

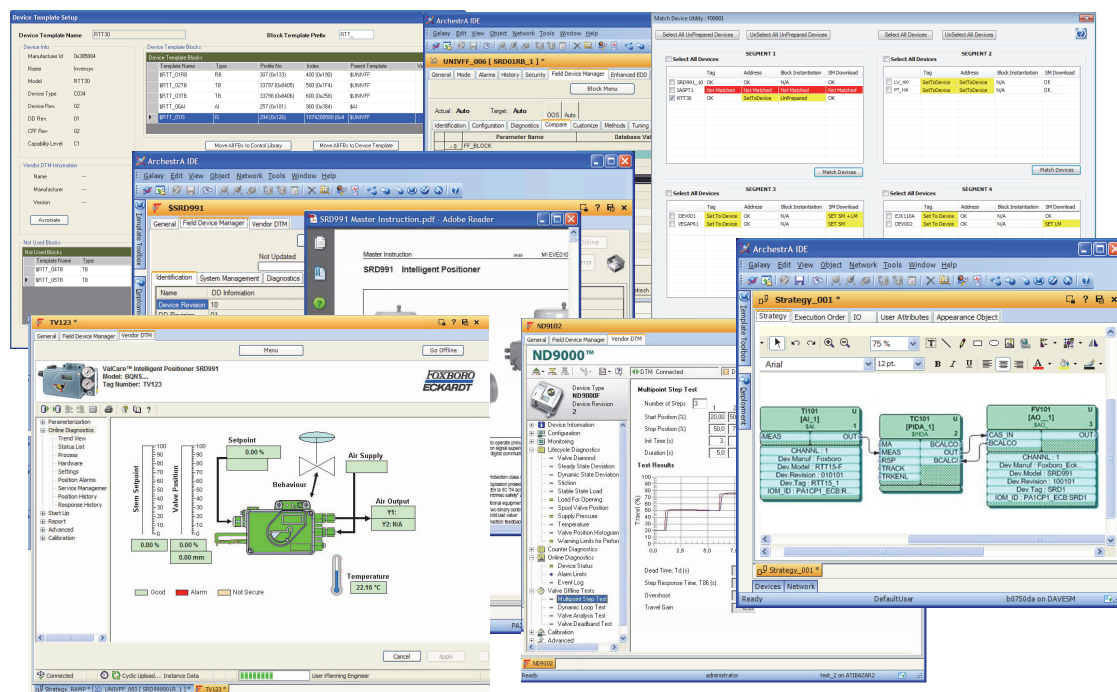
Foxboro Evo™ Process Automation System



Product Specifications

PSS 31S-10B6 B3

Field Device Manager for FOUNDATION™ fieldbus



The Field Device Manager is coupled with the Foxboro Evo™ Control Editors to achieve unprecedented productivity and operational savings for the entire lifecycle when engineering and managing FOUNDATION™ fieldbus devices.

FEATURES

- ▶ Complete lifecycle coverage of all field device tasks — configuration, commissioning, maintenance, and diagnostics — in one comprehensive tool set
- ▶ Industry-leading capabilities to perform predictive maintenance and diagnostics on field devices, and to improve maintenance staff productivity. Invensys has produced not only the first FOUNDATION fieldbus system offering to make use of both FDT and Enhanced EDDL technologies, but has done so in a unique combination that
- allows users to customize maintenance user interfaces beyond the definition from the device description, and optionally install and open FDT compliant Device Type Managers (DTMs) for advanced diagnostics and maintenance.
- ▶ First FOUNDATION fieldbus system to offer device interchange capability via Smart Device Template cloning
- ▶ Advanced device-specific user interfaces for diagnosing and managing field devices via FDT compliant DTMs.

- ▶ Support for the new format of second-generation device descriptions that offer improvements in configuration and data displays
- ▶ Smart Device Templates for dramatically reduced engineering and device commissioning times
- ▶ User customizable engineering and maintenance displays, captured in templates, that increase maintenance productivity and ease of spotting, diagnosing, and correcting device problems
- ▶ Innovative device matching and preparation utilities that automate startup or replacement of field devices
- ▶ Convenient user-defined hyperlinks to all maintenance manuals, procedures, notes, and other documentation
- ▶ Available Instrument Workshop edition for tagging, pre-calibration, testing, and/or pre-commissioning of devices before their plant installation
- ▶ Conversion tools for updating IACC, Foxboro Control Software 2.0 and earlier databases to provide full compatibility with current Foxboro Evo Control Software and Field Device Manager versions.
- ▶ Creating Smart Device Templates
- ▶ Configuring a field device database, either off-line or on-line
- ▶ Calibrating or starting up a field device by running methods in the DDs
- ▶ Customizing user interface screens for diagnosing and viewing field devices.

Smart Device Templates provide the ability to engineer a typical field device type once, and propagate all the user interface, configuration, and download behaviors to each tag of the same device model type, achieving maximum reusable engineering. The templates are made possible by layering FDT technology on top of DD technology. Starting from the DD file, the designer customizes the template for each model of field device in the plant. Templates are managed as FDT Device Type Managers (DTMs), but they remain linked to the DD files for device description.

When you import a DD into the base FOUNDATION fieldbus device template in the Control software, the Control Editors set up a device template folder that includes a device info template and a template for each block described in the DD (Figure 1). These device-specific block templates contain all of the standard and extended parameters as enumerated by the manufacturer, enabling you to pre-configure device block behavior with complete confidence.

OVERVIEW

The Field Device Manager is a software application that adds on to the Foxboro Evo Control Editors to provide complete management of FOUNDATION fieldbus devices. The graphical user interface of Field Device Manager opens inside the Control Editors' editor area.

Field Device Manager is DD based. The development of a device database begins with importing Device Description (DD) files into Field Device Manager, creating templates for each model of field device used in the plant. Users can then perform functions such as:

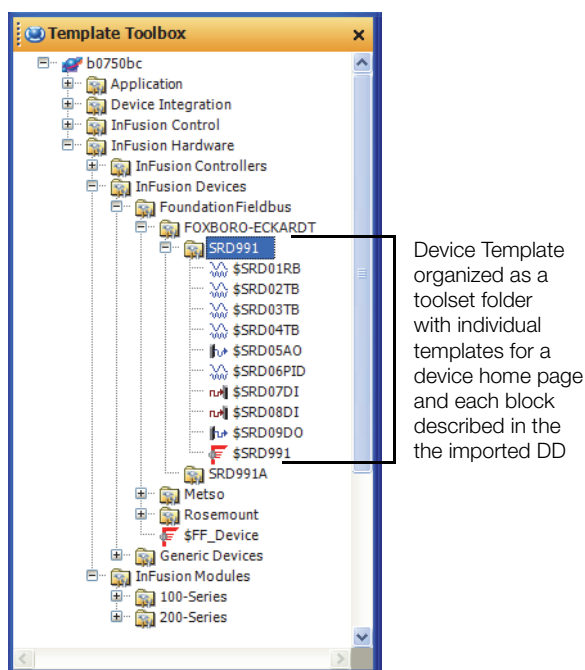


Figure 1. Device Template Folder

Customization of the block templates includes the following — and more:

- ▶ Creating and naming new Field Device Manager block viewing screens
- ▶ Selecting the parameters to appear on each of those screens
- ▶ Organizing the configuration screens
- ▶ Setting parameters and locking them so each block instance will have the value set in the template
- ▶ Selecting which parameters will be downloaded from the host to the device when the devices are installed on the segment.

Field Device Manager is the first device management system to support the new Enhanced EDDL (Electronic Device Description Language) technology, as adopted by the Fieldbus Foundation's DD Cooperation Project. This technology enhances

configuration and on-line device viewing screens by having the device vendor organize screen menus in a hierarchical fashion, and organizing data presentation and content for a device screen, with items such as gauges, bar indicators, trends, histograms, and embedded graphics.

Field Device Manager excels at in-depth diagnosis of the performance and health of today's sophisticated field devices. Often this is best accomplished with a user interface made specifically for that device model by the device vendor, which plugs-into Field Device Manager. For example, today's valve positioners often capture extensive on-line diagnostic data, and support running a comprehensive repertoire of on-line and off-line tests to diagnose and maintain the valve, such as multi-point step tests and valve deadband tests. Field Device Manager is the first system application that supports opening FDT compliant DTM plug-ins for FOUNDATION fieldbus. Like the other user interfaces, these also open in the editor area of the Control Editors window. To enable this capability, Field Device Manager embeds an FDT compliant frame application inside the Control Editors, and adds a communication DTM that supports the Foxboro control processors and connected FBM228 Redundant FOUNDATION fieldbus Interface Modules.

TOOLS FOR UPGRADING AND INTERCHANGING DEVICES

Field Device Manager offers the only device interchange productivity tools on the market for FOUNDATION fieldbus. Through a cloning process specifically designed to deal with similar yet different block parameter sets, you are able to create a new template toolset applicable to the new device type. You then select specific device tags for upgrading using the Device Tag Selection dialog shown in Figure 2.

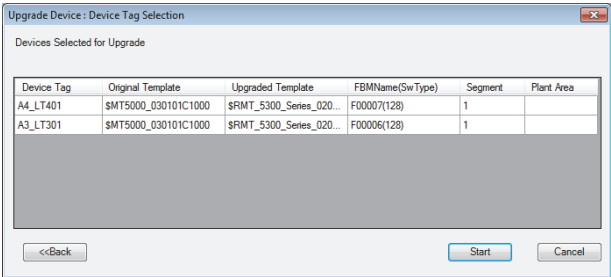


Figure 2. Upgrade Device Type Selection

The process of upgrade is semi-automatic in nature. The degree of human intervention and engineering effort varies depending on the degree of similarity between the original and new device.

FOXBORO EVO CONTROL EDITORS
EXTENSIONS FOR FOUNDATION FIELDBUS

Creating Device Templates

The Control Editors Template Toolbox view contains a hierarchical tree of field device templates. In seconds a user can create the initial templates for each model of field device used in the plant, by browsing to the DD files, confirming the name of the device model, capability level and revisions, and importing the file to the Device Template Setup dialog box (Figure 3). The dialog box enables you to:

- ▶ Specify the block templates that will be created from the DD. You can generate a template for each block described in the DD/CFF file, or select only those transducer and function blocks that will actually be used in the system
- ▶ Place the function blocks in a library where you can create blocks that are both device-specific (for example, a set of AI blocks that can only be assigned to a specific pressure transmitter model) and application-specific (one AI configured for absolute pressure, another for differential pressure, and so on)

- ▶ Create templates for instantiable blocks and specify whether a block is to be instantiated for each instance of the device type or maintained in a library for later assignment to individual devices
- ▶ Name the templates to indicate their type, use in the system or whatever makes them easily recognized by others less familiar with fieldbus ID numbers
- ▶ Associate a manufacturer-supplied DTM with the device template to take advantage of specialized diagnostics and maintenance capabilities in the vendor DTM.

The Control Editors enable you to create multiple application-specific device templates from the same DD, so you can ensure at the template level that block instances match the different users of the device. To differentiate between different uses of the same device type, you can derive the additional templates from the first-level device template, create multiple first-level templates, or do both.

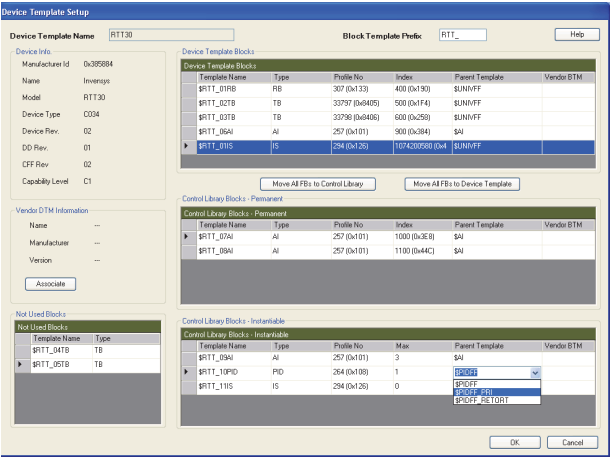


Figure 3. Device Setup Dialog Box

The initial templates have built-in configuration and diagnostic displays. The block configuration views default to the parameters that are defined as writable in the DD files. You can then further customize the template as previously discussed.

DD Aware Engineering

As soon as the device template has been added, both off-line and on-line configuration of a device's blocks is possible. The user can build loops, using the Strategy Editor, adding and editing field device function blocks. All choices of parameter settings are guided by the choice lists the device vendor puts into the DD files.

Configuring Loops and Function Blocks

The Strategy Editor lets users draw or bulk generate loop diagrams. These *strategies* can readily intermix function blocks for fieldbus devices and conventional I/O points. Whether the blocks are fieldbus related or conventional, the drag-and-drop approach to adding blocks and interconnecting them is identical.

The Control Editors and Field Device Manager support configuration and scheduling of all fieldbus function block types in the field devices. Function blocks can be connected to other function blocks on the same segment and to control blocks and DCI blocks in the control processor.

Figure 4 shows a control in the field (CIF) loop with an AI block selected from a device template folder for a pressure transmitter, and PID and AO blocks drawn from a valve positioner template folder. These blocks can only be assigned to device instances derived from their respective template folders, thus assuring an exact match between the block in the strategy and the block in the physical device.

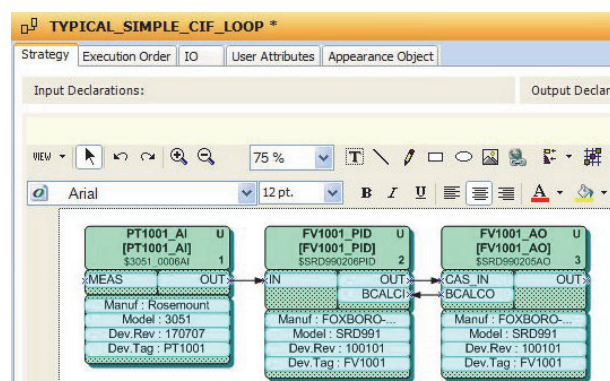


Figure 4. Control Strategy with FF Blocks

A click of the AI block in the diagram opens the block in an editor (Figure 5). Notice the enumeration of choices for Channel coming from the DD.

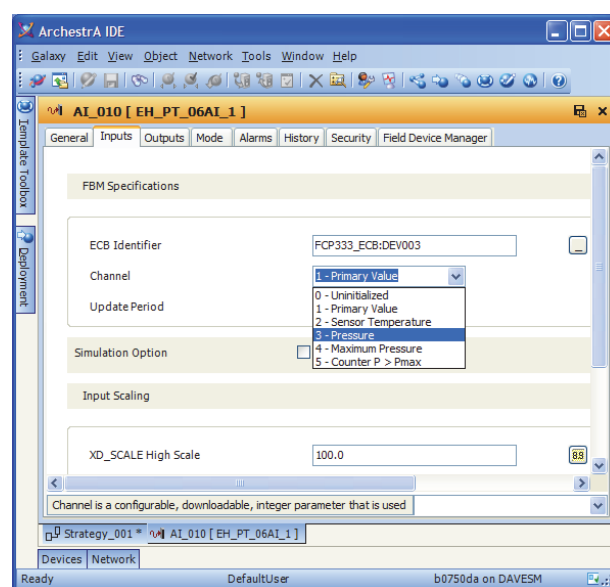


Figure 5. Editing an AI Block

Configuration of alarm limits, alarm priorities, and operator screen alarm destinations is performed identically for fieldbus and traditional function blocks.

Bulk Generation of Fieldbus Control Loops

The Control Editors provide two convenient ways to automate the development of control loop databases without drawing each loop.

The first technique is to create the strategy instances from a strategy template, followed by user edits as desired.

The second bulk generation approach for maximum productivity is to use both control strategy templates and the Bulk Data Editor. The editor lists parameter values and specifies the control strategy templates to use. The strategy is automatically constructed, with little or no remaining parameters that require further manual edits.

Device Strategies

Each time you template a device, the Control Software automatically generates a template for a *Device Strategy*, which enables you to manage the resource and transducer blocks. At your option, these strategies can be customized to include control processor resident blocks that extract diagnostic information from the resource and transducer blocks for proactive maintenance, asset management and other applications. Figure 6 shows a strategy template that provides alarms based on a custom diagnostic parameter in the transducer block and the resource block BLOCK_ERR parameter.

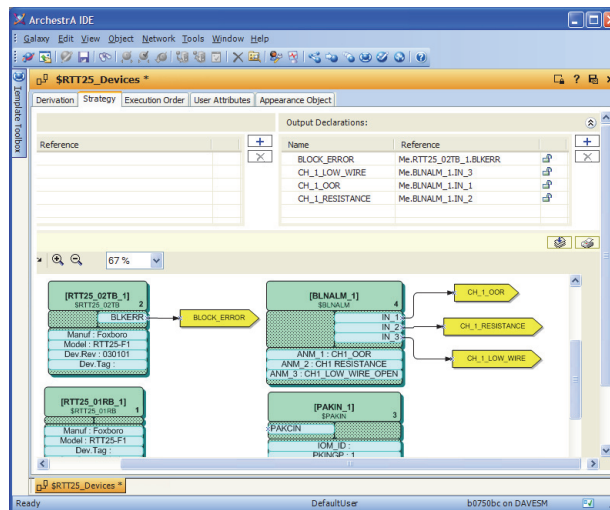


Figure 6. Template for a Device Strategy

Adding Field Devices and Tags to the Database

A new field device and its tag are added by pointing to the FBM228 Fieldbus interface card and choosing the desired device template from which to create the new device instance. All aspects of the device portion of the template, such as maintenance documentation and image links, are copied to the instance. If the template is associated with a vendor DTM, the instance is automatically associated with the same DTM. When the block instances are created and matched up to the desired block templates for that device type they inherit all aspects of the block templates. All the settings from the device info template are automatically created, saving a large configuration effort.

Accessing Field Devices

Field device tags are found both under the FBM228 in the Network view's navigational tree, and under a user-defined hierarchy of plant units in the Devices view. You can double-click the device tag in either view to open it in the editor window and launch either Field Device Manager or a DTM made by the device vendor. The vendor's DTM can be added to the device template at any time, and is automatically attached to all existing tag instances of that type of device.

SMART DEVICE TEMPLATES FOR REUSABLE ENGINEERING

Field Device Manager eliminates repetitive engineering of each and every field device. Almost all engineering is done once in the device info and block templates, which serve as masters for each model of field device. The templates can capture:

- ▶ Typical parameter settings for resource, transducer, and function blocks
- ▶ Links to maintenance manuals, product data sheets, repair procedures, diagrams and other images used for device maintenance
- ▶ Maintenance notes regarding a particular model of field device
- ▶ Customized choices of the list of parameters to appear on Field Device Manager configuration, diagnostic, and watch tab pages
- ▶ Creation of new tab pages in any block view (Figure 7)

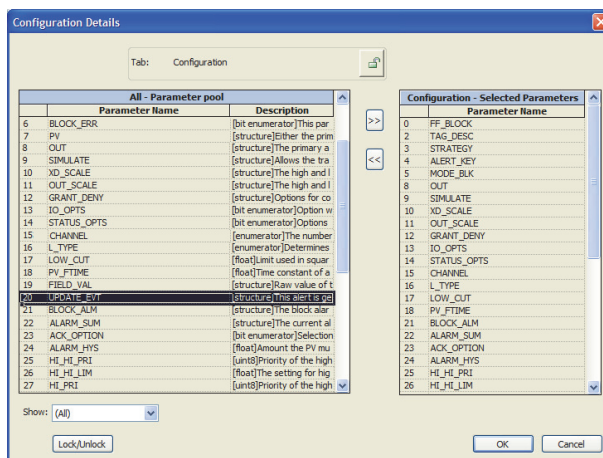


Figure 7. Creating a Custom Diagnostics Tab

- ▶ Customization of access privileges to displays and functions by user role
- ▶ Choice of device block parameters to be downloaded when the device is attached to the segment and tagged (Figure 8).

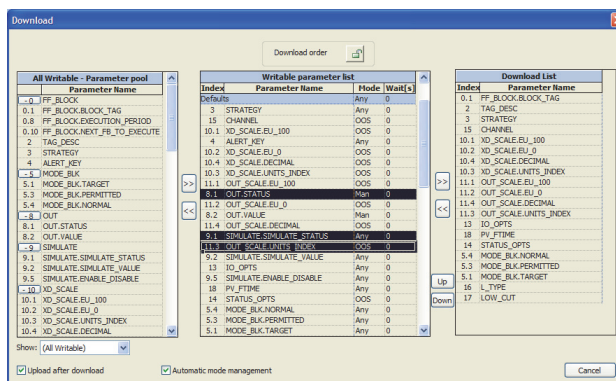


Figure 8. Specifying Parameters for Download

Templates have an inheritance capability for productivity and engineering management. If a parameter setting is locked by the template, each device tag follows the value in the template. You can go back to the template at any time and change the value. The database for each device is automatically updated to match the change made to the template. On the other hand, if a parameter is set in the template, but not locked by the template, the first time a device database is created, the device will equal the template but is not forced to subsequently follow the template. In a similar fashion, customization of viewing screens can be set and locked within the templates if desired.

LINKING SUPPORTING DEVICE MAINTENANCE DOCUMENTATION

Field Device Manager provides quick and easy access to any document, image, or file useful in engineering or maintaining a field device. All such documents are linked to the Identification tab in the device info template. If desired, other documents can be linked to individual tagged instances, as well as to any block template.

The document linkage system opens files in the same fashion as the My Computer functionality of a PC. The linked document may be of any Windows® file type, including Adobe® Acrobat portable documents (.pdf), Microsoft® Word documents (.doc or .docx), Excel® spreadsheets (.xls or .xlsx), text files (.txt), and PowerPoint® slide shows (.ppt). A click of the link opens the file in its native application, as shown by the pdf opened in Acrobat Reader in Figure 9.

As diagrams and pictures are often useful in managing a device, a second file linkage area in the upper left allows connection of JPEGs and bitmap images, which are opened in the lower right area of the Identification tabs of the device and block views.

Do you ever find it useful to leave notes for others in your plant about a specific model or tag of a field device? Field Device Manager allows notes about the device and its blocks to be attached at the template level, or added in at the tag level for a specific device or block instance. Both the Control Editors and Field Device Manager have built-in user help systems to guide you in their use.

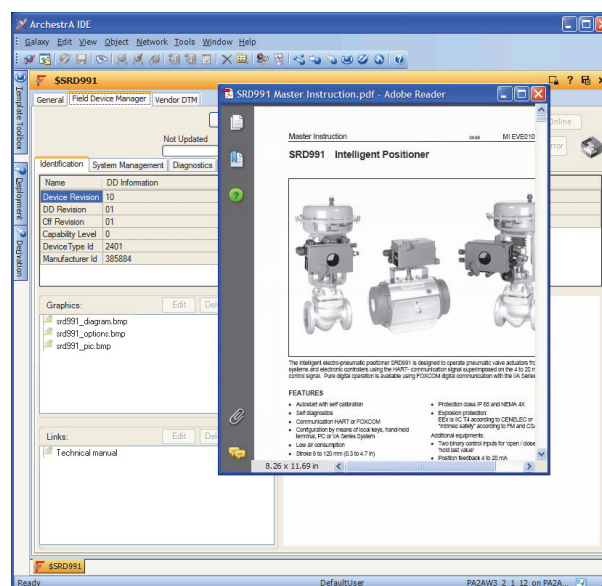


Figure 9. Identification Page with Linked Document

CUSTOMIZABLE DEVICE AND BLOCK VIEWS

Field Device Manager offers many displays beyond the traditional configuration screens. Device information is organized into separate displays for the device itself and for each device block. For devices, the Field Device Manager Diagnostics tab is a real-time composite display of user-selected parameters for each block type (Figure 10).

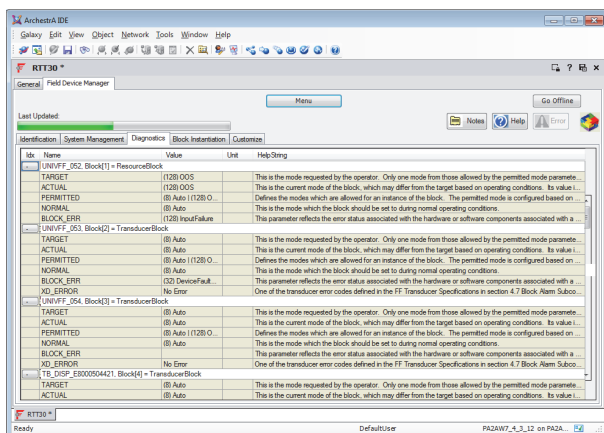


Figure 10. Device Diagnostics Tab

For each block template and instance, Field Device Manager contains a set of standard and user-defined tab pages: Identification, Configuration, Diagnostics, and Compare tabs. The user can set up as many, or as few, custom tabs for each block as desired. Typically, most customization is done in the block templates in the device template folder. The following types of tabs are supported.

- ▶ The Diagnostics tab (Figure 11) is an on-line, continuously updating screen showing the most recent data values from the device.
- ▶ The Watch Tab – Trend Format (Figure 12) displays a real-time trend of up to eight parameters of a device block.
- ▶ The Watch tab – Table Format (Figure 13) displays sampled parameter data, with each row of the table representing a scan of the device.

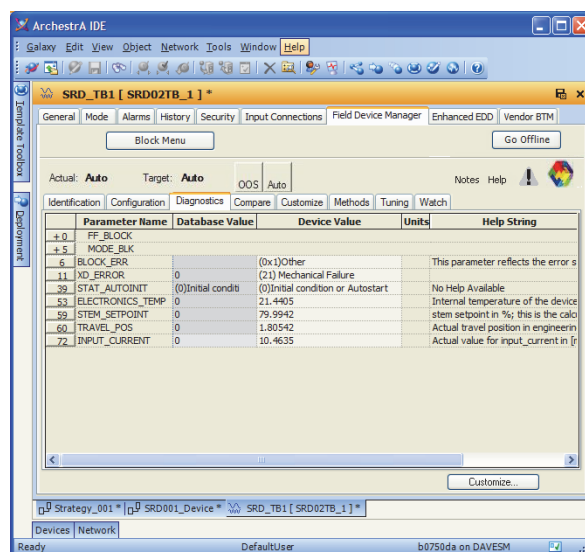


Figure 11. Transducer Block Diagnostics Tab

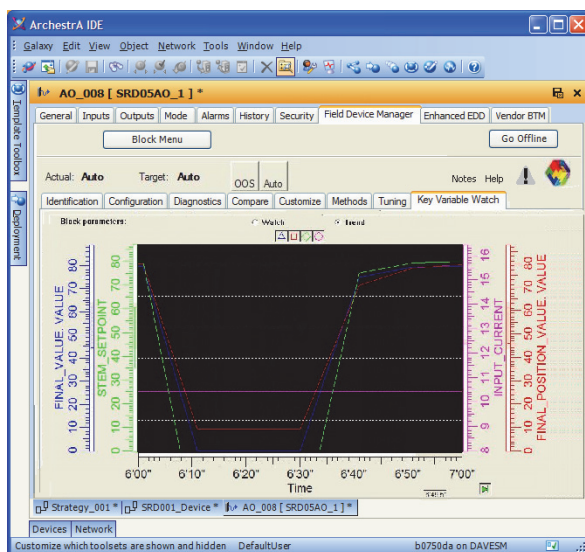


Figure 12. Watch Tab with Trend Format

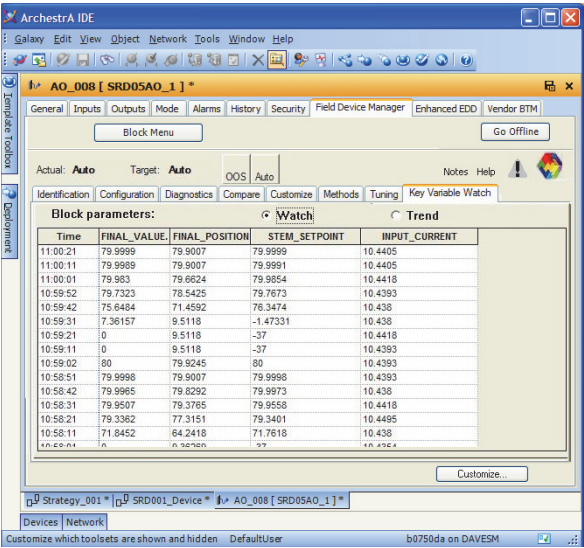


Figure 13. Watch Tab in Table Format

- ▶ The Configuration tab (Figure 14) is used either off-line or on-line to enter device block parameter settings into the Field Device Manager database, and on-line to download those changes to the device.

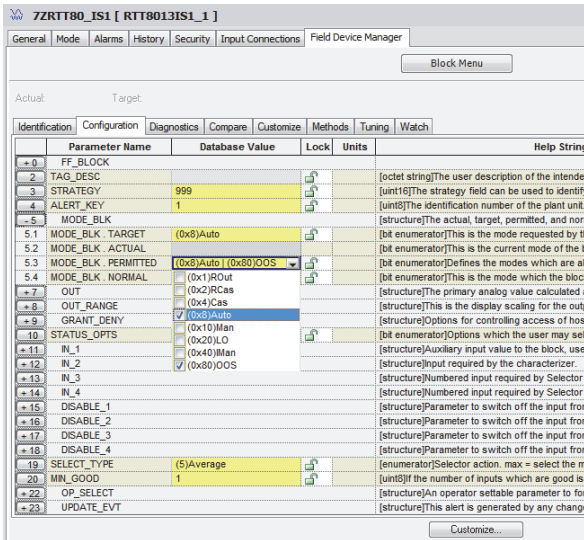


Figure 14. Configuration Tab

- ▶ Tuning tab (Figure 15) is an on-line display having an upper portion that allows setting parameters in the device block and a lower portion where the response of up to eight dynamic parameters can be watched in either tabular or trend format. Typically, the set parameter is not a static parameter (that is, configured once), but rather a state command or tuning type parameter. In the Figure 15 example, the user has given a valve positioner an autostart command to begin the valve's self-calibrate routine, and is now watching the auto initiate status, block errors and transducer errors in the lower half of the tab.

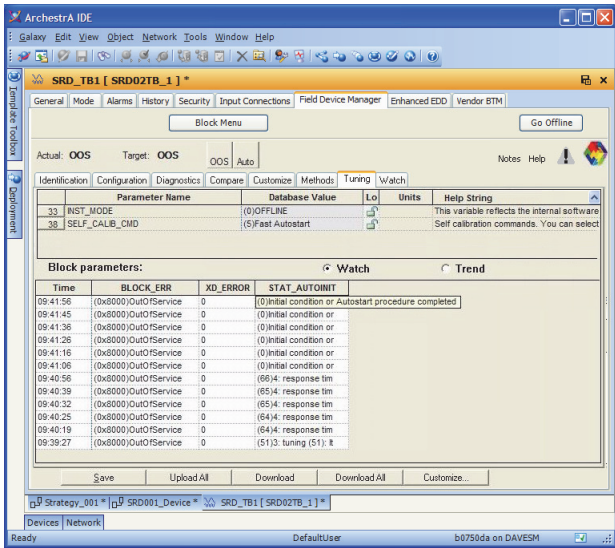


Figure 15. Monitoring Tuning Changes

RUNNING DD METHODS

Each block view also includes a dedicated built-in user interface for running and interacting with DD method execution. Typically these methods are device calibration and commissioning routines. The Methods tab (Figure 16) are divided into three areas:

- ▶ The upper portion lists the method choices available.

- ▶ The middle portion shows progress of the method execution in the form of messages to and from the device.
- ▶ The lower portion is a configurable watch window displaying up to eight block data variables in either trend or table format.

Methods typically require user interaction, as evidenced by the dialog box in Figure 16 where the user must confirm everything is ready for the device to go out of service and begin its self-calibration routine.

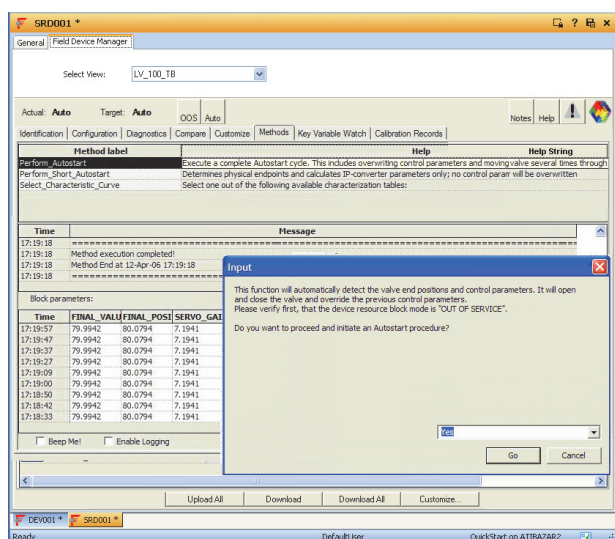


Figure 16. Executing Device Methods

DEVICE COMMISSIONING MADE EASY

Field Device Manager provides intuitive and highly automated utilities to make device commissioning fast and efficient, eliminating the need to download block parameter settings one device at a time.

Automated Matching of Tags with Devices

The Match Device Utility dialog box (Figure 17) displays the tags assigned to each segment, shows whether they have been matched with an installed device and identifies which of the following tasks need to be performed to complete device commissioning:

- ▶ Setting the device PD_Tag to match the database tag name
- ▶ Moving the device from a temporary address to a permanent location
- ▶ Instantiating blocks that are in the device configuration (and removing instantiated blocks that are not in the configuration)
- ▶ Downloading system management parameters specified for download in the configuration
- ▶ Assignment of the Link Master role if specified in the device configuration.

(The first four tasks are performed by the Prepare Device Utility. The Link Master assignment is part of control database deployment.)

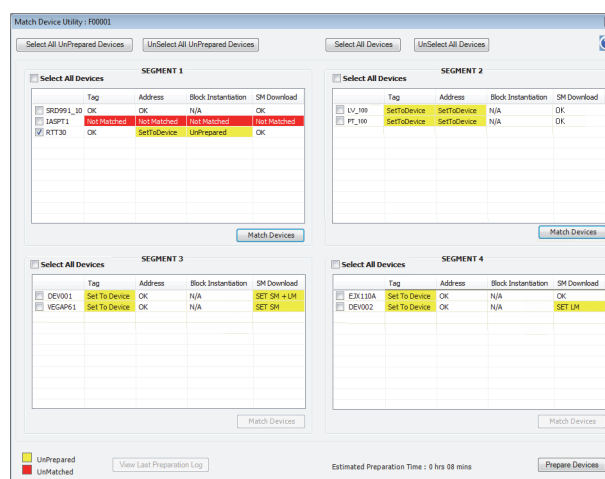


Figure 17. Match Device Utility

From the dialog box, you can open a live list for each segment (Figure 18) which automatically matches database tags with physical devices, and for each matched device enables you verify the fieldbus connection, specify a permanent device address, and change the database name to be set in the device.

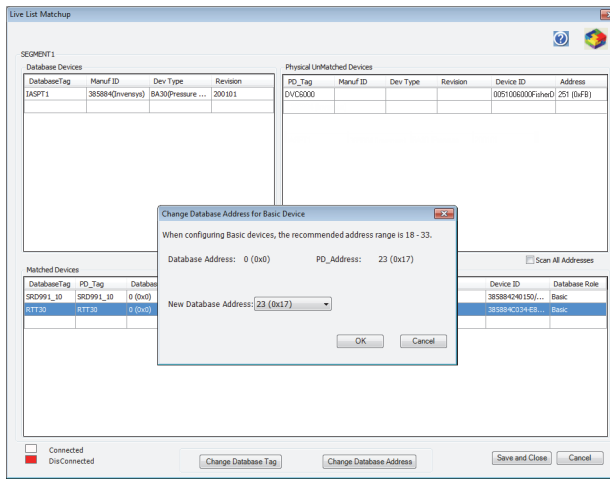


Figure 18. Live List Matchup Dialog Box

Bulk Device Preparation

While device matching is performed one segment at a time, final device preparation can be accomplished in a single automated session that puts multiple FBMs to work preparing devices for one or more control processors. This bulk device preparation performs the device preparation tasks needed for each device (usually setting the PD_Tag and PD_Address, but if required, instantiating blocks and downloading System Management parameters), bypasses fully prepared devices and unmatched devices, and creates a complete log of the session.

Control Database Deployment

Once the H1 devices have been properly tagged, you can enable control for devices one at a time, or preferably enable control for all devices attached to an FBM228. When control is enabled, the FBM

automatically configures each device as follows:

- ▶ Sets the device's boot operational class according to the configuration in the Control Editors, and restarts the device if needed to implement a change
- ▶ Downloads resource and transducer block parameters
- ▶ Downloads standard parameters and extended parameters on the user-defined download list for each function block assigned to the device.

SYNCHRONIZATION OF DEVICE AND HOST DATABASES

Do the host and the device both agree on how the device is configured? They should. Each block view in Field Device Manager has a Compare tab (Figure 19), which is used for manual comparison and synchronization between the host database and device database. A pull-down menu allows various sets of parameters to be displayed for comparison, including all device parameters. Synchronization is accomplished by selecting one or more parameters, and then either uploading the device value into the host database or downloading the host database value to the device.

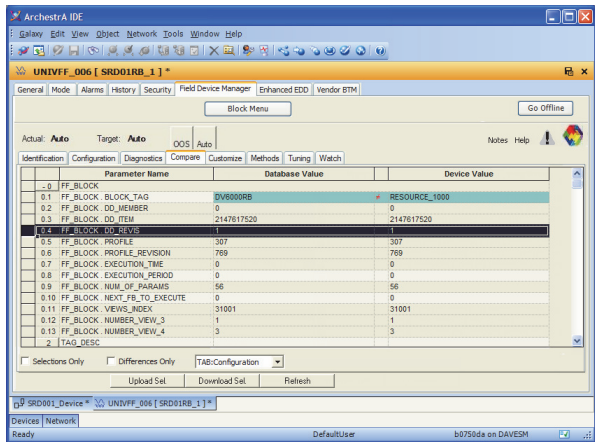


Figure 19. Comparing the Host and Device Database

DIAGNOSING FIELD DEVICE PROBLEMS

The largest economic benefit of FOUNDATION fieldbus technology is the ability to achieve operational savings by better managing, diagnosing, and maintaining field devices. With traditional instrumentation and maintenance tools, many customers report they spend more than 50% of their device maintenance effort on routine instrument checks and callouts where no problem is found.

Field Device Manager leads to dramatic improvements in the uptime and performance of the field devices themselves, as well as improved productivity of the instrument maintenance personnel.

Maintenance staff can quickly examine device status and diagnose problems. Activities can be performed at PCs located conveniently in areas where maintenance staff work, eliminating the need to make trips out to the device. Field Device Manager screens can be customized to optimally present the right information in the best way to the maintenance personnel. Trend and tabular watch screens can be particularly useful in dynamically observing device behavior.

ENHANCED EDDL

One of the benefits of the enhancements to the DD language is that the language allows the device vendor to organize and define content of screens used for on-line viewing of field devices at a block or device level. It now becomes possible to define gauges, trends, histograms, and embedded graphic images in the DD files. Figure 20 shows a trend view of two different input blocks of a field device, and a menu of screens to see process variables, sensor diagnostics and other screens.

Figure 21 shows a gauge display and a comprehensive device diagnostic page.

Even when using Enhanced DDs, definition of additional displays and their customization are possible through Field Device Manager.

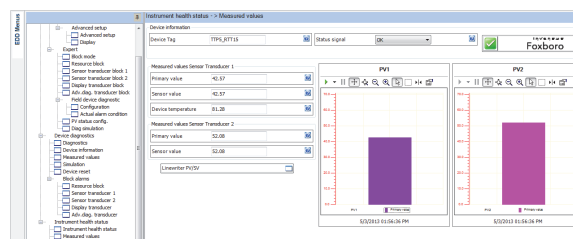


Figure 20. Trends From Two Different Input Blocks Viewed From the Device Level.

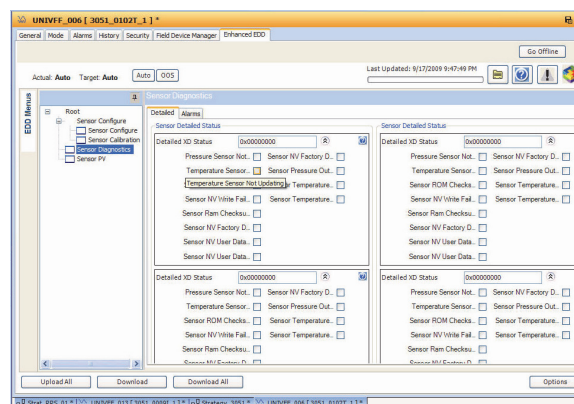
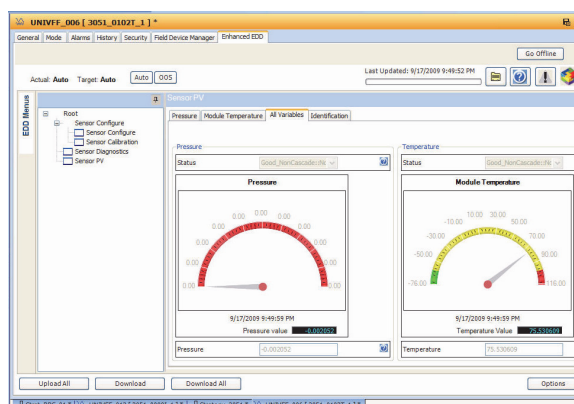


Figure 21. EDDL Gauge and Diagnostic Page

ADVANCED DEVICE SPECIFIC DIAGNOSTICS AND FDT COMPLIANT DTMS

Often the most dramatic improvements in device uptime are achieved through the use of device-specific user interfaces that allow executing, viewing, and documenting on-line and off-line tests of control valves. The DTMs offered by vendors of valve positioners are an excellent example, as they offer capabilities to perform continuous on-line examination of valve and positioner health and performance data (Figure 22), and also provide off-line tests for in-depth diagnostic evaluation.

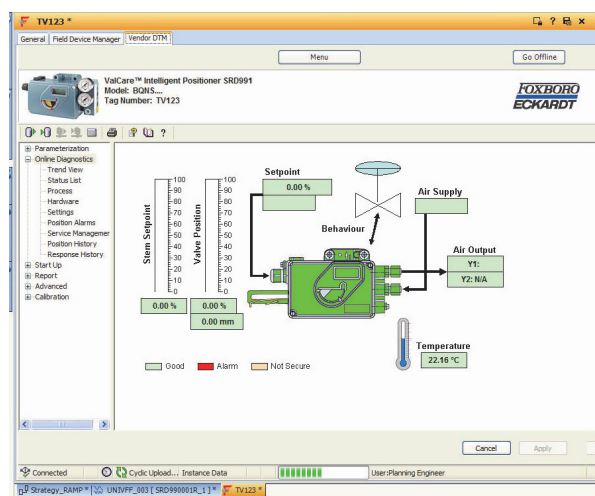


Figure 22. Valve Response History

On-line tests in these DTMs can provide the following indicators:

- ▶ Load for opening can indicate seat wear in butterfly valves or crystallization in ball valves
- ▶ Increased stem friction can indicate a sticking valve, and is a predictive indicator of accuracy problems or complete valve failure
- ▶ Decreased stem friction can point to excessive wear or a valve shaft break

- ▶ Abnormal changes in spool valve position may evidence problems such as an air leak in the actuator
- ▶ Dynamic deviation can help you assess how responsive the valve is
- ▶ Steady state deviation can indicate how accurately the valve achieves setpoint
- ▶ Partial stroke testing of valves in ESD applications can indicate if the valve will be able to operate on demand (Figure 23).

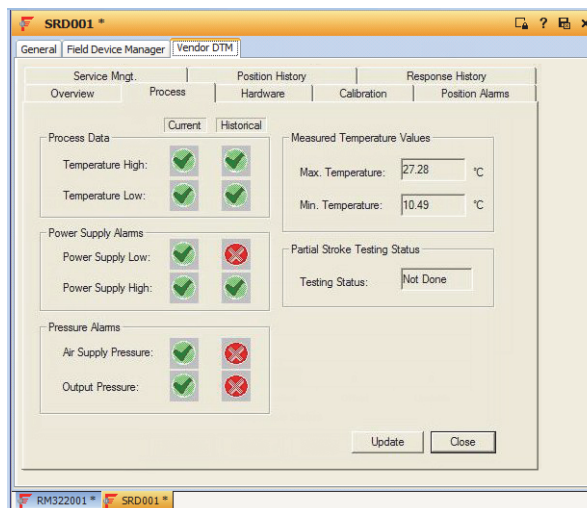


Figure 23. Valve Process and Partial Stroke Status

Many vendors provide a built-in help system to guide use of their DTMs (Figure 24).

Vendors typically provide off-line tests that can drill down even deeper into valve problems and performance. For example:

- ▶ Step response tests (Figure 25) can indicate how well the valve follows setpoint, and validate how well the positioner is tuned.
- ▶ Signature tests can validate valve performance. The ability to archive and restore past valve signatures can help benchmark valve performance changes.

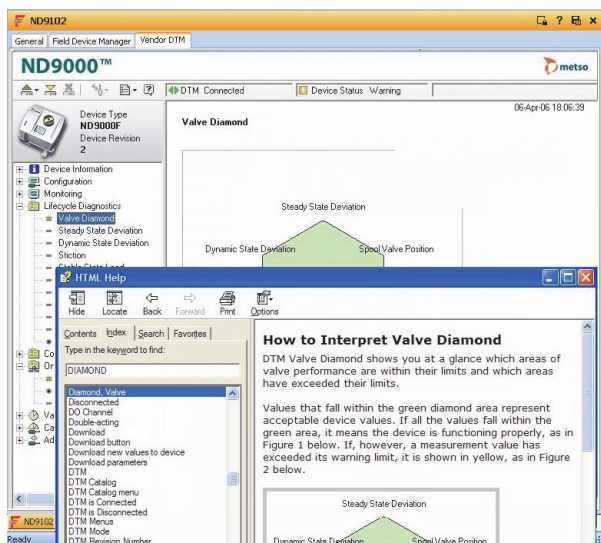


Figure 24. Help File Explains Valve Diamond Analysis

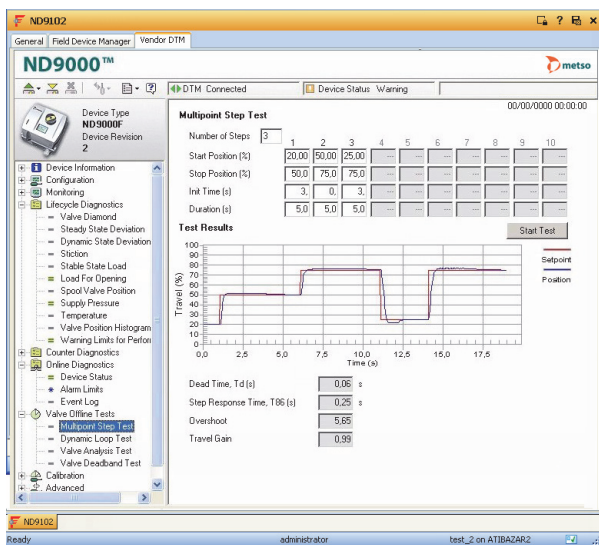


Figure 25. Multipoint Step Response Test

FIELD DEVICE MANAGER – INSTRUMENT WORKSHOP EDITION

The full Control Room edition of Field Device Manager has all the features previously described. This edition is used on workstations running Foxboro Evo Control Software with Foxboro Control Processors and FBM228 H1 interface cards.

In addition, the Control Editors and Field Device Manager are offered in a bundled Instrument Workshop edition. This edition is used off-platform to calibrate, pre-commission, and test instrumentation prior to installation and connection to the FBM228. This edition interacts with the resource and transducer blocks of the field device, for the following functions:

- ▶ Running methods in the DD files through Field Device Manager
- ▶ Exercising off-line diagnostic tests, or running commissioning or calibration functions contained in an FDT compliant DTM made by the device vendor
- ▶ Diagnosing the device using the universal screens of the Field Device Manager
- ▶ Setting or changing the tag of the device
- ▶ Running the Device Preparation Wizard to tag a device prior to connection to the automation system.

SYSTEM ARCHITECTURE

Figure 26 illustrates the full Control Room edition of Field Device Manager.

A computer on The Mesh network should be used for the workstation having the Galaxy Repository.

Field Device Manager can be installed on any computer having a Control Editors client.

If the Control Editors client is on The Mesh network, the Field Device Manager has on-line interaction capability with field devices.

If the Control Editors client is off The Mesh network, the Field Device Manager will have only off-line configuration capability with respect to field devices.

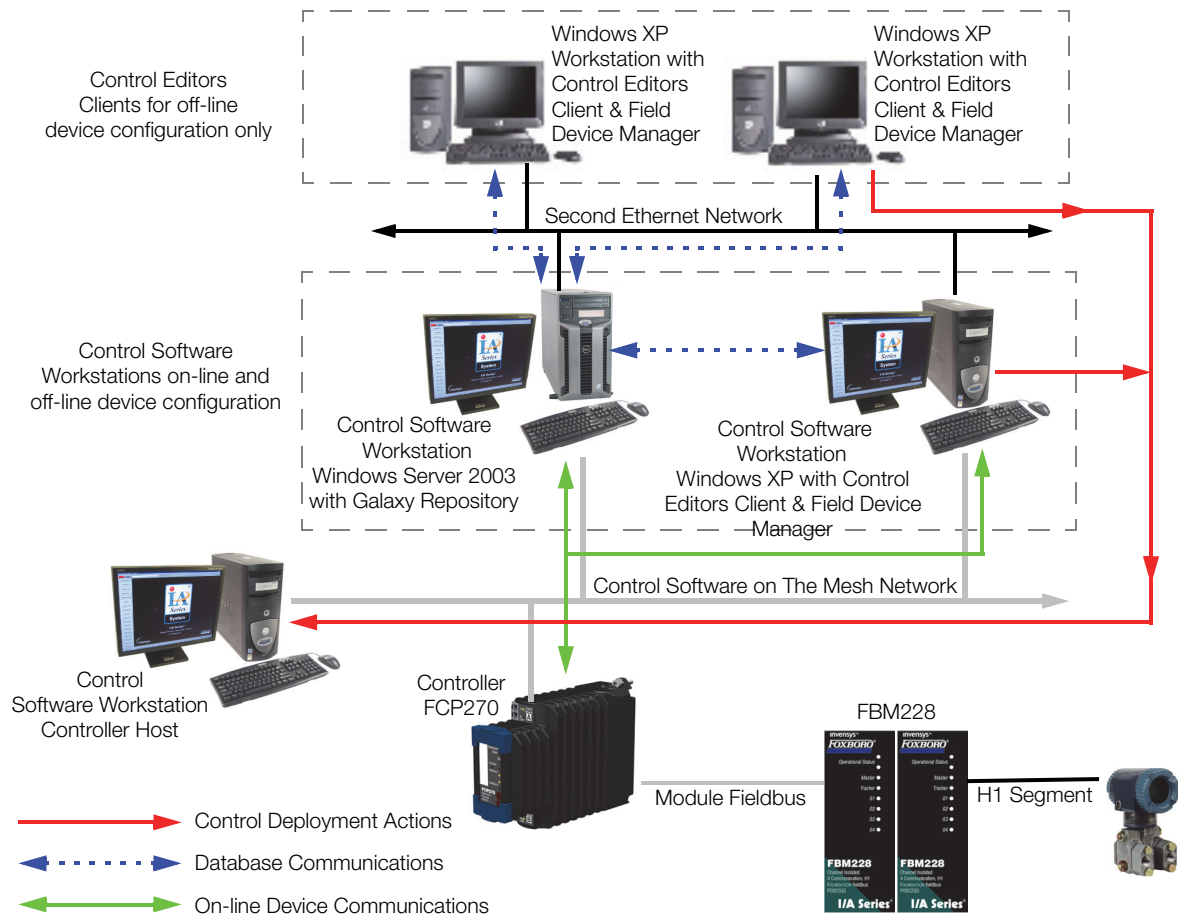


Figure 26. Typical System Architecture of Foxboro Evo Control Editors and Field Device Manager

HARDWARE AND SOFTWARE REQUIREMENTS

CONTROL ROOM EDITION

Hardware

Follow the hardware requirements for the Control Editors as specified in *Control Editors* (PSS 31S-10B3 B3).

Software Minimum Requirement

- ▶ Workstation Software License for both the Control Editors and Field Device Manager
- ▶ Computers having the Control Editors Server license should be sized for the I/O points of all control processors for which the Control Editors keep the database.

INSTRUMENT WORKSHOP EDITION

Hardware

- ▶ Laptop, desktop, or server class computer with 2.18 Ghz (or faster) Intel Pentium® 4 processor (or higher), minimum of 16.0 GB free hard disk space, and minimum of 2.0 gigabytes RAM
- ▶ DVD or CD drive
- ▶ Video Graphic Accelerator Card: 32 MB of memory
- ▶ Communications Network: 100 MHz TCP/IP Switched Ethernet with National Instruments H1 interface card for one H1 segment compatible with the computer
- ▶ H1 junction devices, power supplies, and fieldbus terminations to connect the field device.

Software Requirements

- ▶ Windows XP Professional operating system with Service Pack 2, Windows Server 2003 operating system with Service Pack 1, Windows 7 Professional operating system with Service Pack 1, or Windows Server 2008 R2 Standard operating system
- ▶ Field Device Manager Workshop edition V2.0 or later media kit including licenses for one install of Microsoft SQL Server™ 2005 database software, Microsoft Visio® drawing software, the Galaxy Repository, Control Editors and Access Manager, Field Device Manager, and Control Software support for FOUNDATION fieldbus

HARDWARE AND SOFTWARE REQUIREMENTS (CONTINUED)

RELATED PRODUCT SPECIFICATION SHEETS

For an overview of the Invensys FOUNDATION fieldbus solution, refer to *Control Software with FOUNDATION™ fieldbus* (PSS 31S-10B10 B3).

For detailed information about the FBM228, refer to *FBM228 FOUNDATION fieldbus Interface Module* (PSS 21H-2Z28 B4).

