TX-I/O™
Island bus expansion module

- Expand island bus to a distance of up to 2 x 200 meters
- Compact design per DIN 43 880, requires little space
- Easy installation and setup
  - Mounted on standard rails
  - Self-connecting bus (island bus) for the easiest possible installation
  - Plug-in screw terminals for island bus expansion
  - No programming / parameterization tool required
Function

- The island bus expansion modules allow for “decentralized” sub-islands with TX-I/O-modules, that may be located up to 2 x 200 m from the "local" sub-island.
- A programming / parameterization tool is not required.
- The DIP switches for the bus master and bus terminator must be set correctly on the island bus expansion modules.
- The island bus expansion is based on differential RS-485 transmission technology.
- "Decentralized" sub-island can be supplied using a separate power supply. Loss of this power does not impact the island bus of local sub-islands.

For details on wiring and topology, refer to TX-I/O™ engineering and installation manual, CM110562.

Type summary

Island bus expansion module  TXA1.IBE

Ordering

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

Example:

10  Island bus expansion modules  TXA1.IBE

Equipment combinations

Compatibility

Full functionality is only possible using
- TX-I/O modules from series C and higher
- P-bus interface modules series B and higher
- PXC-NRUD Series C and higher only (Migration – INTEGRAL AS1000)
- All models of PROFINET BIM

Functionality is reduced when using modules for series B and BIM series A: refer to CM110562.

System restrictions

- Number of decentralized sub-islands per I/O island  Max. 8
- Number of island bus expansion modules per decentralized sub-island  Exactly 1
- Number of I/O modules per I/O island  Maximum of 64
- Number of I/O modules per sub-island  No limit, as long as the total of the entire island (64) is maintained.

See TX-I/O engineering and installation manual, CM110562 for more details.
Overview

- Attachment slider for standard rails
- BM DIP switch *) for bus master (island bus)
- LED "COM", displays island bus communication
- Bus connector right
- Bus connector left
- BT DIP switch *) for bus terminal (island bus expansion)
- Plug-in screw terminals
  + Signal island bus expansion
  – Signal island bus expansion
  ▽ equipotential bonding

*) DIP switch:
  Both "BM" switches must have the same position.
  The same applies to "BT" switches.
  For details on wiring and topology, refer to TX-I/O™ engineering and installation manual, CM110562.

Mechanical properties
- The housing complies with DIN 43880 and is 32mm wide.
- The island bus expansion module is plugged on the right side of the power module / bus connection module on the standard rail. The electrical connection is on the 4 side island bus contacts. The bus establishes its own connection, when TX-I/O™ devices are plugged into one another on the rails.

Electrical properties

Interfaces
- Island bus expansion: Plug-in screw terminals
- Island bus: Bus connector on the right and left side of the module.

System ground
- Island bus and island bus expansion are galvanically connected

Protection against incorrect wiring
- All terminals are protected against short circuit and incorrect wiring using AC/DC 24 V.
- This applies as well to reverse phase voltage AC 24 V
- Side bus connector: No protection

Signaling
LED “COM" (yellow)
The LED indicates bus traffic on the island bus:
- Both directions OK: irregular blinking
- Bus short circuit: bright ON
Engineering, topology

- Please consult the following document:
  TX-I/O™ engineering and installation manual, CM110562.
- Island bus and island bus expansion are designed for indoor use only

Mounting

Fixings
The device is mounted on a standard rail 35 x 7.5 mm
(tophat rails TH35-7.5 per EN60715)

Mounting order
An island bus expansion module can be placed anywhere in the I/O row.
For signal quality reasons, however, the best place is directly after the supplying device
(automations station, power supply module, bus connection module or bus interface module).
See also the connection examples on pages 7 and 8.

Exchange
An island bus expansion module may be removed from the row. The electronic component from the neighboring right module must, however, be removed.
Its terminal block may remain.

Permissible mounting positions
TX-I/O™ devices can be mounted in any position:
   horizontally, vertically, on a horizontal surface.
   You must ensure, however, that sufficient ventilation is available to maintain the permissible ambient temperature (max. 50°C).

Disposal
The devices are considered electronics devices for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic garbage.
- Dispose of the devices through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.
## Technical data

### Supply (bus connector on side)
- **Operating voltage range**: DC 21.5...26 V (SELV / PELV) or DC 24 V class 2 (US)
- **Max. power consumption**: 1.2W

(for the sizing of power supplies, see CM110562)

### Maximum distances

*only with TX-I/O modules series C and higher; only with BIM Series B and higher*

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Island bus expansion</td>
<td>Max. 2 x 200 m</td>
<td></td>
</tr>
<tr>
<td>Island bus inside of a sub-island</td>
<td>Max. 50 m with round cable</td>
<td></td>
</tr>
<tr>
<td>Island bus inside of a sub-island (depending on cross section and current load)</td>
<td>Max. 100 m with RG-62</td>
<td></td>
</tr>
</tbody>
</table>

(For details, refer to TX-I/O™ engineering and installation manual, CM110562)

### Number of supported modules

<table>
<thead>
<tr>
<th>Module Type</th>
<th>Per I/O island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus expansion modules</td>
<td>Max. 9 modules</td>
</tr>
<tr>
<td>I/O modules</td>
<td>Max. 64 modules</td>
</tr>
</tbody>
</table>

### Island bus communication

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Island bus traffic display</td>
<td>LED &quot;COM&quot;</td>
</tr>
<tr>
<td>Bus master function</td>
<td>2 DIP switches “BM” = ON</td>
</tr>
<tr>
<td>Bus terminator function (terminator)</td>
<td>2 DIP switches “BT” = ON</td>
</tr>
</tbody>
</table>

### Galvanic isolation

- Island bus and island bus expansion are galvanically connected via PTC (Conductors ⊥ and ↘).

### Short-circuit protection and incorrect wiring

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side bus connector</td>
<td>No protection!</td>
</tr>
<tr>
<td>Terminal</td>
<td>See below</td>
</tr>
</tbody>
</table>

### Cabling

For details on cabling for RS485 and wiring rules, refer to TX-I/O™ engineering and installation manual, CM110562.

### Connection terminals, plug-in, for island bus expansion

<table>
<thead>
<tr>
<th>Mechanical design</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper wire</td>
<td>1 x 0.6 mm² to 2.5 mm²</td>
</tr>
<tr>
<td></td>
<td>or 2 x 0.6 mm² to 1.0 mm²</td>
</tr>
<tr>
<td>Copper stranded wires with ferrules</td>
<td>1 x 0.6 mm² to 2.5 mm²</td>
</tr>
<tr>
<td></td>
<td>or 2 x 0.6 mm² to 1.0 mm²</td>
</tr>
<tr>
<td>Copper stranded wires without ferrules</td>
<td>1 x 0.6 mm² to 2.5 mm²</td>
</tr>
<tr>
<td></td>
<td>or 2 x 0.6 mm² to 1.5 mm²</td>
</tr>
<tr>
<td>Screwdriver</td>
<td>Flat screwdriver</td>
</tr>
<tr>
<td></td>
<td>size 1</td>
</tr>
<tr>
<td></td>
<td>with shaft Ø ≤ 4.5 mm</td>
</tr>
<tr>
<td>Maximum stud torque</td>
<td>0.6 Nm</td>
</tr>
</tbody>
</table>

### Classification per EN 60730

| Function of automatic control devices | Type 1 |
| Degree of pollution |  |
| Mechanical design | 2 |
| Protection class | III |

### Housing type

<table>
<thead>
<tr>
<th>IP class per EN 60529</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front parts in DIN excerpt</td>
<td>IP30</td>
</tr>
<tr>
<td>terminal part</td>
<td>IP20</td>
</tr>
</tbody>
</table>
### Ambient conditions

<table>
<thead>
<tr>
<th>Operation</th>
<th>As per IEC 60721-3-3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Climatic conditions</strong></td>
<td>Class 3K5</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>–5 ... 50 °C</td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>5 ... 95 % r.h.</td>
</tr>
<tr>
<td><strong>Mechanical conditions</strong></td>
<td>Class 3M2</td>
</tr>
</tbody>
</table>

#### Standards, directives and approvals

<table>
<thead>
<tr>
<th>Product standard</th>
<th>EN 60730-1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electromagnetic compatibility (Applications)</strong></td>
<td>For use in residential, commercial, light-industrial and industrial environments</td>
</tr>
<tr>
<td><strong>EU conformity (CE)</strong></td>
<td>CM1T10870xx *)</td>
</tr>
<tr>
<td><strong>UL certification (US)</strong></td>
<td>UL 916, UL 864, <a href="http://ul.com/database">http://ul.com/database</a></td>
</tr>
<tr>
<td><strong>CSA certification</strong></td>
<td>Class 3862, Class 4812 <a href="http://directories.csa-international.org/">http://directories.csa-international.org/</a></td>
</tr>
<tr>
<td><strong>RCM-conformity (EMC)</strong></td>
<td>CM1T10870en_C1 *)</td>
</tr>
<tr>
<td><strong>EAC conformity</strong></td>
<td>Eurasia conformity</td>
</tr>
</tbody>
</table>

### Environmental compatibility

| Product environmental declaration (contains data on RoHS compliance, materials composition, packaging, environmental benefit, disposal) | CM2E8184 *) |

### Color

| Housing | Light gray, RAL 7035 |

### Dimensions

| Housing as per DIN 43880, see dimensions |

### Weight

| Without / with packaging | 64 / 84 g |

*) The documents can be downloaded from [http://siemens.com/bt/download](http://siemens.com/bt/download).
Connection examples for automation station with island bus or PROFINET BIM

See TX-I/O engineering and installation manual, CM110562 for more details.

A) Maximum 2 segments of max. 200 meters each are possible using the island bus expansion modules

Key

N1 Automation station with island bus or PROFINET BIM
U1 Power supply module
U2 Island bus expansion module
U3 TX-I/O modules
X1 Bus connection module

BM Bus master function (island bus, both switches in the same position!)
BT Bus terminator function (island bus expansion, both switches in the same position!)

B) Decentralized sub-island without power supply module (maximum distance depends on current on conductors CS and ⊥)

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Connection examples for automation station with P-bus

See TX-I/O engineering and installation manual, CM110562 for more details.

C) Maximum 2 segments of max. 200 meters each are possible using the island bus expansion modules.

Key

N2 Automation station with P-bus
U1 Power supply module
U2 Island bus expansion module
U3 TX-I/O modules
U4 P-bus interface module
X1 Bus connection module

BM Bus master function (island bus, both switches in the same position!)
BT Bus terminator function (island bus expansion, both switches in the same position!)

D) Decentralized sub-island without power supply module (maximum distance depends on current on conductors CS and ⊥)

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Dimensions

Dimensions in mm