

DeviceNet FDN20 Stations

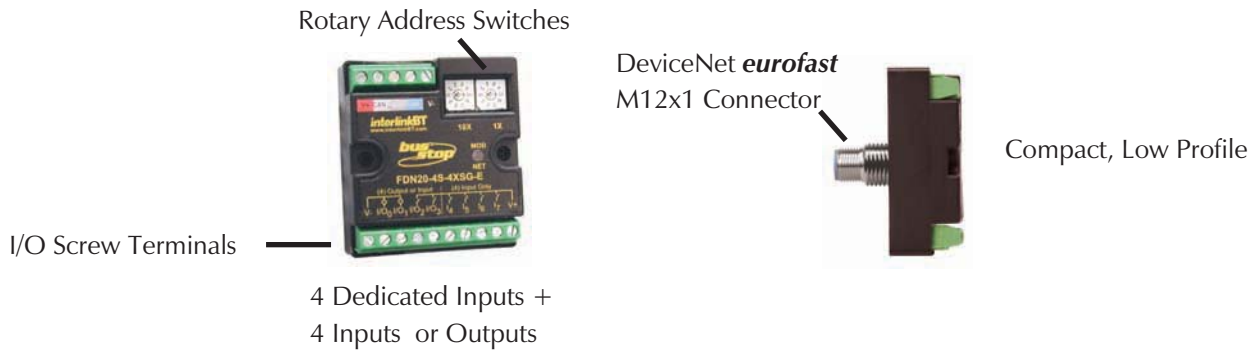
TURCK's FDN20 DeviceNet stations are low-cost screw-terminal connection stations designed for mounting in an enclosure. These stations allow you to easily connect standard I/O devices such as push buttons, pilot lights, motor starters and drives to a DeviceNet network. The FDN20 station is designed to easily upgrade existing equipment to a DeviceNet network.

Specifications

TURCK FDN20 stations are designed to be mounted in standard equipment enclosures (operator stations, motor control centers, etc.). Most FDN20 stations use only screw terminal connections for all I/O and network wiring. FDN20-4S-4XSG-E has a DeviceNet **eurofast**® (M12) connector on the back of the housing that enables mounting the station to an enclosure wall with the (DeviceNet) connection on the outside of the box; greatly simplifying network wiring. Detailed environmental specifications are as follows:

- Housing material: Glass filled nylon
- Protection level: IP 20
- Operating temperature: -40 to +70°C (-40 to +158°F)

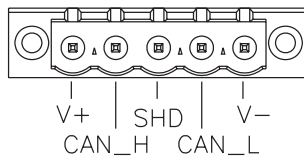
The station's components are identified in the figure below.



Connectors

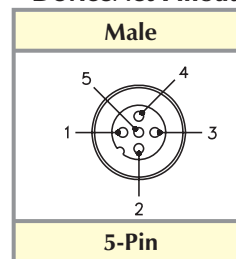
Bus connectors:

FDN20 screw terminal and **eurofast** bus connectors pinouts:



- 1 = Shield
- 2 = V+
- 3 = V-
- 4 = CAN_H
- 5 = CAN_L

DeviceNet Pinout



I/O connectors:

Each FDN20 version uses a different screw terminal connector. Detailed pinout information is given in the product information on the following pages.

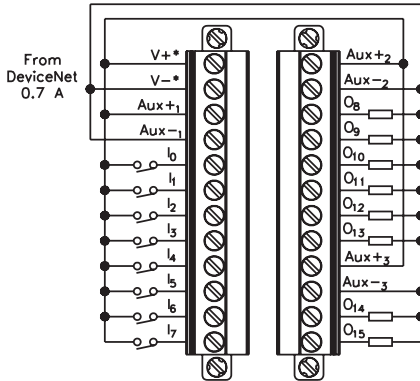
Power

The short FDN20 stations provide all the power to the I/O devices from the DeviceNet™ power supply. In this case there is no auxiliary power connection.

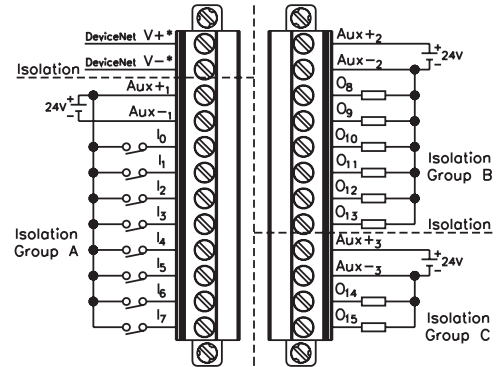
The remaining long FDN20 stations (FDN20-16XSG, for example) provide an auxiliary power connection. I/O devices can be powered from the DeviceNet or auxiliary power supply, depending on how the user chooses to wire the station. The different wiring options are illustrated in the following diagram.

***WARNING NOTE:** (V+) and (V-) PROVIDE POWER FROM DeviceNet . DO NOT CONNECT TO SUPPLY OR GROUND.

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CONNECT AS SHOWN TO USE DeviceNet to POWER I/O



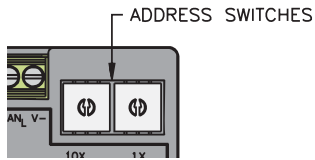
TO USE EXTERNAL POWER SUPPLY

Power ratings for FDN20 stations:

- Bus (DeviceNet) Voltage: 11-26 VDC
- Aux Power Voltage: 24 VDC (nominal)
- Internal Current Consumption: <75 mA (@ nominal 24 VDC) plus sum of I/O currents if auxiliary power is not used
- Input Voltage: 13-26 VDC (From DeviceNet supply)
- Input Short-Circuit Current: <700 mA (total for entire station)
- Input Signal Current (each input): OFF <2 mA; ON 3.0-3.4 mA (@ nominal 24 VDC)
- Input Delay: 2.5 ms
- Output Current: 0.5 A max per output

Addressing

DeviceNet stations must have a network address for communication. The address for FDN20 stations may be set via the visible rotary switches on the front of the station.



Address = $6 \times 10 + 3 \times 1 = 63$

The pair of switches represents the address as a decimal number; the left switch being the 10's multiplier and the right switch the 1's multiplier. To program the stations, rotate the switches with a small slotted screwdriver until the arrows are pointing at the appropriate numbers for the chosen address.

Diagnostics

FDN20 stations provide a single Network Status LED for diagnosing communication problems.

- Green: Connection established
- Flashing green: Waiting for connection
- Flashing red: Connection timed out
- Red: Cannot connect
- Flashing Amber: Finding baud rate (autobaud setting)

The long housing stations (i.e. FDN20-16XSG) have an additional LED for each I/O point on the station indicating:

- Off: Point is off
- Green: Point is on

Additionally, most FDN20 stations provide diagnostic bits in the I/O table for diagnostics. One bit indicates a short-circuit fault for outputs or inputs. See product pages in this catalog for detailed I/O information.

Notes:

Enclosure Mounted
Input/Output Stations



FDN20-4S-4XSG
FDN20-4S-4XSG-E*
FDN20-4S-4XSG-DIN*

* Not UL



- In-Cabinet I/O
- IP 20 Protection
- Ideal for Retrofits
- Automatic Baud Rate Sensing

Electrical

- Operating Current: <75 mA (from DeviceNet) plus I/O currents (from bus power)
- Input Current: <700 mA sum of all inputs (from DeviceNet)
- Output Current: <500 mA per output (from DeviceNet)

Power Distribution

- Inputs: DeviceNet power supply
- Outputs: DeviceNet power supply

Mechanical

- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: IEC IP 20

Material

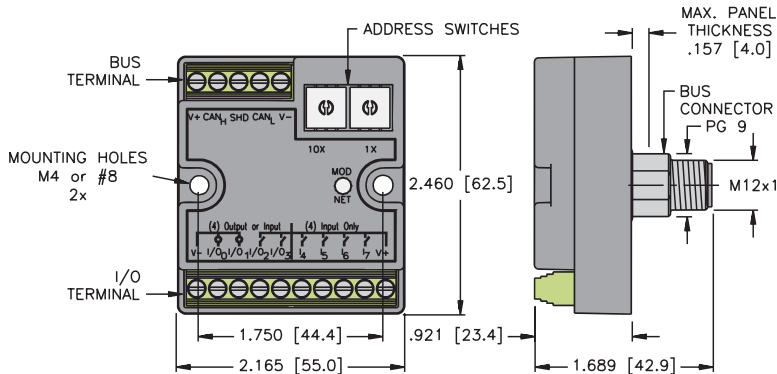
- Connectors: Nickel-plated brass (*eurofast* option only)
- Housing: Nylon

Diagnostics (Logical)

- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates a fault for all inputs and one bit indicates a fault for all outputs

Diagnostics (Physical)

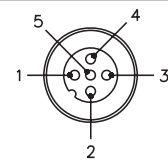
- LED to indicate status of DeviceNet communication



FDN20-4S-4XSG-E shown

DeviceNet Pinout

eurofast Male

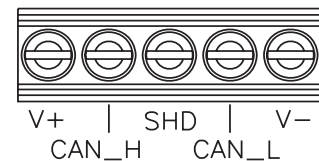


5-Pin

- 1 = Shield
- 2 = V+
- 3 = V-
- 4 = CAN_H
- 5 = CAN_L

FDN20-4S-4XSG-E only

DeviceNet Connector

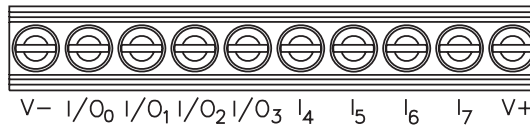


Note: A DIN rail mounting bracket (FDN20-BKT-DIN) may be purchased separately for use with the FDN20-4S-4XSG.

Part Number	Inputs						Outputs				Data	
	Input Count	Pinout	Sensor Style	Group	Individual	Wire-Break Detection	Output Count	Pinout	Current	Individual	Wire-Break Detection	Data Map
FDN20-4S-4XSG	8	FS	PNP	X			4	FS	0.5 A			1
FDN20-4S-4XSG-E	8	FS	PNP	X			4	FS	0.5 A			1
FDN20-4S-4XSG-DIN	8	FS	PNP	X			4	FS	0.5 A			1

Input/Output Connectors

FS



*Note: I/O₀ to I/O₃ can be used as inputs or outputs

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	IGS	OGS	-	-	-	-	-	-
Out	0	-	-	-	-	0-3	0-2	0-1	0-0

**Enclosure Mounted
 Input/Output Station**

- In-Cabinet I/O
- IP 20 Protection
- Ideal for Retrofits
- Automatic Baud Rate Sensing



FDN20-4S-4XSG-0189
FDN20-S0404G-0220*

* Not CE



Electrical

- Operating Current: <75 mA plus I/O currents (from bus power)
- Input Current: <700 mA sum of all inputs (from DeviceNet)
- Output Current: <500 mA per output (from DeviceNet)

Power Distribution

- Inputs: DeviceNet power supply
- Outputs: DeviceNet power supply

Mechanical

- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: IEC IP 20

Material

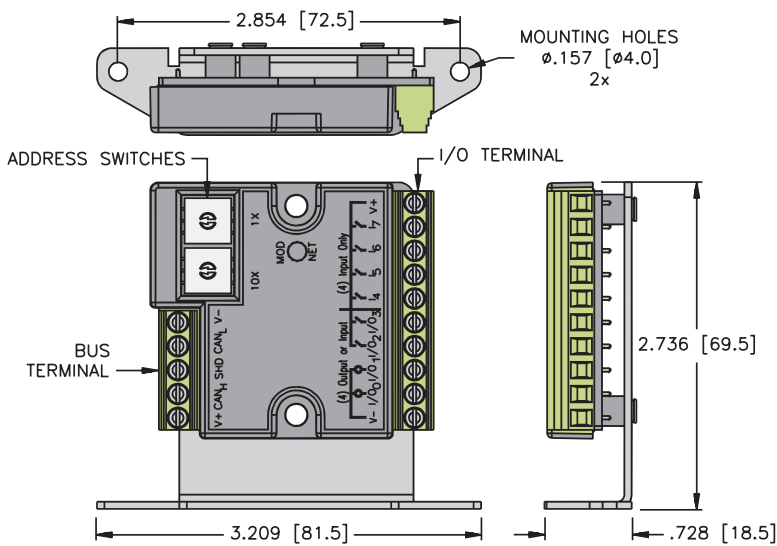
- Housing: Nylon

Diagnostics (Logical)

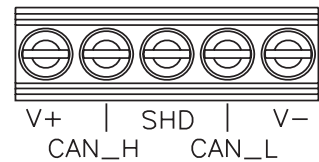
- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates a fault for all inputs and one bit indicates a fault for all outputs

Diagnostics (Physical)

- LED to indicate status of DeviceNet communication



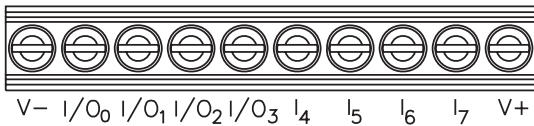
DeviceNet Connector



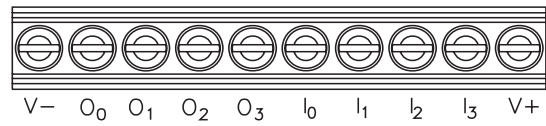
Part Number	Inputs						Outputs				Data	
	Input Count	Pinout	Sensor Style	Group	Individual	Wire-Break Detection	Output Count	Pinout	Current	Individual	Wire-Break Detection	Data Map
FDN20-4S-4XSG-0189	8	FS	PNP	X			4	FS	0.5A			1
FDN20-S0404G-0220	4	FS-2	PNP	X			4	FS-2	0.5 A			2

Input/Output Connectors

FS



FS-2



*Note: I/O₀ to I/O₃ can be used as inputs or outputs

I/O Data Map 1

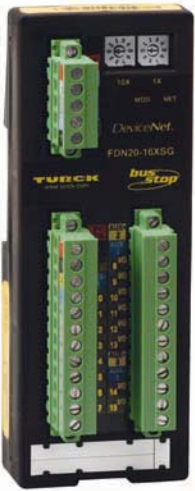
	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	IGS	OGS	-	-	-	-	-	-
Out	0	-	-	-	-	0-3	0-2	0-1	0-0

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	0	IGS	OGS	-	-	I-3	I-2	I-1	I-0
Out	0	-	-	-	-	0-3	0-2	0-1	0-0

**Enclosure Mounted
 Input/Output Stations**

- In-Cabinet I/O
- IP 20 Protection
- Ideal for Retrofits
- Automatic Baud Rate Sensing



FDN20-16XSG
FDN20-16S

Electrical

- Operating Current: <75 mA plus applicable I/O currents (from bus power)
- Input Current: <700 mA sum of all inputs
- Output Current: <500 mA per output

Power Distribution

- Inputs: Optionally DeviceNet or Auxiliary power supply as shown in wiring diagram
- Outputs: Optionally DeviceNet or Auxiliary power supply as shown in wiring diagram

Mechanical

- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: IEC IP 20

Material

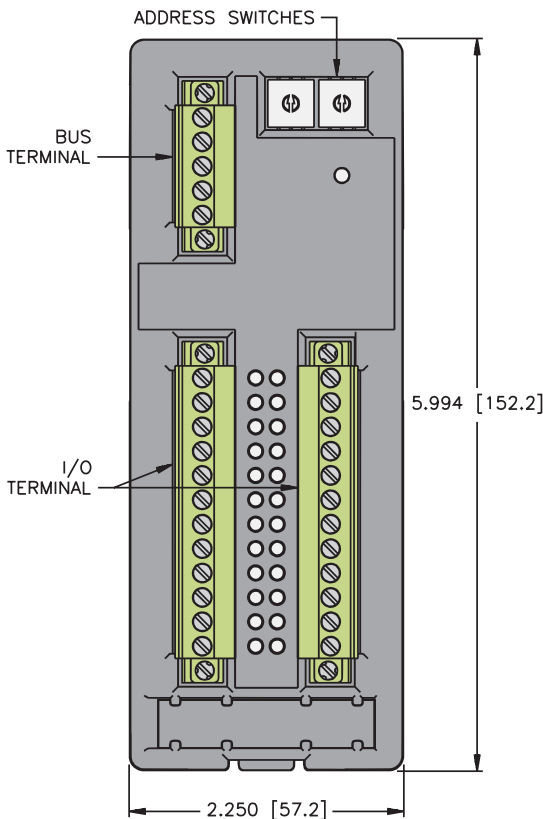
- Housing: Nylon

Diagnostics (Logical)

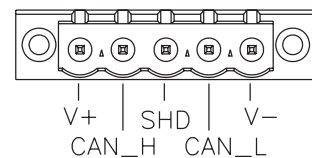
- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates a fault for all inputs, on bit indicates a fault for all outputs

Diagnostics (Physical)

- LED to indicate status of DeviceNet communication

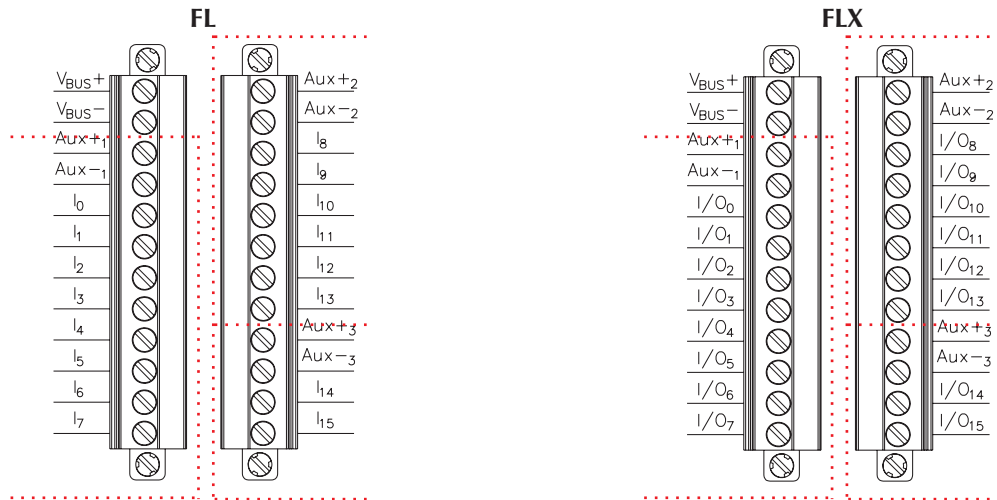


DeviceNet Connector



Part Number	Inputs						Outputs				Data	
	Input Count	Pinout	Sensor Style	Group	Individual	Wire-Break Detection	Output Count	Pinout	Current	Individual	Wire-Break Detection	Data Map
FDN20-16XSG	16	FLX	PNP	X			16	FLX	0.5 A			1
FDN20-16S	16	FL	PNP	X			0					2

Input/Output Connectors



..... Indicates I/O groups which can be powered from separate Aux. Power supplies if desired.

I/O Data Map 1

In	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8	
2	IGS	OGS	-	-	-	-	-	-	
Out	0	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
	1	0-15	0-14	0-13	0-12	0-11	0-10	0-9	0-8

I/O Data Map 2

In	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
1	I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8	
2	IGS	OGS	-	-	-	-	-	-	

**Enclosure Mounted
 Input/Output Stations**

- In-Cabinet I/O
- IP 20 Protection
- Ideal for Retrofits
- Automatic Baud Rate Sensing



FDN20-16SN-16XSG
FDN20-32SN



Electrical

- Operating Current: <75 mA plus applicable I/O currents (from bus power)
- Input Current: <700 mA sum of all inputs
- Output Current: 1.8 A per output

Power Distribution

- Inputs: Optionally DeviceNet or Auxiliary power supply as shown in wiring diagram
- Outputs: Optionally DeviceNet or Auxiliary power supply as shown in wiring diagram

Mechanical

- Operating Temperature: -40 to +70°C (-40 to +158°F)
- Protection: IEC IP 20

Material

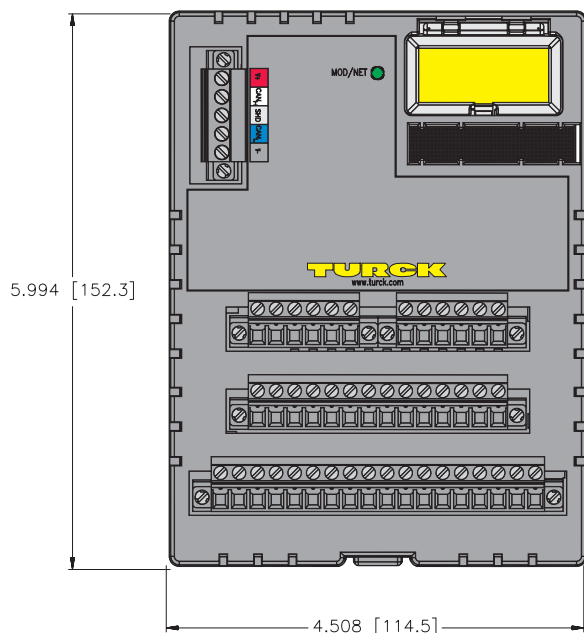
- Housing: Nylon

Diagnostics (Logical)

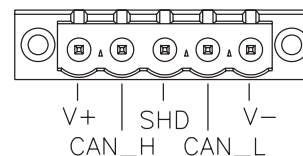
- Open/short-circuit status mapped to DeviceNet I/O table, one bit indicates a fault for all inputs, on bit indicates a fault for all outputs

Diagnostics (Physical)

- LED to indicate status of DeviceNet communication



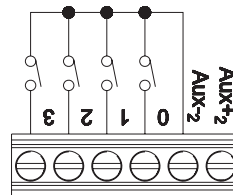
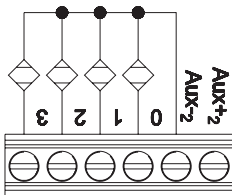
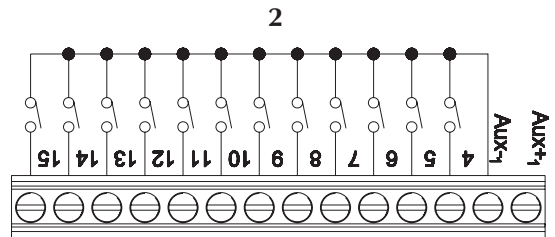
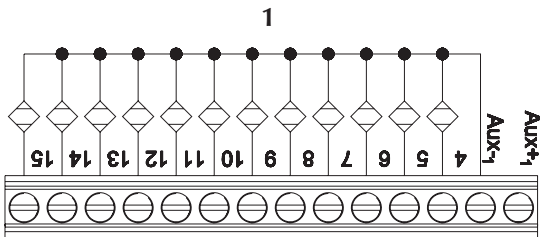
DeviceNet Connector



Part Number	Inputs						Outputs				Data	
	Input Count	Pinout	Sensor Style	Group	Individual	Wire-Break Detection	Output Count	Pinout	Current	Individual	Wire-Break Detection	Data Map
FDN20-16SN-16XSG	32*	1	NPN/PNP	X			16*	2	1.8 A			1
FDN20-32SN	32	1	NPN/PNP	X								2

* 16 dedicated inputs and 16 points which can be used as inputs or outputs.

DeviceNet



I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1
1		I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
2		I-23	I-22	I-21	I-20	I-19	I-18	I-17	I-16
3		I-31	I-30	I-29	I-28	I-27	I-26	I-25	I-24
Out	4	IGS	OGS	-	-	-	-	-	-
	1	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	In	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1
1		I-15	I-14	I-13	I-12	I-11	I-10	I-9	I-8
2		I-23	I-22	I-21	I-20	I-19	I-18	I-17	I-16
3		I-31	I-30	I-29	I-28	I-27	I-26	I-25	I-24
	4	IGS	OGS	-	-	-	-	-	-

**Enclosure Mounted
 Input/Output Stations**



FDN20-4DR



- In-Cabinet I/O
- IP 20 Protection
- Ideal for Retrofits
- Automatic Baud Rate Sensing

Electrical

- Bus Power: 11-26 VDC
- Internal Current Consumption: ≤75 mA plus sum of sensor and output currents (from bus power)

Input Circuits: (4) Negative switched dry contacts

- Input Voltage (V+): 0-26 VDC
- Input Signal Current (Input): OFF > 3 V, < 0.5 mA
 ON 0-1 V, 2-3 mA
- Input Delay: 1 ms

Output Circuits: (12) Solid state relays

- Output Voltage: 0-26 VDC
- Output Load Current: 120 mA (max.)

Output Circuits (Analog): (4) 0-10 V

- Output Voltage 0-10 V
- Representation 16-bit signed integer
- Analog Supply Voltage 10-24 V

Network Status LED

- Status: Green: Established connection
 Flashing Green: Ready for connection
 Red: Connection not possible
 Flashing Amber: autobaud/125k/250k/500k

Adjustments

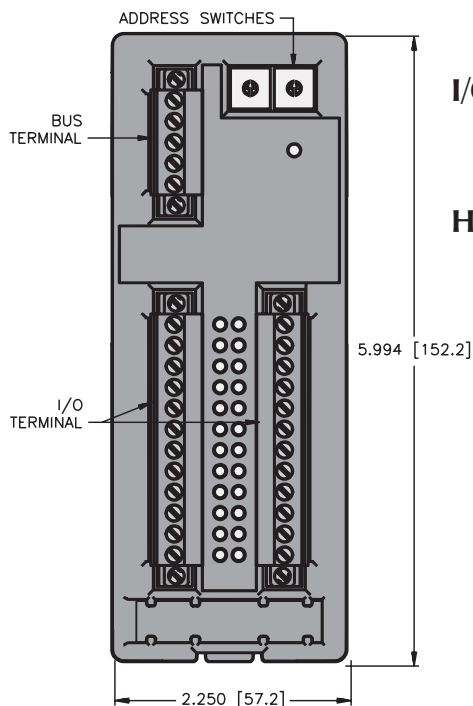
- Slave Side (Network address): 0-63 via rotary switches
- Master Side (Node count): 0-8 via rotary switches
- Master Baud Rate (5,6,7): 5=125 K, 6=250 K, 7=500 K

I/O Status LED

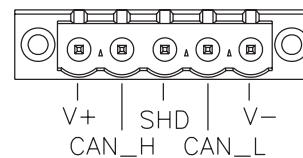
- OFF = off
- Green = On

Housing

- Material: Nylon
- Operating Temperature: -40° to 70° C (-40° to 158° F)



DeviceNet Connector



Part Number	Inputs							Outputs				Data
	Input Count	Pinout	Sensor Style	Group	Individual	Wire-Break Detection	Discrete Relay Output Count	Pinout	Analog Outputs	Individual	Wire-Break Detection	Data Map
FDN20-4DR	4	1	Sinking Dry Contacts	X			12	1	4			1

Input/Output Connectors

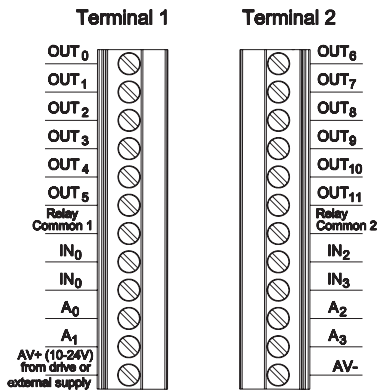


Diagram A

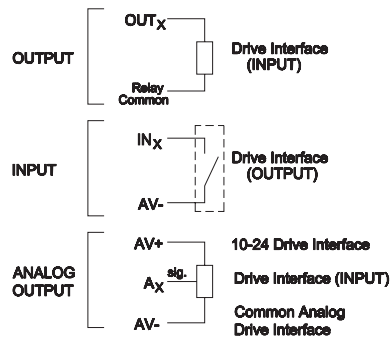


Diagram B

NOTE:
Relay Common and Relay Common 2 are isolated from each other and can be connected to either 10-24 V or AV-

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
In	0	-	-	-	-	-	-	I-1	I-0	
	1	-	-	-	-	-	-	I-3	I-2	
Out	0	-	-	0-5	0-4	0-3	0-2	0-1	0-0	
	1	-	-	0-11	0-10	0-9	0-8	0-7	0-6	
	2	A0 Low Byte								
	3	A0 High Byte								
	4	A1 Low Byte								
	5	A1 High Byte								
	6	A2 Low Byte								
	7	A2 High Byte								
	8	A3 Low Byte								
	9	A3 High Byte								