

TX-I/O™

P-bus interface module TXB1.PBUS

- Interface between the automation station and the bus of the TX-I/O modules
- Integrated DC 24 V, 1.2 A to supply power to TX-I/O modules and field devices
- USB port for tool connection
- Compact format (to DIN43 880), small footprint
- Simple installation and easy access
 - Self-establishing bus connection for maximum ease of installation
 - Plug-in screw terminals
 - Fuse is accessible with device installed
- Easy, fast diagnostics

Functions

The bus interface module is used to connect the TX-I/O™ module system to an automation station with a P-bus interface. The I/O modules are configured with the TX-I/O™ tool. This configuration is downloaded into the bus interface module via the USB port and transferred from there to the TX-I/O modules.

The bus interface module incorporates a DC 24 V power supply for the TX-I/O modules and field devices. This can be operated in parallel with up to three TX1S12F10 power supply modules.

The bus interface module includes diagnostic functions for help with commissioning and service.

The TX-I/O™ tool can be used to simulate field devices, so facilitating the engineering and test phases.

Types

ASN	TXB1.PBUS bus interface module for P-bus
Items supplied	Bus interface module with 2 bus connector covers (1 for right end of I/O bar and 1 spare)
Accessories	TX-I/O™ tool configuration software (to order, please contact your local office)

Ordering

When ordering, please specify the quantity, product name and type code.

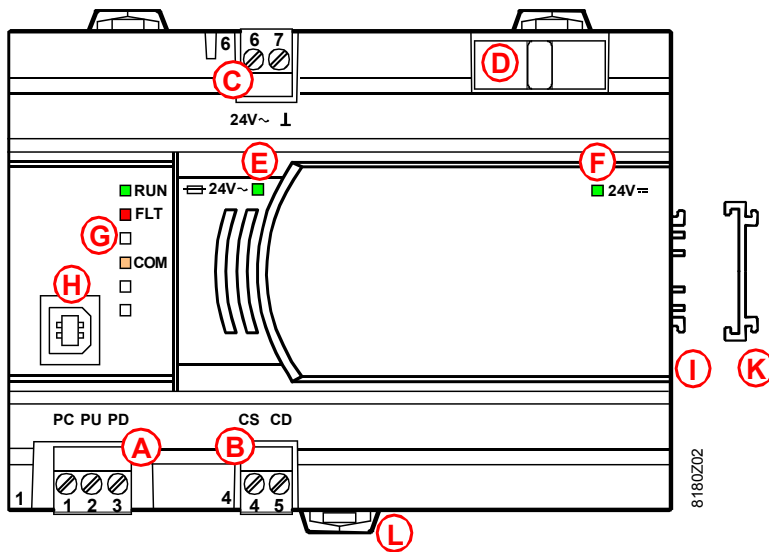
Example:

10 Bus interface modules **TXB1.PBUS**

Compatibility

The TXB1.PBUS bus interface module is suitable for use with all equipment in the TX-I/O™ range.

Overview



Key

- A Plug-in screw terminal ("1" on housing)
 - 1 PC P-bus clock
 - 2 PU Reference voltage
 - 3 PD P-bus data
- B Plug-in screw terminal ("4" on housing)
 - 4 CS DC 24 V supply for modules and field devices
 - 5 CD Island bus signal
- C Plug-in screw terminal ("6" on housing)
 - 6 24V~ Supply for bus interface module and Field devices
 - 7 ⊥ System ground
- D Fuse, M 10A, for AC 24 V field supply
- E LED: "AC 24 V field supply OK"
- F LED "DC 24 V module supply OK"
- G Status LEDs
- H USB port for TX-I/O tool
- I Bus connector
- K Bus cover (for right end of an I/O bar)
- L Slide fitting for standard mounting rail

Mechanical characteristics

Housing

- The housing complies with DIN 43880 and is 90mm wide.
- The plastic housing is provided with a large number of vents for cooling
- When mounting, allow for sufficient heat dissipation by convection (max. ambient temperature 50°C)

Electrical characteristics

Power supply module

- The bus interface module is supplied with AC 24 V. The tolerance range is $-10 \dots +20\%$.
- The device generates a supply voltage of DC 24 V ("Module supply 24V=") for the modules and field devices, designed for a current rating of 1.2 A.
- The power supply module is short-circuit proof.
- Parallel operation is permissible as follows:
 - A maximum of 3 power supply modules can be operated in parallel with one bus interface module
 - However, each I/O bar can accommodate a maximum of 1 additional power supply module (see [3])
- To supply the field devices, the AC 24 V supply voltage is connected via a M 10A fuse to the island bus ("Field supply 24V~", maximum admissible current 6 A).

Interfaces

- Plug-in screw terminals for supply voltage (24V~, \perp), island bus (CS, CD) and P-bus connection (PC, PU, PD)
- USB port type B for connection of the TX-I/O tool.

Island bus

- The I/O modules are mounted to the **right** of the bus interface module on the standard mounting rail. The electrical connection is established via the four island-bus contacts on the side of the modules. The bus is created automatically when the TX-I/O™ devices are connected one next to the other on the rail.
- There is no bus connector on the left side of the device
- For expansion purposes, the CS and CD signals of the island bus are also routed via terminals.

System ground

- The I/O modules and all connected field devices are connected to the same system ground (\perp).
- The system ground of the I/O island (\perp) and of the automation station (G0) are electrically connected (in the P-Bus interface module)

Fuse

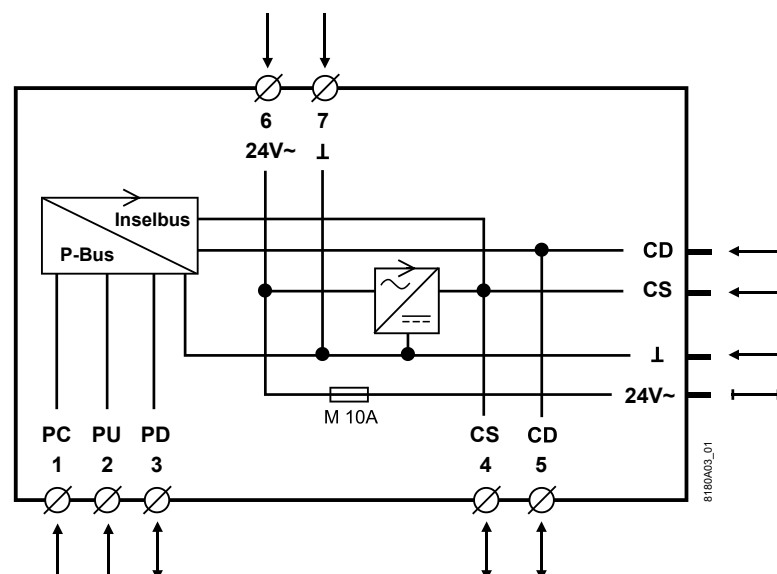
- In the event of overload or short circuit, the fuse (M 10A) cuts off the AC 24 V field supply voltage (but not the bus interface module's supply voltage)
- The fuse can be replaced without removing the bus interface module.

Protection against incorrect wiring

- All terminals are protected against shortcut and incorrect wiring with AC/DC 24 V
- This is the case even for incorrect AC phase sequence
- **Bus connector on side: no protection**
- **Voltage > AC/DC 24 V: no protection**



Circuit principles



LED indication

When the bus interface module is switched on, all LEDs light up for approx. 2 seconds (LED test)

RUN (Green)

The LED lights up when the device CPU is in operation

FLT (Red)

- The LED lights up in the event of a fault (see below)
 - It flashes slowly if there is no configuration
- It flashes quickly while configuring the modules and while the TX-I/O Tool creates an Island bus report
- For detailed information on diagnostics, see [3].

COM (yellow)

The LED lights up to indicate communication on the P-bus

Fuse LED
for field supply



Indicates AC 24 V supply to bus interface module and field supply:

- ON AC 24 V (supply voltage) input present, and Fuse OK
- OFF No AC 24 V (supply voltage) input, or Fuse blown

Module supply LED

(CS conductor)



Indicates DC 24 V module supply / field supply:

- ON Module supply OK. *When other supplies are in the I/O island (CS >21.5 V) and AC 24 V is OK, the LED is also ON.*
- OFF Module supply not OK
Reason: no AC 24 V (supply voltage) input, or AC/DC converter faulty,

Disposal



The device is considered electrical and electronic equipment for disposal in terms of the applicable European Directive 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.

Engineering, mounting, installation and commissioning


Please refer to the following documents

Document	Number
[1] TX-I/O™ module data sheets	CM1N817...
[2] TX-I/O™ functions and operation	CM110561
[3] TX-I/O™ Design and installation manual	CM110562
[4] Replacement of legacy signal types	CM110563
[5] TX-I/O™ Engineering documentation V2.37	CM110641 ff
[6] TX-I/O™ Engineering documentation V4	CM111001 ff

Engineering

The following information is required when sizing the power supply for an I/O island (see [3]):

- Number and type of modules to be supplied (basic consumption of module electronics)
- Type and number of data points (Consumption per configured data point)
- Type and number of field devices to be supplied via the field power supply

Caution! 

- 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

Mounting	The module is mounted on a standard 35 x 7.5 mm mounting rail (top-hat rail type TH35-7.5 to EN60715)
Sequence	The first item on an I/O bar is always the power supply device (bus interface module, power supply module or bus connection module, see [3]).
Replacement	A bus interface module can be removed from the row of modules but to do this, it is essential to remove the plug-in I/O unit from the adjacent module to the right. There is no need to remove the terminal base of this module.
Permitted orientation	The TX-IO™ devices can be mounted in any orientation: It is important to provide adequate ventilation so that the admissible ambient temperature (max. 50°C) is not exceeded.

Technical data

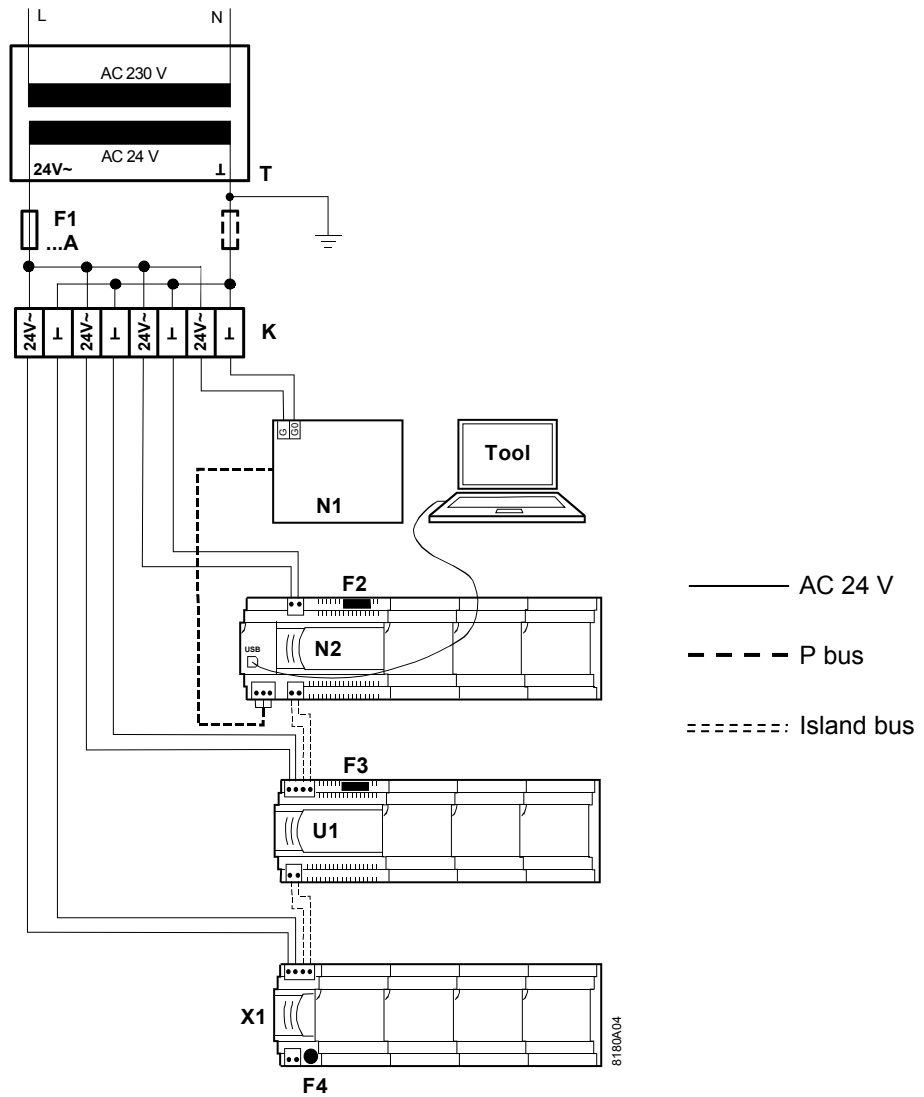
Operating voltage (24V~, ⊥)	Extra low voltage SELV or PELV in accordance with HD348 Half-wave load	AC 24 V, -10 ... +20% or AC 24 V class 2 (US) 50 ... 60 Hz Symmetrical
Power consumption	Without module and field device load With maximum admissible load DC 24 V / 1.2 A With maximum admissible load DC 24 V / 1.2 A + AC 24 V / 6 A	7.5 VA / 0.31 A 55 VA / 2.3 A 200 VA / 8.3 A
Fusing	External supply line protection (EU)	Fuse slow max. 10 A or Circuit breaker max. 13 A Characteristic B, C, D according to EN 60898 or Power source with current limitation of max. 10 A
Protection against shortcircuit and incorrect wiring	Bus connector on side Terminals	No protection! See below
DC output (CS, ⊥)	Nominal voltage Max. current Can be connected in parallel (regulated output voltage) Short-circuit-proof, overload protected Excess temperature cutout Indication	DC 24V 1.2 A For details refer to [3] Self-resetting LED "24V="

AC output (24V~, ⊥)	Nominal voltage	AC 24 V
	Max. current	6.0 A
	Fuse	M 10A (replaceable)
	Indication	LED "24V~"
Island bus communication	(CD, CS)	Short-circuit proof
PBUS communication	(PC, PD,PU)	Short-circuit proof
USB port	Socket	Type B (USB device)
	Data speed (USB 1.0 Full Speed)	12 Mbits/s
	Electrically isolated from ⊥	No
	Protective circuit for protection from overvoltage and overcurrent	Yes
Plug-in connection terminals	Mechanical design	Plug-in screw terminal
	Solid or stranded copper conductors with connector sleeves	1 x 0,6 mmØ to 2.5 mm ² or 2 x 0,6 mmØ to 1.5 mm ²
	Stranded copper conductors without connector sleeves	1 x 0,6 mmØ to 2.5 mm ² or 2 x 0,6 mmØ to 1.5 mm ²
	Screwdriver	Slot-headed screws Screwdriver No. 1 with shaft diameter ≤ 4.5 mm
	Max. tightening torque	0.6 Nm
Classification to EN 60730	Mode of operation of automatic electrical controls	Type 1
	Contamination level	2
	Mechanical design	Protection class III
Housing protection	Protection standard to EN 65029	
	Front-plate components in DIN cut-out	IP30
	Terminal section	IP20
Ambient conditions	Operation	To IEC 60721-3-3
	Climatic conditions	Class 3K5
	Temperature	-5 ... 50 °C
	Humidity	5 ... 95 % rh
	Mechanical conditions	Class 3M2
	Transport	To IEC 60721-3-2
	Climatic conditions	Class 2K3
	Temperature	-25...70 °C
Humidity	5 ... 95 % rh	
	Mechanical conditions	Class 2M2

Standards, directives and approvals	Product standard	EN 60730-1	Automatic electrical controls for household and similar use
	Electromagnetic compatibility (Applications)		For use in residential, commercial, light-industrial and industrial environments
	EU conformity (CE)		CM1T10870xx *)
	UL certification (US)		UL 916, UL 864, http://ul.com/database
	RCM-conformity (EMC)		CM1T10870en_C1 *)
	EAC conformity		Eurasia conformity
Environmental compatibility	Product environmental declaration (contains data on RoHS compliance, materials composition, packaging, environmental benefit, disposal)		CM2E8180 *)
Color	Housing		RAL 7035 (light gray)
Dimensions	Housing to DIN 43 880, see "Dimensions"		
Weight	With / without packaging		318g / 280g

*) The documents can be downloaded from <http://siemens.com/bt/download>.

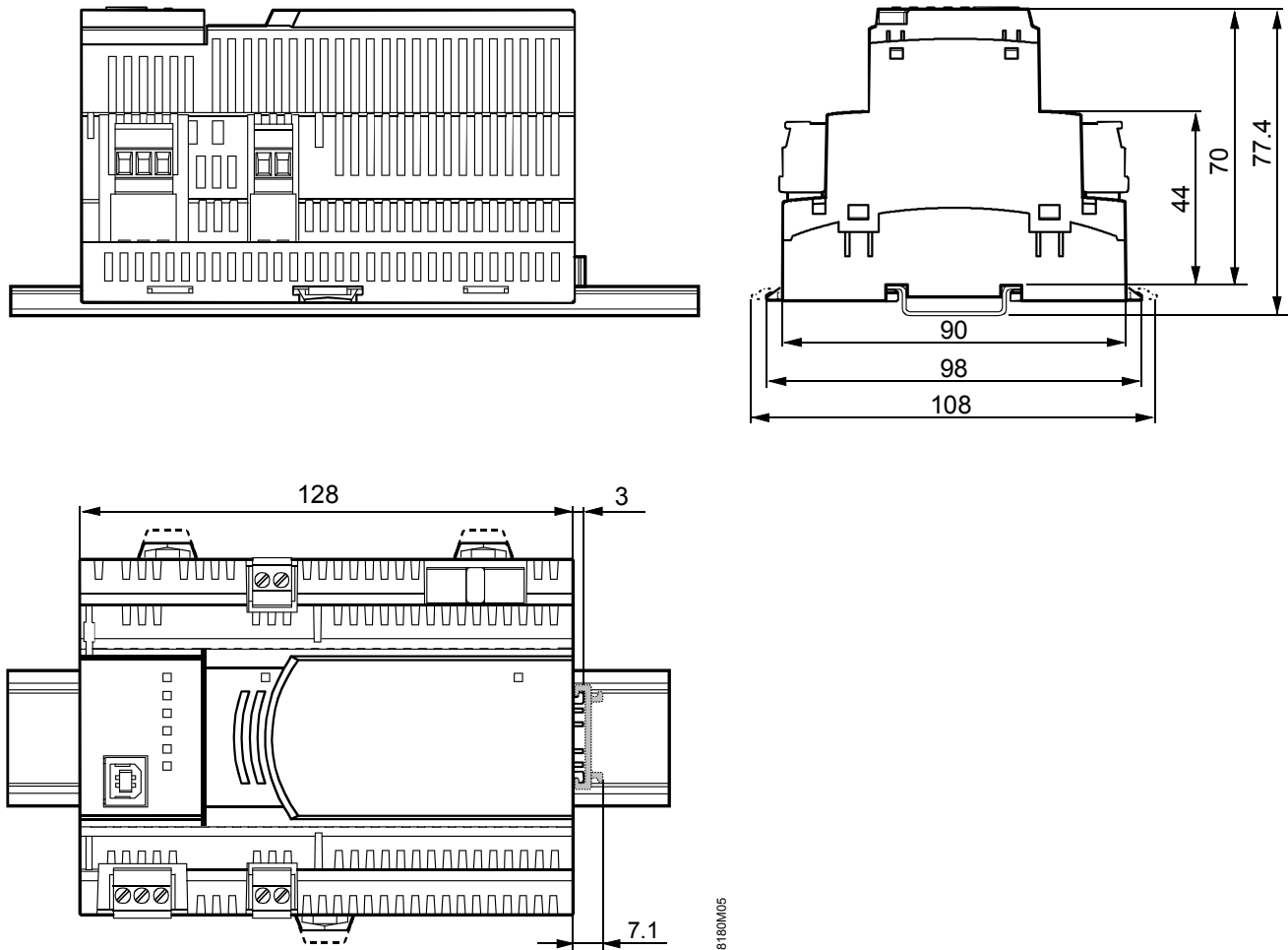
Connection example



Key	T	Safety isolating transformer AC 230 V/AC 24 V to EN 61 558
	K	Terminal strip for ac 24 V distribution via star configuration
	N1	Automation station
	N2	Bus interface module with integral power supply
	U1	TXS1.12F10 power supply module
	X1	TXS1.EF10 bus connection module
	F1	Extra-low voltage fuse for max. power consumption, AC 24 V
	F2	Fine-wire medium time lag 10 A fuse, factory-fitted in bus interface module
	F3	Fine-wire medium time lag 10 A fuse, factory-fitted in power supply module
	F4	Fine-wire medium time lag 10 A fuse, factory-fitted in bus connection module
	Tool	TX-I/O tool for configuration, simulation and diagnostics

Dimensions

Dimensions in mm



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