13 Series C I/O Link Fiber Optic Extenders (FOE)

The Fiber Option Extender modules support the extension of the I/O link beyond the Series C Cabinet with the C300, enabling remote applications of the Series C I/O.

The following two types of FOEs are qualified to be used with Experion depending on the distance between the controller and the IO modules.

- Multi-mode FOE
- Single mode FOE

You can select the appropriate FOE based on your requirement.

Related topics

“Overview of multi-mode FOE” on page 490
“FOE Installation” on page 494
“Component mounting sequence” on page 496
“Defining the Fiber Optic topology” on page 500
“ Single mode fiber optic extender” on page 504
“Defining the single mode fiber optic topology” on page 514

13.1 Overview of multi-mode FOE

The Fiber Optic module and IOTA board are built exclusively for Honeywell by a third party company. With a Series C I/O Link Fiber Optic Extender (FOE) module, the ability exists to connect the C300 controller to remote:

- Series C I/O and
- PM I/O

The FOE has the following capabilities:

- To connect one local cabinet to two remote I/O sites.
  - If more than two remote sites exist, multiple FOE modules may be installed in the local cabinet.
- Has two fiber optic ports sets, FO1 and FO2,
  - each set having both a receive (Rx) and transmit (Tx) connector.
- An IOLINK connector for connecting to the copper IOL.

Note: The same FOE module cannot be used for both types Series C and PM I/O concurrently.

The following FOE connections can be made:

Fiber optic port connections	• Series C: FOE modules to FOE modules • PM I/O: FOE modules to PM I/O Link Extender
IOLINK (copper) connections	• Series C: FOE modules to copper IOLINK

13.1.1 Fiber Optic Extender assembly

The Fiber Optic Extender assembly consists of components that include the FOE module and the FOE IOTA board, along with the FOE interface cable. This assembly is installed in a control cabinet on vertically mounted carriers, specially designed for Series C control hardware. The following figure shows the features of the FOE and its associated IOTA board.

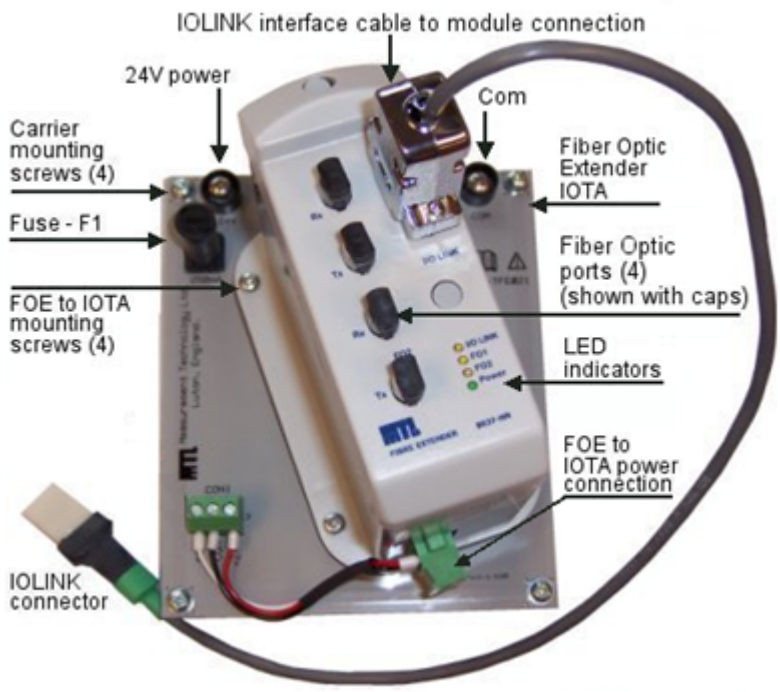


Figure 231: Fiber Optic Extender assembly

Table 140: FOE module and IOTA summary

Item	Description
IOTA board 6-inch	
F1	Fuse
24V power	Power connection to carrier
Com	Ground connection to carrier
FOE Power connector	Plug for FOE power cable connection
Fiber Optic Extender module	
IOLINK connector	IOLINK connector
Fiber optic ports (2 sets)	FO1 - Rx (receive) and Tx (transmit) connectors FO2 - Rx (receive) and Tx (transmit) connectors Either set can be used interchangeably.
LED indicators	Power and communication indicators for the module

13.1.2 FOE features

The following table lists the features available with the Fiber Optic Extender.

Feature	Description	
Supported family	Series C and PM I/O	
Topology types	Point-to-point	Two systems (nodes) connected by a single cable set.
	Daisy chain	Multiple systems connected in a serial manner. Each module acts like 'a repeater' allowing greater fiber distances.

Feature	Description	
	Star Sometimes compared to a 'chicken foot'	Topology whereby all nodes are individually connected to a central connection point. More cable is needed, but if one cable fails, the rest of the nodes remain operational.
Optical budget	8db min 15db typical	
Distance	• Between FOEs with standard cables 1.5 km with premium cable 2.0 km • Daisy chain max 8 km PM I/O 4 km Series C	
Module mounting options	• IOTA • DIN rail (with user supplied power)	
Fiber Optic ports	2	
Power options	• Series C - IOTA • External power system (DIN rail mounting option)	
Power supply options	20 to 30V at 85mA to 74mA max	
Ambient temperature	Operating: -20 to +70 degrees C Storage : -20 to +85 degrees C	
Corrosives	G3 per ISA specification S71.04-1985	
Relative humidity	0% to 90% RH	
Fiber type	Multi-mode Fiber core diameter 62.5 µm Fiber cladding diameter 125 µm Connector type ST type	

13.1.3 Fiber Optic redundancy

Since both Series C and PM I/O links are redundant, FOE modules are always installed in pairs for possible link A and B connections. Therefore, two independent fiber cables (one for Link A and one for Link B) are required between each local and remote connection.

13.1.4 Hazardous environment

The GI/IS IOTA assemblies are certified for installation within a Division 2/Zone 2 hazardous location and provide intrinsically safe field wiring connections to Division 1/Zone 1/0 hazardous locations.

The specific hazardous location assembly certifications are as follows:

Canadian Standards Association (CSA)	
Approved for use within Class I, Division 2, Group A, B, C & D hazardous locations and Class I, Zone 2, Group IIC hazardous locations; T4 temperature rating with intrinsically safe connections to Class I, Division 1, Groups A, B, C and D; Class I, Zone 0/1/2, Group IIC.	
Factory Mutual (FM) Approved for use within Class I, Division 2, Group A, B, C & D hazardous locations and Class I, Zone 2, Group IIC hazardous locations (T4 temperature rating) with intrinsically safe connections to Class I, II and III, Division 1, Groups A, B, C, D, E, F and G; Class I, Zone 0, Group IIC hazardous locations.	

ATEX

Approved for use Zone 2, Group IIC hazardous locations (T4 temperature rating) with intrinsically safe connections to Zone 0, Group IIC hazardous locations.

13.1.5 FOE assembly certification details

The individual elements of the code are explained by reference to the items below.

- Class I, Division 2, Groups A, B, C, D
- Class I, Zone 2, AEX nA IIC
- II 3G EEx nA IIC
- ATEX EEx nA IIC T4

16.4 FOE recommended spares

The following table provides replacement parts, or parts that you may want to keep on hand for backup.

Table 145: Recommended spare parts

Part name	Part number	Description		
Fiber Optic Extender module				
Fiber optic Extender module	8937-HN	Fiber Optic Extender module 2km CC-PFE221 - Honeywell model number		
Fiber optic Extender module	ICF-1150-S-SC-T	Fiber Optic Extender module 10 km		
Fiber Optic Extender IOTA				
Fiber Optic Extender IOTA	8939-HN	6 inch FOE IOTA CC-TFE021 - Honeywell model number		
Cables				
SC IOL cable	CC-KFSGR5	0.5M FOE to Series C I/O link interface cable - Gray		
	CC-KFSVR5	0.5M FOE to Series C I/O link interface cable - Violet		
PM IOL cable	CC-KFPGR5	0.5M FOE to PM I/O link interface cable - Gray		
	CC-KFPVR5	0.5M FOE to PM I/O link interface cable - Violet		
Fuses				
Description	**Part number**	**Quantity**	**Reference designator**	**Function**
Fuse	Two replacement options. • 216.250P Littelfuse • S501-250-R Cooper Bussman	1	F1	Power to module electronics