PSS 21H-2Y3 B3

Fieldbus Communications Module, FCM2F2/FCM2F4/FCM2F10

The FCM2F Fieldbus Communications Modules are communications interfaces which provide baseplate-to-baseplate fiber optic extension of the module Fieldbus (see Figure 1). This allows the DIN rail mounted Fieldbus Modules (FBMs) to be locally or remotely distributed, in multiple enclosures, for strategic placement of input/output points within your plant.

The three versions, FCM2F2, FCM2F4, and FCM2F10, offer three different maximum baseplate-to-baseplate fiber optic cabling distances: up to 2 km (1.24 mi), up to 4 km (2.48 mi), and up to 10 km (6.2 mi), respectively.

The FCM2Fs are mounted on the baseplates in pairs for redundancy. Non-redundant configurations require only a single FCM2F.

Unaffected by electrical noise (EMI, RFI, and lightning), fiber optic cabling provides a versatile, highly reliable means of extending signal communications. It can be used in areas containing rotating machinery, arc welders, and so forth, and can be installed in cable trays containing high voltage power lines, or in outdoor areas exposed to lightning hazards. Its electrical isolation characteristics provide protection from voltage differentials and ground loops.

Figure 1 shows an example of redundant configuration with baseplates (containing FCM2Fs) linked point-to-point with fiber optic cabling. This cabling configuration shows a single fiber optic segment, interconnecting two baseplates. However, up to three fiber optic segments can be used to interconnect the four (maximum) baseplates.

Maximum fiber optic cabling distance between any two baseplates is 10 km (using FCM2F10s), with the total fiber optic cabling distance between the baseplates (all cable segments) not to exceed 10 km (6.2 mi).

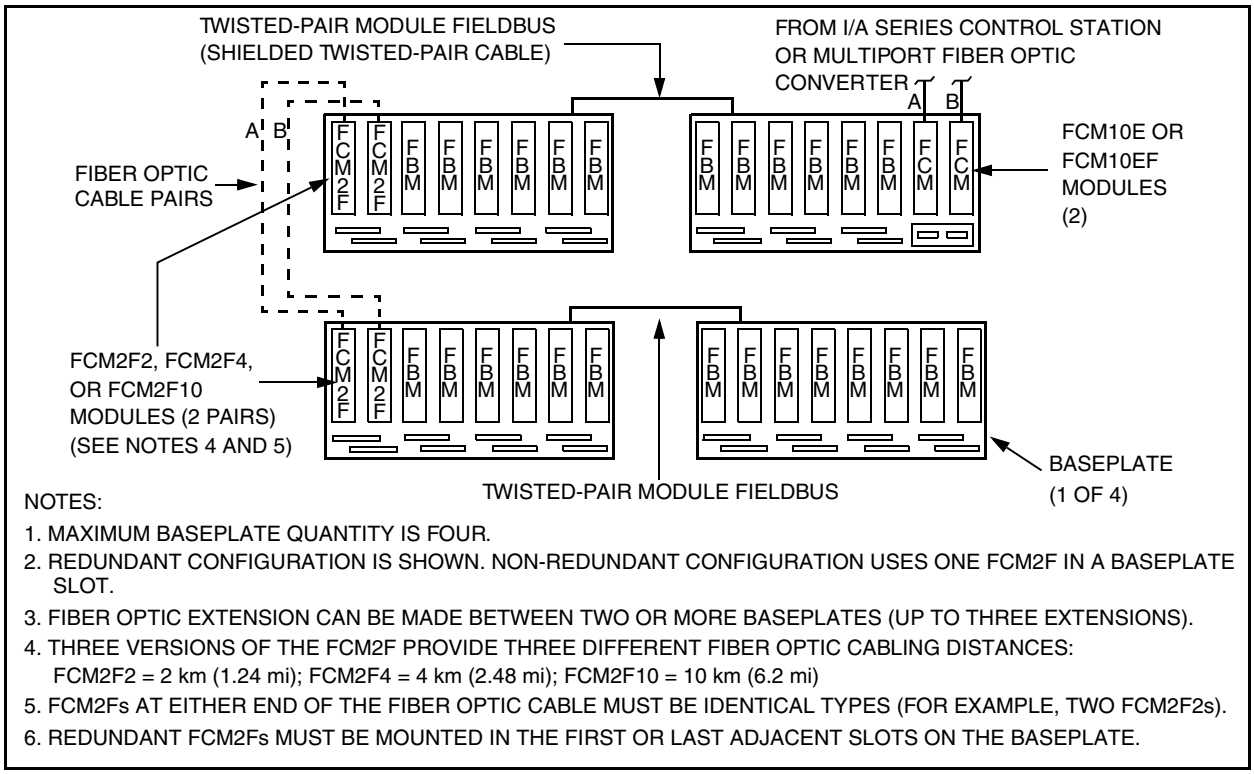

Figure 1. Point-to-Point Fiber Optic Extension of the Module Fieldbus Using FCM2Fs

FCM2F DESIGN

FCM2Fs have a compact design, with a rugged extruded aluminum exterior for physical protection of the circuits. Enclosures specially designed for mounting of the FBMs and FCMs provide various levels of environmental protection for the FCM2Fs, up to harsh environments, per ISA Standard S71.04.

The FCM2F can be removed/replaced from the baseplate without removing power. Six light-emitting diodes (LEDs) incorporated into the front of the FCM2Fs indicate the status of network activity to/from the module Fieldbus and fiber link, and the FCM2Fs operational status.

BASEPLATE MODULE MOUNTING

FCM2Fs mount on a baseplate. The baseplate is either DIN rail mounted or rack mounted, and includes signal connectors for Fieldbus, power, and I/O cable connections. A baseplate can support up to eight FBMs, or a combination of FBMs and FCMs.

When connecting two baseplates (with redundancy) with fiber optic cable, a pair of FCM2Fs are required for each baseplate (for a total of four FCM2Fs).

For non-redundant configurations, each baseplate requires only a single FCM2F.

Multiple baseplates in the same enclosure do not necessarily require FCM2Fs and fiber optic cabling. Any baseplates within 60 m (200 ft) can link together with the standard, shielded twisted-pair cable.

FIBER OPTIC CABLING

Fiber optic cabling used in these module Fieldbus connections is purchased by the customer. The required fiber optic cable for FCM2F2 and FCM2F4 connections is a multimode, graded-index glass fiber with a 62.5 micron core and 125 micron cladding, with 0.275 NA (numerical aperture). Maximum allowable signal loss is 1 dB per km at a wavelength of 1300 nm, and 3.6 dB per km at a wavelength of 850 nm. The cables must be terminated with ST-type connectors. Cables with different characteristics may not be used.

The required cable for the FCM2F10 connection is standard, single-mode fiber cable with ST-type connectors.

Other cable requirements (such as flexibility, or durability) depend on the particular application. Check with your cable vendor/installer for a listing of application-specific cable characteristics.

FUNCTIONAL SPECIFICATIONS

Power Requirements

INPUT VOLTAGE RANGE (REDUNDANT)
24 V dc +5%, -10%

CONSUMPTION
5 W (maximum) at 24 V dc

HEAT DISSIPATION
5 W (maximum) at 24 V dc

Calibration Requirements

Calibration of the module is not required.

Vibration

0.75 g (5 to 200 Hz)

Regulatory Compliance

ELECTROMAGNETIC COMPATIBILITY (EMC)

European EMC Directive 89/336/EEC
EN 50081-2 Emission standard
EN 50082-2 Immunity standard

IEC 61000-4-2 ESD Immunity
Contact 4 kV, air 8 kV

IEC 61000-4-3 Radiated Field Immunity
10 V/m at 80 to 1000 MHz

IEC 61000-4-4 Electrical Fast Transient/Burst Immunity
2 kV

IEC 61000-4-5 Surge Immunity
2kV on ac and dc power lines; 1kV on I/O and communications lines

IEC 61000-4-6 Immunity to Conducted Disturbances
10 V

IEC 61000-4-8 Power Frequency Magnetic Field Immunity
30 A/m

IEC 61000-4-11 Voltage Dips, Short Interruptions and Voltage Variations Immunity

Regulatory Compliance (Cont.)

PRODUCT SAFETY
European Low Voltage Directive 73/23/EEC

PRODUCT CERTIFICATION

Underwriters Laboratories (UL)
Underwriters Laboratories (UL)
UL/UL-C listed as suitable for use in UL/UL-C listed Class I, Groups A-D; Division 2; temperature code T4 enclosure based systems. The modules are also UL and UL-C listed as associated apparatus for supplying non-incendive communication circuits for Class I, Groups A-D hazardous locations when connected to specified I/A Series processor modules as described in the *I/A Series DIN Rail Mounted FBM Subsystem User's Guide* (B0400FA). Communications circuits also meet the requirements for Class 2 as defined in Article 725 of the National Electrical Code (NFPA No.70) and Section 16 of the Canadian Electrical Code (CSA C22.1). Conditions of use are as specified in the *I/A Series DIN Rail Mounted FBM Subsystem User's Guide* (B0400FA).

CENELEC
CENELEC (DEMKO) certified as EEx nA IIC T4 for use in CENELEC certified Zone 2 enclosure based systems. The modules are CENELEC certified as associated apparatus for supplying non-incendive field circuits for Zone 2, Group IIC, potentially explosive atmospheres when connected to specified I/A Series processor modules as described in the *I/A Series DIN Rail Mounted FBM Subsystem User's Guide* (B0400FA).

EUROPEAN UNION COMPLIANCE
Meets all applicable European Union directives including the Explosive Atmospheres (ATEX) directive 94/9/EC, and bears the CE mark.

ENVIRONMENTAL SPECIFICATIONS(A)

Operating

TEMPERATURE
-20 to +70°C (-4 to +158°F)

RELATIVE HUMIDITY
5 to 95% (noncondensing)

ALTITUDE
-300 to +3,000 m (-1,000 to +10,000 ft)

Storage

TEMPERATURE
-40 to +70°C (-40 to +158°F)

RELATIVE HUMIDITY
5 to 95% (noncondensing)

ALTITUDE
-300 to +12,000 m (-1,000 to +40,000 ft)

Contamination

Class G3 (Harsh) as defined in ISA Standard, S71.04.
Pollution degree 2 as defined in IEC 664-1.

(a) The environmental limits of this module may be enhanced by the type of enclosure containing the module. [Refer to the applicable Product Specification Sheet (PSS) which describes the specific type of enclosure that is to be used.]

PHYSICAL SPECIFICATIONS

Mounting

FCM2F2, FCM2F4, and FCM2F10 mounts on a baseplate. The baseplate can be mounted on a DIN rail (horizontally or vertically), or horizontally on a 19-inch rack using a mounting kit. Refer to PSS 21H-2X2 B4 for details.

Mass

284 g (10 oz) approximate

Dimensions

HEIGHT
102 mm (4 in)
114 mm (4.5 in) including mounting lugs

WIDTH
45 mm (1.75 in)

DEPTH
104 mm (4.11 in)

Indicators (mounted on front of module)

Red and green light-emitting diodes (LEDs) provide indication of the FCM operational status. Amber LEDs indicate data traffic and direction.

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Outside U.S.: 1-508-549-2424 or contact your local Invensys representative.
Website: http://support.ips.invensys.com

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