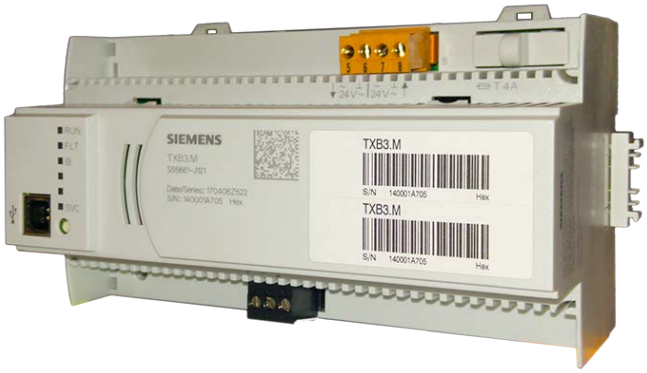
SIEMENS

TX-I/O Product Family

MS/TP Bus Interface Module

TXB3.M



The BACnet MS/TP Bus Interface Module (TXB3.M) enables communication between MS/TP Field Level Network and TX-I/O modules. Furthermore the BACnet MS/TP BIM provides power for TX-I/O modules and peripheral devices.

- Bus Interface Module to connect TX-I/O Modules to MS/TP FLN
- Power supply for TX-I/O Modules and peripheral devices
- BACnet MS/TP communication (BTL certified)
- Operating voltage AC 24 V
- USB interface
- Plug-in screw terminals
- Mounting on standard DIN rails or on the wall

Features

- Support up to 8 TX-I/O modules
- Support for 80 TX-I/O points
- Generation of 24 Vdc at 14.4 W (600 mA) to power TX-I/O modules and peripheral devices
- Transfer of 24Vac at 4A to power peripheral devices
- Support of up to 3 additional power supply modules
- Overload/short-circuit protection for peripheral devices

Use

The BACnet MS/TP Bus Interface Module (TXB3.M) provides FLN communication and power for TX-I/O modules and external devices such as sensors. It does not contain application or control for the TX-I/O modules. The control database for the TX-I/O points resides in the building controllers PXC.

If additional power is needed for TX-I/O modules or sensor power, up to three additional power supplies can be connected to the TX-I/O island bus. The TXB3.M also distributes fused 24 Vac to external devices such as actuators.

Functions

The TXB3.M provides an interface for BACnet Command Objects for points located on a TX-I/O Module to an upper level Automation Station over the BACnet Network.

MS/TP

The physical interface to the BA-Backbone for TXB3.M is RS-485. A single MS/TP port provides a line topology by connecting either two twisted pair cables or one twisted pair cable and an end of line terminator. This port is isolated from the TXB3.M power supply.

USB

Local access to the controller is provided through a USB device connector. Local firmware download and commissioning or diagnostics using the ABT Site tool are possible with this interface.

Power supply

TXB3.M is powered by a SELV/PELV AC 24 V source at 60 VA (2.5A maximum). Output terminals on plug are internally connected to the input terminals through the printed circuit board to provide for a power bus connection. Additional power sourced through the 4A fuse provides AC 24 V at maximum 96 VA for NEC Class 2 power distribution to the TX-I/O modules through TX-I/O island bus interface. Power supply converts AC to DC for TXB3.M operation and TX-I/O island bus interface.

TX-I/O island bus interface

The internal TX-I/O island bus interface provides DC 24 V power supply (CS), communication (CD), system neutral (⊥), and AC 24 V (~) to TX-I/O modules through a four pin connector on right side of TXB3.M. DC 24V provides 14.4W (600 mA) to a limited number (8) of TX-I/O modules through TX-I/O island bus plug and self-forming TX-IO bus. Attached field devices receive DC 24 V and/or AC 24 V through module distribution terminals where present; see TX-I/O Product Range for further details.

External TX-I/O island bus supply

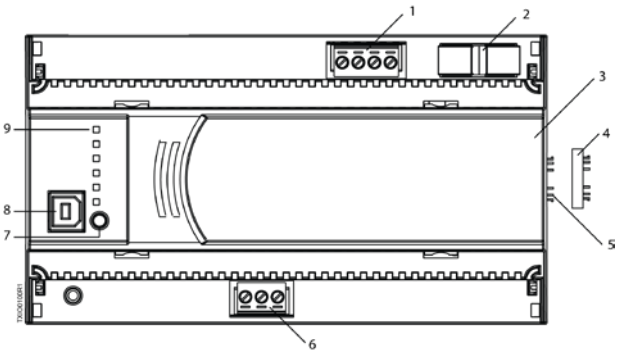
The internal bus supply can be reinforced by external power supply modules. Up to 3 additional power supplies can be connected in parallel (CS/CD). A maximum of 2 of these supplies including TXB3.M may connect on same self-forming bus (DIN rail). An additional power supply or bus connection module must be on same self-forming bus as TXB3.M in order to connect CS/CD to a power supply on a different self-forming bus.

All additional power supply modules must be switched on and off at the same time as the TXB3.M. Otherwise, DC 24 V TX-I/O island bus supply may sag, resulting in alarms.

Mechanical design

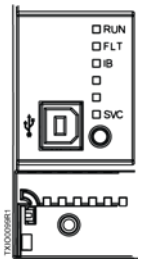
Mechanical design

Expandability is only possible on TXB3.M TX-I/O-bus to integrate data points up to the 80 point or 8-module limit.



1 Plug-in terminal block (AC 24 V operating voltage)
2 T 4 A fuse for AC 24 V peripheral supply via TX-I/O island bus
3 Plastic housing
4 TX-I/O island bus cover (supplied with the device)
5 TX-I/O island bus plug connection
6 Plug-in terminal block MS/TP
7 Service pin
8 USB Device interface
9 LED display for device and system status

LED Indicators

	LED	Color	Activity	Function
	RUN	Green	Continuously ON Continuously OFF Flashing	Device ready to operate. No supply for device. Start-up or program halted
	FLT	Red	Continuously OFF Continuously ON Rapid flashing	OK HW or SW error. Wrong or corrupted application.
	IB	Yellow	Continuously ON Flashing Continuously OFF	OK. Island bus communication. No modules connected TX-I/O modules not configured or communication fault.
	SVC	Red	Continuously OFF Blinking Blinking per wink command*)	OK. No application loaded. Physical identification of the room automation station.

Type summary

Product Description	Order number	SSN number
BACnet MS/TP BIM	TXB3.M	S55661-J121

Equipment combinations

⚠ CAUTION

Active inputs and output are permitted on the same module when connected sensors are powered from that module.

When sensors are externally powered, active inputs and outputs should be on separate modules.

Product Number	Description
TXM1.8D	TX-I/O Module, 8 DI points
TXM1.16D	TX-I/O Module, 16 DI points
TXM1.8U	TX-I/O Module, 8 Universal points
TXM1.8U-ML	TX-I/O Module, 8 Universal points with LOID
TXM1.8X	TX-I/O Module, 8 Super Universal points
TXM1.8X-ML	TX-I/O Module, 8 Super Universal points with LOID
TXM1.6R	TX-I/O Module, 6 DO with Relay points
TXM1.6R-M	TX-I/O Module, 6 DO with Relay points with manual override

Product Number	Description
TXS1.12F4	TX-I/O Power Supply, 1.2A, 4A Fuse
TXS1.12F10	TX-I/O Power Supply, 1.2A, 10A Fuse
TXS1.EF4	TX-I/O Bus Connection Module, 4A Fuse
TXS1.EF10	TX-I/O island bus Connection Module, 10A Fuse
TXA1.IBE	TX-I/O Island Bus Expansion Module

Signal types for TX-I/O modules

			Super Universal	Universal	Binary Input		BO
Module Function		Signal Type	TXM1. 8X (-ML)	TXM1. 8U(-ML)	TXM1. 8D	TXM1. 16D	TXM1. 6R(-M)
AI	0...10 V DC	AI 0-10V	•	•			
	4...20 mA [1]	AI 4-20mA	•				
	Temperature (LG-Ni1000 -50...180 °C)	AI Ni1000	•	•			
	Temperature (Pt1000, NA)	AI PT1K375	•	•			
	Temperature (Pt1000, EU)	AI PT1K385	•	•			
	Temperature (PTC) [2]	AI T1(PTC)	•	•			
	Temperature (NTC 10k)	AI NTC10K	•	•			
	Temperature (NTC 100k)	AI NTC100K	•	•			
	0...2500 Ohm [2]	AI 2500 Ohm	•	•			

Module Function		Signal Type	Super Universal	Universal	Binary Input		BO
			TXM1. 8X (-ML)	TXM1. 8U(-ML)	TXM1. 8D	TXM1. 16D	TXM1. 6R(-M)
AO	0...10 V DC	AO 0-10V	•	•			
	4...20 mA [1]	AO 4-20mA	•				
	3-points control, relay 2 channels [2]	AO 3-Pos Relay					•
BI	Switch on/off, contact normally open	BI NO	•	•	•	•	
	Switch on/off, contact normally closed	BI NC	•	•	•	•	
BO	Switch on/off, relay normally inactive	BO Relay NO					•
	Switch on/off, relay normally active	BO Relay NC					•
	On/off pulse, one channel	BO Pulse					•
	On/off pulse, two channels	BO Pulse On-Off					•

[1] 4-20 mA functionality is only available on point terminations 5-8.

[2] Not supported in Americas.

Product documentation

Topic	Title	Document ID:
Installation, cable length, topology	MS/TP Bus Interface Module Installation	A6V101107899
Engineering and commissioning, workflow	ABT online help	n.a.
Commissioning	User's guide: Setup & Service Assistant (SSA)	CA111050
TXB3.M Start-up Procedures	Setup and configuration	A6V1011181906
TX-I/O Product Range	Specification Sheet	149-476
	Getting Started	553-636
TXB3.M PIC Statement	Protocol Implementation Conformance Statement	A6V11202972

Related documents such as environmental declarations, CE declarations, etc., can be downloaded at the following Internet address:

http://siemens.com/bt/download

Notes

The subsections include important information that is either decisive for the sale or is essential for engineering.

Security

⚠ CAUTION

National safety regulations

Failure to comply with national safety regulations may result in personal injury and property damage.

- Observe national provisions and comply with the appropriate safety regulations.

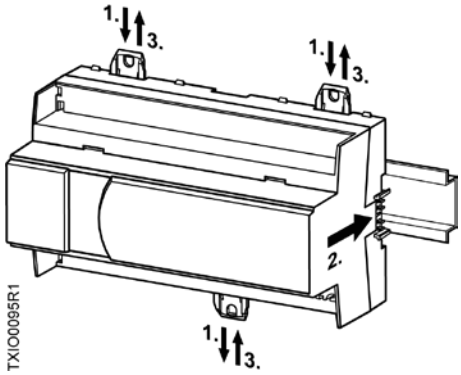
Engineering

- Each TXB3.M has a unique serial number for commissioning support. It is also located on the removable barcode label: See the ABT Site online help for the associated workflow.
- Each TXB3.M has a RNDIS USB Driver with default IP Address 192.168.250.1 that will create a Local Area Connection on the commissioning laptop for use with ABT Site.
- The TXB3.M only supports D Series TX-I/O modules.

	**⚠ CAUTION**
	Type and source of hazard The cable insulation must always comply with the present rated voltage. When the supply voltage of the BIM is transited to external devices, the cable cross section must always correspond to the rated current of the safety circuit breaking device. Observe local regulations in any case.

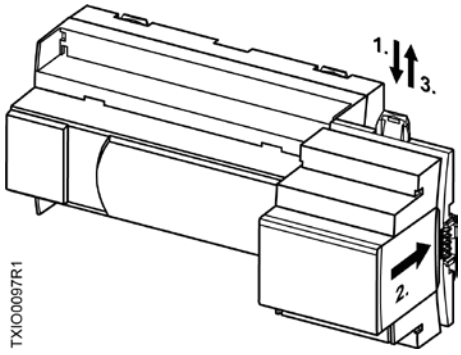
Mounting

The BIM can be snapped onto a standard mounting rail and has pluggable screw terminal blocks to connect the AC 24 V supply and AC 24 V outlets.



DIN rail mounting.

The TX-I/O modules are snapped onto the mounting rail on the right side of the BIM. The TX-I/O island bus is created automatically in this process.



TX-I/O island bus connection.

Mounting position

- Wall, horizontal from left to right or from right to left
- Ambient temperature 0...50 °C / 32...122 °F

Installation

⚠ WARNING

No internal line protection for supply lines to external consumers

Risk of fire and injury due to short-circuits

- Adapt the line diameters as per local regulations to the rated value of the installed fuse.

Note

TX-I/O island bus Polarity: If a power supply module is connected to output 24 V, do not invert ~ and ⊥. The devices are not damaged but TX-I/O island bus communications will not work.

Commissioning

Basic TXB3.M Start-up workflow

1	Verify Hardware installation and power.
2	Establish a connection to the TXB3.M.
3	Load the Device network settings.
4	Load (assign) the Application Configuration into the TXB3.M device.
5	Verify hardware is ready for commissioning.
6	Go Online.
7	Verify device and network settings.
8	Point verification and checkout.
9	Read back the online data to the project.
10	What's next.

Note

To avoid possible network issues/failure, a USB isolator must be used when connecting to a TXB3.M with cables greater than 1m (10 ft) or when using workstation with grounded USB.

Disposal

The device is considered an electronics device for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

Warranty

Technical data on specific applications are valid only together with Siemens products listed under "Equipment combinations". Siemens rejects any and all warranties in the event that third-party products are used.

Technical data

Dimensions and Weight	
Dimension	162 x 90 x 74 mm (6.4 x 3.5 x 2.9 in.)
Weight	349 g (0.8 lb)

Power supply	
Operating voltage	AC 24 V -15 % / +20%
Frequency	48…63 Hz
Power consumption including TX-I/O island bus supply	60 VA maximum with 96 VA maximum pass-thru

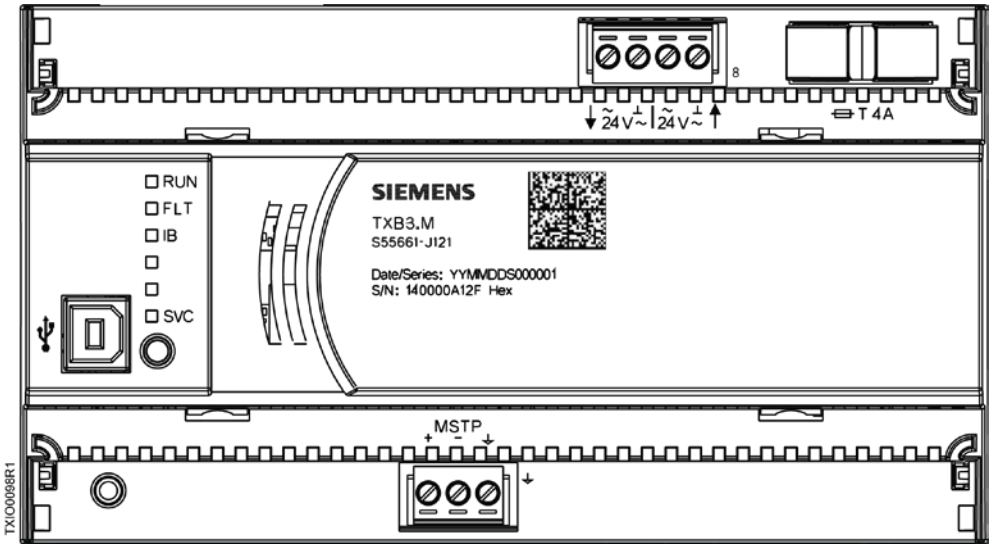
Interfaces	
MS/TP	Interface type: RS485 Galvanic isolation: Yes Baud rates: 9600, 19200, 38400, 57600, 115200 Protocol: BACnet over MS/TP Short-circuit proof Protection against faulty wiring at max. AC 24 V
SVC	Plug: USB Type B. Interface type: USB (2.0) Compatible Data rate: 1.5 Mbps and 12 Mbps. No galvanic isolation to ground. Protocol: RNDIS driver provides DHCP service for TCP/IPv4 local area connection to ABT Site.
TX-I/O island bus communication Nominal voltage Nominal wattage Max current	Connector: 4-Pin self-forming TX-I/O island bus Connector (1-CD, 2-CS, 3-⊥, 4-AC 24V) DC 24V 14.4 W 600mA

Wiring connections	
Pluggable screw terminals	Copper wire or copper strands with ferrules 1 x 0.6 mm (0.02 in) dia. to 2.5 mm^2 (0.004 in^2) or 2 x 0.6 mm (0.02 in) dia. to 1 mm^2 (0.0015 in^2). Copper strands without ferrules 1 x 0.2 mm2 to 2.5 mm2 or 1 x 24 AWG to 14 AWG or 2 x 0.2 mm2 to 1.5 mm2 or 2 x 24 AWG to 16 AWG.
Slotted screws	Size 1, tightening torque 0.6 Nm (0.44 lb-ft).
Wiring lengths for signals.	MSTP 1000 m (3280 ft).

Ambient conditions and protection classification	
Classification as per IEC 60730 Function of automatic control devices Degree of contamination Overvoltage category	 Type 1 2 III
Design type	Device suited for use with equipment of safety classes I and II.
Degree of protection of housing to EN 60529 Terminal part	 IP20
Climatic ambient conditions ● Transport (packaged for transport) as per EN 60721-3-2 ● Operation as per EN 60721-3-3.	 ● Class 2K3 Temperature -25...70 °C (-13... 158 °F) Air humidity 5...95% (non-condensing) ● Class 3K5 Temperature -5...45 °C (23... 113 °F)/ -5...50 °C (23... 122 °F) See Mounting Air humidity 5...95% (non-condensing)
Mechanical ambient conditions Transport as per EN 60721-3-2 Operation as per EN 60721-3-3	 Class 2M2 Class 3M2.

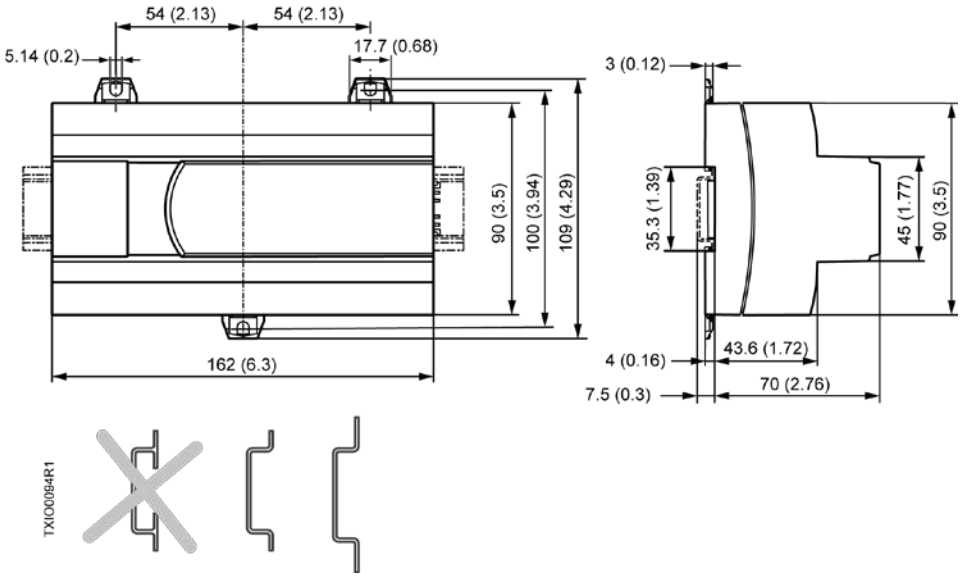
Standards, directives and approvals	
CE Product standard	EN 60730-1. Automatic electronic controls for household and similar use.
CE Product family standard General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS).	EN 50491-5-1 EN 50491-5-2 EN 50491-5-3
Electromagnetic compatibility	For residential, commercial, and industrial environments.
RCM conformity	AS/NZS 61000-6-3
UL Certification	http://database.ul.comUL certified per UL916; cUL certified per CSA C22.2 No. 205
FCC	CFR 47 Part 15 Class B.
BACnet BTL Listing	B-ASC
Environmental compatibility	The product environmental declaration (CM1E9203) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

Connection diagrams



Pin	Description	Terminal
MS/TP	MS/TP connection	⏚, +, -
USB	USB connection	⇄
↓24V~	Operating voltage AC 24 V	~, ⊥
24V~↑	Pass through AC 24 V to supply other devices on a power trunk	~, ⊥
Fuse	T 4 A fuse for TX-I/O island bus conductor V~	▭

Dimensions



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