

FieldBlock™ Enclosure with:



FOUNDATION Fieldbus Input/Relay Output Module (FBR94___)

These I/O Modules are designed to function as FOUNDATION Fieldbus nodes with termination points for connecting switches/sensors (discrete and analog), as well as Independent Relay Outputs to operate high power devices.

Inputs and Outputs

- Two (2) Discrete Inputs
- Two (2) Discrete (Relay) Outputs
- One (1) Analog Input (4-20mA)
- One (1) Analog Output (4-20mA)

Features

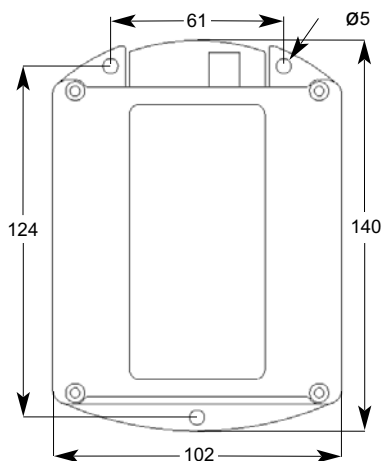
- LED input displays for Inputs 1 & 2
- Date of Last Service
- Pre-determined output Fail State

(See Page 4 detailed wiring instructions)

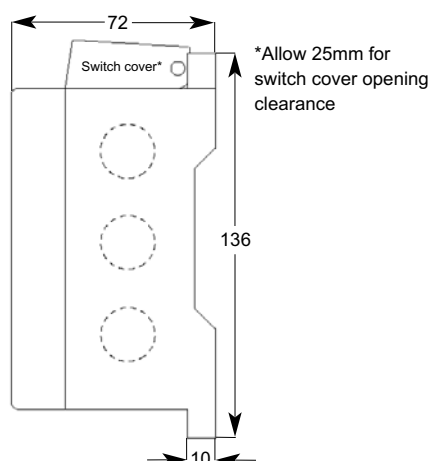


FieldBlock Dimensions (in mm)

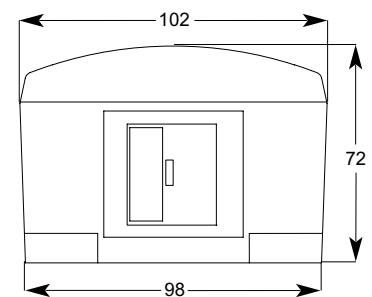
Front View



Side View



Top View



StoneL
 One StoneL Dr
 26271 US Hwy 59
 Fergus Falls, MN 56537
 USA

Telephone: 218.739.5774
 Toll Free: 800.843.7866
 Fax: 218.739.5776
 E-mail: sales@stonel.com
 Website: www.stonel.com

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Example: FBR94022

FB	<u>Function</u>	<u>Entry Options</u>
R94	I/O Relay Module, Independent Outputs, (2 DI/2 DO/1 AI/1 AO), Foundation Fieldbus	007 (6) 1/2 NPT Conduit Entries 022* (3) 4-Pin Male Mini-Connectors, (1) 4-Pin Female Mini-Connector, (6) 4-pin Female Micro-Connectors 023* (3) 4-Pin Male Micro-Connectors, (7) 4-pin Female Micro-Connectors 034 (10) M20 cable glands (.20 -.35 diameter cable) * See Page 5 for Connector pin-out

General Specifications

Operating Life	Unlimited	Temperature Range	-40° to +80°C (-40° to +176°F)
Materials of Construction		Enclosure Protection	NEMA 4, 4X & 6; IP67
Housing and Cover	Lexan® Polycarbonate	Warranty	
Elastomer Seals	Buna-N	Complete Assemblies	Two Years
Fasteners	Stainless Steel		

Lexan is a registered trademark of General Electric Corporation.

Mounting Instructions

Mounting The FieldBlock Enclosure

1. Locate the position where the FieldBlock enclosure will be mounted. Ensure that disconnect switch cover will have sufficient clearance to be lifted.
2. Attach the FieldBlock enclosure to a wall or other stationary flat surface using the mounting holes provided.

Attaching Cables and Connectors

1. Cable glands and connectors are provided for convenient wiring. Ensure all connections are securely tightened.
2. Follow all applicable NEC codes and other regulations.

Installing & Removing Cover

1. To insure NEMA 4, 4X and 6 ratings are maintained the cover **must be** completely closed and the gasket sealed to keep out water.
2. Tighten cover screws to 05-30 inch lbs.

Specifications

Operating Voltage	9-32 VDC via Foundation Fieldbus voltage
Bus Current Draw	16mA
External Control Voltage	24 VDC (For Analog I/O and Relay Output control)
External Control Max Current	Analog Input - 25mA Analog Output - 25mA Relay Output coils - 21mA each (2)
Discrete Inputs	(2) For low power dry contact switches capable of operating at <.045mA @ 6.5VDC or solid state PNP capable of operating at <1mA @ 6.5 VDC
Discrete Controlled Relay Outputs	(2) Discrete Controlled Relay Outputs with contacts rated for 120/250VAC/30VDC fused @ 2 amps
Analog Input	(1) Analog input (4-20 mA). 10 bit resolution (0.1%)
Analog Output	(1) Analog output (4-20 mA). 10 bit resolution (0.1%)
Function Blocks	2 DI; 2 DO; 1 AI; 1AO
Indication	Input 1 = Red LED Input 2 = Green LED

Standard Channel Assignments

Channel 1 (DI1) - Discrete Input 1 (Red LED);	1 = True; 0 = False
Channel 2 (DI2) - Discrete Input 2 (Green LED);	1 = True; 0 = False
Channel 3 (DO1) - Discrete Output 1 (OUT 1);	1 = True; 0 = False
Channel 4 (DO2) - Discrete Output 2 (OUT 2);	1 = True; 0 = False
Channel 5 (AI1) - Analog Input (AIN);	% of 4-20mA Input Range (0 = 4mA; 100 = 20mA)
Channel 6 (AO1) - Analog Output (AOUT);	% of 4-20mA Input Range (0 = 4mA; 100 = 20mA)

Special Channel Assignments

Channel 7 (AO1) - Analog Output (AOUT) with state report from Analog Input (READBACK_D)
Channel 8 (DO1) - Discrete Output 1 (OUT 1) with state report from Discrete Input 1 (READBACK_D)
Channel 9 (DO2) - Discrete Output 2 (OUT 2) with state report from Discrete Input 2 (READBACK_D)

Valve Control Single Block Mode

Channel 10 (DO1) - Discrete Output 1 (OUT 1) with state report Discrete Inputs 1&2 (READBACK_D):

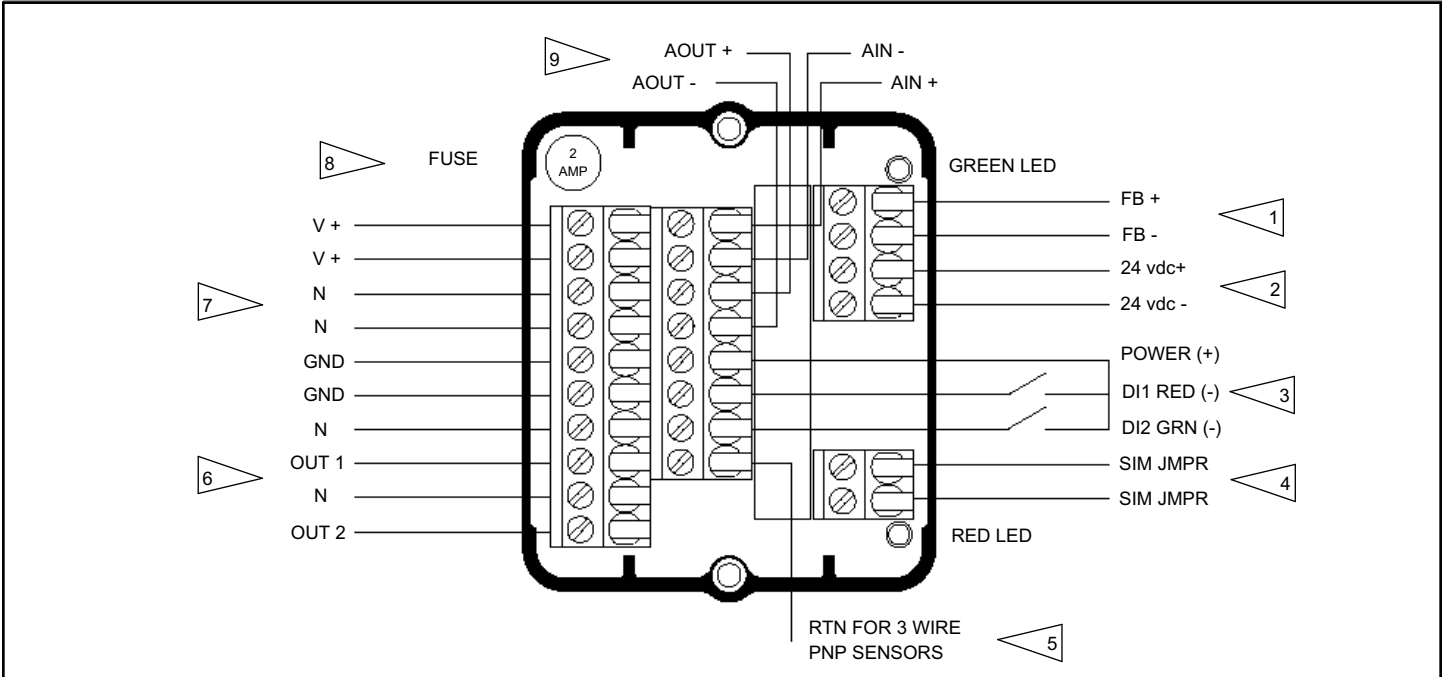
READBACK_D Values:

0 = None

1 = Discrete Input 1 is True

2 = Discrete Input 2 is True

3 = Both Discrete Inputs 1&2 are True



INSTALLATION NOTES:

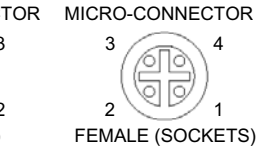
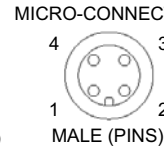
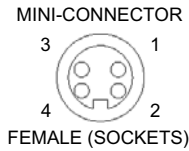
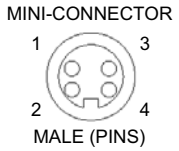
- 1. FOUNDATION Fieldbus bus communications connection points.
- 2. Connection points for external 24VDC power for Analog I/O and internal relay coils for Relay Output.
- 3. Bus powered Discrete Input connection points for low power dry contacts capable of operating at $<.045\text{mA @ }6.5\text{VDC}$ or solid state PNP sensors capable of operating at $<1\text{mA}$ and 6.5VDC . Red LED is local indication of discrete input DI1 RED on/off status and the Green LED for DI2 GRN on/off status.

NOTE: The Discrete Inputs (DI) are not galvanically isolated from the FOUNDATION signal wires. Therefore, the DI connections should not be attached to ground. If the cable runs to the DI's are long or can be exposed to electrical noise, external Opto-isolators on the DI wires may be needed to provide isolation.

- 4. These connection points not used by the consumer.
- 5. Connection point for the "return" of 3 wire PNP sensors. (See Note 3)
- 6. Connection points for devices to be controlled by the Relay Outputs. 24VDC must be applied (See Note 2)
- 7. Connection points for external 120/250VAC or 30VDC power for devices connected to the Relay Outputs. V+, V+, N, N, GND, GND are redundant termination points. The external power source feeds both Relay Outputs
- 8. 2 amp replaceable fuse (Part# 434162) for Relay Output protection. (See Note 6)
- 9. Connection points for 2 wire, 24VDC, 4-20mA analog devices. (See Note 2)

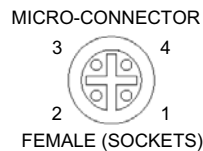
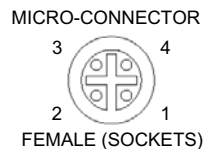
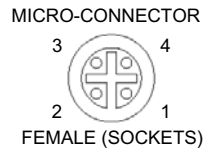
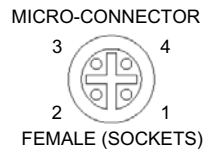
FBR94 Connector Pin Out

ENTRY OPTION 022

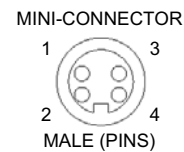


ENTRY OPTION 023

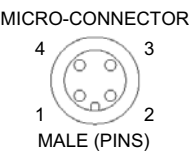
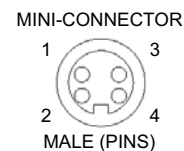
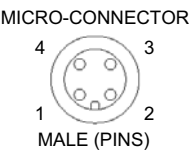
ALL ENTRY OPTIONS



ENTRY OPTION 022



ENTRY OPTION 023



MODEL FBR94***
BUS IN (BI) & BUS OUT (BO)

PIN	WIRE COLOR	FBR94022	FBR94022		
1	BROWN	FB -	FB -		
2	WHITE	FB +	FB +		
3	BLUE	Shield	Shield		
4	BLACK	NOT USED	NOT USED		

RELAY OUTPUTS (RO1 & RO2)

1	BROWN	NOT USED	NOT USED		
2	WHITE	NOT USED	NOT USED		
3	BLUE	N	N		
4	BLACK	OUT	OUT		

DISCRETE INPUTS (DI1 & DI2)

1	BROWN	IN +	IN +		
2	WHITE	NOT USED	NOT USED		
3	BLUE	3 WIRE RTN	3 WIRE RTN		
4	BLACK	IN -	IN -		

ANALOG OUTPUT (AO)

1	BROWN	NOT USED	NOT USED		
2	WHITE	NOT USED	NOT USED		
3	BLUE	AO -	AO -		
4	BLACK	AO +	AO +		

ANALOG INPUT (AI)

1	BROWN	AIN +	AIN +		
2	WHITE	AIN -	AIN -		
3	BLUE	NOT USED	NOT USED		
4	BLACK	NOT USED	NOT USED		

AUX POWER (AUX)

1	BROWN	AUX +	AUX +		
2	WHITE	NOT USED	NOT USED		
3	BLUE	NOT USED	NOT USED		
4	BLACK	AUX -	AUX -		

RELAY POWER (RP)

1	BROWN	VR	VR		
2	WHITE	NOT USED	NOT USED		
3	BLUE	GND	GND		
4	BLACK	N	N		

