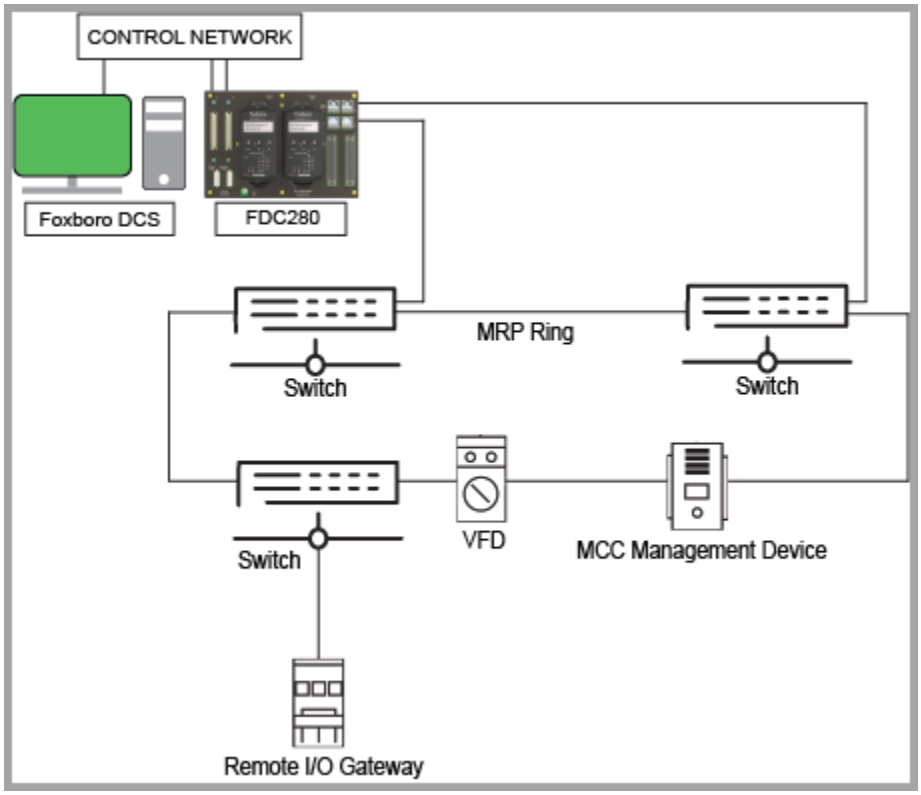
Foxboro™ DCS

PROFINET IO-Controller Driver for Field Device Controller 280

PSS 41S-3PROFIDR

Product Specification

April 2025



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Overview

The FDC280 PROFINET IO-Controller Driver integrates cyclic data from PROFINET devices including:

- Remote IO devices
- Variable Frequency Drives
- Motor Management devices

The FDC280 PROFINET IO-Controller Driver supports:

- Simplex integration of PROFINET S1 devices on an MRP Ring network (100 Mbps or greater) or star network (100 Mbps or greater).
- Fully redundant integration of PROFINET S2 devices on an MRP Ring network (100 Mbps or greater) or star network (100 Mbps or greater).

The FDC280 PROFINET IO-Controller supports connection with up to 75 PROFINET IO-devices devices and up to 5000 input / output tags subject to FDC280 performance limitation.

Features

- Supports PROFINET Conformance Class A devices.
- Supports Real time cyclic data Integration of PROFINET IO-devices into Foxboro DCS using Ethernet connectivity.
- Supports cyclic data transfers at rates 64 ms and higher.
- Supports PROFINET Diagnosis Alarms and Process Alarms.
- Supports up to 75 PROFINET IO-devices per FDC280 controller.
- Supports up to 5000 input / output tags per FDC280 controller.
- Supports a fully redundant integration of PROFINET S2 devices on an MRP Ring network (100 Mbps or greater) or star network (100 Mbps or greater).
- Supports simplex integration of PROFINET S1 devices on an MRP Ring network (100 Mbps or greater) or star network (100 Mbps or greater).
- Availability of standard Foxboro DCS plant management functions and operator displays.
- Foxboro DCS System Manager detection, reporting and management of device connectivity.
- Enhanced diagnostics using disruption-less diagnostics tool.
- Supports bulk configuration of tags using Control Software Bulk Data Object.
- Supports configuration by importing PROFINET Devices General Station Description Files (GSDML) using FDC280 PROFINET IO Configurator and Control Software.

Ease of Integration

FDC280 with the PROFINET IO-Controller driver allows you to exchange cyclic data between PROFINET devices and Foxboro DCS, thus taking advantage of both the power of the Foxboro DCS and the features of PROFINET communication.

Foxboro DCS software also provides standard plant management functions and operator displays for these devices, including startup, and communication fault detection and display using System Manager.

The FDC280 with the PROFINET IO-Controller driver can be configured as either simplex or fault-tolerant, as shown in *EcoStruxure™ Foxboro™ DCS Field Device Controller 280 (FDC280)* (PSS 41H-2FDC280).

To maintain separation between the control processes and the external device communication processes, the PROFINET IO-Controller driver is run on Core 2 of the FDC280's CPU and communicates to the control processes running on Core 1 via an internal bus.

Hardware and Software Compatibility

To add PROFINET IO-Controller driver support to earlier releases of FDC280, the major image update will be required. See *EcoStruxure™ Foxboro™ DCS Field Device Controller 280 (FDC280)* (PSS 41H-2FDC280).

The FDC280 PROFINET IO-Controller Driver is compatible with all releases of:

- Foxboro DCS Control Core Services v9.7 and later
- Control Software v7.5 and later
- FDC280 Firmware version 0904008000 and later

Communications

The FDC280 connects to PROFINET IO-devices over a user-supplied network (100 Mbps or greater).

Figure 1 - FDC280 Simplex Supporting S1 Devices on the Star Network (100 Mbps or Greater)

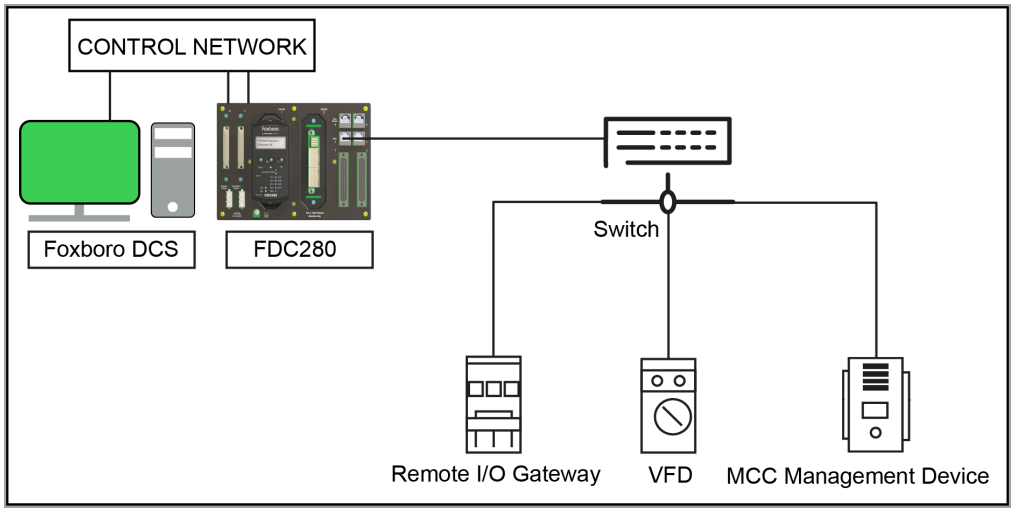
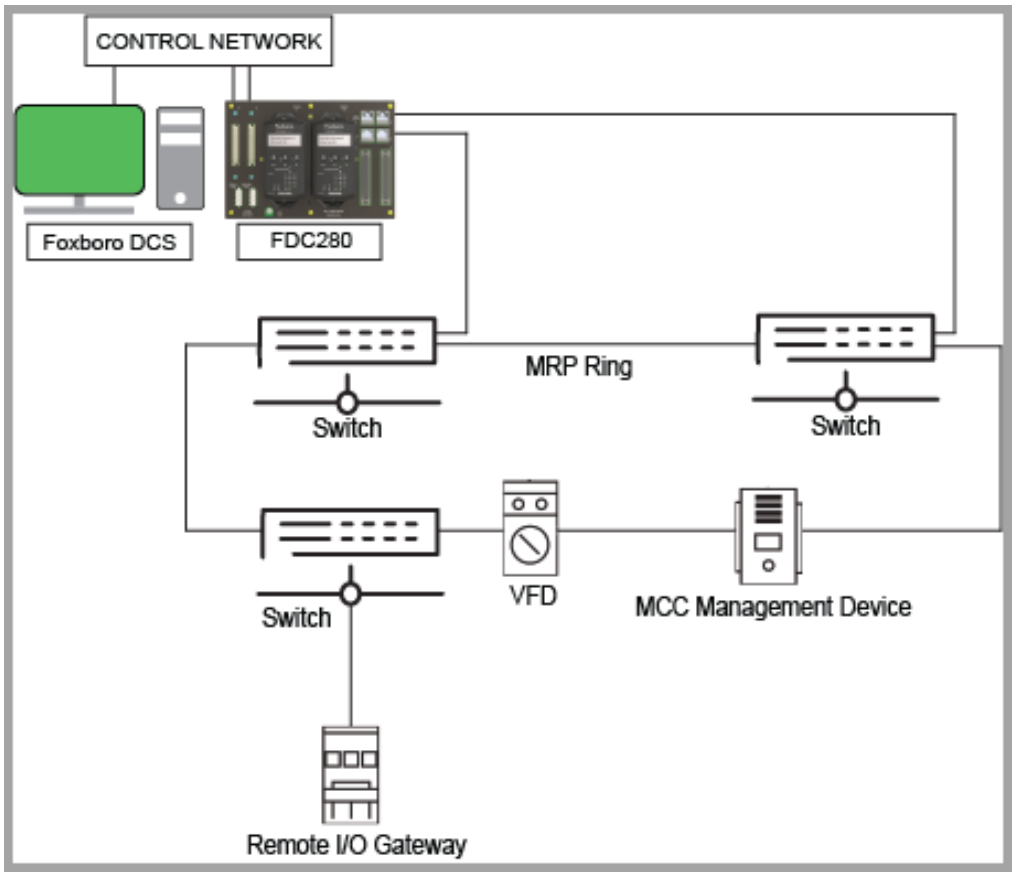
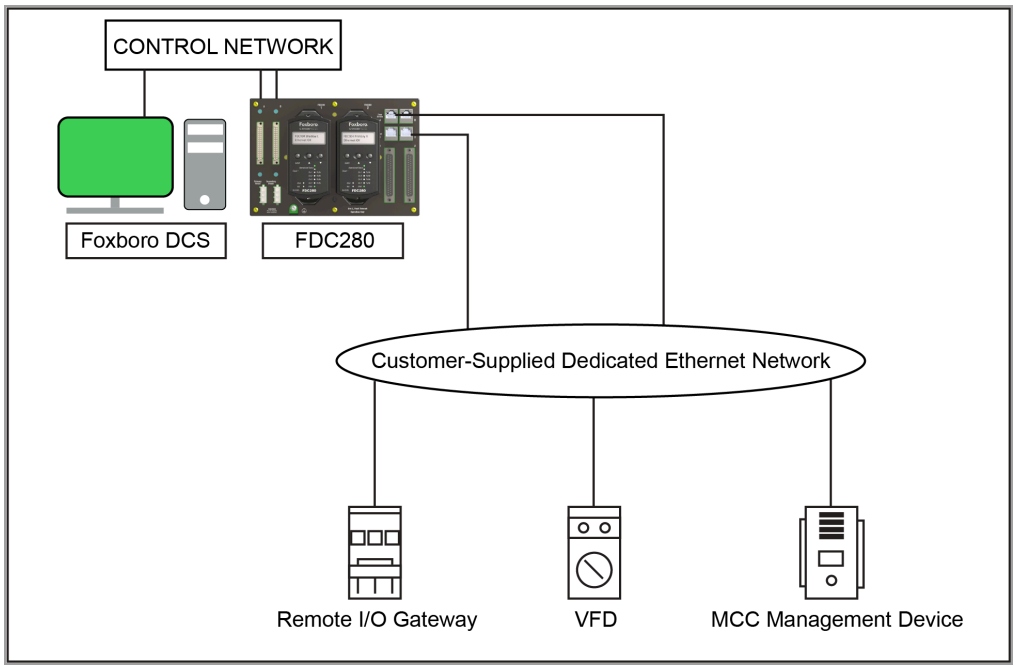


Figure 2 - FDC280FT Supporting S2 Devices on the Ring Network (100 Mbps or Greater)



NOTE: The switches and devices in the Ring network (100 Mbps or greater) must support the MRP protocol.

Figure 3 - FDC280 FT Supporting S2 devices on the Star Network (100 Mbps or Greater)



Ordering

The FDC280 PROFINET IO-Controller Driver can be ordered from *BuyAutomation*. The product includes media and documentation. Engineering assistance can be provided through the normal channels.

Installation and Operation

The FDC280 collects the required data from the device via the PROFINET IO-Controller driver, performs the necessary conversions, and then stores the converted data in its database for incorporation into the Foxboro DCS plant management functions and operator displays. Data can also be written out to the PROFINET IO-Controller device from Foxboro DCS.

Installation and Download

There are two types of driver installation (Minor and Major Image Update) that are explained in *EcoStruxure™ Foxboro™ DCS Field Device Controller 280 (FDC280)* (PSS 41H-2FDC280).

Depending on the type of installation required, installation of the driver may require either a download operation that does not disrupt the rest of Foxboro DCS (Minor) or an operation that involves full, double-sided reboot of the FDC280 (Major).

To add PROFINET IO-Controller driver support to earlier releases of FDC280, a major image update is required.

Configuration Software

FDC280 image 0904008000 that introduces PROFINET IO-Controller Driver support tools includes:

- Control Core Services (CCS) v9.7 or later
- Control Software (CS) v7.5 or later

FDC280 PROFINET IO-Controller Driver configuration tools include:

- FDC280 PROFINET IO Configurator
- Control Software Integrated Development Environment (IDE)

For more information, see *EcoStruxure™ Foxboro™ DCS FDC280 PROFINET IO-Controller Driver User's Guide* (B0700JG). PROFINET Configurator supports easy configuration by importing PROFINET Devices General Station Description Files (GSDML) using the FDC280 PROFINET IO Configurator tool and Control Software.

Diagnostics

All diagnostic data for the PROFINET IO-Controller Communication is made available through Distributed Control Interface (DCI) input blocks.

The FDC280 PROFINET IO-Controller Driver also enables the debugging of any device interface issues, by logging all messages exchanged with a device for analysis, in the FDC280 disruption-less diagnostic application on a workstation connected to the I/O network (100 Mbps or greater).

Specifications

<table>
<tr><td>Number of Devices</td><td>Up to 75 PROFINET IO-devices per FDC280 controller.</td></tr>
<tr><td>Number of DCS Blocks</td><td>The FDC280 can support up to total 8252 DCS blocks subject to performance limitations.</td></tr>
<tr><td>Number of PROFINET I/O points</td><td>The FDC280 can support up to 5000 PROFINET I/O points (mapped to DCI blocks) subject to performance limitations.</td></tr>
<tr><td>Control Block Support</td><td>The FDC280, used with the PROFINET IO-Controller Driver, supports the Foxboro DCS Equipment Control Block (ECBs) and DCI blocks.</td></tr>
<tr><td>Performance</td><td>The FDC280 PROFINET IO-Controller Driver, using DCI blocks, supports communication for 5,000 PROFINET input / output tags. The 5000 tags can be configured with up to 75 PROFINET devices. For example:
<table>
<tr><th>Cyclic Rate</th><th>Basic Processing Cycle</th><th>PROFINET Tags</th><th>PROFINET Devices</th></tr>
<tr><td>64 ms</td><td>100 ms</td><td>1,600</td><td>32</td></tr>
<tr><td>128 ms</td><td>500 ms</td><td>4,000</td><td>75</td></tr>
<tr><td>256 ms</td><td>500 ms</td><td>5,000</td><td>75</td></tr>
<tr><td>512 ms</td><td>1 sec</td><td>5,000</td><td>75</td></tr>
</table></td></tr>
<tr><td>ECBs Supported by the Driver</td><td>• ECBP: Primary ECB, representing the FDC280’s Ethernet port.
• ECB200: Parent ECB, representing the PROFINET IO-Controller Driver.
• ECB201: Child ECB, representing an PROFINET Device.</td></tr>
<tr><td>IO Point Mapping</td><td>The PROFINET IO Configurator:
• Supports easy configuration of PROFINET devices by importing General Station Description Files (GSDML).
• Supports configuration of cyclic data under Modules and Sub-Modules.
• Integrates seamlessly with Control Software to deploy configurations to FDC280 Controllers.</td></tr>
<tr><td>Data Types</td><td>The driver supports the below PROFINET data types:
• Bit - 0 or 1(Boolean): Contact Boolean Type
• Integer8: Signed Integer - 8bit
• Integer16: Signed Integer - 16bit
• Integer32: Signed Integer - 32bit.
• Unsigned8: Unsigned Integer - 8bit
• Unsigned16: Unsigned Integer - 16bit
• Unsigned32: Unsigned Integer - 32bit
• Float32: Float – 4-byte, Single Precision
• Octet String</td></tr>
<tr><td>PROFINET Devices</td><td>The driver supports integration of wide range of Conformance Class A PROFINET IO-devices:
• PROFINET Remote IO
• PROFINET Variable Frequency Drives
• PROFINET IO-device PLCs
• PROFINET MCC Management Devices</td></tr>
<tr><td>DCI Blocks Supported by the</td><td>• BIN: Binary Input DCI block
• BOUT: Binary Output DCI block</td></tr>
</table>

PROFINET IO-Controller Driver	• IIN: Integer Input DCI block • IOUT: Integer Output DCI block • PAKIN: Packed Input DCI block • PAKOUT: Packed Output DCI block • RIN: Real Input DCI block • ROUT: Real Output DCI block
Setting Device IP address	The driver supports setting the PROFINET Device IP address using the FDC280 firmware.
Discovery	The driver can be discovered on the PROFINET Network by PROFINET Supervisors.
Redundancy	Supports full redundant interface with S2 devices.
Part Number	FDC280 PROFINET IO-Controller Driver – Model K. K0177FU

Related Documents

Document Number	Description
PSS 41H-2FDC280	*EcoStruxure™ Foxboro™ DCS Field Device Controller 280 (FDC280)* (PSS 41H-2FDC280)
B0700JG	*EcoStruxure™ Foxboro™ DCS FDC280 PROFINET IO-Controller Driver User's Guide* (B0700JG)
B0700GQ	*EcoStruxure™ Foxboro™ DCS Field Device Controller 280 (FDC280) User's Guide* (B0700GQ)

Proposition 65

WARNING: This product can expose you to chemicals including lead and lead compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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