protective pipe. Parallel routing together with lines that carry alternating currents is not permitted.

Floor temperature controller with clock: HTRRBu-110.021  
Floor temperature controller for distributor assembly: ITR 79 Series (plant engineering)

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	DA400000	<p><b>General features:</b> Floor temperature controller with remote sensor HF-8/4-K2 4 m, multi-digit display 1–6</p> <p><b>Control range:</b> 10 to 60 °C</p> <p><b>Note:</b> The setting range can be adjusted to 10 to 40 °C (for example) using the mechanical range limitation as a replacement for the type <b>HTRRB-010.310</b>.</p>		134.70/1
	DA400100	<p><b>General features:</b> Tiled stove surface temperature controller with remote sensor HF-5/4-K3 4 m; scale: degrees Celsius; threshold arrow</p> <p><b>Control range:</b> 20–80 °C</p>		191.20/1

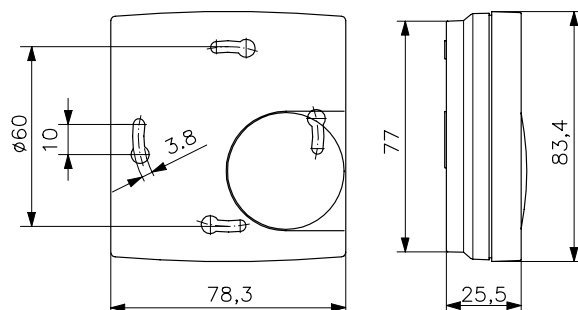


# FLOOR OR SURFACE TEMPERATURE CONTROLLER, ELECTRONIC, WITH REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING / TILED STOVE) HTRRB SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

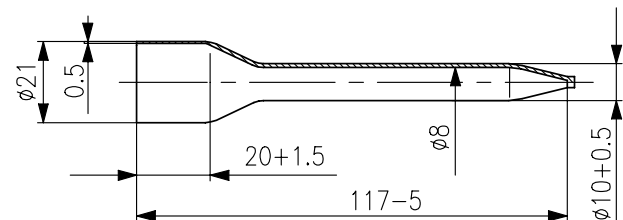
ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
 HF-8/4-K2	G8000370	<b>General features:</b> Spare sensor for HTRRB-011.010 <b>Ambient temperature:</b> -5 to +70 °C <b>Protection rating:</b> IP65 <b>Sensor:</b> NTC <b>Connecting cable:</b> 4 m, PVC	25.00 / II
 HF-8/6-K2	G8000368	<b>General features:</b> Spare sensor for HTRRB-011.010 <b>Ambient temperature:</b> -5 to +70 °C <b>Protection rating:</b> IP65 <b>Sensor:</b> NTC <b>Connecting cable:</b> 6 m, PVC	27.80 / II
 HF-5/4-K3	G9031456	<b>General features:</b> Spare sensor for HTRRB-011.410 <b>Ambient temperature:</b> -50 to +150 °C <b>Protection rating:</b> IP65 <b>Sensor:</b> NTC <b>Connecting cable:</b> 4 m, silicone, H05SS-F <VDE> 2 x 0.75 mm <sup>2</sup>	53.40 / III
 WP-01	G9990180	<b>General features:</b> Heat conduction paste 2 ml; R > 1 TΩ/cm, silicone-free <b>Heat conductivity:</b> > 0.7 W/mK <b>Ambient temperature:</b> -40 to +150 °C	7.20 / II
 THF	C1809515	<b>General features:</b> protective sleeve for screed mounting (for sleeve sensor HF Ø 7.7, for example, HF-8/4-K2 or HF-8/6-K2), copper	42.50 / II

## ILLUSTRATIONS

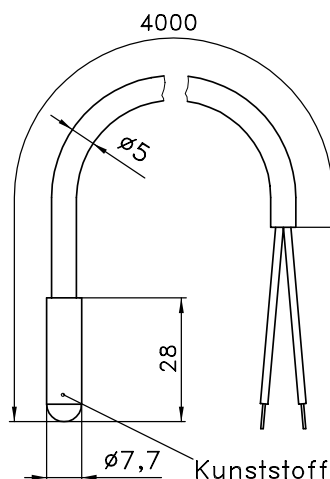
HTRRB



THF



HF-8/4-K2







# ELECTRONIC FLOOR OR SURFACE TEMPERATURE CONTROLLER WITH CLOCK AND REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING) HTRRBu SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 3000



## TECHNICAL DATA

<b>Design:</b>	Berlin 3000
<b>Surface finish:</b>	matt
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	ABS plastic
<b>Operating voltage:</b>	230 V AC, 50 Hz
<b>Ambient temperature:</b>	0 to 30 °C
<b>Storage temperature:</b>	–20 to +70 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals 0.5–1.5 mm <sup>2</sup>
<b>Mounting / attachment:</b>	surface / wall mounting or by means of an adapter plate on a flush-mounted socket
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	II, if properly mounted
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Max. switching current:</b>	heating (terminal 4) 13 (2) A, clock output (terminal 3) 100 mA
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	230 V AC, 50 Hz
<b>Switching power:</b>	terminal 4: 3000 W, terminal 3: 23 W
<b>Switching element:</b>	relay
<b>Switching contact:</b>	NO contact
<b>Output signal:</b>	switching (230 VAC, 50 Hz)
<b>Sensor:</b>	external, NTC
<b>Control function:</b>	heating
<b>Control range:</b>	10 to 42 °C
<b>Hysteresis:</b>	approx. 1 K
<b>Display type:</b>	symbol display
<b>Output 'temperature reduction':</b>	switching (230 VAC, 50 Hz), for pilot function

## APPLICATION


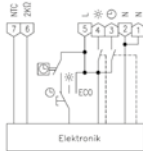
Time-dependent temperature control (for example, of electrical heating systems) for floor, fringe zone, bathroom, ceiling, tiled stove, marble and wall heating systems or tempering systems.

It can be used as a master (pilot regulator) for the temperature reduction of other controllers. Controllers of the series FETR, RTBSU and RTBSB are suitable for use as slaves (satellite controllers).

Note: The sensor line must be routed in a protective pipe. Parallel routing together with lines that carry AC voltage is not permissible.

Programming procedures for every day, familiar from mechanical timers, by means of 'electronic tabs'. Shortest switching time 15 min.






**General features:**  
Pilot function; ECO function; ECO value adjustable; display 'ECO'; display 'On / Off'; display 'heating'; child-safe features; power reserve (approx. 4–7 days); learning function; valve protection; holiday setting; party setting; automatic adjustment to standard / daylight savings time; mechanical range limitation; reduction / comfort / automatic button; external setting; operation using direct-dial buttons; on / off button; information button; party function button; holiday setting button

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
HTRRBu-110.021 	MA600400	With backlighting		286.30/1

Accessories: terminal strips: V00PL compatible valve actuators: ZB00A-010.1xx

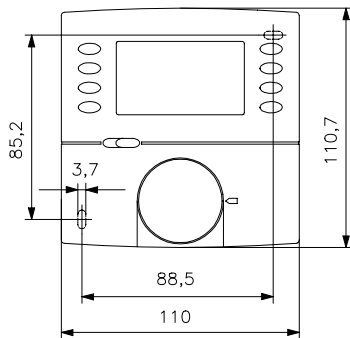


# ELECTRONIC FLOOR OR SURFACE TEMPERATURE CONTROLLER WITH CLOCK AND REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING) HTRRBu SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 3000

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
	MN990001	<b>General features:</b> Adapter plate for mounting devices on flush-mounted sockets (including fastening screws for mounting the controller on the adapter plate) <b>Surface finish:</b> matt <b>Colour:</b> pure white, similar to RAL 9010 <b>Material:</b> ABS plastic	7.70 / II
	G8000370	<b>General features:</b> Spare sensor for HTRRBu-110.021 <b>Ambient temperature:</b> -5 to +70 °C <b>Protection rating:</b> IP65 <b>Sensor:</b> NTC <b>Connecting cable:</b> 4 m, PVC	25.00 / II
	G8000368	<b>General features:</b> Spare sensor for HTRRBu-110.021 <b>Ambient temperature:</b> -5 to +70 °C <b>Protection rating:</b> IP65 <b>Sensor:</b> NTC <b>Connecting cable:</b> 6 m, PVC	27.80 / II
	G9990180	<b>General features:</b> Heat conduction paste 2 ml; $R > 1 \text{ T}\Omega/\text{cm}$ , silicone-free <b>Ambient temperature:</b> -40 to +150 °C	7.20 / II
	C1809515	<b>General features:</b> protective sleeve for screed mounting (for sleeve sensor HF $\varnothing 7.7$ , for example, HF-8/4-K2 or HF-8/6-K2), copper	42.50 / II

## ILLUSTRATIONS

HTRRBu-110.XXX



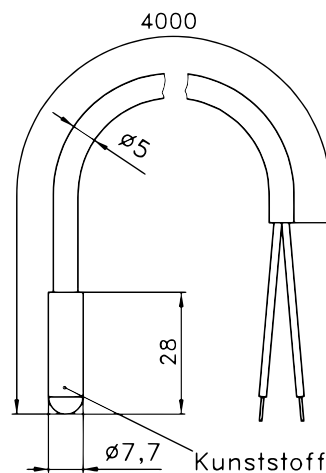
JZ-17



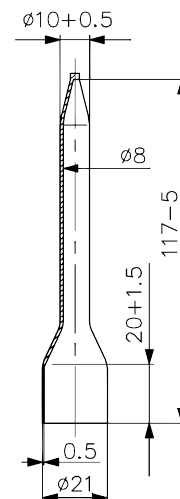
### Factory setting:

- Setback temperature 1.7
- Continuous time display
- Programme display using switching segments enabled
- Child-safe features disabled
- Automatic adjustment to summer / winter time enabled
- Valve and pump protection disabled
- Learning function disabled
- Comfort times:  
Mon–Fri 5 am–9 am / 4 pm–10 pm,  
Sat / Sun 6 am–10 pm
- Sensor rupture and short-circuit safeguarding:  
In case of a sensor rupture or sensor short-circuit, the heating is activated with a power-on time of 30% to prevent cooling or frost damage in the room. Temperatures below -20 °C are also interpreted as sensor rupture, and the emergency function is triggered.

HF-8/4-K2



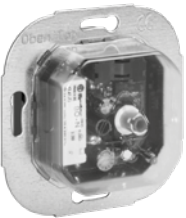
THF





# ELECTRONIC FLOOR TEMPERATURE CONTROLLER WITH REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING) FETR/RTERU

## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED



### TECHNICAL DATA

<b>Design:</b>	Berlin flush-mounted
<b>Housing material:</b>	PC plastic (FETR) PA6 plastic (RTERU)
<b>Operating voltage:</b>	230 V AC, 50 Hz
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals (FETR) pluggable screw terminals
<b>Mounting/attachment:</b>	In flush-mounted socket – with suitable cover set, can be adapted to fit virtually any switch range (deep flush-mounted socket recommended)
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	II, if properly mounted
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	230 V AC, 50 Hz
<b>Switching element:</b>	relay
<b>Switching contact:</b>	NO contact
<b>Output signal:</b>	switching (230 VAC, 50 Hz)
<b>Sensor:</b>	external or internal/external (monitors)
<b>Sensor type (external):</b>	HF-8/4-K2
<b>Sensor rupture and short-circuit protection:</b>	heating is switched off
<b>Sensor wire extendible up to:</b>	50 m with min. 0.5 mm <sup>2</sup> double-insulated
<b>Control function:</b>	heating
<b>Hysteresis:</b>	< 1 K (FETR) 1.5 K (RTERU)
<b>General features:</b>	ECO function; 'reduction' display (FETR); 'heating' display
<b>Input 'temperature reduction':</b>	approx. 5 K (230 VAC, 50 Hz)

### APPLICATION

Temperature control (e.g., of electrical heating systems) for floor, fringe zone, bathroom, ceiling, tiled stove, marble and wall heating systems or tempering systems, direct floor heating systems.


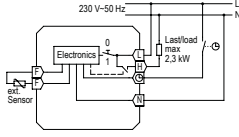

Reduction: With these flush-mounted controllers, the temperature can be reduced by 5 K. For this purpose, potential is applied to the clock input terminal by an external pilot controller or an external timer L1.

Note: The sensor line must be routed in a protective pipe. Parallel routing together with lines that carry alternating currents is not admissible.

The 55 x 55 mm variants visually fit perfectly without an insert frame in many switch ranges of 55 x 55 mm.

Using an insert frame, the 50 x 50 mm variants fit in almost all switch ranges.


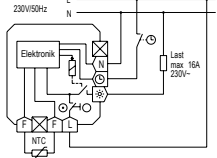

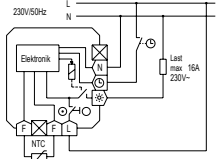






See page for an overview of currently possible combinations and insert frames page 107.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	UN110100	<p><b>General features:</b> floor temperature controller; mechanical range limitation; on/off switch; external setting; protective cap; contact hazard protection cover plate; Multi-digit display *-6</p> <p><b>Ambient temperature:</b> 0 to 35 °C</p> <p><b>Max. switching current:</b> 10 (1.5) A</p> <p><b>Switching power:</b> 2300 W</p> <p><b>Control range:</b> 10 to 50 °C</p> <p><b>Scope of delivery:</b> controller, remote sensor 4 m</p> <p>Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery.</p> <p><b>Suitable set no: JZ-035.xxx, e.g.:</b></p> <p>50 x 50 mm cover set, pure white, glossy: JZ-035.000</p> <p>55 x 55 mm cover set, pure white, gloss: JZ-035.100</p>		96.50/1
	UN110109	<p>Similar to RTERU-010.715#00 but <b>scope of delivery as follows:</b> controller, 4 m remote sensor, alre frame 'Berlin' (neutral), 50 x 50 mm cover, pure white (similar to RAL 9010), glossy</p>		121.70/1



# ELECTRONIC FLOOR TEMPERATURE CONTROLLER WITH REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING) FETR/RTERU


## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	UN030000	<b>General features:</b> Floor temperature controllers; internal setting; multi-digit display 1–6 <b>Ambient temperature:</b> 0 to 40 °C <b>Max. switching current:</b> 16 (2) A <b>Switching power:</b> 3680 W <b>Control range:</b> 10 to 60 °C <b>Scope of delivery:</b> controller, remote sensor 4 m, cover 50 x 50 mm, pure white (similar to RAL 9010), glossy		199.20 / I
	UA030119	<b>General features:</b> Floor temperature controller; mechanical range limitation; <b>'on/off' switch</b> ; external setting; protective cap; contact hazard protection cover plate; multi-digit display 1–5 <b>Ambient temperature:</b> 0 to 40 °C <b>Max. switching current:</b> 16 (2) A <b>Switching power:</b> 3680 W <b>Control range:</b> 10 to 50 °C <b>Scope of delivery:</b> controller, remote sensor 4 m  Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)) and are not included in the delivery. <b>Suitable set no: JZ-005.xxx, e.g.:</b> 50 x 50 mm cover set, pure white, glossy: JZ-005.000 55 x 55 mm cover set, pure white, glossy: JZ-005.100		175.60 / I
	UN030109	Similar to FETR 101.715#00, but with scope of delivery: controller, remote sensor 4 m, alre frame 'Berlin' (neutral), 50 x 50 mm cover, pure white (similar to RAL 9010), glossy		195.50 / I
	UA030502	Similar to FETR 101.715#00, but with control range 10 to 42 °C (multi-digit display 1–4)  Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (Cover sets)) and are not included in the delivery. <b>Suitable set no: JZ-009.xxx, e.g.:</b> 50 x 50 mm cover set, pure white, glossy: JZ-009.000 55 x 55 mm cover set, pure white, glossy: JZ-009.100 Complete device with alre frame 'Berlin' (neutral), 50 x 50 mm cover (pure white, similar to RAL 9010, glossy) upon request.		175.60 / I
ACCESSORIES	ITEM NO.	FEATURES		EURO/PG
	G8000370	<b>General features:</b> Spare sensor for RTERU/FETR 101.7xx <b>Ambient temperature:</b> –5 to +70 °C <b>Protection rating:</b> IP65 <b>Sensor:</b> NTC <b>Connecting cable:</b> 4 m, PVC		25.00 / II
	G8000368	<b>General features:</b> Spare sensor for RTERU/FETR 101.7xx <b>Ambient temperature:</b> –5 to +70 °C <b>Protection rating:</b> IP65 <b>Sensor:</b> NTC <b>Connecting cable:</b> 6 m, PVC		27.80 / II
	G9990180	<b>General features:</b> Heat conduction paste 2 ml; R > 1 TQ / cm, silicone-free <b>Ambient temperature:</b> –40 to +150 °C		7.20 / II
	C1809515	<b>General features:</b> protective sleeve for screed mounting (for sleeve sensor HF Ø 7.7, for example, HF-8/4-K2 or HF-8/6-K2), copper		42.50 / II



# ELECTRONIC FLOOR TEMPERATURE CONTROLLER WITH REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING) FETR/RTERU

## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
JZ-090.900 	VV000025	<b>General features:</b> alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50 x 50 mm cover <b>Design:</b> Berlin <b>Surface finish:</b> glossy <b>Colour:</b> Pure white, similar to RAL 9010 <b>Material:</b> PC plastic		4.40 / I
JZ-090.910	VV000010	Similar to JZ-090.900 but with pearl white colour similar to RAL 1013		4.40 / I
JZ-090.100	VV000048	Similar to JZ-090.900, but for all flush-mounted controllers in combination with 55 x 55 mm cover		4.40 / I

## ALRE FLUSH-MOUNTED RANGE (COVER SETS)

ALL BASIC TYPES AND SUITABLE **50 X 50 MM** COVER SETS / B-J REFLEX SI/SI LINEAR

BASIC TYPE	50 x 50 mm cover set PURE WHITE (RAL 9010) GLOSSY (JZ-xxx.000)		50 x 50 mm cover set PURE WHITE (RAL 9010) MATT (JZ-xxx.001)		50 x 50 mm cover set PEARL WHITE (RAL 1013) GLOSSY (JZ-xxx.010)		EURO/PG
	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	
FETR 101.715#00	JZ-005.000	UN990003	JZ-005.001	UN990006	JZ-005.010	UN990009	16.20 / I
FETR 101.716#00	JZ-009.000	UN990004	JZ-009.001	UN990007	JZ-009.010	UN990010	16.20 / I
RTERU 010.715#00	JZ-035.000	UN990169	JZ-035.001	UN990193	JZ-035.010	UN990177	13.20 / I

BASIC TYPE	50 x 50 mm cover set TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY (JZ-xxx.020)		50 x 50 mm cover set TRAFFIC WHITE (RAL 9016) MATT (JZ-xxx.021)		EURO/PG	BUSCH-JAEGER cover set REFLEX SI/SI LINEAR PURE WHITE (RAL 9010) GLOSSY (JZ-xxx.200 / BJ)		EURO/PG
	Cover set	Item no.	Cover set	Item no.		Cover set	Item no.	
FETR 101.715#00	JZ-005.020	UN990075	JZ-005.021	UN990104	16.20 / I	–	–	
FETR 101.716#00	JZ-009.020	UN990076	JZ-009.021	UN990106	16.20 / I	–	–	
RTERU 010.715#00	JZ-035.020	UN990185	JZ-035.021	UN990201	15.40 / I	JZ-035.200 / BJ	G9990499	13.20 / I

In flush-mounted socket, it can be adapted to fit virtually any switch range.

ALL BASIC TYPES AND SUITABLE COVER SETS **55 X 55 MM**

BASIC TYPE	55 x 55 mm cover set PURE WHITE (RAL 9010) GLOSSY (JZ-xxx.100)		55 x 55 mm cover set PURE WHITE (RAL 9010) MATT (JZ-xxx.101)		55 x 55 mm cover set PEARL WHITE (RAL 1013) GLOSSY (JZ-xxx.110)		EURO/PG
	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	
FETR 101.715#00	JZ-005.100	UN990012	JZ-005.101	UN990015	JZ-005.110	UN990018	18.00 / I
FETR 101.716#00	JZ-009.100	UN990013	JZ-009.101	UN990016	JZ-009.110	UN990019	18.00 / I
RTERU 010.715#00	JZ-035.100	UN990173	JZ-035.101	UN990197	JZ-035.110	UN990181	16.60 / I

BASIC TYPE	55 x 55 mm cover set TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY (JZ-xxx.120)		EURO/PG
	Cover set	Item no.	
FETR 101.715#00	JZ-005.120	UN990091	18.00 / I
FETR 101.716#00	JZ-009.120	UN990092	18.00 / I
RTERU 010.715#00	JZ-035.120	UN990189	18.60 / I

**SPECIAL COLOURS AS WELL AS THE COLOURS ANTHRACITE AND ALUMINIUM ARE AVAILABLE UPON REQUEST.**

ALL BASIC TYPES AND SUITABLE COVER SETS **70 X 70 MM**

BASIC TYPE	70 x 70 mm cover set PURE WHITE (RAL 9010) GLOSSY (JZ-xxx.400)		70 x 70 mm cover set PEARL WHITE (RAL 1013) GLOSSY (JZ-xxx.410)		EURO/PG	70 x 70 mm cover set TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY (JZ-xxx.420)		EURO/PG
	Cover set	Item no.	Cover set	Item no.		Cover set	Item no.	
RTERU 010.715#00	JZ-035.400	UN990143	JZ-035.401	UN990147	16.60 / I	JZ-035.420	UN990151	18.60 / I





## ADAPTATION OF ALRE FLUSH-MOUNTED CONTROLLERS

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION possible with '55 x 55' or '70 x 70' cover set (without insert frame)	'50 X 50' adaptation possible with... (insert frame from manufacturer required)
BERKER	S.1	polar white (matt)	x	1109 19 19
BERKER	S.1	polar white (glossy)	x	1109 90 89
BERKER	Arsys	polar white (glossy)		1108 01 69
BERKER	B.3	aluminium / polar white (matt)	x	1109 19 19
BERKER	B.3	aluminium / polar white (glossy)	x	1109 90 89
BERKER	B.7	glass / polar white (matt)	x	1109 19 19
BERKER	B.7	glass / polar white (glossy)	x	1109 90 89
BERKER	Q.1 / Q.3	polar white (velvet)		1109 60 79
BERKER	K.1	polar white (glossy)		1108 71 09
BUSCH-JAEGER	Reflex SI / SI Linear	alpine white (glossy)		1746-214-101
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)	x	1746-914-101
BUSCH-JAEGER	impuls	alpine white (glossy)		1746/10-74
BUSCH-JAEGER	solo / future / axcent etc.	studio white – see RAL 9016 below		
Els0	Joy	pure white (glossy)	x	363084
Els0	Fashion / Riva / Scala	pure white (glossy)		203084
GIRA	surface switch	pure white (glossy)	x	0282 112
GIRA (System 55)	Standard / E2	pure white (semi-gloss)	x	0282 27
GIRA (System 55)	Standard / E2	pure white (glossy)	x	0282 03
GIRA (System 55)	E22	pure white (glossy)	x	0282 03
GIRA (System 55)	Event	pure white (semi-gloss) + opaque...	x	0282 27
GIRA (System 55)	Event	pure white (glossy) + opaque...	x	0282 03
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium...	x	0282 27
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium...	x	0282 03
GIRA	S-Color	pure white (high-gloss)		0282 40
JUNG	CD 500 / CD plus	alpine white (glossy)		CD 590 Z WW
JUNG	A 500 / AS 500 / A plus	alpine white (glossy)	x	A 590 Z WW
JUNG	LS 990	alpine white (glossy)	x	LS 961 Z WW
JUNG	LS plus	alpine white (glass)	x	LS 961 Z WW
JUNG	A creation	alpine white (glossy)	x	A 590 Z WW
JUNG	LS Design	alpine white (glossy)	x	LS 961 Z WW
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	x	5181 19
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)	x	5185 19
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)	x	5185 19
MERTEN (Surface System)	Artec / Antik	polar white (glossy)		5160 99
MERTEN	1-M / M-Smart / M-Plan / M-Pure / D-Life	active white – see RAL 9016 below or product finder		
PEHA	Standard	pure white (glossy)		80.670.02 ZV
PEHA	Dialog	pure white (glossy)		95.670.02 ZV
PEHA	Aura	pure white (matt) / glass		20.670.02 ZV
PEHA	Badora	pure white (glossy)		11.670.02 ZV
MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION in switch range ('55 x 55' or '70 x 70') possible with...	'50 x 50' adaptation possible with... (insert frame from switch manufacturer required)
BUSCH-JAEGER	solo / future / future linear	studio white (RAL 9016, glossy)		1746/10-84
BUSCH-JAEGER	future linear	studio white (RAL 9016 matt)		1746/10-884
BUSCH-JAEGER	impuls	studio white (RAL 9016 matt)		1746/10-774
BUSCH-JAEGER	axcent	studio white (RAL 9016, glossy)		1746/10-84
BUSCH-JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016, glossy)		1746/10-84
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016, glossy)		1746/10-24G
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016 matt)		1746/10-24
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	x	5185 25
MERTEN	1-M / Atelier-M	active white (RAL 9016, glossy)	x	5185 25
MERTEN	D-Life	lotus white (RAL 9016)	x	MEG4500-6035
PEHA	Standard	arctic		D 80.670 ZV AW

\*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame

**NOTE:** Most light switches are designed in the colour 'similar to RAL 9010', although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt/glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

**'50 x 50 controller':** The housing covers of the 50 x 50 controllers are 50 x 50 mm in size. Using a 50 x 50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50 x 50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch range in question can be found in the column 'Only for adaptation with '50 x 50' cover set'.

**'55 x 55 controller':** The housing covers of the 55 x 55 controllers are 55 x 55 mm in size. Many light switch ranges have inner dimensions of 55 x 55 mm. Therefore, the 55 x 55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column 'Adaptation with '55 x 55' cover set' to determine whether the 55 x 55 controller fits in the given light switch model (x).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12/2022 | No liability is assumed for the information provided. | Technical data subject to change.

Prices valid from 01.01.2024 - 31.12.2024, prices may be subject to change | V1



## PRODUCT FINDER ALRE COVER SETS

### FOR SWITCH RANGES FROM BERKER

#### INTEGRATION EXAMPLES



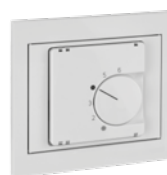
RTERU – in S. 1



RTERU – in B. 3



RTERU – in B. 7



RTERU – in K. 1



RTERU – in Arsys

TYPE ALRE	BERKER RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG	
 Standard	RTERU-010.715#00	S. 1 / B. 3 / B. 7	polar white (RAL 9010) glossy	JZ-035.100 (55 x 55, glossy)	UN990173	not required	16.60/1
		S. 1 / B. 3 / B. 7	polar white (RAL 9010) matt	JZ-035.101 (55 x 55, matt)	UN990197	not required	16.60/1
		Arsys	polar white (RAL 9010) glossy	JZ-035.000 (50 x 50, glossy)	UN990169	1108 01 69	13.20/1
		Q. 1 / Q. 3	polar white (RAL 9010) velvet	JZ-035.001 (50 x 50, matt)	UN990193	1109 60 79	13.20/1
		K. 1	polar white (RAL 9010) glossy	JZ-035.000 (50 x 50, glossy)	UN990169	1108 71 09	13.20/1
		S. 1	white (RAL 1013) glossy	JZ-035.110 (55 x 55, glossy)	UN990181	not required	16.60/1
		Arsys	white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	1108 01 02	13.20/1

## PRODUCT FINDER ALRE COVER SETS

### FOR SWITCH RANGES FROM BUSCH-JAEGER

#### INTEGRATION EXAMPLES



RTERU – in Reflex SI

RTERU –  
in Busch-balance SIRTERU –  
in future linear

RTERU – in solo



RTERU – in alpha nea

TYPE ALRE	BUSCH-JAEGER RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG	
 Standard	RTERU-010.715#00	Reflex SI / SI Linear	alpine white (RAL 9010) glossy	JZ-035.200 / BJ	G9990499	1746-214-101	13.20/1
		Busch-balance SI	alpine white (RAL 9010) glossy	JZ-035.100 (55 x 55, glossy)	UN990173	not required	16.60/1
		impuls	alpine white (RAL 9010) glossy	JZ-035.000 (50 x 50, glossy)	UN990169	1746 / 10-74	13.20/1
		future linear / solo / axcent / carat	studio white (RAL 9016) glossy	JZ-035.020 (50 x 50, glossy)	UN990185	1746 / 10-84	15.40/1
		future linear	studio white (RAL 9016) matt	JZ-035.021 (50 x 50, matt)	UN990201	1746 / 10-884	15.40/1
		alpha nea	studio white (RAL 9016) glossy	JZ-035.020 (50 x 50, glossy)	UN990185	1746 / 10-24G	15.40/1
		alpha nea	studio white (RAL 9016) matt	JZ-035.021 (50 x 50, matt)	UN990201	1746 / 10-24	15.40/1
		Duro 2000 SI / SI Linear	white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	1746-212-101	13.20/1
		future linear / solo / carat	ivory white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	1746 / 10-82	13.20/1
		alpha nea	ivory white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	1746 / 10-22G	13.20/1
		impuls	ivory white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	1746 / 10-72	13.20/1



## PRODUCT FINDER ALRE COVER SETS

FOR SWITCH RANGES FROM ELSO

### INTEGRATION EXAMPLES



RTERU – in Joy



RTERU – in Fashion



RTERU – in Riva



RTERU – in Scala

TYPE ALRE	ELSO RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG
RTERU-010.715#00 	Joy	pure white (RAL 9010) glossy	JZ-035.100 (55 x 55, glossy)	UN990173	not required	16.60/1
	Joy	pearl white (RAL 1013) glossy	JZ-035.110 (55 x 55, glossy)	UN990181	not required	16.60/1
	Fashion/Riva/Scala	pure white (RAL 9010) glossy	JZ-035.000 (50 x 50, glossy)	UN990169	203084	13.20/1
	Fashion/Riva/Scala	pearl white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	203080	13.20/1

Standard

## PRODUCT FINDER ALRE COVER SETS

FOR SWITCH RANGES FROM GIRA

### INTEGRATION EXAMPLES



RTERU – in  
Standard 55



RTERU – in E2



RTERU – in Event



RTERU – in surface  
switch



RTERU – in E22

TYPE ALRE	GIRA RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG
RTERU-010.715#00 	Standard 55/E2/E22/Event/Esprit	pure white (RAL 9010) glossy	JZ-035.100 (55 x 55, glossy)	UN990173	not required	16.60/1
	Standard 55/E2/E22/Event/Esprit	pure white (RAL 9010) matt	JZ-035.101 (55 x 55, matt)	UN990197	not required	16.60/1
	Surface switch <b>NEW</b>	pure white (RAL 9010) glossy	JZ-035.400 (70 x 70, glossy)	UN990143	not required	16.60/1
	Standard 55/Event/Esprit/ClassiX	cream white (RAL 1013) glossy	JZ-035.110 (55 x 55, glossy)	UN990181	not required	16.60/1

Standard



## PRODUCT FINDER ALRE COVER SETS

FOR SWITCH RANGES FROM JUNG

### INTEGRATION EXAMPLES



RTERU – in AS 500



RTERU – in A 500



RTERU – in A plus



RTERU – in A creation



RTERU – in LS-design

NEW

TYPE ALRE	JUNG RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG	
 Standard	RTERU-010.715#00	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-035.100 (55 x 55, glossy)	UN990173	not required	16.60 / I
		CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-035.000 (50 x 50, glossy)	UN990169	CD 590 Z WW	13.20 / I
		LS 990 / LS design / LS plus	alpine white (RAL 9010) glossy	JZ-035.400 (70 x 70, glossy)	UN990143	not required	16.60 / I
		AS 500	white (RAL 1013) glossy	JZ-035.110 (55 x 55, glossy)	UN990181	not required	16.60 / I
		CD 500 / CD plus	white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	590 Z	13.20 / I
		LS 990 / LS design / LS plus	white (RAL 1013) glossy	JZ-035.410 (70 x 70, glossy)	UN990147	not required	16.60 / I

## PRODUCT FINDER ALRE COVER SETS

FOR SWITCH RANGES FROM MERTEN

### INTEGRATION EXAMPLES



RTERU – in 1-M



RTERU – in M-Smart




RTERU – in M-Plan



RTERU – in Artec



RTERU – in Antik

TYPE ALRE	MERTEN RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG	
 Standard	RTERU-010.715#00	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-035.100 (55 x 55, glossy)	UN990173	not required	16.60 / I
		1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-035.101 (55 x 55, matt)	UN990197	not required	16.60 / I
		1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-035.120 (55 x 55, glossy)	UN990189	not required	18.60 / I
		D-Life	lotus white (RAL 9016) glossy	JZ-035.420 (70 x 70, glossy)	UN990151	not required	18.60 / I
		System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-035.000 (50 x 50, glossy)	UN990169	5160 99	13.20 / I
		1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-035.110 (55 x 55, glossy)	UN990181	not required	16.60 / I
		System design: Artec, Antik	white (RAL 1013) glossy	JZ-035.010 (50 x 50, glossy)	UN990177	5160 94	13.20 / I

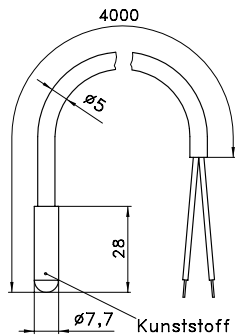


# ELECTRONIC FLOOR TEMPERATURE CONTROLLER WITH REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING) FETR/RTERU

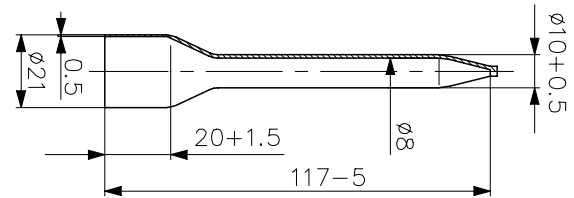
## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

### ILLUSTRATIONS

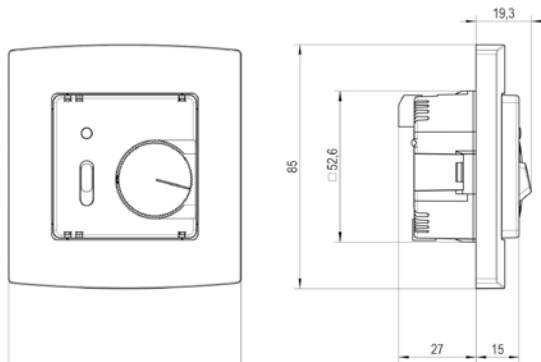
HF-8/4-K2



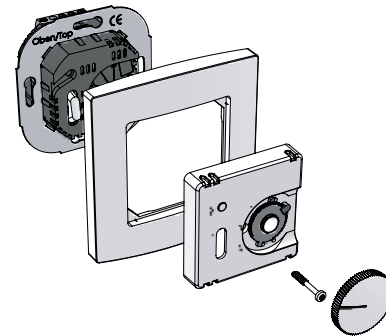
THF



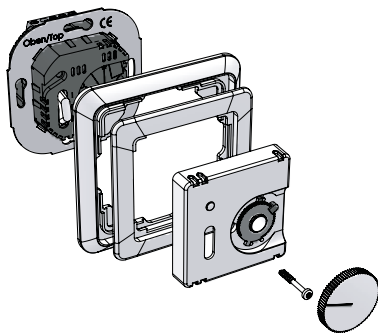
RTERU with alre frame 'Berlin' (#21 types)



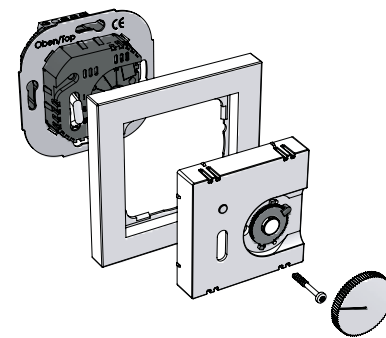
alre frame 'Berlin' (#21 types)



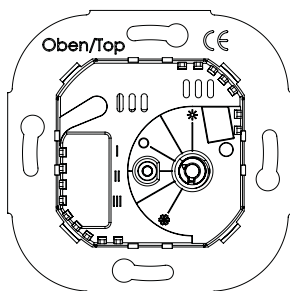
with 50 x 50 mm insert frame



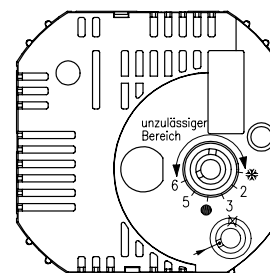
without 55 x 55 mm insert frame



Internal scale RTERU for temperature control without cover



Contact hazard protection cap with scale (for FETR 101.700 with internal setting – similar to illustration)







# ACTUATOR 'STELLA' 230 V NC

## FOR AUTOMATIC HYDRAULIC COMPARISON

**TECHNICAL DATA**

<b>Operating voltage:</b>	230 V~, 50 Hz
<b>Max. power consumption:</b>	30 W
<b>Max. starting current:</b>	approx. 0.13 A
<b>Housing colour:</b>	grey-orange
<b>Housing material:</b>	PA6 plastic
<b>Ambient temperature:</b>	0 to 50 °C
<b>Storage temperature:</b>	-25 to +60 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Mounting/attachment:</b>	M 30 x 1,5
<b>Protection rating:</b>	IP54
<b>Protection class:</b>	II
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Average power consumption:</b>	approx. 1.7 W
<b>Opening/closing time:</b>	approx. 3 min
<b>Nominal stroke:</b>	3.5 mm
<b>Function type:</b>	normally closed
<b>Nominal closing force:</b>	110 N
<b>Connecting cable:</b>	1 m/2 x 0.34 mm <sup>2</sup>


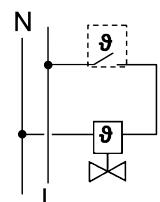


**APPLICATION**

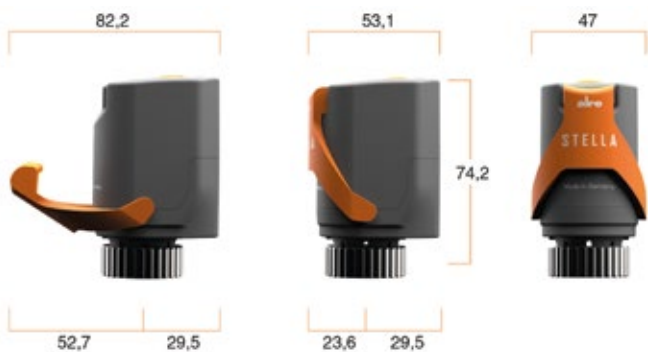
'Stella' – the intelligent autonomous 230 VAC NC electrothermal actuator for automatic adaptive hydraulic balancing of heating manifolds' heating circuits in surface heating and surface cooling systems.

Sensors on the supply and return lines measure temperature differences, and an algorithm continuously calculates the necessary temperature spread and the appropriate valve position.

Normally closed and features a folding lever for easily unscrewing the thermostat valve or opening it manually when it is disconnected from the mains. Features integrated inflow temperature limitation.

Can be combined with all standard temperature controllers and terminal strips (except devices with triac switching element).

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
ZB00A-010.185 	G8990010	Actuator for automatic hydraulic balancing		81.50/1
SET 31 	VV000046	Set for performing fully automatic hydraulic balancing consisting of 5 surface-mounted room thermostats, 1 terminal strip and 6 actuators.		773.90/1
SET 32 	VV000047	Set for performing fully automatic hydraulic balancing consisting of 5 flush-mounted room thermostats, 1 terminal strip and 6 actuators.		863.90/1


**ILLUSTRATIONS****BRIEF DESCRIPTION**



- Combinable with the commercial 2-point room temperature controllers (electromechanical, electronic, PWM), except devices with triac switching element
- for heating and cooling systems
- Features a folding lever for easily unscrewing the thermostat valve or opening it manually when it is disconnected from the mains
- Temperature sensors suited for surface heating pipes made of plastic, metal or combinations thereof with an external diameter of 12 to 20 mm
- measures a heating circuit's outflow temperature
- The range of setpoint temperatures Stella calculates is variable and dependent on user behaviour and the system's environment
- The valve can be adjusted to any desired position between OPEN and CLOSED and set to remain in that position.
- An expansion element and a stroke measuring system are needed to position the valve stroke.



# ELECTRO-THERMAL VALVE ACTUATORS

## FOR HEATING, VENTILATION AND AIR CONDITIONING TECHNOLOGY

	TECHNICAL DATA	APPLICATION
	<b>Housing colour:</b>	pure white, similar to RAL 9010
	<b>Housing material:</b>	PC plastic, GF (20%)
	<b>Ambient temperature:</b>	0 to 50 °C
	<b>Storage temperature:</b>	-20 to +70 °C
	<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
	<b>Mounting / attachment:</b>	M 30 x 1.5
	<b>Protection rating:</b>	IP42
	<b>Protection class:</b>	II
	<b>Safety and EMC:</b>	according to DIN EN 60730
	<b>Average power consumption:</b>	approx. 3 W
	<b>Opening / closing time:</b>	approx. 4 min
	<b>Nominal stroke:</b>	3 mm
	<b>Function type:</b>	normally closed
	<b>Nominal closing force:</b>	90 N
<b>Connecting cable:</b>	0.8 m / 2 x 0.5 mm <sup>2</sup>	
<b>Valve position indicator:</b>	2X (at the top and the side)	
		Extremely compact design: can be fitted quickly and comfortably thanks to the slim shape in the area around the fastening nut.
		Can be fitted in any position: lateral drainage holes carry off any leakage water that from the valve plunger into the open, thus avoiding damage to the drive.
		Additional valve monitoring: two additional viewing windows at the side allow users to visually check the respective valve position with ease; this does not work when mounted in a suspended manner.

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
	H9100010	<b>Operating voltage:</b> 230 V~, 50 Hz <b>Max. power consumption:</b> 70 W <b>Max. starting current:</b> approx. 0.3 A	31.80 / I
	H9100000	<b>Operating voltage:</b> 24 VDC or 24 VAC <b>Max. power consumption:</b> 12 W <b>Max. starting current:</b> approx. 0.5 A	31.80 / I

Thanks to their M 30 x 1.5 fastening and their characteristics (normally closed), the actuators are suitable for the following valve and distributor makes: Beulco, Empur, Heimeier, Kamo, Oventrop, Purmo, SBK, SKV, Strawa, Taconova, Watts

### BRIEF DESCRIPTION:

The drive features a compact, space-saving design.

The device can be mounted easily thanks to the narrowed shape, especially in the fastening area of the nut.

The fastening cable is not located near the fastening nut. This reduces the probability of contact with equipment carrying hot water.

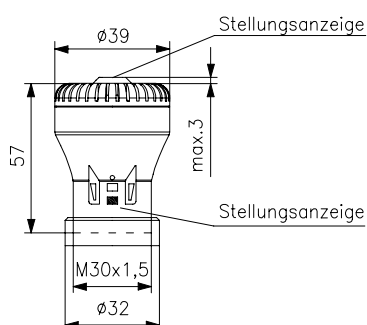
Since the fastening nut allows continuous screwing onto the thread, by unscrewing the nut by two or three turns, it is possible to open the valve in an electrically de-energised state – something that cannot be done with bayonet couplings and impulse couplings.

Discharged water is dissipated via a draining system. Gaskets are not required thanks to the special design.

### THE DUAL POSITION DISPLAY OFFERS THE FOLLOWING ADVANTAGES:

The upper display provides the option of a visual or, in conditions of bad visibility, tactile function test of the drive. The lower viewing windows allow an additional check to determine whether the valve to be actuated follows the lifting movement of the drive. At the beginning of the heating period, it can happen off and on that the valve plungers get “stuck”. Therefore, with the additional display, it is possible to determine whether the cause lies with the actuator or with the valve in the event the valve does not open. However, that is not possible when mounted in a suspended manner.

### ILLUSTRATIONS



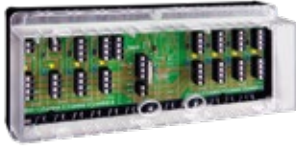
### VALVE ACTUATOR WITH EXTENDED PUSH ROD





# TERMINAL STRIP FOR HEATING MANIFOLD

## FOR 6 OR 8 ROOM THERMOSTATS





### TECHNICAL DATA

<b>Surface finish:</b>	Upper part glossy, lower part matt
<b>Housing colour:</b>	Upper part transparent, lower part anthracite grey, similar to RAL 7016
<b>Housing material:</b>	PC plastic
<b>Operating voltage:</b>	230 VAC/50 Hz
<b>Ambient temperature:</b>	-10 to +50 °C
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	spring terminals 0.75 mm <sup>2</sup> -1.5 mm <sup>2</sup> for rigid cables 0.5 mm <sup>2</sup> -1 mm <sup>2</sup> for flexible cables
<b>Protection rating:</b>	IP20
<b>Mounting/attachment:</b>	convenient and simple installation in the heating manifold via <b>hat rails (standard rail or supporting rail EN 60715)</b> or magnetic bases Surface/wall mounting with 4 fastening screws included in delivery or using optional JZ-32 magnetic fastening set
<b>Protection class:</b>	II, if properly mounted
<b>Control function:</b>	heating or cooling
<b>General features:</b>	Ready for operation display (mains voltage), active channels display, integrated strain relief, labelling fields


### APPLICATION

Terminal strip for heating controller with or without ECO function, also for heating/cooling controller with integrated heating/cooling switch. Depending on the controller used, actuators can be connected in the NC (normally closed) or NO (normally open) mode of operation.

Can be set up with master-slave control when using a clock regulator or an external timer.

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
VOOPL-216.176 	DA480510	<b>General features:</b> Terminal strip in housing for wiring up to 6 room thermostats and up to 12 actuators; (channel 1-2: 1 actuator/channel 3: 4 actuators/channel 4-6: 2 actuators), device fuse T3 15 A/250 V, installation dimensions Ø 5 x 20 mm (also secures the circuits of the connected controllers and valve gears)	81.60/I
VOOPL-318.178 	DA480520	<b>General features:</b> Terminal strip in housing for wiring up to 8 room thermostats and up to 16 actuators; (channel 1-2: 1 actuator/channel 3, 5-8: 2 actuators/channel 4: 4 actuators), device fuse T3 15 A/250 V, installation dimensions Ø 5 x 20 mm (also secures the circuits of the connected controllers and valve gears)	110.90/I

other/similar items: VOORL terminal strip for heating and cooling in the air conditioning technology section beginning on page 147.  
Accessories: suitable valve actuators ZB00A

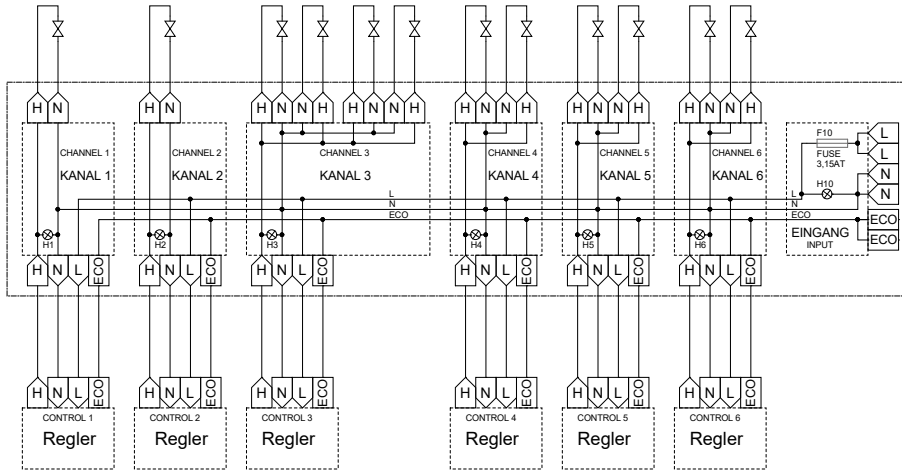
ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-32 	BN990005	<b>General features:</b> Magnetic fastening set for simple and safe fastening of the VOOPL terminal strip on a metallic substrate (for example, heating manifold)	18.20/II

# TERMINAL STRIP FOR HEATING MANIFOLD

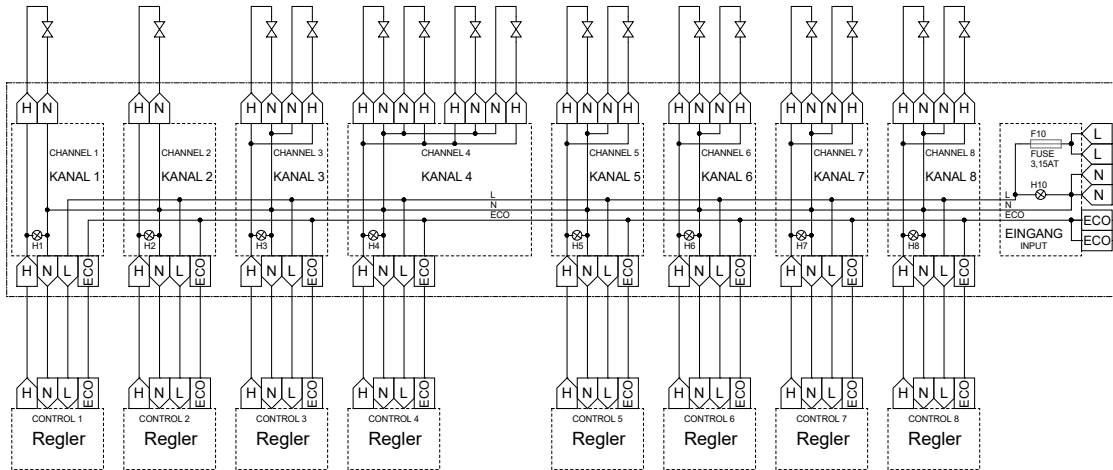
## FOR 6 OR 8 ROOM THERMOSTATS

### ILLUSTRATIONS

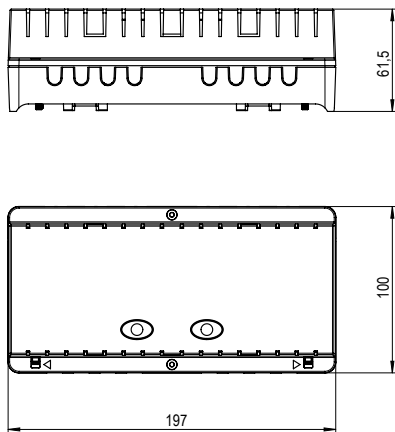
V00PL-216.176



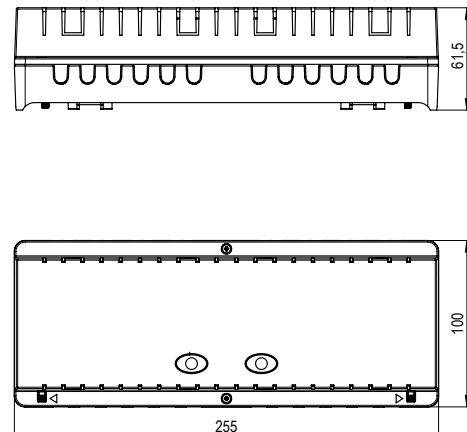
V00PL-318.178



V00PL-216.176



V00PL-318.178





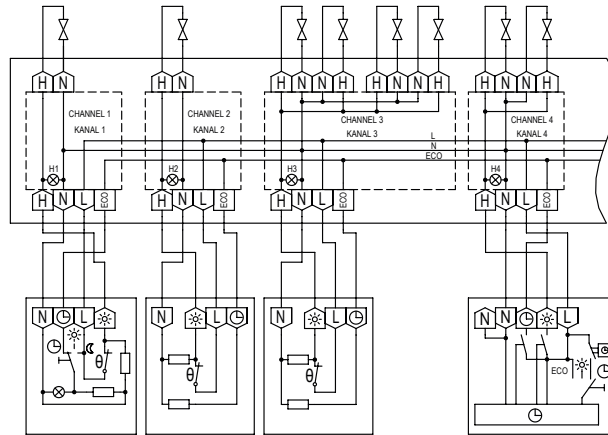
# NOTES ON AND EXAMPLES OF WIRING FOR VOOPL TERMINAL STRIPS

## 1 HEATING SYSTEM WITH MASTER-SLAVE TIME ZONE

The controllers and valve actuators are supplied with power via the terminal strip.

The features and functions of the individual controller types can be found in the overview on page 54.

The information listed in this matrix applies for normally closed valve actuators.

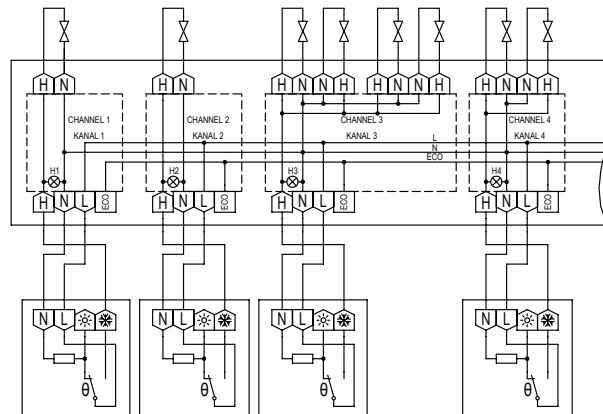


Study	Children's room	Living room	Bedroom
RTBSB-201.075 /	RTBSB-201.002 /	RTBSB-201.002 /	HTRRBu 110.117
RTBSU-401.075	RTBSU-401.002	RTBSU-401.002	(master time zone 2
(slave)	(slave)	(slave)	slave)

## 2 COOLING SYSTEM

The controllers and valve actuators are supplied with power via the terminal strip.

The features and functions of the individual controller types can be found in the overview on page 54. The information listed in this matrix applies for normally closed valve actuators.



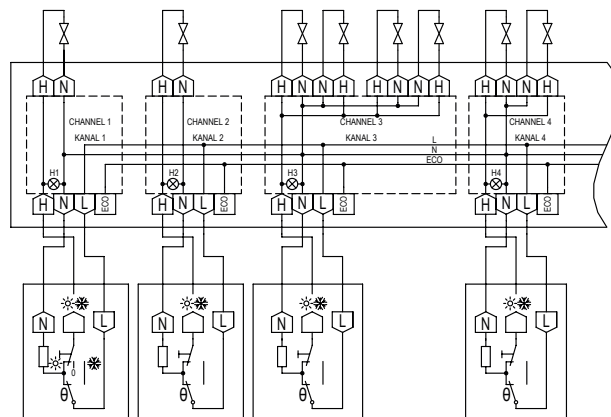
Study	Children's room	Living room	Bedroom
RTBSB-201.010 /	RTBSB-201.010 /	RTBSB-201.010 /	RTBSB-201.010 /
RTBSU-401.010	RTBSU-401.010	RTBSU-401.010	RTBSU-401.010

## 3 HEATING / COOLING SYSTEMS WITH HEATING / COOLING SWITCHES AT THE CONTROLLERS

The controllers and valve actuators are supplied with power via the terminal strip.

The features and functions of the individual controller types can be found in the overview on page 54.

The printing on the heating / cooling changeover switches on the RTBSU-401.065 and RTBSU-401.063 applies to normally closed valve actuators. The medium status 'hot' or 'cold' must always correspond to the switch settings.



Study RTB-	Children's room	Living room	Bedroom
SU-401.063	RTBSB-201.065 /	RTBSB-201.065 /	RTBSB-201.065 /
	RTBSU-401.065	RTBSU-401.065	RTBSU-401.065





# AIR CONDITIONING TECHNOLOGY



SUSTAINABLE AND PRECISE



# ALRE CLIMATE CONTROLLERS. FOR **A PERFECT** **INDOOR CLIMATE.**

Our climate controllers expertly balance humidity and temperature for a comfortable indoor environment, protecting your investments and enhancing comfort. With adjustable programs and display controllers, they offer not only comfort but also sustainability and energy efficiency, aligning with today's growing need for eco-friendly heating solutions amid climate change challenges.

**alre climate controller: comfortable indoor climate any time of the year.**

## APPLICATION **EXAMPLES:**

- + Cooling ceilings
- + Fan coils
- + Hot water underfloor heating
- + Air distribution systems
- + Partial air conditioners
- + Heat pumps
- + AC split units
- + Dew point monitoring
- + Relative humidity control
- + Accessories such as terminal strips and actuators



## OVERVIEW

120

### CLIMATE CONTROLLER

Electronic with triac output (noiseless)	121
Bimetal (mechanical) 'surface-mounted'	122
Electronic, 'surface-mounted' (also for EC fans)	124
Electronic for cooling ceilings or surface heating/cooling systems, 'flush-mounted'	126
Electronic for cooling ceilings or surface heating/cooling systems, 'flush-mounted'	129
Electronic for cooling ceilings or surface heating/cooling systems, 'flush-mounted' with clock (also for EC fans)	133
Continuous electronic climate controller, 'surface-mounted'	139

### DEW POINT MONITORING

Dew point monitor	141
Dew point sensor	142

### HYGROSTATS, / HYGRO-THERMOSTATS

Room 'surface-mounted/flush-mounted'	144
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### TERMINAL STRIPS FOR HEATING / COOLING MANIFOLDS / VALVE ACTUATORS

Terminal strips for heating/cooling manifolds	147
Actuator 'STELLA' 230 V NC	150
Electro-thermal valve actuators	151



**ROOM TEMPERATURE CONTROLLER, HEATING / COOLING, SURFACE-MOUNTED, ULTRA-SLIM**



**ROOM TEMPERATURE CONTROLLER WITH CLOCK, HEATING / COOLING**



**ROOM TEMPERATURE CONTROLLER, HEATING / COOLING, 3-STAGE FAN OUTPUT**



**TERMINAL STRIP VOORL-318.053**



# CLIMATE CONTROLLER OVERVIEW

TYPE	KTRTB-		KTBSB-			KTRRB-				KTRRU-		KTRRUu		KTRVB-			
	211,108	251,108	112,000	113,500	112,070	117,128	117,163	117,169	052,244	052,245	052,245	217,456	257,456	048,100	048,200	052,244	052,245
PAGE	121	121	122	122	122	124	124	124	126	127	129	133	135	139	139	140	140
<b>HOUSING DESIGN</b>																	
Berlin 1000	x	x															
Berlin 2000									x	x				x	x	x	x
Berlin 3000			x	x	x	x	x	x									
Berlin flush-mounted kit											x	x	x				
<b>SENSOR</b>																	
Bimetal (toggler)			x	x	x												
NTC, internal	x	x				x	x	x	x	x	x	x	x	x	x	x	x
NTC, external						x	x	x	x	x	x	x	x			x	x
Floor monitor (NTC)																	
Dew point sensor (external)									x	x	x	x	x			x	x
<b>CONTROL TYPE</b>																	
Climate controller	x	x															
Climate controller (0–10 V)								x				x	x	x	x	x	x
Climate controller with fan output			x	x								x	x				
Climate controller with neutral zone							x		x	x	x	x	x			x	x
Climate controller with neutral zone and fan output					x	x		x				x	x				
Mixing chamber controller (0–10 V)														x	x		
<b>PIPE SYSTEM</b>																	
Air conditioning controller as a 2-pipe system	x	x				x	x	x	x	x	x	x	x			x	x
Air conditioning controller as a 4-pipe system			x	x	x	x	x	x	x	x	x	x	x			x	x
<b>APPLICATION EXAMPLES</b>																	
Hot water floor heating									x	x	x	x	x	x	x	x	x
Fan coil			x	x	x	x		x									
Air distribution systems			x		x	x											
Partial air conditioner	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Cooling ceiling	x	x							x	x	x	x	x	x	x	x	x
Heat pump				x													
AC split unit				x													
<b>FEATURES</b>																	
'ECO' input	x	x				x	x	x	x	x	x	x	x			x	x
Input 'changeover – heating/cooling'	x	x							x	x	x	x	x			x	x
'Off with frost protection monitoring' input						x	x	x	x	x		x	x				
Switch 'on/off'			x	x	x												
Switch 'on/off with frost protection monitoring'						x	x	x									
Switch 'heating/cooling'																	
Switch 'heating/ventilation/cooling'				x													
Switch 'ECO/comfort/off with frost protection monitoring'										x	x						x
Switch 'fan'			x	x	x	x		x									
Indicator lamp 'ON/OFF'				x	x												
Indicator lamp 'heating mode'																	
Indicator lamp 'heating'	x	x		x					x	x	x	x	x			x	x
Indicator lamp 'cooling'	x	x		x					x	x	x	x	x			x	x
Indicator lamp 'heating/cooling'																	
Indicator lamp 'cooling interruption due to condensate'									x	x	x					x	x
<b>MISCELLANEOUS</b>																	
230 V~	x		x	x	x	x	x	x				x					
24 V~		x							x	x	x		x	x	x	x	x

# CLIMATE CONTROLLER ELECTRONIC WITH TRIAC OUTPUT (NOISELESS)

## SURFACE-MOUNTED 'ULTRA-THIN' INSTALLATION – DESIGN BERLIN 1000



### TECHNICAL DATA


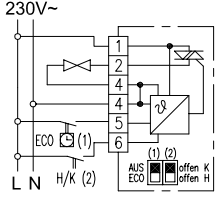


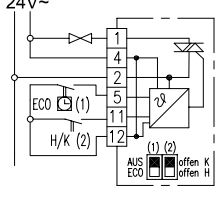
<b>Design:</b>	Berlin 1000
<b>Surface finish:</b>	glossy
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	ABS plastic
<b>Ambient temperature:</b>	0 to 40 °C
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals 0.5 mm <sup>2</sup> to 1.5 mm <sup>2</sup>
<b>Mounting / attachment:</b>	surface / wall mounting (4-hole assembly on flush-mounted socket)
<b>Protection rating:</b>	IP30
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Max. power consumption:</b>	< 0.8 W
<b>Switching power:</b>	15 W
<b>Switching element:</b>	triac
<b>Switching contact:</b>	NC contact
<b>Sensor:</b>	NTC, internal
<b>Control function:</b>	heating or cooling
<b>Control range:</b>	5 to 30 °C
<b>Hysteresis:</b>	0 K since control is practically continuous
<b>Proportional range:</b>	approx. 1 K
<b>General features:</b>	ECO function; 'heating / cooling' display; 'off with frost protection monitoring' operating mode; mechanical range restriction; scale: degrees Celsius; external setting

### APPLICATION

This controller was specifically designed for heating / cooling regulation of 2-pipe systems used in hotels, homes and offices and can control up to 5 valve actuators (normally closed).

The KTRTB's internal sensor measures the room temperature and activates heating or cooling depending on the deviation from the configured setpoint temperature. As the switching element used is a triac rather than a relay or bimetal, the system operates without bothersome switching sounds.

ECO function: if this function is selected, the temperature is adjusted down by 3 K in heating mode and up by 3 K in cooling mode.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	MA700300	<b>Operating voltage:</b> 230 VAC, 50 Hz <b>Protection class:</b> II, if properly mounted <b>Max. switching current:</b> 65 mA <b>Max. switching voltage:</b> 230 VAC, 50 Hz <b>Min. switching voltage:</b> 230 VAC, 50 Hz <b>Output signal:</b> switching PWM (230 VAC, 50 Hz) <b>ECO contact:</b> 230 VAC, 50 Hz, optionally configurable as ECO or OFF function		74.00 / 1
	MA700302	similar to KTRTB-211.108 but housing colour: traffic / studio white, similar to RAL9016		89.40 / 1
	MA700400	<b>Operating voltage:</b> 24 VAC, 50 Hz <b>Protection class:</b> III, protective low voltage <b>Max. switching current:</b> 625 mA <b>Max. switching voltage:</b> 24 VAC, 50 Hz <b>Min. switching voltage:</b> 24 VAC, 50 Hz <b>Output signal:</b> switching PWM (24 VAC, 50 Hz) <b>ECO contact:</b> optionally configurable as ECO or OFF function		55.50 / 1

Accessories: suitable valve actuators ZB00A

For accessories and dimension schematic see page 66.





# MECHANICAL CLIMATE CONTROLLERS KTBSB

## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 3000




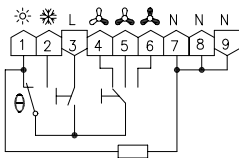

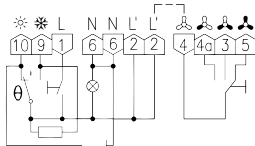

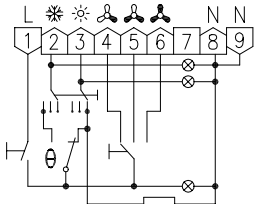
### TECHNICAL SPECIFICATIONS

<b>Design:</b>	Berlin 3000
<b>Surface finish:</b>	matt
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	ABS plastic
<b>Operating voltage:</b>	230 V AC, 50 Hz
<b>Ambient temperature:</b>	0 to 30 °C
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	surface / wall mounting or by means of an adapter plate on a flush-mounted socket
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	II, if properly mounted
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Max. switching current:</b>	6 (3) A
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	230 V AC, 50 Hz
<b>Switching power:</b>	1380 W
<b>Switching element:</b>	bimetallic contact
<b>Switching contact:</b>	changeover
<b>Output signal:</b>	switching (230 VAC, 50 Hz)
<b>Sensor:</b>	bimetal
<b>Control function:</b>	heating or cooling
<b>Control range:</b>	5 to 30 °C
<b>General features:</b>	mechanical range restriction; thermal feedback; scale: degrees Celsius; on / off switch; external setting

### APPLICATION

Control and monitoring of temperatures in closed, dry spaces. Remote control of air conditioners, climate chests, fan coil systems in living and office spaces and doctors' practices. Individual room optimisation in central air conditioning systems (hotels, hospitals etc.).

Suitable for all heating systems. (Please note the maximum switching current.)

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	MA200100	<b>General features:</b> 3-stage fan output; 3-stage fan switch; Switch "On / Off" <b>Hysteresis:</b> approx. 0.5 K at a temperature change of max. 4 K/h		91.00/1
	MA200202	<b>General features:</b> single-room climate controller with neutral zone for 4-pipe systems; 3-stage fan output; 2x auxiliary output 'on/off'; 'on/off' display, 3-stage fan switch; 'on/off' switch <b>Hysteresis:</b> heating approx. 1 K, cooling approx. 2 K, at a temperature change of max. 4 K/h <b>Neutral zone:</b> approx. 2 K		124.00/1
	MA200000	<b>General features:</b> 'on/off' display; 'heating' display; 'cooling' display; for 4-pipe systems; 3-stage fan output; heating / ventilation / cooling switch; 3-stage fan switch; 'on/off' switch <b>Hysteresis:</b> approx. 0.5 K at a temperature change of max. 4 K/h		119.50/1

Accessories: Terminal strips V00PL, compatible valve actuators for ZB00A-010.1xx, adapter plates to mount in flush-mounted socket JZ-17  
 You can find other controllers with outputs for heating / cooling in the 'Heating technology' section (RTBSB / RTBSU).

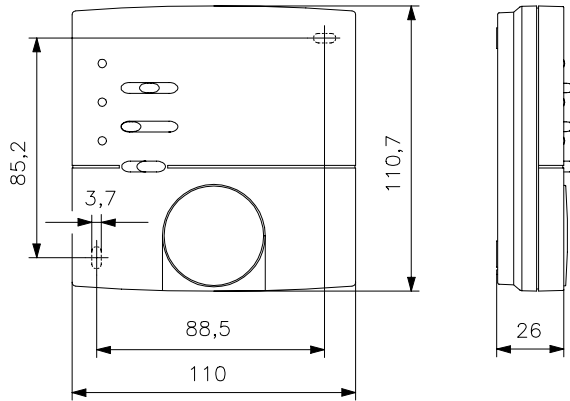
# MECHANICAL CLIMATE CONTROLLERS KTBSB

## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 3000

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-17	MN990001	<p><b>General features:</b> Adapter plate for mounting devices on flush-mounted sockets (including fastening screws for mounting the controller on the adapter plate)</p> <p><b>Surface finish:</b> matt</p> <p><b>Housing colour:</b> pure white, similar to RAL 9010</p> <p><b>Housing material:</b> ABS plastic</p>	7.70/II

### ILLUSTRATIONS

KTBSB



JZ-17



# ELECTRONIC CLIMATE CONTROLLER, KTRRB

## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 3000

### TECHNICAL DATA



<b>Design:</b>	Berlin 3000
<b>Surface finish:</b>	matt
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	ABS plastic
<b>Operating voltage:</b>	230 V AC, 50 Hz
<b>Ambient temperature:</b>	0 to 40 °C
<b>Storage temperature:</b>	–20 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting/attachment:</b>	surface/wall mounting or by means of an adapter plate on a flush-mounted socket
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	II, if properly mounted
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	230 V AC, 50 Hz
<b>Switching element:</b>	relay
<b>Switching contact:</b>	NO contact
<b>Output signal:</b>	switching (230 VAC, 50 Hz)
<b>Sensor:</b>	internal NTC, optional external NTC 'Sensor 2'
<b>ECO contact*:</b>	reduction by 3 K; alternatively, this input can be configured as a frost protection contact
<b>Control function:</b>	heating and /or cooling
<b>Control range:</b>	5 to 30 °C
<b>Neutral zone:</b>	approx. 2 K
<b>General features:</b>	operating mode 'off with frost protection monitoring'; mechanical range restriction; scale: degrees Celsius; external setting

### APPLICATION




Single-room temperature controller with neutral zone for 2-pipe or 4-pipe air conditioners.

#### External flow sensor (H / C sensor):

for switching automatically of the controller to heating or cooling mode in 2-pipe operation depending on the inflow temperature; alternatively, this input can be used as an H / C changeover contact.

#### Sensor rupture and short-circuit Fuse:

in case of a sensor rupture or sensor short-circuit, the heating is activated with a power-on time of 30% to prevent cooling or frost damage in the room.


TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
	MA601300	<b>General features:</b> single-room climate controller, 3-stage fan output, fan operation in neutral zone ON / OFF selectable; <b>on / off switch; 3-stage fan switch</b> <b>Max. switching current:</b> heating 5 (1) A, cooling 5 (1) A, fan 3 (1) A <b>Switching power:</b> heating 1150 W, cooling 1150 W, fan 230 W <b>Hysteresis:</b> approx. 1 K	209.30/1
	MA601400	Similar to KTRRB-117.128 but without 3-stage fan output and 3-stage fan switch	200.70/1
	MA601500	<b>General features:</b> single-room climate controller; <b>'off / manual fan / automatic fan' switch;</b> <b>'ventilator 3-stage 0–10 V' switch;</b> 'parametrisation 3-stage fan output' button; <b>'heating, cooling,</b> frost protection, sensor rupture or short circuiting of the external sensor' display; 3-stage fan output 0–10 V with adjustment to individual fan stages or dynamic 0–10 V to activate <b>EC fans;</b> ON / OFF: ventilator operation in neutral zone selectable <b>Max. switching current:</b> heating 5 (1) A, cooling 5 (1) A <b>Switching power:</b> heating 1150 W, cooling 1150 W <b>Output signal:</b> Analogue 0–10 V (5 mA) for activating an rpm-controlled fan <b>Hysteresis:</b> approx. 0.5 K	219.10/1

Accessories: Adaptor plate for mounting on flush-mounted socket JZ-17, terminal strips V00xx (see page 134, page 147), suitable valve actuators ZB00A-010.1xx (see page 150, page 151, suitable external sensors ('sensor 2'; see 'Sensor technology')  
 You can find other / similar controllers with outputs for heating / cooling in the 'Heating technology' section (RTBSB / RTBSU).

\*With ECO operation, the neutral zone (2 K) is extended by the ECO zone (+ / – 3 K). ECO operation is a savings mode that should be controlled, for example, via a window contact and / or a timer.

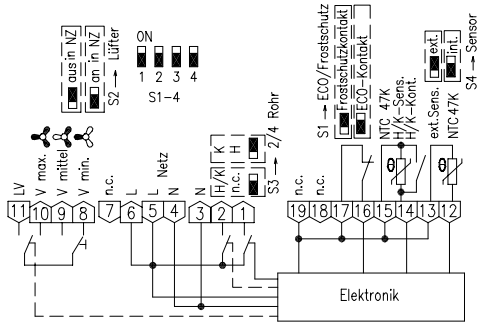
# ELECTRONIC CLIMATE CONTROLLER, KTRRB

## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 3000

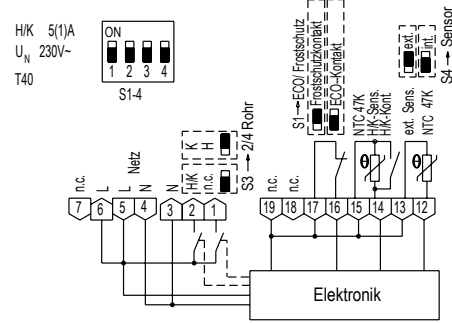
ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-17 	MN990001	<p><b>General features:</b> Adapter plate for mounting devices on flush-mounted sockets (including fastening screws for mounting the controller on the adapter plate)</p> <p><b>Surface finish:</b> matt</p> <p><b>Housing colour:</b> pure white, similar to RAL 9010</p> <p><b>Housing material:</b> ABS plastic</p>	7.70/II

### ILLUSTRATIONS

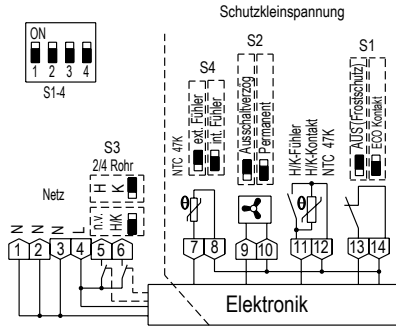
Circuit diagram KTRRB-117.128



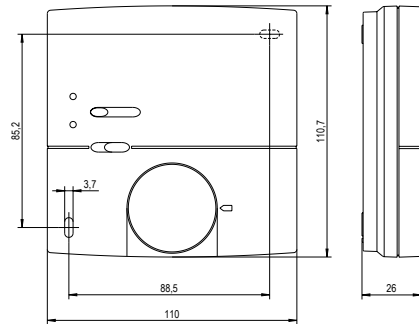
Circuit diagram KTRRB-117.163



Circuit diagram KTRRB-117.169



Housing design – 'Berlin 3000'



# ELECTRONIC CLIMATE CONTROLLER FOR COOLING CEILINGS, KTRRB

SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000 – WITH INTERNAL AND EXTERNAL (OPTIONAL) TEMPERATURE SENSOR



## TECHNICAL DATA


<b>Design:</b>	Berlin 2000
<b>Surface finish:</b>	matt
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	ABS plastic
<b>Ambient temperature:</b>	0 to 40 °C
<b>Operating voltage:</b>	24 VAC / 50 Hz, 24 VDC
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	surface / wall mounting
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	III
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Max. switching current:</b>	1 A
<b>Max. switching voltage:</b>	24 VAC / 50 Hz, 24 VDC
<b>Min. switching voltage:</b>	24 VAC / 50 Hz, 24 VDC
<b>Switching power:</b>	24 W
<b>Switching element:</b>	relay
<b>Switching contact:</b>	NO contact
<b>Output signal:</b>	Switching, 24 VAC / 50 Hz, 24 VDC
<b>Sensor:</b>	NTC internal, optional external, 'Sensor 2'*
<b>Hysteresis:</b>	approx. 1 K
<b>General features:</b>	External dew point sensor connection; mechanical range limitation; external setting

## APPLICATION

Temperature controller for cooling ceilings/walls and all kinds of hot water heaters in 2 and 4-pipe systems for hotel, home and office spaces. As the KTRRB features dew point monitoring, it is highly suited for controlling ceiling cooling systems.

The unit can control up to 5 valve actuators (24 V~ normally closed) per output. The types KTRRB-052.24x can be adapted to normally open actuators (24 V~, max. 5 pieces) with a jumper.

When using 0–10 V actuators: KTRVB-052.24x.


TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG	
	KTRRB-052.244	DA420600	<p><b>General features:</b> ECO function; 'heating / cooling / cooling interruption due to condensation / off' display; 'sensor rupture, sensor short-circuit, frost protection' display; relative scale</p> <p><b>External flow sensor (H / C sensor):</b> for automatic switching of the controller in heating or cooling mode depending on the inflow temperature ('Sensor 2'). Alternatively, this input can be used as an H / C changeover contact</p> <p><b>Eco contact:</b> upon closing the contact, the ECO function is actuated</p> <p><b>Forced switch-off contact:</b> external switch-off function with frost protection function</p> <p><b>Control function:</b> heating and / or cooling, cooling interruption upon condensation of the dew point sensor, frost protection function in the switched-off condition</p> <p><b>Control function:</b> 13 to 29 °C</p> <p><b>Setting range:</b> -8 to +8 °C</p> <p><b>Neutral zone:</b> approx. 2 K</p> <p><b>Pipe system compatibility:</b> 2-pipe and 4-pipe</p>	see page 128	200.80/1








# ELECTRONIC CLIMATE CONTROLLER FOR COOLING CEILINGS, KTRRB

## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	DA420700	<p><b>General features:</b> ECO function; 'heating / cooling / cooling interruption due to condensation / off' display; 'sensor break, sensor short-circuit, frost protection' display; operating mode 'off with frost protection monitoring'; relative scale; <b>off / comfort / ECO switch</b></p> <p><b>External flow sensor (H/C sensor):</b> for automatic switching of the controller to heating or cooling mode depending on the inflow temperature ('Sensor 2'); alternatively, this input can be used as an H/C changeover contact</p> <p><b>ECO Contact:</b> upon closing the contact, the ECO function is actuated</p> <p><b>Forced switch-off contact:</b> external switch-off function with frost protection function</p> <p><b>Control function:</b> heating and / or cooling, cooling interruption upon condensation of the dew point sensor, frost protection function in the switched-off condition</p> <p><b>Control range:</b> 13 to 29 °C</p> <p><b>Setting range:</b> -8 to +8 °C</p> <p><b>Neutral zone:</b> approx. 2 K</p> <p><b>Pipe system compatibility:</b> 2-pipe and 4-pipe</p> <p>Replacement for KTRRB-040.213</p>	see page 128	212.10 / I

\* An internal trimming potentiometer can be used to select whether control should be based on the internal (left stop) or external sensor (right stop). In the intermediate positions, if both sensors are used, a weighting is applied to the internal room sensor and the external radiation sensor. The weighting allows for compensation of different structural conditions such as large window areas or cardinal directions. For very slow controlled systems, it is recommended to assign a higher weighting to the radiation sensor than to the internal room sensor.

Accessories: suitable valve actuators ZBOOA-040.100 (see page 151), suitable external sensors ('Sensor 2'); see 'Sensor technology'.

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
	G8000299	<p><b>Mounting / attachment:</b> using clips on cooling ceiling capillary pipe</p> <p><b>Use:</b> drywall cooling ceiling (plasterboard) with hung up capillary pipe mat, metal ceiling cooling ceiling with integrated capillary pipe system</p> <p><b>Sensor line extendable up to:</b> 50 m with 2 x 0.5 mm<sup>2</sup></p> <p><b>Scope of delivery:</b> sensor, 2 clips for cooling pad</p>	65.80 / I
	G8000300	<p><b>Mounting / attachment:</b> using clips on cooling ceiling capillary pipe or cable ties on the pipe</p> <p><b>Use:</b> pipe systems transporting cold water, plaster cooling ceiling with capillary tube system</p> <p><b>Sensor line extendable up to:</b> 50 m with 2 x 0.5 mm<sup>2</sup></p> <p><b>Scope of delivery:</b> sensor, 2 clips for cooling pad, 2 cable ties</p>	65.80 / I
	SN120000	<p><b>Mounting / attachment:</b> attach to pipe by means of cable ties</p> <p><b>Use:</b> pipe systems transporting cold water</p> <p><b>Sensor line extendable up to:</b> 50 m with 2 x 0.5 mm<sup>2</sup></p> <p><b>Scope of delivery:</b> sensor, 2 cable ties</p>	58.90 / I

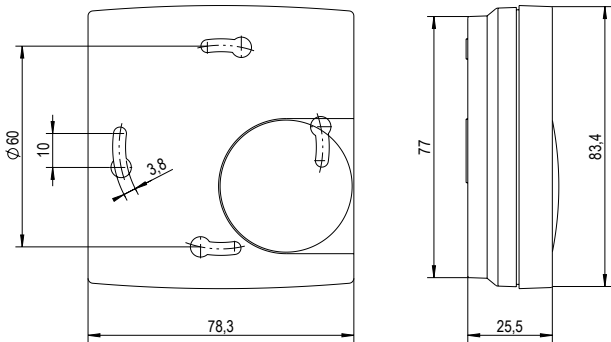


# ELECTRONIC CLIMATE CONTROLLER FOR COOLING CEILINGS, KTRRB

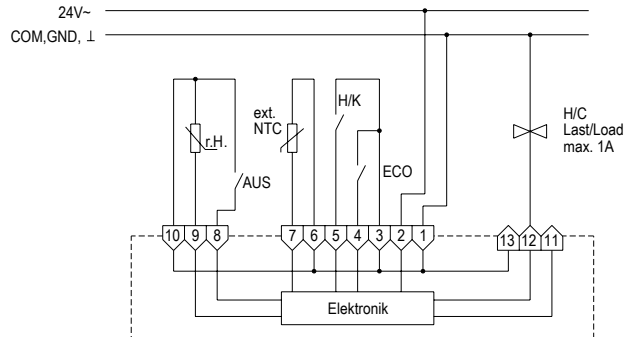
## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

### ILLUSTRATIONS

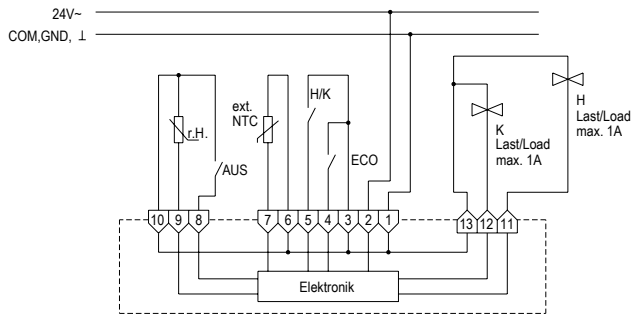
KTRRB



KTRRB-052.24x connection in a 2-pipe system



KTRRB-052.24x connection in a 4-pipe system

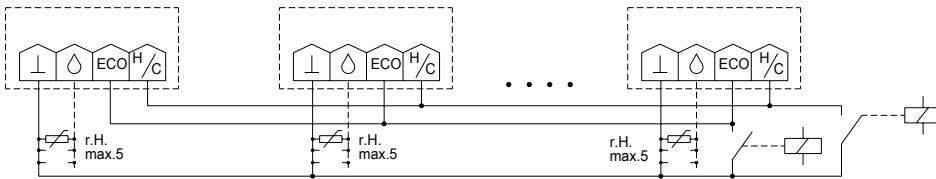


**Important note:**

The inflow channels of TPS-1 and TPS-2 are closed at the factory to avoid dirtying during assembly. After assembly, they must be shortened with a knife until they are flush with the wall or ceiling to ensure air circulation. The air ducts should be arranged such that soiling during operation is avoided. It is important that the air surrounding the sensor has the same temperature as the room air to be cooled. If the humidity and temperature of the air to be cooled (ceiling cooling system) is different from that of the air surrounding the sensor, condensation may be detected prematurely or too late. As regards TPS-3, contact with the PCB paths must be avoided to prevent long-term corrosion.

**Attention in case of sensor extension:**

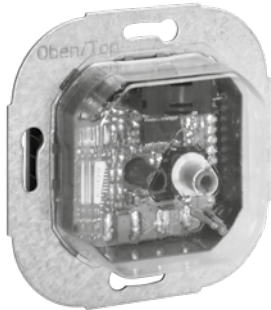
laying parallel to conductors carrying a mains voltage can result in faults. The use of shielded conductors reduces sensitivity to electromagnetic fields.



Parallel wiring for heating / cooling changeover and / or ECO for several controllers (max. 20 controllers)

# ELECTRONIC CLIMATE CONTROLLER FOR COOLING CEILINGS, KTRRU

- WITH INTERNAL AND EXTERNAL (OPTIONAL) TEMPERATURE SENSOR
- FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP



## TECHNICAL DATA

<b>Design:</b>	Berlin flush-mounted
<b>Housing material:</b>	PC plastic
<b>Operating voltage:</b>	24 VAC / 50 Hz, 24 VDC
<b>Ambient temperature:</b>	0 to 40 °C
<b>Storage temperature:</b>	–20 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	III
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Average power consumption:</b>	approx. 0.6 W (1 VA)
<b>Max. switching current:</b>	1 A
<b>Max. switching voltage:</b>	24 VAC / 50 Hz, 24 VDC
<b>Min. switching voltage:</b>	24 VAC / 50 Hz, 24 VDC
<b>Switching power:</b>	24 W
<b>Switching element:</b>	relay
<b>Switching contact:</b>	NO contact
<b>Output signal:</b>	switching, 24 VAC / 50 Hz, 24 VDC
<b>Sensor:</b>	NTC internal, optional external 'Sensor 2'*
<b>ECO contact:</b>	when the contact is closed, the ECO function is actuated (+ / – 3 K)
<b>Control function:</b>	heating and/or cooling, cooling interruption upon condensation of the dew point sensor, frost protection function in the switched-off condition
<b>Control range:</b>	13 to 29 °C
<b>Setting range:</b>	–8 to +8 °C
<b>Hysteresis:</b>	approx. 1 K
<b>Neutral zone:</b>	approx. 2 K
<b>General features:</b>	single-room climate controller; optional external dew point sensor; ECO function; 'heating / cooling / cooling interruption due to condensation / off' display; mechanical range restriction; relative scale; external setting
<b>Pipe system compatibility:</b>	2-pipe and 4-pipe

## APPLICATION


For heating / cooling control of 2- and 4-pipe systems used in hotels, homes and offices.

The unit can control up to 5 valve actuators (24 V~ normally closed) per output. The controllers are configured for 2-pipe or 4-pipe operation by means of a jumper. In 2-pipe operation, the controller is operated with a common heating / cooling output, whose mode of operation action can be toggled by means of an external contact (change-over contact). Connection of TPS dew point sensors is possible (max. 5 of them in parallel). Condensate formation at the TPS can result in the cooling valve getting closed.

It is possible to actuate the energy saving (ECO) function via an external contact.

In the 'off' switch position, the room frost protection function is activated (when the temperature drops below 5 °C, all valves are forced open).

**External flow sensor (H/C sensor):** for automatic switching of the controller to heating or cooling mode depending on the inflow temperature ('Sensor 2'); alternatively, this input can be used as an H/C changeover contact.

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
KTRRU-052.245#00 	UA210401	<p><b>General features:</b> 'off with frost protection monitoring' operating mode; 'off / comfort / ECO' switch</p> <p><b>Surface finish:</b> depending on the cover set selected</p> <p><b>Housing colour:</b> depending on the cover set selected</p> <p><b>Mounting / attachment:</b> in flush-mounted socket – adaptable with 50 x 50 mm or 55 x 55 mm cover set in almost all surface switch ranges (deep flush-mounted socket recommended)</p> <p><b>Accessories:</b> Cover sets are offered in several design variants (see 'Overview', page 131) and are not included in the scope of delivery.</p> <p><b>Suitable set no.:</b> JZ-007.xxx, e.g.:</p> <p>50 x 50 mm cover set, pure white, glossy: JZ-007.000</p> <p>55 x 55 mm cover set, pure white, glossy: JZ-007.100</p> <p><b>Scope of delivery:</b> controller, protective cap</p> <p>If the functions of the 'off / comfort / eco' switch are not required, JZ-008.xxx cover sets can be used instead (in switch position comfort).</p>	205.80 / 1



\* An internal trimming potentiometer can be used to select whether control should be based on the internal (left stop) or external sensor (right stop). In the intermediate positions, if both sensors are used, a weighting is applied to the internal room sensor and the external radiation sensor. The weighting allows for compensation of different structural conditions such as large window areas or cardinal directions. For very slow controlled systems, it is recommended to assign a higher weighting to the radiation sensor than to the internal room sensor.

Accessories: suitable valve actuators ZB00A-040.100 (see page 151), dew point sensor TPS 1 / TPS 2 / TPS 3 (see page 142), suitable external sensors ('Sensor 2'); see 'Sensor technology'.



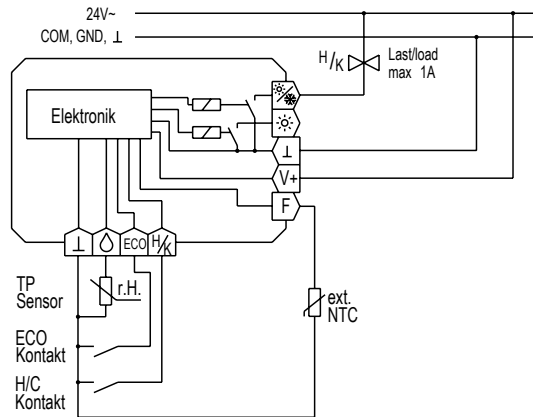
# ELECTRONIC CLIMATE CONTROLLER FOR COOLING CEILINGS, KTRRU

– WITH INTERNAL AND EXTERNAL TEMPERATURE SENSOR –  
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

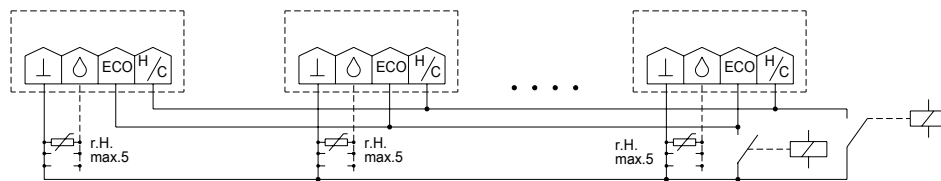
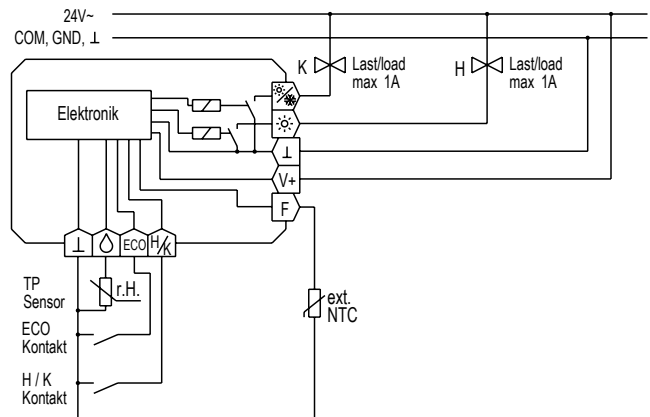
TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
JZ-090.900 	VV000025	<b>General features:</b> alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50 x 50 mm cover <b>Design:</b> Berlin <b>Surface finish:</b> glossy <b>Housing colour:</b> pure white, similar to RAL 9010 <b>Housing material:</b> PC plastic	4.40/1
JZ-090.100	VV000048	similar to JZ-090.900, but for all flush-mounted controllers in combination with cover 55 x 55 mm	4.40/1
JZ-090.910 	VV000010	<b>General features:</b> alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50 x 50 mm cover <b>Design:</b> Berlin <b>Surface finish:</b> glossy <b>Housing colour:</b> pearl white, similar to RAL 1013 <b>Housing material:</b> PC plastic	4.40/1

## ILLUSTRATIONS

Circuit diagram for KTRRU-052.245 in 2-pipe system



Circuit diagram for KTRRU-052.245 in 4-pipe system



Parallel wiring for heating / cooling changeover and / or ECO for several controllers (max. 20 controllers)

## ALRE FLUSH-MOUNTED RANGE (COVER SETS)

ALL BASIC TYPES AND SUITABLE **50 X 50 MM** COVER SETS

BASIC TYPE	50 x 50 mm cover set <b>PURE WHITE (RAL 9010) GLOSSY</b> (JZ-xxx.000)		50 x 50 mm cover set <b>PURE WHITE (RAL 9010) MATT</b> (JZ-xxx.001)		50 x 50 mm cover set <b>PEARL WHITE (RAL 1013) GLOSSY</b> (JZ-xxx.010)		50 x 50 mm cover set <b>TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY (JZ-xxx.020)</b>		EURO / PG
	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	
KTRRU-052.245#00	JZ-007.000	UN990022	JZ-007.001	UN990024	JZ-007.010	UN990026	JZ-007.020	UN990080	13.20/I
Cover sets for function without switch	JZ-008.000	UN990021	JZ-008.001	UN990023	JZ-008.010	UN990025	JZ-008.020	UN990079	12.80/I
FHY 101.060#00	JZ-021.000	UN990039	JZ-021.001	UN990044	JZ-021.010	UN990049	JZ-021.020	UN990081	12.20/I
<b>FRAMES</b>									
alre frame	JZ-090.900	VV000025			JZ-090.910	VV000010			4.40/I

In a flush-mounted socket, it can be adapted to fit virtually any surface switch range.

### ILLUSTRATIONS

alre frame 'Berlin' (JZ-090.900)



Cover set (example), individually foil-wrapped



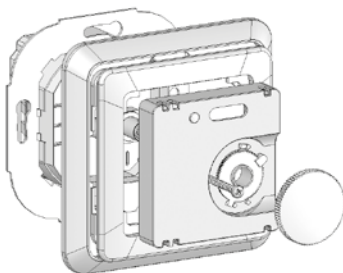
ALL BASIC TYPES AND SUITABLE **55 X 55 MM** COVER SETS

BASIC TYPE	55 x 55 mm cover set <b>PURE WHITE (RAL 9010) GLOSSY</b> (JZ-xxx.000)		55 x 55 mm cover set <b>PURE WHITE (RAL 9010) MATT</b> (JZ-xxx.001)		55 x 55 mm cover set <b>PEARL WHITE (RAL 1013) GLOSSY</b> (JZ-xxx.010)		55 x 55 mm cover set <b>TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY (JZ-xxx.020)</b>		EURO / PG
	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	
KTRRU-052.245#00	JZ-007.100	UN990028	JZ-007.101	UN990030	JZ-007.110	UN990032	JZ-007.120	UN990095	15.00/I
Cover sets for function without switch	JZ-008.100	UN990027	JZ-008.101	UN990029	JZ-008.110	UN990031	JZ-008.120	UN990094	14.50/I
FHY 101.060#00	JZ-021.100	UN990054	JZ-021.101	UN990059	JZ-021.110	UN990064	JZ-021.120	UN990096	13.20/I
<b>FRAMES</b>									
alre frame	JZ-090.100	VV000048							4.40/I

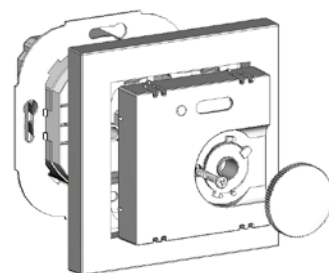
Can be adapted to fit many surface switch ranges in flush-mounted sockets (for a current overview of the suitable frames and insert frames, see page 132).

### ILLUSTRATIONS

KTRRU with 50 x 50 insert frame



KTRRU without 55 x 55 insert frame







## ADAPTATION OF ALRE FLUSH-MOUNTED CONTROLLERS

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION possible with '55 x 55' or 'BJ' cover sets (without insert frame)	Only ADAPTATION with '50 x 50' cover set requires an insert frame from the manufacturer
BERKER	S.1	polar white (matt)	x	1109 19 19
BERKER	S.1	polar white (glossy)	x	1109 90 89
BERKER	Arsys	polar white (glossy)		1108 01 69
BERKER	B.3	aluminium / polar white (matt)	x	1109 19 19
BERKER	B.3	aluminium / polar white (glossy)	x	1109 90 89
BERKER	B.7	glass / polar white (matt)	x	1109 19 19
BERKER	B.7	glass / polar white (glossy)	x	1109 90 89
BERKER	Q.1 / Q.3	polar white (velvet)		1109 60 79
BERKER	K.1	polar white (glossy)		1108 71 09
BUSCH-JAEGER	Reflex SI / SI Linear	alpine white (glossy)		1746-214-101
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)	x	1746-914-101
BUSCH-JAEGER	impuls	alpine white (glossy)		1746 / 10-74
BUSCH-JAEGER	solo / future linear / axcent / etc.	studio white – see RAL 9016 below		
Elso	Joy	pure white (glossy)	x	363084
Elso	Fashion / Riva / Scala	pure white (glossy)		203084
GIRA	surface switch	pure white (glossy)		0282 112
GIRA (System 55)	Standard / E2	pure white (semi-gloss)	x	0282 27
GIRA (System 55)	Standard / E2 / E3	pure white (glossy)	x	0282 03
GIRA (System 55)	E22	pure white (glossy)	x	0282 03
GIRA (System 55)	Event	pure white (semi-gloss) + opaque...	x	0282 27
GIRA (System 55)	Event	pure white (glossy) + opaque...	x	0282 03
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium...	x	0282 27
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium...	x	0282 03
GIRA	S-Color	pure white (high-gloss)		0282 40
JUNG	CD 500 / CD plus	alpine white (glossy)		CD 590 Z WW
JUNG	A 500 / A 550 / AS 500 / A plus / A flow	alpine white (glossy)	x	A 590 Z WW
JUNG	LS 990	alpine white (glossy)		LS 961 Z WW
JUNG	LS plus	alpine white (glass)		LS 961 Z WW
JUNG	A creation	alpine white (glossy)	x	A 590 Z WW
JUNG	LS Design	alpine white (glossy)		LS 961 Z WW
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	x	5181 19
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (glossy)	x	5185 19
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)	x	5185 19
MERTEN (Surface System)	Artec / Antik	polar white (glossy)		5160 99
MERTEN	1-M / M-Smart / M-Plan / M-Pure / D-Life	active white – see RAL 9016 below or product finder		
PEHA	Standard	pure white (glossy)		80.670.02 ZV
PEHA	Dialog	pure white (glossy)		95.670.02 ZV
PEHA	Aura	pure white (matt) / glass		20.670.02 ZV
PEHA	Badora	pure white (glossy)		11.670.02 ZV

MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION possible with '55 x 55' or 'BJ' cover sets (without insert frame)	Only ADAPTATION with '50 x 50' cover set requires an insert frame from the manufacturer
BUSCH-JAEGER	solo / future / future linear	studio white (RAL 9016, glossy)		1746 / 10-84
BUSCH-JAEGER	future linear	studio white (RAL 9016 matt)		1746 / 10-884
BUSCH-JAEGER	impuls	studio white (RAL 9016 matt)		1746 / 10-774
BUSCH-JAEGER	axcent	studio white (RAL 9016, glossy)		1746 / 10-84
BUSCH-JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016, glossy)		1746 / 10-84
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016, glossy)		1746 / 10-24G
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016 matt)		1746 / 10-24
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	x	5185 25
MERTEN	1-M / Atelier-M	active white (RAL 9016, glossy)	x	5185 25
MERTEN	D-Life	lotus white (RAL 9016)		MEG4500-6035
PEHA	Standard	arctic		D 80.670 ZV AW

\*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame

**NOTE:** Most switch ranges are designed in a colour similar to RAL 1013, 9016 or 1013, although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt / glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

**'50 x 50 controller':** The housing covers of the 50 x 50 controllers are 50 x 50 mm in size. Using a 50 x 50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50 x 50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch range in question can be found in the column 'Only for adaptation with '50 x 50' cover set'.

**'55 x 55 controller':** The housing covers of the 55 x 55 controllers are 55 x 55 mm in size. Many light switch ranges have inner dimensions of 55 x 55 mm. Therefore, the 55 x 55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column 'Adaptation with '55 x 55' cover set' to determine whether the 55 x 55 controller fits in the given light switch model (x).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12 / 2022 | No liability is assumed for the information provided. | Technical specifications subject to change.

# ELECTRONIC CLIMATE CONTROLLER WITH TIMER KTRRUU – 230 VAC

## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED



### TECHNICAL DATA

<b>Design:</b>	Berlin flush-mounted
<b>Housing material:</b>	PC, PMMA, ABS plastic
<b>Ambient temperature:</b>	0 to 40 °C
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Protection rating:</b>	IP30
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Max. power consumption:</b>	approx. 1 W (2.2 VA)
<b>Max. switching current:</b>	3 (0.5) A each
<b>Switching element:</b>	2 relays
<b>Switching contact:</b>	2 NO contacts
<b>Output signal:</b>	Switching, analogue 0 to 10 V max. 5 mA for activating an rpm-controlled fan
<b>Sensor:</b>	NTC internal, optional external 'Sensor 2'
<b>External flow sensor (H/C sensor):</b>	For automatic switching of the controller to heating or cooling mode depending on the inflow temperature ('Sensor 2'); alternatively, this input can be used as an H/C changeover contact
<b>ECO contact:</b>	upon closing the contact, the ECO function is actuated
<b>Control range:</b>	5 to 40 °C
<b>Setting range:</b>	standard setting range for heating (5 to 30 °C), second setting range for cooling (18 to 40 °C)
<b>Hysteresis:</b>	approx. 1 K
<b>Neutral zone:</b>	adjustable
<b>Display type:</b>	illuminated graphical display
<b>Pipe system compatibility:</b>	2-pipe and 4-pipe

### APPLICATION

Flush-mounted controller with timer function for heating/cooling regulation of 2 and 4-pipe systems used in hotels, homes and offices. The adaptation takes place in a menu.

The unit can control up to 5 valve actuators (normally open or normally closed) per output. In 2-pipe operation, the operating mode can be changed via an external changeover contact or temperature sensor. The clock can serve as a master for other controllers for switching to ECO mode.

It is possible to activate the energy saving (ECO) or frost protection (OFF) functions via an external contact. Alternatively, the controller's inputs can be configured to connect with an external temperature sensor or dew point sensor (TPS).


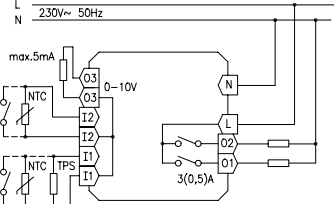
A 0–10 V interface can be used to control the speed of a fan (**EC fan**).

#### General:

digital surface switch single-room climate controller with timer; optional external dew point sensor; ECO function, ECO value adjustable; 'ECO' display; 'on/off' display; 'heating' display; 'cooling' display; 'cooling interruption

due to condensation'; digital actual value display; backlighting; operating mode 'off with frost protection monitoring'; child-safe features; facilities; power-reserve (3 days); actual value correction/measured value correction; learning function; emergency operating mode; holiday setting; party setting; automatic adjustment to summer/winter time; external setting; comfortable operation using touch-sensitive buttons with dynamic button assignment.

Special colours such as anthracite and aluminium are available depending on the project.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
 <p>KTRRUu 217.456#21 (230 VAC)</p>	UA220000	<p><b>Surface finish:</b> glossy  <b>Housing colour:</b> pure white, similar to RAL 9010  <b>Operating voltage:</b> 230 VAC, 50 Hz                      Electrical connection: pluggable screw-type terminals, voltage supply side 0.75–2.5 mm<sup>2</sup>, low-voltage side 0.08–1.5 mm<sup>2</sup>  <b>Mounting/ Attachment:</b> in flush-mounted socket – adaptable with 50 x 50 mm cover in almost all surface switch ranges (deep flush-mounted socket recommended)  <b>Protection class:</b> II  <b>Max. switching voltage:</b> 230 VAC, 50 Hz  <b>Min. switching voltage:</b> 230 VAC, 50 Hz  <b>Switching power:</b> 690 W  <b>Output signal:</b> switching heating, cooling, heating/cooling, ECO, OFF, 230 VAC, 50 Hz; analogue 0–10 V (5 mA) for activating an rpm-controlled fan  <b>Scope of delivery:</b> controller, 50 x 50 mm cover, pure white (similar to RAL 9010), glossy, alre frame 'Berlin'</p>		275.20/1









\* A menu setting can be used to select whether control should be based on the internal or external sensor. In the intermediate positions, if both sensors are used, a weighting is applied to the internal room sensor and the external radiation sensor.

The weighting allows for compensation of different structural conditions such as large window areas or cardinal directions. For very slow controlled systems, it is recommended to assign a higher weighting to the radiation sensor than to the internal room sensor.




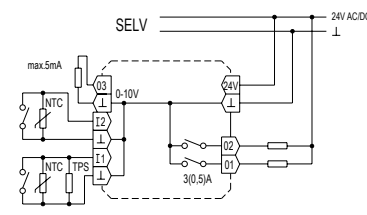








## ELECTRONIC CLIMATE CONTROLLER WITH TIMER KTRRUU – 230 VAC

### FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
KTRRUu 217.456#07 (230 VAC) 	UA220002	Similar to KTRRUu 217.456#21 but scope of delivery as follows: controller, <b>50 x 50 mm cover pure white</b> (similar to RAL 9010), <b>glossy</b> , without frame		271.10/1
KTRRUu 217.456#09 (230 VAC) 	UA220003	Similar to KTRRUu 217.456#21 but scope of delivery as follows: controller, 50 x 50 mm cover <b>pearl white</b> (similar to RAL 1013), <b>glossy</b> , without frame		271.10/1
KTRRUu 217.456#27 (230 VAC) 	UA220004	Similar to KTRRUu 217.456#21 but scope of delivery as follows: controller, <b>50 x 50 mm cover traffic / studio white</b> (similar to RAL 9016), <b>glossy</b> , without frame		271.10/1
KTRRUu 217.456#28 (230 VAC) 	UA220007	Similar to KTRRUu 217.456 but scope of delivery as follows: Controller, cover <b>for use with BUSCH-JAEGER Reflex SI/SI Linear pure white</b> (similar to RAL 9010), <b>glossy</b> , without frame		272.90/1
KTRRUu 217.456#55 (230 VAC) 	UA220005	Similar to KTRRUu 217.456#21 but scope of delivery as follows: controller, <b>55 x 55 mm cover pure white</b> (similar to RAL 9010), <b>glossy</b> , without frame		272.90/1
KTRRUu 217.456#56 (230 VAC) 	UA220009	Similar to KTRRUu 217.456#21 but scope of delivery as follows: controller, <b>55 x 55 mm cover pure white</b> (similar to RAL 9010), <b> matt</b> without frame		272.90/1
KTRRUu 217.456#57 (230 VAC) 	UA220006	Similar to KTRRUu 217.456#21 but scope of delivery as follows: controller, <b>55 x 55 mm cover pearl white</b> (similar to RAL 1013), <b>glossy</b> , without frame		272.90/1
KTRRUu 217.456#59 (230 VAC) 	UA220008	Similar to KTRRUu 217.456#21 but scope of delivery as follows: controller, <b>55 x 55 mm cover traffic / studio white</b> (similar to RAL 9016), <b>glossy</b> , without frame		272.90/1

# ELECTRONIC CLIMATE CONTROLLER WITH TIMER KTRRUU - 24 VAC / VDC




## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	UA220100	Similar to KTRRUu 217.456#21 but with: <b>Operating voltage:</b> 24 VAC / 50 Hz, 24 VDC <b>Protection class:</b> III <b>Max. switching voltage:</b> 24 VAC / 50 Hz, 24 VDC <b>Min. switching voltage:</b> 24 VAC / 50 Hz, 24 VDC <b>Switching power:</b> 72 W <b>Output signal:</b> switching heating, cooling, heating/cooling, ECO, OFF, 24 VAC / 50 Hz, 24 VDC, analogue 0–10 V (5 mA) to control a speed-controlled fan		275.20 / I
	UA220103	Similar to KTRRUu 257.456#21 but scope of delivery as follows: controller, <b>50 x 50 mm cover pure white</b> (similar to RAL 9010), <b>glossy</b> , without frame		271.10 / I
	UA220104	Similar to KTRRUu 257.456#21 but scope of delivery as follows: controller, <b>50 x 50 mm cover pearl white</b> (similar to RAL 1013), <b>glossy</b> , without frame		271.10 / I
	UA220105	Similar to KTRRUu 257.456#21 but scope of delivery as follows: controller, <b>50 x 50 mm cover traffic / studio white</b> (similar to RAL 9016), <b>glossy</b> , without frame		271.10 / I
	UA220108	Similar to KTRRUu 257.456#21 but scope of delivery as follows: Controller, cover <b>for use with BUS-CH-JAEGER Reflex SI / SI Linear pure white</b> (similar to RAL 9010), <b>glossy</b> , without frame		272.90 / I
	UA220106	Similar to KTRRUu 257.456#21 but scope of delivery as follows: controller, <b>55 x 55 mm cover pure white</b> (similar to RAL 9010), <b>glossy</b> , without frame		272.90 / I
	UA220110	Similar to KTRRUu 257.456#21 but scope of delivery as follows: controller, 55 x 55 mm cover, <b>pure white</b> (similar to RAL 9010), <b> matt</b> , without a frame		272.90 / I
	UA220107	Similar to KTRRUu 257.456#21 but scope of delivery as follows: controller, <b>55 x 55 mm cover pearl white</b> (similar to RAL 1013), <b>glossy</b> , without frame		272.90 / I
	UA220109	Similar to KTRRUu 257.456#21 but scope of delivery as follows: controller, <b>55 x 55 mm cover traffic / studio white</b> (similar to RAL 9016), <b>glossy</b> , without frame		272.90 / I

Accessories: suitable valve actuators ZB00A-040.100 (see page 150), dew point sensor TPS 1 / TPS 2 / TPS 3 (see page 142), suitable external sensors ('Sensor 2'); see 'Sensor technology'.

# ELECTRONIC CLIMATE CONTROLLER WITH TIMER KTRRUU

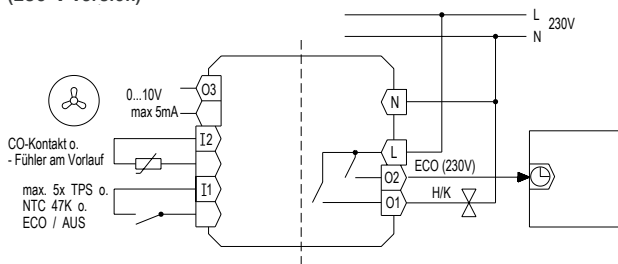
## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG	
	JZ-090.900	VV000025	<b>Design:</b> Berlin <b>Surface finish:</b> glossy <b>Housing colour:</b> pure white, similar to RAL 9010 <b>Housing material:</b> PC plastic <b>General features:</b> alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50 x 50 mm cover	4.40/I
	JZ-090.100	VV000048	Similar to JZ-090.900, but for all flush-mounted controllers in combination with 55 x 55 mm cover	4.40/I
	JZ-090.910	VV000010	<b>Design:</b> Berlin <b>Surface finish:</b> glossy <b>Housing colour:</b> pearl white, similar to RAL 1013 <b>Housing material:</b> PC plastic <b>General features:</b> alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50 x 50 mm cover	4.40/I

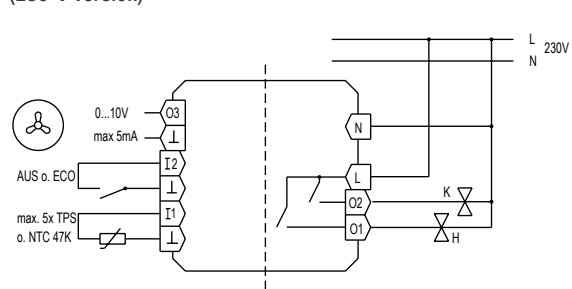
\* A menu can be used to select whether control should be based on the internal or external sensor. In the intermediate positions, if both sensors are used, a weighting is applied to the internal room sensor and the external radiation sensor. The weighting allows for compensation of different structural conditions such as large window areas or cardinal directions. For very slow controlled systems, it is recommended to assign a higher weighting to the radiation sensor than to the internal room sensor.

### ILLUSTRATIONS

KTRRUu application example – 2-pipe system (230-V version)



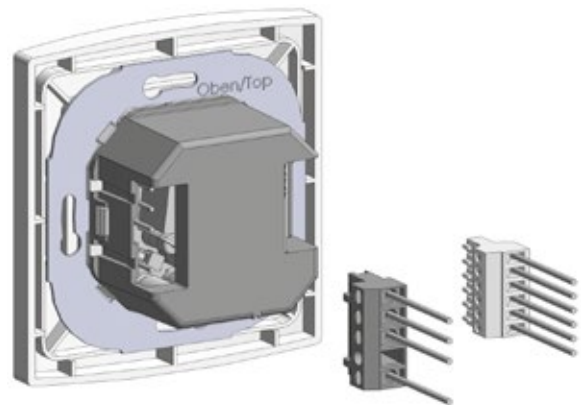
KTRRUu application example – 4-pipe system (230-V version)



KTRRUu with alre frame 'Berlin'



Pluggable screw-type terminals



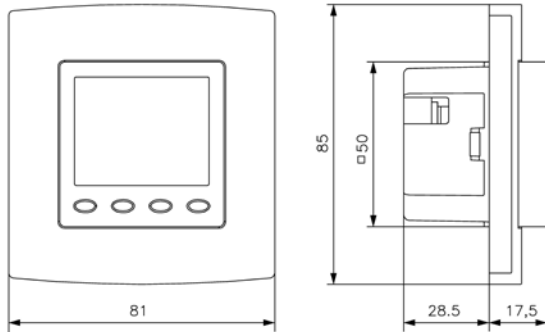


# ELECTRONIC CLIMATE CONTROLLER WITH TIMER KTRRUU

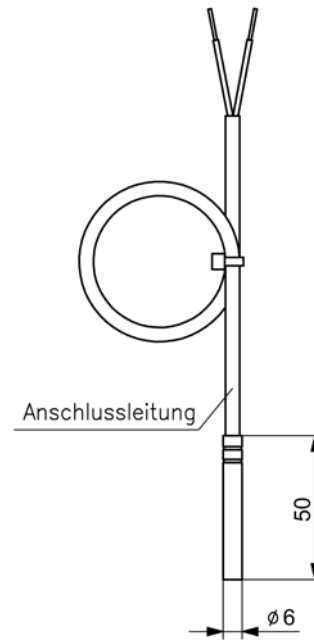
## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

### ILLUSTRATIONS

KTRRUu with alre frame 'Berlin'



KF-2



#### additional benefits:

- Pluggable screw-type terminals facilitate quick and easy assembly
- Illuminated, graphics-capable display
- Automatic adjustment to standard / daylight savings time
- Learn function
- Correction of measurement values
- Configurable display content
- Choice of various languages during installation: (German, English, French, Dutch, Polish, Spanish, Czech, Russian)
- Configurable inputs and outputs, for example:
  - OFF circuit with frost protection
  - ECO input
  - Dew point sensor input
  - Output: heating / cooling / timer master
- Fan control 0–10 V
- Key lock
- Valve protection function
- Configurable control method (PI-PWM or 2-point control)
- Holiday and party function
- Power reserve
- 'Heating mode' indication (LED orange)
- 'cooling mode' indication (LED blue)



## ADAPTATION OF ALRE FLUSH-MOUNTED CONTROLLERS KTRRUU 2X7.456

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION in switch range (55 x 55) possible with...	'50 X 50' adaptation possible with... (insert frame from manufacturer required)
BERKER	S.1	polar white (matt)	KTRRUU 2x7.456#56	not required
BERKER	S.1	polar white (glossy)	KTRRUU 2x7.456#55	not required
BERKER	Arsys	polar white (glossy)		KTRRUU 2x7.456#07 + 1108 01 69
BERKER	B.3	aluminium / polar white (matt)	KTRRUU 2x7.456#56	not required
BERKER	B.3	aluminium / polar white (glossy)	KTRRUU 2x7.456#55	not required
BERKER	B.7	glass / polar white (matt)	KTRRUU 2x7.456#56	not required
BERKER	B.7	glass / polar white (glossy)	KTRRUU 2x7.456#55	not required
BERKER	K.1	polar white (glossy)		KTRRUU 2x7.456#07 + 1108 71 09
BUSCH-JAEGER	Reflex SI/SI Linear	alpine white (glossy)	KTRRUU 2x7.456#28	not required
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)	KTRRUU 2x7.456#55	not required
BUSCH-JAEGER	impuls	alpine white (glossy)		KTRRUU 2x7.456#07 + 1746/10-74
BUSCH-JAEGER	solo/future/axcent etc.	studio white – see RAL 9016 below		
Elso	Joy	pure white (glossy)	KTRRUU 2x7.456#55	not required
Elso	Fashion/Riva/Scala	pure white (glossy)		KTRRUU 2x7.456#07 + (203084)
GIRA	surface switch	pure white (glossy)		KTRRUU 2x7.456#07 + 0282 112
GIRA (System 55)	Standard/E2	pure white (semi-gloss)	KTRRUU 2x7.456#56	not required
GIRA (System 55)	Standard/E2/E3	pure white (glossy)	KTRRUU 2x7.456#55	not required
GIRA (System 55)	E22	pure white (glossy)	KTRRUU 2x7.456#55	not required
GIRA (System 55)	Event	pure white (semi-gloss) + opaque...	KTRRUU 2x7.456#56	not required
GIRA (System 55)	Event	pure white (glossy) + opaque...	KTRRUU 2x7.456#55	not required
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium...	KTRRUU 2x7.456#56	not required
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium...	KTRRUU 2x7.456#55	not required
GIRA	S-Color	pure white (high-gloss)		KTRRUU 2x7.456#07 + 0282 40
JUNG	CD 500/CD plus	alpine white (glossy)		KTRRUU 2x7.456#07 + CD 590 Z WW
JUNG	A 500/A 550/AS 500/ A plus/A flow	alpine white (glossy)	KTRRUU 2x7.456#55	not required
JUNG	LS 990	alpine white (glossy)		KTRRUU 2x7.456#07 + LS 961 Z WW
JUNG	LS plus	alpine white (glass)		KTRRUU 2x7.456#07 + LS 961 Z WW
JUNG	A creation	alpine white (glossy)	KTRRUU 2x7.456#55	not required
JUNG	LS Design	alpine white (glossy)		KTRRUU 2x7.456#07 + LS 961 Z WW
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	KTRRUU 2x7.456#56	not required
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)	KTRRUU 2x7.456#55	not required
MERTEN (System Basis)	1-M/Atelier-M	polar white (glossy)	KTRRUU 2x7.456#55	not required
MERTEN (Surface System)	Artec/Antik	polar white (glossy)		KTRRUU 2x7.456#07 + 5160 99
MERTEN	1-M/M-Smart/M-Plan/ M-Pure/D-Life	active white – see RAL 9016 below		
PEHA	Standard	pure white (glossy)		KTRRUU 2x7.456#07 + 80.670.02 ZV
PEHA	Dialog	pure white (glossy)		KTRRUU 2x7.456#07 + 95.670.02 ZV
PEHA	Aura	pure white (matt) / glass		KTRRUU 2x7.456#07 + 20.670.02 ZV
PEHA	Badora	pure white (glossy)		KTRRUU 2x7.456#07 + 11.670.02 ZV

MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION in switch range (55 x 55) possible with...	To ADAPT KTRRUU in size '50 x 50', an insert frame from the manufacturer is required
BUSCH-JAEGER	solo/future/future linear	studio white (RAL 9016, glossy)		KTRRUU 2x7.456#27 + 1746/10-84
BUSCH-JAEGER	axcent	studio white (RAL 9016, glossy)		KTRRUU 2x7.456#27 + 1746/10-84
BUSCH-JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016)		KTRRUU 2x7.456#27 + 1746/10-84
BUSCH-JAEGER	alpha (nea/exclusive *)	studio white (RAL 9016, glossy)		KTRRUU 2x7.456#27 + 1746/10-24G
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	KTRRUU 2x7.456#59	not required
MERTEN	1-M/Atelier-M	active white (RAL 9016, glossy)	KTRRUU 2x7.456#59	not required
MERTEN	D-Life	lotus white (RAL 9016)		KTRRUU 2x7.456#27 + MEG4500-6035
PEHA	Standard	arctic		KTRRUU 2x7.456#27 + D 80.670 ZV AW

\*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame.

NOTE: Most light switches are designed in the colour 'similar to RAL 9010', although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt/glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

'50 x 50 controller': The housing covers of the 50 x 50 controllers are 50 x 50 mm in size. Using a 50 x 50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50 x 50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch range in question can be found in the column 'For adaptation of KTRRUU into size '50 x 50'.

'55 x 55 controller': The housing covers of the 55 x 55 controllers are 55 x 55 mm in size. Many light switch ranges have inner dimensions of 55 x 55 mm. Therefore, the 55 x 55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column 'Adaptation in switch range (55 x 55)' to determine whether the 55 x 55 controller fits in the given light switch range (KTRRUU 2x7.456#xx).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12/2022 | No liability is assumed for the information provided. | Technical specifications subject to change.

# CONTINUOUS ELECTRONIC CLIMATE CONTROLLER, KTRVB

## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000


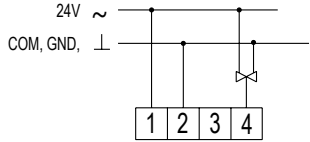

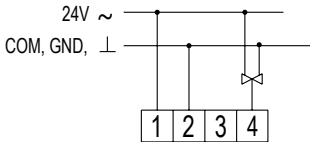


### TECHNICAL DATA

<b>Design:</b>	Berlin 2000
<b>Surface finish:</b>	matt
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	ABS plastic
<b>Storage temperature:</b>	-20 to +70 °C
<b>Operating voltage:</b>	24 VDC, 24 VAC, 50 Hz
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	surface / wall mounting
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	III
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Switching element:</b>	electronic with analogue output signal
<b>General features:</b>	climate controller for individual room control with proportionally controlled valve; mechanical range restriction; external setting

### APPLICATION



Room temperature controller for continuous control of valve actuators. Controller for 2-pipe systems (1-duct), 4-pipe systems (2-duct) and mixing chambers.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	DA450000	<p><b>General features:</b> scale: degrees Celsius</p> <p><b>Ambient temperature:</b> 0 to 50 °C</p> <p><b>Output signal:</b> consistently 0 to 10 V or 10 to 0 V (can be switched using a jumper), max. 5 mA</p> <p><b>Sensor:</b> NTC internal</p> <p><b>Control function:</b> heating or cooling with adjustable p-band, aligned to 5 V at setpoint temperature</p> <p><b>Control range:</b> 5 to 30 °C</p> <p><b>Hysteresis:</b> 0 K, since control is always via the p-band in the range from +0.5 K to 3 K (adjustable)</p> <p><b>Pipe system compatibility:</b> 2-pipe</p>		103.90 / I
	DA450100	<p><b>General features:</b> relative scale</p> <p><b>Ambient temperature:</b> 0 to 50 °C</p> <p><b>Output signal:</b> consistently 0 to 10 V or +10 to 0 V (can be switched using a jumper), max. 5 mA</p> <p><b>Sensor:</b> NTC internal</p> <p><b>Control function:</b> heating or cooling with adjustable p-band, aligned to 5 V at setpoint temperature</p> <p><b>Control range:</b> 13 to 29 °C</p> <p><b>Setting range:</b> -3 to +3 K (the pre-set 'zero point' of approx. 21 °C can be adjusted in the machine by +/- 5 K)</p> <p><b>Hysteresis:</b> 0 K, since control is always via the p-band in the range from +0.5 K to 3 K (adjustable)</p> <p><b>Pipe system compatibility:</b> 2-pipe</p>		111.60 / I



# CONTINUOUS ELECTRONIC CLIMATE CONTROLLER, KTRVB

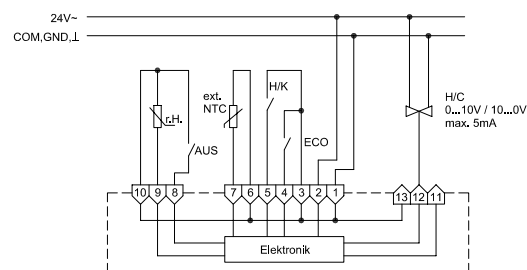
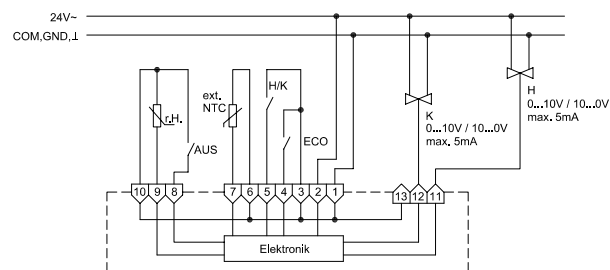
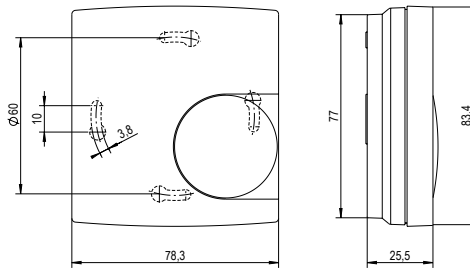
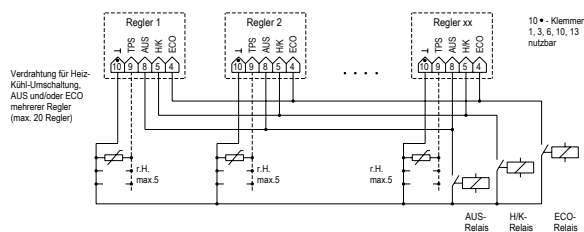
## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
KTRVB-052.244 	DA451500	<p><b>General features:</b> external dew point sensor; ECO function; 'heating / cooling / cooling interruption due to condensation / off' display; 'sensor rupture / sensor short-circuit / frost protection' display; operating mode 'off with frost protection monitoring'; relative scale</p> <p><b>Ambient temperature:</b> 0 to 40 °C</p> <p><b>Output signal:</b> consistently 0–10 V or 10–0 V (can be switched using a jumper), max. 5 mA</p> <p><b>Sensor:</b> NTC internal, optional external 'Sensor 2' (see 'Sensor technology')*</p> <p><b>External flow sensor (H / C sensor):</b> for automatic switching of the controller to heating or cooling mode depending on the inflow temperature; alternatively, this input can be used as a 'Sensor 2' H / C changeover contact</p> <p><b>ECO contact:</b> upon closing the contact, the ECO function is actuated (in heating mode, the temperature is adjusted down by 3 K and in cooling mode it is adjusted up by 3 K)</p> <p><b>Forced switch-off contact:</b> external switch-off function with frost protection monitoring</p> <p><b>Control function:</b> heating and / or cooling with p-band 1 K, cooling interruption upon condensation of the dew point sensor, frost protection function in 'off' state</p> <p><b>Control range:</b> 13 to 29 °C</p> <p><b>Setting range:</b> 21 °C ± 8 K</p> <p><b>Hysteresis:</b> 0 K, since control is always via the p-band in the range from 1 K</p> <p><b>Neutral zone:</b> approx. 2 K</p> <p><b>Pipe system compatibility:</b> 2-pipe and 4-pipe</p>		200.80/1
KTRVB-052.245 	DA451600	Like KTRRB-052.244 but with 'off / comfort / ECO' switch		212.10/1

\* An internal trimming potentiometer can be used to select whether control should be based on the internal (left stop) or external sensor (right stop). In the intermediate positions, if both sensors are used, a weighting is applied to the internal room sensor and the external radiation sensor. The weighting allows for compensation of different structural conditions such as large window areas or cardinal directions. For very slow controlled systems, it is recommended to assign a higher weighting to the radiation sensor than to the internal room sensor.

### ILLUSTRATIONS

#### KTRVB



# ELECTRONIC DEW POINT MONITOR WFRN

## STANDARD RAIL MOUNTING





### TECHNICAL DATA

<b>Surface finish:</b>	matt
<b>Housing colour:</b>	light grey, similar to RAL 7035
<b>Housing material:</b>	PC plastic
<b>Ambient temperature:</b>	0 to 55 °C
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals up to 2.5 mm <sup>2</sup>
<b>Mounting/attachment:</b>	standard rail mounting
<b>Protection rating:</b>	IP20
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Average power consumption:</b>	approx. 1 VA
<b>Min. switching current:</b>	depending on the switching voltage (min. 0.3 W)
<b>Min. switching voltage:</b>	depending on the switching current (min. 0.3 W)
<b>Switching element:</b>	relay
<b>Switching contact:</b>	toggler, potential-free
<b>Output signal:</b>	switching
<b>Control function:</b>	dew point triggering
<b>Hysteresis:</b>	8 MΩ
<b>Fixed break point:</b>	approx. 98% relative humidity
<b>General features:</b>	'dew point triggering' display
<b>Accessories:</b>	dew point sensors (TPS)

### APPLICATION

For interrupting the cooling, when the relative atmospheric humidity exceeds approx. 98%.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	D4780587	<p><b>Operating voltage:</b> 24 VDC, 24 VAC, 50 Hz</p> <p><b>Protection class:</b> III</p> <p><b>Max. switching current:</b> 10 (3) A at 48 VAC, 10 A at 30 VDC, 1 A at 60 VDC</p> <p><b>Max. switching voltage:</b> 48 VAC, 50 Hz / 60 VDC</p> <p><b>Switching power:</b> 500 VA at 48 VAC, 300 W at 30 VDC, 60 W at 60 VDC</p>		173.40 / I
	D4780572	<p><b>Operating voltage:</b> 230 VAC, 50 Hz</p> <p><b>Protection class:</b> II, if properly mounted</p> <p><b>Max. switching current:</b> 10 (3) A at 230 VAC, 10 A at 30 VDC, 1 A at 60 VDC</p> <p><b>Max. switching voltage:</b> 230 VAC, 50 Hz / 60 VDC</p> <p><b>Switching power:</b> 2300 VA at 230 VAC, 300 W at 30 VDC, 60 W at 60 VDC</p>		177.40 / I



# DEW POINT SENSOR, TPS




## TECHNICAL DATA

<b>Storage temperature:</b>	-20 to +70 °C
<b>Sensor wire extendible up to:</b>	50 m with 2 x 0.5 mm <sup>2</sup>
<b>Connecting cable:</b>	10 m
<b>Accessories:</b>	For use with dew point sensors (e.g., WFRRN) or climate controllers with dew point monitoring (KTRRB, KTRRU, KTRRUu, KTRVB, KTFRL, KTFRD)

## APPLICATION

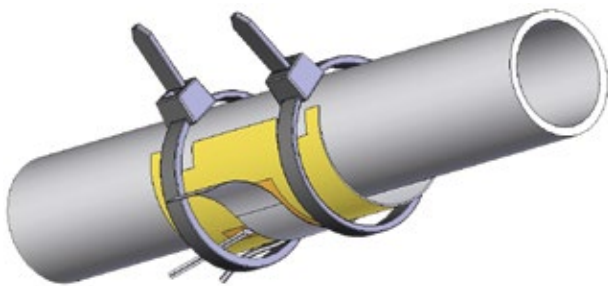
These dew point sensor were developed in conjunction with alre dew point monitors and cooling ceiling controllers for the specific purpose of detecting and signalling the dew point. In this way, they prevent dripping condensation water from reaching the cooling circuit parts, if installed correctly.



TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
TPS 1 	G8000299	<b>Mounting / attachment:</b> using clips on cooling ceiling capillary pipe <b>Use:</b> Drywall cooling ceiling (plasterboard) with hung up capillary pipe mat, metal cooling ceiling with integrated capillary pipe system <b>Sensor wire extendible up to:</b> 50 m with 2 x 0.5 mm <sup>2</sup> <b>Scope of delivery:</b> sensor, 2 clips for cooling pad	65.80/1
TPS 2 	G8000300	<b>Mounting / attachment:</b> using clips on cooling ceiling capillary pipe or cable ties on the pipe <b>Use:</b> Pipe systems transporting cold water, plaster cooling ceiling with capillary tube system <b>Sensor wire extendible up to:</b> 50 m with 2 x 0.5 mm <sup>2</sup> <b>Scope of delivery:</b> sensor, 2 clips for cooling pad, 2 cable ties	65.80/1
TPS 3 	SN120000	<b>Mounting / attachment:</b> attach to pipe by means of cable ties <b>Use:</b> Pipe systems transporting cold water <b>Sensor wire extendible up to:</b> 50 m with 2 x 0.5 mm <sup>2</sup> <b>Scope of delivery:</b> sensor, 2 cable ties	58.90/1

## ILLUSTRATIONS

### TPS 3



#### Important note:

The inflow channels of TPS-1 and TPS-2 are closed at the factory to avoid dirtying during assembly. After assembly, they must be shortened with a knife until they are flush with the wall or ceiling to ensure air circulation. The air ducts should be arranged such that soiling during operation is avoided. It is important that the air surrounding the sensor has the same temperature as the room air to be cooled. If the humidity and temperature of the air to be cooled (ceiling cooling system) is different from that of the air surrounding the sensor, condensation may be detected prematurely or too late. As regards TPS-3, contact with the PCB paths must be avoided to prevent long-term corrosion.

**Attention in case of sensor extension:** Parallel laying to conductors carrying a mains voltage can result in faults. The use of shielded conductors reduces sensitivity to electromagnetic fields.

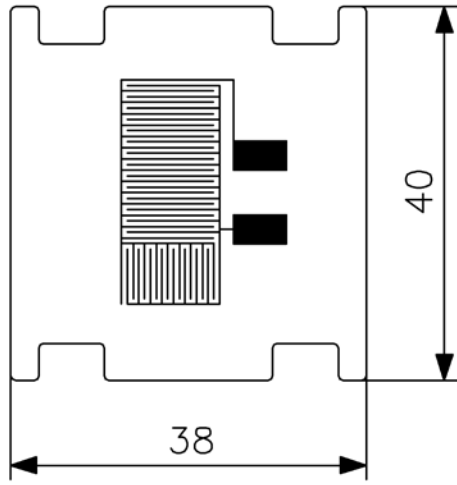
#### Mode of operation – dew point sensor:

if the surface temperature of the dew point sensor is equivalent to the dew point, a microscopic film of moisture forms on its surface. This film changes the resistance value of the dew point sensor to such an extent that the connected controller or monitor detects this change and disables the cooling. In this manner, dripping condensate water at maximum cooling, and hence moisture damage to the building, are avoided. When the dew point sensor dries off again, the resistance value increases and cooling is re-enabled. To ensure that a pending undershooting of the dew point is detected in time, the dew point sensor should be assembled at the point where the dew point is most likely to be reached first along the cooling circuit. Generally, these locations are at the inlet coming into the room and/or near windows. If the place where the dew point is likely to occur cannot be unambiguously determined, it is possible to connect up to 5 dew point sensors in parallel to one controller or monitor.

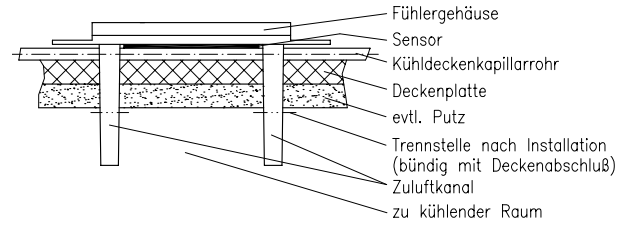
# DEW POINT SENSOR, TPS

## ILLUSTRATIONS

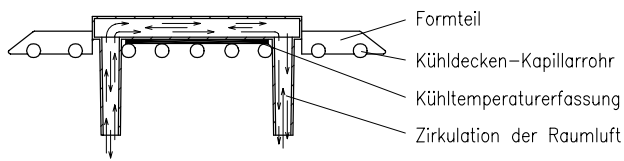
TPS 3



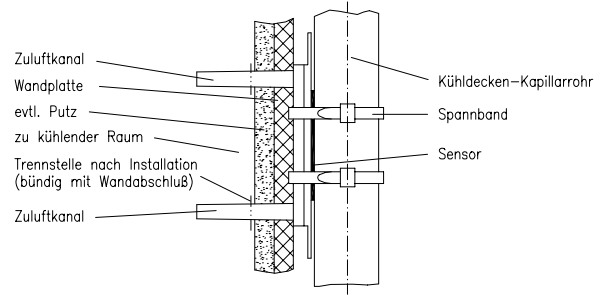
TPS 1



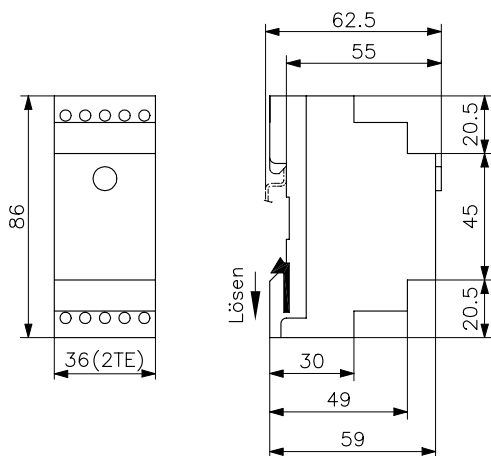
TPS 1



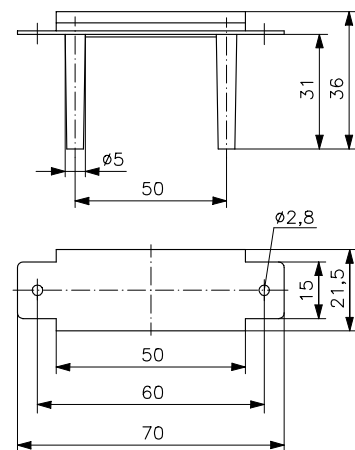
TPS 2



WFRRN



TPS 1/2





# ROOM HYGROSTATS / HYGRO-THERMOSTATS MECHANICAL RFHSB, FHY, RKDSB

## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000 / 3000 / UP



### TECHNICAL DATA


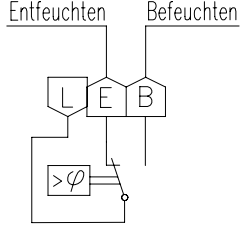
<b>Storage temperature:</b>	–20 to +60 °C (RFHSB-060.xxx –20 to +70 °C)
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	II, if properly mounted
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Min. switching current:</b>	100 mA
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	24 V AC, 50 Hz
<b>General features:</b>	mechanical range restriction
<b>Other / similar items:</b>	For duct and control cabinet hygrostats, see 'Plant Engineering' section

### APPLICATION

**Hygrostat:** The room hygrostat is used to monitor and control the relative humidity, e.g., in offices, homes, winter gardens, baths, swimming pools and data centres. The action of the relative humidity on a measuring tape is made to actuate a potential-free changeover contact. The desired value is set by means of the adjusting knob on the front panel. The setting range can be limited.



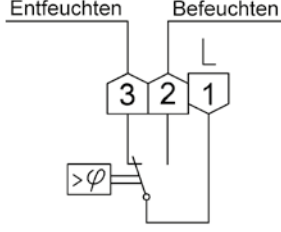

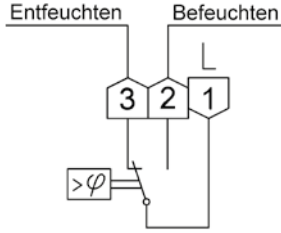

**Hygro-thermostat:** Monitoring and control of the relative humidity and the temperature in one device.

Note: Observe the wet room distance according to DIN VDE 0100-701!

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
FHY 101.060#00 	UA020004	<p><b>General features:</b> external setting; protective cap; contact hazard protection cover plate</p> <p><b>Design:</b> Berlin flush-mounted</p> <p><b>Surface finish:</b> according to selected cover set</p> <p><b>Housing colour:</b> according to selected cover set</p> <p><b>Housing material:</b> PC plastic</p> <p><b>Operating voltage:</b> no auxiliary energy necessary</p> <p><b>Ambient temperature:</b> 0 to 50 °C</p> <p><b>Mounting / attachment:</b> in flush-mounted socket – adaptable with 50 x 50 mm or 55 x 55 mm cover set in almost all surface switch ranges (deep flush-mounted socket recommended)</p> <p><b>Max. switching current:</b> dehumidifying (terminal E) 5 (0.2) A, humidifying (terminal B) 2 (0.2) A</p> <p><b>Switching power:</b> terminal E: 1150 W, terminal B: 460 W</p> <p><b>Switching element:</b> microswitch</p> <p><b>Switching contact:</b> changeover switch (toggler)</p> <p><b>Output signal:</b> switching</p> <p><b>Sensor:</b> plastic fibres</p> <p><b>Control function:</b> humidifying or de-humidifying</p> <p><b>Control range:</b> 35 to 85% rel. humidity</p> <p><b>Hysteresis:</b> approx. 5% rel. humidity</p> <p><b>Accessories:</b> cover sets are offered in several design variants (see 'Overview', page 131) and are not included in the scope of delivery.</p> <p><b>Suitable set no:</b> JZ-021.xxx, e.g.: 50 x 50 mm cover set, pure white, glossy: JZ-021.000 55 x 55 mm cover set, pure white, glossy: JZ-021.100</p> <p><b>Scope of delivery:</b> controller, protective cap</p>		134.70/1

# ROOM HYGROSTATS / HYGRO-THERMOSTATS MECHANICAL RFHSB, FHU, RKDSB

## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000 / 3000 / UP

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	UA020003	Similar to FHU 101.060#21 but scope of delivery as follows: controller, alre frame 'Berlin', 50 x 50 mm cover, pure white (similar to RAL 9010), glossy		149.70 / I
	MA020202	<b>General features:</b> External setting <b>Design:</b> Berlin 2000 <b>Surface finish:</b> matt <b>Housing colour:</b> pure white, similar to RAL 9010 <b>Housing material:</b> ABS plastic <b>Operating voltage:</b> no auxiliary energy necessary <b>Ambient temperature:</b> 0 to 60 °C <b>Mounting / attachment:</b> surface / wall mounting (4-hole assembly on flush-mounted socket) <b>Max. switching current:</b> dehumidifying (terminal 4) 5 (0.2) A, humidifying (terminal 2) 2 (0.2) A <b>Switching power:</b> terminal 4: 1150 W, terminal 2: 460 W <b>Switching element:</b> microswitch <b>Switching contact:</b> changeover switch (toggler) <b>Output signal:</b> switching <b>Sensor:</b> plastic fibres <b>Control function:</b> humidifying or de-humidifying <b>Control range:</b> 35–85% rel. humidity <b>Hysteresis:</b> approx. 7% rel. humidity		88.70 / I
	MA020203	Similar to RFHSB-060.010, but with internal setting		79.90 / I
	MA220000	<b>General features:</b> 'On / off' switch; external setting <b>Design:</b> Berlin 3000 <b>Surface finish:</b> matt <b>Housing colour:</b> pure white, similar to RAL 9010 <b>Housing material:</b> ABS plastic <b>Operating voltage:</b> 24 VAC or 230 VAC selectable <b>Ambient temperature:</b> 0 to 50 °C <b>Mounting / attachment:</b> surface / wall-mounting or by means of adapter plate on flush-mounted socket <b>Max. switching current:</b> dehumidifying (terminal 9) 5 (0.2) A, humidifying (terminal 8) 3 (0.2) A, heating (terminal 1) 10 (4) A at 230 VAC / 1 (1) A at 24 VAC, cooling (terminal 2) 5 (2) A at 230 VAC / 1 (1) A at 24 VAC <b>Switching power:</b> terminal 9: 1150 W, terminal 8: 690 W, terminal 1: 2300 W at 230 VAC / 24 W at 24 VAC, terminal 2: 1150 W at 230 VAC / 230 W at 24 VAC <b>Switching element:</b> microswitch (hygrostat) / bimetal (thermostat) <b>Switching contact:</b> 2x changeover switch (toggler) <b>Output signal:</b> switching <b>Sensor:</b> plastic fibres for humidity, bimetal for temperature <b>Control function:</b> humidifying or de-humidifying, heating or cooling <b>Control ranges:</b> Temperature 10 to 35 °C, Humidity 30 to 100% rel. humidity <b>Hysteresis:</b> approx. 4% rel. humidity, approx. 1 K at a temperature change of max. 4 K/h <b>Accessories:</b> adapter plate flush-mounted socket mounting: JZ-17		174.60 / I



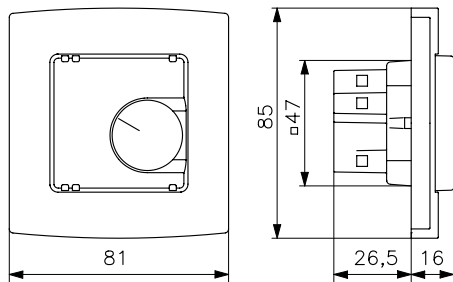
# ROOM HYGROSTATS / HYGRO-THERMOSTATS MECHANICAL RFHSB, FHY, RKDSB

## SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000 / 3000 / UP

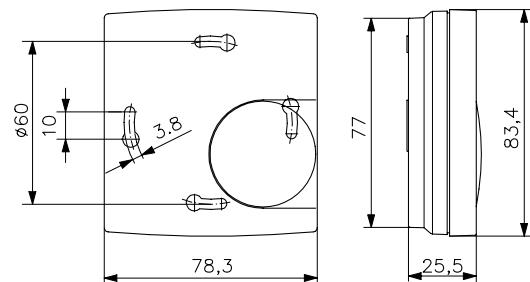
ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
	MN990001	<p><b>General features:</b> Adapter plate for mounting devices on flush-mounted sockets (including fastening screws for mounting the controller on the adapter plate)</p> <p><b>Surface finish:</b> matt</p> <p><b>Housing colour:</b> pure white, similar to RAL 9010</p> <p><b>Housing material:</b> ABS plastic</p>	7.70/II

### ILLUSTRATIONS

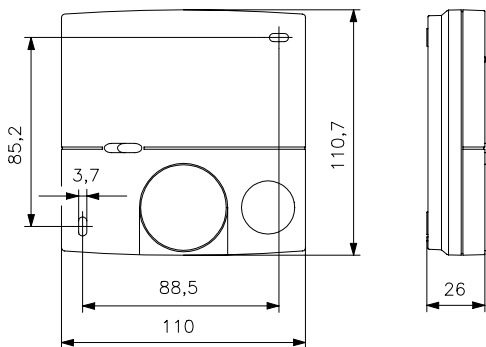
FHY



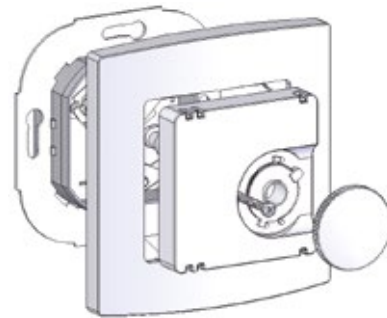
RFHSB



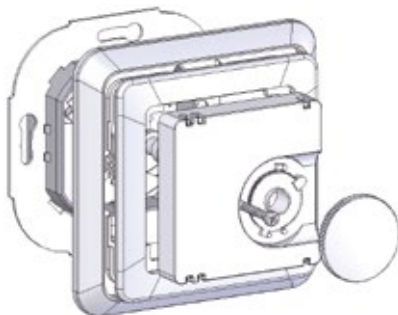
RKDSB



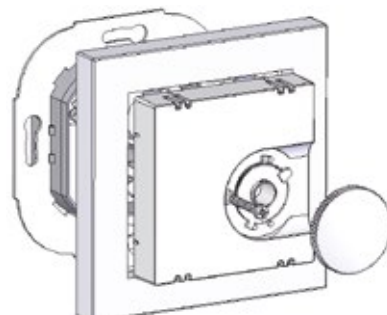
FHY with alre frame 'Berlin' (#21 type)



FHY with insert frame



FHY without 55 x 55 insert frame







# TERMINAL STRIP FOR HEATING / COOLING MANIFOLD VOORL

## FOR 5 OR 8 ROOM THERMOSTATS



### TECHNICAL DATA

<b>Surface finish:</b>	matt
<b>Housing colour:</b>	light grey, similar to RAL 7035
<b>Housing material:</b>	ABS plastic
<b>Operating voltage:</b>	230 V~
<b>Ambient temperature:</b>	-10 to +50 °C
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95%, non-condensing
<b>Electrical connection:</b>	screw-type terminals 0.2 mm <sup>2</sup> – 1.5 mm <sup>2</sup>
<b>Connectable pump power:</b>	max. 180 VA
<b>Device fuse:</b>	T3,15/250 V, Ø 5 x 20 mm
<b>Mounting / attachment:</b>	surface mounting / wall mounting on a wall using screws or magnetic bases on a magnetic substrate
<b>Protection rating:</b>	IP20
<b>Protection class:</b>	II, if properly mounted
<b>Max. number of valve actuators:</b>	number of ducts x 4 for each duct, Duct 1 and 2 as well as 5 and 6 combinable Assignment of ducts to rooms as desired





### APPLICATION


This device is specifically designed for fixed wiring of 230 VAC single-room temperature controllers and the associated valve actuators for fixed-location attachment.

Switching between heating / cooling is performed via a central contact.

Heating controllers with changeover contact (e.g., RTBSB-201.010) can be connected as controllers. A master-slave time zone can be formed by using a clock controller. The time zone can also be switched to ECO function via an external switching contact at terminal U.

The VOORx-318.053 and VOORx-215.053 units feature an integrated pump function.

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
	DA490110	<b>General features:</b> Terminal strip in housing for wiring up to 5 room thermostats and up to 20 actuators; up to 4 actuators per channel can be connected <b>Max. switching current:</b> output 1-5: 3 (1) A <b>Total of all the outputs (5 channels):</b> 3 (1) A <b>Switching power:</b> total of 920 W <b>ECO contact:</b> if clock regulators are used, a time zone can be defined that can be switched to ECO function via an external switching contact on terminal U <b>Control function:</b> heating or cooling	217.30 / I
	DA490310	As for VOORL-215.009, but including pump module (max. 0.75 A)	235.50 / I
	DA490010	<b>General features:</b> Terminal strip in housing for wiring up to 8 room thermostats and up to 32 actuators; up to 4 actuators per channel can be connected <b>Max. switching current:</b> output 1-8: 3 (1) A <b>Total of all the outputs (8 channels):</b> 3 (1) A <b>Switching power:</b> total of 1380 W <b>ECO contact:</b> if clock regulators are used, a time zone can be defined that can be switched to ECO function via an external switching contact on terminal U <b>Control function:</b> Heating or cooling	267.40 / I
	DA490210	As for VOORL-318.009, but including pump module (max. 0.75 A)	286.70 / I

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
	BN990002	Magnetic fastening set for simple and safe fastening of the multi-channel receiver and VOORL terminal strips on a metallic substrate (for example, heating manifold)	24.30 / II

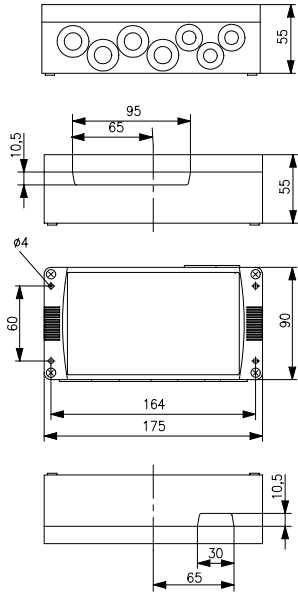


# TERMINAL STRIP FOR HEATING / COOLING MANIFOLD VOORL

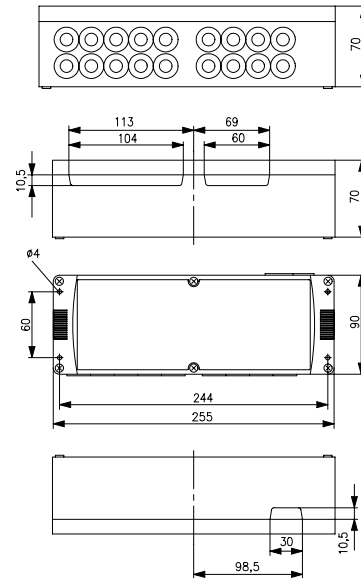
## FOR 5 OR 8 ROOM THERMOSTATS

## ILLUSTRATIONS

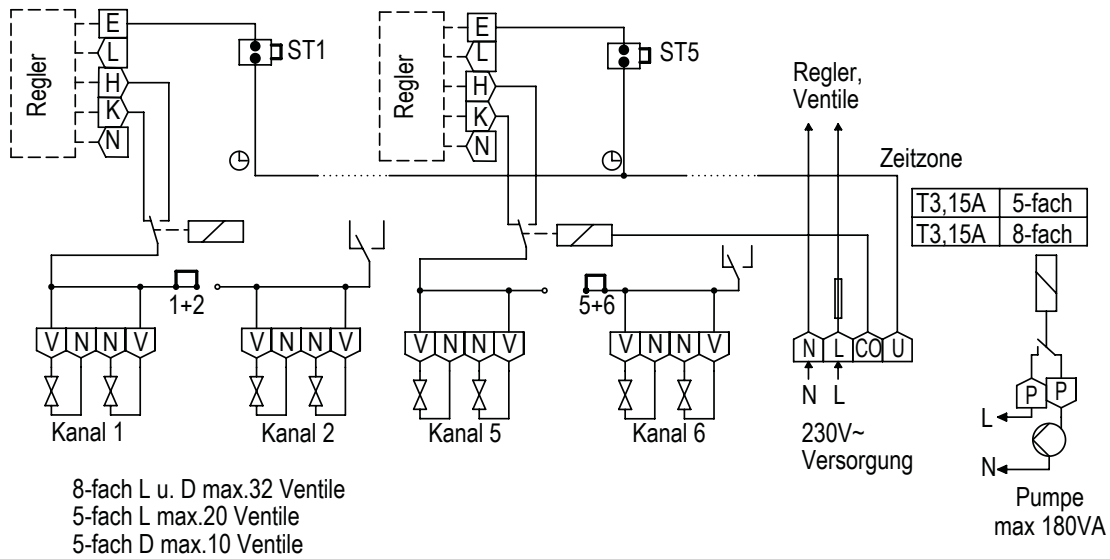
V00RL-215.xxx



V00RL-318.xxx



V00RL-318.xxx



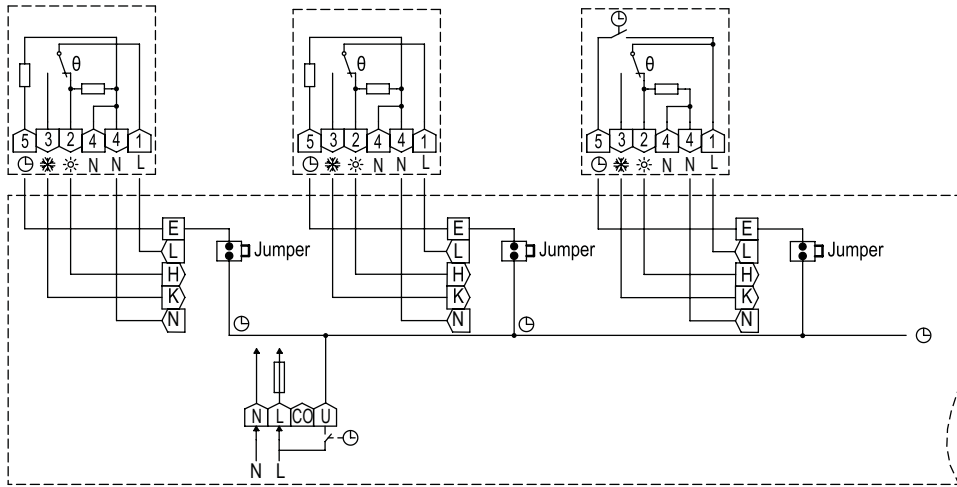
Internal view V00RL-318.xxx



# NOTES ON AND EXAMPLES

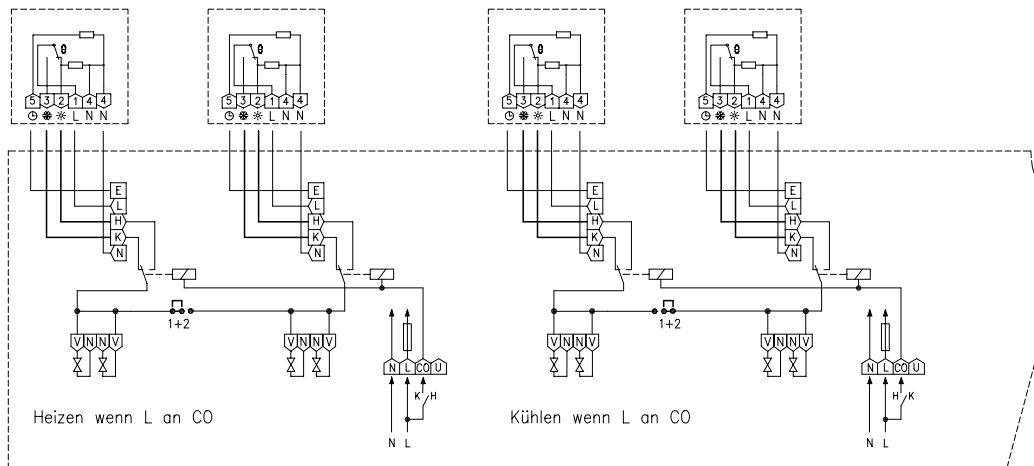
## FOR WIRING THE VOORL TERMINAL STRIPS

### SETTING UP TIME ZONES

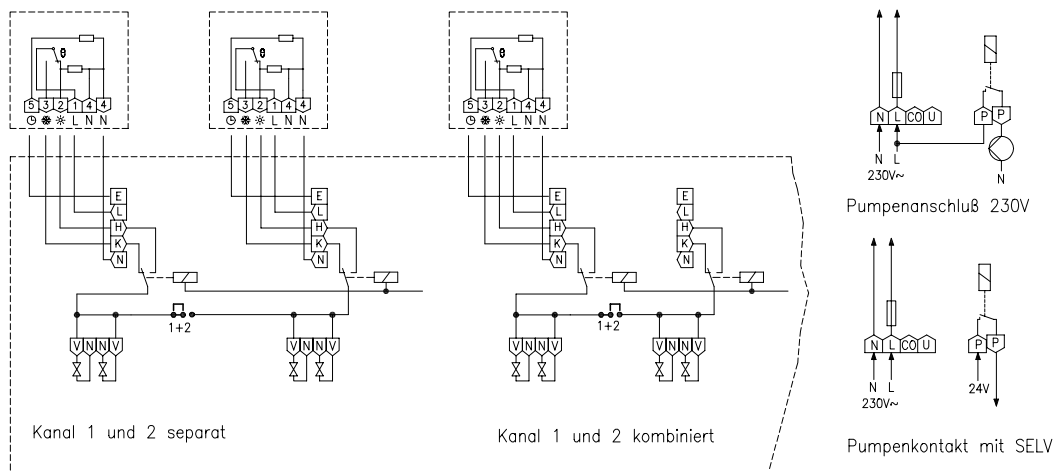


TZ = time zone

### INVERSION OF THE CO CONTACT



### STANDARD WIRING AND COMBINATION OF CHANNEL 1/2





# ACTUATOR 'STELLA' 230 V NC

## FOR AUTOMATIC HYDRAULIC COMPARISON

**TECHNICAL DATA**

<b>Operating voltage:</b>	230 V~, 50 Hz
<b>Max. power consumption:</b>	30 W
<b>Max. starting current:</b>	approx. 0.13 A
<b>Housing colour:</b>	grey-orange
<b>Housing material:</b>	PA6 plastic
<b>Ambient temperature:</b>	0 to 50 °C
<b>Storage temperature:</b>	-25 to +60 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Mounting/attachment:</b>	M 30 x 1,5
<b>Protection rating:</b>	IP54
<b>Protection class:</b>	II
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Average power consumption:</b>	approx. 1.7 W
<b>Opening/closing time:</b>	approx. 3 min
<b>Nominal stroke:</b>	3.5 mm
<b>Function type:</b>	normally closed
<b>Nominal closing force:</b>	110 N
<b>Connecting cable:</b>	1 m/2 x 0.34 mm <sup>2</sup>


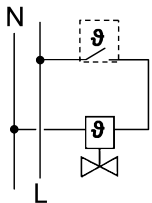


**APPLICATION**

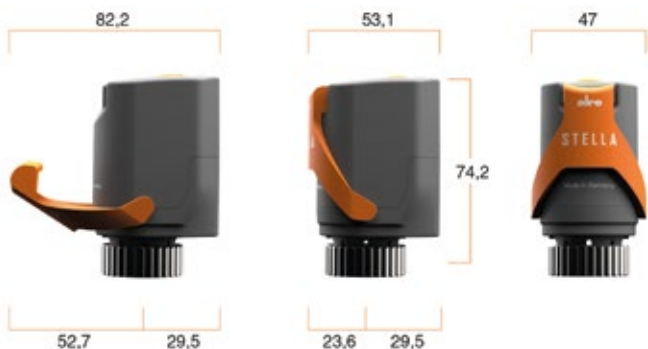
'Stella' – the intelligent autonomous 230 VAC NC electrothermal actuator for automatic adaptive hydraulic balancing of heating manifolds' heating circuits in surface heating and surface cooling systems.

Sensors on the supply and return lines measure temperature differences, and an algorithm continuously calculates the necessary temperature spread and the appropriate valve position.

Normally closed and features a folding lever for easily unscrewing the thermostat valve or opening it manually when it is disconnected from the mains. Features integrated inflow temperature limitation.

Can be combined with all standard temperature controllers and terminal strips (except devices with triac switching element).

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	ZB00A-010.185	G8990010 Actuator for automatic hydraulic balancing		81.50/1
	SET 31	VV000046 Set for performing fully automatic hydraulic balancing consisting of 5 surface-mounted room thermostats, 1 terminal strip and 6 actuators.		773.90/1
	SET 32	VV000047 Set for performing fully automatic hydraulic balancing consisting of 5 flush-mounted room thermostats, 1 terminal strip and 6 actuators.		863.90/1

**ILLUSTRATIONS****BRIEF DESCRIPTION**

- Combinable with the commercial 2-point room temperature controllers (electromechanical, electronic, PWM), except devices with triac switching element
- for heating and cooling systems
- Features a folding lever for easily unscrewing the thermostat valve or opening it manually when it is disconnected from the mains
- Temperature sensors suited for surface heating pipes made of plastic, metal or combinations thereof with an external diameter of 12 to 20 mm
- measures a heating circuit's outflow temperature
- The range of setpoint temperatures Stella calculates is variable and dependent on user behaviour and the system's environment
- The valve can be adjusted to any desired position between OPEN and CLOSED and set to remain in that position.
- An expansion element and a stroke measuring system are needed to position the valve stroke.

# ELECTRO-THERMAL VALVE ACTUATORS

## FOR HEATING, VENTILATION AND AIR CONDITIONING TECHNOLOGY



### TECHNICAL DATA



<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	PC plastic, GF (20%)
<b>Ambient temperature:</b>	0 to 50 °C
<b>Storage temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Mounting / attachment:</b>	M 30 x 1.5
<b>Protection rating:</b>	IP42
<b>Protection class:</b>	II
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Average power consumption:</b>	approx. 3 W
<b>Opening / closing time:</b>	approx. 4 min
<b>Nominal stroke:</b>	3 mm
<b>Function type:</b>	normally closed
<b>Nominal closing force:</b>	90 N
<b>Connecting cable:</b>	0.8 m / 2 x 0.5 mm <sup>2</sup>
<b>Valve position indicator:</b>	2X (at the top and the side)

### APPLICATION

Extremely compact design: can be fitted quickly and comfortably thanks to the slim shape in the area around the fastening nut.

Can be fitted in any position: lateral drainage holes carry off any leakage water that from the valve plunger into the open, thus avoiding damage to the drive.

Additional valve monitoring: two additional viewing windows at the side allow users to visually check the respective valve position with ease; this does not work when mounted in a suspended manner.

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
	H9100010	<b>Operating voltage:</b> 230 V~, 50 Hz <b>Max. power consumption:</b> 70 W <b>Max. starting current:</b> approx. 0.3 A	31.80 / I
	H9100000	<b>Operating voltage:</b> 24 VDC or 24 VAC <b>Max. power consumption:</b> 12 W <b>Max. starting current:</b> approx. 0.5 A	31.80 / I

Thanks to their M 30 x 1.5 fastening and their characteristics (normally closed), the actuators are suitable for the following valve and distributor makes: Beulco, Empur, Heimeier, Kamo, Oventrop, Purmo, SBK, SKV, Strawa, Taconova, Watts

#### Brief description:

The drive features a compact, space-saving design.

The device can be mounted easily thanks to its narrowed shape, especially in the fastening area of the nut.

The connecting cable is not located near the fastening nut. This reduces the probability of contact with equipment carrying hot water.

Since the fastening nut allows continuous screwing onto the thread, by unscrewing the nut by two or three turns, it is possible to open the valve in an electrically de-energised state – something that cannot be done with bayonet couplings and impulse couplings.

Discharged water is dissipated via a draining system. Gaskets are not required thanks to the special design.

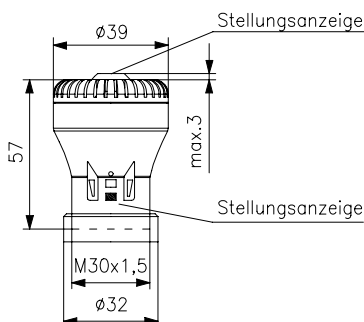
#### The dual position display has the following advantages:

The upper display provides the option of a visual or, in conditions of bad visibility, tactile function test of the drive.

The lower viewing windows allow an additional check to determine whether the valve to be actuated follows the lifting movement of the drive. At the beginning of the heating period, it can happen off and on that the valve plungers get 'stuck'. Therefore, with the additional display, it is possible to determine whether the cause lies with the actuator or with the valve in the event the valve does not open. However, that is not possible when mounted in a suspended manner.

### ILLUSTRATIONS

Valve actuator



Valve actuator with extended push rod









# PLANT ENGINEERING

ROBUST AND VERSATILE



# ALRE PLANT ENGINEERING. SMOOTHER AND **LONGER RUNNING** **SYSTEMS.**

Our devices are built to perform reliably in tough conditions and heavy usage, meeting the rigorous demands of modern industrial environments. Our range includes devices for monitoring humidity, flow, and pressure, suitable for various applications like air systems, greenhouses, and wind tunnels. The new RTKSA universal capillary controller is a standout, offering flexibility for industrial use with various mounting and measuring options. This versatility is ideal for technicians and simplifies choices for wholesalers, making it a versatile solution for a wide array of industrial requirements.

**alre system technology: for perfectly functioning systems.**

## APPLICATION **EXAMPLES:**

- + Temperature control/safety temperature control, for example, in air ducts, boiler systems, storage tanks, heating coils, burners, pipelines etc.
- + Frost protection for hot water heating coils
- + Temperature and humidity control in control cabinets
- + Humidity control in ventilation and air-conditioning ducts
- + Flow monitoring, for example, in ducts, supply and exhaust air devices of fans, water pipes and oil, cooling and lubrication circuits etc.
- + Pressure monitoring of gaseous media, for example, for filter monitoring, fume hoods, fans, heating coils, low air pressure safety devices and limit controllers





# OVERVIEW

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## CAPILLARY AND WET ROOM THERMOSTATS, FROST PROTECTION THERMOSTATS

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**PLANT ROOM  
THERMOSTAT**



**UNIVERSAL CAPILLARY  
DOUBLE THERMOSTAT**



# PLANT ENGINEERING OVERVIEW 1

PLANT, CAPILLARY, WET ROOM AND DOUBLE THERMOSTATS FOR INDOOR AND OUTDOOR USE

TYPE	RTKSA-				JET-				RTKSA- PTR				JET-										JMT-						
	100.010	101.010	100.110	101.110	110 R	110 RF	120 R	120 RF	114.110	114.010	40.000	110 X	110 XF	120 XF	120 X	120 XG	130 X	130 XF	130 XG	133 X	133 XF	140 X	140 XF	143 XF	150	150 F	153	153 F	206 X
PAGE	164	164	164	164	175	175	175	175	166	166	167	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	178

### DEVICES

bimetal											X																		
Plant room thermostat	X	X	X	X	X	X	X	X	X																				
Capillary thermostat												X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Wet room thermostat											X																		
Double thermostat									X	X																			

### CAPILLARY LENGTH

Capillary 1.5 m																													X
Capillary 1.8 m												X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	
Capillary 4.5 m															X			X											

### CONTROL RANGE

-35 to +30 °C					X	X						X	X																
-20 to +30 °C											X																		
-10 to +40 °C	X	X								X																			
0 to 50 °C			X	X					X																				
0 to 60 °C							X	X					X	X	X														
20 to 80 °C																													X
40 to 100 °C																X	X	X	X	X									
70 to 130 °C																					X	X	X						
100 to 280 °C																									X	X	X	X	

### OUTPUT

Microswitch (potential-free changeover contact)	1	1	1	1	1	1	1	1	2	2		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
Switching steps	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2

### SWITCHING POWER

NC contact: 16 (2.5) A at 230 V~	X	X	X	X						X	X																		
NO contact: 6.3 (2.5) A at 230 V~																													
15 (8) A, 24–250 V~					X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10 (4) A, 250 V~, 50 Hz, heating										X																			
5 (2) A, 250 V~, 50 Hz, cooling										X																			

### SUPPLY VOLTAGE

none	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
230 V~, 50 Hz										X																			

### DEGREE OF PROTECTION

IP54	X	X	X	X					X	X																			
IP65					X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

### MISCELLANEOUS

external setting	X		X		X		X					X			X	X	X		X	X		X			X		X		X
internal setting		X		X		X		X	2	2	X		X	X			X			X		X	X	X		X		X	
Temperature controller	X		X		X		X					X			X	X	X		X			X			X				X
Temperature monitor		X		X		X		X	2	2	X		X	X			X					X			X		X		
Temperature limiter																					X	X		X			X	X	

# PLANT ENGINEERING OVERVIEW 2

## UNIVERSAL CAPILLARY THERMOSTATS / CAPILLARY DOUBLE THERMOSTATS (FUNCTION WITHOUT SUPPLY VOLTAGE)

TYPE	RTKSA-													
	000.100	000.200	000.300	001.100	001.200	001.300	001.301	002.310	002.410	003.310	004.310	010.200	013.210	014.210
PAGE	168	168	168	168	168	168	168	168	168	168	168	172	172	172

### CONTROL RANGE

0 to 50 °C	x			x											
0 to 120 °C		x			x							x	x	2	
20 to 150 °C			x			x	x	x		x	x		x		
30 to 110 °C									x						
70 to 130 °C												x			

### OUTPUT

Microswitch (potential-free changeover contact)	1	1	1	1	1	1	1	1	1	1	1	2	2	2	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--

### SWITCHING POWER

NC contact: 16 (2.5) A at 230 V~ NO contact TR/TW/STW: 6.3 (2.5) A at 230 V~	x	x	x	x	x	x	x					x	x	x	x
NC contact: 16 (2.5) A at 230 V~ NO contact TB/STB: 2 (0.4) A at 230 V~									x	x	x		x	x	

### DEGREE OF PROTECTION

IP40	x	x	x	x	x	x	x						x	x	x
IP54									x	x	x	x			

### MISCELLANEOUS

Type testing by TÜV in accordance with DIN EN 14597	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Temperature controller	x	x	x									x			
Temperature monitor				x	x	x	x							x	2
Temperature limiter								x	x					x	
Safety temperature limiter										x			x		
Safety temperature monitor											x				
external setting	x	x	x									x			
internal setting				x	x	x	x	x	x	x	x	x	2	2	





## PLANT ENGINEERING OVERVIEW 3

AIR HEATER THERMOSTATS (DUCT ROD SENSORS WITH CAPILLARY SYSTEM, FUNCTION WITHOUT SUPPLY VOLTAGE)

TYPE	JTL-					JTU-					
	2	8	11	8 NR	17 NR	50	1	3	20	5	6
PAGE	186	186	186	186	186	188	188	188	188	188	188

### DEVICES

Duct thermostat						X	X	X	X	X	X
Air heater thermostat	X	X	X	X	X						

### CAPILLARY LENGTH

Capillary 350 mm	X	X		X		X	X	X		X	X
Capillary 1,250 mm			X		X				X		

### CONTROL RANGE

-25 to +65 °C						X					
20 to 70 °C	X	X	X	X	X						
20 to 100 °C							X	X	X		
60 to 140 °C										X	X
70 to 95 °C				X	X						
70 to 100 °C	X	X	X								
100 °C rod fixed				X	X						

### OUTPUT

Microswitch (potential-free changeover contact)	X	X	X	X	X	X	X	X	X	X	X
---	---	---	---	---	---	---	---	---	---	---	---

### SWITCHING POWER

15 (8) A, 24–250 V~	X	X	X	X	X	X	X	X	X	X	X
---------------------	---	---	---	---	---	---	---	---	---	---	---

### DEGREE OF PROTECTION

IP40	X	X	X	X	X	X	X	X	X	X	X
------	---	---	---	---	---	---	---	---	---	---	---

### MISCELLANEOUS

Type testing by TÜV in accordance with DIN EN 14597	X	X	X	X	X			X	X		
Temperature monitor	X		X	X	X	X	X			X	
Temperature limiter											X
Safety temperature limiter internal setting	X	X	X	X	X	X	X	X	X	X	X

# PLANT ENGINEERING OVERVIEW 4

## CONTACT AND FROST PROTECTION THERMOSTATS

TYPE	ATR				JTF-												RTKSA-																
	83.000	83.100	83.001	83.101	1	1/12	1 W	2	2 W	3	3 W	4	5	21	21/12	21 W	22	22/12	25	203.000	203.100	203.120	203.200	203.220	203.300	204.000	204.020	204.100	204.200	204.220	204.300		
PAGE	179	179	179	179	183	183	183	183	183	183	183	183	183	184	184	184	184	184	184	181	181	181	181	181	181	181	181	181	181	181	181	181	
<b>DEVICES</b>																																	
Contact thermostat	x	x	x	x																													
Frost protection thermostat					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<b>CAPILLARY LENGTH</b>																																	
Capillary 1,800 mm										x	x	x								x							x	x					
Capillary 3,000 mm													x					x			x	x							x				
Capillary 6,000 mm				x		x	x	x						x		x	x						x	x						x	x		
Capillary 12,000 mm					x										x			x							x							x	
<b>OUTPUT</b>																																	
Microswitch (potential-free changeover contact)	x	x	x	x	x	x	x	x	x	x	x	x	x	2	2	2	2	2	2	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<b>CONTROL RANGE</b>																																	
-10 to +12 °C					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x														
-10 to +15 °C																				x	x	x	x	x	x	x	x	x	x	x	x	x	
0 to 60 °C				x	x																												
30 to 90 °C	x	x																															
<b>SWITCHING POWER</b>																																	
15 (8) A, 24–250 V~					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x														
16 (2) A, 24–250 V~	x	x	x	x																													
NC contact:																																	
16 (2.5) A at 230 V~																																	
NO contact STW:																																	
6.3 (2.5) A at 230 V~																					x	x	x	x	x	x	x	x	x	x	x	x	x
NO contact STB:																																	
2.0 (0.4) A at 230 V~																																	
<b>SUPPLY VOLTAGE</b>																																	
none	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<b>DEGREE OF PROTECTION</b>																																	
IP20	x	x	x	x																													
IP40					x	x		x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
IP65							x		x		x					x											x						x
<b>MISCELLANEOUS</b>																																	
Type testing by TÜV in accordance with DIN EN 14597					x	x	x	x	x	x	x	x	x								x	x	x	x	x	x	x	x	x	x	x	x	x
Temperature controller	x		x																														
Temperature monitor	x		x	x	x	x				x	x		x	x	x	x																	
Temperature limiter																	x	x															
Safety temperature limiter									x	x		x									x	x	x	x	x	x							
Safety temperature monitor																											x	x	x	x	x	x	x
external setting	x		x		x	x		x		x	x	x	x	x	x		x	x	x														
internal setting		x		x				x		x						x					x	x	x	x	x	x	x	x	x	x	x	x	x



# PLANT ENGINEERING OVERVIEW 5

## ELECTRONIC TEMPERATURE CONTROLLERS, DIGITAL CONTROLLERS / DISPLAYS

TYPE	ITR								ETR		
	79.402	79.404	79.405	79.408	79.503	79.504	79.508	79.600	79.804	77.008-5	77.009-5
PAGE	194	194	194	194	194	194	194	194	194	196	196

### DEVICES

Standard or top-hat rail controllers	X	X	X	X	X	X	X	X	X		
Universal controller										X	X

### CONTROL RANGE

-50 to +50 °C											X
-35 to +15 °C	X										
-10 to +40 °C				X			X				
0 to 11 °C					X						
0 to 60 °C		X				X			X		
0 to 100 °C											X
5 to 30 °C								2			
35 to 95 °C			X								

### SWITCHING POWER

10 (3) A, 250 V~, make contact	X	X	X	X	X	X	X	X	X		
5 (1.5) A / 250 V~, break contact	X	X	X	X	X	X	X	X	X		
10 (3) A, 250 V~, heating contact										X	X
5 (1) A, 250 V~, cooling contact										X	X

### DEGREE OF PROTECTION

IP20	X	X	X	X	X	X	X	X	X		
IP65										X	X

### MISCELLANEOUS

Temperature controller	X	X	X	X	X	X	X	X	X		
Temperature monitor										X	X
internal setting										X	X
LED heating (red)	X	X	X	X	X				X	X	X
LED cooling (green)						X	X				
230 V~, 50 Hz	X	X	X	X	X	X	X	X	X	X	X

# PLANT ENGINEERING OVERVIEW 6

## FLOW MONITORS AND PRESSURE SWITCHES, FLOW AND PRESSURE MONITORING

	JSL-		JDW-		JDL-					WSERD-		JSF-				JSW-		JPS-								
TYPE	1E	3/3Z	5/5Z	10	111	112	115	116	116A	134.446	134.446	3E	4E	1E	1RE	2E	2RE	1/2	3/4	1	1	3	3B	4	13	
PAGE	199	200	200	200	200	200	200	200	200	202	202	203	203	203	203	203	203	206	206	206	208	208	208	208	208	208

DEVICES																										
Wind indicator relays	X																									
Differential pressure switch		X	X	X	X	X	X	X	X																	
Airflow monitors										X	X															
Flow monitors												X	X	X	X	X	X	X	X	X						
Pressure switch switches																					X	X	X	X	X	

SENSOR ELEMENT																										
wind indicator	X																									
Sensor rod (hot film anemometer)										X	X															
Pressure sensor (membrane)		X	X	X	X	X	X	X	X												X	X	X	X	X	
Paddle												X	X	X	X	X	X	X	X							

OUTPUT																										
Microswitch (potential-free changeover contact)	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Relays (potential-free changeover contact)										X	X															

SWITCHING RANGE																										
0.2–10 m/s										X	X															
1–8 m/s switch-off value	X																									
Dependent on the tube diameter												X	X	X	X	X	X	X	X	X						
20–300 Pa					X																					
20–330 Pa		X																								
30–500 Pa			X																							
40–600 Pa						X																				
100–1,000 Pa							X																			
250–5,000 Pa								X	X																	
400–1,600 Pa				X																						
0.3–4.0 bar																					X	X	X	X	X	X
0.3–6.0 bar																									X	

SWITCHING POWER																											
15 (8) A, 24–250 V~	X									X	X	X	X	X	X	X	X	X	X	X							
10 (3) A, 24–250 V~										X	X																
1.5 (0.4) A, 12–250 V~		X	X	X																							
1 (0.2) A, 12–24 V AC/DC		X	X	X	X	X	X	X	X																		
5 (1) A, 12–250 V~					X	X	X	X	X																		
5 (1.5) A, 24–230 V~																					X	X	X				
2 A (2), 230 V~																						X	X	X	X	X	

OPERATING VOLTAGE																										
none	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
230 V~, 50 Hz										X	X															
24 V~, 50 Hz										X	X															

DEGREE OF PROTECTION																													
IP10																									X	X	X	X	X
IP54		X	X	X	X	X	X	X	X																				
IP65	X									X	X	X	X	X	X	X	X	X	X	X	X	X	X						

MISCELLANEOUS																										
Type tested by the TÜV according to the current 100 to 6												X	X	X	X	X	X									
external setting									X																	
internal setting	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

# FEATURING A **BRAND NEW DESIGN**

## THERMOSTATS FOR PLANT ENGINEERING

We proudly present our latest RTKSA thermostats, versatile enough to suit a wide range of applications including greenhouses, industrial buildings, and warehouses. These are more than just thermostats; they are multifunctional solutions engineered for effective temperature control in various fields. Their standout feature is the compatibility with different accessories, allowing them to serve various roles, from boiler and ventilation to contact thermostats. alre's new thermostats offer a flexible, multi-use tool for diverse temperature control requirements.



**UNIVERSAL  
CONTROLLER**



**UNIVERSAL  
DOUBLE CONTROLLER**



**PLANT ROOM CONT-  
ROLLER**



**FROST PROTECTION  
CONTROLLER**





## COMBINATIONS WITH ACCESSORIES



JZ-29  
(MOUNTING SET)



IMMERSION SLEEVE  
(THK / NTHK)



**BOILER  
THERMOSTAT**



JZ-30  
(MOUNTING SET)



PROTECTION COIL  
(SWK)



**VENTILATION  
THERMOSTAT**



JZ-31  
WORM  
SCREW  
CLAMP



**CONTACT  
THERMOSTAT**

FOR DOUBLE THERMOSTATS, USE THE JZ-30 MOUNTING SET.

See page 168 onwards for more information on  
universal thermostats



# PLANT ROOM THERMOSTAT RTKSA

## CAPILLARY SYSTEM – EXTERNAL SENSORS



### TECHNICAL DATA

<b>Colour:</b>	anthracite grey (similar to RAL 7016), front side transparent
<b>Sensor material:</b>	V4A
<b>Max. sensor temperature:</b>	Top scale value +15%
<b>Max. head temperature:</b>	50 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	<b>NC contact:</b> 16 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10% <b>NO contact:</b> 6.3 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10%
<b>Min. switching current:</b>	Min. 100 mA at 24 V (AC/DC)
<b>Max. switching voltage:</b>	230 VAC 50/60 Hz, 230 VDC
<b>Min. switching voltage:</b>	24 VAC/50 Hz, 24 VDC
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	toggler, potential-free
<b>Control function:</b>	heating or cooling
<b>Hysteresis:</b>	1.3 K
<b>Electrical connection:</b>	Push-in terminals
<b>Mounting/attachment:</b>	wall mounting
<b>Protection class:</b>	I
<b>Protection rating:</b>	IP54 (optionally IP65)
<b>Safety and EMC:</b>	In accordance with DIN EN 60730 (VDE 0631)
<b>Sensor:</b>	liquid-filled capillary
<b>General features:</b>	scale: degrees Celsius

### APPLICATION

RTKSA plant room thermostats were specially developed for use in industrial halls, exhibition halls, air halls and greenhouses. When used as a frost protection controller, the higher tolerances at the end of the scale must be observed.

Type testing by TÜV in accordance with DIN EN 14597



TYPE	ITEM NO.	CONTROL RANGE	HYSTERESIS	FEATURES	EURO/PG
RTKSA-100.010	KA010000	-10 to +40 °C	1.3 K	TR, external setting	100.90/II
RTKSA-101.010	KA010100	-10 to +40 °C	1.3 K	TW, internal setting	100.90/II
RTKSA-100.110	KA010001	0 to +50 °C	1.3 K	TR, external setting	101.40/II
RTKSA-101.110	KA010101	0 to +50 °C	1.3 K	TW, internal setting	100.90/II

TR = temperature controller, TW = temperature monitor

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-33	KA999904	RTKSA seal set, protection rating: IP54	17.40/II

### TYPE COMPARISON (OLD / NEW TYPE)

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS
JET-40	0 to +35 °C	1 K	RTKSA-100.010	-10 to +40 °C	1.3 K
JET-40F	0 to +35 °C	1 K	RTKSA-101.010	-10 to +40 °C	1.3 K
JET-41	0 to +70 °C	2 K	RTKSA-100.110	0 to +50 °C	1.3 K
JET-41F	0 to +70 °C	2 K	RTKSA-101.110	0 to +50 °C	1.3 K

TR = temperature controller, TW = temperature monitor



# PLANT ROOM THERMOSTAT RTKSA

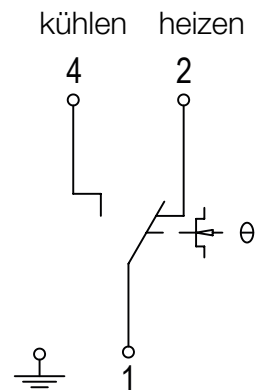
## CAPILLARY SYSTEM – EXTERNAL SENSORS

### ILLUSTRATIONS

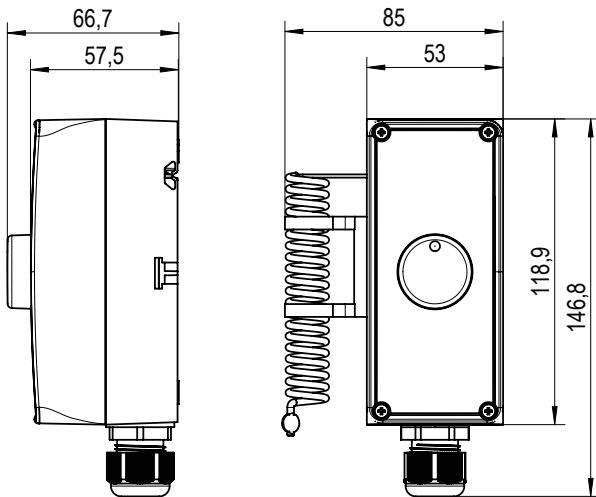
RTKSA with internal setting



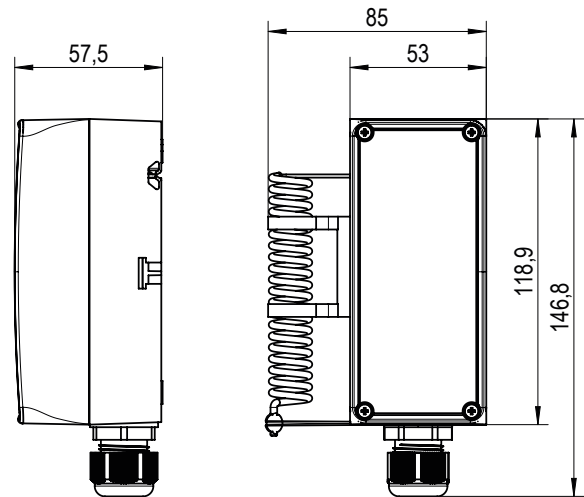
RTKSA



RTKSA-100.010/RTKSA-100.110



RTKSA-101.010/RTKSA-101.110



Scan the QR code now and watch the 'New thermostats in plant engineering' product film. More information at a glance.





# PLANT ROOM DOUBLE THERMOSTAT RTKSA

## CAPILLARY SYSTEM – EXTERNAL SENSORS – 2 SEPARATE SETTING RANGES



### TECHNICAL DATA

<b>Colour:</b>	anthracite grey (similar to RAL 7016), front side transparent
<b>Sensor material:</b>	V4A
<b>Max. sensor temperature:</b>	Top scale value +15%
<b>Max. head temperature:</b>	50 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	<b>NC contact:</b> 16 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10% <b>NO contact:</b> 6.3 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10%
<b>Min. switching current:</b>	Min. 100 mA at 24 V (AC/DC)
<b>Max. switching voltage:</b>	230 VAC 50/60 Hz, 230 VDC
<b>Min. switching voltage:</b>	24 VAC/50 Hz, 24 VDC
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	2 x togglers, potential-free heating or cooling, heating and cooling
<b>Control function:</b>	1.3 K
<b>Hysteresis:</b>	
<b>Electrical connection:</b>	Push-in terminals
<b>Mounting/attachment:</b>	wall mounting
<b>Protection class:</b>	I
<b>Protection rating:</b>	IP54 (optionally IP65)
<b>Safety and EMC:</b>	In accordance with DIN EN 60730 (VDE 0631)
<b>Sensor:</b>	liquid-filled capillary
<b>General features:</b>	scale: degrees Celsius

### APPLICATION

RTKSA plant room thermostats were specially developed for use in industrial halls, exhibition halls, air halls and greenhouses. When used as a frost protection controller, the higher tolerances at the end of the scale must be observed.

2 separate setting ranges, heating and/or cooling.

Type testing by TÜV in accordance with DIN EN 14597



TYPE	ITEM NO.	1. CONTROL RANGE	2. CONTROL RANGE	FEATURES	EURO/PG
RTKSA-114.110	KA011100	0 to +50 °C (TW, internal)	0 to +50 °C (TW, internal)	2 x internal setting	171.00/II
RTKSA-114.010	KA011101	-10 to +40 °C (TW, internal)	-10 to +40 °C (TW, internal)	2 x internal setting	171.00/II

TW = Temperature monitor

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-33	KA999904	Seal set RTKSA, 2 units necessary for double thermostats, protection rating: IP54	17.40/II

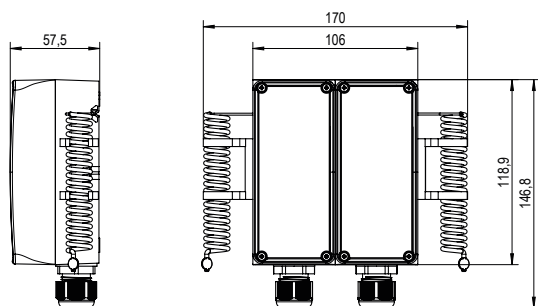
### TYPE COMPARISON (OLD / NEW TYPE)

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS
JET-30	10 to 45 °C (external) TR 0 to 35 °C (internal) TW	approx. 1 K	RTKSA-114.110	0 to +50 °C (internal) TW 0 to +50 °C (internal) TW	1.3 K
JET-31	10 to +45 °C (internal) TW 0 to +35 °C (internal) TW	approx. 1 K			

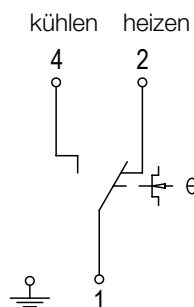
TR = temperature controller, TW = temperature monitor

### ILLUSTRATIONS

RTKSA



RTKSA (2x)



Scan the QR code now and watch the 'New thermostats in plant engineering' product film. More information at a glance.





# WET ROOM THERMOSTAT PTR 40 BIMETAL



### TECHNICAL DATA

<b>Housing colour:</b>	grey (lower part like RAL 7016, upper part like RAL 7035)
<b>Ambient temperature:</b>	-20 to +60 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Operating voltage:</b>	230 V AC, 50 Hz
<b>Max. switching current:</b>	heating (terminal 3) 10 (4) A, cooling (terminal 1) 5 (2) A
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	230 V AC, 50 Hz
<b>Switching element:</b>	bimetallic contact
<b>Control range:</b>	-20 to +30 °C
<b>Hysteresis:</b>	approx. 2 K at a temperature change of max. 4 K/h
<b>Electrical connection:</b>	screw-type terminals 0.12 mm <sup>2</sup> – 2.5 mm <sup>2</sup>
<b>Mounting / attachment:</b>	wall mounting
<b>Protection rating:</b>	IP65
<b>Protection class:</b>	II
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	bimetal
<b>Function type:</b>	TW (temperature monitor)
<b>General features:</b>	thermal feedback, internal setting, scale: degrees Celsius

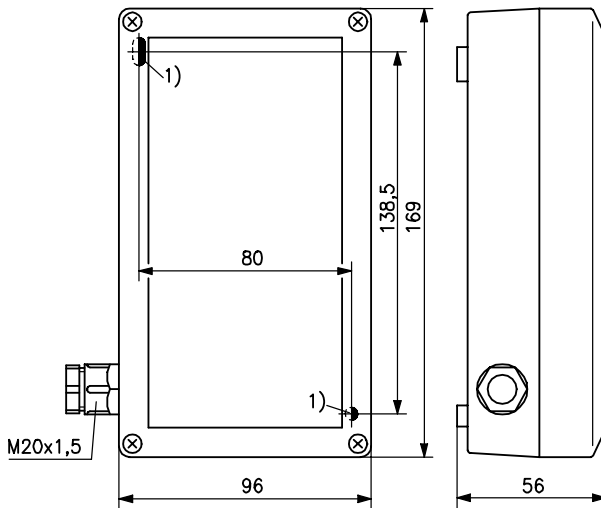
### APPLICATION

Control and monitoring of temperatures of certain open spaces, for example, driveways or damp rooms (greenhouses, sheds, warehouses and basements, garages, etc.).

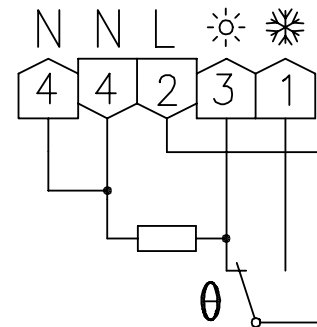
TYPE	ITEM NO.	FEATURES	EURO/PG
PTR 40.000	A201410	switching contact changeover switch (toggler), control function heating or cooling, viewing window	90.80 / II

### ILLUSTRATIONS

PTR 40



PTR 40 ...





# UNIVERSAL CAPILLARY THERMOSTAT RTKSA

## CAPILLARY SYSTEM – TÜV-TESTED



### TECHNICAL DATA

<b>Colour:</b>	anthracite grey (similar to RAL 7016), front side transparent
<b>Sensor material:</b>	Cu
<b>Sensor length:</b>	2 m
<b>Max. sensor temperature:</b>	Top scale value +15%
<b>Max. head temperature:</b>	80 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	<b>NC contact:</b> 16 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10% <b>NO contact TR/TW/STW:</b> 6.3 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10% <b>NO contact TB:</b> 2.0 (0.4) A at 230 VAC +10% 0.25 A at 230 VDC +10%
<b>Min. switching current:</b>	Min. 100 mA at 24 V (AC/DC)
<b>Max. switching voltage:</b>	230 VAC 50/60 Hz, 230 VDC
<b>Min. switching voltage:</b>	24 VAC/50 Hz, 24 VDC
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	toggler, potential-free
<b>Control range:</b>	heating or cooling
<b>Electrical connection:</b>	Push-in terminals
<b>Mounting/attachment:</b>	Wall mounting or with optional process connection (immersion sleeve, protection coil or mounting set JZ-31 for pipe mounting)
<b>Protection class:</b>	I
<b>Protection rating:</b>	RTKSA-xxx.x0x IP40, RTKSA-xxx.x1x IP54, optional IP65
<b>Safety and EMC:</b>	In accordance with DIN EN 60730 (VDE 0631)
<b>Sensor:</b>	liquid-filled capillary
<b>General features:</b>	scale: degrees Celsius

### APPLICATION

This series of devices was specially developed for use in heating technology; in boiler systems or storage tanks; district heating transfer stations and heat transfer systems; in ventilation technology to monitor supply air or as limiters for electrical heating coils, as well as for controlling and monitoring temperatures in pipelines and tanks.

Immersion sleeves, protection coils and mounting sets are not included in the scope of delivery. The JZ-29 mounting set must be used in conjunction with immersion sleeves or protection coils. When used as contact controller (pipe mounting), mounting set JZ-31 must be used, except with models RTKSA-000 100 and RTKSA-001 100.

**Type testing by TÜV in accordance with DIN EN 14597**



TYPE	ITEM NO.	CONTROL RANGE	HYSTERESIS	SENSOR Ø X L	FEATURES	EURO/PG
RTKSA-000.100	KA000000	0 to 50 °C	1.3 K	6 x 175 mm	TR, external setting	68.80/II
RTKSA-000.200	KA000001	0 to 120 °C	3 K	6 x 87 mm	TR, external setting	69.70/II
RTKSA-000.300	KA000002	20 to 150 °C	9.1 K	6 x 56 mm	TR, external setting	69.70/II
RTKSA-001.100	KA000100	0 to 50 °C	1.3 K	6 x 175 mm	TW, internal setting	72.20/II
RTKSA-001.200	KA000101	0 to 120 °C	3 K	6 x 87 mm	TW, internal setting	72.20/II
RTKSA-001.300	KA000102	20 to 150 °C	9.1 K	6 x 56 mm	TW, internal setting	72.20/II
RTKSA-001.301	KA000103	20 to 150 °C	3.3 K	6 x 82 mm	TW, internal setting	72.20/II
RTKSA-002.310	KA000201	20 to 150 °C	-10 to -15K*	6 x 55 mm	TB, internal setting, external reset	84.30/II
RTKSA-002.410	KA000200	30 to 110 °C	-10 to -15K*	6 x 72 mm	TB, internal setting, external reset	80.30/II
RTKSA-003.310	KA000300	20 to 150 °C	-10 to -15K*	6 x 55 mm	STB, internal setting, external reset	98.10/II
RTKSA-004.310	KA000400	20 to 150 °C	-10 K	6 x 55 mm	STW, internal setting	89.90/II

TR = temperature controller, TW = temperature monitor, TB = temperature limiter, STB = safety temperature limiter, STW = safety temperature monitor  
\* Manual reset after cooling down by 10–15 K (depending on configured setpoint)





# UNIVERSAL CAPILLARY THERMOSTAT RTKSA

## CAPILLARY SYSTEM – TÜV-TESTED

ACCESSORIES	ITEM NO.	LENGTH OF	MATERIAL	DIAMETER IXA**	FEATURES	EURO/PG
THK-2-100	KA969901	100 mm	nickel-plated brass	7.5 x 10 mm	Immersion sleeve	21.20/II
THK-2-120	KA969902	120 mm	nickel-plated brass	7.5 x 10 mm	Immersion sleeve	24.20/II
THK-2-200	KA969903	200 mm	nickel-plated brass	7.5 x 10 mm	Immersion sleeve	24.90/II
THK-2-280	KA969904	280 mm	nickel-plated brass	7.5 x 10 mm	Immersion sleeve	30.30/II
THK-2-600	KA969905	600 mm	nickel-plated brass	7.5 x 10 mm	Immersion sleeve	48.20/II
NTHK-2-100	KA969906	100 mm	V4A (1.4571)	7.5 x 10 mm	Immersion sleeve	57.80/II
NTHK-2-120	KA969907	120 mm	V4A (1.4571)	7.5 x 10 mm	Immersion sleeve	58.60/II
NTHK-2-200	KA969908	200 mm	V4A (1.4571)	7.5 x 10 mm	Immersion sleeve	59.70/II
NTHK-2-280	KA969909	280 mm	V4A (1.4571)	7.5 x 10 mm	Immersion sleeve	61.20/II
THK-2-100 x 17	KA979901	100 mm	nickel-plated brass	14.8 x 17 mm	Immersion sleeve	30.80/II
THK-2-200 x 17	KA979902	200 mm	nickel-plated brass	14.8 x 17 mm	Immersion sleeve	41.30/II
NTHK-2-100 x 17	KA979903	100 mm	V4 A (1.4571)	14.8 x 17 mm	Immersion sleeve	60.10/II
NTHK-2-200 x 17	KA979904	200 mm	V4 A (1.4571)	14.8 x 17 mm	Immersion sleeve	62.30/II
SWK-2-100	KA989901	100 mm	steel, nickel-plated	10.5 x 17 mm	Protection coil with flange plate	19.50/II
SWK-2-120	KA989902	120 mm	steel, nickel-plated	10.5 x 17 mm	Protection coil with flange plate	24.20/II
SWK-2-200	KA989903	200 mm	steel, nickel-plated	10.5 x 17 mm	Protection coil with flange plate	24.90/II
SWK-2-280	KA989904	280 mm	steel, nickel-plated	10.5 x 17 mm	Protection coil with flange plate	30.30/II

\*\* I = minimum inner diameter / A = nominal outer diameter

See page 231 for pictures and dimension diagrams for immersion sleeves/protection coils

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-29	KA999901	Mounting set RTKSA for THK/NTHK/SWK individual controllers	4.10/II
JZ-31	KA999903	Mounting set RTKSA for pipe mounting contact controller (worm screw clamp)	5.10/II
JZ-33	KA999904	RTKSA seal set, protection rating: IP54	17.40/II

### TYPE COMPARISON (OLD/NEW TYPE)

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS	ACCESSORIES
KR 80.312	fixed at 100 °C	-20 K	RTKSA-003.310	20 to 150 °C	-10 K	THK-2-100 + JZ-29
LR 80.312	fixed at 100 °C	-20 K				SWK-2-100 + JZ-29
KR 80.318	fixed at 100 °C	-20 K				THK-2-200 + JZ-29
LR 80.318	fixed at 100 °C	-20 K				SWK-2-200 + JZ-29
KR 80.309	fixed at 75 °C	-20 K				THK-2-100 + JZ-29
LR 80.309	fixed at 75 °C	-20 K				SWK-2-100 + JZ-29
KR 80.310	fixed at 75 °C	-20 K				THK-2-200 + JZ-29
LR 80.310	fixed at 75 °C	-20 K				SWK-2-200 + JZ-29
KR 80.206	30 to 65 °C	-8 K	RTKSA-002.410	30 to 110 °C	-10 K	THK-2-100 + JZ-29
KR 80.206 IP54	30 to 65 °C	-8 K				THK-2-100 + JZ-29
KR 80.207	60 to 95 °C	-8 K				THK-2-100 + JZ-29
LR 80.207	60 to 95 °C	-8 K				SWK-2-100 + JZ-29
KR 80.208	85 to 120 °C	-8 K	RTKSA-002.310	20 to 150 °C	-10 K	THK-2-100 + JZ-29
KR 80.202	95 to 130 °C	-8 K				THK-2-100 + JZ-29
KR 80.203	95 to 130 °C	-8 K				THK-2-200 + JZ-29
LR 80.203	95 to 130 °C	-8 K				SWK-2-200 + JZ-29
KR 80.203 IP54	95 to 130 °C	-8 K				THK-2-200 + JZ-29



# UNIVERSAL CAPILLARY THERMOSTAT RTKSA

## CAPILLARY SYSTEM – TÜV-TESTED

### TYPE COMPARISON (OLD / NEW TYPE)

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS	ACCESSORIES
WR 81.029-1	0 to 35 °C	0.5–1 K	RTKSA-000.100	0 to 50 °C	1.3 K	-
KR 80.003-1	0 to 35 °C	1 K				THK-2-200 + JZ-29
LR 80.003-1	0 to 35 °C	1 K				SWK-2-200
WR 81.009-2	0 to 70 °C	1–2 K	RTKSA-000.200	0 to 120 °C	3 K	-
KR 80.035-2	0 to 70 °C	2 K				THK-2-100 + JZ-29
KR 80.027-5	0 to 70 °C	5 K				THK-2-100 + JZ-29
LR 80.027-5	0 to 70 °C	5 K				SWK-2-100 + JZ-29
LR 80.035-2	0 to 70 °C	2 K				SWK-2-100 + JZ-29
KR 80.028-2	0 to 70 °C	2 K				THK-2-200 + JZ-29
LR 80.028-2	0 to 70 °C	2 K				SWK-2-200 + JZ-29
KR 80.029-2	0 to 70 °C	2 K				THK-2-280 + JZ-29
KR 80.029-2 V4A	0 to 70 °C	3 K				NTHK-2-280 + JZ-29
LR 80.029-2	0 to 70 °C	2 K				SWK-2-280 + JZ-29
KR 80.011-1 V4A	10 to 45 °C	1 K				NTHK-2-120 + JZ-29
KR 80.009-1 V4A	10 to 45 °C	1 K				NTHK-2-200 + JZ-29
KR 80.000-5	35 to 95 °C	5 K	RTKSA-000.200	0 to 120 °C	3 K	THK-2-100 + JZ-29
KR 80.001-5	35 to 95 °C	5 K				THK-2-200 + JZ-29
KR 80.001-5 V4A	35 to 95 °C	5 K				NTHK-2-200 + JZ-29
KR 80.008-8	40 to 110 °C	8 K				THK-2-100 + JZ-29
KR 80.006-8	50 to 130 °C	8 K	RTKSA-000.300	20 to 150 °C	9.1 K	THK-2-100 + JZ-29
WR 81.101-1	0 to 35 °C	0.5–1 K	RTKSA-001.100	0 to 50 °C	1.3 K	-
WR 81.129-1	0 to 35 °C	0.5–1 K				-
KR 80.108-1	0 to 35 °C	1 K				-
LR 80.108-1	0 to 35 °C	1 K				-
KR 80.109-1	0 to 35 °C	1 K				THK-2-200 + JZ-29
LR 80.109-1	0 to 35 °C	1 K				SWK-2-200 + JZ-29
WR 81.115-5	0 to 70 °C	4 K	RTKSA-001.200	0 to 120 °C	3 K	JZ-31
WR 81.109-2	0 to 70 °C	1–2 K				-
KR 80.116-2	0 to 70 °C	2 K				THK-2-100 + JZ-29
LR 80.116-2	0 to 70 °C	2 K				SWK-2-100 + JZ-29
KR 80.111-3	0 to 80 °C	1 K				THK-2-100 + JZ-29
KR 80.120-1	10 to 45 °C	1 K				THK-2-200 + JZ-29
LR 80.120-1	10 to 45 °C	1 K				SWK-2-200 + JZ-29
KR 80.100-5	35 to 95 °C	5 K				RTKSA-001.301
KR 80.100-5 IP54	35 to 95 °C	5 K	NTHK-2-100 + JZ-29			
KR 80.101-5	35 to 95 °C	5 K	THK-2-200 + JZ-29			
LR 80.101-5	35 to 95 °C	5 K	SWK-2-200 + JZ-29			
KR 80.124-5	35 to 95 °C	5 K	THK-2-280 + JZ-29			
KR 80.112-5	35 to 95 °C	8 K	RTKSA-001.300	20 to 150 °C	9.1 K	THK-2-600 + JZ-29
KR 80.102-8	40 to 110 °C	8 K				THK-2-100 + JZ-29
KR 80.103-8	40 to 110 °C	8 K				THK-2-200 + JZ-29
WR 81.117-5	50 to 130 °C	4 K				JZ-31
KR 80.106-8	50 to 130 °C	8 K				THK-2-100 + JZ-29



# UNIVERSAL CAPILLARY THERMOSTAT RTKSA

## CAPILLARY SYSTEM – TÜV-TESTED

### ILLUSTRATIONS

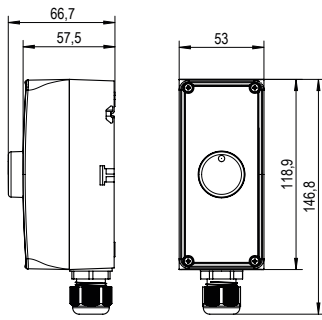
RTKSA with internal setting



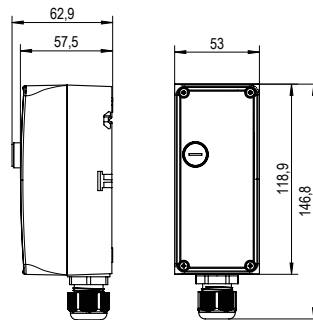
RTKSA with internal setting and external reset



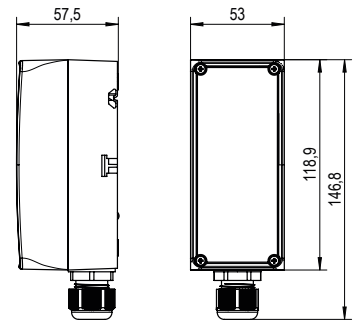
RTKSA TR



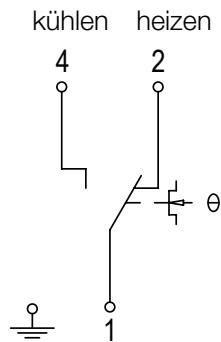
RTKSA TB/STB



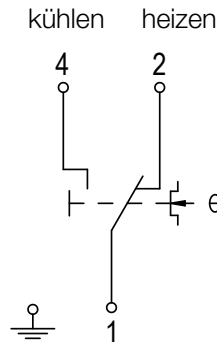
RTKSA TW/STW



RTKSA-000.xxx / RTKSA-001.xxx / RTKSA-004.xxx



RTKSA-002.xxx / RTKSA-003.xxx



Scan the QR code now and watch the 'New thermostats in plant engineering' product film. More information at a glance.

### ACCESSORIES

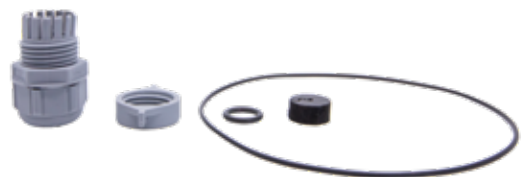
JZ-29



JZ-31



JZ-33





# UNIVERSAL CAPILLARY DOUBLE THERMOSTAT RTKSA

## CAPILLARY SYSTEM – TÜV-TESTED



### TECHNICAL DATA

<b>Colour:</b>	anthracite grey (similar to RAL 7016), front side transparent
<b>Sensor material:</b>	Cu
<b>Sensor length:</b>	2 m
<b>Max. sensor temperature:</b>	Top scale value +15%
<b>Max. head temperature:</b>	80 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	<b>NC contact:</b> 16 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10% <b>NO contact TR/TW:</b> 6.3 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10% <b>NO contact TB/STB:</b> 2.0 (0.4) A at 230 VAC +10% 0.25 A at 230 VDC +10%
<b>Min. switching current:</b>	Min. 100 mA at 24 V (AC/DC)
<b>Max. switching voltage:</b>	230 VAC 50/60 Hz, 230 VDC
<b>Min. switching voltage:</b>	24 VAC/50 Hz, 24 VDC
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	2 x togglers, potential-free heating or cooling
<b>Control range:</b>	Push-in terminals
<b>Electrical connection:</b>	Wall mounting or with optional process connection (immersion sleeve or protection coil)
<b>Mounting/attachment:</b>	
<b>Protection class:</b>	I
<b>Protection rating:</b>	RTKSA-xxx.x0x IP40 RTKSA-xxx.x1x IP54 IP65 (optional)
<b>Safety and EMC:</b>	In accordance with DIN EN 60730 (VDE 0631)
<b>Sensor:</b>	liquid-filled capillary
<b>General features:</b>	scale: degrees Celsius

### APPLICATION

This series of devices was specially developed for use in heating technology; in boiler systems or storage tanks; district heating transfer stations and heat transfer systems; in ventilation technology to monitor supply air or as limiters for electrical heating coils, as well as for controlling and monitoring temperatures in pipelines and tanks.

Immersion sleeves, protection coils and mounting set JZ-31 for pipe mounting are not included in the scope of delivery.

Accessory JZ-30 must be used in conjunction with immersion sleeves.

Type testing by TÜV in accordance with DIN EN 14597



TYPE	ITEM NO.	CONTROL RANGE	HYSTERESIS	SENSOR Ø X L	FEATURES	EURO/PG
RTKSA-010.200	KA001000	TR: 0 to 120 °C STB: 70 to 130 °C	TR: 3 K STB: -10 to -15 K*	6 x 87 mm 6 x 66 mm	TR (external setting), STB (internal setting / external reset)	143.00/II
RTKSA-013.210	KA001200	TW: 0 to 120 °C TB: 20 to 150 °C	TW: 3 K TB: -10 to -15 K*	6 x 87 mm 6 x 55 mm	TW (internal setting) TB (internal setting / external reset)	185.90/II
RTKSA-014.210	KA001100	TW: 0 to 120 °C TW: 0 to 120 °C	TW: 3 K TW: 3 K	6 x 87 mm 6 x 87 mm	2x TW (internal setting)	143.00/II

TR = temperature controller, TW = temperature monitor, TB = temperature limiter, STB = safety temperature limiter  
\* Manual reset after cooling down by 10–15 K (depending on configured setpoint)

ACCESSORIES	ITEM NO.	LENGTH	MATERIAL	DIAMETER I X A**	FEATURES	EURO/PG
THK-2-100x17	KA979901	100 mm	nickel-plated brass	14.8 x 17 mm	Immersion sleeve	30.80/II
THK-2-200x17	KA979902	200 mm	nickel-plated brass	14.8 x 17 mm	Immersion sleeve	41.30/II
NTHK-2-100x17	KA979903	100 mm	V4A (1.4571)	14.8 x 17 mm	Immersion sleeve	60.10/II
NTHK-2-200x17	KA979904	200 mm	V4A (1.4571)	14.8 x 17 mm	Immersion sleeve	62.30/II
SWK-2-100	KA989901	100 mm	steel, nickel-plated	10.5 x 17 mm	Protection coil with flange plate	19.50/II
SWK-2-200	KA989903	200 mm	steel, nickel-plated	10.5 x 17 mm	Protection coil with flange plate	24.90/II

\*\* I = minimum inner diameter / A = nominal outer diameter

See page 231 for pictures and dimension diagrams for immersion sleeves/protection coils



# UNIVERSAL CAPILLARY DOUBLE THERMOSTAT RTKSA

## CAPILLARY SYSTEM – TÜV-TESTED

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-30	KA999902	Mounting set RTKSA for THK/NTHK/SWK double controllers	6.60/II
JZ-33	KA999904	Seal set RTKSA, 2 units necessary for double thermostats, protection rating: IP54	17.40/II

### TYPE COMPARISON (OLD / NEW TYPE)

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS	ACCESSORIES
KR 85.100-5	TR 35 to 95 °C TW 35 to 95 °C	5 K 5 K	RTKSA-014.210	TW: 0 to 120 °C TW: 0 to 120 °C	3 K 3 K	THK-2-100x17 + JZ-30
KR 85.406-2	TW 0 to 70 °C TW 0 to 70 °C	2 K 2 K				THK-2-100x17 + JZ-30
KR 85.101-5	TR 35 to 95 °C TW 35 to 95 °C	5 K 5 K				THK-2-200x17 + JZ-30
KR 85.102-5	TR 35 to 95 °C TW 50 to 130 °C	5 K 8 K				THK-2-100x17 + JZ-30
KR 85.109-2	TR 0 to 70 °C TW 0 to 70 °C	2 K 2 K				THK-2-100x17 + JZ-30
KR 85.400-5	TW 35 to 95 °C TW 35 to 95 °C	5 K 5 K				THK-2-100x17 + JZ-30
KR 85.401-5	TW 35 to 95 °C TW 35 to 95 °C	5 K 5 K				THK-2-200x17 + JZ-30
KR 85.315-5	TR 35 to 95 °C STB fixed at 100 °C	5 K -20 K	RTKSA-010.200	TR: 0 to 120 °C STB: 70 to 130 °C	3 K -10 to -15 K	THK-2-200x17 + JZ-30
KR 85.311-2	TR 0 to 70 °C STB fixed at 75 °C	2 K -20 K				THK-2-100x17 + JZ-30
KR 85.312-2	TR 0 to 70 °C STB fixed at 75 °C	2 K -20 K				THK-2-200x17 + JZ-30
KR 85.314-5	TR 35 to 95 °C STB fixed at 100 °C	5 K -20 K				THK-2-100x17 + JZ-30
LR 85.315-5	TR 35 to 95 °C STB fixed at 100 °C	5 K -20 K				SWK-2-200
LR 85.312-2	TR 0 to 70 °C STB fixed at 75 °C	2 K -20 K				SWK-2-200
KR 85.204-8	TR 50 to 130 °C TB 95 to 130 °C	8 K -8 K	RTKSA-013.210	TW: 0 to 120 °C TB: 20 to 150 °C	3 K -10 to -15 K	THK-2-100x17 + JZ-30
KR 85.230-5	TR 35 to 95 °C TB 95 to 110 °C	5 K 5 K				THK-2-100x17 + JZ-30
KR 85.207-5	TR 35 to 95 °C TB 85 to 120 °C	5 K -8 K				THK-2-200x17 + JZ-30

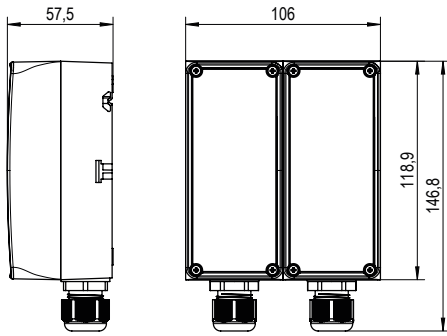




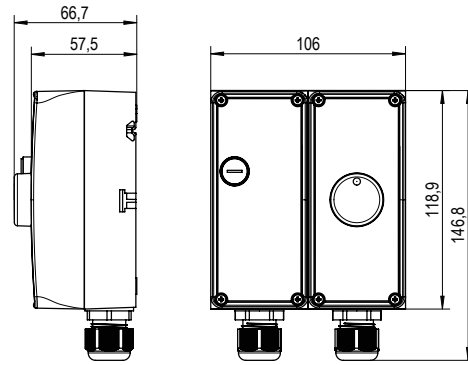
# UNIVERSAL CAPILLARY DOUBLE THERMOSTAT RTKSA CAPILLARY SYSTEM – TÜV-TESTED

## ILLUSTRATIONS

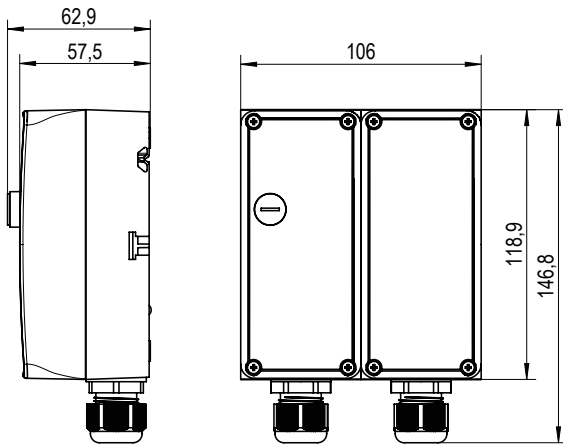
RTKSA-014.210



RTKSA-010.200



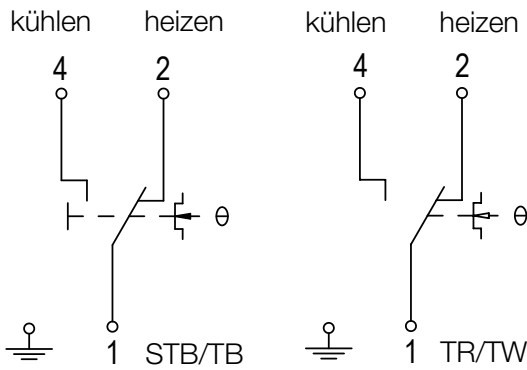
RTKSA-013.210



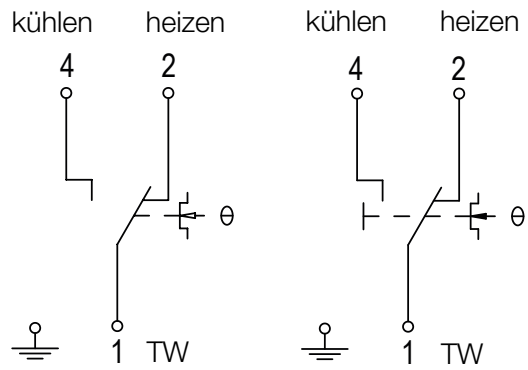
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RTKSA-010.200 / RTKSA-013.210



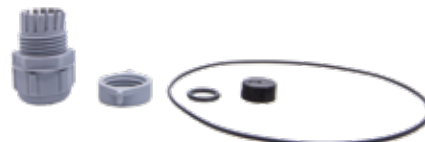
RTKSA-014.210



JZ-30



JZ-33





# SINGLE-STAGE PLANT ROOM THERMOSTATS JET-110 / -120

CAPILLARY SYSTEM – EXTERNAL SENSORS – CONFIGURABLE HYSTERESIS



### TECHNICAL DATA

<b>Colour:</b>	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	10 (4) A
<b>Min. switching current:</b>	150 mA
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	24 VAC, 50 Hz
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	toggler, potential-free
<b>Control function:</b>	heating or cooling
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	wall mounting
<b>Protection class:</b>	I
<b>Protection rating:</b>	IP65
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	liquid-filled capillary
<b>Sensor material:</b>	Cu
<b>General features:</b>	scale: degrees Celsius

### APPLICATION

Control or monitoring of the temperature in the industrial domain in a non-aggressive environment, for example, for controlling heating or cooling systems in greenhouses, industrial and sports halls, air-inflated domes, cold storage and refrigeration rooms.

The JET-110 RF is particularly suitable as an external thermostat.

For successor types for JET-4x and JET-4x F see page 164 (plant room thermostat RTKSA)

TYPE	ITEM NO.	CONTROL RANGE	MAX. SENSOR TEMPERATURE	HYSTERESIS (APPROX.)	AMBIENT TEMPERATURE	FEATURES	EURO/PG
JET-110 R	JA045100	-35 to +30 °C	35 °C	2-20 K adjustable	-35 to +35 °C	External setting with range restriction, TR	162.30 / II
JET-110 RF	JA045200	-35 to +30 °C	35 °C	2-20 K adjustable	-35 to +35 °C	Internal setting with viewing window, TW	163.10 / II
JET-120 R	JA046100	0 to 60 °C	70 °C	2-20 K adjustable	-35 to +70 °C	External setting with range restriction, TR	162.30 / II
JET-120 RF	JA046200	0 to 60 °C	70 °C	2-20 K adjustable	-35 to +70 °C	Internal setting with viewing window, TW	163.20 / II

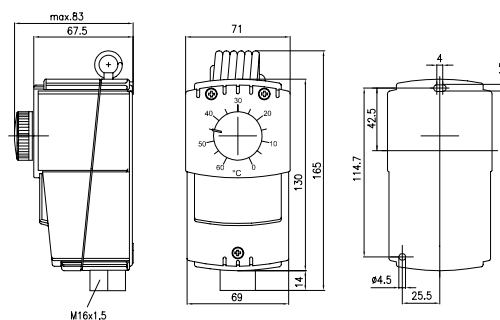
TR = temperature controller, TW = temperature monitor

### ILLUSTRATIONS

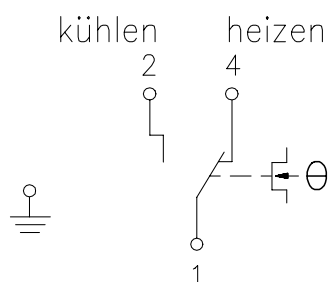
JET-1x0RF



JET-1.



JET-1.





# SINGLE-STAGE CAPILLARY THERMOSTATS JET-1



## TECHNICAL DATA

<b>Housing colour:</b>	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
<b>Sensor material:</b>	Cu (capillaries made from V2A)
<b>Capillary length:</b>	1.8 m (for types with 'G' in the type specification: 4.5 m)
<b>Ambient temperature:</b>	-20 to +55 °C
<b>Max. sensor temperature:</b>	top scale value +15%
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	15 (8) A
<b>Min. switching current:</b>	150 mA
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	24 VAC, 50 Hz
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	toggler, potential-free
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	wall mounting
<b>Protection rating:</b>	IP65
<b>Protection class:</b>	I
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	liquid-filled capillary
<b>General features:</b>	scale: degrees Celsius, mechanical range restriction when external setting is used

## APPLICATION

Monitoring or control of temperatures of non-aggressive, liquid and gaseous media. Particularly suitable for wall mounting. The SW-200-12 protecting coil is to be used for temperature control of non-aggressive gases in ducts; for temperature control in non-aggressive fluids, use the TH immersion sleeve, and in aggressive fluids, the NTH immersion sleeve.

**Immersion sleeves or protection coils are not a part of the scope of delivery (see 'Accessories / Miscellaneous' section).**

TYPE	ITEM NO.	CONTROL RANGE	HYSTERESIS ADJUST-ABLE (APPROX.)	SENSOR A X L	FEATURES	EURO/PG
JET-110X	JA040100	-35 to +30 °C	2-20 K	9.6 x 122 mm	external setting/TR*	160.20/II
JET-110XF	JA040200	-35 to +30 °C	2-20 K	9.6 x 122 mm	internal setting/TW*	161.30/II
JET-120X	JA041100	0 to 60 °C	2-20 K	9.6 x 122 mm	external setting/TR*	160.80/II
JET-120XG	JA041101	0 to 60 °C	2-20 K	9.6 x 122 mm	external setting/TR*	183.10/II
JET-120XF	JA041200	0 to 60 °C	2-20 K	9.6 x 122 mm	internal setting/TW*	160.80/II
JET-130X	JA042100	40 to 100 °C	2-20 K	9.6 x 122 mm	external setting/TR*	161.00/II
JET-130XG	JA042101	40 to 100 °C	2-20 K	9.6 x 122 mm	external setting/TR*	186.20/II
JET-130XF	JA042200	40 to 100 °C	2-20 K	9.6 x 122 mm	internal setting/TW*	161.60/II
JET-133X	JA042300	40 to 100 °C		9.6 x 122 mm	external setting/TB**	167.70/II
JET-133XF	JA042400	40 to 100 °C		9.6 x 122 mm	internal setting/TB**	169.10/II
JET-140X	JA043100	70 to 130 °C	2-20 K	9.6 x 122 mm	external setting/TR*	164.80/II
JET-140XF	JA043200	70 to 130 °C	2-20 K	9.6 x 122 mm	internal setting/TW*	165.50/II
JET-143XF	JA043400	70 to 130 °C		9.6 x 122 mm	internal setting/TB**	172.90/II
JET-150	JA044100	100 to 280 °C	8-50 K	6 x 80 mm	external setting/TR*	160.70/II
JET-150F	JA044200	100 to 280 °C	8-50 K	6 x 80 mm	internal setting/TW*	161.30/II
JET-153	JA044300	100 to 280 °C		6 x 80 mm	external setting/TB**	167.20/II
JET-153F	JA044400	100 to 280 °C		6 x 80 mm	internal setting/TB**	168.60/II

TR = temperature controller, TW = temperature monitor, TB = temperature limiter

\* Control function heating or cooling

\*\* Control function heating or cooling, locks when temperature rises, manual reset after temperature fall of at least 8 K

## ACCESSORIES

Immersion sleeves for types with 'X' in the type specification: TH/NTH-140 see Page 232

Immersion sleeves for types without 'X' in the type specification: TH/NTH-100/200/280 see Page 232

Protection coil for all types: SW-200-12 see Page 231



# SINGLE-STAGE CAPILLARY THERMOSTATS JET-1

## ILLUSTRATIONS

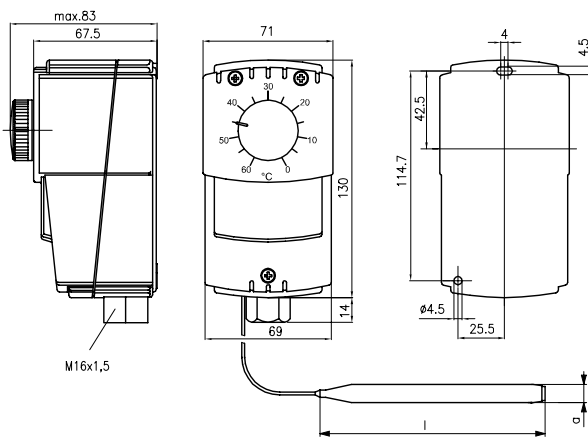
Temperature monitor (TW)



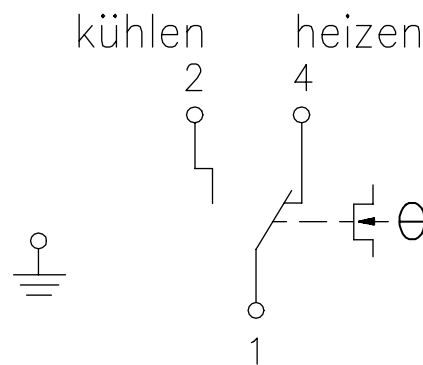
Temperature limiter (TB)



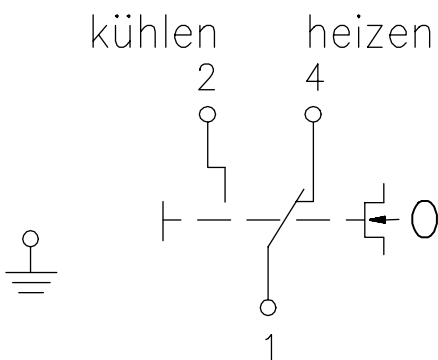
Temperature controller (TR)



TR/TW



TB





# MULTI-STAGE CAPILLARY THERMOSTAT JMT-206 X

## 2 STAGES



### TECHNICAL DATA

<b>Housing colour:</b>	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
<b>Sensor material:</b>	Cu
<b>Capillary length:</b>	1.5 m
<b>Ambient temperature:</b>	-15 to +55 °C
<b>Max. sensor temperature:</b>	top scale value +15%
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	15 (8) A
<b>Min. switching current:</b>	150 mA
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	24 V AC, 50 Hz
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	2 x togglers, potential-free
<b>Control function:</b>	2-stage heating, 2-stage cooling, heating or cooling with neutral zone approx. 1–7 K, adjustable
<b>Hysteresis between the stages:</b>	
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	wall mounting
<b>Protection rating:</b>	IP65
<b>Protection class:</b>	I
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	liquid-filled capillary
<b>General features:</b>	scale: degrees Celsius

### APPLICATION

Multi-stage control of the temperature of liquid or gaseous media, e.g., for activating two-stage burners or heating registers.

The SW-200-12 protecting coil is to be used for temperature control of non-aggressive gases in ducts; for temperature control in non-aggressive fluids, use the TH immersion sleeve, and in aggressive fluids, the NTH immersion sleeve.

**Immersion sleeves or protection coils are not a part of the scope of delivery (see 'Accessories / Miscellaneous' section).**

TYPE	ITEM NO.	CONTROL RANGE	HYSTERESIS IN THE STAGE (APPROX.)	SENSOR A X L	FEATURES	EURO / PG
JMT-206 X	E6060340	20 to 80 °C	1 K	9.6 x 122 mm	External setting, TR	233.90 / II

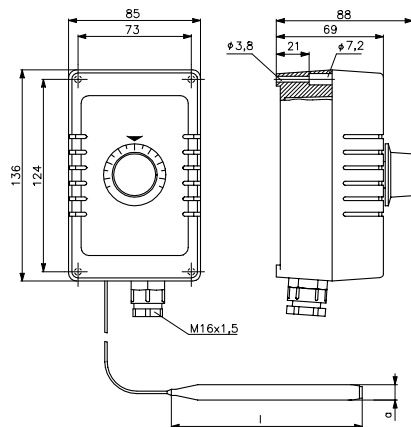
TR = Temperature controller

### ACCESSORIES

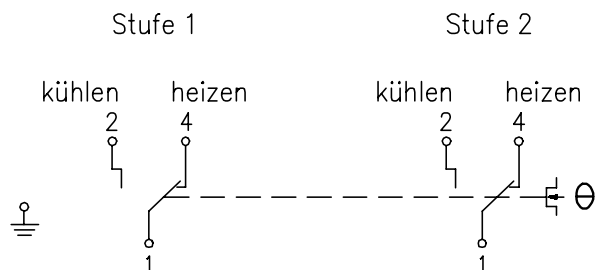
Immersion sleeves TH-140 / NTH-140 (see Page 232), protection coil SW-200-12 (see Page 232)

### ILLUSTRATIONS

JMT-2..



JMT-2..





# CONTACT THERMOSTATS ATR 83

## CAPILLARY SYSTEM



### TECHNICAL DATA

<b>Housing colour:</b>	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
<b>Sensor material:</b>	Cu
<b>Ambient temperature:</b>	0 to 80 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	16 (2) A
<b>Min. switching current:</b>	150 mA
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	24 VAC, 50 Hz
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	toggler, potential-free
<b>Control function:</b>	heating or cooling
<b>Hysteresis:</b>	approx. 4 K
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	on pipe by means of a cable tie (450 x 8.9 mm, easy to remove, heat-resistant up to 105 °C)
<b>Protection class:</b>	I
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	liquid-filled capillary
<b>General features:</b>	scale: degrees Celsius
<b>Scope of delivery:</b>	Controller, cable ties

### APPLICATION

Control or monitoring of temperatures at heat registers, pipelines or tanks, for example, temperature-dependent pump control or control of motor valves.

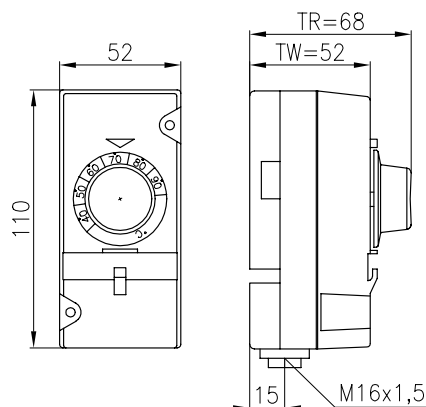
TYPE	ITEM NO.	CONTROL RANGE	MAX. SENSOR TEMPERATURE	FEATURES	EURO/PG
ATR 83.000	C1810492	30 to 90 °C	100 °C	external setting, TR, IP20	47.30 / II
ATR 83.100	C1810493	30 to 90 °C	100 °C	internal setting, TW, IP20	43.40 / II
ATR 83.001	C1810494	0 to 60 °C	80 °C	external setting, TR, IP20	47.30 / II
ATR 83.101	C1810495	0 to 60 °C	80 °C	internal setting, TW, IP20	43.40 / II

TR = temperature controller, TW = temperature monitor

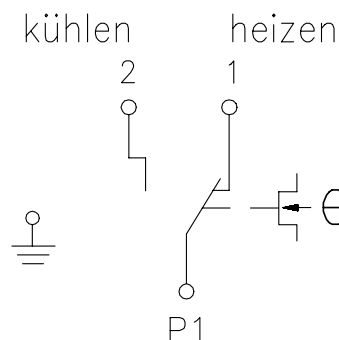
ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
ATRS-1	C1809518	Temperature determination set for ATR with external setting (ATR 83.000, ATR 83.001)	2.90 / II
WP-01	G9990180	heat conduction paste 2 ml	7.20 / II

### ILLUSTRATIONS

ATR 83. ...



ATR 83. ...







# FROST PROTECTION THERMOSTAT RTKSA

## CAPILLARY SYSTEM – TÜV-TESTED



### TECHNICAL DATA

<b>Colour:</b>	Anthracite grey (similar to RAL 7016), front side transparent
<b>Sensor material:</b>	Cu
<b>Max. sensor temperature:</b>	120 °C
<b>Max. head temperature:</b>	80 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Operating voltage:</b>	<b>none</b>
<b>Max. switching current:</b>	<b>NC contact:</b> 16 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10% <b>NO contact STW:</b> 6.3 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10% <b>NO contact STB:</b> 2.0 (0.4) A at 230 VAC +10% 0.25 A at 230 VDC +10%
<b>Min. switching current:</b>	Min. 100 mA at 24 V (AC/DC)
<b>Max. switching voltage:</b>	230 VAC 50/60 Hz, 230 VDC
<b>Min. switching voltage:</b>	24 VAC / 50 Hz, 24 VDC
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	toggler, potential-free
<b>Control range:</b>	-10 to +15 °C
<b>Electrical connection:</b>	Push-in terminals
<b>Mounting / attachment:</b>	Wall mounting; controller housing must be fitted in such a way that the ambient temperature is at least 2 K higher than the setpoint.
<b>Protection class:</b>	I (including switch head and Cu capillary up to 4000 mm)
<b>Safety and EMC:</b>	in accordance with DIN EN 60730 (VDE 0631)
<b>Sensor:</b>	Liquid-filled capillary, active over its entire length (except RTKSA-203.000, RTKSA-204.000, RTKSA-204.020)
<b>General features:</b>	scale: degrees Celsius

### APPLICATION

The RTKSA frost protection thermostat was designed especially for ensuring air or water-exposed frost protection for hot-water heating coils and heat exchangers in ventilation, heating or air conditioning systems.

The capillaries, except RTKSA-203.000 / RTKSA-204.000 / RTKSA-204.020, are active along their entire length. The device actuates when the minimum response length of the capillary (at 3 m: 15 cm, at 6 m: 30 cm, at 12 m: 40 cm) reaches the set scale value.

If a sensor rupture occurs, contact 1–2 is permanently opened and contact 1–4 is permanently closed in the STB/STW application. Unlocking is no longer possible with STB.

#### Air-exposed application:

For the frost protection of heating coils (except RTKSA-203.000 / RTKSA-204.000 / RTKSA-204.020) the capillaries are braced in front of the heating coil to be protected using mounting brackets. Mounting brackets JZ-05 / 6 M (metal) or JZ-05 / 6 K (plastic) should be used for this purpose.

The RTKSA-203.000 / RTKSA-204.000 / RTKSA-204.020 types can be used in conjunction with the SWK-2-xxx protection coils to measure the temperature of non-aggressive gases in the duct.

#### Water-exposed application:

The RTKSA-203.000 / RTKSA-204.000 / RTKSA-204.020 types can be used in conjunction with the TH-140 immersion sleeves for temperature measurement in non-aggressive fluids and in conjunction with the NTH-140 immersion sleeves in aggressive fluids.

#### Note:

Mounting flanges, immersion sleeves and protecting coils are not part of the delivery scope and must be ordered separately as accessories.

**Type testing by TÜV in accordance with DIN EN 14597**





# FROST PROTECTION THERMOSTAT RTKSA

## CAPILLARY SYSTEM

TYPE	ITEM NO.	CAPILLARY LENGTH	DEGREE OF PROTECTION	HYSTERESIS	FEATURES	EURO/PG
RTKSA-203.000	KA020300	1.8 m	IP40	+3 K*	STB, internal setting, external reset, sensor dimensions: 9.5 x 98 mm, also for use in water-exposed applications	122.70 / II
RTKSA-203.100	KA020301	3 m	IP40	+3 K*	STB, internal setting, external reset	119.00 / II
RTKSA-203.120	KA020302	3 m	IP65	+3 K*	STB, internal setting, external reset	175.60 / II
RTKSA-203.200	KA020304	6 m	IP40	+3 K*	STB, internal setting, external reset	135.10 / II
RTKSA-203.220	KA020303	6 m	IP65	+3 K*	STB, internal setting, external reset	165.60 / II
RTKSA-203.300	KA020305	12 m	IP40	+3 K*	STB, internal setting, external reset	189.50 / II
RTKSA-204.000	KA020400	1.8 m	IP40	1.5 K	STW, internal setting, Sensor dimensions: 9.5 x 98 mm, also for use in water-exposed applications	101.40 / II
RTKSA-204.020	KA020401	1.8 m	IP65	1.5 K	STW, internal setting, Sensor dimensions: 9.5 x 98 mm, also for use in water-exposed applications	170.30 / II
RTKSA-204.100	KA020402	3 m	IP40	1.5 K	STW, internal setting	105.90 / II
RTKSA-204.200	KA020403	6 m	IP40	1.5 K	STW, internal setting	113.90 / II
RTKSA-204.220	KA020404	6 m	IP65	1.5 K	STW, internal setting	175.40 / II
RTKSA-204.300	KA020405	12 m	IP40	1.5 K	STW, internal setting	142.80 / II

STB = safety temperature limiter, STW = safety temperature monitor

\*Manual reset after heating by approx. 3 K

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-05 / 6 K	C1809536	1 set of mounting brackets (6 pieces) for frost protection thermostat RTKSA / JTF, made of plastic (max. 145 °C)	13.60 / II
JZ-05 / 6 M	C1809474	1 set of mounting brackets (6 pieces) for frost protection thermostat RTKSA / JTF, made of metal	14.50 / II
JZ-05 / 1 M	C1809462	Single mounting bracket for frost protection thermostat RTKSA / JTF, made of metal	3.20 / II
JZ-29	KA999901	Mounting set for RTKSA THK / NTHK / SWK individual controllers	4.10 / II
JZ-33	KA999904	RTKSA seal set, protection rating: IP54	17.40 / II

ACCESSORIES	ITEM NO.	LENGTH OF	MATERIAL	DIAMETER IXA**	FEATURES	EURO/PG
TH-140	C1809409	140 mm	nickel-plated brass	10 x 12 mm	Immersion sleeve	28.20 / II
NTH-140	C1809435	140 mm	V4A (1.4571)	10 x 12 mm	Immersion sleeve	59.70 / II
SWK-2-100	KA989901	100 mm	steel, nickel-plated	10.5 x 17 mm	Protection coil with flange plate	19.50 / II
SWK-2-200	KA989903	200 mm	steel, nickel-plated	10.5 x 17 mm	Protection coil with flange plate	24.90 / II

\*\* I = minimum inner diameter / A = nominal outer diameter

See page 231 for pictures and dimension diagrams for immersion sleeves/protection coils



# FROST PROTECTION THERMOSTAT RTKSA

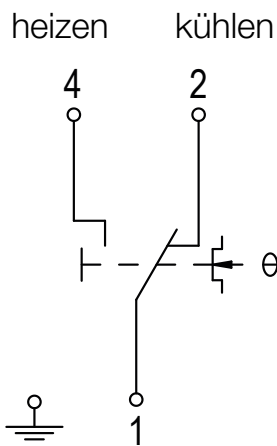
## CAPILLARY SYSTEM

### TYPE COMPARISON (OLD / NEW TYPE)

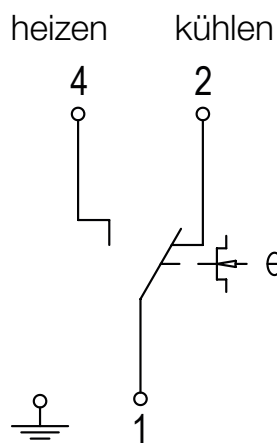
OLD ALRE TYPES	CAPILLARY LENGTH	GENERAL FEATURES	NEW ALRE TYPES	CAPILLARY LENGTH	GENERAL FEATURES
JTF-101	6 m	Protection rating: IP54 Hysteresis: approx. 1 K Control range: -8 to +8 °C Tmax sensor: 150 °C	RTKSA-204.200	6 m	Protection rating: IP40 Hysteresis: approx. 1.5 K Control range: -10 to +15 °C Tmax sensor: 120 °C
JTF-103	1.8 m		RTKSA-204.000	1.8 m	
JTF-105	3 m		RTKSA-204.100	3 m	
JTF-112	12 m		RTKSA-204.300	12 m	

### ILLUSTRATIONS

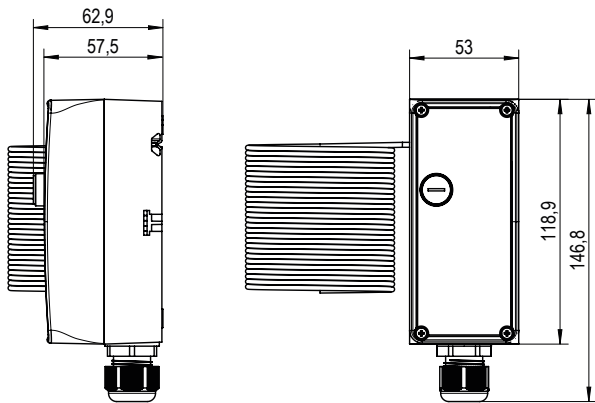
RTKSA-203.xxx



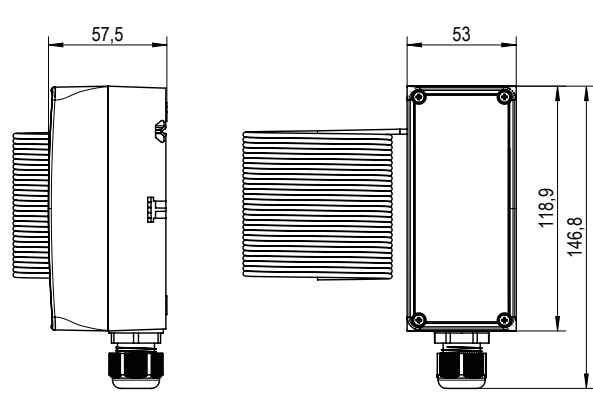
RTKSA-204.xxx



RTKSA-203.xxx



RTKSA-204.xxx



JZ-30



Scan the QR code now and watch the product film 'New thermostats system technology'. More information at a glance.





# FROST PROTECTION THERMOSTAT JTF-1 - 25

## CAPILLARY SYSTEM – 1 OR 2 STAGES – TÜV-TESTED – SWITCHING



### TECHNICAL DATA

<b>Housing colour:</b>	grey
<b>Sensor material:</b>	Cu
<b>Ambient temperature</b>	-10 to +55 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Max. sensor temperature:</b>	200 °C
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	15 (8) A
<b>Min. switching current:</b>	150 mA
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	24 VAC, 50 Hz
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	toggler, potential-free
<b>Control range:</b>	-10 to +12 °C
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	wall mounting, controller housing must be fitted in such a way that it is not subjected to any temperature that is less than the scale value that has been set
<b>Protection class:</b>	I
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	gas-filled capillary, active over its entire length (except for JTF-3, JTF-3 W und JTF-4)
<b>General features:</b>	intrinsic safety, scale: degrees Celsius

### Note:

Mounting flanges, immersion sleeves and protecting coils are not part of the delivery scope and must be ordered separately as accessories.

Type testing by TÜV in accordance with DIN EN 14597

### APPLICATION

Securing hot water registers against freezing. The frost protection thermostats JTF-21 to JTF-25 have 2 switch outputs that allow for intervention in the system before the critical point is reached. All the devices are intrinsically safe and offer a sealable setpoint configuration.

The capillaries, with the exception of JTF-3 / -4, are active over the entire length. The device gets actuated when about 30 cm of the capillary (or approx. 60 cm capillary in the case of 12-m variants) reach the defined value.

### JTF-1 to -25:

For temperature measurement of non-aggressive gases. The mounting brackets JZ-05 / 6 M (metal) or JZ-05 / 6 K (plastic) should be used for bracing the capillaries against the heat register.

### JTF-3 / -4 (additional application):

The SW-200-12 protecting coil is to be used for temperature measurement of non-aggressive gases in the duct; for temperature measurement in non-aggressive fluids, the TH-140 immersion sleeve is to be used, and in aggressive fluids, the NTH-140 immersion sleeve.



TYPE	ITEM NO.	CAPILLARY LENGTH	FEATURES	EURO / PG
<b>1-STAGE</b>				
JTF-1 *	E6090301	6.0 m	external setting, TR, IP40, hysteresis approx. 1 K	122.90 / II
JTF-1 / 12 *	E6090328	12.0 m	external setting, TR, IP40, hysteresis approx. 1 K	210.20 / II
JTF-1 W *	E6090014	6.0 m	internal setting, TW, IP65, hysteresis approx. 1 K	188.10 / II
JTF-2 **	E6090308	6.0 m	external setting, external reset, TB, IP 40, hysteresis: manual reset after temperature rise of approx. 4 K	139.70 / II
JTF-2 W **	E6090287	6.0 m	Internal setting, internal reset, TB, IP65, Hysteresis: manual reset after temperature rise of approx. 4 K	205.10 / II
JTF-3 *	E6090309	1.8 m	external setting, TR, IP 40, hysteresis approx. 1 K, sensor dimensions: 9.5 x 76 mm, also for use in applications exposed to water	118.10 / II
JTF-3 W *	E6090065	1.8 m	internal setting, TW, IP 65, hysteresis approx. 1 K, sensor dimensions: 9.5 x 76 mm, also for use in applications exposed to water	183.00 / II
JTF-4 **	E6090310	1.8 m	external setting, external reset, TB, IP 40, hysteresis: manual reset after temperature rise of approx. 4 K, sensor dimensions: 9.5 x 76 mm, also for use in applications exposed to water	132.80 / II
JTF-5 *	E6090311	3.0 m	external setting, TR, IP40, hysteresis approx. 1 K	119.40 / II



# FROST PROTECTION THERMOSTAT JTF-1 – 25

## CAPILLARY SYSTEM – 1 OR 2 STAGES – TÜV-TESTED – SWITCHING

TYPE	ITEM NO.	CAPILLARY LENGTH	FEATURES	EURO/PG
<b>2-STAGE: 1. STAGE EMITS A SIGNAL 5 K BEFORE THE SWITCH-OFF POINT</b>				
JTF-21 ***	E6090320	6.0 m	external setting, TR, IP40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	168.90/II
JTF-21/12 ***	E6090330	12.0 m	external setting, TR, IP40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	293.00/II
JTF-21 W ***	E6090283	6.0 m	internal setting, TW, IP 65, hysteresis in the stage approx. 1K, hysteresis between the stages approx. 5 K	233.40/II
JTF-22 ****	E6090322	6.0 m	external setting, external reset, TB, IP40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	179.30/II
JTF-22/12 ****	E6090331	12.0 m	external setting, external reset, TB, IP40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	303.40/II
JTF-25 ***	E6090324	3.0 m	external setting, TR, IP40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	165.30/II

TR = temperature controller, TW = temperature monitor, TB = temperature limiter

\* Control function heating or cooling

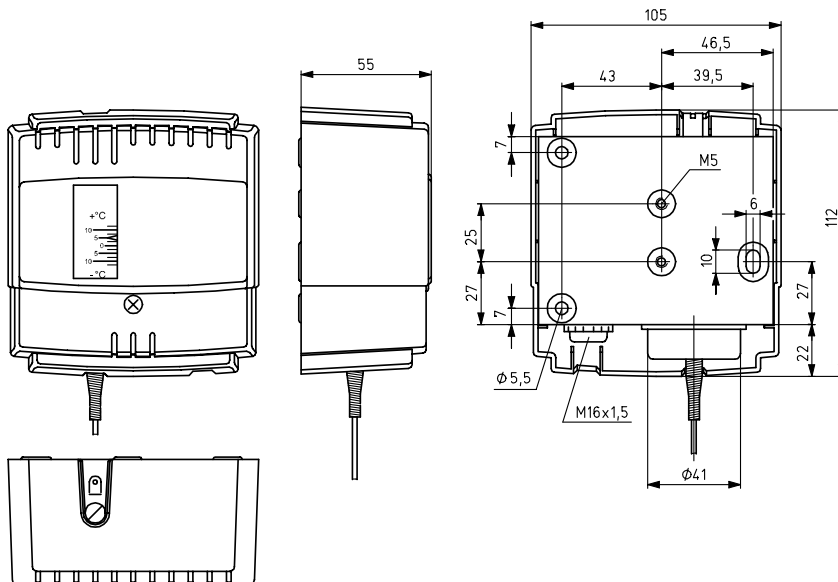
\*\* Control function heating or cooling, locked when the temperature is dropping

\*\*\* Control function heating or cooling, 1st stage emits a signal 5 K before the switch-off signal

\*\*\*\* Control function heating or cooling, 1st stage emits a signal 5 K before the switch-off signal, locks at dropping temperature (manual reset after temperature rise of approx. 4 K)

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-04	E6160133	Capillary tube leadthrough for air ducts with 30-cm protective hose	14.40/II
JZ-05 / 6 K	C1809536	1 set of mounting brackets (6 pieces) for frost protection thermostat JTF, made of plastic (max. 145 °C)	13.60/II
JZ-05 / 6 M	C1809474	1 set of mounting brackets (6 pieces) for frost protection thermostat JTF, made of metal	14.50/II
JZ-05 / 1 M	C1809462	Single mounting bracket for frost protection thermostat JTF, made of metal	3.20/II
JZ-07	E6160145	mounting bracket for frost protection thermostat JTF	6.40/II
TH-140	C1809409	immersion sleeve for JTF-3, JTF-4; material nickel-plated brass	28.20/II
NTH-140	C1809435	immersion sleeve for JTF-3, JTF-4; material V4A (1.4571)	59.70/II
SW-200-12	C1809220	protecting coil for JTF-3, JTF-4 to attach capillary in the air duct; made of nickel-plated steel	32.40/II

### ILLUSTRATIONS



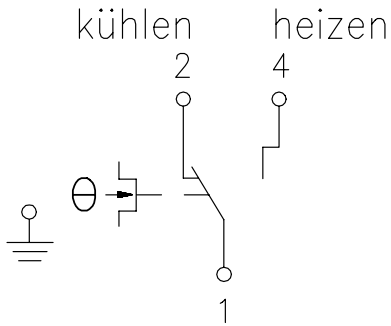


# FROST PROTECTION THERMOSTAT JTF-1 - 25

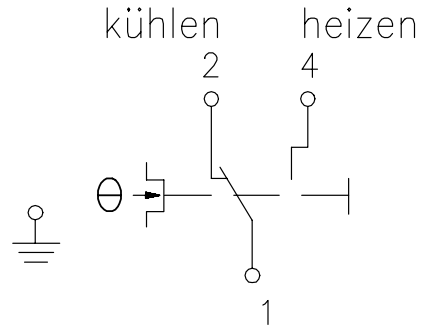
## CAPILLARY SYSTEM – 1 OR 2 STAGES – TÜV-TESTED – SWITCHING

### ILLUSTRATIONS

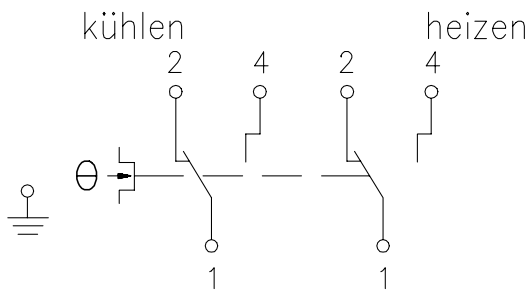
JTF-1 / -3 / -5



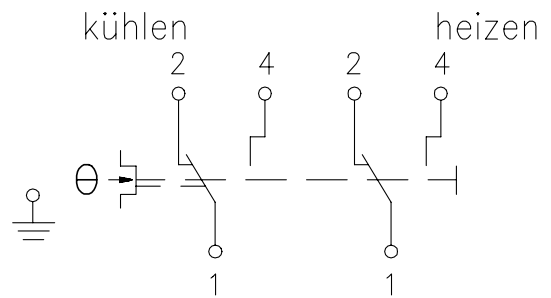
JTF-2 / -4



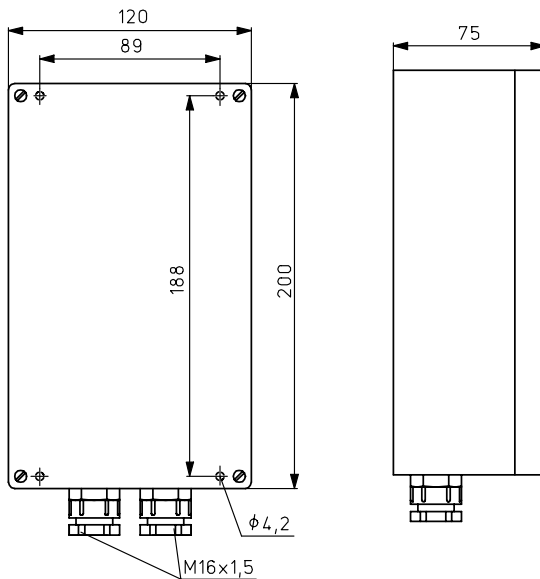
JTF-21 / -25



JTF-22



JTF-...W







# AIR HEATER THERMOSTAT JTL-2 ... -11 / JTL-8 NR ... -17 NR

## CAPILLARY SYSTEM – 2 FUNCTIONS OR 3 FUNCTIONS – TÜV-TESTED

**TECHNICAL DATA**

<b>Housing colour:</b>	grey
<b>Sensor material:</b>	Cu
<b>Ambient temperature:</b>	–15 to +80 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Max. sensor temperature:</b>	200 °C
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	15 (8) A
<b>Min. switching current:</b>	150 mA
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	24 VAC, 50 Hz
<b>Switching element:</b>	microswitch, toggler, potential-free
<b>Control function:</b>	heating or cooling
<b>Control range (fan):</b>	20 to 70 °C
<b>Hysteresis (fan):</b>	adjustable approx. 8–30 K
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	mounting on air duct
<b>Protection rating:</b>	IP20
<b>Protection class:</b>	I
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	liquid-filled capillary, active over its entire length
<b>General features:</b>	intrinsic safety, protection against cold, internal setting, scale: degrees Celsius
<b>Operating elements:</b>	fan switch

**APPLICATION**

Minimum or maximum thermostat for inflow air monitoring and fan regulation in ventilation and air conditioning systems. Overheating protection thermostat for electrical heat registers and directly fired air heaters with oil and gas operation.

The "MAN - AUTO" switch can be used to switch the fan on and off in summer for ventilation.

**Type ... NR:** Temperature-controlled fan regulation, burner monitoring and safety temperature limiter, 3 functions.

Attention: Assemble the device in a vibration-free manner in order to avoid malfunctions and/or sensor rupture.

**Type-tested by TÜV in accordance with DIN EN 14597**

For hot air heaters in accordance with DIN 4794



TYPE	ITEM NO.	CONTROL RANGE BURNER	HYSTERESIS OF BURNER (APPROX.)	CAPILLARY LENGTH	FEATURES*	EURO / PG
JTL-2	E6110013	70 to 100 °C	8 K	350 mm	TW	240.30 / II
JTL-8	E6110049	70 to 100 °C	external reset	350 mm	STB, locked when the temperature is rising, overheating protection	244.00 / II
JTL-11	E6110064	70 to 100 °C	8 K	1250 mm	TW	258.60 / II
JTL-8 NR	E6120038	70 to 95 °C	8 K	350 mm	locked when the temperature is rising, TW / STB, tolerances: STB +0/–10 K, overheating protection, external reset STB, shut-off temperature STB fixed: 100 °C	363.80 / II
JTL-17 NR	E6120077	70 to 95 °C	8 K	1,250 mm	locked when the temperature is rising, TW / STB, tolerances: STB +0/–10 K, overheating protection, external reset STB, shut-off temperature STB fixed: 100 °C	382.30 / II

\* TW = temperature monitor, STB = safety temperature limiter

JTL-4 is replaced by JTL-8.  
JTL-4 NR is replaced by JTL-8 NR.

**Intrinsic safety/protection against cold:** The devices are intrinsically safe, i.e., upon loss of the sensor medium owing to sensor rupture, for example, the burner is switched off. Since minus temperatures generate the same effect through volume reduction of the sensor medium, the devices are adjusted by means of the 'cold screw' such that they switch off the burner only at temperatures below –15 °C. They can only be switched on again manually at temperatures above approx. –5 °C by means of the manual reset button.

**Overheating protection:** This device provides protection from uncontrolled overheating caused, for example, by heat building up or by creeping capillary filling losses when there is invisible damage to the sensor or the capillary tube, etc. Upon reaching a temperature of 220 °C, the safety slot in the sensor melts and, in reaction to losing the filling medium, the device switches off the burner towards the safe side. The burner cannot be switched on again. The device is then unusable and serves as evidence of the presence of an over-temperature of at least 220 °C.

**Locking:** For types JTL-8, JTL-8 NR and JTL-17 NR, a restart after cooling down is only possible by manual reset.



# AIR HEATER THERMOSTAT JTL-2...-11 / JTL-8 NR...-17 NR

## CAPILLARY SYSTEM – 2 FUNCTIONS OR 3 FUNCTIONS – TÜV-TESTED

### ILLUSTRATIONS

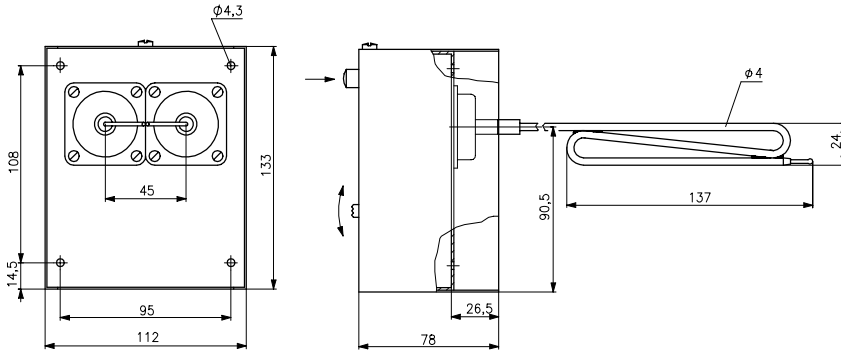
JTL-17NR



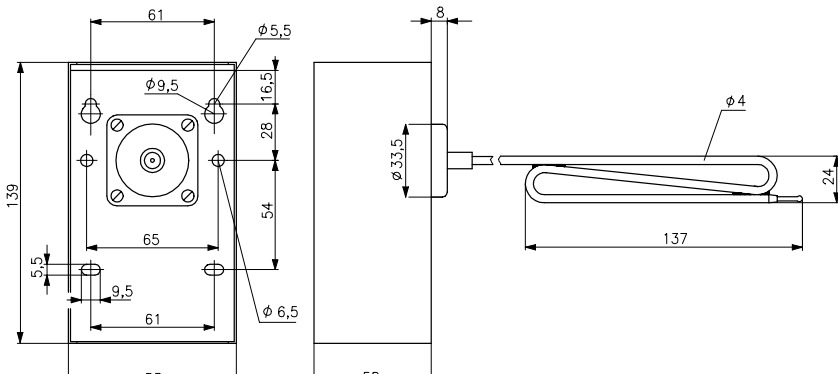
JTL-2



JTL- .. NR

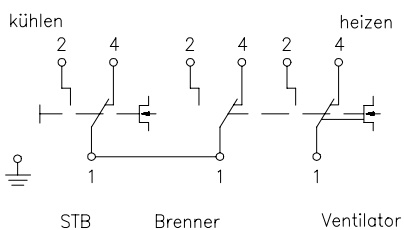


JTL- ..

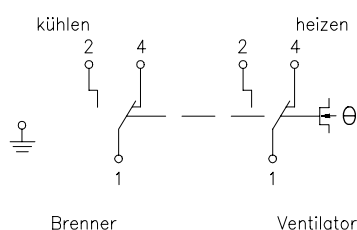


### ILLUSTRATIONS

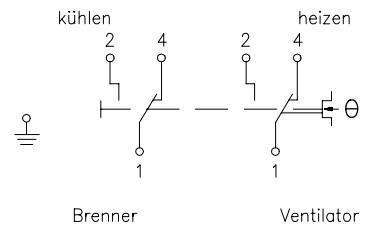
JTL- .. NR



JTL.. (TW)



JTL-.. (STB)





# DUCT THERMOSTAT JTU-1 ... -50

## CAPILLARY SYSTEM – TÜV-TESTED



### TECHNICAL DATA

<b>Housing colour:</b>	grey
<b>Sensor material:</b>	Cu
<b>Ambient temperature:</b>	–15 to +80 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Max. sensor temperature:</b>	200 °C
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	15 (8) A
<b>Min. switching current:</b>	150 mA
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	24 VAC, 50 Hz
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	toggler, potential-free
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	mounting on air duct
<b>Protection rating:</b>	IP40
<b>Protection class:</b>	I
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	liquid-filled capillary, active over its entire length
<b>General features:</b>	internal setting, scale: degrees Celsius

### APPLICATION

Minimum or maximum thermostat for inflow air monitoring and fan regulation in ventilation and air conditioning systems.

Overheating protection thermostat for electrical heat registers and directly fired air heaters with oil and gas operation.

**Attention:** Assemble the device in a vibration-free manner in order to avoid malfunctions and/or sensor rupture.

**JTU-20, -3:**  
**Type testing by TÜV in accordance with DIN EN 14597,**  
for hot air heaters in accordance with DIN 4794



TYPE	ITEM NO.	CONTROL RANGE	HYSTERESIS (AP-PROX.)	CAPILLARY LENGTH	FEATURES	EURO/PG
JTU-50	E6100000	–25 to +65 °C	1.5 K	350 mm	Control function: heating or cooling, TW	174.00/II
JTU-1	E6100012	c	8–30 K adjustable	350 mm	Control function: heating or cooling, TW, intrinsic safety, protection against cold	203.30/II
JTU-3	E6100036	20 to 100 °C	external reset	350 mm	Control function: heating or cooling, locked when the temperature is rising, STB, intrinsic safety, protection against cold, overheating protection	177.90/II
JTU-20	E6100075	20 to 100 °C	external reset	1250 mm	Control function: heating or cooling, locked when the temperature is rising, STB, intrinsic safety, protection against cold	193.90/II
JTU-5	E6100048	60 to 140 °C	8–30 K adjustable	350 mm	Control function: heating or cooling, TW	202.40/II
JTU-6	E6100051	60 to 140 °C	external reset	350 mm	Control function: heating or cooling, locked when the temperature is rising, TB	175.60/II

TW = temperature monitor, STB = safety temperature limiter, TB = temperature limiter

JTU-2 is replaced by JTU-3.

**Intrinsic safety / protection against cold:** The devices are intrinsically safe, i.e., upon loss of the sensor medium owing to sensor rupture, for example, the burner is switched off. Since minus temperatures generate the same effect through volume reduction of the sensor medium, the devices are adjusted by means of the 'cold screw' such that they switch off the burner only at temperatures below –15 °C. They can only be switched on again manually at temperatures above approx. –5 °C by means of the manual reset button.

**Overheating protection:** This device provides protection from uncontrolled overheating, which is caused, for example, by a heat build-up or by creeping capillary filling losses when there is invisible damage to the sensor or the capillary tube etc. Upon reaching a temperature of 220 °C, the safety slot in the sensor melts and, in reaction to losing the filling medium, the device switches off the burner towards the safe side. The burner cannot be switched on again. The device is then unusable and serves as evidence of the presence of an over-temperature of at least 220 °C.

**Locking:** For types JTU-3, JTU-6 and JTU-20, a restart after cooling down is only possible by manual reset.



# DUCT THERMOSTAT JTU-1 ... -50

## CAPILLARY SYSTEM – TÜV-TESTED

### ILLUSTRATIONS

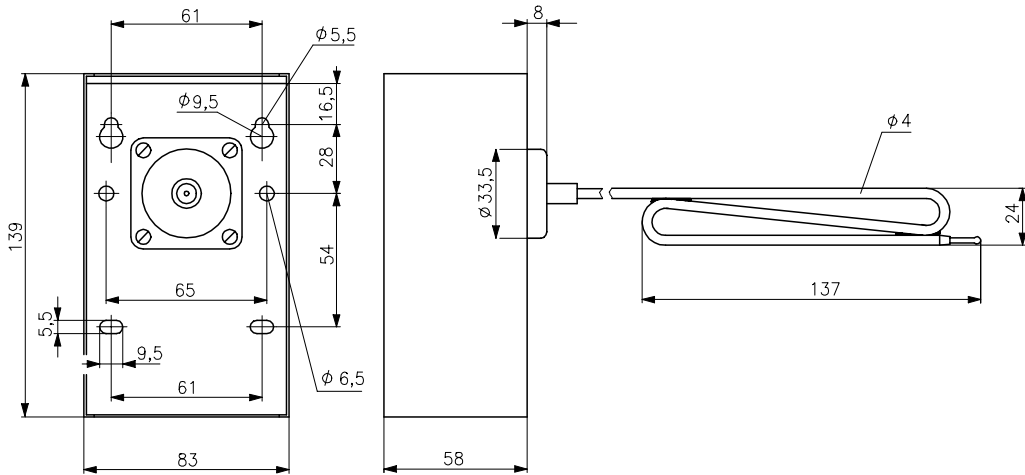
JTU-20



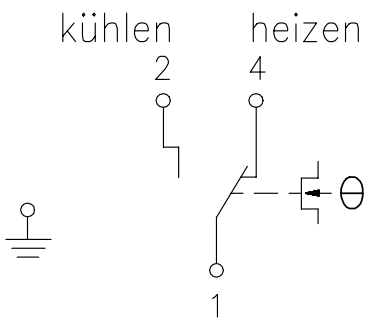
JTU-3/-6



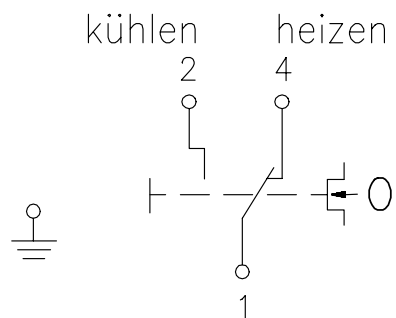
### JTU



JTU-1, -5, -50



JTU-3/-6/-20





# CONTROL CABINET THERMOSTATS, ELECTRONIC FOR PELTIER MODULES - HEATING / COOLING



### TECHNICAL DATA

<b>Housing colour:</b>	light grey RAL7035
<b>Housing material:</b>	Polyamide PA 6.6 (UL94 V-0)
<b>Supply voltage:</b>	24VDC, ±15%
<b>Switching capacity:</b>	max. 16 A
<b>Output:</b>	Relays with voltage-free changeover contact
<b>Power consumption:</b>	0.75 W
<b>Control range:</b>	0 to 60 °C
<b>Switching difference (hysteresis):</b>	approx. 2–3 K
<b>Sensor:</b>	internal NTC
<b>Protection class:</b>	III
<b>Protection rating:</b>	IP20
<b>Operating temperature:</b>	-10 to +70 °C
<b>Storage temperature:</b>	-20 to 70 °C
<b>Permissible humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connections:</b>	screw-type terminals 0.5 to 2.5 mm <sup>2</sup>
<b>Mounting type:</b>	DIN standard rail (35 mm)

### APPLICATION

This temperature controller was specially developed for controlling Peltier modules, for heating or cooling control cabinets, ticket machines and cash points and for reporting information on heating and cooling and requirements.

**Function:**  
The CTRRS uses an internal sensor to measure the air temperature in control cabinets and activates heating or cooling when the temperature exceeds or falls below the established setpoint.

Mounting: The controller is installed on a 35-mm DIN standard rail.  
Mounting set JZ-13 is used when mounting on a sheet metal wall or profile frame.

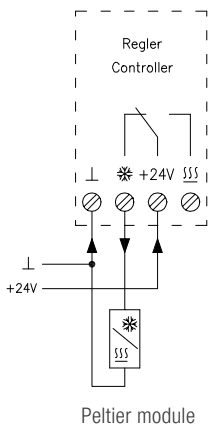
TYPE	ITEM NO.	CONTROL RANGE	FEATURES	EURO/PG
CTRRS-161.000/04	DN600004	0 to 60 °C		53.80/II

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-13	ZA990001	Standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)	5.60/II

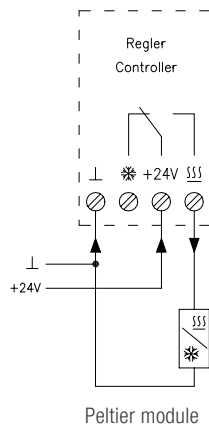
JZ-13 mounting set consisting of a 38 mm long standard rail, screw and tooth lock washer  
Attention: The controller can only be set to one operating mode, either heating or cooling. The changeover contact, when using Peltier elements, is not intended to activate heating or cooling by reversing the current. The CTRRS features an internal sensor. In order to gauge the internal temperature of the control cabinet, it must not be exposed to direct sources of cold or heat, unless doing so concerns the assembly to be protected.

### ILLUSTRATIONS

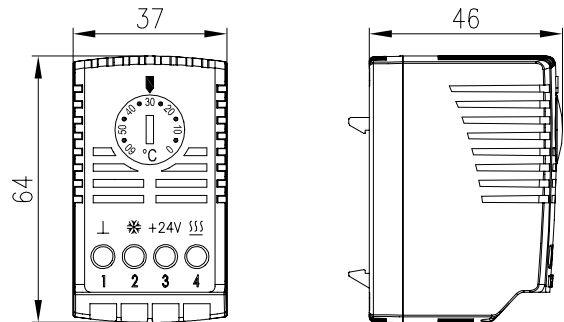
Connection in cooling mode



Connection in heating mode



CTRRS-161.000



Terminal 1: Supply voltage (mass)  
Terminal 2: Output 'cooling'  
Terminal 3: Supply and switching voltage (+24 V4)  
Terminal 4: Output 'heating'



# CONTROL CABINET THERMOSTATS

## ELECTRONIC, FOR PELTIER MODULE – HEATING / COOLING



### TECHNICAL DATA

<b>Housing colour:</b>	light grey RAL7035
<b>Housing material:</b>	ABS plastic
<b>Supply voltage:</b>	24VDC, ±15%
<b>Switching capacity:</b>	max. 16 A
<b>Output (Peltier element):</b>	16 A relay output, Caution! As of 10 A or higher than 30 °C, wiring must not be done using 1.5 mm <sup>2</sup> , but rather must be wired using the next highest cross-section of 2.5 mm <sup>2</sup>
<b>Output (fan):</b>	2(1)A relay output
<b>Power consumption:</b>	approx. 1 W
<b>Control range (heating):</b>	0 to 20 °C
<b>Control range (cooling):</b>	30 to 50 °C
<b>Switching difference (hysteresis):</b>	approx. 1 K
<b>Sensor:</b>	internal or external NTC 2 K
<b>Sensor tolerance:</b>	approx. 1 K
<b>Protection class:</b>	III
<b>Protection rating:</b>	IP20
<b>Admissible ambient temperature:</b>	-10 to +55 °C, Caution! As of 30 °C or higher than 10 A, consider a 2.5 mm <sup>2</sup> connection cross-section
<b>Storage temperature:</b>	-20 to 70 °C
<b>Permissible humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connections:</b>	screw-type terminals 0.5 to 2.5 mm <sup>2</sup>
<b>Mounting type:</b>	DIN standard rail (35 mm)

### APPLICATION

This controller was specially designed for controlling Peltier modules that have fans for the purpose of air conditioning control cabinets.

The KTRRN features two control ranges for heating and cooling. The switching point for heating is selected in the lower setting range, and the switching point for cooling is selected in the upper setting range. The setting ranges are divided into ranges of 10 K. Therefore a neutral zone of at least 10 K is always given, and incorrect switching point settings / switching point overlaps created by the installer are avoided.

The controller is installed on a DIN standard rail. Mounting set JZ-13 is used when mounting on a sheet metal wall or profile frame.

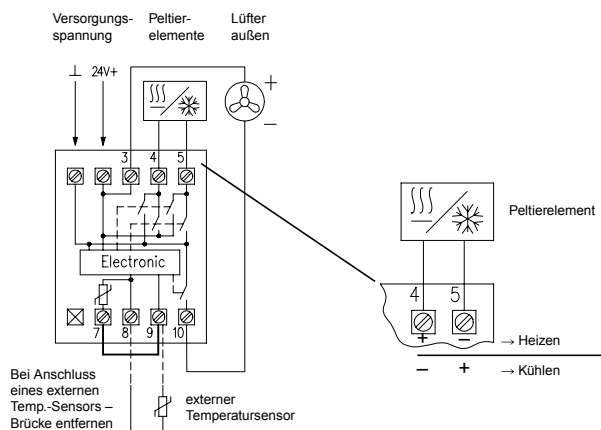
Mounting: The controller is installed on a 35-mm DIN standard rail.  
Mounting set JZ-13 is used when mounting on a sheet metal wall or profile frame.

TYPE	ITEM NO.	CONTROL RANGE	FEATURES	EURO/PG
KTRRN-267.014	DA460002	0 to 20 °C (heating) / 30 to 50 °C (cooling)		109.00 / II

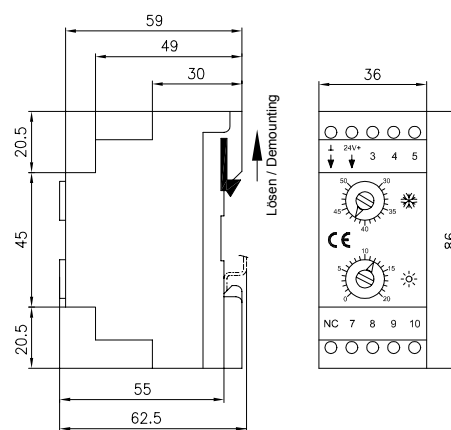
ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-13	ZA990001	Standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)	5.60 / II
HF-8/4-K2	G8000370	External sensor NTC 2K as sleeve sensor HF-8/4-K2	25.00 / II

### ILLUSTRATIONS

KTRRN-267.014



KTRRN-267.014







# CONTROL CABINET THERMOSTATS





## MECHANICAL, BIMETAL

**TECHNICAL DATA**

<b>Housing colour:</b>	grey, similar to RAL 7035
<b>Ambient temperature:</b>	0 to 60 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Max. switching voltage:</b>	230 VAC/50 Hz, 48 VDC
<b>Min. switching voltage:</b>	24 VAC/50 Hz, 24 VDC
<b>Min. switching current:</b>	The resistance of the contact transition results in a voltage drop across the contact. This can have a strong influence on very small switching signals.
<b>Switching element:</b>	bimetallic contact
<b>Hysteresis:</b>	Approx. 4 to 7 K (RTBSS-112.211/12 approx. 1 K at operating voltage of 230 VAC) at a temperature change of max. 4 K/h
<b>Electrical connection:</b>	screw-type terminals 0.5 mm <sup>2</sup> to 2.5 mm <sup>2</sup>
<b>Mounting/ attachment:</b>	on supporting rails (35 mm) according to EN 60715
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	0, determined by the assembly location according to DIN EN 60730
<b>Safety and EMC:</b>	
<b>Sensor:</b>	bimetal
<b>Function type:</b>	TR (temperature controller)
<b>General features:</b>	external setting, scale: degrees Celsius, snap-lock control button
<b>Test mark/ approbation:</b>	UL, VDE

**APPLICATION**

Application scenarios include temperature monitoring in control cabinets, machines and housings.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
	RTBSS-110.250/04	ZN111524 Max. switching current: 10 (2) A/VAC, max. 30 W / VDC Switching contact: NC contact Control function: heating Control range: 0 to 60 °C scale red		19.20/II
	RTBSS-111.250/05	ZN112525 Max. switching current: 10 (2) A/VAC, max. 30 W / VDC Switching contact: NO contact Control function: Cooling Control range: 0 to 60 °C scale blue		19.20/II
	RTBSS-112.250/07	ZN113527 Max. switching current: NC contact 10 (2) A / VAC, max. 30 W / VDC NO contact 5 (2) A / VAC, max. 30 W / VDC Switching contact: changeover Control function: heating or cooling Control range: 0 to 60 °C scale grey		25.00/II
	RTBSS-112.211/12	ZN113152 Max. switching current: NC contact 10 (2) A / VAC, max. 30 W / VDC NO contact 5 (2) A / VAC, max. 30 W / VDC Switching contact: changeover Control function: heating or cooling Control range: 0 to 60 °C Scale grey, thermal feedback		27.50/II
ACCESSORIES	ITEM NO.	FEATURES		EURO/PG
JZ-13	ZA990001	Standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)		5.60/II

See page 193 for dimension diagram (RFHSS/RTBSS)

# CONTROL CABINET HYGROSTATS WITH CHANGEOVER CONTACT


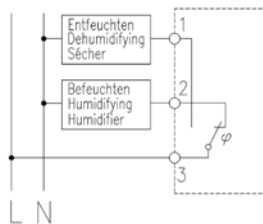


## TECHNICAL DATA

<b>Housing colour:</b>	grey, similar to RAL 7035
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	De-humidifying: 5 (0.2) A, Humidifying: 2 (0.2) A
<b>Min. switching current:</b>	100 mA at 24 VAC
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	24 VAC, 50 Hz
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	changeover
<b>Control function:</b>	humidifying or de-humidifying
<b>Mounting / attachment:</b>	on supporting rails (35 mm) according to EN 60715
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	0, determined by the assembly location
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	plastic fibres
<b>Function type:</b>	controller
<b>General features:</b>	external setting
<b>Test mark / approbation:</b>	RFHSS-114.110/01 UL at 230 VAC

## APPLICATION

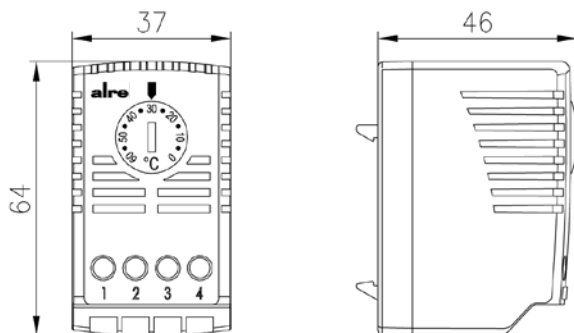
Hygrostat for monitoring and controlling humidity in control cabinets and machines

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG	
	RFHSS-114.110/01	ZN275001	<p>Ambient temperature: 0 to 60 °C Admissible humidity: max. 95% rel. humidity, non-condensing Control range: 40–90 % rel. humidity Hysteresis: approx. 5% rel. humidity Electrical connection: screw-type terminals 0.5 mm<sup>2</sup>–2.5 mm<sup>2</sup> Test mark / approbation: UL for 230 VAC snap-in turning knob</p>		70.60 / II

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-13	ZA990001	Standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)	5.60 / II

## ILLUSTRATIONS

RFHSS / RTBSS





# CONTROLLER FOR DISTRIBUTOR ASSEMBLY (HAT RAIL) ITR 79

## REMOTE SENSOR, ELECTRONIC



### TECHNICAL DATA

<b>Housing colour:</b>	grey, similar to RAL 7035
<b>Ambient temperature:</b>	-10 to +40 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Operating voltage:</b>	230 V AC, 50 Hz
<b>Max. switching current:</b>	NO contact: 10 (2) A, NC contact: 5 (1.5) A
<b>Min. switching current:</b>	The resistance of the contact transition results in a voltage drop across the contact. This can have a strong influence on very small switching signals.
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	5 VAC, 50 Hz
<b>Switching element:</b>	relay
<b>Switching contact:</b>	toggler, potential-free
<b>Electrical connection:</b>	screw-type terminals up to 2.5 mm <sup>2</sup>
<b>Mounting / attachment:</b>	on supporting rails (35 mm) according to EN 60715
<b>Protection rating:</b>	IP20
<b>Protection class:</b>	II
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Function type:</b>	TR (temperature controller)
<b>General features:</b>	external setting

### APPLICATION

Control and monitoring of the temperature in large halls, greenhouses and floor heating systems. The devices have sensor rupture and sensor short-circuit protection.

**Sensors are not a part of the delivery scope** (except for ITR 79.804) For available sensors, see the 'Sensor technology' section.

Use sensors according to the specified sensor number (for example, for sensor number 4:

All sensors with this number can be used, e.g., KF-4). Avoid parallel routing of sensor wires together with mains voltage-bearing wires or use shielded wires.

TYPE	ITEM NO.	CONTROL RANGE	FEATURES	EURO/PG
ITR 79.402	D4780167	-35 to +15 °C	Control function: heating, hysteresis adjustable: approx. 0.5–5 K, sensor: NTC 1 K (sensor 1), scale: degrees Celsius, display 'heating' red	106.30/II
ITR 79.404	D4780155	0 to 60 °C	Control function: heating, hysteresis adjustable: approx. 0.5–5 K, sensor: NTC 10 K (sensor 4), scale: degrees Celsius, display 'heating' red	106.30/II
ITR 79.405	D4780181	35 to 95 °C	Control function: heating, hysteresis adjustable: approx. 0.5–5 K, sensor: NTC 50 K (sensor 5), scale: degrees Celsius, display 'heating' red	106.30/II
ITR 79.408	D4780179	-10 to +40 °C	Control function: heating, hysteresis adjustable: approx. 0.5–5 K, sensor: NTC 8 K (sensor 3), scale: degrees Celsius, display 'heating' red	111.10/II
ITR 79.503	D4780524	0 to 11 °C	Control function: heating, frost protection locked when the temperature is dropping, hysteresis approx. 1.5 K, sensor: NTC 2 K 25 (sensor 0), scale: degrees Celsius, display 'heating' red	120.60/II
ITR 79.504	D4780371	0 to 60 °C	Control function: cooling, hysteresis adjustable: approx. 0.5–5 K, sensor: NTC 10 K (sensor 4), scale: degrees Celsius, display 'cooling' green	111.10/II
ITR 79.508	D4780369	-10 to +40 °C	Control function: cooling, hysteresis adjustable: approx. 0.5–5 K, sensor: NTC 8 K (sensor 3), scale: degrees Celsius, display 'cooling' green	111.10/II

### TWO SETPOINT ADJUSTERS (E.G., DAY/NIGHT TEMPERATURE VIA EXTERNAL CLOCK)

EURO/PG

ITR 79.600	D4780508	2 x 5 to 30 °C	Control function: heating, hysteresis: approx. 0.5 K, sensor: NTC 47 K (sensor 2), ECO contact: toggling between setpoint value 1 and setpoint value 2, scale: degrees Celsius	124.50/II
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### COMPLETE DEVICE INCLUDING REMOTE SENSOR HF-8/4-K2 (4-M CABLE)

EURO/PG

ITR 79.804	D4780545	0 to 60 °C	Control function: heating, hysteresis adjustable: approx. 0.5–5 K, sensor: NTC 2 K (sensor 8), multi-digit scale 0–6, display 'heating' red	142.40/II
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### ACCESSORIES

EURO/PG

JZ-13	ZA990001	Standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)	5.60/II
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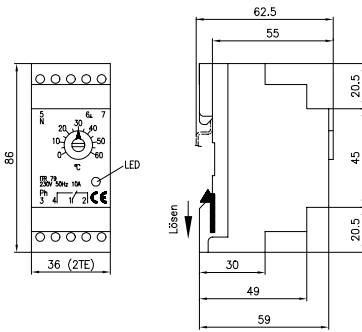


# CONTROLLER FOR DISTRIBUTOR ASSEMBLY (HAT RAIL) ITR 79

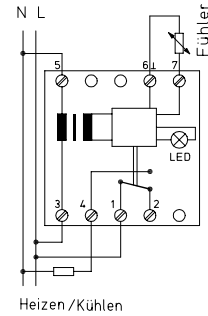
## REMOTE SENSOR, ELECTRONIC

### ILLUSTRATIONS

ITR 79.4... / .5... / .8...



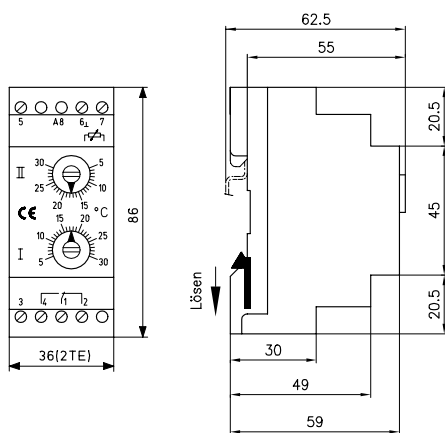
ITR 79.4... / .5... / .8...



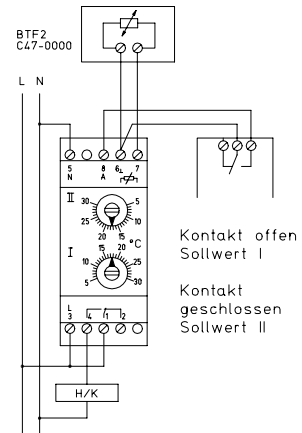
ITR 79.804



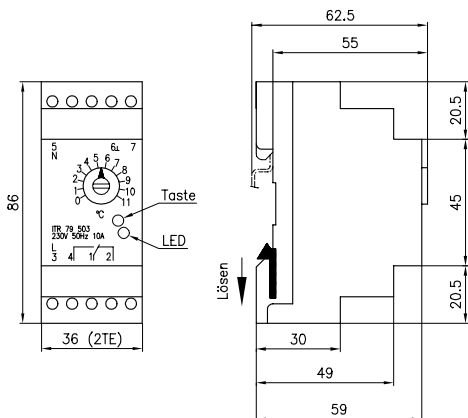
ITR 79.6



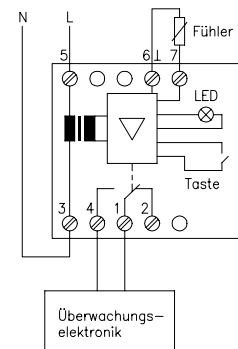
ITR 79.6



ITR 79.503



ITR 79.503





# UNIVERSAL CONTROLLER ETR 77

## REMOTE SENSOR, ELECTRONIC



### TECHNICAL DATA

<b>Housing colour:</b>	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
<b>Ambient temperature:</b>	-20 to +50 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Operating voltage:</b>	230 V AC, 50 Hz
<b>Max. switching current:</b>	NO contact: 10 (3) A (heating), NC contact: 5 (1.5) A (cooling)
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Switching element:</b>	relay
<b>Switching contact:</b>	toggler, potential-free
<b>Control function:</b>	heating or cooling
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting/attachment:</b>	wall mounting
<b>Protection class:</b>	II
<b>Sensor:</b>	KTY 81-121 (sensor 51)

### APPLICATION

Thanks to various sensor models suitable for universal use in heating, ventilation, air-conditioning and refrigeration technology as well as in mechanical and plant engineering.

**Sensors are not a part of the delivery scope.**  
For available sensors, see below or the 'Sensor technology' section.

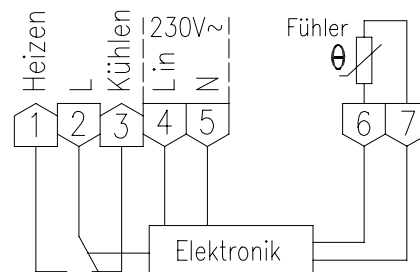
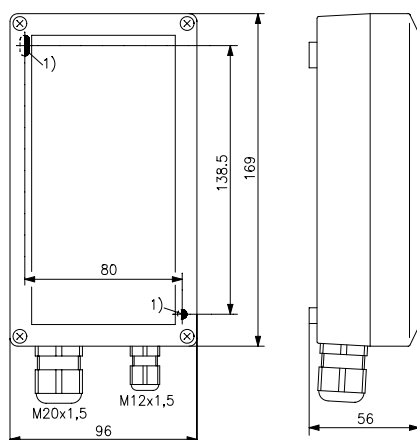
**Note:** The sensor line must be routed in a protective pipe. Parallel routing together with lines that carry alternating currents is not permitted.

**Safety and EMC:** according to DIN EN 60730

TYPE	ITEM NO.	CONTROL RANGE	FEATURES	HYSTERESIS ADJUSTABLE	EURO/PG
ETR 77.008-5	D4770014	-50 to +50 °C	IP65, TW, internal setting, scale: degrees Celsius	0.5-5 K	130.50/II
ETR 77.009-5	D4770026	0 to 100 °C	IP65, TW, internal setting, scale: degrees Celsius	0.5-5 K	129.60/II

TW = Temperature monitor

### ILLUSTRATIONS



ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
AF-51	G9040420	external temperature sensor	25.50/III
ALF-51	G9050210	contact temperature sensor	28.50/III
BTF2-Y81/121-0000	SA140017	Room temperature sensor, surface-mounted	28.30/III
FUFY-81/121-0000	SN090201	Room temperature controller, flush-mounted	35.90/III
KF-51	G9031452	Cable temperature sensor with 1.5 m silicone cable	32.10/III
KF-51/6	G9031453	Cable temperature sensor with 6 m silicone cable	36.00/III
STF-51	SN080500	Radiation temperature sensor	83.30/III

# MECHANICAL HYGROSTATS

## DUCT ASSEMBLY






### TECHNICAL DATA

<b>Housing colour:</b>	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
<b>Ambient temperature:</b>	0 to 60 °C
<b>Permissible atmospheric humidity:</b>	non-condensing
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	15 (8) A
<b>Min. switching current:</b>	150 mA at 125 VAC
<b>Max. switching voltage:</b>	230 VAC, 50 Hz (> 24 V only in dry surroundings)
<b>Min. switching voltage:</b>	24 VAC, 50 Hz
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	toggler, potential-free
<b>Control range:</b>	30–100% rel. humidity
<b>Hysteresis:</b>	approx. 5% rel. humidity
<b>Tolerances:</b>	> 50%: +/- 3.5% relative humidity < 50%: +/- 4% relative humidity
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	mounting on air duct or wall mounting using accessory JZ-20-1
<b>Protection rating:</b>	IP65 front-side
<b>Protection class:</b>	II
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	plastic fibres

### APPLICATION

Use in ventilation and air-conditioning ducts, climate exposure cabinets and dehumidifiers for controlling and/or monitoring the atmospheric humidity in industrial and agricultural applications. Not suitable for aggressive gases. Max. air speed 8 m/s, with sensor protection FS-HI 15 m/s.




TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
HI-1 	JA010100	Control function: humidifying or de-humidifying Function type: controller external setting, mechanical range setting	befeuchten 4 entfeuchten 2 	236.80/II
HI-1F 	JA010200	Control function: humidifying or de-humidifying Function type: monitor internal setting	befeuchten 4 entfeuchten 2 	228.80/II
HI-2 	JA010300	Control function: 2 x humidifying or de-humidifying Hysteresis between the stages: adjustable 3–15% rel. humidity Function type: controller external setting, mechanical range setting	befeuchten 4 2 entfeuchten 4 2 	299.20/II





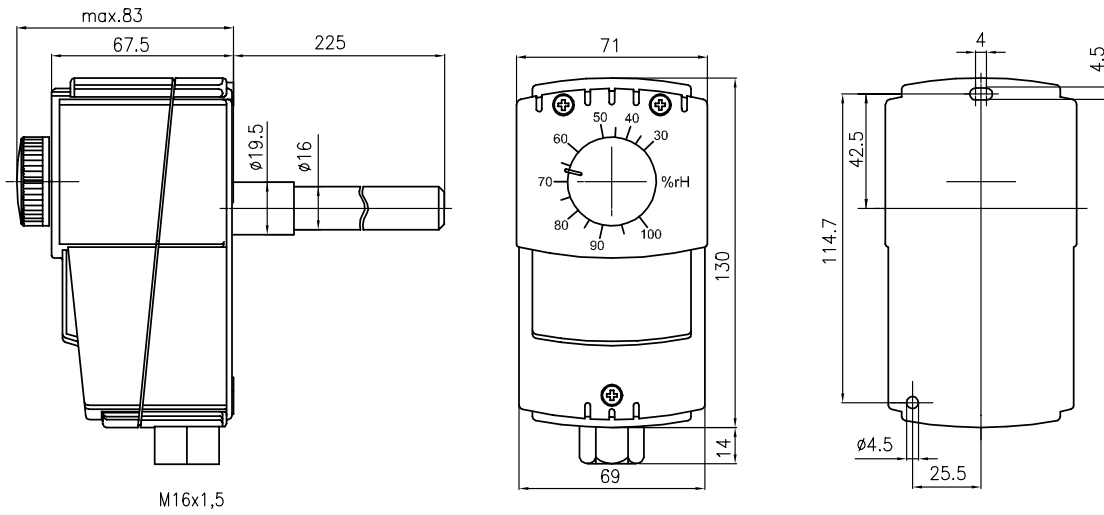
# MECHANICAL HYGROSTATS

## DUCT ASSEMBLY

ACCESSORIES/ OPTIONS	ITEM NO.	FEATURES	EURO/PG
	JZ-20-1 E6130144	Wall bracket for HI	22.70/II
	FS-HI H530975	Sensor protection for HI: finely woven mesh wire, for use at high air speeds of over 8 m/s	17.40/II
	FS2-HI H531011	PTFE filter for HI: fine sensor protection against dust and contamination	74.80/II

### ILLUSTRATIONS

HI-





# WIND INDICATOR RELAY JSL-1E

## MECHANICAL



### TECHNICAL DATA

<b>Housing colour:</b>	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
<b>Ambient temperature:</b>	-40 to +80 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Max. medium temperature:</b>	85 °C
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	15 (8) A
<b>Min. switching current:</b>	150 mA at 24 VAC
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	24 VAC, 50 Hz
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	toggler, potential-free
<b>Control function:</b>	airflow monitoring
<b>Hysteresis:</b>	approx. 1 m/s
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	mounting on air duct
<b>Protection rating:</b>	IP65 housing side, IP20 medium side
<b>Protection class:</b>	I
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	wind indicator
<b>Material (vane):</b>	V2A (1.4301)
<b>Material (lever):</b>	brass
<b>Function type:</b>	monitor
<b>General features:</b>	internal setting

### APPLICATION

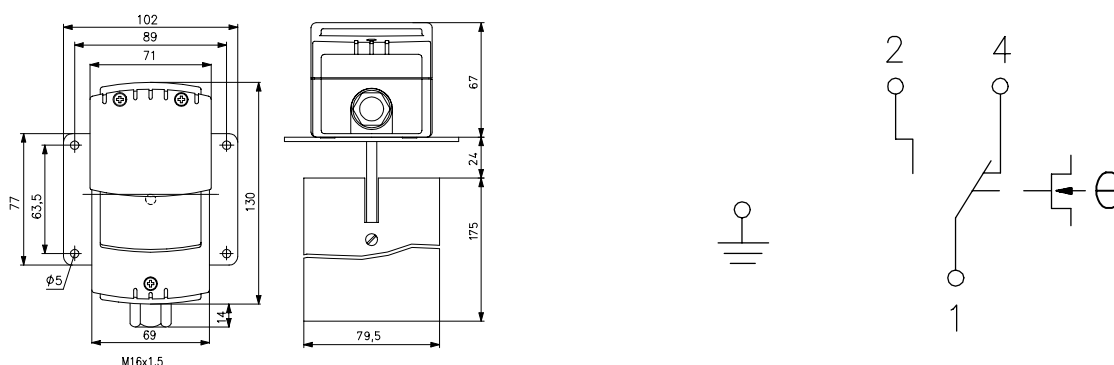
Monitoring of air flows in ducts, in air supply and air exhausting devices of fans or electrical heat registers.

The wind indicator relay is set to the minimum switching points at the factory. The switch-on/switch-off values can be increased by turning the inner screw clockwise. Fitting is done in the vertical paddle position from the top in a horizontal pipe / duct.

TYPE	ITEM NO.	MIN. SWITCH-ON VALUE:	MIN. SWITCH-OFF VALUE:	MAX. SWITCH-ON VALUE:	MAX. SWITCH-OFF VALUE:	EURO/PG
JSL-1E	JA070100	2 m/s	1 m/s	9.2 m/s	8 m/s	107.40/II

TYPE	ITEM NO.	FEATURES	EURO/PG
JZ-08	E6150031	spare vane for JSL-1E	21.80/II

### ILLUSTRATIONS



**Mounting:** The device can be mounted in any alignment, but attention must be paid to the correct direction of flow. When fitting in a vertical duct, the weight of the vane must be balanced at the range screw, which results in changed switching values. Attention: Owing to the changed switching values, at flows near the minimum set value the wind indication relay may not function properly! At air speeds higher than 5 m/s, owing to the danger of breakage, the vane must be cut on the sides where indicated. This increases the minimum switch-off value set at the factory from 1 m/s to 2.5 m/s. A calming path that is 5 times the duct diameter must be provided before and after the assembly location. The scope of delivery includes a seal to be fitted between the duct and the device.

**Function:** The devices are set to the minimum switch-off value at the factory. A higher value can be selected by turning the range screw to the right. If the flow exceeds the value that has been set, contacts 1-2 close and the corresponding assembly is enabled. If the flow drops below the value that has been set, contacts 1-2 open and contacts 1-4 close.



# DIFFERENTIAL PRESSURE SWITCH

JDW-3...10 / JDL-111... 116



JDW-3



JDL-111



JDL-112

## TECHNICAL DATA

<b>Housing colour:</b>	black
<b>Ambient temperature:</b>	-15 to +80 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>Max. sensor temperature:</b>	80 °C
<b>permissible Medium temperature:</b>	-15 to +80 °C
<b>Operating voltage:</b>	none
<b>Min. switching current:</b>	1 mA
<b>Max. switching voltage:</b>	230 VAC / 50 Hz, 24 VDC
<b>Min. switching voltage:</b>	12 VAC / 50 Hz, 12 VDC
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	toggler, gold contact, potential-free
<b>Control function:</b>	switches if the pressure is undershot or exceeded
<b>Pressure connection:</b>	6.2 mm
<b>Mounting/attachment:</b>	wall mounting
<b>Electrical connection:</b>	screw-type terminals
<b>Protection class:</b>	II
<b>Protection rating:</b>	IP54
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	pressure membrane
<b>Function type:</b>	monitor (JDL-116 A controller)

## APPLICATION

Monitoring of overpressure, differential or under-pressure of air and incombustible, non-aggressive gases. Exhaust or fan monitoring or flow monitor for securing electrical heat registers, as filter monitoring, air pressure shortage safeguard, limit value controller.

**JDW- ...:** Supplied without mounting bracket; can be screwed on directly (with 2 screws).

**JDW-...Z:** Supplied with attached mounting bracket JZ-10

**JDL ...:** Supplied with attached mounting bracket JZ-10.

**Note:** Once the differential pressure switch has connected a voltage > 24 V and a current > 0.1 A, the gold layer at the contacts will have burnt away. Thereafter, the differential pressure switch can only be operated at this or a higher power.

**Note:**The hose set is not a part of the delivery scope and must be ordered separately.

## CONVERSION TABLE PRESSURE

	Pa	kPa	bar	mbar	mmWs
1 Pa =	1	0.001	0.00001	0.01	0.101971
1 kPa =	1,000	1	0.01	10	101.971
1 bar =	100,000	100	1	1,000	10197.1
1 mbar =	100	0.1	0.001	1	10.1971
1 mmWs =	9.80665	0.00980665	0.0000980665	0.0980665	1

TYPE	ITEM NO.	CONTROL RANGE	MAX. PRESSURE	HYSTERESIS (dependent on setting range)	FEATURES	EURO / PG
JDW-3	H531002	20–330 Pa	5,000 Pa	approx. 8–20 Pa	Max. switching current: 1.5 (0.4) AAC, 1 (0.2) ADC internal setting	53.80 / II
JDW-3 Z	H531001	20–330 Pa	5,000 Pa	approx. 8–20 Pa	Max. switching current: 1.5 (0.4) AAC, 1 (0.2) ADC internal setting, fixing bracket	59.60 / II
JDW-5	H530996	30–500 Pa	5,000 Pa	approx. 10–25 Pa	Max. switching current: 1.5 (0.4) AAC, 1 (0.2) ADC internal setting	53.80 / II
JDW-5 Z	H531000	30–500 Pa	5,000 Pa	approx. 10–25 Pa	Max. switching current: 1.5 (0.4) AAC, 1 (0.2) ADC internal setting, fixing bracket	59.60 / II
JDW-10	H530997	400–1600 Pa	5,000 Pa	approx. 30–60 Pa	Max. switching current: 1.5 (0.4) AAC, 1 (0.2) ADC internal setting	53.80 / II
JDL-111	H5309098	20–300 Pa	15,000 Pa	approx. 10–15 Pa	Max. switching current: 5 (1) AAC, 1 (0.2) ADC internal setting, silicone-free	60.10 / II
JDL-112	H5309100	40–600 Pa	30,000 Pa	approx. 22–33 Pa	Max. switching current: 5 (1) AAC, 1 (0.2) ADC internal setting, silicone-free	58.90 / II
JDL-115	H5309136	100–1,000 Pa	30,000 Pa	approx. 20–40 Pa	Max. switching current: 5 (1) AAC, 1 (0.2) ADC internal setting, silicone-free	58.90 / II
JDL-116	H530960	250–5,000 Pa	30,000 Pa	approx. 60–150 Pa	Max. switching current: 5 (1) AAC, 1 (0.2) ADC internal setting, silicone-free	58.90 / II
JDL-116 A	H530978	250–5,000 Pa	30,000 Pa	approx. 60–150 Pa	Max. switching current: 5 (1) AAC, 1 (0.2) ADC external setting, silicone-free	66.60 / II



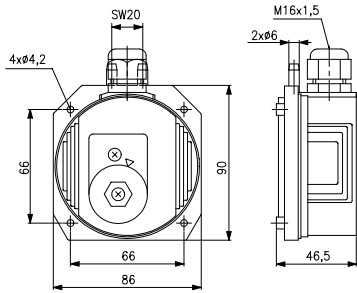
# DIFFERENTIAL PRESSURE SWITCH

JDW-3 ... -10 / JDL-111 ... -116

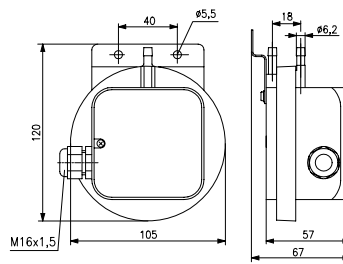
TYPE	ITEM NO.	FEATURES	EURO/PG
JZ-06/1	H5309229	connection set with duct connections made of plastic silicon-free, 2 x 90° angles 2 extensions 90 mm, 4 self-tapping screws, 2 m tube (Ø 6 mm outside)	10.90/II
JZ-10	H5309237	Mounting bracket with screws for JDW-3/-5/-10 (Z shape)	5.80/II
JZ-28	H531012	IP65 cover set, consisting of a cover with pressure compensation element, O-ring and 3 screws, suitable for retrofitting types JDL-111, JDL-112, JDL-115 and JDL-116	47.20/II

## ILLUSTRATIONS

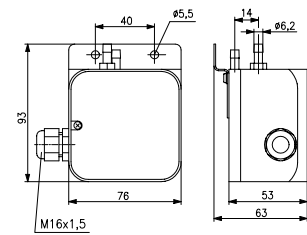
JDW-3 / -5 / -10



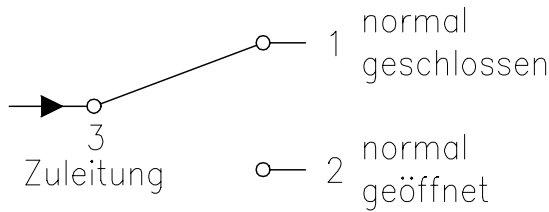
JDL-111



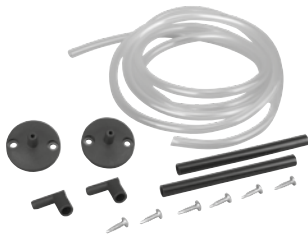
JDL-112 / 115 ... -16



JDW- ... / JDL- ...



JZ-06/1



JZ-10



JDL-116 A



JZ-28





# AIRFLOW MONITORS, WSERD-XXX.446

## ELECTRONIC AIRFLOW MONITORS



### TECHNICAL DATA

<b>Rated voltage:</b>	100–240 VAC or 24 V ±10% AC/DC
<b>Rated power consumption:</b>	< 3 VA
<b>Contact:</b>	2 x togglers, potential-free
<b>Switching voltage:</b>	max. 250 VAC
<b>Switching current:</b>	max. 8 A
<b>Electrical connection:</b>	2.5 mm <sup>2</sup> (sensor 1.0 mm <sup>2</sup> ), screw-type terminals
<b>Protection class:</b>	2
<b>Protection rating:</b>	IP65 (housing) / IP54 (sensor), EN 60529
<b>Setting range:</b>	0.2–10 m/s
<b>Operational range:</b>	0.8–10 m/s flow speed
<b>Start delay:</b>	15–120 seconds
<b>Ambient temperature range:</b>	housing (0 to +50 °C) / sensor (–20 to +90 °C)
<b>Transport and storage temperature:</b>	–10 to +75 °C
<b>Permissible atmospheric humidity:</b>	< 95%
<b>Condensation:</b>	permissible (only external)
<b>Overvoltage category (control unit):</b>	2
<b>Rated impulse voltage:</b>	4000 V
<b>Degree of fouling:</b>	2
<b>Material:</b>	housing cover (polycarbonate), bottom part of housing (ABS), sensor (PVC), cable gland (PA6), sensor housing (aluminium with polyamide PA6)

### APPLICATION

The WSERD airflow monitors are used for the analysis of airflows and the switching statuses that are generated as a result, for monitoring fans or butterfly valves, for flow-dependent monitoring of humidifiers and electric heat registers in accordance with DIN 57100, part 420 and are used in conjunction with DDC systems.

The measuring system, consists of the sensor and the control unit. Two different models of the measuring system are offered: one for wall mounting (the sensor is connected using a cable) and the WSERD-534.446 for duct mounting (the sensor is permanently connected to the control unit). Sensors and control units are balanced independently of one another, and the wall-mounted model can be replaced with devices that are similar in design.

This device meets the following requirements:

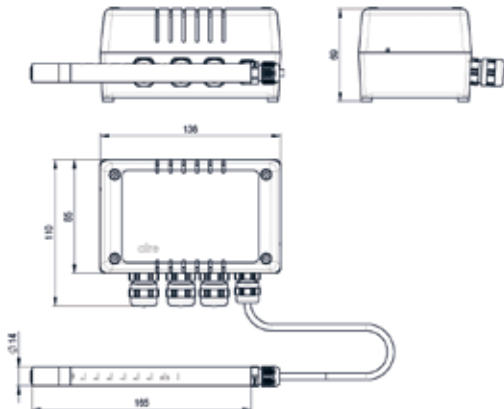
2014/30/EU EMC directives • 2014/35/EU Low Voltage Directive • EN 61326-1:2013 General EMC Requirements • EN 61326-2-3:2013 Immunity for residential / commercial areas • DIN EN 60947-5-1 Low-voltage switchgear and control gear • EN 50581:2012 Restriction of the use of certain hazardous substances

Mounting: performed according to model using suitable screws (WSERD-134.446; not included in the scope of delivery) on even substrate or on the duct using the mounting flange included in the scope of delivery (WSERD-534.446).

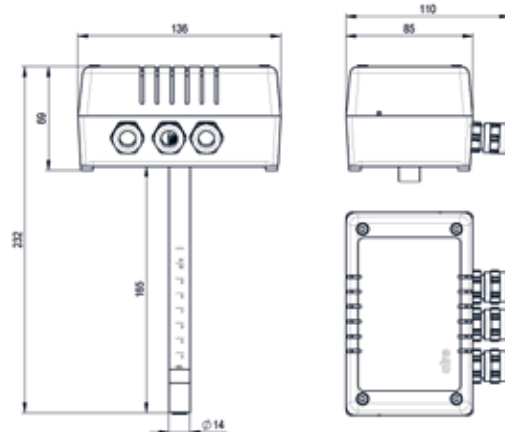
TYPE	ITEM NO.	FEATURES	EURO/PG
WSERD-134.446	G8000428	For wall mounting	403.60/III
WSERD-534.446	G8000429	For duct mounting	403.60/III

### ILLUSTRATIONS

WSERD-134.446 for wall mounting



WSERD-534.446 for duct mounting





# FLOW MONITOR JSF-1 E ... 4 E

## MECHANICAL – TÜV-TESTED



### TECHNICAL DATA

<b>Housing colour:</b>	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
<b>Ambient temperature:</b>	–40 to +85 °C
<b>Permissible atmospheric humidity:</b>	Max. 95% rel. humidity, non-condensing
<b>permissible Medium temperature:</b>	120 °C
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	15 (8) A
<b>Min. switching current:</b>	150 mA at 24 VAC, 50 Hz
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	24 VAC, 50 Hz
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	toggler, potential-free
<b>Control function:</b>	switches if the set value is undershot or exceeded
<b>Hysteresis:</b>	depends on the pipe diameter (see the table of switching values)
<b>Electrical connection:</b>	screw-type terminals
<b>Mounting / attachment:</b>	assembly by means of tapered Whitworth pipe thread R1"
<b>Protection rating:</b>	IP65
<b>Protection class:</b>	I
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	flow paddle
<b>Material of paddle:</b>	stainless steel
<b>Function type:</b>	monitor
<b>General features:</b>	internal setting
<b>Accuracy:</b>	+ / – 15% of the set value
<b>Test mark / approbation:</b>	JSF-1E / JSF-2E / JSF-3E / JSF-4E TÜV. SW.016-13 JSF-1RE / JSF-2RE TÜV.SW.017-13

### APPLICATION

Flow monitoring of liquid media in pipes from 1/2" to 8", for example, oil, cooling and lubricant circuits or as a precaution against a shortage of water.

Assembly: The device can be mounted in any position.

Calming path at least 5 times the pipe diameter before and after the paddle.\*

The max. flow can be significantly higher than the maximum setting value of the monitor.

Not approved for drinking water applications.

TÜV test up to 6" or for all diameters

**Type-tested by the TÜV according to the 'Flow 100' VdTÜV circular**

TYPE	ITEM NO.	PIPE	MEDIUM	FEATURES	EURO / PG
JSF-3 E	JA060500	1/2"	normal	material of carrier: brass max. pressure: 5 bar attached T-piece, grey iron	190.70 / II
JSF-4 E	JA060600	3/4"	normal	material of carrier: brass max. pressure: 5 bar attached T-piece, grey iron	198.90 / II
JSF-1 E	JA060100	1"–8"	normal	material of carrier: brass max. pressure: 8 bar	179.50 / II
JSF-1 RE	JA060200	1"–8"	normal	material of carrier: brass max. pressure: 5 bar reduced switching values**	179.50 / II
JSF-2 E	JA060300	1"–8"	aggressive***	material of carrier: V4A max. pressure: 13 bar	455.20 / II
JSF-2 RE	JA060400	1"–8"	aggressive***	material of carrier: V4A max. pressure: 5 bar reduced switching values**	455.20 / II





# FLOW MONITOR JSF-1 E ... 4 E

## MECHANICAL – TÜV-TESTED

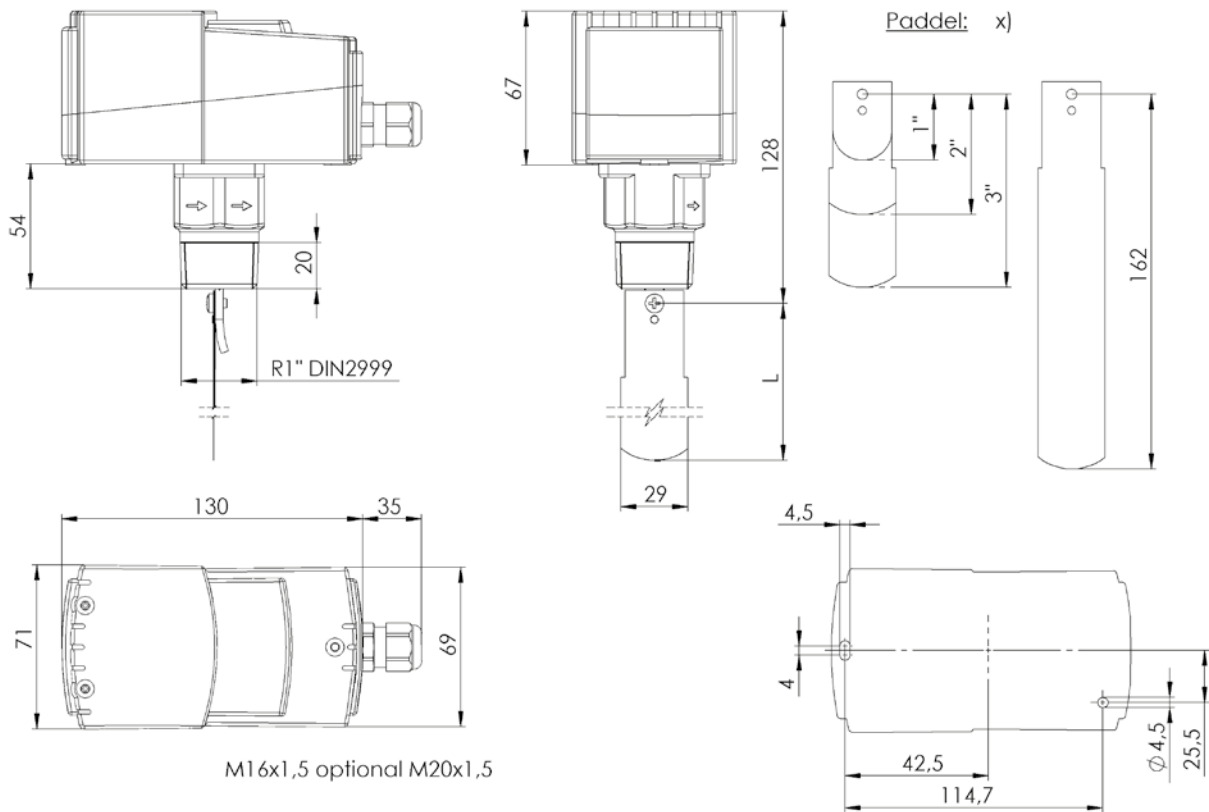
ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-09	E6140170	Spare paddles (each 4 units) from 1" to 8"	21.80/II
<p>* for 1" = paddle 1            for 2" = paddle 1 and 2            for 3" to 8" = Paddle 1, 2 and 3;</p> <p>If reduced flow values (marked in the table under the column pipe with added letters Z) are to be reached, paddle 4 should be used as follows:            for 4" = Paddle 1, 2, 3, 4 (shorten Paddle 4 to 92 mm)            for 5" = Paddle 1, 2, 3, 4 (shorten Paddle 4 to 117 mm);            for 6" = Paddle 1, 2, 3, 4 (shorten Paddle 4 to 143 mm);            for 7" and 8" = Paddle 1, 2, 3, 4 (Paddle 4 not shortened)</p>			

\*\* device types for low flow volume (see switching value table) "RE"

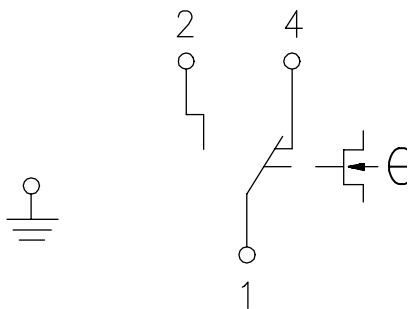
\*\*\* medium aggressive: all parts of the current monitor touching the medium are made of V4A

### ILLUSTRATIONS

JSF-.E / RE



JSF-.E / RE



DN nominal width	Pipe thread inches
6	1/8"
8	1/4"
10	3/8"
15	1/2"
20	3/4"
25	1"
32	1 1/4"
40	1 1/2"
50	2"
65	2 1/2"
80	3"
100	4"
125	5"
150	6"



## FLOW MONITOR JSF-1 E ... 4 E MECHANICAL – TÜV-TESTED

### SWITCHING VALUE TABLE IN m<sup>3</sup>/h FOR JSF-1 E/2 E/1 RE/2 RE

TYPE	PIPE DIAMETER	MIN. SETTING (FACTORY SETTING)		MAX. SETTING	
		OFF	ON	OFF	ON
E	1"	0.55	0.86	2.00	2.10
RE	1"	0.19	0.57	1.00	1.10
E	1¼"	0.82	1.30	2.80	3.00
RE	1¼"	0.24	0.90	1.40	1.60
E	1½"	1.10	1.70	4.00	4.20
RE	1½"	0.50	1.20	1.90	2.20
E	2"	2.10	3.20	7.30	7.80
RE	2"	0.90	2.30	3.60	4.10
E	2½"	2.80	4.30	9.80	10.50
RE	2½"	1.20	3.10	4.90	5.50
E	3"	4.00	6.10	13.80	14.70
RE	3"	2.10	4.90	7.40	8.20
E	4"	10.40	15.40	32.00	33.90
RE	4"	4.90	11.30	17.10	19.10
E	4" Z	7.00	10.50	21.70	23.10
RE	4" Z	3.30	7.70	11.60	13.00
E	5"	20.80	30.60	63.50	67.30
RE	5"	9.70	22.40	34.00	37.90
E	5" Z	10.70	15.80	33.30	34.70
RE	5" Z	5.00	11.50	17.50	19.60
E	6"	29.20	43.00	89.10	94.50
RE	6"	13.60	31.50	47.60	53.20
E	6" Z	13.10	19.30	39.90	42.40
RE	6" Z	6.10	14.10	21.40	23.90
E	8"	72.60	85.10	165.70	172.50
RE	8"	25.70	59.60	90.10	100.70
E	8" Z	38.60	46.50	90.80	94.20
RE	8" Z	21.70	36.50	55.30	61.80

When there is a 'Z' (=additional paddle) in the 'Pipe' column, the long paddle 4 included in the delivery must be used in addition to the 3 factory-installed paddles.

### SWITCHING VALUE TABLE IN l/h FOR JSF-3 E/ -4 E

3 E	½	174	480	846	948
4 E	¾	138	408	768	858

The accuracy of the specified values depends on the actual diameter of the pipe, the actual reduction in the extra paddle and the flow monitor's installation depth.

The devices are set to the minimum switch-off value at the factory. By turning the inner adjusting screw in a clockwise direction, you can set a higher deactivation value. The actual flow quantity must in any case be higher than the one specified in the switch table or the switch-on value, but there is no upper limit. The values specified apply to volume-related mass (density) of water. If the flow drops below the value that has been set, contacts 1 and 2 open and contacts 1 and 4 close.



## FLOW MONITOR JSW WITH DEVICE PLUG



### TECHNICAL DATA

<b>Housing colour:</b>	black
<b>Material of paddle:</b>	stainless steel
<b>material of carrier:</b>	nickel-plated brass
<b>Ambient temperature:</b>	-20 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>max. pressure:</b>	25 bar
<b>permissible Medium temperature:</b>	110 °C
<b>Operating voltage:</b>	none
<b>Max. switching current:</b>	5 A
<b>Min. switching current:</b>	100 mA at 24 VAC, 50 Hz
<b>Max. switching voltage:</b>	230 V AC, 50 Hz
<b>Min. switching voltage:</b>	24 VAC, 50 Hz
<b>Switching element:</b>	microswitch
<b>Switching contact:</b>	toggler, potential-free
<b>Control function:</b>	switches if the set value is undershot or exceeded
<b>Electrical connection:</b>	4-pin plug according to DIN EN 175301-803 (previously DIN 43650 - A / ISO 4400)
<b>Mounting / attachment:</b>	Union nut G 3/8" on soldering socket (for soldering into a standard copper T-piece with outlet 1/2") or T-piece
<b>Protection rating:</b>	IP65
<b>Protection class:</b>	II
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	flow paddle
<b>Function type:</b>	monitor
<b>General features:</b>	internal setting
<b>Accuracy:</b>	+/- 15% of the set value (switching values are only accurate if the flow monitor has been installed in our T-piece. If copper T-pieces are used, the switching values will increase.)

### APPLICATION

Monitoring small and medium, non-aggressive quantities of liquid in pipes with small diameters 1/2" to 1".

Assembly: Vertical in a horizontal pipe. Calming path at least 5 times the pipe diameter before and after the paddle.

Not approved for drinking water applications.

Brass union nut G 3/4" with O-ring and brazing spout for brazing in a standard copper T-piece with outlet 1/2" included in the scope of delivery.

TYPE	ITEM NO.	PIPE	DN	MAX.	SWITCHING POINT DROPPING*	SWITCHING POINT RISING	ΔL/MIN	EURO/PG
JSW-1/2	H530944	1/2"	15	20 l/min	5.0–6.5 l/min	5.5–7.0 l/min	0.5	150.10/III
JSW-3/4	H530945	3/4"	20	40 l/min	7.0–9.5 l/min	9.0–11.0 l/min	2.0	150.10/III
JSW-1	H530946	1"	25	60 l/min	13.5–16.5 l/min	17.0–20.5 l/min	3.5	150.10/III



### T-PIECE (NICKEL-PLATED BRASS):

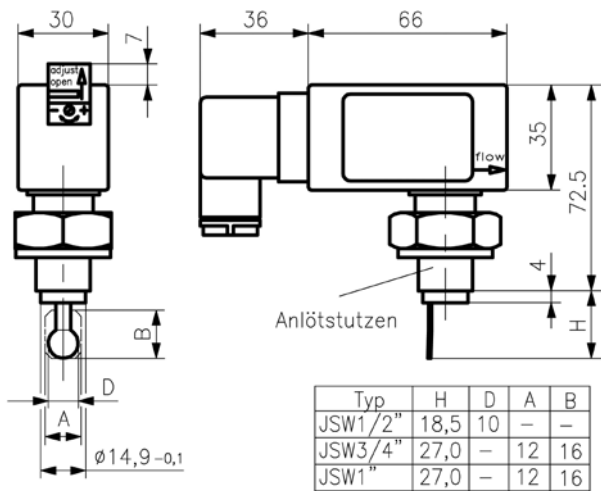
T-piece 1/2"	H530957	23.30/III
T-piece 3/4"	H530951	26.30/III
T-piece 1"	H530953	28.40/III



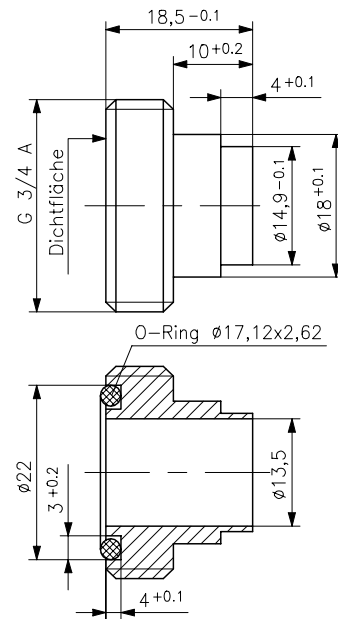
# FLOW MONITOR JSW WITH DEVICE PLUG

## ILLUSTRATIONS

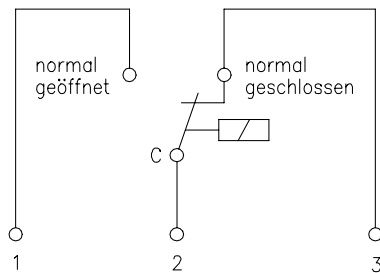
JSW



JSW



JSW



The device works according to the principle of a spring-loaded paddle with magnetic control of a micro-switch. When in rest position or if the switch-off value is undershot (= 'dropping switching point'), contacts 2 and 3 are closed and can be used as signal contacts. Upon reaching the upper switching value (= switch-on value or 'switching point rising'), the contact changes and 2 to 1 are closed. If used as a water shortage safeguard, for example, a pump can be switched on with these contacts. The actual flow quantity must in any case be higher than the switch-on value, but there is no upper limit.

The switching points given in the table apply to flow monitors with an attached T-piece and a water temperature of 20 °C in a horizontal pipe. The devices are set to the minimum switch-off value at the factory, but can be adapted to an existing plant. To that end, the cover of the setting screw on the front side, which is designed so that it cannot be lost, is pushed up in the direction of the arrow and the setting screw is rotated by a maximum of 7 revolutions in the plus direction. With a switching value range of, for example, 13–16.5 l/min, a setting range of 3.5 l/min is obtained. With a total of seven permissible screw revolutions, this gives a change of 0.5 l/min per screw revolution.



# UNIVERSAL PRESSURE SWITCH JPS

## WITH 2 SWITCHING RANGES



### TECHNICAL DATA

**Housing colour and material:**

steel plate, grey powder-coated  
Lower part = steel plate (galv. Zn bl)

**Membrane:**

polyester fabric, coated on both sides

**Ambient temperature:**

max. 55 °C

**Medium temperature:**

-30 to +80 °C

**Switch-off point:**

0.6-2.5 bar

**Protection rating:**

IP10 according to DIN 40050

**Switching capacity:**

2A (2) 230 V – in accordance with  
DIN EN 61058-1

**Contact:**

changeover switch

**Pressure ranges (setting ranges) and differentials:**

**(a) in the normal range:**

Switching range 1:

can be set from 1.0 to 4.0 kp/cm<sup>2</sup>

Differential can be set from 0.7 to 1.5 kp/cm<sup>2</sup>

Switching range 2:

can be set from min. 0.3 to max. 1.0 kp/cm<sup>2</sup>

beneath the first range

Fixed differential 0.3 kp/cm<sup>2</sup>

**(b) with increased pressure range:**

Switching range 1:

can be set from 1.3 to 6.0 kp/cm<sup>2</sup>

Differential can be set from 0.7 to

1.5 kp/cm<sup>2</sup>

Switching range 2:

can be set from min. 0.3 to max. 1.0 kp/cm<sup>2</sup>

beneath the first range

Fixed differential 1.3 kp/cm<sup>2</sup>

### APPLICATION

The JPS is a universal pressure switch with two switching ranges and is suitable for oil, water and air.

It can also be used as a controller for domestic heating oil supply systems, pressure boosting systems, oil pumps and so on.

All devices have changeover contacts

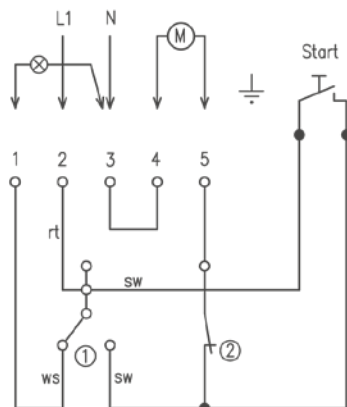
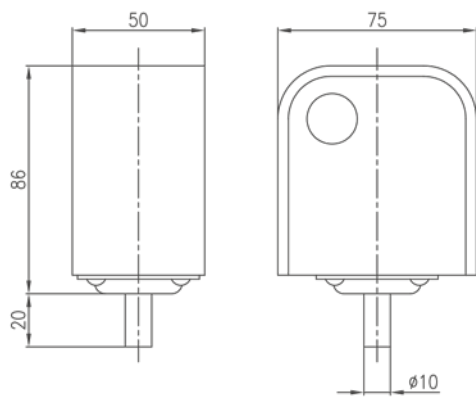
The starter button causes the second switching range to be bridged (if it functions as a safety range). The red indicator light remains illuminated until the accumulated pressure has reached the first switching range

TYPE	ITEM NO.	MEASUREMENT RANGES	FEATURES	EURO/PG
JPS-1	E6160006	2 switching ranges, with starter button and indicator light	Connection adapters for 10-mm immersion sleeve	246.70/II
JPS-3	E6160020	2 switching ranges, with starter button and indicator light, alternate switch-on point	Hexagonal connection-adapters SW17 with 1/4" internal thread	300.30/II
JPS-3 B	E6160044	2 switching ranges, with starter button and indicator light, alternate switch-on point	Connection adapters for 10-mm immersion sleeve	244.80/II
JPS-4	E6160057	2 switching ranges, with starter button and indicator light, for the higher pressure range	Connection adapters for 10-mm immersion sleeve	243.50/II
JPS-13	E6160119	2 switching ranges, with starter button and indicator light	Hexagonal connection-adapters SW17 with 1/4" internal thread	262.70/II

### SWITCHING POINTS (FACTORY SETTING)

JPS TYPE	1	3	3 B	4	13
Lower switch-off point	1.25	1.4	1.3	1.25	0.6
Switch-on point (tolerance / +- 0.02 bar)	1.6	1.8	1.8	1.6	1
Switch-off point (tolerance / +- 0.02 bar)	2.5	2.5	2.9	2.5	2.5

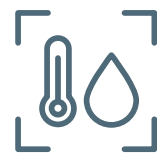
### ILLUSTRATIONS






# SENSOR TECHNOLOGY

PRECISE AND RELIABLE







# ALRE SENSOR TECHNOLOGY, **MEASURE PRECISELY,** CONTROL INTELLIGENTLY.

Our range of sensor technology products is designed to make your life both safer and more convenient. These sensors efficiently collect vital physical data from the environment, including temperature, humidity, and pressure. They then convert this data into electrical signals, which are seamlessly integrated with intelligent control systems. This process ensures accurate interpretation and response, leading to precise and optimal control of your environment.

**alre sensor technology: the basis of safety and comfort.**

## APPLICATION **EXAMPLES:**

- + Temperature measurement in residential and business spaces, outdoor areas, surface temperatures (contact sensors) in liquid and gaseous media, such as in pipelines and air ducts
- + Pressure measurement in liquid and gaseous media, for example in hydraulics, pneumatics, mechanical and plant engineering, process technology, ventilation or air conditioning applications, clean room technology, fine draft measurement
- + Temperature measurement in rooms or ducts
- + Outdoor temperature measurement, for example in refrigeration, air conditioning and ventilation systems, clean room technology, greenhouses, medical rooms, meteorology



## OVERVIEW

210

### TEMPERATURE

Room temperature sensor (surface-mounted / flush mounted) – passive	212
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Assembly-type duct sensors – passive	222
Industrial assembly type duct sensors – (Form B) passive	223

### DIFFERENTIAL PRESSURE

Differential pressure transducers (air)	224
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**ROOM TEMPERATURE  
SENSOR,  
FLUSH-MOUNTED FUF**



**RADIATION  
TEMPERATURE SENSOR  
STF**



**EXTERNAL  
TEMPERATURE SENSOR**



**ROOM TEMPERATURE  
SENSOR,  
SURFACE-MOUNTED,  
ULTRA-SLIM**





# ROOM TEMPERATURE SENSOR – SURFACE-MOUNTED BTF2

## SURFACE-MOUNTED ‘ULTRA-THIN’ – DESIGN BERLIN 1000, FOR MEASURING THE TEMPERATURE IN DRY ROOMS

**TECHNICAL DATA**

<b>Design:</b>	Berlin 1000
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	ABS plastic
<b>Ambient temperature:</b>	-10 to +50 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	Screw-type terminals 0.33 mm <sup>2</sup> to 1.5 mm <sup>2</sup> only at protective low voltage max. 30 VAC / 42 VDC
<b>Max. measurement current:</b>	< 1 mA
<b>Extendable sensor wire:</b>	depending on the cross-section of the conductor and the sensor unit type
<b>Tolerances:</b>	PT100/PT1000 DIN EN 60751 B
<b>Mounting / attachment:</b>	surface / wall mounting (4-hole assembly on flush-mounted socket)
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	III
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor characteristic curves:</b>	the sensor characteristic curves can be found in the ‘Miscellaneous’ section

**APPLICATION**

Temperature measurement in living spaces and office spaces.

Assembly and wiring of the lower part can take place separately, surface-mounted or on a switch socket Ø 60 mm by means of socket screws.

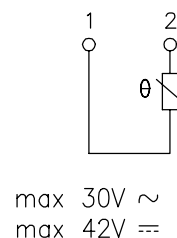
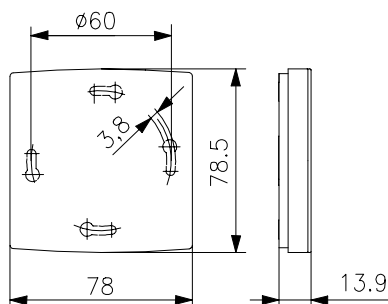
Please follow the EMC directives. Avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	TYPE	ITEM NO.	EURO / PG
PT-100	BTF2-P100-0000	SA140000	28.30 / III
PT-1000	BTF2-P1000-0000	SA140001	28.30 / III
NTC 2K25 ‘Sensor 0’	BTF2-C225-0000	SA140013	28.30 / III
NTC 47K ‘Sensor 2’	BTF2-C47-0000	SA140014	28.30 / III
NTC 8K ‘Sensor 3’	BTF2-C08-0000	SA140015	28.30 / III
NTC 10K ‘Sensor 4’	BTF2-C10-0000	SA140006	28.30 / III
NTC 2K ‘Sensor 8’	BTF2-C02-0000	SA140016	28.30 / III
KTY 81-121 ‘Sensor 51’	BTF2-Y81 / 121-0000	SA140017	28.30 / III
KTY 11-7 ‘Sensor 57’	BTF2-Y11 / 7-0000	SA140018	28.30 / III

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-21	MN990006	Adapter frame for mounting room temperature sensors of the Berlin 1000 series in flush-mounted sockets up to 80 x 80 mm	5.20 / I

**ILLUSTRATIONS**

Berlin 1000





# ROOM TEMPERATURE CONTROLLER – FLUSH-MOUNTED FUF

## FOR MEASURING THE TEMPERATURE IN DRY ROOMS



### TECHNICAL DATA

<b>Design:</b>	Berlin flush-mounted
<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	PC plastic
<b>Ambient temperature:</b>	-10 to +50 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	Screw-type terminals 0.5 mm <sup>2</sup> to 1.5 mm <sup>2</sup> only to safety extra low voltage max. 30 VAC / 42 VDC
<b>Max. measurement current:</b>	< 1 mA
<b>Extendable sensor wire:</b>	depending on the cross-section of the conductor and the sensor unit type
<b>Tolerances:</b>	PT100 / PT1000 DIN EN 60751 B
<b>Mounting / attachment:</b>	in a flush-mounted socket, can be adapted to fit virtually any surface switch range. 50 x 50 mm adaptable
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	III
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor characteristic curves:</b>	the sensor characteristic curves can be found in the 'Miscellaneous' section

### APPLICATION

Temperature measurement in living spaces and office spaces.

The room temperature sensor with 50 x 50-mm cover can be integrated into almost all switch ranges by means of an insert frame. (Frames are not a part of the delivery scope.) For integration examples, see the 'Heating technology' section.

Please follow the EMC directives. Avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	TYPE	ITEM NO.	SURFACE FINISH	EURO / PG
PT-100	FUFP 100-0000	SN090000	glossy	35.90 / III
PT-1000	FUFP 1000-0000	SN090001	glossy	36.20 / III
NTC 2K25 'Sensor 0'	FUFC 225-0000	SN090197	glossy	35.90 / III
NTC 47K 'Sensor 2'	FUFC 47-0000	SN090198	glossy	35.90 / III
NTC 8K 'Sensor 3'	FUFC 08-0000	SN090199	glossy	35.90 / III
NTC 10K 'Sensor 4'	FUFC 10-0000	SN090005	glossy	35.90 / III
NTC 2K 'Sensor 8'	FUFC 02-0000	SN090200	glossy	35.90 / III
KTY 81-121 'Sensor 51'	FUFY 81 / 121-0000	SN090201	glossy	35.90 / III
KTY 11-7 'Sensor 57'	FUFY 11 / 7-0000	SN090202	glossy	35.90 / III

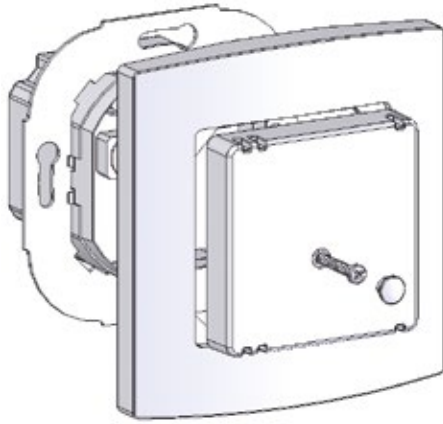
ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-090.900	W000025	alre frame 'Berlin' for all flush-mounted controllers and sensors with 50 x 50-mm pure white cover, glossy, like RAL 9010	4.40 / I



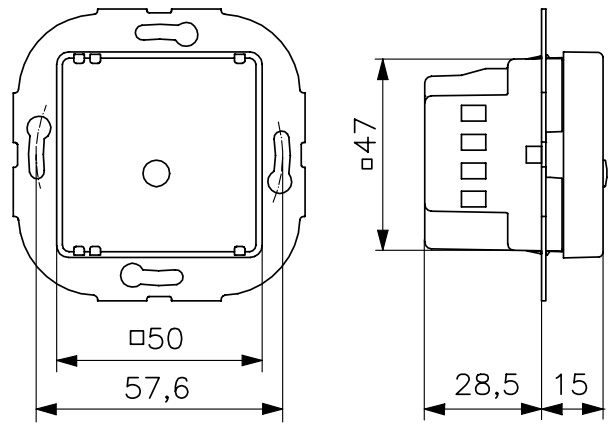
# ROOM TEMPERATURE CONTROLLER - FLUSH-MOUNTED FUF FOR MEASURING THE TEMPERATURE IN DRY ROOMS

## ILLUSTRATIONS

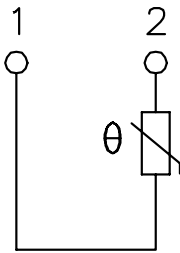
FUF with alre frame 'Berlin'



Dimension drawing RUF



FUFxx-0000





# OUTDOOR TEMPERATURE SENSOR AF WITH PASSIVE OUTPUT.

## AF – OUTDOOR TEMPERATURE SENSOR WITH INSIDE SENSOR



### TECHNICAL DATA

<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	PA plastic (30% GF reinforced)
<b>Ambient temperature:</b>	-30 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals 0.14 mm <sup>2</sup> up to 2.5 mm <sup>2</sup> only at protective low voltage max. 30 VAC / 42 VDC
<b>Max. measurement current:</b>	< 1 mA
<b>Extendable sensor wire:</b>	depending on the cross-section of the conductor and the sensor unit type
<b>Tolerances:</b>	PT100/PT1000 DIN EN 60751 B
<b>Mounting / attachment:</b>	surface / wall mounting
<b>Protection rating:</b>	IP65
<b>Protection class:</b>	III
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor characteristic curves:</b>	the sensor characteristic curves can be found in the 'Miscellaneous' section

### APPLICATION

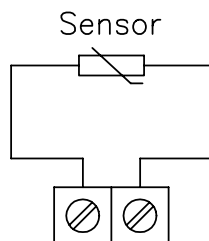
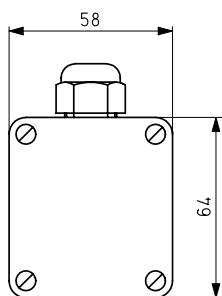
The AF outdoor temperature sensors are used for temperature measurement in the outdoors, in damp environments, in cold storage rooms and greenhouses as well as in industrial applications and are specially protected against dust and moisture. If there is direct incident sunlight on the sensor housing, the use of a sun shade is recommended.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

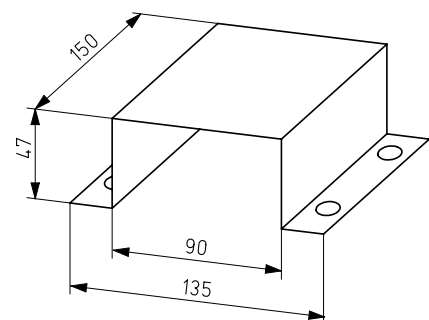
SENSOR	TYPE	ITEM NO.	EURO/PG
PT 100	AFP 100	G9040010	25.50 / III
PT 1000	AFP 1000	G9040020	25.50 / III
NTC 2K25 'Sensor 0'	AF-0	G9040360	25.50 / III
NTC 1K 'Sensor 1'	AF-1	G9040370	25.50 / III
NTC 47K 'Sensor 2'	AF-2	G9040380	25.50 / III
NTC 8K 'Sensor 3'	AF-3	G9040390	25.50 / III
NTC 10K 'Sensor 4'	AF-4	G9040400	25.50 / III
NTC 50K 'Sensor 5'	AF-5	G9040561	25.50 / III
NTC 2K 'Sensor 8'	AF-8	G9040410	25.50 / III
KTY 81-121 'Sensor 51'	AF-51	G9040420	25.50 / III
KTY 11-7 'Sensor 57'	AF-57	G9040681	25.50 / III

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
S protection 01	G9990170	Ball impact guard, sun and rain protection; 150 x 90 x 47 mm; stainless steel V4A 1.4571	37.70 / III

### ILLUSTRATIONS



S protection 01







# OUTDOOR TEMPERATURE SENSORS AFH WITH PASSIVE OUTPUT

## AFH ... OUTDOOR TEMPERATURE SENSOR WITH SLEEVE LEAD-OUT



### TECHNICAL SPECIFICATIONS

<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	PA plastic (30% GF reinforced)
<b>Operating voltage (active):</b>	24 VDC
<b>Ambient temperature:</b>	-30 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Max. measurement current (passive):</b>	< 1 mA
<b>Electrical connection:</b>	Screw-type terminals 0.14 mm <sup>2</sup> to 2.5 mm <sup>2</sup> only at protective low voltage, max. passive output: 30 VAC / 42 V DC
<b>Sensor wire extendable:</b>	depending on the cross-section of the conductor and the sensor unit type
<b>Tolerances:</b>	PT100/PT1000 DIN EN 60751 B
<b>Mounting / attachment:</b>	surface / wall mounting
<b>Protection rating:</b>	IP65
<b>Protection class:</b>	III
<b>Safety and EMC:</b>	according to DIN EN 60730

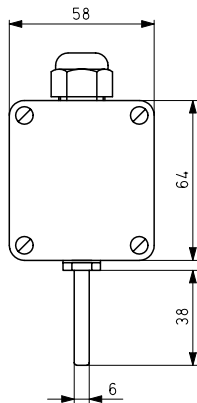
### APPLICATION

The outdoor temperature sensors are used for temperature measurement in the outdoors, in damp room applications, in cold storage rooms and greenhouses as well as in industrial applications and are specially protected against dust and moisture. Owing to the external sensor sleeve, this outdoor sensor has a very good actuation response to temperature changes.  
If there is direct incident sunlight on the sensor, the use of a sun shade is recommended.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	TYPE	ITEM NO.	EURO / PG
PT 100	AFHP 100	G9040160	44.30 / III
PT 1000	AFHP 1000	G9040170	44.30 / III
NTC 10K 'Sensor 4'	AFHC 10	G9040220	44.30 / III

### ILLUSTRATIONS





# SLEEVE TEMPERATURE SENSORS HF

HF ... / P SLEEVE TEMPERATURE SENSOR WITH PVC CABLE

HF ... / S SLEEVE TEMPERATURE SENSOR WITH SILICONE CABLE



### TECHNICAL DATA (HF.../P AND HF.../S)

<b>Sensor dimensions:</b>	Ø 6 mm x 45 mm
<b>Sensor sleeve material:</b>	V2A (1.4301)
<b>Permissible atmospheric humidity:</b>	max. 95% relative humidity, non-condensing
<b>Max. measurement current:</b>	< 1 mA
<b>Electrical connection:</b>	only to safety extra low voltage max. 30 VAC / 42 VDC
<b>Connecting cable:</b>	1 m, 2 x 0.5 mm <sup>2</sup> (HFP 100/S/6 m: 6 m, 2 x 0.5 mm <sup>2</sup> )
<b>Extendable sensor wire:</b>	depending on the cross-section of the conductor and the sensor unit type
<b>Tolerances:</b>	PT100/PT1000 DIN EN 60751 B
<b>Mounting / attachment:</b>	in immersion sleeve, protective coil, on pipe etc.
<b>Protection rating:</b>	IP65, moisture-impregnable burnishing
<b>Protection class:</b>	III
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor characteristic curves:</b>	the sensor characteristic curves can be found in the 'Miscellaneous' section
<b>Immersion sleeves:</b>	Immersion sleeves can be found in the 'Miscellaneous' section.

### APPLICATION

The HF sleeve sensors are used for temperature measurement in liquid or gaseous media. Thanks to the moisture-impermeable burnishing, the sleeve sensor is particularly protected against moisture and dust.

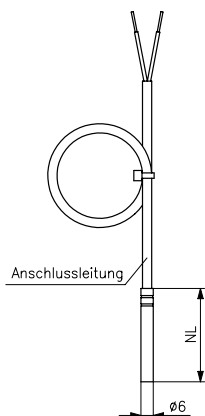
If used in liquid media, integration in an immersion sleeve is necessary.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	TYPE	ITEM NO.	FEATURES	EURO/PG
PT 100	HFP 100/P	G9030010	Sensor wire PVC, -35 to +105 °C	18.50/III
PT 1000	HFP 1000/P	G9030020	Sensor wire PVC, -35 to +105 °C	18.50/III
NTC 10K	HFC 10/P	G9030070	Sensor wire PVC, -35 to +105 °C	18.50/III

SENSOR	TYPE	ITEM NO.	FEATURES	EURO/PG
PT 100	HFP 100/S	G9030140	Sensor wire, silicone, -50 to +150 °C	25.60/III
PT 100	HFP 100/S/6 m	G9030411	Sensor wire, silicone, -50 to +150 °C	36.80/III
PT 1000	HFP 1000/S	G9030150	Sensor wire, silicone, -50 to +150 °C	25.60/III
Ni 1000	HFN 1000/S	G9030160	Sensor wire, silicone, -50 to +150 °C	28.50/III
NTC 10K	HFC 10/S	G9030200	Sensor wire, silicone, -50 to +150 °C	25.60/III

### ILLUSTRATIONS





# CABLE TEMPERATURE SENSOR KF

(REMOTE SENSOR FOR ALRE STANDARD DEVICES, FOR EXAMPLE, ITR79, ETC.)



## TECHNICAL DATA (HF.../P AND HF.../S)

<b>Sensor dimensions:</b>	see dimension diagram
<b>Sensor sleeve material:</b>	V4A (1.4571)
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Max. measurement current:</b>	< 1 mA
<b>Electrical connection:</b>	only at safety extra-low voltage max. 30 VAC / 42 VDC KF-100-4 and KF-100/6-4 4-wire
<b>Sensor wire extendible up to:</b>	depending on the cross-section of the conductor and the sensor unit type
<b>Tolerances:</b>	PT100/PT1000 Class B
<b>Mounting/attachment:</b>	in immersion sleeve, protective coil, on pipe etc.
<b>Protection rating:</b>	IP 67
<b>Protection class:</b>	III
<b>Sensor characteristic curves:</b>	the sensor characteristic curves can be found in the 'Miscellaneous' section
<b>Accessories:</b>	Immersion sleeves/protection coils can be found under Miscellaneous
<b>Sensor characteristic curves:</b>	the sensor characteristic curves can be found in the 'Miscellaneous' section
<b>Immersion sleeves:</b>	Immersion sleeves can be found in the 'Miscellaneous' section.

## APPLICATION

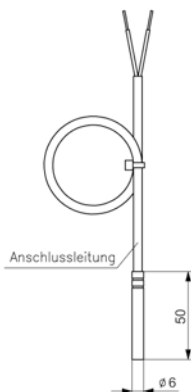
For temperature measurement of liquid media by integrating in immersion sleeves (TH/NTH). For temperature measurement of air and non-aggressive gases in the air duct by integration in a protection coil (SW-200, see the 'Accessories/Miscellaneous' section).

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	TYPE	ITEM NO.	FEATURES	EURO/PG
'Sensor 0' (NTC 2 K 25)	KF-0	G9031441	Wire PE, 1.5 m, -35 to +100 °C	29.60/III
'Sensor 1' (NTC 1K)	KF-1	G9031442	Wire PE, 1.5 m, -35 to +100 °C	29.60/III
'Sensor 2' (NTC 47 K)	KF-2	G9031446	Wire PE, 1.5 m, -35 to +100 °C	29.60/III
'Sensor 3' (NTC 8 K)	KF-3	G9031447	Wire PE, 1.5 m, -35 to +100 °C	29.60/III
'Sensor 4' (NTC 10 K)	KF-4	G9031449	Wire PE, 1.5 m, -35 to +100 °C	29.60/III
'Sensor 4' (NTC 10 K)	KF-4/6	G9031450	Wire PE, 6 m, -35 to +100 °C	31.40/III
'Sensor 5' (NTC 50 K)	KF-5	G9031451	Wire PE, 1.5 m, -35 to +100 °C	29.60/III
'Sensor 6' (NTC 100 K)	KF-6	G9031455	Wire PE, 1.5 m, -35 to +100 °C	32.10/III
'Sensor 51' (KTY 81-121)	KF-51	G9031452	Wire silicone, 1.5 m, -50 to +150 °C	32.10/III
'Sensor 51' (KTY 81-121)	KF-51/6	G9031453	Wire silicone, 6 m, -50 to +150 °C	36.00/III
'Sensor 57' (KTY 11-7)	KF-57	G9031454	Wire PE, 1.5 m, -35 to +100 °C	29.60/III
PT-100	KF-100-4	G9031443	Wire silicone, 1.5 m, -50 to +180 °C	37.60/III
PT-100	KF-100/6-4	G9031444	Wire silicone, 6 m, -50 to +180 °C	43.60/III
PT-1000	KF-1000	G9031445	Wire silicone, 1.5 m, -50 to +180 °C	30.50/III

## ILLUSTRATIONS

KF





# CONTACT TEMPERATURE SENSOR ALF



## TECHNICAL DATA

<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	PA plastic (30% GF reinforced)
<b>Ambient temperature:</b>	-30 to +70 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Max. measurement current (passive):</b>	< 1 mA
<b>Electrical connection:</b>	screw-type terminals 0.14 mm <sup>2</sup> – 2.5 mm <sup>2</sup> only at safety extra-low voltage passive max. 30 V AC / 42 V DC
<b>Mounting / attachment:</b>	on pipe by means of cable tie-wrap
<b>Tolerances:</b>	PT100/PT1000
<b>Protection rating:</b>	IP65
<b>Protection class:</b>	III
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor characteristic curves:</b>	the sensor characteristic curves can be found in the 'Miscellaneous' section

## APPLICATION

The ALF contact temperature sensors are used for temperature measurement on pipes, tubes or heat carriers.

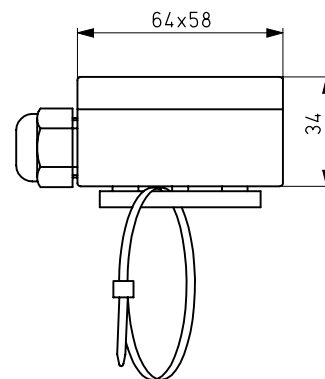
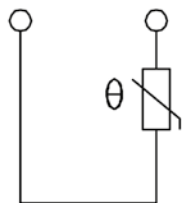
For better temperature transmission between the pipe and the contact sensor, the use of a heat conducting paste is recommended.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	TYPE	ITEM NO.	EURO/PG
PT 100	ALFP 100	G9050010	28.50 / III
PT 1000	ALFP 1000	G9050020	28.50 / III
'Sensor 0' (NTC 2K25)	ALF-0	G9050270	28.50 / III
'Sensor 2' (NTC 47K)	ALF-2	G9050160	28.50 / III
'Sensor 3' (NTC 8K)	ALF-3	G9050180	28.50 / III
'Sensor 4' (NTC 10K)	ALF-4	G9050190	28.50 / III
'Sensor 5' (NTC 50K)	ALF-5	G9050200	28.50 / III
'Sensor 51' (KTY 81-121)	ALF-51	G9050210	28.50 / III

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
WP-01	G9990180	heat conduction paste 2 ml	7.20 / II

## ILLUSTRATIONS





# PENDULUM TEMPERATURE SENSOR PF



### TECHNICAL DATA

<b>Sensor material:</b>	Al black, PVC wire
<b>Sensor dimensions:</b>	Ø 60 mm
<b>Ambient temperature:</b>	-30 to +80 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Max. measurement current:</b>	< 1 mA
<b>Electrical connection:</b>	only at protective low voltage max. 30 VAC / 42 VDC
<b>Extendable sensor wire:</b>	depending on the cross-section of the Conductor and sensor type
<b>Connecting cable:</b>	2 x 0.5 mm <sup>2</sup>
<b>Mounting / attachment:</b>	suspended
<b>Tolerances:</b>	PT100 / PT1000 DIN EN 60751 B NI1000 DIN EN 43760 B
<b>Protection rating:</b>	IP65
<b>Protection class:</b>	III
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor characteristic curves:</b>	the sensor characteristic curves can be found in the 'Miscellaneous' section

### APPLICATION

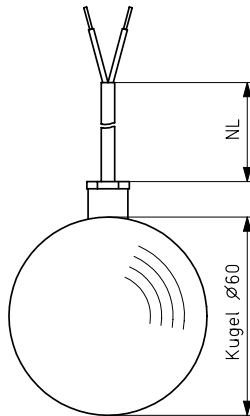
The pendulum temperature sensor PF serves to measure the temperatures in larger spaces. Owing to the spherical form, this sensor captures the temperature from all directions of the room, so that when correctly positioned in the room, a representative measurement result can be achieved.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	TYPE	ITEM NO.	FEATURES	EURO / PG
PT 100	PFP 100	G9130010	Wire length: 1 m	97.80 / III
PT 1000	PFP 1000	G9130020	Wire length: 1 m	97.80 / III
'Sensor 4' NTC 10 K	PFC 10	G9130070	Wire length: 1 m	97.80 / III
'Sensor 2' NTC 47 K	PFC 47 / 6 (6 m)	G9130180	Wire length: 6 m	103.60 / III

### ILLUSTRATIONS

PF





# RADIATION TEMPERATURE SENSOR STF



## TECHNICAL DATA

<b>Design:</b>	Berlin 2000
<b>Housing colour:</b>	pure white, similar to RAL 9010, ball black
<b>Housing material:</b>	ABS plastic
<b>Ambient temperature:</b>	-20 to +60 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Max. measurement current:</b>	< 1 mA
<b>Electrical connection:</b>	screw-type terminals 0.14 mm <sup>2</sup> up to 1.5 mm <sup>2</sup> only at protective low voltage max. 30 VAC / 42 VDC
<b>Extendable sensor wire:</b>	depending on the cross-section of the conductor and the sensor unit type
<b>Mounting / attachment:</b>	surface / wall mounting (4-hole assembly on flush-mounted socket)
<b>Protection rating:</b>	IP30
<b>Protection class:</b>	III
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor characteristic curves:</b>	the sensor characteristic curves can be found in the 'Miscellaneous' section

## APPLICATION

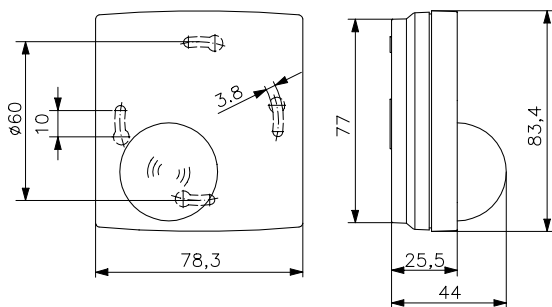
The radiation temperature sensor is a dual sensor for the measurement of radiation and room heat. The radiation sensor is located in the black hemisphere; the room sensor is located the plastic housing. Connection with screw-type terminals.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

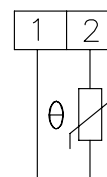
SENSOR	TYPE	ITEM NO.	EURO/PG
'Sensor 0' 2x NTC 2 K 25	STF-0	SN080100	83.30 / III
'Sensor 2' 2x NTC 47 K	STF-2	SN080200	83.30 / III
'Sensor 4' 2x NTC 10 K	STF-4	SN080400	83.30 / III
'Sensor 51' 2x KTY-81-121	STF-51	SN080500	83.30 / III

## ILLUSTRATIONS

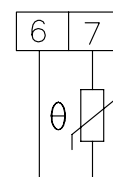
STF



STF



Strahlungsfühler



Raumfühler





# ASSEMBLY-TYPE DUCT SENSOR EKF WITH PASSIVE OUTPUT



### TECHNICAL DATA

<b>Housing colour:</b>	pure white, similar to RAL 9010
<b>Housing material:</b>	PA plastic (30% GF reinforced)
<b>Sensor tube material:</b>	V2A (1.4301)
<b>Ambient temperature:</b>	-30 to +70 °C
<b>Max. sensor temperature:</b>	150 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Electrical connection:</b>	screw-type terminals 0.14 mm <sup>2</sup> up to 2.5 mm <sup>2</sup> only at protective low voltage max. 30 VAC/42 VDC
<b>Tolerances:</b>	PT100/PT1000 DIN EN 60751 B
<b>Mounting/ attachment:</b>	in immersion sleeves (THMs, THV) for fluids or with mounting flange (MF) in air ducts
<b>Protection rating:</b>	IP65
<b>Protection class:</b>	III
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor characteristic curves:</b>	the sensor characteristic curves can be found in the 'Miscellaneous' section
<b>Immersion sleeves:</b>	From the fitting length (EL), subtract 15 mm to determine the nominal length (NL) of the immersion sleeve, for example, EL = 65 mm corresponds to THV / 50

### APPLICATION

The assembly-type duct sensor EKF is used for measuring temperatures in liquids and gases in pipes, air ducts or tanks. A mounting flange (MF) is required for use in air ducts. If used in liquids, immersion sleeves made of brass with nickel plating (THMs) should be used. For aggressive media, immersion sleeves made of stainless steel V4A (THV) are recommended. Immersion sleeves or mounting flanges are not part of the delivery scope and must be **ordered separately** as accessories.

**Accessories:** mounting flange for installation in air ducts; MF matching immersion sleeves in brass; Immersion sleeves with brass plating can be found in the 'Miscellaneous' section matching immersion sleeves stainless steel (V4A); immersion sleeves made of stainless steel can be found in the 'Miscellaneous' section

**Extendable sensor wire:** depending on the cross-section of the conductor and the sensor unit type

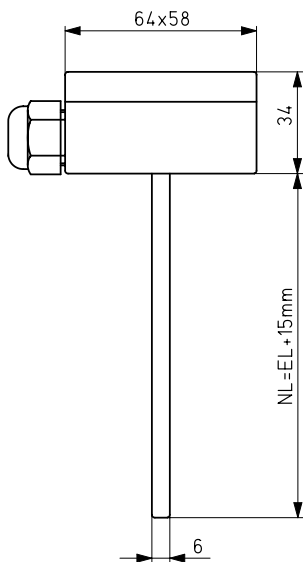
Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	FITTING LENGTH 65 MM (FOR 50-MM IMMERSION SLEEVES)	FITTING LENGTH 115 MM (FOR 100 MM IMMERSION SLEEVES)	FITTING LENGTH 165 MM (FOR 150-MM IMMERSION SLEEVES)	PG
PT 100	EKFP 100/50 Item no.: G9140010; € 41.50	EKFP 100/100 Item no.: G9140140; € 42.10	EKFP 100/150 Item no.: G9140270; € 43.40	III
PT 1000	EKFP 1000/50 Item no.: G9140020; € 41.50	EKFP 1000/100 Item no.: G9140150; € 42.10	EKFP 1000/150 Item no.: G9140280; € 43.40	III

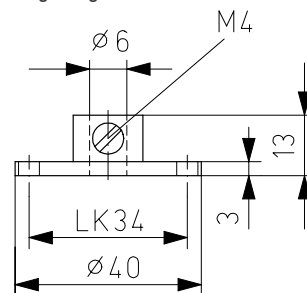
ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
MF	G9990160	mounting flange for integrated duct sensor	7.70/III

### ILLUSTRATIONS

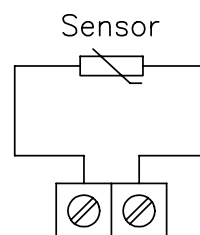
assembly-type duct sensor



Mounting flange MF



assembly-type duct sensor





# INDUSTRIAL ASSEMBLY-TYPE DUCT SENSOR IKF1 (FORM B) WITH PASSIVE OUTPUT



### TECHNICAL DATA

<b>Housing colour:</b>	silver-grey
<b>Housing material:</b>	aluminium
<b>Sensor tube material:</b>	V2A (1.4301)
<b>Ambient temperature:</b>	-30 to +100 °C
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing
<b>Max. sensor temperature:</b>	150 °C
<b>Electrical connection:</b>	screw-type terminals 0.14 mm <sup>2</sup> up to 2.5 mm <sup>2</sup> , only at protective low voltage max. 30 VAC/42 VDC
<b>Tolerances:</b>	PT1000 DIN EN 60751 B
<b>Mounting/attachment:</b>	in immersion sleeves (THMs, THV) for fluids or with mounting flange (MF) in air ducts
<b>Protection rating:</b>	IP43
<b>Protection class:</b>	III
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor characteristic curves:</b>	the sensor characteristic curves can be found in the 'Miscellaneous' section
<b>Immersion sleeves:</b>	from the fitting length (EL), subtract 15 mm to determine the nominal length (NL) of the immersion sleeve, for example, EL = 65 mm corresponds to THV/50
<b>Accessories:</b>	mounting flange for installation in air ducts: MF matching immersion sleeves in brass: immersion sleeves with brass plating can be found in the 'Miscellaneous' section matching immersion sleeves stainless steel (V4A): immersion sleeves made of stainless steel can be found in the 'Miscellaneous' section

### APPLICATION

The industrial assembly-type duct sensor IKF1 is used for measuring temperatures of liquids and gases in pipes, air ducts or tanks in the mechanical and plant engineering sector. A mounting flange (MF) is required for use in air ducts. If used in liquids, immersion sleeves made of brass with nickel plating (THMs) should be used. For aggressive media, immersion sleeves made of stainless steel V4A (THV) are recommended. Immersion sleeves or mounting flanges are not part of the delivery scope and must be **ordered separately** as accessories.

**Sensor wire extendable:**  
depending on the cross-section of the conductor and the sensor unit type

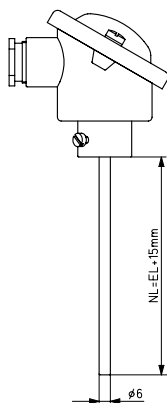
Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	FITTING LENGTH (EL) 65 MM (FOR 50-MM IMMERSION SLEEVES)	FITTING LENGTH (EL) 115 MM (FOR 100 MM IMMERSION SLEEVES)	FITTING LENGTH (EL) 165 MM (FOR 150-MM IMMERSION SLEEVES)	PG
PT 1000	IKF1P 1000/50 Item no.: G9150020; € 71.20	IKF1P 1000/00 Item no.: G9150150; € 72.90	IKF1P 1000/150 Item no.: G9150280; € 74.30	III

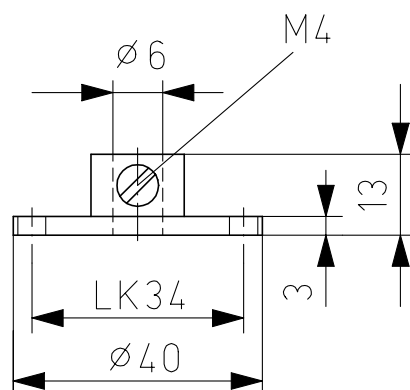
ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
MF	G9990160	mounting flange for integrated duct sensor	7.70/III

### ILLUSTRATIONS

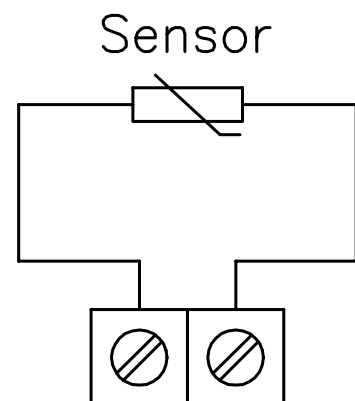
Industrial assembly-type duct sensor



Mounting flange MF



IKF





# TRANSDUCER 'DIFFERENTIAL PRESSURE – AIR'



## TECHNICAL DATA

<b>Housing colour:</b>	grey
<b>Housing material:</b>	plastic
<b>Material of parts coming in contact with the medium:</b>	Ni, PU, Al, Au, Pyrex glass, silicone, Kovar, Duraplast, Ultem Plasic
<b>Operating voltage:</b>	15–30 VDC, 15–30 VAC
<b>Ambient temperature:</b>	10 to 50 °C
<b>Permissible atmospheric humidity:</b>	max. 80% rel. humidity, non-condensing
<b>max. pressure:</b>	5 times the measurement range end value (relative pressure)
<b>Electrical connection:</b>	screw-type terminals up to 1.5 mm <sup>2</sup>
<b>Mounting / attachment:</b>	wall mounting
<b>Protection rating:</b>	IP54
<b>Protection class:</b>	III
<b>Safety and EMC:</b>	according to DIN EN 60730
<b>Sensor:</b>	piezo-resistive pressure sensor
<b>Pressure connection:</b>	d x L: 6.6 x 10 mm (for flexible tubes d = 6 mm)
<b>Cable gland:</b>	M 12 x 1.5
<b>Output signal:</b>	continuous, adjustable 0–10 V, 0–20 mA, 4–20 mA
<b>Accuracy:</b>	Linearity: +/- 2% FS Influence of supply: <0.05% Influence of position: 0.1% at 3000 Pa, 0.3% at 1500 Pa, 0.9% at 500 Pa, 1.8% at 250 Pa Temperature drift: offset and range respectively +/- 0.12% FS/K Long-term stability: +/- 2% FS/year

## APPLICATION

The microprocessor-controlled pressure transducers are suitable for detecting overpressure, underpressure or differential pressure of non-aggressive gases.

They are used in heating, ventilation or air conditioning applications as well as in clean room technology or for fine draft measurement.

The pressure measurement is performed using a piezo-resistive pressure sensor.

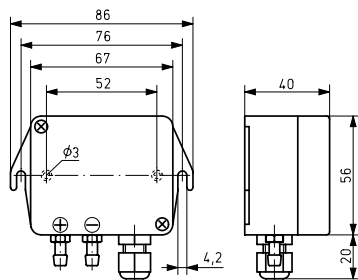
The types MDEKD replace the types DF.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

TYPE	ITEM NO.	MEASUREMENT RANGES	EURO/PG
MDEKD-940.000	G9270010	1000 Pa, 750 Pa; 500 Pa; 250 Pa relative pressure	172.80/III
MDEKD-940.100	G9270020	10000 Pa; 7500 Pa; 5000 Pa; 2500 Pa relative pressure	172.80/III

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-27	G9990450	cover with 3.5-digit LC display for MDEKD, easy assembly	80.60/III
JZ-06/1	H5309229	Connection set with duct connections made of plastic, 2 x 90° angles, 2 extensions 90 mm, 4 self-tapping screws, 2 m tube Ø 6 mm outside for differential pressure switch JDW, JDL, pressure transducer	10.90/II

## ILLUSTRATIONS



MDEKD with JZ-27





# ACCESSORIES

CUSTOMISED AND HIGH-PERFORMANCE





# ALRE ACCESSORIES. MAKING SOPHISTICATED TECHNOLOGY **EVEN MORE POWERFUL.**

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even better.**

## APPLICATION **EXAMPLES:**

- + Controllers for dry and wet saunas
- + Process connections for liquid and gaseous media
- + Various accessories





## SAUNA CONTROLLERS 228

### SAUNA CONTROLLERS

## ACCESSORIES 230

### ACCESSORIES

## ANNEX 236

### TECHNICAL ANNEX

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## SAUNATHERM VU / HYGROTHERM VU

### SAUNA CONTROLLERS FOR DRY AND WET SAUNAS



**TECHNICAL DATA**

<b>Colour:</b>	cream white, similar to RAL 9001
<b>Housing material:</b>	ABS
<b>Mains voltage:</b>	400 VAC, 3/N 50 Hz
<b>Equipment:</b>	sensor rupture / short-circuit safeguarding, 'light' switch, 'ON / OFF' switch, 'light / fan / electronics' microfuse, 'ON / OFF' contact input
<b>Trigger temperature of safety temperature limiter:</b>	approx. 141 °C
<b>Heating time limit:</b>	6 h / 12 h / none
<b>Pre-selection timer:</b>	can be set to max. 12 h, 1-h intervals
<b>Switching power, furnace:</b>	max. 9 kW (max. 3 kW per phase)
<b>Switching power, light:</b>	max. 100 W, 230 VAC, 50 Hz
<b>Switching power, fan:</b>	max. 100 W, 230 VAC, 50 Hz
<b>Switching element:</b>	safety protection, relay 3-stage switching
<b>Hysteresis:</b>	approx. 1 K
<b>Display type:</b>	LED
<b>Protection rating:</b>	IP44
<b>Protection class:</b>	II, if properly mounted
<b>Fuse:</b>	T1, 25 A (5 x 20)
<b>Scope of delivery:</b>	control unit, sensor / STB, fastening screws
<b>Mounting:</b>	wall mounting
<b>Ambient temperature:</b>	-15 to +25 °C
<b>Electrical connection:</b>	screw-type terminals
<b>Permissible atmospheric humidity:</b>	max. 95% rel. humidity, non-condensing

**APPLICATION**

Sauna controllers for dry or dry / wet saunas.




Load expansion possible with LG 9 / 18 (18 kW) or LG 9 / 30 (30 kW).

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
 <p>Saunatherm VU</p>	D4700653	Sauna controller for dry saunas (Finnish) Control range: 30 to 120 °C Switch: 'Fan On / Off' Indicators: 'HEATING', 'ON / OFF', 'pre-selection timer'	348.80 / III
 <p>Hygrotherm VU</p>	D4700736	Sauna controller for dry saunas (Finnish) or wet saunas Control range, dry sauna: 80 to 110 °C Control range, wet sauna: 40 to 60 °C / approx. 40–95% rel. humidity Switching power vaporiser: max. 3 kW Switch: 'Fan, 3-stage' Indicators: 'heating', 'ON / OFF', 'pre-selection timer' Water shortage detection Post-operation drying temperature adjustable: approx. 60 to 80 °C Post-operation drying limitation: approx. 3.5 h Fan post-operation time: approx. 15 minutes	521.00 / III



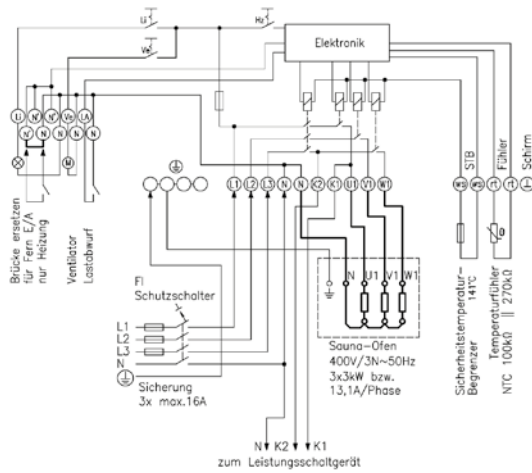
# ACCESSORIES FOR SAUNATHERM VU / HYGROTHERM VU

## SAUNA CONTROLLERS FOR DRY AND WET SAUNAS

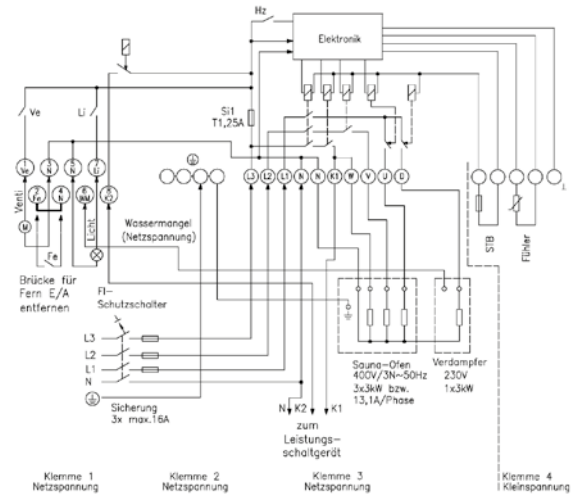
TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
	D4710450	Power switching unit 9 kW (max. 3 kW per phase) With this unit, all control units can be enhanced from 9 kW to 18 kW switching power (9 kW via control unit + 9 kW via load switch = 18 kW total power).	201.80 / III
	H4690008	Power switching unit 21 kW (max. 7 kW per phase) With this unit, all control units can be enhanced from 9 kW to 30 kW Switching power (9 kW via control unit + 21 kW via load switch = 30 kW total power).	769.20 / III
	D4700662	Spare sensor /STB for Saunatherm VU and Hygrotherm VU	62.20 / III

### ILLUSTRATIONS

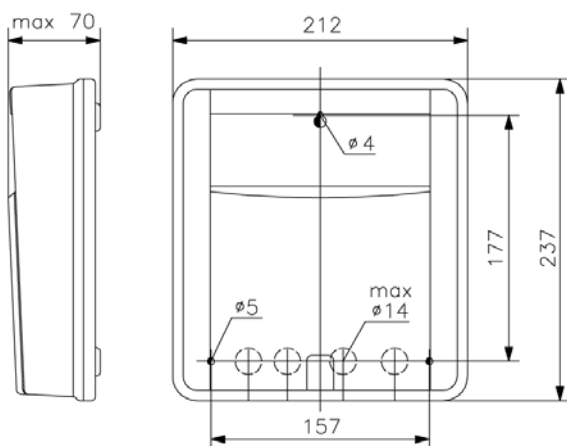
Saunatherm VU



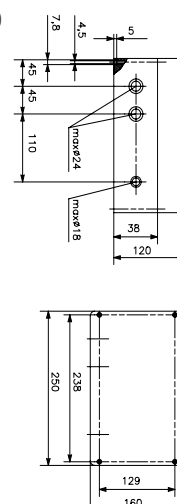
Hygrotherm VU



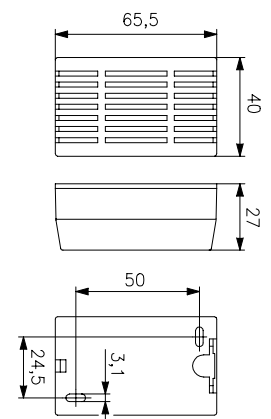
Sauna controllers, LG 9/18



LG 9/30



Sensor/STB





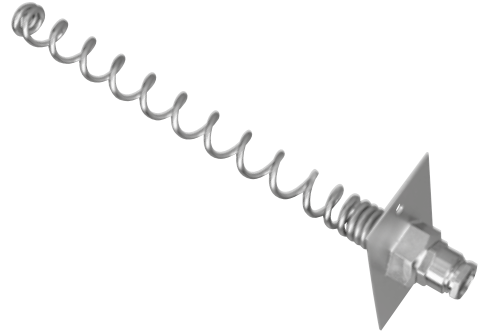
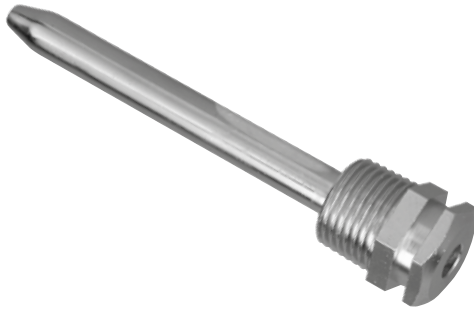
# IMMERSION SLEEVES / PROTECTION COILS FOR RTKSA AND FOR SLEEVE AND CABLE SENSORS

FOR INDUSTRIAL APPLICATIONS AND HEATING TECHNOLOGY

## ILLUSTRATIONS

THK/NTHK

SW-200/SW-200-12



## IMMERSION SLEEVES FOR RTKSA

TYPE	ITEM NO.	LENGTH OF L	DIAMETER I X A*	MATERIAL	MAX. PRES-SURE (P/BAR)	EURO/PG
THK-2-100	KA969901	100 mm	7.5 x 10 mm	nickel-plated brass	20	21.20/II
THK-2-120	KA969902	120 mm	7.5 x 10 mm	nickel-plated brass	20	24.20/II
THK-2-200	KA969903	200 mm	7.5 x 10 mm	nickel-plated brass	20	24.90/II
THK-2-280	KA969904	280 mm	7.5 x 10 mm	nickel-plated brass	20	30.30/II
THK-2-600	KA969905	600 mm	7.5 x 10 mm	nickel-plated brass	20	48.20/II
NTHK-2-100	KA969906	100 mm	7.5 x 10 mm	V4 A (1.4571)	40	57.80/II
NTHK-2-120	KA969907	120 mm	7.5 x 10 mm	V4 A (1.4571)	40	58.60/II
NTHK-2-200	KA969908	200 mm	7.5 x 10 mm	V4 A (1.4571)	40	59.70/II
NTHK-2-280	KA969909	280 mm	7.5 x 10 mm	V4 A (1.4571)	40	61.20/II
THK-2-100 x 17	KA979901	100 mm	14.8 x 17 mm	nickel-plated brass	20	30.80/II
THK-2-200 x 17	KA979902	200 mm	14.8 x 17 mm	nickel-plated brass	20	41.30/II
NTHK-2-100 x 17	KA979903	100 mm	14.8 x 17 mm	V4 A (1.4571)	40	60.10/II
NTHK-2-200 x 17	KA979904	200 mm	14.8 x 17 mm	V4 A (1.4571)	40	62.30/II

## PROTECTION COIL FOR RTKSA

TYPE	ITEM NO.	LENGTH OF L	DIAMETER I X A*	MATERIAL	EURO/PG
SWK-2-100	KA989901	100 mm	10.5 x 17 mm	steel, nickel-plated	19.50/II
SWK-2-120	KA989902	120 mm	10.5 x 17 mm	steel, nickel-plated	24.20/II
SWK-2-200	KA989903	200 mm	10.5 x 17 mm	steel, nickel-plated	24.90/II
SWK-2-280	KA989904	280 mm	10.5 x 17 mm	steel, nickel-plated	30.30/II



# IMMERSION SLEEVES / PROTECTION COILS FOR RTKSA AND FOR SLEEVE AND CABLE SENSORS

FOR INDUSTRIAL APPLICATIONS AND HEATING TECHNOLOGY

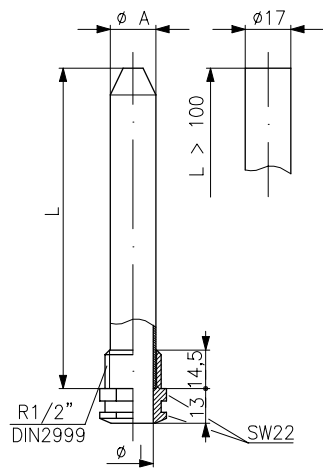
**PROTECTION COIL** FOR CAPILLARY FASTENING IN THE AIR DUCT (JET / JMT / JTF) AND ALL SLEEVE SENSORS HF AND CABLE SENSORS

TYPE	ITEM NO.	LENGTH OF L	LINE INSERTION	DIAMETER I X A*	MATERIAL	EURO/PG
SW-200	C1809219	200 mm	7.8 mm	11 x 17 mm	steel, nickel-plated	33.60 /II
SW-200-12	C1809220	200 mm	11.8 mm	11 x 17 mm	steel, nickel-plated	32.40 /II

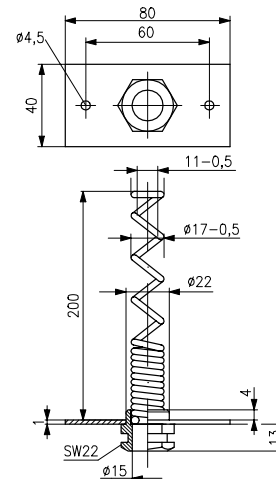
\* I = minimum inner diameter  
A = nominal outer diameter

## ILLUSTRATIONS

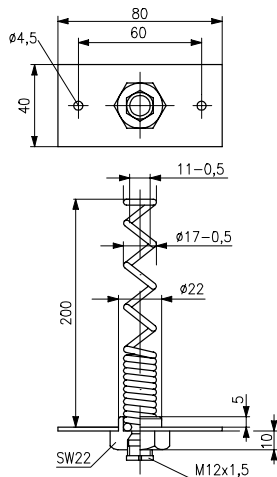
THK/NTHK



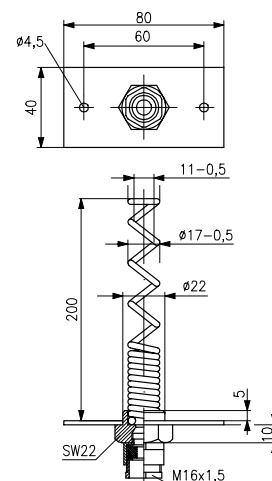
SWK



SW-200



SW-200-12





# IMMERSION SLEEVES FOR CAPILLARY / FROST PROTECTION THERMOSTATS / HF / SCREED MOUNTING

FOR INDUSTRIAL APPLICATIONS AND HEATING TECHNOLOGY

## ILLUSTRATIONS

TH/NTH



THF



**FOR SENSORS** HF Ø 7.7 MM, CAPILLARY AND FROST PROTECTION THERMOSTATS JET / JMT / WR 81 AND JTF (FOR JTF, ONLY TYPE TH / NTH-140)

TYPE	ITEM NO.	LENGTH OF L	DIAMETER I X A**	MATERIAL	MAX. PRESSURE (P/BAR)	EURO/PG
TH-55	C1809296	55 mm	8 x 10 mm	nickel-plated brass	20	22.30 / II
TH-100	C1809310	100 mm	8 x 10 mm	nickel-plated brass	20	24.50 / II
TH-140*	C1809409	140 mm	10 x 12 mm	nickel-plated brass	20	28.20 / II
TH-200	C1809438	200 mm	8 x 10 mm	nickel-plated brass	20	29.10 / II
TH-280	C1809440	280 mm	8 x 10 mm	nickel-plated brass	20	34.90 / II
NTH-55	C1809284	55 mm	8 x 10 mm	V4 A (1.4571)	40	56.10 / II
NTH-100	C1809308	100 mm	8 x 10 mm	V4 A (1.4571)	40	57.80 / II
NTH-140*	C1809435	140 mm	10 x 12 mm	V4 A (1.4571)	40	59.70 / II
NTH-200	C1809439	200 mm	8 x 10 mm	V4 A (1.4571)	40	60.50 / II
NTH-280	C1809441	280 mm	8 x 10 mm	V4 A (1.4571)	40	61.20 / II

\* Suitable for all types with an X in the designation, for example JET-1 ... X or JMT 206 X

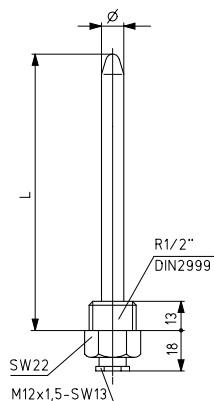
\*\* I = minimum inner diameter  
A = nominal outer diameter

## CU PROTECTIVE SLEEVE FOR SLEEVE SENSOR HF / CABLE SENSOR KF FOR SCREED MOUNTING

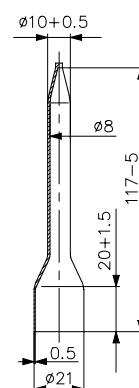
TYPE	ITEM NO.	EURO/PG
THF	C1809515	42.50 / II

## ILLUSTRATIONS

TH/NTH



THF



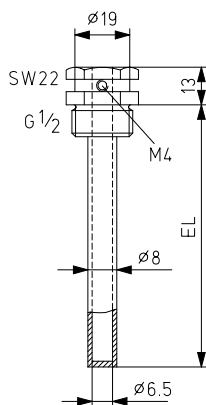


# IMMERSION SLEEVES / MOUNTING FLANGE FOR HF, KF, EKF AND IKF FOR SLEEVE SENSORS / CABLE SENSORS Ø 6 MM PVC AND SILICONE, ASSEMBLY-TYPE AND INDUSTRIAL CABLE SENSORS

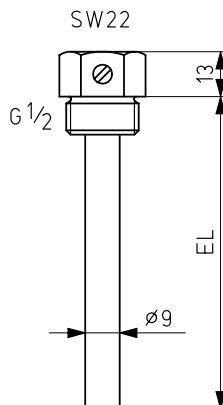
FOR SENSOR TECHNOLOGY

## ILLUSTRATIONS

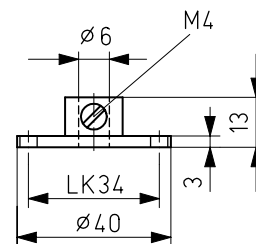
THMs



THV



MF



## IMMERSION SLEEVES, NICKEL-PLATED, WITH RECESS

TYPE	ITEM NO.	FITTING LENGTH EL	DIAMETER I X A*	MAX. PRESSURE (P/BAR)	EURO/PG
THMs / 50	G9990010	50 mm	6.5 x 8 mm	20	14.70 / II
THMs / 100	G9990020	100 mm	6.5 x 8 mm	20	15.30 / II
THMs / 150	G9990030	150 mm	6.5 x 8 mm	20	16.30 / II
THMs / 200	G9990040	200 mm	6.5 x 8 mm	20	16.80 / II
THMs / 250	G9990050	250 mm	6.5 x 8 mm	20	17.80 / II
THMs / 300	G9990370	300 mm	6.5 x 8 mm	20	18.50 / II

## IMMERSION SLEEVES, STAINLESS STEEL V4 A 1.4571

TYPE	ITEM NO.	FITTING LENGTH EL	DIAMETER I X A*	MAX. PRESSURE (P/BAR)	EURO/PG
THV / 50	G9990060	50 mm	6.3 x 9 mm	40	32.30 / II
THV / 100	G9990070	100 mm	6.3 x 9 mm	40	33.70 / II
THV / 150	G9990080	150 mm	6.3 x 9 mm	40	35.40 / II
THV / 200	G9990090	200 mm	6.3 x 9 mm	40	36.80 / II
THV / 250	G9990100	250 mm	6.3 x 9 mm	40	38.20 / II
THV / 300	G9990200	300 mm	6.3 x 9 mm	40	39.30 / II
THV / 400	G9990210	400 mm	6.3 x 9 mm	40	42.60 / II
THV / 450	G9990470	450 mm	6.3 x 9 mm	40	43.50 / II
THV / 500	G9990220	500 mm	6.3 x 9 mm	40	45.60 / II
THV / 600	G9990400	600 mm	6.3 x 9 mm	40	48.40 / II

## MOUNTING FLANGE, ALUMINIUM

TYPE	ITEM NO.	FITTING LENGTH EL	DIAMETER I X A*	MAX. PRESSURE (P/BAR)	EURO/PG
MF	G9990160		6 x 40 mm		7.70 / III

\* I = minimum inner diameter  
A = nominal outer diameter

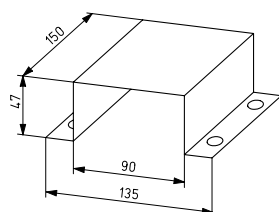


**ACCESSORIES**FOR HEATING TECHNOLOGY / AIR CONDITIONING TECHNOLOGY /  
PLANT ENGINEERING AND SENSOR TECHNOLOGY

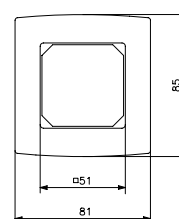
TYPE	ITEM NO.	DESCRIPTION	EURO/PG
ATRS-1	C1809518	Temperature determination set for ATR 83.0...	2.90/II
ET-01	MA990000	Adjusting knob for B1000 series devices, scale: degrees Celsius, pure white glossy	3.40/I
ET-02	MA990001	Adjusting knob for B1000 series devices, multi-digit display 1 to 6, pure white glossy	3.40/I
ET-10	MA990002	Adjusting knob for B2000 series devices, multi-digit display 1 to 6, pure white glossy	3.20/I
FS-HI	H530975	Sensor protection (protective wire braiding) for duct hygrostat HI	17.40/II
FS2-HI	H531011	PTFE filter fine protection for duct hygrostat HI	74.80/II
JZ-04	E6160133	Capillary tube leadthrough for air ducts with 30-cm protective hose (JTF frost protection thermostats, JMT capillary controllers, WR, JET)	14.40/II
JZ-05 / 6 K	C1809536	1 set of mounting brackets (6 pieces) for frost protection thermostat JTF, made of plastic (max. 145 °C)	13.60/II
JZ-05 / 6 M	C1809474	1 set of mounting brackets (6 pieces) for frost protection thermostat JTF, made of metal	14.50/II
JZ-05 / 1 M	C1809462	Single mounting bracket for frost protection thermostat JTF, made of metal	3.20/II
JZ-06 / 1	H5309229	Connection set with duct connections made of plastic, 2 x 90° angles, 2 extensions 90 mm, 4 self-tapping screws, 2-m tube Ø 6 mm outside for JDW differential pressure switch, JDL, DF pressure transducer	10.90/II
JZ-07	E6160145	Mounting bracket for frost protection thermostats JTF	6.40/II
JZ-08	E6150031	Spare vane for wind indication relay JSL	21.80/II
JZ-09	E6140170	Spare paddles (4 pieces), from 1" to 8" for flow monitor JSF	21.80/II
JZ-10	H5309237	Mounting bracket for JDL 109/-113 and JDW-3/-5/-10 with 6 screws	5.80/II
JZ-13	ZA990001	Standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)	5.60/II
JZ-17	MN990001	Adapter plate for Berlin 3000 housing (hard-wired)	7.70/II
JZ-18	MN990002	Adapter snap-on plate (controller is detachable) for Berlin 3000 housing (wireless)	7.70/II
JZ-19	MN990003	Fully prewired plug-in socket (as for RTBSB-001.411), can be fitted with room thermostats RTBSB-001.086 or RTBSB-001.096	41.50/I
JZ-20-1	E6130144	Wall holder including fastening material for duct hygrostat (HI)	22.70/II
JZ-21	MN990006	Adapter frame for mounting devices of the Berlin 1000 series in flush-mounted sockets up to 80 x 80 mm	5.20/I
JZ-24	BN990002	Magnetic fastening set for simple and safe fastening of Multi-channel receiver or wiring strips VOORL	24.30/II
JZ-25	BN990003	External antenna for reception enhancement under difficult reception conditions of the multi-channel receiver, antenna cable (JZ-26) is not a part of the delivery scope	68.70/II
JZ-26	BN990004	Antenna cable 1 m for connecting the external antenna JZ-25 with multi-channel receivers	41.30/II
JZ-27	G9990450	LC-display 3½ digit, for MDEKD	80.60/III
JZ-28	H531012	IP65 cover set, consisting of a cover with pressure compensation element, O-ring and 3 screws, suitable for retrofitting of the types JDL-111, JDL-112, JDL-114, JDL-115 and JDL-116	47.20/II
JZ-29	KA999901	Mounting set RTKSA for THK/NTHK/SWK single thermostat	4.10/II
JZ-30	KA999902	Mounting set RTKSA for THK/NTHK/SWK double thermostat	6.60/II
JZ-31	KA999903	Mounting set RTKSA for pipe mounting as contact thermostat	5.10/II
JZ-32	BN990005	Magnet attachment set for terminal strips VOOPL-216.176/VOOPL-318.178 and radio multi-channel receiver HTFRL-214.240/HTFRL-316.225	18.20/II
JZ-33	KA999904	RTKSA seal set, protection rating: IP54	17.40/II
JZ-090.900	VW000025	alre frame 'Berlin' for all flush-mounted controllers with 50 x 50 cover, pure white, glossy, similar to RAL 9010 Fastening of the VOOPL terminal strip on a metallic substrate (for example, heating manifold)	4.40/I
JZ-090.910	VW000010	alre frame 'Berlin' for all flush-mounted controllers with 50 x 50 cover, pearl white, glossy, similar to RAL 1013	4.40/I
JZ-090.100	VW000048	alre frame 'Berlin' for all flush-mounted controllers with 55 x 55 cover, pure white, glossy, similar to RAL 9010. Fastening of the VOOPL terminal strip on a metallic substrate (for example, heating manifold)	4.40/I
S protection 01	G9990170	Ball impact guard, sun and rain protection; 150 x 90 x 47 mm; stainless steel V4A 1.4571	37.70/III
WP-01	G9990180	heat conduction paste 2 ml	7.20/II

**ILLUSTRATIONS**

S protection 01



alre frame 'Berlin'



**ACCESSORIES**FOR HEATING TECHNOLOGY / AIR CONDITIONING TECHNOLOGY /  
PLANT ENGINEERING AND SENSOR TECHNOLOGY

ET-01



ET-02



ET-10



FS-HI



FS2-HI



JZ-04



JZ-05 / 6 K



JZ-05 / 6 M



JZ-06 / 1



JZ-07



JZ-08



JZ-09



JZ-10



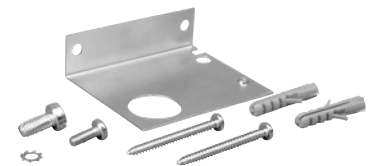
JZ-17



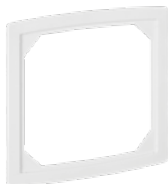
JZ-18



JZ-20-1



JZ-21



JZ-24



JZ-29



JZ-30



JZ-31



JZ-32





## TYPE COMPARISON OVERVIEW

### ROOM TEMPERATURE CONTROLLER MECHANICAL OLD (FTR) AND NEW (RTBSU):

ITEM NO. OLD	OLD TYPE	ITEM NO. NEW	NEW TYPE	REMARKS
UA010017	FTR 101.000#00	UA090000	RTBSU-401.000#00	
UN010009	FTR 101.000#21	UA090014	RTBSU-401.000#21	
UA010134	FTR 101.002#00	UA090001	RTBSU-401.002#00	
UA010222	FTR 101.010#00	UA090002	RTBSU-401.010#00	
UA012404	FTR 101.034#07	UA090004	RTBSU-401.034#00	+ JZ-016.000
UA012405	FTR 101.034#55	UA090004	RTBSU-401.034#00	+ JZ-016.100
UA010702	FTR 101.052#21	UA090015	RTBSU-401.052#21	
UA010811	FTR 101.062#00	UA090003	RTBSU-401.062#00	
UA011000	FTR 101.063#00	UA090006	RTBSU-401.063#00	
UA010910	FTR 101.065#00	UA090007	RTBSU-401.065#00	
UA010415	FTR 101.075#00	UA090008	RTBSU-401.075#00	
UA010615	FTR 101.086#00	UA090009	RTBSU-401.086#00	
UN010607	FTR 101.086#21	UA090016	RTBSU-401.086#21	
UA012008	FTR 101.202#00	UA090010	RTBSU-401.202#00	
UN102009	FTR 101.202#21	UA090010	RTBSU-401.202#00	+ JZ-001.000 + JZ-090.900
UA012301	FTR 101.210#00	UA090011	RTBSU-401.210#00	
UA012500	FTR 101.262#00	UA090012	RTBSU-401.262#00	
UA012501	FTR 101.262#21	UA090012	RTBSU-401.262#00	+ JZ-035.000 + JZ-090.900
UA012600	FTR 101.265#00	UA090017	RTBSU-401.265#00	
UA013000	FTR 101.902#07	UA090013	RTBSU-401.902#07	

SPARE PARTS COVER SETS FTR ON REQUEST.

### TERMINAL STRIP FOR HEATING MANIFOLD:

ITEM NO. OLD	OLD TYPE	REMARKS	ITEM NO. NEW	NEW TYPE	REMARKS
DA480500	VOOPL-215.000	5-channel, IP20	DA480510	VOOPL-216.176	6-channel, IP20
DA480200	VOOPD-215.000	5-channel, IP65	DA480510	VOOPL-216.176	6-channel, IP20
DA480400	VOOPL-318.000	8-channel, IP20	DA480520	VOOPL-318.178	8-channel, IP20
DA480300	VOOPD-318.000	8-channel, IP65	DA480520	VOOPL-318.178	8-channel, IP20

### PLANT ROOM THERMOSTAT OLD (JET-4X/JET-3X) AND NEW (RTKSA):

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS
JET-40	0 to +35 °C	1 K	RTKSA-100.010	-10 to +40 °C	1.3 K
JET-40F	0 to +35 °C	1 K	RTKSA-101.010	-10 to +40 °C	1.3 K
JET-41	0 to +70 °C	2 K	RTKSA-100.110	0 to +50 °C	1.3 K
JET-41F	0 to +70 °C	2 K	RTKSA-101.110	0 to +50 °C	1.3 K
JET-30	10 to 45 °C (external) TR 0 to 35 °C (internal) TW	approx. 1 K	RTKSA-114.110	0 to +50 °C (internal) TW 0 to +50 °C (internal) TW	1.3 K
JET-31	10 to +45 °C (internal) TW 0 to +35 °C (internal) TW	approx. 1 K			

TR = temperature controller, TW = temperature monitor



# TYPE COMPARISON OVERVIEW

## BOILER / VENTILATION THERMOSTATS

(OLD) (KR / LR) AND UNIVERSAL CAPILLARY THERMOSTAT (NEW) (RTKSA):

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS	ACCESSORIES
KR 80.312	fixed at 100 °C	-20 K	RTKSA-003.310	20 to 150 °C	-10 K	THK-2-100 + JZ-29
LR 80.312	fixed at 100 °C	-20 K				SWK-2-100 + JZ-29
KR 80.318	fixed at 100 °C	-20 K				THK-2-200 + JZ-29
LR 80.318	fixed at 100 °C	-20 K				SWK-2-200 + JZ-29
KR 80.309	fixed at 75 °C	-20 K				THK-2-100 + JZ-29
LR 80.309	fixed at 75 °C	-20 K				SWK-2-100 + JZ-29
KR 80.310	fixed at 75 °C	-20 K				THK-2-200 + JZ-29
LR 80.310	fixed at 75 °C	-20 K				SWK-2-200 + JZ-29
KR 80.206	30 to 65 °C	-8 K	RTKSA-002.410	30 to 110 °C	-10 K	THK-2-100 + JZ-29
KR 80.206 IP54	30 to 65 °C	-8 K				THK-2-100 + JZ-29
KR 80.207	60 to 95 °C	-8 K				THK-2-100 + JZ-29
LR 80.207	60 to 95 °C	-8 K				SWK-2-100 + JZ-29
KR 80.208	85 to 120 °C	-8 K	RTKSA-002.310	20 to 150 °C	-10 K	THK-2-100 + JZ-29
KR 80.202	95 to 130 °C	-8 K				THK-2-100 + JZ-29
KR 80.203	95 to 130 °C	-8 K				THK-2-200 + JZ-29
LR 80.203	95 to 130 °C	-8 K				SWK-2-200 + JZ-29
KR 80.203 IP54	95 to 130 °C	-8 K				THK-2-200 + JZ-29
WR 81.029-1	0 to 35 °C	0.5-1 K	RTKSA-000.100	0 to 50 °C	1.3 K	-
KR 80.003-1	0 to 35 °C	1 K				THK-2-200 + JZ-29
LR 80.003-1	0 to 35 °C	1 K				SWK-2-200
WR 81.009-2	0 to 70 °C	1-2 K	RTKSA-000.200	0 to 120 °C	3 K	-
KR 80.035-2	0 to 70 °C	2 K				THK-2-100 + JZ-29
KR 80.027-5	0 to 70 °C	5 K				THK-2-100 + JZ-29
LR 80.027-5	0 to 70 °C	5 K				SWK-2-100 + JZ-29
LR 80.035-2	0 to 70 °C	2 K				SWK-2-100 + JZ-29
KR 80.028-2	0 to 70 °C	2 K				THK-2-200 + JZ-29
LR 80.028-2	0 to 70 °C	2 K				SWK-2-200 + JZ-29
KR 80.029-2	0 to 70 °C	2 K				THK-2-280 + JZ-29
KR 80.029-2 V4A	0 to 70 °C	3 K				NTHK-2-280 + JZ-29
LR 80.029-2	0 to 70 °C	2 K				SWK-2-280 + JZ-29
KR 80.011-1 V4A	10 to 45 °C	1 K				NTHK-2-120 + JZ-29
KR 80.009-1 V4A	10 to 45 °C	1 K				NTHK-2-200 + JZ-29
KR 80.000-5	35 to 95 °C	5 K				THK-2-100 + JZ-29
KR 80.001-5	35 to 95 °C	5 K				THK-2-200 + JZ-29
KR 80.001-5 V4A	35 to 95 °C	5 K				NTHK-2-200 + JZ-29
KR 80.008-8	40 to 110 °C	8 K				THK-2-100 + JZ-29



## TYPE COMPARISON OVERVIEW

**BOILER / VENTILATION THERMOSTATS (OLD) (KR / LR) AND UNIVERSAL CAPILLARY THERMOSTAT (NEW) (RTKSA):**

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS	ACCESSORIES
KR 80.006-8	50 to 130 °C	8 K	RTKSA-000.300	20 to 150 °C	9.1 K	THK-2-100 + JZ-29
WR 81.101-1	0 to 35 °C	0.5–1 K	RTKSA-001.100	0 to 50 °C	1.3 K	-
WR 81.129-1	0 to 35 °C	0.5–1 K				-
KR 80.108-1	0 to 35 °C	1 K				-
LR 80.108-1	0 to 35 °C	1 K				-
KR 80.109-1	0 to 35 °C	1 K				THK-2-200 + JZ-29
LR 80.109-1	0 to 35 °C	1 K				SWK-2-200 + JZ-29
WR 81.115-5	0 to 70 °C	4 K				RTKSA-001.200
WR 81.109-2	0 to 70 °C	1–2 K	-			
KR 80.116-2	0 to 70 °C	2 K	THK-2-100 + JZ-29			
LR 80.116-2	0 to 70 °C	2 K	SWK-2-100 + JZ-29			
KR 80.111-3	0 to 80 °C	1 K	THK-2-100 + JZ-29			
KR 80.120-1	10 to 45 °C	1 K	THK-2-200 + JZ-29			
LR 80.120-1	10 to 45 °C	1 K	SWK-2-200 + JZ-29			
KR 80.100-5	35 to 95 °C	5 K	RTKSA-001.301	20 to 150 °C	3.3 K	THK-2-100 + JZ-29
KR 80.100-5 IP54	35 to 95 °C	5 K				NTHK-2-100 + JZ-29
KR 80.101-5	35 to 95 °C	5 K				THK-2-200 + JZ-29
LR 80.101-5	35 to 95 °C	5 K				SWK-2-200 + JZ-29
KR 80.124-5	35 to 95 °C	5 K				THK-2-280 + JZ-29
KR 80.112-5	35 to 95 °C	8 K				RTKSA-001.300
KR 80.102-8	40 to 110 °C	8 K	THK-2-100 + JZ-29			
KR 80.103-8	40 to 110 °C	8 K	THK-2-200 + JZ-29			
WR 81.117-5	50 to 130 °C	4 K	JZ-31			
KR 80.106-8	50 to 130 °C	8 K	THK-2-100 + JZ-29			

**FROST PROTECTION THERMOSTAT OLD (JTF-1XX) AND NEW (RTKSA):**

OLD ALRE TYPES	CAPILLARY LENGTH	GENERAL FEATURES	NEW ALRE TYPES	CAPILLARY LENGTH	GENERAL FEATURES
JTF-101	6 m	Protection rating: IP54 Hysteresis: approx. 1 K Control range: –8 to +8 °C Tmax sensor: 150 °C	RTKSA-204.200	6 m	Protection rating: IP40 Hysteresis: approx. 1.5 K Control range: –10 to +15 °C Tmax sensor: 120 °C
JTF-103	1.8 m		RTKSA-204.000	1.8 m	
JTF-105	3 m		RTKSA-204.100	3 m	
JTF-112	12 m		RTKSA-204.300	12 m	



# TIPS FOR HEATING INSTALLERS AND ELECTRICIANS

## BERLIN 1000 / 2000 / 3000 – BIMETAL

PROBLEM	CAUSE
Large temperature variation present in the room (approx. 5–8 K).	<ol style="list-style-type: none"> <li>1.) The neutral conductor N is not connected to terminal 4 of the controller.</li> <li>2.) The neutral conductor N is connected to terminal 4 of the controller, but not in the distribution system (distribution box, fuse box).</li> </ol>
The setting knob (setpoint transmitter) must be set higher than the desired room temperature.	<ol style="list-style-type: none"> <li>1.) Incoming and outgoing (switched) phase have been interchanged. As a result, the feedback resistor continuously carries a voltage and acts like a temperature reducer in the room. Moreover, the temperature variation is very high (approx. 5–8 K)</li> <li>2.) The heating output is dimensioned too low for the room. As a result of this, the power-on time of the controller is too long; the feedback resistor is thus switched on for too long and acts as a temperature reducer in the room.</li> <li>3.) External heat sources are influencing the controller (for example, the sun, TV, lamp etc.). These external heat sources cause the controller to register a higher-than-actual temperature and, as a result, the room is not heated sufficiently.</li> </ol>
The setting knob (setpoint transmitter) must be set lower than the desired room temperature.	<ol style="list-style-type: none"> <li>1.) The controller has been installed, for example, behind a curtain or on an outer wall or next to a door. The controller registers a lower-than-actual temperature and, as a result, the room is overheated.</li> </ol>
The room does not become warm.	<ol style="list-style-type: none"> <li>1.) Faulty actuator element, actuator element does not open the valve.</li> <li>2.) There may be coarse construction site dirt in the controller. This dirt is preventing the contact from closing.</li> <li>3.) The controllers of two rooms have been connected in series. These rooms only become warm when both controller contacts are closed.</li> </ol>

TOPIC	NOTE
Reaction times – underfloor heating	<ol style="list-style-type: none"> <li>1.) Particularly with floor heating, it is important to remember that there are very long reaction times. Therefore, the room heats up very slowly and also cools slowly (incident sunlight, for example, results in overheating). So do not expect that a cold room will reach the desired room temperature within a short time after having set the adjusting knob to a high value.</li> </ol>
Room temperature in well-insulated rooms	<ol style="list-style-type: none"> <li>2.) Also, with well insulated rooms, remember that the room temperature drops very slowly. As a result, it can happen that at night, despite 'Reduced operation' (for example, 4 K lower), the room temperature drops only a little and the heating therefore does not get activated for a prolonged time.</li> </ol>
Installation instructions – bimetal controllers	<ol style="list-style-type: none"> <li>3.) Very often, the function of bimetal controllers is impaired or rendered completely useless by construction site dirt that has penetrated into them. Therefore, the controllers should be installed only after any required spatula, painting or wallpapering work. Avoid drilling dust without fail.</li> </ol>

## PLANT ENGINEERING

TOPIC	NOTE
Connecting industrial thermostats and controllers to PLC or DDC	For connecting industrial thermostats and controllers to programmable logic controllers (PLC) or direct digital controls (DDC), the use of normal commercial coupling relays with 230 V~ coil voltage and gold-plated switching contacts is recommended.





# ECODESIGN DIRECTIVE

The Ecodesign Directive (EU 2015/1188) sets forth essential regulations for the marketing and implementation of household local space heaters. This directive, effective from August 10, 2015, with a transitional phase until January 1, 2018, aims to foster environmentally friendly design and labeling of local space heaters, ultimately leading to reduced energy consumption.

At alre, we fully support this initiative and the push towards energy-saving control technology. For nearly five decades, our focus has been on the development and production of innovative products that are optimized for energy efficiency. This commitment aligns perfectly with the goals of the Ecodesign Directive, as we continue to contribute to a more sustainable future.









The Directive distinguishes between different types of heating, electric local space heaters and local space heaters for gaseous or liquid fuels. The electric local space heaters are additionally subdivided into:

- + **portable local space heaters,**
- + **fixed local space heaters,**
- + **storage local space heaters,**
- + **underfloor local space heaters and**
- + **Radiant local space heaters.**

Central space heaters that distribute heat to different rooms via a liquid medium are not affected by this regulation.

The following table lists the products that comply with the Directive for use in portable local space heaters, fixed local space heaters and underfloor local space heaters. If you have any questions about suitable products for other types of heating, please do not hesitate to contact us.



PRODUCTS/PRODUCT GROUPS	ELECTRIC LOCAL SPACE HEATERS		
	PORTABLE	FIXED	UNDER-FLOOR
<p>HTRRUu 210.021 see 'Heating technology' section</p> 	<b>x</b>	<b>x</b>	<b>x</b>
<p>HTRRBu 110.1xx/21 see 'Heating technology' section</p> 	<b>x</b>	<b>x</b>	<b>x</b>
<p>Wireless system without weekly programme  <b>Actuators: HTFRB, HTFRE, HTFRU</b>  <b>Sensors: FTRFB</b>                      see 'Wireless systems' section</p> 	<b>x</b>		
<p>Wireless system with weekly programme*  <b>Actuators: HTFRB, HTFRE, HTFRU</b>  <b>Sensors: FTRFB, FTRFBu, FTRFUd</b>                      see 'Wireless systems' section</p> 	<b>x</b>	<b>x</b>	<b>x</b>
<p>RTBSU-401.xxx                      RTBSB-001.xxx                      RTBSB-001.4xx                      see 'Heating technology' section</p> 	<b>x</b>		
<p>RTBSU-401.xxx or RTBSB-001.xxx                      (variants with clock input) in conjunction with clock thermostat**                      see 'Heating technology' section</p> 	<b>x</b>	<b>x</b>	<b>x</b>
<p>RTERU-010.715                      HTRRB-01x.xxx                      see 'Heating technology' section</p> 	<b>x</b>		
<p>RTERU-010.715 or                      HTRRB-01x.xxx                      in conjunction with clock thermostat**                      see 'Heating technology' section</p> 	<b>x</b>	<b>x</b>	<b>x</b>

\* Sensors with clock required in each room or master-slave control with central clock programme (transfer of central sensor functions with clock).

\*\* Transfer of clock thermostat functions via clock output to the corresponding clock input of other thermostats.



# FUNDING OPPORTUNITIES WITH THE **BAFA SUBSIDY PROGRAMME**

HEAT  
INTELLIGENTLY –  
SECURE **A**  
**20 PER CENT  
SUBSIDY**  
FOR THE  
OPTIMISATION OF  
YOUR HEATING  
SYSTEM NOW.

Obsolete technology and non-coordinated plant components often lead to excessive energy consumption. However, many homeowners shy away from renovating their heating systems because they fear high costs.

For this reason, the German Federal Office for Economic Affairs and Export Control (BAFA) has launched a subsidy programme for heating optimisation. The aim of the subsidy programme is to motivate homeowners to renew their heating systems with attractive, non-repayable subsidies. Among other things, this is intended to make an important contribution to the environmentally friendly supply of heat in Germany.

In January 2021, the grant funding for individual measures came into effect as part of the German Federal Subsidy Programme for Efficient Buildings (Bundesförderung für effiziente Gebäude – Einzelmaßnahmen, BEG EM), with which applications for subsidising individual measures can now also be submitted to the BAFA. Central space heaters that distribute heat to different rooms via a liquid medium are not affected by this regulation.





# WHAT IS SUBSIDISED?

AND DOES THE SUBSIDY ALSO APPLY TO ALRE PRODUCTS?

Within the framework of BAFA subsidies, two measures for heating optimisation are subsidised at 20 per cent by the state:

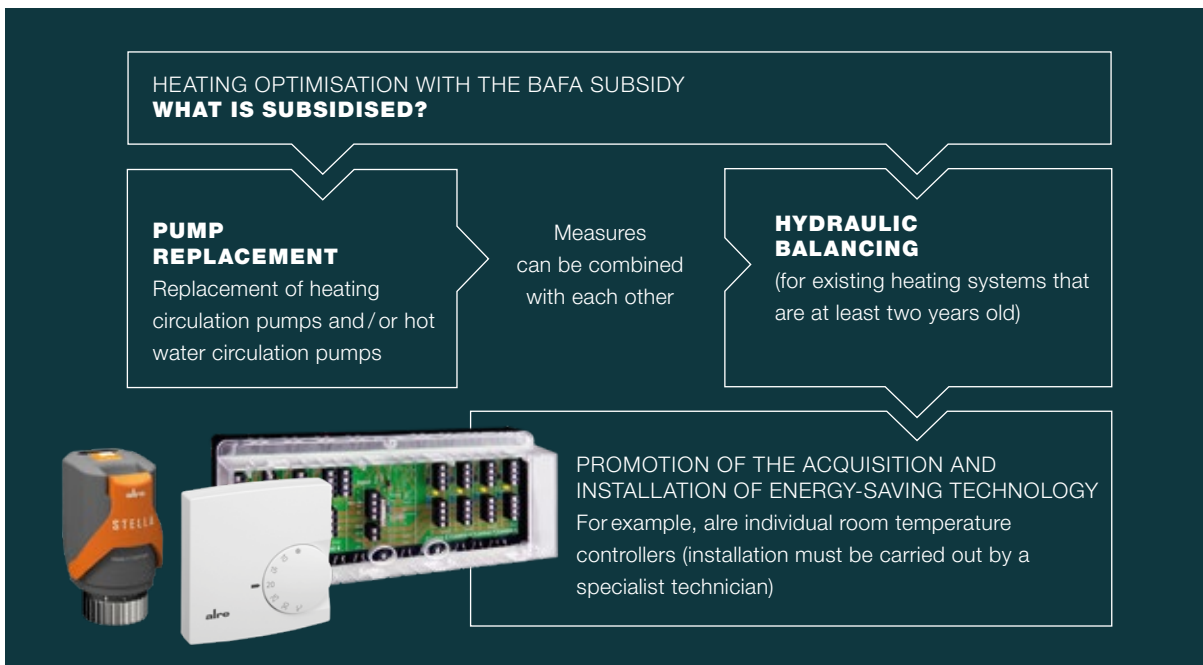
**1. Climate-friendly heating using renewable energies**

(for example, heat pumps, pellet heating systems, hybrid heating systems or solar thermal power plants) – 20 to 45 per cent subsidy

**2. Measures for optimising heating**

(for example, hydraulic balancing including the replacement of heating pumps) – 20 per cent subsidy


For heating optimisation via hydraulic balancing, you can also have our energy-saving alre controllers installed by a specialist technician. The acquisition and installation costs are also subsidised at 20 per cent.





# WHO CAN APPLY FOR THE SUBSIDY?

In principle, private individuals, companies, freelancers, municipalities, regional authorities and special-purpose associations as well as other legal entities under private law (in particular associations, foundations, non-profit organisations or cooperatives) are entitled to support. The German Federal Government, German Federal States and their institutions are excluded from funding.

Further information on the contents, procedures and terms and conditions can be found at [www.bafa.de](http://www.bafa.de)

**1. Step**  
 Register on the BAFA website

**2. Step**  
 Contract a specialist technician and optimise the heating system

**3. Step**  
 Submit the subsidy application and invoice copy



# SENSOR CHARACTERISTIC CURVES

## TABLE OF SENSOR VALUES

TEMPERATURE	PT 100	PT 1000	NI 1000	'SENSOR 0' NTC 2K25	'SENSOR 1' NTC 1KO	'SENSOR 2' NTC 47K	'SENSOR 3' NTC 8K
°C	Ω	Ω	Ω	Ω	Ω	Ω	Ω
-50	80.30	803.00	742.55	151398	32540	3152409	537827
-45	82.30	823.00	766.76	106557	24432	2230085	378534
-40	84.30	843.00	791.31	75923	18515	1595524	269709
-35	86.20	862.00	816.21	54731	14156	1153886	194427
-30	88.20	882.00	841.46	39895	10916	843120	141724
-25	90.20	902.00	867.04	29390	8486	622133	104107
-20	92.20	922.00	892.96	21871	6648	463401	77696
-15	94.10	941.00	919.22	16434	5248	348285	58379
-10	96.10	961.00	945.82	12462	4172	264028	44269
-5	98.00	980.00	972.74	9533	3340	201812	33866
0	100.00	1000.00	1000.00	7355	2691	155480	26126
5	102.00	1020.00	1027.59	5719	2182	120696	20318
10	103.90	1039.00	1055.52	4482	1780	94377	15923
15	105.80	1058.00	1083.77	3539	1460	74314	12570
20	107.80	1078.00	1112.36	2813	1205	58910	9994
25	109.70	1097.00	1141.29	2252	1000	47000	8000
30	111.70	1117.00	1170.56	1814	834	37732	6445
35	113.60	1136.00	1200.16	1471	699	30472	5224
40	115.50	1155.00	1230.11	1199	588	24750	4260
45	117.50	1175.00	1260.41	984	498	20214	3494
50	119.40	1194.00	1291.05	811	423	16597	2882
55	121.30	1213.00	1322.05	673	361	13697	2389
60	123.20	1232.00	1353.40	560	309	11360	1991
65	125.50	1252.00	1385.12	469	266	9466	1667
70	127.10	1271.00	1417.21	395	230	7925	1402
75	129.00	1290.00	1449.67	334	199	6664	1185
80	130.90	1309.00	1482.50	283	173	5627	1006
85	132.80	1328.00	1515.73	241	151	4771	857
90	134.70	1347.00	1549.34	207	133	4062	734
95	136.60	1366.00	1583.36	177	117	3471	631
100	138.50	1385.00	1617.79	153	103	2978	544
105	140.40	1404.00	1652.62	132	91	2563	471
110	142.30	1423.00	1687.89	115	81	2215	409
115	144.20	1442.00	1723.58	100	72	1919	356
120	146.10	1461.00	1759.72	88	64	1669	12
125	148.00	1480.00	1796.30	77	57	1456	273
130	149.80	1498.00	1833.35	68	51	1274	240
140	153.60	1536.00	1908.87	53	41	984	188
150	157.30	1573.00	1986.35	42	34	769	148



# SENSOR CHARACTERISTIC CURVES

## TABLE OF SENSOR VALUES

TEMPERATURE	'SENSOR 4' NTC 10K	'SENSOR 5' NTC 50K	'SENSOR 6' NTC 100K	'SENSOR 8' NTC 2K	'SENSOR 51' KTY 81-121	'SENSOR 57' KTY 11-7
°C	Ω	Ω	Ω	Ω	Ω	Ω
-50	672283	2820844	8276704	77977	510	1051
-45	473168	2027885	5751387	57655	535	1103
-40	337137	1473182	4044707	43039	562	1156
-35	243033	1080969	2877133	32427	589	1212
-30	177155	800794	2069021	24651	617	1269
-25	130508	598684	1503450	18902	647	1328
-20	97120	451517	1103398	14615	677	1390
-15	72973	343390	817535	11391	708	1453
-10	55337	263262	611269	8947	740	1518
-5	42333	203390	461045	7079	773	1586
0	32658	158300	350656	5642	807	1655
5	25397	124082	268840	4527	842	1726
10	19903	97925	207702	3657	877	1799
15	15713	77789	161654	2973	914	1874
20	12492	62184	126708	2431	951	1951
25	10000	50000	100000	2000	990	2030
30	8056	40455	79428	1654	1029	2111
35	6530	32910	63489	1376	1070	2194
40	5325	26916	51056	1151	1111	2279
45	4368	22129	41297	967	1153	2366
50	3602	18285	33591	816	1196	2456
55	2986	15182	27470	693	1241	2545
60	2488	12664	22582	590	1286	2638
65	2084	10612	18656	505	1331	2733
70	1753	8931	15478	434	1378	2829
75	1481	7547	12917	374	1426	2928
80	1258	6404	10821	324	1475	3029
85	1072	5456	9105	282	1525	3131
90	917	4665	7693	246	1575	3236
95	788	4004	6527	215	1627	3342
100	680	3448	5559	189	1679	3451
105	588	2980	4752	167	1732	3561
110	511	2584	4077	147	1786	3674
115	445	2248	3511	130	1841	3788
120	389	1962	3033	116	1896	3905
125	342	1717	2629	103	1950	4023
130	301	1507	2287	91	2003	4143
140	235	1171	1745	73	2103	4390
150	185	920	1348	60	2189	4644





# TECHNICAL TERMS

TECHNICAL TERMS	DEFINITION/EXPLANATION
<b>Range limitation (mechanical):</b>	Below the adjusting knob, there are 'setting flags' (red/blue) for mechanically delimiting the min./max. temperature range. In this manner, an undesired mis-setting of the setpoint can be prevented, for example, in children's rooms or public buildings.
<b>Bimetal:</b>	Thermo-bimetal is generally constructed of layers of metal or alloys of more or less the same thickness, which are firmly joined to one another and have different coefficients of thermal elongation. As a result, they bend under temperature changes, so that upon heating, the side with the component that has a lower heat elongation becomes hollow. The heat is transferred by conduction, radiation or convection from the surroundings (indirect heating).
<b>Defrosting:</b>	Defrosting is the regular de-icing or heating up of the heat exchanger or cooling unit to maintain efficient operation of the system.
<b>Intrinsic safety (JTU, JTL)</b>	Intrinsic safety / protection against cold: The devices are intrinsically safe, i.e., upon loss of the sensor medium owing to sensor rupture, for example, the burner is switched off. Since minus temperatures generate the same effect through volume reduction of the sensor medium, the devices are adjusted by means of the 'cold screw' such that they switch off the burner only at temperatures below $-15\text{ }^{\circ}\text{C}$ . They can only be switched on again manually at temperatures above approx. $-5\text{ }^{\circ}\text{C}$ by means of the manual reset button.
<b>Air conditioner, 2-pipe fan convector (fan coil):</b>	The 2-pipe air conditioners are supplied with heating or cooling water for heat exchange, depending on the requirement, through the same pipe system via 2 pipes (inflow and outflow).
<b>Air conditioner, 4-pipe fan convector (fan coil):</b>	The 4-pipe air conditioners are supplied with heating or cooling water for heat exchange, depending on the requirement, through a heating circuit and a cooling circuit (4 pipes).
<b>Cooling ceiling:</b>	The cooling ceiling belongs to the group of panel heaters. Cooling ceilings are used often in office spaces for passive cooling. In such systems, cold water (usually at $16\text{ }^{\circ}\text{C}$ ) flows through a network of pipes and cools the room air. Lower inflow temperatures are not possible because of condensation water formation.
<b>Neutral zone:</b>	The control range in which neither heating nor cooling takes place is called the neutral zone.
<b>NC contact (bimetal):</b>	The control contact opens with increasing temperature and closes at dropping temperature (for 'heating').
<b>Proportional band (p-band):</b>	The proportional band is the range around the target temperature within which the controller delivers a steady output signal. This means that the room temperature is kept more or less constant within the proportional band by the controller (if the heating capacity is sufficient).
<b>2-point control (ON/OFF control):</b>	Control algorithm which, for example, switches off the output when the set temperature is exceeded and switches it on again when the current temperature falls short of the setpoint value. The temperature in the room is always subject to certain variations (control deviations). This deviation results from the switching temperature difference of the controller and the properties of the room, such as heating speed, heat loss etc.
<b>3-point control:</b>	In a 3-point control system, the controller can change between the operating modes heating, neutral zone and cooling.
<b>PWM (pulse width modulation):</b>	Process for generating a continuous-like transmission behaviour in a control path. By varying the power-on time at the input, owing to the time constant of the transmission path, a continuous-like (smooth) signal waveform is generated at its output.
<b>Switching difference (hysteresis):</b>	Difference between the switching on and switching off of the heater or the controller. a) There is the switching temperature difference of the controller, which depends on the construction of the device. b) There is the switching temperature difference of the room, which is dependent on the behaviour of the entire control path, i.e. on the floor design, the action of external heat sources, the installation location of the controller and the controller itself. The switching temperature difference always refers to the controller. It does not express the actual switching temperature difference of the control path. The latter changes according to the deployment location and conditions. Any indoor temperature is constantly subject to variations. This deviation results from the switching temperature difference of the controller and the properties of the room, such as heating speed, heat loss etc.
<b>NO contact (bimetal):</b>	NO contact (bimetal): The control contact closes with increasing temperature and opens at dropping temperature (for 'cooling').
<b>Toggler (bimetal):</b>	This is a toggler with an NC contact and an NO contact. It operates as described for NC and NO contacts.
<b>Split unit / multi-split unit:</b>	Split AC units consist of at least two heat exchangers in which one is installed as a vaporiser in the rooms to be cooled and the other serves as a condenser for heat dissipation. Most split units allow reverse operation for heating the rooms if this is required. Multi-split units consist of several vaporisers connected to a condenser (liquefier).
<b>Valve actuator:</b>	Electrical controllable valve for regulating, for example, the hot water flow in heating systems. A distinction is made here between ON/OFF valve actuators and proportional valve actuators. Proportional valves are designed for connecting controllers with a continuous control mode.



# TECHNICAL TERMS

TECHNICAL TERMS	DEFINITION/EXPLANATION
<b>Continuous control:</b>	The controller provides an analogue output signal. The value of the output signal changes continuously, i.e., without any steps or jumps, in response to the output signal.
<b>Temperature reduction (TR):</b>	The TR is also implemented via a resistor, as is the case with thermal recirculation. This resistor is activated manually or by a timer. As a result, the bimetal is made to feel a simulated temperature that is about 4 K higher than the actual temperature in the room. Consequently, in a room with a controller setting of, for example, 20 °C, the temperature in the room can drop to a value 4 K lower, to max. 16 °C. If the temperature drops further, the heating system switches on again, and at > 16 °C, it gets switched off. The magnitude of the temperature reduction to be actually achieved depends on the insulation of the building and the reduction period (one night, weekend, holiday).
<b>Thermal recirculation (RF):</b>	By means of an additional integrated heating resistor, the controller is made to switch off at the right time during the heating process. As a result, exceeding the desired room temperature is minimised, and there is a smaller switching difference.
<b>Heat pump:</b>	Rooms can be cooled or heated with heat pumps. Modern systems allow efficient heating and cooling operation since they allow reversible process reversing.
<b>Reversing valve:</b>	A reversing valve (4-way control valve) facilitates a reversing cycle by turning the condenser (liquefier) into an evaporator which causes the cooling unit to heat up or defrost.
<b>Valve protection function</b>	Valve and pump protection serves to prevent the valve seat and /or pumps from corroding during long downtimes. It is recommended to activate valve protection for hot water heating systems. If valve and pump protection is activated, the valve or a heating pump is operated once on Mondays between 1100hrs and 1200hrs for 5 minutes. Valve and pump protection only becomes active if no heating has taken place within the last week. This avoids unnecessary additional heating at times of year when heating is in use and does not affect the control system.
<b>Evaporator /liquefier:</b>	A liquefier or condenser is a heat exchanger in a cooling unit that liquefies a gaseous medium through the dissipation of heat. Usually, further cooling of the cooling agent takes place in the liquefier. According to the definition of terms in the European Standard EN 378 Part 1, the condenser in cooling units is called the liquefier in order to easily distinguish it from an electrical condenser. The vaporiser implements the opposite process, evaporating the liquid medium by heating it up.

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# TERMS AND CONDITIONS OF SALE AND SUPPLY

## THE ALRE-IT

### 1. GENERAL

In addition to the General Terms and Conditions of Delivery for Products and Services of the Electrical Industry and the Green Terms and Conditions of Delivery as of January 2022 (hereinafter referred to as 'GL'), the following provisions shall apply to all business relations with our customers who are contractors, legal entities under public law or special funds under public law (hereinafter referred to as 'Customer'). These can be viewed and downloaded on our website at [www.alre.de](http://www.alre.de). We are the 'Supplier' as defined by the GL.

### 2. QUOTATIONS

2.1. Our offers are subject to change and without obligation, unless we have expressly designated them as binding.

2.2. Declarations of acceptance and purchase orders need our confirmation (in written and/or electronic form) for them to become legally valid; the same applies to supplements, changes and subsidiary agreements. Drawings, illustrations, dimensions and other performance data are only binding if such terms are expressly agreed upon.

### 3. PRICES AND PRICE ADJUSTMENT

3.1. In addition to the regulations in Art. II (1) of the GL, freight, insurance and customs costs are not included in the prices.

3.2. Price changes caused by changes to the contract product or by changes to the requirements of the contract product are negotiated and determined on the basis of a joint cost analysis.

### 4. DEADLINES FOR DELIVERY/DELAY

In addition to the provisions in Art. IV (2) of GL, we will inform the Customer immediately if the service is not available within the extended delivery periods. In this case, we shall be entitled to withdraw from the contract

in whole or in part. Any consideration already rendered by the Customer shall be reimbursed by us without delay. The case of

non-availability of the service in this sense shall include in particular the failure of our suppliers to deliver to us on time if we have concluded a congruent hedging transaction or if neither we nor our suppliers are at fault.

### 5. LIABILITY

5.1. In principle, our liability is based on GL, in particular Art. XII.

5.2. In addition to Art. IV (4), Art. VIII (12) and Art. XI (1) of GL, we, our legal representatives, executive employees or agents shall be liable under this contract for minor negligence in the event of a breach of an 'essential' obligation under this contract. 'Essential' obligations are those obligations which are necessary for the performance of the contract and the breach of which would jeopardise the achievement of the purpose of the contract and on the observance of which the Customer may therefore regularly rely. In these cases, liability is limited to typical and foreseeable damages.

### 6. PACKAGING

The packaging will not be taken back, unless this is required by law.

### 7. TERMS OF PAYMENT

In addition to Article II of GL, the following provisions shall apply:

7.1. Our invoices are payable within 30 days from the date of invoice.

7.2. The Customer shall be in default upon expiry of the aforementioned payment period. The amount to be paid shall bear interest during the period of default at the applicable statutory default interest rate. We reserve the right to assert further claims for damages caused by default.

7.3. Once an agreement is made, we are entitled to make a delivery in whole or in part only against advance payment or cash on delivery.

7.4. If it becomes apparent after conclusion of the contract that our claim to payment is at risk due to the purchaser's inability to

pay, we shall be entitled – if applicable, after setting a deadline (Section 321 of the German Civil Code (BGB)) – to withdraw from the contract in accordance with the statutory provisions on refusal of performance.

7.5. The Customer shall only be entitled to retention rights to the extent that his claim has been legally established or is undisputed. In the event of defects in the delivery, the Customer's counter rights, in particular the rights under Art. VIII (6) of the GL shall remain unaffected.

## 8. MATERIAL DEFECTS

8.1. In deviation from Art. VIII (1)(1) of the GL, exclusively Section 434 is valid.

8.2. Supplementary to item. VIII of GL, the purchaser's claims for defects presuppose that it has complied with its statutory obligations to inspect and give notice of defects (Sections 377, 381 of the German Commercial Code – HGB). The Customer must inspect the goods immediately after delivery. Obvious defects must be reported in writing by the Customer immediately, on the seventh day at latest. If a hidden defect only becomes apparent at a later date, the Customer must nevertheless notify us of this in writing immediately after becoming aware of it.

8.3. Supplementary to item. VIII of GL, there shall be no warranty claims if our operating or assembly instructions are not followed, changes or repair work are carried out on our products or parts are replaced or our products are used contrary to the contractually stipulated suitability. The same applies if the purchaser, in a manner that is not transparent to us, joins, mixes or processes our products, contrary to their normal and/or usual suitability, with his products or products of third parties, or uses our products contrary to the state of science and technology, or in any other manner contrary to their normal and/or usual suitability.

8.4. Technical data on our products in offers, catalogues and other product descriptions has been determined by us in a suitable test environment (we will be happy to provide information on request)

and represents the sole basis for agreed quality. Testing for suitability for the purpose intended by the Customer or for the use of the part under specific usage conditions is the responsibility of the Customer; we do not provide any kind of guarantee.

8.5. Subsequent performance does not include the removal of the defective item or its re-installation if we were not originally obliged to install it.

8.6. In addition to Art. VIII (10 and 11) of the GL, Section 439 BGB remains unaffected. Section 8.2 remains unaffected.

## 9. USE OF THE B@HOME SYSTEM

The Terms of Use available on our website at [www.alre.de](http://www.alre.de) apply for the use of the b@home portal and the b@home app including the updates ('b@home system'), which are made available to the Customer by us. Should the Customer use the b@home system for a company, he accepts the validity of these terms of use in a legally binding manner for this company.

**Last updated: December 2022**

# GENERAL NOTES

## THE ALRE-IT

### SAFETY REGULATIONS

When handling products, the applicable EU Directives and the assembly and installation instructions in the operating manuals must be followed without fail.

### NOTES ON TECHNICAL DATA

Technical data has been determined by us in a suitable test environment (we will be happy to provide information on request) and represents the sole basis for agreed quality. All the equipment and components shown in this catalogue may only be used in keeping with their intended purpose. Testing for suitability for the purpose intended by the Customer/client or for the use of the part under specific usage conditions is the responsibility of the Customer/client; we do not provide any kind of guarantee.

We reserve the right to make changes to products and documentation as may be required for technical progress and continuous improvement and therefore, there may be deviations from the information in the catalogue. Printing errors excepted.

Any reproduction of this documentation, even in extract form, is not permitted without the consent of ALRE-IT Regeltechnik GmbH, Berlin. The place of jurisdiction is Berlin.

This price list is valid as of **01.01.2024**. This price list supersedes all previous price lists and renders them invalid. A significant increase in the market price of raw materials and electronic components has led to us also having adjusted our prices.

We reserve the right to make changes.

### REACH, ROHS, WEEE

**REACH:** The company ALRE-IT Regeltechnik exclusively sells non-chemical products (articles) from which no substance is released under normal and reasonably foreseeable conditions of use. The products of ALRE-IT Regeltechnik GmbH and their packaging comply with the permissible threshold values for substances on the candidate list according to REACH Regulation 1907/2006 and all the published amendments (provisions) pertaining to it.

**RoHs:** As of 01/07/2013 the CE marking confirms that the respective products comply with the requirements of the RoHS 2011/65/EU and (EU) 2015/863 Directives.

**WEEE:** The company ALRE-IT Regeltechnik is registered as a manufacturer according to Section 3 (9) of the ElektroG (German Electricals Act) and under the registration number DE 58457361 at the EAR. All products manufactured by ALRE-IT Regeltechnik that fall within the scope of the ElektroG meet the legal requirements and thus ensure the proper collection, storage, recycling and environmentally friendly disposal of old equipment.

### PRODUCT TESTING

For information on our declarations of conformity and various product tests, please visit our website at **[www.alre.de](http://www.alre.de)**.

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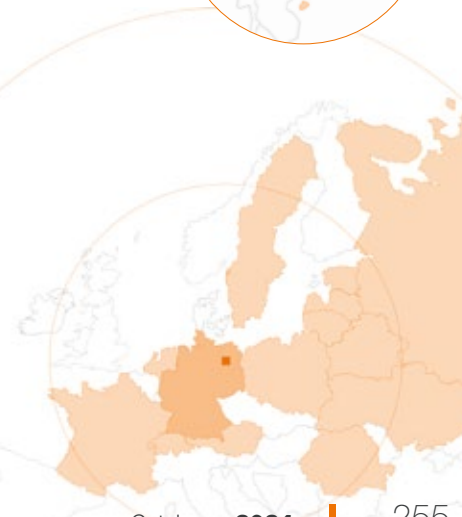
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