

**Climate  
Control**

**IMI TA**

# TA-Slider 160 BACnet/Modbus



## **Actuators**

Digitally configurable proportional push actuator for Bus communication with BACnet MS/TP or Modbus RTU – 160/200 N

## TA-Slider 160 BACnet/Modbus

Digitally configurable actuators for Bus communication with BACnet MS/TP or Modbus RTU, with or without change-over. 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.

#### 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.

#### 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  
Self-adjusting force  
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 CO (change-over) version:

+ 1 binary input, max. 100  $\Omega$ , cable max. 10 m or shielded.  
+ 2 connections for Pt1000 temperature probe.  
+ 1 relay, internally wired for control of TA-M106 actuator on TA-6-way valve (max. 2A, 30 VAC/VDC on resistive load).

#### Supply voltage:

24 VAC/VDC  $\pm 15\%$ .  
Frequency 50/60 Hz  $\pm 3$  Hz.  
BACnet/Modbus CO:  
24 VAC only for enabling powering of TA-M106 actuator.

#### Power consumption:

BACnet/Modbus:  
Operation: < 1.5 VA (VAC);  
< 1.0 W (VDC)  
Standby: < 1.2 VA (VAC);  
< 0.75 W (VDC)  
BACnet/Modbus CO:  
Operation: < 1.5 VA (VAC)  
Standby: < 1.2 VA (VAC)  
TA-M106 actuator consumption must be added separately.

#### 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,  
2-4.7 / 7.3-10 VDC,  
0-4.5 / 5.5-10 VDC or  
2-5.5 / 6.5-10 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:

10 s/mm

#### Adjusting force:

160/200 N  
Self-adjusting for IMI TA/IMI Heimeier valves.

#### 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)

**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 (CO version):  
Type LiYY 3x0.34 mm<sup>2</sup>.  
1, 2 or 5 m. With connector to actuator TA-M106.  
Halogen free, fire class B2<sub>ca</sub> – s1a, d1, a1 according to EN 50575.

**Stroke:**

6,9 mm.  
Automatic detection of the valve lift (stroke detection).

**Noise level:**

Max. 30 dBA

**Weight:**

BACnet/Modbus: 0.22 kg  
BACnet/Modbus CO:  
0.26 kg, 1 m relay cable.  
0.31 kg, 2 m relay cable.  
0.45 kg, 5 m relay cable.

**Connection to valve:**

Swivelling nut M30x1,5.

**Material:**

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

**Colour:**

White RAL 9016, grey RAL 7047.

**Marking:**

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

**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.

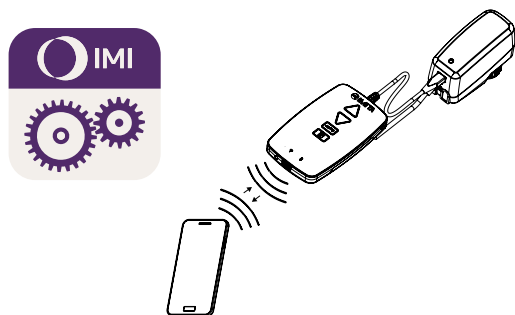
**Product standard:**

EN 60730.

## 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.

### Self-adjusting force

Automatic valve type detection, the force is set to 160 or 200 N for IMI TA/IMI Heimeier valves.  
Default setting: On.

### 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.

### 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 CO 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

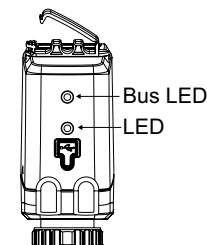
		Status	Red (heating) / Blue (cooling)
	— — — —	Fully retracted (actuator stem)	Long pulse - Short pulse
	— — — —	Fully extended (actuator stem)	Short pulse - Long pulse
	— — — —	Intermediate position	Long pulses
	— — — —	Moving	Short pulses
	— — — —	Calibrating	2 short pulses
		Manual mode or no power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

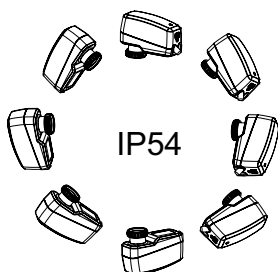
If an error is detected, violet pulses are displayed as the red or blue status lights flash alternately.  
More detailed information, please see the HyTune app + TA-Dongle.

### Bus LED indication

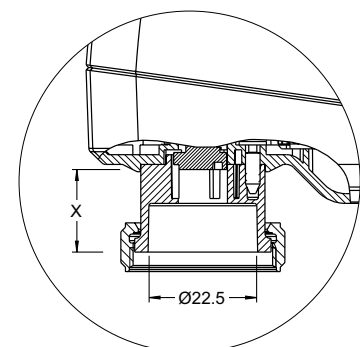
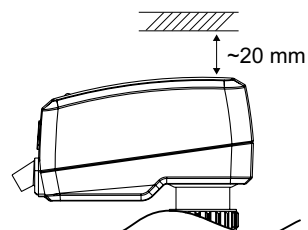
Colour	Status
Red	Change of network configuration or board starting
Orange	Message received
Green	Ready - Waiting for messages



## Installation

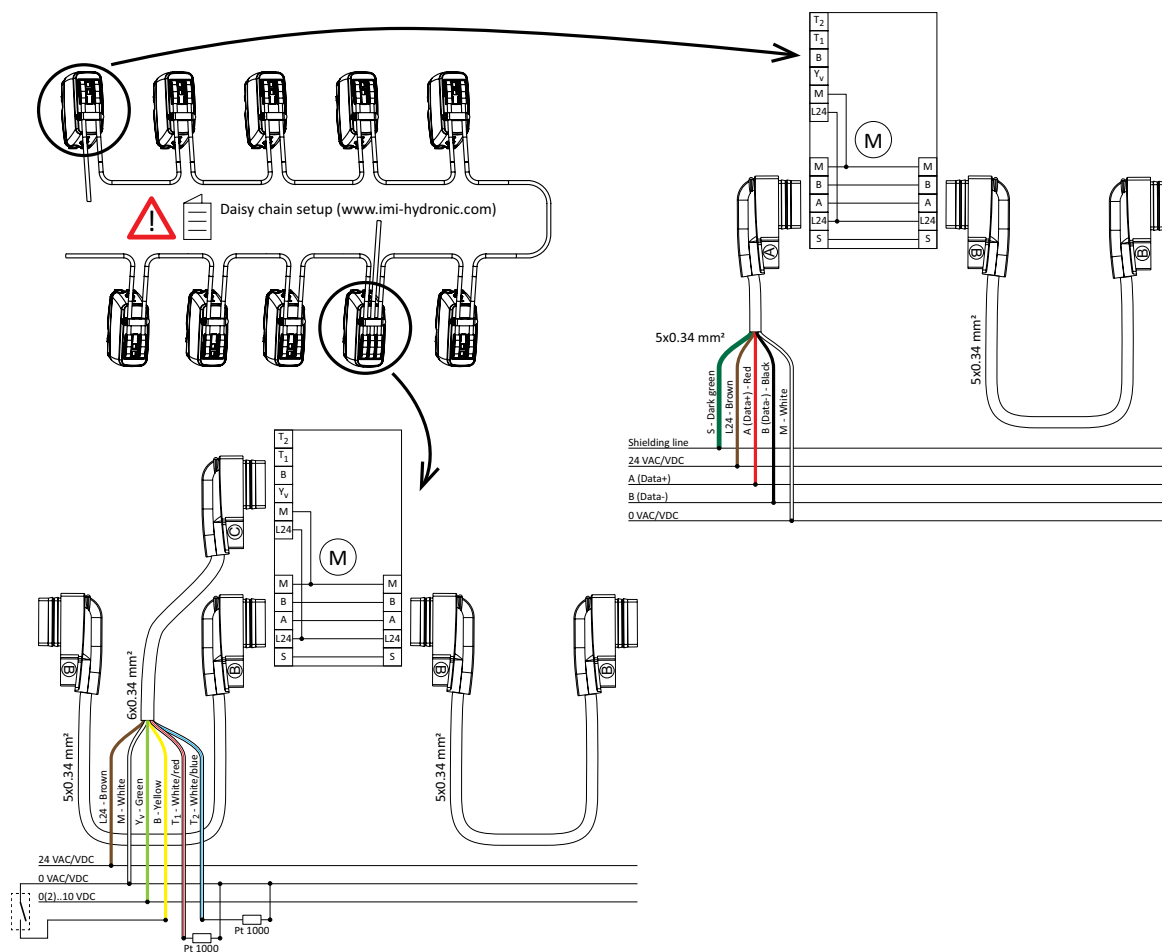


### Note!



$$X = 10.0 - 16.9$$

## Connection diagram – BACnet/Modbus

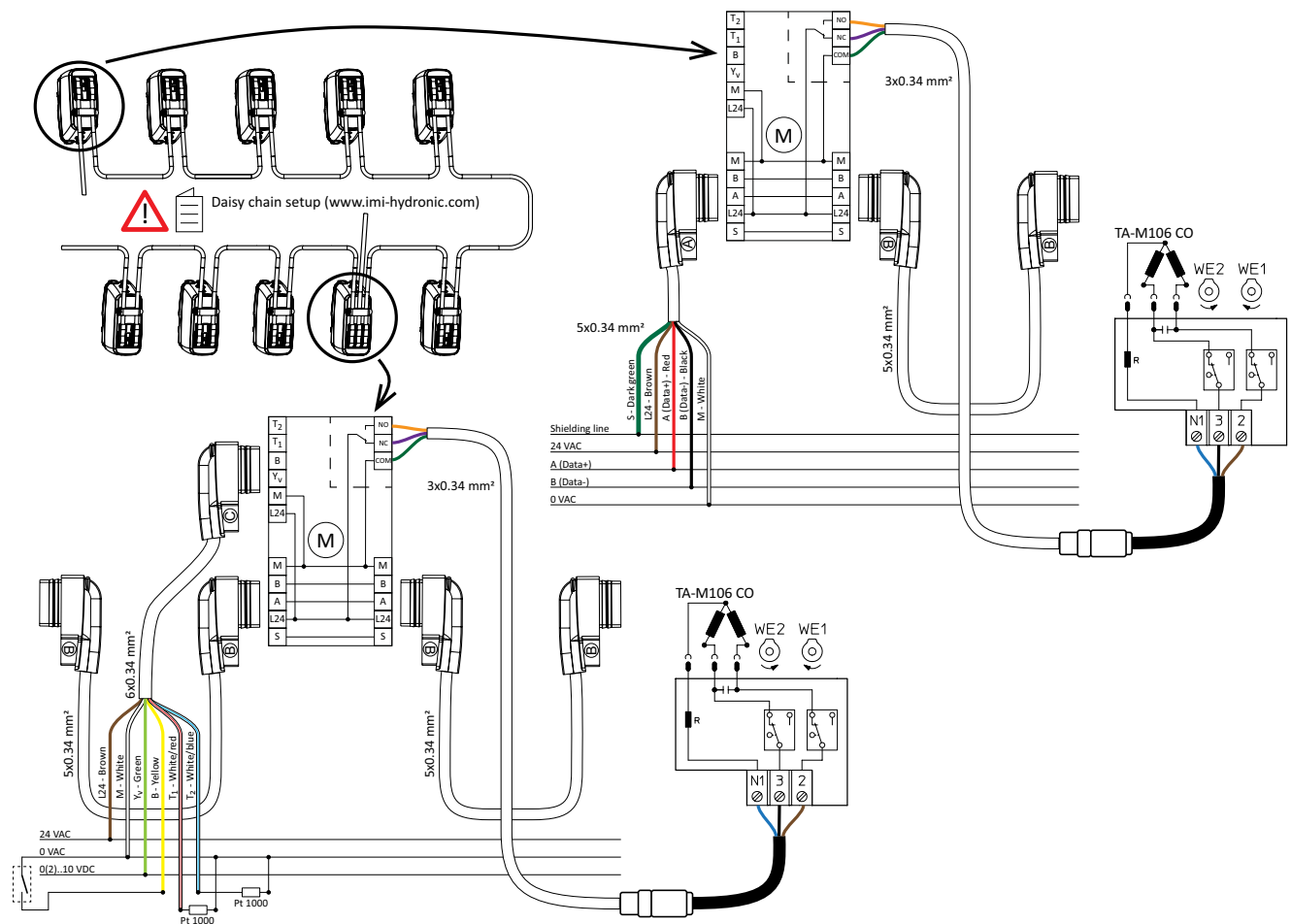


Terminal	Description
S	Shielding, line should be connected at one end to a specific shielding terminal connected itself to EARTH.
L24	Power supply 24 VAC/VDC
M	Neutral for power supply 24 VAC/VDC and signals.
A (Data+)	Data+ (RS 485)
B (Data-)	Data- (RS 485)
Y <sub>v</sub>	Input signal for proportional 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/VDC operating only with safety transformer according to EN 61558-2-6.

## Connection diagram – BACnet/Modbus CO

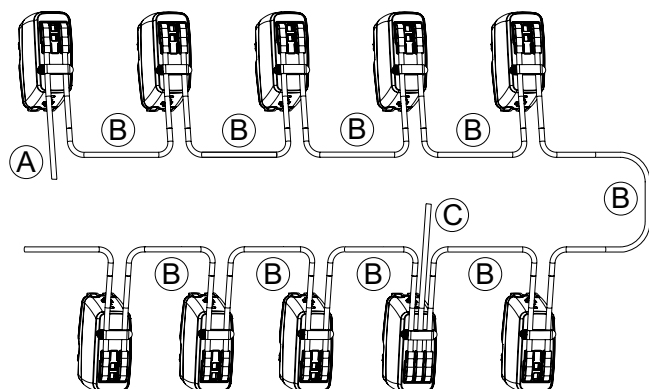


Terminal	Description
S	Shielding, line should be connected at one end to a specific shielding terminal connected itself to EARTH.
L24	Power supply 24 VAC
M	Neutral for power supply 24 VAC and signals.
A (Data+)	Data+ (RS 485)
B (Data-)	Data- (RS 485)
Y <sub>v</sub>	Input signal for proportional control 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 to connect TA-M106 actuator.
NC	Normally closed contact for relay
NO	Normally open contact for relay



24 VAC/VDC 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.

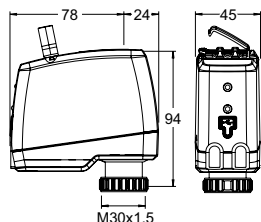
Max. number\* of TA-Slider in a daisy chain, before power boosting is required (cable C).

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.

## Articles - TA-Slider 160 BACnet/Modbus



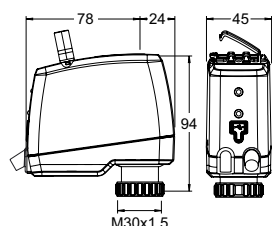
### TA-Slider 160 BACnet/Modbus

Input signal: Via Bus or 0(2)-10 VDC

With binary input and 2 connections for Pt1000 temperature probe

	Bus	EAN	Article No
	BACnet	5901688823590	322224-13011
	Modbus	5901688823538	322224-12011

## Articles - TA-Slider 160 BACnet/Modbus CO



### TA-Slider 160 BACnet/Modbus CO

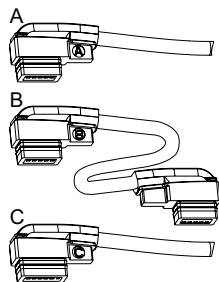
Input signal: Via Bus or 0(2)-10 VDC

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 CO	5901688823743	322224-13514
2	BACnet CO	5902276896743	322224-13515
5	BACnet CO	5901688823767	322224-13516
1	Modbus CO	5901688823682	322224-12514
2	Modbus CO	5901688823699	322224-12515
5	Modbus CO	5901688823705	322224-12516



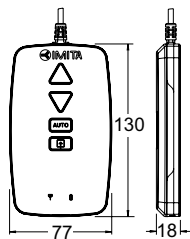
## Additional equipment



### 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



The products, texts, photographs, graphics and diagrams in this document may be subject to alteration by IMI without prior notice or reasons being given. For the most up to date information about our products and specifications, please visit [climatecontrol.imiplc.com](http://climatecontrol.imiplc.com).

TA-Slider 160 BACnet/Modbus ed.8 08.2023