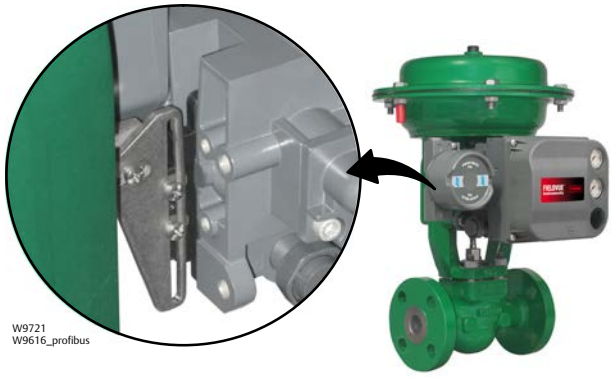
Fisher™ FIELDVUE™ DVC6200p Digital Valve Controller

The FIELDVUE DVC6200p digital valve controller is a PROFIBUS PA communicating instrument that converts a digital control signal into a pneumatic output to an actuator. It can easily be retrofitted in place of existing analog positioners on most Fisher and non-Fisher pneumatic actuators.



LINKAGE-LESS FEEDBACK SYSTEM

Features

Reliability

- Linkage-Less Non-Contact Position Feedback— The high performance, linkage-less feedback system eliminates physical contact between the valve stem and the DVC6200p. There are no wearing parts so cycle life is maximized.

- Built to Survive—The field proven DVC6200p instrument has fully encapsulated electronics that resist the effects of vibration, temperature, and corrosive atmospheres. A weather-tight wiring terminal box isolates field wiring connections from other areas of the instrument.

Performance

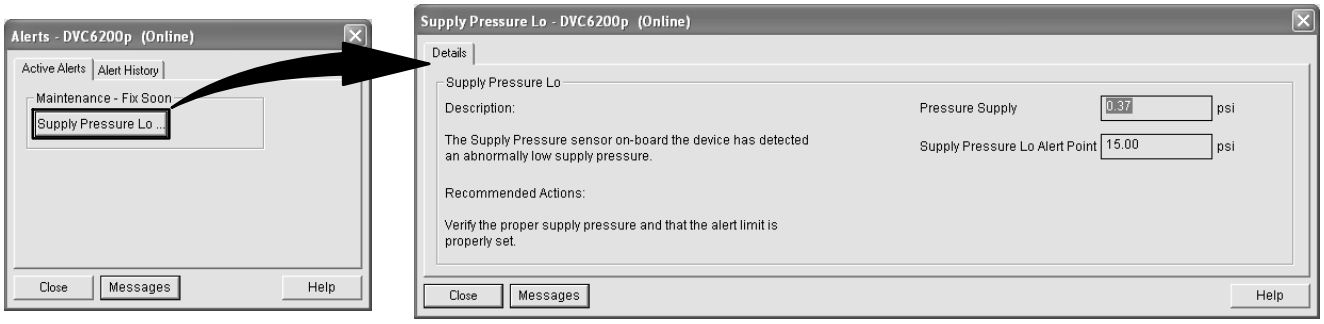
- Accurate and Responsive— The two-stage positioner design provides quick response to large step changes and precise control for small setpoint changes.

- Travel Control/Pressure Fallback— Valve position feedback is critical to the operation of the digital valve controller. The DVC6200p can detect position feedback problems and automatically revert to I/P transducer mode to keep the valve operational.

Ease of Use

- Enhanced Safety— The DVC6200p is a PROFIBUS PA communicating device, so information can be accessed anywhere along the loop. This flexibility can reduce exposure to hazardous environments and make it easier to evaluate valves in hard to reach locations.

Figure 1. Active Alerts



ACTIVE ALERTS **ALERT DETAILS**

- Fast Commissioning— PROFIBUS communication allows you to quickly commission loops remotely using the PROFIBUS configuration tool with the DVC6200p Electronic Device Description (EDD). The DVC6200p can also be locally calibrated/commissioned by shorting the auxiliary terminal located in the terminal box.

- Easy Maintenance— The DVC6200p digital valve controller is modular in design. Critical working components can be replaced without removing field wiring or pneumatic tubing.

- Stroke Valve— The Stroke Valve Test is used to confirm proper valve operation. It helps to validate the auto-calibration after guided setup is complete.

Value

- Hardware and Installation Savings— Significant savings can be achieved in reduced wiring, installation, and hardware requirements compared to traditional integrated control systems. By utilizing function blocks such as Discrete Input and Analog Input blocks, the need for limit switches and position transmitters can be eliminated, providing additional savings in hardware and installation costs.

- Improved Maintenance Decisions— Digital communication provides easy access to the condition of the valve. Sound process and asset management decisions can be made by analysis of valve information through device alerts that provide details of the operational state of the final control element (see figure 1).

Figure 2. Overview Page

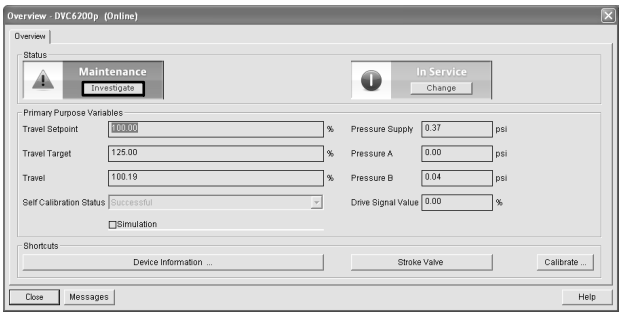
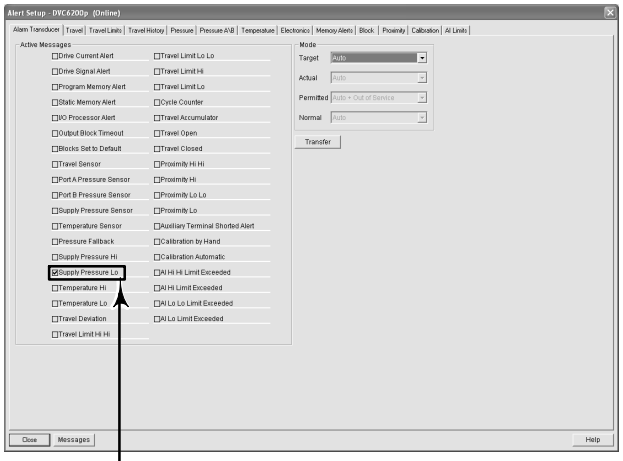


Figure 3. Alerts Summary



ACTIVE ALERT INDICATED BY CHECKBOX

Device Alerts

The DVC6200p digital valve controller provides a comprehensive library of device alerts and fully supports NAMUR NE 107. Using Emerson's Human Centered Design concept of the Device Dashboard graphical user interface, device alerts are easily accessed via a PROFIBUS configuration tool such as Siemens PDM. When installed as part of a PROFIBUS communicating system, the DVC6200p delivers prompt notification of current issues directly on the Overview Page and Alerts Summary Page (see figure 2 and 3).

Alerts assist in identification and notifications, along with recommended actions to resolve situations such as the following:

- Valve travel deviation due to excessive valve friction or galling
- High cycle due to dither or improper tuning
- Total travel movement has accumulated beyond a specified point resulting in packing wear
- Travel sensor failure
- Valve travel is above or below a specified point
- Various instrument mechanical and electrical issues

Specifications

Available Mounting

- Integral mounting to Fisher 657/667 or GX actuators
- Integral mounting to Fisher rotary actuators,
- Sliding-stem linear applications
- Quarter-turn rotary applications

DVC6200p digital valve controllers can also be mounted on other actuators that comply with IEC 60534-6-1,
IEC 60534-6-2, VDI/VDE 3845 and NAMUR mounting standards.

Function Block Suite

Standard (throttling) control includes AO, AI, DO, and DI function blocks. Also included are a Logbook block and an Alarm Transducer block.

Function Block Execution Times

AO Block: 6 ms
AI Block: 6 ms
DO Block: 6 ms
DI Block: 6 ms

Minimum Device Interval: 25 ms

Electrical Input

Voltage Level: 9 to 32 volts
Maximum Current: 19 mA
Reverse Polarity Protection: Unit is not polarity sensitive
Termination: Bus must be properly terminated per ISA SP50 guidelines

Digital Communication Protocol

PROFIBUS registered device
Certified to PROFIBUS Profile 3.02

Supply Pressure(1)

Minimum Recommended: 0.3 bar (5 psig) higher than maximum actuator requirements

Maximum: 10.0 bar (145 psig) or maximum pressure rating of the actuator, whichever is lower

Medium: Air or Natural Gas

Supply medium must be clean, dry and noncorrosive

Per ISA Standard 7.0.01
A maximum 40 micrometer particle size in the air system is acceptable. Further filtration down to 5 micrometer particle size is recommended. Lubricant content is not to exceed 1 ppm weight (w/w) or volume (v/v) basis. Condensation in the air supply should be minimized.

Pressure dew point: At least 10°C less than the lowest ambient temperature expected

Per ISO 8573-1
Maximum particle density size: Class 7
Oil content: Class 3
Pressure dew point: Class 3

Output Signal

Pneumatic signal, up to full supply pressure
Maximum Span: 9.5 bar (140 psig)
Action: ■ Double, ■ Single Direct or ■ Reverse

Steady-State Air Consumption(2)(3)

At 1.4 bar (20 psig) supply pressure: Less than 0.38 normal m^3/hr (14 scfh)
At 5.5 bar (80 psig) supply pressure: Less than 1.3 normal m^3/hr (49 scfh)

Maximum Output Capacity(2)(3)

At 1.4 bar (20 psig) supply pressure:
10.0 normal m^3/hr (375 scfh)
At 5.5 bar (80 psig) supply pressure:
29.5 normal m^3/hr (1100 scfh)

Operating Ambient Temperature Limits(1)(4)

-40 to 85°C (-40 to 185°F)
-52 to 85°C (-62 to 185°F) for instruments utilizing the Extreme Temperature option (fluorosilicone elastomers)

Independent Linearity(5)

Typical Value: ±0.50% of output span

Electromagnetic Compatibility

Meets EN 61326-1:2013
Immunity—Industrial locations per Table 2 of the EN 61326-1 standard.
Emissions—Class A
ISM equipment rating: Group 1, Class A

Vibration Testing Method

Tested per ANSI/ISA-S75.13.01 Section 5.3.5.

Humidity Testing Method

Tested per IEC 61514-2

-continued-

Specifications (continued)

Hazardous Area Approvals

CSA— Intrinsically Safe, FISCO, Explosion-proof, Division 2, Dust Ignition-proof (Canada)

FM— Intrinsically Safe, FISCO, Explosion-proof, Non-Incendive, Dust Ignition-proof (United States)

ATEX— Intrinsically Safe, FISCO, Flameproof, Type n, Dust by intrinsic safety

IECEx— Intrinsically Safe, FISCO, Flameproof, Type n, Dust by intrinsic safety and enclosure

Natural Gas Certified, Single Seal Device— CSA, FM, ATEX, and IECEx

Marine Approvals— Lloyds, DNV, ABS, Bureau Veritas

CML— Certification Management Limited (Japan)

CUTR— Customs Union Technical Regulations

ESMA— Emirates Authority for Standardization and Metrology - ECAS-Ex (UAE)

INMETRO— National Institute of Metrology, Quality and Technology (Brazil)

KOSHA— Korean Occupational Safety & Health Agency (South Korea)

KTL— Korea Testing Laboratory (South Korea)

CCC— China Compulsory Certification

NEPSI— National Supervision and Inspection Centre for Explosion Protection and Safety of Instrumentation (China)

PESO CCOE— Petroleum and Explosives Safety Organisation - Chief Controller of Explosives (India)

SANS— South African Bureau of Standards

UKEx— Intrinsically Safe & Dust, Flameproof, Dust by Enclosure, Type n (United Kingdom)

Not all certifications apply to all constructions. Contact your Emerson sales office or refer to the DVC6200p product page at Fisher.com for approval specific information

Electrical Housing

CSA— Type 4X, IP66
FM— Type 4X, IP66
ATEX— IP66
IECEx— IP66

Connections

Supply Pressure: 1/4 NPT internal and integral pad for mounting 67CFR regulator
Output Pressure: 1/4 NPT internal
Tubing: 3/8-inch recommended
Vent: 3/8 NPT internal
Electrical: 1/2 NPT internal or M20

Actuator Compatibility

Stem Travel (Sliding-Stem Linear)
Linear actuators with rated travel between 6.35 mm (0.25 inch) and 606 mm (23.375 inches)

Shaft Rotation (Quarter-Turn Rotary)
Rotary actuators with rated travel between 45 degrees and 180 degrees(6)

Weight

Aluminum: 3.5 kg (7.7 lbs)
Stainless Steel: 8.6 kg (19 lbs)

Construction Materials

Housing, module base and terminal box:
A03600 low copper aluminum alloy (standard)
Stainless Steel (optional)
Cover:
Thermoplastic polyester
Elastomers:
Nitrile (standard)
Fluorosilicone (optional)

Options

■ Supply and output pressure gauges or ■ Tire valves, ■ Integral mounted filter regulator, ■ Low-Bleed Relay(7), ■ Extreme Temperature, ■ Natural Gas Certified, Single Seal Device ■ Remote Mount(8), ■ Stainless Steel

NOTE: Specialized instrument terms are defined in ANSI/ISA Standard 51.1 - Process Instrument Terminology.
1. The pressure/temperature limits in this document and any other applicable code or standard should not be exceeded.
2. Normal m^3/hour - Normal cubic meters per hour at 0°C and 1.01325 bar, absolute. Scfh - Standard cubic feet per hour at 60°F and 14.7 psia.
3. Values at 1.4 bar (20 psig) based on a single-acting direct relay; values at 5.5 bar (80 psig) based on double-acting relay.
4. Temperature limits vary based on hazardous area approval. Lower temperature limit for CUTR Ex d approval with fluorosilicone elastomers is -53°C (-63.4°F).
5. Typical value. Not applicable for travels less than 19 mm (0.75 inch) or for shaft rotation less than 60 degrees. Also not applicable for digital valve controllers in long-stroke applications.
6. Rotary actuators with 180 degree rated travel require a special mounting kit; contact your Emerson sales office for kit availability.
7. The Quad O steady-state consumption requirement of 6 scfh can be met by a DVC6200p with low bleed relay A option, when used with up to 4.8 bar (70 psi) supply of Natural Gas at 16°C (60°F). The 6 scfh requirement can be met by low bleed relay B and C when used with up to 5.2 bar (75 psi) supply of Natural Gas at 16°C (60°F).
8. 4-conductor shielded cable, 18 to 22 AWG minimum wire size, in rigid or flexible metal conduit, is required for connection between base unit and feedback unit.

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