METSO Neles ND9000 Valve Controller via Profibus PA to the PlantPAx Process Automation System
Important User Information

Solid-state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (publication SGI-1.1 available from your local Rockwell Automation sales office or online at http://www.rockwellautomation.com/literature/) describes some important differences between solid-state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid-state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

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The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

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**WARNING**: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

**ATTENTION**: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

**SHOCK HAZARD**: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.

**BURN HAZARD**: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.

**IMPORTANT**

Identifies information that is critical for successful application and understanding of the product.

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**Introduction**

The purpose of this document is to provide a simple proven step by step guide to integrating and configuring the Metso Neles Valve controller into the Rockwell Automation PlantPAx process Automation System using process networks. These include HART, FOUNDATION Fieldbus and Profibus PA. This document is intended to provide a tested method to quickly connect to and communicate with the field device. It is not meant to show all of the methods nor is it intended to be a detailed document pertaining to all of the features, capabilities, and application of the field devices.

To supply robust system solutions, Rockwell Automation pre-tests many third-party manufactured HART, FOUNDATION Fieldbus, and PROFIBUS PA field devices in the system test laboratory for compatibility with the Rockwell Automation PlantPAx process automation system. Each field device is connected to the PlantPAx system and is subjected to interoperability testing procedures similar to operating procedures in your plant. The results of each field test are recorded in a test report for integration planning purposes.

For this field device, an additional step provides an integration document and interoperability statement for each tested instrument. The Integration Document provides information on installation, configuration, startup, and operation of the integrated system. The interoperability statement is assurance that the field device meets PlantPAx system interoperability performance measures, as established by Rockwell Automation. Both the integration document and interoperability statement help reduce risk with ease of integration.

The overall purpose of this document is to provide you with proven solutions that combine field instrumentation with fieldbus networks, such as HART, FOUNDATION Fieldbus, and PROFIBUS PA networks, with asset management capabilities and Rockwell Automation’s system capabilities to provide a total engineered solution.

Through pre-engineered integration in support of increasing requirements for plant-wide control, the document offers the following benefits:

- Reduced integration costs throughout engineering, commissioning, and start-up
- Optimized plant availability and output
- Ensured product quality and consistency
- Optimized traceability to meet regulatory demands
- Predictive maintenance through intelligent instruments
For new construction, process improvements at an existing plant, or operating cost reductions, the benefits are:

- Reduces risk, reduces integration costs, and protects investment with pre-engineered interoperability. Both companies believe open systems and standardized interfaces bring maximum benefits.
- Advanced diagnostics with plant-wide control provides better visibility of plant health and easier access to instrument diagnostics, which ultimately leads to faster troubleshooting and improves decision-making.
- Collaborative lifecycle management leads to improvements in design, engineering, and startup and support of plants. This collaboration increases productivity, manages information about instrumentation assets, optimizes plant assets, and results in a complete lifecycle management solution.

Application Overview

This document provides a step-by-step approach to integrating a Valve Controller via PROFIBUS PA into a Rockwell Automation PlantPAx process automation system.

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<td>Details about the field instrument and control system.</td>
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<td>System Details</td>
<td>Specifications on the required hardware and software components.</td>
</tr>
<tr>
<td>Installation</td>
<td>How to install and connect the instrument, linking device and other components.</td>
</tr>
</tbody>
</table>
| Configuration        | How to:
|                      | • Configure the 1788-EN2PAR linking device. |
|                      | • Configure the field device. |
| Visualization        | How to implement and configure a graphical display of device information. |

The ControlLogix platform provides a robust EtherNet/IP backbone for communication to process fieldbus networks. The PlantPAx architecture uses producer/consumer technology, allowing input information and output status to be shared by all ControlLogix controllers in the system. This integration document assumes you have a working knowledge of ControlLogix systems. For more details regarding the equipment and tasks described in this document see additional resources.

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This integration document assumes you have a working knowledge of ControlLogix systems. For more details regarding the equipment and tasks described in this document go to the Rockwell Automation Literature library at www.rockwellautomation.com and www.rockwellautomation.com/knowledgebase

The AOP can be downloaded from Rockwell Hiprom at www.hiprom.com.

Device files can be downloaded from www.metso.com/valves
The ControlLogix platform provides a robust EtherNet/IP backbone for communication to process fieldbus networks. The PlantPAx architecture uses producer/consumer technology, allowing input information and output status to be shared by all ControlLogix controllers in the system. This integration document assumes you have a working knowledge of ControlLogix systems. For more details regarding the equipment and tasks described in this document see additional resources.

This diagram is an example of a PlantPAx system used for testing. It is based on EtherNet/IP network backplane with I/O for HART and 1788-EN2PAR and 1788-EN2FFR linking devices for FF and Profibus PA. The personal computer has the following software packages for programming and configuring the system and field components: RSLogix V20, RSLinx, FactoryTalk View, and AssetCentre software. Other tools are available from the device vendors such as hand held programmers and software packages.
Device Information

Intelligent Valve Controller, Series ND9000

Neles ND9000 is a top class intelligent valve controller designed to operate on any valve and actuator type in all industry areas. With unique performance features, it ensures maximum control accuracy in all operating conditions. The diagnostic capabilities provide the user with valuable information as a basis for predictive maintenance. For more details see ND9000 Installation, Maintenance and operators Instructions (7ND9071en.pdf) (www.metsoautomation.com/ND9000).

- Enclosure options
  - ND9100: Anodized aluminum alloy and polymer composite
  - ND9200: Anodized aluminum alloy and tempered glass
  - ND9300: Full 316 stainless steel

- Communication options
  - ND9000H HART
  - ND9000F, FOUNDATION Fieldbus H1
  - ND9000P Profibus PA

- Wide coverage of hazardous area approvals (Explosion/Flame proof, Intrinsically safe)
  - ATEX, IECEx, cCSAus, Inmetro, GOST R

- Single device for double and single-acting actuators, as well as linear and rotary valves

- Simple and fast commissioning (only 4 parameters needed: signal, rotating direction, actuator type, fail safe action)

- 3 types of spool valves for different actuator sizes
  - Small actuators < 1 dm³ = 2 mm spool valve ≥ 5 Nm³/h / 3 scfm
  - Medium actuators 1 dm³ - 3 dm³ = 3 mm spool valve ≥ 12 Nm³/h / 7 scfm
  - Large actuators > 3 dm³ = 6 mm spool valve ≥ 38 Nm³/h / 22 scfm

- The adaptive control algorithm together with the intelligent nozzle / flapper system ensures best control results even under changing process and environmental conditions.
  - Dead band ≤ 0.1% / hysteresis < 0.5% (according to IEC61514 measured with a diaphragm actuator at moderate constant-load in ambient temperature).

- By continuous monitoring of the supply and actuator pressure
  - leaks in the control system can be identified and compensated
  - best control results will be achieved even with external instrumentation components (volume booster)

- Valve specific functions (dead angle, cut-offs and valve characterization) integrated.
• Local user interface enables easy usage of the device
  – Parameterization and calibration
  – Measurements: input signal, valve position, temperature, supply pressure, actuator pressure difference
  – All warnings, alarm messages as clear text messages in English, German, French
• Extremely high vibration resistance
• Continuous self-monitoring, as well as online, counter and lifecycle diagnosis enables
  – rapid detection of faulty components
  – accurate assessment of the specific valve performance
  – statement about negative process and environmental influences
  – assessment of the performance of the superior controller
• All diagnostic data are stored in the device over the entire operating period (up to 25 years)
• The event log stores up to 8000 events (alerts, alarms, notes)
• Performance view
• Supports FDT/DTM technology
• Advanced offline-tests according IEC61514 / ISA 75.25-2000
  – Multipoint step response test
  – Hysteresis test
  – Valve analysis test
  – Dead band test

Control System

The control system includes these components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller</td>
<td>The ControlLogix controller is a modular, high performance control that uses RSLogix 5000 programming software to configure, program, and monitor a system.</td>
</tr>
<tr>
<td>FOUNDATION Fieldbus linking device</td>
<td>The 1788HP-EN2P AR is a PROFIBUS PA master linking device to an EtherNet/IP network for a PROFIBUS PA field device network capable of supporting process instrumentation. It is a true PA master, linking directly to the PA network with built-in PA power conditioners. The EN2P AR and PA field devices are added directly into the RSLogix 5000 I/O tree. The EN2P AR supports FDT (Field Device Type) / DTM (Device Type Manager) technology. The 1788HP-EN2P AR provides a fast and integrated solution for adding PROFIBUS PA field devices to any Logix5000 platform. This linking device provides a direct link between PROFIBUS PA and EtherNet/IP with no intermediate PROFIBUS-DP layer required. The module supports a maximum of 24 field devices and can supply a 500 mA per trunk.</td>
</tr>
</tbody>
</table>
Hardware Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profibus PA communication module</td>
<td>1788-EN2PAR</td>
</tr>
<tr>
<td>Stratix 8000 switch</td>
<td>1783-MS1OT</td>
</tr>
<tr>
<td>Allen-Bradley power supply</td>
<td>1606-XLE</td>
</tr>
<tr>
<td>ControlLogix controller</td>
<td>1756-L7x</td>
</tr>
<tr>
<td>EtherNet/IP communication bridge</td>
<td>1756-EN2TR or 1756-ENBT</td>
</tr>
<tr>
<td>Termination</td>
<td>Hiprom FBJB6 or P+F SP JB 08</td>
</tr>
</tbody>
</table>

For further details, see the PlantPAx Process Automation System Selection Guide, publication PROCES-SG001.

Software Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSLinx 5000 Enterprise Series programming software, Professional edition Includes: • RSLinx Classic software</td>
<td>9324-RLD700NXENE</td>
</tr>
<tr>
<td>FactoryTalk View Site Edition (SE) software (optional)</td>
<td>9701-VWSXXXXXENE</td>
</tr>
<tr>
<td>FactoryTalk AssetCentre server</td>
<td>9515-ASTSRVRENE</td>
</tr>
<tr>
<td>FactoryTalk AssetCentre process device configuration</td>
<td>9515-ASTPDCFENE</td>
</tr>
<tr>
<td>FieldCare Standard Asset Management software (optional)</td>
<td>—</td>
</tr>
</tbody>
</table>

For specifications of the engineering workstation (EWS) and operator workstation (OWS), see the Integrated Architecture for Process Control System Recommendations Reference Manual, publication PROCES-RM001.
Connect a **ND9000F Foundation Fieldbus Valve Controller**

The ND900P is powered by the Profibus PA network (IEC 61158-2). The same bus cable is used also for the fieldbus communication. The bus cable is led through a:

- M20 x 1.5 cable gland, or
- 1/2 NPT cable gland

Connect the conductors to the terminal strip as shown below.

**Figure 1 - ND9000P Terminals**

Reverse polarity protection permits connection of the bus cables in any order. Suitable connection plug (Fieldbus Connector) can be mounted on cable gland to provide uniform connection to fieldbus network.
Assembly Related Parameter Settings

The configuration parameters shall be defined based on valve assembly. Parameters can be set via device DTM or via LUI (local user interface). For details see ND9000 Installation, Maintenance and operators Instructions (7ND9071en.pdf) (www.metsoautomation.com/ND9000).

Note that to make the device available for cyclic Profibus communication, the device address must be changed from the default (126) to an address that is suitable for the application.
5.2 Guided start-up

Guided startup offers a fast view of the most critical parameters of the ND controller, actuator and valve configuration. After verifying the parameters the valve travel calibration is recommended. The guided start-up is entered by pressing the \( \text{)} \) and \( \text{)} \) keys simultaneously.

The configuration parameters are listed in following order, see explanation from 5.5:

- Valve type \( \text{VTYP} \)
- Actuator type \( \text{ATYP} \)
- Positioner fail action \( \text{PFA} \)
- Valve rotation direction \( \text{ROT} \)
- Valve dead angle \( \text{A0} \)
- PA address \( \text{ADR} \) (ND9000P only)

If you modify any of the parameters you will also need to calibrate the device. See 5.6 for detailed description.

**NOTE:**
You may cancel any action by pressing the \( \text{)} \) button. Cancelling of operation returns user interface view one level up in menu hierarchy.

![Diagram](image_url)
Fieldbus Connector

The connection technology of PROFIBUS PA allows measuring devices to be connected to the fieldbus via uniform mechanical connections, such as T-boxes, distribution modules, etc. This connection technology, which uses prefabricated distribution modules and plug-in connectors, offers substantial advantages over conventional wiring.

- Field devices can be removed, replaced or added at any time during normal operation. Communication is not interrupted.
- Installation and maintenance are significantly easier.
- Existing cable infrastructures can be used and expanded instantly; e.g., when constructing new star distributors using 4-channel or 8-channel distribution modules.

1. Insert plug (2) into bushing (3).
2. Screw firmly.
3. Ground the device according to the desired safety concept.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ground</td>
</tr>
<tr>
<td>2</td>
<td>Signal +</td>
</tr>
<tr>
<td>3</td>
<td>Signal -</td>
</tr>
<tr>
<td>4</td>
<td>Not connected</td>
</tr>
</tbody>
</table>
Connect a Field Instrument

The 1788-EN2PAR linking device is designed to operate within the Rockwell Automation PlantPAx system using EtherNet/IP as the communication backbone to the PROFIBUS PA process device network. All power required for the module's operation is derived from an external 24V power supply. For current consumption, please refer to electrical specifications in the EN2PAR user manual.

The current status of the linking device is conveyed to the user by means of the LCD display.

The following information is stored in the 1788-EN2PAR and is available to the PlantPAx process automation system.

- Eight input process variables (PVs) and eight output PVs from as many as 24 Profibus PA field devices
- Diagnostics from the 1788-EN2PAR module
- Extended diagnostics of each Profibus field device

The 1788-EN2PAR and field devices can be connected through a junction box (complying with IEC.61158-2), such as the 1788HP-PAJB-4.

Power Connection

The 1788-EN2PAR requires 9…32V input to operate. Optionally, you can install a second power supply (for redundant purposes) to the module.
Profibus PA Connection

The Profibus PA network must be connected via the PA terminal on the module.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right</td>
<td>PA +</td>
</tr>
<tr>
<td>Middle</td>
<td>PA -</td>
</tr>
<tr>
<td>Left</td>
<td>Shield</td>
</tr>
</tbody>
</table>

The PA cable color code is used as set in IEC61158-2 physical layer specification.
Set the IP Address of the Linking Device

The module connects to an Ethernet network using an RJ45 connector. The module ships with BOOTP enabled. You can set the IP address by using a BOOTP server or the hardware switches. The hardware switches are located under the front cover as shown below. The Page button toggles between different diagnostics on the display.

In this application, the Ethernet port connects the linking device to a ControlLogix system via a 1756-EN2TR module.

With this address, the module boots with IP address: 192.168.1.091.

With this address, the module boots with BOOTP enabled.

For normal BOOTP operation the switches must be set to 000.
You need the following software to configure and use the 1788-EN2PAR:

- Add-on profile (AOP)
- 1788-EN2PAR device type manager (DTM)

Both the applications can be found on the product CD or the Hiprom Technologies website: [www.hiprom.com](http://www.hiprom.com).

To install the AOP and DTM go to the Hiprom site and download the files. Then open RSLogix 5000.

Also just a reminder to download and install any GSD, DD or DTMs that might be required by going to the METSO website at [www.metso.com/valves](http://www.metso.com/valves).

**Configure via RSLogix 5000 Software**

Use RSWho Active to verify the active devices, as shown below.
1. In RSLogix 5000 software, create a new project.

![RSLogix 5000 menu](image)

2. Enter the controller information and click OK.

![New Controller dialog box](image)

3. Right click the 1756 Backplane and choose New Module to add the EtherNet/IP module.

![I/O Configuration](image)
4. Select the EtherNet/IP communication module and click Create.

5. Enter the IP address for the module (192.168.1.111 in this example).
6. Click OK.

The module should appear in the I/O configuration tree.

7. Select the Ethernet network and choose the linking device.

8. Click Create.
9. Enter the configuration data for the linking device and click OK.

The I/O configuration tree screen should look similar to this.

The default requested packet interval (RPI) for the module is 300 ms. The RPI determines the amount of Class 1 data that requests send for the field devices. If there are many field devices on the network and the RPI is set too low, the field devices will not be able to update in time and all acyclic PA data will be slow as Class 1 data is prioritized. Please see Class 2 MPPF in the master configuration.
10. Right-click the module in the I/O configuration tree and choose Properties.

11. Choose the Configuration tab.

12. Enter configuration information for the linking device and click OK.

13. Use Who Active to create a communication path.

14. Select the controller.
15. Click Download and go online with the controller.

16. Click Download again.

17. Click Yes and verify the online screen status.
18. Select the 1788-EN2PAR in the I/O tree and choose Properties.

19. Click the Configuration tab and select master (1) configuration.

20. Choose Scan Network.
21. Select the GSD File.

22. Click Scan Network.

23. If the new device is found click OK.

By default, all Profibus PA devices are set at address 126. You can modify the default address by pressing the keys on the operator interface on the device.

Or you can change the address on the Configuration tab.

24. If the new device is not found, click Process Catalog.

This launches the utility that manages the GSD files and DTMs.

a. Choose Profibus PA > Compile GSD Catalog.

When complete, devices with GSD files are displayed in the left pane.

The default device settings shown can be changed; see the appropriate device documentation. You cannot configure a device for cyclic communication unless the GSD file is in the Process Utility Catalog and the catalog has been updated.

b. Click OK.
25. Click Download.

26. Click the Configuration tab.

27. Select Readback Pos D and make the following Input Output selections.
28. Click OK and then click Download.

29. Add the following logic and tags to the program to write a real value to the Output PV tag for the device.
30. Save the logic and go online.

31. Open the Properties tab for the device and choose Status and Select PV Data.

The following should appear with live data. All appropriate fields should be green.

This example does not show the output 1 SP.

Once the configuration is complete, you can download the configuration to the 1788-EN2PAR device. The device saves the configuration in non-volatile memory. If the power is cycled then the module uses the last configuration saved.
Device Type Manager (DTM)

The DTM can be used either in the profile with the ThinFrame or using a FDT Frame (such as AssetCentre or FieldCare software).

The ThinFrame can only view diagnostics of the field device. The user will need a FDT frame to configure and parameterize the field device.

NOTE: At the time of this writing the DTM Thinframe function was not functional with the Metso DTM format and a future release from Hiprom will fix the problem. An example of how it should work is included.

1. Click Process Catalog.

2. Choose DTM > Update Catalog.

3. If prompted, enter the information on this screen.
4. Choose the correct DTM.

5. Click Ok.

6. Save and close the project.

7. Right-click the 1788-EN2PAR in the I/O configuration tree and choose Properties.

8. Go online.

9. Right-click the 1788-EN2PAR in the I/O configuration tree and choose Properties.

10. Click the Configuration tab and select the device.
11. Click Process Catalog.


13. Enter the device information and click Launch DTM.

14. Verify the DTMs and close.

15. Select the proper DTM to import into the frame.

16. Go online and choose Open DTM > Online Parameters.
17. Right-click the device and choose Set Node Address.

18. Click OK and enter the desired node address.

19. Click OK and verify the change.
20. Save the Project.

Verify Operation in RSLogix 5000 Software

Each 1788-EN2PAR consumes a total of 4 connections from the ControlLogix controller, regardless of the number of field devices. Thus the input and output image of each 1788-EN2PAR is divided into four sections A…D. The first connection has the PA Master Data.

To monitor online data, do the following.
1. In the RSLogix 5000 tree, choose Controller Tags > EN2PAR:OA > Master.

This bit is set once the two PA master modules are synchronized, have the same node number, and have the same configuration.

If a field device is online and running (exchanging cyclic data) then its field device index bit in (the connection status) is set. If the device goes offline the bit is cleared.
2. Select Field Device 0 and click Data. Each field device will display its diagnostics as well as all available PVs and status.

AssetCentre software is a FDT-based plant asset management software tool that lets you configure the intelligent field instruments and devices. Before starting, make sure the DTMs have been imported and installed for the linking device and the device.

Rockwell’s AssetCentre software is the FDT based plant asset management software tool that lets you configure the intelligent field instruments or devices.

Before beginning this process, make sure the DTMs have been downloaded from the vendor website, imported, and installed for both the 1788-EN2FFR and the device.

1. Launch AssetCentre software and open a new project.
2. Choose Tools > DTM Catalog to update the DTM catalog.

3. Click Scan Now to verify that the DTMs you installed exist in the catalog.

4. Close the DTM catalog.

5. To set up the DTM network path, choose Tasks > DTM Networks.
6. Select the name of the DTM network in the tree to the left and click Add DTM.

7. Select the HS network in the tree and click OK.
8. Select the HS network in the tree and click Add DTM.

9. Select the 1756-ENBT or network device DTM and click on it to view the device DTM information on the bottom of the screen.

10. Click OK.

11. Enter the IP Address (111 for this example) and Scan rate.

12. Click Enter to accept the entries.

13. Click Next.
14. Select the 1788-EN2PAR device and click OK.

![](Image)

15. Enter the IP Address (125 for this example).

![](Image)

16. Click Enter to accept the entry.
17. Click Next.

18. Click Scan network to see if the device is detected.
19. Verify the information and click OK.

20. Click Close.

**Verify DTM Installation and Operation.**

1. Click Design to enter design mode.
2. Choose Process Area > New.
3. From the Process Area Tree in the Asset Type to Add window, click Instrument and then click OK.

4. Enter a device name (valve ND9000 in this example) and click OK.
5. Right-click the newly-named device and choose Properties.
6. Choose DTM Addressing Info and click the Grey Box (…) on the right side of the screen.

7. Select the device and click OK.
8. Click OK.

9. Right-click the instrument and choose DTM View.
10. Click Online at the top of the screen and the click Open.

11. To select device attributes, click on a heading.

12. Click Close.

13. Save the project.
Valve Positioner Configuration

A valve positioner generally only has one slot which has multiple predefined inputs and outputs. One of the most basic options is to configure the valve positioner to receive a set-point from the ControlLogix controller via the 1788-EN2PAR and to return the actual position.

Once an output/input option has been selected, the data format option is replaced by a Configure button and the Manual Config option is set. Click Configure to change the data.

This launches the Slot Configuration window.
Check the valve positioner's documentation to see what format the data is for each option. For the above example, the set-point sent to the valve positioner is a real with a 1-byte status. The actual position returned by the valve positioner is a real with a 1-byte status and a 1-byte status discrete position.

A real value can be written into the output PV tag for that field device (see example code EN2PAR_FieldDevice_Outputs.ACD).

Send a good/valid PV status to the field device output. Refer to the field device user manual for the needed status values. Generally, a PV status value of 0x80 (-128) lets the field device accept the position. If you do not send the PV status, the valve positioner does not use the position value and returns to a safe state.

**Using Metso Valve Manager Software**

The valve manager software graphically displays indexes of the valve, actuator, and positioner, as well as indexes of control performance and the application environment. The report shows the status of each component and guidelines for recommended actions.
Figure 2 - Performance View of the Metso Valve Manager

![Performance View of the Metso Valve Manager](image)

Figure 3 - Example Diagnostics Trend on Device

![Example Diagnostics Trend on Device](image)
Figure 4 - Multipoint Step Response Test
Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At http://www.rockwellautomation.com/support, you can find technical manuals, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools. You can also visit our Knowledgebase at http://www.rockwellautomation.com/knowledgebase for FAQs, technical information, support chat and forums, software updates, and to sign up for product notification updates.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnectSM support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://www.rockwellautomation.com/support/.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

<table>
<thead>
<tr>
<th>United States or Canada</th>
<th>1.440.646.3434</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside United States or Canada</td>
<td>Use the Worldwide Locator at <a href="http://www.rockwellautomation.com/rockwellautomation/support/overview.page">http://www.rockwellautomation.com/rockwellautomation/support/overview.page</a>, or contact your local Rockwell Automation representative.</td>
</tr>
</tbody>
</table>

New Product Satisfaction Return

Rockwell Automation tests all of its products to help ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

<table>
<thead>
<tr>
<th>United States</th>
<th>Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside United States</td>
<td>Please contact your local Rockwell Automation representative for the return procedure.</td>
</tr>
</tbody>
</table>

Documentation Feedback

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