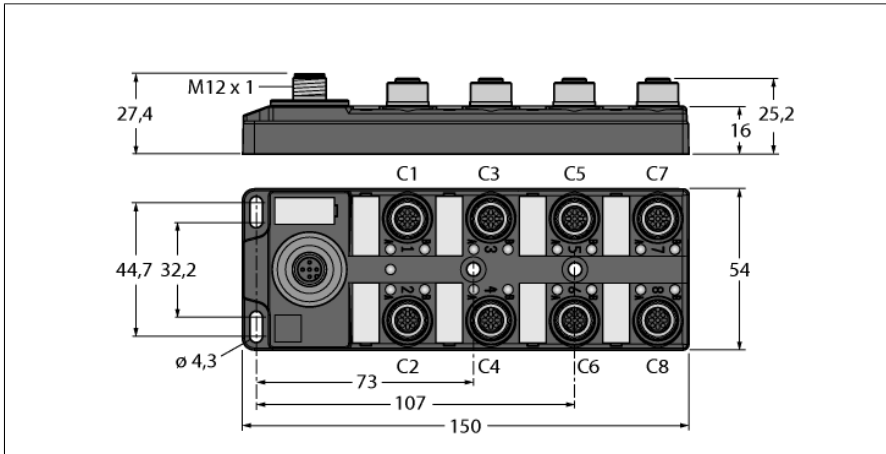


# I/O Hub for Connecting Digital Signals to IO-Link Master

## 8 Digital PNP Outputs 0.5 A

### TBIL-M1-8DOP

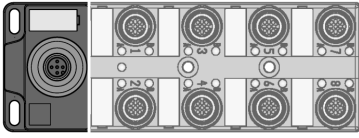


|                            |  |
|----------------------------|--|
| ID                         | 6814101  |
| <b>Supply</b>              |  |
| Supply voltage             | 24 VDC   |
| Admissible range           | 18...30 VDC<br>V1 max. 4 A                                     |
| Voltage supply connection  | M12  |
| Operating current          | Max. 65 mA   |
| Sensor/actuator supply     | Class-A supply from V1<br>Short circuit-proof, 120 mA per slot |
| Power dissipation, typical | ≤ 1.5 W  |
| <b>Digital outputs</b>     |  |
| Number of channels         | 8 digital PNP outputs  |
| Connectivity outputs       | M12  |
| Output type                | PNP  |
| Type of output diagnostics | Group diagnostics  |
| Output voltage             | 24 VDC from supply voltage                                     |
| Output current per channel | 4 A total (3 A UL rating), 0.5 A per channel                   |
| Simultaneity factor        | 0.75   |
| Load type                  | resistive, inductive, lamp load                                |
| Short-circuit protection   | yes  |
| Electrical isolation       | outputs to FE 500 VDC  |
| <b>IO-Link</b>             |  |
| Connectivity IO-Link       | 1 × M12  |
| IO-Link specification      | V 1.1  |
| IO-Link port type          | Class A  |
| Frame type                 | 2.3  |
| Transmission rate          | COM 2 / 38.4 kbps  |
| Programming                | IO-Link master   |
| Transmission physics       | corresponds to 3-wire physics (PHY2)                           |

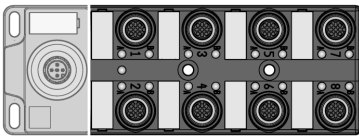
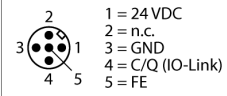
- IO-Link V1.1 Class A
- Glass fiber reinforced housing
- Shock and vibration tested
- Fully potted module electronics
- Protection classes IP65, IP67, IP69K
- ATEX Zone 2/22
- CCC-Ex
- 1 digital output per slot
- I&M data sets support installation and maintenance
- IO-Link diagnostics for short circuit and supply voltage

| Standard/Directive conformity |  |
|-------------------------------|--|
| Vibration test                | Acc. to EN 60068-2-6<br>Acceleration up to 20 g  |
| Shock test                    | Acc. to EN 60068-2-27  |
| Drop and topple               | Acc. to IEC 60068-2-31/IEC 60068-2-32  |
| Electromagnetic compatibility | Acc. to EN 61000-6-2/-6-4  |
| Approvals and certificates    | CE<br>UKCA<br>ATEX Zone 2/22<br>CCC-Ex<br>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)        | 54 x 150 x 27.4 mm   |
| Ambient temperature           | -40...+70 °C   |
| Storage temperature           | -40...+85 °C   |
| Altitude                      | Max. 5000 m  |
| Protection class              | IP67<br>IP69K  |
| MTTF                          | 174 years acc. to SN 29500 (Ed. 99) 20 °C  |
| Housing material              | PA6-GF30   |
| Mounting                      | 4 mounting holes Ø 4.3 mm  |

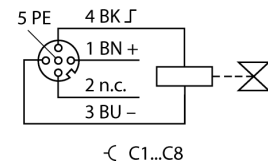
## Pinning and wiring diagram



M12 x 1 IO-Link



M12 x 1 Output



**Module LED status**

| LED     | Color | Status   | Description   |
|---------|-------|----------|---|
| IO-Link | Green | OFF      | Power off   |
|         |       | Flashing | IO-Link communication OK,<br>receiving valid output process data                                |
|         | Red   | ON       | IO-Link communication or module error   |
|         |       | Flashing | IO-Link communication OK,<br>receiving no or invalid output process data or diagnosis available |

**Outputs LED status**

| LED                   | Color | Status | Description              |
|-----------------------|-------|--------|--------------------------|
| C1 A / B ... C8 A / B | Green | OFF    | Output inactive, logic 0 |
|                       |       | ON     | Output active, logic 1   |

C ... = slot number, A / B = Signal LED (signal A = pin 4, B = signal pin 2)

## Process Data

|         | Byte | Bit 7<br>MSB    | Bit 6           | Bit 5           | Bit 4           | Bit 3           | Bit 2           | Bit 1           | Bit 0<br>LSB    |
|---------|------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Outputs | 0    | DI8<br>C8P4 (A) | DI7<br>C7P4 (A) | DI6<br>C6P4 (A) | DI5<br>C5P4 (A) | DI4<br>C4P4 (A) | DI3<br>C3P4 (A) | DI2<br>C2P4 (A) | DI1<br>C1P4 (A) |

C... = slot no., P... = pin no.

## Diagnostics / Events

| Class/Qualifier |      |          | Code            | Description |                                      |
|-----------------|------|----------|-----------------|-------------|--------------------------------------|
| Mode            | Type | Instance |                 |             |                                      |
| 0xC0            | 0x30 | 0x04     | 0xF4 appears    | 0x5110      | Supply voltage too high              |
| 0x80            | 0x30 | 0x04     | 0xB4 disappears | 0x5110      |                                      |
| 0xC0            | 0x30 | 0x04     | 0xF4 appears    | 0x5111      | Supply voltage too low               |
| 0x80            | 0x30 | 0x04     | 0xB4 disappears | 0x5111      |                                      |
| 0xC0            | 0x30 | 0x04     | 0xF4 appears    | 0x7710      | Short circuit to GND or Power Supply |
| 0x80            | 0x30 | 0x04     | 0xB4 disappears | 0x7710      |                                      |
| 0xC0            | 0x30 | 0x04     | 0xF4 appears    | 0x5000      | Hardware error                       |
| 0x80            | 0x30 | 0x04     | 0xB4 disappears | 0x5000      |                                      |

## Device Parameters

| ISDU  |           | Parameter Name           | Access<br>R: Read<br>W: Write | Data Length | Data Type   |   |
|-------|-----------|--------------------------|-------------------------------|-------------|-------------|---|
| Index | Sub-Index |                          |                               |             |             |   |
| 0x0C  | 0x02      | Data Storage Lock        | R/W                           | 1Bit        | Boolean     | Lock Parameter Upload<br>0: Unlocked; 1: Locked<br>Default: 0 |
| 0x10  | 0x00      | Vendor Name              | R                             | 16 Bytes    | String      | TURCK   |
| 0x11  | 0x00      | Vendor Text              | R                             | 32 Bytes    | String      | www.turck.com   |
| 0x12  | 0x00      | Product Name             | R                             | 32 Bytes    | String      | TBIL-M1-8DOP  |
| 0x13  | 0x00      | Product ID               | R                             | 16 Bytes    | String      | 6814101   |
| 0x14  | 0x00      | Product Text             | R                             | 32 Bytes    | String      | I/O HUB   |
| 0x15  | 0x00      | Serial Number            | R                             | 16 Bytes    | String      |   |
| 0x17  | 0x00      | FW Revision              | R                             | 16 Bytes    | String      |   |
| 0x18  | 0x00      | Application Specific Tag | R/W                           | 32 Bytes    | String      | Free text e.g for application name<br>Default: ***            |
| 0x40  | 0x00      | Parameter ID             | R/W                           | 4 Bytes     | Unsigned 32 | ID no. e.g. for module identification<br>Default: 0x0000      |

## 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 |                   |