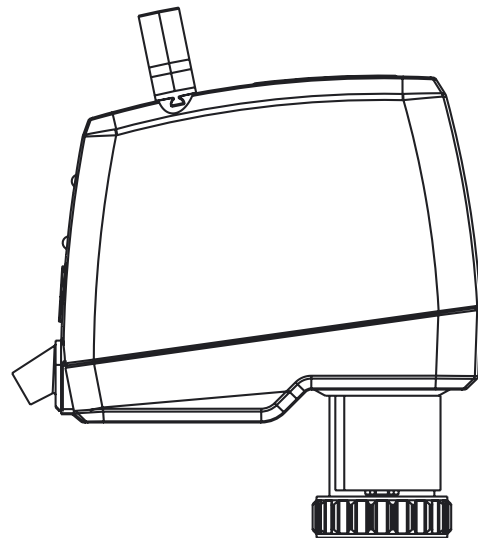
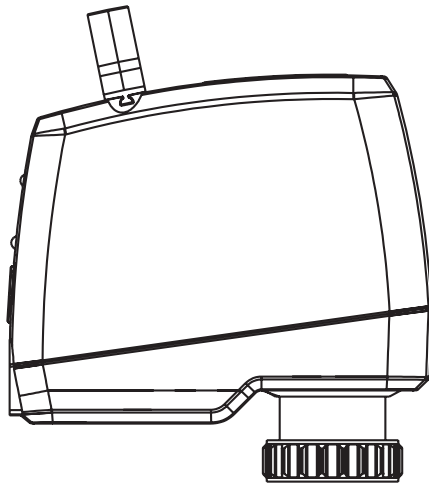


IMI TA

TA-Slider 160/500 Modbus RTU

Protocol Implementation




General information

Date:	26/09/2024
Protocol:	Modbus RTU
Product Name:	TA-Slider 160 Modbus, TA-Slider 160 Modbus CO, TA-Slider 500 Modbus, TA-Slider 500 Modbus R24
Product Model Number:	322224 12011, 322224 1251X, 322225 12011, 322225 1231X
Product Description:	Digitally configurable proportional push actuator - 160/200N, Digitally configurable proportional push-pull actuator - 500N
Firmware Revision (Modbus RTU)	2.5.0
Address:	1* to 247
Baud rates:	AutoDetect, 1200, 2400, 4800, 9600* 19200, 38400, 56200, 76800, 115200
Parity:	Odd, Even*, None
Databits:	8
Stopbit:	1
Endianness (float):	Big-endian

*) Default Value

Main use cases on how to configure a TA-Slider for Change-Over applications are displayed in the bottom of the documentation.



Follow the RS485 wiring guidelines from the documentation on our website. The necessary information regarding cable type, length, section, number of units, and baud rate can be found there.

Order cables A, B, and C as specified in the TA-Slider technical documentation.

Modbus holding registers

Register	Address	Data type	Access	Unit	Value range	Default	Description
PositionSetpoint	0	Word	R/W	1/100%	[0-10000]	n.a	Relative position setpoint in 1/100%. i.e. 0...10000 corresponds to 0...100%. <i>! Required configuration via HyTune App: SignalSource (register: 29) needs to be set to Bus. i</i>
RelayTrigger	1	Word	W	n.a	0: Deactivated 1: Activated	0	Trigger Relay (for instance to control 3 point motor) <i>! Required configuration via HyTune App: Relay trigger needs to be set to Bus. ¹⁾</i> <i>Only available for TA-Slider Change-Over versions j</i>
ForceCalibTrigger	3	Word	R/W	n.a	0: Deactivated 1: Activated	0	Trigger a calibration, the TA-Slider will perform full calibration (open and close). It will then go back to its Setpoint.
BusBinaryInput	4	Word	R/W	n.a	0: Regime1 / No flushing 1: Regime2 / Flushing	0	Used to change Regimes if BusBinaryAction (register: 7) is 1. OR Used to trigger Flushing if BusBinaryAction (register: 7) is 2.
FlowUnit	5	Word	R/W	n.a	0: l/h 1: GPM	0	Flow unit
TemperatureUnit	6	Word	R/W	n.a	0: °C 1: °F	0	Temperature unit
BusBinaryAction	7	Word	R	n.a	0: None 1: Change-Over 2: Flushing	0	If CoRegimeSwitching is set to 2:bus then BusBinaryAction is 1. <i>!Required configuration via HyTune App: Change Binary Input Action within Control Settings sectionj</i>
FlowFeedback ²⁾	8-9	Float	R	FlowUnit	[0.0, 3.4e+38]	0	Interpolated flow value. <i>!Requires valve type to be defined via Valve (register: 149) or configuration via HyTune app. within Valve sectionj</i>
MBSN	10	4 bytes	R	n.a	[0-2*32]	n.a	S/N of actuator
CurrentPosition	12	Word	R	1/100%	[0-10000]	10000	Current actuator position
CalibStroke	13	Word	R	µm	[0-25000]	n.a	Measured calibrated stroke, its value depends on the actuator type, on the valve type and its mechanical pre-setting.
MotorStatus	14	Word	R	n.a	0: Stopped 1: Retracting 2: Extending 3: Calibration 4: Manual-override 5: Clogging 6: Error	n.a	Motor status
CurrentTime	15-16	Long	R	sec	[0-2*32]	0	Number of seconds elapsed since latest restart
Motor_OnTime	17-18	Long	R	sec	[0-2*32]	0	Total of seconds of running motor
Actuator_OnTime	19-20	Long	R	sec	[0-2*32]	0	Total of seconds of running actuator
Actuator_Distance	21-22	Long	R	mm	[0-2*32]	0	Distance traveled by the actuator spindle
PhysicalBinaryInput	23	Word	R	n.a.	0: Deactivated 1: Activated	0	Status of the physical binary input.
RelayFeedback ¹⁾	24	Word	R	n.a.	0: Deactivated 1: Activated	0	Status of Relay. Used to verify register 1 or know relay status in case of other parametrisation. ¹⁾
PowerType	26	Word	R	n.a.	0: None 1: AC/DC low voltage 3: USB 4: KNX	1	Power type. For Modbus/BACnet, it should always be "AC/DC low voltage"
ControlCharacteristics	27	Word	R	n.a.	0: Linear 1: EQM 2: AntiEQM	0	Characteristic of the actuator. On an EQM valve it is recommended to keep a linear actuator characteristic. <i>!Required configuration via HyTune App: Change Control Characteristics within Control Settings sectionj</i>
Speed	28	Word	R	s/mm	10 (TA-SLD 160) [4, 6] (TA-SLD 500)	10(TA-SLD 160) 4(TA-SLD 500)	Speed of the actuator, it is parametrisable for TA-Slider 500. <i>!Required configuration via HyTune App: Change Speed within Speed sectionj</i>
SignalSource	29	Word	R	n.a	1: Analog (V) 5: Bus	1	SignalSource used to control the TA-Slider. Possible to work in hybrid mode, i.e control source analog and data acquisition bus. <i>!Required configuration via HyTune App: Change Control Source within Control Settings sectionj</i>
ValveName	30	String	R	n.a	n.a	n.a	Valve name (Set by App, free text)
ObjectName	43	String	R	n.a	n.a	n.a	Object Name(Set by App, free text)
Localisation	56	String	R	n.a	n.a	n.a	Localisation (Set by App, free text)

ReturnSetpointRegime2 ³⁾	159-160	Float	R/W	TemperatureUnit	[-9.0, 119.0] °C [15.8, 246.2] °F	50 °C 122 °F	Return temperature setpoint assigned to the actuator when the actuator is in regime 2. <i>!Only applicable when TemperatureLimitationType (register: 151) is T Return Limitation. Only applicable if CORegimeSwitching (register: 173) different than None.i</i>
MinFlowThresholdRegime1 ³⁾	161-162	Float	R/W	FlowUnit	[0.05*ValveNominalFlow, 0.9*MaxFlowRegime1]	0.25*MaxFlowRegime1	Temperature limitation stops to operate when the interpolated flow goes below the min flow threshold in regime 1. Setting the minimum flow requires specifying the valve on which the TA-Slider is mounted. <i>!Only applicable when TemperatureLimitationType (register: 151) different than None.i !Requires valve type to be defined via Valve (register: 149) or configuration via HyTune app. within Valve sectioni</i>
MinFlowThresholdRegime2 ³⁾	163-164	Float	R/W	FlowUnit	[0.05*ValveNominalFlow, 0.9*MaxFlowRegime2]	0.25*MaxFlowRegime2	Temperature limitation stops to operate when the interpolated flow goes below the min flow threshold in regime 2. Setting the minimum flow requires specifying the valve on which the TA-Slider is mounted. <i>!Only applicable when TemperatureLimitationType (register: 151) different than None. !Requires valve type to be defined via Valve (register: 149) or configuration via HyTune app. within Valve sectioni Only applicable if CORegimeSwitching (register: 173) different than None.i</i>
MinStrokeThresholdRegime1 ³⁾	165	Word	R/W	µm	if Linear valve: [0.1*ValveNominalPos; 0.95*MaxStrokeRegime1] if EQM valve: [0.12*ValveNominalPos; 0.90*MaxStrokeRegime1]	if Linear valve: 0.25*MaxStrokeRegime1 if EQM valve: 0.55*MaxStrokeRegime1	Temperature limitation stops to operate when the actuator goes below the min position threshold in regime 1. <i>!Only applicable when TemperatureLimitationType (register: 151) different than Nonei</i>
MinStrokeThresholdRegime2 ³⁾	166	Word	R/W	µm	if Linear valve: [0.1*ValveNominalPos; 0.95*MaxStrokeRegime2] if EQM valve: [0.12*ValveNominalPos; 0.90*MaxStrokeRegime2]	if Linear valve: 0.25*MaxStrokeRegime2 if EQM valve: 0.55*MaxStrokeRegime2	Temperature limitation stops to operate when the actuator goes below the min position threshold in regime 2. <i>!Only applicable when TemperatureLimitationType (register: 151) different than None. Only applicable when CORegimeSwitching (register: 173) different than None.i</i>
DeltaTReferenceHeating ³⁾	167-168	Float	R/W	K	[3.0, 40.0] K	20 K	For heating systems with return temperature limitation enabled, a reference of the system delta of temperature must be specified. <i>!Only applicable when TemperatureLimitationType (register: 151) is T Return Limitation.i</i>
DeltaTReferenceCooling ³⁾	169-170	Float	R/W	K	[2.0, 15.0] K	6 K	For cooling systems with return temperature limitation enabled, a reference of the system delta of temperature must be specified. <i>!Only applicable when TemperatureLimitationType (register: 151) is T Return Limitation.i</i>
OperatingMode ³⁾	171	Word	R	n.a	0: Heating 1: Cooling	0	The operating mode is used for setting default and limit parameters when applying DT and return temperature limitation. When heating/cooling change-over is configured, the operating mode is determined automatically by the change-over switching and cannot be changed manually.
CurrentCoRegime ³⁾	172	Word	R	n.a	0: Regime1 1: Regime2	0	Current change-over regime status. To change the regime use BusBinaryInput (register: 4).
CoRegimeSwitching ³⁾	173	Word	R	n.a	0: None 1: Dual-Range input Signal 2: Bus 3: Temperature detection 5: Delta Temperature Detection 6: Binary input	0	Switching mode type between regimes 1 and 2. <i>!Required configuration via HyTune App: change Change-over switching within Change-Over Sectioni</i>
CoSwitchingTemperatureRegime1 ³⁾	174-175	Float	R/W	TemperatureUnit	[0.0, 20.0] °C [32.0, 68.0] °F	19 °C 66.2 °F	This first switching temperature is the temperature of supply water above which the TA-Slider will switch to the cooling regime. <i>!Only applicable when CoRegimeSwitching (register: 173) is Temperature detection.i</i>
CoSwitchingTemperatureRegime2 ³⁾	176-177	Float	R/W	TemperatureUnit	[22.0, 90.0] °C [71.6, 194.0] °F	25 °C 77 °F	This second switching temperature is the temperature of supply water below which the TA-Slider will switch to the heating regime. <i>!Only applicable when CoRegimeSwitching (register: 173) is Temperature detection. Only applicable if CORegimeSwitching (register: 173) different than None.i</i>
CoSwitchingDTHysteresis ³⁾	178-179	Float	R/W	K	[0.5, 5.0]	0.5	TA-Slider will switch between heating and cooling regimes provided that the difference between supply and return temperatures reverts its sign by more than the specified DT hysteresis. <i>!Requires CoRegimeSwitching (register: 173) to be set to Delta Temperature detection.i</i>
Temp1Used ³⁾	180	Word	R	n.a	0: Not used 1: Used	0	Defines whether the Temperature sensor 1 is used or not. <i>!Required configuration via HyTune App: enable Temperature Sensors within Ancillary inputs/outputs section of the Control Settings menui</i>
Temp2Used ³⁾	181	Word	R	n.a	0: Not used 1: Used	0	Defines whether the Temperature sensor 2 is used or not. <i>!Required configuration via HyTune App: enable Temperature Sensors within Ancillary inputs/outputs section of the Control Settings menui</i>
Temp1Location ³⁾	182	Word	R	n.a	0: Supply side 1: Return side	0	Location on which the Temperature sensor 1 is installed. <i>!Required configuration via HyTune App: Change Temperature Sensors location within Ancillary inputs/outputs section of the Control Settings menui</i>
Temp2Location ³⁾	183	Word	R	n.a	0: Supply side 1: Return side	1	Location on which the Temperature sensor 2 is installed. <i>!Required configuration via HyTune App: Change Temperature Sensors location within Ancillary inputs/outputs section of the Control Settings menui</i>

¹⁾ only with CO and R24 versions

²⁾ only from firmware version 2.4.4

³⁾ only from firmware version 2.5.0

Valve Type Selection

Input valve id into register 149 to enable flow setting.

Valve id	Valve Family	DN	TA-Slider Family	Nominal Flow [l/h]	Position for nominal flow [mm]	ValveMinAccFlow [l/h]
101	TA-COMPACT	DN10	TA-SLIDER 160	120	4	13.4
102	TA-COMPACT	DN15 LF	TA-SLIDER 160	245	4	31.1
103	TA-COMPACT	DN15	TA-SLIDER 160	470	4	81.5
104	TA-COMPACT	DN20	TA-SLIDER 160	1150	4	171.9
105	TA-COMPACT	DN25	TA-SLIDER 160	2150	4	249.5
106	TA-COMPACT	DN32	TA-SLIDER 160	3700	4	380.7
201	TA-MODULATOR	DN10	TA-SLIDER 160	120	4	11.6
202	TA-MODULATOR	DN15 LF	TA-SLIDER 160	230	4	25.0
203	TA-MODULATOR	DN15	TA-SLIDER 160	480	4	75.1
204	TA-MODULATOR	DN20	TA-SLIDER 160	975	4	86.2
205	TA-MODULATOR	DN25	TA-SLIDER 160	1750	6.5	64.0
206	TA-MODULATOR	DN32	TA-SLIDER 160	3600	6.5	114.6
207	TA-MODULATOR	DN40	TA-SLIDER 500	6500	15	85.0
208	TA-MODULATOR	DN50	TA-SLIDER 500	11200	15	210.0
209	TA-MODULATOR	DN65	TA-SLIDER 750	24100	20	235.0
210	TA-MODULATOR	DN65 HF	TA-SLIDER 750	36500	20	765.2
211	TA-MODULATOR	DN80	TA-SLIDER 750	37300	20	348.3
212	TA-MODULATOR	DN80 HF	TA-SLIDER 750	49000	20	642.9
213	TA-MODULATOR	DN100	TA-SLIDER 1600	51700	20	898.2
214	TA-MODULATOR	DN100 HF	TA-SLIDER 1600	75900	20	2195.2
215	TA-MODULATOR	DN125	TA-SLIDER 1600	77300	20	1230.5
216	TA-MODULATOR	DN125 HF	TA-SLIDER 1600	127000	20	3423.5
217	TA-MODULATOR	DN150	TA-SLIDER 1600	126000	30	1619.5
218	TA-MODULATOR	DN150 HF	TA-SLIDER 1600	190000	30	9487.6
219	TA-MODULATOR	DN200	TA-SLIDER 1600	209000	32.5	1348.8
220	TA-MODULATOR	DN200 HF	TA-SLIDER 1600	329000	32.5	7536.6

How To: Change-Over system

This methodology is only applicable from FW 2.5.0

If you want to use your bus to control your change-over setup. You must first pre-configure your TA-Slider via the HyTune app and the TA-Dongle.

- 1- Connect your TA-Dongle to the TA-Slider and define the Change-Over Type to Bus in the Control Settings section.
- 2- Define your Device ID, baud-rate (default: Auto Detect) and Parity (Default: Even).
- 3- Activate Relay in Control Settings section and set the Trigger to Bus (in the case of controlling the M106 rotary actuator)

From now all parameters can be set via the bus.

- 4- Define the valve the TA-Slider is mounted on (register: 149).
- 5- Define the Maximum flows for each of the regimes (register: 141-142 and register: 143-144).
- 6- Switch in between regimes using BusBinaryInput (register: 4).

You will need to use at least 3 registers to be able to control a Change-Over system over bus (register: 0,1 and 4).

Actuator configuration

The actuator can be configured by the HyTune app thanks to the TA-Dongle device, with or without the actuator power supplied. HyTune can be downloaded from Apple App Store or Google Play. Once connected to a TA-Slider, HyTune allows to set, from one screen, all following bus parameters:

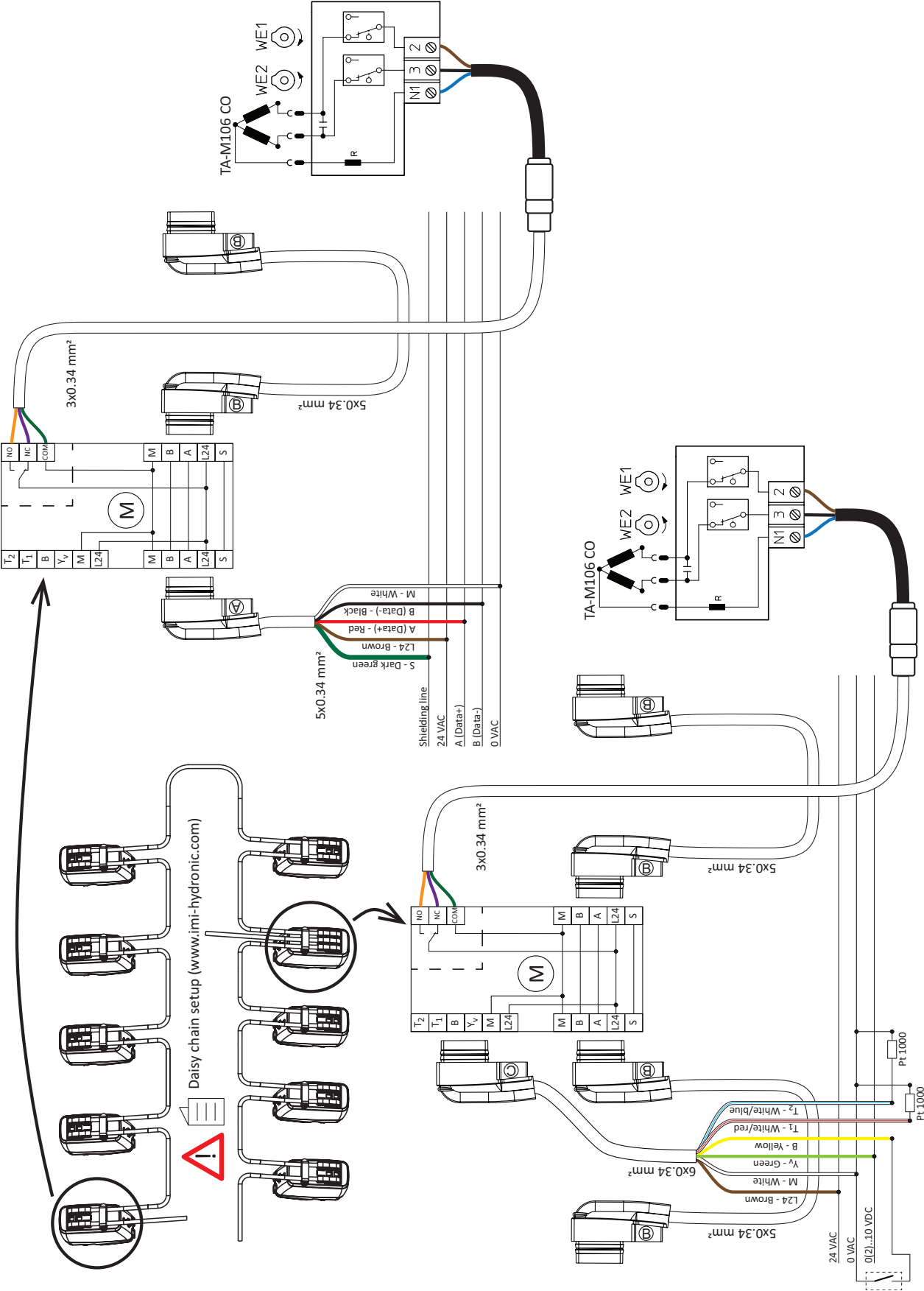
- baud rate,
 - parity,
 - slave id,
 - terminal resistance,
 - automatic device name and
 - the choice to control TA-Slider via the bus or via the 0-10 VDC analogue line (hybrid mode).
- In addition, over 100 other functional parameters can be set as for any other TA-Slider.

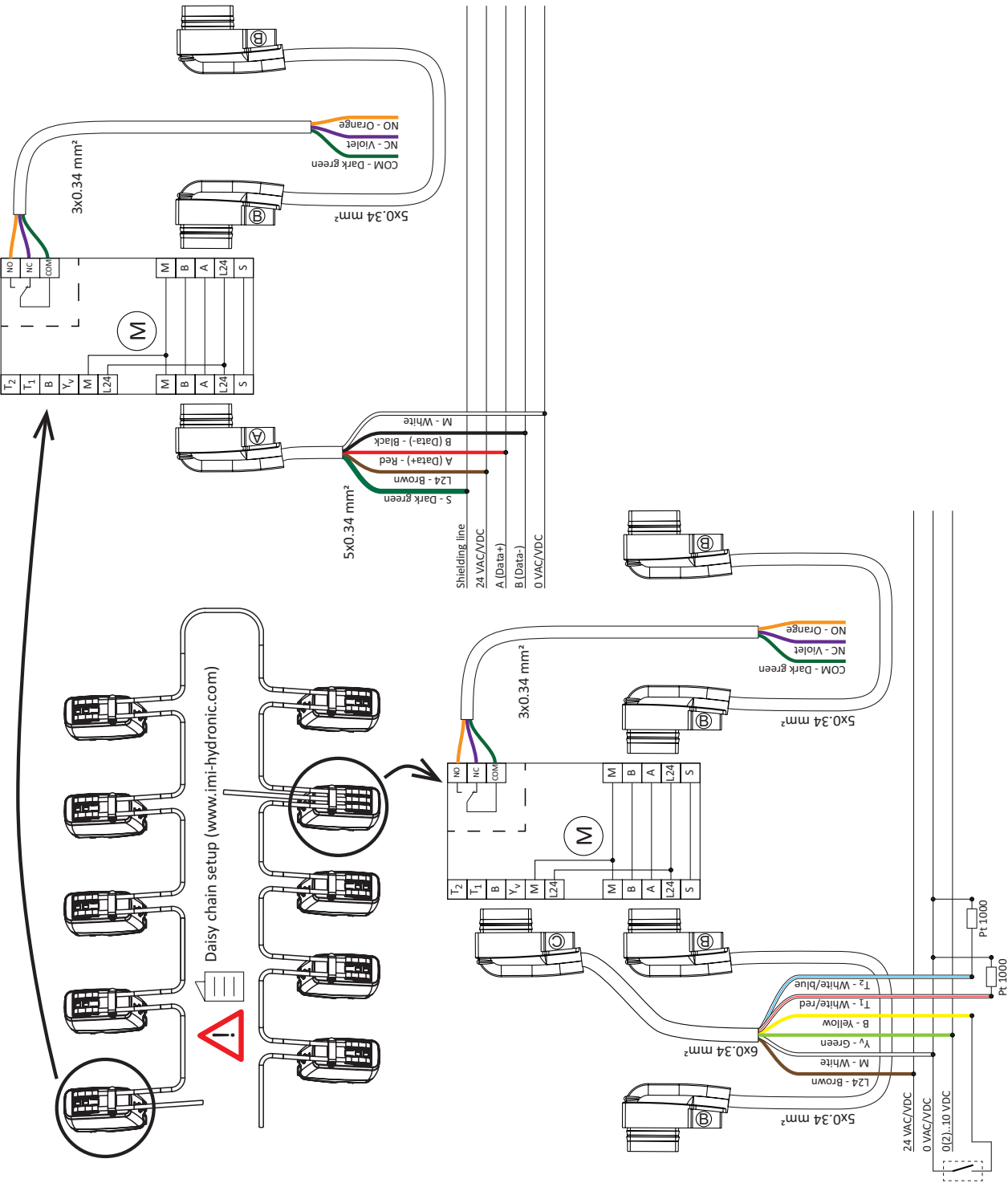
RS-485 termination resistance

As indicated above, the terminal resistance can be activated by using the HyTune app with the TA-Dongle device connected to TA-Slider.

TA-Slider 160/500 BACnet/Modbus







We reserve the right to introduce technical alterations without prior notice.

