

# TA-Slider 500

BACnet/Modbus



## Actuators

Digitally configurable proportional push-pull actuator for Bus communication with BACnet MS/TP or Modbus RTU – 500/300 N

# TA-Slider 500

## BACnet/Modbus

Digitally configurable actuators for Bus communication with BACnet MS/TP or Modbus RTU, and a wide range of setup options provide extensive flexibility for on-site parameter adaptation. Fully programmable binary input, relay and adjustable max. 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.
- > **Quick copying of settings**  
Setup configuration can be copied quickly from the TA-Dongle to identical TA-Slider actuators.



### Technical description

#### Functions:

Proportional control  
Manual override (TA-Dongle)  
Stroke detection  
Mode, status and position indication  
Stroke limitation setting  
Minimum stroke setting  
Valve blockage protection  
Valve clogging detection  
Error safe position  
Diagnostic/Logging  
Delayed start-up

#### BACnet/Modbus version:

+ 1 binary input, max. 100  $\Omega$ , cable max. 10 m or shielded.  
+ 2 connections for Pt1000 temperature probe.

#### BACnet/Modbus R24 version:

+ 1 binary input, max. 100  $\Omega$ , cable max. 10 m or shielded.  
+ 2 connections for Pt1000 temperature probe.  
+ 1 relay, max. 2A, 30 VAC/VDC on resistive load.

#### Supply voltage:

24 VAC/VDC  $\pm 15\%$ .  
Frequency 50/60 Hz  $\pm 3$  Hz.

#### Power consumption:

Operation: < 3.0 VA (VAC); < 1.5 W (VDC)  
Standby: < 1.5 VA (VAC); < 0.75 W (VDC)

#### Input signal:

By BACnet/Modbus or with hybrid control mode;  
0(2)-10 VDC,  $R_i$  47 k $\Omega$ .  
Adjustable hysteresis sensitivity 0.1-0.5 VDC.  
0.33 Hz low pass filter.  
Proportional:  
0-10, 10-0, 2-10 or 10-2 VDC  
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.  
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: By BACnet/Modbus. If Hybrid mode chosen, default input signal is Proportional 0-10 VDC.

#### Output signal:

By BACnet/Modbus.

#### Characteristics:

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

#### Control speed:

4 or 6 s/mm.  
Default setting: 4 s/mm.

#### Adjusting force:

Push 500 N  
Pull 300 N

#### Temperature:

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

#### Ingress protection:

IP54 (all directions)  
(according to EN 60529)

#### Protection class:

(according to EN 61140)  
III (SELV)

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**Cables:**

Separate overmoulded cables (see Additional equipment).  
 Type LiYCY 5x0.34 mm<sup>2</sup> (cables A and B) and type LiYY 6x0.34 mm<sup>2</sup> (cable C).  
 Halogen free, fire class B2<sub>ca</sub> – s1a, d1, a1 according to EN 50575.  
 Relay cable (R24 version):  
 Type LiYY 3x0.34 mm<sup>2</sup>.  
 1, 2 or 5 m. With wire end sleeves.  
 Halogen free, fire class B2<sub>ca</sub> – s1a, d1, a1 according to EN 50575.

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**Stroke:**

16,2 mm.  
 Automatic detection of the valve lift (stroke detection).

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**Noise level:**

Max. 30 dBA

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**Weight:**

BACnet/Modbus: 0.25 kg  
 BACnet/Modbus R24:  
 0.29 kg, 1 m relay cable  
 0.33 kg, 2 m relay cable  
 0.47 kg, 5 m relay cable

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**Connection to valve:**

Swivelling nut M30x1,5.

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**Material:**

Cover: PC/ABS GF8  
 Housing: PA GF40.  
 Swivelling nut: Nickel-plated brass.

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**Colour:**

White RAL 9016, grey RAL 7047.

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**Marking:**

Label: IMI TA, CE, product name, article No. and technical specification.

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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 63000.

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**Product standard:**

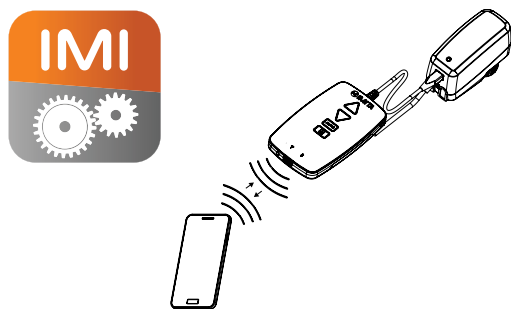
EN 60730.

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## 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. Connect the TA-Dongle to the actuator and press the configuration button. HyTune can be downloaded from the App Store or Google Play.



### Manual override

By using the TA-Dongle device. No power supply needed.

### 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  $K_{v_{max}}/q_{l_{max}}$ .  
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  $q_{l_{min}}$ .  
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.

### 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, using the dual-range input signal or performing the switching via BACnet or Modbus.

### BACnet/Modbus and BACnet/Modbus R24 versions:







BACnet MS/TP (BACnet Protocol Revision 14).





Modbus RTU.

More detailed information, please see TA-Slider 160/500 BACnet MS/TP and Modbus RTU protocol implementation documents.

## LED indication

### LED indication

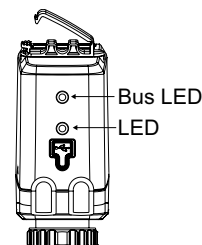
		Status	Red (heating) / Blue (cooling)
	— — — —	Fully retracted (actuator stem)	Long pulse - Short pulse
	— — — —	Fully extended (actuator stem)	Short pulse - Long pulse
	— — — —	Intermediate position	Long pulses
	— — — —	Moving	Short pulses
	— — — —	Calibrating	2 short pulses
		Manual mode or no power supply	Off

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

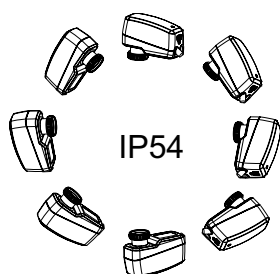
If an error is detected, violet pulses are displayed as the red or blue status lights flash alternately.  
More detailed information, please see the HyTune app + TA-Dongle.

### Bus LED indication

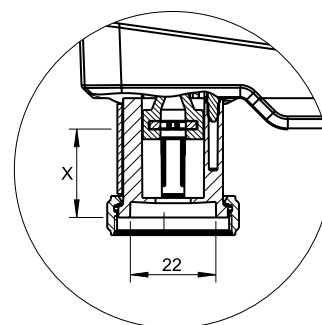
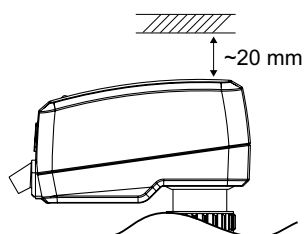
Colour	Status
Red	Change of network configuration or board starting
Orange	Message received
Green	Ready - Waiting for messages



## Installation

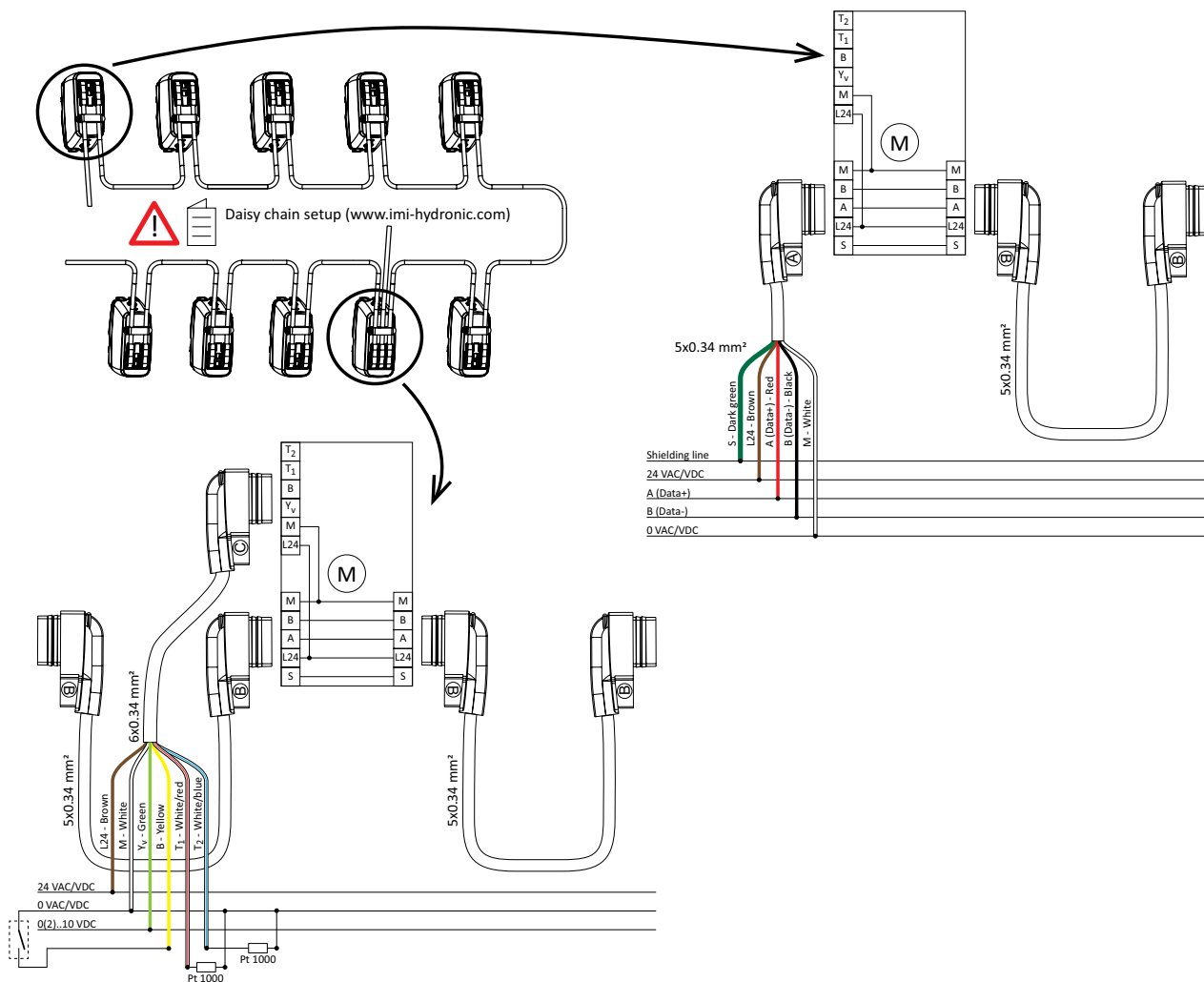


### Note!



$$X = 7.7 - 23.9 \text{ mm}$$

## Connection diagram – BACnet/Modbus

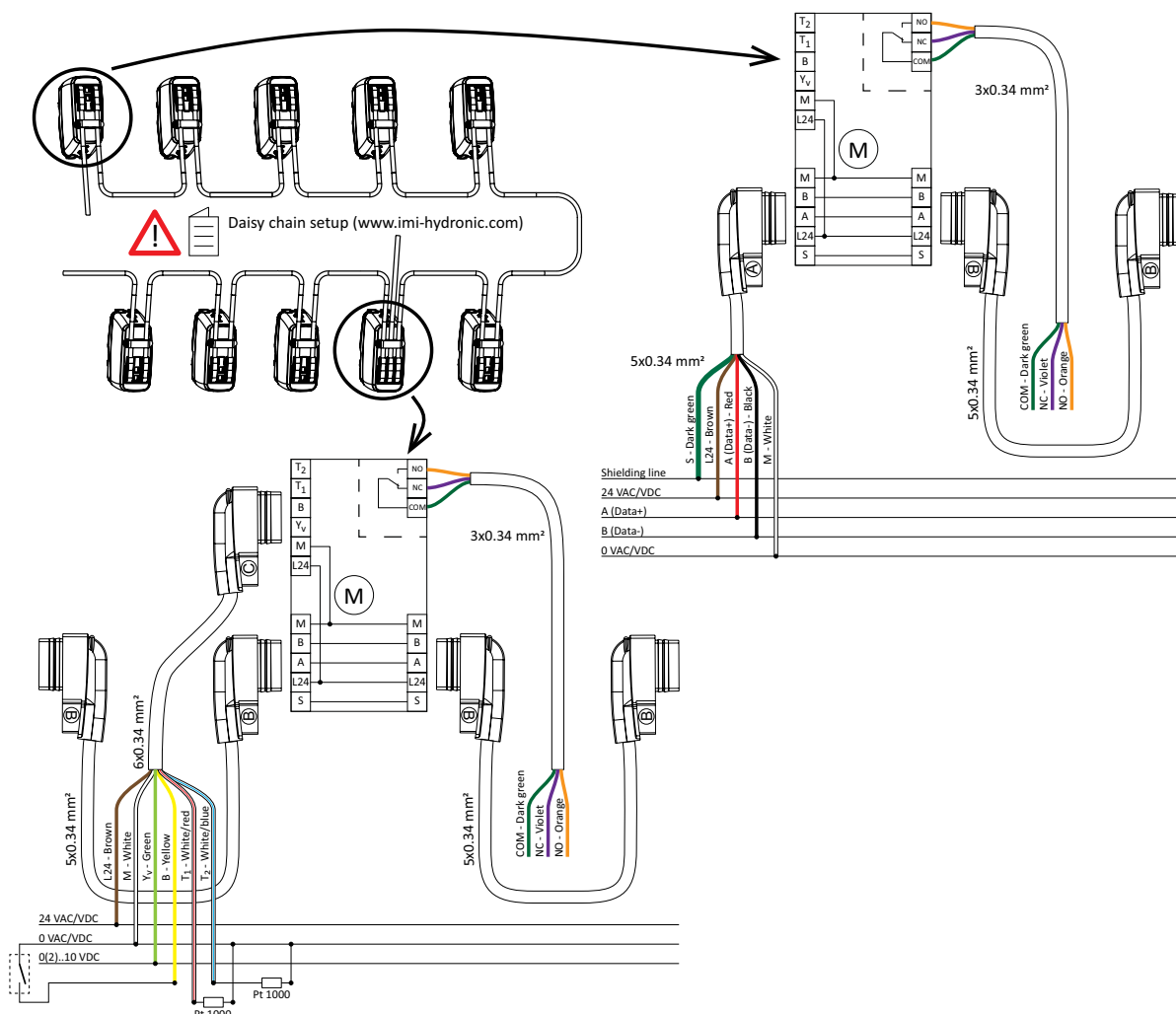


Terminal	Description
S	Shielding, line should be connected at one end to a specific shielding terminal connected itself to EARTH.
L24	Power supply 24 VAC/VDC
M	Neutral for power supply 24 VAC/VDC and signals.
A (Data+)	Data+ (RS 485)
B (Data-)	Data- (RS 485)
Y <sub>v</sub>	Input signal for proportional control 0(2)-10 VDC, 47 kΩ.
B	Connection for potential free contact (e.g. open window detection), max. 100 Ω, max. 10 m cable or shielded.
T1	Connection for Pt1000 temperature sensor, to be connected between T1 and M, max. 10 m total cable length between actuator and sensor head.
T2	Second connection for Pt1000 temperature sensor, to be connected between T2 and M, max. 10 m total cable length between actuator and sensor head.



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

## Connection diagram – BACnet/Modbus R24

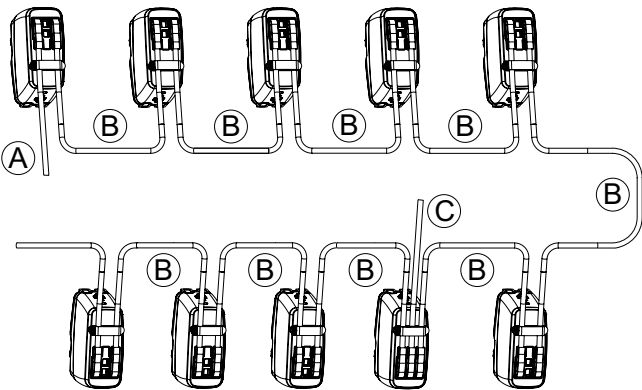


Terminal	Description
S	Shielding, line should be connected at one end to a specific shielding terminal connected itself to EARTH.
L24	Power supply 24 VAC/VDC
M	Neutral for power supply 24 VAC/VDC and signals.
A (Data+)	Data+ (RS 485)
B (Data-)	Data- (RS 485)
Y <sub>V</sub>	Input signal for proportional control 0(2)-10 VDC, 47 kΩ.
B	Connection for potential free contact (e.g. open window detection), max. 100 Ω, max. 10 m cable or shielded.
T1	Connection for Pt1000 temperature sensor, to be connected between T1 and M, max. 10 m total cable length between actuator and sensor head.
T2	Second connection for Pt1000 temperature sensor, to be connected between T2 and M, max. 10 m total cable length between actuator and sensor head.
COM	Common contact of relay, max. 2A @ 30 VAC/VDC on resistive load
NC	Normally closed contact for relay
NO	Normally open contact for relay



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

Daisy chain setup



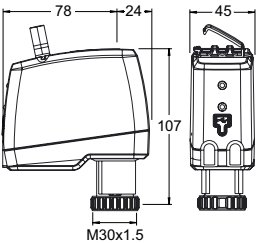
A: To connect the first TA-Slider 160/500 BACnet or Modbus of a daisy chain to the Bus.  
B: Between two actuators in a daisy chain.  
C: To enable hybrid mode or provide power supply if the daisy chain is long.

Max. number\* of TA-Slider in a daisy chain, before power boosting is required (cable C).  
Using DC voltage increases the max. number of devices (not possible for CO option as TA-M106 requires 24 VAC).

	24 VDC	24 VAC
TA-Slider 160 BACnet/Modbus	17	14
TA-Slider 160 BACnet/Modbus CO	n.a.	8
TA-Slider 500 BACnet/Modbus	14	10
TA-Slider 500 BACnet/Modbus R24	14	10

\*) Assuming strictly 24 V at the free wire end of the first daisy chain cable (power supply output). For other start voltages, please contact IMI Hydronic Engineering.

Articles - BACnet/Modbus

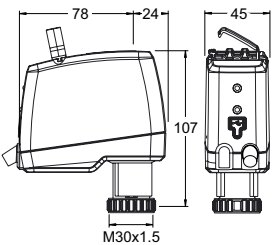


**TA-Slider 500 BACnet/Modbus**  
Input signal: Via Bus or 0(2)-10 VDC

With binary input and 2 connections for Pt1000 temperature probe

	Bus	EAN	Article No
	BACnet	5901688824009	322225-13011
	Modbus	5901688823781	322225-12011

Articles - BACnet/Modbus R24

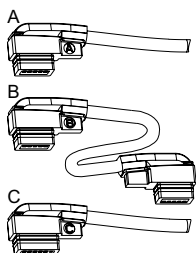


**TA-Slider 500 BACnet/Modbus R24**  
Input signal: Via Bus or 0(2)-10 VDC

With binary input, 2 connections for Pt1000 temperature probe and relay 24V

Relay cable length [m]	Bus	EAN	Article No
With halogen free relay cable			
1	BACnet	5901688829059	322225-13314
2	BACnet	5901688829066	322225-13315
5	BACnet	5901688829073	322225-13316
1	Modbus	5901688824092	322225-12314
2	Modbus	5901688824108	322225-12315
5	Modbus	5901688824115	322225-12316

## Additional equipment



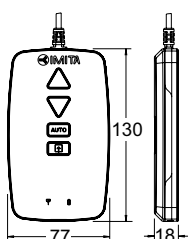
### Daisy chain cables

A: To connect the first TA-Slider 160/500 BACnet or Modbus of a daisy chain to the Bus.

B: Between two actuators in a daisy chain.

C: To enable hybrid mode or provide power supply if the daisy chain is long.

Cable length [m]	EAN	Article No
<b>Halogen free cable</b>		
<b>Type A</b>		
1,5	5902276898228	322042-80012
5	5902276898235	322042-80013
10	5902276898242	322042-80014
<b>Type B</b>		
1,5	5902276898259	322042-80015
5	5902276898266	322042-80016
10	5902276898273	322042-80017
<b>Type C</b>		
1,5	5902276898280	322042-80018
5	5902276898297	322042-80019
10	5902276898303	322042-80020



### TA-Dongle

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

EAN	Article No
5901688828632	322228-00001

