Foxboro FCM10E P0914YM

01 Bridge the trunk and local FBM group

Communications role

The control station and its DIN-rail Fieldbus Modules exchange data through different network segments. The FCM10E translates the controller-facing 10 Mbps Ethernet traffic into the 2 Mbps signaling used on the module segment and translates the returning traffic in the opposite direction.

Data path

01	I/A Series control station generates or receives trunk communication.
02	The 10BASE2 Ethernet trunk reaches the assigned FCM10E interface.
03	The interface crosses the galvanically isolated communication boundary.
04	The 2 Mbps module Fieldbus exchanges data with the associated FBMs.

Architectural choices

Single interface One module serves a nonredundant FBM group.	**Paired interfaces** Two modules form the redundant interface arrangement.
Shared trunk Additional equipment groups may connect along the Ethernet trunk.	**Physical extension** A planned optical trunk segment requires separate conversion equipment.

Signal isolation

Galvanic separation exists between the Ethernet trunk and the local module-Fieldbus circuits. This communication boundary should not be confused with the channel isolation specifications of the downstream input or output modules.

Data transport is not measurement conversion

The FCM10E carries communications for the FBM group. The downstream FBMs perform their own input or output functions; a successful communication path does not establish the accuracy or configuration of an individual process channel.

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02 Interface and capacity specifications

Network and electrical ratings

Parameter	Value
Ethernet trunk rate	10 Mbps
Trunk physical interface	10BASE2 coaxial Ethernet
Module Fieldbus rate	2 Mbps
Maximum FBMs per interface or pair	30
Maximum FCM10E pairs per trunk	30
Redundant configuration	2 FCM10E modules per grouping
Nonredundant configuration	1 FCM10E module per grouping
Front indicators	6 LEDs
Supply voltage	24 V DC; +5%, -10%
Maximum power consumption	7 W at 24 V DC
Maximum heat dissipation	7 W at 24 V DC
Vibration	0.75 g; 5–200 Hz

Two rates remain distinct

The trunk operates at 10 Mbps and the local module segment at 2 Mbps. The bridge does not make the local FBM segment a 10 Mbps segment; each rate describes its own side of the communication path.

Group capacity remains thirty

One interface and a redundant pair have the same maximum group size of 30 FBMs. Pairing provides a redundant communication arrangement rather than doubling that group capacity.

Shared trunk planning

Up to 30 interface pairs connect to the trunk. Additional controller, cable and installed-system constraints must also be satisfied; multiplying two separate published limits is not a substitute for a complete network design.

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03 Environment and installation envelope

Environmental characteristics

Parameter	Value
Operating temperature	-20 to +70 °C
Storage temperature	-40 to +70 °C
Relative humidity	5–95%, noncondensing
Operating altitude	-300 to +3000 m
Storage altitude	-300 to +12000 m
Contamination classification	ISA S71.04 Class G3
Pollution degree	2; IEC 664-1
Baseplate mounting	DIN rail or rack

Additional installation facts

Item	Characteristic
Baseplate accommodation	Up to eight FBMs or a combination of FBMs and FCMs
Removal arrangement	Power and communication cabling can remain connected
Calibration	No module calibration required
Operating indication	Red and green LEDs
Traffic indication	Amber LEDs; activity and direction
Storage humidity	5–95% RH, noncondensing

Environmental scope

Temperature and contamination ratings apply together with the selected enclosure. Condensation, cable entries and the surrounding installation remain part of the environmental assessment even when the module’s numerical temperature range is satisfied.

Thermal allowance for redundancy

Both modules in a pair contribute to the enclosure load. At the stated maximum of 7 W per module, the pair contributes a calculated 14 W before the heat from associated FBMs or other equipment is included.

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04 Capacity examples and topology decisions

Illustrative grouping examples

Arrangement	Interface count	Interpretation
10 FBMs in one redundant group	2 FCM10E modules	One group remains below the 30-FBM boundary.
30 FBMs in one redundant group	2 FCM10E modules	The group reaches the stated interface limit.
Two separate groups of 15 FBMs	4 FCM10E modules for redundant operation	Each group has its own interface pair.
One nonredundant group	1 FCM10E module	A second working interface is not present.

Examples are not complete system approvals

These examples illustrate only the interface grouping rules. Baseplate positions, control-station limits, cabling distance and the exact installed topology still govern the complete arrangement.

Useful distinctions

Slots versus nodes
A physical baseplate limit applies to one mounting assembly; a group can extend beyond one baseplate.

Pairs versus FBMs
A pair count on the trunk and an FBM count within a group describe different populations.

Copper versus optical
The FCM10E presents the coaxial trunk interface; converters provide a separate optical extension.

Active versus redundant
A working single path can carry service while the second path remains unavailable.

Avoid unintended capacity assumptions

Retain the group membership in the network drawing. A spare slot, an additional interface or a connected cable does not by itself increase the supported membership of an existing group.

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05 Operating indications and system service

What each observation establishes

Observation	Meaning
Red/green operating indication	Status of the communications module itself
Amber traffic indication	Activity and direction of data transfer
Controller-to-FBM exchange	End-to-end data communication for the selected group
Successful redundant-path test	Behavior of the installed pair during the approved test
Restored cable arrangement	Physical topology returned to its intended state

Evaluate symptoms by scope

A failure affecting one FBM calls for a different investigation from a failure affecting every module in the group or several groups on one trunk. Establish that scope before replacing the common communication interface.

Service continuity depends on the installed arrangement

The mechanical design retains the power and communications cables during exchange. Availability during removal depends on the working redundant interface and path, so mechanical replaceability is not a guarantee of uninterrupted application service.

No calibration adjustment

The interface does not require module calibration. Service verification focuses on power, status, topology and actual data exchange through the intended paths.

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Foxboro FBM3A/33A

Foxboro FBM1/37/43

Technical basis

Foxboro PSS 21H-2Y1 B3, Fieldbus Communications Module FCM10E, August 2007, pp. 1–4; PSS 21H-2X2 B4, Modular Baseplates, FCM10E P0914YM identification.