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

<table>
<thead>
<tr>
<th>ASN</th>
<th>TXB1.PBUS bus interface module for P-bus</th>
</tr>
</thead>
</table>

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 ... +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~, ⊥), 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 (⊥).
- The system ground of the I/O island (⊥) 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

<table>
<thead>
<tr>
<th>Document</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1] TX-I/O™ module data sheets</td>
<td>CM1N817...</td>
</tr>
<tr>
<td>[2] TX-I/O™ functions and operation</td>
<td>CM110561</td>
</tr>
<tr>
<td>[4] Replacement of legacy signal types</td>
<td>CM110563</td>
</tr>
<tr>
<td>[5] TX-I/O™ Engineering documentation V2.37</td>
<td>CM110641 ff</td>
</tr>
<tr>
<td>[6] TX-I/O™ Engineering documentation V4</td>
<td>CM111001 ff</td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>Operating voltage (24V~, ⊥)</th>
<th>Extra low voltage SELV or PELV in accordance with HD348 Half-wave load</th>
<th>AC 24 V, -10 ... +20% or AC 24 V class 2 (US) 50 ... 60 Hz Symmetrical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption</td>
<td>Without module and field device load</td>
<td>7.5 VA / 0.31 A</td>
</tr>
<tr>
<td></td>
<td>With maximum admissible load DC 24 V / 1.2 A</td>
<td>55 VA / 2.3 A</td>
</tr>
<tr>
<td></td>
<td>With maximum admissible load DC 24 V / 1.2 A + AC 24 V / 6 A</td>
<td>200 VA / 8.3 A</td>
</tr>
<tr>
<td>Fusing</td>
<td>External supply line protection (EU)</td>
<td>Fuse slow max. 10 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or Circuit breaker max. 13 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Characteristic B, C, D according to EN 60898</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or Power source with current limitation of max. 10 A</td>
</tr>
<tr>
<td>Protection against shortcut and incorrect wiring</td>
<td>Bus connector on side Terminals</td>
<td>No protection!</td>
</tr>
<tr>
<td>DC output (CS, ⊥)</td>
<td>Nominal voltage</td>
<td>DC 24V</td>
</tr>
<tr>
<td></td>
<td>Max. current</td>
<td>1.2 A</td>
</tr>
<tr>
<td></td>
<td>Can be connected in parallel (regulated output voltage)</td>
<td>For details refer to [3]</td>
</tr>
<tr>
<td></td>
<td>Short-circuit-proof, overload protected Excess temperature cutout</td>
<td>Self-resetting</td>
</tr>
<tr>
<td></td>
<td>Indication</td>
<td>LED &quot;24V=&quot;</td>
</tr>
</tbody>
</table>
### Siemens TXB1.PBUS – P-bus interface module

**Nominal voltage** | AC 24 V
---|---
**Max. current** | 6.0 A
**Fuse** | M 10A (replaceable)
**Indication** | LED "24V~"

<table>
<thead>
<tr>
<th>Island bus communication</th>
<th>(CD, CS )</th>
<th>Short-circuit proof</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBUS communication</td>
<td>(PC, PD,PU)</td>
<td>Short-circuit proof</td>
</tr>
<tr>
<td>USB port</td>
<td>Socket</td>
<td>Type B (USB device)</td>
</tr>
<tr>
<td>Data speed (USB 1.0 Full Speed)</td>
<td>12 Mbits/s</td>
<td></td>
</tr>
<tr>
<td>Electrically isolated from</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Protective circuit for protection from</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>overvoltage and overcurrent</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plug-in connection terminals</th>
<th>Mechanical design</th>
<th>Plug-in screw terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Solid or stranded copper conductors with connector sleeves</td>
<td>1 x 0.6 mm∅ to 2.5 mm²</td>
</tr>
<tr>
<td></td>
<td>Stranded copper conductors without connector sleeves</td>
<td>or 2 x 0.6 mm∅ to 1.5 mm²</td>
</tr>
<tr>
<td></td>
<td>Screwdriver</td>
<td>Slot-headed screws</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Screwdriver No. 1 with shaft diameter ≤ 4.5 mm</td>
</tr>
<tr>
<td></td>
<td>Max. tightening torque</td>
<td>0.6 Nm</td>
</tr>
</tbody>
</table>

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

*) The documents can be downloaded from [http://siemens.com/bt/download](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