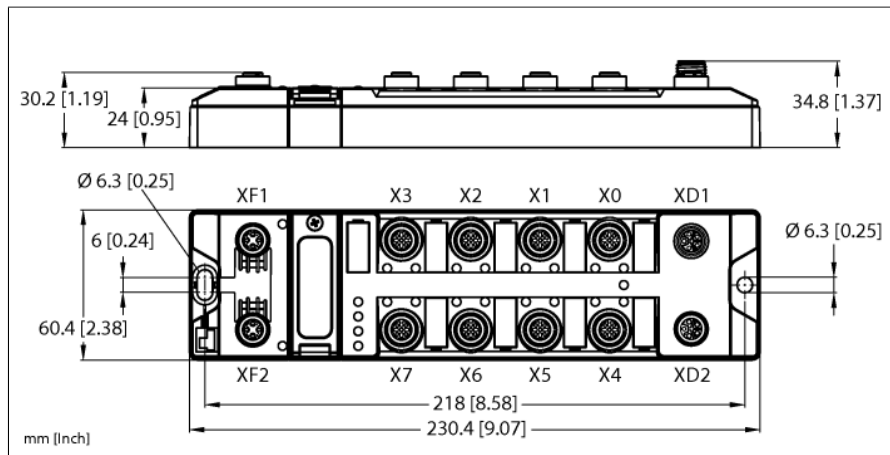


Compact I/O Module for EtherCAT

8 IO-Link Master Channels

4 Universal Digital PNP Channels, 2 A, Channel Diagnostics

TBEC-LL-8IOL



Type	TBEC-LL-8IOL
ID	100004614
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	M12, L-coded
Operating current	V1: min. 120 mA, max. 150 mA V2: min. 40 mA, max. 70 mA
Sensor/actuator supply	Supply from V1 Short-circuit proof, max. 4 A per slot X0 and X4, max. 2 A per slot X1–X3, X5–X7
Sensor/actuator supply	Class B supply from V2 Short-circuit proof, max. 4 A per slot X4 and X5, max. 2 A per slot X6 and X7
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 connection technology	2 x M12, 4-pin, D-coded
Service interface	EoE
EtherCAT	
CAN over EtherCAT	acc. to modular device profile (ETG.5001.1)
Diagnostics	CoE Emergencies, DiagnosisHistory
Address allocation	Automatic/Explicit Device Identification

- Glass fiber reinforced housing
- Shock and vibration tested
- Fully potted module electronics
- Protection classes IP65, IP67, IP69K
- M12, 5-pin, L-coded male connector for power supply
- Galvanically isolated voltage groups support passive safety
- 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

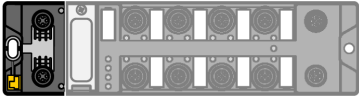
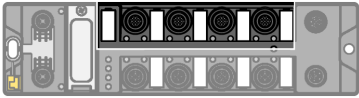
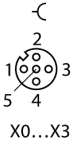
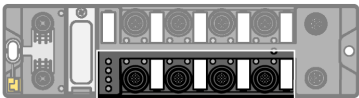
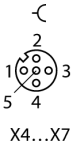
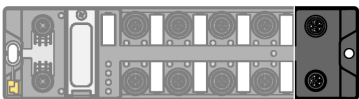
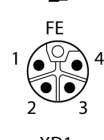
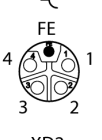
Digital inputs	
Number of channels	4 DXP + 8 SIO
Connectivity inputs	M12, 5-pin
Input type	PNP
Type of input diagnostics	Channel diagnostics
Switching threshold	EN 61131-2 type 3, PNP
Low-level signal voltage	< 5 V
High level signal voltage	> 11 V
Low level signal current	< 1.5 mA
High level signal current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

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 UV resistant acc. to DIN EN ISO 4892-2A (2013)
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 34.8 mm
Ambient temperature	-40...+70 °C
Storage temperature	-40...+85 °C
Altitude	Max. 5000 m
Protection class	IP65
	IP67
	IP69K
MTTF	146 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

		M12 × 1 Ethernet  1 = TX + 2 = RX + 3 = TX - 4 = RX - flange = FE  1 = RX + 2 = TX + 3 = RX - 4 = TX - flange = FE
	Accessories Accessories: Connection cable , 2-channel (example): RK 4.4T-2-RS 4.4T Ident no. U2445 Splitter, 1-channel (example): YB2-FSM 4.5-2FKM 4.5 Ident no. U0875-78	M12 × 1 I/O port  1 = V_{aux1} (V1) 2 = DXP (V1) 3 = GND (V1) 4 = C/Q (V1) 5 = n.c. X0...X3
	Accessories Pin 1: V_{AUX1} can be switched off via process data Pin 4: IO-Link data (C/Q) or digital input (SIO mode) X4...X7: IO-Link master class B Pin 2: switchable class B supply (V_{AUX2})	I/O Slot, M12 × 1  1 = V_{aux1} (V1) 2 = V_{aux2} (V2) 3 = GND (V1) 4 = C/Q (V1) 5 = GND (V2) X4...X7
		M12 power supply, L-coded  XD1  XD2

Module Status LED

LED	Color	Status	Description
PWR	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 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	IO-Link communication, process data invalid
		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	Output active with overload/short circuit
		Flashing	Overload supply V _{AUX 1}
		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	V _{AUX2} active on Pin 2 with overload/short circuit
		Flashing	Overload supply V _{AUX 1}
		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	