TRIGA Life Safety Systems, LLC
7600 Olde Eight Rd, Hudson, Ohio, 44236-1057
Tel: +1 330-577-5199, Email: info@trigaglobal.com

TR-FML/TR-FSL Fiber Option Modules Product Installation Document

PN LSL10178-003TR-E:A 02/03/21 ECN: 151608

1 Description

The Triga Series, Emergency Communication System uses the TR-NIC (Network Interface Card) to connect to the Triga Series Fire, Alarm Control Panels. The TR-NIC supports two types of fiber-option modules to convert the wire to the fiber.

- TR-FML (Fiber-Optic Multi-Mode, Receiver)
- TR-FSL (Fiber-Optic Single-Mode Transmitter)

1.1 TR-FML (Fiber-Optic Multi-Mode, Receiver)

The TR-FML is a fiber module that is used as one channel to transmit or receive communications with the ECS-NVCM (Network Voice Control Module) or TR-NIC (Network Interface Card). It allows the multi-mode fiber to network between the TR-FML module boards. Figure 1 shows the TR-FML fiber module.

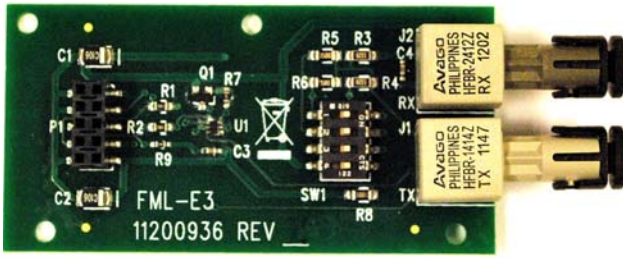

Figure 1 TR-FML Fiber Modules

1.2 TR-FSL (Fiber-Optic Single-Mode, Transmitter)

The TR-FSL is a fiber module that is used as one channel to transmit or receive communications with the ECS-NVCM (Network Voice Control Module) or TR-NIC (Network Interface Card). It allows the single-mode fiber to network between the TR-FSL module boards. Figure 2 shows the TR-FSL fiber module.

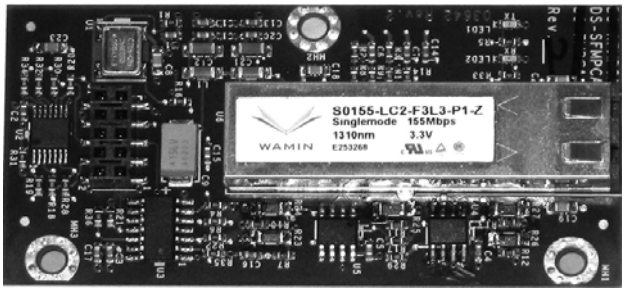

Figure 2 TR-FSL Fiber Modules

Table 1 lists the models that are assigned to the ECS and TR-NIC.

ECS	TR-NIC
TR-2100ECSR	TR-2100R

Table 1 Network Voice and Interface Card Modules

1.3 Compatibility

The TR-FML/TR-FSL fiber option modules can be used with the compatible Triga Series, Fire Alarm Control Panels (FACP's). For additional information, refer to the following FACP documents that are located on the Triga ESD Website, www.trigaglobal.com.

Document	Document Part Number
TR-2100ECSR Manual	LS10143-003TR-E
TR-NIC Installation Sheet	LS10171-002TR-E
TR-RPS1 Manual	LS10259-002TR-E
Triga ECS Manual	LS10262-002TR-E

1.4 TR-FML/TR-FSL Specifications

Table 2 lists the TR-FML multi-mode fiber-optic and the TR-FSL single-mode fiber-optic modules, digital audio ports specifications.

Specifications	TR-FML	TR-FSL
Type of Connector:	Type ST	Type LC
Maximum Attenuation:	8 dbB for multi-mode with 62.5/125 micrometer cable @ 200 µ.	30 dB for multi-mode with 9/125 micrometer cable @ 1310 nm.
Current Draw:		
Standby Current:	0.053 A	0.079 A
Alarm Current:	0.053 A	0.079 A
Environment Rating:	32° to 120°F (0° to 49°C), 0% to 93%	32° to 120°F (0° to 49°C), 0% to 93%
Relative Humidity:	Non-condensing at 90°F (30°C)	Non-condensing at 90°F (30°C)

Table 2 TR-FML/TR-FSL Specifications

2 Installation

CAUTION: STATIC SENSITIVE EQUIPMENT:
THIS EQUIPMENT IS SENSITIVE TO STATIC ELECTRICITY. IT MAY BE DAMAGED IF NOT PROPERLY HANDLED. TRANSPORT AND STORE THIS UNIT IN A STATIC-SHIELDING BAG. FAILURE TO OBSERVE THIS REQUIREMENT COULD CAUSE LATENT DAMAGE TO THE EQUIPMENT WHICH MIGHT NOT MANIFEST ITSELF UNTIL AFTER THE EQUIPMENT IS PLACED IN SERVICE.
DISCONNECT ALL POWER:
REMOVE ALL SOURCES OF POWER BEFORE YOU SERVICE, REMOVE OR INSTALL ANY UNITS.

All components should be located per the following requirements:

- Installations are to be indoors only, in dry locations, protected from rain, water, and rapid changes in temperature that could cause condensation.
- Equipment must be securely mounted on rigid, permanent walls.
- Operating temperature shall not exceed the range of 32° to 120° F (0 to 49° C).
- Operating humidity not to exceed 93% non-condensing at 90° F (32° C).
- All sub-assemblies and components are to be located in compliance with the local, the national codes and the manufacturer's recommendations.
- All installation field wiring shall be in compliance with the local code, the national code and the manufacturer's recommendations.
- Use the Architects and Engineering Specifications for detailed information on your Facility's Configuration.

2.1 TR-FML/TR-FSL Installation

1. Remove the unit from its static-shield bag, observing proper static protection measures.
2. Visually inspect the unit for damage.

   If any components are damaged, notify the shipping carrier immediately. Report missing components to the Triga Customer Service.
3. Use the hardware kit provided with the unit.
4. Plug the Fiber Module #1 into P6 of the ECS-NVCM or TR-NIC circuit as shown in Location 1 in Figure 3 and Figure 4.
5. To connect the Fiber Module # 1 to the ECS-NVCM or TR-NIC, insert and secure three screws (#4-40 x 1/4" (.635 cm)) as shown in Location 2 in Figure 3 and Figure 4.
6. Plug the Fiber Module #1 into P5 of the ECS-NVCM or TR-NIC circuit as shown in Location 3 in Figure 3 and Figure 4.
7. To connect the Fiber Module #1 to the ECS-NVCM or TR-NIC, insert and secure three screws (#4-40 x 1/4" (.635 cm)) as shown in Location 4 in Figure 3 and Figure 4.

NOTE: FIBER MODULES:TR-FSL AND TR-FML
Install a maximum of two boards per installation. The fiber modules can be combined.

Figure 3 illustrates the TR-FML/TR-FSL installed to the TR-NIC.

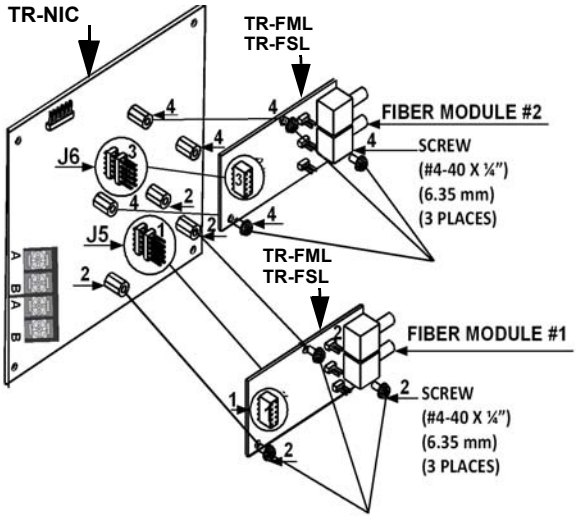

Figure 3 TR-FML Installation

Figure 4 illustrates the TR-FML/TR-FSL installed to the ECS-NVCM.

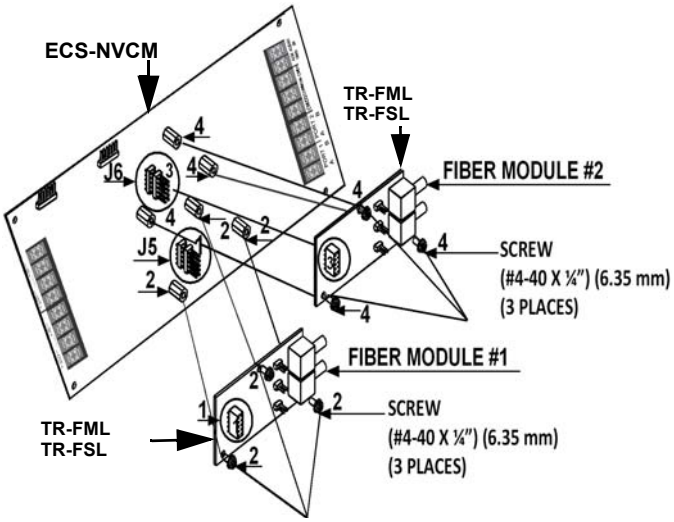

Figure 4 TR-FSL Installation

3 Wiring

Table 3.1 and Section list the wiring for the following fiber-optic modules.

- Fiber-Optic Multi-Mode Module (TR-FML)
- Fiber-Optic Single-Mode Module (TR-FSL)

3.1 TR-FML Fiber-Optic Module Wiring

Figure 5 illustrates the TR-FML PCB circuit board diagram.

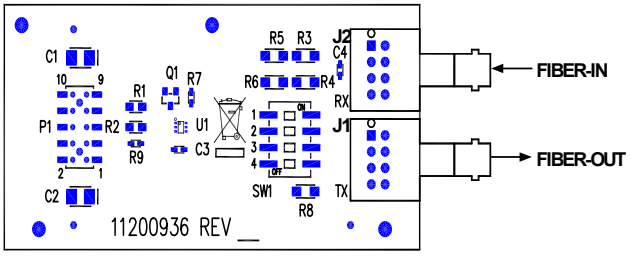

Figure 5 TR-FML Circuit Board Diagram

TR-FML Fiber-Optic Module Wiring Connections

Table 3 lists the TR-FML terminal wiring designations to connect the module.

Designation	Description
J1	Connects to the transmitting fiber. (See Note)
J2	Connect to the receiving fiber. (See Note)
SW1-1	Sets the optical output power for the transmitting fiber. (See Table 4)
SW1-2	Sets the optical output power for the transmitting fiber. (See Table 4)
SW1-3	Sets the optical output power for the transmitting fiber. (See Table 4)
SW1-4	Not used.
P1	Plugs onto P5 (Port 1) or P6 (Port 2) of the TR-NVCM or TR-NIC.
Note 1: Use standard ST connector fiber-optic cable, multi-mode, up to 200 µ (optimized for 62.5/125 µ).	
Note 2: Signal loss up to 8dB maximum between nodes.	

Table 3 TR-FML Terminal Wiring Designations

Table 4 lists the TR-FML switch settings and drive currents.

SW1-1	SW1-2	SW1-3	Drive Current
OFF	OFF	OFF	10 mA
OFF	OFF	ON	20 mA
OFF	ON	OFF	32 mA
OFF	ON	ON	42 mA
ON	OFF	OFF	54 mA
ON	OFF	ON	64 mA
ON	ON	OFF	76 mA
ON	ON	ON	86 mA
Note: SW1-4 is not used.			

Table 4 TR-FML Switch Settings and Drive Currents

3.2 TR-FSL Fiber-Optic Module Wiring

Figure 6 illustrates the TR-FSL, PCB circuit board diagram.

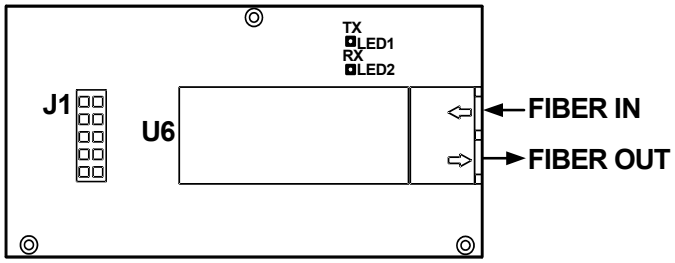

Figure 6 TR-FSL Circuit Board Diagram

TR-FSL Fiber-Optic Module Wiring Connections

Table 5 lists the TR-FML terminal wiring designations to connect the module.

Designation	Description
J1	Plugs on to P5 (Port 1) or P6 (Port 2) of the TR-NVCM or TR-NIC.
U6	Top connection connects to the receiving fiber (IN). Bottom connection connects to the transmitting fiber (OUT).
Note: Use LC connector fiber-optic cable, single mode, up to 1310 nm (optimized for 9/125 µ). Signal loss up to 30 dB maximum between nodes.	

Table 5 TR-FML Terminal Wiring Designations

Table 6 lists the TR-FSL LED Indicators.

LED #	Name	Color	Description
1	TX	Green	Lights while data is transmitted on the Repeater. When activity is detected, the TX light flickers and turns ON. If no activity is detected, the TX light turns OFF.
2	RX	Green	Lights while data is received on the Repeater. When activity is detected, the RX light flickers and turns ON. When no activity is detected, the RX light turns OFF.

Table 6 TR-FSL LED Indicators