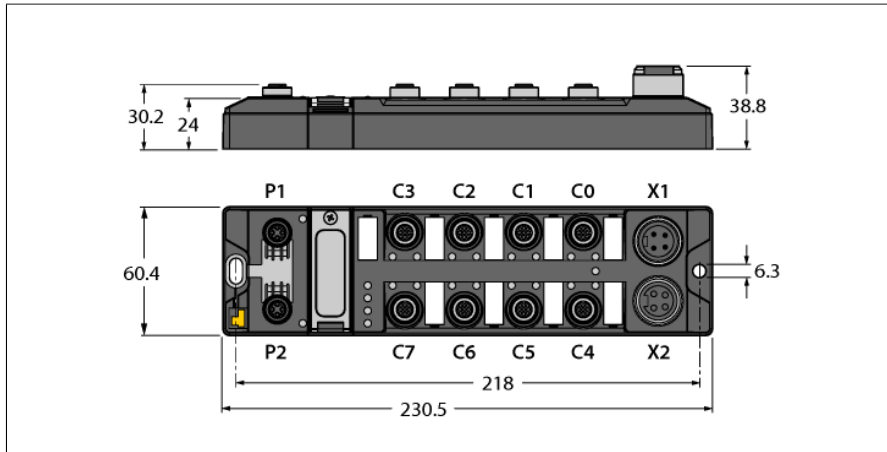


Ethernet spanner

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

TBEN-LG-EN1



Type	TBEN-LG-EN1
ID	6814046
Supply	
Supply voltage	24 VDC
Admissible range	18...30 VDC Total current max. 9 A per voltage group
Voltage supply connection	7/8", 4-pin
Sensor/actuator supply	supply of ports C0-C7 from V1 short-circuit proof, 120 mA per port
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 transmission rate	10/100 Mbps
Fieldbus connection technology	2 × M12, 4-pin, D-coded
Web server	default: 192.168.1.254
Service interface	Ethernet via P1
Product code	14046
Modbus TCP	
Addressing	Static IP, BOOTP, DHCP
Supported function codes	FC1, FC2, FC3, FC4, FC6, FC15, FC16, FC23
Number of TCP connections	8
Ethernet/IP	
Addressing	acc. to EtherNet/IP specification
Class 1 connections (CIP)	3

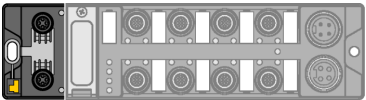
- Two separate, electrically isolated Ethernet interfaces
- Bidirectional data exchange between two controllers
- Protocols: EtherNet/IP, Modbus TCP and PROFINET
- PROFINET is supported on Ethernet port P2
- 1:1 NAT router
- 10 Mbps/100 Mbps
- 2 × M12, 4-pin, D-coded, Ethernet fieldbus connection
- Glass fiber reinforced housing
- Shock and vibration tested
- Fully potted module electronics
- Protection classes IP65, IP67, IP69K
- 4-pin 7/8" male connector for power supply
- Galvanically isolated voltage groups support passive safety
- Input diagnostics per port
- This item may only be used for GM projects!

PROFINET	
Addressing	DCP
Conformance class	B (RT)
MinCycleTime	1 ms
Fast Start-Up (FSU)	< 150 ms
Diagnostics	acc. to PROFINET alarm handling
Topology detection	supported
Automatic addressing	supported

Digital inputs	
Number of channels	16
Connectivity inputs	M12, 5-pin
Input type	PNP
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
Electrical isolation	Galvanically isolated to the fieldbus Voltage proof up 500 VDC

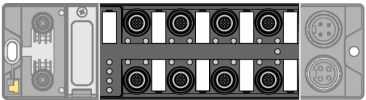
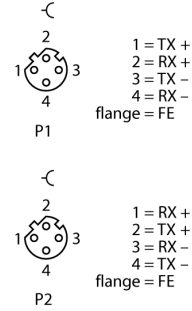
Standard/Directive conformity	
Vibration test	Acc. to EN 60068-2-6 Acceleration up to 20 g
Shock test	acc. to EN 60068-2-27
Drop and topple	acc. to EN 60068-2-31/IEC 60068-2-32
Electromagnetic compatibility	Acc. to EN 61131-2
Approvals and certificates	CE and UKCA FCC statement, UV resistant acc. to DIN EN ISO 4892-2A (2013)
UL Certificate	cULus LISTED 21 W2, Encl.Type 1 IND.CONT.EQ.

General Information	
Dimensions (W x L x H)	60.4 x 230.4 x 39 mm
Ambient temperature	-40...+70 °C
Storage temperature	-40...+85 °C
Altitude	Max. 5000 m
Protection class	IP65 IP67 IP69K
MTTF	205 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

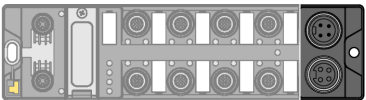
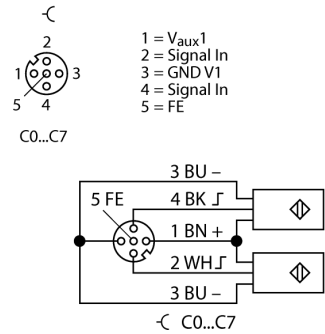


Note
P1: External network
P2: Local network
Ethernet cable (example):
RSSD-RSSD-441-2M/S2174
ID No. 6914218

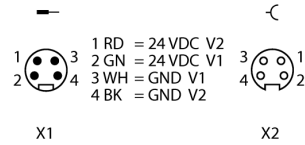
M12 x 1 Ethernet



M12 x 1 Input



7/8" Power Supply



Module Status LED

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	No diagnostics available
	Red	On	Diagnostics available
			Undervoltage diagnosis response is parameter dependent
PWR	Green	On	V _i power supply OK
		Off	V _i power supply off or V _i undervoltage

LED Status I/O

LED	Color	Status	Description
LED 0...15	Green	ON	Input active
	Red	Flashing	Power overload at the corresponding port. Both port LEDs are flashing.
		OFF	Input inactive

Process Data Mapping of the 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	DI15 C7P2	DI14 C7P4	DI13 C6P2	DI12 C6P4	DI11 C5P2	DI10 C5P4	DI9 C4P2	DI8 C4P4	DI7 C3P2	DI6 C3P4	DI5 C2P2	DI4 C2P4	DI3 C1P2	DI2 C1P4	DI1 C0P2	DI0 C0P4
Status (RO)	0x0001	-	FCE	SPE1	SPE2	CFG	COM	V1	-	V2	-	-	-	-	-	-	Diag Warn
Diag (RO)	0x0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	I/O Diag
Power clamp input data (RO)	0x3000 - 0x30FF	256 Bytes															
Power clamp output data (WR)	0X3400 - 0x34ff	256 Bytes															
I/O Diag (RO)	0xA000									SCS7	SCS6	SCS5	SCS4	SCS3	SCS2	SCS1	SCS0

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

	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)																	
GW status	0	-	FCE	SPE1	SPE2	CFG	COM	V1	-	V2	-	-	-	-	-	-	Diag Warn
Inputs	1	DI15 C7P2	DI14 C7P4	DI13 C6P2	DI12 C6P4	DI11 C5P2	DI10 C5P4	DI9 C4P2	DI8 C4P4	DI7 C3P2	DI6 C3P4	DI5 C2P2	DI4 C2P4	DI3 C1P2	DI2 C1P4	DI1 C0P2	DI0 C0P4
Diag 1	2	-	-	Sched Diag	-	-	-	-	-	-	-	-	-	-	-	-	I/O Diag
Diag 2	3									SCS7	SCS6	SCS5	SCS4	SCS3	SCS2	SCS1	SCS0

PROFINET Process Data

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Inputs	0	DI7 C3P2	DI6 C3P4	DI5 C2P2	DI4 C2P4	DI3 C1P2	DI2 C1P4	DI1 C0P2	DI0 C0P4
	1	DI15 C72	DI14 C7P4	DI13 C6P2	DI12 C6P4	DI10 C5P2	DI9 C5P4	DI8 C4P2	DI7 C4P4

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