



industrie  
technik®

# Products for HVAC/R

## 2018



**“Over 70 countries  
around the world  
trust our quality  
products”**



# We are here for you!

Now you're just a page away from getting to know our vast 2018 product range. Before you get started we want you to know that we are here for you. Our sales team and customer support are eager to assist and attend to any given challenge.

- This catalogue shows only a part of our assortment. As we produce our products in-house, we can adapt a product to your specific needs or offer additional models. If you have special requirements we are just an e-mail or a phone call away.
- Are you interested in complete solutions? At Industrietechnik we can offer packages that include products that are not part of or ordinary assortment.
- We offer professional support during working hours 8:00–17:00

*Don't hesitate to contact us. Our dedicated sales and support team are looking forward to talking to you.*

PRODUCT SALES & SUPPORT

+39 0472 830626 | [info@industrietechnik.it](mailto:info@industrietechnik.it)

[WWW.INDUSTRIEZECHNIK.IT](http://WWW.INDUSTRIEZECHNIK.IT)



**“EXPERIENCE, EXPERTISE AND CAPACITY OF LISTENING ARE THE FOUNDATIONS FOR A CUSTOMER-ORIENTED CONSULTING”**

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COMPANY PRESENTATION

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THERMOSTATS AND CONTROLLERS

1



ELECTRONIC THERMOSTATS

2



ELECTROMECHANICAL THERMOSTATS

3



ELECTRIC HEATING CONTROLLERS

4



SENSORS, TRANSMITTERS AND SWITCHES

5



WIRELESS PRODUCTS

6



DAMPER ACTUATORS

7



VALVES AND ACTUATORS

8



PRESENCE AND SMOKE DETECTORS

9

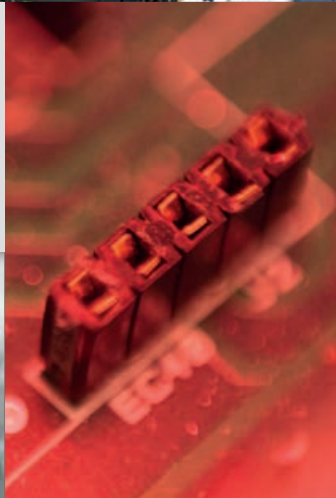
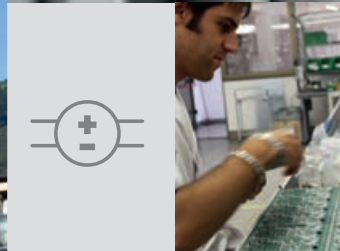
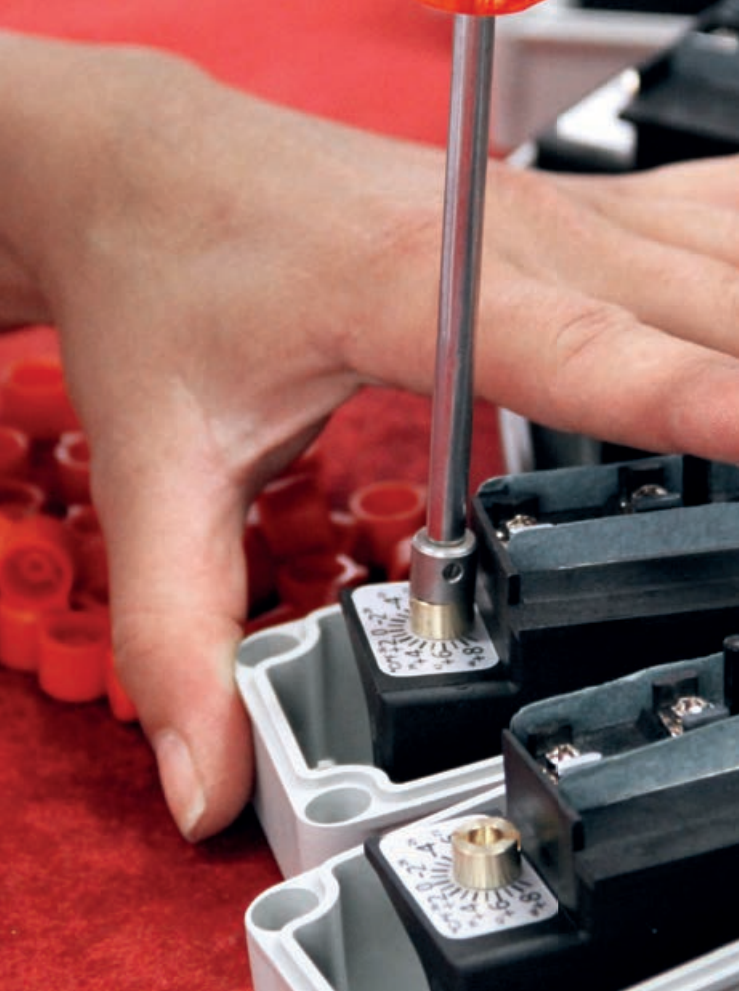


MISCELLANEOUS PRODUCTS

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I





# Industrietechnik – We have been listening for over 30 years

Ever since Industrietechnik was established in 1981, the very foundation of our company has been our ability to listen. In close cooperation with every new customer, we have developed our product range into what it is today – a complete and diverse range of HVAC/R field products for measurement and control in building automation.

Our head office and production site is situated in Brixen, South Tyrol, in the heart of the European Alps at the cultural crossroads of northern and southern Europe. Companies from our region are often known for their quality, long standing experience and extensive know-how. Many businesses in our area are market leaders in their sectors, even in an international context. Our five storey building hosts offices, R&D, sales, support, our testing facilities and a modern production site with state of the art equipment. This gives us full control over the whole production chain from development and design to production and dispatch. To extend our customer service, we also have a sales office in Milan.

Today, we are a leading provider of one of the widest ranges of field devices including valves and actuators, electronic and electro-mechanical devices that can be found on the global market. Together, we sell products to installers, system integrators, wholesalers and OEM-customers in more than 80 countries and we are constantly expanding – and we continue to listen.

# PRODUCT NEWS

## 2018



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### Evolution FH

#### *New Evolution model for underfloor heating*

Our popular Evolution series is now extended with new models for regulation and control of radiant panel systems. Elegant design makes the controller fit perfectly into all modern indoor environments while heating rooms easily and efficiently to create a pleasant indoor comfort. Four different models are available depending on your specific needs, installation is easy and - like all Evolution products - it includes our easy-to-use Evolution tool for comfortable configuration.



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**22**

### Evolution AHU

#### *For air handling unit applications*

The new, customized room controller for air handling units, Evolution AHU, is equipped with rapid access buttons to reach the frequently used functions. The large number of inputs and outputs makes it ideal for various types of systems that control anything from supply air temperature, return or ambient air temperature with supply limitations, monitoring of ambient air temperature using cascade control, to monitoring air quality, dehumidification, free cooling, free heating, and heat recovery. It has a RS485 communication port with Modbus RTU slave protocol, designed for wall installation on 3 modules box.







SEZ4



VFMD



VFTR



VFBF  
USE WITH  
ACTUATOR SE5, SE10

CHAPTER  
8

## News in our extensive range of valves & actuators!

Every year, we add new high-quality valves to our already extensive range and most recently we added the VFBF (Internally threaded 2- and 3-way control valves) designed to control hot, cold or glycol-mixed water in heating- and ventilation systems. The new models also include the VFMD/VFTR Valves (Externally threaded 2- and 3-way zone and control valves) for control of hot and cold water in climate-

heating- and ventilation systems. The VFMD/VFTR series also control glycol-mixed water in, for example, liquid connected recovery systems. The VFMD & VFTR can all be used together with our easy to mount actuators SEZ4. You can find our complete range of valves & actuators at Industrietechnik.



SIR-SW



SAW



SIR-PW



MR16W

CHAPTER  
6

## Check out our new wireless product range!

We are proud to present a completely new product range based on wireless communication. Now, you can mount products in a truly flexible way - the ideal solution for non-invasive mounting in heritage-listed buildings with restrictions, or for growing offices where furniture and layout need to change. Our new series delivers communication at its best - wireless, with a long communication range

and high level of reliability. The products can easily be integrated with any other Modbus based system on the market.

The series includes a receiver, a door contact, a room temperature sensor, an outdoor temperature sensor and a presence detector.





Meet the leading manufacturer

# of measurement and control devices for HVAC/R applications

“WE BELIEVE IN PRODUCTS AND SERVICES THAT OUR  
CUSTOMERS CAN RELY ON WITH CONFIDENCE”

COMPANY PRESENTATION



HEATING



COOLING



VENTILATION



AIR  
APPLICATIONS



WATER  
APPLICATIONS



HUMIDITY



PRESSURE



FLOW

COMPANY PRESENTATION

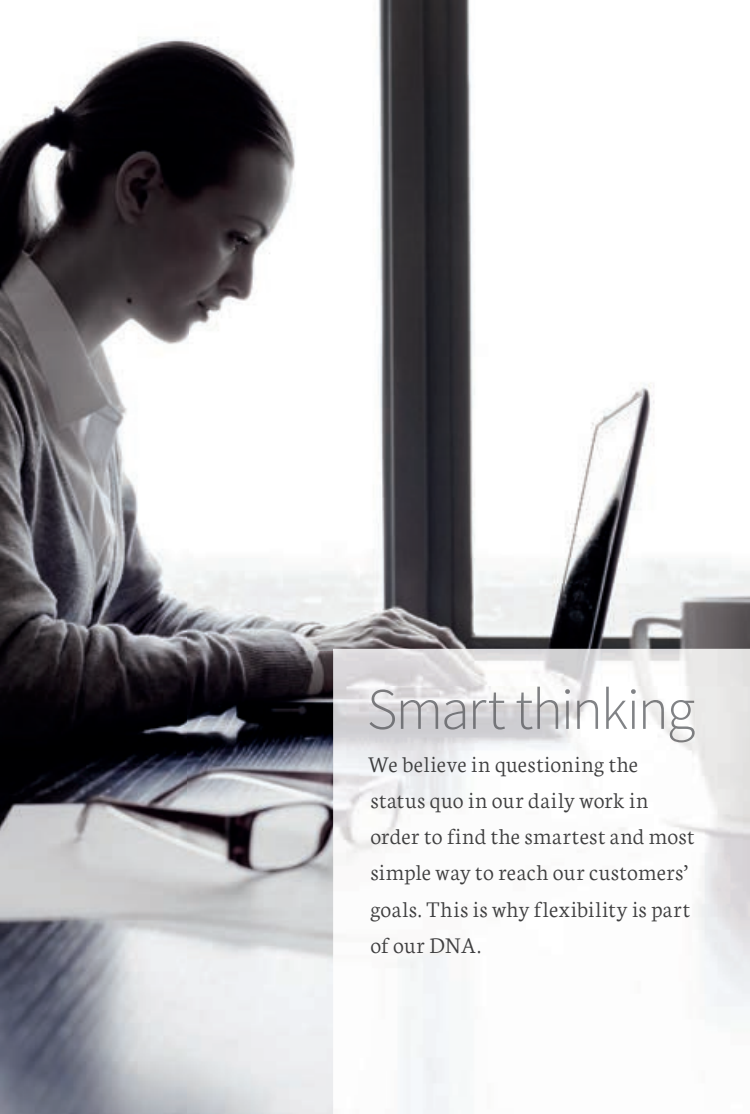
We believe in the combination of smart thinking, competence, reliability and the reduction of complexity.

Coming from a multicultural, hard working and ambitious environment, we know that we need to perform outstandingly to succeed on the international market. Industrie-technik was born out of an entrepreneur's dream of developing reliable, quality products to satisfy a big market of HVAC/R customers. He received all the input he needed as he was driving around in his car selling products directly to customers. One of our very first products was a frost protection thermostat - a product that we continue to develop and that is still part of our range.

## Close customer relationships

Today, we no longer ring on doorbells - but we know that good products are born from market input. That's why we've developed a company that builds on close customer relationships and our passion to provide products customers can truly rely on. In order to provide the best service and the right product range we always go back to our core values, the very foundation on which we perform work and conduct ourselves.





## Smart thinking

We believe in questioning the status quo in our daily work in order to find the smartest and most simple way to reach our customers' goals. This is why flexibility is part of our DNA.



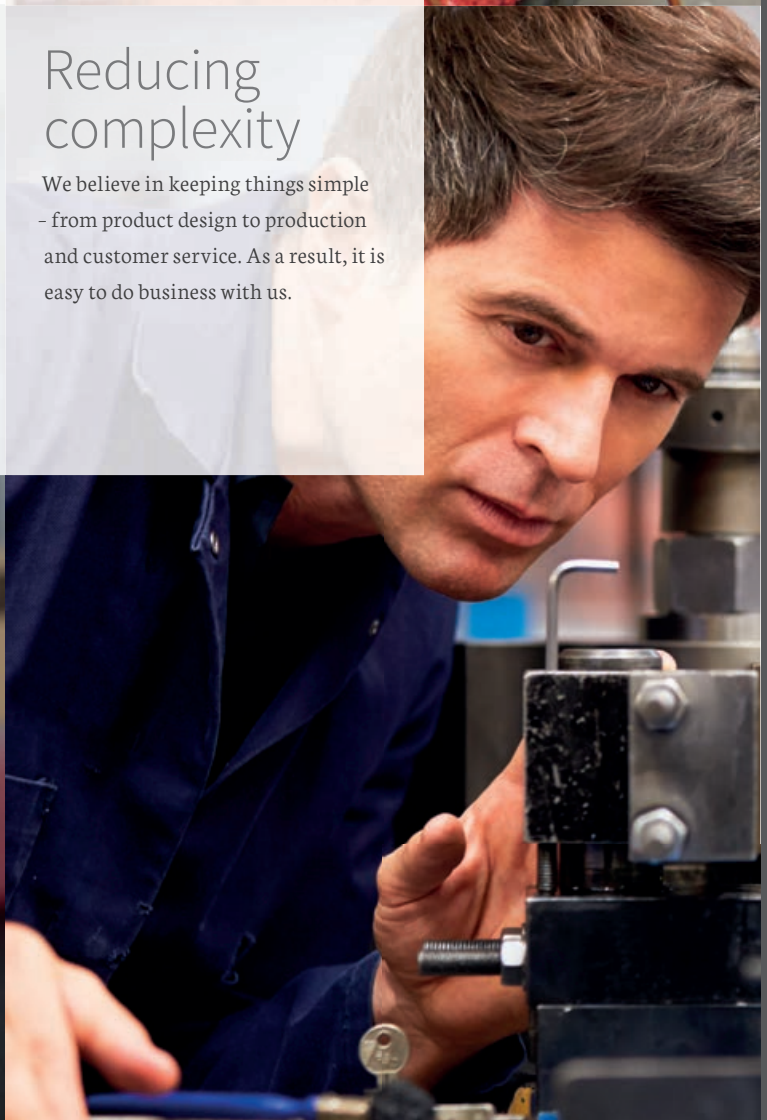
## Competence

We believe that actively gathering knowledge makes us thinkers with a distinctive and informed point of view.



## Reliability

We believe in the simple rule of doing what we say we are going to do, both as individuals and as an organization. We keep our promises.



## Reducing complexity

We believe in keeping things simple – from product design to production and customer service. As a result, it is easy to do business with us.

We believe that good products often are born out of frustration with the status quo.

The goal of Industrietechnik is to develop and market a full range of field products necessary for HVAC/R applications. Our comprehensive range includes a complete assortment of valves and actuators as well as electronic and electromechanical devices for reliable measurement and control in building automation.

In the field of liquid flow switches and frost protection thermostats, we are one of Europe's leading companies.

Overall, we cover the complete range of application areas from air-liquid flow and quality, temperature and humidity to pressure.

## Controlling each step in closely knit teams

Our product development is truly customer driven and we control each step of our entire production process, following rigid internal and external standards. In our large-scale testing area every HVAC/R product is repeatedly subjected to extensive tests. We leave nothing to chance and we believe that only in-house tested and retested products are reliable products that our customers can trust.

**Controllers**

**Room controllers & Thermostats**

**Switches**

**Transmitters**

**Temperature sensors**

**Valves & Valve actuators**

**Damper actuators**

**Other products**





Ventilation & heating controllers



Electric heating controllers



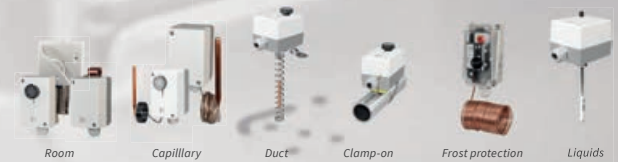
Evolution - Room controller



Room controllers & thermostats



Electronic controllers & thermostats



Electromechanical thermostats

Room

Capillary

Duct

Clamp-on

Frost protection

Liquids



Pressure



Humidity



Flow



Air flow



Level



Temperature & Humidity



CO<sub>2</sub>



Pressure



Air velocity



CO & VOC



Wireless

PT100  
PT1000  
NTC1.8  
NTC2.2  
NTC10-01  
NTC10-02  
NTC10-03  
NTC15  
NTC20  
NI1000-01  
NI1000-02



Duct



Average



Immersion



Room



Outdoor



Clamp-on sensors



Cable



Heating, cooling & ventilation system



Pressure independent control valves



Butterfly valves



Actuators



Without spring control



With spring return



For fire dampers



Presence protection



Smoke



Transformers



Frost protection unit



Step controllers

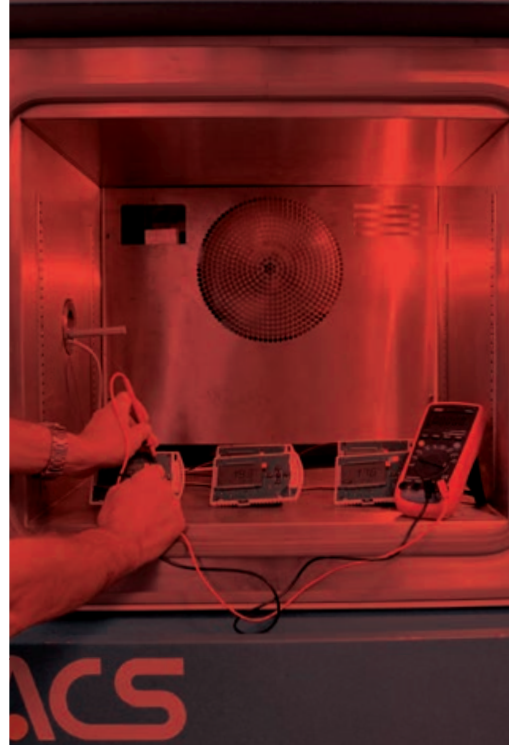


Energy meters

We believe that a closely knit organization and smart thinking are essential for the fast and flexible execution of OEM projects.

At Industrietechnik Sales, Purchasing, Development, Economy and Production work side by side. This gives us full insight and control of the entire working process from idea to product and after sales, ensuring quality at every step and on every level of the company. By controlling processes we can plan in advance and optimize our delivery times and at the same time protect customer investments.

This structure makes it possible for us to respond to OEM client demands in a fast and flexible manner. Projects are always coordinated in close cooperation with our customers and in direct communication with our R&D department.







# We are listening.

We can handle all kinds of OEM projects, from product branding to in-house programming of software to adapting our products to the need of your specific application. Moreover, the fact that we have very modern production machinery makes it possible for us to provide branded products that are not part of the standard program - and to do so very quickly. We only work with certified suppliers and can handle both small and large volumes.

## EXAMPLES OF APPLICATIONS THAT OUR PRODUCTS CAN BE FOUND IN:

- Air handling units
- Fan coils
- Chillers
- Heat exchangers
- Ventilation systems
- Air curtains
- Truck refrigerators



YOUR GRAPHICS, IN YOUR COLOR OF CHOICE

Our products reach the market through a network of sales teams and distributors in over 80 countries and have been installed in a huge variety of buildings on every continent across the world. This has given us important insights into product development and flexible customer service. Our head office is located in Bressanone and we have a local sales office in Milan dedicated to the Italian market. Our global markets are served by our international sales force and our warehouse in Bressanone ensures safe and fast deliveries.

Large quantities of our products reach the market in the shape of OEM products with the name of renowned quality brands or integrated into their range.

#### EXPERIENCED IN DELIVERIES

- Short delivery times
- Deliveries in time

# As a leading global provider we understand the needs of many markets.

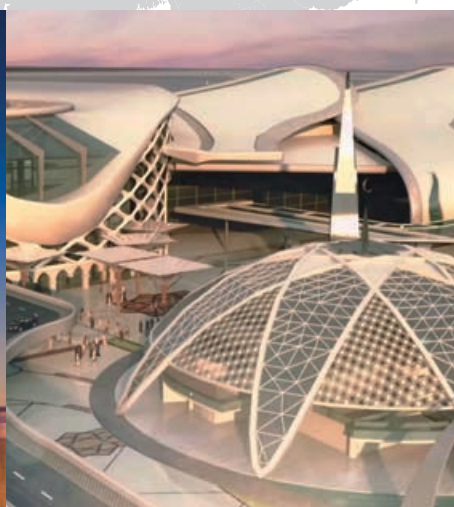
**NORFIM OFFICE BUILDING** LISBON, PORTUGAL. **TURCELL GEBZE OPERATION CENTER** GEBZE, TURKEY. **VOYAGER MERIT HOTEL-TRNC** CYPRUS. **PIXEL-34** TBILISI, GEORGIA. **HOSPITAL SAN CAMILLO LIDO DI VENEZIA**, ITALY. **AIRPORT LAMEZIA TERME** ITALY. **HOSPITAL CASCAIS** PORTUGAL. **FORTINA HOTEL** MALTA. **MERIT HOTEL** CYPRUS. **SAPPHIRE MALL AND RESIDENCE PROJECT** TURKEY. **MARMARA HOTEL** TURKEY. **HOSPITAL SAN MARTINO** GENOVA, ITALY. **SKOPJE AIRPORT** SKOPJE MACEDONIA. **BOLU HIGHWAY MALL** TURKEY. **RADISSON HOTEL** ISTANBUL, TURKEY. **PETITE ENFANCE** CAVAILLON, FRANCE. **SISLI KULTUR MERKEZI** SISLI, TURKEY. **RAMADA HOTEL IZMIT** IZMIT, TURKEY. **APHRODITE HOTEL** CYPRUS. **STATE HOSPITAL** TURKEY. **TRM EMERGENCY HOSPITAL** TURKEY. **HAWLER AIRPORT** NORTH IRAQ. **KAF HOSPITAL** TURKMENISTAN. **ENFIDHA AIRPORT** TUNISIA. **SHANGRI-LA'S MACTAN RESORT & SPA** PHILIPPINES. **ERBIL DIVAN HOTEL** IRAQ. **ASHGABAT EYE HOSPITAL** TURKMENISTAN. **AKU HOSPITAL** PAKISTAN PAKISTAN. **GALLERIA MALL** AMMAN, JORDAN. **CENTRAL BANK OF IRAQ** IRAQ. **BROUGHTON HOSPITAL** NORTH CAROLINA, USA.

# Some of our reference projects world wide.

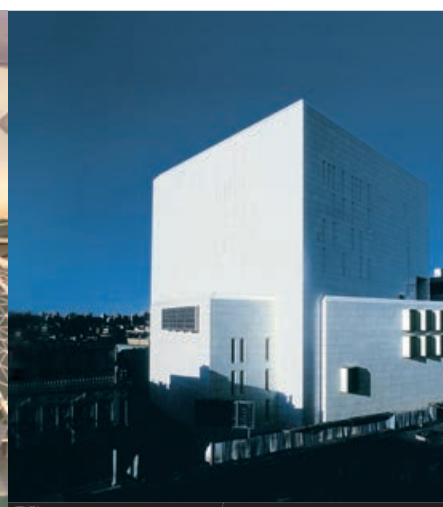
**Divan Erbil Hotel**  
Erbil, IRAQ



**Medina Airport**  
Medina, SAUDI ARABIA



**Central Bank of Iraq**  
IRAQ



**Baku Aquatic Centre**  
ASERBAIDSCHAN



**Hotel Baia Azul**  
Madeira, PORTUGAL

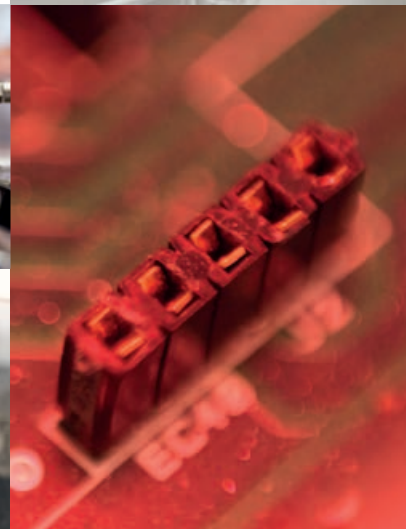
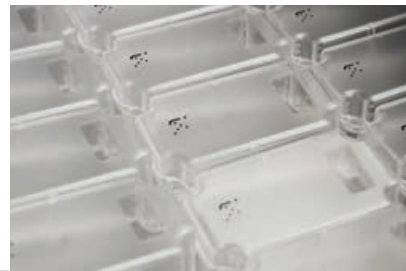


**Sapphire Shopping Center & Residence**  
Istanbul, TURKEY

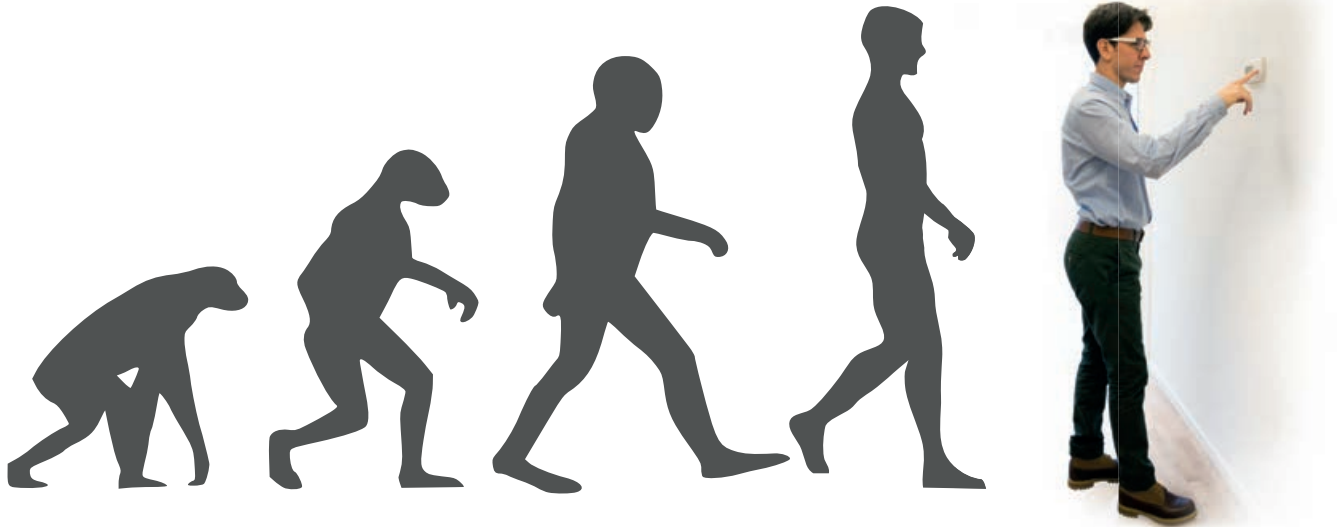


# 1 Pre-programmed controllers

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# The result of continuous development



## Evolution

### Room Controller for fan-coil and air handling applications

#### QUICK FACTS

- Communication via RS485
- Quick and secure settings with the Evolution tool
- Easy installation
- On/Off control or 0...10 V
- Real-time clock
- Download Evolution tool at [www.industrietechnik.it](http://www.industrietechnik.it)



#### EVOLUTION TH

##### FOR FAN-COIL APPLICATIONS

Due to a large number of I/Os, the unit is fit for control of 3-speed or EC fans in 2-pipe, 2-pipe + electric heater, 4-pipe, 4-pipe and electric heater systems. Keycard input, window contact, CO<sub>2</sub> sensor and season change function.

#### EVOLUTION AHU

##### FOR AIR HANDLING UNIT APPLICATIONS

Due to a large number of I/Os, small air handling units and recuperators can be driven. The unit can be used for 2-pipe, 4-pipe systems, for on-off and EC fan control and for dampers. Direct power supply from the line. Humidity sensor on board.

#### EVOLUTION FH

##### FOR RADIANT PANEL APPLICATIONS

The available functions, including flow temperature control, dew point control, the presence of the relative humidity sensor on board, the management of dehumidification, possibility of using independent time slots by area and much more, make the FH series regulators the optimal choice for the management of heating and cooling systems with radiant panels.

## EVOLUTION, PRE-CONFIGURED CONTROLLER WITH DISPLAY, CLOCK AND COMMUNICATION

Controllers of the Evolution series are available in a wide range of functions for controlling heating, cooling and air-conditioning installations. The new room controller Evolution TH is well-suited for thermoregulation applications.

Thanks to a large number of I/Os the unit is fit for control of 3-speed or EC fans in 2-pipe, 2-pipe + electric heater, 4-pipe, 4-pipe + electric heater systems. The outputs for valves can be on/off or modulating type. The large backlit display allows user to easily see temperatures, humidity, parameter settings, time bands and the state of the unit. The device is equipped with rapid access keys for the most common functions (fan speed control, season change, on/off etc.). The unit also features an RS485 line with Modbus slave RTU protocol or BACnet MS/TP for external communication and can be built-in wall mounted with a 3-module box. Depending on the model, controllers can have a communication feature, a clock, an on/off or proportional control, humidity sensor and a CO2 sensor input.



TH



Technical data	
Supply voltage	110...230 V AC ± 10%, 50...60 Hz
Inputs	2 digital contacts free of potential / 2 or 3 NTC10-02 sensors / USB port for parameters setting and software update
Outputs	3 analogue outputs 0...10 V (R <sub>L</sub> > 10 kOhm) according to model / 5 relays SPST 230 V AC, 3A (AC1) according to model
Power consumption	Max. 1.3 W
Temperature range	0...50 °C
Storage temperature	-20...+70 °C
Display	LCD with backlight
Communication	Modbus RTU (slave) or BACnet MS/TP
Range of temperature reading	-15...+90 °C
Mounting	3 modules built-in box
Casing	PC + ABS - White effect RAL 9003
Weight	Max. 230 g
Dimensions	128 x 80 x 55.5 mm
Protection class	IP30
Isolation class	II
Certification	EN 60730-1/A16:2007, EN 61000-6-1:2007, EN 61000-6-3:2007 and EN 60730-2-9:2003. RoHS: This Product complies with the EU directive 2011/65/EU of the European Parliament

### PRODUCT SELECTION

TH-	X	X	X	S	X	1
<b>Version:</b>						
1 digital output + 3 analogue outputs + 3 analogue inputs	0					
2 digital output + 2 analogue outputs + 3 analogue inputs	1					
3 digital output + 1 analogue outputs + 3 analogue inputs	2					
3 digital output + 2 analogue outputs + 2 analogue inputs	3					
5 digital output + 0 analogue outputs + 3 analogue inputs	4					
<b>Communication:</b>						
Without communication				S		
Modbus					M	
Bacnet						B
<b>Clock:</b>						
Without clock					S	
With clock						C
<b>Internal sensor:</b>						
Temperature						T
Temperature + humidity						H
<b>Connector:</b>						
Plug-in connectors						

## EVOLUTION, ROOM CONTROLLER FOR AIR HANDLING UNITS

Room controller for air handling units, equipped with rapid access buttons for the most common functions. The wide availability of inputs and outputs makes it ideal for various types of systems: supply air temperature control, the supply air temperature control with outside temperature compensation, shooting or ambient air temperature control with supply limitations, monitoring of ambient air temperature using cascade control (control with flow sensor), monitoring air quality, dehumidification, free cooling, free heating, heat recovery. The outputs can be on / off or modulating. The large backlit display is easily readable and allows to read the measured values of humidity and temperature, control parameters, time slots of operation and the status of the device. It has also a RS485 communication line with Modbus RTU slave protocol, designed for installation on the wall of the box 3 modules. Depending on the model, the regulators may have a communication function, clock, on / off or proportional control, humidity sensor and a CO2 sensor input.



AHU



Technical data	
Supply voltage	110...230 V AC ± 10%, 50...60 Hz
Inputs	2 potential free contacts / 2 or 3 NTC10-02 sensors / USB port for parameters setting and software update
Outputs	3 analogue outputs 0...10 V ( $R_L > 10 \text{ k}\Omega$ ) according to model / 5 relays SPST 230 V AC, 3A (AC1) according to model
Power consumption	Max. 1.3 W
Storage temperature	-20...+70 °C
Temperature range	0...50 °C
Ambient humidity	10...90 % RH (non-condensing)
Display	LCD with backlight
Communication	Modbus RTU (slave)
Range of temperature reading	-15...+90 °C
Mounting	3 modules built-in box
Casing	PC + ABS - White effect RAL 9003
Weight	Max. 230 g
Dimensions	128 x 80 x 55.5 mm
Protection class	IP30
Isolation class	II
Certification	EN 60730-1/A16:2007, EN 61000-6-1:2007, EN 61000-6-3:2007 and EN 60730-2-9:2003. RoHS: This Product complies with the EU directive 2011/65/EU of the European Parliament

## PRODUCT SELECTION

AHU	X	X	X	S	X	1
<b>Version:</b>						
1 digital output + 3 analogue outputs + 3 analogue inputs	0					
2 digital output + 2 analogue outputs + 3 analogue inputs	1					
3 digital output + 1 analogue outputs + 3 analogue inputs	2					
3 digital output + 2 analogue outputs + 2 analogue inputs	3					
5 digital output + 0 analogue outputs + 3 analogue inputs	4					
<b>Communication:</b>						
Without communication			S			
Modbus			M			
<b>Clock:</b>						
Without clock				S		
With clock				C		
<b>Internal sensor:</b>						
Temperature						T
Temperature + humidity						H
<b>Connector:</b>						
Plug-in connectors						



## EVOLUTION, ROOM CONTROLLER FOR RADIANT PANEL APPLICATIONS

Room regulator for regulation and control applications of radiant panel systems. The available functions, including flow temperature control, dew point control, the presence of the relative humidity sensor on board, the management of dehumidification, possibility of using independent time slots by area and much more, make the FH series regulators the optimal choice for the management of heating and cooling systems with radiant panels. The controllers have a Modbus communication port for control in master / slave systems or for interfacing with supervisory systems. The configuration of the products can be done via Modbus port or through a USB port, using the special Evolution Tool configuration software.



FH



1

Technical data	
Supply voltage	110...230 V AC $\pm$ 10%, 50...60 Hz
Power consumption	Max. 1.3 W
Temperature range	0...50 °C
Inputs	2 potential free contacts / 2 or 3 NTC10K sensors / USB port for parameters setting and software update
Outputs	1 analogue outputs 0...10 V ( $R_L > 10$ kOhm) according to model / 3 or 5 relays SPST 250 V AC, 3A (AC1) according to model
Communication	Modbus RTU (master or slave)
Range of temperature reading	-15...+90 °C
Ambient humidity	10...90 % RH (non-condensing)
Dimensions	128 x 80 x 55.5 mm
Mounting	3 modules built-in box
Storage temperature	-20...+70 °C
Casing	PC + ABS - White effect RAL 9003
Weight	Max. 230 g
Protection class	IP30
Isolation class	II
Certification	EN 60730-1, EN 61000-6-1, EN 61000-6-3

Article	DO	AO	AI	Communication	Clock	Internal sensor
FH-2MSSH1	3	1	3	Modbus	-	Temp.+humidity
FH-2MCSH1	3	1	3	Modbus	X	Temp.+humidity
FH-4MSSH1	5	0	3	Modbus	-	Temp.+humidity
FH-4MCSH1	5	0	3	Modbus	X	Temp.+humidity

## ROOM TEMPERATURE, HUMIDITY, CO2 AND UNIVERSAL CONTROLLER 110...240 V AC

Stand-alone room controller for temperature, humidity, CO2 and universal.

Technical data	
Supply voltage	110...240 V AC, 50...60 Hz
Input	1 analogue input 0...10 V (only for model PC-U)
Output	1 analogue output 0...10 V ( $R_L > 10$ kOhm)
Ambient temperature	0...50 °C
Ambient humidity	10...90 % RH (non-condensing)
Working range, temperature	0...50 °C
Working range, humidity	0...100 % RH
Working range, CO <sub>2</sub>	0...2000 ppm
Protection class	IP30 class II
Dimensions	PC-H, PC-U: 85 x 100 x 30.5 mm PC-T, PC-TC: 88 x 100 x 30.5 mm



PC-H, PC-U



PC-T, PC-TC

Article	Description	Power consumption
PC-H	Room humidity controller	Max. 0.46 W
PC-T	Room temperature controller	Max. 0.46 W
PC-TC	Room temperature and CO2 controller	Max. 1.25 W
PC-U	Universal room controller	Max. 0.46 W

## ROOM TEMPERATURE CONTROLLER FOR 0...10 V DC OR 3-POINT ACTUATORS

This room controller is primarily intended for control of heating or cooling in zone control systems. It has an input for a presence detector (occupancy control). The controller also has an input for change-over, which makes it possible for the control function to switch between heating and cooling.



CA1

Technical data	
Supply voltage	24 V AC, $\pm 15\%$ 50...60 Hz, 2 VA
Output	0...10 V DC, 1 mA or 3-point, 24 V AC, 1 A
Inputs	Two digital and one NTC sensor
Setpoint	0...40 °C
P-band	0.5...50 K
Dimensions	102 x 120 x 29 mm
Protection class	IP20

Article	Description
CA1	Room temperature controller

## ELECTRONIC ROOM THERMOSTAT, 1-STAGE

Electronic thermostats intended for heating or cooling with built-in sensor and input for an external sensor.



TAE1 TAE2

Technical data	
Supply voltage	230 V AC $\pm 10\%$ , 1 VA
Outputs	16 A, 230 V AC, change-over relay
Ambient temperature	0...50 °C
Sensor inputs	NTC sensor
Mounting	Wall
Dimensions	86 x 86 x 30 mm
Protection class	IP30

Article	Temperature range	Hysteresis
TAE1	0...30 °C	1 K
TAE2	20...50 °C	1...10 K

## ROOM CONTROLLER WITH ACTIVE FROST PROTECTION FOR 3-POINT ACTUATOR

Controller intended for control of valve actuators in water-heated systems. It has a built-in room sensor and can be used for control of supply air temperature or room temperature, with or without cascade control. The controller has built-in active frost protection with two alarm relays and automatic heat maintaining function during shutdown.





RA-CTA

1



Technical data	
Supply voltage	24 V AC $\pm$ 10 %, 50/60 Hz
Power consumption	Max. 5 VA
Control signal (output)	3-point floating control, 24 V AC output (heating)
Sensor inputs	Three 0...30°C (the sensor determines the range (NTC sensor))
Setpoint	0...30 °C
Minimum limit	0...30°C (not active for single sensor control)
Cascade factor (CF)	1...15 (must be set to 1 for single sensor control)
Frost alarm setpoint	5 °C
Shutdown mode setpoint	25°C (setpoint on frost protection sensor)
Fan relay	Breaking contact for fan contactor interlock if a frost protection alarm occurs. 230 V AC, 2 A.
Alarm relay	Change-over contact for alarm indication if a frost protection alarm occurs. 24 V AC, 2 A.
Mounting	Wall
Dimensions	93 x 153 x 40 mm
Protection class	IP20

Article	Description
RA-CTA	Room controller for HVAC system, with active frost protection

## DB-TA ROOM CONTROLLERS WITHOUT DISPLAY

RANGE +5...+30°C DB-TA-		PIPE	OUTPUTS		SWITCHES			REMOTE S/W	REMOTE SENSOR	POWER SUPPLY
			RELAY	0... 10 VCC	ON/OFF	3-SPEED	S/W			
323-	199	2	•		•				B	24/230 Vca
	435	2	•		s	•		•	A	
	995	2	•					•	B	
	998	2	•				•		B	
335-	933	2/4		•/••		•	•/zn		B	24 Vca
	993	2/4		•/••			•/zn			
343-	139	4	••		•	•	zn		B	24/230 Vca
	199	4	••		•		zn			
	999	4	••				zn			
345-	139	4		••	•	•	zn		B	24 Vca
	199	4		••	•		zn			
	999	4		••			zn			
347-	439	4	3 point control		s	•	zn		A	24 Vca
363-	436	2	•		s	•	auto		A	230 Vca
367-	439	2	3 point control		s	•	zn		A	24 Vca
383-	433	2/4	•		s	•	•		A	24/230 Vca
387-	10A	2/4	••••		•	m/a	auto		A	230 Vca
	566	4	••••			m/a	zn		A	
	866	2	••••			m/a	auto		A	

### INDEX FOR MODELS DB-TA-3:

- zn** dead zone
- s** continuous fan/thermostatic fan/off switch
- auto** s/w change over with water sensor
-  on/off/electric heater switch
-  min speed/automatic speed switch
- m/a** min speed/automatic speed switch
- A** sensor NT0220-NTC10-02
- B** sensor NT0220-NTC100

## ROOM THERMOSTATS FOR 2 PIPE SYSTEMS

Technical data	
Supply voltage	24/230 V AC ± 10 %, 50/60 Hz (selectable by jumper)
Load	Max. 6 A
Output	1 SPDT relay 6 A 24/230 V AC
Power consumption	1 W
Sensor	Thermoresistor NTC 100K (for DB-TA-323-435 -> NTC 10K)
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C (mechanical limitation of the setpoint adjustment)
Hysteresis	0.5 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	210 g
Dimensions	144 x 82 x 27 mm
Protection class	IP30
Isolation class	II

Article	On/off button	3 speeds	Change-over function, season	Sensor
DB-TA-323-199	X	-	-	NT0220-NTC100 optional with 2 m cable, selectable by jumper
DB-TA-323-435	X	X	Remote	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-323-995	-	-	Remote	NT0220-NTC100 optional with 2 m cable, selectable by jumper
DB-TA-323-998	-	-	Local	NT0220-NTC100 optional with 2 m cable, selectable by jumper



For DB-TA-323-435 switch off/fan based on temp./continuous fan.



DB-  
TA-323-199



DB-  
TA-323-435



DB-  
TA-323-995



DB-  
TA-323-998

## ROOM CONTROLLERS FOR 2 OR 4 PIPE SYSTEMS, 0...10 V OUTPUT

Technical data	
Supply voltage	24 V AC ± 10 %, 50/60 Hz
Load	Max. 6 A (speeds)
Output	Proportional 0...10 V DC ( $R_L > 10 \text{ k}\Omega$ )
Power consumption	1 W
Sensor	NTC 100K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C (mechanical limitation of the setpoint adjustment)
Hysteresis	0.5 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
P-band	1...5 K
Neutral zone	1...4 K
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	210 g
Dimensions	144 x 82 x 34 mm mm
Protection class	IP30
Isolation class	II

Article	3 speeds	Change-over function, season	Sensor
DB-TA-335-933	X	Local S/W (2-pipe)	NT0220-NTC100 optional with 2 m cable, selectable by jumper
DB-TA-335-993	-	Local S/W (4-pipe) neutral zone	NT0220-NTC100 optional with 2 m cable, selectable by jumper



DB-  
TA-335-933



DB-  
TA-335-993

## ROOM CONTROLLERS FOR 4 PIPE SYSTEMS

Technical data	
Supply voltage	24/230 V AC ± 10%, 50/60 Hz (selectable by jumper)
Load	Max. 6 A (resistivi)
Outputs	2 SPDT relays 6 A 24/230 V AC
Power consumption	1 W
Sensor	NTC 100K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	+5...+30 °C mechanical limitation of the setpoint adjustment
Hysteresis	0.5 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Neutral zone	1...4 K
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	210 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30 class II
Isolation class	II



DB-  
TA-343-139



DB-  
TA-343-199



DB-  
TA-343-999

Article	On/off button	3 speeds	Change-over function, season	Sensor
DB-TA-343-139	X	X	Local S/W (neutral zone)	NT0220-NTC100 optional with 2 m cable, selectable by jumper
DB-TA-343-199	X	-	Local S/W (neutral zone)	NT0220-NTC100 optional with 2 m cable, selectable by jumper
DB-TA-343-999	-	-	Local S/W (neutral zone)	NT0220-NTC100 optional with 2 m cable, selectable by jumper

## ROOM CONTROLLERS FOR 4 PIPE SYSTEMS, 0...10 V OUTPUTS

Technical data	
Supply voltage	24 V AC ± 10%, 50/60 Hz
Load	Max. 6 A (speed)
Outputs	2 proportional 0...10 V DC ( $R_L > 10 \text{ k}\Omega$ )
Power consumption	1 W
Sensor	NTC 100K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C mechanical limitation of the setpoint adjustment
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
P-band	1...5 K
Neutral zone	1...4 K
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	210 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30 class II
Isolation class	II



DB-  
TA-345-139



DB-  
TA-345-199



DB-  
TA-345-999

Article	On/off button	3 speeds	Change-over function, season	Sensor
DB-TA-345-139	X	X	Local S/W (neutral zone)	NT0220-NTC100 optional with 2 m cable, selectable by jumper
DB-TA-345-199	X	-	Local S/W (neutral zone)	NT0220-NTC100 optional with 2 m cable, selectable by jumper
DB-TA-345-999	-	-	Local S/W (neutral zone)	NT0220-NTC100 optional with 2 m cable, selectable by jumper

## ROOM CONTROLLERS FOR 4 PIPE SYSTEMS, 3-POINT OUTPUT

Technical data	
Supply voltage	24 V AC $\pm$ 10%, 50/60 Hz
Outputs	5 triac 24 V AC / valves: max 0.5 A, min 0.025 A / speed: max 1 A, min 0.040 A
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	Summer: +24 $\pm$ 5 °C / winter: +20 $\pm$ 5 °C (mechanical limitation of the setpoint adjustment)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
P-band	1...10 K
Neutral zone	4 K
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	210 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30 class II
Isolation class	II



DB-  
TA-347-439

1

Article	Manual selection of thermostatic fan/continuous fan/Off	3 speeds	Change-over function, season	Sensor
DB-TA-347-439	X	X	Local S/W (neutral zone)	NT0220-NTC10-02 optional with 2 m cable, selectable by jumper

## ROOM THERMOSTATS FOR 2 PIPE SYSTEMS WITH AUTOMATIC SEASON CHANGEOVER

Technical data	
Supply voltage	230 V AC $\pm$ 10%, 50/60 Hz
Load	Max. 6 A (resistivi)
Output	1 relay 6 A 230 V AC
Power consumption	1 W
Sensor	NTC 10K air sensor and water sensor
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C (mechanical limitation of the setpoint adjustment)
Hysteresis	< 0.5 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	210 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30 class II
Isolation class	II



DB-  
TA-363-436

Article	Manual selection of thermostatic fan/continuous fan/Off	3 speeds	Change-over function, season	Sensor
DB-TA-363-436	X	X	Local S/W auto (season changeover selection, S/W, by water sensor)	NT0220-NTC10-02 optional with 2 m cable, selectable by jumper



Note: The thermostats are supplied with water sensor model NTA020-027P

## ROOM CONTROLLERS FOR 2 PIPE SYSTEMS WITH AUTOMATIC SEASON CHANGEOVER, 3-POINT OUTPUT



DB-  
TA-367-439

Technical data	
Supply voltage	24 V AC $\pm$ 10%, 50/60 Hz
Outputs	5 triac 24 Vac / valves: max 0.5 A, min 0.025 A / speed: max 1 A, min 0.040 A
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	Summer: +24 $\pm$ 5 °C / winter: +20 $\pm$ 5 °C (mechanical limitation of the setpoint adjustment)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
P-band	1...10 K
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	210 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30 class II
Isolation class	II

Article	Manual selection of thermostatic fan/continuous fan/Off	3 speeds	Change-over function, season	Sensor
DB-TA-367-439	X	X	Local S/W auto (season changeover selection, S/W, by air sensor)	NT0220-NTC10-02 optional with 2 m cable, selectable by jumper



Note: The controllers are supplied with water sensor model NTA020-027P.

## ROOM THERMOSTATS FOR 2 OR 4 PIPE SYSTEMS



DB-  
TA-383-433

Technical data	
Supply voltage	24/230 V AC $\pm$ 10%, 50/60 Hz (selectable by jumper)
Load	Max. 6 A
Output	1 relay SPDT 6 A 230 V AC
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C (mechanical limitation of the setpoint adjustment)
Hysteresis	0.5 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	210 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30 class II
Isolation class	II

Article	Manual selection of thermostatic fan/continuous fan/Off	3 speeds	Change-over function, season	Sensor
DB-TA-383-433	X	X	Local S/W	NTA020-027P optional with 2 m cable, selectable by jumper



## ROOM CONTROLLERS FOR 2 OR 4 PIPE SYSTEMS WITH AUTOMATIC SPEED AND CHANGEOVER



DB-TA-387-10A

1

Technical data	
Supply voltage	230 V AC ±10%, 50/60 Hz
Load	Max. 6 A for motor output and valves or electric heater relay
Output	5 relays 8 A 230 V AC
Power consumption	1 W
Sensor	NTC 10K air sensor and water sensor
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	12...28 °C mechanical limitation of the setpoint adjustment
Hysteresis	0.4 K (between 1 <sup>st</sup> and 3 <sup>rd</sup> speeds)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	210 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30 class II
Isolation class	II

Article	On/off button	Speed selection button	Change-over function, season	3 speeds	Sensor
DB-TA-387-10A	X I, II, Automatic	-	Auto working season selection (W/S) by water sensor for 2-pipe systems; by air sensor for 4-pipe systems.	Auto	NT0220-NTC10-02 optional with 2 m cable, selectable by jumper



Note: The controllers are supplied with water sensor model NTA020-027P.

## ROOM CONTROLLERS FOR 2 OR 4 PIPE SYSTEMS WITH AUTOMATIC MOTOR SPEED AND SEASON CHANGEOVER

### Technical data

Supply voltage	230 V AC $\pm$ 10%, 50/60 Hz
Load	Max. 6 A for motor output, valves or electric heater relay
Outputs	8 relays 6 A 230 V AC
Power consumption	1 W
Sensor	NTC 10K air sensor and water sensor
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	Summer: +24 $\pm$ 5 °C / winter: +20 $\pm$ 5 °C (mechanical limitation of the setpoint adjustment)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Hysteresis	0.5 K
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	210 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30 class II
Isolation class	II



DB-  
TA-387-566



DB-  
TA-387-866

Article	Tubes	On/off/electric heating button	Auto/silence	Change-over function, season	3 speeds	Sensor
DB-TA-387-566	4	X	X	Neutral zone	Auto	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-387-866	2	X	X	W/S (working season, W/S, selection by water sensor)	Auto	NTA020-027P optional with 2 m cable, selectable by jumper



Note: The controllers are supplied with water sensor model NTA020-027P.

## DB-TA ROOM CONTROLLERS WITH DISPLAY

RANGE +5...+30°C <b>DB-TA-</b>		PIPE	OUTPUTS		SWITCHES			REMOTE S/W	ECONOMY	REMOTE SENSOR	POWER SUPPLY
			RELAY	0... 10 VCC	ON/OFF	3-SPEED	S/W				
31A-	100	2/4		q	•					A	24 Vca
	110	2/4		q	•		•				
33A-	10A	2/4		q	•		par	•	v	A	24 Vca
	13A	2/4		q	•	•	par	•	v		
393-	435	2/4	•		s	•	•			A	230 Vca
	436	2	•		s	•		•			
3A3-	000	4	••••				zn			A	230 Vca
	139	4	••		•	•	zn		v		
	199	4	••		•		zn		v		
	700	4	••••			•Vct	zn				
	939	4	••			•	zn		v		
	999	4	••				zn		v		
3A5-	000	4		••			zn		v	-	24 Vca
	100	4		••	•		zn		v		
	130	4		••	•	•	zn		v		
3A8-	000	4	• heating	••			zn		v	-	24 Vca
	100	4	• heating	••	•		zn		v		
	130	4	• heating	••	•	•	zn		v		
3A9-	000	4	•	•			zn		v	-	24 Vca
	100	4	•	•	•		zn		v		
	130	4	•	•	•	•	zn		v		
3B5-	000	2		•			par	w	v	-	24 Vca
	100	2		•	•		par	w	v		
	130	2		•	•	•	par	w	v		
3B8-	100	2	•	•	•		par	w	v	-	24 Vca
	130	2	•	•	•	•	par	w	v		
3C3-	139	2	••		•	•	par		v	A	230 Vca
	199	2	••		•		par		v		
	999	2	••				par		v		
3D3-	00A	2	••••		on/off/res (par)	out/cont1/cont2/ cont3 (par)	par	par	v	A	230 Vca
		4					auto				
3E3-	139	2	• (cooling)		•	•			v	A	230 Vca
	199	2	• (cooling)		•				v		
3F3-	139	2	•		•	•			v	A	230 Vca
	199	2	•		•				v		
	939	2	•			•			v		
	999	2	•						v		
3G3-	700	2/4	3 point control			•Vct	par			A	230 Vca

### INDEX FOR MODELS DB-TA-3:

- Vct** continuous fan/thermostatic fan
- zn** dead zone
- q** proportional-integral action
- s** continuous fan/thermostatic fan/off switch
- auto** s/w change-over with water sensor
- heat** heating
- par** setting by keys and display
- A** sensor NT0220-NTC10-02
- v** ECONOMY version: replace last number of code with "A"
- w** only for ECONOMY version

## ROOM CONTROLLERS FOR AIR HANDLING UNIT

The DB-TA-31A series can control temperature in room applications on heating, cooling, ventilation 2-pipe or 4-pipe systems.

Technical data	
Supply voltage	24 V AC $\pm$ 10%, 50/60 Hz
Inputs	Season changeover / limit sensor (to define when ordering) / remote air sensor (optional)
Outputs	1 or 2 0-10 V outputs ( $R_L > 10$ kOhm)
Power consumption	< 1.5 W
Sensor	Internal or remote NTC 10K for air sensor / remote NTC 10K for limit sensor (code STC-NTC10-02)
Ambient temperature	6...45 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	6...45 °C
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II



DB-TA-31A-100



DB-TA-31A-110

Article	On/off button	Change-over function, season	Sensor
DB-TA-31A-100	X	Remote contact	NT0220-NTC10-02 optional with 2 m cable, selectable by jumper
DB-TA-31A-110	X	S / W	NT0220-NTC10-02 optional with 2 m cable, selectable by jumper

## ROOM CONTROLLERS FOR 2 AND 4 PIPE SYSTEMS WITH ECONOMY FUNCTION, WITH 0...10 V OUTPUT(S)

Proportional integral temperature control in heating, ventilation, refrigeration and air conditioning for typically 2- and 4-pipe fan-coil systems with proportional valves.

Technical data	
Supply voltage	24 V AC ± 10%, 50/60 Hz
Inputs	External contact for economy / external contact or water sensor (NTA020-027P optional) for remote season changeover function (2-pipe)
Outputs	Valves: 1 or 2 0-10 V outputs ( $R_L > 10 \text{ k}\Omega$ ) / speeds: 6 A 24/230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...45 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	6...45 °C
Storage temperature	-20...+60 °C
Storage humidity	< 95 % RH
Economy	2 pipes: adjustable range between 6...45 °C (replaced the working setpoint) / 4 pipes: adjustable range between 0...5 °C
P-band	1...30 K
I-time	1...30 minutes
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II



DB-TA-33A-10A



DB-TA-33A-13A

Article	On/off button	3 speeds	Change-over function, season	Sensor
DB-TA-33A-10A	X	-	S / W setting by keys and display	NTO220-NTC10-02 optional with 2 m cable, selectable by jumper
DB-TA-33A-13A	X	X	S / W setting by keys and display	NTO220-NTC10-02 optional with 2 m cable, selectable by jumper



Note: optional water sensor model NTA020-027P.

## ROOM THERMOSTATS FOR 2 OR 4 PIPE SYSTEMS

Technical data	
Supply voltage	230 V AC ± 10%, 50/60 Hz
Load	Max. 6 A
Inputs	External contact or water sensor for remote season changeover function (DB-TA-393-436)
Outputs	1 relay SPDT 6 A 230 V AC
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C adjustment by step of 0.5 °C
Hysteresis	0.5 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II



DB-TA-393-435



DB-TA-393-436

Article	Manual selection of thermostatic fan/continuous fan/Off	3 speeds	Change-over function, season	Sensor
DB-TA-393-435	X	X	S / W	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-393-436	X	X		NTA020-027P optional with 2 m cable, selectable by jumper



Note: optional water sensor model NTA020-027P.

## ROOM THERMOSTATS FOR 4 PIPE SYSTEMS WITH 2 STAGES HEATING AND 2 STAGES COOLING

Technical data	
Supply voltage	230 V AC ± 10%, 50/60 Hz
Outputs	Valves: 4 relays SPST 5 A 230 V AC / speeds: 5 A 230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Step differential	0.5...4 K
Hysteresis	0.5...4 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II



DB-TA-3A3-700



DB-TA-3A3-000

Article	3 speeds	Step differential	Hysteresis	Sensor
DB-TA-3A3-700	X	0.5...4 K	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3A3-000	-	0.5...4 K	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper

## ROOM THERMOSTATS FOR 4 PIPE SYSTEMS

Technical data	
Supply voltage	230 V AC ± 10%, 50/60 Hz
Outputs	Valves: 2 relays SPDT 6 A 230 V AC / speeds: 6 A 230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Hysteresis	0.5...4 K
Neutral zone	1...4 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II

Article	On/off button	3 speeds	Change-over function, season	Sensor
DB-TA-3A3-139	X	X	W/S (neutral zone)	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3A3-199	X	-	W/S (neutral zone)	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3A3-939	-	X	W/S (neutral zone)	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3A3-999	-	-	W/S (neutral zone)	NTA020-027P optional with 2 m cable, selectable by jumper



DB-TA-3A3-139



DB-TA-3A3-199



DB-TA-3A3-939



DB-TA-3A3-999

## ROOM THERMOSTATS FOR 4 PIPE SYSTEMS WITH ECONOMY FUNCTION

Technical data	
Supply voltage	230 V AC ± 10%, 50/60 Hz
Input	External contact for economy function
Outputs	Valves: 2 relays SPDT 6 A 230 V AC / speeds: 6 A 230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Hysteresis	0.5...4 K
Neutral zone	1...4 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Economy	Adjustable range between 0...5 °C
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II

Article	On/off button	3 speeds	Change-over function, season	Sensor
DB-TA-3A3-13A	X	X	W/S (neutral zone)	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3A3-19A	X	-	W/S (neutral zone)	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3A3-93A	-	X	W/S (neutral zone)	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3A3-99A	-	-	W/S (neutral zone)	NTA020-027P optional with 2 m cable, selectable by jumper



DB-TA-3A3-13A



DB-TA-3A3-19A



DB-TA-3A3-93A



DB-TA-3A3-99A

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## ROOM CONTROLLERS FOR 4 PIPE SYSTEMS, TWO 0-10 V OUTPUTS

Technical data	
Supply voltage	24 V AC ± 10%, 50/60 Hz
Outputs	Valves: 2 0-10 V outputs ( $R_L > 10 \text{ k}\Omega$ ) / speeds: 6 A 24/230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
P-band	1...5 K
Neutral zone	1...4 K
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II

Article	On/off button	3 speeds	Change-over function, season
DB-TA-3A5-000	-	-	Neutral zone
DB-TA-3A5-100	X	-	Neutral zone
DB-TA-3A5-130	X	X	Neutral zone



DB-TA-3A5-130



DB-TA-3A5-100



DB-TA-3A5-000

## ROOM CONTROLLERS FOR 4 PIPE SYSTEMS WITH ECONOMY FUNCTION, TWO 0-10 V OUTPUTS

Technical data	
Supply voltage	24 V AC ± 10%, 50/60 Hz
Input	External contact for economy function
Outputs	Valves: 2 0-10 V outputs ( $R_L > 10 \text{ k}\Omega$ ) / speeds: 6 A 24/230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Economy	Adjustable range between 0...5 °C
P-band	1...5 K
Neutral zone	1...4 K
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II

Article	On/off button	3 speeds	Change-over function, season
DB-TA-3A5-00A	-	-	Neutral zone
DB-TA-3A5-10A	X	-	Neutral zone
DB-TA-3A5-13A	X	X	Neutral zone



DB-TA-3A5-13A



DB-TA-3A5-10A



DB-TA-3A5-00A



## ROOM CONTROLLERS FOR 4 PIPE SYSTEMS, TWO 0...10 V OUTPUTS, ONE HEATING RELAY OUTPUT

Technical data	
Supply voltage	24 V AC ± 10%, 50/60 Hz
Outputs	Valves: 2 0-10 V outputs ( $R_L > 10 \text{ k}\Omega$ ) 1 relay output 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Hysteresis	0.4 K (relay)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
P-band	1...5 K
Neutral zone	1...4 K
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II

Article	On/off button	3 speeds	Change-over function, season
DB-TA-3A8-000	-	-	Neutral zone
DB-TA-3A8-100	X	-	Neutral zone
DB-TA-3A8-130	X	X	Neutral zone



DB-TA-3A8-130



DB-TA-3A8-100



DB-TA-3A8-000

## ROOM CONTROLLERS FOR 4 PIPE SYSTEMS WITH ECONOMY FUNCTION, TWO 0-10 V OUTPUTS AND HEATING RELAY OUTPUT

Technical data	
Supply voltage	24 V AC ± 10%, 50/60 Hz
Input	External contact for economy function
Outputs	Valves: 2 0-10 V outputs ( $R_L > 10 \text{ k}\Omega$ ) 1 relay output 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Hysteresis	0.4 K (relay)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Economy	Adjustable range between 0...5 °C
P-band	1...5 K
Neutral zone	1...4 K
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II

Article	On/off button	3 speeds	Change-over function, season
DB-TA-3A8-00A	-	-	Neutral zone
DB-TA-3A8-10A	X	-	Neutral zone
DB-TA-3A8-13A	X	X	Neutral zone



DB-TA-3A8-00A



DB-TA-3A8-10A



DB-TA-3A8-13A

## ROOM CONTROLLERS FOR 4 PIPE SYSTEMS, TWO OUTPUTS 0...10 V AND ONE HEATING RELAY OUTPUT

Technical data	
Supply voltage	24 V AC ± 10%, 50/60 Hz
Outputs	Valves: 1 0-10 outputs (RL > 10 kOhm) 1 relay 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Hysteresis	0.5...2 K (relay)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
P-band	1...5 K
Neutral zone	1...4 K
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II



DB-TA-3A9-000



DB-TA-3A9-100



DB-TA-3A9-130

Article	On/off button	3 speeds	Change-over function, season
DB-TA-3A9-000	-	-	Neutral zone
DB-TA-3A9-100	X	-	Neutral zone
DB-TA-3A9-130	X	X	Neutral zone

## ROOM CONTROLLERS FOR 4 PIPE SYSTEMS WITH ECONOMY FUNCTION, TWO 0...10 V OUTPUT AND ONE RELAY OUTPUT

Technical data	
Supply voltage	24 V AC ± 10%, 50-60 Hz
Input	External contact for economy function
Outputs	Valves: 1 0-10 outputs (RL > 10 kOhm) 1 relay 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Hysteresis	0.5...2 K (relay)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Economy	Adjustable range between 0...5 °C
P-band	1...5 K
Neutral zone	1...4 K
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II



DB-TA-3A9-00A



DB-TA-3A9-10A



DB-TA-3A9-13A

Article	On/off button	3 speeds	Change-over function, season
DB-TA-3A9-00A	-	-	Neutral zone
DB-TA-3A9-10A	X	-	Neutral zone
DB-TA-3A9-13A	X	X	Neutral zone

## ROOM CONTROLLERS FOR 2 PIPE SYSTEMS, ONE 0-10 V OUTPUT

Technical data	
Supply voltage	24 V AC ± 10%, 50/60 Hz
Output	Valves: 1 0-10 V output ( $R_L > 10 \text{ k}\Omega$ ) / speeds: 6 A 24/230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
P-band	1...5 K
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II

Article	On/off button	3 speeds	Change-over function, season
DB-TA-3B5-000	-	-	Selector
DB-TA-3B5-100	X	-	Selector
DB-TA-3B5-130	X	X	Selector



DB-TA-3B5-000



DB-TA-3B5-100



DB-TA-3B5-130

## ROOM CONTROLLERS FOR 2 PIPE SYSTEMS WITH ECONOMY FUNCTION AND REMOTE SEASON CHANGEOVER

Technical data	
Supply voltage	24 V AC ± 10%, 50/60 Hz
Input	External contact for economy and season changeover function
Output	Valves: 1 0-10 V outputs ( $R_L > 10 \text{ k}\Omega$ ) / speeds: 6 A 24/230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Economy	Economy setpoint: adjustable range between 5...30°C
P-band	1...5 K
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II

Article	On/off button	3 speeds	Change-over function, season
DB-TA-3B5-00A	-	-	Remote contact
DB-TA-3B5-10A	X	-	Remote contact
DB-TA-3B5-13A	X	X	Remote contact



DB-TA-3B5-00A



DB-TA-3B5-10A



DB-TA-3B5-13A

## ROOM CONTROLLERS FOR 2 PIPE SYSTEMS, ONE 0...10 OUTPUT AND ONE RELAY OUTPUT

Technical data	
Supply voltage	24 V AC $\pm$ 10%, 50/60 Hz
Outputs	Valves: 1 0-10 outputs (RL > 10 kOhm) 1 relay output 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz
Output	
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Hysteresis	0.4 K (relay)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
P-band	1...5 K
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II



DB-TA-3B5-100



DB-TA-3B5-130

Article	On/off button	3 speeds	Change-over function, season
DB-TA-3B8-130	X	-	Selector
DB-TA-3B8-100	X	X	Selector

## ROOM CONTROLLERS FOR 2 PIPE SYSTEMS WITH ECONOMY FUNCTION AND REMOTE SEASON CHANGEOVER, ONE 0...10 V OUTPUT AND ONE RELAY OUTPUT

Technical data	
Supply voltage	24 V AC $\pm$ 10%, 50/60 Hz
Inputs	External contacts for economy and season changeover function
Outputs	Valves: 1 0-10 outputs (RL > 10 kOhm) 1 relay 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Hysteresis	0.4 K (relay)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Economy	Economy setpoint: adjustable range between 5...30 °C
P-band	1...5 K
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II



DB-TA-3B8-10A



DB-TA-3B8-13A

Article	On/off button	3 speeds	Change-over function, season
DB-TA-3B8-10A	X	-	Remote contact
DB-TA-3B8-13A	X	X	Remote contact

## ROOM THERMOSTATS 2 STAGES

Temperature control in heating, refrigeration and air conditioning for typical fan-coil systems with 2 stages.

Technical data	
Supply voltage	230 V AC ± 10%, 50/60 Hz
Outputs	Valves: 2 relay SPDT 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Step differential	0.5...4 K
Hysteresis	0.5...4 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II

Article	On/off button	3 speeds	Hysteresis	Sensor
DB-TA-3C3-139	X	X	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3C3-199	X	-	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3C3-999	-	-	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper



DB-TA-3C3-139



DB-TA-3C3-199



DB-TA-3C3-999

## ROOM THERMOSTATS 2 STAGES WITH ECONOMY FUNCTION

Temperature control in heating, refrigeration and air conditioning for typical fan-coil systems with 2 stages.

Technical data	
Supply voltage	230 V AC ± 10%, 50/60 Hz
Input	External contact for economy function
Outputs	Valves: 2 relay SPDT 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Step differential	0.5...4 K
Hysteresis	0.5...4 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Economy	Adjustable range between 0...5 °C
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30 class II
Isolation class	II

Article	On/off button	3 speeds	Hysteresis	Sensor
DB-TA-3C3-13A	X	X	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3C3-19A	X	-	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3C3-99A	-	-	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper



DB-TA-3C3-13A



DB-TA-3C3-19A



DB-TA-3C3-99A

## ROOM THERMOSTATS WITH AUTOMATIC SPEED AND ECONOMY FUNCTION



DB-TA-3D3-00A

Technical data	
Supply voltage	230 V AC ± 10%, 50/60 Hz
Outputs	Valves: 2 outputs 0,5 A 230 V AC / speeds: 3 outputs 3 A 230 V AC
Power consumption	1 W
Sensor	NTC 10K optional water sensor: NTA020-027P
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	7...30 °C
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Economy	2 pipes: adjustable range between 5...30 °C (replaced the working setpoint) / 4 pipes: adjustable range between 0...5 °C
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II

Article	On/off button	3 speeds	Change-over function, season	Sensor
DB-TA-3D3-00A	-(on/off setting from parameters)	Automatic	2-pipe system: S/W par (setting by keys and display) 4-pipe system: S/W auto (s/w change-over with water sensor)	NTA020-027P optional with 2 m cable, selectable by jumper



Note: The controllers are supplied with water sensor model NT0220-NTC10-02.

## ROOM THERMOSTATS ONE STAGE FOR 2 PIPE SYSTEM, COOLING ONLY



DB-TA-3E3-139



DB-TA-3E3-199

Technical data	
Supply voltage	230 V AC ± 10%, 50/60 Hz
Outputs	Valves: 1 relay SPDT 6 A 230 V AC / speeds: 6 A 230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10 K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Hysteresis	0.5...4 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II

Article	On/off button	3 speeds	Hysteresis	Sensor
DB-TA-3E3-139	X	X	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3E3-199	X	-	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper

## ROOM THERMOSTATS ONE STAGE FOR 2 PIPE SYSTEM WITH ECONOMY FUNCTION

Technical data	
Supply voltage	230 V AC ± 10%, 50/60 Hz
Input	External contact for economy function
Outputs	Valves: 1 relay SPDT 6 A 230 V AC / speeds: 6 A 230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Hysteresis	0.5...4 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Economy	Adjustable range between 5...30 °C (replaced the working setpoint)
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II



DB-TA-3E3-13A



DB-TA-3E3-19A

Article	On/off button	3 speeds	Hysteresis	Sensor
DB-TA-3E3-13A	X	X	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3E3-19A	X	-	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper

## ROOM THERMOSTATS ONE STAGE FOR 2 PIPE SYSTEMS

Technical data	
Supply voltage	230 V AC ± 10%, 50/60 Hz
Outputs	valves: 1 relay SPDT 6 A 230 V AC / speeds: 6 A 230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Hysteresis	0.5...4 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II



DB-TA-3F3-139



DB-TA-3F3-199



DB-TA-3F3-939



DB-TA-3F3-999

Article	On/off button	3 speeds	Hysteresis	Sensor
DB-TA-3F3-139	X	X	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3F3-199	X	-	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3F3-939	-	X	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3F3-999	-	-	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper

## ROOM THERMOSTATS ONE STAGE FOR 2 PIPE SYSTEMS WITH ECONOMY FUNCTION

Technical data	
Supply voltage	230 V AC ± 10%, 50/60 Hz
Input	External contact for economy function
Outputs	Valves: 1 relay SPDT 6 A 230 V AC / speeds: 6 A 230 V AC, 50/60 Hz
Power consumption	1 W
Sensor	NTC 10K
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	5...30 °C
Hysteresis	0.5...4 K
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Economy	Adjustable range between 5...30 °C (replaced the working setpoint)
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II

Article	On/off button	3 speeds	Hysteresis	Sensor
DB-TA-3F3-13A	X	X	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3F3-19A	X	-	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3F3-93A	-	X	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper
DB-TA-3F3-99A	-	-	0.5...4 K	NTA020-027P optional with 2 m cable, selectable by jumper



DB-TA-3F3-13A



DB-TA-3F3-19A



DB-TA-3F3-93A



DB-TA-3F3-99A



## ROOM CONTROLLERS FOR 4 PIPE SYSTEMS, 3 POINTS OUTPUT



DB-TA-3G3-700

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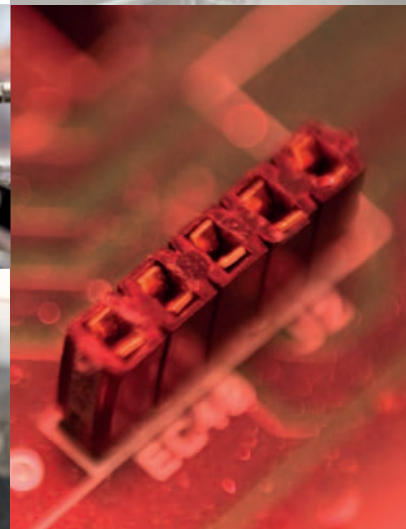
Technical data	
Supply voltage	230 V AC $\pm$ 10%, 50/60 Hz
Outputs	Valves: 4 outputs 5 A 230 V AC / speeds: 3 outputs 3 A 230 V AC
Power consumption	1 W
Sensor	NTC 10K Optional water sensor: NTA020-027P
Ambient temperature	0...40 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	7...30 °C
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Temperature resolution	0.1 °C
Casing	ABS fireproof according to UL94 V-0 color (RAL 9010)
Weight	220 g
Dimensions	144 x 82 x 34 mm
Protection class	IP30
Isolation class	II

Article	Tubes	3 speeds	Sensor
DB-TA-3G3-700	2/4	X	NTA020-027P optional with 2 m cable, selectable by jumper



# 2 Electronic thermostats

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## ELECTRONIC THERMOSTATS, 1 AND 2 STAGES

Temperature control in heating or cooling systems.



DB-I2D/1

Technical data	
Supply voltage	230 V AC $\pm$ 10%, 50/60 Hz
Input	1 NTC 10K sensor, remote setpoint controller (optional)
Output	1 or 2 relays SPDT 10 A 230 V AC
Power consumption	< 1.5 W
Accuracy	$\pm$ 1 °C
Ambient temperature	-20...+50 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Max. temperature sensor	-40...+110 °C
Casing	ABS fireproof according to UL94 V-0
Weight	480 g
Dimensions	132 x 85 x 88 mm
Protection class	IP65
Isolation class	II

Article	Steps	Temperature range	Hysteresis	Step differential
DB-I1D/1	1	-10...+40 °C	0.5...6 K	-
DB-I1D/2	1	30...80 °C	0.5...6 K	-
DB-I2D/1	2	-10...+40 °C	0.5...6 K	0.5...6 K
DB-I2D/2	2	30...80 °C	0.5...6 K	0.5...6 K



On request: remote setpoint control; code: DB-CDP/N1.

## DIGITAL CONTROLLERS, 4 STAGES WITH RELAY

Temperature and humidity control in heating, cooling, humidification and dehumidification systems.



DB-I4D/02/001

Technical data	
Supply voltage	230 V AC $\pm$ 10%, 50-60 Hz
Input	- NTC 10K sensor and/or humidity-current transmitter 4...20 mA- remote setpoint controller DB-CDP-N1 (optional)
Output	4 or 8 SPDT relays 10 A 230 V AC
Ambient temperature	-10...+50 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Delay	0...9.5 min
Display	2 lines with 3 digits (7 segments display)
Configuration	4 push/buttons keyboard on the front
Casing	Makrolon
Weight	920 g
Dimensions	200 x 120 x 75 mm (DB-I4D/02/004: 2 casings 200 x 120 x 75 mm)
Protection class	IP65
Isolation class	II

Article	Power consumption	Number of modules	Steps	Range	Hysteresis	Input
DB-I4D/02/001	< 3 W	1	4	-50...+110 °C	0...10 K	NTC 10K
DB-I4D/02/002	< 3 W		4	0...100 % RH	0...100 % RH	4...20 mA
DB-I4D/02/003	< 3 W	1	4	-50...+110 °C / 0...100 % RH	0...10 K / 0...10 % RH	NTC 10K / 4...20 mA
DB-I4D/02/004	< 6 W	2	8	-50...+110 °C	0...10 K	NTC 10K

## DIFFERENTIAL THERMOSTATS

Temperature control in heating pump systems, solar heating panel systems, for regulation of water circulation pumps and all systems that depend on a differential temperature.

Technical data	
Supply voltage	230 V AC $\pm$ 10%, 50/60 Hz
Input	2 NTC 10K sensor (thermostats are supplied with NT0420 + NTC10-02)
Output	1 SPDT relay 10 A 230 V AC
Power consumption	< 1.5 W
Accuracy	$\pm$ 1 °C
Ambient temperature	-20...+50 °C
Ambient humidity	10...90 % RH (non-condensing)
Setpoint	1...20 Delta T °C
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Max. temperature sensor	-40...+110 °C
Casing	ABS fireproof according to UL94 V-0
Weight	580 g
Dimensions	132 x 85 x 88 mm
Protection class	IP65
Isolation class	II



DB-IDD

Article	Temperature range	Hysteresis
DB-IDD	-10...+85 °C	0.5...6 K

## DIGITAL THERMOSTAT ONE STAGE

Indication and controlling of temperature with NTC sensors in industrial heating and cooling applications.

Technical data	
Supply voltage	230 V AC, 50/60 Hz
Input	1 NTC sensor
Output	1 SPDT relay 10 A, 230 V AC resistive load
Sensor	NTC10-02
Power consumption	1,8 W / 2,5 VA
Setpoint	-40...+105 °C
Ambient temperature	0...55 °C
Ambient humidity	10...90% RH (non-condensing)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Hysteresis	0,1...99 K
Resolution	0,1 °C / 1 °C / 0,1 °F
Casing	Fire-proof
Connection	Screw terminal blocks
Installation	Panel mounting, with click brackets
Dimensions	75 x 33 x 65 mm - mounting hole 71 x 29 mm
Protection class	IP65 (frontal)



DTR11N7

Article	Setpoint	Hysteresis
DTR11N7	-40...+105 °C	0,1...99 K

## DIGITAL CONTROLLERS WITH RELAYS

Control of 1 or 2 independent physical quantities with:

- 2 relay outputs;
- 1 output for power supply of active transducer (17 V DC, max. 44 mA);
- 3 digit display;
- red LED, output state indicator;
- push buttons for parameters setting;
- optical alarms;
- password and two access levels.



DB-R/1

Technical data DB-R/1	
Outputs	2 SPDT relays 8 A 230 V AC
Power consumption	< 3 W
Ambient temperature	0...45 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Connection	Screw terminal block for cables up to 2.5 mm <sup>2</sup>
Casing	ABS fireproof plastic according to UL94 V-0
Weight	400 g
Dimensions	96 x 48 x 122 mm - mounting hole: 92 x 45 mm
Protection class	IP52 (front)
Isolation class	II

DB-R/1

Part number selection		Input 1			Input 2			X	1
DB-R		X	X	XX	X	X	XX	X	1
<b>INPUT 1</b>									
NTC10-02	1	1	07	(1)					
PT1000	2	1	08	(1)					
PTC 2K	3	1	09	(1)					
NI1000-02	4	1	10	(1)					
0...1000 Ohm	5	2	06	(1)					
0...1 Vcc (**)	6								
0...10 Vcc (**)	7								
0...20 mA (**) (Rin = 100 Ohm)	8								
4...20 mA (**) (Rin = 100 Ohm)	9								
<b>UNIT 1</b>									
°C		1							
% u.r.		2							
bar		3							
mbar		4							
Pa		5							
<b>RANGE 1</b>									
0...+50°C			01						
-30...+50°C			02						
-10...+40°C			03						
0...+100°C			04						
-20...+80°C			05						
0...+100% u.r.			06						
-50...+110°C			07						
-60...+600°C			08						
-50...+150°C			09						
-60...+200°C			10						
Range on request (*)			99						
<b>INPUT 2</b>									
None			0	0	00				
NTC10-02			1	1	07	(1)			
PT1000			2	1	08	(1)			
PTC 2K			3	1	09	(1)			
NI1000-02			4	1	10	(1)			
0...1000 Ohm			5	2	06	(1)			
0...1 Vcc (**)			6						
0...10 Vcc (**)			7						
0...20 mA (**) (Rin = 100 Ohm)			8						
4...20 mA (**) (Rin = 100 Ohm)			9						
<b>UNIT 2</b>									
None				0					
°C				1					
% u.r.				2					
bar				3					
mbar				4					
Pa				5					
<b>RANGE 2</b>									
None					00				
0...+50°C					01				
-30...+50°C					02				
-10...+40°C					03				
0...+100°C					04				
-20...+80°C					05				
0...+100% u.r.					06				
-50...+110°C					07				
-60...+600°C					08				
-50...+150°C					09				
-60...+200°C					10				
range on request (*)					99				
<b>POWER SUPPLY</b>									
230 Vca ±10% 50/60 Hz								1	
12 Vca ±10% 50/60 Hz								2	
<b>OUTPUT</b>									
2 relè SPDT 230Vca 8A									

(\*) specify on order  
 (†) compulsory ranges  
 (\*\*) the choice of the setting range is only permitted for models with voltage inputs (VDC) or current (mA)

## DIGITAL CONTROLLERS 2 OUTPUTS 0...10 V

Regulation of 1 or 2 independent physical quantities with:

- 2 proportional outputs 0...10 V DC;
- 1 output for power supply of active transducer ( 17 V DC, Max. 44 mA);
- 3 digit display;
- red led, output state indicator;
- push buttons for parameters setting;
- optical alarms;
- password and two access levels.



DB-R/2

Technical data DB-R/2	
Outputs	2 0-10 V ( $R_L > 10 \text{ KOhm}$ )
Power consumption	< 3 W
Ambient temperature	0...45 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Connection	Screw terminal block for cables up to 2.5 mm <sup>2</sup>
Casing	ABS fireproof plastic according to UL94 V-0
Weight	400 g
Dimensions	96 x 48 x 122 mm - mounting hole: 92 x 45 mm
Protection class	IP52 (front)
Isolation class	II



Part number selection	Input 1			Input 2			X	2
	X	X	XX	X	X	XX		
<b>INPUT 1</b>								
NTC10-02	1	1	07	(1)				
0...10 Vcc (**)	7							
4...20 mA (**) (Rin = 100 Ohm)	9							
<b>UNIT 1</b>								
°C		1						
% u.r.		2						
bar		3						
mbar		4						
Pa		5						
<b>RANGE 1</b>								
0...+50°C			01					
-30...+50°C			02					
-10...+40°C			03					
0...+100°C			04					
-20...+80°C			05					
0...+100% u.r.			06					
-50...+110°C			07					
-60...+600°C			08					
-50...+150°C			09					
-60...+200°C			10					
range on request (*)			99					
<b>INPUT 2</b>								
None				0	0	00		
NTC10-02				1	1	07	(1)	
0...10 Vcc (**) (Rin = 100 Ohm)				7				
4...20 mA (**) (Rin = 100 Ohm)				9				
<b>UNIT 2</b>								
None					0			
°C					1			
% u.r.					2			
bar					3			
mbar					4			
Pa					5			
<b>RANGE 2</b>								
None						00		
0...+50°C						01		
-30...+50°C						02		
-10...+40°C						03		
0...+100°C						04		
-20...+80°C						05		
0...+100% u.r.						06		
-50...+110°C						07		
-60...+600°C						08		
-50...+150°C						09		
-60...+200°C						10		
range on request (*)						99		
<b>POWER SUPPLY</b>								
230 Vca ±10% 50/60 Hz							1	
12 Vca ±10% 50/60 Hz							2	
<b>OUTPUT</b>								
2.0-10 V								

(\*) specify on order  
 (!) compulsory ranges  
 (\*\*) the choice of the setting range is only permitted for models with voltage inputs (VDC) or current (mA)

## DIGITAL CONTROLLERS WITH 1 OUTPUT 0...10 V AND 1 RELAY OUTPUT

Regulation of 1 or 2 independent physical quantities with:

- 1 proportional output 0...10 V DC;
- 1 relay output;
- 1 output for power supply of active transducer (17 V DC, Max. 44 mA)
- 3 digit display;
- red led, output state indicator;
- push buttons for parameters setting;
- optical alarms;
- password and two access levels.



DB-R/3

Technical data DB-R/3	
Outputs	1 proportional 0...10 V DC ( $R_L > 10 \text{ k}\Omega$ ) / 1 SPDT relay 8 A 230 V AC
Power consumption	< 3 W
Ambient temperature	0...45 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Connection	Screw terminal block for cables up to 2.5 mm <sup>2</sup>
Casing	ABS fireproof plastic according to UL94 V-0
Weight	400 g
Dimensions	96 x 48 x 122 mm - mounting hole: 92 x 45 mm
Protection class	IP52 (front)
Isolation class	II

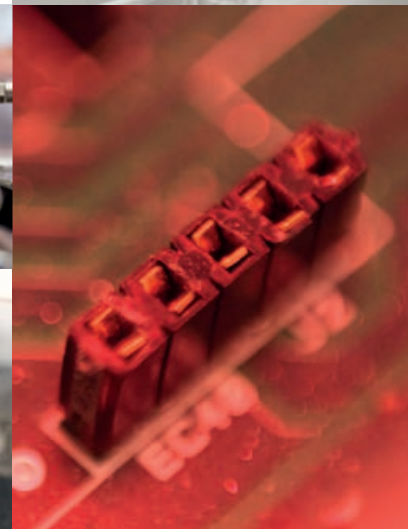
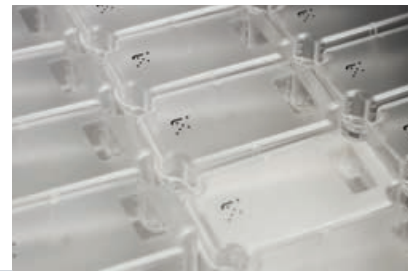
DB-R/3

Part number selection	X	Input 1 X	XX	X	Input 2 X	XX	X	1
<b>INPUT 1</b>								
NTC10-02	1	1	07	(1)				
0...10 Vcc (**)	7							
4...20 mA (**) (Rin = 100 Ohm)	9							
<b>UNIT 1</b>								
°C		1						
% u.r.		2						
bar		3						
mbar		4						
Pa		5						
<b>RANGE 1</b>								
0...+50°C			01					
-30...+50°C			02					
-10...+40°C			03					
0...+100°C			04					
-20...+80°C			05					
0...+100% u.r.			06					
-50...+110°C			07					
-60...+600°C			08					
-50...+150°C			09					
-60...+200°C			10					
range on request (*)			99					
<b>INPUT 2</b>								
None				0	0	00		
NTC10-02				1	1	07	(1)	
PT1000				2	1	08	(1)	
PTC 2K				3	1	09	(1)	
NI1000-02				4	1	10	(1)	
0...1000 Ohm				5	2	06	(1)	
0...1 Vcc (**)				6				
0...10 Vcc (**)				7				
0...20 mA (**)				8				
4...20 mA (**)				9				
<b>UNIT 2</b>								
None					0			
°C					1			
% u.r.					2			
bar					3			
mbar					4			
Pa					5			
<b>RANGE 2</b>								
None						00		
0...+50°C						01		
-30...+50°C						02		
-10...+40°C						03		
0...+100°C						04		
-20...+80°C						05		
0...+100% u.r.						06		
-50...+110°C						07		
-60...+600°C						08		
-50...+150°C						09		
-60...+200°C						10		
range on request (*)						99		
<b>POWER SUPPLY</b>								
230 Vca ±10% 50/60 Hz							1	
12 Vca ±10% 50/60 Hz							2	
<b>OUTPUT</b>								
1 0-10 V e 1 relè SPDT 230 Vca 8 A								



# 3 Electromechanical thermostats

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## ROOM THERMOSTAT

1-stage room thermostat. Models with on/off switch or summer/winter switch.

Technical data	
Sensor element	Gas-filled bellows with membrane
Hysteresis	< 1 K
Contact	NO/NC 250 V AC 16 (2,5) A
Temperature range	5...30 °C
Ambient temperature	Max. 50 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	0...50 °C
Storage humidity	< 95 % RH
Mounting	Room
Casing	ABS, fireproof according UL94 V-0 color (Euro White)
Dimensions	80 x 80 x 44 mm
Weight	128 g
Protection class	IP20
Isolation class	I



TA33/I

Article	On/off button	Summer/winter switch	Hysteresis
TA31/I	-	-	< 1K
TA33/I	X	-	< 1K
TA34/I	-	X	< 1K

Article	Description
000071	Pin for knob lock - 2 pcs. per device

## ROOM THERMOSTATS WITH FIXED HYSTERESIS, IP54

A wide range of low cost room thermostats for wall mounting.

Technical data	
Sensor element	Liquid-filled coiled copper nickel bulb
Contacts	Dust-tight microswitches with switching SPDT contacts (heat/cool)
Switch capacity	NC 16 (6) A, 250 V AC / NO 6 (4) A, 250 V AC
Temperature range	°C
Ambient temperature	-10...+65 °C
Ambient humidity	10...90% RH (without condensing)
Storage temperature	-20...+65 °C
Storage humidity	< 95 % RH
Max. bulb temperature	65 °C
Casing	Bayblend® base, ABS cover
Weight	1 stage: 340 g 2 stage: 520 g
Protection class	IP54
Isolation class	I
Dimensions	108 x 70 x 72 mm (132 x 88 x 70 mm for 2 stage models)



ET060U



ET06060U

Article	Temperature range 1	Temperature range 2	Hysteresis range 1	Hysteresis range 2	Hidden setpoint
ET060	0...+60 °C		1.5±1 K		-
ET060U	0...+60 °C		1.5±1 K		X
ET06060	0...+60 °C	0...+60 °C	1.5±1 K	1.5±1 K	-
ET06060U	0...+60 °C	0...+60 °C	1.5±1 K	1.5±1 K	X



Note: range 2 always under the cover, U range 1 under the cover

## WALL THERMOSTAT, IP65

High quality thermostats for use in cooling, heating and ventilation systems.

Technical data	
Sensor element	Liquid-filled coiled copper bulb
Contacts	Dust-tight microswitches with SPDT contacts (heat/cool)
Switch capacity	15 (8) A, 24...250 V AC
Ambient temperature	-35...+60 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-40...+65 °C
Storage humidity	< 95 % RH
Max. bulb temperature	65 °C
Casing	Bayblend® base, ABS cover
Dimensions	108 x 70 x 72 mm
Weight	450 g
Protection class	IP65
Isolation class	I



DBET-26



DBET-26U

Article	Temperature range	Steps	Hysteresis	Step diff.	Hidden setpoint
DBET-22	-30...+30 °C	1	2...15 K	-	-
DBET-22U	-30...+30 °C	1	2...15 K	-	X
DBET-23	-30...+30 °C	1	1 K	-	-
DBET-22/2	-30...+30 °C	2	1 K	2...5 K	-
DBET-26	0...60 °C	1	2...15 K	-	-
DBET-27	0...60 °C	1	1 K	-	-
DBET-26U	0...60 °C	1	2...15 K	-	X
DBET-26/2	0...60 °C	2	1 K	2...5 K	-
DBET-22/2U	-30...+30 °C	2	1 K	2...5 K	X
DBET-23U	-30...+30 °C	1	1 K	-	X
DBET-26/2U	0...60 °C	2	1 K	2...5 K	X
DBET-27U	0...60 °C	1	1 K	-	X

## CAPILLARY THERMOSTATS, IP54

A wide range of low cost thermostats.



TC090

Technical data	
Sensor element	Liquid-filled coiled copper bulb with capillary PVC protected
Bulb	Ø 6.8 mm
Length, capillary tube	1.5 m
Contacts	Dust-tight microswitches with SPDT contacts (heat/cool)
Switch capacity	NC 16 (4) A 250 V AC / NO 10 (6) A 250 V AC
Ambient temperature	-10...+65 °C
Ambient humidity	10...90% RH (non-condensing)
Storage temperature	-40...+70 °C
Storage humidity	< 95 % RH
Max. bulb temperature	130 °C
Casing	Bayblend® base, ABS cover
Weight	360 g
Protection class	IP54
Isolation class	I
Dimensions	108 x 70 x 72 mm

Article	Temperature range	Hysteresis
TC060	0...60 °C	4±1 K
TC090	0...90 °C	4±1 K

## ACCESSORIES

Article	Description
DBZ-30/14	Brass pocket ,120 mm. Suitable for MTIBL90H.
DBZ-31/14	Stainless steel EN 1.4301 pocket, 120 mm. Suitable for MTIBL90H.



## CAPILLARY THERMOSTAT, IP 65

High quality thermostats for use in cooling, heating and ventilation systems.

Technical data	
Sensor element	Liquid-filled coiled copper bulb
Bulb	Ø 9.5 (Ø 8 for range 50...120°C)
Length, capillary tube	1.5 m
Contacts	Dust-tight microswitches with SPDT contacts (heat/cool)
Switch capacity	15 (8) A, 24...250 V AC
Ambient temperature	-35...+65 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-40...+70 °C
Storage humidity	< 95 % RH
Casing	Bayblend® base, ABS cover
Dimensions	108 x 70 x 72 mm
Weight	400 g
Protection class	IP65
Isolation class	I



DBET-6



DBET-16U

Article	Temperature range	Steps	Hysteresis	Step diff.	Max. bulb temperature	Hidden setpoint	Immersion well to use
DBET-4	-30...+30 °C	1	2...20 K	-	60 °C	-	DBZ-01/02
DBET-4U	-30...+30 °C	1	2...20 K	-	60 °C	X	DBZ-01/02
DBET-4/2	-30...+30 °C	2	1 K	2...5 K	60 °C	-	DBZ-01/02
DBET-5	-30...+30 °C	1	1 K	-	60 °C	-	DBZ-01/02
DBET-6	-30...+30 °C	1	Manual minimal reset	-	60 °C	-	DBZ-01/02
DBET-16	20...90 °C	1	2...20 K	-	100 °C	-	DBZ-01/02
DBET-16U	20...90 °C	1	2...20 K	-	100 °C	X	DBZ-01/02
DBET-17	20...90 °C	1	1 K	-	100 °C	-	DBZ-01/02
DBET-18	20...90 °C	1	Manual maximum reset	-	100 °C	-	DBZ-01/02
DBET-10	50...120 °C	1	2...20 K	-	150 °C	-	DBZ-16/17
DBET-5U	-30...+30 °C	1	1 K	-	60 °C	X	DBZ-01/02
DBET-7	0...60 °C	1	2...20K	-	75 °C	-	DBZ-01/02
DBET-7/2	0...60 °C	2	1 K	2...5 K	75 °C	-	DBZ-01/02
DBET-8	0...60 °C	1	1 K	-	75 °C	-	DBZ-01/02
DBET-11	50...120 °C	1	1 K	-	150 °C	-	DBZ-16/17

## ACCESSORIES

Article	Description
DBZ-01	Brass pocket 120 mm. Suitable for MTIC30S, MTIC30SH, MTIC30-2, MTIC30, MTIC30R, MTIC90S, MTIC90SH, MTIC90, MTIC90R and FT...
DBZ-02	Stainless steel EN 1.4301 pocket, 120 mm. Suitable for MTIC30S, MTIC30SH, MTIC30-2, MTIC30, MTIC30R, MTIC90S, MTIC90SH, MTIC90, MTIC90R and FT...
DBZ-16	Brass pocket, 120 mm. Suitable for MTIC120S.
DBZ-17	Stainless steel EN 1.4301 pocket 120 mm, 10 x 0.5. Suitable for MTIC120S.

## DUCT THERMOSTAT, IP54

A range of high-quality duct thermostats.



TZR6585

Technical data	
Sensor element	Liquid-filled coiled copper bulb with 200 mm protection spring and mounting bracket
Contacts	Dust-tight microswitches with SPDT contacts (heat/cool)
Switch capacity	TZ090U: NC 16 (6) A, 250 V AC, NO 6 (4) A, 250 V AC / TZR6585: NC 16 (2,5) A, 250 V AC, NO 0,5 A, 250 V AC
Ambient temperature	-35...+65 °C
Ambient humidity	10...90% RH (non-condensing)
Insertion length	200 / Ø 21 mm
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Casing	Bayblend® base, ABS cover
Weight	590 g
Dimensions	108 x 70 x 72 mm
Protection class	IP54
Isolation class	I

Article	Temperature range	Hysteresis	Max. bulb temperature	Function	Hidden setpoint	Switch capacity
TZ090U	0...90 °C	4±1 K	120 °C	With SPDT contact	X	NC 16 (6) A, 250 V AC / NO 6 (4) A, 250 V AC
TZR6585	65...85 °C	20±5 K	125 °C	Manual maximum reset (unit can be reset only if temperature drops below the setpoint minus the hysteresis.)	-	NC 16 (2,5) A, 250 V AC / NO 0,5 A, 250 V AC

### ACCESSORIES

Article	Description
DBZ-25	Protection spring and mounting bracket. Suitable for MTID.



Note: the thermostats are supplied with spiral protection bracket model DBZ-25. The device can only be rearmed if the temperature falls below the setpoint minus the hysteresis value.

## DUCT THERMOSTAT, IP65

High quality thermostats for use in cooling, heating and ventilation systems.

Technical data	
Sensor element	Liquid-filled coiled copper bulb with 200 mm protection spring and mounting bracket
Contacts	Dust-tight microswitches with SPDT contacts (heat/cool)
Switch capacity	15 (8) A, 24...250 V AC
Ambient temperature	-35...+65 °C
Ambient humidity	10...90 % RH (non-condensing)
Insertion length	200 / Ø 21 mm
Storage temperature	-40...+70 °C
Storage humidity	< 95 % RH
Casing	Bayblend® base, ABS cover
Weight	690 g
Dimensions	108 x 70 x 72 mm
Protection class	IP65
Isolation class	I



DBTZ-7



DBTZ-12U

Article	Temperature range	Steps	Hysteresis	Step diff.	Max. bulb temperature	Hidden setpoint
DBTZ-2U	-30...+30 °C	1	1 K	-	60 °C	X
DBTZ-7	0...60 °C	1	2...20 K	-	75 °C	-
DBTZ-7/2	0...60 °C	2	1 K	2...5 K	75 °C	-
DBTZ-8	0...60 °C	1	1 K	-	75 °C	-
DBTZ-12U	50...120 °C	1	Manual maximum reset	-	140 °C	X

### ACCESSORIES

Article	Description
DBZ-25	Protection spring and mounting bracket. Suitable for MTID.



Note: the thermostats are supplied with spiral protection bracket model DBZ-25.

## ELECTROMECHANICAL CLAMP-ON THERMOSTAT, IP20

High quality thermostats for use in cooling, heating and ventilation systems.



AT2090

Technical data	
Sensor element	Bimetal
Contacts	SPDT contacts
Switch capacity	NC 16 (2,5) A, 250 V AC / NO 2,5 A, 250 V AC
Ambient temperature	max 85 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-20...+60 °C
Storage humidity	< 95 % RH
Max. bulb temperature	90 °C
Casing	Zinc plated steel plate, not sealed ABS cover
Weight	150 g
Protection class	IP20
Dimensions	39 x 55 x 112 mm
Isolation class	I

Article	Temperature range	Hysteresis	Hidden setpoint
AT2090	+20...+90 °C	8±3 K	-
AT2090U	+20...+90 °C	8±3 K	X

## CLAMP-ON THERMOSTAT, IP65

Thermostats for use in cooling, heating and ventilation systems.



DBAT-5

Technical data	
Sensor element	Liquid-filled coiled copper bulb for contact
Contacts	Dust-tight microswitches with SPDT contacts (heat/cool)
Switch capacity	15 (8) A, 24...250 V AC
Ambient temperature	-35...+65 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-40...+70 °C
Storage humidity	< 95 % RH
Hysteresis	2...20 K
Casing	Bayblend® base, ABS cover
Weight	410 g
Protection class	IP65 class I
Isolation class	I
Dimensions	108 x 70 x 72 mm



DBAT-5U

Article	Temperature range	Max. bulb temperature	Hidden setpoint
DBAT-3	0...60 °C	75 °C	-
DBAT-3U	0...60 °C	75 °C	X
DBAT-5	20...90 °C	95 °C	-
DBAT-5U	20...90 °C	95 °C	X

## FROST PROTECTION THERMOSTAT

High quality frost protection thermostats for use in cooling, heating and ventilation systems.

Technical data	
Sensitive element	Gas-filled coiled copper
Contacts	SPDT microswitch
Switch capacity	15 (8) A, 24...250 V AC
Accuracy	± 1K
Ambient temperature	Max. 55 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-30...+60 °C
Storage humidity	< 95 % RH
Max. bulb temperature	150 °C
Casing	Base in ABS, cover in transparent Polycarbonate (PC)
Weight	340 g
Protection class	IP65
Isolation class	I
Dimensions	140 x 62 x 65 mm (cable gland included)



TF30



TF60R

Article	Temperature range	Hysteresis	Reset	Capillary length
TF30	-10...+10 °C or +14...+50 °F	2 K	Automatic	3 m
TF30R	-10...+10 °C or +14...+50 °F	Manual minimal reset	Manual	3 m
TF60	-10...+10 °C or +14...+50 °F	2 K	Automatic	6 m
TF60R	-10...+10 °C or +14...+50 °F	Manual minimal reset	Manual	6 m
TF18	-10...+10 °C or +14...+50 °F	2 K	Automatic	1.8 m
TF18R	-10...+10 °C or +14...+50 °F	Manual minimal reset	Manual	1.8 m



TF18

### ACCESSORIES

Article	Description
DBZ-01	Brass pocket 120 mm. Suitable for MTIC30S, MTIC30SH, MTIC30-2, MTIC30, MTIC30R, MTIC90S, MTIC90SH, MTIC90, MTIC90R and FT...
DBZ-02	Stainless steel EN 1.4301 pocket, 120 mm. Suitable for MTIC30S, MTIC30SH, MTIC30-2, MTIC30, MTIC30R, MTIC90S, MTIC90SH, MTIC90, MTIC90R and FT...
DBZ-05	Set of 6 mounting brackets for capillary of antifrost thermostats



DBZ-05

## IMMERSION THERMOSTATS, IP54

Temperature control in pipes for heating, cooling and air conditioning systems, boilers and heaters. Temperature monitoring and safety protection with manual reset (2 stages).



TV090



TV0909OU

Technical data	
Sensor element	Copper bulb with 120 mm brass pocket (on request with 200 mm length)
Contacts	Dust-tight microswitches with SPDT contacts (heat/cool)
Switch capacity	With SPDT contact: NC 250 V AC 16 (6) A / NO 250 V AC 6 (4) manual maximum reset: NC 250 V AC 16 (2,5) A / NO 250 V AC 0,5 A
Ambient temperature	-35...+65 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Casing	Bayblend® base, ABS cover (2 stage models: sealed ABS)
Weight	single stage: 440 g double range: 560 g
Dimensions	108 x 70 x 72 mm (2 stage models: 132 x 88 x 70 mm)
Protection class	IP54
Isolation class	I

Article	Temperature range 1	Temperature range 2	Hysteresis	Step diff.	Max. bulb temperature	Function	Hidden setpoint
TV090	0...90 °C		4±1 K	-	120 °C	with SPDT contact	-
TV090U	0...90 °C		4±1 K	-	120 °C	with SPDT contact	X
TVR6585	65...85 °C		20±5 K	-	125 °C	manual maximum reset (unit can be reset only if temperature drops below the setpoint minus the hysteresis)	-
TVR90110	90...110 °C		20±5 K	-	125 °C	Manual maximum reset (unit can be reset only if temperature drops below the setpoint minus the hysteresis)	-
TV0909OU	0...90 °C	0...90 °C	4±1 K	4±1 K	120 °C	with SPDT contact	X
TV090UR85	0...90 °C	65...85 °C	4±1 K	20±5 K	120 °C	manual maximum reset with SPDT contact (unit can be reset only if temperature drops below the setpoint minus the hysteresis)	-

## ACCESSORIES

Article	Description
DBZ-30/14	Brass pocket ,120 mm. Suitable for MTIBL90H.
DBZ-40/14	Brass pocket 100 mm. Suitable for MTIBL90H.
DBZ-31/14	Stainless steel EN 1.4301 pocket, 120 mm. Suitable for MTIBL90H.
DBZ-41/14	Stainless steel EN 1.4301 pocket, 120 mm. Suitable for MTIBL90H.



Note: the thermostats are supplied with standard pocket models DBZ-30/14 and DBZ-40/14.

## IMMERSION THERMOSTATS, IP65

High-quality immersion thermostats for use in cooling, heating and ventilation systems.



DBTV-18U

Technical data	
Sensor element	Liquid-filled coiled copper bulb
Contacts	Dust-tight microswitches with SPDT contacts (heat/cool)
Switch capacity	15 (8) A, 24...250 V AC
Ambient temperature	-35...+65 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-40...+70 °C
Storage humidity	< 95 % RH
Casing	Bayblend® base, ABS cover
Weight	440 g
Dimensions	108 x 70 x 72 mm
Protection class	IP65
Isolation class	I

Article	Temperature range	Max. bulb temperature
DBTV-8	0...60 °C	75 °C
DBTV-17	20...90 °C	100 °C
DBTV-11	50...120 °C	140 °C

Article	Temperature range	Hysteresis	Max. bulb temperature	Hidden setpoint
DBTV-1	-30...+30 °C	2...20 K	60 °C	-
DBTV-2U	-30...+30 °C	1 K	60 °C	X
DBTV-7	0...+60 °C	2...20 K	75 °C	-
DBTV-7U	0...+60 °C	2...20 K	75 °C	X
DBTV-8U	0...+60 °C	1 K	75 °C	X
DBTV-16	+20...+90 °C	2...20 K	100 °C	-
DBTV-17U	20...90 °C	1 K	100 °C	X
DBTV-18	20...90 °C	manual maximum reset	100 °C	-
DBTV-18U	20...90 °C	manual maximum reset	100 °C	X

## ACCESSORIES

Article	Description
DBZ-16/14	Brass pocket 120 mm. Suitable for MTIB60, MTIB90 and MTIB120.
DBZ-17/14	Stainless steel EN 1.4301 pocket, 120 mm. Suitable for MTIB60, MTIB90 and MTIB120.



Note: the thermostats are supplied with standard pocket model DBZ-16/14. The device can only be reset if the temperature falls below the setpoint minus the hysteresis.

## POCKETS FOR THERMOSTATS

Pockets for thermostats in brass or stainless steel.

Article	Tube length	Total length	Outside diameter tube	Internal diameter tube	Connection	Material	Fixing stopper
DBZ-01	120 mm	140 mm	11 mm	10 mm	R1/2"	Brass / Cu Ni	X
DBZ-02	120 mm	148 mm	12 mm	10 mm	R1/2"	Stainless steel EN 1.4301	X
DBZ-16	120 mm	140 mm	10 mm	8.5 mm	R1/2"	Brass / Cu Ni	X
DBZ-16/14	120 mm	140 mm	10 mm	8.5 mm		Brass / Cu Ni	-
DBZ-17	120 mm	148 mm	10 mm	8.5 mm	R1/2"	Stainless steel AISI 304	X
DBZ-17/14	120 mm	148 mm	10 mm	8.5 mm		Stainless steel EN 1.4301	-
DBZ-17/14/200	200 mm	228 mm	10 mm	8,5 mm	R1/2"	Acciaio inox AISI 304	X
DBZ-18	40 mm	61 mm	11 mm	10 mm	R1/2"	Brass / Cu Ni	X
DBZ-19	40 mm	68 mm	10 mm	8.5 mm	R1/2"	Stainless steel AISI 304	X
DBZ-30/14	120 mm	140 mm	8 mm	7 mm	R1/2"	Brass / Cu Ni	X
DBZ-31/14	120 mm	148 mm	9 mm	7 mm	R1/2"	Stainless steel EN 1.4301	X
DBZ-40/14	108 mm	128 mm	16 mm	15 mm	R1/2"	Brass / Cu Ni	X
DBZ-41/14	120 mm	148 mm	16 mm	14 mm	R1/2"	Stainless steel AISI 304	X



DBZ-01



DBZ-02



DBZ-16-14



DBZ-17-14



For additional lengths of stainless steel versions contact *Industrietechnik*



DBZ-18



DBZ-19



DBZ-31-14



DBZ-30-14



DBZ-40-14



DBZ-41-14

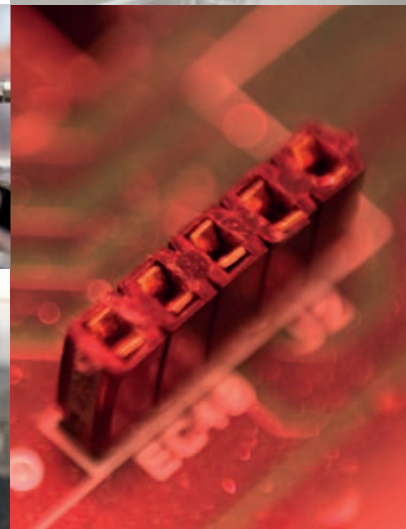






# 4 Electric heating controllers

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## CONTROLLER WITH PI-CONTROL, 230...400 V AC, WALL MOUNTING

Controllers intended for control of radiators or electric heating coils. They can be mounted on a wall or in a cabinet. The controllers pulse the whole load on/off and utilise time-proportional triac control. Both automatic control function adaptation, P- or PI-control, and supply voltage adaptation, 230/400 V.

Technical data	
Supply voltage	210...415 V AC, 50...60 Hz, automatic adaption
Ambient temperature	0...30 °C, non condensing °C
P-band	20 K (rapid temperature changes) 1.5 K (slow temperature changes)
I-time	6 min (rapid temperature changes)
Pulse period	60 s
Dimensions	93 x 153 x 40 mm
Protection class	IP20
Inputs/outputs (I/Os)	
Setpoint	0...30 °C (the external sensor determines the temperature range (NTC sensor))
Night setback	0...10 K
Output (load)	16 A (min. 1 A) 1-phase max. 3.6 kW, 2-phase max. 6.4 kW

Article	Description	Mounting
CTR-M	Electric heating controller with min./max. limitation	Wall
CTR/D	Electric heating controller	DIN-rail
CTR-ADD	Add-on unit	Wall
CTR-X/D	Electric heating controller for external 0...10 V DC control signal	DIN-rail



CTR-M



CTR-D



CTR-ADD

## CONTROLLER FOR EXTERNAL INPUT SIGNAL 0-10 V, 230 V AC OR 400 V AC, WALL MOUNTING

Heating controller for controlling electric heating batteries, electric panels etc. The controller operates on an input signal from an external controller.

Technical data	
Supply voltage	PULSER230X...: 230 V AC (207...253 V AC), 50...60 Hz PULSER400X...: 400 V AC (360...440 V AC), 50...60 Hz
Ambient temperature	0...30 , non-condensing
Pulse period	6/60/120 s , adjustable
Dimensions	93 x 153 x 40 mm
Mounting	Wall
Protection class	IP20

Article	Description	Supply voltage	Output (load)
CTR230X010	Electric heating controller for external 0...10 V DC control signal	230 V AC	Up to 16 A, min. 1 A. Max. output: 3.6 kW. Min. output: 230 W.
CTR400X010	Electric heating controller for external 0...10 V DC control signal	400 V AC	Up to 16 A, min. 1 A. Max. output: 6.4 kW. Min. output: 400 W.



CTR230X010



CTR400X010

## ELECTRIC HEATING CONTROLLER FOR WALL MOUNTING, 3-PHASE, 210...415 V

The controller can be used with internal or external setpoint. Automatic control function adaptation, P- or PI-control. The controller can also be set to be controlled by an external 0...10 V DC signal.

Technical data	
Supply voltage	3-phase, 210...255 / 380...415 V AC, automatic adaptation
Setpoint	0...30 °C (the sensor determines the range)
Max. load	Max. 25 A, min. 3 A/phase
Sensor inputs	Two, main and min./max. limiting sensors (NTC sensor)
Control signal	0...10 V DC (external signal)
Mounting	Wall
Protection class	IP30
P-band	Supply air temperature control: 20 K, fixed Room temperature control: 1.5 K, fixed
I-time (supply air temperature control)	6 min, fixed
Pulse period	6...120 s
Dimensions	160 x 207 x 94 mm



CTR2000

Article	Description
CTR2000	Electric heating controller

## SLAVE BOARD FOR ELECTRIC HEATING CONTROLLERS

CTR-S1 is intended for use together with the electric heating controller CTR2000, in order to control extra loads.

Article	Description
CTR-S1	Slave board for control of extra loads (+17 kW)



CTR-S1

## ELECTRIC HEATING CONTROLLER FOR DIN-RAIL MOUNTING, 3-PHASE, 210...415 V, 40 A

For control of electric heating coils or radiators. The controllers pulse the whole load on/off and utilise time-proportional triac control. Automatic control function adaptation, P- or PI-control. The controllers can also be set to be controlled by an external 0...10 V DC signal.



CTR40

Technical data	
Supply voltage	3-phase, 210...255 / 380...415 V AC, automatic adaptation
Ambient temperature	0...40 °C
Mounting	DIN-rail
Dimensions (WxHxD)	195 x 220 x 95 mm
Protection class	IP20
P-band	Supply air temperature control: 20 K, fixed Room temperature control: 1.5 K, fixed
I-time	6 min, fixed
Pulse period	6...60 s
Load	40 A
Output	40 A, 3 x 400 V AC, 27 kW (3 x 230 V, 16 kW)
Inputs	
Setpoint	0...30 °C (the sensor determines the range)
Sensor inputs	Two, main and max./min. limiting sensors (NTC sensor).
Control signal	0...10 V DC

Article	Description	External 0...10 V DC control signal option
CTR40	Electric heating controller with temperature control	X



To control larger electrical loads, see the step controllers SC4 and SC6.

## ELECTRIC HEATING CONTROLLER FOR DIN-RAIL MOUNTING, 3-PHASE, 210...415 V, 80 A

For control of electric heating coils or radiators. The controllers pulse the whole load on/off and utilise time-proportional triac control. Automatic control function adaptation, P- or PI-control. The controllers can also be set to be controlled by an external 0...10 V DC signal.



CTR80

Technical data		
Supply voltage	3-phase, 400 V AC $\pm 10\%$	
Ambient temperature	0...40 °C	
Mounting	DIN-rail	
Dimensions (WxHxD)	195 x 220 x 105 mm	
Protection class	IP20	
P-band	Supply air temperature control: 20 K, fixed Room temperature control: 1.5 K, fixed	
I-time	6 min, fixed	
Pulse period	6...120 s	
Load	80 A	
Output	80 A, 3 x 400 V AC, 55 kW	
Inputs		
Setpoint	0...30 °C (the sensor determines the range)	
Sensor inputs	Two, main and max./min. limiting sensors (NTC sensor).	
Control signal	0...10 V DC	
Article	Description	External 0...10 V DC control signal option
CTR80	Electric heating controller with temperature control	X



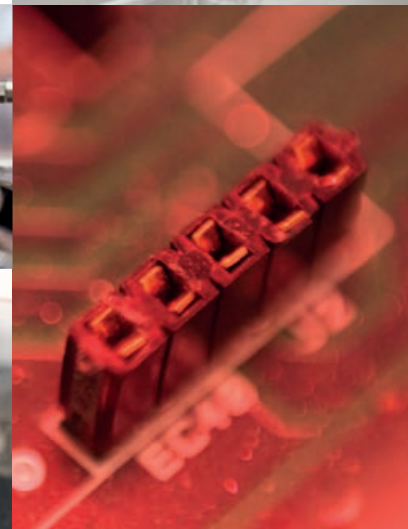
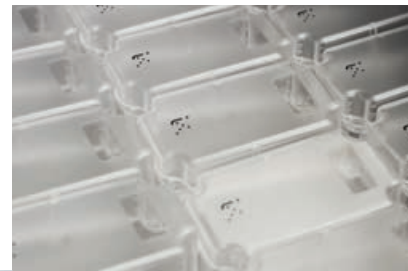
To control larger electrical loads, see the step controllers SC4 and SC6.





# 5 Sensors, transmitters and switches

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## TEMPERATURE TRANSMITTERS AND SENSORS

### CLAMP-ON SENSOR WITH HOUSING

Clamp-on sensor for surface temperature measurement, including a metal strap for easy fastening and a tube of heat-conductive contact paste.



SC

Technical data	
Temperature range	-20...+120 °C
Cable gland	M16
Protection class	IP42 (or IP40, depending on the mounting position)
Dimensions	93 x 70 x 35 mm

Article	Sensor element	Nominal resistance	Temperature range	Equivalent
SC-PT100	PT100	100 Ω (0°C)	-20...+120 °C	-
SC-PT1000	PT1000	1000 Ω (0°C)	-20...+120 °C	-
SC-NTC1.8	NTC 1.8	1800 Ω (25°C)	-20...+120 °C	TAC
SC-NTC2.2	NTC 2.2	2252 Ω (25°C)	-20...+120 °C	Johnson Controls
SC-NTC10-01	NTC 10	10 kΩ (25°C)	-20...+120 °C	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
SC-NTC10-02	NTC 10	10 kΩ (25°C)	-20...+120 °C	Carel - Evco - Eliwell - AB Industrietechnik
SC-NTC10-03	NTC 10	10 kΩ (25°C)	-20...+120 °C	Andover - Delta Controls - Siebe - York
SC-NTC20	NTC 20	20 kΩ (25°C)	-20...+120 °C	Honeywell
SC-Ni1000-01	Ni1000	1000 Ω (0°C)	-20...+120 °C	Siemens - Landis & Staefa
SC-Ni1000-02	Ni1000	1000 Ω (0°C)	-20...+120 °C	Sauter

### CLAMP-ON SENSOR WITH CABLE

For surface temperature measurement. Including clamp (Ø max 40 mm).

Technical data	
Material	Nickel-plated copper
Cable length	1.5 m
Protection class	IP65
Dimensions	36 x 10.5 x 7.5 / models with PVC sleeve: 23.5 x 6 x 9.5 mm



SCC

Article	Sensor element	Nominal resistance	Temperature range	Equivalent
SCC-PT100	PT100	100 Ω (0°C)	-30...+150 °C	-
SCC-PT1000	PT1000	1000 Ω (0°C)	-30...+150 °C	-
SCC-NTC1.8	NTC 1.8	1800 Ω (25°C)	-30...+120 °C	TAC
SCC-NTC2.2	NTC 2.2	2252 Ω (25°C)	-30...+150 °C	Johnson Controls
SCC-NTC10-01	NTC 10	10 kΩ (25°C)	-30...+150 °C	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
SCC-NTC10-02	NTC 10	10 kΩ (25°C)	-30...+110 °C	Carel - Evco - Eliwell - AB Industrietechnik
SCC-NTC10-02-BR-J	NTC 10	10 kΩ (25°C)	-50...+110 °C	Carel - Evco - Eliwell - AB Industrietechnik
SCC-NTC10-03	NTC 10	10 kΩ (25°C)	-30...+150 °C	Andover - Delta Controls - Siebe - York
SCC-NTC15-01	NTC 15	15 kΩ (0°C)	0...30 °C	Regin - AB Industrietechnik
SCC-NTC20	NTC 20	20 kΩ (25°C)	-30...+150 °C	Honeywell
SCC-Ni1000-01	Ni1000	1000 Ω (0°C)	-30...+150 °C	Siemens - Landis & Staefa
SCC-Ni1000-02	Ni1000	1000 Ω (0°C)	-30...+150 °C	Sauter



SCC-NTC10-02-BR-J



SCC-NTC15-01

### ACCESSORIES

Article	Description
PASTA-20	Heat-conductive paste in tube, 20 g

## DUCT SENSOR WITH HOUSING

Duct sensor for air temperature measurement in ventilation ducts.



STC

Technical data	
Cable gland	M16
Material, well	Stainless steel, SUS304
Diameter	8 mm
Protection class	IP65
Dimensions	93 x 70 x 260 mm / ...430 model: 93 x 70 x 460 mm

Article	Sensor element	Nominal resistance	Insertion length	Temperature range	Equivalent
STC-PT100	PT100	100 Ω (0°C)	60...205 mm	-30...+70 °C	-
STC-PT1000	PT1000	1000 Ω (0°C)	60...205 mm	-30...+70 °C	-
STC-PT1000/430	PT1000	1000 Ω (0°C)	60...405 mm	-30...+70 °C	-
STC-NTC1.8	NTC 1.8	1800 Ω (25°C)	60...205 mm	-30...+70 °C	TAC
STC-NTC2.2	NTC 2.2	2252 Ω (25°C)	60...205 mm	-30...+70 °C	Johnson Controls
STC-NTC10-01	NTC 10	10 kΩ (25°C)	60...205 mm	-30...+70 °C	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
STC-NTC10-02	NTC 10	10 kΩ (25°C)	60...205 mm	-30...+70 °C	Carel - Evco - Eliwell - AB Industrietechnik
STC-NTC10-03	NTC 10	10 kΩ (25°C)	60...205 mm	-30...+70 °C	Andover - Delta Controls - Siebe - York
STC-NTC20	NTC 20	20 kΩ (25°C)	60...205 mm	-30...+70 °C	Honeywell
STC-NI1000-01	Ni1000	1000 Ω (0°C)	60...205 mm	-30...+70 °C	Siemens - Landis & Staefa
STC-NI1000-02	Ni1000	1000 Ω (0°C)	60...205 mm	-30...+70 °C	Sauter

## DUCT SENSOR WITH CABLE

Duct sensor for air temperature measurement in ventilation ducts. Adjustable insertion length.



STCC

Technical data	
Cable length	1.5 m
Insertion length	15...145 mm adjustable
Diameter	9 mm
Protection class	IP20

Article	Sensor element	Nominal resistance	Temperature range	Equivalent
STCC-PT100	PT100	100 Ω (0°C)	-30...+70 °C	-
STCC-PT1000	PT1000	1000 Ω (0°C)	-30...+70 °C	-
STCC-NTC1.8	NTC 1.8	1800 Ω (25°C)	-30...+70 °C	TAC
STCC-NTC2.2	NTC 2.2	2252 Ω (25°C)	-30...+70 °C	Johnson Controls
STCC-NTC10-01	NTC 10	10 kΩ (25°C)	-30...+70 °C	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
STCC-NTC10-02	NTC 10	10 kΩ (25°C)	-30...+70 °C	Carel - Evco - Eliwell - AB Industrietechnik
STCC-NTC10-03	NTC 10	10 kΩ (25°C)	-30...+70 °C	Andover - Delta Controls - Siebe - York
STCC-NTC15-01	NTC 15	15 kΩ (0°C)	0...30 °C	Regin - AB Industrietechnik
STCC-NTC15-02	NTC 15	15 kΩ (0°C)	0...60 °C	Regin - AB Industrietechnik
STCC-NTC15-03	NTC 15	15 kΩ (20°C)	20...50 °C	Regin - AB Industrietechnik
STCC-NTC15-04	NTC 15	15 kΩ (0°C)	0...40 °C	Regin - AB Industrietechnik
STCC-NTC20	NTC 20	20 kΩ (25°C)	-30...+70 °C	Honeywell
STCC-NI1000-01	Ni1000	1000 Ω (0°C)	-30...+70 °C	Siemens - Landis & Staefa
STCC-NI1000-02	Ni1000	1000 Ω (0°C)	-30...+70 °C	Sauter

## AVERAGE TEMPERATURE SENSOR WITH HOUSING

Average temperature sensor for duct mounting. The cable is mounted with clamps and is held in place inside the duct by an end spring.



STM

Technical data	
Cable gland	M16
Cable length	3 m
Insertion length	0...75 mm
Diameter	8 mm
Dimensions	93 x 70 x 100 mm
Protection class	IP65

Article	Sensor element	Nominal resistance	Equivalent
STM-PT100	PT100	100 Ω (0°C)	-
STM-PT1000	PT1000 (DIN class B)	1000 Ω (0°C)	-
STM-NTC1.8	NTC 1.8	1800 Ω (25°C)	TAC
STM-NTC2.2	NTC 2.2	2252 Ω (25°C)	Johnson Controls
STM-NTC10-01	NTC 10	10 kΩ (25°C)	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
STM-NTC10-02	NTC 10	10 kΩ (25°C)	Carel - Evco - Eliwell - AB Industrietechnik
STM-NTC10-03	NTC 10	10 kΩ (25°C)	Andover - Delta Controls - Siebe - York
STM-NTC20	NTC 20	20 kΩ (25°C)	Honeywell
STM-NI1000-01	Ni1000	1000 Ω (0°C)	Siemens - Landis & Staefa
STM-NI1000-02	Ni1000	1000 Ω (0°C)	Sauter

## IMMERSION SENSOR WITH HOUSING, WITHOUT WELL

Immersion sensor, threaded.



SI

Technical data	
Cable gland	M16
Insertion length	90 mm
Diameter	5 mm
Connection	R1/4"
Material, probe	Stainless steel, SUS304
Diameter, probe	5 mm
Pressure rating	PN16
Protection class	IP65
Dimensions	93 x 70 x 152 mm

Article	Sensor element	Nominal resistance	Temperature range	Equivalent
SI-PT100	PT100	100 Ω (0°C)	-20...+120 °C	-
SI-PT1000	PT1000	1000 Ω (0°C)	-20...+120 °C	-
SI-NTC1.8	NTC 1.8	1800 Ω (25°C)	-20...+120 °C	TAC
SI-NTC2.2	NTC 2.2	2252 Ω (25°C)	-20...+120 °C	Johnson Controls
SI-NTC10-01	NTC 10	10 kΩ (25°C)	-20...+120 °C	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
SI-NTC10-02	NTC 10	10 kΩ (25°C)	-20...+110 °C	Carel - Evco - Eliwell - AB Industrietechnik
SI-NTC10-03	NTC 10	10 kΩ (25°C)	-20...+120 °C	Andover - Delta Controls - Siebe - York
SI-NTC20	NTC 20	20 kΩ (25°C)	-20...+120 °C	Honeywell
SI-NI1000-01	Ni1000	1000 Ω (0°C)	-20...+120 °C	Siemens - Landis & Staefa
SI-NI1000-02	Ni1000	1000 Ω (0°C)	-20...+120 °C	Sauter

## IMMERSION SENSOR WITH HOUSING AND WELL

The sensor part has a clip fastening which makes it easy to mount.

Technical data	
Cable gland	M16
Insertion length	90 mm
Connection, well	R1/2"
Material, probe and well	Stainless steel
Diameter, well	8 mm
Pressure rating	PN25
Dimensions	93 x 70 x 150 mm
Protection class	IP65



STI

Article	Sensor element	Nominal resistance	Temperature range	Equivalent
STI-PT100	PT100	100 Ω (0°C)	-20...+120 °C	-
STI-PT1000	PT1000	1000 Ω (0°C)	-20...+120 °C	-
STI-NTC1.8	NTC 1.8	1800 Ω (25°C)	-20...+120 °C	TAC
STI-NTC2.2	NTC 2.2	2252 Ω (25°C)	-20...+120 °C	Johnson Controls
STI-NTC10-01	NTC 10	10 kΩ (25°C)	-20...+120 °C	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
STI-NTC10-02	NTC 10	10 kΩ (25°C)	-20...+110 °C	Carel - Evco - Eliwell - AB Industrietechnik
STI-NTC10-03	NTC 10	10 kΩ (25°C)	-20...+120 °C	Andover - Delta Controls - Siebe - York
STI-NTC20	NTC 20	20 kΩ (25°C)	-20...+120 °C	Honeywell
STI-Ni1000-01	Ni1000	1000 Ω (0°C)	-20...+120 °C	Siemens - Landis & Staefa
STI-Ni1000-02	Ni1000	1000 Ω (0°C)	-20...+120 °C	Sauter

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## IMMERSION SENSOR WITH DIN HEAD

Immersion sensor for industrial applications.

Technical data	
Pressure rating	PN6
Material, well	Stainless steel AISI 304
Diameter, well	10 mm
Insertion length	200 mm
Dimensions	Max. Ø 82 x h 307 mm
Protection class	IP54
Precision	Class B



DPTD

Article	Sensor element	Nominal resistance	Temperature range
DPTD-PT100	PT100	100 Ω (0°C)	-50...+600 °C
DPTD-PT1000	PT1000	1000 Ω (0°C)	-50...+600 °C

## IMMERSION SENSOR WITH FIXED CABLE

Immersion sensor for water temperature measurement with threaded connection R1/4"



STIC

Technical data	
Temperature range	-30...+70 °C
Cable length	1.5 m
Connection	R1/4"
Diameter	4 mm
Material, probe	Stainless steel, SUS304
Pressure rating	PN10
Protection class	IP65

Article	Sensor element	Nominal resistance	Insertion length	Equivalent
STIC-PT100/135	PT100	100 Ω (0°C)	135 mm	-
STIC-PT1000/135	PT1000	1000 Ω (0°C)	135 mm	-
STIC-NTC1.8/135	NTC 1.8	1800 Ω (25°C)	135 mm	TAC
STIC-NTC2.2/135	NTC 2.2	2252 Ω (25°C)	135 mm	Johnson Controls
STIC-NTC10-01/135	NTC 10	10 kΩ (25°C)	135 mm	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
STIC-NTC10-02/135	NTC 10	10 kΩ (25°C)	135 mm	Carel - Evco - Eliwell - AB Industrietechnik
STIC-NTC10-03/135	NTC 10	10 kΩ (25°C)	135 mm	Andover - Delta Controls - Siebe - York
STIC-NTC20/135	NTC 20	20 kΩ (25°C)	135 mm	Honeywell
STIC-NI1000-01/135	Ni1000	1000 Ω (0°C)	135 mm	Siemens - Landis & Staefa
STIC-NI1000-02/135	Ni1000	1000 Ω (0°C)	135 mm	Sauter

Article	Sensor element	Nominal resistance	Insertion length	Equivalent
STIC-PT100/220	PT100	100 Ω (0°C)	220 mm	-
STIC-PT1000/220	PT1000	1000 Ω (0°C)	220 mm	-
STIC-NTC1.8/220	NTC 1.8	1800 Ω (25°C)	220 mm	TAC
STIC-NTC2.2/220	NTC 2.2	2252 Ω (25°C)	220 mm	Johnson Controls
STIC-NTC10-01/220	NTC 10	10kΩ (25°C)	220 mm	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
STIC-NTC10-02/220	NTC 10	10kΩ (25°C)	220 mm	Carel - Evco - Eliwell - AB Industrietechnik
STIC-NTC10-03/220	NTC 10	10kΩ (25°C)	220 mm	Andover - Delta Controls - Siebe - York
STIC-NTC20/220	NTC 20	20kΩ (25°C)	220 mm	Honeywell
STIC-NI1000-01/220	Ni1000	1000 Ω (0°C)	220 mm	Siemens - Landis & Staefa
STIC-NI1000-02/220	Ni1000	1000 Ω (0°C)	220 mm	Sauter

Article	Sensor element	Nominal resistance	Insertion length	Equivalent
STIC-PT100/300	PT100	100 Ω (0°C)	300 mm	-
STIC-PT1000/300	PT1000	1000 Ω (0°C)	300 mm	-
STIC-NTC1.8/300	NTC 1.8	1800 Ω (25°C)	Max. 300 mm	TAC
STIC-NTC2.2/300	NTC 2.2	2252 Ω (25°C)	300 mm	Johnson Controls
STIC-NTC10-01/300	NTC 10	10 kΩ (25°C)	300 mm	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
STIC-NTC10-02/300	NTC 10	10 kΩ (25°C)	300 mm	Carel - Evco - Eliwell - AB Industrietechnik
STIC-NTC10-03/300	NTC 10	10 kΩ (25°C)	300 mm	Andover - Delta Controls - Siebe - York
STIC-NTC20/300	NTC 20	20 kΩ (25°C)	300 mm	Honeywell
STIC-NI1000-01/300	Ni1000	1000 Ω (0°C)	300 mm	Siemens - Landis & Staefa
STIC-NI1000-02/300	Ni1000	1000 Ω (0°C)	300 mm	Sauter

## ACCESSORIES

Article	Description
DF	Mounting flange for 135 mm long sensors for mounting in ventilation ducts

## WELL

Well for immersion sensors.

Technical data	
Connection	R1/2"
Pressure rating	PN25

Article	Description	Material	Insertion length
DBZ-90R	Well for probe SI...	Acid-proof stainless steel, SUS316	90 mm
DBZ-90W	Well for probe STI...	Acid-proof stainless steel, SUS316	90 mm
DBZ-135R	Well for probe STIC-.../135	Acid-proof stainless steel, SUS316	135 mm
DBZ-220R	Well for probe STIC-.../220	Acid-proof stainless steel, SUS316	220 mm
DBZ-300R	Well for probe STIC-.../300	Acid-proof stainless steel, SUS316	300 mm



DBZ-90W



DBZ-135R



DBZ-AD1

## ACCESSORIES

Article	Description
DBZ-AD1	Adapter 1/4" to 1/2". For mounting immersion sensors in 1/2".

## ROOM SENSOR

For room temperature measurement.

Technical data	
Temperature range	0...50 °C
Dimensions	86 x 86 x 30 mm
Protection class	IP30



SA

Article	Sensor element	Nominal resistance	Temperature range	Equivalent
SA-PT100	PT100	100 Ω (0°C)	0...50 °C	-
SA-PT1000	PT1000	1000 Ω (0°C)	0...50 °C	-
SA-NTC1.8	NTC 1.8	1800 Ω (25°C)	0...50 °C	TAC
SA-NTC2.2	NTC 2.2	2252 Ω (25°C)	0...50 °C	Johnson Controls
SA-NTC10-01	NTC 10	10 kΩ (25°C)	0...50 °C	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
SA-NTC10-02	NTC 10	10 kΩ (25°C)	0...50 °C	Carel - Evco - Eliwell - AB Industrietechnik
SA-NTC10-03	NTC 10	10 kΩ (25°C)	0...50 °C	Andover - Delta Controls - Siebe - York
SA-NTC15-01	NTC 15	15 kΩ (0°C)	0...30 °C	Regin - AB Industrietechnik
SA-NTC15-03	NTC 15	15 kΩ (20°C)	20...50 °C	Regin - AB Industrietechnik
SA-NTC15-04	NTC 15	15 kΩ (0°C)	0...40 °C	Regin - AB Industrietechnik
SA-NTC20	NTC 20	20 kΩ (25°C)	0...50 °C	Honeywell
SA-NI1000-01	Ni1000	1000 Ω (0°C)	0...50 °C	Siemens - Landis & Staefa
SA-NI1000-02	Ni1000	1000 Ω (0°C)	0...50 °C	Sauter

## ROOM SENSOR WITH SETPOINT ADJUSTMENT

For room temperature measurement. Can also be used solely for setpoint adjustment.



SAP

Technical data	
Sensor element	PT1000 (DIN class B)
Nominal resistance	1000 Ω/0°C
Dimensions	86 x 86 x 30 mm
Protection class	IP30

Article	Sensor element	Nominal resistance	Potentiometer range	Temperature range	Equivalent
SAP-PT100-2	PT100	100 Ω (0°C)	5...30 °C 0...10 kΩ	0...50 °C	-
SAP-PT1000-1	PT1000	1000 Ω (0°C)	5...31 °C 1020...1120 Ω	0...50 °C	-
SAP-PT1000-2	PT1000	1000 Ω (0°C)	5...30 °C 0...10 kΩ	0...50 °C	-
SAP-NTC1.8-2	NTC 1.8	1800 Ω (25°C)	5...30 °C 0...10 kΩ	0...50 °C	TAC
SAP-NTC2.2-2	NTC 2.2	2252 Ω (25°C)	5...30 °C 0...10 kΩ	0...50 °C	
SAP-NTC10-01-2	NTC 10	10 kΩ (25°C)	5...30 °C 0...10 kΩ	0...50 °C	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
SAP-NTC10-02-2	NTC 10	10 kΩ (25°C)	5...30 °C 0...10 kΩ	0...50 °C	Carel - Evco - Eliwell - AB Industrietechnik
SAP-NTC10-03-2	NTC 10	10 kΩ (25°C)	5...30 °C 0...10 kΩ	0...50 °C	Andover - Delta Controls - Siebe - York
SAP-NTC15-01-3	NTC 15	15 kΩ (0°C)	0...30 °C 0...5 kΩ	0...30 °C	Regin - AB Industrietechnik
SAP-NTC20-2	NTC 20	20 kΩ (25°C)	5...30 °C 0...10 kΩ	0...50 °C	Honeywell
SAP-NI1000-01-2	Ni1000	1000 Ω (0°C)	5...30 °C 0...10 kΩ	0...50 °C	Siemens - Landis & Staefa
SAP-NI1000-02-2	Ni1000	1000 Ω (0°C)	5...30 °C 0...10 kΩ	0...50 °C	Sauter

## OUTDOOR SENSOR

Technical data	
Cable gland	M16
Dimensions	93 x 70 x 46 mm
Protection class	IP65



SE

Article	Sensor element	Nominal resistance	Temperature range	Equivalent
SE-PT100	PT100	100 Ω (0°C)	-30...+70 °C	-
SE-PT1000	PT1000	1000 Ω (0°C)	-50...+70 °C	-
SE-NTC1.8	NTC 1.8	1800 Ω (25°C)	-30...+70 °C	TAC
SE-NTC2.2	NTC 2.2	2252 Ω (25°C)	-30...+70 °C	Johnson Controls
SE-NTC10-01	NTC 10	10 kΩ (25°C)	-30...+70 °C	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
SE-NTC10-02	NTC 10	10 kΩ (25°C)	-30...+70 °C	Carel - Evco - Eliwell - AB Industrietechnik
SE-NTC10-03	NTC 10	10 kΩ (25°C)	-30...+70 °C	Andover - Delta Controls - Siebe - York
SE-NTC20	NTC 20	20 kΩ (25°C)	-30...+70 °C	Honeywell
SE-NI1000-01	Ni1000	1000 Ω (0°C)	-30...+70 °C	Siemens - Landis & Staefa
SE-NI1000-02	Ni1000	1000 Ω (0°C)	-30...+70 °C	Sauter



## CABLE TEMPERATURE SENSOR, METAL HOUSING

Technical data	
Material, tube	Stainless steel AISI 304
Material, cable	Thermoplastic rubber
Bulb length	40 mm
Cable length	2 m
Diameter	4 mm
Protection class	IP67



NT04

Article	Sensor element	Nominal resistance	Temperature range	Compatible with
NT0420-NTC1.8	NTC 1.8	1800 Ω (25°C)	-50...+110 °C	Tac
NT0420-NTC2.2	NTC 2.2	2252 Ω (25°C)	-50...+110 °C	Johnson Controls
NT0420-NTC10-01	NTC 10	10 kΩ (25°C)	-50...+110 °C	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
NT0420-NTC10-02	NTC 10	10 kΩ (25°C)	-50...+110 °C	Carel - Evco - Eliwell - AB Industrietechnik
NT0420-NTC10-03	NTC 10	10 kΩ (25°C)	-50...+110 °C	Andover - Delta Controls - Siebe - York
NT0420-NTC20	NTC 20	20 kΩ (25°C)	-50...+110 °C	Honeywell
NT0420-Ni1000-01	Ni1000	1000 Ω (0°C)	-50...+110 °C	Siemens - Landis & Staefa
NT0420-Ni1000-02	Ni1000	1000 Ω (0°C)	-50...+110 °C	Sauter

## CABLE SENSOR, PVC HOUSING

Technical data	
Material, tube	PP
Material, cable	PVC
Bulb length	23 mm
Cable length	2 m
Diameter	6 mm
Protection class	IP67



NT02

Article	Sensor element	Nominal resistance	Temperature range	Equivalent
NT0220-NTC1.8	NTC 1.8	1800 Ω (25°C)	-40...+80 °C	Tac
NT0220-NTC2.2	NTC 2.2	2252 Ω (25°C)	-40...+80 °C	Johnson Controls
NT0220-NTC10-01	NTC 10	10 kΩ (25°C)	-40...+80 °C	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell
NT0220-NTC10-02	NTC 10	10 kΩ (25°C)	-40...+80 °C	Carel - Evco - Eliwell - AB Industrietechnik
NT0220-NTC10-03	NTC 10	10 kΩ (25°C)	-40...+80 °C	Andover - Delta Controls - Siebe - York
NT0220-NTC20	NTC 20	20 kΩ (25°C)	-40...+80 °C	Honeywell
NT0220-NTC100	NTC 100	100 kΩ (25°C)	-40...+80 °C	Industrietechnik
NT0220-Ni1000-01	Ni1000	1000 Ω (0°C)	-40...+80 °C	Siemens - Landis & Staefa
NT0220-Ni1000-02	Ni1000	1000 Ω (0°C)	-40...+80 °C	Sauter

## BULB SENSOR, NTC REGIN

Technical data	
Sensor element	NTC, 15...10 kΩ
Material, tube	Nickel plated brass
Material, cable	Silicone
Bulb length	50 mm
Cable length	1.5 m
Diameter	6 mm
Protection class	IP65



NT05

Article	Sensor element	Nominal resistance	Temperature range	Compatible with
NT0515-NTC15	NTC 15	15 kΩ (0°C)	0...30 °C	Regin

## ACCESSORIES

Article	Description
PASTA-20	Heat-conductive paste in tube, 20 g



*This sensor cannot be used together with the CTR series.*

## BULB SENSOR WITH CABLE, METAL HOUSING, PT100/PT1000

Universal sensor.

Technical data	
Material, tube	Stainless steel AISI 304
Material, cable	Thermoplastic rubber
Bulb length	40 mm
Cable length	1.5 m
Diameter	4 mm
Protection class	IP67
Accuracy	class B



PT04

Article	Sensor element	Nominal resistance	Temperature range	Compatible with
PT0415-PT100	PT100	100 Ω (0°C)	-30...+110 °C	Universal
PT0415-PT1000	PT1000	1000 Ω (0°C)	-30...+110 °C	Universal

## CABLE TEMPERATURE SENSOR -50...+200 °C, METAL HOUSING

Technical data	
Material, tube	Stainless steel AISI 304
Material, cable	Silicone
Bulb length	100 mm
Cable length	2 m (3 wires)
Diameter	6 mm
Protection class	IP67
Precision	Class B



PT10

Article	Sensor element	Nominal resistance	Temperature range	Compatible with
PT1020-PT100	PT100	100 Ω (0°C)	-50...+200 °C	Universal
PT1020-PT1000	PT1000	1000 Ω (0°C)	-50...+200 °C	Universal

## CABLE TEMPERATURE SENSOR 0...350 °C, METAL HOUSING

Special cable sensor for high temperature.

Technical data	
Material, tube	Stainless steel AISI 304 with ceramic insert
Material, cable	Fiberglass
Bulb length	100 mm
Cable length	2 m (3 wires)
Diameter	6 mm
Protection class	IP44
Precision	Class B



PT10xxC

Article	Sensor element	Nominal resistance	Temperature range	Compatible with
PT1020C-PT100	PT100	100 Ω (0°C)	0...350 °C	Universal
PT1020C-PT1000	PT1000	1000 Ω (0°C)	0...350 °C	Universal

## SETPOINT DEVICE FOR PT1000

Setpoint device which gives resistance corresponding to the standard PT1000 table.

Technical data	
Temperature range	5...30 °C
Mounting	Panel mounting
Dimensions	60 x 60 x 38 mm
Protection class	IP20



SET-PT1000

Article	Description
SET-PT1000	Setpoint device
SET-30	Setpoint device for controllers for electrical resistance CTR

## HEAT-CONDUCTIVE PASTE

Article	Description
PASTA-20	Heat-conductive paste in tube, 20 g



PASTA-20

## SENSOR CHARACTERISTICS

	PT100	PT1000	NTC 1,8K	NTC 2,2K	NTC 10K-01	NTC 10K-02	NTC 10K-03	NTC 15K-01	NTC 15K-02	NTC 15K-03	NTC 15K-04	NTC 20K	NI 1000-01	NI 1000-02
Equivalent			Tac	Johnson Controls	Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell	Carel - Evco - Elwell - AB Industrietechnik	Andover - Delta Controls - Siebe - York	Regin - AB Industrietechnik	Regin - AB Industrietechnik	Regin - AB Industrietechnik	Regin - AB Industrietechnik	Honeywell	Siemens - Landis & Staefa	Sauter
Temp. °C	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω
150	157,3	1573			186									
140	153,6	1536			235								1737	1909
130	149,8	1498			301								1675	1833
120	146,1	1461			390								1615	1760
110	142,3	1423	138	115	511	758	624					818	1557	1688
100	138,5	1385	177	153	679	973	817					1114	1500	1618
90	134,7	1347	230	206	916	1266	1084					1541	1444	1549
80	130,9	1309	303	283	1255	1668	1457					2166	1390	1483
70	127,1	1271	404	395	1752	2228	1990					3098	1337	1417
65	125,2	1252	469	469	2083	2588	2338					3732	1311	1385
60	123,2	1232	547	560	2488	3020	2760		10000			4518	1285	1353
55	121,3	1213	640	672	2986	3536	3270					5494	1260	1322
50	119,4	1194	753	811	3602	4160	3893		10830	10000		6718	1235	1291
45	117,5	1175	888	984	4368	4911	4655			10830		8260	1210	1260
40	115,5	1155	1052	1199	5324	5827	5594		11670	11670	10000	10212	1186	1230
35	113,6	1136	1252	1471	6532	6940	6754			12500	10625	12698	1162	1200
30	111,7	1117	1498	1814	8055	8313	8196	10000	12500	13330	11250	15886	1138	1171
29	111,3	1113	1553	1893	8406	8622	8525	10170				16627	1132	1165
28	111,0	1110	1611	1977	8779	8944	8869	10330				17407	1128	1159
27	110,5	1105	1671	2064	9165	9281	9229	10500				18227	1123	1153
26	110,1	1101	1734	2156	9574	9632	9606	10670				19090	1119	1147
<b>25</b>	109,7	1097	<b>1800</b>	<b>2252</b>	<b>10000</b>	<b>10000</b>	<b>10000</b>	10830		14170	11875	<b>20000</b>	1114	1141
24	109,3	1093	1868	2353	10448	10380	10413	11000				20958	1109	1136
23	109,0	1090	1940	2460	10924	10780	10845	11170				21968	1105	1130
22	108,6	1086	2015	2572	11421	11200	11298	11330				23033	1100	1124
21	108,2	1082	2092	2689	11940	11630	11773	11500				24156	1095	1118
20	107,8	1078	2174	2813	12491	12090	12270	11670	13330	15000	12500	25340	1091	1112
19	107,4	1074	2258	2944	13073	12560	12791	11830				26491	1086	1107
18	107,0	1070	2347	3081	13681	13060	13337	12000				27912	1081	1101
17	106,6	1066	2440	3226	14325	13580	13910	12170				29307	1077	1095
16	106,2	1062	2537	3378	15000	14120	14510	12330				30782	1072	1089
15	105,9	1059	2638	3538	15710	14690	15140	12500			13125	32340	1068	1084
14	105,5	1055	2744	3707	16461	15280	15801	12370				33982	1063	1078
13	105,1	1051	2854	3886	17256	15900	16494	12830				35716	1058	1072
12	104,7	1047	2972	4074	18091	16560	17222	13000				37550	1054	1067
11	104,3	1043	3093	4272	18970	17240	17987	13170				39489	1049	1061
10	103,9	1039	3222	4482	19902	17960	18790	13330	14170		13750	41540	1045	1056
9	103,5	1035	3354	4703	20884	18700	19633	13500				43715	1040	1050
8	103,1	1031	3493	4936	21918	19480	20519	13670				46018	1036	1044
7	102,7	1027	3639	5183	23015	20300	21451	13830				48457	1031	1039
6	102,3	1023	3791	5443	24170	21150	22430	14000				51041	1027	1033
5	101,9	1019	3951	5718	25391	22050	23460	14170			14375	53780	1022	1028
4	101,6	1016	4120	6009	26683	23000	24545	14330				56678	1018	1022
3	101,2	1012	4296	6317	28051	23990	25687	14500				59751	1013	1016
2	100,8	1008	4481	6643	29498	25030	26890	14670				63011	1009	1011
1	100,4	1004	4677	6988	31030	26130	28156	14830				66469	1004	1005
<b>0</b>	<b>100,0</b>	<b>1000</b>	4882	7353	32650	27280	29490	15000	15000		15000	70140	<b>1000</b>	<b>1000</b>
-5	98,0	980	6059	9532	42327	33900	37310					92220	978	973
-10	96,1	961	7580	12460	55329	42470	47540					122260	956	946
-15	94,1	941	9519	16430	72957	53410	61020					163480	935	919
-20	92,2	922	12061	21863	97083	67770	78910					220600	914	893
-25	90,2	902	15359	29371	130422	86430	102900					300400	893	867
-30	88,2	882	19747	39855	176976	111300	135200					413400	872	842
-35	86,3	863											851	816
-40	84,3	843											831	791

## TEMPERATURE TRANSMITTER FOR ROOM MOUNTING, 0...10 V AND MODBUS

Technical data	
Supply voltage	24 V AC $\pm 10\%$ / 15...35 V DC
Power consumption	< 1 W
Temperature range	0...50 °C
Ambient temperature	0...50 °C
Ambient humidity	10...90 % UR (senza condensa)
Voltage range	0...11.5 V DC
Transformer power	$\geq 2$ VA
Mounting	Room
Display	4 digit
Dimensions	100 x 85 x 30.5 mm
Protection class	IP30
Isolation class	III



TTA



TTA-D

Article	Output signal	Accuracy	Display
TTA	0...10 V DC	$\pm 0.4^\circ\text{C}$	-
TTA-D	0...10 V DC	$\pm 0.4^\circ\text{C}$	X
TTA-M	Modbus	$\pm 0.2^\circ\text{C}$	-
TTA-D-M	Modbus	$\pm 0.2^\circ\text{C}$	X

## TEMPERATURE TRANSMITTER FOR ROOM MOUNTING, 4...20 MA

Technical data	
Supply voltage	Max. 28 V DC, Min. $11+(0.02 \times \text{RL})$ V DC
DC power	Min. 1 W
Temperature range	0...50 °C
Ambient temperature	0...50 °C
Ambient humidity	10...95 % RH
Power consumption	0.6 W
Accuracy, temperature	$\pm 0.5^\circ\text{C}$ at 20°C
Mounting	Room
Dimensions (WxHxD mm)	100 x 85 x 30.5
Protection class	IP30
Isolation class	III



TTA-C



TTA-CD

Article	Output signal	Display
TTA-CD	4...20 mA (2 wires)	X
TTA-C	4...20mA (2 wires)	-

## TEMPERATURE TRANSMITTER FOR WALL MOUNTING, IP65



TTE011

Technical data	
Power consumption	< 1 W
Ambient temperature	-20...+50 °C
Ambient humidity	10...95 % RH
Storage temperature	-20...+70 °C
Material, casing cover	White polycarbonate
Material, casing base	Grey polycarbonate
Weight	170 g
Dimensions	75 x 75 x 36 mm (housing)
Protection class	IP65 class III (sensor excluded)
Isolation class	III

Article	Temperature range	Output signal	Accuracy	Supply voltage
TTE011	0...50 °C	0...10 V DC	± 1°C	18...35 V DC / 18...24 V AC
TTE012	-30...+50 °C	0...10 V DC	± 1,5°C	18...35 V DC / 18...24 V AC
TTE013	0...100 °C	0...10 V DC	± 2°C	18...35 V DC / 18...24 V AC
TTE021	0...50 °C	4...20 mA (2 wires)	± 1°C	Max 30 V DC, Min 11+(0,02xRL) V DC
TTE022	-30...+50 °C	4...20 mA (2 wires)	± 1,5°C	Max 30 V DC, Min 11+(0,02xRL) V DC
TTE023	0...100 °C	4...20 mA (2 wires)	± 2°C	Max 30 V DC, Min 11+(0,02xRL) V DC

## TEMPERATURE TRANSMITTER FOR AIR DUCT MOUNTING, IP65



TTC021

Technical data	
Power consumption	< 1 W
Temperature range sensor	-20...+80 °C
Insertion length	60...230 mm
Ambient temperature	0...50 °C
Ambient humidity	10...95 % RH (non-condensing)
Storage temperature	-20...+70 °C
Material, casing cover	White polycarbonate
Material, casing base	Grey polycarbonate
Weight	260 g
Dimensions	75 x 75 x 36 mm (housing)
Protection class	IP65 (sensor excluded)
Isolation class	III

Article	Temperature range	Output signal	Accuracy	Supply voltage
TTC011	0...50 °C	0...10 V DC	± 1°C	18...35 V DC / 18...24 V AC
TTC012	-30...+50 °C	0...10 V DC	± 1,5°C	18...35 V DC / 18...24 V AC
TTC013	0...100 °C	0...10 V DC	± 2°C	18...35 V DC / 18...24 V AC
TTC021	0...50 °C	4...20 mA (2 wires)	± 1°C	Max 30 V DC, Min (11+(0,02xRL)) V DC
TTC022	-30...+50 °C	4...20 mA (2 wires)	± 1,5°C	Max 30 V DC, Min (11+(0,02xRL)) V DC
TTC023	0...100 °C	4...20 mA (2 wires)	± 2°C	Max 30 V DC, Min (11+(0,02xRL)) V DC

Article	Description
DBZ-22	Mounting bracket for air duct transmitters

## TEMPERATURE TRANSMITTER FOR IMMERSION MOUNTING, IP65

Technical data	
Power consumption	< 1 W
Temperature range sensor	-20...+100 °C
Insertion length	120 mm
Ambient temperature	0...50 °C
Ambient humidity	10...95 % RH (non-condensing)
Storage temperature	-20...+70 °C
Material, casing cover	White polycarbonate
Material, casing base	Grey polycarbonate
Weight	310 g
Dimensions	75 x 75 x 36 mm (housing)
Protection class	IP65 (sensor excluded)
Isolation class	III



TTI011

Article	Temperature range	Output signal	Accuracy	Supply voltage
TTI011	0...50 °C	0...10 V DC	± 1°C	18...35 V DC / 18...24 V AC
TTI012	-30...+50 °C	0...10 V DC	± 1,5°C	18...35 V DC / 18...24 V AC
TTI013	0...100 °C	0...10 V DC	± 2°C	18...35 V DC / 18...24 V AC
TTI021	0...50 °C	4...20 mA (2 wires)	± 1°C	Max 30 V DC, Min (11+(0,02xRL)) V DC
TTI022	-30...+50 °C	4...20 mA (2 wires)	± 1,5°C	Max 30 V DC, Min (11+(0,02xRL)) V DC
TTI023	0...100 °C	4...20 mA (2 wires)	± 2°C	Max 30 V DC, Min (11+(0,02xRL)) V DC

## CO<sub>2</sub>, CO, VOC TRANSMITTERS

### CO<sub>2</sub> TRANSMITTER, ROOM MOUNTING

This series with automatic calibration sets new standards in CO<sub>2</sub> measurement for HVAC applications. It combines the measurement of the carbon dioxide level, temperature and relative humidity. Models with or without display are available.



TCO2A



TCO2A-D

#### Technical data

Supply voltage	24 V AC ±10 %, 50...60 Hz / 15...35 V DC
Working range, CO <sub>2</sub>	0...2000 ppm
Working range, temperature	0...50 °C
Working range, humidity	10...90 % RH (non-condensing)
Power consumption	< 2.5 W
Energy consumption	< 0.5 Wh
Transformer power	≥ 5 VA
Accuracy, CO <sub>2</sub>	< ± (50 ppm + 2 % of the measured value) (25 °C)
Accuracy, humidity	±3 % RH (20°C)
Relay output	Max. 1 A at 50 V AC, min. 1 mA at 5 V DC
Mounting	Room
Dimensions	100 x 85 x 30.5 mm
Protection class	IP30

#### Outputs

CO <sub>2</sub>	0...10 V DC referring to 0...2000 ppm
Temperature	0...10 V DC referring to 0...50 °C or resistive outputs
Humidity	0...10 V DC referring to 0...100 % RH



Article	Description	Display	Output signal	Accuracy, temperature
TCO2A	CO <sub>2</sub> + °C	-	0...10V + 0...10V	± 0.4 °C
TCO2A-D	CO <sub>2</sub> + °C	X	0...10V + 0...10V	± 0.4 °C
TCO2A-PT100	CO <sub>2</sub> + PT100, 100 Ohm (0°C)	-	0...10V + ohm	± 0.3 °C
TCO2A-PT1000	CO <sub>2</sub> + PT1000, 1000 Ohm (0°C)	-	0...10V + ohm	± 0.3 °C
TCO2A-NTC1.8	CO <sub>2</sub> + NTC 1.8, 1800 Ohm (25°C)	-	0...10V + ohm	± 0.5 °C
TCO2A-NTC2.2	CO <sub>2</sub> + NTC 2.2, 2252 Ohm (25°C)	-	0...10V + ohm	± 0.2 °C
TCO2A-NTC10-01	CO <sub>2</sub> + NTC 10, 10 kOhm (25°C)	-	0...10V + ohm	± 0.2 °C
TCO2A-NTC10-02	CO <sub>2</sub> + NTC 10, 10 kOhm (25°C)	-	0...10V + ohm	± 0.3 °C
TCO2A-NTC10-03	CO <sub>2</sub> + NTC 10, 10 kOhm (25°C)	-	0...10V + ohm	± 0.25 °C
TCO2A-NTC20	CO <sub>2</sub> + NTC 20, 20 kOhm (25°C)	-	0...10V + ohm	± 0.2 °C
TCO2A-NI1000-01	CO <sub>2</sub> + Ni1000, 1000 Ohm (0°C)	-	0...10V + ohm	± 0.5 °C
TCO2A-NI1000-02	CO <sub>2</sub> + Ni1000, 1000 Ohm (0°C)	-	0...10V + ohm	± 0.5 °C
TCO2A-D-PT100	CO <sub>2</sub> + PT100, 100 Ohm (0°C)	X	0...10V + ohm	± 0.3 °C
TCO2A-D-PT1000	CO <sub>2</sub> + PT1000, 1000 Ohm (0°C)	X	0...10V + ohm	± 0.3 °C
TCO2A-D-NTC1.8	CO <sub>2</sub> + NTC 1.8, 1800 Ohm (25°C)	X	0...10V + ohm	± 0.5 °C
TCO2A-D-NTC2.2	CO <sub>2</sub> + NTC 2.2, 2252 Ohm (25°C)	X	0...10V + ohm	± 0.2 °C
TCO2A-D-NTC10-01	CO <sub>2</sub> + NTC 10, 10 kOhm (25°C)	X	0...10V + ohm	± 0.2 °C
TCO2A-D-NTC10-02	CO <sub>2</sub> + NTC 10, 10 kOhm (25°C)	X	0...10V + ohm	± 0.3 °C
TCO2A-D-NTC10-03	CO <sub>2</sub> + NTC 10, 10 kOhm (25°C)	X	0...10V + ohm	± 0.25 °C
TCO2A-D-NTC20	CO <sub>2</sub> + NTC 20, 20 kOhm (25°C)	X	0...10V + ohm	± 0.2 °C
TCO2A-D-NI1000-01	CO <sub>2</sub> + Ni1000, 1000 Ohm (0°C)	X	0...10V + ohm	± 0.5 °C
TCO2A-D-NI1000-02	CO <sub>2</sub> + Ni1000, 1000 Ohm (0°C)	X	0...10V + ohm	± 0.5 °C
TCO2A-M	CO <sub>2</sub> + °C	-	Modbus	± 0.2 °C
TCO2A-D-M	CO <sub>2</sub> + °C	X	Modbus	± 0.2 °C
TCO2AU	CO <sub>2</sub> + °C + RH	-	0...10V + 0...10V + 0...10V	± 0.4 °C
TCO2AU-PT100	CO <sub>2</sub> + RH + PT100, 100 Ohm (0°C)	-	0...10V + 0...10V + ohm	± 0.3 °C
TCO2AU-PT1000	CO <sub>2</sub> + RH + PT1000, 1000 Ohm (0°C)	-	0...10V + 0...10V + ohm	± 0.3 °C
TCO2AU-NTC1.8	CO <sub>2</sub> + RH + NTC 1.8, 1800 Ohm (25°C)	-	0...10V + 0...10V + ohm	± 0.5 °C
TCO2AU-NTC2.2	CO <sub>2</sub> + RH + NTC 2.2, 2252 Ohm (25°C)	-	0...10V + 0...10V + ohm	± 0.2 °C
TCO2AU-NTC10-01	CO <sub>2</sub> + RH + NTC 10, 10 kOhm (25°C)	-	0...10V + 0...10V + ohm	± 0.2 °C
TCO2AU-NTC10-02	CO <sub>2</sub> + RH + NTC 10, 10 kOhm (25°C)	-	0...10V + 0...10V + ohm	± 0.3 °C
TCO2AU-NTC10-03	CO <sub>2</sub> + RH + NTC 10, 10 kOhm (25°C)	-	0...10V + 0...10V + ohm	± 0.25 °C
TCO2AU-NTC20	CO <sub>2</sub> + RH + NTC 20, 20 kOhm (25°C)	-	0...10V + 0...10V + ohm	± 0.2 °C
TCO2AU-NI1000-01	CO <sub>2</sub> + RH + Ni1000, 1000 Ohm (0°C)	-	0...10V + 0...10V + ohm	± 0.5 °C
TCO2AU-NI1000-02	CO <sub>2</sub> + RH + Ni1000, 1000 Ohm (0°C)	-	0...10V + 0...10V + ohm	± 0.5 °C
TCO2AU-D	CO <sub>2</sub> + °C + RH	X	0...10V + 0...10V + 0...10V	± 0.4 °C
TCO2AU-D-PT100	CO <sub>2</sub> + RH + PT100, 100 Ohm (0°C)	X	0...10V + 0...10V + ohm	± 0.3 °C
TCO2AU-D-PT1000	CO <sub>2</sub> + °C + RH	X	0...10V + 0...10V + ohm	± 0.3 °C
TCO2AU-D-NTC1.8	CO <sub>2</sub> + RH + NTC 1.8, 1800 Ohm (25°C)	X	0...10V + 0...10V + ohm	± 0.5 °C
TCO2AU-D-NTC2.2	CO <sub>2</sub> + RH + NTC 2.2, 2252 Ohm (25°C)	X	0...10V + 0...10V + ohm	± 0.2 °C
TCO2AU-D-NTC10-01	CO <sub>2</sub> + RH + NTC 10, 10 kOhm (25°C)	X	0...10V + 0...10V + ohm	± 0.2 °C
TCO2AU-D-NTC10-02	CO <sub>2</sub> + RH + NTC 10, 10 kOhm (25°C)	X	0...10V + 0...10V + ohm	± 0.3 °C
TCO2AU-D-NTC10-03	CO <sub>2</sub> + RH + NTC 10, 10 kOhm (25°C)	X	0...10V + 0...10V + ohm	± 0.25 °C
TCO2AU-D-NTC20	CO <sub>2</sub> + RH + NTC 20, 20 kOhm (25°C)	X	0...10V + 0...10V + ohm	± 0.2 °C
TCO2AU-D-NI1000-01	CO <sub>2</sub> + RH + Ni1000, 1000 Ohm (0°C)	X	0...10V + 0...10V + ohm	± 0.5 °C
TCO2AU-D-NI1000-02	CO <sub>2</sub> + RH + Ni1000, 1000 Ohm (0°C)	X	0...10V + 0...10V + ohm	± 0.5 °C
TCO2AU-M	CO <sub>2</sub> + RH + °C	-	Modbus	± 0.2 °C
TCO2AU-D-M	CO <sub>2</sub> + RH + °C	X	Modbus	± 0.2 °C

## CO<sub>2</sub> TRANSMITTER, AIR DUCT MOUNTING

Measures the concentration of carbon dioxide in ducts. Exempt from periodic calibration. Some models are equipped with a passive temperature sensor.

Technical data	
Supply voltage	15...35 V DC / 24 V AC ± 10% 50-60 Hz
CO <sub>2</sub> sensor	NDIR (Non-Dispersive Infrared Technology)
Output	0...10 V DC or 0...5 V DC, RL>10 kOhm
Working range, CO <sub>2</sub>	0...2000 ppm
Working range, temperature	0...+50 °C
Working range, humidity	10...90 % RH (non-condensing)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Accuracy, CO <sub>2</sub>	±(50 ppm +2% of the measured value)
Power consumption	< 2.5 W
Energy consumption	< 0.5 Wh
Transformer power	>=5 VA
Max. air velocity	10 m/s
Mounting	Duct
Material, casing cover	White polycarbonate
Material, casing base	Grey polycarbonate
Insertion length	60...230 mm
Weight	160 g
Dimensions	75 x 77 x 36 mm (housing)
Protection class	IP65 case (sensor excluded)
Isolation class	III
Outputs	
CO <sub>2</sub>	0...10 V DC referring to 0...2000 ppm
Temperature	passive sensor °C



TCO2C



DBZ-22

Article	Description	Output signal	Accuracy, temperature
TCO2C	CO <sub>2</sub>	0...10 V	-
TCO2C-05	CO <sub>2</sub>	0...5 V	-
TCO2C-PT100	CO <sub>2</sub> + PT100, 100 Ohm (0°C)	0...10 V + Ohm	± 0.3
TCO2C-PT1000	CO <sub>2</sub> + PT1000, 1000 Ohm (0°C)	0...10 V + Ohm	± 0.3
TCO2C-NTC1.8	CO <sub>2</sub> + NTC 1.8, 1800 Ohm (25°C)	0...10 V / Ohm	± 0.5
TCO2C-NTC2.2	CO <sub>2</sub> + NTC 2.2, 2252 Ohm (25°C)	0...10 V + Ohm	± 0.2
TCO2C-NTC10-01	CO <sub>2</sub> + NTC 10, 10 kOhm (25°C)	0...10 V + Ohm	± 0.2
TCO2C-NTC10-02	CO <sub>2</sub> + NTC 10, 10 kOhm (25°C)	0...10 V + Ohm	± 0.3
TCO2C-NTC10-03	CO <sub>2</sub> + NTC 10, 10 kOhm (25°C)	0...10 V + Ohm	± 0.25
TCO2C-NTC20	CO <sub>2</sub> + NTC 20, 20 kOhm (25°C)	0...10 V + Ohm	± 0.2
TCO2C-NI1000-01	CO <sub>2</sub> + Ni1000, 1000 Ohm (0°C)	0...10 V + Ohm	± 0.5
TCO2C-NI1000-02	CO <sub>2</sub> + Ni1000, 1000 Ohm (0°C)	0...10 V + Ohm	± 0.5

### ACCESSORIES

Article	Description
DBZ-22	Mounting bracket for air duct transmitters



Note: the transmitters model TCO2C are supplied with mounting bracket model DBZ-22.

## CARBON MONOXIDE TRANSMITTER

This device measures the carbon monoxide concentration using an electrochemical method of measurement characterised by high selectivity even in low concentrations. It is installed for both safety and energy-saving reasons. The output signals are linear representations of the gas concentration.

The transmitter is TÜV-approved in accordance with VDI 2053.

Technical data	
Supply voltage	12...28 V DC
Measuring range	0...300 ppm
Outputs	4...20 mA, two-wire / 0...10 V DC, three-wire
Calibration	Automatic zero adjustment
Dimensions	80 x 82 x 86 mm
Protection class	IP56



TCO1

Article	Description
TCO1	CO transmitter

## ROOM AIR QUALITY TRANSMITTERS, VOC

Analysis of the air quality based on a mixed gas VOC (Volatile Organic Compounds) sensor.

Detectable gases:

- carbon monoxide CO
- hydrogen sulfide H<sub>2</sub>S
- solvent vapours
- cigarette smoke
- car exhaust
- air produced by human breathing
- combustion smoke from wood, paper and plastics.

Technical data	
Supply voltage	15...36 V DC or 24 V AC/DC ± 10%, 50-60 Hz
Outputs	0...10 V DC, 0...20 mA or 4...20 mA, selectable by jumpers
Sensor	VOC
Ambient temperature	0...50 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-20...+50 °C
Storage humidity	< 95 % RH
Casing	Plastic material similar to RAL 9010
Weight	80 g
Dimensions	75 x 75 x 25 mm
Protection class	IP30 (case)
Isolation class	III
Certification	EN 60335-1: safety / EN 60529: IP degree of protection / EN 60730: domestic controls



DB-RLQ

Article	Output	Application
DB-RLQ	0...10 V DC, 0...20 mA, 4...20 mA	Room
DB-RLQ5	0...5 V DC, 0...20 mA, 4...20 mA	Room

## DUCT AIR QUALITY TRANSMITTERS, VOC

Analysis of the air quality based on a mixed gas VOC (Volatile Organic Compounds) sensor.

Detectable gases:

- carbon monoxide CO
- hydrogen sulfide H<sub>2</sub>S
- solvent vapours
- cigarette smoke
- car exhaust
- air produced by human breathing
- combustion smoke from wood, paper and plastics.



DB-KLQ

Technical data	
Supply voltage	15...36 V DC or 24 V AC/DC ± 10%, 50-60 Hz
Outputs	0...10 V DC, 0...20 mA or 4...20 mA, selectable by dip-switch
Sensor	VOC
Ambient temperature	0...50 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-20...+50 °C
Storage humidity	< 95 % RH
Casing	Plastic material similar to RAL 9010
Weight	80 g
Dimensions	65 x 59 x 36 mm (tube L = 206 mm, diameter = 16 mm)
Protection class	IP30 (case)
Isolation class	III
Certification	EN 60335-1: safety / EN 60529: IP degree of protection / EN 60730: domestic controls

Article	Output	Application
DB-KLQ	0...10 V DC, 0...20 mA, 4...20 mA	Duct
DB-KLQ5	0...5 V DC, 0...20 mA, 4...20 mA	Duct

# HUMIDITY TRANSMITTERS AND HUMIDISTATS

## ROOM HUMIDISTAT

Electromechanical humidistat for room mounting with synthetic element.

Technical data	
Sensor element	Synthetic element
Switch capacity	Humidify: 2 (1) A, 230 V AC Dehumidify: 5 (1) A, 230 V AC
Humidity range	30...100 % RH
Hysteresis	4 % at 50 % RH
Ambient temperature	0...60 °C
Ambient humidity	< 95 % RH (non-condensing)
Weight	130 g
Dimensions	115 x 70 x 35 mm
Protection class	IP20
Isolation class	II



DBZH-101

Article	Hidden setpoint	Description
DBZH-101	-	
DBZH-101U	X	

## ROOM HUMIDISTAT

Electromechanical humidistat with a synthetic element. The setpoint knob can be locked.

Technical data	
Sensor element	Synthetic element
Output	One, 230 V AC, 5 A, change-over
Setpoint	35...95 % RH
Hysteresis	7 % RH
Mounting	Room
Dimensions	86 x 86 x 30 mm
Protection class	IP30



DBZH-102

Article	Description
DBZH-102	Room humidistat, 1-step

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## DUCT HUMIDISTAT

Humidistat to be mounted in the duct.



DBKH-10

Technical data	
Sensor element	Synthetic element
Contact	Dust-tight microswitches with SPDT contacts
Switch capacity	15 (2) A, 230 V AC/0.25 A, 230 V DC
Humidity range	30...100 % RH
Hysteresis	4 % at 50% RH
Max. air velocity	8 m/s
Ambient temperature	0...60 °C
Ambient humidity	< 95 % RH (non-condensing)
Storage temperature	-30...+60 °C
Storage humidity	< 95 % RH (In the case of voltage below 48 V, the humidistat can be used up to 100% RH)
Tube length	220 mm
Material, tube	Nickel-plated brass, perforated
Casing	ABS
Weight	480 g
Dimensions	108 x 70 x 72 mm

Article	Hidden setpoint	Protection class
DBKH-10	-	IP54
DBKH-10U	X	IP65

## DUCT/WALL HUMIDISTAT

Electromechanical humidistat with change-over contact.



DBKH-10H

Technical data	
Sensor element	Human hair
Output	10 A, 250 V AC, change-over
Setpoint	10...100 % RH
Hysteresis	3 % RH
Mounting	Duct or wall
Dimensions	80 x 85 x 88 mm
Protection class	IP54
Isolation class	I

Article	Description	Output	Step differential
DBKH-10H	Duct/wall humidistat	1-step	-
DBKH-20H	Duct/wall humidistat	2-step	0...25 % RH

## HUMIDITY TRANSMITTER FOR ROOM MOUNTING, OUTPUT 0...10 V, IP30

Transmitters for relative humidity and temperature measurement. They have good long-term stability and are resistant to contamination.

Technical data	
Supply voltage	24 V AC $\pm$ 10% / 15...35 V DC
Power consumption	<1W
Transformer power	$\geq$ 2 VA
Output signal	0...10 V DC or Modbus
Ambient temperature	0...50 °C
Ambient humidity	0...95%
Working range, temperature	0...50 °C
Working range, humidity	0...100 % RH
Accuracy, humidity	$\pm$ 3 % RH at 20 °C
Mounting	Room
Dimensions	100 x 85 x 30.5 mm
Protection class	IP30
Isolation class	III



TUA



TUA-D

Article	Output signal	Display
TUA-M	Modbus	-
TUA-D-M	Modbus	X
TUA	0...10 V DC	-
TUA-D	0...10 V DC	X

## HUMIDITY TRANSMITTER FOR ROOM MOUNTING, OUTPUT 4...20 mA, IP30

Technical data	
Supply voltage	Max 28 V DC, Min (11+(0,02xRL)) V DC
Output signal	4...20 mA (2 wire)
Power consumption	0,6 W
Ambient temperature	0...50 °C
Ambient humidity	0...95% RH (non condensing)
Transformer power	>=1 W
Working range, humidity	0...100 % RH (non condensing)
Accuracy, humidity	±3 % RH at 20 °C
Mounting	Room
Dimensions	100 x 85 x 30.5 mm
Protection class	IP30
Isolation class	III

Article	Display
TUA-C	-
TUA-CD	X



TUA-C



TUA-CD



## HUMIDITY AND TEMPERATURE TRANSMITTER FOR ROOM MOUNTING, 4...20 MA

Technical data	
Supply voltage	Max. 28 V DC, Min. 11+(0.02xRL) V DC
Output signal	4...20 mA (2 wire)
Power consumption	1.2 W
Temperature range	0...50 °C
Ambient temperature	0...50 °C
Ambient humidity	0...95 % RH (non-condensing)
Humidity range	0...100 % RH
Transformer power	Min. 2 W
Accuracy, humidity	±3% RH at 20 °C
Accuracy, temperature	±0.5°C at 20°C
Mounting	Room
Dimensions (WxHxD mm)	100 x 85 x 30.5
Protection class	IP30
Isolation class	III

Article	Display
TTUA-C	-
TTUA-CD	X



TTUA-CD

## HUMIDITY/TEMPERATURE TRANSMITTER FOR ROOM MOUNTING, IP30

Transmitter for relative humidity and temperature measurement. It has good long-term stability and is resistant to contamination.



TTUA



TTUA-D

Technical data	
Supply voltage	24 V AC $\pm 10\%$ / 15...35 V DC
Power consumption	< 1 W
Transformer power	$\geq 2$ VA
Working range, temperature	0...50 °C
Working range, humidity	0...100 % RH
Accuracy, humidity	$\pm 3\%$ RH at 20°C
Mounting	Room
Dimensions	100 x 85 x 30.5 mm
Protection class	IP30

Article	Description	Display	Output signal	Accuracy, temperature
TTUA	RH + °C	-	0...10 V + 0...10 V	$\pm 0.4$ °C
TTUA-PT100	RH + PT100, 100 Ohm (0°C)	-	0...10 V + ohm	$\pm 0.3$ °C
TTUA-PT1000	RH + PT1000, 1000 Ohm (0°C)	-	0...10 V + ohm	$\pm 0.3$ °C
TTUA-NTC1.8	RH + NTC 1.8, 1800 Ohm/25°C	-	0...10 V + ohm	$\pm 0.5$ °C
TTUA-NTC2.2	RH + NTC 2.2, 2252 Ohm/25°C	-	0...10 V + ohm	$\pm 0.2$ °C
TTUA-NTC10-01	RH + NTC 10, 10 kOhm/25°C	-	0...10 V + ohm	$\pm 0.2$ °C
TTUA-NTC10-02	RH + NTC 10, 10 kOhm/25°C	-	0...10 V + ohm	$\pm 0.3$ °C
TTUA-NTC10-03	RH + NTC 10, 10 kOhm/25°C	-	0...10 V + ohm	$\pm 0.25$ °C
TTUA-NTC20	RH + NTC 20, 20 kOhm/25°C	-	0...10 V + ohm	$\pm 0.2$ °C
TTUA-NI1000-01	RH + Ni1000, 1000 Ohm/0°C	-	0...10 V + ohm	$\pm 0.5$ °C
TTUA-NI1000-02	RH + Ni1000, 1000 Ohm/0°C	-	0...10 V + ohm	$\pm 0.5$ °C
TTUA-D	RH + °C	X	0...10 V + 0...10 V	$\pm 0.4$ °C
TTUA-D-PT100	RH + PT100, 100 Ohm/0°C	X	0...10 V + ohm	$\pm 0.3$ °C
TTUA-D-PT1000	RH + PT1000, 1000 Ohm (0°C)	X	0...10 V + ohm	$\pm 0.3$ °C
TTUA-D-NTC1.8	RH + NTC 1.8, 1800 Ohm/25°C	X	0...10 V + ohm	$\pm 0.5$ °C
TTUA-D-NTC2.2	RH + NTC 2.2, 2252 Ohm/25°C	X	0...10 V + ohm	$\pm 0.2$ °C
TTUA-D-NTC10-01	RH + NTC 10, 10 kOhm/25°C	X	0...10 V + ohm	$\pm 0.2$ °C
TTUA-D-NTC10-02	RH + NTC 10, 10 kOhm/25°C	X	0...10 V + ohm	$\pm 0.3$ °C
TTUA-D-NTC10-03	RH + NTC 10, 10 kOhm/25°C	X	0...10 V + ohm	$\pm 0.25$ °C
TTUA-D-NTC20	RH + NTC 20, 20 kOhm/25°C	X	0...10 V + ohm	$\pm 0.2$ °C
TTUA-D-NI1000-01	RH + Ni1000, 1000 Ohm/0°C	X	0...10 V + ohm	$\pm 0.5$ °C
TTUA-D-NI1000-02	RH + Ni1000, 1000 Ohm/0°C	X	0...10 V + ohm	$\pm 0.5$ °C
TTUA-M	Humidity and temperature transmitter	-	Modbus	$\pm 0.2$ °C
TTUA-D-M	RH + °C	X	Modbus	$\pm 0.2$ °C

## WALL HUMIDITY TRANSMITTER

Technical data	
Supply voltage, 0...10 V DC	18...24 V AC / 18...35 V DC
Supply voltage, 4...20 mA	Max 30 V DC, Min (11+(0,02xRL)) V DC
Power consumption	< 1 W
Transformer power	≥ 2 VA
Ambient humidity	10...95 % RH (non-condensing)
Working range, temperature	0...50 °C
Storage temperature	-20...+70 °C
Accuracy	±3 % RH at 20 °C
Temperature dependence of electronics	Output 4...20 mA: 0.015 °C/°C
Material, casing cover	White polycarbonate
Material, casing base	Grey polycarbonate
Weight	170 g
Dimensions	75 x 172 x 36 mm
Protection class	IP65 (sensor excluded)
Isolation class	III



TUE

Article	Supply voltage	Load limits	Output
TUE1	18...24 V AC / 18...35 V DC	RL < 1000 Ohm	0...10 V DC
TUE2	11...30 V DC	V+ - (0.02 x RL) ≥ 11 V]	4...20 mA
TUE3	18...24 V AC / 18...35 V DC	RL < 1000 Ohm	0...5 V DC



*Operating temperature limit 0...+50 °C*

## WALL HUMIDITY/TEMPERATURE TRANSMITTER



TUTE

Technical data	
Power consumption	< 1 W
Ambient humidity	10...95 % RH (non-condensing)
Storage temperature	-20...+70 °C
Working range, temperature	0...50 °C
Accuracy, humidity	± 3% RH at 20 °C
Material, casing cover	White polycarbonate
Material, casing base	Grey polycarbonate
Weight	170 g
Dimensions	75 x 172 x 36 mm
Protection class	IP65 (sensor excluded)
Isolation class	III

Article	Supply voltage	Temperature range	Output, temperature	Output, humidity	Accuracy, temperature
TUTE0111	18...24 V AC / 18...35 V DC	0...+50 °C	0...10 V DC	0...10 V DC	± 1°C
TUTE0121	18...24 V AC / 18...35 V DC	-30...+50 °C	0...10 V DC	0...10 V DC	± 1.5°C
TUTE0131	18...24 V AC / 18...35 V DC	0...+100 °C	0...10 V DC	0...10 V DC	± 2°C
TUTE0212	Max 30 V DC, Min 11+(0,02xRL) V DC	0...+50 °C	4...20 mA	4...20 mA	± 1°C
TUTE0222	Max 30 V DC, Min 11+(0,02xRL) V DC	-30...+50 °C	4...20 mA	4...20 mA	± 1.5°C
TUTE0232	Max 30 V DC, Min 11+(0,02xRL) V DC	0...+100 °C	4...20 mA	4...20 mA	± 2°C
TUTE1101	18...24 V AC / 18...35 V DC	-5...+50 °C	NTC 10K-02	0...10 V DC	± 0.6°C
TUTE1102	Max 30 V DC, Min 11+(0,02xRL) V DC	-5...+50 °C	NTC 10K-02	4...20 mA	± 0.6°C
TUTE1103	18...24 V AC / 18...35 V DC	-5...+50 °C	NTC 10K-02	0...5 V DC	± 0.6°C
TUTE1301	18...24 V AC / 18...35 V DC	-5...+50 °C	NTC 1K8	0...10 V DC	± 0.6°C
TUTE1302	Max 30 V DC, Min 11+(0,02xRL) V DC	-5...+50 °C	NTC 1K8	4...20 mA	± 0.6°C
TUTE1401	18...24 V AC / 18...35 V DC	-5...+50 °C	NTC 10K-01	0...10 V DC	± 0.2°C
TUTE1402	Max 30 V DC, Min 11+(0,02xRL) V DC	-5...+50 °C	NTC 10K-01	4...20 mA	± 0.2°C
TUTE1501	18...24 V AC / 18...35 V DC	-5...+50 °C	NTC 10K-03	0...10 V DC	± 0.2°C
TUTE1502	Max 30 V DC, Min 11+(0,02xRL) V DC	-5...+50 °C	NTC 10K-03	4...20 mA	± 0.2°C
TUTE1601	18...24 V AC / 18...35 V DC	-5...+50 °C	NTC 20K	0...10 V DC	± 0.6°C
TUTE1602	Max 30 V DC, Min 11+(0,02xRL) V DC	-5...+50 °C	NTC 20K	4...20 mA	± 0.6°C
TUTE1701	18...24 V AC / 18...35 V DC	-5...+50 °C	PT1000	0...10 V DC	± 0.6°C
TUTE2101	18...24 V AC / 18...35 V DC	-5...+50 °C	PT100	0...10 V DC	± 0.3°C
TUTE2102	Max 30 V DC, Min 11+(0,02xRL) V DC	-5...+50 °C	PT100	4...20 mA	± 0.3°C



Operating temperature limit 0...+50 °C

## DUCT HUMIDITY TRANSMITTER

Technical data	
Supply voltage, 0...10 V DC	18...24 V AC / 18...35 V DC
Supply voltage, 4...20 mA	Max 30 V DC, Min (11+(0,02xRL)) V DC
Power consumption	< 1 W
Sensor	Capacitive
Ambient temperature	0...+50 °C
Working range, temperature	0...50 °C
Ambient humidity	10...95 % RH (non-condensing)
Storage temperature	-20...+70 °C
Accuracy	±3 % RH at 20 °C
Casing	Cover: white polycarbonate Base: grey polycarbonate
Weight	260 g
Dimensions	75 x 103 x 266 mm
Protection class	IP65
Isolation class	III



TUC



DBZ-22

Article	Humidity range	Output
TUC1	0...100 % RH	0...10 V DC
TUC2	0...100 % RH	4...20 mA (2 wires)
TUC3	0...100 % RH	0...5 V DC

### ACCESSORY

Article	Description
DBZ-22	Mounting bracket for air duct transmitters



Operating temperature limit 0...+50 °C. These transmitters are supplied with mounting bracket model DBZ-22.

## DUCT HUMIDITY/TEMPERATURE TRANSMITTER



TUTC

Technical data	
Power consumption	< 1 W
Sensor	Temperature: resistive ; humidity: capacitive
Ambient humidity	10...95 % RH (non-condensing)
Working range, temperature	0...50 °C
Humidity range	0... 100 % RH (non condensing)
Storage temperature	-20...+70 °C
Accuracy	Humidity: ± 3% RH at 20 °C Temperature: Max error 1 °C (range 0...50 °C) Max error 1.5 °C (range -30...+50 °C) Max error 2 °C (range 0...100 °C)
Casing	Cover: white polycarbonate Base: grey polycarbonate
Weight	260 g
Dimensions	75 x 103 x 266 mm
Protection class	IP65 (sensor excluded)
Isolation class	III

Article	Supply voltage	Temperature range	Output, temperature	Output, humidity
TUTC0111	18...24 V AC / 18...35 V DC	0...+50 °C	0...10 V DC	0...10 V DC
TUTC0121	18...24 V AC / 18...35 V DC	-30...+50 °C	0...10 V DC	0...10 V DC
TUTC0131	18...24 V AC / 18...35 V DC	0...+100 °C	0...10 V DC	0...10 V DC
TUTC0212	Max 30 V DC, Min 11+(0,02xRL) V DC	0...+50 °C	4...20 mA	4...20 mA
TUTC0222	Max 30 V DC, Min 11+(0,02xRL) V DC	-30...+50 °C	4...20 mA	4...20 mA
TUTC0232	Max 30 V DC, Min 11+(0,02xRL) V DC	0...+100 °C	4...20 mA	4...20 mA
TUTC1101	18...24 V AC / 18...35 V DC	-5...+50 °C	NTC 10K-02	0...10 V DC
TUTC1102	Max 30 V DC, Min 11+(0,02xRL) V DC	-5...+50 °C	NTC 10K-02	4...20 mA
TUTC1103	18...24 V AC / 18...35 V DC	-5...+50 °C	NTC 10K-02	0...5 V DC
TUTC1301	18...24 V AC / 18...35 V DC	-5...+50 °C	NTC 1K8	0...10 V DC
TUTC1302	Max 30 V DC, Min 11+(0,02xRL) V DC	-5...+50 °C	NTC 1K8	4...20 mA
TUTC1401	18...24 V AC / 18...35 V DC	-5...+50 °C	NTC 10K-01	0...10 V DC
TUTC1402	Max 30 V DC, Min 11+(0,02xRL) V DC	-5...+50 °C	NTC 10K-01	4...20 mA
TUTC1501	18...24 V AC / 18...35 V DC	-5...+50 °C	NTC 10K-03	0...10 V DC
TUTC1502	Max 30 V DC, Min 11+(0,02xRL) V DC	-5...+50 °C	NTC 10K-03	4...20 mA
TUTC1601	18...24 V AC / 18...35 V DC	-5...+50 °C	NTC 20K	0...10 V DC
TUTC1602	Max 30 V DC, Min 11+(0,02xRL) V DC	-5...+50 °C	NTC 20K	4...20 mA
TUTC1701	18...24 V AC / 18...35 V DC	-5...+50 °C	PT1000	0...10 V DC
TUTC2101	18...24 V AC / 18...35 V DC	-5...+50 °C	PT100	0...10 V DC
TUTC2102	Max 30 V DC, Min 11+(0,02xRL) V DC	-5...+50 °C	PT100	4...20 mA

### ACCESSORY

Article	Description
DBZ-22	Mounting bracket for air duct transmitters



Operating temperature limit 0...+50 °C. These transmitters are supplied with mounting bracket model DBZ-22.

# FLOW, AIR AND LIQUID SWITCHES AND TRANSMITTERS

## LIQUID FLOW SWITCHES

Switches for liquid flow control.

Well-suited for:

- heating and air conditioning systems
- refrigeration systems.



DB25MI

Technical data	
Media	Water, Water max. 50% glycol
Contacts	Dust-tight microswitch with SPDT contacts
Switch capacity	5 A, 250 V AC
Media temperature	-20...+110 °C
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH
Max. pressure	2500 kPa = 25 bar
Pressure loss at $Q_{max}$	1 kPa = 0.01 bar
Tolerance	± 15 % end of scale
Hysteresis	Min. 0.7 l/min
Plug	Internally threaded connector DIN 43650-A
Casing	ABS V0
Body	Brass
Paddles	Stainless steel
Packing	NBR
Weight	300...990 g
Dimensions	102 x 30 x 83...104 mm
Isolation class	II
Protection class	IP65

Article	Connection	Setting range	Max. recommended flow (l/min)
DB10MI	3/8"	5 - 6 l/min (H <sub>2</sub> O)	10 l/min (H <sub>2</sub> O)
DB15MI	1/2"	6 - 7 l/min	20 l/min
DB20MI	3/4"	7.5 - 11 l/min	40 l/min
DB20MI/1	3/4"	13 - 16 l/min	40 l/min
DB25MI	1"	19 - 24 l/min	60 l/min
DB32MI	1 1/4"	30 - 50 l/min	80 l/min
DB40MI	1 1/2"	50 - 60 l/min	100 l/min
DB50MI	2"	70 - 90 l/min	150 l/min



*The indicated values have been measured with the flow switch mounted horizontally.*

## LIQUID FLOW SWITCH

A series of electromechanical flow switches, suited for pipes of industrial plants: heating and air conditioning, refrigeration systems and heat pumps. Available in brass (suitable for normal media), and stainless steel AISI 316L (compatible with certain aggressive media).

Technical data	
Media	Water, Water max. 50% glycol
Contacts	Dust-tight microswitch with switching contacts SPDT
Switch capacity	15 (8) A, 24...250 V AC
Ambient temperature	-40...+85 °C
Ambient humidity	10...90 % RH (non-condensing)
Media temperature	-40...+120 °C
Storage temperature	-40...+85 °C
Storage humidity	< 95 % RH
Connection	Standard R1" (DIN 2999) for series SF1 and SF2
Material, casing cover	Transparent Polycarbonate (PC)
Material, casing base	ABS
Paddles	Stainless steel AISI 316L
Weight	950 g
Dimensions	140 x 62 x 65 mm
Protection class	IP65 class I
Isolation class	I

Article	For pipes (diameter)	Flow	Media	"T" pipe fitting	Max. pressure
SF1K	1...8"	0.6...90.8 m <sup>3</sup> /h	Normal (body in brass)	-	1100 kPa (11 bar)
SF1E	1...8"	0.6...90.8 m <sup>3</sup> /h	Normal (body in brass)	-	1100 kPa (11 bar)
SF1RE	1...8"	0.2...55.3 m <sup>3</sup> /h	Normal (body in brass)	-	1100 kPa (11 bar)
SF2EI	1...8"	0.6...90.8 m <sup>3</sup> /h	Corrosive (AISI 316L compatibility)	-	3000 kPa (30 bar)
SF2REI	1...8"	0.2...55.3 m <sup>3</sup> /h	Corrosive (AISI 316L compatibility)	-	3000 kPa (30 bar)
SF3E	1/2"	0.174...0.846 m <sup>3</sup> /h	Normal (body in brass)	X	1100 kPa (11 bar)
SF4E	3/4"	0.138...0.768 m <sup>3</sup> /h	Normal (body in brass)	X	1100 kPa (11 bar)
SF6E	1"	0.124...1.0 m <sup>3</sup> /h	Normal (body in brass)	X	1100 kPa (11 bar)



SF1E



SF2EI



SF3E



DBZ-09

## ACCESSORIES

Article	Description
DBZ-09	Paddles for liquid flow switch in stainless steel AISI 316L.



Models SF1E and SF2EI with TÜV approval. Notes: the flow switches are supplied with paddles model DBZ-09. On request available: 1" NPT connection version (product code "SFxx/NPT") for SF1 and SF2 series.



## SF1K/SF1E/SF2EI

### Flow chart H<sub>2</sub>O

Pipe connector Ø	Qmax m <sup>3</sup> /h recommended	Min. adjustment m <sup>3</sup> /h cut-off cut-in	Max. adjustment m <sup>3</sup> /h cut-off cut-in
1"	3,6	0,6 (1,0)	2,0 (2,1)
1 1/4"	6,0	0,8 (1,3)	2,8 (3,0)
1 1/2"	9,0	1,1 (1,7)	3,7 (4,0)
2"	15,0	2,2 (3,1)	5,7 (6,1)
2 1/2"	24,0	2,7 (4,0)	6,5 (7,0)
3"	36,0	4,3 (6,2)	10,7 (11,4)
4"	60,0	11,4 (14,7)	27,7 (29,0)
4" Z	60,0	6,1 (8,0)	17,3 (18,4)
5"	94,0	22,9 (28,4)	53,3 (55,6)
5" Z	94,0	9,3 (12,9)	25,2 (26,8)
6"	120,0	35,9 (43,1)	81,7 (85,1)
6" Z	120,0	12,3 (16,8)	30,6 (32,7)
8"	240,0	72,6 (85,1)	165,7 (172,5)
8" Z	240,0	38,6 (46,5)	90,8 (94,2)

For models with suffix "Z" the longest paddle must be used to obtain the values indicated on the table.

Pressure drop at the maximum flow (Qmax): 0,08 bar

**Nota:** the values indicated on schedule have been measured with the flow switch mounted on horizontal position.

## SF1RE/SF2REI

### Flow chart H<sub>2</sub>O

Pipe connector Ø	Min. adjustment m <sup>3</sup> /h cut-off cut-in	Max. adjustment m <sup>3</sup> /h cut-off cut-in
1"	0,2 (0,6)	1,0 (1,1)
1 1/4"	0,25 (0,9)	1,4 (1,6)
1 1/2"	0,5 (1,2)	1,6 (2,2)
2"	0,9 (2,3)	3,6 (4,1)
2 1/2"	1,2 (3,1)	4,9 (5,5)
3"	2,1 (4,9)	7,4 (8,2)
4"	4,9 (11,3)	17,1 (19,1)
4" Z	3,3 (7,7)	11,6 (13,0)
5"	9,7 (22,4)	34,0 (37,9)
5" Z	5,0 (11,5)	17,5 (19,6)
6"	13,6 (31,5)	47,6 (53,2)
6" Z	6,1 (14,1)	21,4 (23,9)
8"	25,7 (59,6)	90,1 (100,7)
8" Z	21,7 (36,5)	55,3 (61,8)

**Nota:** the values indicated on schedule have been measured with the flow switch mounted on horizontal position.

**Palette** (models without "T" pipe fitting)

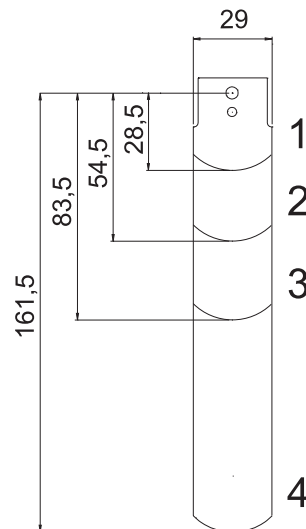
## SF3E/4E/6E

### Flow chart with „T“ fittings

SF-	Pipe connector with "T" pipe fitting Ø	Min. adjustment m <sup>3</sup> /h cut-off cut-in	Max. adjustment m <sup>3</sup> /h cut-off cut-in
3E	1/2"	0,174 (0,48)	0,846 (0,948)
4E	3/4"	0,138 (0,408)	0,768 (0,858)
6E	1"	0,2 (0,6)	1,0 (1,1)

The "T" connectors have cylindrical GAS thread.

**Nota:** the values indicated on schedule have been measured with the flow switch mounted on horizontal position.



PIPE	PADDLES
1"	1
1 1/4"	1
1 1/2"	1
2"	1+2
2 1/2"	1+2
3"	1+2+3
4"	1+2+3
4" Z	1+2+3+4
5"	1+2+3
5" Z	1+2+3+4
6"	1+2+3
6" Z	1+2+3+4
8"	1+2+3
8" Z	1+2+3+4



## AIR FLOW SWITCH

Air or non-aggressive gas flow control. Alarm signal for flow shortage. Well-suited for air ducts, air conditioning and air handling systems.

Technical data	
Contacts	Dust-tight microswitch with SPDT contacts (NC/NO)
Switch capacity	15 (8) A, 24...250 V AC
Ambient temperature	-40...+85 °C
Ambient humidity	10...90 % RH (non-condensing)
Media temperature	-10...+85 °C
Storage temperature	-40...+85 °C
Storage humidity	< 95 % RH
Material, casing cover	Transparent PC
Material, casing base	ABS
Body	Brass
Paddles	Stainless steel AISI 301
Weight	630 g
Dimensions	265.5 x 140 x 102 mm
Protection class	IP65



SL1E



DBZ-08

Article	Cut out	Cut in	Max. air temperature
SL1E	min. 1.0 m/s - max. 8.0 m/s	min. 2.5 m/s - max. 9.2 m/s	85 °C

## ACCESSORIES

Article	Description
DBZ-08	Stainless steel AISI 301 paddle for air flow switch



*Supplied with paddle model DBZ-08. The values indicated on schedule have been measured with the flow switch mounted on horizontal position.*

## AIR VELOCITY TRANSMITTER

For air velocity measurement in ventilation ducts.

Technical data	
Supply voltage	24 V AC $\pm$ 20 %, 4 VA
Working range	0...10 m/s, 0...15 m/s, 0...20 m/s
Output signal	0...10 V (max. 1 mA), 4...20 mA
Time constant	1.5 s at 10 m/s
Accuracy	$\pm$ (0.2 m/s + 3 % of the value) at 0...10 m/s $\pm$ (0.2 m/s + 3 % of the value) at 0...15 m/s $\pm$ (0.2 m/s + 4 % of the value) at 0...20 m/s
Damping	0.2 or 2 s
Ambient temperature	-10...+50 °C
Insertion length	50...200 mm - adjustable
Mounting	Duct
Dimensions	90 x 85 x 255 mm
Protection class	IP65



TVAN

Article	Description
TVAN	Air velocity transmitter

## LUX TRANSMITTERS

### LUX TRANSMITTER

In- or outdoor lux transmitter with a passive PT1000 temperature sensor as well as DIP-switches for scaling the output signal.

Technical data	
Supply voltage	12...34 V AC/DC
Analogue output	0...10 V. Min. load resistance 10...100 kΩ.
Operating temperature	-30...+70 °C
Relative humidity	0...98 %, non-condensing
Connection	Screw clamps 1.5 mm <sup>2</sup>
Measuring range	0...1000 / 0...10000 / 0...50000 / 0...100000 lux
Weight	119 g
Dimensions (WxHxD)	75 x 69 x 44 mm
Protection class	IP54



LTWT10N/  
PT1000

### MODELS

Article	Description
LTWT10N/PT1000	Lux transmitter

## PRESSURE SWITCHES AND TRANSMITTERS

### AIR DIFFERENTIAL PRESSURE SWITCHES

Differential pressure for air or non-aggressive and non-inflammable gas control.



DBL



DBZ-06



DBZ-14A



DBZ-14B

#### Technical data

Contacts	Microswitch with SPDT contacts, according to EN 1854 (EN 60730)
Switch capacity	1.5 (0.4) A, 250 V AC
Ambient temperature	-20...+85 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-40...+85 °C
Max. pressure	100 mbar
Diaphragm	Silicone (LSR)
Casing	Polystyrene
Weight	180...210 g
Dimensions	Ø 118 x h 57.5 mm
Protection class	IP54
Isolation class	II

Article	Range	Hysteresis
DBL-205A	0.3...4.0 mbar (30...400 Pa)	0.15 mbar ± 15%
DBL-205B	0.5...5.0 mbar (50...500 Pa)	0.2 mbar ± 15%
DBL-205C	0.2...3.0 mbar (20...300 Pa)	0.1 mbar ± 15%
DBL-205D	2...10 mbar (200...1000Pa)	1.0 mbar ± 15%
DBL-205E	5...25 mbar (500...2500 Pa)	1.5 mbar ± 15%

### ACCESSORIES

Article	Description
DBZ-06	Connection set with 2 PVC duct connectors, 2 m flexible PVC pipe and 4 screw
DBZ-14A	Set with mounting bracket and screws (S-shaped)
DBZ-14B	Set with mounting bracket and screws (L-shaped)



Articles available in multipack /M: DBL-205.../M (45 pcs.)

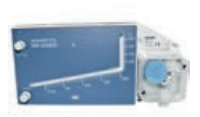
## MANOMETERS AND AIR DIFFERENTIAL PRESSURE SWITCHES

Differential pressure visualization of air or non-aggressive and non-inflammable gases with alarm at a pre-set value.

The compact unit consists of:

- a differential manometer with an inclined liquid pipe, complete of tank to allow temporary over-pressure;
- a bottle containing indication liquid and 2 stickers (red/green);
- a differential pressure switch connected to the manometer with PVC hose, complete of pressure adjustment knob, terminals for electrical connections and cable gland PG 9 (protection class according to EN 60529: IP54);
- PVC hose Ø 4 x 7 - 2.2 m length, pipes and fixing screws.

Technical data	
Contacts	Dust-tight microswitch with SPDT contacts
Switch capacity	3 (2) A, 250 V AC
Ambient temperature	-40...+60 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	DB-M...: -45...+70 °C DB-M...P...: -25...+70 °C
Accuracy	5 Pa
Fluid	ISO-paraffin with density at 15 °C DB-M6P6: red colour DB-M10P13: blue colour
Electrical connection	With terminals and cable gland PG9
Material	ABS, PMMA, PC
Packing	NBR
Weight	400...820 g
Dimensions	290 x 140 x 64 mm
Protection class	IP54 class II
Isolation class	II



DB-M6P6

Article	Manometer range	Pressure switch range	Hysteresis	Max. pressure
DB-M6	0...600 Pa	-	-	200 kPa
DB-M6P6	0...600 Pa	40...600 Pa	30 Pa	50 kPa
DB-M10	0...1500 Pa	-	-	200 kPa
DB-M10P13	0...1500 Pa	100...1300 Pa	80 Pa	50 kPa

## DIFFERENTIAL PRESSURE TRANSMITTERS 0...2.5 BAR

Differential pressure transmitter for monitoring differential gaseous pressure, non-aggressive media. Can be mounted in any position.

Possible areas of applications are:

- air-conditioning and clean rooms;
- building automation;
- valve and flap control;
- fluid and level monitoring;
- control of air flows.

Technical data	
Supply voltage	24 V AC / DC with output 0...10 V DC and 4...20 mA 24 V DC with output 4...20 mA (2 wires)
Outputs	0...10 V DC (max 10 mA) 4...20 mA (20...500 Ohm)
Sensor	Piezoresistive
Ambient temperature	0...50 °C
Ambient humidity	10...95 % RH (non-condensing)
Storage temperature	-10...+70 °C
Accuracy	< ± 0.2 % of end of scale
Typical long term stability	< ± 0.5 % to ± 2.5 % of end of scale/year
Response time	100 ms or 1 sec., selectable
Installation	Can be mounted in any position
Casing	Housing with process connection P2 made of ABS, mounting part with process connection P1 made of POM
Weight	170 g
Dimensions	Max. Ø 118 x h 57.5 mm
Protection class	IP54
Certification	EN60770, EN61326



984M.3X3104



984M.343714

Article	Range 1	Range 2	Output signal	Display
984M.323204	0...100 Pa (1.0 mbar)	0...250 Pa (2.5 mbar)	4...20 mA	-
984M.343304	0...500 Pa (5.0 mbar)	0...1000 Pa (10 mbar)	4...20 mA	-
984M.343714	0...500 Pa (5.0 mbar)	0...1000 Pa (10 mbar)	0...10 V DC	X
984M.353704	0...1000 Pa (10 mbar)	0...2500 Pa (25 mbar)	0...10 V DC	-
984M.353D04	0...1000 Pa (10 mbar)	0...2500 Pa (25 mbar)	4...20 mA	-
984M.3x3204	-50...50 Pa (-0,5...0,5 mbar)	Pa	4...20 mA	-
984M.3x3114	-50...50 Pa (-0,5...0,5 mbar)	Pa	0...10 V DC	X
984M.3x3114	-250...250 Pa (-2,5...2,5 mbar)	Pa	0...10 V DC	-



DBZ-06

 For other models, please contact Industrietechnik.

### ACCESSORIES

Article	Description
DBZ-06	Connection set with 2 PVC duct connectors, 2 m flexible PVC pipe and 4 screw
DBZ-14A	Set with mounting bracket and screws (S-shaped)
DBZ-14B	Set with mounting bracket and screws (L-shaped)
104552	Test certificate



DBZ-14A



DBZ-14B

## DIFFERENTIAL PRESSURE TRANSMITTER FOR AIR, WITH DISPLAY

Microprocessor-controlled differential pressure transmitter for measurement of air and neutral gases. This transmitter has four different measuring ranges in the same unit. The range is selected by means of buttons under the cover. Other functions are zero-point adjustment and electronic damping of the signal.

Supplied with 2 m plastic tube and two pressure outlets.

Selectable working range and output signal. Adjustable damping of the measuring signal.



TPDA

Technical data	
Supply voltage	24 V AC or DC, 5 VA
Output signal	0...10 V DC or 4...20 mA
Working range	0...100 Pa, 0...300 Pa, 0...500 Pa and 0...1000 Pa
Accuracy	±1 % at 20°C
Electronic damping	0...20 s
Display	LED, 3 digits
Dimensions	129 x 89 x 58 mm
Protection class	IP54

Article	Description
TPDA	Differential pressure transmitter with display

## DIFFERENTIAL PRESSURE TRANSMITTER WITH BUILT-IN CONTROLLER, WITH DISPLAY

Microprocessor-controlled differential pressure transmitter with built-in controller for control of dampers, frequency converters, VAV systems, gases etc. It has four separate measurement ranges in the same unit. The working range is selected by means of buttons under the cover.

It has adjustable damping of the measuring signal and is supplied with 2 m plastic tube and two pressure outlets.



TPDA-C

Technical data	
Supply voltage	24 V AC or DC, 5 VA
Output signal, pressure	0...10 V DC or 4...20 mA
Output signal, controller	0...10 V DC
Working range	0...100 Pa, 0...300 Pa, 0...500 Pa and 0...1000 Pa
Accuracy	±1 % at 20°C
P-band	0...300 %
I-time	0...999 s
D-factor	0...999 s
Electronic damping	0...20 s
Display	LED, 3 digits
Mounting	Wall
Dimensions	129 x 89 x 58 mm
Protection class	IP54

Article	Description
TPDA-C	Differential pressure transmitter with built-in controller, with display

## DIFFERENTIAL PRESSURE TRANSMITTERS WITH COMMUNICATION

Technical data	
Supply voltage	24 V AC/DC ±15 %
Overall accuracy pressure	≤ 1 % full scale
Power consumption	2 VA (rms), min. trafo size 7,5 VA
Operating temperature	-25...+50 °C
Communication	EXoline / Modbus
Protection class	IP54
Universal inputs (UI1, UI2) to be configured as PT1000, Ni1000 (6180 ppm/K), digital or 0...10 V inputs	
PT1000 input	-40...+60°C / -40...+140°F, accuracy ±1 K (-25...0°C), ±0.5 K (0...50°C)
Ni1000 input	-40...+60°C / -40...+140°F, accuracy ±1 K (-25...0°C), ±0.5 K (0...50°C)
Digital input	Potential-free contacts on/off (closed=on)
0...10 V input	±1 % full scale accuracy



TPDAxxxxCx

Article	Working range	Number of sensors	Operating temperature
TPDA12C	0...1250 Pa	1	-25...+50 °C
TPDA25C	0...2500 Pa	1	-25...+50 °C
TPDA75C	0...7500 Pa	1	-25...+50 °C
TPDA12C2	PS1: 0...1250 Pa / PS2: 0...1250 Pa / PS2: 0...1250 Pa	2	-25...+50 °C
TPDA25C2	PS1: 0...2500 Pa / PS2: 0...2500 Pa / PS2: 0...2500 Pa	2	-25...+50 °C
TPDA1225C2	PS1: 0...1250 Pa / PS2: 0...2500 Pa	2	-25...+50 °C
TPDA1275C2	PS1: 0...1250 Pa / PS2: 0...7500 Pa	2	-25...+50 °C

## DIFFERENTIAL PRESSURE TRANSMITTERS WITH ANALOGUE OUTPUTS

Technical data	
Supply voltage	24 V AC/DC ±15 %
Overall accuracy pressure	≤ 1 % full scale
Power consumption	0...10 V mode : 2 VA (rms), min. trafo size 7,5 VA 4...20 mA mode : 2.7 VA (rms), min. trafo size 9 VA
Operating temperature	-25...+50 °C
Protection class	IP54



TPDAxxxxAx

Article	Working range	Number of sensors
TPDA12A	0...1250 Pa	1
TPDA25A	0...2500 Pa	1
TPDA75A	0...7500 Pa	1
TPDA1225A2	PS1: 0...1250 Pa / PS2: 0...2500 Pa	2
TPDA1275A2	PS1: 0...1250 Pa / PS2: 0...7500 Pa	2



## PRESSURE TRANSMITTER FOR LIQUIDS AND GASES

Pressure transmitter for measurement of liquids and gases.

Technical data	
Output signal	0...10 V DC (three-wire) or 4...20 mA (two-wire)
Pressure connection	G 1/4" (outside thread)
Dynamic response time	< 2 ms, 1 ms typically
Tolerable overload	≤ 4 bar 3.0 x full scale, > 4 bar 2.5 x full scale
Media temperature	-15...+125 °C
Ambient temperature	-30...+85 °C
Storage temperature	-50...+100 °C
Accuracy, characteristic line	±0.3 % full scale *
Accuracy, resolution	0.1 % full scale *
Accuracy, thermal characteristic	Max. ±0.2 % full scale / 10 K *
Accuracy, long-term stability according to IEC EN 60770-1	Max. ±0.25 % full scale *
Sealing	FPM
Weight	90 g
Cable length	1.5 m
Protection class	IP67



TPGL



TPL105074



DBZ-AD1

### MODELS

Article	Working range	Output signal	Supply voltage	Power consumption
TPGL1	0...100 kPa (1 bar)	0...10 V DC	12...33 V DC / 24 V AC ±15 %	< 7 mA
TPGL1-420	0...100 kPa (1 bar)	4...20 mA	7...33 V DC	< 23 mA
TPGL2.5	0...250 kPa (2.5 bar)	0...10 V DC	12...33 V DC / 24 V AC ±15 %	< 7 mA
TPGL2.5-420	0...250 kPa (2.5 bar)	4...20 mA	7...33 V DC	< 23 mA
TPGL6	0...600 kPa (6 bar)	0...10 V DC	12...33 V DC / 24 V AC ±15 %	< 7 mA
TPGL6-420	0...600 kPa (6 bar)	4...20 mA	7...33 V DC	< 23 mA
TPGL10	0...1000 kPa (10 bar)	0...10 V DC	12...33 V DC / 24 V AC ±15 %	< 7 mA
TPGL10-420	0...1000 kPa (10 bar)	4...20 mA	7...33 V DC	< 23 mA
TPGL16	0...1600 kPa (16 bar)	0...10 V DC	12...33 V DC / 24 V AC ±15 %	< 7 mA
TPGL16-420	0...1600 kPa (16 bar)	4...20 mA	7...33 V DC	< 23 mA
TPGL25	0...2500 kPa (25 bar)	0...10 V DC	12...33 V DC / 24 V AC ±15 %	< 7 mA
TPGL25-420	0...2500 kPa (25 bar)	4...20 mA	7...33 V DC	< 23 mA
TPGL40	0...4000 kPa (40 bar)	0...10 V DC	12...33 V DC / 24 V AC ±15 %	< 7 mA
TPGL40-420	0...4000 kPa (40 bar)	4...20 mA	7...33 V DC	< 23 mA

### ACCESSORIES

Article	Description
TPL105074	Mounting spacer which lowers the temperature at higher media temperatures than the sensor can handle.
DBZ-AD1	Adapter 1/4" to 1/2". For mounting immersion sensors in 1/2".



For other models please contact Industrietechnik.

## DIFFERENTIAL PRESSURE TRANSMITTER FOR LIQUIDS AND GASES

Differential pressure transmitter for measurement of liquids (also glycol-mixed) and gases (not ammonia).

Supply voltage	24 V CA / 18...33 V DC $\pm$ 15% (output signal 0...10 V), 0.1 VA 11...33 V DC $\pm$ 15%, two-wire (output signal 4...20 mA), 0.5 VA
Output signal	0...10 V DC or 4...20 mA (two-wire)
Ambient temperature	-15...+85 °C
Accuracy	TPDL10...TPDL250: $\pm$ 1.3 % es TPDL400: $\pm$ 0.8 % es TPDL600...TPDL2500: $\pm$ 0.5 % es
Connection	Screw fitting for $\varnothing$ 6 mm pipe included
Electrical connection	DIN EN 175301 803-A
Dimensions	68 x 40 x 113 mm
Protection class	IP65



TPDL



TPDL-NIPPEL



TPDL-R

Article	Output signal	Working range
TPDL10	0...10 V DC	0...10 kPa (0...0.1 bar)
TPDL10-420	4...20 mA	0...10 kPa (0...0.1 bar)
TPDL20	0...10 V DC	0...20 kPa (0...0.2 bar)
TPDL20-420	4...20 mA	0...20 kPa (0...0.2 bar)
TPDL40	0...10 V DC	0...40 kPa (0...0.4 bar)
TPDL40-420	4...20 mA	0...40 kPa (0...0.4 bar)
TPDL100	0...10 V DC	0...100 kPa (0...1 bar)
TPDL100-420	4...20 mA	0...100 kPa (0...1 bar)
TPDL250	0...10 V DC	0...250 kPa (0...2.5 bar)
TPDL250-420	4...20 mA	0...250 kPa (0...2.5 bar)
TPDL400	0...10 V DC	0...400 kPa (0...4 bar)
TPDL400-420	4...20 mA	0...400 kPa (0...4 bar)
TPDL600	0...10 V DC	0...600 kPa (0...6 bar)
TPDL600-420	4...20 mA	0...600 kPa (0...6 bar)
TPDL1000	0...10 V DC	0...1000 kPa (0...10 bar)
TPDL1000-420	4...20 mA	0...1000 kPa (0...10 bar)
TPDL1600	0...10 V DC	0...1600 kPa (0...16 bar)
TPDL1600-420	4...20 mA	0...1600 kPa (0...16 bar)
TPDL2500	0...10 V DC	0...2500 kPa (0...25 bar)
TPDL2500-420	4...20 mA	0...2500 kPa (0...25 bar)

Article	Description
TPDL-NIPPEL	Nipple (R=1/8" 27 NPT) for connection of $\varnothing$ 6 mm copper pipe
TPDL-R	Copper pipe, $\varnothing$ 6 mm, length 30 cm



For other models please contact Industrietechnik.

## LEVEL SWITCHES

Level control of normal liquids contained in tanks and barrels.

Alarm signal of minimum or maximum level.



SQ01

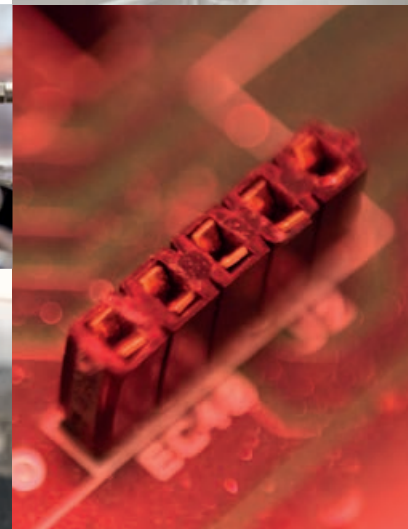
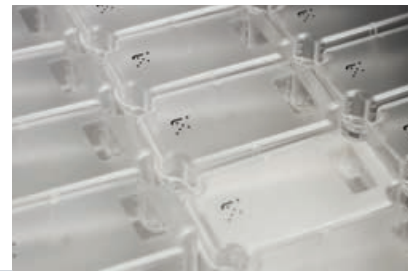
Technical data	
Contacts	Dust-tight microswitch with SPDT contacts
Switch capacity	15 (8) A, 24...250 V AC
Ambient temperature	-40...+85 °C
Ambient humidity	10...90 % RH (non-condensing)
Media temperature	max. +85 °C
Storage temperature	-40...+85 °C
Storage humidity	< 95 % RH
Level length	200 mm
Protection class	IP65
Isolation class	I
Material	
Material, casing cover	Transparent polycarbonate
Material, casing base	ABS
Body	Brass
Float	Acrylic
Weight	960 g
Dimensions	140 x 62 x 65 mm

Article	Hysteresis	Max. temperature	Max. pressure
SQ01	10/14 mm	+85 °C	11 bar



# 6 Wireless products

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## WIRELESS RECEIVER WITH MODBUS COMMUNICATION

Handles up to 16 sensors.



MR16W

Technical data	
Power supply	24 V AC/DC ±15%
Frequency	868 MHz
Protection class	IP54
Ambient temperature	-10...+50 °C
Ambient humidity	up to 85 % RH non-condensing
Article	Description
MR16W	Wireless receiver with Modbus communication

## WIRELESS ROOM TEMPERATURE SENSOR

For room temperature measurement.



SAW

Technical data	
Power supply	AA 1.5 V L91 battery x 2
Frequency	868 MHz
Protection class	IP30
Temperature range	-10...+50 °C
Ambient humidity	up to 85 % RH non-condensing
Article	Description
SAW	Wireless room temperature sensor

## WIRELESS OUTDOOR TEMPERATURE SENSOR

For outdoor temperature measurement.



SEW

Technical data	
Power supply	CR123A 3V lithium battery x 2
Frequency	868 MHz
Protection class	IP54
Temperature range	-30...+50 °C
Ambient humidity	up to 85 % RH non-condensing
Article	Description
SEW	Wireless outdoor temperature sensor

## WIRELESS CEILING MOUNTED MOTION DETECTOR

Detector providing a signal when someone enters the room. 360° detection area with a diameter of 8 meters.

Technical data	
Power supply	CR123A 3V lithium battery
Frequency	868 MHz
Protection class	IP20
Ambient temperature	-10...+45 °C
Ambient humidity	up to 85 % RH non-condensing

Article	Description
SIR-SW	Wireless ceiling mount IR motion sensor



SIR-SW

## WIRELESS PRESENCE DETECTOR

Detector providing a signal when someone enters the room.

Technical data	
Power supply	CR123A 3V lithium battery
Frequency	868 MHz
Protection class	IP20
Ambient temperature	-10...+50 °C
Ambient humidity	up to 85 % RH non-condensing

Article	Description
SIR-PW	Wireless IR detector



SIR-PW

## WIRELESS DOOR CONTACT

Door contact detecting opening of door or window.

Technical data	
Power supply	CR2 3V lithium battery
Frequency	868 MHz
Protection class	IP30
Ambient temperature	-10...+50 °C
Ambient humidity	up to 85 % RH non-condensing

Article	Description
CFW	Wireless door contact



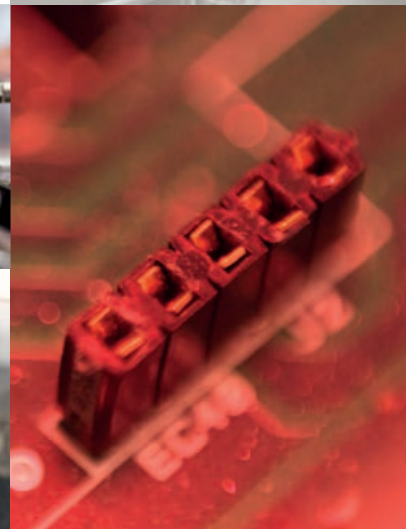
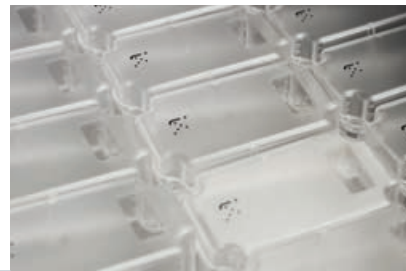
CFW





# 7 Damper actuators

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## DAMPER ACTUATORS WITHOUT SPRING RETURN, 2 NM

Designed for applications with small dampers (0.5 m<sup>2</sup>) of ventilation and air handling units.



DAK-DMK

Technical data	
Max. damper size	0.5 m <sup>2</sup>
Torque	2 Nm
Frequency	50...60 Hz
Rotation angle	95°
Ambient temperature	-20...+50 °C
Ambient humidity	5...95% UR
Noise level	Max 45 dB
Mounting	Directly on jack shaft
For jack shaft	6...16 mm Ø (round shaft), 5...11 mm (square shaft)
Weight	600 g
Protection class	IP54
Isolation class	III (DAK230: class II)
Certification	CE

Article	Supply voltage	Control signal	Power consumption	Auxiliary switch	Stroke time
DAK24	24 V AC / DC	On/off or 3 point	2,0 W	-	35...45 s
DAK24S	24 V AC / DC	On/off or 3 point	2.0 W	1 fixed SPDT 3 (1.5) A / AC 230 V positioned on 10°	35...45 s
DAK230	230 V AC	On/off or 3 point	1,5 W	-	35...45 s
DAK230S	230 V AC	On/off or 3 point	1.5 W	1 fixed SPDT 3 (1.5) A / AC 230 V positioned on 10°	35...45 s
DMK24	24 V AC / DC	2...10 V DC	2,5 W	-	45...55 s

## DAMPER ACTUATORS WITHOUT SPRING RETURN, 4 NM

Well-suited for applications with small dampers (up to 1 m<sup>2</sup>) in ventilation and air handling units.



DAN-DMN

Technical data	
Max. damper size	1 m <sup>2</sup>
Torque	4 Nm
Frequency	50...60 Hz
Stroke time	35 s
Rotation angle	Operating: 90° Limitation: 5...85° in 5° steps
Ambient temperature	-20...+50 °C
Ambient humidity	5...95% RH
Noise level	Max 45 dB
Mounting	Directly on jack shaft
For jack shaft	10...16 mm Ø (round shaft), 10...12 mm (square shaft)
Protection class	IP44 or IP54 with cable glands
Isolation class	III (DAN230: class II)
Certification	CE

Article	Supply voltage	Control signal	Power consumption	Auxiliary switch	Weight
DAN24	24 V AC / DC	On/off or 3 point	Operating: 2.5 W At end stops: 0.85 W	-	900 g
DAN24S	24 V AC / DC	On/off or 3 point	Operating: 2.5 W At end stops: 0.85 W	2 x 3 (1.5) A / AC 230 V	900 g
DAN230	230 V AC	On/off or 3 point	Operating: 4.0 W At end stops: 3.0 W	-	1000 g
DAN230S	230 V AC	On/off or 3 point	Operating: 4.0 W At end stops: 3.0 W	2 x 3 (1.5) A / AC 230 V	1000 g
DMN24	24 V AC / DC	0...10 V DC	Operating: 2.5 W At end stops: 0.85 W	-	900 g

## DAMPER ACTUATORS WITHOUT SPRING RETURN, 8 NM

Well-suited for applications with dampers (2 m<sup>2</sup>) in ventilation and air handling units.



DAS-DMS

Technical data	
Max. damper size	2 m <sup>2</sup>
Torque	8 Nm
Frequency	50...60 Hz
Stroke time	30 s
Rotation angle	Operating: 90° (93° mechanical) Limitation: 5...85° in 5° steps
Ambient temperature	-20...+50 °C
Ambient humidity	5...95 % RH
Noise level	Max 45 dB
Mounting	Directly on jack shaft
For jack shaft	10...20 mm Ø (round shaft), 10...20 mm (square shaft)
Weight	1200 g
Protection class	IP44 or IP54 with cable glands
Isolation class	III (DAS230, DMS230: class II)
Certification	CE

Article	Supply voltage	Control signal	Power consumption	Auxiliary switch
DAS24	24 V AC / DC	on/off or 3 point	Operating: 3.9 W At end stops: 0.4 W	-
DAS24S	24 V AC / DC	on/off or 3 point	Operating: 3.9 W At end stops: 0.4 W	2 x 3 (1.5) A / AC 230 V
DAS230	230 V AC	on/off or 3 point	Operating: 4.8 W At end stops: 1.2 W	-
DAS230S	230 V AC	on/off or 3 point	Operating: 4.8 W At end stops: 1.2 W	2 x 3 (1.5) A / AC 230 V
DMS24	24 V AC / DC	Y1: 0(2)...10 V DC Y2: 0(4)...20 mA U: 0(2)...10 V DC (feedback signal)	Operating: 4.0 W At end stops: 0.7 W	-
DMS24S	24 V AC / DC	Y1: 0(2)...10 V DC Y2: 0(4)...20 mA U: 0(2)...10 V DC (feedback signal)	Operating: 4.0 W At end stops: 0.7 W	2 x 3 (1.5) A / AC 230 V
DMS230	230 V AC	Y1: 0(2)...10 V DC Y2: - U: 0(2)...10 V DC (feedback signal)	Operating: 4.8 W At end stops: 1.0 W	-
DMS230S	230 V AC	Y1: 0(2)...10 V DC Y2: - U: 0(2)...10 V DC (feedback signal)	Operating: 4.8 W At end stops: 1.0 W	2 x 3 (1.5) A / AC 230 V

## DAMPER ACTUATORS WITHOUT SPRING RETURN, 16 NM

Well-suited for applications with dampers (4 m<sup>2</sup>) in ventilation and air handling units.



DA-DM

Technical data	
Max. damper size	4 m <sup>2</sup>
Torque	16 Nm
Frequency	50...60 Hz
Stroke time	80 s
Rotation angle	Operating: 90° (93° mechanical) Limitation: 5...85° in 5° steps
Ambient temperature	-20...+50 °C
Ambient humidity	5...95 % RH
Noise level	Max 45 dB
Mounting	Directly on jack shaft
For jack shaft	10...20 mm Ø (round shaft), 10...20 mm (square shaft)
Weight	1200 g
Protection class	IP44 or IP54 with cable glands
Isolation class	III (DA230, DM230: class II)
Certification	CE

Article	Supply voltage	Control signal	Power consumption	Auxiliary switch
DA24	24 V AC / DC	on/off or 3 point	Operating: 3.9 W At end stops: 0.4 W	-
DA24S	24 V AC / DC	on/off or 3 point	Operating: 3.9 W At end stops: 0.4 W	2 x 3 (1.5) A / AC 230 V
DA230	230 V AC	on/off or 3 point	Operating: 4.8 W At end stops: 1.2 W	-
DA230S	230 V AC	on/off or 3 point	Operating: 4.8 W At end stops: 1.2 W	2 x 3 (1.5) A / AC 230 V
DM24	24 V AC / DC	Y1: 0(2)...10 V DC Y2: 0(4)...20 mA U: 0(2)...10 V DC (feedback signal)	Operating: 4.0 W At end stops: 0.7 W	-
DM24S	24 V AC / DC	Y1: 0(2)...10 V DC Y2: 0(4)...20 mA U: 0(2)...10 V DC (feedback signal)	Operating: 4.0 W At end stops: 0.7 W	2 x 3 (1.5) A / AC 230 V
DM230	230 V AC	Y1: 0(2)...10 V DC Y2: - U: 0(2)...10 V DC (feedback signal)	Operating: 4.8 W At end stops: 1.0 W	-
DM230S	230 V AC	Y1: 0(2)...10 V DC Y2: - U: 0(2)...10 V DC (feedback signal)	Operating: 4.8 W At end stops: 1.0 W	2 x 3 (1.5) A / AC 230 V

## DAMPER ACTUATORS WITHOUT SPRING RETURN, 24 NM

Well-suited for applications with dampers (6 m<sup>2</sup>) in ventilation and air handling units.



DAL-DML

Technical data	
Max. damper size	6 m <sup>2</sup>
Torque	24 Nm
Frequency	50...60 Hz
Stroke time	125 s
Rotation angle	Operating: 90° (93° mechanical) Limitation: 5...85° in 5° steps
Ambient temperature	-20...+50 °C
Ambient humidity	5...95 % RH
Noise level	Max 45 dB
Mounting	Directly on jack shaft
For jack shaft	10...20 mm Ø (round shaft), 10...20 mm (square shaft)
Weight	1200 g
Protection class	IP44 or IP54 with cable glands
Isolation class	III (DAL230, DML230: class II)
Certification	CE

Article	Supply voltage	Control signal	Power consumption	Auxiliary switch
DAL24	24 V AC / DC	on/off or 3 point	Operating: 3.9 W At end stops: 0.4 W	-
DAL24S	24 V AC / DC	on/off or 3 point	Operating: 3.9 W At end stops: 0.4 W	2 x 3 (1.5) A / AC 230 V
DAL230	230 V AC	on/off or 3 point	Operating: 4.8 W At end stops: 1.2 W	-
DAL230S	230 V AC	on/off or 3 point	Operating: 4.8 W At end stops: 1.2 W	2 x 3 (1.5) A / AC 230 V
DML24	24 V AC / DC	Y1: 0(2)...10 V DC Y2: 0(4)...20 mA U: 0(2)...10 V DC (feedback signal)	Operating: 4.0 W At end stops: 0.7 W	-
DML24S	24 V AC / DC	Y1: 0(2)...10 V DC Y2: 0(4)...20 mA U: 0(2)...10 V DC (feedback signal)	Operating: 4.0 W At end stops: 0.7 W	2 x 3 (1.5) A / AC 230 V
DML230	230 V AC	Y1: 0(2)...10 V DC Y2: - U: 0(2)...10 V DC (feedback signal)	Operating: 4.8 W At end stops: 1.0 W	-
DML230S	230 V AC	Y1: 0(2)...10 V DC Y2: - U: 0(2)...10 V DC (feedback signal)	Operating: 4.8 W At end stops: 1.0 W	2 x 3 (1.5) A / AC 230 V

## DAMPER ACTUATORS WITHOUT SPRING RETURN, 32 NM

Well-suited for applications with medium or large dampers (8 m<sup>2</sup>) in ventilation and air handling units.



DAG-DMG

Technical data	
Max. damper size	8 m <sup>2</sup>
Torque	32 Nm
Frequency	50...60 Hz
Rotation angle	Operating: 0...90° Limitation: 5...85° in 5° steps
Ambient temperature	-20...+50 °C
Ambient humidity	5...95 % RH
Noise level	Max 45 dB
Mounting	Directly on jack shaft
For jack shaft	10...20 mm Ø (round shaft), 10...16 mm (square shaft)
Protection class	IP44 or IP54 with cable glands
Isolation class	III (DAG230: class II)
Certification	CE

Article	Supply voltage	Control signal	Power consumption	Auxiliary switch	Stroke time	Weight
DAG24	24 V AC / DC	on/off or 3 point	Operating: 4.0 W At end stops: 0.5 W	-	160 s	1100 g
DAG24S	24 V AC / DC	on/off or 3 point	Operating: 4.0 W At end stops: 0.5 W	2 x 3 (1.5) A / AC 230 V	160 s	1100 g
DAG230	230 V AC	on/off or 3 point	Operating: 4.8 W At end stops: 1.2 W	-	160 s	1200 g
DAG230S	230 V AC	on/off or 3 point	Operating: 4.8 W At end stops: 1.2 W	2 x 3 (1.5) A / AC 230 V	160 s	1200 g
DMG24	24 V AC / DC	Y1: 0(2)...10 V DC Y2: 0(4)...20 mA U: 0(2)...10 V DC (feedback signal)	Operating: 2.5 W At end stops: 0.3 W	-	240 s	1200 g
DMG24S	24 V AC / DC	Y1: 0(2)...10 V DC Y2: 0(4)...20 mA U: 0(2)...10 V DC (feedback signal)	Operating: 2.5 W At end stops: 0.3 W	2 x 3 (1.5) A / AC 230 V	240 s	1200 g

## DAMPER ACTUATORS WITH SPRING RETURN, 5 NM

Well-suited for applications with security dampers used as antifreeze, antismoke or for sealing in the hygienic-sanitary field.

Technical data	
Max. damper size	1 m <sup>2</sup>
Torque	5 Nm
Frequency	50...60 Hz
Running time, actuator	50...70 s
Running time, spring return	< 20 s
Rotation angle	Operating: 90° (95° mechanical) Limitation: 5...85° in 5° steps
Ambient temperature	-20...+50 °C
Ambient humidity	5...95 % RH
Noise level	Max 45 dB
Mounting	Directly on jack shaft
For jack shaft	10...16 mm Ø (round shaft), 7...11 mm (square shaft)
Protection class	IP54
Isolation class	II
Certification	CE



DAN230F

Article	Supply voltage	Power consumption	Auxiliary switch	Weight
DAN24F	24 V AC / DC	Operating: 7.2 W At end stops: 2.5 W	-	1800 g
DAN24FS	24 V AC / DC	Operating: 7.2 W At end stops: 2.5 W	2 x SPDT 3 (1.5) A / AC 230 V	1800 g
DAN230F	230 V AC	Operating: 4.2 W At end stops: 2.5 W	-	1900 g
DAN230FS	230 V AC	Operating: 4.2 W At end stops: 2.5 W	2 x SPDT 3 (1.5) A / AC 230 V	1900 g

## DAMPER ACTUATORS WITH SPRING RETURN, 10 NM

Well-suited for applications with security dampers used as antifreeze, antismoke or for sealing in the hygienic-sanitary field.

Technical data	
Max. damper size	2 m <sup>2</sup>
Torque	10 Nm
Frequency	50...60 Hz
Running time, actuator	100 s
Running time, spring return	25 s
Rotation angle	-5°...+95°
Ambient temperature	-20...+50 °C
Ambient humidity	5...95 % RH
Noise level	Max 45 dB
Mounting	Directly on jack shaft
For jack shaft	10...19 mm Ø (round shaft), 10...16 mm (square shaft)
Weight	2300 g
Protection class	IP54
Isolation class	III (DAT230F: class II)
Certification	CE



DAT230F

Article	Supply voltage	Power consumption	Auxiliary switch
DAT24F	24 V AC / DC	operating: 5,0 W	-
DAT24FS	24 V AC / DC	operating: 5,0 W	2 x 3 (1,5) A / AC 230 V
DAT230F	230 V AC	operating: 6,5 W	-
DAT230FS	230 V AC	operating: 6,5 W	2 x 3 (1,5) A / AC 230 V

## DAMPER ACTUATORS WITH SPRING RETURN, 20 NM

Well-suited for applications with security dampers used as antifreeze, antismoke or for sealing in the hygienic-sanitary field.



DB-DA24FN

Technical data	
Max. damper size	4 m <sup>2</sup>
Torque	20 Nm
Running time, actuator	75 - 150 s / 90°
Running time, spring return	20 s / 90°
Rotation angle	0...95°
Ambient temperature	-30...+50 °C
Ambient humidity	5...95 % RH
Noise level	Motor: < 35/45 dB Spring: < 65 dB
Mounting	Directly on jack shaft
For jack shaft	9...26 mm Ø (round shaft), 9...18 mm (square shaft)
Weight	2400 g
Protection class	IP54 (cable downwards)
Isolation class	III (DB-DA230FN/DB-DA230FN-S2:class II)
Certification	CE

Article	Supply voltage	Control signal	Power consumption	Auxiliary switch
DB-DA24FN	24 V AC / DC	2-point	operating: 10,5 W	-
DB-DA24FN-S2	24 V AC / DC	2-point	operating: 10,5 W	2 x 5 (2,5) A, 250 VAC
DB-DA230FN	230 V AC	2-point	operating: 10,5 W	-
DB-DA230FN-S2	230 V AC	2-point	operating: 10,5 W	2 x 5 (2,5) A, 250 VAC
DB-DM24FN	24 V AC / DC	0...10 V DC	operating: 8,0 W	-
DB-DM24FN-S2	24 V AC / DC	Continuous 0(2)...10 VDC / Ri > 100 kΩ, 0(4)...20 mA / Rext. = 500Ω	operating: 8,0 W	2 x 5 (2,5) A, 250 VAC

## DAMPER ACTUATORS WITH SPRING RETURN FOR FIRE DAMPERS, 5 NM

Well-suited for applications with security / fire dampers used as antifreeze, antismoke or for sealing in the hygienic-sanitary field.



AF230SE

Technical data	
Max. damper size	1 m <sup>2</sup>
Torque	5 Nm
Frequency	50...60 Hz
Thermal protection	Duct 72°C
Running time, actuator	50...70 s
Running time, spring return	< 20 s
Rotation angle	90° (95° mechanical)
Ambient temperature	-20...+50 °C
Ambient humidity	5...95 % RH
Noise level	Max < 45 dB
Mounting	Directly on jack shaft
For jack shaft	12 mm (square shaft)
Protection class	IP54
Isolation class	II
Certification	CE

Article	Supply voltage	Power consumption	Auxiliary switch	Weight
AF24SE	24 V AC / DC	Operating: 7.2 W At end stops: 2.5 W	2 SPDT fixed 3 (1.5) A / AC 230 V	1800 g
AF230SE	230 V AC	Operating: 4.2 W At end stops: 2.5 W	2 SPDT fixed 3 (1.5) A / AC 230 V	1900 g



## DAMPER ACTUATORS WITH SPRING RETURN FOR FIRE DAMPERS, 8 NM

Well-suited for applications with security / fire dampers used as antifreeze, antismoke or for sealing in the hygienic-sanitary field.



NF24SE

Technical data	
Max. damper size	1.5 m <sup>2</sup>
Torque	8 Nm
Frequency	50...60 Hz
Thermal protection	Duct 72°C
Running time, actuator	75...95 s
Running time, spring return	< 25 s
Rotation angle	90° (95° mechanical)
Ambient temperature	-20...+50 °C
Ambient humidity	5...95 % RH
Noise level	Max < 45 dB
Mounting	Directly on jack shaft
For jack shaft	12 mm (square shaft)
Protection class	IP54
Isolation class	II
Certification	CE

Article	Supply voltage	Power consumption	Auxiliary switch	Weight
NF24SE	24 V AC / DC	Operating: 7.0 W At end stops: 2.0 W	2 SPDT fixed 3 (1.5) A / AC 230 V	2200 g
NF230SE	230 V AC	Operating: 8.0 W At end stops: 5.5 W	2 SPDT fixed 3 (1.5) A / AC 230 V	2300 g

## DAMPER ACTUATORS WITH SPRING RETURN FOR FIRE DAMPERS, 20 NM

Well-suited for applications with security / fire dampers used as antifreeze, antismoke or for sealing in the hygienic-sanitary field.



DB-SF

Technical data	
Max. damper size	3 m <sup>2</sup>
Torque	20 Nm
Frequency	50...60 Hz
Thermal protection	Duct 72°C (only models ...TA-12)
Running time, actuator	150 s
Running time, spring return	Max 20 s
Rotation angle	90°
Ambient temperature	-20...+50 °C
Ambient humidity	5...95 % RH
Noise level	Motor: < 45 dB Spring: < 65 dB
Mounting	Directly on jack shaft
For jack shaft	12 mm (square shaft)
Weight	2500 g
Protection class	IP54
Isolation class	III (DB-SF2: class II)
Certification	CE

Article	Supply voltage	Power consumption	Auxiliary switch	Thermal protection
DB-SF1.90/12	24 V AC / DC	operating: max. 6,5 W / 8,5 VA	2 x 5 (1,5) A / AC 230 V	-
DB-SF1.90TA/12	24 V AC / DC	operating: max. 6,5 W / 8,5 VA	2 x 5 (1,5) A / AC 230 V	72° on the duct
DB-SF2.90/12	230 V AC	operating: max. 9,0 W / 10,0 VA	2 x 5 (1,5) A / AC 230 V	-
DB-SF2.90TA/12	230 V AC	operating: max. 9,0 W / 10,0 VA	2 x 5 (1,5) A / AC 230 V	72° on the duct

## POSITION TRANSDUCER

Article	Supply voltage	Output signal	Control signal	Mounting
DB-PA	24 V AC/DC	0(2)...10 V DC ( $R_{load} > 6K\Omega$ ) (control override)	0(2)...10 V DC	Wall
DB-PF	24 V AC/DC	0(2)...10 V DC ( $R_{load} > 6K\Omega$ ) (control override)	0(2)...10 V DC	Front-end



DB-PA

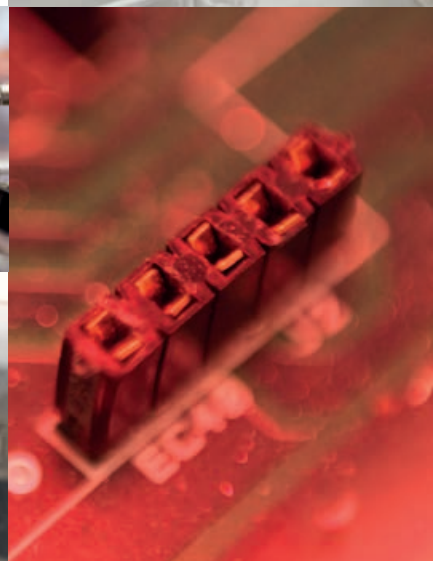


DB-PF







# 8 Valves and valve actuators

















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- X Recommended choice
- ◆ Other possible alternative

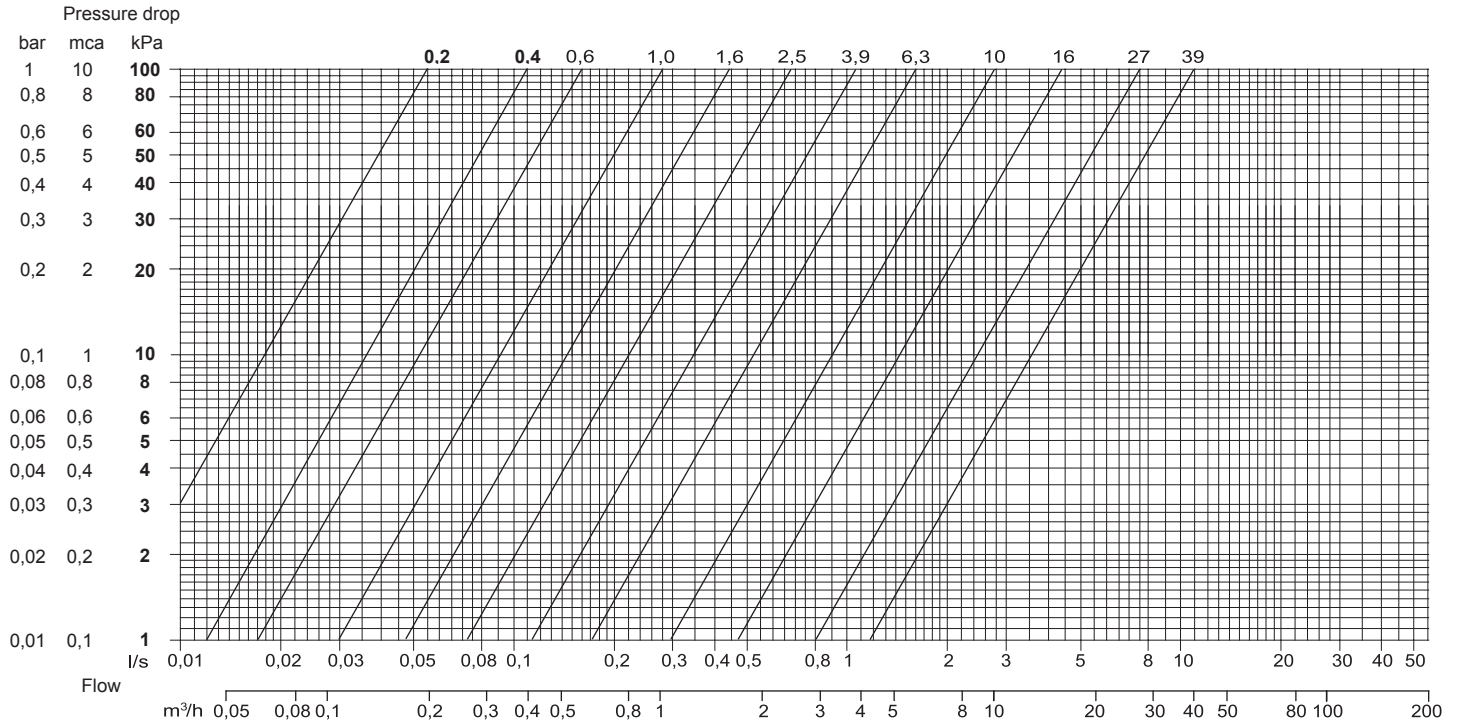
			
SM	FCA	SE1	SE1C
synchronous, spring return 24 V AC, 230 V AC	synchronous, spring return 230 V AC	thermostatic, on/off, 24/230 V AC 0...10 V, 24 V AC	thermostatic, on/off, 24/230 V AC
		100-140 N	90 N

### ACTUATORS AND VALVE BODIES COUPLING

Image	Model	Description	Stroke	Size	SM	FCA	SE1	SE1C	
	DB-VZ	threaded 2-, 3-way		G 1/2-1	X				
	FCV	threaded 2-, 3-way		G 1/2-1 1/4		X			
	VFX2	threaded 2-way	stroke 2.5 mm	G 1/2-3/4			X		
	VFX3	threaded 3-way					X		
	VFX4	threaded 3-way, 4 port					X		
	VFPIP/ VFPIM/ VFPI	pressure independent valves	stroke 2.7mm	DN 15-25				X	
	VFMD2	threaded 2-way	stroke 5.5 mm						
	VFMD3	threaded 3-way							
	VTFR2	threaded 2-way	stroke 5.5 mm						
	VTFR3	threaded 3-way							
	VFBF2	threaded 2-way	stroke 20 mm						
	VFBF3	threaded 3-way							
	VFG2	female threaded 2-way	stroke 20 mm	DN 15-50					
	VFG3	female threaded 3-way							
	VFD2	male threaded 2-way	stroke 20 mm	DN 15-50					
	VFD3	male threaded 3-way							
	VFFG2	flanged 2-way 3-way	stroke 20 mm	DN 50-65					
	VFFG3		stroke 40 mm	DN 80-200					
	VFL2	flanged 2-way	stroke 20 mm	DN 65-80					
			stroke 40 mm	DN 100-150					
	VFL3	flanged 3-way	stroke 20 mm	DN 65-80					
			stroke 40 mm	DN 100-150					
	VFDH	flanged 2-way	stroke 20 mm	DN 15-50					
			stroke 20 mm	DN 65-80					
			stroke 38 mm	DN 100					
			stroke 40 mm	DN 125-150					
	VF	butterfly		DN 32-80					



## CALCULATION OF $K_{VS}$ VALUE

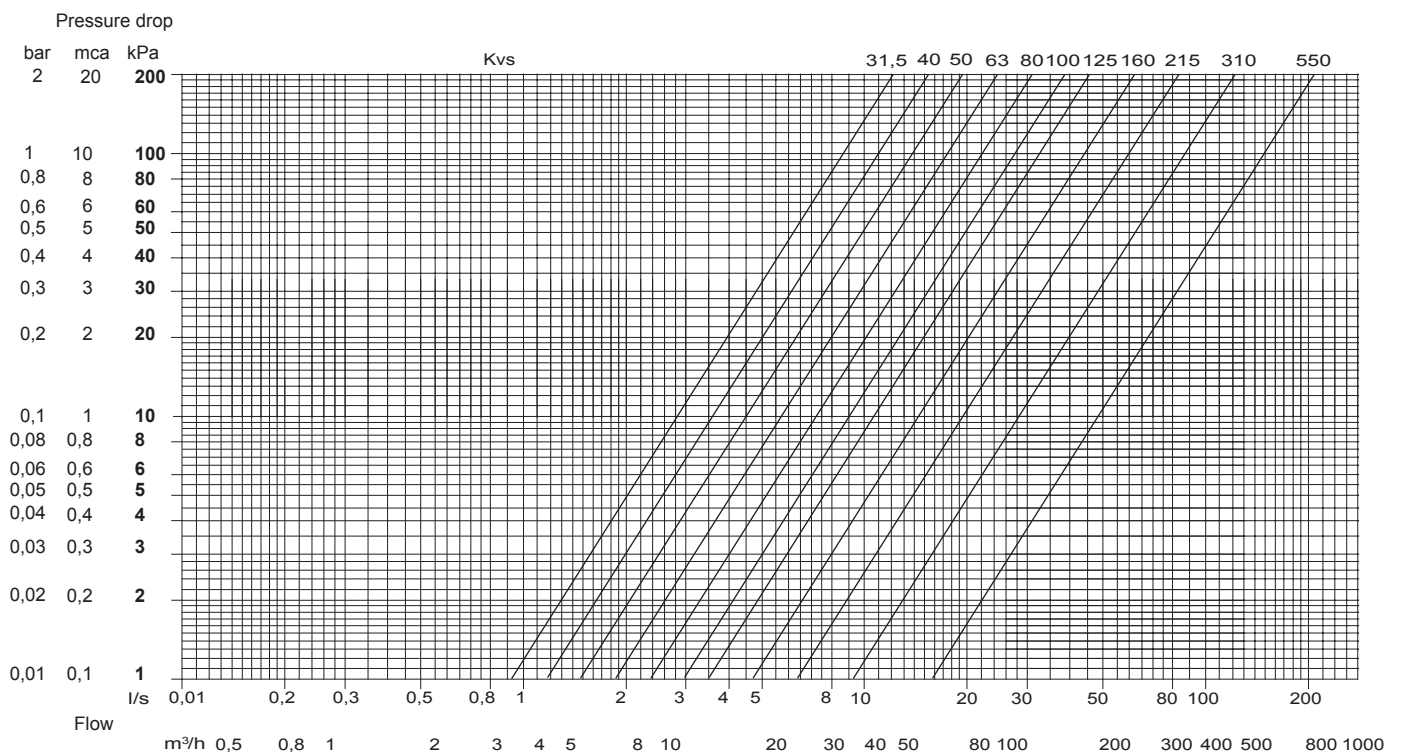


The **pressure drop diagram** allows the Calculation of  $K_{VS}$  for a regulation valve. It correlates the flow rate with the pressure drop. The axes use a logarithmic scale so that you can represent any of  $K_{VS}$  value with a straight line.

Example:

**TO CHOOSE A  $K_{VS}$  VALUE FOR A VALVE HAVING A PRESSURE DROP OF 80 KPA AND A FLOW RATE OF 0,2 L/S:**

- Draw a horizontal line corresponding to the pressure drop value (DP = 80 kPa)
- Draw a vertical line in correspondance of the flow rate value (0,2 l / s)
- Then draw a straight line from the intersection formed up to the nearest  $K_{VS}$  line
- Read the value of the corresponding  $K_{VS}$
- Result: 1.0  $K_{VS}$





## THERMAL ACTUATORS FOR MANIFOLDS AND VALVES

Thermal actuator to be used on manifolds

Technical data	
Sensor element	Special wax
Power consumption	3 VA
Ambient temperature	0...50 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-10...+60 °C Humidity: < 95 % RH
Peak current	SE1C24, SE1C24S < 0.25 A SE1C230, SE1C230S < 1 A
Auxiliary switch	3 A 230 V AC
Cable	PVC, section 2(4) x 0.50 mm <sup>2</sup> , length 1 m
Connection	Metal ring M30 x 1.5
Material, casing	Matt polycarbonate, self extinguishing V0 - V1 according to UL94
Weight	150 g
Dimensions	Ø 48.5 x h 65 mm
Protection class	IP40 If mounted vertically: IP44 clas II (SE1C230, SE1C230S) class III (SE1C24, SE1C24S)
Control signal	On/Off



SE1C



ADVFX

Article	Supply voltage	Auxiliary switch	Run-on time
SE1C24	24 V AC ± 10%, 50/60 Hz	-	4.5 min (20°C)
SE1C230	230 V AC ± 10%, 50/60 Hz	-	3.5 min (20°C)
SE1C24S	24 V AC ± 10%, 50/60 Hz	X	4.5 min (20°C)
SE1C230S	230 V AC ± 10%, 50/60 Hz	X	3.5 min (20°C)

### ACCESSORIES

Article	Actuator	Description
ADVFX		Adapter for SE1C/VFX coupling up to Kvs 2.5 to allow the valve to be normally open on direct way
ADV11	SE1C...	Adapter for valve with 2.7 mm stroke (to be ordered separately)



Articles available in multipack /M: SE1C.../M (72 pcs.)

## ON-OFF ZONE VALVES

On-Off control of heat or cool water flow. The valves must be combined with the SM actuator.



DB-VZ2-20

Technical data valve	
Storage temperature	-20...+70 °C
Humidity	< 95 % RH
Media temperature	0...105 °C
Nominal pressure (PN)	16 bar
Weight	270...750 g
Material	
Body	Forged brass
Stem	Stainless steel AISI 302
Packing	NBR

## 2-WAY VALVES

Article	Nominal diameter	Connection	Kvs	Max. diff. pressure
DB-VZ2-15	DN15	G 1/2"	1.6 m <sup>3</sup> /h	250 kPa (2,5 bar)
DB-VZ2-20	DN20	G 3/4"	1.6 m <sup>3</sup> /h	100 kPa (1 bar)
DB-VZ2-25	DN25	G 1"	1.6 m <sup>3</sup> /h	60 kPa (0,6 bar)

Article	Nominal diameter	Connection	Kvs	Max. diff. pressure
DB-VZ3-15	DN15	G 1/2"	1.6 m <sup>3</sup> /h	250 kPa (2,5 bar)
DB-VZ3-20	DN20	G 3/4"	1.6 m <sup>3</sup> /h	100 kPa (1 bar)
DB-VZ3-25	DN25	G 1"	1.6 m <sup>3</sup> /h	60 kPa (0,6 bar)

## ACTUATOR FOR DB-VZ ON-OFF ZONE VALVES

Actuators with auxiliary microswitch for 2-way and 3-way DB-VZ valves.

Technical data actuator	
Power consumption	7 VA
Load	max. 3A, 125...250 V AC
Opening time	≤ 10 s
Closing time, spring	≤ 5 s
Ambient temperature	2...60 °C
Ambient humidity	10...90 % RH (non-condensing)
Material, casing base	Aluminium alloy casting
Material, casing cover	Fire-proof ABS
Dimensions	77 x 65 x 62 mm
Protection class	IP40
Isolation class	II



SM24-CA

### ACTUATORS

Article	Supply voltage	Auxiliary switch
SM230/CA	230 V AC ± 10%	X
SM24/CA	24 V AC ± 10%	X

## PRESSURE INDEPENDENT CONTROL VALVES

The valve is a combined differential pressure regulator, flow limiter and equal percentage control valve with full stroke and authority. The pressure independent control valves are suitable for constant or variable temperature systems and can be used as constant flow limiters in constant volume systems (with no actuators), or as pressure independent control valves in variable volume systems (with actuators).

The VFPIP / VFPIIM / VFPI valves DN15-25 are intended to be used together with ITK's SE1Cxxx or SE1.2xxx actuators.



VFPIP15



VFPIIM15



VFPIIM25



VFPI15

Technical data	
Application	Heating/cooling systems, fan coil units, radiant cooling and ventilation
Pressure class	25 bar
Flow characteristics	Equal percentage
Rangeability	50 ~ 100 : 1
Max. diff. pressure	600 kPa
Stroke	2,7 mm
Media	Hot water, cold water, glycol-mixed water (max. 50 % glycol)
Max. leakage	0.01 % of maximum flow, Class IV IEC 60534-4
Media temperature	-10...+120 °C
Material	
Body	Brass CW602N (CZ121)
Plug parabol	Brass CW614N (CZ132)
Stem	Stainless steel
O-rings	EPDM
Pressure controller	EPDM, stainless steel and high resistance polymer

## MODELS WITHOUT MEASURING PORT CONNECTORS

Article	Nominal diameter	Connection	Max. flow rate	Max. start up pressure	Rangeability	Stroke	Actuator
VFPI15-150	DN15	G½"	150 l/h	20 kPa	50 ~ 100 : 1	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT
VFPI15-600	DN15	G½"	600 l/h	25 kPa	50 ~ 100 : 1	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT
VFPI15-900	DN15	G½"	900 l/h	30 kPa	50 ~ 100 : 1	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT
VFPI20-600	DN20	G¾"	600 l/h	25 kPa	50 ~ 100 : 1	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT
VFPI20-900	DN20	G¾"	900 l/h	30 kPa	50 ~ 100 : 1	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT



The VFPI models are non-stock items.

## MODELS WITH MEASURING PORT CONNECTORS BUT NO MEASURING PORTS

Article	Nominal diameter	Connection	Max. flow rate	Max. start up pressure	Rangeability	Max. diff. pressure	Stroke	Actuator
VFPIP15-150	DN15	G1/2"	150 l/h	20 kPa	50 ~ 100 : 1	600 kPa	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT
VFPIP15-600	DN15	G1/2"	600 l/h	25 kPa	50 ~ 100 : 1	600 kPa	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT
VFPIP15-780	DN15	G1/2"	780 l/h	35 kPa	50 ~ 100 : 1	600 kPa	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT
VFPIP20-1000	DN20	G3/4"	1000 l/h	30 kPa	50 ~ 100 : 1	600 kPa	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT
VFPIP20-1500	DN20	G3/4"	1500 l/h	35 kPa	50 ~ 100 : 1	600 kPa	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT
VFPIP25-1500	DN25	G1"	1500 l/h	35 kPa	50 ~ 100 : 1	600 kPa	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT

## MODELS WITH MEASURING PORTS

Article	Nominal diameter	Connection	Max. flow rate	Max. start up pressure	Rangeability	Stroke	Actuator
VFPM15-150	DN15	G1/2"	150 l/h	20 kPa	50 ~ 100 : 1	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT
VFPM15-600	DN15	G1/2"	600 l/h	25 kPa	50 ~ 100 : 1	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT
VFPM15-780	DN15	G1/2"	780 l/h	35 kPa	50 ~ 100 : 1	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT
VFPM20-1000	DN20	G3/4"	1000 l/h	30 kPa	50 ~ 100 : 1	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT
VFPM20-1500	DN20	G3/4"	1500 l/h	35 kPa	50 ~ 100 : 1	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT
VFPM25-1500	DN25	G1"	1500 l/h	35 kPa	50 ~ 100 : 1	2.7 mm	SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT

## ELECTROMECHANICAL ACTUATORS FOR THE PCTV, PCTVM AND PCTVS VALVES

Technical data	
Max. media temperature	95 °C
Ambient temperature	0...50 °C
Protection class	IP43
Force	120 N +30% -20%
Stroke time	8 s/mm



SE1.2xxx/PT

### MODELS

Article	Control signal	Stroke	Supply voltage	Power consumption
SE1.2F24/PT	3-point	6 mm (max.)	24 V AC	1.5 W / 2.5 VA
SE1.2F230/PT	3-point	6 mm (max.)	230 V AC	2.2 W / 6.5 VA
SE1.2M24-3.2/PT	0...10 V	6 / 3.2 mm	24 V AC	1.5 W / 2.5 VA

### ACCESSORIES

Article	Actuator	Description
ADV11	SE1C...	Adapter for valve with 2.7 mm stroke (to be ordered separately)

## INTERNALLY THREADED 2- AND 3-WAY VALVES

Valves intended for on/off control of hot or cold water in heating or cooling systems. The valves can only be used together with FCA actuators and are available as both 2- and 3-way models.



FCV-220



FCV-320

Technical data	
Application	Heating systems, cooling systems, fan-coil units, ventilation systems
Max. leakage	0.0 % of the kvs value
Media	Hot water, cold water, glycol-mixed water (max. 50 % glycol)
Media temperature	2...94 °C
Pressure rating	PN16 (240 psi)
Connection	Internal thread BSP according to ISO 228/1
Material	
Body	Brass CW614N
Ball	EPDM
O-rings	EPDM

### 2-WAY

Article	Nominal diameter	Connection	Kvs	Max. diff. pressure	Actuator
FCV-215	DN15	G1/2"	3.2 m <sup>3</sup> /h	200 kPa (2 bar)	FCA-2
FCV-220	DN20	G3/4"	4.6 m <sup>3</sup> /h	150 kPa (1,5 bar)	FCA-2
FCV-225	DN25	G1"	5.7 m <sup>3</sup> /h	100 kPa (1 bar)	FCA-2
FCV-232	DN32	G1 1/4"	10 m <sup>3</sup> /h	80 kPa (0,8 bar)	FCA-2

### 3-WAY

Article	Nominal diameter	Connection	Kvs	Max. diff. pressure	Actuator
FCV-315	DN15	G1/2"	3.2 m <sup>3</sup> /h	150 kPa (1,5 bar)	FCA-3
FCV-320	DN20	G3/4"	4.6 m <sup>3</sup> /h	100 kPa (1 bar)	FCA-3
FCV-325	DN25	G1"	5.7 m <sup>3</sup> /h	100 kPa (1 bar)	FCA-3
FCV-332	DN32	G1 1/4"	8.4 m <sup>3</sup> /h	80 kPa (0,8 bar)	FCA-3

## ACTUATORS FOR INTERNALLY THREADED 2- AND 3-WAY VALVES

Actuator intended for on/off control of hot or cold water in heating or cooling systems. The actuator has a synchronous motor and spring return mechanism. It is intended for use together with Regin's ZFCM valves.

Technical data	
Supply voltage	230 V AC, 50...60 Hz
Control signal	On/off
Power consumption	6 VA
Opening time	Approx. 15 s
Closing time, spring	4...5 s
Ambient temperature	0...60 °C
Storage temperature	-20...+65 °C
Material	ABS
Dimensions	91 x 68 x 65 mm
Protection class	IP44

Article	Valve
FCA-3	FCV-3
FCA-2	FCV-2



FCA-2



FCA-3

## 2-, 3-WAY AND 3-WAY (BYPASS) ZONE VALVES

Valves for control of heating and cooling in fan-coil or chilled beams applications. The valves are intended to be used together with the thermal SE1 actuators. They are available as 2- and 3-way versions, as well as bypass versions. The valves have linear flow characteristics.

Technical data	
Pressure rating	PN16
Connection	BSP externally threaded according to ISO 228/1
Flow characteristics	Linear
Max. leakage	0 % of the kvs value
Media	Hot water, cold water, glycol-mixed water (max. 40 % glycol)
Media temperature	2...95 °C
Stroke	2.5 mm
Material	
Body	Brass CW614N
Plug	PA + GF
Stem	PA + GF
Spring	Stainless steel
Packing box	PPO + GP
O-rings	FKM



VFX214



VFX237



VFX314



VFX337



VFX437



VFX414



VTP



ADVFX

### 2-WAY

Article	Nominal diameter	Connection	Kvs, A-AB	Kvs, B-AB	Max. diff. pressure	Actuator
VFX210	DN15	G1/2"	0.25 m <sup>3</sup> /h	-	250 kPa (2,5 bar)	SE1T / SE1M
VFX211	DN15	G1/2"	0.4 m <sup>3</sup> /h	-	250 kPa (2,5 bar)	SE1T / SE1M
VFX212	DN15	G1/2"	0.6 m <sup>3</sup> /h	-	250 kPa (2,5 bar)	SE1T / SE1M
VFX213	DN15	G1/2"	1.0 m <sup>3</sup> /h	-	250 kPa (2,5 bar)	SE1T / SE1M
VFX214	DN15	G1/2"	1.6 m <sup>3</sup> /h	-	250 kPa (2,5 bar)	SE1T / SE1M
VFX235	DN20	G3/4"	2.5 m <sup>3</sup> /h	-	250 kPa (2,5 bar)	SE1T / SE1M
VFX237	DN20	G3/4"	4.0 m <sup>3</sup> /h	-	80 kPa (0,8 bar)	SE1TP / SE1MP
VFX239	DN20	G3/4"	6.0 m <sup>3</sup> /h	-	80 kPa (0,8 bar)	SE1TP / SE1MP

### 3-WAY

Article	Nominal diameter	Connection	Kvs, A-AB	Kvs, B-AB	Max. diff. pressure	Actuator
VFX310	DN15	G1/2"	0.25 m <sup>3</sup> /h	0.25 m <sup>3</sup> /h	250 kPa (2,5 bar)	SE1T / SE1M
VFX311	DN15	G1/2"	0.4 m <sup>3</sup> /h	0.4 m <sup>3</sup> /h	250 kPa (2,5 bar)	SE1T / SE1M
VFX312	DN15	G1/2"	0.6 m <sup>3</sup> /h	0.6 m <sup>3</sup> /h	250 kPa (2,5 bar)	SE1T / SE1M
VFX313	DN15	G1/2"	1.0 m <sup>3</sup> /h	0.8 m <sup>3</sup> /h	250 kPa (2,5 bar)	SE1T / SE1M
VFX314	DN15	G1/2"	1.6 m <sup>3</sup> /h	1.0 m <sup>3</sup> /h	250 kPa (2,5 bar)	SE1T / SE1M
VFX335	DN20	G3/4"	2.5 m <sup>3</sup> /h	1.6 m <sup>3</sup> /h	250 kPa (2,5 bar)	SE1T / SE1M
VFX337	DN20	G3/4"	4.0 m <sup>3</sup> /h	2.5 m <sup>3</sup> /h	80 kPa (0,8 bar)	SE1TP / SE1MP
VFX339	DN20	G3/4"	6.0 m <sup>3</sup> /h	4.0 m <sup>3</sup> /h	80 kPa (0,8 bar)	SE1TP / SE1MP



### 3-WAY WITH BYPASS

Article	Nominal diameter	Connection	Kvs, A-AB	Kvs, B-AB	Max. diff. pressure	Actuator
VFX410	DN15	G1/2"	0.25 m <sup>3</sup> /h	0.25 m <sup>3</sup> /h	250 kPa (2,5 bar)	SE1T / SE1M
VFX411	DN15	G1/2"	0.4 m <sup>3</sup> /h	0.4 m <sup>3</sup> /h	250 kPa (2,5 bar)	SE1T / SE1M
VFX412	DN15	G1/2"	0.6 m <sup>3</sup> /h	0.6 m <sup>3</sup> /h	250 kPa (2,5 bar)	SE1T / SE1M
VFX413	DN15	G1/2"	1.0 m <sup>3</sup> /h	0.8 m <sup>3</sup> /h	250 kPa (2,5 bar)	SE1T / SE1M
VFX414	DN15	G1/2"	1.6 m <sup>3</sup> /h	1.0 m <sup>3</sup> /h	250 kPa (2,5 bar)	SE1T / SE1M
VFX435	DN20	G3/4"	2.5 m <sup>3</sup> /h	1.6 m <sup>3</sup> /h	250 kPa (2,5 bar)	SE1T / SE1M
VFX437	DN20	G3/4"	4.0 m <sup>3</sup> /h	2.5 m <sup>3</sup> /h	80 kPa (0,8 bar)	SE1TP / SE1MP
VFX439	DN20	G3/4"	6.0 m <sup>3</sup> /h	4.0 m <sup>3</sup> /h	80 kPa (0,8 bar)	SE1TP / SE1MP

### ACCESSORIES

Article	Description
VTP	Override control
ADVFX	Adapter for SE1C/VFX coupling up to Kvs 2.5 to allow the valve to be normally open on direct way



Articles available in multipack /M: VFX21.../M (140 pcs.); VFX31.../M (120 pcs.); VFX 41.../M (100 pcs.); VFX235/M (136 pcs.) VFX335/M (120 pcs.); VFX435/M (80 pcs.)

### THERMAL ACTUATOR

Thermal actuator with position indicator for control of valves in heating or cooling systems. The actuator can be used to control radiator circuits, solar heating systems, heating or cooling coils, floor heating etc. To be combined with the VFX range of valves.

Technical data	
Stroke	2.5 mm
Ambient temperature	0...50 °C
Ambient humidity	10...90 % RH (non-condensing)
Storage temperature	-20...+70 °C
Storage humidity	< 95 % RH (non-condensing)
Closing/opening time	SE1T230, SE1TP230: 210 s / SE1T24, SE1TP24: 270 s
Peak current	24 V AC: < 0.25 A / 230 V AC: < 0.90 A
Auxiliary switch	250 V AC 3 A
Cable	PVC, section 2 x 0.50 mm <sup>2</sup> , 2 m length
Connection	M30 x 1.5 metal ring
Material, casing	Matt polycarbonate, self extinguishing V0 - V1 according to UL94
Weight	200 g
Dimensions	Ø 40 x 61 mm
Protection class	IP40 (IP44 when vertically mounted)
Isolation class	II (SE1T230, SE1TP230)III (SE1T24,SE1TP24,SE1M24 e SE1MP24)



SE1T230



SE1T230S



SE1M24

Article	Force	Supply voltage	Control signal	Power consumption	Stroke time	Auxiliary switch
SE1T24	100 N	24 V AC ± 10 %, 50/60 Hz	On/Off	3.0 VA	4.5 min	-
SE1T24S	100 N	24 V AC ± 10 %, 50/60 Hz	On/Off	3.0 VA	4.5 min	X
SE1T230	100 N	230 V AC ± 10 %, 50/60 Hz	On/Off	3.0 VA	3.5 min	-
SE1TP24	140 N	24 V AC ± 10 %, 50/60 Hz	On/Off	3.0 VA	4.5 min	-
SE1TP24S	140 N	24 V AC ± 10 %, 50/60 Hz	On/Off	3.0 VA	4.5 min	X
SE1TP230	140 N	230 V AC ± 10 %, 50/60 Hz	On/Off	3.0 VA	3.5 min	X
SE1T230S	100 N	230 V AC ± 10 %, 50/60 Hz	On/Off	3.0 VA	3.5 min	X
SE1TP230S	140 N	230 V AC ± 10 %, 50/60 Hz	On/Off	3.0 VA	3.5 min	X
SE1MP24	140 N	24 V AC ± 10 %, 50/60 Hz	0...10 V DC	3.5 VA	3.5 min	-
SE1M24	100 N	24 V AC ± 10 %, 50/60 Hz	0...10 V DC	3.5 VA	4.5 min	-

## INTERNALLY THREADED 2-WAY VALVES

The valves are designed for control of hot, cold or glycol-mixed water in heating and ventilation systems. They are pressure balanced (from DN20-50, not DN15) and can therefore handle high differential pressure with low force. The valves are intended to be used together with Industrietechnik's SE5... actuators. They should not be used in domestic water systems.

Technical data	
Pressure rating	PN16
Connection	BSP internally threaded according to ISO 228/1
Flow characteristics	Equal percentage
Max. leakage	0.0 % of the kvs value (PTFE gasket, carbon-filled 25 %, no leakage)
Max. diff. pressure	1600 kPa (16 bar)
Media	Hot water, cold water, glycol-mixed water (max. 50 % glycol)
Media temperature	-5...+140 °C
Rangeability	100:1
Stroke	20 mm
Material	
Body	Brass CW614N
Seat	Brass CW614N
Plug	Stainless steel 1.4301
Stem	Stainless steel 1.4305
Seat packing	PTFE with 25 % carbon
O-rings	EPDM



VFG2



IS02420001



IS6321457301

## MODELS

Article	Nominal diameter	Connection	Kvs	Actuator
VFG215-0,6	DN15	G½"	0.6 m³/h	SE5
VFG215-1,0	DN15	G½"	1.0 m³/h	SE5
VFG215-1,6	DN15	G½"	1.6 m³/h	SE5
VFG215-2,5	DN15	G½"	2.5 m³/h	SE5
VFG220-1,6	DN20	G¾"	1.6 m³/h	SE5
VFG220-2,7	DN20	G¾"	2.7 m³/h	SE5
VFG220-3,9	DN20	G¾"	3.9 m³/h	SE5
VFG225-6,3	DN25	G1"	6.3 m³/h	SE5
VFG225-10	DN25	G1"	10 m³/h	SE5
VFG232-10	DN32	G1¼"	10 m³/h	SE5
VFG232-16	DN32	G1¼"	16 m³/h	SE5
VFG240-16	DN40	G1½"	16 m³/h	SE5
VFG240-27	DN40	G1½"	27 m³/h	SE5
VFG250-27	DN50	G2"	27 m³/h	SE5
VFG250-39	DN50	G2"	39 m³/h	SE5

## ACCESSORIES

Article	Description
IS02420001	Spare parts kit, O-ring kit for BTV valves from DN15 to DN25
IS6321457301	Spare parts kit, packing box

## INTERNALLY THREADED 3-WAY VALVES

Valves designed for control of hot, cold or glycol-mixed water in heating and ventilation systems. They also function very well in domestic water systems. The valves are intended for use together with SE5... actuators. Valves with DN32-50 may also be used with SE10..., if a larger actuating force is required.

Technical data	
Pressure rating	PN16
Connection	BSP internally threaded according to ISO 228/1
Flow characteristics	Equal percentage
Max. leakage	0.1 % of Kvs
Media	Hot water, cold water, glycol-mixed water (max. 50 % glycol)
Media temperature	-5...+185 °C
Rangeability	100:1
Stroke	20 mm
Material	
Body	Gunmetal CC491K (RG5)
Seat	Gunmetal CC491K (RG5)
Plug	Gunmetal CC491K (RG5)
Stem	Stainless steel 1.4305
Packing box	Dezincification resistant brass CW 602N, self-adjusting teflon
O-rings	Viton



VFG3



IS0603080300

### 3-WAY

Article	Nominal diameter	Connection	Max. diff. pressure	Kvs	Actuator
VFG315-0,63	DN15	G½"	1600 kPa / 16 bar	0.63 m³/h	SE5
VFG315-1,0	DN15	G½"	1600 kPa / 16 bar	1.0 m³/h	SE5
VFG315-1,6	DN15	G½"	1600 kPa / 16 bar	1.6 m³/h	SE5
VFG315-2,1	DN15	G½"	1600 kPa / 16 bar	2.1 m³/h	SE5
VFG315-2,7	DN15	G½"	1600 kPa / 16 bar	2.7 m³/h	SE5
VFG320-4,2	DN20	G¾"	1600 kPa / 16 bar	4.2 m³/h	SE5
VFG320-5,6	DN20	G¾"	1600 kPa / 16 bar	5.6 m³/h	SE5
VFG325-10	DN25	G1"	1000 kPa / 10 bar	10 m³/h	SE5
VFG332-16	DN32	G1¼"	600 kPa / 6 bar	16 m³/h	SE5, SE10
VFG340-27	DN40	G1½"	400 kPa / 4 bar	27 m³/h	SE5, SE10
VFG350-39	DN50	G2"	250 kPa / 2,5 bar	39 m³/h	SE5, SE10

### ACCESSORIES

Article	Description
IS0603080300	Spare parts kit, packing box

## EXTERNALLY THREADED 2-WAY VALVE

2-way valves designed for control of cold, hot or glycol-mixed water, for use in domestic water systems or district heating within the temperature range -5°C...+150°C. They are pressure balanced (from DN20-50, not DN15) and can therefore handle high differential pressure with low force. The valves are intended to be used together with SE5... actuators.

Technical data	
Pressure rating	PN16
Connection	BSP externally threaded according to ISO 228/1; supplied with threaded connections
Flow characteristics	Equal percentage
Max. leakage	0.0 % of the Kvs value (PTFE gasket, carbon-filled 25 %, no leakage)
Media	Hot water, cold water, glycol-mixed water (max. 50 % glycol)
Media temperature	-5...+150 °C
Rangeability	100:1
Stroke	20 mm
Max. diff. pressure	1600 kPa (16 bar)
Material	
Body	Gunmetal CC491K (RG5)
Seat	Stainless steel 1.4301
Plug	Stainless steel 1.4305
Stem	Stainless steel 1.4305
Seat packing	PTFE with 25 % carbon
Packing box	Dezincification resistant brass CW 602N, self-adjusting teflon
O-rings	Viton
Material, connections	
Nut	Malleable cast iron, galvanized
Nipple	Dezincification resistant brass CW 602N
Fitting seal	Novatec Premium 2, Nitrile bonded aramid fibre with graphite



VFD2



IS0603080300

## MODELS

Article	Nominal diameter	Kvs	Actuator
VFD215-0,63	DN15	0.63 m <sup>3</sup> /h	SE5
VFD215-1,25	DN15	1.25 m <sup>3</sup> /h	SE5
VFD215-1,6	DN15	1.6 m <sup>3</sup> /h	SE5
VFD215-2,5	DN15	2.5 m <sup>3</sup> /h	SE5
VFD215-4,0	DN15	4 m <sup>3</sup> /h	SE5
VFD220-5,0	DN20	5 m <sup>3</sup> /h	SE5
VFD220-6,3	DN20	6.3 m <sup>3</sup> /h	SE5
VFD225-8,0	DN25	8 m <sup>3</sup> /h	SE5
VFD225-10	DN25	10 m <sup>3</sup> /h	SE5
VFD232-12,5	DN32	12.5 m <sup>3</sup> /h	SE5
VFD232-16	DN32	16 m <sup>3</sup> /h	SE5
VFD240-20	DN40	20 m <sup>3</sup> /h	SE5
VFD240-25	DN40	25 m <sup>3</sup> /h	SE5
VFD250-31,5	DN50	31.5 m <sup>3</sup> /h	SE5
VFD250-40	DN50	40 m <sup>3</sup> /h	SE5

## EXTERNALLY THREADED CONTROL VALVE, MANUALLY CONVERTIBLE TO EITHER 2-WAY OR 3-WAY (SELECTABLE)

Valves intended for control of cold, hot and glycol-mixed water in heating, ventilation and domestic water systems. The valves are intended to be used together with Industrietechnik's SE5... actuators. Valves with DN32-50 may also be used with SE10... if a larger actuating force is required.

Technical data	
Pressure rating	PN16
Connection	BSP externally threaded according to ISO 228/1; supplied with threaded connections
Flow characteristics	Equal percentage
Max. leakage	0.1 % of the kvs value
Media	Hot water, cold water, glycol-mixed water (max. 50 % glycol)
Media temperature	-5...+185 °C
Rangeability	100:1
Stroke	20 mm
Material	
Body	Gunmetal CC491K (RG5)
Seat	Gunmetal CC491K (RG5)
Plug	Gunmetal CC491K (RG5)
Stem	Stainless steel 1.4305
Packing box	Dezincification resistant brass CW 602N, self-adjusting teflon
O-rings	Viton
Material, connections	
Nut	Malleable cast iron, galvanized
Nipple	Dezincification resistant brass CW 602N
Fitting seal	Novatec Premium 2, Nitrile bonded aramid fibre with graphite
Cover lid	Dezincification resistant brass CW 602N



VFD3



IS0603080300

### MODELS

Article	Nominal diameter	Max. diff. pressure	Kvs	Actuator
VFD315-0,63	DN15	1600 kPa / 16 bar	0.63 m <sup>3</sup> /h	SE5
VFD315-1,25	DN15	1600 kPa / 16 bar	1.25 m <sup>3</sup> /h	SE5
VFD315-1,6	DN15	1600 kPa / 16 bar	1.6 m <sup>3</sup> /h	SE5
VFD315-2,5	DN15	1600 kPa / 16 bar	2.5 m <sup>3</sup> /h	SE5
VFD315-4,0	DN15	1600 kPa / 16 bar	4 m <sup>3</sup> /h	SE5
VFD320-5,0	DN20	1600 kPa / 16 bar	5 m <sup>3</sup> /h	SE5
VFD320-6,3	DN20	1600 kPa / 16 bar	6.3 m <sup>3</sup> /h	SE5
VFD325-8,0	DN25	1000 kPa / 10 bar	8 m <sup>3</sup> /h	SE5
VFD325-10	DN25	1000 kPa / 10 bar	10 m <sup>3</sup> /h	SE5
VFD332-12,5	DN32	600 kPa / 6 bar	12.5 m <sup>3</sup> /h	SE5
VFD332-16	DN32	600 kPa / 6 bar	16 m <sup>3</sup> /h	SE5, SE10
VFD340-20	DN40	400 kPa / 4 bar	20 m <sup>3</sup> /h	SE5, SE10
VFD340-25	DN40	400 kPa / 4 bar	25 m <sup>3</sup> /h	SE5, SE10
VFD350-31,5	DN50	250 kPa / 2.5 bar	31.5 m <sup>3</sup> /h	SE5, SE10
VFD350-40	DN50	250 kPa / 2.5 bar	40 m <sup>3</sup> /h	SE5, SE10

### ACCESSORIES

Article	Description
IS0603080300	Spare parts kit, packing box

## 2- AND 3-WAY DIN-STANDARD FLANGED VALVE

Control valves for use in heating, cooling and ventilation systems. They are intended to be used together with SE actuators. The valves have DIN-standard lengths.

Technical data	
Pressure rating	PN16
Connection	Flanged according to EN 1092-2
Flow characteristics	A - AB = equal percentage, B - AB = linear
Max. leakage	0 % of Kvs
Media	Hot water, cold water, glycol-mixed water (max. 50 % glycol)
Media temperature	-5...+120 °C
Rangeability	100:1 (DN50...200), > 50:1 (DN25...40)
Max. diff. pressure	If a smaller actuator than the suggested one is used, the max. differential pressure may be different. More information is available in the product sheet.
Material	
Body	Cast iron Grade 250
Plug	Gunmetal 1400 LG2 (DN50...200), Brass CW614N (DN25...40)
Seat	Gunmetal 1400 LG2 (DN50...200), Cast iron Grade 250 (DN25...40)
Stem	Stainless steel 1.4305
Packing box	Brass CW614N
Bonnet	Brass CW614N
O-rings	EPDM
Packing	Aramid reinforced rubber



VFFG2



VFFG3

## 2-WAY VALVES

Article	Kvs	Nominal diameter	Max. diff. pressure	Actuator
VFFG225-6,3	6.3 m <sup>3</sup> /h	DN25	400 kPa / 4 bar	SE5, SE10
VFFG225-10	10 m <sup>3</sup> /h	DN25	400 kPa / 4 bar	SE5, SE10
VFFG232-10	10 m <sup>3</sup> /h	DN32	350 kPa / 3,5 bar	SE5, SE10
VFFG232-16	16 m <sup>3</sup> /h	DN32	350 kPa / 3,5 bar	SE5, SE10
VFFG240-16	16 m <sup>3</sup> /h	DN40	300 kPa / 3 bar	SE5, SE10
VFFG240-25	25 m <sup>3</sup> /h	DN40	300 kPa / 3 bar	SE5, SE10
VFFG250-31,5	31.5 m <sup>3</sup> /h	DN50	450 kPa / 4,5 bar	SE18
VFFG250-40	40 m <sup>3</sup> /h	DN50	450 kPa / 4,5 bar	SE18
VFFG265-50	50 m <sup>3</sup> /h	DN65	350 kPa / 3,5 bar	SE18
VFFG265-63	63 m <sup>3</sup> /h	DN65	350 kPa / 3,5 bar	SE18
VFFG280-80	80 m <sup>3</sup> /h	DN80	300 kPa / 3 bar	SE18
VFFG280-100	100 m <sup>3</sup> /h	DN80	300 kPa / 3 bar	SE18
VFFG2100-125	125 m <sup>3</sup> /h	DN100	200 kPa / 2 bar	SE18
VFFG2100-160	160 m <sup>3</sup> /h	DN100	200 kPa / 2 bar	SE18
VFFG2125-215	215 m <sup>3</sup> /h	DN125	120 kPa / 1,2 bar	SE25
VFFG2150-310	310 m <sup>3</sup> /h	DN150	100 kPa / 1 bar	SE25
VFFG2200-550	550 m <sup>3</sup> /h	DN200	200 kPa / 2 bar	SE25

### 3-WAY VALVES

Article	Kvs	Nominal diameter	Max. diff. pressure	Actuator
VFFG325-6,3	6.3 m <sup>3</sup> /h	DN25	400 kPa / 4 bar	SE5, SE10
VFFG325-10	10 m <sup>3</sup> /h	DN25	400 kPa / 4 bar	SE5, SE10
VFFG332-10	10 m <sup>3</sup> /h	DN32	350 kPa / 3,5 bar	SE5, SE10
VFFG332-16	16 m <sup>3</sup> /h	DN32	350 kPa / 3,5 bar	SE5, SE10
VFFG340-16	16 m <sup>3</sup> /h	DN40	300 kPa / 3 bar	SE5, SE10
VFFG340-25	25 m <sup>3</sup> /h	DN40	300 kPa / 3 bar	SE5, SE10
VFFG350-31,5	31.5 m <sup>3</sup> /h	DN50	450 kPa / 4,5 bar	SE18
VFFG350-40	40 m <sup>3</sup> /h	DN50	450 kPa / 4,5 bar	SE18
VFFG365-50	50 m <sup>3</sup> /h	DN65	350 kPa / 3,5 bar	SE18
VFFG365-63	63 m <sup>3</sup> /h	DN65	350 kPa / 3,5 bar	SE18
VFFG380-80	80 m <sup>3</sup> /h	DN80	300 kPa / 3 bar	SE18
VFFG380-100	100 m <sup>3</sup> /h	DN80	300 kPa / 3 bar	SE18
VFFG3100-125	125 m <sup>3</sup> /h	DN100	200 kPa / 2 bar	SE18
VFFG3100-160	160 m <sup>3</sup> /h	DN100	200 kPa / 2 bar	SE18
VFFG3125-215	215 m <sup>3</sup> /h	DN125	120 kPa / 1,2 bar	SE25
VFFG3150-310	310 m <sup>3</sup> /h	DN150	100 kPa / 1 bar	SE25
VFFG3200-550	550 m <sup>3</sup> /h	DN200	70 kPa / 0,7 bar	SE25

### 2- AND 3-WAY DIN-STANDARD FLANGED VALVE

Control valves intended for use in heating, cooling and ventilation systems. They are intended to be used together with the SExx actuators. The valves have DIN-standard lengths.

Technical data	
Pressure rating	PN16
Connection	Flanged according to EN 1092-2
Flow characteristics	A → AB: 0-30 % open = linear, 30 - 100 % open = equal percentage B → AB: linear
Max. leakage	A - AB: DN65...DN80 = max 0.1 % of the kvs value, DN100...DN150 = max 0.2 % of the kvs value B - AB: Max 2 % of the kvs value
Media	Hot water, cold water, glycol-mixed water (max. 50 % glycol)
Media temperature	-5...+120 °C
Rangeability	100:1
Material	
Body	Cast iron Grade 200
Seat	Cast iron Grade 200
Plug	Stainless steel 1.4301
Stem	Stainless steel 1.4301
Packing box	Brass CW 617N
Bonnet	Cast iron Grade 200
O-rings	EPDM
Packing	Aramid reinforced rubber



VFL2



VFL3

### 3-WAY VALVES

Article	Nominal diameter	Kvs	Stroke	Actuator
VFL265-52	DN65	52 m <sup>3</sup> /h	20 mm	SE18, SE25
VFL80-79	DN80	79 m <sup>3</sup> /h	20 mm	SE18, SE25
VFL2100-124	DN100	124 m <sup>3</sup> /h	40 mm	SE18, SE25
VFL2125-200	DN125	200 m <sup>3</sup> /h	40 mm	SE18, SE25
VFL2150-300	DN150	300 m <sup>3</sup> /h	40 mm	SE18, SE25
VFL365-52	DN65	52 m <sup>3</sup> /h	20 mm	SE18, SE25
VFL380-79	DN80	79 m <sup>3</sup> /h	20 mm	SE18, SE25
VFL3100-124	DN100	124 m <sup>3</sup> /h	40 mm	SE18, SE25
VFL3125-200	DN125	200 m <sup>3</sup> /h	40 mm	SE18, SE25
VFL3150-300	DN150	300 m <sup>3</sup> /h	40 mm	SE18, SE25

## FLANGED 2-WAY DIN-STANDARD VALVE FOR DISTRICT HEATING

Pressure balanced 2-way valve intended for control of hot, cold or glycol-mixed water, ideal for district heating within the temperature range -5...+185°C. Intended for use with the SE5.../SE10.../SE18.../SE25... actuators.

Technical data	
Pressure rating	PN16
Connection	Flanges according to EN 1092-2
Flow characteristics	Equal percentage
Max. leakage	0.0 % of the kvs value (PTFE gasket, carbon-filled 25 %, no leakage) / 0.05 % of kvs for NTVS...-...M models with metal packing
Media	Hot water, cold water, glycol-mixed water (max. 50 % glycol)
Media temperature	-5...+185 °C
Rangeability	100:1
Max. diff. pressure	1600 kPa (16 bar)
Material	
Body	Nodular cast iron (GJS) EN-JS1050
Seat	Stainless steel 1.4301 or gunmetal CC491K (RG5)
Plug	Stainless steel 1.4305 (DN15...DN100) or gunmetal CC491K (RG5) (DN125...DN150)
Stem	Stainless steel 1.4305
Lining	Stainless steel 1.4301
Seat packing, soft seal	PTFE with 25 % carbon
Seat packing, metal seal	Stainless steel 1.4057
Packing box	Dezincification resistant brass CW 602N, self-adjusting teflon
O-rings	Viton



VFDH



IS0603080300



## MODELS

Article	Nominal diameter	Kvs	Stroke	Actuator
VFDH15-1,6	DN15	1.6 m <sup>3</sup> /h	20 mm	SE5
VFDH15-2,7	DN15	2.7 m <sup>3</sup> /h	20 mm	SE5
VFDH20-6,3	DN20	6.3 m <sup>3</sup> /h	20 mm	SE5
VFDH25-10	DN25	10 m <sup>3</sup> /h	20 mm	SE5
VFDH32-16	DN32	16 m <sup>3</sup> /h	20 mm	SE5
VFDH40-27	DN40	27 m <sup>3</sup> /h	20 mm	SE5
VFDH50-39	DN50	39 m <sup>3</sup> /h	20 mm	SE5
VFDH65-63	DN65	63 m <sup>3</sup> /h	20 mm	SE10
VFDH80-100	DN80	100 m <sup>3</sup> /h	20 mm	SE10
VFDH100-160	DN100	160 m <sup>3</sup> /h	38 mm	SE18
VFDH125-215	DN125	215 m <sup>3</sup> /h	40 mm	SE25
VFDH150-310	DN150	310 m <sup>3</sup> /h	40 mm	SE25

## ACCESSORIES

Article	Description
IS0603080300	Spare parts kit, packing box

## VALVE ACTUATOR, 24 V SUPPLY VOLTAGE AND 3-POINT CONTROL

Valve actuator for control of Industrietechnik's range of valves. Available in models with actuator force of 500, 1000, 1800 or 2500 N. The actuators can be operated manually with the manual override mechanism on the lid.

### Technical data

Supply voltage	24 V AC
Control signal	3-point
Stroke time	3 s/mm
Ambient temperature	0...50 °C
Storage temperature	-40...80 °C
Ambient humidity	10...90 % RH
Protection class	IP54



SE5



SE10-SE18-SE25

### MODELS

Article	Max. power consumption	Force	Stroke	Stroke time
SE5F24	7.8 W / 8.0 VA	500 N	10...30 mm	3 s/mm
SE10F24	6.2 W / 6.7 VA	1000 N	10...30 mm	3 s/mm
SE18F24	10.9 W / 11.7 VA	1800 N	10...52 mm	3 s/mm
SE25F24	10.9 W / 11.7 VA	2500 N	10...52 mm	3 s/mm

## VALVE ACTUATOR, 24 V SUPPLY VOLTAGE AND 0(2)...10 V DC CONTROL

Valve actuator with automatic stroke adjustment for control of Industrietechnik's range of valves. Available in models with actuator force of 500, 1000, 1800 or 2500 N. The actuators can be operated manually with the manual override mechanism on the lid.

### Technical data

Supply voltage	24 V AC/DC
Control signal	0...10 V DC or 2...10 V DC (or 4...20 mA with a 500 Ω resistor connected)
Ambient temperature	0...50 °C
Storage temperature	-40...80 °C
Ambient humidity	10...90 % RH
Protection class	IP54



SE5



SE10-SE18-SE25

### MODELS

Article	Max. power consumption	Force	Stroke	Stroke time
SE5M24	5.1 W / 13.9 VA	500 N	10...30 mm	1.5 s/mm
SE10M24	6.2 W / 17.4 VA	1000 N	10...30 mm	1.5 s/mm
SE18M24	8.6 W / 22.4 VA	1800 N	10...52 mm	3 s/mm
SE25M24	8.6 W / 22.4 VA	2500 N	10...52 mm	3 s/mm

## VALVE ACTUATOR, 230 V SUPPLY VOLTAGE AND 3-POINT CONTROL

Valve actuator for control of Industrietechnik's range of valves. Available in models with actuator force of 500, 1000, 1800 or 2500 N. The actuators can be operated manually with the manual override mechanism on the lid.

Technical data	
Supply voltage	230 V AC $\pm 15\%$ , 50 Hz
Control signal	3-point
Power consumption	15.3 W / 16.5 VA
Stroke time	3 s/mm
Ambient temperature	0...50 °C
Storage temperature	-40...+80 °C
Ambient humidity	10...90 % RH
Protection class	IP54



SE5



SE10-SE18-SE25

### MODELS

Article	Max. power consumption	Force	Stroke	Stroke time
SE5F230	15.3 W / 16.5 VA	500 N	10...30 mm	3 s/mm
SE10F230	15.3 W / 16.5 VA	1000 N	10...30 mm	3 s/mm
SE18F230	15.3 W / 16.5 VA	1800 N	10...52 mm	3 s/mm
SE25F230	15.3 W / 16.5 VA	2500 N	10...52 mm	3 s/mm

## EXTERNALLY THREADED 2- AND 3-WAY CONTROL VALVES

Externally threaded control valves intended for use in heating and cooling systems together with the SEZ4... series of electromechanical actuators.

Technical data	
Application	Heating systems, cooling systems, fan-coil units, ventilation systems
Pressure rating	PN16
Connection	BSP externally threaded according to ISO 228/1
Flow characteristics	Linear
Max. leakage	0.0 % of kvs
Media	Hot water, cold water, glycol-mixed water (max. 50 % glycol)
Media temperature	2...110 °C
Rangeability	50:1
Stroke	5.5 mm
Material	
Body	Brass CW614N
Seat	Brass CW614N
Plug	Brass CW614N
Stem	Stainless steel 1.4305
Seat packing	EPDM
O-rings	EPDM
Material, connections	
Nut	Malleable cast iron, galvanized
Nipple	Dezincification resistant brass CW 602N (DN15-DN20), Malleable cast iron (DN25-DN40)
Fitting seal	Novatec Premium 2, Nitrile bonded aramid fibre with graphite
Cover lid	Dezincification resistant brass CW 602N



VFMD2



VFMD3

### 2-WAY VALVES

Article	Nominal diameter	Kvs	Max. diff. pressure	Actuator
VFMD215-0.25	DN15	0.25	400 kPa	SEZ4
VFMD215-0.4	DN15	0.4	400 kPa	SEZ4
VFMD215-0.6	DN15	0.6	400 kPa	SEZ4
VFMD215-1.0	DN15	1.0	400 kPa	SEZ4
VFMD215-1.6	DN15	1.6	400 kPa	SEZ4
VFMD215-2.5	DN15	2.5	400 kPa	SEZ4
VFMD215-4.0	DN15	4.0	400 kPa	SEZ4
VFMD220-6.3	DN20	6.3	350 kPa	SEZ4
VFMD225-10	DN25	10	200 kPa	SEZ4
VFMD232-16	DN32	16	130 kPa	SEZ4
VFMD240-25	DN40	25	60 kPa	SEZ4

### 3-WAY VALVES

Article	Nominal diameter	Kvs	Max. diff. pressure	Actuator
VFMD315-0.25	DN15	0.25	400 kPa	SEZ4
VFMD315-0.4	DN15	0.4	400 kPa	SEZ4
VFMD315-0.6	DN15	0.6	400 kPa	SEZ4
VFMD315-1.0	DN15	1.0	400 kPa	SEZ4
VFMD315-1.6	DN15	1.6	400 kPa	SEZ4
VFMD315-2.5	DN15	2.5	400 kPa	SEZ4
VFMD315-4.0	DN15	4.0	400 kPa	SEZ4
VFMD320-6.3	DN20	6.3	350 kPa	SEZ4
VFMD325-10	DN25	10	200 kPa	SEZ4
VFMD332-16	DN32	16	130 kPa	SEZ4
VFMD340-25	DN40	25	60 kPa	SEZ4

## EXTERNALLY THREADED 2- AND 3-WAY ZONE VALVES

Valves used for control of hot and cold water in climate, heating and ventilation systems. They can also control glycol-mixed water in for example liquid connected recovery systems. Intended to be used together with the SEZ4 actuators.

Technical data	
Pressure rating	PN16
Connection, actuator	M30 x 1.5
Connection	BSP externally threaded according to ISO 228/1
Flow characteristics	Equal percentage
Max. leakage	0 % of the kvs value
Media temperature	1...110 °C (the valve has a max. temperature of 140°C, the RVAZ4 actuators have a max. temperature of 110°C)
Media	Hot water, cold water, glycol-mixed water (max. 30 % glycol)
Rangeability	50:1
Stroke	5.5 mm
Material	
Body	Brass CW614N
Seat	Brass CW614N
Plug	Brass CW614N
Stem	Stainless steel 1.4305
Seat packing	EPDM
O-rings	EPDM



VFTR2



VFTR3

### 2-WAY VALVES

Article	Nominal diameter	Kvs	Connection	Max. diff. pressure	Actuator
VFTR215-0.25	DN15	0.25	G1/2"	350 kPa	SEZ4
VFTR215-0.4	DN15	0.4	G1/2"	350 kPa	SEZ4
VFTR215-0.6	DN15	0.6	G1/2"	350 kPa	SEZ4
VFTR215-1.0	DN15	1.0	G1/2"	350 kPa	SEZ4
VFTR215-1.6	DN15	1.6	G1/2"	350 kPa	SEZ4
VFTR220-2.0	DN20	2.0	G3/4"	250 kPa	SEZ4
VFTR220-2.5	DN20	2.5	G3/4"	250 kPa	SEZ4
VFTR220-4.0	DN20	4.0	G3/4"	150 kPa	SEZ4
VFTR220-6.0	DN20	6.0	G3/4"	150 kPa	SEZ4
VFTR225-7.0	DN25	7.0	G1"	70 kPa	SEZ4

### 3-WAY VALVES

Article	Nominal diameter	Kvs	Connection	Max. diff. pressure	Actuator
VFTR315-0.25	DN15	0.25	G1/2"	350 kPa	SEZ4
VFTR315-0.4	DN15	0.4	G1/2"	350 kPa	SEZ4
VFTR315-0.6	DN15	0.6	G1/2"	350 kPa	SEZ4
VFTR315-1.0	DN15	1.0	G1/2"	350 kPa	SEZ4
VFTR315-1.6	DN15	1.6	G1/2"	350 kPa	SEZ4
VFTR320-2.0	DN20	2.0	G3/4"	250 kPa	SEZ4
VFTR320-2.5	DN20	2.5	G3/4"	250 kPa	SEZ4
VFTR320-4.0	DN20	4.0	G3/4"	100 kPa	SEZ4
VFTR320-6.0	DN20	6.0	G3/4"	100 kPa	SEZ4
VFTR325-7.0	DN25	7.0	G1"	70 kPa	SEZ4

## VALVE ACTUATOR FOR 0...10 V OR 3-POSITION CONTROL

The SEZ4 series of valve actuators are easy to mount and have a clear position indication which shows the position of the actuator. The actuator has manual manoeuvring.

Technical data	
Force	400 N
Stroke	5.5 mm
Ambient temperature	0...50 °C
Storage temperature	-10...+80 °C
Media temperature	1...110 °C
Ambient humidity	Max. 95 % RH
Protection class	IP44
Connection	M30 x 1.5



SEZ4

## ACTUATORS FOR INDUSTRIETECHNIK'S VALVE RANGES VFTR AND VFMD

Article	Supply voltage	Power consumption	Control signal	Stroke time
SEZ4F24	24 V AC ±15 %	0.6 W	3-point	150 s
SEZ4M24	24 V AC ±15 %, 24 V DC ±15 %	6 W	0...10 V DC	30 s
SEZ4F230	230 V AC ±15 %, 50/60 Hz	6 W	3-point	150 s

## INTERNALLY THREADED 2- AND 3-WAY CONTROL VALVES

Valves designed for control of hot, cold or glycol-mixed water in heating and ventilation systems. The valves are intended for use together with Industrietechnik's SE5.../SE10... actuators.

Technical data	
Application	Heating systems, cooling systems, ventilation systems
Pressure rating	PN16
Connection	BSP internally threaded according to ISO 228/1
Flow characteristics	A - AB = equal percentage, B - AB = linear
Max. leakage	0.1 % of Kvs
Media	Hot water, cold water, glycol-mixed water (max. 50 % glycol)
Media temperature	-5...+140 °C
Rangeability	100:1
Stroke	20 mm
Material	
Body	Brass CW614N
Seat	Brass CW614N
Plug	Brass CW614N
Stem	Stainless steel 1.4305
Packing box	Brass CW614N
O-rings	EPDM



VFBF2



VFBF3

## 2-WAY VALVES

Article	Nominal diameter	Kvs	Connection	Actuator	Max. diff. pressure (SE5...)_	Max. diff. pressure (SE10...)_
VFBF215-0.63	DN15	0.63	G ½"	SE5, SE10	700 kPa	700 kPa
VFBF215-1.0	DN15	1.0	G ½"	SE5, SE10	700 kPa	700 kPa
VFBF215-1.6	DN15	1.6	G ½"	SE5, SE10	700 kPa	700 kPa
VFBF215-2.1	DN15	2.1	G ½"	SE5, SE10	700 kPa	700 kPa
VFBF215-2.7	DN15	2.7	G ½"	SE5, SE10	700 kPa	700 kPa
VFBF220-4.2	DN20	4.2	G ¾"	SE5, SE10	600 kPa	600 kPa
VFBF220-5.6	DN20	5.6	G ¾"	SE5, SE10	600 kPa	600 kPa
VFBF225-10	DN25	10	G 1"	SE5, SE10	500 kPa	500 kPa
VFBF232-16	DN32	16	G 1¼"	SE5, SE10	400 kPa	450 kPa
VFBF240-25	DN40	25	G 1½"	SE5, SE10	300 kPa	400 kPa
VFBF250-40	DN50	40	G 2"	SE5, SE10	200 kPa	300 kPa

## 3-WAY VALVES

Article	Nominal diameter	Kvs	Connection	Actuator	Max. diff. pressure (SE5...)_	Max. diff. pressure (SE10...)_
VFBF315-0.63	DN15	0.63	G ½"	SE5, SE10	700 kPa	700 kPa
VFBF315-1.0	DN15	1.0	G ½"	SE5, SE10	700 kPa	700 kPa
VFBF315-1.6	DN15	1.6	G ½"	SE5, SE10	700 kPa	700 kPa
VFBF315-2.1	DN15	2.1	G ½"	SE5, SE10	700 kPa	700 kPa
VFBF315-2.7	DN15	2.7	G ½"	SE5, SE10	700 kPa	700 kPa
VFBF320-4.2	DN20	4.2	G ¾"	SE5, SE10	600 kPa	600 kPa
VFBF320-5.6	DN20	5.6	G ¾"	SE5, SE10	600 kPa	600 kPa
VFBF325-10	DN25	10	G 1"	SE5, SE10	500 kPa	500 kPa
VFBF332-16	DN32	16	G 1¼"	SE5, SE10	400 kPa	450 kPa
VFBF340-25	DN40	25	G 1½"	SE5, SE10	300 kPa	400 kPa
VFBF350-40	DN50	40	G 2"	SE5, SE10	200 kPa	300 kPa

## BUTTERFLY VALVES

The VF series of butterfly valves are designed for use in LPW (low pressure water) heating and air conditioning systems.

Technical data				
Pressure rating	PN16			
Media temperature	-15...+90 °C			
Article	Nominal diameter	Kvs	Max. diff. pressure	Actuator
VF32	DN32	40 m <sup>3</sup> /h	1000 kPa / 10 bar	DAL... / DML24
VF40	DN40	50 m <sup>3</sup> /h	1000 kPa / 10 bar	DAL... / DML24
VF50	DN50	99 m <sup>3</sup> /h	800 kPa / 8 bar	DAL... / DML24
VF65	DN65	170 m <sup>3</sup> /h	600 kPa / 6 bar	DAL... / DML24
VF80	DN80	261 m <sup>3</sup> /h	600 kPa / 6 bar	DAG... / DMG24



VF65



KIT-VF32/80

### ACCESSORY

Article	Description
KIT-VF32/80	Assembly kit for butterfly valves VF with electric actuator



The valves are supplied with the assembly kit model KIT-VF32/80.

## ELECTRIC ACTUATORS FOR VF VALVES SERIES

Bi-directional actuators with manual override, 2 SPDT auxiliary switches, selectable rotation direction, IP44 or IP54 with cable glands.

Article	Torque	Running time, actuator	Supply voltage	Control signal	Auxiliary switch
DAL24S	24	125 s	24 V AC / DC	on/off or 3 point	2 x 3 (1.5) A / AC 230 V
DAL230S	24	125 s	230 V AC	on/off or 3 point	2 x 3 (1.5) A / AC 230 V
DML24S	24	125 s	24 V AC / DC	Y1: 0(2)...10 V DC Y2: 0(4)...20 mA U: 0(2)...10 V DC (feedback signal)	2 x 3 (1.5) A / AC 230 V
DAG24S	32	160 s	24 V AC / DC	on/off or 3 point	2 x 3 (1.5) A / AC 230 V
DAG230S	32	160 s	230 V AC	on/off or 3 point	2 x 3 (1.5) A / AC 230 V
DMG24S	32	240 s	24 V AC / DC	Y1: 0(2)...10 V DC Y2: 0(4)...20 mA U: 0(2)...10 V DC (feedback signal)	2 x 3 (1.5) A / AC 230 V



DAL-DML

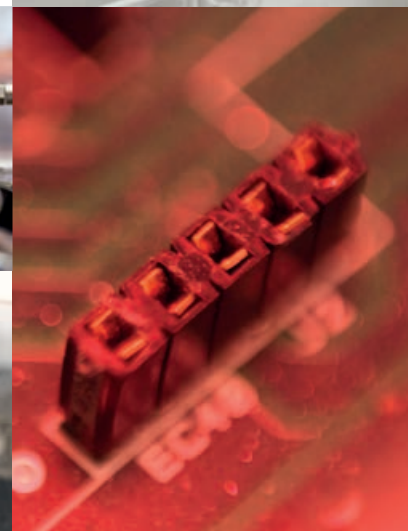
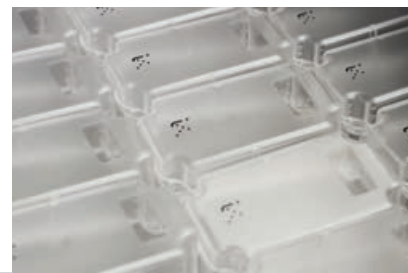


DAG-DMG



# 9 Presence and smoke detectors

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## MOTION DETECTOR

Detector providing a signal when someone enters the room. The detector has a pulse-detecting function that minimizes the risk of false alarms. Settable on/off delays and change-over relay.



SIR24-P



SIR24-PC

Technical data	
Supply voltage	24 AC/DC
Alarm relay	200 mA, 24 V AC/DC, potential-free, change-over relay
Current consumption	5 mA
Temperature range	-20...+50 °C
Ambient humidity	Max. 95 % RH
Dimensions	Wall model: 112 x 66 x 45 mm Ceiling model: Ø 110 x h 44 mm
Protection class	IP20

Article	Mounting	Detection area
SIR24-P	Wall	15 m, 110° angle
SIR24-PC	Ceiling	Height x 2.5 = coverage diameter, 25° angle

## SMOKE DETECTOR FOR DUCT MOUNTING, OPTICAL

Single-tube detector, including 600 mm Venturi tube.



SSDD-OE65



SSDD-TDS

Technical data	
Supply voltage	9...33 V DC (via CABV control unit). 24 V AC ±15 % for RAC models.
Power consumption, incl. end resistor (not RAC(M))	Normal operation: 11 mA at 24 V DC. Alarm condition: 40 mA at 24 V DC. Service alarm condition: 20 mA at 24 V DC.
Mounting	Duct
Tube length	540 mm Ø 30 mm
Dimensions	155 x 115 x 75 mm
Protection class	IP54

Article	Description
SSDD-OE65	Optical detector with service alarm
SSDD-OE50	Optical detector with service alarm
SSDD-OE65-RAC	Optical detector with AC power supply and relay output only. With service alarm.

## ACCESSORIES

Article	Description
SSDD-TDS	Mounting spacer for insulated pipe ducts
SSDD-VR600	Venturi tube, 540 mm length (standard)
SSDD-VR2000	Venturi tube, 1940 mm length

## SMOKE DETECTOR FOR CEILING MOUNTING

Smoke detector for all kinds of areas. Constructed to meet the high demands of a modern fire installation.

Technical data	
Supply voltage	9...33 V DC (via CABV control unit)
Current consumption	11 mA (40 mA if an alarm occurs)
Mounting	Ceiling
Dimensions	Ø 100 x h 50 mm
Protection class	IP43



### MODELS

Article	Description	Detection principle	Wind speed	Radioactivity
SSDC65-OE	Optical detector with service alarm	Optical. Photoelectric, reflecting type	-	-
SSDC50-OE-GA4	Optical detector with service alarm	Optical. Photoelectric, reflecting type	-	-



### ACCESSORIES

Article	Description
SSDC-BP	Base for detectors
SSDC-BPR-S50	Base for SSDC50 detectors with built-in change-over relay (24 V AC)
SSDC-BPR-S65	Base for S65 detectors with built-in change-over relay (24 V AC)



## CONTROL UNITS FOR SMOKE DETECTORS

Control unit for smoke detectors. Provides power supply and alarm handling for smoke detectors, with or without service alarm. Two relay contacts for alarm handling.

Technical data	
Current consumption	30 mA (70 mA if an alarm occurs)
Mounting	DIN-rail
Number of modules	3
Dimensions	52 x 85 x 74 mm
Protection class	IP20

Article	Supply voltage	Alarm outputs	Description
CABV24-S-300/D	24 V AC/DC	One change-over contact (smoke), one closing contact (smoke), one closing contact (service)	Control unit with service alarm
CABV-S-300/D	230 V AC	One change-over contact (smoke), one closing contact (smoke), one closing contact (service)	Control unit with service alarm



## SMOKE SPRAY

Spray for control of smoke detectors. Suitable for control of ionisation or optical smoke detectors.

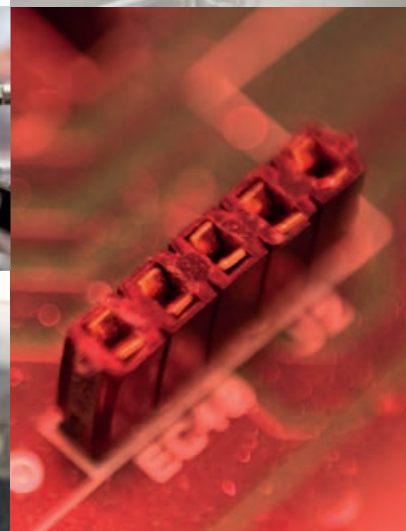
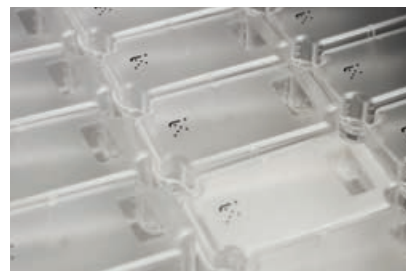
Article	Description
SPRAY-260	Smoke spray, 260 ml





# 10 Miscellaneous products

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## TRANSFORMER, 15 VA, DIN-RAIL MOUNTING

Transformer with built-in PTC fuse. Overload and short-circuit proof.

Technical data	
Supply voltage	230 V ~ (230 V ~ 50/60 Hz 15 VA)
Output voltage	12 / 24 V AC
Max. load	15 VA
Mounting	DIN-rail
Number of modules	2
Dimensions	35 x 90 x 60 mm
Protection class	IP20



TR15-2D

Article	Description
TR15-2D	Transformer

## TRANSFORMER, 40 VA, DIN-RAIL MOUNTING

Transformer with built-in PTC fuse. Overload and short-circuit proof.

Technical data	
Supply voltage	230 V ~ (230 V ~ 50/60 Hz 40 VA)
Output voltage	12 V AC and 24 V AC
Max. load	40 VA
Number of modules	3
Mounting	DIN-rail
Dimensions, external (WxHxD)	53 x 90 x 60 mm
Protection class	IP20



TR40

Article	Description
TR40	Transformer

## TRANSFORMER, 60 VA, WALL MOUNTING

Transformer with replaceable fuses on both poles of the secondary side. Overload and short-circuit proof.

Technical data	
Supply voltage	230 V ~ (230 V ~ 50/60 Hz 60 VA)
Output voltage	24 V AC
Max. load	60 VA
Dimensions, external (WxHxD)	73 x 124 x 67 mm
Mounting	Wall
Protection class	IP44



TR60

Article	Description
TR60	Transformer

## TRANSFORMER, 63 VA, DIN-RAIL MOUNTING

Transformer with built-in PTC fuse. Overload and short-circuit proof.

Technical data	
Supply voltage	230 V ~ (230 V ~ 50/60 Hz 63 VA)
Output voltage	12 / 24 V AC
Max. load	63 VA
Mounting	DIN-rail
Number of modules	6
Dimensions, external (WxHxD)	106 x 90 x 62 mm
Protection class	IP20



TR63-6D

Article	Description
TR63-6D	Transformer

## STEP CONTROLLER, 1- OR 2-STAGE

Step controllers suitable for heating/cooling or alarm applications. They convert a 0...10 V DC input signal to a relay output. The controllers are suitable for DIN-rail or cabinet mounting and have adjustable switching points. The step controller with 2 relays can be set to either binary or sequential control. Individually settable on/off levels

Technical data	
Supply voltage	24 V AC/DC, 2 VA
Input signal	0...10 V DC
Settings	0...10 V DC
Mounting	DIN-rail
Number of modules	3
Dimensions	52 x 85 x 74 mm
Protection class	IP20



SC1

Article	Description	Output	Step differential
SC1	Step controller with 1 relay (change-over)	One relay, change-over, 10 A, 250 V AC	-
SC2	Step controller with 2 relays (closing)	Two relays, closing, 10 A, 250 V AC	0...2 V DC



SC2

## STEP CONTROLLER, 4- OR 6-STAGE

Controllers intended for control of electric heating coils, four or six relays. They can be used with any controller with a 0...10 V DC or 10...2 V DC output signal. The step controllers also have an analogue output (0...10 V) for control of an electric heating controller to give proportional heating between steps.

Technical data	
Supply voltage	24 V AC, 6 VA
Output	4 alt. 6 relays (closing), binary or sequential control
Input signal	0...10 V DC
Output signal	0...10 V DC
Mounting	DIN-rail
Number of modules	6
Dimensions	100 x 85 x 74 mm
Protection class	IP20

Article	Description	Run-on time
SC4	Step controller with 4 relays	-
SC6	Step controller with 6 relays	3 min



SC4



SC6



## FROST PROTECTION UNIT

The electronic frost protection unit is mainly intended for use in air handling systems. If the temperature falls below the setpoint, the relays will fall and an alarm LED lights up. The unit should be connected to an NTC sensor placed on the heating coil or return water pipe. The frost protection unit has two alarm relays and manual or automatic reset. The sensor must have 0...30°C temperature range.

When there is frost risk, the device has a 0...10 V DC control output that can be used to override the valve.

Technical data	
Supply voltage	24 V AC
Power consumption	2 VA
Setpoint	0...15 °C
P-band, control signal override	5 K (fixed)
Mounting	DIN-rail
Number of modules	3
Dimensions	52 x 85 x 74 mm
Protection class	IP20
Inputs	
Sensor inputs	One, 0...30°C (NTC sensor)
Control signal	0...10 V DC (from the controller)
Outputs	
Relays	24 V AC, 1 A, change-over and 230 V AC, 1 A, breaking contact
Output signal	0...10 V DC
Article	Description
FV	Frost protection unit (delivered without a sensor)



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# General sales conditions of AB Industrietechnik SRL

THIS ISSUE REPLACES AND CANCELS ALL PREVIOUS ONES AND IS SUBJECT TO MODIFICATION WITHOUT PRIOR NOTICE. THE BUYER FULLY ACCEPTS THESE GENERAL SALES CONDITIONS.

## PRICES

The prices mentioned in our current price list are in Euro (€), do not include VAT and, even if confirmed, may be subject to variations due to increases in raw materials and labour costs. If the price is tied to parity between the Euro and a foreign currency, the rate of exchange value is specified by the Banca d'Italia, as indicated in the „Il Sole 24 Ore“ daily newspaper. If the rate of exchange varies by more than 5%, we reserve the right to modify at any time our prices and the discounts applied to current orders. In such a case, the buyer is entitled to withdraw immediately from the order. The said prices do not include transport and insurance costs, import license expenses, customs charges, etc., which are considered chargeable to the Buyer.

Our quotations are not binding for the order; the Buyer accepts our delivery terms. After issuing our order acknowledgement, the order is confirmed.

For invoices under € 50,00 net a sum of € 10,00 will be applied for management cost.

Neutral products:

are supplied without a surcharge but with a minimum of 50 pieces/part number.

Branding products:

- cliché cost for colour € 95,00 (max 2 colours)

- tampography on box, min. 100 pieces/order, surcharge of € 1,50 net/piece. For higher quantities, the surcharge may be discussed. The products, wherever possible, can be supplied with a test certificate (part number 103999) at the net price of € 31,00 net + VAT to be requested during the ordering process. Certificates of origin issued by the Chamber of Commerce cost € 50,00. Certificates legalized by foreign embassy min. € 250,00.

## PACKING

Packing is included in the sales price. A packaging different from the standard will be invoiced at cost (standard plastic pallets at € 11,00 net each).

## TECHNICAL DATA AND DOCUMENTS RELATED TO THE SUPPLY

Weights, dimensions, prices, performance, colours, pictures and other information, including samples characteristics, indicated in AB Industrietechnik Srl's catalogues, price lists, circular letters or other sales and technical literature are merely indicative and not binding, unless AB Industrietechnik Srl expressly refers to them in its quotation or order confirmation.

AB Industrietechnik Srl reserves the right to make changes at any time to its products' technical specifications in order to improve their performance, informing the Buyer in writing in case the above changes are substantial (i.e. changes affecting: products' installation procedures, products' interchangeability features, etc.).

We reserve our rights on all documents referring to the products and/or made available with quotations, acknowledgements or on delivery. Such documents may neither be copied nor made available to third parties without our written agreement. They must be returned to us on request.

## SHIPMENT

Shipment is ex our works in Bressanone, unless otherwise agreed. As soon as the goods are handed over to the forwarder, all our obligations are considered fulfilled. Therefore, all expenses and risks will be the Buyer's responsibility without any exceptions, even if the shipping charges are prepaid by us. It is the Buyer's responsibility to insure the goods against damage and/or loss. We therefore cannot be held liable for damage and/or loss.

The shipping rates for Italy are at cost price, and we reserve the right to select the most suitable means of transport. In case of payment by cash on delivery, the fees are always incurred by us and debited to the Buyer.

## DELIVERY TERMS

Delivery terms are indicative and are not binding. We cannot be held liable for any production or shipment delay, if such a delay is caused by one of the following reasons: a commercial blockade, difficulties in obtaining raw materials and/or other circumstances beyond our control. In that case we do not accept any penalties and the Buyer renounces any claims for indemnity and/or reimbursement of damages.

We reserve the right to deliver the goods before the agreed date.

## CLAIMS

Claims have to be brought to our attention within 8 days after the receipt of the goods, otherwise we will not accept the said claims. Claims do not authorise delays in payment or further price reductions. In case of packing received damaged, the Buyer must inform the forwarder immediately, and send a copy to us for information.

The total liability of AB Industrietechnik Srl, on all claims of any kind, whether in contract, warranty, indemnity, tort (including negligence), strict liability, or otherwise, arising out of the performance or breach of the contract or use of any product, shall not exceed the value of the product such liability is related to.

In no event shall AB Industrietechnik Srl be liable for loss of profit or revenues ("lucro cessante"), loss of use of the product or any associated equipment, claims of Buyer's or third parties for such damages, or for any special, consequential, incidental, indirect or exemplary damages.

## PAYMENT TERMS

Invoices are payable in the currency specified in the invoice. Payments must be remitted within the agreed deadline. We reserve the ownership of the goods until the invoice and any accessory expenses have been fully paid. Failure by the Buyer to pay by the due date automatically gives rise to interest, giving us the right to deem the contract cancelled because of such failure, unless we prefer to ask for settlement of the amount due, by recourse to law if necessary, with bank interest and damages added. If the Buyer stops a payment, the outstanding amount becomes immediately due and we will file a petition for bankruptcy. Interest on arrears: in the case of delayed payments, interest on arrears will be calculated at the rate of 8 (eight) points above the official rate of discount of the Banca d'Italia in force at the time such interest was applied.

## WARRANTY

All the products supplied by us are guaranteed against construction faults or defects of material for 24 months from the date of delivery, the term by which we shall repair the faulty parts in order to restore correct operation of the appliances. We do not accept any responsibility for direct or indirect damage caused by the use of said appliances. Any return of material must be requested from us in writing, must reach us free our works and will be returned ex our works.

The guarantee is restricted exclusively to the repair at our plant of appliances acknowledged to be defective, whereas all other costs of transport or labour for technical operations on the appliances are charged to the Buyer. The guarantee is voided if the appliances are found to have been tampered with or dismantled. If interventions on appliances not considered to be under guarantee are requested, we reserve the right to debit the Buyer for management of the return € 40,00, spare parts, manpower etc. not included. Errors caused by improper or incorrect use, installation and/or commissioning are not subject to any kind of warranty.

In the event of a dispute, the Buyer accepts that the Bolzano Court of Law is competent and accepts the laws in force in Italy.

## BUYER COMMITMENTS

The Buyer is the sole party responsible for the choice of products purchased and for all activities subsequent to sale, namely the installation, handling, assembly, set-up and maintenance of the product at the Buyer's premises. These activities must be carried out in full compliance with the instructions given in the technical documentation. The Buyer must also be in possession of structures and skills (including technological skills) necessary for the correct use of the product.

More specifically, in order to ensure correct installation and subsequent correct function of the product, the Buyer must comply in full and diligently with all obligations listed in the technical documentation.

The Buyer must also comply with and apply all regulations and local rules applicable in the country in which the product is to be used. These include all those concerning the protection of public health and safety and good commercial practice. Any costs relating to the compliance of the product with the rules set out by the legislation of the country in which it is to be used, will be paid for exclusively by the Buyer.

## SOFTWARE

Should the product include a software application, the use of this software may, as applicable, be governed by specific, separate terms and conditions of a use license.

## AUTHOR'S RIGHTS

Without prior written authorization of AB Industrietechnik Srl, the customer is not allowed to copy or reproduce the contents of AB Industrietechnik Srl's catalogue, in particular technical drawings and pictures, for advertising purposes or the like.

These general sale and delivery conditions are subject to the author's right. Legal action will be taken in case of failure to comply with this right.

# CONVERSION CHARTS

	UNIT	FACTOR	UNIT	FACTOR	UNIT
<b>Length</b>	Inches	x 25.4	= mm	x 0.03937	= inches
	Feet	x 0.3048	= m	x 3.208	= feet
<b>Area</b>	Square inches	x 645.16	= mm <sup>2</sup>	0.00155	= in <sup>2</sup>
	Square feet	x 0.0929	= m <sup>2</sup>	x 10.764	= ft <sup>2</sup>
<b>Volume</b>	Cubic inches	x 16387	= mm <sup>3</sup>	0.000061	= in <sup>3</sup>
	Cubic feet	x 0.02832	= m <sup>3</sup>	x 35.31	= ft <sup>3</sup>
	Cubic feet	x 28.32	= litre	x 0.0353	= ft <sup>3</sup>
	Pints	x 0.56825	= litre	x 1.7598	= Pints
	Imp.gal	x 4.546	= litre	x 0.22	= Imp.gal
	Imp.gal	x 0.004546	= m <sup>3</sup>	x 220	= Imp.gal
<b>Mass</b>	lb (pounds)	x 0.4536	= kg	x 2.2046	= lb
<b>Force</b>	lb (pounds)	x 4.448	= N	x 0.22482	= lb
<b>Speed</b>	ft/min	x 0.00508	= m/s	x 196.85	= ft/m
<b>Flow</b>	imp.gal/min	x 0.07577	= l/s	x 13.2	= imp.gal/min
	Imp.gal/h	x 0.000126	= m <sup>3</sup> /s	x 7936.51	= imp.gal/h
	ft <sup>3</sup> /min	x 0.000472	= m <sup>3</sup> /s	x 2118.64	= ft <sup>3</sup> /min
<b>Heating power</b>	kcal/h	x 1.163	= W	x 0.8598	= kcal/h
<b>Pressure</b>	lb/in <sup>2</sup>	x 0.0689	= bar	x 14.5	= lb/in <sup>2</sup>
	lb/in <sup>2</sup>	x 0.0703	= kg/cm <sup>2</sup>	x 14.22	= ib/in <sup>2</sup>
	kg/cm <sup>2</sup>	x 0.9807	= bar	x 1.020	= kg/cm <sup>2</sup>

	kPa	Pa	bar	mmWC	mWC	MPa	kp/CM <sup>2</sup>	psi
1 kPa		1000	0.01	100	0.1	0.001	0.01	0.15
1 Pa	0.001		0.00001	0.1	0.0001	0.000001	0.00001	0.00015
1 bar	100	100000		10000	10	0.1	1	15
1 mmWC	0.01	10	0.0001		0.001	0.00001	0.0001	0.0015
1 mWC	10	10000	0.1	1000		0.01	0.1	1.5
1 MPa	1000	1000000	10	100000	100		10	150
1 kp/cm <sup>2</sup>	100	100000	1	10000	10	0.1		15
1 psi	6.666667	6666.667	0.066667	666.6667	0.666667	0.006667	0.066667	

bar	x 14.50377	= psi
bar	x 100	= kPa
kg/cm <sup>2</sup>	x 14.22334	= psi
inches Hg	x 0.4912	= psi
N/m <sup>2</sup>	x 1.0	= Pa
mbar	x 100	= Pa
°C	x (1.8x°C)+32	= °F
kgcm	x 0.098	= Nm
litre	x 1000	= m <sup>3</sup>
gal (IMP)	x 4.5460	= litre
gal (US)	x 3.7854	= litre
gal (IMP)	x 1.20095	= gal (US)



"We believe that listening and being creative are the keys to innovation and smart solutions"

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