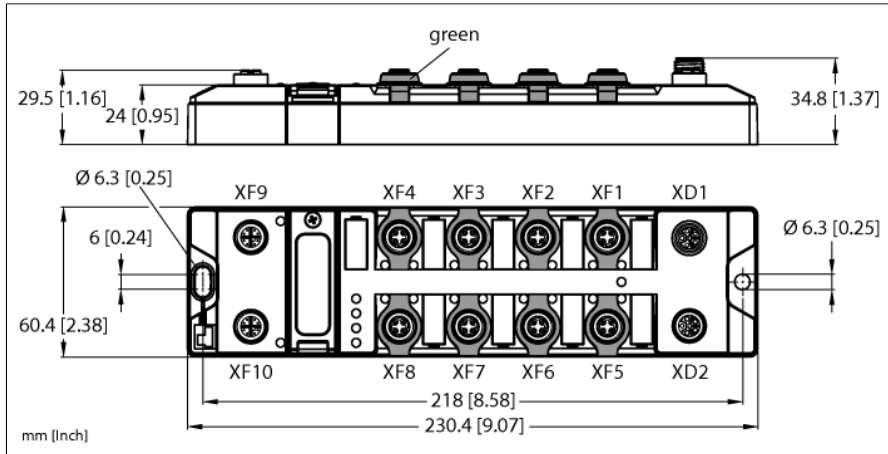


# Managed Ethernet Switch

## 8 × 100-Mbit Ports, 2 × 1-Gbit Ports

### TBEN-LL-SE-M2

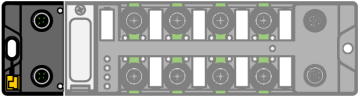
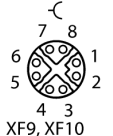
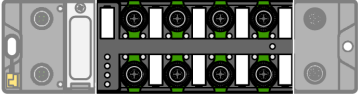
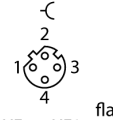
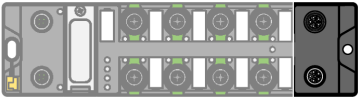
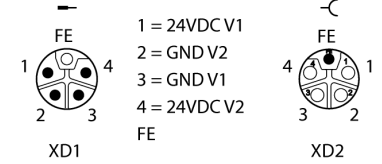


Type	TBEN-LL-SE-M2
ID	100004427
<b>Supply</b>	
Supply voltage	24 VDC
Admissible range	8...30 VDC Load dump protection at 12 V XD1-XD2 forward current max. 16 A per voltage group
Voltage supply connection	M12 male connector, L-coded
Electrical isolation	galvanic isolation of the voltage groups V1 and V2, voltages up to 500 VAC
Power dissipation, typical	≤ 4.8 W
<b>System data</b>	
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
<b>Switch port mirroring</b>	
Port mirroring 1:1	Yes
Port mirroring N:1	Yes, max. 9

- 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
- M12, L-coded male connector for power supply
- Galvanically isolated voltage groups
- ATEX Zone 2/22
- 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

<b>Switch interface</b>	
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
Jumbo frames	Yes, up to 10,240 bytes
Multiple queues per port	Yes, max. 8
QoS port prioritization (802.1D/p)	Yes
<b>Switch management</b>	
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
<b>Switch protocols</b>	
IGMP	Yes
LLDP	Yes
NTP relay	Yes
PTP (IEEE1588)	Yes
<b>Switch redundancy</b>	
MSTP (802.1s)	Yes
RSTP (802.1w)	Yes
STP (802.1D)	Yes
<b>Switch routing</b>	
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
<b>Switch security</b>	
Broadcast storm protection	Yes
Firewall	Yes
<b>Standard/Directive conformity</b>	
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 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 Zones 2 and 22 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	81 years acc. to SN 29500 (Ed. 99) 20 °C
Housing material	PA6-GF30
Housing color	Black
Male 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

		<p>M12 × 1 Ethernet</p>  <p>             1 = TxD1 +              2 = TxD1 -              3 = RxD2 +              4 = RxD2 -              5 = BID4 +              6 = BID4 -              7 = BID3 +              8 = BID3 -              flange = FE         </p>
		<p>M12 × 1 Ethernet</p>  <p>             1 = TX +              2 = RX +              3 = TX -              4 = RX -              flange = FE         </p> <p>XF1...XF8</p>
		<p>M12 power supply, L-coded</p>  <p>             1 = 24VDC V1              2 = GND V2              3 = GND V1              4 = 24VDC V2              FE         </p> <p>XD1</p> <p>             1 = 24VDC V1              2 = GND V2              3 = GND V1              4 = 24VDC V2              FE         </p> <p>XD2</p>

## Module Status LED

LED	Color	Status	Description
L/A	Green	On	Ethernet link established 100 Mbps (XF1...XF10) or 1000 Mbps (XF9 and XF10)
		Flashing	Ethernet communication 100 Mbps or 1000 Mbps
	Yellow	On	Ethernet link established (10 Mbps)
		Flashing	Ethernet communication (10 Mbps)
		Off	No Ethernet link
Run	Green	Flashing (1 Hz)	USB host function is activated
		Flashing (0.5 Hz)	No USB host function active
PWR	Green	On	V <sub>1</sub> power supply OK
		Off	V <sub>1</sub> power supply off or V <sub>1</sub> undervoltage