Climate
Control

IMI TA

TA-Slider 1600 2T Plus

Actuators

Digitally configurable proportional push-pull actuator with temperature measurement capability – 1600 N

Breakthrough
engineering for
a better world

TA-Slider 1600 2T Plus

Digitally configurable actuators with temperature measurement capability for all control systems with or without Bus communication. To be mounted on a PIBCV for tackling ΔT syndrome or for handling change-over based on T supply or ΔT sign detection. Wide range of setup possibilities gives high flexibility to adapt parameters on-site. Fully programmable binary input, relay and adjustable max. stroke of the valve bring new opportunities for advanced hydronic control and balancing.

Key features

Optional ΔT and temperature return limitation
Optimize the efficiency of your production units by ensuring optimal temperature regimes.

Change-over functionality
Switch between heating/cooling flows according to input signal or automatically using T supply or ΔT sign detection.

Convenient, reliable setup
Fully customisable by smartphone via Bluetooth using a TA-Dongle.

Easy diagnostics
Tracks the last 10 errors to allow system faults to be found quickly.

Perfection in connectivity
Communication with the most used Bus protocols.

Technical description

Functions:
ΔT and temperature return limitation
Reading (supply/return temperature, ΔT, position)
Automatic change-over function
Proportional control
3-point control
On-off control
Manual override
Stroke detection
Mode, status and position indication
Output signal VDC
Stroke limitation setting
Minimum stroke setting
Valve blockage protection
Valve clogging detection
Error safe position
Diagnostic/Logging
Delayed start-up

BUS communication board
+ ModBus or BACnet.

Relay board
+ 1 binary input, max. 100 Ω, cable max. 10 m or shielded.
+ 2 relays, max. 5A, 30 VDC/250 VAC on resistive load.
+ Output signal in mA.

Connect one or two Pt1000 sensors depending on the application (see section “Sensors”).

Supply voltage:
24 VAC/VDC ±15%.
Frequency 50/60 Hz ±3 Hz.

Power consumption:
Operation: < 11.5 VA (VAC); < 5.7 W (VDC)
Standby: < 1.1 VA (VAC); < 0.5 W (VDC)

Input signal:
0(2)-10 VDC, R_i 47 kΩ.
Adjustable sensitivity 0.1-0.5 VDC.
0.33 Hz low pass filter.
0(4)-20 mA R_i 500 Ω.
Proportional:
0-10, 10-0, 2-10 or 10-2 VDC
0-20, 20-0, 4-20 or 20-4 mA
Proportional split-range:
0-5, 5-0, 5-10 or 10-5 VDC
0-4.5, 4.5-0, 5.5-10 or 10-5.5 VDC
2-6, 6-2, 6-10 or 10-6 VDC
0-10, 10-0, 10-20 or 20-10 mA
4-12, 12-4, 12-20 or 20-12 mA
Proportional dual-range (for change-over):
0-3.3 / 6.7-10 VDC,
10-6.7 / 3.3-0 VDC,
2-4.7 / 7.3-10 VDC or
10-7.3 / 4.7-2 VDC.
Default setting: Proportional 0-10 VDC.

Output signal:
0(2)-10 VDC, max. 8 mA, min. 1.25 kΩ.
Plus version: 0(4)-20 mA, max. 700 Ω.
Ranges: See “Input signal”.
Default setting: Proportional 0-10 VDC.

Characteristics:
Linear, EQM 0.25 and inverted EQM 0.25.
Default setting: Linear.

Control speed:
3, 4, 6, 8, 12 or 16 s/mm
Default setting: 3 s/mm

Adjusting force:
1600 N

Temperature:
Media temperature: 0°C – +120°C
Operating environment: 0°C – +50°C (5-95%RH, non-condensing)
Storage environment: -20°C – +70°C (5-95%RH, non-condensing)

Measurement accuracy:
Temperature pocket: Class AA
In valve measuring point: Class B
Surface mounted: Class B

Absolute temperature:
Pt1000 Class AA: ±0.1°C at 0°C
Pt1000 Class B: ±0.3°C at 0°C

Time constant τ (63%):
In valve measuring point: 5s
Temperature pocket: 9s
Surface mounted: 20s

Ingress protection:
IP54 all directions
(according to EN 60529)

Protection class:
(according to EN 61140).
Class I.

Stroke:
Max. 33 mm
Automatic detection of the valve lift (stroke detection).

Noise level:
Max. 40 dBA

Weight:
1,6 kg

Connection to valve:
By two M8 screws to the valve and by quick connection to the stem.

Material:
Cover: PBT
Bracket: Alu EN44200

Temperature sensor cable:
Halogen free, fire class IEC 60332-3-24 (cat. C).
Lengths see section “Sensors”.

Colour:
Orange RAL 2011, grey RAL 7043.

Marking:
IMI TA, product name, article No. and technical specification.
LED indication description.

Certification CE:
LV-D. 2014/35/EU: EN 60730-1, -2-14.
EMC-D. 2014/30/EU: EN 60730-1, -2-14.
RoHS-D. 2011/65/EU: EN 63000.

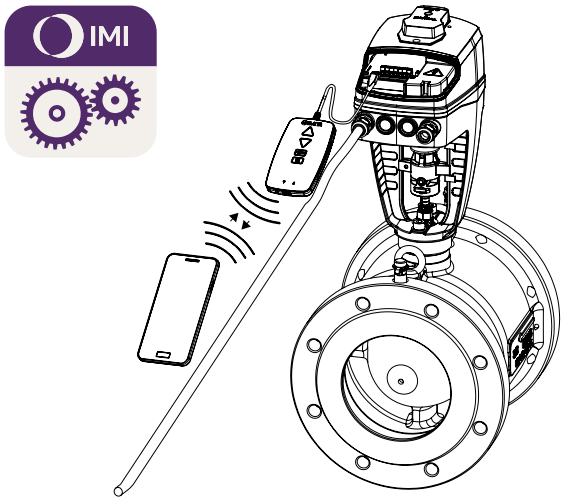
Product standard:
EN 60730
(for Residential and industrial areas)

Cable:
Wire cross-section*: 0.5-2.0 mm^2
Protection class I: H05VV-F or similar
Protection class III: LiYY or similar

*) **Note:** Wire cross-sections must be chosen according to actuator power consumption and line length, such as the voltage supply to the actuator does not go below 20.4 VAC/VDC (24 VAC/VDC minus 15%).
In case of VDC input signal on a 24 VAC/VDC powered actuator, the voltage drop on neutral line must be smaller than the defined hysteresis level for the VDC input signal.

Function

Setting
The actuator can be set by the HyTune app (iOS version 16 or later, Android version 9 or later) + the TA-Dongle device, with or without the actuator power supplied.
The setting configuration can be stored in the TA-Dongle for setting of one or several actuators. Connect the TA-Dongle to the actuator and press the configuration button.
HyTune can be downloaded from the App Store or Google Play.



Setting Bus communication parameters
Configuration of Bus parameters such as address, baud rate, parity and more is to be carried out by the HyTune app + the TA-Dongle device, with or without the actuator power supplied. More detailed information, please see Bus protocol implementation documents.

Manual override
By 5 mm Allen key or by the TA-Dongle device.
Note: Power supply needed when TA-Dongle is used.

Position indicator
Visible mechanical stroke indication on the bracket.

Calibration/Stroke detection
According to selected settings in the table.

Type of calibration	At power on	After manual override
Both end positions (full)	√ *	√
Fully extended position (fast)	√	√ *
None	√	

*) Default
Note: A calibration refresh can be automatically repeated monthly or weekly.
Default setting: Off.

Stroke limitation setting
A maximum stroke smaller than or equal to the detected valve lift can be set to the actuator.
For some IMI TA/IMI Heimeier valves it can also be set to a Kv_{max}/q_{max}.
Default setting: No stroke limitation (100%).

Minimum stroke setting
The actuator can be set with a minimum stroke below which it will not go (except for calibration).
For some IMI TA/IMI Heimeier valves, it can also be set to a q_{min}.
Default setting: No minimum stroke (0%).

Valve blockage protection
The actuator will perform a quarter of a full stroke and then back to desired value if no actuation takes place for one week or one month.
Default setting: Off.

Valve clogging detection
If actuation stops before the desired value is reached, the actuator moves back ready to make a new attempt. The actuator will move to the configured error safe position after three attempts.
Default setting: On.

Error safe position
Fully extended or retracted position when following errors occur; low power, line break, valve clogging or stroke detection failure.
Default setting: Fully extended position.

Diagnostics/logging
The last 10 errors (low power, line break, valve clogging, stroke detection failure) with time stamps can be read using the HyTune app + TA-Dongle device. Logged errors will be cleared if the power is disconnected.

Delayed start-up
The actuator can be specified a delay (0 to 1275 sec.) before starting up after a power supply cut. This is useful when used with a control system that has itself a long start-up time.
Default setting: 0 seconds.

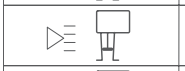
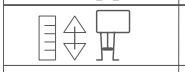
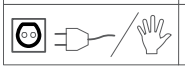
ΔT and temperature return limitation
Ensure your installation is properly balanced and optimize the efficiency of your production units by ensuring optimal temperature regimes.

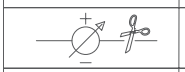
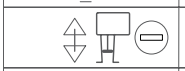
Connection interfaces for Bus communication
- RS485; BACnet MS/TP, Modbus/RTU
- Ethernet; BACnet/IP, Modbus/TCP

Binary input
If the binary input circuit is open, the actuator will go to a set stroke, switch to a second stroke limitation setting or drive to its full stroke regardless of any limitations for flushing purpose. See also Change-over system detection.
Default setting: Off

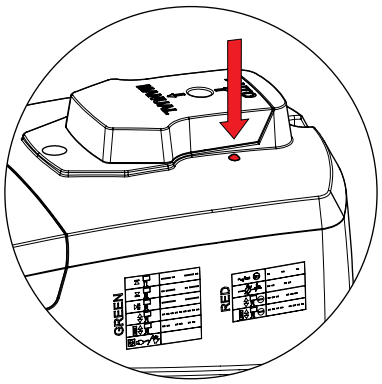
Change-over system detection
Switching between two different stroke limitation settings by toggling the binary input or using the dual-range input signal. For the Bus versions, this switching may also be made via the Bus.

LED indication

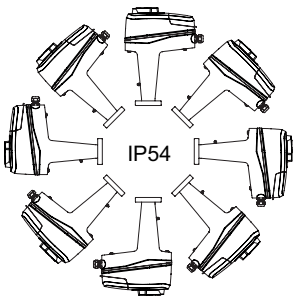
	Status	Green
	Fully retracted (actuator stem)	Long pulse - Short pulse
	Fully extended (actuator stem)	Short pulse - Long pulse
	Intermediate position	Long pulses
	Moving	Short pulses
	Calibrating	2 short pulses
	Manual mode or no power supply	Off

	Error code	Red
	Power supply too low	1 pulse
	Line broken (2-10 V or 4-20 mA)	2 pulses
	Valve clogging or foreign object	3 pulses
	Stroke detection failure	4 pulses

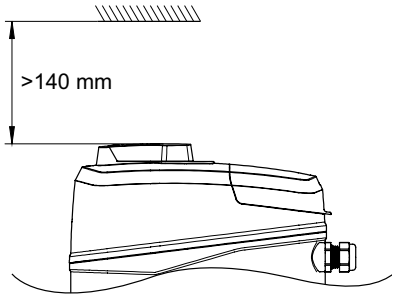
If an error is detected, red pulses are displayed as the green status lights flash alternately.
More detailed information, please see the HyTune app + TA-Dongle.



Installation



Note!



Connection diagram – Terminal/Description

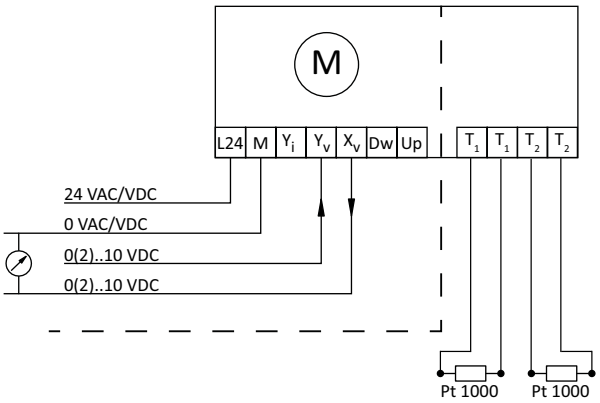
Terminal	Description
L24	Power supply 24 VAC/VDC
M*	Neutral for power supply 24 VAC/VDC and signals
Y_i	Input signal for proportional control 0(4)-20 mA, 500 Ω
Y_V	Input signal for proportional control 0(2)-10 VDC, 47 kΩ
X_i	Output signal 0(4)-20 mA, max. resistance 700 Ω
X_V	Output signal 0(2)-10 VDC, max. 8 mA or min. load resistance 1.25 kΩ
Dw	3-point control signal for extending actuator spindle
Up	3-point control signal for retracting actuator spindle
B	Connection for potential free contact (e.g. open window detection), max. 100 Ω, max. 10 m cable or shielded
COM1, COM2	Common relay contacts, max. 250 VAC, max. 5A @ 250 VAC on resistive load, max. 5A @ 30 VDC on resistive load
NC1, NC2	Normally closed contacts for relays 1 and 2
NO1, NO2	Normally open contacts for relays 1 and 2
T1	Connection to first Pt1000 temperature sensor, max. 10 m total cable length between actuator and sensor head
T2	Connection to second Pt1000 temperature sensor, max. 10 m total cable length between actuator and sensor head.

*) All M terminals are internally connected.

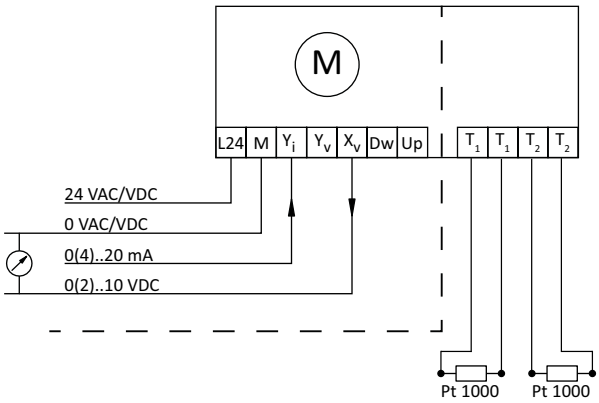
T1/T2: Required configuration via HyTune App. Temperature sensors must be enabled within ancillary inputs/outputs section of the control settings menu.

Connection diagram – 24 V

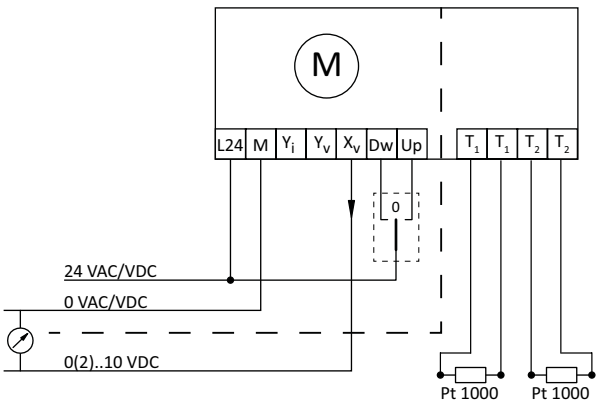
0(2)-10 VDC



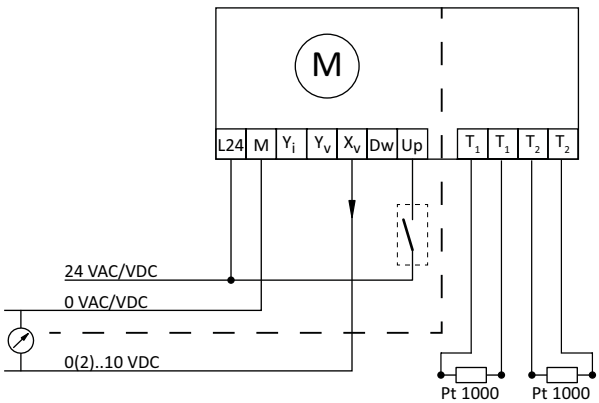
0(4)-20 mA



3-point



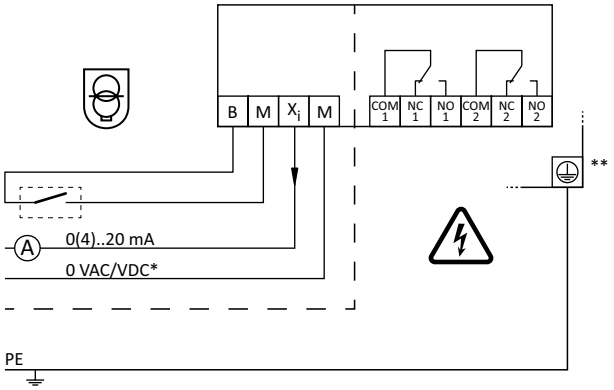
On-off



24 VAC/VDC operating only with safety transformer according to EN 61558-2-6.

Connection diagram – Relay

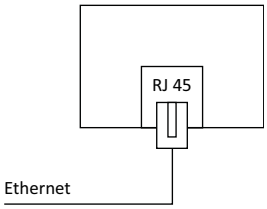
Relay board



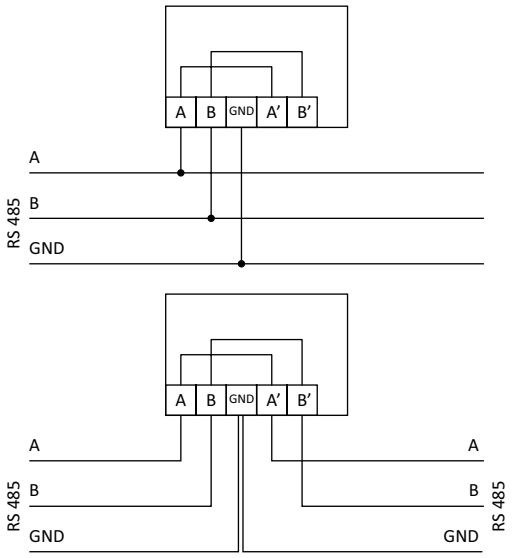
*) Low voltage neutral
**) Ground connection required.

Connection diagram – Bus communication

Ethernet communication board
BACnet/IP, Modbus/TCP



RS 485 board
BACnet MS/TP, Modbus/RTU



Note: A, B, A', B' and GND terminals are isolated from all other terminals.

Sensors

For applications that require only one temperature measurement, order one temperature sensor.
For applications where two temperature measurements are necessary, order two temperature sensors.
IMI offers a range of temperature sensors that are compatible with the actuator. Note that the sensors do not have to be of the same type.
For article numbers see section “Sensors”.

Insertion in temperature pocket
Sensor type: Pt1000, Ø 5 mm, 3 m cable.

Pocket length	Cable length	For pipe DN			
[mm]	[mm]	10-25	32-50	65-80	100-250
25	3000	X			
40	3000		X		
70	3000			X	
100	3000				X

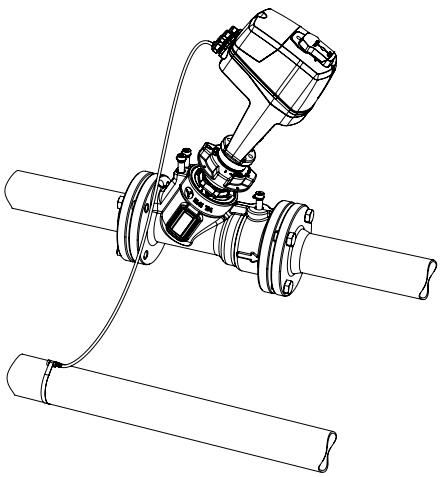
Insertion in valve measuring point
Sensor type: Pt1000, Ø 3 mm, 3 or 5 m cable.

Sensor length	Cable length	TA-Modulator	TBV-CM	TA-COMPACT -P/-DP	STAD	STAF/ STAF-SG	STAF/ STAF-SG	STAF-SG	STAF-SG
[mm]	[mm]	DN 10-50	DN 15-25	DN 10-32	DN 10-50	DN 65-125	DN 150	DN 200-250	DN 300-400
60	3000	X	X	X	X				
130	5000					X		X	
170	5000						X		X

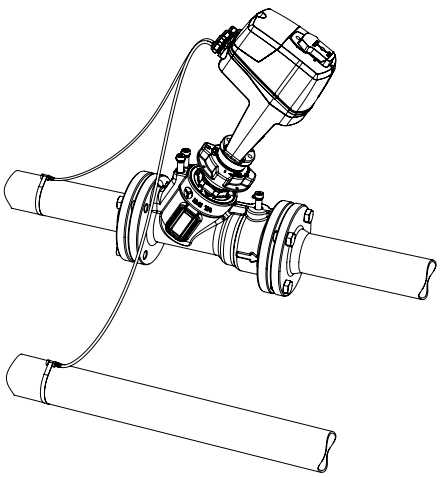
Surface mounted temperature sensor
Sensor type: Pt1000, 3 m cable.

Examples

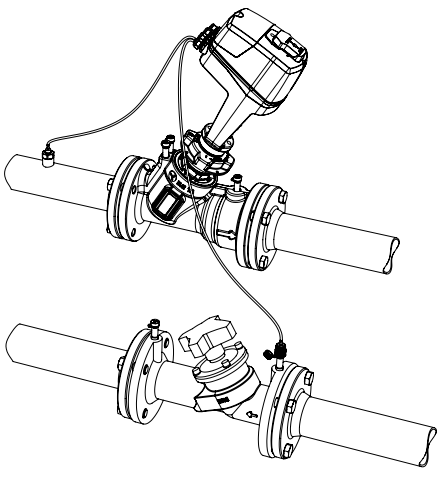
TA-Modulator with 1 sensor on return pipe
In this setup, 1 sensor should be ordered.
The sensor is mounted on the surface of the return pipe, for instance to monitor or control based on return water temperature.



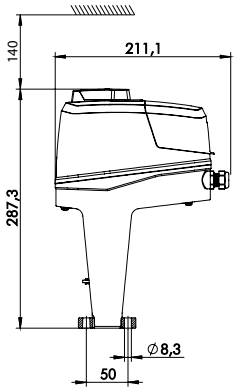
TA-Modulator with 2 sensors
In this setup, 2 sensors should be ordered.
One sensor is mounted on the surface of the supply pipe, and another sensor is mounted on the surface of the return pipe.

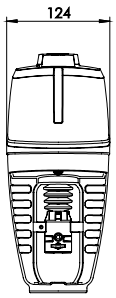


TA-Modulator with 2 sensors and STAF
In this setup, 2 sensors should be ordered.
One sensor is inserted into a temperature pocket, and another sensor is used for insertion in the measuring point from STAF.



Articles





TA-Slider 1600 2T Plus
Without Pt1000. Sensors ordered separately.
Input signal: 0(2)-10 VDC, 0(4)-20 mA, 3-point, on-off

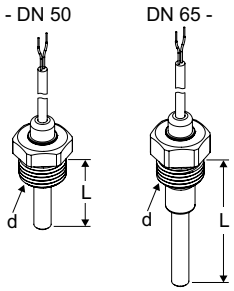
With binary input, relays, mA output signal

Supply voltage	Bus	EAN	Article No
24 VAC/VDC	-	5902276821073	322228-10419

With BUS communication, binary input, relays, mA output signal

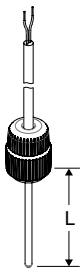
Supply voltage	Bus		EAN	Article No
24 VAC/VDC	Modbus/RTU	RS 485	5902276821080	322228-12419
	BACnet MS/TP	RS 485	5902276821097	322228-13419
	Modbus/TCP	Ethernet	5902276821103	322228-14419
	BACnet/IP	Ethernet	5902276821110	322228-16419

Sensors



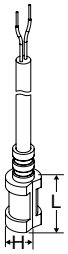
Temperature pocket with sensor
Pt1000
For mounting directly on pipe.
Free space >70 mm is required above the temperature sensor pocket.

For pipe DN	d	L	Cable length	EAN	Article No
10-25	G1/2	25	3000	5902276820748	322428-00020
32-50	G1/2	40	3000	5902276820755	322428-00521
65-80	G1/2	70	3000	5902276821745	322428-00621
100-250	G1/2	100	3000	5902276821738	322428-00721



Temperature sensor for valve measuring point
Pt1000
Applicable to families: TA-Modulator, TBV-CM, TA-COMPACT-P/-DP, STAD, STAF/STAF-SG

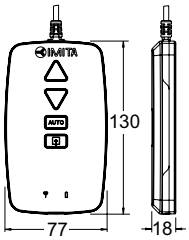
For valve DN	L	Cable length	EAN	Article No
10-50	60	3000	5902276820786	322428-00122
65-250	130	5000	5902276820793	322428-00134
300-400 + STAF 150	170	5000	5902276820809	322428-00135



Surface temperature sensor
Pt1000
For mounting directly on pipe surface.

H	L	Cable length	EAN	Article No
10	16	3000	5902276820816	322428-00429

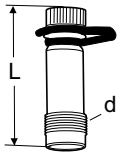
Additional equipment



TA-Dongle
For Bluetooth communication with the HyTune app, transfer configuration settings and manual override.

EAN	Article No
5901688828632	322228-00001

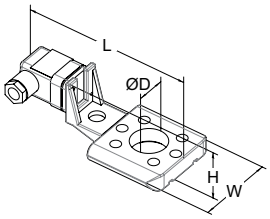
Accessories



Measuring point
AMETAL®/EPDM
For mounting directly on pipe and insertion of Temperature sensor for valve measuring point.

d	L	EAN	Article No
R1/4	39	7318792813108	52 179-009
R1/4	103	7318792814600	52 179-609
R3/8	45	7318792813009	52 179-008
R3/8	101	7318792814501	52 179-608

Stem heater
Including spindle top (extension) and extended screws.
Temperature range till -10 °C.
Voltage 24 VAC ±10% 50/60 Hz ±5%.
Power P_N approx. 30 W.
Current 1,4 A.
Surface temperature max. 50 °C.



For valve	DN	L	H	W	D	EAN	Article No
		146	49	70	30		
KTM 512	65-125					3831112533455	322042-81401
TA-Modulator	65-200					3531112534834	322042-80010