TCF-142-M-ST (Hochiki America) Installation Instruction

HA-06-272, October 2011

Overview

General Description

The TCF-142-M-ST converts RS485 networking signals to operate over fiber optic cable. The TCF-142-M-ST extends serial transmission distance up to 5 km (3.10 Miles).

Why Convert RS485 twisted pair copper wire to Fiber?

Fiber communication not only extends the communication distance, but also provides many advantageous features.

IMMUNITY FROM ELECTRICAL INTERFERENCE: Fiber optic cable is not affected by electromagnetic interference or radio frequency interference. It provides a clean communication path and is immune to cross-talk.

INSULATION: Optical fiber is an insulator; the glass fiber eliminates the need for using electric currents as the communication medium.

SECURITY: Fiber cannot be tapped by conventional electric means and is very difficult to tap into optically.

RELIABILITY & MAINTENANCE: Fiber is immune to adverse temperature and moisture conditions, does not corrode or lose its signal, and is not affected by short circuits, power surges, or static electricity.

Reverse Power Protection

The Reverse Power Protection feature provides extra protection against accidentally connecting the power cables to the wrong terminal. The converter automatically detects which power wire is positive and which is negative.

DIP Switch Selectable Terminator

The TCF-142-M-ST termination resistor is set with a DIP switch located on the outside of the converter's casing.

No Configuration Required for Baudrate Settings

The TCF-142-M-ST is compatible with any baudrate from 50 bps to 921.6Kbps. It automatically converts the signal back and forth between serial (RS-232, RS-422, or RS-485) and fiber, and does not need to interpret the signal or the baudrate of the transmitting device. For this reason, the TCF-142-M-ST does not have any DIP switches or jumpers for setting the baudrate.

Features

- "Ring" or "Point to Point" transmission
- Extend RS-485 transmission distance:
  - up to 5 km (3.10 Miles) with multi-mode
- Compact size
- Decrease signal interference
- Protect against electronic degradation and chemical corrosion
- Supports baudrates up to 921.6 Kbps
- Extended operating temperature from -40 to 75°C

Package Checklist

Before installing the TCF-142-M-ST, verify that the package contains the following items:

- 1 TCF-142-M-ST media converter
- Power jack to 3-pin terminal block adaptor
- Stick-on pads
- Installation Instruction (printed)

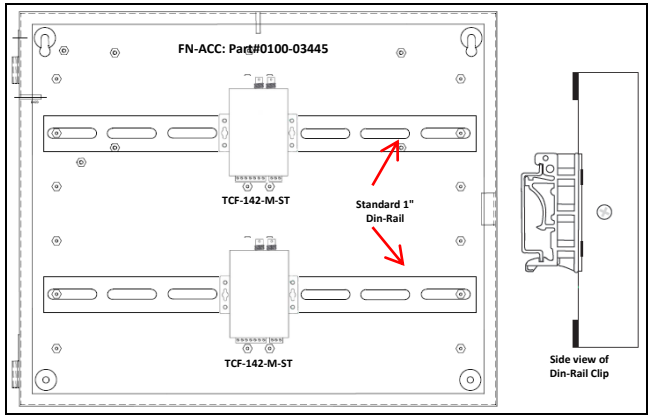
NOTE: Please notify your sales representative if any of the above items are missing or damaged.

Appearance

TCF-142-M-ST fiber converter is easy to set up and use. The serial terminal block connects to your FACP, the serial terminal block of the other converter connects to the other FACP or Network Annunciator, and the two converters are connected by fiber cable(s).

NOTE **Electrostatic Discharge Warning!**
To protect the product from damage due to electrostatic discharge, we recommend wearing a grounding device when handling your TCF-142.

Mounting



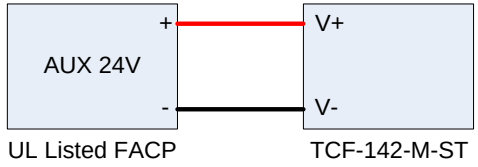
- FN-ACC (Battery Enclosure) Part#0100-03445
- 2 Standard 1" Din Rail

Using a standard drywall self-tapping screw, mount the FN-ACC (Battery Enclosure) to the drywall/wood/metal. The TCF-142-M-ST modules are required to be mounted inside of the FN-ACC and within 20ft of the panel/annunciator with all wiring in a conduit. It is also required to be installed in the same room as the FACP or Network Annunciator.

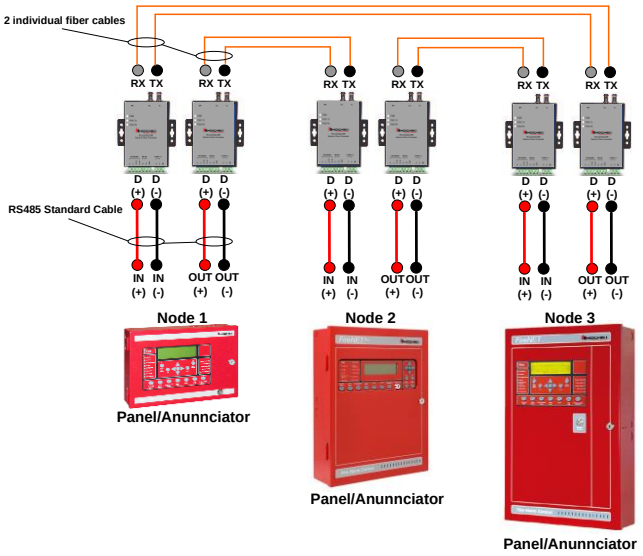
Wiring Examples

Connecting the Power Supply

Before using the TCF-142-M-ST, first connect the DC power supply to the power supply terminal block located on the TCF-142-M-ST's bottom panel



Connecting 2-wire RS-485 Serial Devices



***Caution*: Network circuit functions as Class B wiring.**
D+, D-, RX, and TX wires are supervised

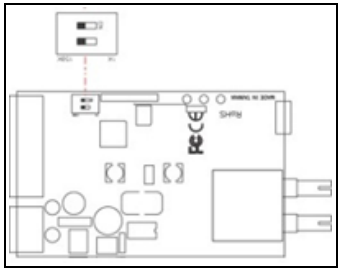
Terminal Connector View

Switch Settings

Serial Connection	SW1	SW2	Built-in 120 Ω Terminator	SW3	SW4
RS-232	**ON**	**OFF**	**Enable**	**ON**	**-**
RS-422	**ON**	**ON**	**Disable**	**OFF**	**-**
RS-485 4-wire	**OFF**	**OFF**	**Ring mode**	**-**	**ON**
RS-485 2-wire	**OFF**	**ON**	**Point to Point mode**	**-**	**OFF**

Two additional DIP switches (SW1 and SW2) are located inside the TCF-142-M-ST. These switches are used to configure the pull high/low resistors. Note that SW1 and SW2 must both be

configured to ON or both must be configured to OFF.



Pull High/Low Resistor	SW1*	SW2*
150K	OFF	OFF
1K (default)	ON	ON

*These DIP switches are located inside the TCF-142-M-ST.

NOTE: Recommend setting SW1 and SW2 to 1K option (ON/ON) when termination is enabled.

RS-485 is the only signal that can be used to network FireNET, FireNET Plus Panels and Network Annunciators. RS-485 is power limited.

LED Description

There are 3 LEDs on the front panel of the TCF-142-M-ST.

LED	Color	Function
PWR	Red	Steady On: Power is On
Fiber Tx	Green	Blinking when fiber is transmitting data
Fiber Rx	Orange	Blinking when fiber is receiving data

Specifications

Model Name	TCF-142-M-ST
Serial Communication	
Signals for RS-232	NC
Signals for RS-422	NC
Signals for RS-485 4-wire	TxD+, TxD-, RxD+, RxD-, SGND
Signals for RS-485 2-wire	Data+, Data-, SGND
Baud rate	50 bps to 921.6 Kbps
Surge Protection	15KV ESD
Fiber Communication	
Connection Type	ST
Distance	Multi-mode fiber for 5 km
Cable Specifications	50/125, 62.5/125, or 100/140µm
Wavelength	850 nm
TX Output	> -5 dBm
Rx Sensitivity	-20 dBm

Point to Point Transmission	Half duplex
Ring Transmission	Half duplex
Environmental Limits	
Operating Temperature	0 to 60˚C (32 to 140˚F), 5 to 93% RH
Storage Temperature	-40 to 75˚C (-40 to 167˚F), 5 to 93% RH
Power	
Input Power Voltage	12 to 42 VDC ***(Power Limited)***
Power Line Protection	1 KV Burst (EFT), EN61000-4-4 1 KV Surge, EN61000-4-5
Reverse Power Protection	Protects against V+/V- reversal
Over Current Protection	Protects against 2 signals shorted together: 1.1A
Power Consumption	140 mA
Physical Characteristics	
Dimensions	2.6” x 3.9” x 0.8” 3.5” x 3.9” x 0.8” (included screw hole)
Material	Aluminum (0.039”)
Weight	320 g
Regulatory Approvals	
EMC	CE, FCC (Class A)
LVD	EN 60950-1
Saftey	UL 60950-1
EMI	FCC Part 15 Subpart B Class B. EN 55022 Class B
EMS	EN61000-4-2 (ESD), Criteria B, Level 2 EN61000-4-3 (RS), Criteria B, Level 2 EN61000-4-4 (EFT), Criteria B, Level 2 EN61000-4-5 (Surge), Criteria B, Level 2 EN61000-4-6 (CS), Criteria B, Level 2

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