

BUILDING AUTOMATION
CONTROL TECHNOLOGY
SENSOR TECHNOLOGY

alre



THERMOSTATS FOR CONTROL CABINETS

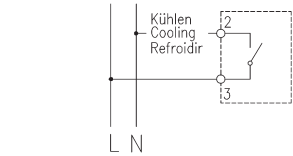
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Thermostats for Control Cabinets RTBSS

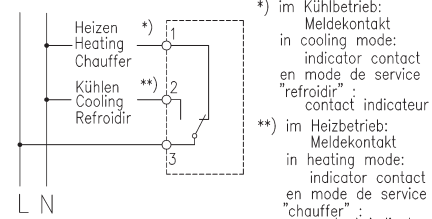
Thermostat with bimetallic sensor

	Technical specifications	Application
	Operating voltage:	24 ... 250V~ / 24 ... 48V — (changer only)
	Sensor:	bimetal
	Switching capacity:	N/C contact/ N/O contact 24V~ 250V~/10(2)A, 24V — ... 48V — max. 30W changer contact cooling: 24V~ 250V~/10(2)A, 24V — ... 48V — max. 30W changer contact heating: 24V~ 250V~/10(2)A, 24V — ... 48V — max. 30W
	Contact:	1 N/O contact (heating), 1 N/C contact (cooling) or 1 changer contact (heating/cooling)
	Switching differential:	see Table
	Equipment:	Outside setting, twist-type knob
	Protection Type:	IP30
	Protection class:	0 (protection class must be ensured by the installation site)
	Type of connection:	Screw terminals 0,5 ... 2,5mm²
	Type of installation:	on DIN-bar (35mm)
	Ambient air temperature:	-20T40 (-20 ... 40°C) 0T60 (0 ... 60°C)
	Enclosure:	Plastic, gray (RAL7035)
	Weight:	approx. 50g
	Certifications:	UL, VDE (only 0...60°C types)

RTBSS 110.xxx (N/C contact)



RTBSS 111.xxx (N/C contact)



RTBSS 112.xxx (changer contact)
RF nur bei RTBSS-112.x11

Type	Product No.	Setting range	Switching differential	Equipment	Scale	WG
RTBSS-110.250/04	ZN111524	0 ... 60 °C	4 ... 7K	N/C contact (heating)	red	II
RTBSS-111.250/05	ZN112525	0 ... 60 °C	4 ... 7K	N/O contact (cooling)	blue	II
RTBSS-112.250/07	ZN113527	0 ... 60 °C	4 ... 7K	Changer (heating and cooling)	gray	II
RTBSS-112.130	ZA113310	-20 ... 40 °C	<3K	Changer (heating and cooling)	gray	II
RTBSS-112.230	ZA113320	0 ... 60 °C	<3K	Changer (heating and cooling)	gray	II
RTBSS-112.111	ZA113110	-20 ... 40 °C	~1K*	Changer (heating and cooling)	gray	II
RTBSS-112.211/12	ZN113152	0 ... 60 °C	~1K*	Changer (heating and cooling)	gray	II

* with thermal return, only with an operating voltage of 230V~

Type	Equipment	WG
JZ-13	ZA990001 Standard track with drill holes to fasten thermostats for control cabinets (length 40mm)	II

Thermostats for Control Cabinets RTKSS, PTR

Thermostats with capillary sensors

	Technical specifications	Application
	Sensor:	Capillary (1.5m)
	Switching capacity:	Changer heating: 24V~...250V~/10(2) 24V — ... 48V — max. 30W Changer cooling: 24V~ ... 250V~/5(2)A, 24V — ... 48V — max. 30W
	Contact:	Changer (heating/cooling)
	Switching differential:	<7K
	Equipment:	Outside setting, twist-type knob
	Protection Type:	IP30
	Protection class:	0 (protection class must be ensured by the installation site)
	Type of connection:	Screw terminals 0,5 ... 2,5mm²
	Type of installation:	on DIN-bar (35mm)
	Ambient air temperature:	min. -20°C ... max. control temperature plus 15% (see setting range), approx. 50g
	Enclosure:	Plastic, gray (RAL7035)
	Weight:	approx. 70g

RTKSS 112.xxx (Wechsler)

Type	Product No.	Setting range	Switching differential	Equipment	Scale	WG
RTKSS-112.270/07	ZN143727	0 ... 60 °C	<7K	1 changer (heating/cooling)	gray	II
RTKSS-112.370	ZA143730	20 ... 80 °C	<7K	1 changer (heating/cooling)	gray	II

Thermostat with bimetallic sensor, design Pikolo

	Technical specifications	Application
	Operating voltage:	230V~
	Sensor:	Bimetal
	Switching capacity:	Heating: 10(4)A, Cooling: 5(2)A
	Contact:	1 changer
	Switching differential:	approx. 2K
	Equipment:	Outside setting, range specifications under the knob
	Protection Type:	IP30
	Protection class:	II, after the appropriate installation
	Type of connection:	Screw terminals 0,5 ... 2,5mm²
	Type of installation:	on DIN-bar (35mm)
	Ambient air temperature:	0 ... 60 °C
	Enclosure:	Plastic, gray (RAL7035)
	Weight:	approx. 85g

PTR 01.082

Type	Product No.	Setting range	Switching differential	Equipment	Scale	WG
PTR 01.082	A201302	10 ... 60 °C	approx. 2K	1 changer (heating/cooling)	black	II

Type	WG
JZ-13	ZA990001 Standard track with drill holes to fasten thermostats for control cabinets (length 40mm)
JZ-15	ZA990002 Installation set to fasten the remote capillary sensor

Peltier thermostats CTRRS, KTRRN

Heating or cooling

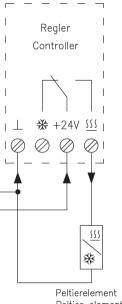
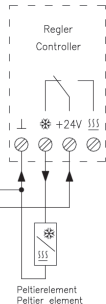
Technical specifications		Application
Operating voltage:	24V $\pm$ 15%	Peltier thermostat to connect a Peltier element to heat or cool – to climatize switch cabinets, ticket machines and ATM or similar applications.
Sensor:	Internal NTC	
Switching capacity:	14A (max. 16A/60,000 operating cycles)	
Contact:	Changer (cooling = N/C contact, heating = N/O contact)	
Power consumption:	0,75W	
Setting range:	0 ... 60°C	
Switching differential:	approx. 2 ... 3K	
Equipment:	Outside setting, twist-type knob	
Protection Type:	IP30	
Protection class:	III	
Type of connection:	Screw terminals 0,5 ... 2,5mm ²	Peltier thermostat to connect a Peltier element to heat or cool – to climatize switch cabinets, ticket machines and ATM or similar applications.
Type of installation:	on DIN-bar (35mm)	
Ambient air temperature:	-10T60 (-10 ... 60°C)	
Enclosure:	Polyamide PA6.6 (UL94 V-0), gray (RAL7035)	
Knob colour/Scale:	gray	
Weight:	approx. 75g	

Type	Product No.	Equipment	WG
CTRRS-161.000/04	DN600004	Peltier thermostat for heating and cooling	II

Heating and Cooling

Technical specifications		Application		
Operating voltage:	24V==	Peltier thermostat to connect a Peltier element to heat or cool – to climatize switch cabinets, ticket machines and ATM or similar applications.		
Sensor:	Internal or optionally external 2k sensor			
Switching capacity:	Peltier element: 16A; fan output: 2(1)A			
Contact:	2 x N/O contacts (heating and cooling) with neutral zone; (Peltier element); N/O contact (fan)			
Power consumption:	approx. 1W			
Setting range:	Heating: 0 ... 20°C; cooling: 0 ... 50°C			
Switching differential:	approx. 1K			
Equipment:	Separate control areas for heating and cooling; neutral zone of at least 10K. The fan is only activated during heating and cooling.			
Protection Type:	IP20			
Protection class:	III	If the temperature drops below the set heating switch point, the thermostat turns on the outside fan and activates the Peltier element, whereby the direction of the direct current effects the heating of the control cabinet. If the set cooling switch point is exceeded, the outside fan is turned on and the Peltier element is activated by the opposite direction of the direct current. The opposite direction of the direct current effects the cooling of the control cabinet.		
Type of connection:	Screw terminals 0,5 ... 2,5mm²			
Type of installation:	on DIN-bar (35mm)			
Ambient air temperature:	-10T55 (-10 ... 55°C)			
Enclosure:	Plastic ABS, gray (RAL7035)			
Knob colour/Scale:	gray			
Weight:	approx. 105g			
Type	Product No.	Equipment	ext.Sensor (optional)	WG
KTRRN-267.014/03	DN460003	Peltier thermostat for heating and cooling, fan control	"8" (NTC 2K), page 8	II





Type	Product No.	WG
JZ-13	ZA990001	II

Control cabinet hygrostats RFHSS, PHY

Technical specifications		Application
Sensor:	Plastic fibers	Hygrostat to monitor and control the humidity in switch cabinets, beverage or cigarette machines
Switching capacity:	RFHSS-114.110/01 Humidify: 24V~... 230V~ / 2(0,2)A, bei 24V~ min.100 mA Dehumidify: 24V~... 230V~ / 5(0,2)A, bei 24V~ min.100 mA RFHSS-115.110/01 max.: 100 mA, 48V~/= min.: 5 mA, 5V~/=-	
Contact:	1 changer	
Switching differential:	~5% rel. humidity	
Equipment:	Outside adjustment, twist-type knob	
Protection Type:	IP30	
Protection class:	RFHSS-114: 0 (Protection class must be guaranteed by installation site) RFHSS-115: III, protective low voltage	
Type of connection:	Screw terminals 0,5 ... 2,5mm ²	
Type of installation:	on DIN-bar (35mm)	
Ambient air temperature:	T60 (0 ... 60°C)	
Enclosure:	Plastic UL94 V-0, gray (RAL7035)	Hygrostat to monitor and control the humidity in switch cabinets, beverage or cigarette machines
Knob colour/Scale:	blue	
Weight:	approx. 70g	
Certifications:	UL (only RFHSS-114 and only 230V~)	

Type	Product No.	Setting range	Equipment	WG
RFHSS-114.110/01	ZN275001	40 ... 90% rel.humidity	1 changer	II
RFHSS-115.110/01	ZN276001	40 ... 90% rel.humidity	1 changer, gold contacts	II

Design Pikolo

Technical specifications		Application
Sensor:	Plastic fibers	Hygrostat to monitor and control the humidity in switch cabinets, beverage or cigarette machines
Switching capacity:	Dehumidify 5(0,2)A; Humidifying 2(0,2)A 24...250 V~, minimal 100 mA bei 24V~	
Contact:	1 changer	
Switching differential:	~4% rel. humidity	
Equipment:	Outside adjustment, range specification beneath knob	
Protection Type:	IP30	
Protection class:	II upon appropriate installation	
Type of connection:	Screw terminals 0,5 ... 2,5mm ²	
Type of installation:	on DIN-bar (35mm)	
Ambient air temperature:	10 ... 60°C	
Enclosure:	Plastic, gray (RAL7035)	Hygrostat to monitor and control the humidity in switch cabinets, beverage or cigarette machines
Knob colour/Scale:	gray	
Weight:	approx. 85g	

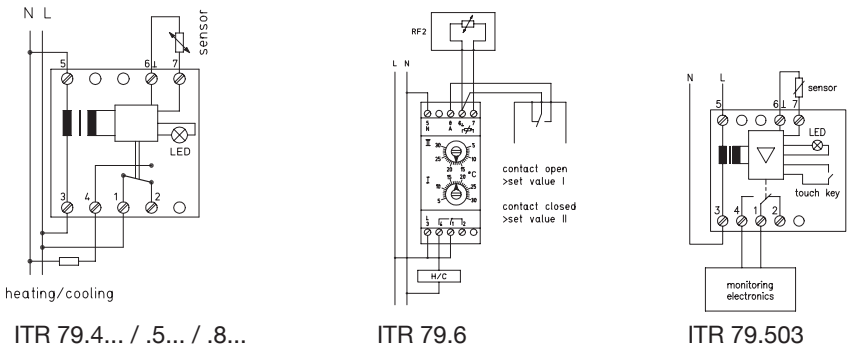
Type	Product No.	Setting range	Equipment	Scale	WG
PHY 60.082	A261004	30 ... 100% rel.humidity	1 changer	gray	II

Type	WG
JZ-13	II

Controller for distributor installation (hat rail) ITR 79

Electronic, remote sensor

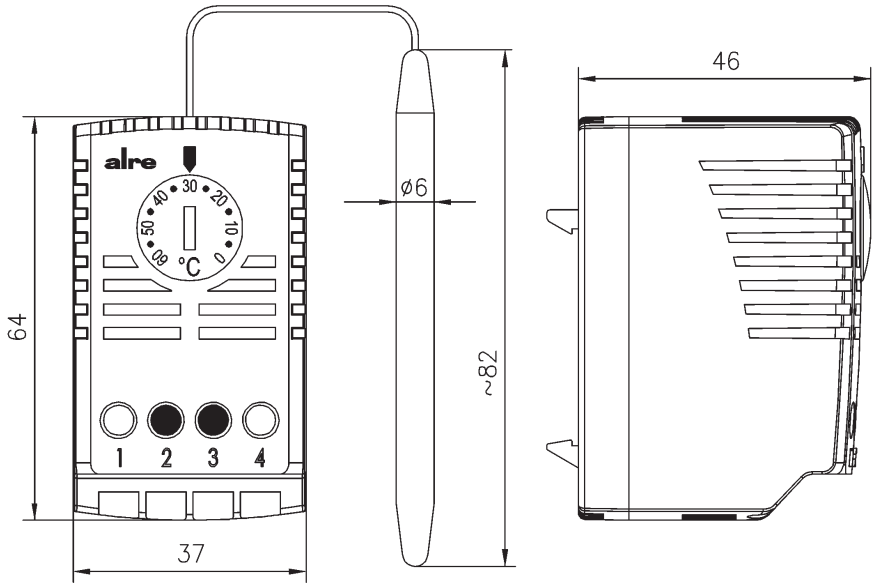
Technical specifications		Application
Operating voltage:	230V~, 50 Hz	Temperature control and monitoring for halls, greenhouses, and floor heating systems. The equipment has a sensor break and short circuit fuse.
Switching capacity:	Up to 250V~ (not for SELV) N/C, 10 (3)A, N/O, 5 (1, 5)A	
Contact:	1 relays as potential changer	
Switching differential:	Adjustable from 0.5...5K With the exception of ITR 79.600, ITR 79.503	Sensors are not part of the delivery (except in ITR 79.804, ITR 79.805, ITR 79.811) (consult page 8 of the main catalogue for sensor selection). Use sensor in accordance with the specified sensor number (e.g. sensor number 24 or 4: all sensors with this number can be used, e.g. HF-4 or LF 24). Avoid installing the sensor line parallel to the power supply line or to shielded cables.
Ambient air temperatur:	- 10 ... + 40 °C	
Protection Type:	IP20	
Protection class:	II	
Betriebsanzeige:	LED – red: heating LED – green: cooling	
Type of installation:	on DIN-bar (35mm)	
Elektrische Anschlüsse:	Screw terminals für max. 2,5mm²	
Enclosure:	gray (RAL7035)	
Knopfbedruckung/Scale:	gray	



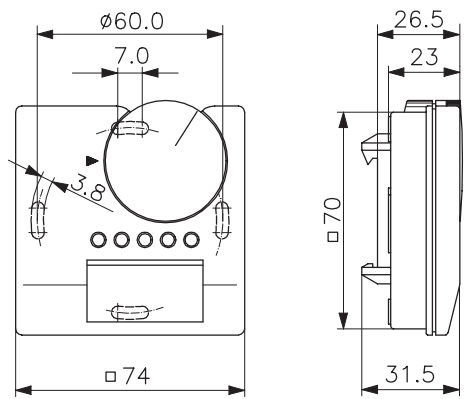
Type	Product No.	Setting range	Equipment	Sensor	WG
ITR 79.402	D4780167	- 35 ... + 15 °C	Heating LED red	1 / 21 (NTC 1K)	II
ITR 79.404	D4780155	0 ... 60 °C	Heating LED red	4 / 24 (NTC 10K)	II
ITR 79.405	D4780181	35 ... 95 °C	Heating LED red	5 / 25 (NTC 50K)	II
ITR 79.406	D4780205	70 ... 130 °C	Heating LED red	6 (NTC 100K)	II
ITR 79.408	D4780179	- 10 ... + 40 °C	Heating LED red	3 / 23 (NTC 8K)	II
ITR 79.503	D4780524	0 ... 11 °C	Frost protection, manual reset, switch differential 1.5 fi rm, LED red (sensor at 75°C)	0 / 20 (NTC 2K 25)	II
ITR 79.504	D4780371	0 ... 60 °C	Cooling LED green	4 / 24 (NTC 10K)	II
ITR 79.508	D4780369	- 10 ... + 40 °C	Cooling LED green	3 / 23 (NTC 8K)	II
Two target value adjusters (e.g. day/night temperature through an external clock)					WG
ITR 79.600	D4780508	2 x 5 ... 30 °C	Heating, switch differential 0.5K fi rm	2 (NTC 47K)	II
Complete devices with remote sensors					WG
ITR 79.804	D4780545	0 ... 60 °C	Scale 0 ... 6, heating, LED red, incl. sensor HF-8 / 4-K2 (4m), insulated	8 (NTC 2K)	II
ITR 79.805	D4780557	+ 35 ... + 95 °C	Heating, LED red, incl. sensor HF-8 / 4-K2 (4m)	8 (NTC 2K)	II
ITR 79.811	D4780559	- 15 ... + 15 °C	Heating, LED red, incl. sensor HF-8 / 4-K2 (4m)	8 (NTC 2K)	II

Scale drawing

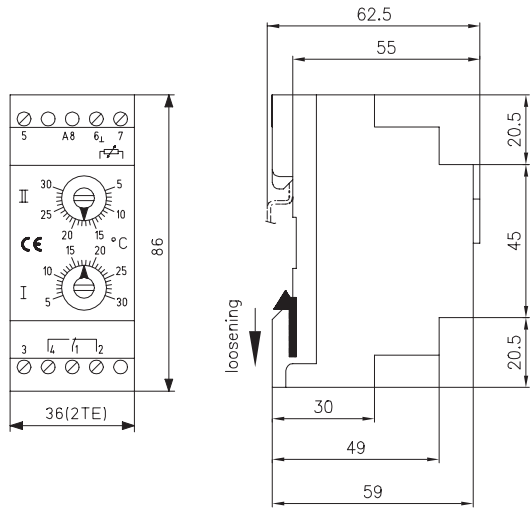
RTBSS, RTKSS, CTRRS, RFHSS:



PHY 60.082, PTR 01.082



KTRRN, ITR



Sleeve temperature sensors HF

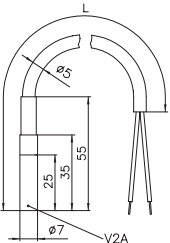
(Remote sensors for Alre standard equipment, e.g. ITR79...)

Technical specifications		Application	
	Ambient air temperature with PE cable:	-50 ... +85°C	To measure the temperature of liquid media by installing sleeve temperature sensors (TH/NTH). To measure the temperature of air and non-aggressive gases in the air duct by installing a spring guard.
	Ambient air temperature with silicon cable:	-50 ... +150°C	
	Ambient air temperature with PVC cable:	-35 ... +105°C	
	Protection type:	IP 65	
	Sensor line (can be extended up to):	NTC 50m, PTC 100m	
	Sensor characteristics:	See main catalogue	

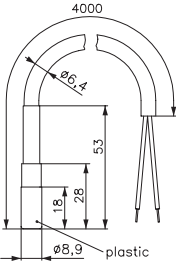
(Please follow the EMV guidelines. Avoid installing lines parallel to power supply lines or shielded lines.)
In V2 A sleeve molded (except ... K = plastic sleeve). Time constant of approx. 20sec in moving water.

Dimensional drawings

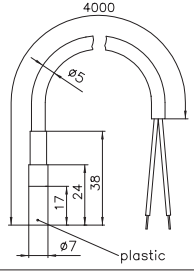
HF



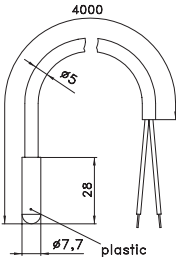
HF-5/4K3



HF-5/4K2



HF-8/...K2



Type	Product No.	Sensor
HF-0	D4779114	„0“ (NTC 2K 25) PE-cabel 1,5m
HF-0/6	D4779126	„0“ (NTC 2K 25) PE-cabel 6m
HF-1	D4779203	„1“ (NTC 1K) PE-cabel 1,5m
HF-2	D4779823	„2“ (NTC 47K) PE-cabel 1,5m
HF-3	D4779090	„3“ (NTC 8K) PE-cabel 1,5m
HF-3/6	D4779102	„3“ (NTC 8K) PE-cabel 6m
HF-4	D4779088	„4“ (NTC 10K) PE-cabel 1,5m
HF-4/6	D4779710	„4“ (NTC 10K) PE-cabel 6m
HF-5	D4779025	„5“ (NTC 50K) PE-cabel 1,5m
HF-5/4K2	D4771303	„5“ (NTC 50K) PVC-cabel (HAR) 4m
HF-5/4K3*	D4771304	„5“ (NTC 50K) Silikon-cabel 4m
HF-5/6	D4779619	„5“ (NTC 50K) PE-cabel 6m
HF-6	D4779037	„6“ (NTC 100K) Silikon-cabel 1,5m
HF-6/3	D4779835	„6“ (NTC 100K) Silikon-cabel 3m
HF-8/4K2	G8000370	„8“ (NTC 2K) PVC-cabel (VDE) 4m acc. to DIN 44574
HF-8/6K2	G8000368	„8“ (NTC 2K) PVC-cabel (VDE) 6m acc. to DIN 44574

* Please note: for diameters larger than 8.9mm for TH/NTH 140 see main catalogue

Overview of the Control Cabinet Thermostats

	Thermostats							Humidity controller			Peltier thermostat		Built-in thermostat		
	RTBSS 110.x50	RTBSS 111.x50	RTBSS 112.x50	RTBSS 111.x30	RTBSS 112.x30	RTBSS 112.x1	RTKSS 112.x70	PTR 01.082	RFHSS 114.110/01	PHY 60.082	CTRRS	KTRRN	ITR 79		
Contact	N/C contact	N/O contact	Changer	N/O contact	Changer	Changer	Changer	Changer	Changer			Changer (cooling=N/C contact; heating = N/O contact)	2x N/O contact (heating and cooling) with neutral zone (Peltier element); N/O contact (ventilating)	Changer	
Voltage*	24V~ ... 250V~/24V ... 48V max. 30W							100V ... 230V~	24V~ ... 230V~					24V	Up to 250V (not for SELV)
Current	10(2)/A	10(2)/A	N/C contact 10(2) A N/O contact 5(2)/A	10(2)/A	N/C contact 10(2) A N/O contact 5(2)/A	N/C contact 10(2) A N/O contact 5(2)/A	N/C contact 10(2) A N/O contact 5(2)/A	N/C contact 10(2) A N/O contact 5(2)/A	Dehumidify at 5(0.2)A Humidity at 2 (0.2)A Minimum 100 mA (at 24V~)			14A (max. 16A/60,000 operating cycles)	2-pole switch contact for one Peltier element 16A/Ventilator output 2(1)A	PELV 10(3)A NC contact: 5 (1.5)A	
Control ranges	x=1: -20 ... 40°C x=2: 0 ... 60°C x=3: -20 ... 80°C			10 ... 60°C				40 ... 90% rel. humidity	30 ... 100% rel. humidity	0 ... 60°C		Heating: 0...20°C Cooling: 30...50°C	-35...130°C Depending on the type	0.5 ... 5K einstellbar (außer ITR 79.600)	
Switching differential*	4 ... 7K		approx. 3K		approx. 1K		< 7K	2K	approx. 5% r.H.		approx. 4% r.H.	Internal 47k sensor	Internal or external 2k sensor	NTC	
Sensor element	Bimetallic sensor							Capillary (1.5m)	Bimetallic	Plastic fibers			Internal 47k sensor	Internal or external 2k sensor	
Type of connection	Screw terminals 2.5mm²														
Ambient air temperature (storage temperature)	x=1: -20 ... 40°C x=2: 0 ... 60°C (-20 ...+80°C)				min. -20°C ...max. Regeltemp. +15%				10 ... 60°C (-20 ... 70°C)	0 ... 60°C (-20 ... 80°C)	10 ... 60°C (-20 ... 60°C)	-10 ... 70°C (-20 ... 70°C)	-10 ... 55°C (-20 ... 70°C)	-10 ... +40°C (-20 ... 60°C)	
Protection type	IP30														
Protection class	0 (the protection class must be ensured on-site) (PTR and PHY are protection class II)														
Knob color	red	blue	gray	blue	gray	gray	gray	gray	gray	gray	gray	gray	gray	gray	
Enclosure	Plastic														
Approx. weight	50g				70g				85g	50g	85g	70g	150g		

* Because of the thermal return the RTBSS 112.x11 with 1K switching differential needs a supply voltage of 230V ~

Technical Terms

Bimetal:

In general, thermo-bimetal is composed of about two equal layers of metals or alloys, which are firmly connected with one another; however, they expand to a different degree upon exposure to heat. There it flexes when the temperature changes. If the heat rises, one side distends while the other metallic component does not expand as much. The heat is transferred from the environment through the conductivity, radiation or convection (indirect heating).

Neutral zone:

Any control range, which does not heat or cool is defined as neutral zone.

Peltier element:

A Peltier element is an electrical component that generates a temperature difference between two pole plates when under direct voltage. The physical basis for it is the Peltier effect (according to Jean Peltier (1785-1845)). When the polarity of the voltage fluctuates, the heat and cold pole switch. Therefore, Peltier elements can be used in small enclosures and devices for both heating and cooling. To increase the effectiveness and thermal output, the elements are generally cascaded. The advantage of this application is that they can cool without requiring a coolant and they can heat at the same time. Peltier thermostats are maintenance-free.

N/O contact (bimetallic):

This control contact closes when the temperature rises and opens when the temperature drops (for “cooling”).

Thermal return:

The additionally installed heating resistor ensures that the thermostat is turned off in time during the heating process. Therefore, it reduces an overshoot of room temperature and it generates a smaller switching differential.

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Capillary sensor:

Capillary sensors use the thermal expansion of a liquid to measure temperature. Liquid with a defined expansion coefficient is filled in a metallic pipe (papilla). The liquid is transported through the capillary to a membrane, which transforms the thermal expansion into a mechanical movement. This motion can then be used to activate a micro-switch. Capillary sensors are often used in immersion sleeves or in contact sensors. They work free of any ancillary energy.

N/C contact (bimetallic):

This control contact opens as the temperature rises and closes as the temperature drops (for “heating”).

Switch differential and hysteresis:

This is the difference between turning the heat or thermostat on and off. The specified switch differential refers always to the thermostat. It does not specify the truly generated hysteresis of the room temperature. It changes depending on the location where it is used and the conditions under which it is used. The room temperature is always subject to fluctuations. These fluctuations result in the switch differential of the thermostat, the room’s characteristics such as the heating time, loss of heat, etc. and the levels of disturbance.”

Changer (bimetallic):

This is a changer with an N/C and N/O contact. It works as described under N/C and N/O contact.

Point of contact

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Region North

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02, 03, 1, 2, 30, 31, 38, 39
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Area West

Postcode-area
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50-53, 57-61, 657-659
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Area South-West

Postcode-area
54-56, 63, 64, 650-656, 66-69, 7
Internal services
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E-Mail: vertrieb@alre.de

Area South

Postcode-area
8
Internal services
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Area South-East

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Distribution partner the Russian



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Thermo Trade Engineering
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Distribution partner the Republic of Estonia, the Republic of Latvia, The Republic of Lithuania, the Russian Federation



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Internet: www.olil.ru

Distribution partner Poland, Romania, Ukraine, Belarus



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Internet: www.dacpol.eu

Distribution partner Romania

BEE speed Automatizări
Beespeed Automatizări SRL
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Internet: www.beespeed.ro

Distribution partner Great Britain



Suka Controls Limited
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Distribution partner the Netherlands



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Distribution partner France



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Distribution partner Austria

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Distribution partner Portugal, Spain



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Distribution partner the People's Republic of China



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