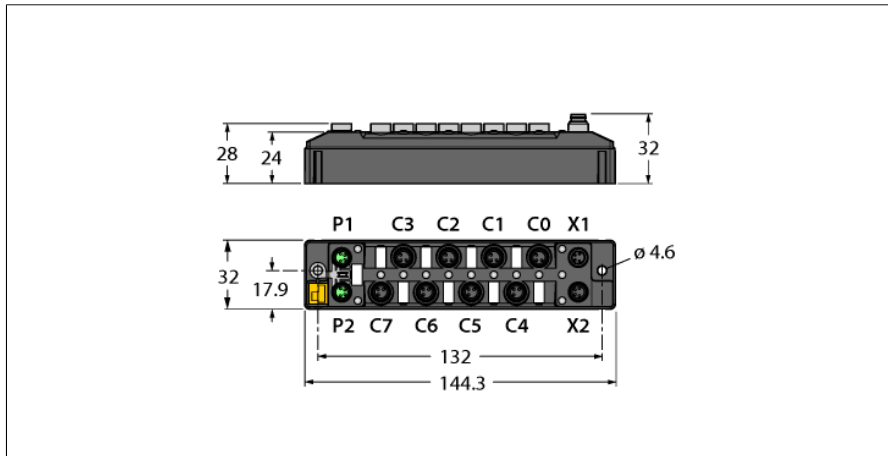


Compact Multiprotocol I/O Module for Ethernet 8 Digital PNP Inputs, Input Diagnostics per Group TBEN-S1-8DIP



- Male M8, 4-pin, for power supply
- Input diagnostics by group
- FLC/ARGEЕ programmable
- PROFINET® device, EtherNet/IP™ device or Modbus® TCP slave
- Integrated Ethernet switch
- Supports 10 Mbps/100 Mbps
- 2x M8, 4-pin, Ethernet fieldbus connection
- Glass-fiber reinforced housing
- Shock and vibration tested
- Fully potted module electronics
- Protection classes IP65 / IP67 / IP69K

Type designation	TBEN-S1-8DIP
Ident-No.	6814020
Supply	
Supply voltage	24 VDC
Admissible range	18...30 VDC
	Total current max. 4 A per voltage group V1
Voltage supply connection	2 × M8, 4-pin
Operating current	V1: max. 150 mA
Sensor/Actuator supply V_{aux1}	supply of ports C0-C7 from V1
	short-circuit proof, 0.5 A for group C0-C3, C4-C7
Electrical isolation	galvanic isolation of the voltage groups V1 and V2, voltages up to 500 VAC
System data	
Fieldbus transmission rate	10 Mbps/100 Mbps
Fieldbus connection technology	2 × M8, 4-pin
Protocol detection	automatic
Web server	default: 192.168.1.254
Service interface	Ethernet via P1 or P2
Field Logic Controller (FLC)	
Supported from firmware version	3.1.4.0
Released from ARGEE version	2.0.24.0
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)
EtherNet/IP™	
Addressing	acc. to EtherNet/IP™ specification
Quick Connect (QC)	< 500 ms
Device Level Ring (DLR)	supported
Class 3 connections	3
Class 1 connections	10
Input Assembly Instance	103
Output Assembly Instance	104
Configuration Assembly Instance	106

Compact Multiprotocol I/O Module for Ethernet

8 Digital PNP Inputs, Input Diagnostics per Group

TBEN-S1-8DIP

PROFINET

Addressing	DCP
Conformance class	B (RT)
MinCycleTime	1 ms
Fast Start-Up (FSU)	< 500 ms
Diagnostics	acc. to PROFINET alarm handling
Topology detection	supported
Automatic addressing	supported
Media Redundancy Protocol (MRP)	supported

Digital inputs

Number of channels	8
Connectivity inputs	M8, 3-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	0.2ms / 3 ms ms
Electrical isolation	galvanic isolation to P1/P2 , voltages up to 500 VDC

Standard/Directive conformity

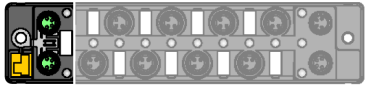
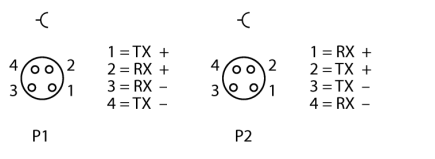
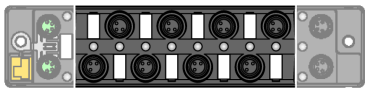
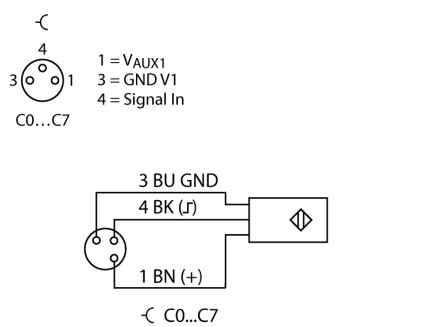
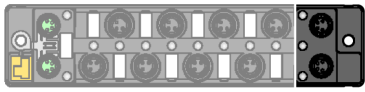
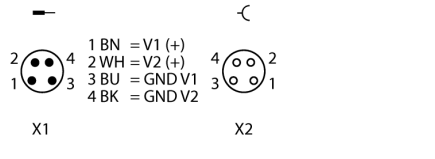
Vibration test	acceleration to 20 g acc. to EN 60068-2-6
Shock test	acc. to EN 60068-2-27
Drop and topple	acc. to EN 60068-2-31/IEC 60068-2-32
Electromagnetic compatibility	acc. to EN 61131-2
Approvals and certificates	CE, FCC
UL Certificate	cULus LISTED 21 W2, Encl.Type 1 IND.CONT.EQ.

General Information

Dimensions (W x L x H)	32 x 144 x 32mm
Operating temperature	-40...+70 °C
Storage temperature	-40...+85 °C
Altitude	max. 5000 m
Protection class	IP65 IP67 IP69K
MTTF	319 years acc. to SN 29500 (Ed. 99) 20 °C
Housing material	PA6-GF30
Housing color	Black
Material label	Polycarbonate
Halogen-free	yes
Mounting	2 mounting holes □ 4.6 mm

Note the numbering of the IO range:
From firmware version 3.1.4.0 and higher ports C0 to C7 and channels CH0 to CH7 are counted. For more details on the corresponding change see manual.

Compact Multiprotocol I/O Module for Ethernet
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	<p>Accessories</p> <p>It is strongly recommended to use only pre-assembled Ethernet cables!</p> <p>Ethernet cable (example):</p> <p>M8-M8: PSGS4M-PSGS4M-4413-1M Ident. no. U-55718</p> <p>M8-RJ45: PSGS4M-RJ45S-4413-1M Ident. no.: U-55725</p> <p>M8-M12: RSSD-PSGS4M-4413-1M Ident. no.: U-58840</p>	<p>M8 x 1 Ethernet</p> 
	<p>Accessories</p> <p>Actuator and sensor cable/PUR cable (example):</p> <p>M8 - open end</p> <p>ID No. 6625562 PSG3M-2/TXL</p> <p>M8-M8</p> <p>ID No. 6625665 PKG3M-0,3-PSG3M/TXL</p> <p>ID No. 6627137 PKG3M-3-PSG3M/TXL</p>	<p>M8 x 1 Input</p> 
	<p>Accessories</p> <p>Power supply cable (example):</p> <p>M8-M8 2 m</p> <p>PKG 4M-2-PSG 4M</p> <p>Ident. no. U99-10815</p>	<p>M8 x 1 Voltage Supply</p> 

Compact Multiprotocol I/O Module for Ethernet

8 Digital PNP Inputs, Input Diagnostics per Group

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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	Steady flashing: Ready Sequence of 3 flashes in 2 seconds: FLC/ARGEE active
	Red	ON	IP address conflict or Restore Mode or Modbus timeout
		Flashing	Blink/Wink command active
	Red/ Green	Alternating	Waiting for assignment of an IP address, DHCP or BootP
	OFF	Power off	
ERR	Green	ON	Diagnostics disabled
	Red	ON	Diagnostics enabled V_1 undervoltage diagnosis is parameter-dependent
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 0 ... 7	Green	ON	Input active
	Red	Flashing	Overload of the port supply. All LEDs of the affected group C0-C3 or C4-C7 are flashing.
		OFF	Input inactive
LED 7	White	Flashing	Blink/Wink command active

Compact Multiprotocol I/O Module for Ethernet

8 Digital PNP Inputs, Input Diagnostics per Group

TBEN-S1-8DIP

Process Data Mapping of the Single Protocols

For more details on the corresponding protocols see manual.

Modbus TCP

Register Addressing (16-bit)

Offset Process Input Data: 0x0000, structure acc. to general register mapping

Offset Process Output Data: 0x0800: Structure acc. to general register mapping

EtherNet/IP™

Word addressing (16-bit)

Process input data (station -> scanner):

Status word is located in front of the general process data!

	Reg/ 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
GW status	0x0000		-	FCE	-	-	CFG	COM	V1	-	V2	-	-	-	-	-	-	Diag Warn
	0x0001		Structure according to general register mapping															
	...																	

Process output data (scanner -> station):

Control word is located in front of the general process data!

	Reg/ 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
Control	0x0000		reserved															
	0x0001		Structure according to general register mapping															
	...																	

PROFINET:

Byte addressing (8-bit)

Offset Process Input Data: 0x0000, structure acc. to general register mapping

Offset Process Output Data: 0x0000: Structure acc. to general register mapping

General register mapping:

Address details are relative, offset of the respective protocol is to be observed.

Channel/port/pin assignment:

Channel		-	-	-	-	-	-	-	-	-	Ch7	Ch6	Ch5	Ch4	Ch3	CH2	CH1	CH0
		-	-	-	-	-	-	-	-	-	DI7	DI6	DI5	DI4	DI3	DI2	DI1	DI0
Port		-	-	-	-	-	-	-	-	-	C7	C6	C5	C4	C3	C2	C1	C0
Pin		-	-	-	-	-	-	-	-	-	P4	P4	P4	P4	P4	P4	P4	P4

Process input data:

	Reg/ 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		
		Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0		
			MSB										LSB							
Digital inputs	0x0000	0x0000	-	-	-	-	-	-	-	-	DI7	DI6	DI5	DI4	DI3	DI2	DI1	DI0		
Diagnostics	0x0001	0x0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	VERR V1 CH47	VERR V1 CH03		
Latch input	0x0002	0x0004																		
Counter Ch0	0x0003	0x0006	Counter value LSB																	
	0x0004	0x0008	Counter value MSB																	
Frequency Ch0	0x0005	0x000A	Frequency MSB										Frequency LSB							
Status	0x0006	0x000C	-	-	-	-	-	-	-	-	reserved									
Module status	0x0007	0x000E	-	FCE	-	-	-	COM	V1	-	V2	-	-	-	-	-	-	DIAG		

Process output data:

	Reg/ 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		
		Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0		
			MSB										LSB							
Latch reset	0x0000	0x0000	-	-	-	-	-	-	-	-	DI7	DI6	DI5	DI4	DI3	DI2	DI1	DI0		
Control	0x0001	0x0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CNT_ RST		

Legend:

V1	Undervoltage V1	CFG	I/O configuration error
V2	Undervoltage V2	FCE	I/O-ASSISTANT Force Mode active
6	TURCK	Pro	:

Compact Multiprotocol I/O Module for Ethernet

8 Digital PNP Inputs, Input Diagnostics per Group

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Dlx	Digital input channel x	DOx	Digital output channel x
Diag	Module diagnostics available	ERR x	Overcurrent output channel x
VERRVxCHyz	Overcurrent supply VAUXx channel y to z	PWMOUTERR	Overcurrent PWM output
VERRVxPyCz	Overcurrent supply VAUXx, pin y, port z	VAUXxPyCz	Supply VAUXx, pin y, port z
		CNT_RST	Counter reset