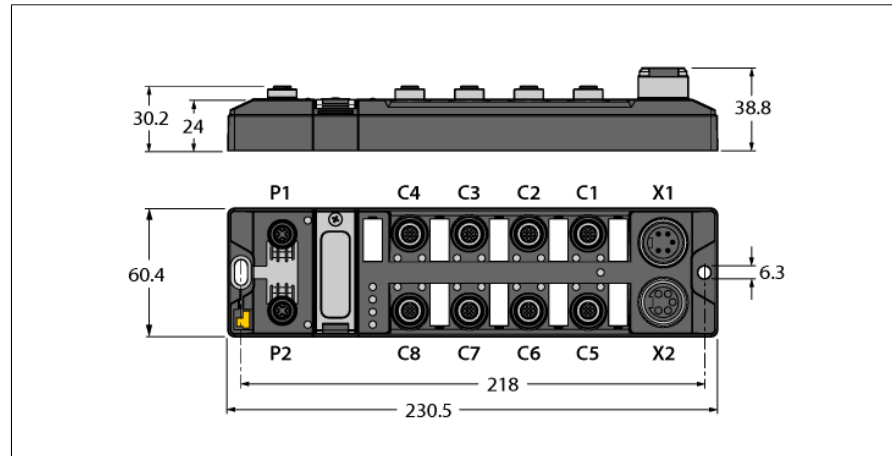


Ethernet spanner

**Master to master data exchange, NAT router, 16 digital PNP inputs
TBEN-L1-EN1**



- Two separate, electrically isolated Ethernet interfaces
- Bi-directional data exchange between two networks
- Protocol conversion between EtherNet/IP™ and Modbus® TCP
- 1:1 NAT router
- Integrated Ethernet switch
- 10 Mbps / 100 Mbps supported
- 2 x M12, 4-pin, D-coded, Ethernet-fieldbus connection
- Glass-fiber reinforced housing
- Shock and vibration tested
- Potted module electronics
- Protection classes IP67 / IP69K
- 7/8" connector for power supply, 5-pin
- Input diagnostics per port

Type code	TBEN-L1-EN1
Ident no.	6814035
Number of channels	16
Electrical isolation	galvanic isolation of the voltage groups V1 and V2, voltages up to 500 VAC
Supply voltage	24 VDC
Admissible range	18...30 VDC total current max. 9 A per voltage group total current V1 + V2 max. 11 A per module
Number of channels	16
Type of input diagnostics	group diagnostics
Switching threshold	EN 61131-2 Typ 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	2.5 ms
Potential separation	galvanic isolation to P1/P2 , voltages up to 500 VDC
System data	
Fieldbus transmission rate	10 Mbps/100 Mbps
Web server	default: 192.168.1.254
Service Interface	Ethernet via P1
Modbus TCP	
Addressing	Static IP, BOOTP, DHCP
Supported function codes	FC1, FC2, FC3, FC4, FC5, FC6, FC15, FC16, FC23
Number of TCP connections	8
EtherNet/IP™	
Addressing	acc. to EtherNet/IP™ specification
Number of CIP connections	3

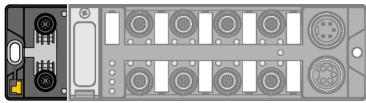
Ethernet spanner

Master to master data exchange, NAT router, 16 digital PNP inputs

TBEN-L1-EN1

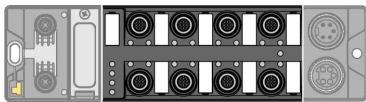
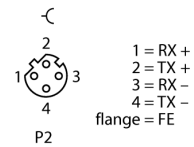
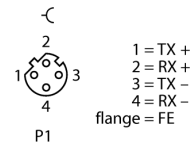
Dimensions (W x L x H)	60.4 x 230.4 x 39mm
Housing material	PA6-GF30
Halogen-free	yes
Mounting	2 mounting holes □ 6.3 mm
Operating temperature	-40...+70 °C
Storage temperature	-40...+70 °C
Altitude	max.5000 m
Vibration test	acceleration to 20 g acc. to EN 60068-2-6
Shock test	acc. to EN 60068-2-27
Drop and topple	acc. to EN 60068-2-31/IEC 60068-2-32
Electro-magnetic compatibility	acc. to EN 61131-2
Protection class	IP65 IP67 IP69K
MTTF	205 years

Ethernet spanner
Master to master data exchange, NAT router, 16 digital PNP inputs
TBEN-L1-EN1



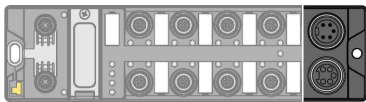
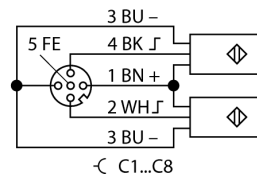
Note
P1: External network
P2: Local network
Ethernet cable (example):
RSSD-RSSD-441-2M/S2174
Ident no. 6914218

Ethernet M12 x 1



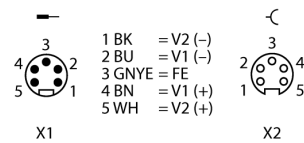
Note
Actuator and sensor cable, PUR extension cable (example):
RKC4.4T-2-RSC4.4T/TXL
Ident no. 6625608
Extension cable with Y piece for single assignment (example):
FSM4-2WAK3-1/1/P00
Ident no. 8009560

Input M12 x 1



Note
Power supply cable (example):
RKM52-1-RSM52
Ident no. 6914149

Power Supply 7/8"



Ethernet spanner
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Module LED Status

LED	Color	Status	Description
ETH1 / ETH2	Green	ON	Ethernet link (100 Mbps)
		flashing	Ethernet communication (100 Mbps)
	Yellow	ON	Ethernet link (10 Mbps)
		flashing	Ethernet communication (10 Mbps)
		OFF	No Ethernet link
BUS	Green	ON	Active connection to a master
		flashing	Ready
	Red	ON	Network error or Restore Mode or Modbus timeout
		flashing	Blink/Wink command active
		OFF	Power off
ERR	Green	ON	Diagnostics disabled
	Red	ON	Diagnostics enabled
PWR	Green	ON	Power supply V ₁ OK
		OFF	V ₁ power off or below defined tolerance of 18 V

LED Status I/O

LED	Color	Status	Description
LED 1 ... 16	Green	ON	Input active
	Red	flashing	Power overload at the corresponding port. Both port LEDs are flashing.
		OFF	Input inactive

Ethernet spanner

Master to master data exchange, NAT router, 16 digital PNP inputs

TBEN-L1-EN1

Process Data Mapping of Single Protocols

For more details on the corresponding protocols see manual.

Modbus TCP register mapping

The address ranges are valid for both networks.

	Reg	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
Inputs (RO)	0x0000	DI16 C8P2	DI15 C8P4	DI14 C7P2	DI13 C7P4	DI12 C6P2	DI11 C6P4	DI10 C5P2	DI9 C5P4	DI8 C4P2	DI7 C4P4	DI6 C3P2	DI5 C3P4	DI4 C2P2	DI3 C2P4	DI2 C1P2	DI1 C1P4	
Status (RO)	0x0001	-	FCE	SPE1	SPE2	CFG	COM	V1	-	V2	-	-	-	-	-	-	Diag Warn	
Diag (RO)	0x0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	I/O Diag	
Spanner input data (RO)	0X3000 - 0x30ff	256 bytes																
Spanner output data (WR)	0X3400 - 0x34ff	256 bytes																
I/O Diag (RO)	0xA000										SCS8	SCS7	SCS6	SCS5	SCS4	SCS3	SCS2	SCS1

EtherNet/IP™ data mapping with activated scheduled diagnostics, default settings

The address ranges are valid for both networks.

	Word	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Input data (Station -> Scanner)																	
	1-4	reserved															
Spanner	5-133	256 bytes data exchange															
Output (Scanner -> Station)																	
	1-4	reserved															
Spanner	5-133	256 bytes data exchange															

Key:

DIx	Digital input channel x	CFG	I/O Configuration error
DOx	Digital output channel x	FCE	I/O-ASSISTANT Force Mode active
Cx	Port x	I/ODiag	I/O diagnostics connected
Px	Pin x	SchedDiag	Manufacturer-specific diagnostics configured and active
DiagWarn	Diagnostic at least on 1 channel	SCSx	Short-circuit at port x
V1	Undervoltage V1	SCG1	Short-circuit supply ports C0-C3
V2	Undervoltage V2	SCG2	Short-circuit supply ports C4-C7
COM	Communication error on internal module bus	SCOx	Short-circuit output channel x
SPEx	Spanner port active		