IMI

**Climate
Control**

IMI TA

TA-Slider 1600

Actuators
Digitally configurable proportional push-pull actuator
– 360 lbf (1600 N)

**Breakthrough
engineering for
a better world**

TA-Slider 1600

Digitally configurable actuators for all control systems with or without BUS communication. Wide range of setup possibilities gives high flexibility to adapt parameters on-site. Fully programmable binary input, relay and adjustable maximum stroke of the valve bring new opportunities for advanced hydronic control and balancing.

Key features

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

Fully configurable
More than 200 setup options allow input and output signals, binary input, relay, characteristics and many other parameters to be configured.

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:
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

Plus version:
With optional BUS communication board
+ ModBus or BACnet

With optional relay board
+ 1 binary input, max. 100 Ω, cable max. 32.8 ft or shielded.
+ 2 relays, max. 5A, 30 VDC/250 VAC on resistive load
+ Output signal in mA

Supply voltage:
24 VAC/VDC ±15%.
100-240 VAC ±10%.
Frequency 50/60 Hz ±3 Hz.

Power consumption:
24 VAC/VDC:
Operation: < 10.8 VA (VAC); < 7.7 W (VDC)
Standby: < 1 VA (VAC); < 0.5 W (VDC)
100-240 VAC:
Operation: < 14.2 VA (VAC)
Standby: < 1.8 VA (VAC)

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:
76.2, 101.6, 152.4, 203.2, 304.8 or 406.4 s/in
Default setting: 76.2 s/in.

Adjusting force:
360 lbf

Temperature:
Media temperature: 32°F – +248°F
Operating environment: 32°F – +122°F (5-95%RH, non-condensing)
Storage environment: -4°F – +158°F (5-95%RH, non-condensing)

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

IMI

Protection class:
(according to EN 61140).
100-240 VAC: Class I.
24 VAC/VDC: Plus version with optional relay board, Class I.
All other versions, Class III safety extra low voltage.

Stroke:
Max. 1.30 in
Automatic detection of the valve lift (stroke detection).

Noise level:
Max. 40 dBA

Weight:
3.5 lb

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

Material:
Cover: PBT
Bracket: Alu EN44200

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 50581.

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

Cable:
Wire cross-section*: 20 AWG-14 AWG (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 8 or later on iPhone 4S or later, Android version 4.3 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. Press the configuration button on the TA-Dongle, after connecting to the actuator. HyTune can be downloaded from the Apple App Store or Google Play.
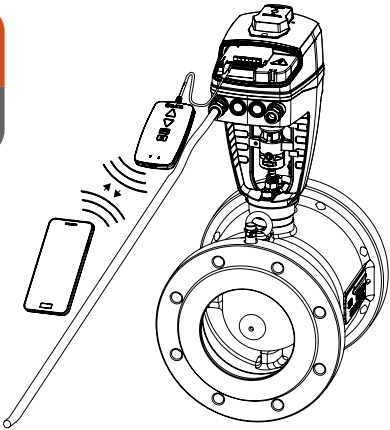
Setting Bus communication parameters

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 Cv_{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

If no actuation is performed for one week or one month, the actuator will perform one full stroke cycle.
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 are readable by the HyTune app + TA-Dongle device. Time-stamps of past 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.

Plus version:

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.
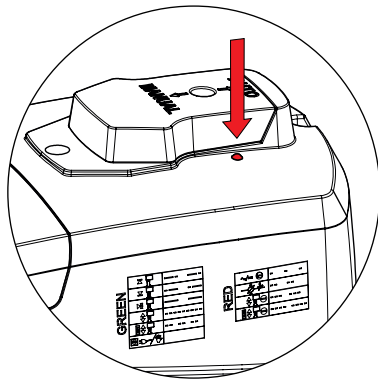
Installation

Note!

IP54

>6"
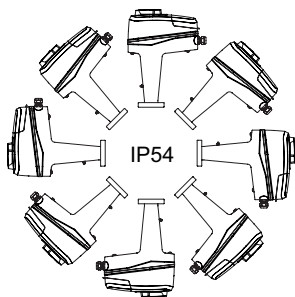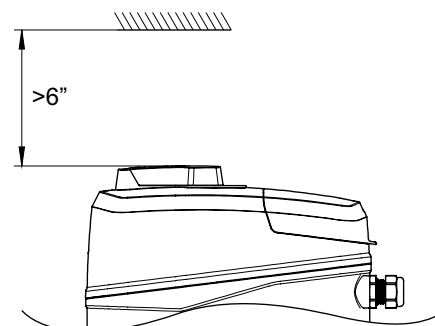
Connection diagram – Terminal/Description

| Terminal	Description
L24	Power supply 24 VAC/VDC
M*	Neutral for power supply 24 VAC/VDC and signals
L	Power supply 100-240 VAC
N	Neutral for power supply 100-240 VAC
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 (24 VAC/VDC or 100-240 VAC)
Up	3-point control signal for retracting actuator spindle (24 VAC/VDC or 100-240 VAC)
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

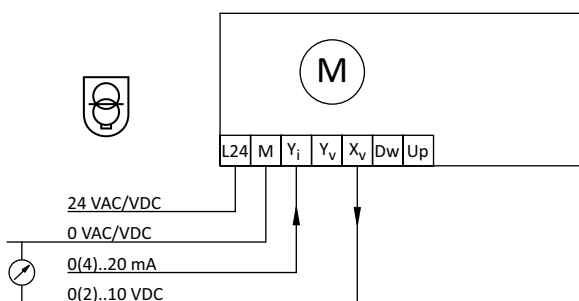*) All M terminals are internally connected.

Connection diagram – 24 V
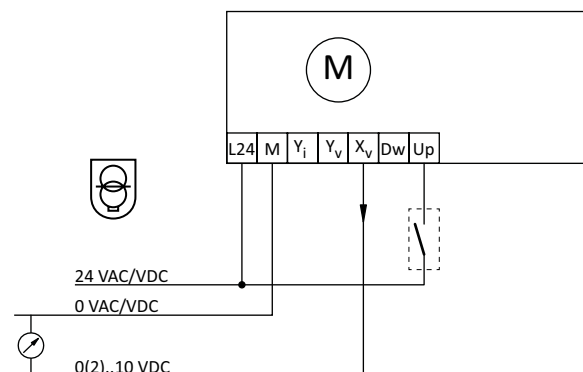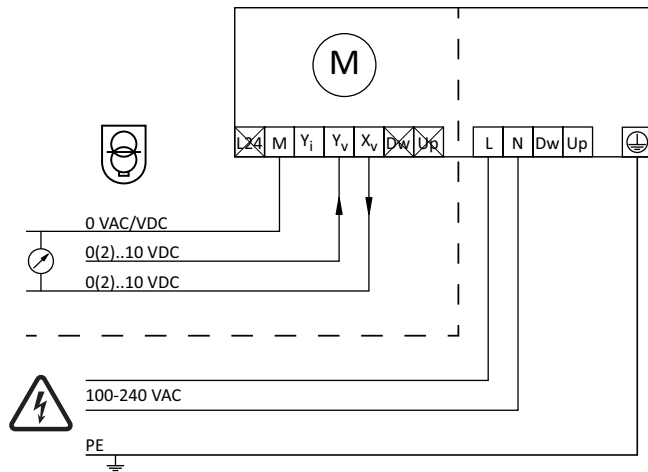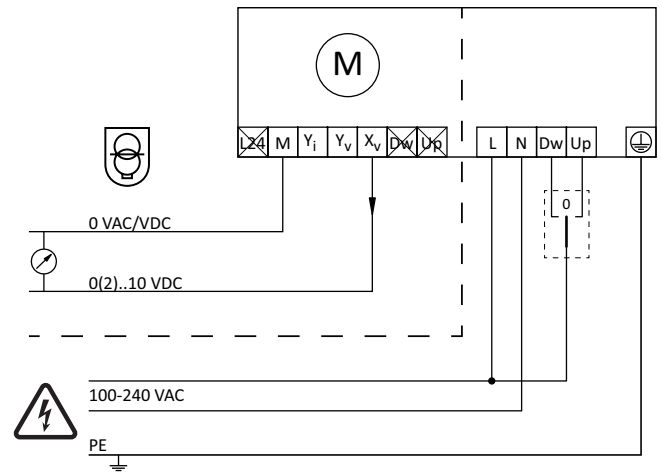
0(2)-10 VDC
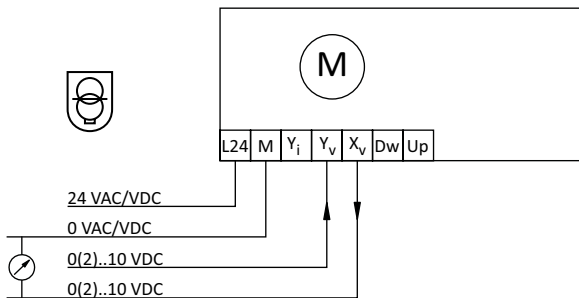
3-point
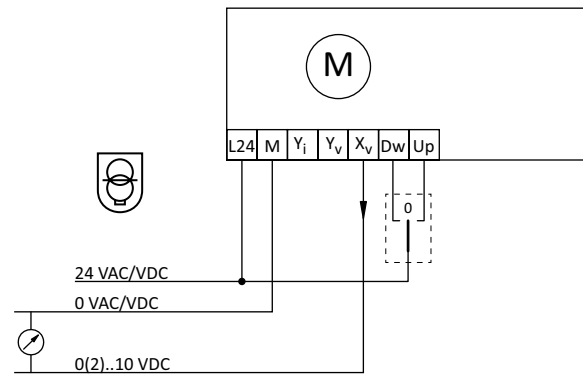
0(4)-20 mA

On-off

24 VAC/VDC operating only with safety transformer according to EN 61558-2-6.
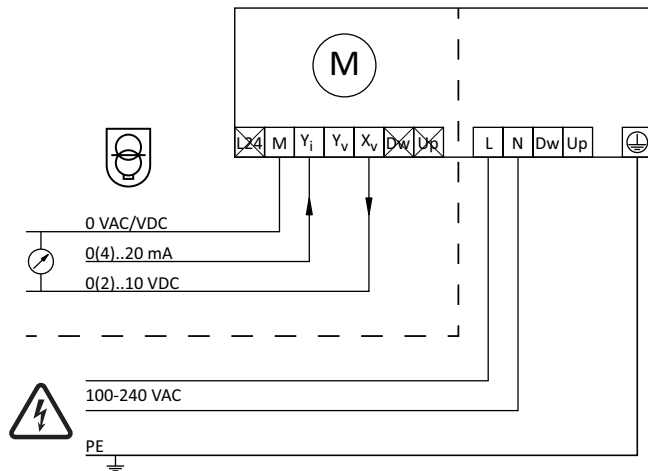
Connection diagram – 100-240 V

0(2)-10 VDC

0 VAC/VDC
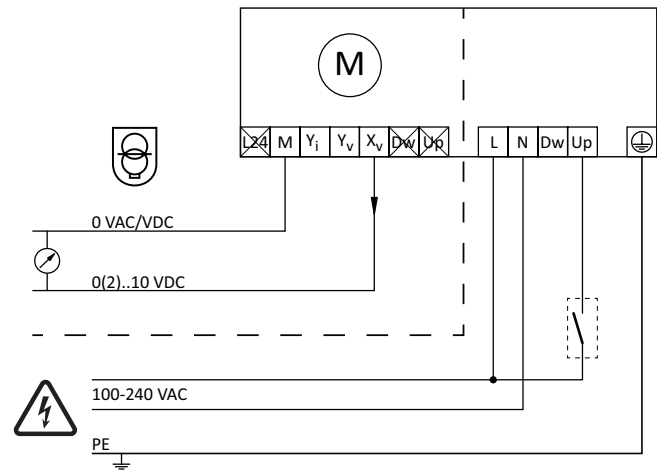0(2)..10 VDC
0(2)..10 VDC
100-240 VAC
PE

3-point

0 VAC/VDC
0(2)..10 VDC
100-240 VAC
PE

0(4)-20 mA

0 VAC/VDC
0(4)..20 mA
0(2)..10 VDC
100-240 VAC
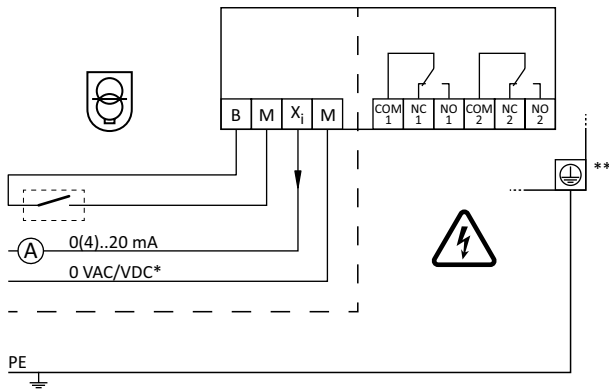PE

On-off

0 VAC/VDC
0(2)..10 VDC
100-240 VAC
PE

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

Connection diagram – Relay (for Plus version only)

Optional relay board

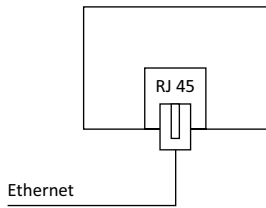| B | M | X_i | M | COM 1 | NC 1 | NO 1 | COM 2 | NC 2 | NO 2 |

0(4)..20 mA

0 VAC/VDC*

PE

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

Connection diagram – Bus communication (for Plus version only)

Optional Ethernet communication board
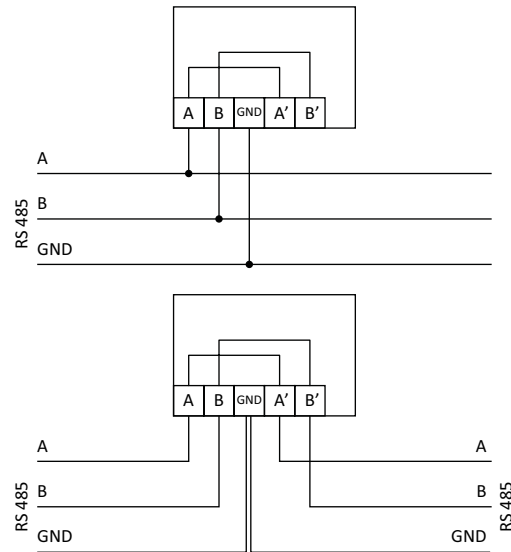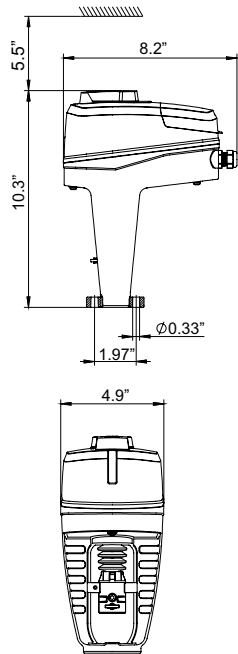BACnet/IP, Modbus/TCP

RJ 45

Ethernet

Optional RS 485 board
BACnet MS/TP, Modbus/RTU

| A | B | GND | A' | B' |

RS 485

A

B

GND

| A | B | GND | A' | B' |

RS 485

A

B

GND

RS 485

A

B

GND

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

Articles

TA-Slider 1600
Input signal: 0(2)-10 VDC, 0(4)-20 mA, 3-point, on-off

Supply voltage	Article No
24 VAC/VDC	322228-10110
100-240 VAC	322228-40110
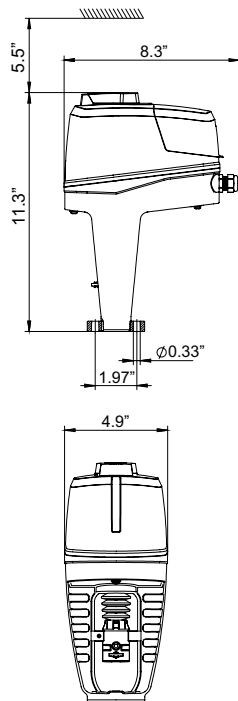
TA-Slider 1600 Plus
Input signal: 0(2)-10 VDC, 0(4)-20 mA, 3-point, on-off

With binary input, relays, mA output signal

Supply voltage	BUS		Article No
24 VAC/VDC	-		322228-10219
100-240 VAC	-		322228-40219

With BUS communication (without binary input, relays, mA output signal)

Supply voltage	BUS		Article No
24 VAC/VDC	Modbus/RTU	RS 485	322228-12210
	BACnet MS/TP	RS 485	322228-13210
	Modbus/TCP	Ethernet	322228-14210
	BACnet/IP	Ethernet	322228-16210
100-240 VAC	Modbus/RTU	RS 485	322228-42210
	BACnet MS/TP	RS 485	322228-43210
	Modbus/TCP	Ethernet	322228-44210
	BACnet/IP	Ethernet	322228-46210

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

Supply voltage	BUS		Article No
24 VAC/VDC	Modbus/RTU	RS 485	322228-12219
	BACnet MS/TP	RS 485	322228-13219
	Modbus/TCP	Ethernet	322228-14219
	BACnet/IP	Ethernet	322228-16219
100-240 VAC	Modbus/RTU	RS 485	322228-42219
	BACnet MS/TP	RS 485	322228-43219
	Modbus/TCP	Ethernet	322228-44219
	BACnet/IP	Ethernet	322228-46219

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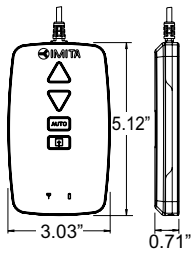
TA-Dongle
For Bluetooth communication with the HyTune app, transfer configuration settings and manual override.

	Article No
	322228-00001

Accessories

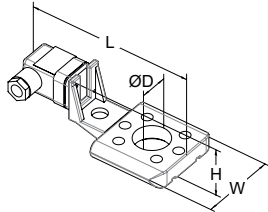**Stem heater**
Including spindle top (extension) and extended screws.
Temperature range till 14 °F.
Voltage 24 VAC ±10% 50/60 Hz ±5%.
Power P_N approx. 30 W.
Current 1.4 A.
Surface temperature max. 122 °F.

For valve	Size	L	H	W	D	Article No
		5.71	1.93	2.75	1.18	
KTM 512	2 1/2" - 5"					322042-81401
TA-Modulator	2 1/2" - 8"					322052-80010