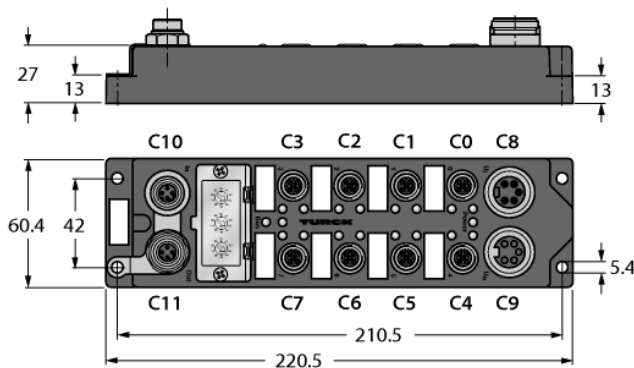


Compact multiprotocol I/O module for Ethernet

16 configurable digital channels

pnp inputs / outputs 2 A

FGEN-XSG16-5001



- Input diagnostics per port
- Output diagnostics per channel
- Two freely selectable digital signals per port
- 7/8", 5-pin, for power supply
- Fibre-glass reinforced PA6 housing
- Vibration and shock-resistant
- Encapsulated module electronics
- Metal connectors
- Degree of protection IP67

Type	FGEN-XSG16-5001
ID	6825421
Number of channels	16
Operating / load voltage	18...30 VDC
Operating current	< 200 mA
Electrical isolation	Unlike other FGEN modules, the FGEN-XSG has a common reference potential for operating and load voltage, because the I/O points are freely selectable.
Voltage supply connection	2 x 7/8"
Inputs	
Number of channels	(16) 3-wire pnp sensors
Input voltage	18...30 VDC from operating voltage UB
Supply current	120 mA per port, short-circuit proof
Switching threshold	EN 61131-3
Input delay	low max.: 1.5 mA / high min.: 2 mA
Max. input current	2.5 ms
Electrical isolation	7 mA
	galvanically separated against the bus
Outputs	
Number of channels	(16) DC actuators
Output voltage	18...30 VDC from load voltage
Output current per channel	2.0 A, short-circuit proof
Load type	resistive, inductive, lamp load
Simultaneity factor	0.25 for entire module
	1* 2A or 2* 1A per port
	total current max. 9 A per module
Electrical isolation	galvanically separated against the bus
System data	
Transmission rate	10/100 Mbps; Full/Half Duplex; Auto Negotiation; Auto Crossing
Connection technology Ethernet	2 x M12 x 1 female connector, 4-pin, D-coded
Protocol detection	automatic
Web server	from FW 3.1.0.0
Service interface	Ethernet
Modbus TCP	
Addressing	Static IP, BOOTP, DHCP
Supported function codes	FC1, FC2, FC3, FC4, FC5, FC6, FC15, FC16, FC23
Number of TCP connections	8

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Ethernet/IP

Addressing	acc. to EtherNet/IP specification
Quick Connect (QC)	< 150 ms
Device Level Ring (DLR)	supported
Class 3 connections (TCP)	3
Class 1 connections (CIP)	10

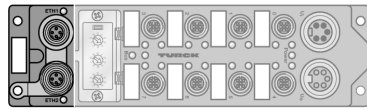
PROFINET

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

Dimensions (W x L x H)

Housing material	60 x 220.5 x 27 mm
Halogen-free	fibre-glass reinforced Polyamide (PA6-GF30)
Mounting	yes
Ambient temperature	4 mounting holes Ø 5,4 mm
Storage temperature	0...+55 °C
Altitude	-25...+70 °C
Vibration test	Max. 5000 m
Shock test	Acc. to EN 60068-2-6
Electromagnetic compatibility	acc. to EN 60068-2-27
Protection class	Acc. to EN 61131-2
MTTF	IP67
Approvals	149 years acc. to SN 29500 (Ed. 99) 20 °C
UL Certificate	CE, cULus
	pol. deg.2, env. temp. max. 40 °C, cl.2 ps req.

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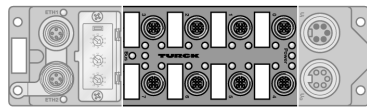
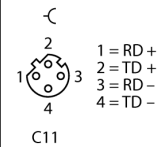
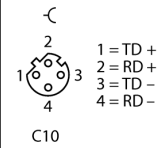
Accessories

Ethernet cable (example):

RSSD RSSD 441-2M

Ident-No. U-02482

M12 x 1 Ethernet



Accessories

FGEN-XSG modules with freely selectable I/O functions (input/output). Power and load supply with common reference potential.

Not recommended for applications with safety shutdown V_0 . However, the use of other FGEN modules is permitted.

Accessories:

Connection cable for dual channels (example):

RK 4.4T-2-RS 4.4T

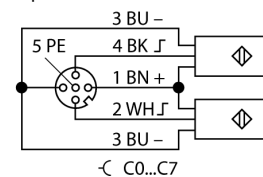
Ident-No. U2445

Splitter for single channels (example):

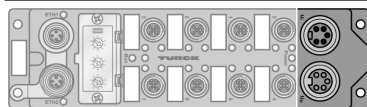
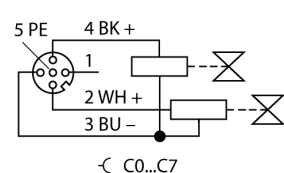
YB2-FSM 4.5-2FKM 4.5

Ident-No. U0875-78

M12 x 1 Input



M12 x 1 Output



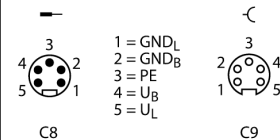
Accessories

Power supply cable (example):

RSM RKM 50-2M

Ident-No. U2282-0

7/8" Power Supply



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LED status module

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
		flashing	Blink/Wink command active
		off	No power supply
Power	green	on	Operating voltage U_s and load voltage U_L within the defined tolerances
	red	on	Load voltage U_L below the defined tolerances
		off	Operating voltage U_s below the defined tolerances

LED status IOs

LED	Color	Status	Description
C0.I1 ... C7.I16 resp. C0.O1 ... C7.O16	green	on	Input resp. output active
	red	on	Overload of sensor supply at the corresponding connector resp. output active with overload / short circuit
		off	Input resp. output inactive

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Process data mapping of single protocols

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	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	-	-	CFG	COM	UB	-	UL	-	-	-	-	-	-	Diag Warn
Diag (RO)	0x0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	I/O Diag
Outputs (RW)	0x0800	DO15 C7P2	DO14 C7P4	DO13 C6P2	DO12 C6P4	DO11 C5P2	DO10 C5P4	DO9 C4P2	DO8 C4P4	DO7 C3P2	DO6 C3P4	DO5 C2P2	DO4 C2P4	DO3 C1P2	DO2 C1P4	DO1 C0P2	DO0 C0P4
I/O Diag (RO)	0xA000	SC07	SC06	SC05	SC04	SC03	SC02	SC01	SC00	SCS7	SCS6	SCS5	SCS4	SCS3	SCS2	SCS1	SCS0
I/O Diag (RO)	0xA001	-	-	-	-	-	-	-	-	SC015	SC014	SC013	SC012	SC011	SC010	SC009	SC008

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	UB	-	UL	-	-	-	-	-	-	Diag Warn
Inputs	2	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	3	-	-	Sched Diag	-	-	-	-	-	-	-	-	-	-	-	-	I/O Diag
Diag 2	4	SC07	SC06	SC05	SC04	SC03	SC02	SC01	SC00	SCS7	SCS6	SCS5	SCS4	SCS3	SCS2	SCS1	SCS0
Diag 3	5	-	-	-	-	-	-	-	-	SC015	SC014	SC013	SC012	SC011	SC010	SC009	SC008
Output (Scanner -> Station)																	
Control	1	reserved															
Outputs	2	DO15 C7P2	DO14 C7P4	DO13 C6P2	DO12 C6P4	DO11 C5P2	DO10 C5P4	DO9 C4P2	DO8 C4P4	DO7 C3P2	DO6 C3P4	DO5 C2P2	DO4 C2P4	DO3 C1P2	DO2 C1P4	DO1 C0P2	DO0 C0P4

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	UB	-	UL	-	-	-	-	-	-	Diag Warn
Inputs	2	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	3	-															I/O Diag
Output (Scanner -> Station)																	
Control	1	reserved															
Outputs	2	DO15 C7P2	DO14 C7P4	DO13 C6P2	DO12 C6P4	DO11 C5P2	DO10 C5P4	DO9 C4P2	DO8 C4P4	DO7 C3P2	DO6 C3P4	DO5 C2P2	DO4 C2P4	DO3 C1P2	DO2 C1P4	DO1 C0P2	DO0 C0P4

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 C7P2	DI14 C7P4	DI13 C6P2	DI12 C6P4	DI11 C5P2	DI10 C5P4	DI9 C4P2	DI8 C4P4
Outputs	0	DO7 C3P2	DO6 C3P4	DO5 C2P2	DO4 C2P4	DO3 C1P2	DO2 C1P4	DO1 C0P2	DO0 C0P4
	1	DO15 C7P2	DO14 C7P4	DO13 C6P2	DO12 C6P4	DO11 C5P2	DO10 C5P4	DO9 C4P2	DO8 C4P4

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Legend:

DI	Digital input	COM	Communication error on internal module bus
DO	Digital output	CFG	I/O configuration error
Cx	female	FCE	I/O-ASSISTANT Force Mode active
Px	Pin	I/ODiag	I/O diagnostics available
DiagWarn	Diagnostic at least on 1 channel	SchedDiag	Manufacturer-specific diagnostics configured and active
UL	Undervoltage UL	SCSx	Short-circuit on sensor supply at female x
UB	Undervoltage UB	SCOx	Short-circuit output x