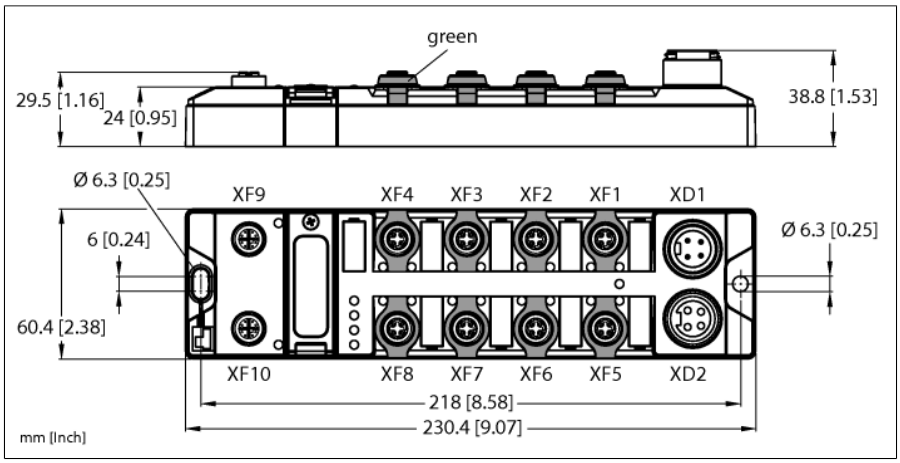
Managed Ethernet Switch
8 × 100-Mbit Ports, 2 × 1-Gbit Ports
TBEN-L4-SE-M2



Type	TBEN-L4-SE-M2
ID	100004426
Supply	
Supply voltage	24 VDC
Admissible range	8…30 VDC Load dump protection at 12 V
Voltage supply connection	7/8″, 4-pin
Electrical isolation	galvanic isolation of the voltage groups V1 and V2, voltages up to 500 VAC
Power dissipation, typical	≤ 4.5 W
System data	
Transmission rate Ethernet	10/100/1000 Mbps
Connection technology Ethernet	2 × M12, 8-pin, X-coded 8 × M12, 4-pin, D-coded
Web server	Default: 192.168.1.254
Frame forwarding	store and forward
Switch advanced diagnostics	
PROFINET DHC (Data Hold Counter)	Yes
Frame errors	Yes
Netload diagnostics	Yes
Duplexity	Yes
Link speed	Yes
Switch port mirroring	
Port mirroring 1:1	Yes
Port mirroring N:1	Yes, max. 9

- PROFINET device, EtherNet/IP device or Modbus TCP server
- 2 × M12, 8-pin, X-coded, 1 Gbps high-speed backbone
- 8 × M12, 4-pin, D-coded, 100 Mbps
- 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
- Web-based management
- Firewall
- Configurable LAN/WAN zones
- NAT routing
- VLAN according to IEEE 802.1q
- Prioritization according to IEEE 802.1p
- DHCP server/client
- Port-based IP address assignment
- IGMP (snooping/querier)
- Media redundancy RSTP
- HTTP, HTTPS, LLDP, NTP, SNMP V1–V3
- Port mirroring

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Switch interface	
10/100-Mbit ports	8
10/100/1000-Mbit ports	2
802.3ab compliance	Yes
802.3q compliance	Yes
802.3u compliance	Yes
802.3x compliance	Yes
Auto-crossing (802.3)	Yes
Auto-negotiation (802.3)	Yes
Auto-polarity (802.3)	Yes
Cable test	Yes
Flow control (802.3X)	Yes
Jumbo frames	Yes, up to 10,240 bytes
Multiple queues per port	Yes, max. 8
QoS port prioritization (802.1D/p)	Yes

Switch management	
DHCP server	Yes
DHCP client	Yes
DHCP option 82	Yes
Web server firmware update	Yes
USB firmware update	Yes
SNMP v1	Yes
SNMP v2	Yes
SNMP v3	Yes
SNMP traps	Yes
HTTP web server	Yes

Switch protocols	
IGMP	Yes
LLDP	Yes
NTP relay	Yes
PTP (IEEE1588)	Yes

Switch redundancy	
MSTP (802.1s)	Yes
RSTP (802.1w)	Yes

Switch routing	
IPv4 routing static	Yes
NAT	Yes
NAT PAT	Yes
NAT, VLAN based	Yes, max. 32
VLAN, port based	Yes
VLAN, multiple VLAN	Yes, max. 50

Switch security	
Broadcast storm protection	Yes
Firewall	Yes

Modbus TCP	
Addressing	Static IP, DHCP
Supported function codes	FC1, FC2, FC3, FC4, FC5, FC6, FC15, FC16, FC23
Number of TCP connections	8
Input register start address	0 (0x0000 hex)
Output register start address	2048 (0x0800 hex)

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Ethernet/IP	
Addressing	acc. to EtherNet/IP specification
Quick Connect (QC)	< 150 ms
min. RPI	2 ms
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	128 ms
Diagnostics	acc. to PROFINET alarm handling
Topology detection	supported
Automatic addressing	supported
Media Redundancy Protocol (MRP)	supported
System redundancy	S2
Netload class	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)
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 38.8 mm
Ambient temperature	-40…+70 °C
Storage temperature	-40…+85 °C
Altitude	Max. 5000 m
Protection class	IP65 IP67 IP69K
MTTF	82 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

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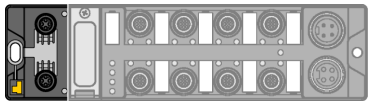
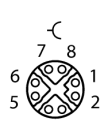
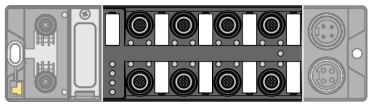
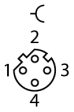
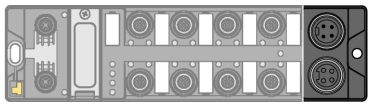
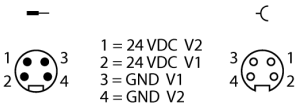
		M12 × 1 Ethernet  XF9, XF10 1 = TxD1 + 2 = TxD1 – 3 = RxD2 + 4 = RxD2 – 5 = BID4 + 6 = BID4 – 7 = BID3 + 8 = BID3 – flange = FE
		M12 × 1 Ethernet  XF1…XF8 1 = TX + 2 = RX + 3 = TX – 4 = RX – flange = FE
		7/8″ Power Supply  X1 X2 1 = 24 VDC V2 2 = 24 VDC V1 3 = GND V1 4 = GND V2

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Module Status LED

LED	Color	Status	Description
L/A	Green	On	Ethernet connection established 100 Mbps (XF1…XF10) or 1000 Mbps (XF9 and XF10)
		Flashing	Ethernet communication 100 Mbps or 1000 Mbps
	Yellow	On	Ethernet link (10 Mbps)
		Flashing	Ethernet communication (10 Mbps)
		Off	No Ethernet connection
Run	Green	Flashing (1 Hz)	USB host function is activated
		Flashing (0.5 Hz)	No USB host function active
PWR	Green	On	V_1 supply voltage OK
		Off	V_1 supply voltage off or below defined tolerance of 18 V

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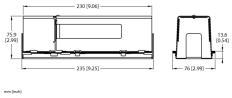
Accessories

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	

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