

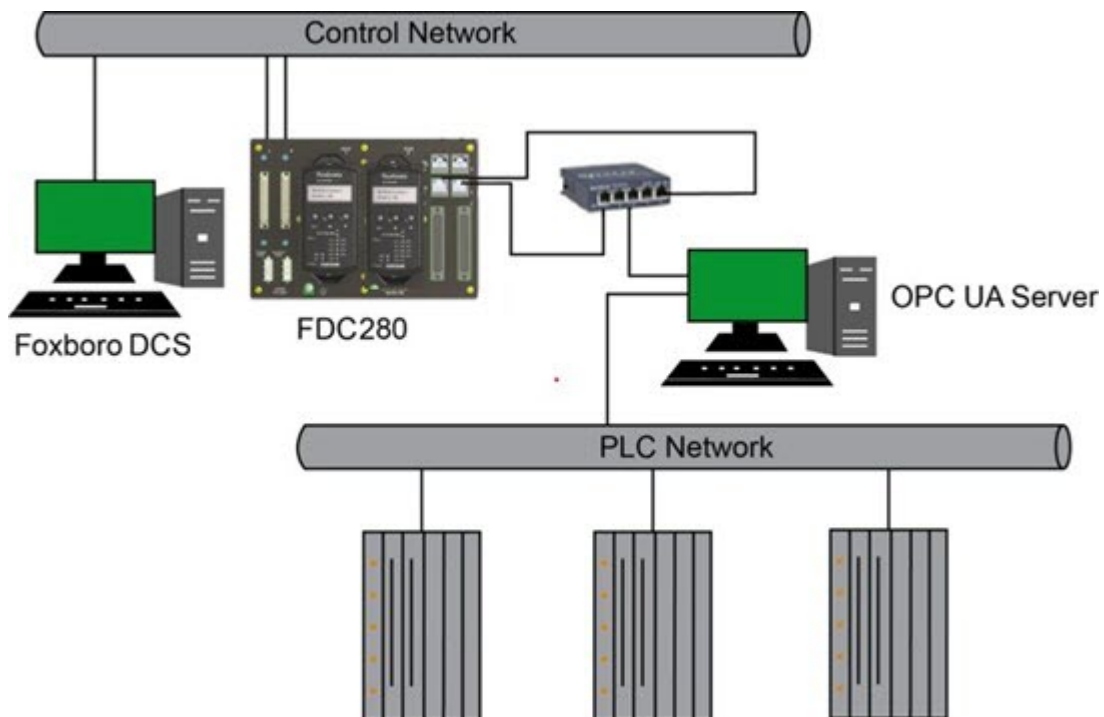
Foxboro™ DCS

OPC UA Client Driver for Field Device Controller 280

PSS 41S-3FDCOPC

Product Specification

June 2024



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Overview

The OPC UA Client Driver integrates plant-floor third-party devices via the OPC UA Server with Foxboro DCS for real-time data access. It can also directly integrate a plant floor device if the device has a built-in embedded OPC UA server.

Analog and digital values can be read from or written to an OPC UA Server that supports these data types. Communication is performed via an Ethernet connection between the FDC280 and an OPC UA Server.

The FDC280 supports connection with one OPC UA Server and up to 8000 points subject to FDC280 performance limitation.

The OPC UA Server manages all the intricacies of device-specific communication protocols. The OPC UA Server packages the data in generic OPC UA form so that the OPC UA Client Driver can have read/ write access to the data in the device.

Features

- Real time data Integration of OPC UA servers into a Foxboro DCS using Ethernet connectivity
- Supports one workstation-based or embedded OPC UA Server per FDC280 Controller.
- Up to 8,000 input / output tags for a single OPC UA server.
- Supports application authentication using self-signed certificates.
- Supports the following modes of user authentication:
 - Anonymous user
 - Username and password
- Supports Security mode as None, Sign, and Sign & Encrypt.
- Availability of standard Foxboro DCS plant management functions and operator displays.
- 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 using Control Software only.

Ease of Integration

FDC280 with OPC UA Client driver enables you to exchange data between OPC UA Servers and Foxboro DCS, thus taking advantage of both the power of the Foxboro DCS and enhanced security and interoperability features of OPC UA 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 OPC UA Client 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 OPC UA Client driver is run on Core 2 of the FDC280's CPU and communicates to the control process running on Core 1 via an internal bus.

Hardware

To add OPC UA Client driver support to earlier releases of FDC280, a major image update is required. See *EcoStruxure™ Foxboro™ DCS Field Device Controller 280 (FDC280)* (PSS 41H-2FDC280).

Software

The FDC280 OPC UA Client Driver is compatible with all releases of:

- Foxboro DCS Control Core Services v9.3 and later
- Control Software v7.1.1 and later

Communications

The FDC280 connects to a third-party OPC UA Server over a user-supplied network connection.

Configuration

Control Software IDE

Control Core Services (CCS) v9.3 or later and Control Software (CS) v7.1.1 or later are required to support the FDC280 image that introduces OPC UA Client Driver support. To configure the FDC280 OPC UA Client driver, use the Control Software Integrated Development Environment (IDE), as described in *EcoStruxure™ Foxboro™ DCS FDC280 OPC UA Client Driver User's Guide* (B0700WJ).

FDC280 OPC UA Client Driver cannot be configured using FDC280 CCS Configurator and ICC.

Operation

The FDC280 collects the required data from the OPC UA Server, 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 OPC UA Server 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).

Product Support

The FDC280 OPC UA Client Driver can be ordered from BuyAutomation. The product includes media and documentation. Engineering assistance can be provided through the normal channels.

Diagnostics

All diagnostic data for the OPC UA Communication is made available through Distributed Control Interface (DCI) input blocks. The FDC280 OPC UA Client Driver also enables the debugging of any device interface issues, by logging all messages exchanged with a device for analysis, in the FDC280 Diagnostic application on a workstation connected to the I/O network.

The FDC280 communication to the I/O device on the network interface is encrypted for all security modes. Therefore, the conventional method of capturing network data to analyze and debug does not work. The FDC280 can log all messages in decrypted form and send them out to the FDC280 Diagnostic application on a workstation connected to the same network as the I/O device.

Specifications

Number of Devices	Single OPC UA Server per FDC280 Controller.
Number of Points	The FDC280 can support up to 8,000 blocks subject to performance limitations.
Control Block Support	The FDC280, used with the OPC UA Client Driver, supports the Foxboro DCS Equipment Control Block (ECBs) and DCI blocks.
Performance	The FDC280 OPC UA Client Driver, using DCI blocks, supports communication for 8,000 input / output tags and up to 20 different subscriptions at different publish rates. Up to 8,000 tags per single subscription can be supported at the same publish rate. Supports up to 8,000 points per 2 sec publish rate.
ECBs Supported by the Driver	• ECBP: Primary ECB, representing the FDC280's Ethernet port • ECB200: Parent ECB, representing the OPC UA Client Driver • ECB201: Child ECB, representing an OPC UA Server
OPC UA Server Name Space Configuration	• Supports up to 10 different Namespace URIs and Up to 256 characters for a Namespace URI in OPC UA Server. • Supports Mapping of OPC UA Tags using any of the following types of Node Identifiers: ◦ String Node Identifier up to 128 characters long. ◦ Numeric Node Identifier up to 128 characters long. ◦ GUID Node Identifier up to 128 characters long. ◦ OPAQUE Node Identifier up to 128 characters long.
Deadband supported by the driver	Supports the following deadband configuration options: • Absolute deadband • Percentage deadband • None
Time stamping options supported by the driver	Support the following modes of time stamping: • OPC UA Server Time Stamping • Source Time Stamping • FDC280 Time Stamping
DCI Blocks Supported by the OPC UA Client Driver	• BIN: Binary Input DCI block • BOUT: Binary Output DCI block • BINR: Redundant Binary Input DCI block • IIN: Integer Input DCI block • IOUT: Integer Output DCI block • IINR: Redundant Integer Input DCI block • PAKIN: Packed Input DCI block • PAKOUT: Packed Output DCI block • PAKINR: Redundant Packed Input DCI block • PLSOUT: Pulse Output DCI Block • RINR: Redundant Real Input DCI block • ROUT: Real Output DCI block • RINR: Redundant Real Input DCI block • STRIN: String Input DCI block

Security Features	• Supports Application Authentication using self-signed certificates. • Supports the following modes of user authentication: ◦ Anonymous User ◦ Username and Password • Supports Security mode as None, Sign, and Sign & Encrypt. Supports the following security policies: • 6.5.123 SecurityPolicy – None • 6.6.162 SecurityPolicy – Basic128Rsa15 • 6.6.163 SecurityPolicy – Basic256 • 6.6.164 SecurityPolicy - Aes128-Sha256-RsaOaep • 6.6.165 SecurityPolicy – Basic256Sha256 • 6.6.166 SecurityPolicy - Aes256-Sha256-RsaPss
Part Numbers	• FDC280 OPC UA Client driver – Model K. K0177EC

Related Documents

Document
<i>EcoStruxure™ Foxboro™ DCS Field Device Controller 280 (FDC280) (PSS 41H-2FDC280)</i>
<i>EcoStruxure™ Foxboro™ DCS FDC280 OPC UA Client Driver User's Guide (B0700WJ)</i>
<i>EcoStruxure™ Foxboro™ DCS Field Device Controller 280 (FDC280) User's Guide (B0700GQ)</i>

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