MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

FOXBORO

RH924YA FCP280

FIELD CONTROL PROCESSOR MODULE

Used with the applicable Foxboro I/A Series DCS configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Schneider Electric / Foxboro official product specification

Foxboro™ DCS

Field Control Processor 280 (FCP280)

PSS 41H-1FCP280

Product Specification

April 2025

https://www.se.com

Overview

The EcoStruxure™ Foxboro™ DCS Field Control Processor 280 (FCP280) is a distributed, optionally fault-tolerant, field-mounted controller module. The FCP280 performs regulatory, logic, timing, and sequential control together with connected Foxboro DCS Fieldbus Modules (FBMs). It also performs data acquisition and alarm detection and notification. The FCP280 connects to the Foxboro DCS Control Network via standard fiber optic or copper 100 Mbps Ethernet cables from network adapters installed on its baseplate (see the next figure).

The FCP280 requires Foxboro DCS Control Core Services software v9.0 or later. A system with the FCP280 and this software is called an EcoStruxure Foxboro DCS Process Automation System.

Figure 1 - Fault-Tolerant FCP280 Module Pair Mounted on Vertical Mounted 2-Position FCP280 Baseplate

Legend	
A	To/From Control Network Ethernet Fiber Switch “B”
B	100 Mbps Orange Duplex Fiber Cable
C	To/From Control Network Ethernet Fiber Switch “A”
D	FCP280 Fault-Tolerant Module Pair
E	Each Fieldbus Port (1-4. Top 1, Bottom 4) can connect to an HDLC fieldbus with 200 Series FBMs (a mix of Compact or standard), along with 100 Series FBMs in a pre-approved configuration
F	Liquid Crystal Display
G	Operational LED’s for module state and Fieldbus communication
H	Down-Arrow Button
I	Up-Arrow Button
J	Select Button
K	Network Adapters (Fiber Adapters Shown, Copper Adapters available)
L	Operational LEDs for communication status to/from the Control Network

The fault-tolerant version of the FCP280 consists of two processor modules. These modules are installed in adjacent FCP280 slots in dedicated baseplates for high speed communication between the modules.

The FCP280 accepts four PIO channels (that is, four separate HDLC fieldbuses) via the four Fieldbus ports on its baseplate. These four Fieldbuses are referred to collectively as the “Expanded fieldbus.”

The number of 200 Series and 100 Series FBMs that an FCP280 can support varies depending on the types of FBMs used:

- 200 Series FBMs exclusively used with FCP280 - Each Fieldbus port on the FCP280 baseplate can connect to a baseplate chain with up to 32 Compact or standard 200 Series FBMs per chain via the 2 Mbps HDLC fieldbus for up to 128 modules.
- 200 Series and 100 Series FBMs (dual baud configurations) used with FCP280. The FCP280 can support a total of 128 100 Series FBMs (Y-module) or competitive devices (such as Foxboro DCS system migration FBMs) in one or more baseplate chains, with the remainder of the FCP280's 128 module limit being 200 Series FBMs, depending on the Fieldbus loading of the FCP280. For example, an FCP280 could support 64 100 Series FBMs and 64 200 Series FBMs (as 64 + 64 = 128). Main and expansion FBMs are considered as two FBMs for counting purposes. As well, no more than 64 100 Series FBMs are allowed on each PIO channel/baseplate port. See the next two figures.

  NOTE: Certain competitive migration or supported third-party modules such as the EcoStruxure Foxboro DCS Process Automation System Migration Fieldbus Modules and Pepperl+Fuchs™ I/O modules may increase this 128 module maximum per FCP280. For the maximum numbers of each of these migration/ third-party modules supported by the FCP280, see the supported migration products books in *Field Control Processor 280 (FCP280) User's Guide* (B0700FW).

  NOTE: Although the FCP280 is capable of communicating with the maximum number of FBMs (128), some restrictions may constrain a useful control system's design, thereby limiting the number of FBMs that can be installed.

An optional dual cable baseplate is available that supports four PIO channels, but separate A versus B bus connectors are provided along with dedicated connectors for the optional Time Strobe inputs.

Fieldbus connections from the optional dual cable baseplate to standard or compact 200 Series FBMs require separate A versus B bus cables plus a dual "D" connection adapter on the FBM baseplate (RH926KW).

NOTE: The dual cable baseplate does not support connections to 100 Series FBMs or equivalent competitive migration and third-party modules.

When supporting 200 Series and 100 Series FBMs, each Fieldbus port (PIO channel) is dedicated to supporting either a 268 Kbps HDLC fieldbus (for 100 Series FBMs) or a 2 Mbps HDLC fieldbus (for 200 Series FBMs) — not both.

For connections to 100 Series FBMs, an FBI200 pair is required to extend communications up to 1,830 m (6,000 ft). See the next figure.

NOTE: When replacing a CP10, CP30, CP40, or CP60 with a FCP280 and keeping all its 100 Series FBMs, an FBI200 is required to be installed between the CP and FBMs to reduce potential system messages.

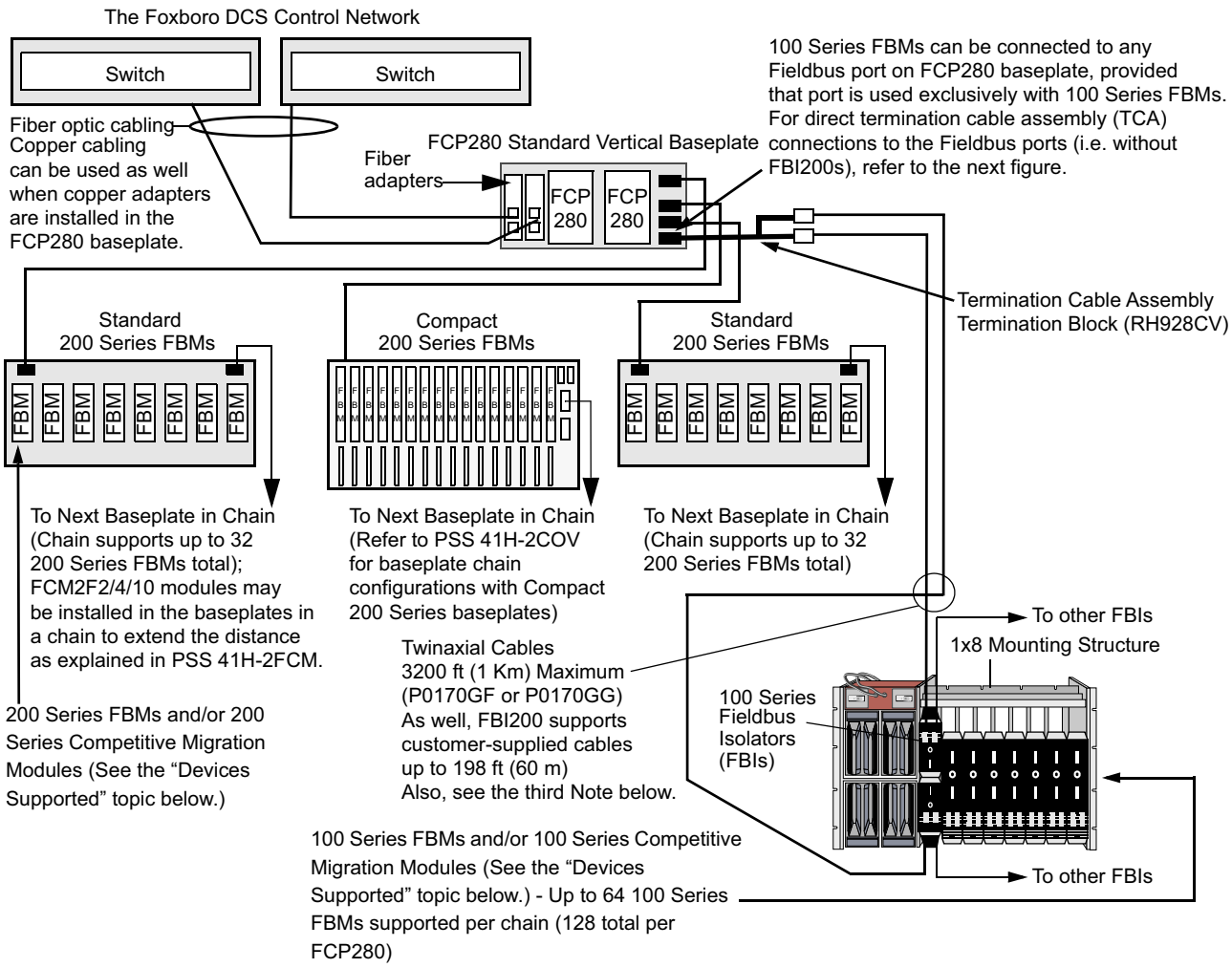
The Fieldbus splitter (RH928CV) is used to directly connect a Fieldbus port to a 268 Kbps HDLC fieldbus. This provides a connector for any Fieldbus port on the FCP280 baseplate, and two Termination Cable Assembly (TCA) termination blocks for the twinaxial cabling from the 100 Series FBMs.

The FCP280 can also communicate with serial and Ethernet devices, such as PLCs, via Field Device System Integrators (special FBMs). This allows you to connect to new device interfaces without any changes to the controller software.

To estimate the FCP280's processor load, see *Field Control Processor 280 (FCP280) Sizing Guidelines and Excel Workbook* (B0700FY).

For a description of the FCP280 baseplates, see *Standard 200 Series Baseplates* (PSS 41H-2SBASPLT).

Figure 2 - Typical FCP280 Network Configuration with Mixed 100 Series and 200 Series FBM Functionality (Simplified)



The FCP280 supports up to 128 FBMs, which can consist of one of these options: 128 200 Series FBMs, 128 100 Series FBMs, or a mix of 128 200 Series and 100 Series FBMs. If you use a mix of 100 Series and 200 Series FBMs, the FBMs cannot be mixed concurrently on the same Fieldbus port (PIO channel). Each PIO channel must be configured to either a 268 Kbps or 2 Mbps HDLC fieldbus.

The 100 Series FBMs can be connected to any fieldbus port on the FCP280 baseplate, provided that the overall FBM limit of 128 100 Series FBMs is maintained for the FCP280. Up to 64 100 Series FBMs are supported on each PIO channel/ baseplate port.

An FBI200 may be included on this connection to extend the distance between the 100 Series FBIs and the FCP280 baseplate. In mixed configurations (100 and 200 Series FBMs) the FCP280 can communicate on the 268 Kbps HDLC fieldbus up to 60 m (198 ft). When communicating with a 268 Kbps HDLC fieldbus only, the FCP280 can communicate on this fieldbus up to 1 km (3,200 ft). The FBI100 pair may be used in place of FBI200s. For sizing constraints and devices supported by the FBI200, see *FBI200 Fieldbus Isolator/Filter* (PSS 41H-2FBI200). For sizing constraints and devices supported by the FBI100, see *FBI100 Fieldbus Isolator/Filter* (PSS 21H-2Y16 B4). The FBI200/FBI100 extends the distance of the HDLC fieldbus between the FCP280 and the FBMs up to 1,830 m (6,000 ft). The FBI200 can be used with 200 Series FBMs as well to extend the cabling distances to them. The FBI100 is used exclusively with 100 Series FBMs to extend the cabling distances to them.