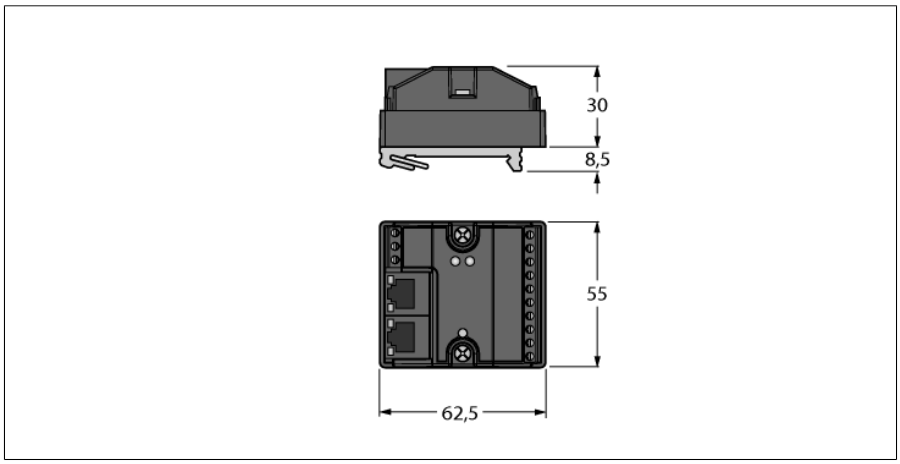
Compact IP20 Multiprotocol Ethernet I/O Station
Master to master data exchange, NAT router, 8 Digital PNP Inputs
FEN20-EN1-DIN



- **Two separate, electrically isolated Ethernet interfaces**
- **Bi-directional data exchange between two networks**
- **Protocol conversion between EtherNet/IP™, Modbus® TCP and Profinet®**
- **PROFInet® is supported on P2 Ethernet port**
- **1:1 NAT router**
- **10 Mbps/100 Mbps supported**
- **2 RJ45 ports for the Ethernet connection**
- **Protection class IP20**
- **8 digital inputs**
- **24 VDC, PNP**

Type designation	FEN20-EN1-DIN
Ident-No.	6931320
Number of channels	8
Operating / load voltage	12...30 VDC
Operating current	100 mA
Electrical isolation	500V Galvanic Zone-Zone and Zone-Ethernet
Supply voltage	24 VDC
Power dissipation, typical	≤ 2.4 W
Voltage supply connection	Screw terminals
Inputs	
Number of channels	8
Input voltage	24 VDC
Supply current	700 mA
Switching threshold	7V / 1.65mA
Low level signal voltage	< 7 VDC
High level signal voltage	7...30 VDC
Low level signal current	< 1.5 mA
High level signal current	> 2.5 mA
Input delay	2.5 ms
Max. input current	6 mA
System data	
Transmission rate	10/100 Mbps; Full/Half Duplex; Auto Negotiation; Auto Crossing
Addressing modes Ethernet:	via Software
Connection technology Ethernet	2 x RJ45 Sockets
Protocol detection	automatic
Web server	192.168.1.254 (Default)
Service interface	Ethernet
Device Reset	via Push-button
Modbus TCP	
Addressing	Static IP, BOOTP, DHCP
Supported function codes	FC1, FC2, FC3, FC4, FC5, FC6, FC15, FC16, FC23
Number of TCP connections	6
Input Data Size	max. 1 register
Input register start address	0 (0x0000 hex)
Output Data Size	max. 1 register
Output register start address	2048 (0x0800 hex)
EtherNet/IP™	
Addressing	acc. to EtherNet/IP™ specification
Quick Connect (QC)	< 150 ms
Device Level Ring (DLR)	supported
Class 1 connections	6

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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)	55 x 62.5 x 30mm
Housing material	Fiber-glass reinforced Polyamide (PA6-GF30)
Operating temperature	-40...70 °C
Storage temperature	-40...85 °C
Protection class	IP20
Approvals	CE, cULus

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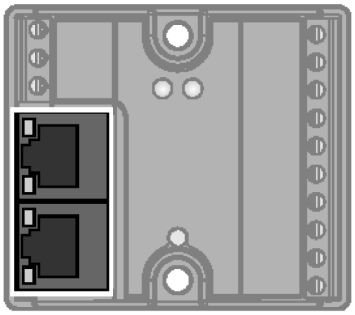
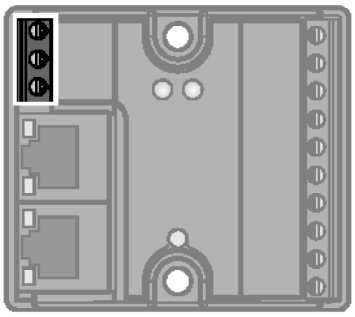


Ethernet Ports

RJ45 Ethernet

1 = TX +
2 = TX –
3 = RX +
4 = n.c.
5 = n.c.
6 = RX –
7 = n.c.
8 = n.c.

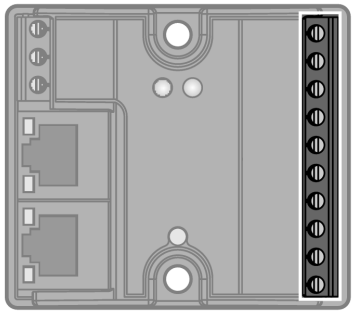


Power Supply

Recommended torque for screw terminals: 0.5 Nm (4.43 lb.in)

Power Supply

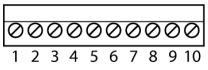
1 = ⏚
2 = V1 –
3 = V1 +



Digital inputs

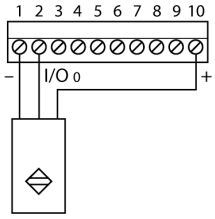
Recommended torque for screw terminals: 0.5 Nm (4.43 lb.in)

Terminal Connection



1 = V1 –
2 = I/O 0
3 = I/O 1
4 = I/O 2
5 = I/O 3
6 = I 4
7 = I 5
8 = I 6
9 = I 7
10 = V_{OUT}1 +

3-wire



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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	IP address conflict or status word is active
		flashing	Blink/Wink command active
		OFF	Power off
ERR	Green	ON	Diagnostics disabled
	Red	ON	Short-circuit

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Process Data Mapping

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	-	-	-	-	-	-	-	-	DI7	DI6	DI5	DI4	DI3	DI2	DI1	DI0
Status (RO)	0x0001	-	FCE	SPE2	SPE1	CFG	COM	V1 low	-	-	-	-	-	-	-	-	Diag
Diag (RO)	0x0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spanner Input	0x3000-0x30EF	240 Words Data Exchange															
Spanner Output	0x3400-0x34EF	240 Words Data Exchange															

EtherNet/IP™ Data Mapping

	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	0	-	FCE	SPE2	SPE1	CFG	-	V1 low	-	-	-	-	-	-	-	-	Diag
	1	-	-	-	-	-	-	-	-	DI7	DI6	DI5	DI4	DI3	DI2	DI1	DI0
	2	Reserved															
	3	Reserved															
	4 - 243	Input Data															
OUTPUT	**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**
	0 - 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4 - 243	Output Data															

PROFINET Process Data – Supported on port 2 only

	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	0	-	FCE	SPE2	SPE1	CFG	-	V1 low	-	-	-	-	-	-	-	-	Diag
	1	-	-	-	-	-	-	-	-	DI7	DI6	DI5	DI4	DI3	DI2	DI1	DI0
	2	Reserved															
	3	Reserved															
	4 - 243	Input Data															
OUTPUT	**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**
	0-3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4 - 243	Output Data															

Key:

DIx	Digital input x	COM	Communication error on internal module bus
SPEx	Spanner established connection port x	CFG	I/O configuration error
V1 low	Undervoltage V1	FCE	I/O-ASSISTANT Force Mode active
Diag Warn	Diagnostic at least on 1 channel	Diag	I/O diagnostic detected

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