PlantPAx™ Distributed Control System (DCS) Demonstrator - Pressure, Flow, Level, Temperature

8095450 (3531-V5)

LabVolt Series

Datasheet

* The product images shown in this document are for illustration purposes; actual products may vary. Please refer to the Specifications section of each product/item for all details. Festo Didactic reserves the right to change product images and specifications at any time without notice.

Festo Didactic
en 220 V - 50 Hz
01/2025

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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.

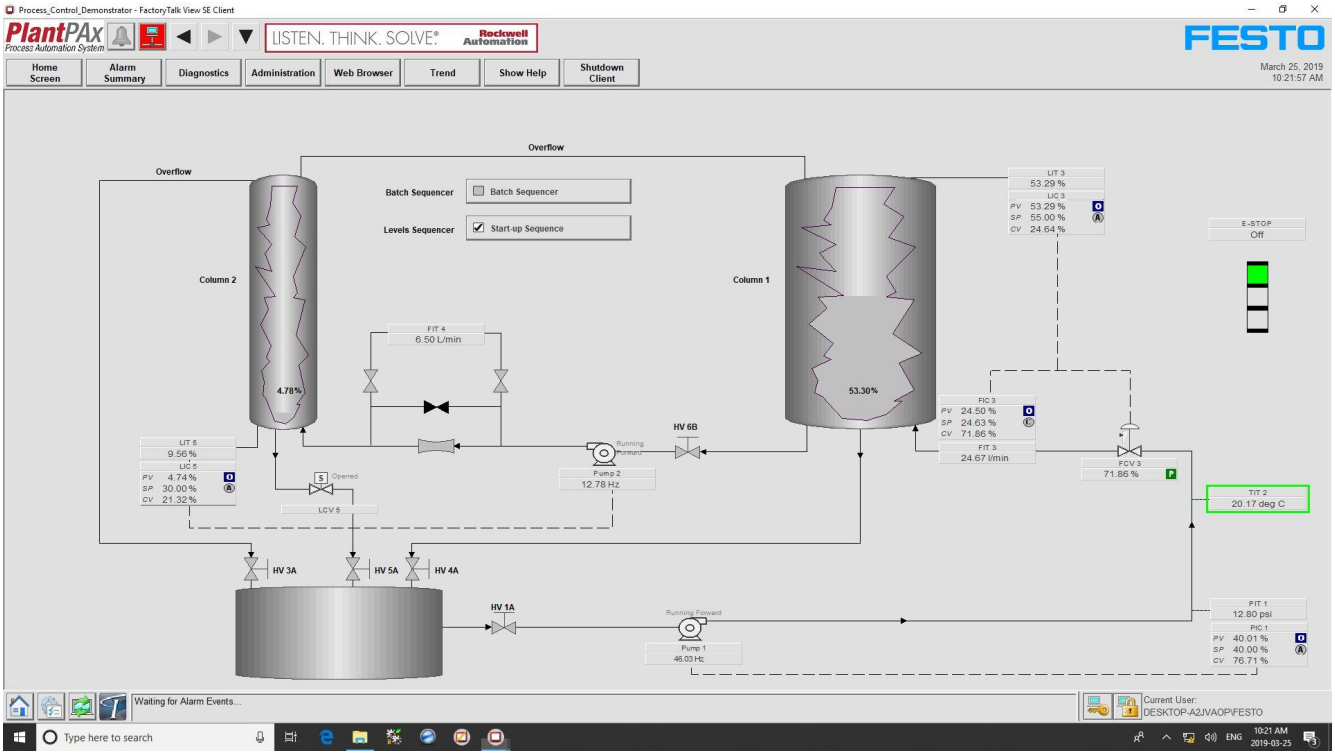
The Demonstrator features a batch sequencer that permit to fill-up the small column with four different amount of water and running the batches permit to the trainee to see the impact of the process stability.

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.

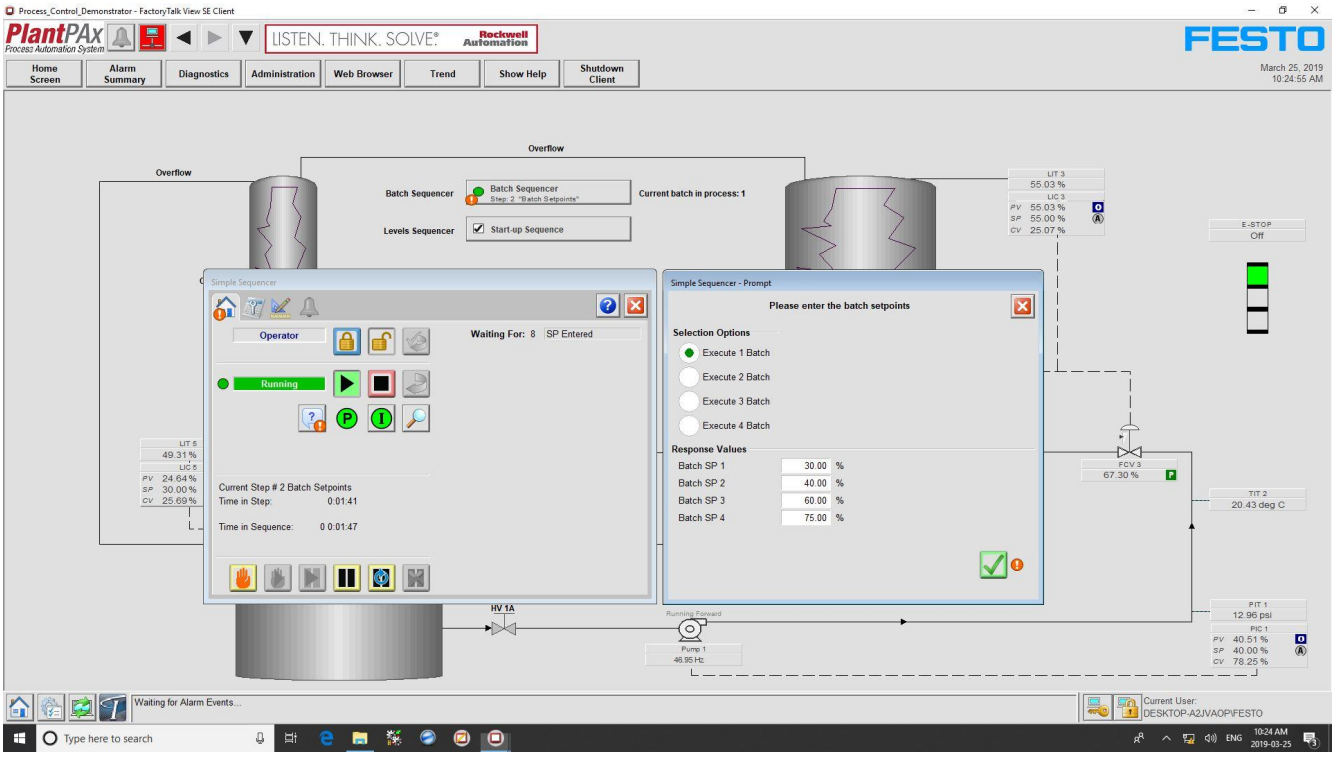
The HART® protocol shall enable communication between devices by superimposing digital signals on top of the existing 4-20 mA outputs. The FOUNDATION™ Fieldbus, Profibus PA and Ethernet I/P protocols shall work in the same manner as a Local Area Network (LAN) for smart devices. Each protocol has the 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.

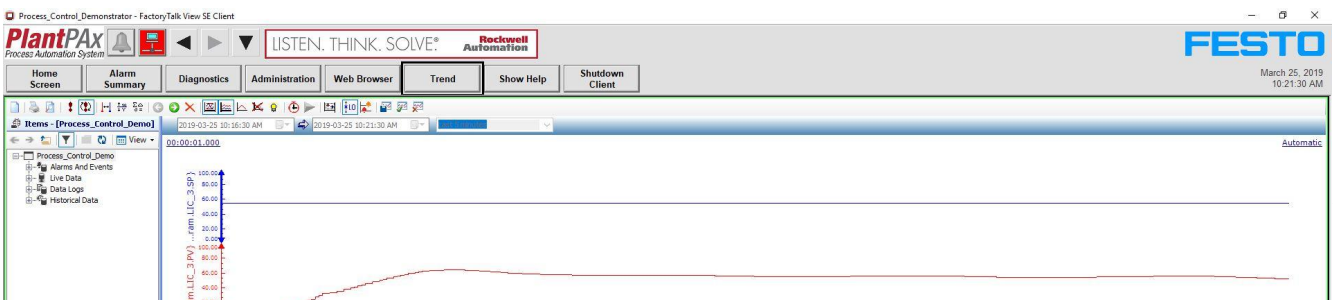
FactoryTalk Site Edition Station software is required and this one not included with the Demonstrator.



Main Screen



Batch Sequencer



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

Qty	Description	Model number
1	Familiarization with the Process Control Demonstrator	590096 (52466-E0)
1	PlantPAx DCS Training System - Pressure, Flow, Level, Temperature	8095451 (46801-V5)

List of Manuals

Description	Manual number
Electromagnetic Flow Meters (Workbook)	585123 (85990-00)
Electromagnetic Flow Meters (Workbook (Instructor))	585126 (85990-10)
Control Valves (User Guide)	585145 (86001-E0)
Radar Level Transmitters (Workbook)	589760 (52200-00)
Radar Level Transmitters (Workbook (Instructor))	589762 (52200-10)
Familiarization with the Process Control Demonstrator (User Guide)	590096 (52466-E0)

Table of Contents of the Manual(s)

Electromagnetic Flow Meters (Workbook) (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 (Workbook) (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 (Purchased separately)

Qty	Description	Model number
1	Calibration Kit	588416 (46980-00)

Equipment Description

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Radar Level Transmitters (Workbook) (589760 (52200-00))

- 1 Fundamentals of Radar Level Transmitters

Optional Equipment Description

Calibration Kit (Optional) 588416 (46980-00)

The Calibration Kit includes the equipment required to precisely adjust the control valves and to perform diagnostic tests on electrical devices. The kit contains a Fluke 725 multifunction process calibrator which can act as a source and measure different parameters. A calibration pump completes the kit and is used to calibrate pressure devices.

A Calibration Kit, Model 46980 or 46981, is required to characterize and tune processes in the Pressure, Flow, Level, and Temperature Process Training Systems.

Manual

Description	Manual number
(Workbook)	594085 (54387-00)

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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