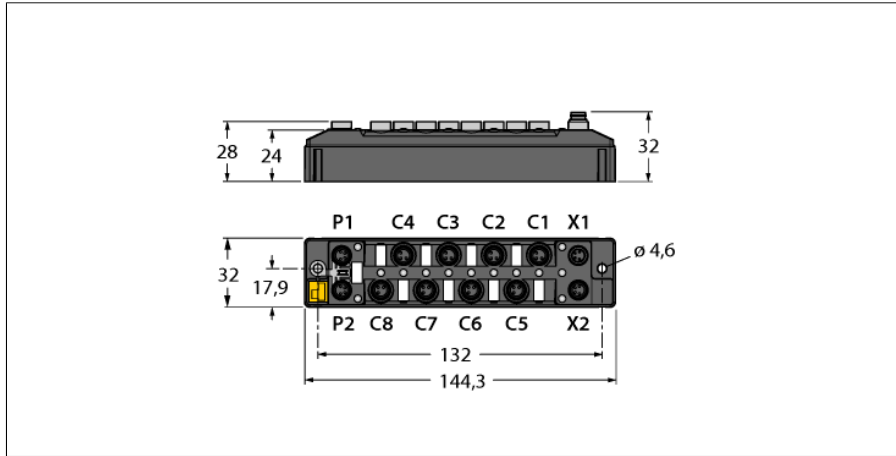


Compact multiprotocol I/O module for Ethernet
8 universal digital channels, configurable as PNP inputs or 0.5 A outputs
TBEN-S1-8DXP



- Input diagnostics group
- One freely selectable digital channel per slot
- Max. 0.5A per output
- Output diagnostics per channel
- Male M8, 4-pin, for power supply
- Separated power groups for safety shutdown
- Glass-fiber reinforced housing
- Shock and vibration tested
- Fully potted module electronics
- Protection classes IP65 / IP67 / IP69K

Type code	TBEN-S1-8DXP
Ident no.	6814023
Supply	
Supply voltage	24 VDC
Admissible range	18...30 VDC
	Total current max. 4A per voltage group
Operating current	< 150 mA
Sensor/Actuatorsupply V_{AUX1}	supply of slots C1-C4 from V1
	short-circuit proof, 0.5 A for group C1-C4
Sensor/Actuatorsupply V_{AUX2}	supply of slots C5-C8 from V2
	short-circuit proof, 0.5 A for group C5-C8
Electrical isolation	V1 and V2 voltage groups galvanically isolated, voltages up to 500 VDC
System data	
Fieldbus transmission rate	10 Mbps / 100 Mbps
Fieldbus connection technology	2 x M8, 4-pin
Protocol detection	automatic
Web server	integrated
Service interface	Ethernet via P1 or P2
Modbus TCP	
Addressing	Static IP, BOOTP, DHCP
Supported function codes	FC1, FC2, FC3, FC4, FC5, FC6, FC15, FC16, FC23
Simultaneous CIP connections	8
EtherNet/IP™	
Addressing	acc. to EtherNet/IP™ specification
Quick Connect (QC)	< 500 ms
Device Level Ring (DLR)	supported
Simultaneous CIP connections	3
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

Compact multiprotocol I/O module for Ethernet

8 universal digital channels, configurable as PNP inputs or 0.5 A outputs

TBEN-S1-8DXP

Digital inputs

Number of channels	8
Connection technology 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	< 5V
High level signal voltage	> 11 V
Low level signal current	< 1.5 mA
High level signal current	> 2mA
Input delay	0.05 ms
Electrical isolation	galvanically isolated to the bus, voltages up to 500 VDC

Digital outputs

Number of channels	8
Connection technology Outputs	M8, 3-pol
Output type	PNP
Type of output diagnostics	Channel diagnostics
Output voltage	24 VDC from potential group
Output current per channel	0.5 A per port, short-circuit proof
Simultaneity factor	0.88
Load type	resistive, inductive, lamp load
Short-circuit protection	yes
Electrical isolation	galvanically isolated to the bus, voltages up to 500 VDC

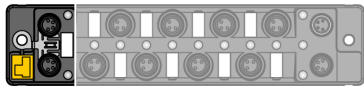
Conformance of Standard and Directives

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 IEC 60068-2-31/IEC 60068-2-32 1
Electro-magnetic compatibility	acc. to EN 61131-2
Approvals and certificates	CE
UL conditions	cULus LISTED 21 W2, Encl.Type 1 IND.CONT.EQ.

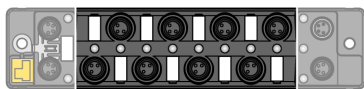
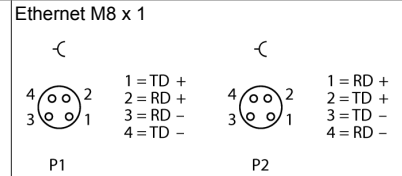
General Information

Dimensions (W x L x H)	32x144x31mm
Operating temperature	-40 ... +70 °C
Storage temperature	-40 ... +70 °C
Altitude	max.5000 m
IP Rating	IP65 IP67 IP69K
MTTF	248 years
Housing material	PA6-GF30
Housing color	black
halogen-free	yes
Mounting	2 mounting holes □ 4.6 mm

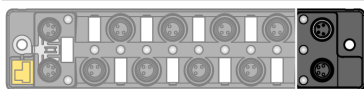
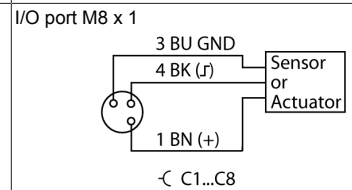
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TBEN-S1-8DXP



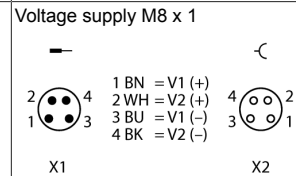
Note
 It is strongly recommended to use only ready-made Ethernet cables!
 Ethernet cable (example):
 M8-M8:
 PSGS4M-PSGS4M-4414-1M
 Ident. no. 6932993
 M8-RJ45:
 PSGS4M-RJ45S-4414-1M
 Ident. no.: 6933004
 M8-M12:
 RSSD-PSGS4M-4414-2M
 Ident. no.: 6933008



Note
 Actuator and sensor cable, PUR extension cable (example):
 M8 - open end
 PSG3M-2/TXL
 Ident. no. 6625562



Note
 Power supply cable (example):
 M8-M8 4m
 PKG4M-4-PSG4M/TXL
 Ident. no. 6626679



Compact multiprotocol I/O module for Ethernet
8 universal digital channels, configurable as PNP inputs or 0.5 A outputs
TBEN-S1-8DXP

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	IP-address conflict 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	V ₁ and V ₂ power on
	red	on	V ₂ power off or below defined tolerance
	off	off	V ₁ power off or below defined tolerance

LED status IOs

LED	Color	Status	Description
LED 1 ... 8	Green	ON	Input or output active
		Flashing	Overload of the power supply slot. All LEDs of the affected group C1-C4 or C5-C8 are flashing.
	Red	ON	Output active with overload / short circuit
		OFF	Input or output inactive

Compact multiprotocol I/O module for Ethernet

8 universal digital channels, configurable as PNP inputs or 0.5 A outputs

TBEN-S1-8DXP

Process data mapping of single protocols

For more details on the corresponding protocols see manual.

Modbus TCP register mapping

	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	-	-	-	-	-	-	-	-	DI8 C8P4	DI7 C7P4	DI6 C6P4	DI5 C5P4	DI4 C4P4	DI3 C3P4	DI2 C2P4	DI1 C1P4
Status (RO)	0x0001	-	FCE	-	-	CFG	COM	V1	-	V2	-	-	-	-	-	-	Diag Warn
Diag (RO)	0x0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	I/O Diag
Outputs (RW)	0x0800	-	-	-	-	-	-	-	-	DO8 C8P4	DO7 C7P4	DO6 C6P4	DO5 C5P4	DO4 C4P4	DO3 C3P4	DO2 C2P4	DO1 C1P4
I/O Diag (RO)	0xA000	SCO8	SCO7	SCO6	SCO5	SCO4	SCO3	SCO2	SCO1	-	-	-	-	-	-	SCG2	SCG1

EtherNet/IP™ data mapping with activated scheduled diagnostics

	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	1	-	FCE	-	-	CFG	COM	V1	-	V2	-	-	-	-	-	-	Diag Warn
Inputs	2	-	-	-	-	-	-	-	-	DI8 C8P4	DI7 C7P4	DI6 C6P4	DI5 C5P4	DI4 C4P4	DI3 C3P4	DI2 C2P4	DI1 C1P4
Diag 1	3	-	-	Sched Diag	-	-	-	-	-	-	-	-	-	-	-	-	I/O Diag
Diag 2	4	SCO8	SCO7	SCO6	SCO5	SCO4	SCO3	SCO2	SCO1	-	-	-	-	-	-	SCG2	SCG1
Output (Scanner -> Station)																	
Control	1	reserved															
Outputs	2	-	-	-	-	-	-	-	-	DO8 C8P4	DO7 C7P4	DO6 C6P4	DO5 C5P4	DO4 C4P4	DO3 C3P4	DO2 C2P4	DO1 C1P4

EtherNet/IP™ data mapping with activated summarized diagnostics

	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	1	-	FCE	-	-	CFG	COM	V1	-	V2	-	-	-	-	-	-	Diag Warn
Inputs	2	-	-	-	-	-	-	-	-	DI8 C8P4	DI7 C7P4	DI6 C6P4	DI5 C5P4	DI4 C4P4	DI3 C3P4	DI2 C2P4	DI1 C1P4
Diag 1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	I/O Diag
Output (Scanner -> Station)																	
Control	1	reserved															
Outputs	2	-	-	-	-	-	-	-	-	DO8 C8P4	DO7 C7P4	DO6 C6P4	DO5 C5P4	DO4 C4P4	DO3 C3P4	DO2 C2P4	DO1 C1P4

PROFINET Process Data

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Inputs	0	DI8 C8P4	DI7 C7P4	DI6 C6P4	DI5 C5P4	DI4 C4P4	DI3 C3P4	DI2 C2P4	DI1 C1P4
Outputs	0	DO8 C8P4	DO7 C7P4	DO6 C6P4	DO5 C5P4	DO4 C4P4	DO3 C3P4	DO2 C2P4	DO1 C1P4

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 C1-C4
V2	Undervoltage V2	SCG2	Short-circuit supply ports C5-C8
COM	Communication error on internal module bus	SCOx	Short-circuit output channel x
SPEX	Spanner port active		