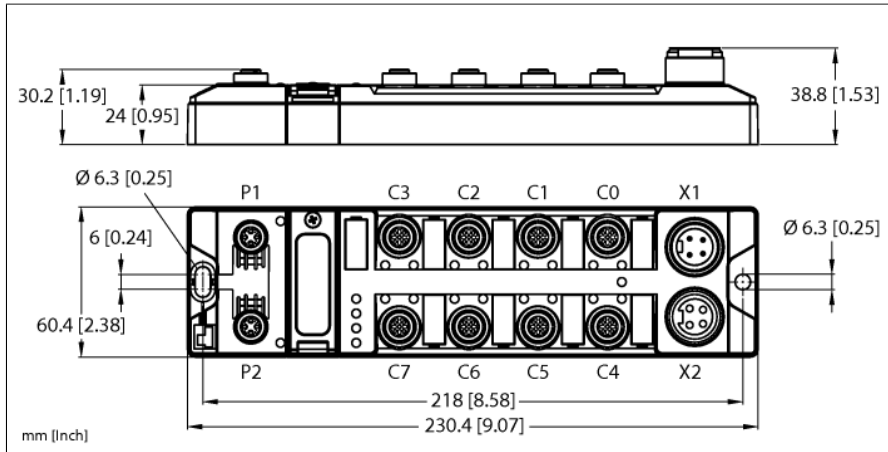


Compact Multiprotocol I/O Module for Ethernet

8 IO-Link Master Channels

4 Universal Digital PNP Channels, 2 A, Channel Diagnostics

TBEN-L4-8IOL



| | |
|--------------------------------|--|
| ID | 6814082 |
| Supply | |
| Supply voltage | 24 VDC |
| Admissible range | 18...30 VDC Total current max. 9 A per voltage group Total current V1 + V2 max. 11 A |
| Voltage supply connection | 7/8", 4-pin |
| Operating current | V1: max. 180 mA, min. 120 mA V2: min. 40 mA, max. 90 mA |
| Sensor/actuator supply | Supply from V1 Short-circuit proof, max. 4 A per slot C0 and C4, max. 2 A per slot C1–C3, C5–C7 |
| Sensor/actuator supply | Class B supply from V2 Short-circuit proof, max. 4 A per slot C4 and C5, max. 2 A per slot C6 and C7 |
| Electrical isolation | galvanic isolation of the voltage groups V1 and V2, voltages up to 500 VAC |
| Fault exclusion | Yes, acc. to EN ISO 13849-2, appendix D.2 |
| System data | |
| Fieldbus transmission rate | 10/100 Mbps |
| Fieldbus connection technology | 2 x M12, 4-pin, D-coded |
| Protocol detection | automatic |
| Web server | Default: 192.168.1.254 |
| Service interface | Ethernet via P1 or P2 |
| ARGEE functionality | Supported |
| ARGEE Firmware Version | 3.0.6.0 |
| ARGEE Engineering Version | 2.0.25.0 |

- PROFINET device, EtherNet/IP device, Modbus TCP server, CC-Link IE field basic
- Integrated Ethernet switch
- Supports 10 Mbps/100 Mbps
- 2 x M12, 4-pin, D-coded, Ethernet fieldbus connection
- PROFINET S2 system redundancy
- Glass fiber reinforced housing
- Shock and vibration tested
- Fully potted module electronics
- Protection classes IP65, IP67, IP69K
- 7/8" male connector for power supply, 4-pin
- Galvanically isolated voltage groups
- ATEX zone 2/22
- CCC-Ex
- M12 ports for IO-Link master, 5-pin
- IO-Link master port class A and port class B
- IO-Link Protocol 1.1
- Programmable ARGEE

| Modbus TCP | |
|-------------------------------|---|
| Addressing | Static IP, DHCP |
| Supported function codes | FC1, FC2, FC3, FC4, FC6, FC15, FC16, FC23 |
| Number of TCP connections | 8 |
| Input register start address | 0 (0x0000 hex) |
| Output register start address | 2048 (0x0800 hex) |

| Ethernet/IP | |
|---------------------------------|-----------------------------------|
| Addressing | acc. to EtherNet/IP specification |
| Quick Connect (QC) | < 150 ms |
| min. RPI | 2 ms |
| Device Level Ring (DLR) | supported |
| Class 3 connections (TCP) | 3 |
| Class 1 connections (CIP) | 10 |
| Input Assembly Instance | 101 |
| Output Assembly Instance | 102 |
| Configuration Assembly Instance | 106 |

| PROFINET | |
|---------------------------------|---------------------------------|
| Version | 2.35 |
| Addressing | DCP |
| Conformance class | B (RT) |
| MinCycleTime | 1 ms |
| Fast Start-Up (FSU) | < 150 ms |
| Diagnostics | acc. to PROFINET alarm handling |
| Topology detection | supported |
| Automatic addressing | supported |
| Media Redundancy Protocol (MRP) | supported |
| System redundancy | S2 |
| Netload class | 3 |

| CC-Link | |
|----------------------------|----------------------------|
| Interface | CC-Link IE Field Basic |
| Type | Intelligent device station |
| Message Transmission | Yes |
| Profile specification | CSP+ |
| Max. occupied stations | 4 |
| IP change mechanism | Yes |
| Acyclic SLMP communication | Yes |

| Digital inputs | |
|---------------------------|--|
| Number of channels | 4 DXP + 8 SIO |
| Connectivity inputs | M12, 5-pin |
| Input type | PNP |
| Type of input diagnostics | Channel diagnostics |
| Switching threshold | EN 61131-2 Typ 3, PNP |
| Low-level signal voltage | < 5 V |
| High level signal voltage | > 11 V |
| Low level signal current | < 1.5 mA |
| High level signal current | > 2 mA |
| Input delay | 0.05 ms |
| Electrical isolation | galvanically isolated to the bus, voltages up to 500 VAC |

| Digital outputs | |
|----------------------------|---|
| Number of channels | 4 DXP |
| Connectivity outputs | M12, 5-pin |
| Output type | PNP |
| Type of output diagnostics | Channel diagnostics |
| Output voltage | 24 VDC from potential group |
| Output current per channel | 2 A, short-circuit proof |
| Electrical isolation | galvanic isolation to P1/P2 voltages up to 500 VDC |

| IO-Link | |
|-----------------------|---|
| Number of channels | 8 |
| IO-Link | Pin 4 in IOL mode |
| IO-Link specification | V 1.1 |
| IO-Link port type | Class A and Class B |
| Frame type | supports all specified frame types |
| Supported devices | Max. 32 bytes in/32 bytes out per port |
| Transmission rate | 4.8 kbps (COM 1) / 38.4 kbps (COM 2) / 230 kbps (COM 3) |

| Standard/Directive conformity | |
|-------------------------------|---|
| Vibration test | Acc. to EN 60068-2-6 Acceleration up to 20 g |
| Shock test | acc. to EN 60068-2-27 |
| Drop and topple | acc. to EN 60068-2-31/IEC 60068-2-32 |
| Electromagnetic compatibility | Acc. to EN 61131-2 |
| Approvals and certificates | CE UKCA ATEX zone 2/22 CCC-Ex FM class I, zone 2, UV resistant acc. to DIN EN ISO 4892-2A (2013) |
| UL Certificate | cULus LISTED 21 W2, Encl.type 1 IND.CONT.EQ. |
| Note on ATEX/IECEx | The Quick Start Guide with information on use in Ex areas must be observed. |

| General Information | |
|------------------------|---|
| Dimensions (W x L x H) | 60.4 x 230.4 x 39 mm |
| Ambient temperature | -40...+70 °C |
| Storage temperature | -40...+85 °C |
| Altitude | Max. 5000 m |
| Protection class | IP65 IP67 IP69K |
| MTTF | 161 years acc. to SN 29500 (Ed. 99) 20 °C |
| Housing material | PA6-GF30 |
| Housing color | Black |
| Connector material | Nickel-plated brass |
| Window material | Lexan |
| Material screw | 303 stainless steel |
| Material label | Polycarbonate |
| Halogen-free | yes |
| Mounting | 2 mounting holes □ 6.3 mm |

Module Status LED

| LED | Color | Status | Description |
|-------------|--|-------------|---|
| ETH1 / ETH2 | Green | On | Ethernet Link (100 Mbps) |
| | | Flashing | Ethernet communication (100 Mbps) |
| | yellow | On | Ethernet link (10 Mbps) |
| | | Flashing | Ethernet communication (10 Mbps) |
| | | Off | No Ethernet link |
| BUS | Green | On | Active connection to a master |
| | | Flashing | Steady flashing: Ready Sequence of 3 flashes in 2 seconds: FLC/ARGEE active |
| | Red | On | IP-address conflict or Restore Mode or Modbus timeout |
| | | Flashing | Blink/Wink command active |
| | Green/Red | Alternating | Autonegotiation and/or waiting for DHCP/Boot-P addressing |
| | | Off | Power off |
| ERR | Green | On | No diagnostics available |
| | Red | On | Diagnostics available Undervoltage diagnosis response is parameter dependent |
| PWR | LED response parameter (PWR) at V_2 undervoltage = "red" | | |
| | Green | On | V_1 and V_2 power supply OK |
| | Red | On | V_2 power supply off or V_2 undervoltage |
| | | Off | V_1 power supply off or V_1 undervoltage |
| | LED response parameter (PWR) at V_2 undervoltage = "green" | | |
| | Green | On | V_1 and V_2 power supply OK |
| | | Flashing | V_2 power supply off or V_2 undervoltage |
| | | Off | V_1 power supply off or V_1 undervoltage |

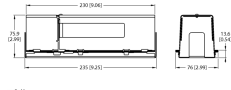
LED Status I/O

| LED | Color | Status | Description |
|---|-------|----------|---|
| LED 0, 2, 4, 6, 8, 10, 12, 14 IO-Link Port 1-8 IO-Link Mode | Green | Flashing | IO-Link communication, process data valid |
| | | Red | Flashing |
| | | ON | IO-Link supply OK, no IO-Link Communication |
| | | OFF | Port inactive |
| LED 0, 2, 4, 6, 8, 10, 12, 14 IO-Link Port 1-8 SIO Mode | Green | ON | Digital Input signal is present |
| | | OFF | No input signal |
| LED 1, 3, 5, 7 DXP | Green | ON | Digital input or output active |
| | | Red | ON |
| | | Flashing | Overload supply V_{AUX1} |
| | | OFF | Input or output inactive |
| LED 9, 11, 13, 15 IO-Link Class B VAUX2 | Green | ON | V_{AUX2} Active on Pin 2 |
| | | Red | ON |
| | | Flashing | Overload supply V_{AUX1} |
| | | OFF | V_{AUX2} Inactive on Pin 2 |

Process Data Mapping of the Single Protocols

For more details on the corresponding protocols see manual.

Accessories

| Type code | Ident-No. | | Dimension drawing |
|-----------|-----------|--|---|
| TB-SG-L | 100014865 | Protective housing for TBEN-L and TBIL-M block I/O modules for use in ATEX Zone 2/22 |  |