

FOI-2991, FOI-2992, FOI-2993, FOI-2994, FOI-2995, FOI-2996

FIBER OPTIC ISOLATOR



Description

The FOI-2991, FOI-2992, FOI-2993, and FOI-2994 all provide complete electrical isolation for control signals and relay closures. The units are uni-directional devices with the FOI-2991 and FOI-2992 having optical transmitters, while the FOI-2993 and FOI-2994 have optical receivers. Both the FOI-2991 and FOI-2992 can accept up to 12 individual control signals. The FOI-2991 can only accept a DC control signal between 0 to +5V, while the FOI-2992 can accept either a DC or AC control signal between +12 to +24V. The FOI-2993 and FOI-2995 have 12 SPST Form A relays, and the FOI-2994 and FOI-2996 have 8 SPDT Form C relays. The FOI-2993 and FOI-2994 are latching and the FOI-2995 and FOI-2996 are non-latching. During power interruptions or failures, the relays on the FOI-2993 and FOI-2994 will hold the last commanded state until powered is restored and the relays are commanded differently, while the FOI-2995 and FOI-2996 will revert to the open state.

The units can be used in areas of high electrical noise or in and out of RF shielded enclosures. The fiber optic cable is not susceptible to interference caused by impulse noise, crosstalk, or EMI. Privacy of communications is also enhanced because the fiber optic cable does not radiate any emissions.

In addition, fiber optic cable offers much longer transmission distances than copper wiring. Multimode optics on the units can extend the distance to 2km. A typical link consists of either an FOI-2991 or an FOI-2992 at one end of the network transmitting optical signals to an FOI-2993 or an FOI-2994 at the other end of the network with a single fiber optic cable between them as shown under "TYPICAL APPLICATION".



Control / Alarm

Uni-Directional (Simplex) Control

Optical Transmitter

FOI-2991: 0 to +5 VDC inputs

FOI-2992: +12 to +24 VAC/VDC inputs

Optical Receiver

FOI-2993: SPST Form A latching relay closure

FOI-2994: SPDT Form C latching relay closure

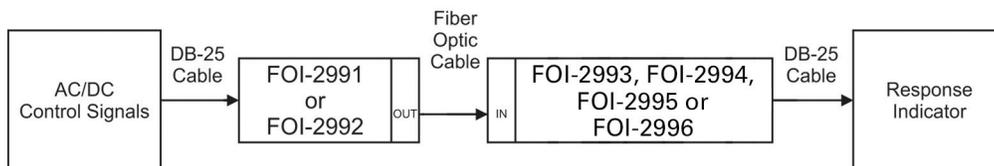
FOI-2995: SPST Form A non-latching relay closure

FOI-2996: SPDT Form C non-latching relay closure

Features:

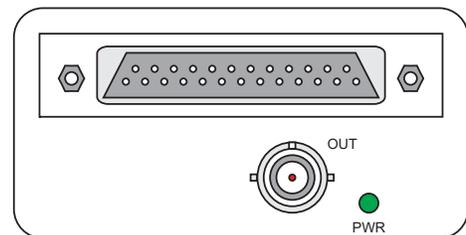
- **FOI-2991:** Accepts up to 12 signals, 0 to +5 VDC each
- **FOI-2992:** Accepts up to 12 signals, +12 to +24 VAC/VDC each
- **FOI-2993/FOI-2995:** Activates up to 12 single pole single throw (SPST) Form A relay contact pairs
- **FOI-2994/FOI-2996:** Activates up to 8 single pole double throw (SPDT) Form C relay contact pairs
- During power interruptions or failures, the relays on the FOI-2993 and FOI-2994 will hold the last commanded state until powered is restored and the relays are commanded differently.

Typical Application

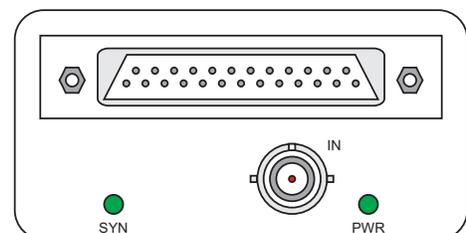


LED indicators

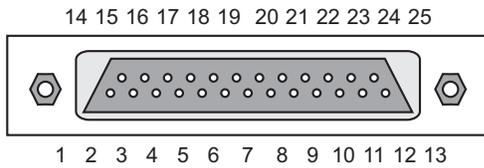
Label	Color	Description
PWR	Green	Power supply in FOI unit is operating properly.
	Off	No power from the PSQ power supply or open fuse inside the FOI unit. Check that the PSQ power supply is operating properly. If the PSQ power supply is good, separate the FOI unit from the PSQ power supply for 30 seconds and then reattach so that the fuse inside the FOI unit has time to reset. If the PWR led is still off or not constant, replace the FOI unit.
SYN	Green	Optical signal in detected.
	Off	No optical signal in or optical level too low. Check that the opposite unit has power.



FOI-2991-ST and FOI-2992-ST Front View

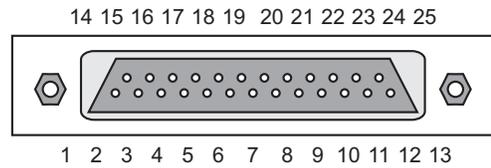


FOI-2993-ST, FOI-2994-ST, FOI-2995-ST and FOI-2996-ST



FOI-2991 DB-25 Female pinout

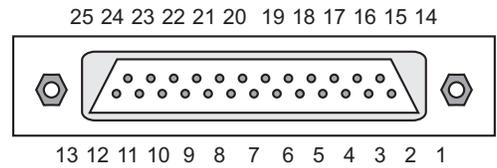
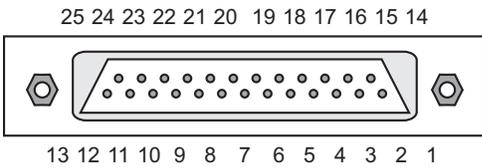
	Pin	Description
	1	Chassis Ground
Channel 1	2	Input
	3	Signal Ground
Channel 2	4	Input
	5	Signal Ground
Channel 3	6	Input
	7	Signal Ground
Channel 4	8	Input
	9	Signal Ground
Channel 5	10	Input
	11	Signal Ground
Channel 6	12	Input
	13	Signal Ground
Channel 7	14	Input
	15	Signal Ground
Channel 8	16	Input
	17	Signal Ground
Channel 9	18	Input
	19	Signal Ground
Channel 10	20	Input
	21	Signal Ground
Channel 11	22	Input
	23	Signal Ground
Channel 12	24	Input
	25	Signal Ground



FOI-2992 DB-25 Female pinout

	Pin	Description
	1	Chassis Ground
Channel 1	2	Input
	3	Input
Channel 2	4	Input
	5	Input
Channel 3	6	Input
	7	Input
Channel 4	8	Input
	9	Input
Channel 5	10	Input
	11	Input
Channel 6	12	Input
	13	Input
Channel 7	14	Input
	15	Input
Channel 8	16	Input
	17	Input
Channel 9	18	Input
	19	Input
Channel 10	20	Input
	21	Input
Channel 11	22	Input
	23	Input
Channel 12	24	Input
	25	Input

The tables above describe the de-energized states of the relays. Relays are de-energized when the inputs from the FOI-2991 and FOI-2992 are left unconnected or held high. During power failures or interruptions, the relays in the FOI-2993 and FOI-2994 will hold the last commanded state until power is restored and commanded differently while the FOI-2995 and FOI-2996 will return to the open state.



FOI-2993 & FOI-2995 DB-25 Male pinout

	Pin	Description
	1	Chassis Ground
Channel 1	2	Normally Open
	3	Common
Channel 2	4	Normally Open
	5	Common
Channel 3	6	Normally Open
	7	Common
Channel 4	8	Normally Open
	9	Common
Channel 5	10	Normally Open
	11	Common
Channel 6	12	Normally Open
	13	Common
Channel 7	14	Normally Open
	15	Common
Channel 8	16	Normally Open
	17	Common
Channel 9	18	Normally Open
	19	Common
Channel 10	20	Normally Open
	21	Common
Channel 11	22	Normally Open
	23	Common
Channel 12	24	Normally Open
	25	Common

FOI-2994 & FOI-2996 DB-25 Male pinout

	Pin	Description
	1	Chassis Ground
Channel 1	2	Normally Open
	3	Common
Channel 2	4	Normally Closed
	5	Normally Open
Channel 3	6	Common
	7	Normally Closed
Channel 4	8	Normally Open
	9	Common
Channel 5	10	Normally Closed
	11	Normally Open
Channel 6	12	Common
	13	Normally Closed
Channel 7	14	Normally Open
	15	Common
Channel 8	16	Normally Closed
	17	Normally Open
Channel 9	18	Common
	19	Normally Closed
Channel 10	20	Normally Open
	21	Common
Channel 11	22	Normally Closed
	23	Normally Open
Channel 12	24	Common
	25	Normally Closed

The tables above describe the de-energized states of the relays. Relays are de-energized when the inputs from the FOI-2991 and FOI-2992 are left unconnected or held high. During power failures or interruptions, the relays in the FOI-2993 and FOI-2994 will hold the last commanded state until power is restored and commanded differently while the FOI-2995 and FOI-2996 will return to the open state.

Specifications

		minimum	typical	maximum	unit
Power Requirement	Voltage Range	7	9	12	V
	Supply Current	-	150	-	mA
Environmental	Storage Temperature	-40	-	85	°C
	Operating Temperature	0	-	50	°C
FOI-2991	Data Rate	DC	-	4.8	kbps
	Sampling Jitter	0	-	10	%
	Input Voltage Range	0	-	5	VDC
FOI-2992	Data Rate	DC	-	4.8	kbps
	Sampling Jitter	0	-	10	%
	Input Voltage Range	12	-	24	VAC/VDC
Relay Coil Data	FOI-2993	Latching, Single Pole Single Throw (SPST), Form A; 1A at 30VDC; 0.5A at 125VAC			
	FOI-2994	Latching, Single Pole Double Throw (SPDT), Form C; 1A at 30VDC; 0.5A at 125VAC			
	FOI-2995	Non-latching, Single Pole Single Throw (SPST), Form A; 1A at 30VDC; 0.5A at 125VAC			
	FOI-2996	Non-latching, Single Pole Double Throw (SPDT), Form C; 1A at 30VDC; 0.5A at 125VAC			
Interface Connector	FOI-2991	DB-25 Female			
	FOI-2992				
	FOI-2993/FOI-2995	DB-25 Male			
	FOI-2994/FOI-2996				
Case Dimensions	Size 2	length	width	height	weight
		4.5 in (114 mm)	1.312 in (33 mm)	2.562 in (65 mm)	2 lb (0.9 kg)

Optical Characteristics

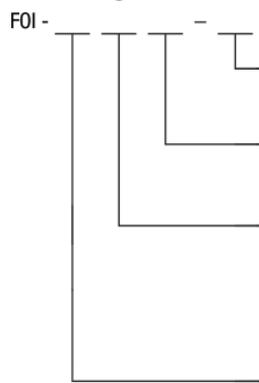
Fiber	Size	Max Distance	Wavelength	Output Power	Receiver Sensitivity	Loss Budget
Multimode	62.5 / 125 μm	2 km	820 nm	-18 dBm	-30 dBm	12 dB

Accessories

Model	Description
CBL-2991	Cable for FOI-2991, 3 foot DB-25 male to pigtail wire
CBL-2994	Cable for FOI-2994, 3 foot DB-25 female to pigtail wire
CMA-2001	Chassis Mount Adapter for RMC-2101
CMA-3002	Chassis Mount Adapter for RMC-3101, RMC-3102
PSQ-2910	Power Supply for FOI-2xxx series
RMC-2101	Rack Mount Chassis, 3-1/2" H x 19" W, rear access
RMC-3101	Rack Mount Chassis, 5-1/4" H x 19" W, front access
RMC-3102	Rack Mount Chassis, 5-1/4" H x 19" W, front access with optical patch panel
WMA-2001	Wall Mount Adapter with optical patch
WMA-3002	Wall Mount Adapter

Ordering Information

FOI -



- Optical Interface:**
ST
- Fiber:**
Blank = multi-mode
- RFI Suppression:**
Blank = standard unit
- Model:**
2991 = Optical Transmitter: 0 to +5 VDC inputs
2992 = Optical Transmitter: +12 to +24 VAC/VDC inputs
2993 = Optical Receiver: SPST Form A latching relay closure
2994 = Optical Receiver: SPDT Form C latching relay closure
2995 = Optical Receiver: SPST Form A non-latching relay closure
2996 = Optical Receiver: SPDT Form C non-latching relay closure

Standard Options:
FOI-2991-ST
FOI-2992-ST
FOI-2993-ST
FOI-2994-ST

For special applications that require custom units, please call FiberPlex for more information.