PlantPAx™ Distributed Control System (DCS) Demonstrator - Pressure, Flow, Level, Temperature 589631 (3531-V0)
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General Description

The Distributed Control System (DCS) Demonstrator is a modular demonstration unit capable of showing real-life process applications across a wide range of industries, including water and wastewater, oil refining, petrochemical, and food processing.

The PlantPAx DCS Training System is a demonstrator that can be used to train students on the instruments used to control or monitor industrial processes including temperature, pressure, flow, and level process variables. The training system is configured to teach different types of PID process control loops as well as different type of control strategies. The system is capable to monitor Pressure, Flow and Temperature process variables. The Demonstrator features two level PID control loops working simultaneously to maintain a stable level in each column even when disturbance occurs. The PID Level control loop of the large column works in Cascade mode with the flow rate and use a pneumatic control valve as a the final element.

The Demonstrator also features a pressure control loop that maintain a stable pressure at the inlet of the large column. The pressure control loop uses the centrifugal pump with an industrial variable frequency drive to maintain the desired pressure.

The Learning System uses modern equipment and user guides that will explain students on how to configure and use devices found in the process industry. The system also features a sequencer performing an automatic start-up sequence to facilitate the operation of the system.

The Demonstrator features a batch sequencer that permit to fill-up the small column with four different amount of water and running the batches permit to the trainee to see the impact of the process stability.

The PlantPAx™ DCS Demonstrator uses four different communication protocols between smart devices and smart transmitters. The four protocols are HART®, FOUNDATION™ Fieldbus, Profibus PA and Ethernet/IP.

The HART® protocol shall enable communication between devices by superimposing digital signals on top of the existing 4-20 mA outputs. The FOUNDATION™ Fieldbus, Profibus PA and Ethernet I/P protocols shall work in the same manner as a Local Area Network (LAN) for smart devices. Each protocol has the option to be configured manually or through a computer using either a DCS system or an optional configuration software.

It is also possible to edit the HMI interface and the PLC program to change the control strategies using two optional software such as FactoryTalk Site Edition Studio and RSLogix 5000 Full Edition.

Ordering numbers:

589631 (3531-V0) 120V-60Hz
8095450 (3531-V5) 230V-50/60Hz

FactoryTalk Site Edition Station software is required and this one not included with the Demonstrator.
Main Screen

Batch Sequencer
PID Loop Tuning

Features & Benefits

- Smart transmitters using Hart, FOUNDATION Fieldbus, Profibus PA, Ethernet/IP communication protocols
- Many types of transmitters: Differential-pressure, Radar, Magnetic, Temperature
- Ethernet communication for variable frequency drives
- High-speed, touch screen computer
- Industrial Control Cabinet
- Advanced Network

List of Equipment

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<td>PlantPAx DCS Training System - Pressure, Flow, Level, Temperature</td>
<td>589880 (46801-V0)</td>
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## List of Manuals

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<th>Description</th>
<th>Manual number</th>
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<td>Electromagnetic Flow Transmitter (Student Manual)</td>
<td>585123 (85990-00)</td>
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<td>Electromagnetic Flow Transmitter (Instructor Guide)</td>
<td>585126 (85990-10)</td>
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<tr>
<td>Control Valves (User Guide)</td>
<td>585145 (86001-E0)</td>
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<tr>
<td>Radar Level Transmitters (Student Manual)</td>
<td>589760 (52200-00)</td>
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<td>Radar Level Transmitters (Instructor Guide)</td>
<td>589762 (52200-10)</td>
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<tr>
<td>Familiarization with the Process Control Demonstrator (User Guide)</td>
<td>590096 (52466-E0)</td>
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## Table of Contents of the Manual(s)

### Electromagnetic Flow Transmitter (Student Manual) (585123 (85990-00))
- 1 Fundamentals of the Electromagnetic Flowmeters

### Control Valves (User Guide) (585145 (86001-E0))
- 1 Basic Control Valve Theory
- 2 Basic Control Valve (46950-B)
- 3 Pneumatic Control Valve with a Positioner (46950-A)
- 4 Control Valve with DVC2000 (46950-0)
- 5 Control Valve with DVC6000 – HART/FF (46950-E/-D)
- 6 Control Valve with DVC6200 – HART/FF (46950-E/-D)
- 7 Electric Control Valve (46950-C)

### Radar Level Transmitters (Student Manual) (589760 (52200-00))
- 1 Fundamentals of Radar Level Transmitters

### Familiarization with the Process Control Demonstrator (User Guide) (590096 (52466-E0))
- 1 Process Control Demonstrator
- 2 Control Panel
- 3 Disconnect Switch and Emergency Push-Button
- 4 AC Drives
- 5 PLC Fundamentals
- 6 The Human-Machine Interface
- 7 Process Columns
- 8 Differential-Pressure Transmitter
- 9 Radar Level Transmitters
- 10 Electromagnetic Flow Transmitter
- 11 Temperature Probes and Transmitter
- 12 Three-Valve Manifold
- 13 Solenoid Valve
- 14 Control Valve
- 15 Venturi Tube
- 16 Rotameter

## Additional Equipment Required to Perform the Exercises

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<th>Qty</th>
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<tbody>
<tr>
<td>1</td>
<td>FactoryTalk View SE Studio (Educational)</td>
<td>588400 (46968-40)</td>
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<td>1</td>
<td>FactoryTalk View SE Station (Educational)</td>
<td>588401 (46968-50)</td>
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<tr>
<td>1</td>
<td>FactoryTalk View SE Studio (Commercial)</td>
<td>588393 (46968-E0)</td>
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<tr>
<td>1</td>
<td>FactoryTalk View SE Station (Commercial)</td>
<td>588394 (46968-F0)</td>
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**Equipment Description**

**PlantPAx DCS Training System - Pressure, Flow, Level, Temperature**

589880 (46801-V0)

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**Control Valves (User Guide) (585145 (86001-E0))**

- 1 Basic Control Valve Theory
- 2 Basic Control Valve (46950-B)
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- 6 Control Valve with DVC6200 – HART/FF (46950-E/-D)
- 7 Electric Control Valve (46950-C)

**Radar Level Transmitters (Student Manual) (589760 (52200-00))**

- 1 Fundamentals of Radar Level Transmitters

**Optional Equipment Description**

**FactoryTalk View SE Studio (Educational) (Optional)**

588400 (46968-40)

FactoryTalk View Site Edition is a Windows-based application suite, produced by Rockwell Software, which simplifies the creation of graphic human-machine interfaces (HMI), such as operator interface solutions, to monitor and control machines and small processes. This versatile suite is compatible with the PlantPAx DCS Demonstaror, Model 3531-V,

HMI applications are developed and edited using FactoryTalk View Studio, which also has limited runtime capabilities to test your interface. A completed application can be loaded directly on the Touch-Screen Computer of the PlantPAx DCS Demonstaror

Your applications can also be designed to run on the touch-screen computer for an unlimited period of time, but doing so requires the purchase of FactoryTalk View Site Edition Station Runtime.

Available versions:

- 46968-0 FactoryTalk View ME Studio (Educational)
- 46968-1 FactoryTalk View ME Studio (with Foxboro OPC server, Educational)
- 46968-2 FactoryTalk View ME Station (Educational)
FactoryTalk View ME Station (with Foxboro OPC server, Educational)

FactoryTalk View ME Station (Commercial)

FactoryTalk View ME Station (with Foxboro OPC Server, Commercial)

FactoryTalk View ME Station (Commercial)

FactoryTalk View ME Station (with Foxboro OPC server, Commercial)

FactoryTalk View ME Station (with Foxboro OPC server, Educational)

FactoryTalk View ME Station (Commercial)

FactoryTalk View ME Station (Commercial)

FactoryTalk View ME Station (Commercial)

FactoryTalk View SE Station (Educational) (Optional)

588401 (46968-50)

FactoryTalk View Site Edition is a Windows-based application suite, produced by Rockwell Software, which simplifies the creation of graphic human-machine interfaces (HMI), such as operator interface solutions, to monitor and control machines and small processes. This versatile suite is compatible with the PlantPAx DCS Demonstrator, Model 3531-V.

HMI applications are developed and edited using FactoryTalk View Studio, which also has limited runtime capabilities to test your interface. A completed application can be loaded directly on the Touch-Screen Computer of the PlantPAx DCS Demonstrator.

Your applications can also be designed to run on the touch-screen computer for an unlimited period of time, but doing so requires the purchase of FactoryTalk View Site Edition Station Runtime.

Available versions:

• 46968-0 FactoryTalk View ME Studio (Educational)
• 46968-1 FactoryTalk View ME Studio (with Foxboro OPC server, Educational)
• 46968-2 FactoryTalk View ME Station (Educational)
• 46968-3 FactoryTalk View ME Station (with Foxboro OPC server, Educational)
• 46968-A FactoryTalk View ME Studio (Commercial)
• 46968-B FactoryTalk View ME Studio (with Foxboro OPC Server, Commercial)
• 46968-C FactoryTalk View ME Station (Commercial)
• 46968-D FactoryTalk View ME Station (with Foxboro OPC server, Commercial)

FactoryTalk View SE Studio (Commercial) (Optional)

588393 (46968-E0)

FactoryTalk View Site Edition is a Windows-based application suite, produced by Rockwell Software, which simplifies the creation of graphic human-machine interfaces (HMI), such as operator interface solutions, to monitor and control machines and small processes. This versatile suite is compatible with the PlantPAx DCS Demonstrator, Model 3531-V.

HMI applications are developed and edited using FactoryTalk View Studio, which also has limited runtime capabilities to test your interface. A completed application can be loaded directly on the Touch-Screen Computer of the PlantPAx DCS Demonstrator.

Your applications can also be designed to run on the touch-screen computer for an unlimited period of time, but doing so requires the purchase of FactoryTalk View Site Edition Station Runtime.

Available versions:

• 46968-0 FactoryTalk View ME Studio (Educational)
• 46968-1 FactoryTalk View ME Studio (with Foxboro OPC server, Educational)
• 46968-2 FactoryTalk View ME Station (Educational)
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- 46968-3 FactoryTalk View ME Station (with Foxboro OPC server, Educational)
- 46968-A FactoryTalk View ME Studio (Commercial)
- 46968-B FactoryTalk View ME Studio (with Foxboro OPC Server, Commercial)
- 46968-C FactoryTalk View ME Station (Commercial)
- 46968-D FactoryTalk View ME Station (with Foxboro OPC server, Commercial)

FactoryTalk View SE Station (Commercial) (Optional)

588394 (46968-F0)

FactoryTalk View Site Edition is a Windows-based application suite, produced by Rockwell Software, which simplifies the creation of graphic human-machine interfaces (HMI), such as operator interface solutions, to monitor and control machines and small processes. This versatile suite is compatible with the PlantPAx DCS Demonstrator, Model 3531-V.

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- 46968-C FactoryTalk View ME Station (Commercial)
- 46968-D FactoryTalk View ME Station (with Foxboro OPC server, Commercial)
Reflecting the commitment of Festo Didactic to high quality standards in product, design, development, production, installation, and service, our manufacturing and distribution facility has received the ISO 9001 certification.

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