

# TA-Slider 1600



## Actuators

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

# 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.
- > **Easy diagnostics**  
Tracks the last 10 errors to allow system faults to be found quickly.
- > **Fully configurable**  
More than 200 setup options allow input and output signals, binary input, relay, characteristics and many other parameters to be configured.
- > **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  $\Omega$ , 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  $\pm 15\%$ .  
100-240 VAC  $\pm 10\%$ .  
Frequency 50/60 Hz  $\pm 3$  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 k $\Omega$ .  
Adjustable sensitivity 0.1-0.5 VDC.  
0.33 Hz low pass filter.  
0(4)-20 mA  $R_i$  500  $\Omega$ .  
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 k $\Omega$ .  
Plus version: 0(4)-20 mA, max. 700  $\Omega$ .  
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)

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**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.

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**Stroke:**

Max. 1.30 in

Automatic detection of the valve lift (stroke detection).

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**Noise level:**

Max. 40 dBA

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**Weight:**

3.5 lb

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**Connection to valve:**

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

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**Material:**

Cover: PBT

Bracket: Alu EN44200

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**Colour:**

Orange RAL 2011, grey RAL 7043.

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**Marking:**

IMI TA, product name, article No. and technical specification.

LED indication description.

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**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.

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**Product standard:**

EN 60730

(for Residential and industrial areas)

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**Cable:**

Wire cross-section\*: 20 AWG-14 AWG (0.5-2.0 mm<sup>2</sup>)

- Protection class I: H05VV-F or similar

- Protection class III: LiYY or similar

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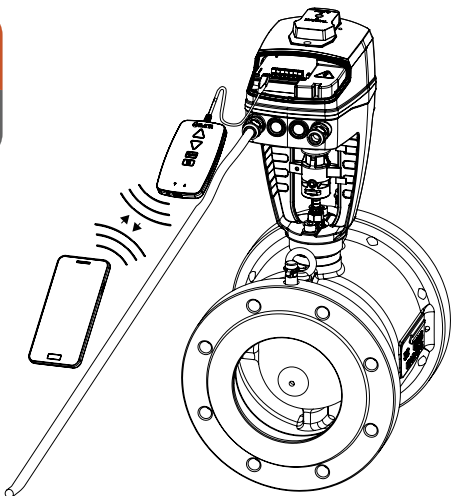
\*) **Note:** Wire cross-sections must be chosen according to actuator power consumption and line length, such as the voltage supply to the actuator does not go below 20.4 VAC/VDC (24 VAC/VDC minus 15%).

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 TA/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 TA/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

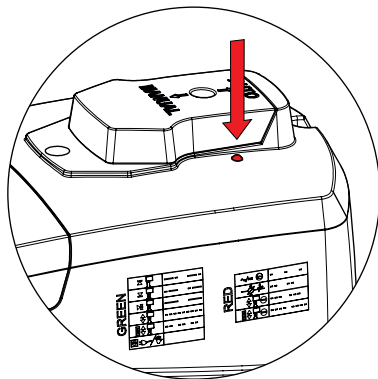
Switching between two different stroke limitation settings by toggling the binary input or using the dual-range input signal. For the Bus versions, this switching may also be made via the Bus.

## LED indication

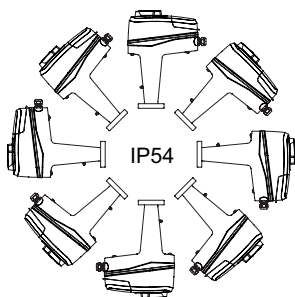
	Status	Green
	Fully retracted (actuator stem)	Long pulse - Short pulse
	Fully extended (actuator stem)	Short pulse - Long pulse
	Intermediate position	Long pulses
	Moving	Short pulses
	Calibrating	2 short pulses
	Manual mode or no power supply	Off

	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

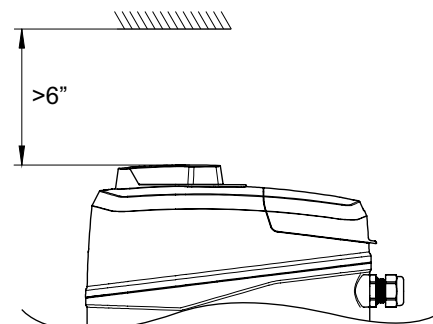
If an error is detected, red pulses are displayed as the green status lights flash alternately. More detailed information, please see the HyTune app + TA-Dongle.



## Installation



### Note!



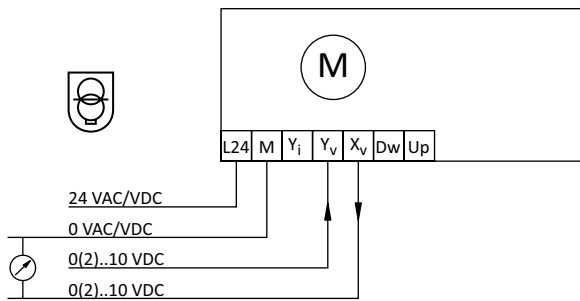
## Connection diagram – Terminal/Description

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 <sub>i</sub>	Input signal for proportional control 0(4)-20 mA, 500 Ω
Y <sub>v</sub>	Input signal for proportional control 0(2)-10 VDC, 47 kΩ
X <sub>i</sub>	Output signal 0(4)-20 mA, max. resistance 700 Ω
X <sub>v</sub>	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

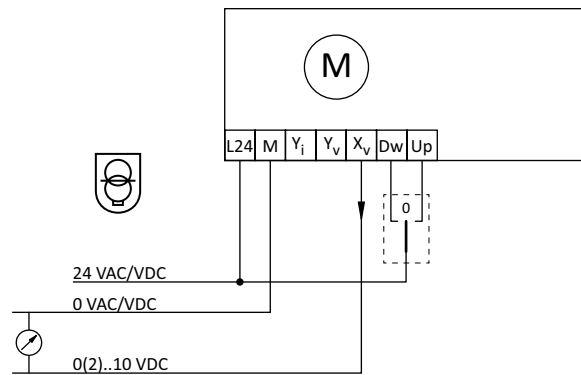
\*) All M terminals are internally connected.

## Connection diagram – 24 V

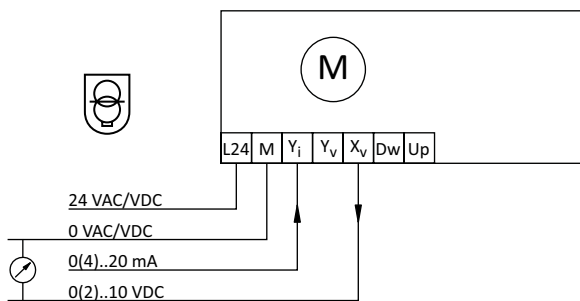
### 0(2)-10 VDC



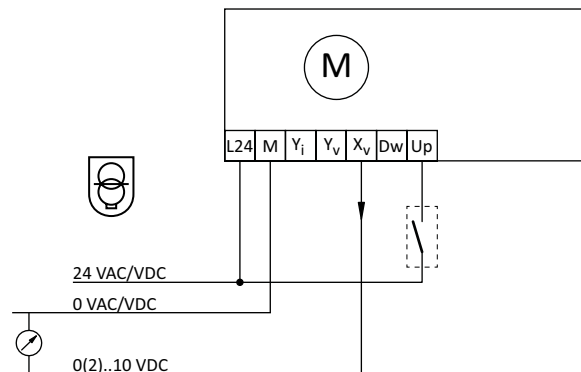
### 3-point




### 0(4)-20 mA



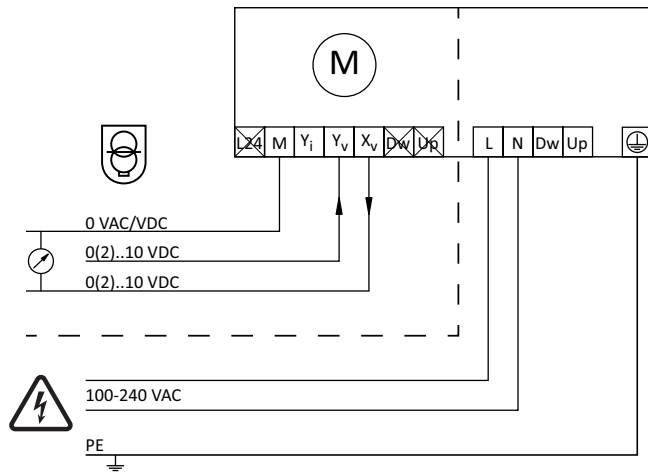
### On-off



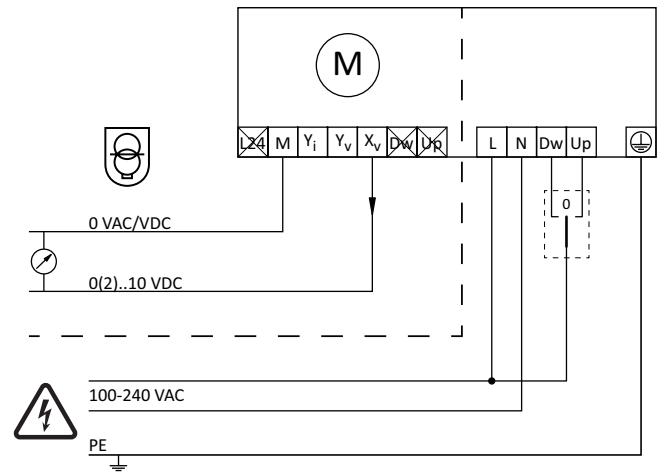
 24 VAC/VDC operating only with safety transformer according to EN 61558-2-6.

## Connection diagram – 100-240 V

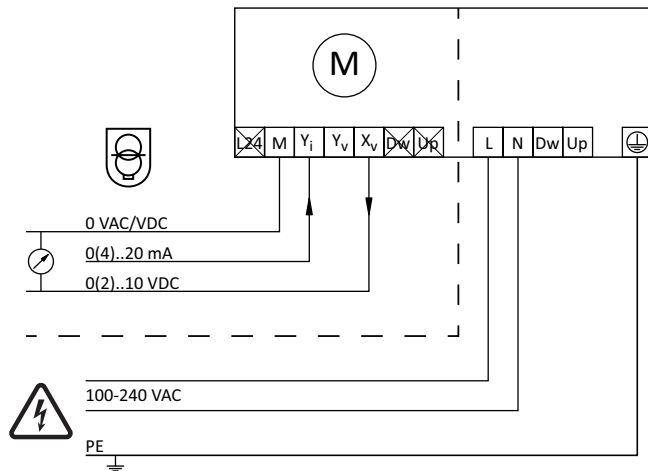
### 0(2)-10 VDC



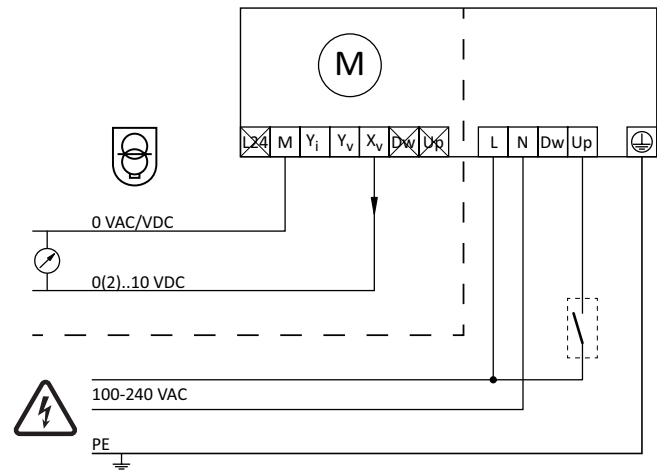
### 3-point



### 0(4)-20 mA



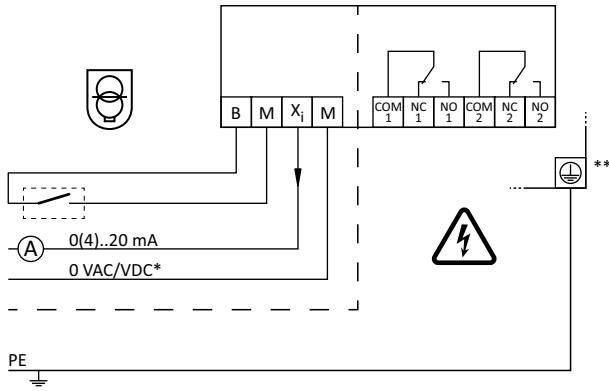
### On-off



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

## Connection diagram – Relay (for Plus version only)

### Optional relay board

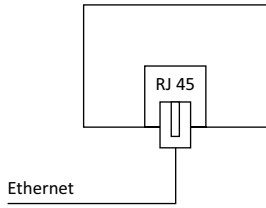


- \*) Low voltage neutral
- \*\*\*) Ground connection required.

## Connection diagram – Bus communication (for Plus version only)

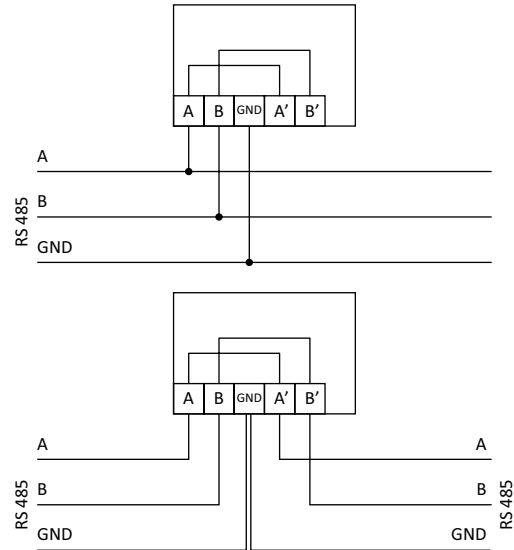
### Optional Ethernet communication board

BACnet/IP, Modbus/TCP



### Optional RS 485 board

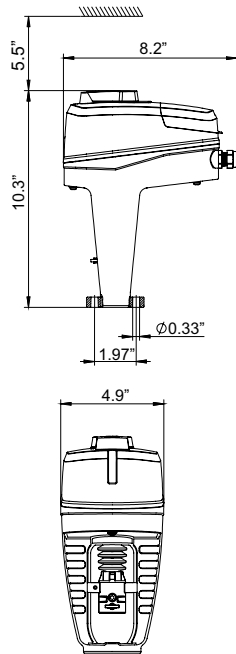
BACnet MS/TP, Modbus/RTU



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



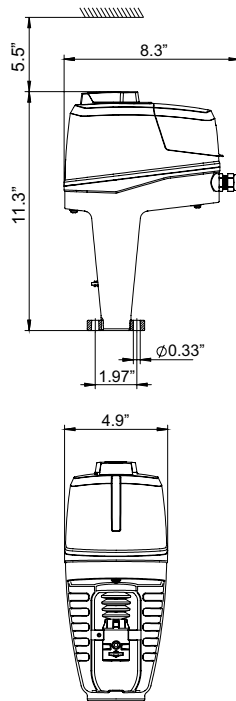
## Articles



### 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

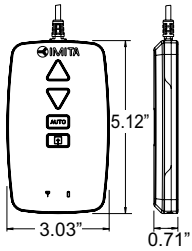
#### With BUS communication (without binary input, relays, mA output signal)

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.

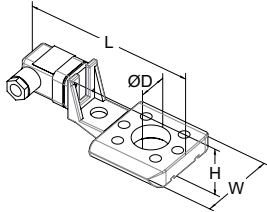
Temperature range till 14 °F.

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
		146	49	70	30	
KTM 512	3" - 5"					322042-81401
TA-Modulator	65-150					322052-80010

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