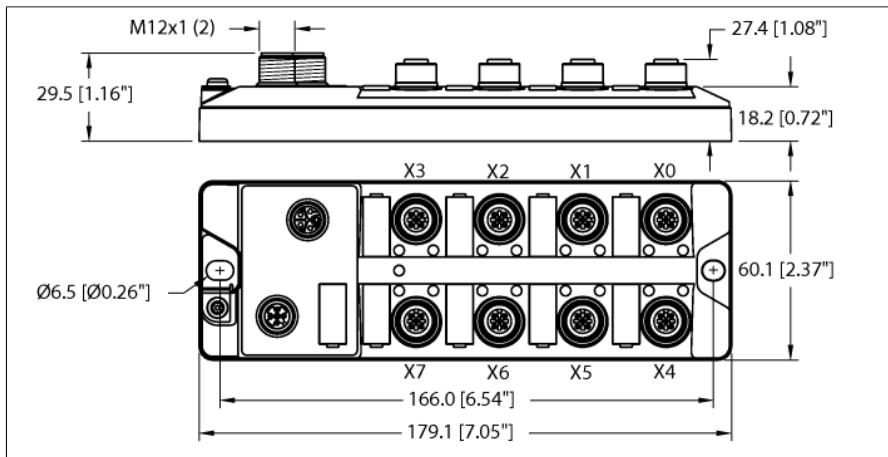


# I/O Hub for Connecting Digital Signals to IO-Link Master

## 16 Universal Digital Channels, PNP

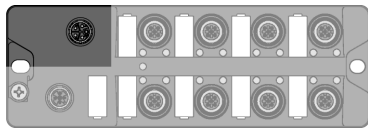
### TBIL-LL-16DXP-AUX



- Glass fiber reinforced housing
- Shock and vibration tested
- Fully potted module electronics
- Protection classes IP65, IP67, IP69K

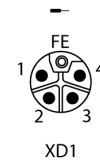
|                            |  |
|----------------------------|--|
| Type                       | TBIL-LL-16DXP-AUX  |
| ID                         | 100000884  |
| <b>Supply</b>              |  |
| Supply voltage             | 24 VDC   |
| Admissible range           | 18...30 VDC<br>V1 max. 9 A<br>V2 max. 9 A<br>V1 + V2 max. 11 A                   |
| Voltage supply connection  | M12 male connector, L-coded  |
| Operating current          | 120 mA   |
| Sensor/actuator supply     | Supply from V1, X0–X3, short-circuit proof, 2.0 A per slot                       |
| Sensor/actuator supply     | Supply from V2, X4–X7, short-circuit proof, 2.0 A per slot                       |
| Electrical isolation       | Possible isolation of voltage groups V1, V2 and Viol<br>Voltage proof up 500 VDC |
| Fault exclusion            | Yes, acc. to EN ISO 13849-2, appendix D.2  |
| <b>Digital inputs</b>      |  |
| Number of channels         | 16   |
| Connectivity inputs        | M12  |
| Type of input diagnostics  | Channel diagnostics  |
| Low-level signal voltage   | -3...5 VDC (EN 61131-2, type 1 and 3)  |
| High level signal voltage  | 11...30 VDC (EN 61131-2, type 1 and 3)   |
| Input delay                | 0.010 ms   |
| Max. input current         | 15 mA  |
| <b>Digital outputs</b>     |  |
| Number of channels         | 16   |
| Connectivity outputs       | M12  |
| Output type                | PNP  |
| Type of output diagnostics | Channel diagnostics  |
| Output current per channel | 2.0 A max. per pin. 2.5 A max. per slot.   |
| Output delay               | 0.35 ms  |
| Load type                  | Resistive, inductive, lamp load  |
| Short-circuit protection   | yes  |
| Electrical isolation       | 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                        | 2,6  |
| Transmission rate                 | COM 2/38.4 kbps                                |
| Programming                       | FDT/DTM  |
| <b>Approvals and certificates</b> |  |
|                                   | CE   |
|                                   | UV-resistant acc. to DIN EN ISO 4892-2A (2013) |
| UL Certificate                    | cULus LISTED 21 W2, Encl.type 1 IND.CONT.EQ.   |
| <b>General Information</b>        |  |
| Dimensions (W x L x H)            | 60.1 x 179.1 x 29.5 mm                         |
| Ambient temperature               | -40...+70 °C                                   |
| Storage temperature               | -40...+85 °C                                   |
| Altitude                          | Max. 5000 m                                    |
| Protection class                  | IP65<br>IP67<br>IP69K                          |
| MTTF                              | 164 years acc. to SN 29500 (Ed. 99) 20 °C      |
| Housing material                  | PA6-GF30                                       |
| Housing color                     | Black  |
| Mounting                          | 2 mounting holes Ø 6.5 mm                      |

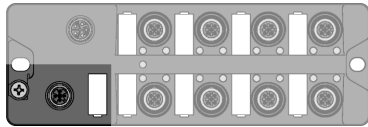


**Accessories**

**M12 L-Code Aux Power**

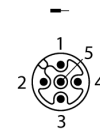


- 1 = 24VDC (V1)
- 2 = GND (V2)
- 3 = GND (V1)
- 4 = 24VDC (V2)
- 5 = FE

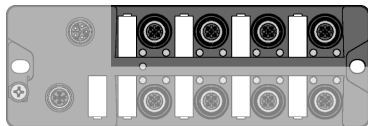


**Accessories**

**M12 IO-Link**

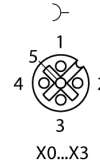


- 1 = 24 VDC (V<sub>IOL</sub>)
- 2 = n.c.
- 3 = GND (V<sub>IOL</sub>)
- 4 = C/Q (IO-LINK)
- 5 = n.c.

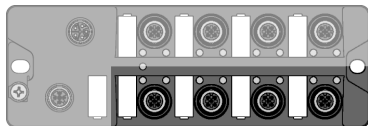


**Accessories**

**I/O Port M12 x 1**

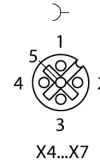


- 1 = VAUX1 (V1)
- 2 = In/Out (odd)
- 3 = GND (V1)
- 4 = In/Out (even)
- 5 = FE



**Accessories**

**I/O Port M12 x 1**



- 1 = VAUX2 (V2)
- 2 = In/Out (odd)
- 3 = GND (V2)
- 4 = In/Out (even)
- 5 = FE

## Module LED status

| LED     | Color | Status   | Description   |
|---------|-------|----------|---|
| IO-Link | Green | Off      | No power supply   |
|         |       | Flashing | IO-Link communication OK,<br>valid process data is being sent or received                         |
|         | Red   | On       | IO-Link communication or module error   |
|         |       | Flashing | IO-Link communication OK,<br>invalid process data or diagnostics available, V1 or V2 undervoltage |

## I/O LED status

| LED     | Color | Status   | Description   |
|---------|-------|----------|---|
| X0...X7 | Green | On       | Input or output active  |
| 0...15  | Red   | On       | Output active with overload/short circuit                             |
|         |       | Flashing | Power overload at the corresponding slot. Both slot LEDs are flashing |
|         |       | Off      | Input or output inactive  |

X... = male connector no., 0...15 = signal LED (even = pin 4, odd = pin 2)

Process data

| <b>INPUT</b>  | <b>BYTE</b> | <b>Bit 7</b>  | <b>Bit 6</b>   | <b>Bit 5</b>  | <b>Bit 4</b>  | <b>Bit 3</b>  | <b>Bit 2</b>  | <b>Bit 1</b>  | <b>Bit 0</b>  |
|---------------|-------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Inputs        | 0           | DI7 C3P2 (B)  | DI6 C3P4 (A)   | DI5 C2P2 (B)  | DI4 C2P4 (A)  | DI3 C1P2 (B)  | DI2 C1P4 (A)  | DI1 C0P2 (B)  | DI0 C0P4 (A)  |
|               | 1           | DI15 C7P2 (B) | DI14 C7P4 (A)  | DI13 C6P2 (B) | DI12 C6P4 (A) | DI11 C5P2 (B) | DI10 C5P4 (A) | DI9 C4P2 (B)  | DI8 C4P4 (A)  |
| Diagnostics   | 2           |               | Hardware error |               |               |               |               |               |               |
|               | 3           | V2 Aux high   | V1 Aux high    | V2 high       | V1 high       | V2 Aux low    | V1 Aux low    | V2 low        | V1 low        |
|               | 4           | Vsens OC C7P1 | Vsens OC C6P1  | Vsens OC C5P1 | Vsens OC C4P1 | Vsens OC C3P1 | Vsens OC C2P1 | Vsens OC C1P1 | Vsens OC C0P1 |
|               | 5           | DO7 SC        | DO6 SC         | DO5 SC        | DO4 SC        | DO3 SC        | DO2 SC        | DO1 SC        | DO0 SC        |
|               | 6           | DO15 SC       | DO14 SC        | DO13 SC       | DO12 SC       | DO11 SC       | DO10 SC       | DO9 SC        | DO8 SC        |
| <b>OUTPUT</b> | <b>BYTE</b> | <b>Bit 7</b>  | <b>Bit 6</b>   | <b>Bit 5</b>  | <b>Bit 4</b>  | <b>Bit 3</b>  | <b>Bit 2</b>  | <b>Bit 1</b>  | <b>Bit 0</b>  |
| Outputs       | 0           | DO7 C3P2 (B)  | DO6 C3P4 (A)   | DO5 C2P2 (B)  | DO4 C2P4 (A)  | DO3 C1P2 (B)  | DO2 C1P4 (A)  | DO1 C0P2 (B)  | DO0 C0P4 (A)  |
|               | 1           | DO15 C7P2 (B) | DO14 C7P4 (A)  | DO13 C6P2 (B) | DO12 C6P4 (A) | DO11 C5P2 (B) | DO10 C5P4 (A) | DO9 C4P2 (B)  | DO8 C4P4 (A)  |