Fisher™ FIELDVUE™ DVC6200p Digital Valve Controller

This manual applies to:

Device ID Number	0x1037
Device Revision	1
Hardware Revision	9
Firmware Revision	1.6.3.2.0
DD Revision	1.3/1.4
Instrument Level	FD
Current GSD	FC051037
Profile Specific GSD	PA139710
DTM Revision	1.0

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Contents

Section 1 Introduction and Specifications

Installation, Pneumatic and Electrical Connections, and Initial Configuration

Refer to the DVC6200 Series Quick Start Guide (D103556X012) for DVC6200p installation, connection, and initial configuration information. If a copy of this quick start guide is needed scan or click the field support code at the right, contact your Emerson sales office or visit our website at Fisher.com.

Scan or click to access field support

Scope of Manual

This instruction manual is a supplement to the DVC6200 Series Quick Start Guide (D103556X012) that ships with every instrument. This instruction manual includes product specifications, reference materials, custom setup information, calibration and maintenance procedures, and replacement part details for the DVC6200p digital valve controller.

Note

All references to the DVC6200p digital valve controller include the DVC6205p base unit unless otherwise indicated.

Do not install, operate, or maintain a DVC6200p digital valve controller without being fully trained and qualified in valve, actuator, and accessory installation, operation, and maintenance. **To avoid personal injury or property damage, it is important to carefully read, understand, and follow all of the contents of this manual, including all safety cautions and warnings.** If you have any questions about these instructions, contact your Emerson sales office before proceeding.

Conventions Used in this Manual

Throughout this document, parameters are typically referred to by their common name or label.

Description

DVC6200p digital valve controllers are communicating, microprocessor-based instruments. In addition to the traditional function of converting a digital signal to a pneumatic output pressure, the DVC6200p digital valve controller, using PROFIBUS PA communications protocol, gives easy access to information critical to process operation as well as process control. It includes AO, AI, DO, and two DI function blocks in addition to the physical and transducer blocks.

Using a compatible profibus configuration device, you can obtain information about the health of the instrument. You can also obtain asset information about the actuator or valve manufacturer, model, and serial number. You can set input and output configuration parameters and calibrate the instrument.

Using the PROFIBUS protocol, information from the instrument can be integrated into control systems.

The DVC6200p can be mounted on single or double-acting sliding-stem actuators, as shown in figure 1-1, or on rotary actuators. It can also be integrally mounted to the Fisher GX control valve and actuator system, as shown in figure 1-2. The DVC6200p mounts on most Fisher and other manufacturers' rotary and sliding-stem actuators.

Figure 1-1 FIELDVUE DVC6200p Digital Valve Controller Mounted on a Fisher Sliding-Stem Valve Actuator

X1182-1_profibus

Figure 1-2. FIELDVUE DVC6200p Digital Valve Controller Integrally Mounted to a Fisher GX Control Valve and Actuator System

W9616_profibus

Instrument Blocks

The digital valve controller is a block-based device. For detailed information on the blocks within the digital valve controller, see the Detailed Setup section of this manual.

The DVC6200p digital valve controller includes the physical and transducer block:

- Physical Block—The physical block contains the hardware specific characteristics associated with a device; it has no input or output parameters. The physical block monitors and controls the general operation of other blocks within the device. For example, when the mode of the physical block is Out of Service, it impacts all function blocks.
- Transducer Block—The transducer block connects the analog output function block to the I/P converter, relay, and travel sensor hardware within the digital valve controller.

Function Blocks

In addition to the physical and transducer block, the digital valve controller contains the following function blocks.

- Analog Output (AO) Function Block—The analog output function block accepts the output from another function block (such as a PID block) and transfers it as an actuator control signal to the transducer block. If the DO block is selected, the AO block is not functional.

- Discrete Output (DO) Function Block—The discrete output function block processes a discrete set point and sends it to a specified output channel, which can be transferred to the transducer block for actuator control. In the digital valve controller, the discrete output block provides both normally open or closed control and the ability to position the valve in 5% increments for coarse throttling applications. If the AO block is selected, the DO block is not functional.

- Analog Input (AI) Function Block—The analog input function block monitors the signal from a DVC6200p sensor or internal measurement and provides it to another block.

- Discrete Input (DI) Function Block—The discrete input function block processes a single discrete input from a DVC6200p and makes it available to other function blocks. In the digital valve controller, the discrete input function block can provide limit switch functionality and valve position proximity detection.

- Alarm Transducer Block—The Alarm Transducer Block manages the device alarms. Active alarms are monitored and displayed as active. Working with the Logbook Block those alarms active and configured are time/date stamped and written to the Logbook block.

- Logbook Function Block—The Logbook Function Block will store any alarm that is active and configured to record an occurrence of the alarm to the logbook. Logbook entries are written from active alarms in the Alarm Transducer Block. Each Logbook entry is time/date stamped. A maximum of 260 log entries are allowed.

Specifications

Specifications for the DVC6200p digital valve controller are shown in table 1-1.

Table 1-1. Specifications

Available Mounting

DVC6200p digital valve controller and DVC6215 feedback unit: ■ Integral mounting to Fisher 657/667 or GX actuators ■ Integral mounting to Fisher rotary actuators, ■ Sliding-stem linear applications ■ Quarter-turn rotary applications

DVC6205p base unit for 2 inch pipestand or wall mounting (for remote-mount)

The DVC6200p digital valve controller or DVC6215 feedback unit 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

Supply Medium

Air or Natural Gas

Supply medium must be clean, dry and non-corrosive.

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.

Per ISO 8573-1
Maximum particle density size: Class 7
Oil content: Class 3
Pressure Dew Point: Class 3 or at least 10°C less than the lowest ambient temperature expected

Output Signal

Pneumatic signal, up to full supply pressure
Minimum Span: 0.4 bar (6 psig)
Maximum Span: 9.5 bar (140 psig)
Action: ■ Double, ■ Single Direct or ■ Reverse

Steady-State Air Consumption(2)(3)

Standard Relay
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)

Low Bleed Relay
At 1.4 bar (20 psig) supply pressure:
Average value 0.056 normal m^3/hr (2.1 scfh)
At 5.5 bar (80 psig) supply pressure:
Average value 0.184 normal m^3/hr (6.9 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)
-52 to 125°C (-62 to 257°F) for remote-mount feedback unit

-continued-

Table 1-1. Specifications (continued)

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. Performance is shown in table 1-2 below.
Emissions—Class A
ISM equipment rating: Group 1, Class A

Lightning and Surge Protection—The degree of immunity to lightning is specified as Surge immunity in table 1-2. For additional surge protection commercially available transient protection devices can be used.

Vibration Testing Method

Tested per ANSI/ISA-75.13.01 Section 5.3.5. A resonant frequency search is performed on all three axes. The instrument is subjected to the ISA specified 1/2 hour endurance test at each major resonance.

Humidity Testing Method

Tested per IEC 61514-2

Electrical Classification

Hazardous Area Approvals

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

FM— Intrinsically Safe, FISCO, Explosion-proof, Non-Incendive, Dust Ignition-proof

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

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

Electrical Housing

CSA— Type 4X, IP66

FM— Type 4X, IP66

ATEX— IP66

IECEx— IP66

Other Classifications/Certifications

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

ABS— Marine Type Approval

BV— Marine Type Approval

DNV— Marine Type Approval

Lloyds Register— Marine Type Approval

CCC— China Compulsory Certification

CML— Certification Management Limited (Japan)

CUTR— Customs Union Technical Regulations (Russia, Kazakhstan, Belarus, and Armenia)

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)

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

Contact your Emerson sales office for classification/certification specific information

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

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

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

-continued-

Table 1-1. Specifications (continued)

Weight

DVC6200p
Aluminum: 3.5 kg (7.7 lbs)
Stainless Steel: 8.6 kg (19 lbs)

DVC6205p: 4.1 kg (9 lbs)
DVC6215: 1.4 kg (3.1 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 (extreme temperature)

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

Contact your Emerson sales office or go to Fisher.com for additional information.

Declaration of SEP

Fisher Controls International LLC declares this product to be in compliance with Article 4 paragraph 3 of the PED Directive 2014 / 68 / EU. It was designed and manufactured in accordance with Sound Engineering Practice (SEP) and cannot bear the CE marking related to PED compliance.

However, the product *may* bear the CE marking to indicate compliance with *other* applicable European Community Directives.

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. 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. Pneumatic tubing between base unit output connection and actuator has been tested to 91 meters (300 feet). At 15 meters (50 feet) there was no performance degradation. At 91 meters there was minimal pneumatic lag.

Table 1-2. EMC Summary Results—Immunity

Port	Phenomenon	Basic Standard	Test Level	Performance Criteria(1)
Enclosure	Electrostatic discharge (ESD)	IEC 61000-4-2	4 kV contact 8 kV air	A(2)
	Radiated EM field	IEC 61000-4-3	80 to 1000 MHz @ 10 V/m with 1 kHz AM at 80% 1400 to 2000 MHz @ 10 V/m with 1 kHz AM at 80% 2000 to 2700 MHz @ 10 V/m with 1 kHz AM at 80%	A
	Rated power frequency magnetic field	IEC 61000-4-8	30 A/m at 50/60 Hz	A
I/O signal/control	Burst	IEC 61000-4-4	1 kV	A(2)
	Surge	IEC 61000-4-5	1 kV	B
	Conducted RF	IEC 61000-4-6	150 kHz to 80 MHz at 3 Vrms	A

Performance criteria
DVC6200: +/- 1%
DVC6205 Remote Mount: +/- 2%
1. A = No degradation during testing. B = Temporary degradation during testing, but is self-recovering.
2. Excluding Simulate function, which meets Performance Criteria B.

Related Information

PROFIBUS PA Installation and Wiring Guidelines

Refer to the DVC6200 Series Quick Start Guide (D103556X012) for installation and wiring information.

Related Documents

Other documents containing information related to the DVC6200p digital valve controller include:

- DVC6200 Series Quick Start Guide (D103556X012)
- CSA Hazardous Area Approvals - DVC6200 Series Digital Valve Controllers (D104203X012)
- FM Hazardous Area Approvals - DVC6200 Series Digital Valve Controllers (D104204X012)
- ATEX Hazardous Area Approvals - DVC6200 Series Digital Valve Controllers (D104205X012)
- IECEx Hazardous Area Approvals - DVC6200 Series Digital Valve Controllers (D104206X012)
- Device Setup and Accessing Communications and Calibration using Siemens SIMATIC Manager/PDM (D103560X012)
- Module Definitions, IO Bytes, and Data Length for DVC6200p PROFIBUS PA Digital Valve Controller (D104019X012)
- Bulletin 62.1:DVC6200p FIELDVUE DVC6200p Digital Valve Controller (D103564X012)
- Bulletin 62.1:DVC6200(S1) FIELDVUE DVC6200 Digital Valve Controller Dimensions (D103543X012)
- Bulletin 62.1:Digital Valve Controller - Fisher FIELDVUE Digital Valve Controller Product Selection (D104363X012)

All documents are available from your Emerson sales office or at Fisher.com.

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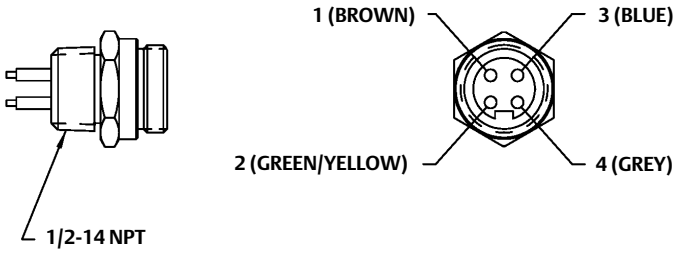
Section 2 Wiring Practices

Quick Connect Cable Entry

The DVC6200p is offered with a quick connect cable entry option, shown in figure 2-1, for the PROFIBUS signal. The quick connect cable entry provides an easier and more reliable interface to PROFIBUS devices and support modules by providing a standard connection.

Figure 2-1. Quick Connect Connector



NOTE:
1. COLORS ARE WIRE COLORS.

GE61479-A

Note

The quick connect cable entry option is only available for intrinsically safe and non-incendive installations.

Refer to figure 7-2 for identification of parts.

⚠ WARNING

Personal injury or property damage, caused by fire or explosion, can result from the discharge of static electricity. Connect a 14 AWG (2.08 mm^2) ground strap between the digital valve controller and earth ground when flammable or hazardous gases are present. Refer to national and local codes and standards for grounding requirements.

To avoid static discharge from the plastic cover, do not rub or clean the cover with solvents. Clean with a mild detergent and water only.

To avoid personal injury or property damage, do not use the Quick Connect option on instruments in explosion-proof or flameproof installations.

1. The quick connect cable entry should be installed on the digital valve controller at the factory. If it is, proceed to step 3. If not continue with step 2.
2. To install the Quick Connect:
   a. Remove the terminal box cap (key 4) from the terminal box (key 3).
   b. Apply sealant to the threads of the quick connector.

c. Insert the wire pigtail into the desired conduit opening on the terminal box. Tighten the quick connector in the conduit opening.

d. The instrument is not polarity sensitive. Connect the blue wire to the negative LOOP terminal in the terminal box. Connect the brown wire to the positive LOOP terminal. Isolate the green/yellow wire inside of the DVC6200p, and ensure that the shield is totally isolated at the instrument end.

Note

The green/yellow wire is isolated inside the DVC6200p to help prevent ground loop issues.

e. Replace the terminal box cap on the terminal box and tighten until no gap remains. Secure the terminal box cap by engaging the lock screw.

3. Connect the field wiring connector to the installed quick connector.

Communication Connections

A PROFIBUS PA secondary master interfaces with the DVC6200p digital valve controller from any wiring termination point in the segment.

Section 3 Configuration

Figure 3-1. Example of Typical Online Screen

Transducer Block Mode

Modes

The transducer block can be in one of two modes:

○ Automatic (Auto)— This is the operational mode for this block. When the transducer block is in the Auto mode, all other functions blocks will function normally.

○ Out of Service (OOS)— Placing the transducer block in Out of Service mode changes the output to the zero power (no I/P drive) condition.

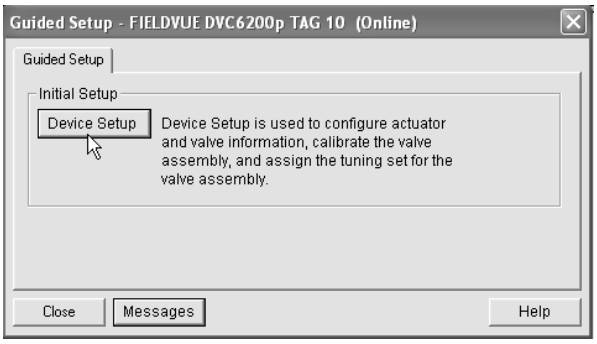
Note

To setup and calibrate the instrument the transducer block mode must be in Auto and Write Locking (see page 26) must be Acyclic Writeable.

Guided Setup

- Device Setup— This procedure, accessible from the Guided Setup tab, as shown in figure 3-2, is used to configure actuator and valve information, calibrate the valve assembly, and assign the tuning set for the valve assembly.

Figure 3-2. Example of Typical Guided Setup Tab



Manual Setup

Manual Setup allows you to configure the digital valve controller to your application. Table 3-1 lists the default settings for a standard factory configuration. You can adjust actuator response, set the various modes, alerts, ranges, travel cutoffs and limits. You can also restart the instrument and set the protection.

Table 3-1. Factory Default Settings

Setup Parameter	Default Setting
Travel Cutoff Hi Travel Cutoff Lo Travel Integral Gain Travel Calibration Trigger	99.5% 0.5% 0 repeats/min No
Travel Integral Enable Travel Integral Limit Hi Travel Integral Limit Lo Travel Integral Deadzone	On 30% -30% 0.25%
Pressure Cutoff Hi Pressure Cutoff Lo Pressure Integral Deadzone Pressure Integral Hi Limit Pressure Integral Lo Limit	99.5% -0.5% 0.25% 50.0% -50.0%
Input Characterization Shutdown Trigger Shutdown Recovery Output Block Timeout	Linear All Off All Auto Recovery 600 sec

Note

The DVC6200p may keep the Transducer Block Mode Out-of-Service if the instrument is not properly mounted.

To setup and calibrate the instrument, the Transducer Block Mode must be AUTO and the output block (AO or DO) must be OOS. Protection must be None.

When performing procedures where you are prompted to change the mode, changes to Protection will be made automatically. If you have a host system that overrides transducer block parameters ensure that the Protection setting is not left as None. Doing so will result in transducer block parameters being overwritten. Refer to page 26 for additional information on setting Protection.

Response Control

Travel/Pressure Control

- Travel/Pressure State indicates if the instrument is being used for travel control (position control) or as an I/P (pressure control).
- Travel/Pressure Select

Note

Travel / Pressure Select must be set to Travel for double acting actuators.

Note

When using Pressure Fallback Manual Recovery or Pressure Fallback Auto Recovery, the valve travel has the potential of moving rapidly, causing potential process instability when returning to Travel Control.

Travel / Pressure Select determines if the instrument is setup for travel position or pressure control. Select Travel, Pressure, Travel with Pressure Fallback/Auto recovery or Travel with Pressure Fallback/Manual Recovery. If the travel sensor fails, and Travel with Pressure Fallback/Auto Recovery is selected, it will return to travel control when the travel sensor starts working again. Travel with Pressure Fallback/Manual recovery will stay in pressure control until Travel Pressure Select is changed to Travel or Travel with Pressure Fallback/Auto recovery. It is not necessary to enable the Travel Sensor Alert for Pressure Fallback to occur.

- Travel Cutoff Hi defines the high cutoff point for the travel in percent (%) of pre-characterized setpoint. Above this cutoff, the travel target is set to 123.0% of the ranged travel. Travel Cutoff Hi is deactivated by setting it to 125.0%.
- Travel Cutoff Lo defines the low cutoff point for the travel in percent (%) of pre-characterized setpoint. Below this cutoff, the travel target is set to -23%. A Travel Cutoff Lo of 0.5% is recommended to help ensure maximum shutoff seat loading. Travel Cutoff Lo is deactivated by setting it to -25.0%
- Pressure Tune Cutoff Hi defines the high cutoff point for the pressure in percent (%) of pre-characterized setpoint. Above this cutoff, the pressure target is set to 123.0%. A Pressure Cutoff Open of 99.5% is recommended to ensure valve goes fully open. Pressure Tune Cutoff Hi is deactivated by setting it 125%.

- Pressure Tune Cutoff Lo defines the low cutoff point for the pressure in percent (%) of pre-characterized setpoint. Below this cutoff, the pressure target is set to -23%. A Pressure Tune Cutoff Lo of 0.5% is recommended to help ensure maximum shutoff seat loading. Pressure Tune Cutoff Lo is deactivated by setting it to -25.0%.

- Pressure Range Hi is the high end of output pressure range. Enter the pressure that corresponds with 100% valve travel when Zero Power Condition is closed, or 0% valve travel when Zero Power Condition is open. This pressure *must be greater* than the Pressure Range Lo.

- Pressure Range Lo is the low end of the output pressure range. Enter the pressure that corresponds to 0% valve travel when Zero Power Condition is closed, or 100% valve travel when Zero Power Condition is open. This pressure *must be less* than the Pressure Range Hi.

Output Synchronize

Output Sync allows a bumpless transition from travel control mode to pressure control mode in the event of control feedback switch.

- Bleed Rate is the time, in %/sec, for the transition to the user-specified setpoint. Select Enable or Disable.

Travel Deviation Fallback

- Travel Deviation Fallback occurs when a gross deviation exists between set point and actual travel. It switches to Pressure Control and no longer uses the travel sensor to position the valve Select Enabled or Disabled.

- Fallback Point is the point, in percent (%) of travel, at which the instrument switches to Pressure Control.

- Fallback Time is the time, in seconds, that is required to reach the Travel Deviation Fallback Point.

- Deadband defines the Travel Deviation Fallback Deadband in percent (%).

- Minimum Supply is the minimum air supply, in psi or percent (%), required for the pressure control mode to activate during Travel Deviation Fallback

Travel Tuning Set

⚠ WARNING

Changes to the tuning set may cause the valve/actuator assembly to stroke. To avoid personal injury or property damage caused by moving parts, keep hands, tools, and other objects away from the valve/actuator assembly.

There are eleven Travel Tuning Sets to choose from. Each tuning set provides a preselected value for the digital valve controller gain settings.

Tuning set C provides the slowest response and M provides the fastest response. Table 3-2 lists the proportional gain, velocity gain and minor loop feedback gain values for preselected tuning sets.

In addition, you can specify Expert tuning and individually set the proportional gain, velocity gain, and minor loop feedback gain. Individually setting or changing any tuning parameter or running the Performance Tuner will automatically change the tuning set to X (expert).

Table 3-2. Gain Values for Preselected Travel Tuning Sets

Tuning Set	Travel Proportional Gain	Travel Velocity Gain	Travel Minor Loop Feedback Gain
C	4.4	3.0	35
D	4.8	3.0	35
E	5.5	3.0	35
F	6.2	3.1	35
G	7.2	3.6	34
H	8.4	4.2	31
I	9.7	4.8	27
J	11.3	5.6	23
K	13.1	6.0	18
L	15.5	6.0	12
M	18.0	6.0	12
X (Expert)	User Adjusted	User Adjusted	User Adjusted

Note

Use Expert tuning if standard tuning has not achieved the desired results.

Table 3-3 provides tuning set selection guidelines for Fisher and Baumann™ actuators. These tuning sets are recommended starting points. After you finish setting up and calibrating the instrument, you may have to select either a higher or lower tuning set to get the desired response.

For an actuator not listed in table 3-3, you can estimate a starting tuning set by calculating the casing or cylinder volume. Then, find an actuator in table 3-3 with the closest equivalent volume and use the tuning set suggested for that actuator.

Table 3-3. Actuator Information for Initial Setup

Actuator Manufacturer	Actuator Model	Actuator Size	Actuator Style	Starting Tuning Set	Travel Sensor Motion[2] Relay A or C[3]	
Fisher	585C & 585CR	25 50 60 68, 80 100, 130	Piston Dbl w/ or w/o Spring. See actuator instruction manual and nameplate.	E F J L M	User Specified	
	657	30, 30i 34, 34i, 40, 40i 45, 45i, 50, 50i 46, 46i, 60, 60i, 70, 70i & 80-100	Spring & Diaphragm	H K L M	Away from the top of the instrument	
	667	30, 30i 34, 34i, 40, 40i 45, 45i, 50, 50i 46, 46i, 60, 60i, 70, 70i, 76, 76i & 80-100	Spring & Diaphragm	H K L M	Towards the top of the instrument	
	1051 & 1052	20, 30 33 40 60, 70	Spring & Diaphragm (Window-mount)	H I K M	Away from the top of the instrument	
	1061	30 40 60 68, 80, 100, 130	Piston Dbl w/o Spring	J K L M	Depends upon pneumatic connections. See description for Travel Sensor Motion	
	1066	20, 27, 75	Piston Dbl w/o Spring	Specify	Depends upon pneumatic connections. See description for Travel Sensor Motion	
	1066SR	20 27, 75	Piston Sgl w/Spring	G L	**Mounting Style**	**Travel Sensor Motion**
					A	Away from the top of the instrument
					B	Towards the top of the instrument
					C	Towards the top of the instrument
					D	Away from the top of the instrument
	2052	1 2 3	Spring & Diaphragm (Window-mount)	H K M	Away from the top of the instrument	
	3024	GA 1.21 GA 1.31 GA 1.41	Spring & Diaphragm	E H K	For P_O operating mode (air opens): Towards the top of the instrument For P_S operating mode (air closes): Away from the top of the instrument	
	GX	225	Spring & Diaphragm	X[1]	**Air to Open** Towards the top of the instrument	**Air to Close** Away from the top of the instrument
		750		K		
		1200		M		
Baumann	Air to Extend	16 32 54	Spring & Diaphragm	C E H	Away from the top of the instrument	
	Air to Retract				Towards the top of the instrument	
	Rotary	10 25 54		E H J	Specify	

NOTE: Refer to table 3-5 for feedback connection (magnet assembly) information.
1. X = Expert Tuning. Proportional Gain = 4.2; Velocity Gain = 3.0; Minor Loop Feedback Gain = 18.0
2. Travel Sensor Motion in this instance refers to the motion of the magnet assembly.
3. Values shown are for Relay A and C. Reverse for Relay B.

Pressure Tuning Set

⚠ WARNING

Changes to the tuning set may cause the valve/actuator assembly to stroke. To avoid personal injury or property damage caused by moving parts, keep hands, tools, and other objects away from the valve/actuator assembly.

There are twelve Pressure Tuning Sets to choose from. Each tuning set provides a preselected value for the digital valve controller gain settings.

Tuning set B provides the slowest response and M provides the fastest response. Tuning set B is appropriate for controlling a pneumatic positioner. Table 3-4 lists the proportional gain, pressure integrator gain and minor loop feedback gain values for preselected tuning sets.

In addition, you can specify Expert tuning and individually set the pressure proportional gain, pressure integrator gain, and pressure minor loop feedback gain. Individually setting or changing any tuning parameter will automatically change the tuning set to X (expert).

Table 3-4. Gain Values for Preselected Pressure Tuning Sets

Tuning Set	Pressure Proportional Gain	Pressure Integrator Gain	Pressure Minor Loop Feedback Gain
B	0.5	0.3	35
C	2.2	0.1	35
D	2.4	0.1	35
E	2.8	0.1	35
F	3.1	0.1	35
G	3.6	0.1	34
H	4.2	0.1	31
I	4.8	0.1	27
J	5.6	0.1	23
K	6.6	0.1	18
L	7.8	0.1	12
M	9.0	0.1	12
X (Expert)	User Adjusted	User Adjusted	User Adjusted

Note

Use Expert tuning only if standard tuning has not achieved the desired results.

Out Block Selection

Out Block Selection defines which output function block, Analog or Discrete, will control the setpoint of the valve.

Note

Select the AO function block if throttling control is required. Select the DO function block for on/off connectivity.

Change Tuning and Integral Settings

Travel Tuning

- **Travel Tuning Set**, there are eleven Travel Tuning Sets to choose from. Each tuning set provides a preselected value for the digital valve controller gain settings.
- **Travel Proportional Gain,** for travel control tuning only. Changing this parameter will also change the tuning set to Expert.
- **Travel Velocity Gain,** for travel control tuning only. Changing this parameter will also change the tuning set to Expert.
- **Travel MLFB Gain** is the minor loop feedback gain for travel control only. Changing this parameter will also change the tuning set to Expert.
- **Travel Integral Gain** (also called reset), is the ratio of the change in output to the change in input, based on the control action in which the output is proportional to the time integral of the input.
- **Travel Integral Dead Zone** is a window around the Primary Setpoint in which the integral action is disabled. The dead band is configurable from 0 to 2% corresponding to a symmetric window from 0% to +/-2% around the Primary Setpoint. Integral Dead Zone is used to eliminate friction induced limit cycles around the Primary Setpoint when the integrator is active. This dead zone value is used during the Auto Calibration of Travel procedure even if the travel integral is disabled; in the case of Auto Calibration travel failures with piston actuators, this value should be set to 1%. Default value is 0.26%.
- **Travel Integral Limit Hi** provides an upper limit to the integrator output. The high limit is configurable from 0 to 100% of the I/P drive signal.
- **Travel Integral Limit Lo** provides a lower limit to the integrator output. The low limit is configurable from -100 to 0% of the I/P drive signal.
- **Travel Integral Enable** is used to enable the integral setting to improve static performance by correcting for error that exists between the travel target and actual travel.

Pressure Tuning

- **Pressure Tuning Set**, there are twelve Pressure Tuning Sets to choose from. Each tuning set provides a preselected value for the digital valve controller gain settings.
- **Pressure Proportional Gain,** for pressure control tuning only. Changing this parameter will also change the tuning set to Expert.
- **Pressure Integral Gain** (also called reset) is the ratio of the change in output to the change in input, based on the control action in which the output is proportional to the time integral of the input. This feature is used during pressure control for greater accuracy during pressure control/fallback. Changing this parameter will also change the tuning set to Expert.
- **Pressure Integral Dead Zone** is a window around the Primary Setpoint in which the integral action is disabled. The dead band is configurable from 0 to 2%.
- **Pressure Integral Limit Hi** provides an upper limit to the integrator output. The high limit is configurable from 0 to 100% of the I/P drive signal.

- Pressure Integral Limit Lo provides a lower limit to the integrator output. The low limit is configurable from -100 to 0% of the I/P drive signal.

- Pressure MLFB Gain is the minor loop feedback gain for the pressure control tuning set. Changing this parameter will also change the tuning set to Expert.

Tuner

⚠ WARNING

During tuning the valve may move, causing process fluid or pressure to be released. To avoid personal injury and property damage caused by the release of process fluid or pressure, isolate the valve from the process and equalize pressure on both sides of the valve or bleed off the process fluid.

Tuner is used to determine digital valve controller tuning. It will move the valve slightly and monitor the effects of small tuning changes until an optimum control response is achieved. Because the tuner can detect internal instabilities before they become apparent in the travel response, it can generally optimize tuning more effectively than manual tuning.

Input Characterization

Input Characterization defines the relationship between the travel target and the setpoint received from the output block. Travel target is the output from the characterization function.

Linearization Table

You can select from the three fixed input characteristics shown in figure 3-3 or you can select a custom characteristic. Figure 3-3 shows the relationship between the travel target and travel set point for the fixed input characteristics.

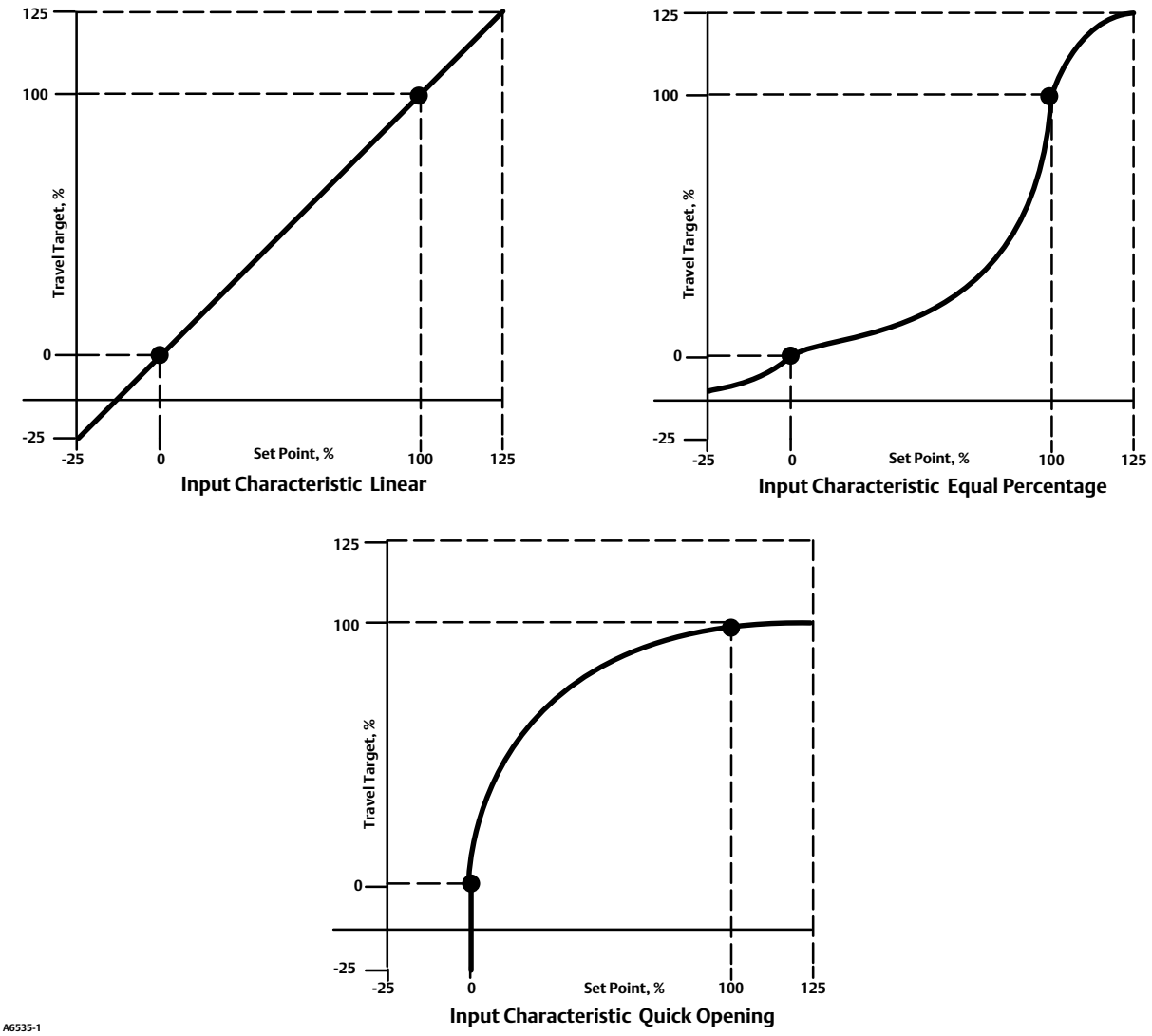
You can specify 21 points on a custom characteristic curve. Each point defines a travel target, in % of ranged travel, for a corresponding set point, in % of ranged set point. Set point values range from -25.0% to 125%. Before modification, the custom characteristic is linear. You cannot modify the custom points if the Input Characterization is set to custom.

Linearization Type

Select the linearization type:

No linearization (default is linear)
Linearization table
Equal percentage— a valve flow characteristic where equal increments of valve stem travel produce equal percentage changes in existing flow, or
Quick opening— a valve flow characteristic where most of the change in flow rate takes place for small amounts of stem travel from the closed position. The flow characteristic curve is basically linear through the first 40 percent of stem travel.

Figure 3-3. Travel Target Versus Ranged Set Point, for Various Input Characteristics (Zero Power Condition = Closed)



Instrument

Actuator Style— select spring & diaphragm, piston double-acting without spring, piston single-acting with spring, or piston double-acting with spring.

Valve Type— enter the type of valve, sliding-stem or rotary, on which the instrument is mounted.

Feedback Connection— refer to table 3-5 for Feedback Connection options. Choose the assembly that matches the actuator travel range.

Note

As a general rule, do not use less than 60% of the magnet assembly travel range for full travel measurement. Performance will decrease as the assembly is increasingly subranged.

The linear magnet assemblies have a valid travel range indicated by arrows molded into the piece. This means that the hall sensor (on the back of the DVC6200p housing) has to remain within this range throughout the entire valve travel. The linear magnet assemblies are symmetrical. Either end may be up.

Table 3-5. Feedback Connection Options

Magnet Assembly	Travel Range		
	mm	Inch	Degrees
SStem #7	4.2-7	0.17-0.28	-
SStem #19	8-19	0.32-0.75	-
SStem #25	20-25	0.76-1.00	-
SStem #38	26-38	1.01-1.50	-
SStem #50	39-50	1.51-2.00	-
SStem #110	51-110	2.01-4.125	-
SStem #210	111-210	4.126-8.25	-
SStem #1 Roller	> 210	> 8.25	60-90°
RShaft Window #1	-	-	60-90°
RShaft Window #2	-	-	60-90°
RShaft End Mount	-	-	60-90°

Maximum Supply Pressure— enter the maximum supply pressure in psi, bar, or kPa, depending on what was selected for pressure units.

Relay Type— enter the Relay Type. There are three categories of relays that result in combinations from which to select.

Relay Type: The relay type is printed on the label affixed to the relay body:
A = double-acting or single acting
B = single-acting, reverse
C= single-acting, direct

Lo Bleed: The label affixed to the relay body indicates it is a low bleed version.

Zero Power Condition— identifies whether the valve is open or closed when instrument power is lost. If you are unsure how to set this parameter, disconnect the segment loop power to the instrument. The resulting valve travel is the Zero Power Condition.

Note

For bumpless restart of the valve on power-cycle ensure the IO_OPTS “Use Failsafe Value per Type on restart” parameter is enabled. This parameter can be enabled in the Analog Output or Discrete Output block under the Manual Setup tab. Select Classic View > AO or DO Block > Mode and Manufacturer Specific > Use Failsafe Value per Type on Restart.

Enter Assembly Specification

Valve

- Valve Manufacturer— enter the identification number of the manufacturer of the valve on which the instrument is mounted.

- Valve Model Number— enter the design letter or type number for the valve on which the instrument is mounted.
- Valve Serial Number—enter the serial number of the valve on which the instrument is mounted.
- Valve Type— enter the type of valve, sliding-stem or rotary, on which the instrument is mounted.
- Valve Size— enter the size of the valve on which the instrument is mounted.
- Valve Class— enter the valve pressure class rating.
- Rated Travel— the nominal stroke of the valve in units that are the same as that of OUT_SCALE. Read only.
- Actual Travel— enter the actual travel in inches or mm for sliding-stem valves, or in degrees of rotation for rotary valves.
- Shaft Stem Diameter— enter the valve stem diameter in inches or millimeters.
- Packing Type— enter the valve packing construction .
- Inlet Pressure— enter the valve inlet pressure in psig, kPa, Bar, inHg, inH_2O, or kg/cm^2.
- Outlet Pressure— enter the valve outlet pressure in psig, kPa, Bar, inHg, inH_2O, or kg/cm^2.

Trim

- Seat Type— enter the valve seat type.
- Leak Class— enter the valve leak class.
- Port Diameter— enter the valve port diameter in inches or mm.
- Port Type— enter the valve port type.
- Flow Direction— enter the flow direction through the valve.
- Push Down To— enter the effect on valve movement when the stem is moved down.
- Flow Tends To— enter the effect on valve travel with increasing flow.
- Unbalanced Area— enter the valve unbalanced area in in^2, cm^2 or mm^2.

Actuator

- Actuator Manufacturer— enter the manufacturer's identification number of the actuator on which the instrument is mounted.
- Actuator Model Number— enter the type number for the actuator on which the instrument is mounted.
- Actuator Serial Number— enter the serial number for the actuator on which the instrument is mounted.
- Actuator Size— enter the size of the actuator on which the instrument is mounted.
- Actuator Fail Action— sets actuator action to be performed upon loss of actuator air pressure .

- Feedback Connection —refer to table 3-5 for Feedback Connection options. Choose the assembly that matches the actuator travel range.
- Travel Sensor Motion— establishes the proper valve travel sensor (feedback) rotation/movement. For quarter-turn actuators determine rotation by viewing the rotation of the magnet assembly from the back of the instrument.

⚠ WARNING

If you answer YES to the prompt for permission to move the valve when setting the Travel Sensor Motion, the instrument will move the valve through its full travel range. To avoid personal injury and property damage caused by the release of pressure or process fluid, isolate the valve from the process and equalize pressure on both sides of the valve or bleed off the process fluid.

Note
Travel Sensor Motion in this instance refers to the motion of the magnet assembly. Note that the magnet assembly may be referred to as a magnetic array in user interface tools.

For instruments with relay A or C If increasing air pressure at output A causes the magnet assembly to move up, or the actuator shaft to rotate counterclockwise, enter "Counterclockwise/Towards Top of Instrument." If it causes the magnet assembly to move down, or the actuator shaft to rotate clockwise, enter "Clockwise/Away From Top of Instrument."

For instruments with relay B If decreasing air pressure at output B causes the magnet assembly to move up, or the actuator shaft to rotate counterclockwise, enter "Counterclockwise/Towards Top of Instrument." If it causes the magnet assembly to move down, or the actuator shaft to rotate clockwise, enter "Clockwise/Away From Top of Instrument."

- Lever Style— enter the lever style for rotary actuators as either Pivot Point or Rack and Pinion.
- Lever Arm Length—defines the lever arm length for rotary actuators.
- Effective Area — enter the actuator effective area in in^2, cm^2, or mm^2.
- Air— select Opens or Closes, indicating the effect of increasing air pressure on the valve travel.
- Upper Bench Set— enter the upper actuator operating pressure.
- Lower Bench Set— enter the lower actuator operating pressure.
- Nominal Supply Pressure— enter the nominal instrument supply pressure.
- Spring Rate— enter the actuator spring rate in lbs•in or N•m.

Reference

- Trim Style 1— enter the valve trim style.
- Trim Style 2— enter the valve trim style.
- Stroking Time Open— enter the time required to stroke the valve from closed to open.
- Stroking Time Close— enter the time required to stroke the valve from open to closed.

Note
Stroking Time Open and Stroking Time Close are used as a point of reference only; they do not reflect the actual time required to stroke the valve from closed to open or open to closed.

- Field Serial Number— enter the instrument serial number.

Units

Select the appropriate units for your application.

- Temperature Unit— °C or °F
- Pressure Unit— psig, kPa, Bar, inHg, inH_2O, or kg/cm^2
- Travel Unit— cm, mm, inch, or deg
- Length Unit— cm, mm, or inch
- Area Unit— in^2, cm^2, or mm^2
- Spring Rate Unit— lbs•in or N•m

Security

Write Locking— select the appropriate level of software write protection.

- Acyclic Writeable— all parameters are writeable (not locked).
- Acyclic Write Refused— acyclic writes to all parameters are denied, except WRITE_LOCKING, TAB_ENTRY and ACTUAL_POST_READ_NUMBER parameter.

Protection

To configure a parameter in the digital valve controller Protection must be set at or above that parameters protection level. In addition, protection is provided for various transducer block parameters, as indicated in the Protect Category column of table C-3, to prevent inadvertently overwriting key data by the host system or user.

- None— will not protect any transducer block parameters.
- Calibration— will protect only Calibration transducer block parameters.
- Setup and Calibration— will protect only Setup and Calibration transducer block parameters.
- All— will protect all transducer block parameters.

Note
Device Setup Auto Travel and Manual Travel automatically change transducer block protection for the user.

See table C-3 for individual parameter details.

Classic View

Classic view allows you to view all of the variables in the Physical, Transducer, and function blocks.

Alert Setup

Instrument Alert Conditions, when enabled, detect many operational and performance issues that may be of interest. To view these alerts, you must open the appropriate status screen on a host system.

Configure Alert Category— select Failed, Maintenance, or Advisory.

Failed A failed alert indicates a failure within the device that will make the device or some part of the device non-operational.

Maintenance A maintenance alert indicates the device or some part of the device needs maintenance soon.

Advisory An advisory alert indicates informative conditions that do not have a direct impact on the device's primary functions.

Supervision— if Supervision is selected, the Binary Message (BM) is immediately active. If Supervision is not selected, you can choose between active and inactive BM.

Logbook— indicate if the alert should be stored in the Logbook function block. The logbook function block contains binary messages and status information about the stored alerts. Each logbook entry is time/date stamped. A maximum of 260 log entries are allowed.

Alarm Transducer

Active Messages

Active Messages provides an overview of the active alerts. Select the appropriate tab within Configure > Alert Setup to view and set alarm limits. Alert details are covered by tab below.

Mode

The Alarm transducer block supports two modes of operation.

- Automatic (Auto)
- Out of Service (OOS)

Travel Alerts

Note
The alerts contained in this section are valid for both travel and pressure control.

Travel Target

Travel target is the output from the characterization function.

Travel

Travel displays the actual position of the valve in percent (%) of calibrated travel.

Travel Deviation

- Travel Deviation—Travel Deviation displays the absolute difference in percent between Travel Target and Actual Travel.
- Deviation Alert Point— the alert point for the difference, expressed in percent (%), between the travel target and the actual travel. When the difference exceeds the alert point for more than the Travel Deviation Time, the Travel Deviation Alert is set.
- Deviation Time— the time, in seconds, that the travel deviation must exceed the Travel Deviation Alert Point before the alert is set.

Travel Open

This alert is active if the Travel goes above the Travel Open Alert Point.

- Open Alert Point— the value of the travel in percent (%) or ranged travel, which, when exceeded, sets the Travel Open Alert.
- Open Deadband— the travel, in percent (%) of ranged travel, required to clear a Travel Open alert once it has been set.

Travel Closed

This alert is active if the Travel goes below than the Travel Closed Alert Point.

- Closed Alert Point— set when the value of the travel, in percent (%) of ranged travel, goes below the Travel Closed Alert Point.
- Closed Deadband— the travel, in percent (%) of ranged travel, required to clear a Travel Closed alert once it has been set.

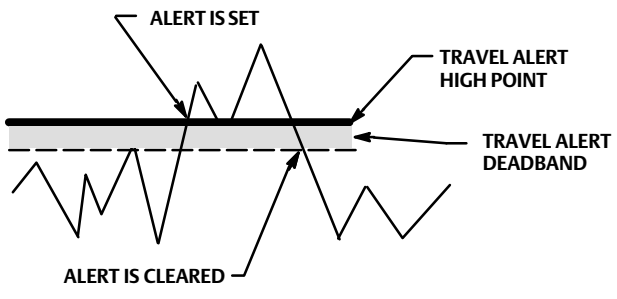
Travel Limits

Travel Limit Hi Hi

This alert is active if the Travel exceeds the Travel Hi Hi Alert point. See figure 3-4.

- Hi Hi Alert Point— the value of the travel, in percent (%) of ranged travel, which, when exceeded, sets the Travel Alert Hi Hi alert.
- Hi Hi Deadband— the travel, in percent (%) of ranged travel, required to clear a Travel Hi Hi alert, once it has been set.

Figure 3-4. Travel Hi Alert Deadband

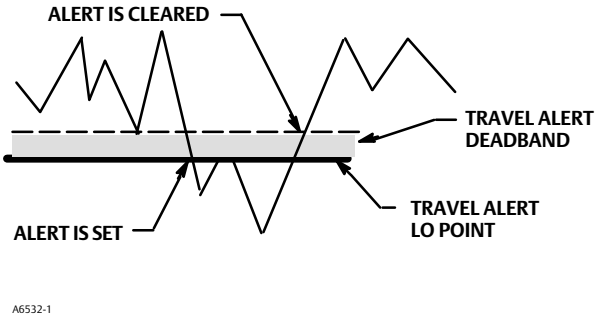


Travel Limit Lo Lo

This alert is active if the Travel is lower than the Travel Lo Lo Alert point. See figure 3-5.

- Lo Lo Alert Point— set when the value of the travel, in percent (%) of ranged travel, goes below the Travel Lo Lo Alert Point .
- Lo Lo Deadband— the travel, in percent (%) of ranged travel, required to clear a Travel Lo Lo alert once it has been set.

Figure 3-5. Travel Lo Alert Deadband



Travel Limit Hi

This alert is active if the Travel exceeds the Travel Hi Alert point. See figure 3-4.

- Hi Alert Point— the Travel Hi Alert set if the ranged travel rises above the Travel Hi Alert Point. Once the alert is set, the ranged travel must fall below the alert high point set by the Travel Hi Deadband before the alert is cleared.
- Hi Deadband— the travel, in percent (%) of ranged travel, required to clear a Travel Hi Alert, once it has been set.

Travel Limit Lo

This alert is active if the Travel is lower than the Travel Lo Alert point. See figure 3-5.

- Lo Alert Point— the Travel Lo Alert is set when the value of the travel, in percent (%) of ranged travel, goes below the Travel Lo Alert Point.
- Travel Lo Deadband— the travel, in percent (%) of ranged travel, required to clear a travel lo alert, once it has been set.

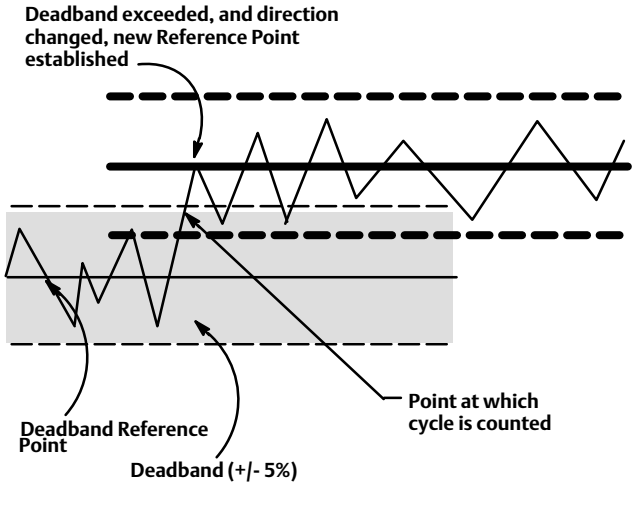
Travel History Alerts

Cycle Counter

This alert is active if the Cycle Counter exceeds the Cycle Counter Alert Point. It is cleared after you reset the Cycle Counter to a value less than the alert point.

- Cycle Counter— records the number of times the travel changes direction. The change in direction must occur after the deadband has been exceeded before it can be counted as a cycle. See figure 3-6. You can reset the Cycle Counter by configuring it as zero.

Figure 3-6. Cycle Counter Deadband (set at 10%)



- Cycle Counter Limit— is the value of the Cycle Counter, in cycles, which, when exceeded, sets the Cycle Counter Alert.

- Cycle Counter Deadband— the area around the travel reference point, in percent (%) of ranged travel, that was established at the last increment of the Cycle Counter. This area must be exceeded before a change in travel direction can be counted as a cycle. See figure 3-6.

Travel Accumulator

This alert is active if the Travel Accumulator exceeds the Travel Accumulator Alert Point. The Travel Accumulator Alert is set when the Travel Accumulator value exceeds the Travel Accumulator Alert Point. It is cleared after you reset the Travel Accumulation to a value less than the alert point.

- Travel Accumulator— records the total change in travel, in percent (%) of ranged travel, since the accumulator was last cleared. The value of the Travel Accumulator increments when the magnitude of the change exceeds the Travel Accumulator Dead-band. See figure 3-7. You can reset the Travel Accumulator by configuring it to zero.

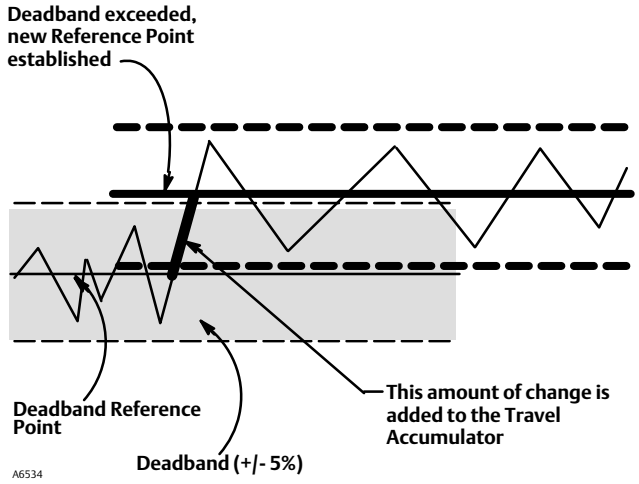
- Travel Accumulator Limit— the value of the Travel Accumulator, in percent (%) of ranged travel, which, when exceeded, sets the Travel Accumulator Alert.

- Travel Accumulator Deadband— the area around the travel reference point, in percent (%) of ranged travel, that was established at the last increment of the accumulator. This area must be exceeded before a change in travel can be accumulated. See figure 3-7.

Travel Sensor

This alert is active if the Travel Sensor reading is outside the functional range, or the sensor becomes disconnected.

Figure 3-7. Travel Accumulator Deadband (set at 10%)



Pressure Alerts

Supply Pressure Hi Alert

This alert is active when the supply pressure exceeds the Supply Pressure Hi Alert Point.

- Supply Pressure Hi Alert Point— when the supply pressure exceeds the supply pressure alert point, the supply pressure alert is active.

Supply Pressure Lo Alert

This alert is active when the supply pressure is lower than the Supply Pressure Lo Alert Point.

- Supply Pressure Lo Alert Point— when the supply pressure falls below the supply pressure alert point, the supply pressure alert is active. To disable the supply pressure alert, set Supply Pressure Alert Point to zero.

Supply Pressure Sensor

This alert is active if the Supply Pressure Sensor reading is outside the functional range.

Pressure Fallback

This alert is active if a travel sensor failure or a gross travel deviation has resulted in fallback to pressure control.

Pressure A/B Alerts

This alert is active if the configured Pressure Sensor reading (Port A or Port B) is outside the functional range.

Temperature Alerts

Temperature Hi

This alert is active if the temperature is greater than the Temperature Hi Alert Point.

- Temperature Hi Alert Point— active when the instrument temperature exceeds the Temperature Hi Alert Point.

Temperature Low

This alert is active if the temperature is lower than the Temperature Lo Alert Point.

- Temperature Lo Alert Point— active when the instrument temperature is lower than the Temperature Lo Alert Point.

Temperature Sensor

This alert is active if the Temperature Sensor reading is outside the functional range.

- Temperature—Degrees Fahrenheit or Celsius. The temperature is measured from a sensor mounted on the digital valve controller's printed wiring board.

Electronics Alerts

Drive Current Alert

This alert is active when the difference between the expected Drive Current and the actual Drive Current has exceeded the Drive Current Alert Time.

- Drive Current Alert Point— when the absolute difference between the Drive Current and Drive Signal exceeds the set threshold for greater than the Drive Current Alert Time.

- Drive Current Alert Time— the maximum time, in seconds, that the Drive Current Alert Point can be exceeded before the Drive Current Alert is active.

Drive Signal

The Drive Signal displays the commanded Drive Signal being sent to the I/P converter as a percentage of the maximum drive.

This alert is active if one of the following conditions exist:

Where Zero Power Condition is defined as closed:

Drive Signal < 10% and Calibrated Travel > 3%

Drive Signal > 90% and Calibrated Travel < 97%

Where Zero Power Condition is defined as open:

Drive Signal < 10% and Calibrated Travel < 97%

Drive Signal > 90% and Calibrated Travel > 3%

Memory Alerts

Program Memory Alert

This alert is active if a pending Flash or NVM failure is present.

Static Memory Alert

This alert is active if a failure occurs in the FRAM memory where the static parameters are stored.

Processor Alert

This alert is active if a failure occurs in the I/O processor.

Block Alerts

Output Block Timeout

This alert is active if the analog or discrete output block has not executed for longer than the configured timeout.

- Output Execution Interval—the maximum time between updates from the AO or DO block to the transducer block setpoint.

Blocks Set to Default

This alert is active if the physical block has undergone Restart with Defaults. This will stay active until the transducer block is changed from Out of Service.

Proximity Alerts

Proximity Hi Hi Alert

This alert is active if the Travel is within the detection band set by the Travel Hi Hi Alert Point and the Travel Hi Hi Deadband.

Proximity Hi Alert

This alert is active if the Travel is within the detection band set by the Travel Hi Alert Point and the Travel Hi Deadband.

Proximity Lo Lo Alert

This alert is active if the Travel is within the detection band set by the Travel Lo Lo Alert Point and the Travel Lo Lo Deadband.

Proximity Lo Alert

This alert is active if the Travel is within the detection band set by the Travel Lo Alert Point and the Travel Lo Deadband.

Calibration Alerts

Auxiliary Terminal Shorted Alert

This alert is active when the Auxiliary Terminal is shorted, to perform auto calibration or auto tuning, for more than the set time.

Calibration Automatic

This alert is active when Auto calibration is in progress.

Calibration by Hand

This is alert is active when Manual calibration is in progress.

AI Limits

The following alerts are active if the set limit is exceeded.

AI Hi Hi Limit Exceeded

AI Hi Limit Exceeded

AI Lo Lo Limit Exceeded

AI Lo Limit Exceeded

Section 4 Calibration

Calibration Overview

When a DVC6200p digital valve controller is ordered as part of a control valve assembly, the factory mounts the digital valve controller on the actuator and connects the necessary tubing, then sets up and calibrates the controller.

For digital valve controllers that are ordered separately perform Device Setup to configure and calibrate the instrument. Calibration of the pressure sensors generally is unnecessary; however if pressure sensor calibration is required follow the appropriate procedure below.

For detailed calibration information, refer to the following calibration procedures.

Calibration

⚠ WARNING

During calibration the valve will move full stroke. To avoid personal injury and property damage caused by the release of pressure or process fluid, isolate the valve from the process and equalize pressure on both sides of the valve or bleed off the process fluid.

- Auto Calibration —This procedure automatically calibrates the travel. The calibration procedure uses the valve and actuator stops as the 0% and 100% calibration points.
- Manual Calibration —This procedure permits manual calibration of the travel. This calibration procedure allows you to determine the 0% and 100% calibration points.
- Relay —This procedure permits adjustment of the pneumatic relay.

If a double-acting relay is used, you will be prompted to run the relay adjustment when auto or manual calibration is selected. Select Yes to adjust the relay, select No to proceed with calibration. For additional information, refer to Relay Adjustment in this section.

Note
Relay Adjustment is only available for the double-acting relay (Relay A).

- Pressure A— This procedure permits calibrating the pressure A sensor. Normally the sensor is calibrated at the factory and should not need calibration.
- Pressure B —This procedure permits calibrating the pressure B sensor. Normally the sensor is calibrated at the factory and should not need calibration.
- Supply Pressure —This procedure permits calibrating the supply pressure sensor. Normally the sensor is calibrated at the factory and should not need calibration.

Auto Calibration

Select Auto Calibration on the Travel tab from the Configure > Calibrate menu.

Follow the prompts to automatically calibrate travel.

1. The auto calibration procedure is automatic. It is completed when the calibration menu shows the progress is 100% complete.

   During calibration, the instrument seeks the high and low end points. By searching for the end points, the instrument establishes the limits of physical travel, i.e. the actual travel 0 and 100% positions. This also determines how far the relay beam swings to calibrate the sensitivity of the beam position sensor.

2. Select the Calibration Type; Auto calibrate-Standard or Auto calibrate-Extended. Auto calibrate-Standard is used for most applications. Actuators with boosters or special accessories may require Auto calibrate-Extended.
3. Enter the name of the person performing the calibration procedure.
4. Enter the location of the calibration procedure.
5. Enter the date of the calibration procedure.
6. Place the instrument in Auto mode for the valve to track input.

Manual Calibration

Select Manual Calibration on the Travel tab from the Configure > Calibrate menu.

Follow the prompts to manually calibrate travel.

Note
0% Travel = Valve Closed ; 100% Travel = Valve Open

1. From the adjustment menu, select the direction and size of change required to set the travel at 100% (move the valve to any point between 10% and 90% open). Select the changes of 10%, 5%, 1%, -1%, -5% and -10%, respectively, to choose the travel feedback movement. Select Next to implement the adjustment.

   If another adjustment is required, repeat step 1. Otherwise, select Done and go to step 2.

2. From the adjustment menu, select the direction and size of change required to set the travel to 0% (move the valve to close).

   If another adjustment is required, repeat step 2. Otherwise, select Done and go to step 3.

3. Enter the name of the person performing the calibration procedure.
4. Enter the location of the calibration procedure.
5. Enter the date of the calibration procedure.
6. Place the Transducer Block Mode in Auto and verify that the travel properly tracks the input.

Relay

Select Relay on the A/B Pressure Sensor tab from the Configure > Calibrate menu. Follow the prompts to check relay adjustment. Replace the digital valve controller cover when finished.

Note
Single-acting Relay B and C are not user-adjustable.

Double-Acting Relay

The double-acting relay is designated by “Relay A” on a label affixed to the relay itself. For double-acting actuators, the valve must be near mid-travel to properly adjust the relay. The valve will automatically be positioned when *Relay* is selected.

Note

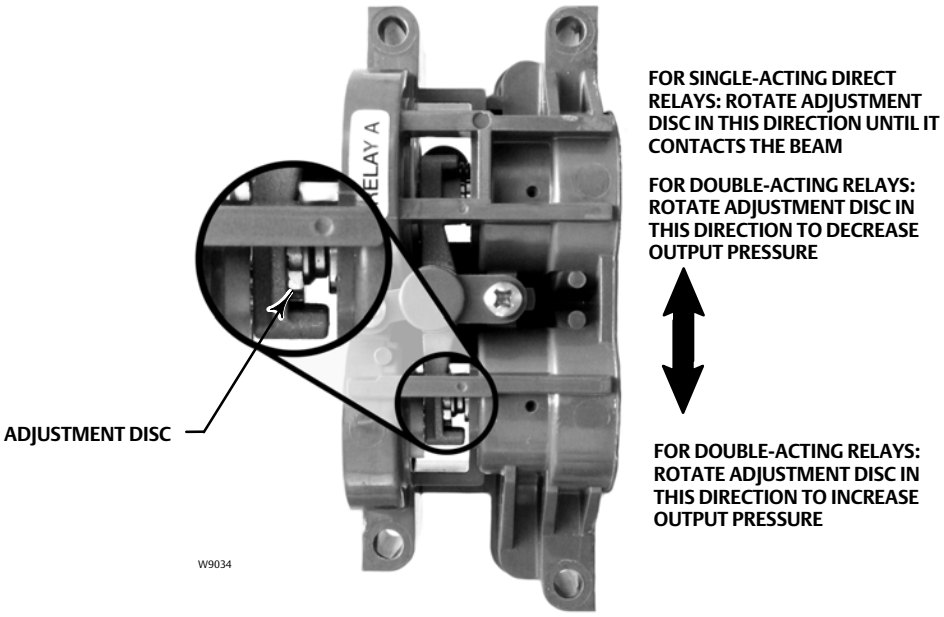
Care should be taken during relay adjustment as the adjustment disc may disengage if rotated too far.

Rotate the adjustment disc, shown in figure 4-1, until the output pressure displayed is between 50 and 70% of supply pressure. This adjustment is very sensitive. Be sure to allow the pressure reading to stabilize before making another adjustment (stabilization may take up to 30 seconds or more for large actuators).

If the low bleed relay option has been ordered stabilization may take approximately two minutes longer than the standard relay.

Relay A may also be adjusted for use in single-acting- direct applications. Rotate the adjustment disc as shown in figure 4-1 for single-acting direct operation.

Figure 4-1. Relay A Adjustment (Shroud Removed for Clarity)



Pressure Sensors

Note

Air must be applied to the DVC6200p to calibrate the pressure sensors. If no air is present there is potential to calibrate with a span of zero, which will result in the pressure sensors not functioning.

Select the appropriate pressure sensor on the A/B Pressure Sensor tab from the Configure > Calibrate menu. Follow the prompts to calibrate the pressure sensors.

Pressure A or Pressure B

Note

Pressure A and B sensors are calibrated at the factory and should not require calibration.

⚠ WARNING

During calibration the valve will move full stroke. To avoid personal injury and property damage caused by the release of pressure or process fluid, isolate the valve from the process and equalize pressure on both sides of the valve or bleed off the process fluid.

1. Select a) Zero Only, or b) Zero and Span (gauge required).
1. The following message appears: The Pressure Sensor calibration procedure permits calibrating the Pressure A Sensor. Normally this sensor is calibrated at the factory, and should not need Calibration.
2. Click OK when you have read this message.
3. The instrument will move the valve to Open. Once it has stopped moving and pressure is 0 psi, click EXIT.
4. Place the Transducer Block mode in Auto for the valve to track input.

Supply Pressure

Note

The pressure sensor is calibrated at the factory and should not require calibration.

To calibrate the supply pressure sensor, connect an external reference gauge to the output side of the supply regulator. The gauge should be capable of measuring maximum instrument supply pressure.

1. Select a) Zero Only, or b) Zero and Span (gauge required).
   a. If Zero Only calibration is selected, adjust the supply pressure regulator to remove supply pressure from the instrument. When supply pressure is at 0 psi, press OK to continue. Once calibration is complete, go to step 5.
   b. If Zero and Span calibration is selected, adjust the supply pressure regulator to remove supply pressure from the instrument. When supply pressure is at 0 psi, press OK to continue. Once calibration is complete, proceed with step 2.
2. Adjust the supply pressure regulator to the maximum instrument supply pressure.
3. Enter the new supply pressure (in psi) using the external pressure gauge value. Press OK.
4. From the adjustment menu, select the direction and size of adjustment to the displayed value. Selecting large, medium, and small adjustments causes changes of approximately 3.0 psi/0.207 bar/20.7 kPa, 0.30 psi/0.0207 bar/2.07 kPa, and 0.03 psi/0.00207 bar/0.207 kPa, respectively. Adjust the displayed value until it matches the supply pressure, select Done and go to step 5.
5. Place the Transducer Block mode in Auto for the valve to track input.
6. Calibration is now complete. Press OK.

Auxiliary Terminal Calibration

Note

This calibration method can be used when there is no Class-2 master or other configuration software available. Prior to initiating calibration ensure that the device has sufficient power and air supply.

⚠ WARNING

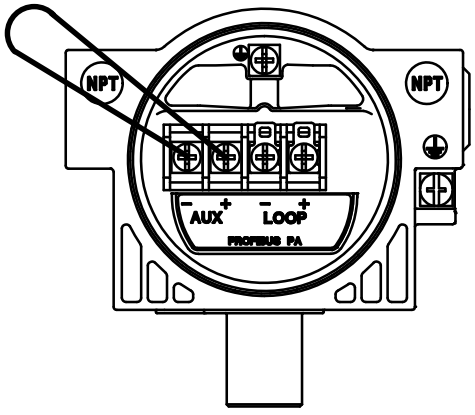
Changes to the instrument setup may cause changes in the output pressure or valve travel. Depending on the application, these changes may upset process control, which may result in personal injury or property damage.

⚠ WARNING

During calibration the valve will move full stroke. To avoid personal injury and property damage caused by the release of process fluid or pressure, isolate the valve from the process and equalize pressure on both sides of the valve or bleed off the process fluid.

Travel calibration and auto tuning can be accomplished by shorting the auxiliary terminal connections, shown in figure 4-2, between 3 to 10 seconds. You can abort the procedure by shorting the auxiliary terminals for 1 second. Pressure range will also be captured during this procedure.

Figure 4-2. Short the Auxiliary Terminal Connections



Note

Calibration time varies depending on the type and size of the actuator. For a Fisher 667 size 30 actuator typical calibration time is approximately 4-5 minutes.

Section 5 Device Information, Diagnostics, and Alerts

Overview

Status & Primary Purpose Variables

The overview section provides basic information about the current state of the instrument and gives you access to the current values of:

- Device/Alert Status
- Communication Status
- Travel Setpoint
- Travel Target
- Travel
- Self Calibration Status
- Pressure Supply
- Pressure A
- Pressure B
- Drive Signal Value

Device Information

Device Information provides details about the instrument construction including:

- Device Identification Number
- Device ID (unique number used to prevent the instrument from accepting commands intended for other instruments)
- Serial Numbers
- Firmware, Software, and Hardware Revisions
- Function Block availability

Service Tools

Alerts

Active Alerts

Instrument Alert Conditions, when enabled, detect many operational and performance issues that may be of interest. Refer to Alert Setup on page 27 for alert information.

Alert History

Contains information about past alerts, including the date and time.

Diagnostics

Stroke Valve

Stroke Valve is used to confirm proper valve operation. Select from the following:

- Step to Target—steps the travel to the specified target.
- Ramp 10%/sec to Target—ramps the travel to the specified target at the rate of 10% per second of the ranged travel.
- Ramp 1%/sec to Target—ramps the travel to the specified target at the rate of 1.0% per second of the ranged travel.
- Exit Stroke Valve

Variables

AO Control — Pre-Characterization

- **Travel** is the value of the travel in % (percent) of ranged travel. Travel always represents how far the valve is open.
- **Final Position Value**

AO Control — Post-Characterization

- **Travel Target** is the output from the characterization function.
- **Travel** is the actual position of the valve in percent (%) of calibrated travel.

Pressures

- **Pressure Supply** is the value of the supply pressure in psi, bar, kPa, inHg, inH_2O, or kg/cm^2.
- **Pressure A** is the value of Output Pressure A in psi, bar, kPa, inHg, inH_2O, or kg/cm^2.
- **Pressure B** is the value of Output Pressure B in psi, bar, kPa, inHg, inH_2O, or kg/cm^2.

- **Drive Signal Value** indicates the drive signal, as a percentage of the maximum drive available, going from the printed wiring board to the I/P converter. In most applications, the drive signal ranges between 50% and 75% of the maximum drive signal.
- **Travel/Pressure State** indicates if the instrument is being used for travel control (position control) or as an I/P (pressure control).
- **Temperature** is the internal temperature of the instrument in either degrees Fahrenheit or Celsius.

Run Time Variables

Max/Min Recorded Temperature

- **Maximum Temperature** shows the maximum temperature the instrument has experienced since installation.
- **Maximum Temperature Time** shows the date and time when the maximum temperature occurred.
- **Minimum Temperature** shows the minimum temperature the instrument has experienced since installation.
- **Minimum Temperature Time** shows the date and time when the minimum temperature occurred.

Max/Min Recorded Supply Pressure

- **Maximum Supply Pressure** shows the maximum supply pressure the instrument has experienced since installation.
- **Maximum Supply Pressure Time** shows the date and time when the maximum supply pressure occurred.
- **Minimum Supply Pressure** shows the minimum supply pressure the instrument has experienced since installation.
- **Minimum Supply Pressure Time** shows the date and time when the minimum supply pressure occurred.

Maintenance

Performance Tuner

⚠ WARNING

During performance tuning the valve may move, causing process fluid or pressure to be released. To avoid personal injury and property damage caused by the release of process fluid or pressure, isolate the valve from the process and equalize pressure on both sides of the valve or bleed off the process fluid.

Performance Tuner is used to determine digital valve controller tuning. It will move the valve slightly and monitor the effects of small tuning changes until an optimum control response is achieved. Because the Performance Tuner can detect internal instabilities before they become apparent in the travel response, it can generally optimize tuning more effectively than manual tuning.

Restart Options

⚠ WARNING

Restarting the instrument may cause loss of process control. To avoid personal injury and property damage caused by the release of pressure of process fluid, isolate the valve from the process and equalize pressure on both sides of the valve or bleed off the process fluid.

You can restart the instrument to reset parameters, links, etc. within the instrument. However, due to the effect that a restart can have on the instrument, and therefore the control loop, restarting the instrument should be used cautiously and only as a last measure.

There are two different restarts: Restart Processor and Restart with Defaults.

When selecting either of these options, Restart informs you of the consequences of this action and asks if you want to continue. Select *Yes* to perform the restart action, select *No* to select another action or exit. Restart informs you when the restart is completed. You must acknowledge the message to continue.

Warm Start (Restart Processor)— Performing a Restart Processor has the same effect as removing power from the instrument and re-applying power. Configuration and calibration do not change.

Cold Start (Restart with Defaults)— Performing a Restart with Defaults should be done with care. This restart resets most of the static and non-volatile parameters for all of the blocks in the instrument to their initial value. After a Restart with Defaults, you should place the instrument in service (the transducer block mode to auto) and run Device Setup and download the instrument configuration from the control system to properly setup the instrument. You also may need to re-establish communication links and trends.

Reset Informational Parameters

Reset Functional Parameters

Default Bus Address— Reset bus address to 126.

Reset Power-up Count— Resets count to 0.

Section 6 Maintenance and Troubleshooting

The DVC6200p digital valve controller enclosure is rated Type 4X and IP66, therefore periodic cleaning of internal components is not required. If the DVC6200p is installed in an area where the exterior surfaces tend to get heavily coated or layered with industrial or atmospheric contaminants, it is recommended that the vent (key 52) be periodically removed and inspected to ensure there is no partial or full obstruction. If the vent appears to be partially or fully obstructed, it must be cleaned or replaced. Lightly brush the exterior of the vent to remove contaminants and run a mild water/detergent solution through the vent to ensure it is free of any obstruction. Allow the vent to dry before reinstalling.

⚠ WARNING

Personal injury or property damage can occur from cover failure due to overpressure. Ensure that the housing vent opening is open and free of debris to prevent pressure buildup under the cover.

⚠ WARNING

To avoid static discharge from the plastic cover, do not rub or clean the cover with solvents. To do so could result in an explosion. Clean with a mild detergent and water only.

⚠ WARNING

Avoid personal injury or property damage from sudden release of process pressure or bursting of parts. Before performing any maintenance procedures on the DVC6200p digital valve controller:

- **Always wear protective clothing, gloves, and eyewear.**
- **Do not remove the actuator from the valve while the valve is still pressurized.**
- **Disconnect any operating lines providing air pressure, electric power, or a control signal to the actuator. Be sure the actuator cannot suddenly open or close the valve.**
- **Use bypass valves or completely shut off the process to isolate the valve from process pressure. Relieve process pressure from both sides of the valve.**
- **Vent the pneumatic actuator loading pressure and relieve any actuator spring precompression.**
- **Use lock-out procedures to be sure that the above measures stay in effect while you work on the equipment.**
- **Check with your process or safety engineer for any additional measures that must be taken to protect against process media.**

⚠ WARNING

When using natural gas as the supply medium, or for explosion-proof applications, the following warnings also apply:

- **Remove electrical power before removing the housing cap. Personal injury or property damage from fire or explosion may result if power is not disconnected before removing the cap.**
- **Remove electrical power before disconnecting any of the pneumatic connections.**
- **When disconnecting any of the pneumatic connections or any pressure retaining part, natural gas will seep from the unit and any connected equipment into the surrounding atmosphere. Personal injury or property damage may result**

from fire or explosion if natural gas is used as the supply medium and appropriate preventive measures are not taken. Preventive measures may include, but are not limited to, one or more of the following: ensuring adequate ventilation and the removal of any ignition sources.

- **Ensure that the cover is correctly installed before putting this unit back into service. Failure to do so could result in personal injury or property damage from fire or explosion.**

⚠ WARNING

When replacing components, use only components specified by the factory. Always use proper component replacement techniques, as presented in this manual. Improper techniques or component selection may invalidate the approvals and the product specifications, as indicated in table 1-1. It may also impair operations and the intended function of the device, and could cause personal injury and property damage.

Using the digital valve controller, valve and instrument maintenance can be enhanced, thus avoiding unnecessary maintenance. DVC6200p with digital communication provides easy access to to the condition of the valve through alerts that provide descriptions of the alert and recommended actions for correcting problems.

Removing the Magnetic Feedback Assembly

To remove the magnet assembly from the actuator stem, perform the following basic steps.

1. Make sure that the valve is isolated from the process.
2. Remove the instrument terminal box cover.
3. Disconnect the field wiring from the terminal board.
4. Shut off the instrument air supply.
5. Disconnect the pneumatic tubing and remove the DVC6200p or the DVC6215 from the actuator.
6. Remove the screws holding the magnet assembly to the connector arm.

When replacing the instrument, be sure to follow the mounting guidelines in the Installation section of the quick start guide (D103556X012) that ships with the product. Setup and calibrate the instrument prior to returning to service.

Module Base Maintenance

The digital valve controller contains a module base consisting of the I/P converter, printed wiring board assembly, and pneumatic relay. The module base may be easily replaced in the field without disconnecting field wiring or tubing.

Tools Required

Table 6-1 lists the tools required for maintaining the DVC6200p digital valve controller.

Table 6-1. Tools Required

Tool	Size	Component
Phillips Screwdriver		Relay, printed wiring board assembly, and cover screws
Hex key	5 mm	Terminal box screw
Hex key	1.5 mm	Terminal box cover screw
Hex key	2.5 mm	I/P converter screws
Hex key	6 mm	Module base screws

Component Replacement

When replacing any of the components of the DVC6200p, the maintenance should be performed in an instrument shop whenever possible. Make sure that the electrical wiring and pneumatic tubing is disconnected prior to disassembling the instrument.

Removing the Module Base

Refer to figure 7-2 or 7-4 for key number locations.

⚠ WARNING

To avoid personal injury or equipment damage from bursting of parts, turn off the supply pressure to the digital valve controller and bleed off any excess supply pressure before attempting to remove the module base assembly from the housing.

1. Unscrew the four captive screws in the cover (key 43) and remove the cover from the module base (key 2).
2. Using a 6 mm hex socket wrench, loosen the three-socket head screws (key 38). These screws are captive in the module base by retaining rings (key 154).

Note

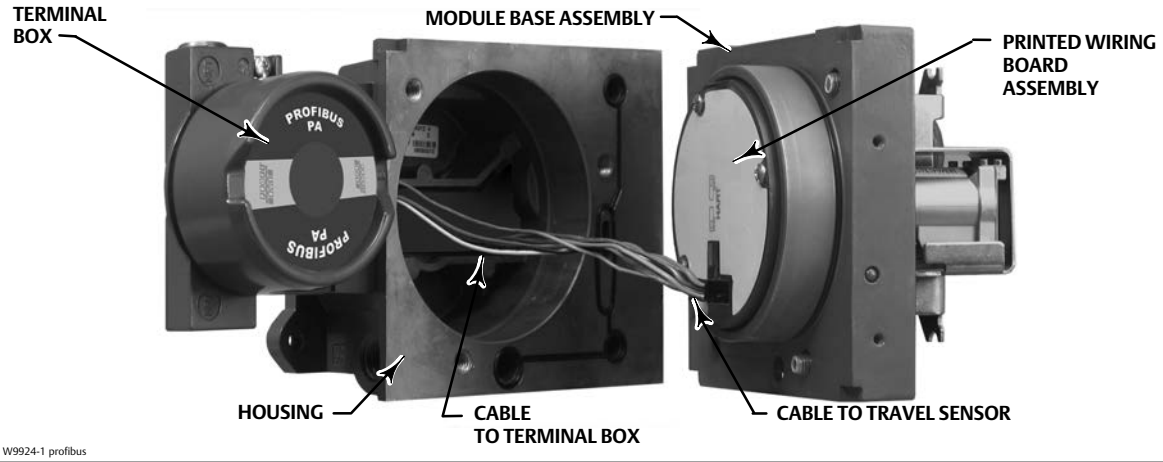
The module base is linked to the housing by two cable assemblies. Disconnect these cable assemblies after you pull the module base out of the housing.

NOTICE

To avoid affecting performance of the instrument, take care not to damage the module base seal or guide surface. Do not bump or damage the bare connector pins on the PWB assembly. Damaging either the module base or guide surface may result in material damage, which could compromise the instruments ability to maintain a pressure seal.

3. Pull the module base straight out of the housing (key 1). Once clear of the housing, swing the module base to the side of the housing to gain access to the cable assemblies.
4. The digital valve controller has two cable assemblies, shown in figure 6-1, which connect the module base, via the printed wiring board assembly, to the travel sensor and the terminal box. Disconnect these cable assemblies from the printed wiring board assembly on the back of the module base.

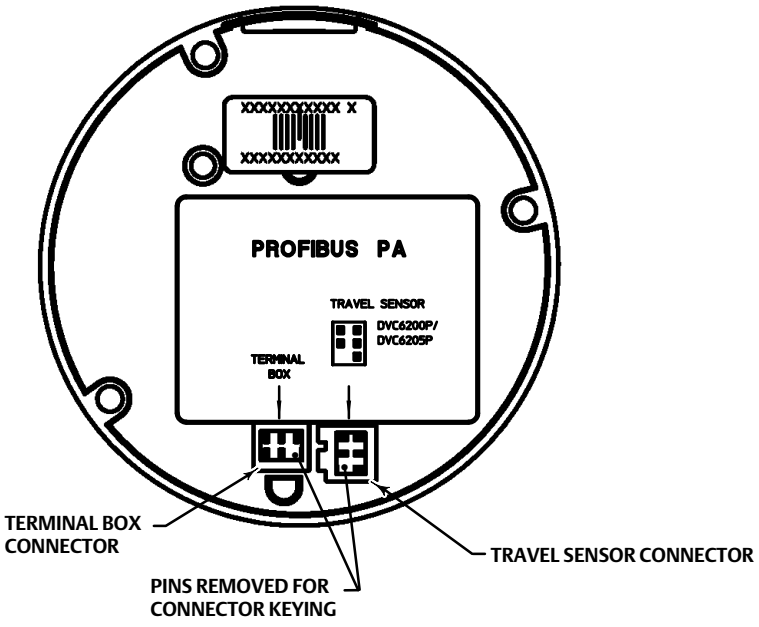
Figure 6-1. Printed Wiring Board Cable Connections



Replacing the Module Base

Refer to figure 7-2 or 7-4 for key number locations. Refer to figure 6-2 for a view of the back of the PWB assembly sub-module.

Figure 6-2. Back View of PWB Assembly Sub-Module



Note

To avoid affecting performance of the instrument, inspect the guide surface on the module and the corresponding seating area in the housing before installing the module base assembly. These surfaces must be free of dust, dirt, scratches, and contamination.

Ensure the module base seal is in good condition. Do not reuse a damaged or worn seal.

1. Ensure the module base seal (key 237) is properly installed in the housing (key 1). Ensure the O-ring (key 12) is in place on the module base assembly.
2. Connect the terminal box connector to the PWB assembly (key 50). Orientation of the connector is required.
3. Connect the travel sensor connector to the PWB assembly (key 50). Orientation of the connector is required.
4. Insert the module base (key 2) into the housing (key 1).

Note

For stainless steel digital valve controllers pipe thread sealant (key 64) is recommended under the head of the three socket head screws (key 38) prior to attaching the module base to the housing in the next step.

5. Install three socket head screws (key 38) in the module base into the housing. If not already installed, press three retaining rings (key 154) into the module base. Evenly tighten the screws in a crisscross pattern to a final torque of 16 N•m (138 lbf•in).

NOTICE

Disruption of process control can result if the cable assemblies/wiring are damaged when attaching the cover to the module base assembly

Ensure that the cable assemblies/wiring are positioned in the cavity of the module base so they do not get compressed or damaged when attaching the cover to the module base assembly in step 6.

6. Attach the cover (key 43) to the module base assembly.

Submodule Maintenance

The digital valve controller's module base contains the following submodules: I/P converter, PWB assembly, and pneumatic relay. If problems occur, these submodules may be removed from the module base and replaced with new submodules. After replacing a submodule, the module base may be put back into service.

NOTICE

Exercise care when performing maintenance on the module base. Reinstall the cover to protect the I/P converter and gauges when servicing other submodules.

In order to maintain accuracy specifications, do not strike or drop the I/P converter during submodule maintenance.

I/P Converter

Refer to figure 7-2 or 7-4 for key number locations. The I/P converter (key 41) is located on the front of the module base.

Note

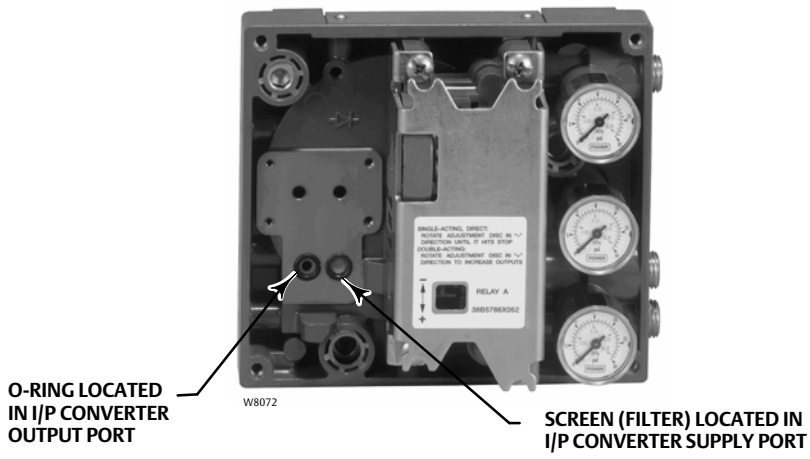
After I/P converter submodule replacement, calibrate the digital valve controller to maintain accuracy specifications.

Replacing the I/P Filter

A screen in the supply port beneath the I/P converter serves as a secondary filter for the supply medium. To replace this filter, perform the following procedure:

1. Remove the I/P converter (key 41) and shroud (key 169) as described in the Removing the I/P Converter procedure.
2. Remove the screen (key 231) from the supply port.
3. Install a new screen in the supply port as shown in figure 6-3.
4. Inspect the O-ring (key 39) in the I/P output port. If necessary, replace it.
5. Reinstall the I/P converter (key 41) and shroud (key 169) as described in the Replacing the I/P Converter procedure.

Figure 6-3. I/P Filter Location



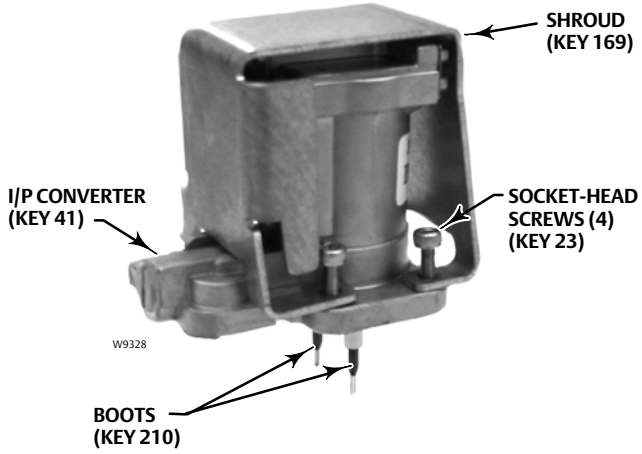
Removing the I/P Converter

1. Remove the front cover (key 43), if not already removed.
2. Refer to figure 6-4. Using a 2.5 mm hex socket wrench, remove the four socket-head screws (key 23) that attach the shroud (key 169) and I/P converter (key 41) to the module base (key 2).
3. Remove the shroud (key 169); then pull the I/P converter (key 41) straight out of the module base (key 2). Be careful not to damage the two electrical leads that come out of the base of the I/P converter.
4. Ensure that the O-ring (key 39) and screen (key 231) stay in the module base and do not come out with the I/P converter (key 41).

Replacing the I/P Converter

1. Refer to figure 6-3. Inspect the condition of the O-ring (key 39) and screen (key 231) in the module base (key 2). Replace them, if necessary. Apply silicone lubricant to the O-ring.
2. Ensure the two boots (key 210) shown in figure 6-4 are properly installed on the electrical leads.

Figure 6-4. I/P Converter



3. Install the I/P converter (key 41) straight into the module base (key 2), taking care that the two electrical leads feed into the guides in the module base. These guides route the leads to the printed wiring board assembly submodule.
4. Install the shroud (key 169) over the I/P converter (key 41).
5. Install the four socket-head screws (key 23) and evenly tighten them in a crisscross pattern to a final torque of 1.6 N•m (14 lbf•in).
6. After replacing the I/P converter, calibrate travel or perform touch-up calibration to maintain accuracy specifications.

Printed Wiring Board (PWB) Assembly

Refer to figure 7-2 or 7-4 for key number locations. The PWB assembly (key 50) is located on the back of the module base assembly (key 2).

Note

If the PWB assembly submodule is replaced, calibrate and configure the digital valve controller to maintain accuracy specifications.

Removing the Printed Wiring Board Assembly

1. Separate the module base from the housing by performing the Removing the Module Base procedure.
2. Remove three screws (key 33).
3. Lift the PWB assembly (key 50) straight out of the module base (key 2).
4. Ensure that the O-rings (key 40) remain in the pressure sensor bosses on the module base assembly (key 2) after the PWB assembly (key 50) has been removed.

Replacing the Printed Wiring Board Assembly

1. Apply silicone lubricant to the pressure sensor O-rings (key 40) and install them on the pressure sensor bosses in the module base assembly.
2. Properly orient the PWB assembly (key 50) as you install it into the module base. The two electrical leads from the I/P converter (key 41) must guide into their receptacles in the PWB assembly and the pressure sensor bosses on the module base must fit into their receptacles in the PWB assembly.
3. Push the PWB assembly (key 50) into its cavity in the module base.
4. Install and tighten three screws (key 33) to a torque of 1 N•m (10.1 lbf•in).
5. Reassemble the module base to the housing by performing the Replacing the Module Base procedure.
6. Setup and calibrate the digital valve controller.

Note

Calibration is required for either Travel or Pressure Control after PWB Assembly replacement.

Note that only one calibration is needed, depending on control selection.

Pneumatic Relay

Refer to figure 7-2 or 7-4 for key number locations. The pneumatic relay (key 24) is located on the front of the module base.

Note

After relay submodule replacement, calibrate the digital valve controller to maintain accuracy specifications.

Removing the Pneumatic Relay

1. Loosen the four screws that attach the relay (key 24) to the module base. These screws are captive in the relay.
2. Remove the relay.

Replacing the Pneumatic Relay

1. Visually inspect the holes in the module base to ensure they are clean and free of obstructions. If cleaning is necessary, do not enlarge the holes.
2. Apply silicone lubricant to the relay seal and position it in the grooves on the bottom of the relay as shown in figure 6-5. Press small seal retaining tabs into retaining slots to hold relay seal in place.

Figure 6-5. Pneumatic Relay Assembly

3. Position the relay (with shroud) on the module base. Tighten the four screws, in a crisscross pattern, to a final torque of 2 N•m (20.7 lbf•in).
4. Using the configuration software, verify that the value for Relay Type parameter matches the relay type installed.
5. After replacing the relay and verifying the relay type, calibrate travel or perform touch-up calibration to maintain accuracy specifications

Gauges, Pipe Plugs, or Tire Valves

Depending on the options ordered, the DVC6200p will be equipped with either gauges (key 47), pipe plugs (key 66), or tire valves (key 67). Single-acting instruments will also have a screen (key 236, figure 7-3). These are located on the top of the module base next to the relay.

Perform the following procedure to replace the gauges, tire valves, or pipe plugs. Refer to figure 7-2 and 7-3 for key number locations.

1. Remove the front cover (key 43).
2. Remove the gauge, pipe plug, or tire valve as follows:

For gauges (key 47), the flats are on the gauge case. Use a wrench on the flats of the gauge to remove the gauge from the module base. For double-acting instruments, to remove the supply gauge remove one of the output gauges.

For pipe plugs (key 66) and tire valves (key 67), use a wrench to remove these from the module base.

3. Apply pipe thread sealant (key 64) to the threads of the replacement gauges, pipe plugs, or tire valves.
4. Using a wrench, screw the gauges, pipe plugs, or tire valves into the module base.

Terminal Box

⚠ WARNING

Refer to the Maintenance WARNING at the beginning of this section.

Refer to figure 7-2 or 7-4 for key number locations.

The terminal box is located on the housing and contains the terminal strip assembly for field wiring connections.

Removing the Terminal Box

⚠ WARNING

To avoid personal injury or property damage caused by fire or explosion, remove power to the instrument before removing the terminal box cover in an area which contains a potentially explosive atmosphere or has been classified as hazardous.

1. Loosen the set screw (key 58) in the cap (key 4) so that the cap can be unscrewed from the terminal box.
2. After removing the cap (key 4), note the location of field wiring connections and disconnect the field wiring from the terminal box.
3. Separate the module base from the housing by performing the Removing the Module Base procedure.
4. Disconnect the terminal box wiring connector from the PWB assembly (key 50).
5. Remove the screw (key 72). Pull the terminal box assembly straight out of the housing.

Replacing the Terminal Box

Note

Inspect all O-rings for wear and replace as necessary.

1. Apply lubricant, silicone sealant to the O-ring (key 34) and install the O-ring over the stem of the terminal box.
2. Insert the terminal box assembly stem into the housing until it bottoms out. Position the terminal box assembly so that the hole for the screw (key 72) in the terminal box aligns with the threaded hole in the housing. Install the screw (key 72).

3. Connect the terminal box wiring connector to the PWB assembly (key 50).
4. Reassemble the module base to the housing by performing the Replacing the Module Base procedure.
5. Reconnect the field wiring as noted in step 2 in the Removing the Terminal Box procedure.
6. Apply lubricant, silicone sealant to the O-ring (key 36) and install the O-ring over the 2-5/8 inch threads of the terminal box. Use of a tool is recommended to prevent cutting the O-ring while installing it over the threads.
7. Apply lithium grease (key 63) to the 2-5/8 inch threads on the terminal box to prevent seizing or galling when the cap is installed.
8. Screw the cap (key 4) onto the terminal box until no gap remains.
9. Install the set screw (key 58) into the cap (key 4). Secure the cap by engaging the set screw.

Stroking the Digital Valve Controller Output

After completing maintenance procedures, confirm proper valve operation by stroking the digital valve controller output. Refer to page 42 in the Viewing Device Variables and Diagnostics section.

Instrument Troubleshooting

What to Do First

When a problem occurs, check the following first:

Mounting

- Is the feedback linkage connected correctly? Refer to the quick start guide (D103556X012) that ships with the product.

Utility Connections

- Are pneumatic connections correct? Are there any air leaks? Refer to the quick start guide that ships with the product.
- Is the air supply pressure sufficient to drive the valve?
- Is the digital valve controller correctly connected to the fieldbus? Refer to the quick start guide that ships with the product.
- Is there power to the device? Is the terminal voltage between 9 and 32 volts? Refer to the quick start guide that ships with the product.
- Is the segment terminated correctly? See host system documentation.
- Is the host system connected to the segment? See host system documentation.

If communication or output difficulties are experienced with the instrument, refer to the troubleshooting information provided in table 6-2.

Also see the Technical Support Checklist found on page 58.

Table 6-2. Instrument Troubleshooting

Symptom	Possible Cause	Action
1 Instrument will not communicate.	1a No power to device	1a1 Ensure device is connected to the segment (see host system documentation).
		1a2 Measure the terminal voltage. Terminal voltage should be between 9 and 32 VDC.
		1a3 Check to be sure device is drawing current. There should be approximately 19 mA.
	1b Internal device wiring problems.	1b1 Verify connectors are plugged into the printed wiring board correctly (see Printed Wiring Board Assembly on page 51).
		1b2 Check continuity of cable between terminal box and printed wiring board. If necessary, replace the terminal box assembly (see page 53).
		1b3 Check for damaged printed wiring board lands and terminals. If necessary, replace the terminal box assembly (see page 53).
	1c Incompatible network settings	1c Change host parameters. Refer to host documentation for procedure.
	1d Defective printed wiring board (PWB) assembly.	1d Replace printed wiring board (see page 51).
	1e Defective terminal box.	1e Check continuity from each screw terminal to the corresponding PWB connector pin. If necessary, replace the terminal box assembly (see page 53).
2 Device does not stay on segment.	2a Incorrect signal level.	2a1 Check that segment is properly terminated (see host system documentation).
		2a2 Wrong cable type or segment length too long.
		2a3 Bad power supply or conditioner.
	2b Excess noise on segment.	2b1 Check integrity of wiring connections. Follow PROFIBUS PA wiring guidelines.
		2b2 Check for corrosion or moisture on terminals in terminal box (refer to page 53 for terminal box maintenance information).
		2b3 Check for bad power supply.
	2c Electronics failing.	2c. Replace printed wiring board assembly (see Replacing the PWB Assembly on page 51).
3 A value cannot be written to a parameter.	3a Physical block parameter Write Lock may be set to Locked.	3a Change Write Lock to Not Locked (refer to page 26).
	3b If a transducer block parameter, the mode may be incorrect or the parameter may be protected.	3b1 Check table C-3. If necessary change the transducer block target mode.
		3b2 Check table C-3. If necessary change data protection.
	3c You have attempted to write a value that is outside the valid range.	3c Check the range values listed for the parameter (refer to the parameter tables in Appendix C).
	3d Function block or in/out block mode may be incorrect.	3.d. Confirm that block is in correct mode for writing to any given parameter.
4 Function block actual mode does not change with target mode.	4a Physical block actual mode is Out of Service.	4a Change Physical block target mode to Auto (refer to the Physical Block tab under Manual Setup > Classic View or to host system documentation).
	4b Transducer block actual mode is not Auto.	4b Change transducer block target mode to Auto (see page 13, Transducer Block Mode, refer to the Transducer Block tab under Manual Setup > Classic View or to host system documentation).
	4c Schedules that define when function blocks execute are not set correctly.	4c Set the schedules using host system or configuration tool. All function blocks must be in a schedule that is downloaded to the device.
	4d Configuration error	4d Look for configuration error bit in BLOCK_ERR. By default, all enumerature type parameters are initialized to 0 (undefined). They must be configured before the block can be put into service.

-Continued-

Table 6-2. Instrument Troubleshooting (Continued)

Symptom	Possible Cause	Action
5 Input or Output Block does not go to mode target	5a Physical block actual mode is Out of Service	5a Change Physical block target mode to Auto (refer to the Physical Block tab under Manual Setup > Classic View or to host system documentation).
	5b Transducer block actual mode is not Auto.	5b Change transducer block target mode to Auto (see page 13, Transducer Block Mode, refer to the Transducer Block tab under Manual Setup > Classic View or to host system documentation).
	5c Transducer has detected a hardware failure.	5c A bad status is passed to the block's READBACK or FIELD_VAL parameter.
	5d Wrong output block is active.	5d Use Outblock Selection to select the desired output block. The deselected block will have a bad status for READBACK.
6 Transducer block Setpoint (POSITIONING_VALUE [57]) is not being automatically updated from the AO block.	6a Transducer block mode in not Auto.	6a Change transducer block mode to Auto.
	6b AO block is not active.	6b Change Outblock Selection to AO Control.
7 Transducer block setpoint Setpoint(D) (SETPOINT_D [81]) is not being automatically updated from the DO block.	7a Transducer block mode is not Auto.	7a Change transducer block mode to Auto.
	7b DO block is not active.	8.b Change Outblock Selection to DO Control.
8 Valve does not move when the set point is changed	8a A function block actual mode is Out of Service or Transducer Block Actual mode is Out of Service or Manual.	8a1 Change the target mode to an operational mode (see Appendix C or host system documentation).
		8a2 Verify that the correct block (AO or DO) is configured in Feature Select in the physical block. Only the selected out block is able to set the transducer setpoint and move the valve.
	8b Pneumatic connections are incorrect or supply pressure is incorrect	8b Check pneumatic connections and supply pressure. Be sure supply pressure regulator is set correctly.
	8c The valve has failed.	8c Apply a pneumatic pressure to the valve actuator and check valve action.
	8d The I/P converter or relay has failed.	8d Replace the I/P converter or relay (see page 50).
9 Valve does not stroke from 0 to 100% with set point change	9a Insufficient supply pressure or leak in pneumatic connections.	9a Check supply pressure and supply pressure regulator setting. Check for leaks around pneumatic connections.
10 Deviation between set point and actual valve position remains.	10a Digital valve controller output is in cutoff.	10a Check values for Travel Cutoff High and Travel Cutoff Low (see page 15 of the Configuration Section or host system documentation).
	10b Digital valve controller is not calibrated correctly	10b Perform Auto or Manual Travel Calibration (see page 35.)
	10c Incorrect turning. Tuning that is too conservative will result in excess error.	10c Perform Tuning procedure to adjust tuning and optimize valve response (see page 21).
11 The valve cycles, does not stay on set point.	11a Large amount of packing friction.	11a1 Perform Tuning procedure to adjust tuning and optimize valve response (see page 21).
		11a2 Use a larger size actuator.
12 Valve responds too slowly.	12a I/P converter input filter clogged or air blockage in I/P assembly nozzle block.	12a1 Replace I/P converter filter (see Replacing the I/P Filter on page 49).
		12a2 Replace I/P converter (see page 50).
	12b O-ring(s) between I/P converter missing or hard and flattened losing seal.	12b Replace O-ring(s) (refer to page 49).
	12c I/P assembly out of spec.	13c I/P assembly nozzle may have been adjusted. Verify drive signal (55% to 80%). Replace I/P assembly if drive signal is continuously high or low (see page 50).
	12d Defective gasket.	12d Check gasket for closed holes, excessive deformation due to overtightening or “oozing”. If necessary, replace gasket (see the beginning of this section).

-Continued-

Table 6-2. Instrument Troubleshooting (Continued)

Symptom	Possible Cause	Action
	12e Defective relay.	12e Remove relay, inspect for missing Belleville washer, missing valve spring, missing valve plug. Inspect “lip” under top O-ring for breakage due to relay removal. Inspect O-rings and replace if hard or damaged. Replace parts or relay if I/P assembly good and air passages not blocked (see page 52).
	12f If responds slowly only upon air demand, there may be a restriction in the air line, the supply run may be excessively long, or the supply regulator may be defective or capacity not large enough.	12f1 Check supply line to ensure it is not clogged or damaged. Replace if necessary.
		12f2 If supply run is excessively long, a volume tank may need to be installed on the the supply side of the pressure regulator
		12f3 Replace supply regulator
13 Instrument will not calibrate, has sluggish performance or oscillates.	13a Travel sensor failed.	13a Replace the housing (key 1)
	13b Travel feedback is out of accepted range	13b Check the mounting. Ensure the correcting mounting kit has been selected and the magnetic array is properly installed.
	13c Cables not plugged into PWB correctly.	13c Inspect connections and correct.
	13d Configuration errors.	13d Verify configuration. Use Device Setup.
	13e Restricted pneumatic passages in I/P converter	13e Check screen in I/P converter supply port of the module base. Replace if necessary. If passages in I/P converter restricted, replace I/P converter (see page 50).
	13f O-ring(s) between I/P converter assembly missing or hard and flattened losing seal.	13f Replace O-ring(s) (refer to the I/P Converter section on page 49).
	13g I/P converter assembly damaged/corroded/clogged.	13g Check for bent flapper, open coil (continuity), contamination, staining, or dirty air supply. Coil resistance should be between 1680 - 1860 ohms. Replace I/P assembly if damaged, corroded, clogged, or open coil (see page 50).
	13h I/P converter assembly out of spec.	13h I/P converter assembly nozzle may have been adjusted. Verify drive signal (55 to 80% for double-acting; 60 to 85% for single-acting) with the valve off the stops. Replace I/P converter assembly if drive signal is continuously high or low (see page 50).
	13i Defective module base seal.	13i Check module base seal for condition and position. If necessary, replace seal. Refer to Module Base Maintenance on page 46.
	13j Defective relay.	13j Depress relay beam at adjustment location in shroud, look for increase in output pressure. Remove relay, inspect relay seal. Replace relay seal or relay if I/P converter assembly good and air passages not blocked (refer to page 52). Check relay adjustment (refer to page 37 of the Calibration Section).
	13k Defective 67CFR regulator, supply pressure gauge jumps around.	13k Replace 67CFR regulator.
14 Instrument will not calibrate.	14a Configuration errors.	14a Verify configuration.
	14b Magnet assembly is not correctly installed.	14b Check the mounting. Ensure the correcting mounting kit has been selected and the magnetic array is properly installed.
	14c Cables not plugged into PWB correctly.	14c Inspect connections and correct.
15. Erroneous pressure readings.	15a Defective pressure sensor(s).	15a Replace PWB (see page 51).
	15b Pressure sensor O-ring(s) missing.	15b Replace O-ring(s).

Technical Support Checklist

Have the following information available prior to contacting your Emerson sales office for support.

Reference

1. Instrument serial number as read from nameplate _____
2. What is the firmware version of the DVC6200p? _____
3. What is the hardware version of the DVC6200p? _____
4. What is the address of the DVC6200p? _____

Mode and Status

5. What are the DVC6200p Block Modes?

Actual Modes:	Physical Block _____	Transducer Block_____	AO/DO Block _____
Target Modes:	Physical Block _____	Transducer Block_____	AO/DO Block _____
Permitted Modes:	Physical Block _____	Transducer Block_____	AO/DO Block _____

6. What is the status of the individual function blocks?

Operational

7. Does the digital valve controller respond to the control signal? Yes _____ No _____
   If No, describe

8. Is it on Travel or Pressure control?
9. What are the following parameter readings?

Setpoint _____	Drive Signal _____%	
Supply Pressure _____	Pressure A _____	Pressure B _____
Travel Target _____%	Travel _____%	Pressure B _____

10. What is the safe position of the valve? Fail Closed ____ Fail Open ____

Interface and Diagnostic Tools

11. What interface and diagnostic tools are available?_____
12. Provide any available supporting documentation, such as Status Monitor, Detailed Setup, any alert readings.

Mounting

Reference

1. Actuator application: sliding-stem? _____ Rotary? _____
2. Which digital valve controller do you have? DVC6200p _____ DVC6205p/DVC6215 _____
3. What Make, Brand, Style, Size, etc. actuator is the DVC6200p mounted on? _____

Operational

4. What is the full travel of the valve?_____
5. What is the Mounting Kit part number? _____

Other

6. If mounting kits are made by Impact Partner/Customer, please provide pictures of installation.

Section 7 Parts

Parts Ordering

Whenever corresponding with your Emerson sales office about this equipment, always mention the controller serial number.

⚠ WARNING

Use only genuine Fisher replacement parts. Components that are not supplied by Emerson should not, under any circumstances, be used in any Fisher instrument. Use of components not supplied by Emerson may void your warranty, might adversely affect the performance of the instrument, and could cause personal injury and property damage.

Parts Kits

Note
All Standard kits with elastomers include nitrile elastomers. Extreme temperature kits include fluorosilicone elastomers.

Kit	Description	Part Number
1*	Elastomer Spare Parts Kit (kit contains parts to service one digital valve controller)	
	Standard	19B5402X012
	Extreme Temperature	19B5402X022
2*	Small Hardware Spare Parts Kit (kit contains parts to service one digital valve controller)	19B5403X032
3*	Seal Screen Kit [kit contains 25 seal screens (key 231) and 25 O-rings (key 39)]	14B5072X182
4*	Integral Mount Seal Kit (for 667 size 30i - 76i and GX actuators) [kit contains 5 seals (key 288)]	19B5402X032
5*	Terminal Box Kit	
	Aluminum	
	Standard	19B5401X212
	Standard, M20	19B5401X482
	Standard, Natural Gas Certified	19B5401X232
	Standard, Natural Gas Certified, M20	19B5401X512
	Extreme Temperature	19B5401X222
	Extreme Temperature, M20	19B5401X492
	Extreme Temperature, Natural Gas Certified	19B5401X242
	Extreme Temperature, Natural Gas Certified, M20	19B5401X522
	Stainless Steel	
	Extreme Temperature	19B5401X252
	Extreme Temperature, M20	19B5401X502
	Extreme Temperature, Natural Gas Certified	19B5401X332
	Extreme Temperature, Natural Gas Certified, M20	19B5401X532
6*	I/P Converter Kit	
	Standard	38B6041X152
	Extreme Temperature	38B6041X132
7*	Spare Module Base Assembly Kit [kit contains module base (key 2); drive screws, qty. 2, (key 11); shield/label (key 19); hex socket cap screw, qty. 3, (key 38); self tapping screw, qty. 2 (key 49); pipe plug, qty. 3 (key 61); retaining ring, qty. 3 (key 154); screen (key 236); and flame arrestors, qty. 3 (key 243)]	
	Aluminum	GE18654X012
	Stainless Steel	GE18654X022
8*	Spare Housing Assembly Kit [kit contains housing (key 1); vent assembly (key 52); seal (only included in Housing A kits) (key 288); seal (key 237); O-ring (key 34); O-ring (only used with integrally mounted regulator) (key 5)]	
	Aluminum	
	Housing A (used for GX actuator)	
	Standard	GE48798X032
	Extreme Temperature	GE48798X042
	Housing B (used for all actuators except GX)	
	Standard	GE48798X072
	Extreme Temperature	GE48798X082
	Stainless Steel	
	Housing B (used for all actuators except GX)	
	Extreme Temperature	GE48798X102
9*	Spare I/P Shroud Kit [kit contains shroud (key 169) and hex socket cap screw, qty. 4 (key 23)]	GE29183X012

*Recommended spare parts

Kit	Description	Part Number

Note

The Remote Mount Feedback Unit kit is not orderable by part number due to nameplate/approval requirements. Contact your Emerson sales office for information on ordering this kit.

10	Remote Mount Feedback Unit Kit (see figure 7-5) [remote housing assembly (key25); hex socket set screw (key 58); 1/2 NPT pipe plug (key 62); wire retainer, qty 2 (key 131); terminal cover (key 255); o-ring (key 256); gasket (Housing A only, used for GX actuator) (key 287); seal (Housing A only, used for GX actuator) (key 288)	
11	Feedback Array Kit	
	Sliding Stem (Linear) [kit contains feedback array and hex socket cap screws, qty. 2, washer, plain, qty. 2, external tooth lock washer, qty. 2 (only with aluminum feedback array kit) and alignment template. 210 mm (8-1/4 inch) kit contains feedback array and hex socket cap screws, qty. 4, washer, plain, qty. 4, external tooth lock washer, qty. 4 (only with aluminum feedback array kit), alignment template and insert]. Stainless steel kits only for use with stainless steel mounting kits.	
	7 mm (1/4-inch)	
	Aluminum	GG20240X012
	19 mm (3/4-inch)	
	Aluminum	GG20240X022
	Stainless steel	GE65853X012
	25 mm (1-inch)	
	Aluminum	GG20240X032
	Stainless steel	GE65853X022
	38 mm (1-1/2 inch)	
	Aluminum	GG20240X042
	Stainless steel	GE65853X032
	50 mm (2-inch)	
	Aluminum	GG20240X052
	Stainless steel	GE65853X042
	110 mm (4-1/8 inch)	
	Aluminum	GG20240X082
	Stainless steel	GE65853X062
	210 mm (8-1/4 inch)	
	Aluminum	GG20243X012
	Stainless steel	GE65853X072
	Rotary [kit contains feedback assembly, pointer assembly, travel indicator scale and M3 machine pan head screws, qty.2]. Stainless steel kits only for use with stainless steel mounting kits.	
	Aluminum	GG10562X012
	Stainless steel	GG10562X022
	Rotary array kit with coupler [Kit contains feedback assembly and NAMUR coupler]	
	Aluminum	GE71982X012
	Stainless steel	GE71982X022

Kit	Description	Part Number
12	Mounting Shield Kit [kit contains shield, qty. 3 and machine screws, qty. 6]	GG05242X022
13	Gasket/Seal Kit, for use with GX actuator [kit contains insulating gasket (key 287) and seal (key 288)	GE45468X012

Parts List

Note

Parts with footnote numbers are available in parts kits; see footnote information at the bottom of the page.

Contact your Emerson sales office for Part Ordering information.

Standard parts with elastomers include nitrile elastomers. Extreme temperature parts include fluorosilicone elastomers.

Key	Description

Housing (see figure 7-2 and 7-4)

DVC6200p

1	Housing(8)
52	Vent, plastic(2)
74	Mounting Bracket (DVC6205p only)
271	Screen(8)
287	Gasket, Housing A only (used for GX actuator)
288	Seal (used for 667 size 30i - 76i and GX actuators)

DVC6205p

1	Housing(8)
11	Drive Screw (2 req'd)
20	Shield
52	Vent, plastic(2)
74	Mounting Bracket
248	Screw, hex head (4 req'd)
249	Screw, hex head (4 req'd)
250	Spacer (4 req'd)
267	Standoff (2 req'd)
271	Screen(8)

*Recommended spare
2. Available in the Small Hardware Spare Parts Kit
8. Available in the Spare Housing Assembly Kit

Key	Description	Part Number

Common Parts (see figure 7-2, 7-3, and 7-4)

DVC6200p and DVC6205p

16*	O-ring(1) (3 req'd)	
29	Warning label, for use only with LCIE hazardous area classifications	
33	Mach Screw, pan hd, SST(2) (3 req'd)	
38	Cap Screw, hex socket, SST(2)(7) (3 req'd)	
43*	Cover Assembly (includes cover screws)	
	Standard	GG53748X012
	Extreme temperature	GG53748X022
48	Nameplate	
49	Screw, self tapping (2 req'd)(7) Not required for relay A	
61	Pipe Plug, hex socket(7) Housing A with relay C (2 req'd) (used for GX actuator) Housing A with relay B (1 req'd) (used for GX actuator) Housing B with relay B and C (1 req'd) (used for all actuators except GX)	
63	Lithium grease (not furnished with the instrument)	
64	Pipe thread sealant, anaerobic (not furnished with the instrument)	
65	Lubricant, silicone sealant (not furnished with the instrument)	
154	Retaining Ring(2) (3 req'd)	
236	Screen (required for relay B and C only)(8)	
237	Module Base Seal(1)	

Module Base (see figure 7-2 and 7-4)

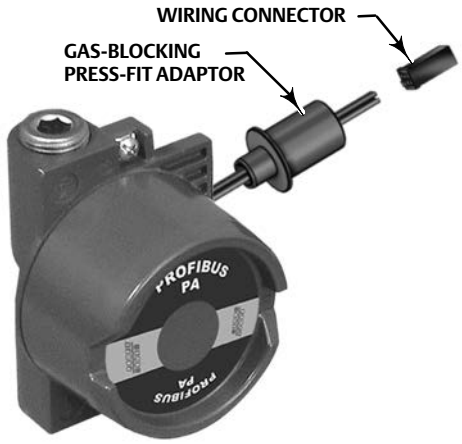
DVC6200p and DVC6205p

2	Module Base(7)	
11	Drive Screw(7) (2 req'd)	
12	O-ring(1)	
19	Label, Shield Assembly(7)	
61	Pipe Plug, hex socket(7) (3 req'd)	
243	Slotted Pin (flame arrestor)(7) (3 req'd)	

*Recommended spare

1. Available in the Elastomer Spare Parts Kit
2. Available in the Small Hardware Spare Parts Kit
3. Available in the Seal Screen Kit
6. Available in the I/P Converter Kit
7. Available in the Spare Module Base Assembly Kit
8. Available in the Spare Housing Assembly Kit
9. Available in the Spare Shroud Kit

Figure 7-1. Terminal Box of Natural Gas Certified FIELDVUE DVC6200p Digital Valve Controller



W9923-1 profibus

Key	Description	Part Number

I/P Converter Assembly (see figure 7-2 and 7-4)

DVC6200p and DVC6205p

23	Cap Screw, hex socket, SST(2)(9) (4 req'd)	
39*	O-ring(1)(3)(6)	
41	I/P Converter(6)	
169	Shroud(6)(9) (not shown, see figure 6-4)	
210*	Boot, nitrile(1)(6) (2 req'd) (see figure 6-4)	
231*	Seal Screen(1)(3)(6)	

Relay (see figure 7-2 and 7-4)

DVC6200p and DVC6205p

24*	Relay Assembly, (includes shroud, relay seal, mounting screws)	
	Standard	
	Standard Bleed	
	Housing A (used for GX actuator)	
	Single-/acting direct (relay C)	38B5786X182
	Single-acting reverse (relay B)	38B5786X172
	Housing B (used for all actuators except GX)	
	Single-acting direct (relay C)	38B5786X132
	Double-acting (relay A)	38B5786X052
	Single-acting reverse (relay B)	38B5786X092

Key	Description	Part Number
24*	Relay Assembly, (includes shroud, relay seal, mounting screws)	
	Standard (continued)	
	Low Bleed	
	Housing A (used for GX actuator)	
	Single-acting direct (relay C)	38B5786X202
	Single-acting reverse (relay B)	38B5786X192
	Housing B (used for all actuators except G)	
	Single-acting direct (relay C)	38B5786X152
	Double-acting (relay A)	38B5786X072
	Single-acting reverse (relay B)	38B5786X112
	Extreme Temperature	
	Standard Bleed	
	Single-acting direct (relay C)	38B5786X142
	Double-acting (relay A)	38B5786X032
	Single-acting reverse (relay B)	38B5786X102
	Low Bleed	
	Single-acting direct (relay C)	38B5786X162
	Double-acting (relay A)	38B5786X082
	Single-acting reverse (relay B)	38B5786X122

Loop Connections Terminal Box (see figure 7-2 and 7-4)

DVC6200p and DVC6205p

Key	Description
4	Terminal Box Cap
34*	O-ring(1)(5)
36*	O-ring(1)(5)
58	Set Screw, hex socket, SST(2)
72	Cap Screw, hex socket, SST(2)
164	Terminal Box Assembly

Feedback Connections Terminal Box (see figure 7-4)

DVC6205p

Key	Description
4	Terminal Box Cap
34*	O-ring(1)(5)
36*	O-ring(1)(5)
58	Set Screw, hex socket, SST(2)
62	Pipe Plug, hex hd, SST
262	Adapter
263*	O-ring
264	Terminal Box Assembly, remote

Key	Description

PWB Assembly (see figure 7-2 and 7-4)

DVC6200p and DVC6205p

Key	Description
50*	PWB Assembly FD (Fieldbus Diagnostics)

Pressure Gauges, Pipe Plugs, or Tire Valve Assemblies (see figure 7-3)

DVC6200p and DVC6205p

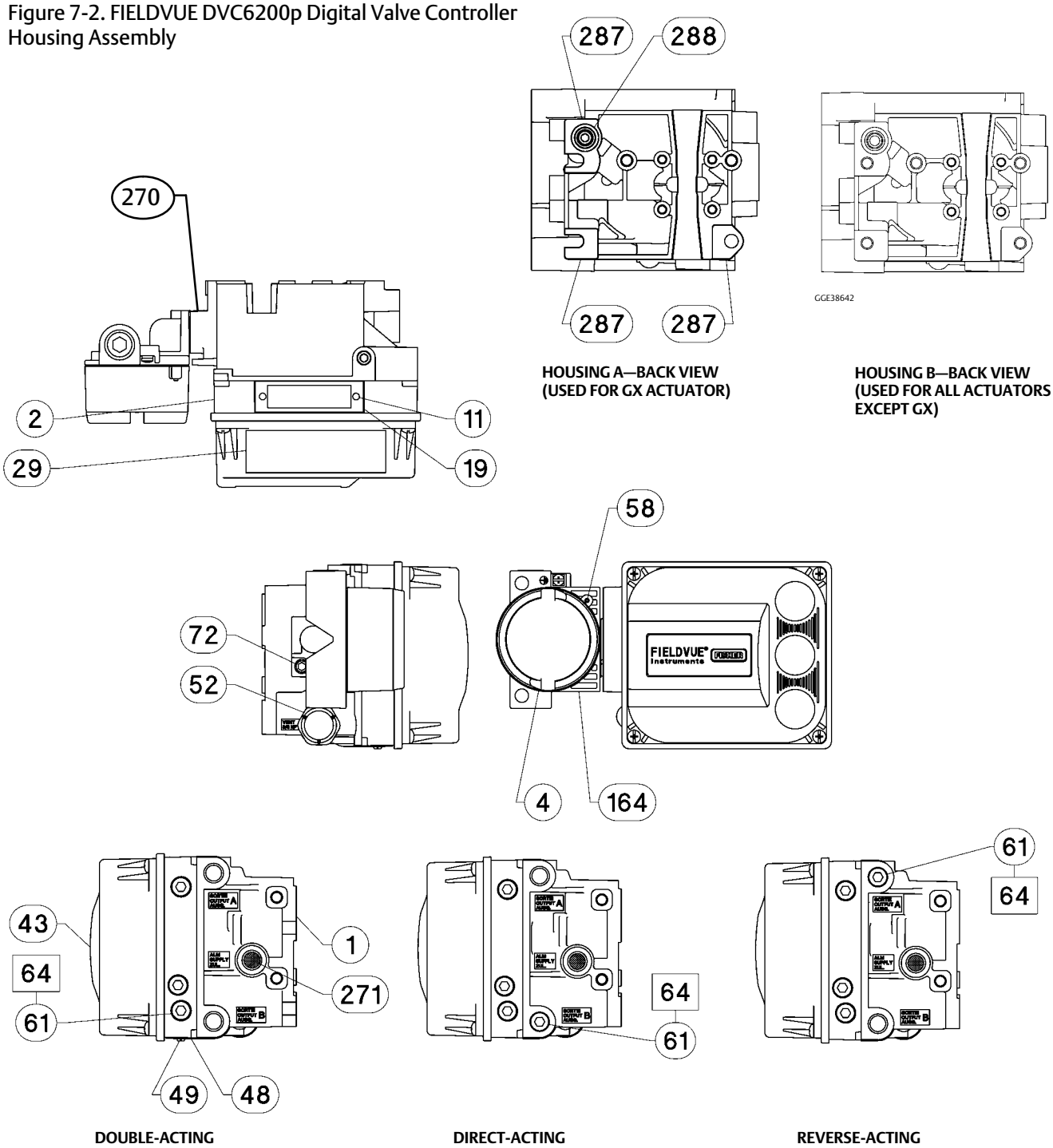
Key	Description
47*	Pressure Gauge, nickel-plated brass case, brass connection Double-acting (3 req'd); Single-acting (2 req'd) PSI/MPA Gauge Scale To 60 PSI, 0.4 MPa To 160 PSI, 1.1 MPa PSI/bar Gauge Scale To 60 PSI, 4 bar To 160 PSI, 11 bar PSI/KG/CM^2 Gauge Scale To 60 PSI, 4 KG/CM^2 To 160 PSI, 11 KG/CM^2
66	Pipe Plug, hex hd For units w/o gauges
67	Tire Valve, used with Tire Valve Option only Double-acting (3 req'd); Single-acting (2 req'd)

DVC6215 Feedback Unit (see figure 7-5)

Key	Description
65	Lubricant, silicone sealant (not furnished with the instrument)
256*	O-Ring, fluorosilicone

*Recommended spare
1. Available in the Elastomer Spare Parts Kit
2. Available in the Small Hardware Spare Parts Kit
5. Available in the Terminal Box Kit

Figure 7-2. FIELDVUE DVC6200p Digital Valve Controller Housing Assembly



HOUSING A—BACK VIEW (USED FOR GX ACTUATOR)

HOUSING B—BACK VIEW (USED FOR ALL ACTUATORS EXCEPT GX)

DOUBLE-ACTING

DIRECT-ACTING

REVERSE-ACTING

APPLY LUBRICANT, SEALANT, OR THREAD LOCK

65 **APPLY LUBRICANT ON ALL O-RINGS UNLESS OTHERWISE SPECIFIED**

GG06847 sheet 1 of 3
GG06861 sheet 1 of 3

Figure 7-2. FIELDVUE DVC6200p Digital Valve Controller Housing Assembly (continued)

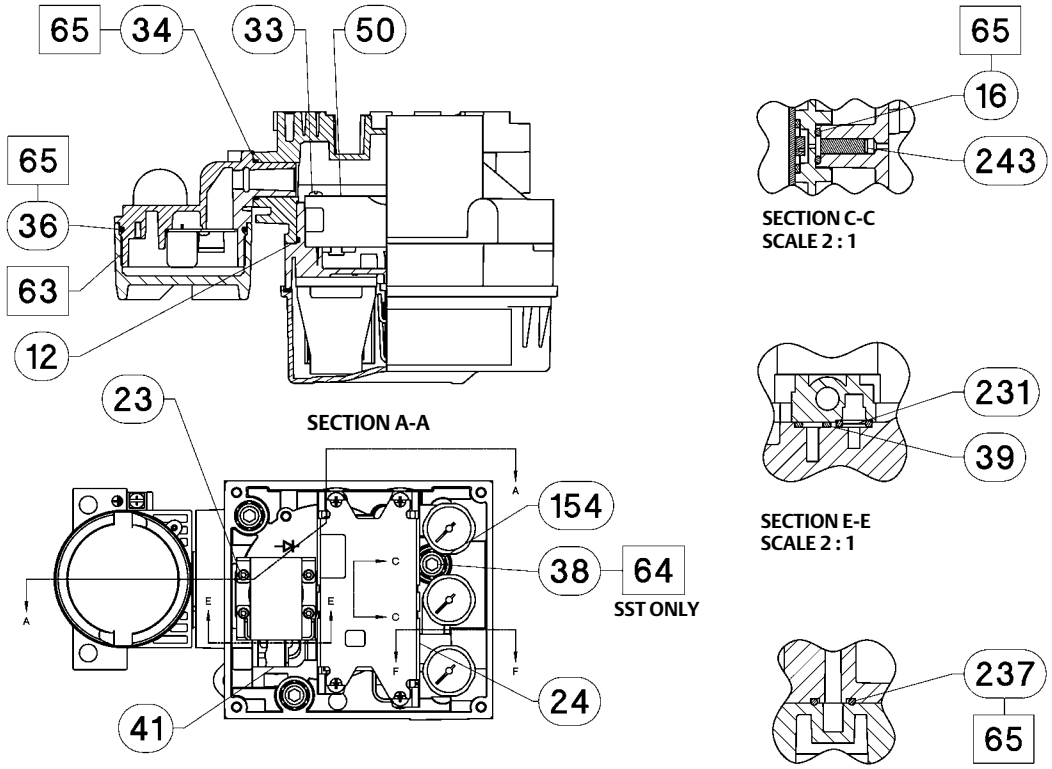


Figure 7-3. Gauge Configuration

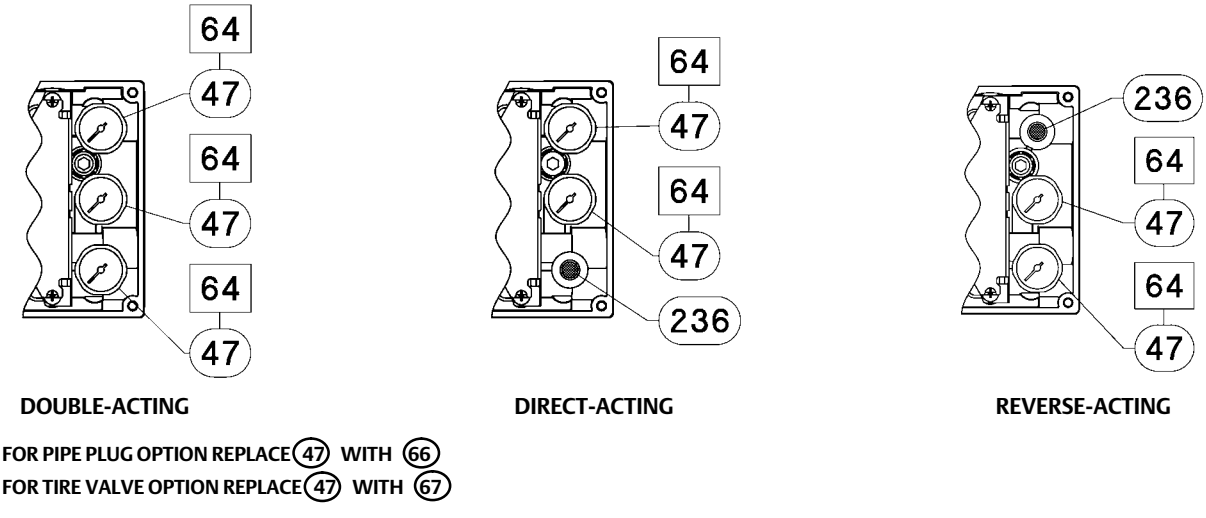


Figure 7-4. FIELDVUE DVC6205p Base Unit Housing Assembly

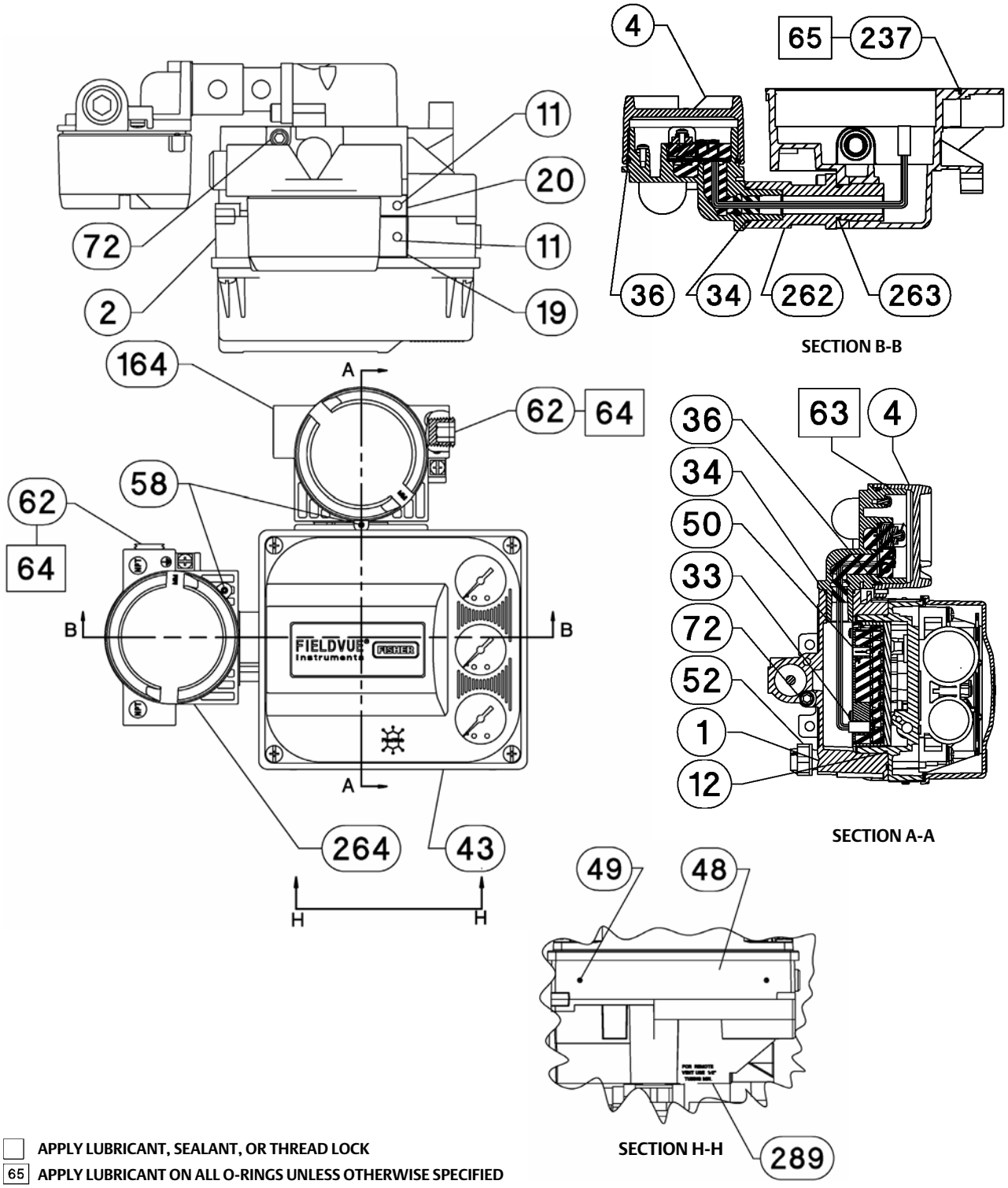
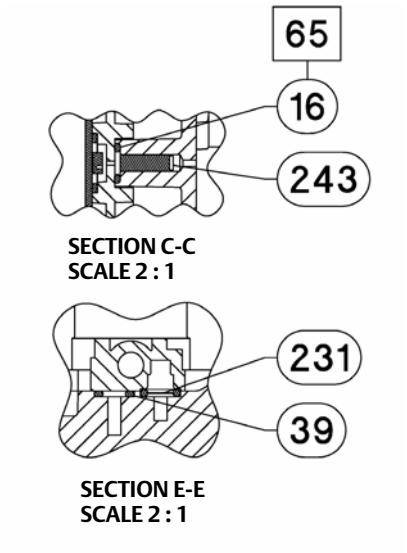
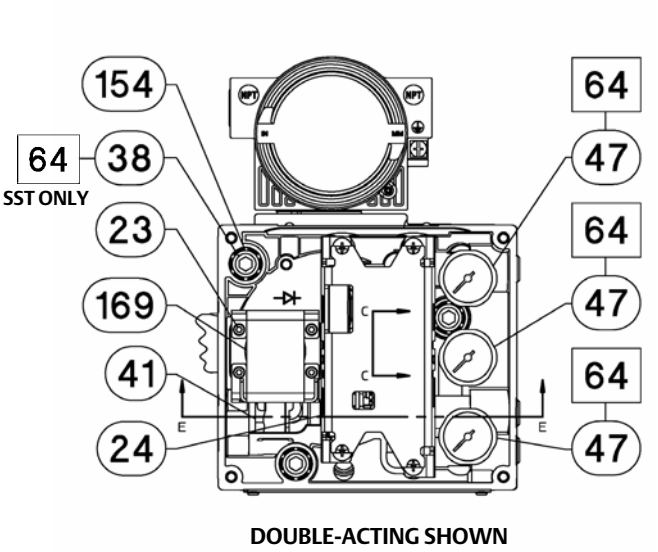
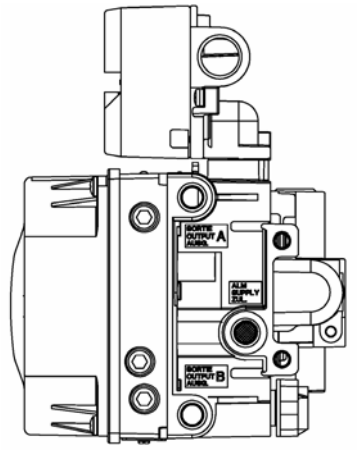


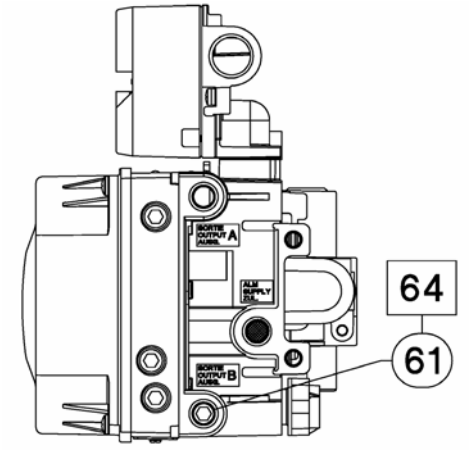
Figure 7-4. FIELDVUE DVC6205p Base Unit Housing Assembly (continued)



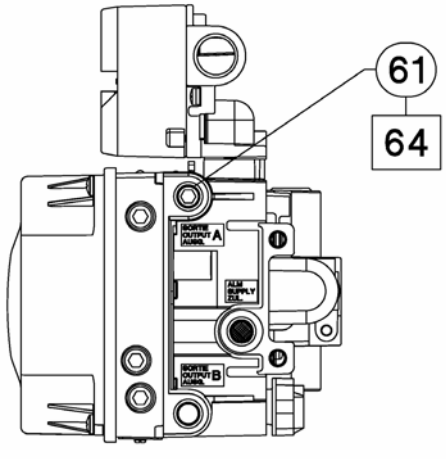




DOUBLE-ACTING



DIRECT-ACTING

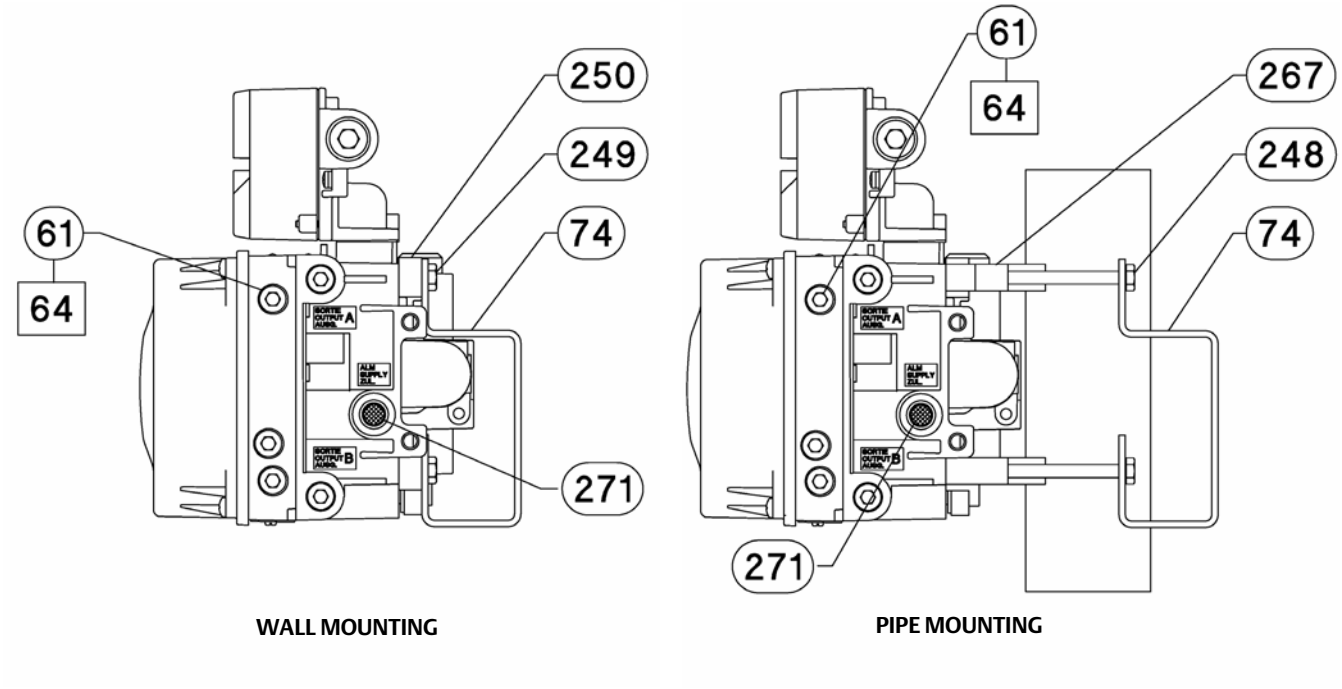


REVERSE-ACTING

☐ **APPLY LUBRICANT, SEALANT, OR THREAD LOCK**
65 **APPLY LUBRICANT ON ALL O-RINGS UNLESS OTHERWISE SPECIFIED**

GE40181

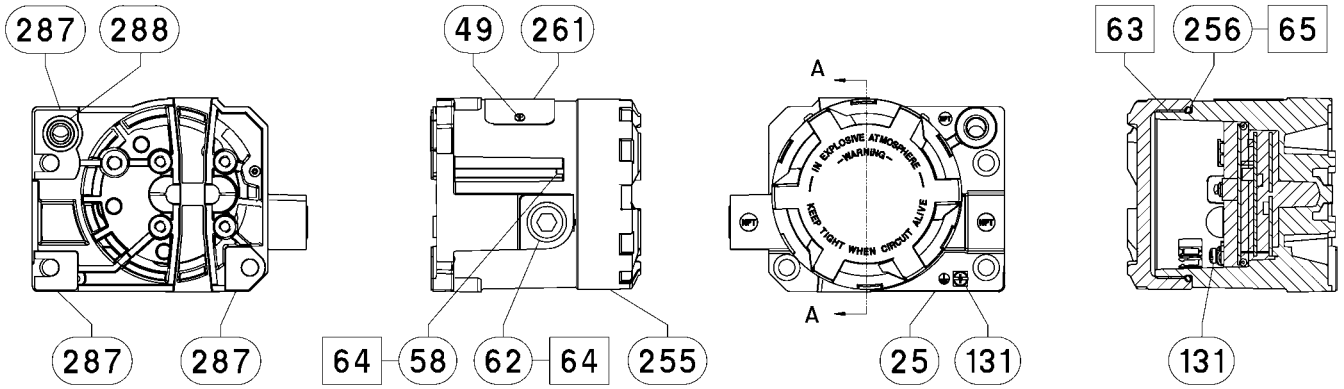
Figure 7-4. FIELDVUE DVC6205p Base Unit Housing Assembly (continued)



☐ **APPLY LUBRICANT, SEALANT, OR THREAD LOCK**
65 **APPLY LUBRICANT ON ALL O-RINGS UNLESS OTHERWISE SPECIFIED**

GE40181

Figure 7-5. FIELDVUE DVC6215 Remote Feedback Assembly

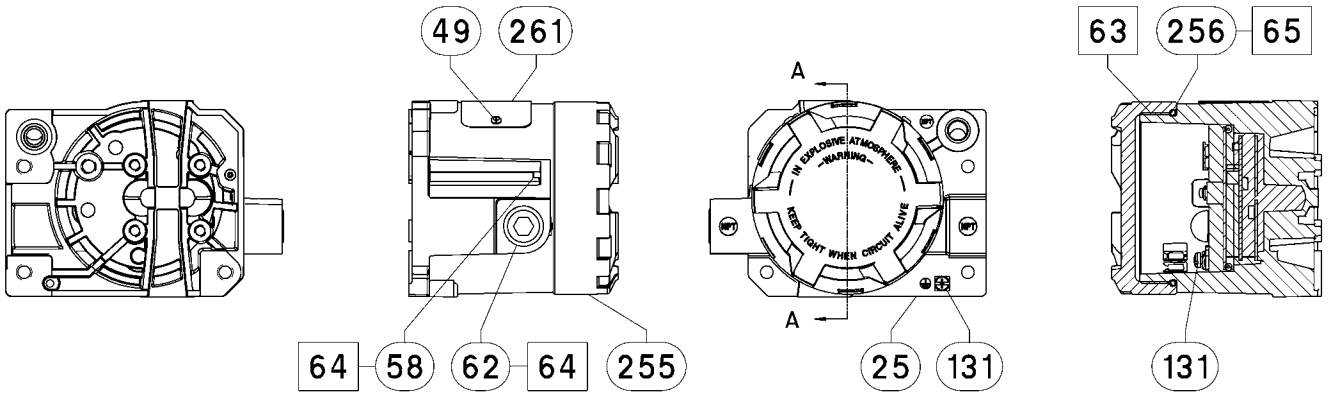


PARTS NOT SHOWN: 158

☐ **APPLY LUBRICANT/SEALANT**

GE46670-B

HOUSING A
(USED FOR GX ACTUATOR)



PARTS NOT SHOWN: 158

☐ **APPLY LUBRICANT/SEALANT**

GE40178-B

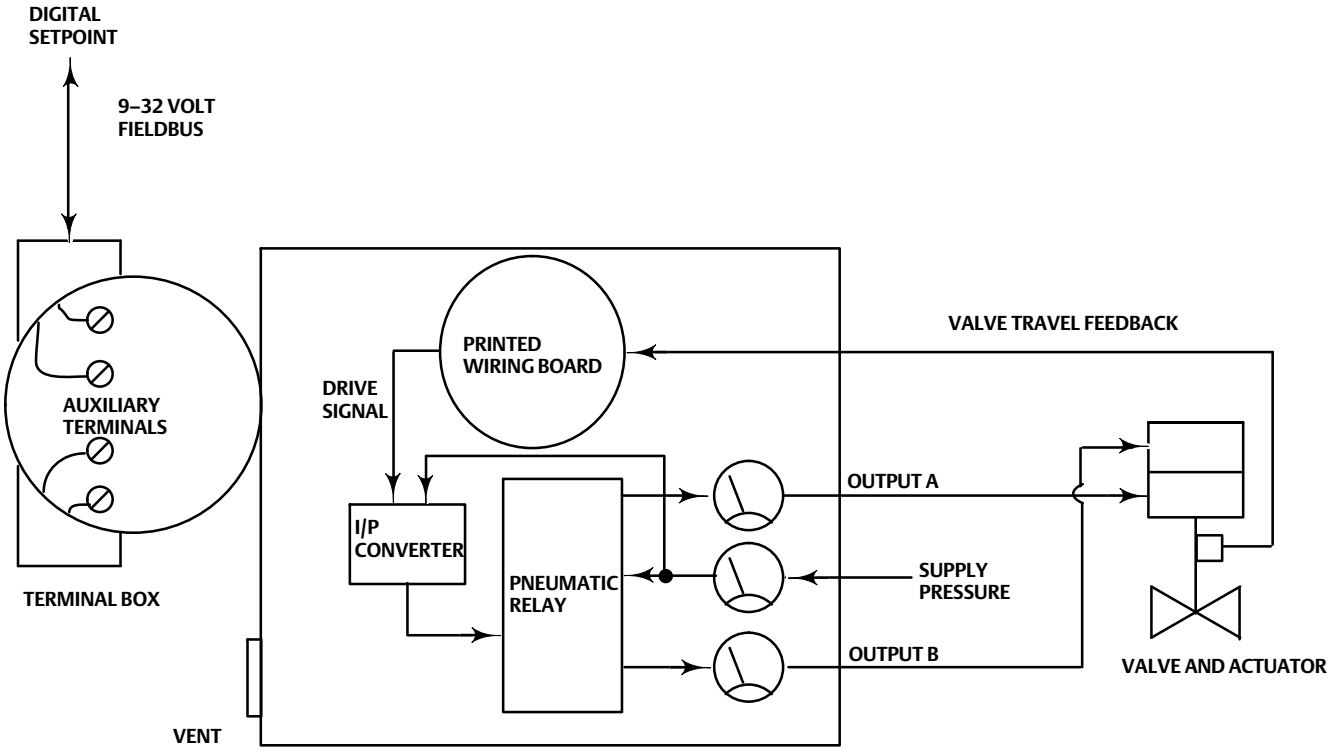
HOUSING B
(USED FOR ALL ACTUATORS EXCEPT GX)

Appendix A Principle of Operation

Digital Valve Controller Operation

The DVC6200p digital valve controller has a single module base that may be easily replaced in the field without disconnecting field wiring or tubing. The master module contains the following submodules: current-to-pneumatic (I/P) converter, printed wiring board assembly, and pneumatic relay. The relay position is detected by sensing the magnet on the relay beam via a detector on the printed wiring board. This sensor is used for the minor loop feedback (MLFB) reading. The master module can be rebuilt by replacing the submodules. See figures A-1 and A-2.

Figure A-1. FIELDVUE DVC6200p Digital Valve Controller Block Diagram



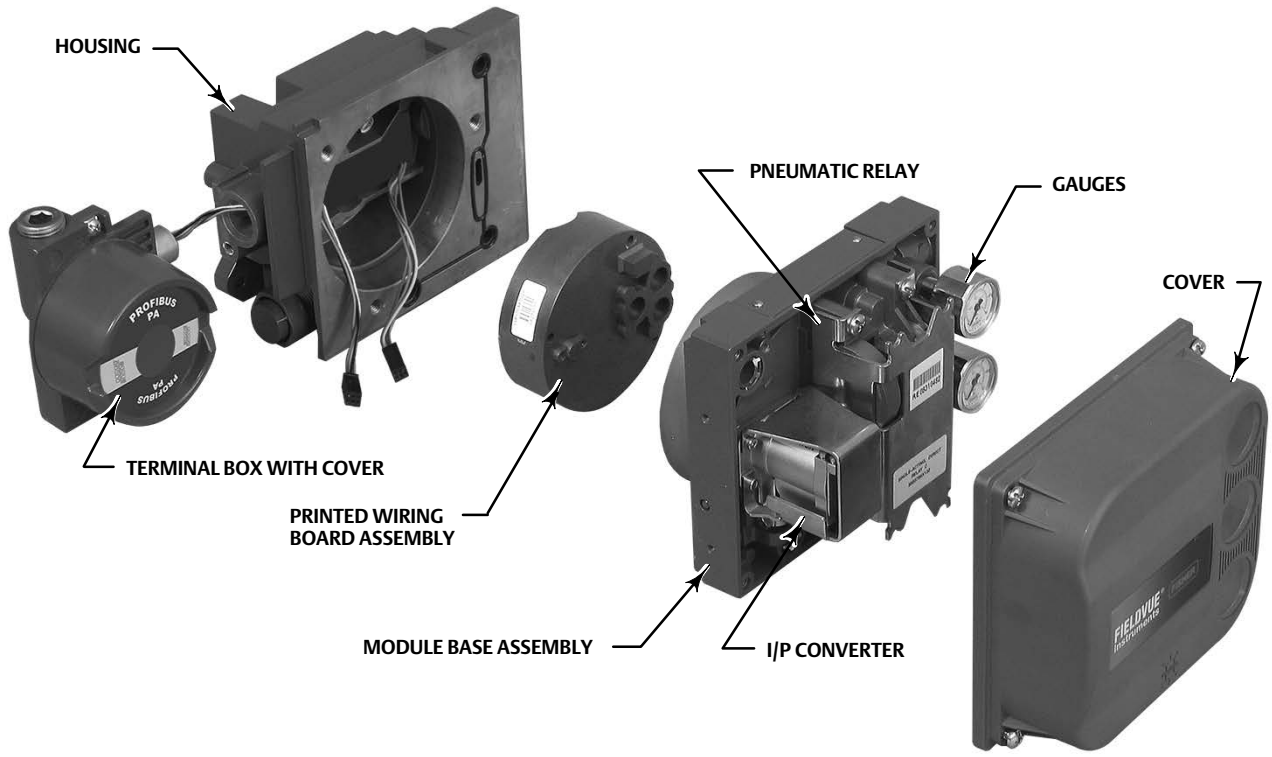
The DVC6200p digital valve controller is a bus-powered instrument that provides a control valve position in response to a digital setpoint from the control room. The following describes a direct acting DVC6200p digital valve controller mounted on a sliding-stem piston actuator, where the valve is closed with zero power to the instrument.

The setpoint is routed into the terminal box through a single pair of wires and then to the printed wiring board assembly submodule where it is read by the microprocessor, processed by a digital algorithm, and converted into an analog I/P drive signal.

As the setpoint increases, the drive signal to the I/P converter increases, increasing the I/P output pressure. The I/P output pressure is routed to the pneumatic relay submodule. The relay is also connected to supply pressure and amplifies the small pneumatic signal from the I/P converter. The relay accepts the amplified pneumatic signal and provides two output pressures. With relay A, an increasing setpoint will produce increasing pressure at output A and decreasing pressure at output B. With relay B an increasing setpoint will produce decreasing pressure at output B

(output A is not available). With relay C an increasing setpoint will produce an increasing pressure on output A (output B is not available). The output A pressure is used for double-acting and single-acting direct applications. The output B pressure is used for double-acting and single-acting reverse applications.

Figure A-2. FIELDVUE DVC6200p Digital Valve Controller Assembly



As shown in figure A-1, the increased output A pressure causes the actuator stem to move upward. The stem position is sensed by the travel sensor. The stem continues to move upward until the correct stem position is attained. At this point the printed wiring board assembly stabilizes the I/P drive signal. This prevents any further increase in the pneumatic signal from the I/P converter.

As the digital setpoint decreases, the drive signal to the I/P converter submodule decreases, decreasing the I/P output pressure. The pneumatic relay decreases the output A pressure and increases the output B pressure. The stem moves downward until the correct position is attained. At this point the printed wiring board assembly stabilizes the I/P drive signal. This prevents any decrease in the pneumatic signal from the I/P converter.

Appendix B Device Diagnostics

Description of device related diagnosis

Unit_Diag_Bit(16) = "Error appears"
Unit_Diag_Bit(17) = "Error disappears"

Unit_Diag_Bit(35) = "Restart"
Unit_Diag_Bit(36) = "Coldstart"
Unit_Diag_Bit(37) = "Maintenance required"
Unit_Diag_Bit(39) = "Ident_Number violation"
Unit_Diag_Bit(40) = "Failure of the device"
Unit_Diag_Bit(41) = "Maintenance demanded"
Unit_Diag_Bit(42) = "Function Check"
Unit_Diag_Bit(43) = "Process nt rtn valid values"
Unit_Diag_Bit(55) = "Extension Available"

Extended Diagnostic Bytes - Manufacturer Specific

Unit_Diag_Bit(56) = "Dia Limits"
Unit_Diag_Bit(57) = "Dia Advisory"
Unit_Diag_Bit(58) = "Reserved"
Unit_Diag_Bit(59) = "Reserved"
Unit_Diag_Bit(60) = "Reserved"
Unit_Diag_Bit(61) = "Reserved"
Unit_Diag_Bit(62) = "Reserved"
Unit_Diag_Bit(63) = "Reserved"

Unit_Diag_Bit(64) = "Drive Current Alert"
Unit_Diag_Bit(65) = "Drive Signal Alert"
Unit_Diag_Bit(66) = "Program Memory Alert"
Unit_Diag_Bit(67) = "Static Memory Alert"
Unit_Diag_Bit(68) = "I/O Processor Alert"
Unit_Diag_Bit(69) = "Output Block Timeout"
Unit_Diag_Bit(70) = "Blocks Set To Default"
Unit_Diag_Bit(71) = "Travel Sensor Alert"

Unit_Diag_Bit(72) = "Port A Pressure Sensor Alert"
Unit_Diag_Bit(73) = "Port B Pressure Sensor Alert "
Unit_Diag_Bit(74) = "Supply Pressure Sensor Alert"
Unit_Diag_Bit(75) = "Temperature Sensor Alert"
Unit_Diag_Bit(76) = "Pressure Fallback"
Unit_Diag_Bit(77) = "Supply Pressure High"
Unit_Diag_Bit(78) = "Supply Pressure Low"
Unit_Diag_Bit(79) = "Temperature High"

Unit_Diag_Bit(80) = "Temperature Low"
Unit_Diag_Bit(81) = "Travel Deviation"
Unit_Diag_Bit(82) = "Travel Limit High High"
Unit_Diag_Bit(83) = "Travel Limit Low Low"
Unit_Diag_Bit(84) = "Travel Limit High"
Unit_Diag_Bit(85) = "Travel Limit Low"
Unit_Diag_Bit(86) = "Cycle Counter Alert"
Unit_Diag_Bit(87) = "Travel Accumulator Alert "

Unit_Diag_Bit(88) = "Travel Open"
Unit_Diag_Bit(89) = "Travel Closed"
Unit_Diag_Bit(90) = "Proximity High High"
Unit_Diag_Bit(91) = "Proximity High"
Unit_Diag_Bit(92) = "Proximity Low Low"
Unit_Diag_Bit(93) = "Proximity Low"
Unit_Diag_Bit(94) = "Auxiliary Terminal Shorted"
Unit_Diag_Bit(95) = "Calibration By Hand"

Unit_Diag_Bit(96) = "Calibration Automatic"
Unit_Diag_Bit(97) = "AI Hi Hi Limit Exceeded"
Unit_Diag_Bit(98) = "AI Hi Limit Exceeded"
Unit_Diag_Bit(99) = "AI Lo Lo Limit Exceeded"
Unit_Diag_Bit(100) = "AI Lo Limit Exceeded"
Unit_Diag_Bit(101) = "Reserved"
Unit_Diag_Bit(102) = "Reserved"
Unit_Diag_Bit(103) = "Reserved"

Appendix C Blocks

Physical Block

The physical block contains the hardware specific characteristics associated with a device; it has no input or output parameters. The physical block monitors and controls the general operation of other blocks within the device. Most of the physical block parameters are operational parameters that provide information about the instrument such as identification, hardware information, available options, etc. and are read only. Configuration of the physical block involves selecting features from those that are available and setting the mode.

Parameter List

- Read/Write Capability: RO - Read Only, RW - Read Write
- Mode: The block mode(s) required to write to the parameter
- Double indentation and shared Index Number indicates sub-parameter.

Table C-1. Physical Block Parameter Definitions

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Valid Range	Initial Value	Description
BLOCK_OBJECT	0	RO			-	Data Type: DS-32 First parameter of every block. Contains characteristics of the block, eg. Block type and profile number
RESERVED	0.1				250	Data Type: Unsigned8
BLOCK_OBJECT	0.2			1: Physical Block	1	Data Type: Unsigned8 Identifies the block.
PARENT_CLASS	0.3			1: Reserved 2: Actuator 3-12: Reserved	2	Data Type: Unsigned8 Identifies which class the device belongs to.
CLASS	0.4				250	Data Type: Unsigned8 Reserved
DEV_REV	0.5			>0	1	Data Type: Unsigned16 Contains information about the device's revision. Increased when there is a new firmware release.
DEV_REV_COMP	0.6				1	Data Type: Unsigned16 Represents the lowest device revision which is supported by the device.
DD_REVISION	0.7				0	Data Type: Unsigned16

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Table C-1. Physical Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Valid Range	Initial Value	Description
PROFILE	0.8			Octet 1: Number of PA profiles within PI Profile Class. Set to 0x40. Octet 2: 0x01: Class A, all standard params have their own memory place. 0x02: Class B, all standard params have their own memory place. 0x81: Class A, all standard params in 1 memory place. 0x82: Class B, all standard params in 1 memory place. 253: Manufacturer specific block structures	0x4002	Data Type: Octet String Profile Class given by PI, and description of profile
PROFILE_REVISION	0.9			Octet 1: Number before the decimal point Octet 2: Number after the decimal point	0x0302	Data Type: Unsigned16 Profile revision used for this device.
EXECUTION_TIME	0.10				0	Data Type: Unsigned8
NUMBER_OF_PARAMETERS	0.11				0x3c	Data Type: Unsigned16 Number of used parameters in the block.
ADDRESS_OF_VIEW_1	0.12			Octet 1 (MSB): Slot Octet 2 (LSB): Index of View_1 parameter for access.	0x004C	Data Type: Unsigned16 Address of View 1 parameter, see table C-2.
NUMBER_OF_VIEWS	0.13				0x01	Data Type: Unsigned8 Number of view objects of the block.
Static Revision ST_REV	1	RO		0 to 65535	0	Data Type: Unsigned16 The revision level of the static data. Increments by one each time a static parameter changes, or a change of a table is accepted. Reset to 0 in case of a cold start (ie if FACTORY_RESET = 1 is set). Set to 1 if overflow.
Tag Description TAG_DESC	2	RW	ALL		Null	Data Type: Octet String The user description of the intended application of the block.
Strategy STRATEGY	3	RW	ALL		0	Data Type: Unsigned16 User-specified value used in configuration or diagnostics as a key in sorting block information
Alert Key ALERT_KEY	4	RW	ALL	0 to 255	0	Data Type: Unsigned8 The identification number of the plant unit. This information may be used in the host for sorting alarms or events generated by blocks.
Target Mode TARGET_MODE	5	RW	ALL	7: OOS 3: Auto	Auto	Target mode of the block

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Table C-1. Physical Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Valid Range	Initial Value	Description
Block Mode MODE_BLK	6	RO				
ACTUAL	6.2			7: OOS 3: Auto	Auto	Data Type: DS-37 The actual, permitted, and normal modes. Actual: The current mode of the block Permitted: Allowed modes for TARGET_MODE Normal: Desired operating mode
PERMITTED	6.3			7: OOS 3: Auto	OOS + Auto	
NORMAL	6.4			7: OOS 3: Auto	Auto	
Alarm Summary ALARM_SUM	7	RO				
CURRENT	7.1			Octet 1 0 - 6: Reserved 7: Update Event - Set after any STATIC parameter is changed. Octet 2: Reserved	0	Data Type: DS-42 Current alert status, unacknowledged states, unreported states, and disabled states of the alarms associated with the function block. • Current active alerts cleared after 20s (condensed status) or 10s (classic status) • Unacknowledged, unreported, and disabled not used.
UNACKNOWLEDGED	7.2				0	
UNREPORTED	7.3				0	
DISABLED	7.4				0	
Software Revision SOFTWARE_REV	8	RO				Data Type: Visible string Device's software revision
Hardware Revision HARDWARE_REV	9	RO			Factory Set	Data Type: Visible string Device's hardware revision
Manufacturer Id DEVICE_MAN_ID	10	RO			0x13	Data Type: Unsigned16 Manufacturer identification number, used by an interface device to locate the DD file for the resource.
DEVICE_ID	11	RO			Device ID	Data Type: Visible String String containing the 16 character device ID Of the form 0013DVCXXXXXXXXX, where XXXXXXXXX = ELECTRONICS_SN
DEVICE_SER_NUM	12	RO			Null	Data Type: Visible String Serial number of the device. Set by factory.

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Table C-1. Physical Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Valid Range	Initial Value	Description
DIAGNOSIS	13	RO		Octet 1 0-7: Reserved, set to 0 Octet 2 0-2: Reserved, set to 0 3: DIA_WARMSTART - set after power up or after executing FACTORY_RESET = 2506 (A) 4: DIA_COLDSTART - Set after executing FACTORY_RESET = 1 (A) 5: DIA_MAINTENANCE - Maintenance required (R) 6: Reserved, set to 0 7: IDENT_NUMBER_ VIOLATION - set if Ident_Number of the running cyclic data transfer and the value of IDENT_NUMBER_ SELECTOR does not match. If IDENT_ NUMBER_SELECTOR = 127 then this bit is cleared (R) Octet 3 0: DIA_ MAINTENANCE_ALARM - Failure of device (R) 1: Reserved, set to 0 2: DIA_FUNCTION_ CHECK - Device is in function check mode, simulation or local control (R) 3: Reserved, set to 0 4-7: Reserved, set to 0 Octet 4 0 - 6: Reserved 7: DIAGNOSIS_ EXTENSION available. (R)	0	Data Type: Octet String Used for all configuration, hardware, connection failure or system problems in the device. If in CONDENSED mode, not more than 1 bit is to be set for a single diagnostic event. Only CONDENSED mode is supported here. (R): Indication remains active as long as the alert is active (A): Indication is set within 10s, and will be cleared not later than 10s after the action is completed

-Continued-

Table C-1. Physical Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Valid Range	Initial Value	Description
DIAGNOSIS_EXTENSION	14	RO		Octet 1 0: DIA_LIMITS - Limits violation (R) 1: DIA_ADVISORY - Advisory message available (R) Bits 2 - 7: Reserved Octet 2 0: BM1 - Drive Current Alert (R) 1: BM2 - Drive Signal Alert (R) 2: BM3 - Program Memory Alert (R) 3: BM4 - Static Memory Alert (R) 4: BM5 - I/O Processor Alert (R) 5: BM6 - Output Block Timeout (R) 6: BM7 - Blocks Set To Default (R) 7: BM8 - Travel Sensor Alert (R) Octet 3 0: BM9 - Port A Pressure Sensor Alert (R) 1: BM10 - Port B Pressure Sensor Alert (R) 2: BM11 - Supply Pressure Sensor Alert (R) 3: BM12 - Temperature Sensor Alert (R) 4: BM13 - Pressure Fallback (R) 5: BM14 - Supply Pressure High (R) 6: BM15 - Supply Pressure Low (R) 7: BM16 - Temperature High (R) Octet 4 0: BM17 Temperature Low (R) 1: BM18 - Travel Deviation (R) 2: BM19 - Travel Limit High High (R) 3: BM20 - Travel Limit Low Low (R) 4: BM21 - Travel Limit High (R) 5: BM22 - Travel Limit Low (R) 6: BM23 - Cycle Counter Alert (R) 7: BM24 - Travel Accumulator Alert (R)	0	Data Type: Octet String Contains additional device alerts if DIAGNOSIS_EXTENSION available bit is set in DIAGNOSIS parameter Octets 2 to 6 are related to the binary messages in the Alarm Transducer block. The bits in Octets 2 to 6 will be set when the corresponding alert in the Alarm TB is enabled and becomes active. (R): Indication remains active as long as the alert is active (A): Indication is active within 10s, and will be cleared not later than 10s after the action is completed

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Table C-1. Physical Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Valid Range	Initial Value	Description
DIAGNOSIS_EXTENSION (continued)	14	RO		Octet 5 0: BM25 - Travel Open (R) 1: BM26 - Travel Closed (R) 2: BM27 - Proximity High High (R) 3: BM28 - Proximity High (R) 4: BM29 - Proximity Low Low (R) 5: BM30 - Proximity Low (R) 6: BM31 - Auxiliary Terminal Shorted (R) 7: BM32 - Calibration By Hand (R) Octet 6 0: BM33 - Calibration Automatic (R) 1: BM34 - AI Hi Hi Limit Exceeded (R) 2: BM35 - AI Hi Limit Exceeded (R) 3: BM36 - AI Lo Lo Limit Exceeded (R) 4: BM37 - AI Lo Limit Exceeded (R) 5 - 7: Reserved	0	Data Type: Octet String Contains additional device alerts if DIAGNOSIS_EXTENSION available bit is set in DIAGNOSIS parameter Octets 2 to 6 are related to the binary messages in the Alarm Transducer block. The bits in Octets 2 to 6 will be set when the corresponding alert in the Alarm TB is enabled and becomes active. (R): Indication remains active as long as the alert is active (A): Indication is active within 10s, and will be cleared not later than 10s after the action is completed
DIAGNOSIS_MASK	15	RO		See DIAGNOSIS, parameter 13 for valid Range	0x00B80580	Data Type: Octet String Definition of supported DIAGNOSIS information bits. Set if the corresponding diagnosis is supported.
DIAGNOSIS_MASK_EXTENSION	16	RO		See DIAGNOSIS_ EXTENSION, parameter 15 for valid range	0x03FFFFFFFF 1F	Data Type: Octet String Definition of supported DIAGNOSIS_EXTENSION information bits. Set if the corresponding diagnosis is supported.
DEVICE_CERTIFICATION	17					Not used
Write Lock WRITE_LOCKING	18	RW	ALL	0: Acyclic writes to all parameters are denied, except WRITE_LOCKING, TAB_ENTRY and ACTUAL_POST_READ _NUMBER parameter. 2457: All parameters are writeable.	2457	Data Type: Unsigned16 Software write protection.

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Table C-1. Physical Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Valid Range	Initial Value	Description
FACTORY RESET	19	RW	ALL	1: Reset parameters to default values. The setting of bus address is not affected. 2: Reset informational parameters. The setting of bus address is not affected. 3: Reset functional parameters. The setting of bus address is not affected. 2506: Restart device. Has the same effect as power-cycling the device. Only dynamic parameters are reset. 2712: Reset bus address to 126. 32768: Reset Power_Up_Count to 0. Available to factory only.	0	Data Type: Unsigned16 Allows a manual reset to be initiated. Several degrees of reset are possible. Note that writing some values may affect communications.
DESCRIPTOR	20	RW	ALL		null	Data Type: Octet String User-defined text describing the device within the application
DEVICE_MESSAGE	21	RW	ALL		null	Data Type: Octet String User-defined message describing the device within the application or in the plant
DEVICE_INSTAL_DATE	22	RW	ALL		null	Data Type: Octet String Device installation date.
LOCAL_OP_ENA	23					Not used
IDENT_NUMBER_SELECTOR	24	RW	ALL	0: Profile specific id number V3.x 1: Manufacturer specific id number V3.x 2 - 126: Reserved 127: Adaptation mode, device is able to communicate using multiple id numbers	127	Data Type: Unsigned8 Selector for profile specific or manufacturer specific identification number. Not affected by FACTORY_RESET. Change of id number via this parameter changes the characteristics of the device's cyclic behavior, which is determined by the associated GSD-file. The following conditions apply: 1. The change is to be done when there is no cyclic communication to the device. 2. Change to this parameter value during cyclic communication to the device causes the IDENT_NUMBER_VIOLATION bit of the DIAGNOSIS parameter to be set. The cyclic data transfer is not affected and the associated Ident_Number of the device remains the same, until either the cyclic transfer is aborted and reinstalled, or a power down happens. During the new re-establishment of the cyclic data transfer the latest IDENT_NUMBER_SELECTOR value and the associated Ident_Number is used. 3. Parameter cannot be modified when cyclic data transfer is active. Response error code is "Access, state conflict".
HW_WRITE_PROTECTION	25					Not used

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Table C-1. Physical Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Valid Range	Initial Value	Description
Feature FEATURE	26					
SUPPORTED	26.1	RO		Octet 1: 0: Diagnosis Condensed_Status supported 1: Diagnosis Classic_Status supported 2: Data exchange broadcast supported 3: MS1 application relationship supported 4: Profisafe communication supported 5-7: Reserved Octets 2-4: Reserved	0x01000000	Data Type: DS-68 Indicates optional features implemented in the device and the status of these features, whether supported or not supported.
ENABLED	26.2	RO		Octet 1: 0: Diagnosis Condensed_Status enabled 1: Diagnosis Classic_Status enabled 2: Data exchange broadcast enabled 3: MS1 application relationship enabled 4: Profisafe communication enabled 5 - 7: Reserved Octets 2-4: Reserved	0x01000000	
COND_STATUS_DIAG	27	RW	ALL	0: Reserved 1: Condensed Status and Diagnosis 2 - 255: Reserved	1	Data Type: Unsigned8 Indicates / configures the type of status and diagnostic currently being active in the device

-Continued-

Table C-1. Physical Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Valid Range	Initial Value	Description
DIAG_EVEN_SWITCH	28					
DIAG_STATUS_LINK	28.1	RW	ALL	STATUS (Bits 0 - 3): 0: GOOD - OK 1: GOOD - maintenance required 2: GOOD - maintenance demanded 3: UNCERTAIN - maintenance demanded 4: BAD - maintenance alarm 5: Uncertain - process related, no maintenance 6: BAD - process related, no maintenance 7: BAD - function check / local override 8: GOOD - function check DIAGNOSIS (Bits 4 - 7): 0: OK 1: DIA_MAINTENANCE 2: DIA_MAINTENANCE_DEMANDED 3: DIA_MAINTENANCE_ALARM 4: DIA_INV_PRO_COND 5: DIA_FUNCTION_CHECK		Data Type: Unsigned8 Allows mapping to DIAGNOSIS_EXTENSION. Each byte corresponds to how each bit in DIAGNOSIS_EXTENSION parameter will trigger the corresponding bit in DIAGNOSIS parameter. Byte to bit mapping in the same order.
SLOT	28.2	RO	ALL	0	0	Data Type: Unsigned8 Points to the next Diag_Event_Switch structure.
INDEX (ABSOLUTE)	28.3	RO	ALL	0	0	
Reserved by PI	29-38					
GLOBAL_STATUS	39	RO		0: Failure 1: Maintenance required 2: Function check 3: Limits 4: Advisory	0	Data Type: Unsigned16 Information on Alarm Transducer Block Alarm's Status
Reserved by PI	40-47					
Extended Parameters						
DEV_IDENT_NUMBER	48	RO			0x1037	Data Type: Unsigned16 Device's manufacturer specific identification number, provided by PNO during device registration
Private Label Distributor DISTRIBUTOR	49					Not used
Miscellaneous Options MISC_OPTIONS	50	RO		0: Software Download 10: Travel Control Capable 11: Pressure Control Capable 12: Fallback Capable	0x1C00 (Bits 10, 11 12)	Data Type: Unsigned32 Indicates which miscellaneous licensing options are enabled.
Electronics Serial Number ELECTRONICS_SN	51	RO			Factory Set	Data Type: Visible String Electronics serial number set by manufacturing.
Field Serial Number FIELD_SN	52	RW	ALL		null	Data Type: Visible String Instrument serial number set in the field.

-Continued-

Table C-1. Physical Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Initial Value	Description
Time Since Reset TIME_SINCE_RESET	53	RO		0 - 0xFFFFFFFF	0	Data Type: Unsigned32 Number of seconds since the last time DVC6200p was restarted. Restart due to power up or restart command.
POWER_UP_COUNT	54	RO		0 - 0xFFFFFFFF	0	Data Type: Unsigned32 Number of power cycles since leaving factory. Affected by FACTORY_RESET in the following manner: Reset default parameters (1): Resets to 1 Restart device (2506): Increment by 1 Reset Power_Up_Count (32768): Resets to 0
STBY_SOFTWARE_REV	55	RO				Data Type: Visible String Device's standby software revision. Reserved for future use.
FB_AVAILABLE	56	RO		0: AO 1: DO 2: AI 3: DI 4: PID 5: IS 6: OS 7: MAI 8: CS 9: LB	0x20F	Data Type: Octet String Indicates which function blocks are available to license in the firmware
DEVICE_TIME	57	RW	ALL		0	Data Type: BinaryDate Device date and time
Fraction of a minute	57.1			0-999	0	Data Type: Unsigned16 Number of milliseconds
Fraction of an hour	57.2			0-59	0	Data Type: Unsigned8 Minute
Fraction of a day	57.3			0-23	0	Data Type: Unsigned8 Hour
Day of Week + Day of Month	57.3			Upper 3 bits: 0 = Sunday, 1=Monday ... 6 = Saturday Lower 5 bits: 1 ... 31	1	Data Type: Unsigned8 Upper 3 bits = Day of week Lower 3 bits = Day of month
Month	57.3			1-12	1	Data Type: Unsigned8 Month
Year	57.3				84	Data Type: Unsigned8 Year
DEVICE_ADDRESS	58	RW	OOS	0-126	126	Data Type: Unsigned8 Indicates devices address. Only writeable during device setup. Not affected by FACTORY RESET.
STACK_LIB_VERSION	59	RO				Data Type: Visible String Identifies which version of Stack Library is present in the device.

View Lists

View lists allow the values of a set of parameters to be accessed at the same time.

Table C-2. Physical Block, View 1

Index Number	Parameter
1	ST_REV
6.1	MODE_BLK.ACTUAL_MODE
6.2	MODE_BLK.PERMITTED_MODE
6.3	MODE_BLK.NORMAL_MODE
7.1	ALARM_SUM.CURRENT
7.2	ALARM_SUM.UNACKNOWLEDGED
7.3	ALARM_SUM.UNREPORTED
7.4	ALARM_SUM.DISABLED
13	DIAGNOSIS

Transducer Block

The transducer block accepts a signal from an output block as a set point to position a valve using a pneumatic actuator. Input to the transducer block is in percent. Closed is 0%, and open is 100%. The transducer block contains setup and calibration information and can be tuned to closely match the actuator. Input characterization permits modifying the overall characteristic of the instrument-actuator-valve combination in order to modify the installed gain characteristic of the loop. The transducer block can also be used to perform instrument and valve diagnostics and trigger performance alerts.

Parameter List

- Read/Write Capability: RO - Read Only, RW - Read Write
- Mode: The block mode(s) required to write to the parameter
- Protection Category: Indicates whether or not the parameter is writable while the PROTECTION parameter is set to a particular level.
  -N/A indicates a read-only parameter that is never writable, regardless of the value of the PROTECTION parameter
  -NONE indicates a read-only parameter that is always writable, regardless of the value of the PROTECTION parameter
  -CAL indicates a parameter that is only writable while the value of the PROTECTION parameter is “NONE”.
  -SETUP indicates a parameter that is only writable while the value of the PROTECTION parameter is “NONE” or “CAL”.
  -ALL indicates a parameter that is writable while the value of the PROTECTION parameter is “NONE”, “CAL”, or “SETUP & CAL”.
- Double indentation and shared Index Number indicates sub-parameter

Table C-3. Transducer Block Parameter Definitions

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
BLOCK_OBJECT	0	RO			-		Data Type: DS-32 First parameter of every block. Contains characteristics of the block, eg. Block type and profile number
RESERVED	0.1				250		Data Type: Unsigned8 Reserved
BLOCK_OBJECT	0.2			3: Transducer Block	3		Data Type: Unsigned8 Identifies the block.
PARENT_CLASS	0.3			1-4: Reserved 5: Actuator 6-127: Reserved	5		Data Type: Unsigned8 Identifies which class the device belongs to.
CLASS	0.4			1: Reserved 2: Electro-pneumatic 3-127: Reserved	2		Data Type: Unsigned8 Identifies the type of device.
DEV_REV	0.5				1		Data Type: Unsigned16 Contains information about the device's revision. Increased when there is a new firmware release.
DEV_REV_COMP	0.6				1		Data Type: Unsigned16 Represents the lowest device revision which is supported by the device.

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
DD_REVISION	0.7				0		Data Type: Unsigned16
PROFILE	0.8			Octet 1: Number of PA profiles within PI Profile Class. Set to 0x40. Octet 2: 0x01: Class A, all standard params have their own memory place. 0x02: Class B, all standard params have their own memory place. 0x81: Class A, all standard params in 1 memory place. 0x82: Class B, all standard params in 1 memory place. 253: Manufacturer specific block structures	0x4002		Data Type: Octet String Profile Class given by PI, and description of profile.
PROFILE_REVISION	0.9			Octet 1: Number before the decimal point. Octet 2: Number after the decimal point.	0x0302		Data Type: Unsigned16 Profile revision used for this device.
EXECUTION_TIME	0.10				0		
NUMBER_OF_PARAMETERS	0.11				0x86		Data Type: Unsigned16 Number of used parameters in the block.
ADDRESS_OF_VIEW_1	0.12			Octet 1 (MSB): Slot Octet 2 (LSB): Index of View_1 parameter for access.	0x0896		Data Type: Unsigned16 Address of View 1 parameter, see table C-4.
NUMBER_OF_VIEWS	0.13				0x01		Data Type: Unsigned8 Number of view objects of the block.
Static Revision ST_REV	1	RO		0 to 65535	0	N/A	Data Type: Uint16 The revision level of the static data. Increments by one each time a static parameter changes, or a change of a table is accepted. Reset to 0 in case of a cold start (ie if FACTORY_RESET = 1 is set). Set to 1 if overflow.
Tag Description TAG_DESC	2	RW	ALL		NULL	SETUP	Data Type: String The user description of the intended application of the block.
Strategy STRATEGY	3	RW	ALL		0	SETUP	Data Type: Uint16 User-specified value used in configuration or diagnostics as a key in sorting block information.
Alert Key ALERT_KEY	4	RW	ALL	0 to 255	0	SETUP	Data Type: Uint8 The identification number of the plant unit. This information may be used in the host for sorting alarms or events generated by blocks.
Target Mode TARGET_MODE	5	RW	ALL	7: OOS 3: AUTO	7	N/A	Data Type: Uint8 The requested block mode.

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
Block Mode MODE_BLK	6	RO		7: OOS 3: AUTO		N/A	Data Type: DS-69 The actual, target, permitted, and normal modes. Actual: The current mode of the block Permitted: Allowed modes for TARGET_MODE Normal: Desired operating mode
ACTUAL	6.1				N/A		
PERMITTED	6.2				OOS + Auto		
NORMAL	6.3				AUTO		
Alarm Summary ALARM_SUM	7	RO		Octet 1: 0 - 6: Reserved 7: Update Event - Set after any STATIC parameter is changed. Octet 2: Reserved		N/A	Data Type: DS-42 Current alert status, unacknowledged states, unreported states, and disabled states of the alarms associated with the function block.
CURRENT	7.1				0		Data Type: Octet String Current active alerts. Cleared after 20s (condensed status) or 10s (classic status).
UNACKNOWLEDGED	7.2				0		Not used
UNREPORTED	7.3				0		Not used
DISABLED	7.4				0		Not used
Reserved by PI	8						
ACT_STROKE_TIME_DEC	9	RO	ALL		0	N/A	Not used
ACT_STROKE_TIME_INC	10	RO	ALL		0	N/A	Not Used
Reserved by PI	11-16						
TAB ENTRY	17	RW	OOS	1 to 21	1	SETUP	Data Type: Unsigned 8 Identifies which element of the table is in the TAB_X_Y_VALUE parameter currently. Used to read or write value to the table element. This parameter is never protected by any write locking mechanism.
TAB_X_Y_VALUE	18	RW	OOS	1-4: (Float) X_VALUE 5-8: (Float) Y_VALUE	-	SETUP	Data Type: Float Contains one value couple of the table. Writes to this parameter must be preceded by a valid TAB_OP_CODE. Notes: -25% to 125%. Each X value must be > previous value, each Y value must be > previous value. Checked when TAB_OP_CODE = 3 is issued. Up to 21 X_VALUEs and 21 Y_VALUEs
TAB_MIN_NUMBER	19	RO			2	SETUP	Data Type: Unsigned 8 Minimum number of table entries required to implement the table.
TAB_MAX_NUMBER	20	RO			21	SETUP	Data Type: Unsigned 8 Maximum number of table entries stored.
TAB_ACTUAL_NUMBER	21	RO		2 to 21	2	SETUP	Data Type: Unsigned 8 Actual number of entries in the table. Calculated after the table is stored in the device.
DEADBAND	22	RW	OOS		0	N/A	Not used
DEVICE_CALIB_DATE	23	RW	OOS		NULL	SETUP	Data Type: Octet String Date of last calibration of the device. If calibration is executed from AUX terminals, this will be the timestamp of calibration completion.

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
DEVICE_CONFIG_DATE	24	RW	OOS		NULL	SETUP	Data Type: Octet String Date of last configuration of the device.
LIN_TYPE	25	RW	OOS	0: No linearization (linear) 1: Linearization table 240: Equal percentage 241: Quick opening Others: Reserved	0	SETUP	Data Type: Unsigned8 Type of linearization.
Reserved by PI	26-31					N/A	
RATED_TRAVEL	32	RW	OOS	-25% to 125%	100	NONE	Data Type: Float Nominal stroke of the valve in units same as that of OUT_SCALE. This parameter is for informational purposes only and has no effect on the servo control.
SELF_CALIB_CMD	33	RW		0: None 1: Reserved 2: Start self calibration 7: Reset "total valve travel limit exceeded" CB_TOT_VALVE_TRAV and reset "Accumulated valve travel" TOTAL_VALVE_TRAVEL 10: Reserved 11 = Start self calibration Extended 12 = Start manual calibration 14 = Mark full closed 15 = Mark full open 16 = Manual calibration final 18 = Execute Tuner 19 = Execute Tuner (Graphite Packing) 20 = Execute Tuner (Booster) 21 = Execute Tuner (Graphite Packing & Booster) 22 = Clear SELF_CALIB_STATUS 255: Abort	0	CAL	Data Type: Unsigned8 Initiate calibration or tuner procedure.

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
SELF_CALIB_STATUS	34	RO		0: Undetermined 1: Reserved 2: Aborted 3: Reserved 4: Error in mechanical system (pressure problem) 5-10: Reserved 12-127: Reserved 128: Self-calibration in progress 129: Manual calibration in progress 130: Quick Setup in progress (If initiated from AUX terminals) 131: tuner active 132: tuner error (no movement) 133: tuner error (Accessories unstable) 134: tuner error (Other) 135: Self-calibration error (Other) 136: Aborted from AUX terminals 254: Successful 255: No valid data (bad sensor reading)	0	N/A	Data Type: Unsigned8 Result or status of the calibration procedure. Initiating a new tuner or calibration command will clear the current bits. Note: if the status is 'self-calibration in progress' while power is cut off, upon power being re-applied, this parameter will show its last stored value prior to the start of calibration.
SERVO_GAIN_1	35	RW	ALL	0 <= value <= 32768	4.4	SETUP	Data Type: Float Proportional gain. Used for travel control only.
SERVO_RATE_1	36	RW	ALL	0 <= value <= 32768	3	SETUP	Data Type: Float Derivative gain. Used for travel control only.
SERVO_RESET_1	37	RW	ALL	0 <= value <= 32768, = 0 causes wind down	9.4	SETUP	Data Type: Float Integral gain. Used for travel control only. If set to 0, will cause integrator to wind down.
SETP_CUTOFF_DEC	38	RW	OOS	-25% to 125%	0.50%	SETUP	Data Type: Float Travel cutoff low
SETP_CUTOFF_INC	39	RW	OOS	-25% to 125%	99.50%	SETUP	Data Type: Float Travel cutoff high
Reserved by PI	40-44		NA			N/A	
TOTAL_VALVE_TRAVEL	45	RO	NA			N/A	Data Type: Float Accumulated travel in %.
TOT_VALVE_TRAVEL_LIM	46	RW	ALL	>=0%	1,000,000%	SETUP	Data Type: Float Limit for TOTAL_VALVE_TRAVEL in %.
TRAVEL_LIMIT_LOW	47	RW	OSS	AO.OUT_SCALE.EU_AT_ 0%-10% to AO.OUT_SCALE.EU_AT_ 100%+10%	0%	SETUP	Data Type: Float Lower limit of valve position in percent of travel span, corresponding to OUT_SCALE.
TRAVEL_LIMIT_UP	49	RW	OOS	AO.OUT_SCALE.EU_AT_ 0%-10% to AO.OUT_SCALE.EU_AT_ 100%+10%	100%	SETUP	Data Type: Float Upper limit of valve position in percent of travel span, corresponding to OUT_SCALE.

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
TRAVEL_RATE_DEC	49	RW	ALL	0 <= value <= 32768	0	NONE	Data Type: Float Closing time of the valve in seconds. Controls how fast TRAVEL_TARGET changes in response to POSITIONING_VALUE. Example: If the value of this parameter is 10secs, the valve will close at the rate of 10%/sec. A value of 0 disables rate limiting.
TRAVEL_RATE_INC	50	RW	ALL	0 <= value <= 32768	0	NONE	Data Type: Float Opening time of the valve in seconds. Controls how fast TRAVEL_TARGET changes in response to POSITIONING_VALUE. Example: If the value of this parameter is 10secs, the valve will open at the rate of 10%/sec. A value of 0 disables rate limiting.
VALVE_MAINT_DATE	51	RW	ALL		Null	CAL	Data Type: Octet String Date of last valve maintenance
SERVO_GAIN_2	52					N/A	Not used
SERVO_RATE_2	53					N/A	Not used
SERVO_RESET_2	54					N/A	Not used
TAB_OP_CODE	55	RW	OOS	0: Not initialized 1: New operation characteristic, first value (TAB_ENTRY=1) 2: Reserved 3: Last value, end of transmission, check table, swap the old curve with the new curve and update TAB_ACTUAL_NUMBER 4 - 6: Reserved	0	SETUP	Data Type: Unsigned8 Controls the transaction of the characterization table. It is possible to read a table or parts of the table without start and stop interaction (TAB_OP_CODE 1 and 3). The start is indicated by setting TAB_ENTRY to 1.

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
TAB_STATUS	56	RO		0: Not initialized 1: Good (new table is valid) 2: Not monotonous increasing (old table is valid) 3: Reserved 4: Not enough values transmitted (old table is valid) 5: Too many values transmitted (old table is valid) 6 - 7: Reserved 8: Table is currently loaded, set after TAB_OP_CODE=1 and before TAB_OP_CODE=3 (Additional access to table not valid, old values are valid) 9: Sorting and checking of Table (Additional access to table not valid, old values are valid) 10-19: Reserved 20: Not monotonous increasing (table is not initialized) 21: Reserved 22: Not enough values transmitted (table is not initialized) 23: Too many values transmitted (table is not initialized) 24 - 25: Reserved 26: Table is currently loaded, set after TAB_OP_CODE=1 and before TAB_OP_CODE=3 (Additional access to table not valid, table is not initialized) 27: Sorting and checking of Table (Additional access to table not valid, table is not initialized)	0	N/A	Data Type: Unsigned8 Indicates the status of the characterization table.
POSITIONING_VALUE	57	RO				N/A	Data Type: 101 The actual command variable for the device in units of OUT_SCALE, in other words, setpoint in units of OUT_SCALE, usually in percent. Status BAD will drive the actuator to the fail-safe position defined by ACTUATOR_ACTION.
VALUE	57.1			-25% to 125%	0		Data Type: Float Physical target, or % of travel or pressure range. Written by AO channel 0x0839.
STATUS	57.2				0		Data Type: Unsigned8 Indicates validity of VALUE, set by out block OUT.STATUS..

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
FEEDBACK_VALUE	58	RO		>=0	0	N/A	Data Type: 101 The actual position of the device in units of OUT_SCALE. Controls AI channel 0x083A.
VALUE	58.1			-25% to 125%	0		Data Type: Float Physical position.
STATUS	58.2				0		Data Type: Unsigned8 Indicates validity of VALUE.
VALVE_MAN	59	RW	ALL		Null	SETUP	Data Type: Octet String Name of Valve Manufacturer.
ACTUATOR_MAN	60	RW	ALL		Null	SETUP	Data Type: Octet String Name of Actuator Manufacturer.
VALVE_TYPE	61	RW	ALL	0: Sliding stem 1: Part-turn rotary valve 2: Multi-turn rotary valve	0	SETUP	Data Type: Unsigned8 Type of valve.
ACTUATOR_TYPE	62	RO		0: Electro-pneumatic 1 - 3: Reserved	0	SETUP	Data Type: Unsigned8 Type of actuator.
ACTUATOR_ACTION	63	RW	ALL	0: Not initialized 1: Opening (100%) 2: Closing (0%) 3: None / remains in actual position	0	SETUP	Data Type: Unsigned8 Fail-safe position of the valve assembly.
VALVE_SER_NUM	64	RW	ALL		NULL	SETUP	Data Type: Octet String Serial number of the valve.
ACTUATOR_SER_NUM	65	RW	ALL		NULL	SETUP	Data Type: Octet String Serial number of the actuator.
ADD_GEAR_SER_NUM	66	RW	ALL		NULL	SETUP	Data Type: Octet String Serial number of the additional component (eg booster) mounted between actuator and valve.
ADD_GEAR_MAN	67	RW	ALL		NULL	SETUP	Data Type: Octet String Manufacturer name of the additional component (eg booster) mounted between actuator and valve.
ADD_GEAR_ID	68	RW	ALL		NULL	SETUP	Data Type: Octet String Manufacturer specific type identification of the additional component (eg booster) mounted between the actuator and valve.
ADD_GEAR_INST_DATE	69	RW	ALL		NULL	SETUP	Data Type: Octet String Installation date of the additional component (eg booster) mounted between actuator and valve.
Reserved by PI	70-79					N/A	
Extended Parameters							
FINAL_POSITION_VALUE	80	RO	N/A				Data Type: 101 Characterized Valve travel in percent or characterized percent of pressure range.
Travel (Decharacterized) VALUE	80.1			-25 to 125%	0	N/A	Data Type: Float % of travel or pressure range, controls AI channel 0x0850.
Travel Status (Decharacterized) STATUS	80.2				0	N/A	Data Type: Unsigned8 Indicates the validity of VALUE.

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
SETPOINT_D	81	RO				N/A	Data Type: 101 Characterized Valve travel in percent or characterized percent of pressure range.
VALUE	81.1		N/A	0 = closed 1 = open 5,10,15.. = %	N/A		Data Type: Unsigned8 Discrete value of setpoint. Only values of 0, 1, or increments of 5 up to, and including 100 are allowed. Written by DO channel 0x0851.
STATUS	81.2		N/A		N/A		Data Type: Unsigned8 Indicates validity of value, set by out block OUT.STATUS.
TRAVEL_D	82					N/A	
Travel (D) VALUE	82.1	RO		0 = closed 1 = open 5,10,15.. = %	N/A		Data Type: Unsigned8 Discrete value of travel. Only values of 0, 1, or increments of 5 up to , and including 100 are allowed. Controls DI channel 0x0852.
Travel(D) Status STATUS	82.2	RO			N/A		Data Type: Unsigned8 Indicates validity of value.
TRAVEL.TARGET	83					N/A	Data Type: 101 When the digital valve controller is NOT in DO control, this parameter takes its update from the POSITIONING_VALUE. When the digital valve controller is in DO control, this parameter takes its input from SETPOINT_D.
VALUE	83.1	RO		-25% to 125%			Data Type: Float Physical target in % of travel or % of pressure range. This is post characterization. Controls AI channel 0x0853.
STATUS	83.2	RO					Data Type: UINT8
SUPPLY_PRESSURE	84						Data Type: DS-65 VALUE is pressure of air supply, controls AI channel 0x0854. STATUS indicates the validity of VALUE.
Supply Pressure VALUE	84.1	RO			N/A		
Supply Pressure Status STATUS	84.2	RO			N/A		
PRESSURE_A	85						Data Type: DS-65 Pressure of primary air output, controls AI channel 0x0855. STATUS Indicates the validity of VALUE.
Pressure A VALUE	85.1	RO			N/A		
Pressure A Status STATUS	85.2	RO			N/A		
PRESSURE_B	86						Data Type: DS-65 VALUE is the Pressure on secondary output, controls AI channel 0x0856. STATUS indicates the validity of VALUE.
Pressure B VALUE	86.1	RO			N/A		
Pressure B Status STATUS	86.2	RO			N/A		
PRESSURE_DIFF	87						Data Type: VALUE is the difference between PRESSURE_A and PRESSURE_B, controls AI channel 0x0857. STATUS indicates the validity of VALUE.
Pressure Differential VALUE	87.1	RO			N/A		
Pressure Differential Status STATUS	87.2	RO			N/A		

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
Travel Pressure Control TVL_PRESS_CONTROL	88						
Travel/Pressure Select TVL_PRESS_SELECT	88.1	RW	ALL	1=Travel 2=Pressure 3=TVL/PRESS Auto Recv 4=TVL/PRESS Man Recv	1	SETUP	Data Type: Enum Selects whether travel sensor or port A pressure is used for feedback.
Travel/Pressure State TVL_PRESS_STATE	88.2	RO	N/A	1=Travel 2=Pressure	N/A	N/A	Data Type: Enum Indicates which sensor is used for feedback.
Basic Setup BASIC_SETUP	89						
Actuator Style ACTUATOR_STYLE	89.1	RW	OOS	1=Spring & Diaphragm 2=Piston-Dbl w/o Spring 3=Piston-Dbl w/Spring 4=Piston Sgl w/Spring	1	SETUP	Data Type: Enum
Zero Power Condition ZERO_PWR_COND	89.2	RW	OOS	1=Valve Closed 2=Valve Open	1	SETUP	Data Type: Enum Identifies whether the valve is open or closed when instrument power is lost.
Travel Sensor Motion TRAVEL_SENSOR_MOTION	89.3	RW	OOS	1 = Counter Clockwise / Towards Top of Instrument	1	SETUP	Data Type: Enum
Feedback Connection FEEDBACK_CONN	89.4	RW	OOS	0x40-0x7F = SensorX	0x40	SETUP	Data Type: Enum
Relay Type RELAY_TYPE	89.5	RW	OOS	1=Relay A or C--Double or Single Direct 2=Relay B--Single Reverse 5=Relay C-Special App. --Single Direct 6=Relay B-Special App. --Single Reverse 9=Lo-Bleed Relay A or C--Double or Single Direct 10=Lo-Bleed Relay B--Single Reverse 13=Lo-Bleed Relay C-Special App.--Single Direct 10=Lo-Bleed Relay B-Special App.--Single Reverse	1	SETUP	Data Type: Enum Note: Bit 0: Direct Bit 1: Reverse Bit 2: Special App Bit 3: Lo-Bleed
Maximum Supply Pressure MAX_SUPP_PRESS	89.6	RW	ALL	> 0, < = 150	35 psig	SETUP	Data Type: Float
Pressure Range Hi PRESS_RANGE_HI	89.7	RW	OOS	> 0, < = 150	15.0 psig	SETUP	Data Type: Float Defines pressure corresponding to max pressure in pressure control mode.
Pressure Range Lo PRESS_RANGE_LO	89.8	RW	OOS	> = 0, < = 150	3.0 psig	SETUP	Data Type: Float Defines pressure corresponding to minimum pressure in pressure control mode.
Travel Tuning Set TVL_TUNING_SET	89.9	RW	ALL	1=B, 2= C, ...12=M 23=X	2	SETUP	Data Type: Enum Letter (B through M or X)
Pressure Tuning Set PRESS_TUNING_SET	89.10	RW	ALL	1=B, 2=C, ...12= M 23=X	2	SETUP	Data Type: Enum Letter (B through M or X)
TRAVEL_CAL	90						

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
Travel Count TVL_COUNT	90.1	RO	N/A				Data Type: Unsigned16 Raw feedback from pot A/D.
Travel Hi Calibration TVL_HI_CAL	90.2	RW	OOS	TVL_FAC_LO <= value <= TVL_FAC_HI		CAL	Data Type: Unsigned16 Valve travel in A/D counts when I/P drive is at maximum.
Travel Lo Calibration TVL_LO_CAL	90.3	RW	OOS	TVL_FAC_LO <= value <= TVL_FAC_HI		CAL	Data Type: Unsigned16 Valve travel in A/D counts when I/P drive is at zero.
Travel Fac Hi TVL_FAC_HI	90.4	RO	N/A		Set by Factory	N/A	Data Type: Uint16 Maximum value of travel sensor counts. Set at factory.
Travel Fac Lo TVL_FAC_LO	90.5	RO	N/A		Set by Factory	N/A	Data Type: Uint16 Minimum value of travel sensor counts. Set at factory.
Travel IP Bias TVL_IP_BIAS	90.6	RW	OOS	0% - 100%	70%	CAL	Data Type: Float
Travel MLFB Bias TVL_MLFB_BIAS	90.7	RW	OOS	0 - 100%	50%	CAL	Data Type: Float
Last Calibration Type TVL_CAL_TYPE	90.8	RW	OOS	0: Not Calibrated 1: Single Point Calibration 2: Auto Calibration 3: Manual Calibration		CAL	Data Type: Enum What was the last calibration done?
SELF_CALIB_PROG	91	RO			0	N/A	Data Type: UINT8 Indicates the progress of self calibration.
TRAVEL_TUNE	92						
Travel Integral Enable TVL_INTEG_ENABLE	92.1	RW	ALL	1=Off 2=On	2	SETUP	Data Type: Enum
Travel Integral Limit Hi TVL_INTEG_LIM_HI	92.2	RW	ALL	0% - 100%	30%	SETUP	Data Type: Float Upper limit to the integrator output.
Travel Integral Limit Lo TVL_INTEG_LIM_LO	92.3	RW	ALL	-100% - 0%	-30%	SETUP	Data Type: Float Lower limit to the integrator output
Travel Integral Dead Zone TVL_INTEG_DEADZ	92.4	RW	ALL	0% - 2%	0.25%	SETUP	Data Type: Float Window around the Primary Setpoint in which the integral action is disabled.
Travel MLFB Gain TVL_MLFB_GAIN	92.5	RW	ALL	0 <= value <= 32768	35	SETUP	Data Type: Float
PRESS_CAL	93						
Supply Pressure Scale SUPP_PRESS_SCALE	93.1	RW	OOS	0 to 32768.0		CAL	Data Type: Float
Supply Pressure Offset SUPP_PRESS_OFFSET	93.2	RW	OOS	0 to 16383		CAL	Data Type: Uint16
Pressure A Scale PRESS_A_SCALE	93.3	RW	OOS	0 to 32768.0		CAL	Data Type: Float
Pressure A Offset PRESS_A_OFFSET	93.4	RW	OOS	0 to 16383		CAL	Data Type: Uint16
Pressure B Scale PRESS_B_SCALE	93.5	RW	OOS	0 to 32768.0		CAL	Data Type: Float
Pressure B Offset PRESS_B_OFFSET	93.6	RW	OOS	0 to 16383		CAL	Data Type: Uint16
Pressure IP Bias PRESS_IP_BIAS	93.7	RW	OOS	0-100%	70%	CAL	Data Type: Float
Pressure MLFB Bias PRESS_MLFB_BIAS	93.8	RW	OOS	0-100%	50%	CAL	Data Type: Float
PRESS_TUNE1	94						
Pressure Cutoff Hi PRESS_CUTOFF_HI	94.1	RW	ALL	-25 -125%	99.50%	SETUP	Data Type: Float 0.5% hysteresis on leaving cutoff.

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
Pressure Cutoff Lo PRESS_CUTOFF_LO	94.2	RW	ALL	-25 -125%	0.50%	SETUP	Data Type: Float 0.5% hysteresis on leaving cutoff.
Pressure Proportional Gain PRESS_PROP_GAIN	94.3	RW	ALL	> = 0, < 32	2.2	SETUP	Data Type: Float Proportional gain
Pressure Integral Gain PRESS_INTEG_GAIN	94.4	RW	ALL	> = 0, < 32	0.1	SETUP	Data Type: Float Integral resets per second
Pressure Rate Gain PRESS_RATE_GAIN	94.5	RW	ALL	> = 0, < = 512	0	SETUP	Data Type: Float Derivative gain
Temperature TEMPERATURE	95						
VALUE	95.1	RO		> -76 F < 257 F or equivalent in other units	N/A		Data Type: Float Electronics temperature - Controls AI channel 0x085F.
STATUS	95.2	RO			N/A		Data Type: Unsigned8 Indicates validity of VALUE.
Travel Deviation TRAVEL_DEVIATION	96						
VALUE	96.1	RO				N/A	Data Type: Float Absolute value of FEEDBACK_VALUE(58) in % - TRAVEL_TARGET(85). Controls AI channel 0x0860.
STATUS	96.2	RO				N/A	Data Type: Unsigned8 Indicates validity of VALUE.
Drive Signal DRIVE_SIGNAL	97						Data Type: Float Controls AI channel 9
VALUE	97.1	RO		0 to 100%		N/A	Data Type: Float Drive to I/P, controls AI channel 0x0861.
STATUS	97.2	RO				N/A	Data Type: Unsigned8 Indicates validity of VALUE.
Drive Current DRIVE_CURRENT	98	RO	N/A	0 to 100%		N/A	Data Type: Float
MLFB MLFB	99	RO	N/A	-100% to 100% (when device not in cutoff)		N/A	Data Type: Float
Cycle Count CYCLE_COUNT	100	RW	ALL	Write: Anything Read: Actual		CAL	Data Type: Unsigned32 Number of travel direction reversals
Temperature Units TEMPERATURE_UNITS	101	RW	ALL	C=1001 F=1002	C	SETUP	Data Type: Unsigned16
Pressure Units PRESSURE_UNITS	102	RW	ALL	kPa=1133 bar=1137 psig=1143 inHg=1155 inH2O=1146 Kg/cm^2=1145	kPa	SETUP	Data Type: Unsigned16
Travel Units TVL_UNITS	103	RW	ALL	cm=1012 mm=1013 in=1019 deg=1005	mm	SETUP	Data Type: Unsigned16 Travel units for spec sheet ACTUAL_TRAVEL only
Length Units LENGTH_UNITS	104	RW	ALL	cm=1012 mm=1013 in=1019	mm	SETUP	Data Type: Unsigned16
Area Units AREA_UNITS	105	RW	ALL	cm^2=1025 mm^2=1027 in^2=1030	cm^2	SETUP	Data Type: Unsigned16
Spring Rate Units SPRING_RATE_UNITS	106	RW	ALL	N/m=1165 lb/in=1596	N/m	SETUP	Data Type: Unsigned16

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
SPEC_SHEET_VALVE	107						
Valve Size VALVE_SIZE	107.1	RW	ALL		NULL	ALL	Data Type: Octet String
Valve Class VALVE_CLASS	107.2	RW	ALL		NULL	ALL	Data Type: Octet String
Actual Travel ACTUAL_TRAVEL	107.3	RW	ALL	0 to 32768 (inch)	0.00	ALL	Data Type: Float
Shaft Stem Diameter SHAFT_STEM_DIA	107.4	RW	ALL	0 to 32768 (inch)	0.00	ALL	Data Type: Float
Packing Type PACKING_TYPE	107.5	RW	ALL		NULL	ALL	Data Type: Octet String
Inlet Pressure INLET_PRESSURE	107.6	RW	ALL	0 to 32768 (psi)	0.00	ALL	Data Type: Float
Outlet Pressure OUTLET_PRESSURE	107.7	RW	ALL	0 to 32768 (psi)	0.00	ALL	Data Type: Float
Valve Model Number VALVE_MODEL_NUM	107.8	RW	ALL		NULL	ALL	Data Type: Octet String
SPEC_SHEET_TRIM	108						
Seat Type SEAT_TYPE	108.1	RW	ALL		NULL	ALL	Data Type: Octet String
Leak Class LEAK_CLASS	108.2	RW	ALL	0: 1: I 2: II 3: III 4: IV 5: V 6: VI 7: BFW 8: STD AIR 9: BFW II 10: BFW III 11: BFW IV 12: BFW V 13: BFW VI 14: 1/10th of IV 15: Bubble Tight	0	ALL	Data Type: Enum ANSI Seat Leakage Classification
Port Diameter PORT_DIAMETER	108.3	RW	ALL	0 to 32768 (inch)	0.00	ALL	Data Type: Float
Port Type PORT_TYPE	108.4	RW	ALL	0= 1=balanced 2=unbalanced	0	ALL	Data Type: Enum
Flow Direction FLOWDIRECTION	108.5	RW	ALL	0= 1=up 2=down	0	ALL	Data Type: Enum
Push Down To PUSH_DOWN_TO	108.6	RW	ALL	0= 1=open 2=close	0	ALL	Data Type: Enum
Flow Tends To FLOW_TENDS_TO	108.7	RW	ALL	0= 1=open 2=close	0	ALL	Data Type: Enum
Unbalanced Area UNBALANCED_AREA	108.8	RW	ALL	0 to 32768 (in^2)	0.00	ALL	Data Type: Float
Trim Style 1 TRIM_STYLE_1	108.9	RW	ALL		NULL	ALL	Data Type: Octet String
Trim Style 2 TRIM_STYLE_2	108.10	RW	ALL		NULL	ALL	Data Type: Octet String

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
SPEC_SHEET_ACT	109						
Actuator Size ACTUATOR SIZE	109.1	RW	ALL		NULL	ALL	Data Type: Octet String
Effective Area EFFECTIVE AREA	109.2	RW	ALL		0.00	ALL	Data Type: Float
Air AIR	109.3	RW	ALL	0= 1=open 2=close	0	ALL	Data Type: Enum
LEVER_STYLE	109.4	RW	ALL	0= 1=Pivot Point 2=Rack & Pinion	0	ALL	Data Type: Enum
Lower Bench Set LOWER_BENCH_SET	109.5	RW	ALL	0 to 32768 (psi)	0.00	ALL	Data Type: Float
Upper Bench Set UPPER_BENCH_SET	109.6	RW	ALL	0 to 32768 (psi)	0.00	ALL	Data Type: Float
Nominal Supply Pressure NOMINAL_SUPPLY_PRESSURE	109.7	RW	ALL	0 to 32768 (psi)	0.00	ALL	Data Type: Float
Spring Rate SPRING_RATE	109.8	RW	ALL	0 to 187.1105 (N/m)	0.00	ALL	Data Type: Float
Stroking Time Open STROKING_TIME_OPEN	109.9	RW	ALL	0 to 32768 (seconds)	0.00	ALL	Data Type: Float
Stroking Time Close STROKING_TIME_CLOSE	109.10	RW	ALL	0 to 32768 (seconds)	0.00	ALL	Data Type: Float
Lever Arm Length LEVER_ARM_LENGTH	109.11	RW	ALL	0 to 32768 (inch)	0.00	ALL	Data Type: Float
ACT_MODEL_ENUM	109.12	RW	ALL		0	ALL	Data Type: Enum
ACT_SIZE_ENUM	109.13	RW	ALL		0	ALL	Data Type: Enum
Actuator Model Number ACT_MODEL_NUM	109.14	RW	ALL		NULL	ALL	Data Type: Octet String
DEVICE_RECORD	110						These parameters can only reset through VL/DD.
Temperature Maximum TEMP_MAX	110.1	RO	N/A		-32,768,00	N/A	Data Type: Float Highest temperature recorded
Temperature Maximum Time TEMP_MAX_TIME	110.2	RO	N/A		undefined	N/A	Data Type: BinaryDate
Temperature Minimum TEMP_MIN	110.3	RO	N/A		32768.00	N/A	Data Type: Float Lowest temperature recorded
Temperature Minimum Time TEMP_MIN_TIME	110.4	RO	N/A		undefined	N/A	Data Type: BinaryDate
Supply Pressure Maximum SUPP_PRESS_MAX	110.5	RO	N/A		-32,768.00	N/A	Data Type: Float Highest supply pressure recorded
Supply Pressure Maximum Time SUPP_PRESS_MAX_TIME	110.6	RO	N/A		undefined	N/A	Data Type: BinaryDate
Supply Pressure Minimum SUPP_PRESS_MIN	110.7	RO	N/A		32,768.00	N/A	Data Type: Float Lowest supply pressure recorded
Supply Pressure Minimum Time SUPP_PRESS_MIN_TIME	110.8	RO	N/A		undefined	N/A	Data Type: BinaryDate

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
PROTECTION	111	RW	ALL	1 = None 2 = Calibration 3 = Setup & Calibration 4 = All	1 (after "Restart w/ Defs) 2 (from the factory)	NONE	Data Type: ENUM Write lock enable/disable If setting is at or above a parameter's protection level then that parameter is read-only. Setup parameters are any parameters that are meant to be written by a user in order to change its control behavior or how it reports information. (Setup examples are: Feedback Connection, Tuning Constants, Cutoffs). Additional parameters that do not effect control are included when ALL protection is invoked.
RESERVED_A	112	RW	ALL		N/A	NONE	Data Type: Array, 118 x UINT8
RESERVED_AI	113	RW	ALL		0	NONE	Data Type: Uint16
OUTPUT_SYNC	114	RW	ALL			NONE	Allows a bumpless transition from travel control mode to pressure control mode in the event of control feedback switch
BLEED_RATE	114.1			0% < VALUE ≤ 100%	25%/sec		Data Type: Float Controls how quickly the new servo transitions to the user-specified setpoint
ENABLE	114.2			0=Disabled 1=Enabled	FALSE		Data Type: Uint8 Enables the Output Synchronize feature.
DEVIATION_FALLBACK	115						Feature to handle the case where the linkage becomes detached, but travel sensor reading still falls within valid range, pressure control mode should be enforced at this point.
DEV_FALLBACK_ENABLE	115.1	RW	ALL	1=Disabled 2=Enabled	1	SETUP	Data Type: Enum Enables the Deviation Fallback feature.
DEV_FALLBACK_POINT	115.2	RW	ALL	0% < VALUE ≤ 125%	25%	SETUP	Data Type: Float Set deviation value, such that if DEVIATION_FALLBACK.DEVIATION is greater than or equal to this value, then switch to pressure control mode.
DEV_FALLBACK_TIME	115.3	RW	ALL	0 sec ≤ VALUE ≤ 120 secs	10sec	SETUP	Data Type: Float Time required to reach the DEV_FALLBACK_POINT.
DEV_FALLBACK_DEADBAND	115.4	RW	ALL	0% ≤ VALUE ≤ 100%	2%	SETUP	Data Type: Float The deviation fallback deadband.
DEV_FALLBACK_MIN_SUPPLY	115.5	RW	ALL	5psi < VALUE ≤ 150psi	15 psi	SETUP	Data Type: Float The minimum air supply pressure for the pressure control mode to activate during the DEVIATION FALLBACK feature.
OUTBLOCK_SEL	116	RW	OOS	1: AO Block 2: DO Block	1	SETUP	Data Type: ENUM Controls which output block (AO or DO) the transducer block will respond to.

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
SELFTEST_STATUS	117	RO	N/A	Octet 1 0: reserved, set to 0 1: unused, set to 0 2: Integrator Limited Low 3: Integrator Limited High 4: Tvl Sensor Span Error 5: MLFB Error 6: reserved, set to 0 7: Tvl Sensor High Error Octet 2 0: Tvl Sensor Low Error 1: Pressure B Sensor Failure 2: Pressure A Sensor Failure 3: Supply Sensor Failure 4: Static Memory Failure 5: IOP Failure 6: Drive Current Alert 7: Simulate ON	0,0	N/A	Data Type: Octet String The "Tvl Sensor Error" bits will be cleared if TVL_PRESS_SELECT is set to "Pressure"
INST_ALERTS_CONFIG	118						
Output Blk Timeout OUTPUT_BLK_TIMEOUT	118.1	RW	ALL	Time > = 1, < = 800 seconds	600 sec	SETUP	Data Type: Float The maximum time between updates from the AO or DO block to the transducer block setpoint.
Drive Current Alert Point DRIVE_CURRENT_ALRT_PT	118.2	RW	ALL	> = 5 %, < = 100 %	50%	SETUP	Data Type: Float (percent different) drive signal not reaching I/P accurately.
Drive Current Alert Time DRIVE_CURRENT_TIME	118.3	RW	ALL	= 0.25, < = 120 seconds	5 sec	SETUP	Data Type: Float Time required before alert goes active.
INST_ALERTS_CONFIG2	119						
Travel Deviation Alert Point TVL_DEV_ALRT_PT	119.1	RW	ALL	> 0%, <= 125%	5%	SETUP	Data Type: Float Alerts when difference between sp and pv is too large for too long.
Travel Deviation Time TVL_DEV_TIME	119.2	RW	ALL	> = 0, < = 120 seconds	10 sec	SETUP	Data Type: Float Time required before alert goes active.
Travel Deviation Deadband TVL_DEV_DB	119.3	RW	ALL	> = 0%, < = 100%	2%	SETUP	Data Type: Float Hysteresis
Travel Accumulator Deadband TVL_ACCUM_DB	119.4	RW	ALL	0 - 100%	1%	SETUP	Data Type: Float Hysteresis
DI_OPEN	120		N/A			N/A	
VALUE	120.1	RO		1: Travel open alert active 0: Otherwise	N/A		Data Type: Unsigned 8 1 if travel open alert is active. Controls DI channel 0x0878.
STATUS	120.2	RO			N/A		Data Type: Unsigned8 Indicates validity of VALUE.
DI_CLOSED	121		N/A			N/A	Data Type: Float
VALUE	121.1	RO		1: Travel closed alert active 0: Otherwise	N/A		Data Type: Unsigned 8 1 if travel closed alert is active. Controls DI channel 0x0879.
STATUS	121.2	RO			N/A		Data Type: Unsigned8 Indicates validity of VALUE.

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
DI_LO_LO	122		N/A			N/A	Data Type: Float
VALUE	122.1	RO		1: Travel low low alert active 0: Otherwise	N/A		Data Type: Unsigned 8 1 if travel low low alert is active. Controls DI channel 0x087A.
STATUS	122.2	RO			N/A		Data Type: Unsigned8 Indicates validity of VALUE.
DI_LO	123		N/A			N/A	Data Type: Float
VALUE	123.1	RO		1: Travel low alert active 0: Otherwise	N/A		Data Type: Unsigned 8 1 if travel low alert is active. Controls DI channel 0x087B
STATUS	123.2	RO			N/A		Data Type: Unsigned8 Indicates validity of VALUE.
DI_HI_HI	124		N/A			N/A	Data Type: Float
VALUE	124.1	RO		1: Travel high high alert active 0: Otherwise	N/A		Data Type: Unsigned 8 1 if travel high high alert is active. Controls DI channel 0x087C.
STATUS	124.2	RO			N/A		Data Type: Unsigned8 Indicates validity of VALUE.
DI_HI	125		N/A			N/A	Data Type: Float
VALUE	125.1	RO		1: Travel high alert active 0: Otherwise	N/A		Data Type: Unsigned 8 1 if travel high alert is active. Controls DI channel 0x087D.
STATUS	125.2	RO			N/A		Data Type: Unsigned8 Indicates validity of VALUE.
DEVICE_CALIB_PERSON	126	RW			NULL	CAL	Data Type: Octet String Calibration person.
DEVICE_CALIB_LOC	127	RW			NULL	CAL	Data Type: Octet String Calibration person.
PRESS_TUNE2	128						
Pressure Integral Dead Zone PRESS_INTEG_DEADZ	128.1	RW	ALL	> = 0%, < = 2.0%	0.25%	SETUP	Data Type: Float Integrator Deadzone, 1/2 width
Pressure Integral Limit Hi PRESS_INTEG_HI_LIM	128.2	RW	ALL	> = 0%, < = 100%	50%	SETUP	Data Type: Float Integrator limits
Pressure Integral Limit LO PRESS_INTEG_LO_LIM	128.3	RW	ALL	< = 0%, > = -100%	-50%	SETUP	Data Type: Float Integrator limits
Pressure Integral IC Hi PRESS_INTEG_IC_HI	128.4	RW	ALL	>= -100%, < = 100%	12%	SETUP	Data Type: Float Integrator initial condition
Pressure Integral IC Lo PRESS_INTEG_IC_LO	128.5	RW	ALL	>= -100%, < = 100%	-12%	SETUP	Data Type: Float Integrator initial condition
Pressure MLFB Gain PRESS_MLFB_GAIN	128.6	RW	ALL	> 0, < = 100	35	SETUP	Data Type: Float
INST_ALERTS_CONFIG3	129						
Temperature Hi Alert Point TEMP_HI_ALRT_PT	129.1	RW	ALL	> -76 F, < 257 F	186 F	SETUP	Data Type: Float Temperature HI Limits
Temperature Lo Alert Point TEMP_LO_ALRT_PT	129.2	RW	ALL	> -76 F, < 257 F	-63 F	SETUP	Data Type: Float Temperature LO Limits
Supply Pressure Hi Alert Point SUP_PRES_HI_ALRT_PT	129.3	RW	ALL	> = 0, < = 150	145 psig	SETUP	Data Type: Float Maximum supply pressure
Supply Pressure Lo Alert Point SUP_PRES_LO_ALRT_PT	129.4	RW	ALL	> = 0, < = 150	15 psig	SETUP	Data Type: Float Minimum supply pressure

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Table C-3. Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Default Value	Protect Category	Description
INST_ALERTS_CONFIG4	130						
Cycle Count Alert Point CYCLE_COUNT_ALRT_PT	130.1	RW	ALL	> = 0	1,000,000%	SETUP	Data Type: Uint32 Alerts when number of cycles is too large.
Cycle Count Deadband CYCLE_COUNT_DB	130.2	RW	ALL	0 - 100%	1%	SETUP	Data Type: Float Deadband
Travel Open Alert Point TVL_OPEN_ALRT_PT	130.3	RW	ALL	-25% to 125%	99.5%	SETUP	Data Type: Float Alert when valve is open.
Travel Open Deadband TVL_OPEN_DB	130.4	RW	ALL	> = 0%, < =100%	1%	SETUP	Data Type: Float Deadband
INST_ALERTS_CONFIG5	131						
Travel Closed Alert Point TVL_CLOSED_ALRT_PT	131.1	RW	ALL	-25% to 125%	0.5%	SETUP	Data Type: Float Alerts when valve closed.
Travel Closed Deadband TVL_CLOSED_DB	131.2	RW	ALL	> = 0%, < = 100%	5%	SETUP	Data Type: Float Deadband
Travel Lo Lo Alert Point TVL_LO_LO_ALRT_PT	131.3	RW	ALL	-25% to 125%	-25%	SETUP	Data Type: Float Alert when valve position is less than alert point.
Travel Lo Lo Deadband TVL_LO_LO_DB	131.4	RW	ALL	> = 0%, < = 100%	5%	SETUP	Data Type: Float Deadband
INST_ALERTS_CONFIG6	132						
Travel Lo Alert Point TVL_LO_ALRT_PT	132.1	RW	ALL	-25% to 125%	-25%	SETUP	Data Type: Float Alert when valve position is less than alert point.
Travel Lo Deadband TVL_LO_DB	132.2	RW	ALL	> = 0%, < = 100%	5%	SETUP	Data Type: Float Deadband
Travel Hi Alert Point TVL_HI_ALRT_PT	132.3	RW	ALL	-25% to 125%	125%	SETUP	Data Type: Float Alert when valve position is greater than alert point.
Travel Hi Deadband TVL_HI_DB	132.4	RW	ALL	> = 0%, < = 100%	5%	SETUP	Data Type: Float Deadband
INST_ALERTS_CONFIG7	133						
Travel Hi Hi Alert Point TVL_HI_HI_ALRT_PT	133.1	RW	ALL	-25% to 125%	125%	SETUP	Data Type: Float Alert when valve position is greater than alert point.
Travel Hi Hi Deadband TVL_HI_HI_DB	133.2	RW	ALL	> = 0%, < = 100%	5%	SETUP	Data Type: Float Deadband
AUX_MIN_SHORT_ALRT_TIME	133.3	RW	ALL	>= 0, <=120 seconds	20 sec	SETUP	Data Type: Float Time required for the auxiliary terminal to be shorted before alert goes active.
AUX_MIN_CLEAR_TIME	133.4	RW	ALL	>= 0, <=120 seconds	3 sec	SETUP	Data Type: Float Time required before alert, currently active, to become clear.

View Lists

View lists allow the values of a set of parameters to be accessed at the same time.

Table C-4. Transducer Block, View 1

Index Number	Parameter
1	ST_REV
6.1	MODE_BLK.ACTUAL
6.2	MODE_BLK.PERMITTED
6.3	MODE_BLK.NORMAL
7.1	ALARM_SUM.CURRENT
7.2	ALARM_SUM.UNACKNOWLEDGED
7.3	ALARM_SUM.UNREPORTED
7.4	ALARM_SUM.DISABLED

Analog Output Function Block

Parameter List

- Read/Write Capability: RO - Read Only, RW - Read Write
- Mode: The block mode(s) required to write to the parameter
- Double indentation and shared Index Number indicates sub-parameter

Table C-5. Analog Output Function Block Parameter Definitions

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BLOCK_OBJECT	0	RO			-	Data Type: DS-32 First parameter of every block. Contains characteristics of the block, eg. Block type and profile number.
RESERVED	0.1				250	Data Type: Unsigned8
BLOCK_OBJECT	0.2			2: Function Block	2	Data Type: Unsigned8 Identifies the block.
PARENT_CLASS	0.3			1: Reserved 2: Output 3 - 127: Reserved	2	Data Type: Unsigned8 Identifies which class the device belongs to.
CLASS	0.4			1: Analog Output 2 - 127: Reserved	1	Data Type: Unsigned8 Definition of class code.
DEV_REV	0.5				1	Data Type: Unsigned16 Contains information about the device's revision. Increased when there is a new firmware release.
DEV_REV_COMP	0.6				1	Data Type: Unsigned16 Represents the lowest device revision which is supported by the device.
DD_REVISION	0.7				0	Data Type: Unsigned16
PROFILE	0.8			Octet 1: Number of PA profiles within PI Profile Class. Set to 0x40. Octet 2: 0x01: Class A, all standard params have their own memory place. 0x02: Class B, all standard params have their own memory place. 0x81: Class A, all standard params in 1 memory place. 0x82: Class B, all standard params in 1 memory place. 253: Manufacturer specific block structures	0x4002	Data Type: Octet String Profile Class given by PI, and description of profile.
PROFILE_REVISION	0.9			Octet 1: Number before the decimal point. Octet 2: Number after the decimal point.	0x0302	Data Type: Unsigned16 Profile revision used for this device.
EXECUTION_TIME	0.10				0	Data Type: Unsigned8

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Table C-5. Analog Output Function Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
NUMBER_OF_PARAMETERS	0.11				0x33	Data Type: Unsigned16 Number of used parameters in the block.
ADDRESS_OF_VIEW_1	0.12			Octet 1: (MSB): Slot Octet 2: (LSB): Index of View_1	0x0143	Data Type: Unsigned16 Address of View 1 parameter, see table C-6.
NUMBER_OF_VIEWS	0.13				0x01	Data Type: Unsigned8 Number of view objects of the block.
Static Revision ST_REV	1	RO		0 to 65535	0	Data Type: Unsigned16 The revision level of the static data. Increments by one each time a static parameter changes, or a change of a table is accepted. Reset to 0 in case of a cold start (ie if FACTORY_RESET = 1 is set). Set to 1 if overflow.
Tag Description TAG_DESC	2	RW	ALL		Null	Data Type: Octet String The user description of the intended application of the block.
Strategy STRATEGY	3	RW	ALL		0	Data Type: Unsigned16 User-specified value used in configuration or diagnostics as a key in sorting block information.
Alert Key ALERT_KEY	4	RW	ALL	0 to 255	0	Data Type: Unsigned8 The identification number of the plant unit. This information may be used in the host for sorting alarms or events generated by blocks.
Target Mode TARGET_MODE	5	RW	ALL	Bit 7: OOS Bit 4: MAN Bit 3: AUTO Bit 1: RCAS	OOS	Data Type: Unsigned8 Target mode of the block.
Block Mode MODE_BLK	6	RO		Bit 7: OOS Bit 4: MAN Bit 3: AUTO Bit 1: RCAS		Data Type: DS-37 The actual, permitted, and normal modes of the block. Actual: Permitted: Allowed modes for TARGET_MODE Normal: Desired operating mode
ACTUAL	6.1				OOS	
PERMITTED	6.2			OOS + MAN + AUTO + RCAS	OOS + MAN + AUTO + RCAS	
NORMAL	6.3				AUTO	
Alarm Summary ALARM_SUM	7	RO		Octet 1: Bit 0 - 6: Reserved Bit 7: Update Event - Set after any STATIC parameter is changed. Octet 2: Reserved		Data Type: DS-42 Current alert status, unacknowledged states, unreported states, and disabled states of the alarms associated with the function block.
CURRENT	7.1				0	Data Type: Octet String Current active alerts. The update event bit is cleared after 20s (condensed status) or 10s (classic status).
UNACKNOWLEDGED	7.2				0	Not used
UNREPORTED	7.3				0	Not used
DISABLED	7.4				0	Not used
BATCH	8					Not used
Set Point SP	9	RW	ALL		Dynamic	Data Type: 101 Setpoint. Defines the position of the device in AUTO mode.
VALUE				PV_SCALE +/- 10%	0	Data Type: Float
STATUS					0x80	Data Type: Unsigned8 Indicates validity of VALUE.
Reserved by PI	10					

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Table C-5. Analog Output Function Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
Process Value Scale PV_SCALE	11	RW				Data Type: DS-68 The high and low scale values, engineering unit code, and number of decimal places to be used in displaying the PV parameter and parameters which have the same scaling as PV.
EU_AT_100%	11.1				100	Data Type: Float
EU_AT_0%	11.2				0	Data Type: Float
UNITS_INDEX	11.3				%	Data Type: Unsigned16
DECIMAL_POINT	11.4				2	Data Type: Integer8
Readback READBACK	12	RO				Data Type: 101 Actual position of the device. This can be characterized or de-characterized depending on IN_CHANNEL setting.
VALUE					0	Data Type: Float
STATUS					0	Data Type: Unsigned8 Indicates validity of VALUE.
Reserved by PI	13					
Remote Cascade Input RCAS_IN	14	RW	ALL			Data Type: DS-65 Target SP and status by supervisory host
VALUE				PV_SCALE +/- 10%	0	Data Type: Float
STATUS					0xC4	Data Type: Unsigned8 Indicates validity of VALUE.
Reserved by PI	15-20					
IN_CHANNEL	21	RW	ALL	Byte 1: TB_ID = 8 Byte 2: Relative index of the TB parameter 80 = Final_Position_Value	0x0850	Data Type: Unsigned16 Defines which transducer parameter provides input to the AO READBACK parameter.
OUT_CHANNEL	22	RW	ALL	Byte 1: TB_ID = 8 Byte 2: Relative index of the TB parameter 57 = Positioning_Value	0x0839	Data Type: Unsigned16 Defines which transducer parameter receives the AO output. Select Positioning_Value to control valve position.
FSAFE_TIME	23	RW	ALL	>= 0	2	Data Type: Float Time in seconds from detection of failure of the actual used setpoint (SP=BAD or RCAS_IN <>GOOD) to the action of the block if the condition still exists. A comm timeout changes the status of the transmitted setpoint to BAD
FSAFE_TYPE	24	RW	ALL	0: Value of FSAFE_VALUE is used as setpoint, status of OUT = UNCERTAIN - Substitute Value 1: Use last valid setpoint; status of OUT = UNCERTAIN - Last usable Value or BAD - No comm, no LUV 2: Actuator goes to fail-safe position defined by ACTUATOR_ACTION (only useful for actuators with spring return); status of OUT = BAD - non specific	1	Data Type: Unsigned8 Defines the reaction of the device if a failure of the actual used setpoint is still detected after FSAFE_TIME or if the status of actual used setpoint is Initiate Fail Safe.
FSAFE_VALUE	25	RW	ALL	PV_SCALE +/- 10%	0	Data Type: Float Setpoint used if FSAFE_TYPE = 0 and FSAFE is activated
Reserved by PI	26					

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Table C-5. Analog Output Function Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
Remote Cascade Output RCAS_OUT	27	RO	N/A	Status Value		Data Type: 101 Setpoint provided to a supervisory host for monitoring / back calculation and to allow action to be taken under limited conditions or mode change. The value will be same as RCAS_IN in RCAS mode and SP in AUTO mode.
VALUE					0	Data Type: Float
STATUS					0	Data Type: Unsigned8 Indicates validity of VALUE.
Reserved by PI	28-30					
POS_D	31	RO			Dynamic	Data Type: 102
VALUE				0: Not initialized 1: Closed 2: Opened 3: Intermediate	0	Data Type: Unsigned8 The current position of the valve (discrete).
STATUS					0	Data Type: Unsigned8 Indicates validity of VALUE.
SETP_DEVIATION	32	RO			0	Data Type: Float Difference between OUT signal and feedback position in % travel span.
CHECK_BACK	33	RO		Octet 1: 0: CB_FAIL_SAFE - Fail safe active (R) 1: Reserved 2: CB_LOCAL_OP Field device under local control (R) 3 - 7: Reserved Octet 2: 0: CB_ACT_OPEN - Actuator is moving towards open direction (R) 1: CB_ACT_CLOSE - Actuator is moving towards close direction (R) 2: CB_UPDATE_EVT - FB and TB static data changed (A) 3: CB_SIMULATE - Simulation of process values is enabled (R) 4 - 5: Reserved 6: CB_CONTR_INACT - Positioner inactive (OUT status = BAD) (R) 7: Reserved Octet 3: 0: CB_TOT_VALVE_ TRAV - Total valve travel limit exceeded (R) 1 - 7: Reserved	0	Data Type: Octet String Detailed information of the device, bitwise coded. More than 1 message possible at once. (R): Indication remains active as long as the reason for the message exists. (A): Indication will be automatically reset after 20 secs.
CHECK_BACK_MASK	34	RO		Refer to CHECK_BACK parameter for bit definition.	0x054F01	Data Type: Octet String Definition of supported CHECK_BACK information bits. Set if supported, cleared if not supported.
Simulate SIMULATE	35	RW	ALL			Data Type: DS-50 Simulate READBACK by defining the value and status. Signal path from the Transducer block to the AO block will be disconnected.

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Table C-5. Analog Output Function Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
SIMULATE_STATUS	35.1				0	Data Type: Unsigned8 Status written by an operator to simulate Transducer block value status
SIMULATE_VALUE	35.2				0	Data Type: Float Value written by an operator to simulate Transducer block value.
SIMULATE_ENABLE	35.3			0: Disabled <>0: Enabled	0	Data Type: Unsigned8 Switch to enable or disable simulation.
INCREASE_CLOSE	36	RW	ALL	0: Rising- increasing setpoint results in OPENING of valve 1: Falling - increasing setpoint results in CLOSING of valve	0	Data Type: Unsigned8 Direction of positioner in RCAS and AUTO mode.
OUT	37	RW	MAN		Dynamic	Data Type: 101 Value showing the desired valve position in engineering units in RCAS and AUTO mode, and is the value specified by the operator in MAN and LO mode.
VALUE	37.1			OUT_SCALE +/- 10%	0	Data Type: Float
STATUS	37.2				0x80	Data Type: Unsigned8 Indicates validity of VALUE.
OUT_SCALE	38	RW				Data Type: DS-36 Conversion of the OUT parameter in percent to OUT in engineering units as the output value of the block. The high and low scale values, engineering unit code, and the number of decimal points.
EU_AT_100%	38.1				100	Data Type: Float
EU_AT_0%	38.2				0	Data Type: Float
UNITS_INDEX	38.3			at least mm, degrees, %	%	Data Type: Unsigned16
DECIMAL_POINT	38.4				2	Data Type: Integer8
Reserved by PI	39-48					
Extended Parameters						
Process Variable PV	49	RO				Data Type: 101 Actual valve position in PV units.
VALUE					0	Data Type: Float
STATUS					0	Data Type: Unsigned8 Indicates validity of VALUE.
I/O Options IO_OPTS	50	RW	OOS	Octet 1: 0: Reserved 1: SP tracks READBACK in Man 2-3: Reserved 4: SP Tracks retained target in MAN 5-6: Reserved 7: Use FSAFE_VALUE on restart Octet 2: 0 - 7: Reserved	0x0000	Data Type: Octet String User options for Output Control. Bit 4 can not be set with bit 1 Retained target will be the the current target mode if the actual mode is MAN. If the target mode is RCAS, SP will track RCAS_IN parameter.

View Lists

View lists allow the values of a set of parameters to be accessed at the same time.

Table C-6. AO Function Block, View 1

Index Number	Parameter
1	ST_REV
6.1	MODE_BLK.ACTUAL_MODE
6.2	MODE_BLK.PERMITTED_MODE
6.3	MODE_BLK.NORMAL_MODE
7.1	ALARM_SUM.CURRENT
7.2	ALARM_SUM.UNACKNOWLEDGED
7.3	ALARM_SUM.UNREPORTED
7.4	ALARM_SUM.DISABLED
12.1	READBACK.VALUE
12.2	READBACK.STATUS
31.1	POS_D.VALUE
31.2	POS_D.STATUS
33	CHECKBACK

Discrete Output Function Block

Parameter List

- Read/Write Capability: RO - Read Only, RW - Read Write
- Mode: The block mode(s) required to write to the parameter
- Double indentation and shared Index Number indicates sub-parameter

Table C-7. Discrete Output Function Block Parameter Definitions

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Initial Value	Description
BLOCK_OBJECT	0	RO			-	Data Type: DS-32 First parameter of every block. Contains characteristics of the block, eg. Block type and profile number.
RESERVED	0.1				250	Data Type: Unsigned8
BLOCK_OBJECT	0.2			2: Function Block	2	Data Type: Unsigned8 Identifies the block.
PARENT_CLASS	0.3			1: Reserved 2: Output 3 - 127: Reserved	2	Data Type: Unsigned8 Identifies which class the device belongs to.
CLASS	0.4			1: Analog Output 2: Discrete Output 3 - 127: Reserved	2	Data Type: Unsigned8 Definition of class code.
DEV_REV	0.5				1	Data Type: Unsigned16 Contains information about the device's revision. Increased when there is a new firmware release.
DEV_REV_COMP	0.6				1	Data Type: Unsigned16 Represents the lowest device revision which is supported by the device.
DD_REVISION	0.7				0	Data Type: Unsigned16
PROFILE	0.8			Octet 1: Number of PA profiles within PI Profile Class. Set to 0x40. Octet 2: 0x01: Class A, all standard params have their own memory place. 0x02: Class B, all standard params have their own memory place. 0x81: Class A, all standard params in 1 memory place.	0x4002	Data Type: Octet String Profile Class given by PI, and description of profile.
PROFILE_REVISION	0.9			Octet 1: Number before the decimal point. Octet 2: Number after the decimal point.	0x0302	Data Type: Unsigned16 Profile revision used for this device.
EXECUTION_TIME	0.10				0	Data Type: Unsigned8
NUMBER_OF_PARAMETERS	0.11				0x2F	Data Type: Unsigned16 Number of used parameters in the block.
ADDRESS_OF_VIEW_1	0.12			Octet 1 (MSB): Slot Octet 2 (LSB): Index of View_1 parameter for access	0x033F	Data Type: Unsigned16 Address of View 1 parameter, see table C-8.

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Table C-7. Discrete Output Function Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Initial Value	Description
NUMBER_OF_VIEWS	0.13				0x01	Data Type: Unsigned8 Number of view objects of the block.
Static Revision ST_REV	1	RO	N/A	0 to 65535	0	Data Type: Unsigned16 The revision level of the static data. Increments by one each time a static parameter changes, or a change of a table is accepted. Reset to 0 in case of a cold start (ie if FACTORY_RESET = 1 is set). Set to 1 if overflow.
Tag Description TAG_DESC	2	RW	ALL		null	Data Type: Octet String The user description of the intended application of the block.
Strategy STRATEGY	3	RW	ALL	0 to 65535	0	Data Type: Unsigned16 The strategy field can be used to identify grouping of blocks. This data is not checked or processed by the block.
Alert Key ALERT_KEY	4	RW	ALL	0 to 255	0	Data Type: Unsigned8 The identification number of the plant unit. This information may be used in the host for sorting alarms or events generated by blocks.
TARGET_MODE	5	RW	ALL	Bit 7: OOS Bit 4: MAN Bit 3: AUTO Bit 1: RCAS	OOS	Data Type: Unsigned8 Target mode of the block.
Block Mode MODE_BLK	6	RO		Bit 7: OOS Bit 4: MAN Bit 3: AUTO Bit 1: RCAS		Data Type: DS-37 Valid Bits: 7: OOS, 4: MAN, 3: AUTO, 1: RCAS The actual, permitted, and normal modes of the block. Actual: The current mode of the block Permitted: Allowed modes for Target Normal: Desired operating mode
ACTUAL	6.1				OOS	
PERMITTED	6.2			OOS + MAN + AUTO + RCAS	OOS + MAN + AUTO + RCAS	
NORMAL	6.3				AUTO	
Alarm Summary ALARM_SUM	7	RO		Octet 1: Bits 0 - 6: Reserved Bit 7: Update Event - Set after any STATIC parameter is changed. Octet 2: Reserved		Data Type: DS-42 Current alert status, unacknowledged states, unreported states, and disabled states of the alarms associated with the function block.
CURRENT	7.1				0	Date Type: Octet String Current active alerts. Limit alarm bits are cleared when the alarm condition is cleared. Update event bit is cleared after 20s (condensed status) or 10s (classic status)
UNACKNOWLEDGED	7.2				0	Not used
UNREPORTED	7.3				0	Not used
DISABLED	7.4				0	Not used
BATCH	8					Data Type: DS-67 Not used
SP_D	9	RW	ALL			Data Type: 101 Setpoint. Defines the position of the device in AUTO mode.
VALUE	9.1			0 = closed 1 = open 5,10,15... 255=%	0	Data Type: Unsigned8
STATUS	9.2				0x80	Data Type: Unsigned8 Indicates validity of VALUE.

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Table C-7. Discrete Output Function Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Initial Value	Description
OUT_D	10	RW	MAN			Data Type: 102 Process variable of the DO block in AUTO and RCAS mode, and is the value specified by the operator/engineer in MAN and LO. In case of BAD status the valve goes to the position specified in ACTUATOR_ACTION.
VALUE	10.1			0 = closed 1 = open 5,10,15... 255=%	0	Data Type: Unsigned8
STATUS	10.2				0x80	Data Type: Unsigned8 Indicates validity of VALUE.
Reserved by PI	11					
READBACK_D	12	RO				Data Type: 102 Actual position of the device.
VALUE	12.1			0 = closed 1 = open 5,10,15... =%	0	Data Type: Unsigned8
STATUS	12.1				0	Data Type: Unsigned8 Indicates validity of VALUE.
Reserved by PI	13					
Remote Cascade Input Discrete RCAS_IN_D	14	RW	ALL			Data Type: 102 Target setpoint and status provided by a supervisory host in RCAS mode.
VALUE	14.1			0 = closed 1 = open 5,10,15... = %	0	Data Type: Unsigned8
STATUS	14.2				0xC4	Data Type: Unsigned8 Indicates validity of VALUE.
Reserved by PI	15-16					
IN_CHANNEL	17	RW	ALL	Byte 1: TB_ID = 8 Byte 2: Relative index of the TB parameter 82 = TRAVEL_D	0x0852	Data Type: Unsigned16 Defines which transducer parameter provides input to the DO READBACK_D parameter.
INVERT	18	RW	ALL	0: Not inverted 1: Inverted	0	Data Type: Unsigned8 Indicates whether SP_D should be logically inverted before writing to OUT_D in AUTO or RCAS mode.
FSAFE_TIME	19	RW	ALL	>= 0	0	Data Type: Float Time in seconds from detection of failure of the actual used setpoint (SP_D=BAD or RCAS_IN _D<>GOOD) to the action of the block if the condition still exists. A comm timeout changes the status of the transmitted setpoint to BAD.
FSAFE_TYPE	20	RW	ALL	0: Value of FSAFE_VAL_D is used as setpoint, status of OUT_D = UNCERTAIN - Substitute Value 1: Use last valid setpoint; status of OUT_D = UNCERTAIN - Last usable Value or BAD - No comm, no LUV 2: Actuator goes to fail-safe position defined by ACTUATOR_ACTION , status of OUT_D = BAD - non specific	1	Data Type: Unsigned8 Defines the reaction of the device if a failure of the actual used setpoint is still detected after FSAFE_TIME or if the status of actual used setpoint is Initiate Fail Safe.
FSAFE_VAL_D	21	RW	ALL	0=closed 1=open 5,10,15... 255=%	0	Data Type: Unsigned8 Setpoint used if FSAFE_TYPE = 0 and FSAFE is activated

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Table C-7. Discrete Output Function Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Initial Value	Description
Remote Cascade Output Discrete RCAS_OUT_D	22	RO				Data Type: 102 Setpoint provided to a supervisory host for monitoring / back calculation and to allow action to be taken under limited conditions or mode change.
VALUE	22.1				0	Data Type: Unsigned8
STATUS	22.2				0	Data Type: Unsigned8 Indicates validity of VALUE.
Reserved by PI	23					
Simulate Discrete SIMULATE_D	24	RW	ALL			Data Type: DS-51 Simulate READBACK by defining the value and status. Signal path from the Transducer block to the DO Block will be disconnected.
SIMULATE_STATUS	24.1				0	Data Type: Unsigned8 Status written by an operator to simulate Transducer block value status.
SIMULATE_VALUE	24.2			0 = closed 1 = open 5,10,15... 255=%	0	Data Type: Unsigned8 Value written by an operator to simulate Transducer block value.
SIMULATE_ENABLED	24.3			0: Disabled <>0: Enabled	0	Data Type: Unsigned8 Switch to enable or disable simulation.
Reserved by PI	25-32					
CHECK_BACK	33	RO		Octet 1: 0: CB_FAIL_SAFE - Fail safe active (R) 1: Reserved 2: CB_LOCAL_OP - Field device under local control (R) Octet 2: 0: CB_ACT_OPEN - Actuator is moving towards open direction (R) 1: CB_ACT_CLOSE - Actuator is moving towards close direction (R) 2: CB_UPDATE_EVT - FB and TB static data changed (A) 3: CB_SIMULATE - Simulation of process values is enabled (R) 4 - 5: Reserved 6: CB_CONTR_INACT - Positioner inactive (OUT_D status = BAD) (R) 7: Reserved Octet 3: 0: CB_TOT_VALVE_ TRAV - Total valve travel limit exceeded (R) 1 - 7: Reserved	0	Data Type: Octet String Detailed information of the device, bitwise coded. More than 1 message possible at once. (R): Indication remains active as long as the reason for the message exists. (A): Indication will be automatically reset after 20 secs.
CHECK_BACK_MASK	34	RO		Refer to CHECK_BACK parameter for bit definition.	0x054F01	Data Type: Octet String Definition of supported CHECK_BACK information bits. Set if supported, cleared if not supported.
OUT_CHANNEL	35	RW	ALL	Byte 1: TB_ID = 1 Byte 2: Relative index of the TB parameter 81 = SETPOINT_D	0x0851	Data Type: Unsigned16 Defines which transducer parameter receives the DO output. Select Setpoint_D to control valve position.
Reserved by PI	36-44					

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Table C-7. Discrete Output Function Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Mode	Range	Initial Value	Description
Extended Parameters						
PV_D	45	RO				Data Type: 101 Actual valve position in PV_D units.
VALUE	45.1				0	Data Type: Unsigned8
STATUS	45.2				0	Data Type: Unsigned8 Indicates validity of VALUE.
I/O Options IO_OPTS	46	RW	OOS	Octet 1: 0: Reserved 1: SP_D tracks READBACK_D in Man 2-3: Reserved 4: SP_D Tracks retained target in MAN 5-6: Reserved 7: Use FSAFE_VALUE on restart Octet 2: 0 - 7: Reserved	0x0000	Data Type: Octet String User options for Output Control. Bit 4 cannot be set with bit 1 Retained target will be the the current target mode if the actual mode is MAN. If the target mode is RCAS, SP will track RCAS_IN parameter.

View Lists

View lists allow the values of a set of parameters to be accessed at the same time.

Table C-8. DO Function Block, View 1

Index Number	Parameter
1	ST_REV
6.1	MODE_BLK.ACTUAL
6.2	MODE_BLK.PERMITTED
6.3	MODE_BLK.NORMAL
7.1	ALARM_SUM.CURRENT
7.2	ALARM_SUM.UNACKNOWLEDGED
7.3	ALARM_SUM.UNREPORTED
7.4	ALARM_SUM.DISABLED
9.1	SP_D.VALUE
9.2	SP_D.STATUS
10.1	OUT_D.VALUE
10.2	OUT_D.STATUS
14.1	RCAS_IN_D.VALUE
14.2	RCAS_IN_D.STATUS
22.1	RCAS_OUT_D.VALUE
22.2	RCAS_OUT_D.STATUS
33	CHECK_BACK

Analog Input Function Block

Parameter List

- Read/Write Capability: RO - Read Only, RW - Read Write
- Mode: The block mode(s) required to write to the parameter
- Double indentation and shared Index Number indicates sub-parameter

Table C-9. Analog Input Block Parameter Definitions

Label PARAMETER_NAME	Index Number	RO / RW	Write Block Mode	Range	Default Value	Description
BLOCK_OBJECT	0	RO			-	Data Type: DS-32 First parameter of every block. Contains characteristics of the block, eg. Block type and profile number
RESERVED	0.1				250	Data Type: Unsigned8
BLOCK_OBJECT	0.2			2: Function Block	2	Data Type: Unsigned8 Identifies the block.
PARENT_CLASS	0.3			1: Reserved 2: Output 3 - 127: Reserved	1	Data Type: Unsigned8 Identifies which class the device belongs to.
CLASS	0.4			1: Analog Output 2 - 127: Reserved	1	Data Type: Unsigned8 Identifies the type of device.
DEV_REV	0.5				1	Data Type: Unsigned16 Contains information about the device's revision. Increased when there is a new firmware release.
DEV_REV_COMP	0.6				1	Data Type: Unsigned16 Represents the lowest device revision which is supported by the device.
DD_REVISION	0.7				0	Data Type: Unsigned16
PROFILE	0.8			Octet 1: Number of PA profiles within PI Profile Class. Set to 0x40. Octet 2: 0x01: Class A, all standard params have their own memory place. 0x02: Class B, all standard params have their own memory place. 0x81: Class A, all standard params in 1 memory place. 0x82: Class B, all standard params in 1 memory place. 253: Manufacturer specific block structures	0x4002	Data Type: Octet String Profile Class given by PI, and description of profile.

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Table C-9. Analog Input Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Write Block Mode	Range	Default Value	Description
PROFILE_REVISION	0.9			Octet 1: Number before the decimal point. Octet 2: Number after the decimal point.	0x0302	Data Type: Unsigned16 Profile revision used for this device.
EXECUTION_TIME	0.10				0	Data Type: Unsigned8
NUMBER_OF_PARAMETERS	0.11				0x2F	Data Type: Unsigned16 Number of used parameters in the block.
ADDRESS_OF_VIEW_1	0.12			Octet 1: (MSB): Slot. Octet 2: (LSB): Index of View_1 parameter for access	0x023F	Data Type: Unsigned16 Address of View 1 parameter, see table C-10.
NUMBER_OF_VIEWS	0.13				0x01	Data Type: Unsigned8 Number of view objects of the block.
Static Revision ST_REV	1	RO		0 to 65535	0	Data Type: Unsigned16 The revision level of the static data. Increments by one each time a static parameter changes, or a change of a table is accepted. Reset to 0 in case of a cold start (ie if FACTORY_RESET = 1 is set). Set to 1 if overflow.
Tag Description TAG_DESC	2	RW	ALL		Null	Data Type: Octet String The user description of the intended application of the block.
Strategy STRATEGY	3	RW	ALL		0	Data Type: Unsigned16 User-specified value used in configuration or diagnostics as a key in sorting block information.
Alert Key ALERT_KEY	4	RW	ALL	0 to 255	0	Data Type: Unsigned8 The identification number of the plant unit. This information may be used in the host for sorting alarms or events generated by blocks.
TARGET MODE	5	RW	ALL	Bit 7: OOS Bit 4: Man Bit 3: Auto	OOS	Data Type: Unsigned8 Target mode of the block.
Block Mode MODE_BLK	6	RO		Bit 7: OOS Bit 4: Man Bit 3: Auto		Data Type: DS-69 Valid Bits: 7: OOS, 4: MAN, 3: AUTO The actual, permitted, and normal modes of the block. Actual: The current mode of the block Permitted: Allowed modes for TARGET_MODE. Normal: Desired operating mode.
ACTUAL	6.1				N/A	
PERMITTED	6.2			OOS + MAN + AUTO	OOS + MAN + AUTO	
NORMAL	6.3				AUTO	
Alarm Summary ALARM_SUM	7	RO		Octet 1: Bit 0: Reserved Bit 1: HI_HI_Alarm Bit 2: HI_Alarm Bit 3: LO_LO_Alarm Bit 4: LO_Alarm Bits 5 - 6: Reserved Bit 7: Update Event - Set after any STATIC parameter is changed. Octet 2: Reserved		Data Type: DS-42 Current alert status, unacknowledged states, unreported states, and disabled states of the alarms associated with the function block.
CURRENT	7.1				0	Date Type: Octet String Current active alerts. Limit alarm bits are cleared when the alarm condition is cleared. Update event bit is cleared after 20s (condensed status) or 10s (classic status).
UNACKNOWLEDGED	7.2				0	Not used
UNREPORTED	7.3				0	Not used
DISABLED	7.4				0	Not used

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Table C-9. Analog Input Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Write Block Mode	Range	Default Value	Description
BATCH	8					Not used
Reserved by PI	9					
OUT	10	RW*	MAN	OUT		Data Type: 101 Contains the measurement value in a vendor specific or configuration adjusted engineering unit and the belonging status in AUTO MODE. The AI Block parameter OUT contains the value and status set by an operator in MAN MODE. In OOS mode, this parameter contains last valid value or fail safe value, depending on FSAFE_TYPE. *The OUT parameter can be written if the AI Function Block Actual MODE = Manual
VALUE				OUT_SCALE +/- 10%	0	Data Type: Float
STATUS					0	Data Type: Unsigned8
Process Value Scale PV_SCALE	11	RW	ALL	Must match the TB related Channel parameter	-	Data Type: DS-68 Conversion of Process Variable into percent high and low scale values. The engineering unit of PV_SCALE high and low scale values are directly related to the PV_UNIT of the configured Transducer Block (configured via Channel parameter). The PV_SCALE high and low scale values follow the changes of the PV_UNIT of the related Transducer Block automatically, i.e. a change of the Transducer Block PV_UNIT causes no bump at OUT from AI. There are exceptions possible where the bump is required such as cleaning of analyzers. The values of OUT_SCALE and PV_SCALE shall be equal i.e. PV_SCALE.EU_at_100% = OUTSCALE.EU_at_100% and PV_SCALE.EU_at_0% = OUTSCALE.EU_at_0%
EU_AT_100%	11.1				100	Data Type: Float
EU_AT_0%	11.2				0	Data Type: Float
OUT_SCALE	12	RW	ALL			Data Type: DS-36 Scale of Process Variable. Contains the values of the lower limit and upper limit effective range, the code number of the engineering unit of Process Variable and the useful number of digits on the right hand side of the decimal point. The values of OUT_SCALE and PV_SCALE shall be equal i.e. PV_SCALE.EU_at_100% = OUTSCALE.EU_at_100% and PV_SCALE.EU_at_0% = OUTSCALE.EU_at_0%
EU_AT_100%	12.1				100	Data Type: Float
EU_AT_0%	12.2				0	Data Type: Float
UNITS_INDEX	12.3				%	Data Type: Unsigned16
DECIMAL_POINT	12.4				2	Data Type: Integer8
Linearization Type LIN_TYPE	13	RW	ALL	0: No Linearization 10: Square Root 243: Raw Value	0	Data Type: Unsigned8 Type of Linearization Equation for linearizations: No Linearization: PV' = Field_Val * (OUT_SCALE.EU_100% - OUT_SCALE.EU_0%) + OUT_SCALE.EU_0% Square Root: PV' = sqrt(Field_Val)*(OUT_SCALE.EU_100% - OUT_SCALE.EU_0%) + OUT_SCALE.EU_0% Raw Value: PV' = PV where Field_Val = (PV - PV_SCALE.EU_0%) / (PV_SCALE.EU_100% - PV_SCALE.EU_0%)

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Table C-9. Analog Input Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Write Block Mode	Range	Default Value	Description
CHANNEL	14	RW	ALL	1: TB_ID = 8 2: Transducer Block Parameter Relative Index 56=FEEDBACK_VALUE 80=FINAL_POSITION_VALUE 83=TRAVEL_TARGET 84=SUPPLY_PRESSURE 85=PRESSURE_A 86=PRESSURE_B 87=PRESSURE_DIFF 95=TEMPERATURE 96=TRAVEL_DEVIATION 97=DRIVE_SIGNAL	0x083A	Data Type: 101 Used to select the type of threshold that is used to set the output.
PV_FTIME	16	RW	ALL	Positive	0	Data Type: Float Filter time of process variable Contains the time constant for the rise time of the Function Block output up to a value 63.21% resulting from a jump on the input (PT1 filter).
FSAFE_TYPE	17	RW	ALL	0: value FSAFE_VALUE is used as OUT 1: use last stored valid OUT value (if no valid value is available, then OUT value is initial value in this case) 2: OUT has the wrong calculated value and status	1	Data Type: Unsigned8 Defines the reaction of the device, if a fault is detected. The calculated ACTUAL_MODE remains in AUTO. If this parameter is not implemented, the AI Function Block behaves like FSAFE_TYPE = 1
FSAFE_VALUE	18	RW	ALL		0	Data Type: Float Default value for OUT parameter, if the status from the primary value from the transducer block is bad.
Alarm Hysteresis ALARM_HYS	19	RW	ALL		0.5% of range	Data Type: Float Hysteresis. Prevents multiple triggering of the alarm if the process variable is hovering around the xx_LIM. Sensitivity is adjustable. Expressed as a value below the high limit and above the low limit.
High High Limit HI_HI_LIM	21	RW	ALL		100	Data Type: Float Value for upper limit of alarms. If the measured variable is equal to or higher than the HI_HI_LIM value the Limit Bit "high limited" in the Status Byte of OUT and the HI_HI_Alarm bit in parameter ALARM_SUM should be set to 1.
Hi Limit HI_LIM	23	RW	ALL		100	Data Type: Float Value for upper limit of warnings. If the measured variable is equal to or higher than the HI_LIM value the Limit Bit "high limited" in the Status Byte of OUT and the HI_Alarm bit in parameter ALARM_SUM should be set to 1.
Low Limit LO_LIM	25	RW	ALL		0	Data Type: Float Value for lower limit of warnings. If the measured variable is equal to or lower than the LO_LIM value the Limit Bit "low limited" in the Status Byte of OUT and the LO_Alarm bit in parameter ALARM_SUM should be set to 1.
Low Low Limit LO_LO_LIM	27	RW	ALL		0	Data Type: Float Value for lower limit of alarms. If the measured variable is equal to or lower than the LO_LO_LIM value the Limit Bit "low limited" in the Status Byte of OUT and the LO_LO_Alarm bit in parameter ALARM_SUM should be set to 1.

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Table C-9. Analog Input Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Write Block Mode	Range	Default Value	Description
High High Alarm HI_HI_ALM	30	RO	-		0	Data Type: DS-39 Contains the state of the upper limit of an alarm and the associated time stamp.
UNACKNOWLEDGED	30.1					
ALARM_STATE	30.2					
TIME_STAMP	30.3					
SUBCODE	30.4					
VALUE	30.5					
High Alarm HI_ALM	31	RO	-		0	Data Type: DS-39 Contains the state of the upper limit of a warning and the associated time stamp.
UNACKNOWLEDGED	31.1					
ALARM_STATE	31.2					
TIME_STAMP	31.3					
SUBCODE	31.4					
VALUE	31.5					
Low Alarm LO_ALM	32	RO	-		0	Data Type: DS-39 Contains the state of the lower limit of a warning and the associated time stamp.
UNACKNOWLEDGED	32.1					
ALARM_STATE	32.2					
TIME_STAMP	32.3					
SUBCODE	32.4					
VALUE	32.5					
Low Low Alarm LO_LO_ALM	33	RO	-		0	Data Type: DS-39 Contains the state of the lower limit of an alarm and the associated time stamp.
UNACKNOWLEDGED	33.1					
ALARM_STATE	33.2					
TIME_STAMP	33.3					
SUBCODE	33.4					
Simulate SIMULATE	34	RW	ALL		Disabled	Data Type: DS-50 For commissioning and test purposes the input value from the Transducer Block into the Analog Input Function Block can be modified. This means that the Transducer Block and Analog Input Function Block will be disconnected.
SIMULATE_STATUS				Note: Uncertain - Simulated value end will be rejected by device	0	
SIMULATE_VALUE					0	
SIMULATE_ENABLED				0: Disabled <>0: Enabled	0	
OUT_UNIT_TEXT	35	RW	ALL		-	Data Type: OctetString If a specific unit of OUT parameter is not in the code list you have the possibility to write the specific text into this parameter. The unit code is then equal to “textual unit definition”.
Reserved by PI	36-44					
Extended Parameter						
PV	45	RO				Data Type: 101 Process Variable used in the process control.
VALUE	45.1				0	Data Type: Float This parameter is updated as long as the block mode is not in OOS.
STATUS	45.2				0	Data Type: Unsigned8 Indicates validity of VALUE.
LOW_CUT	46	RW	ALL	Positive	0	Data Type: Float If calculated output is below this value the output is 0.

View Lists

View lists allow the values of a set of parameters to be accessed at the same time.

Table C-10. AI Function Block, View 1

Index Number	Parameter
1	ST_REV
6.1	MODE_BLK.ACTUAL_MODE
6.2	MODE_BLK.PERMITTED_MODE
6.3	MODE_BLK.NORMAL_MODE
7.1	ALARM_SUM.CURRENT
7.2	ALARM_SUM.UNACKNOWLEDGED
7.3	ALARM_SUM.UNREPORTED
7.4	ALARM_SUM.DISABLED
10.1	OUT.VALUE
10.2	OUT.STATUS

Discrete Input Function Block

Parameter List

- Read/Write Capability: RO - Read Only, RW - Read Write
- Mode: The block mode(s) required to write to the parameter
- Double indentation and shared Index Number indicates sub-parameter

Table C-11. Discrete Input Function Block Parameter Definitions

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Default Value	Description
BLOCK_OBJECT	0	RO			-	Data Type: DS-32 First parameter of every block. Contains characteristics of the block, eg. Block type and profile number
RESERVED	0.1				250	Data Type: Unsigned8
BLOCK_OBJECT	0.2			2: Function Block	2	Data Type: Unsigned8 Identifies the block.
PARENT_CLASS	0.3			1: Input 2 - 127: Reserved	1	Data Type: Unsigned8 Identifies which class the device belongs to.
CLASS	0.4			1: Reserved 2: Discrete Input 3 - 127: Reserved	2	Data Type: Unsigned8 Identifies the type of device.
DEV_REV	0.5				1	Data Type: Unsigned16 Contains information about the device's revision. Increased when there is a new firmware release.
DEV_REV_COMP	0.6				1	Data Type: Unsigned16 Represents the lowest device revision which is supported by the device.
DD_REVISION	0.7				0	Data Type: Unsigned16
PROFILE	0.8			Octet 1: Number of PA profiles within PI Profile Class. Set to 0x40. Octet 2: 0x01: Class A, all standard params have their own memory place. 0x02: Class B, all standard params have their own memory place. 0x81: Class A, all standard params in 1 memory place. 0x82: Class B, all standard params in 1 memory place. 253: Manufacturer specific block structures	0x4002	Data Type: Octet String Profile Class given by PI, and description of profile.
PROFILE_REVISION	0.9			Octet 1: Number before the decimal point. Octet 2: Number after the decimal point.	0x0302	Data Type: Unsigned16 Profile revision used for this device.
EXECUTION_TIME	0.10				0	Data Type: Unsigned8

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Table C-11. Discrete Input Function Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Default Value	Description
NUMBER_OF_PARAMETERS	0.11				0x25	Data Type: Unsigned16 Number of used parameters in the block.
ADDRESS_OF_VIEW_1	0.12			Octet 1 (MSB): Slot Octet 2 (LSB): Index of View_1 parameter for access	DI1: 0x0435 DI2: 0x0535	Data Type: Unsigned16 Address of View 1 parameter, see table C-12.
NUMBER_OF_VIEWS	0.13				0x01	Data Type: Unsigned8 Number of view objects of the block.
Static Revision ST_REV	1	RO		0 to 65535	0	Data Type: Unsigned16 The revision level of the static data. Increments by one each time a static parameter changes, or a change of a table is accepted. Reset to 0 in case of a cold start (ie if FACTORY_RESET = 1 is set). Set to 1 if overflow.
Tag Description TAG_DESC	2	RW	ALL		null	Data Type: Octet String The user description of the intended application of the block.
Strategy STRATEGY	3	RW	ALL		0	Data Type: Unsigned16 User-specified value used in configuration or diagnostics as a key in sorting block information.
Alert Key ALERT_KEY	4	RW	ALL	0 to 255	0	Data Type: Unsigned8 The identification number of the plant unit. This information may be used in the host for sorting alarms or events generated by blocks.
TARGET_MODE	5	RW	ALL	Bit 7: OOS Bit 4: Man Bit 3: Auto	OOS	Data Type: DS-37 Target mode of the block.
Block Mode MODE_BLK	6	RO		OOS+MAN+AUTO		Data Type: DS-69 Valid Bits: 7:OOS, 4:MAN, 3:AUTO The actual, target, permitted, and normal modes of the block. Actual: The current mode of the block Permitted: Allowed modes for Target Normal: Most common mode for Target
ACTUAL	6.1				OOS	
PERMITTED	6.2				OOS+MAN+AUTO	
NORMAL	6.3				AUTO	
Alarm Summary ALARM_SUM	7	RO		Octet 1: Bit 0: Discrete Alarm Bits 1 - 6: Reserved Bit 7: Update Event - Set after any STATIC parameter is changed. Octet 2: Reserved		Data Type: DS-42 Current alert status, unacknowledged states, unreported states, and disabled states of the alarms associated with the function block.
CURRENT	7.1				0	Data Type: Octet String Current active alerts. Limit alarm bits are cleared when the alarm condition is cleared. Update event bit is cleared after 20s (condensed status) or 10s (classic status).
UNACKNOWLEDGED	7.2				0	Not used
UNREPORTED	7.3				0	Not used
DISABLED	7.4				0	Not used
BATCH	8					Data Type: DS-67 Not used
Reserved by PI	9					

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Table C-11. Discrete Input Function Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Default Value	Description
OUT_D	10	RW	MAN	OUT	-	Data Type: 102 Output of the function block. The value is specified by the operator in MAN mode. Discrete state 1 is condition true and discrete state 0 is condition false. Condition depends on channel assignment. In OOS mode, this parameter contains last value.
VALUE	10.1				0	Data Type: Float Contains the measurement value in a vendor specific or configuration adjusted engineering unit.
STATUS	10.2				0	Data Type: Unsigned8 Indicates validity of VALUE.
Reserved by PI	11-13					
CHANNEL	14	RW	ALL	Byte 1: TB_ID = 8 Byte 2: Transducer Block Parameter Relative Index 82 = TRAVEL_D 120 = DI_OPEN 121 = DI_CLOSED 122 = DI_LO_LO 123 = DI_LO 124 = DI_HI_HI 125 = DI_HI	0x0852	Data Type: Unsigned16 Used to select the type of threshold that is used to set the output.
INVERT	15	RW	ALL	0 = Normal 1 = Invert	0	Data Type: Unsigned16 Indicates whether the input value of the PV_D should be logically inverted before it is stored in the OUT_D.
Reserved by PI	16-19					
FSAFE_TYPE	20	RW	ALL	0: value FSAFE_VALUE is used as OUT 1: use last stored valid OUT value (if no valid value is available, then OUT value is initial value in this case) 2: OUT has the wrong calculated value and status	1	Data Type: Unsigned8 Defines the reaction of the device, if a fault is detected. The calculated ACTUAL_MODE remains in AUTO.
FSAFE_VAL_D	21	RW	ALL		0	Data Type: Unsigned8 Default value for OUT parameter, if a sensor or sensor electronic fault is detected.
Reserved by PI	22-23					
Simulate Discrete SIMULATE_D	24	RW	ALL		Disabled	Data Type: DS-51 For commissioning and test purposes the input value from the Transducer Block into the Digital Input Function Block can be modified. This means that the Transducer Block and Digital Input Function Block will be disconnected.
SIMULATE_STATUS	24.1				0	Data Type: Unsigned8 Status written by an operator to simulate transducer block value status.
SIMULATE_VALUE	24.2				0	Data Type: Unsigned8 Value written by an operator to simulate transducer block value.
SIMULATE_ENABLED	24.3			0: Disabled <0>: Enabled	0	Data Type: Unsigned8 Switch to enable or disable simulation.
Reserved by PI	25-34					
Extended Parameters						
PV_D	35	RO	N/A		-	Data Type: 102 Process variable from Transducer Block used in block execution.

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Table C-11. Discrete Input Function Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Default Value	Description
VALUE	35.1				0	Data Type: Unsigned8 This parameter is updated as long as the block mode is not in OOS.
STATUS	35.2				0	Data Type: Unsigned8 Indicates validity of VALUE.
DISC_LIM	36	RW	ALL	Any value between 0 and 255. A value of 255 disables the alarm.	255	Data Type: Unsigned8 State of discrete input which will generate an alarm. Sets Discrete Alarm when value matches OUT_D.

View Lists

View lists allow the values of a set of parameters to be accessed at the same time.

Table C-12. DI Function Block, View 1

Index Number	Parameter
1	ST_REV
6.1	MODE_BLK.ACTUAL
6.2	MODE_BLK.PERMITTED
6.3	MODE_BLK.NORMAL
7.1	ALARM_SUM.CURRENT
7.2	ALARM_SUM.UNACKNOWLEDGED
7.3	ALARM_SUM.UNREPORTED
7.4	ALARM_SUM.DISABLED
10.1	OUT_D.VALUE
10.2	OUT_D.STATUS

Alarm Transducer Block

Parameters

The logbook includes time stamp with each alert.

- Read/Write Capability: RO - Read Only, RW - Read Write
- Mode: The block mode(s) required to write to the parameter
- Double indentation and shared Index Number indicates sub-parameter

Table C-13. Alarm Transducer Block Parameter Definitions

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BLOCK_OBJECT	0	RO			-	Data Type: DS-32 First parameter of every block. Contains characteristics of the block, eg. Block type and profile number
RESERVED	0.1				250	Data Type: Unsigned8
BLOCK_OBJECT	0.2			3: Transducer Block	3	Data Type: Unsigned8 Identifies the block.
PARENT_CLASS	0.3			1 - 8: Reserved 9: Alarm 10 - 127: Reserved	9	Data Type: Unsigned8 Identifies which class the device belongs to.
CLASS	0.4			1: Binary Message	1	Data Type: Unsigned8 Identifies the type of device.
DEV_REV	0.5				1	Data Type: Unsigned16 Contains information about the device's revision. Increased when there is a new firmware release.
DEV_REV_COMP	0.6				1	Data Type: Unsigned16 Represents the lowest device revision which is supported by the device.
DD_REVISION	0.7				0	Data Type: Unsigned16
PROFILE	0.8			Octet 1: Number of PA profiles within PI Profile Class. Set to 0x40. Octet 2: 0x01: Class A, all standard params have their own memory place. 0x02: Class B, all standard params have their own memory place. 0x81: Class A, all standard params in 1 memory place.	0x4002	Data Type: Octet String Profile Class given by PI, and description of profile
PROFILE_REVISION	0.9			Octet 1: Number before the decimal point. Octet 2: Number after the decimal point.	0x0302	Data Type: Unsigned16 Profile revision used for this device.
EXECUTION_TIME	0.10				0	Data Type: Unsigned8
NUMBER_OF_PARAMETERS	0.11				0x36	Data Type: Unsigned16 Number of used parameters in the block.
ADDRESS_OF_VIEW_1	0.12			Octet 1 (MSB): Slot. Octet 2: (LSB): Index of View_1 parameter for access	0x0746	Data Type: Unsigned16 Address of View 1 parameter, see table C-14.
NUMBER_OF_VIEWS	0.13				0x01	Data Type: Unsigned8 Number of view objects of the block.

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
Static Revision ST_REV	1	RO		0 to 65535	0	Data Type: Unsigned16 The revision level of the static data. Increments by one each time a static parameter changes, or a change of a table is accepted. Reset to 0 in case of a cold start (ie if FACTORY_RESET = 1 is set). Set to 1 if overflow.
Tag Description TAG_DESC	2	RW	ALL		null	Data Type: Octet String The user description of the intended application of the block.
Strategy STRATEGY	3	RW	ALL		0	Data Type: Unsigned16 User-specified value used in configuration or diagnostics as a key in sorting block information.
Alert Key ALERT_KEY	4	RW	ALL	0 to 255	0	Data Type: Unsigned8 The identification number of the plant unit. This information may be used in the host for sorting alarms or events generated by blocks.
TARGET_MODE	5	RW	ALL	Bit 7: OOS Bit 3: Auto	Auto	Data Type: DS-37 Target mode of the block
Block Mode MODE_BLK	6	RO		Bit 7: OOS Bit 3: Auto		Data Type: DS-69 Valid Bits: 7:OOS, 3:AUTO The actual, permitted, and normal modes of the block. Actual: The current mode of the block Permitted: Allowed modes for TARGET_MODE Normal: Desire operating mode
ACTUAL	6.1				N/A	
PERMITTED	6.2				OOS+ AUTO	
NORMAL	6.3				AUTO	
Alarm Summary ALARM_SUM	7			Octet 1: Bits 0- 6: Reserved Bit 7: Update Event - Set after any STATIC parameter is changed. Octet 2: Reserved		Data Type: DS-42 Current alert status, unacknowledged states, unreported states, and disabled states of the alarms associated with the function block.
CURRENT	7.1	RO			0	Data Type: Octet String Current active alerts. Cleared after 20s (condensed status) or 10s (classic status)
UNACKNOWLEDGED	7.2	RO			0	Not used
UNREPORTED	7.3	RO			0	Not used
DISABLED	7.4	RW			0	Not used

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
STATUS_CLASSES	8	RO		Coding of Bit 15 of each STATUS_CLASSES element 0: no Binary Message of this status class is active 1: at least one Binary Message of this status class is active Status Class Failure: Array Element 0 0-14: Reserved 15: Set if at least one BM in this status class is active Status Class Maintenance Required: Array Element 1 0-14: Reserved 15: Set if at least one BM in this status class is active Status Class Function Check: Array Element 2 0 - 5: Reserved 6: Calibration by Hand 7: Calibration automatic 8 to 14 : reserved 15: OR value of bits 0-14 Status Class Limits: Array Element 3 0: HI_HI_LIM exceeded in AI Block 1: HI_LIM exceeded in AI Block 2: LO_LIM exceeded in AI Block 3: LO_LO_LIM exceeded in AI Block 4 to 14: reserved 15: OR value of bits 0-14 Status Class Advisory: Array Element 4 0-14: Reserved 15: Set if at least one BM in this status class is active	0,...,0	Data Type: Unsigned16 This array contains one element for each status class. The bits 0 to 14 of each element mirror the statuses of individual Binary Messages or device specific events. Bit 15 (MSB) is the OR combination of all Binary Messages belonging to the status class and shows if at least one of these Binary Messages is active.
ACTIVE_MESSAGES	9	RO	N/A	Coding of each bit: 0: BM_NOT_ACTIVE 1: BM_ACTIVE	0,0,0,0	Data Type: Unsigned16 Contains all configured Binary Messages, each Binary Message is represented by one bit. The order number of the bits in the bit string is the same as the order fo the Binary Messages in the block parameter list of the Alarm Transducer Block
Reserved by PI	10-14					
NUMBER_OF_MESSAGES	15	RO	N/A		37	Data Type: Unsigned16 Number of configurable Binary Messages in the device.

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BM_1	16	RW	ALL			Data Type: DS-62 Drive Current Failure
Status_Class	16.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0001	Data Type: Unsigned16 Default: FAILURE = 0x0001
Logbook_Entry	16.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	16.6			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	16.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	16.5			ASCII Text	Drive Current	Data Type: Visible String
BM_2	17	RW	ALL			Data Type: DS-62 Drive Signal Alert
Status_Class	17.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0002	Data Type: Unsigned16 Default: MAINTENANCE REQUIRED = 0x0002
Logbook_Entry	17.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	17.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	17.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	17.5			ASCII Text	Drive Signal	Data Type: Visible String
BM_3	18	RW	ALL			Data Type: DS-62 Program Memory Alert
Status_Class	18.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0001	Data Type: Unsigned16 Default: FAILURE = 0x0001
Logbook_Entry	18.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	18.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	18.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	18.5			ASCII Text	Program Memory	Data Type: Visible String

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BM_4	19	RW	ALL			Data Type: DS-62 Static Memory Alert
Status_Class	19.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0001	Data Type: Unsigned16 Default: FAILURE = 0x0001
Logbook_Entry	19.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	19.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	19.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	19.5			ASCII Text	Static Memory	Data Type: Visible String
BM_5	20	RW	ALL			Data Type: DS-62 I/O Processor Alert
Status_Class	20.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0001	Data Type: Unsigned16 Default: FAILURE = 0x0001
Logbook_Entry	20.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	20.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	20.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	20.5			ASCII Text	I/O Processor	Data Type: Visible String
BM_6	21	RW	ALL			Data Type: DS-62 Output Block Timeout
Status_Class	21.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0002	Data Type: Unsigned16 Default: MAINTENANCE REQUIRED = 0x0002
Logbook_Entry	21.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	21.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	21.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	21.5			ASCII Text	O/P Blk Timeout	Data Type: Visible String

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BM_7	22	RW	ALL			Data Type: DS-62 Blocks Set to Default
Status_Class	22.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0001	Data Type: Unsigned16 Default: FAILURE = 0x0001
Logbook_Entry	22.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	22.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	22.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	22.5			ASCII Text	Blks Defaulted	Data Type: Visible String
BM_8	23	RW	ALL			Data Type: DS-62 Travel Sensor
Status_Class	23.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0001	Data Type: Unsigned16 Default: FAILURE = 0x0001
Logbook_Entry	23.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	23.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	23.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	23.5			ASCII Text	Travel Sensor	Data Type: Visible String
BM_9	24	RW	ALL			Data Type: DS-62 Port A Pressure Sensor
Status_Class	24.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0002	Data Type: Unsigned16 Default: MAINTENANCE REQUIRED = 0x0002
Logbook_Entry	24.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	24.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	24.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	24.5			ASCII Text	Pres A Sensor	Data Type: Visible String

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BM_10	25	RW	ALL			Data Type: DS-62 Port B Pressure Sensor
Status_Class	25.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0002	Data Type: Unsigned16 Default: MAINTENANCE REQUIRED = 0x0002
Logbook_Entry	25.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	25.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	25.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	25.5			ASCII Text	Pres B Sensor	Data Type: Visible String
BM_11	26	RW	ALL			Data Type: DS-62 Supply Pressure Sensor
Status_Class	26.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0002	Data Type: Unsigned16 Default: MAINTENANCE REQUIRED = 0x0002
Logbook_Entry	26.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	26.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	26.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	26.5			ASCII Text	Sup Pres Sensor	Data Type: Visible String
BM_12	27	RW	ALL			Data Type: DS-62 Temperature Sensor
Status_Class	27.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0010	Data Type: Unsigned16 Default: ADVISORY = 0x0010
Logbook_Entry	17.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	27.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	27.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	27.5			ASCII Text	Temp Sensor	Data Type: Visible String

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BM_13	28	RW	ALL			Data Type: DS-62 Pressure Fallback
Status_Class	28.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0002	Data Type: Unsigned16 Default: MAINTENANCE REQUIRED = 0x0002
Logbook_Entry	28.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	28.6			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	28.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	28.5			ASCII Text	Press Fallback	Data Type: Visible String
BM_14	29	RW	ALL			Data Type: DS-62 Supply Pressure High
Status_Class	29.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0002	Data Type: Unsigned16 Default: MAINTENANCE REQUIRED = 0x0002
Logbook_Entry	29.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	29.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	29.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	29.5			ASCII Text	Sup Press High	Data Type: Visible String
BM_15	30	RW	ALL			Data Type: DS-62 Supply Pressure Low
Status_Class	30.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0002	Data Type: Unsigned16 Default: MAINTENANCE REQUIRED = 0x0002
Logbook_Entry	30.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	30.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	30.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	30.5			ASCII Text	Sup Press Low	Data Type: Visible String

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BM_16	31	RW	ALL			Data Type: DS-62 Temperature High
Status_Class	31.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0010	Data Type: Unsigned16 Default: ADVISORY = 0x0010
Logbook_Entry	31.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	31.6			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	31.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	31.5			ASCII Text	Temperature Hi	Data Type: Visible String
BM_17	32	RW	ALL			Data Type: DS-62 Temperature Low
Status_Class	32.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0010	Data Type: Unsigned16 Default: ADVISORY = 0x0010
Logbook_Entry	32.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	32.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	32.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	32.5			ASCII Text	Temperature Low	Data Type: Visible String
BM_18	33	RW	ALL			Data Type: DS-62 Travel Deviation
Status_Class	33.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0002	Data Type: Unsigned16 Default: MAINTENANCE REQUIRED = 0x0002
Logbook_Entry	33.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	33.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	33.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	33.5			ASCII Text	Tvl Deviation	Data Type: Visible String

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BM_19	34	RW	ALL			Data Type: DS-62 Travel Limit High High
Status_Class	34.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0010	Data Type: Unsigned16 Default: ADVISORY = 0x0010
Logbook_Entry	34.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	34.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	34.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	34.5			ASCII Text	Tvl Limit Hi Hi	Data Type: Visible String
BM_20	35	RW	ALL			Data Type: DS-62 Travel Limit Low Low
Status_Class	35.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0010	Data Type: Unsigned16 Default: ADVISORY = 0x0010
Logbook_Entry	35.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	35.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	35.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	35.5			ASCII Text	Tvl Limit Lo Lo	Data Type: Visible String
BM_21	36	RW	ALL			Data Type: DS-62 Travel Limit High
Status_Class	36.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0010	Data Type: Unsigned16 Default: ADVISORY = 0x0010
Logbook_Entry	36.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	36.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	36.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	36.5			ASCII Text	Tvl Limit High	Data Type: Visible String

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BM_22	37	RW	ALL			Data Type: DS-62 Travel Limit Low
Status_Class	37.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0010	Data Type: Unsigned16 Default: ADVISORY = 0x0010
Logbook_Entry	37.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	37.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	37.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	37.5			ASCII Text	Tvl Limit Low	Data Type: Visible String
BM_23	38	RW	ALL			Data Type: DS-62 Cycle Counter
Status_Class	38.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0002	Data Type: Unsigned16 Default: MAINTENANCE REQUIRED = 0x0002
Logbook_Entry	38.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	38.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	38.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	38.5			ASCII Text	Cycle Counter	Data Type: Visible String
BM_24	39	RW	ALL			Data Type: DS-62 Travel Accumulator
Status_Class	39.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0002	Data Type: Unsigned16 Default: MAINTENANCE REQUIRED = 0x0002
Logbook_Entry	39.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	39.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	39.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	39.5			ASCII Text	Tvl Accumulator	Data Type: Visible String

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BM_25	40	RW	ALL			Data Type: DS-62 Travel Open
Status_Class	40.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0010	Data Type: Unsigned16 Default: ADVISORY = 0x0010
Logbook_Entry	40.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	40.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	40.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	40.5			ASCII Text	Tvl Open	Data Type: Visible String
BM_26	41	RW	ALL			Data Type: DS-62 Travel Closed
Status_Class	41.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0010	Data Type: Unsigned16 Default: ADVISORY = 0x0010
Logbook_Entry	41.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	41.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	41.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	41.5			ASCII Text	Tvl Closed	Data Type: Visible String
BM_27	42	RW	ALL			Data Type: DS-62 Proximity High High
Status_Class	42.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0010	Data Type: Unsigned16 Default: ADVISORY = 0x0010
Logbook_Entry	42.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	42.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	42.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	42.5			ASCII Text	Proximity Hi Hi	Data Type: Visible String

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BM_28	43	RW	ALL			Data Type: DS-62 Proximity High
Status_Class	43.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0010	Data Type: Unsigned16 Default: ADVISORY = 0x0010
Logbook_Entry	43.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	43.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	43.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	43.5			ASCII Text	Proximity High	Data Type: Visible String
BM_29	44	RW	ALL			Data Type: DS-62 Proximity Low Low
Status_Class	44.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0010	Data Type: Unsigned16 Default: ADVISORY = 0x0010
Logbook_Entry	44.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	44.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	44.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	44.5			ASCII Text	Proximity Lo Lo	Data Type: Visible String
BM_30	45	RW	ALL			Data Type: DS-62 Proximity Low
Status_Class	45.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0010	Data Type: Unsigned16 Default: ADVISORY = 0x0010
Logbook_Entry	45.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	45.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	45.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	45.5			ASCII Text	Proximity Low	Data Type: Visible String

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BM_31	46	RW	ALL			Data Type: DS-62 Auxiliary Terminal Shorted
Status_Class	46.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0010	Data Type: Unsigned16 Default: ADVISORY = 0x0010
Logbook_Entry	46.2			False: Do not store in Logbook True: Store in Logbook	TRUE	Data Type: Boolean
Output_Reference	46.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	46.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	46.5			ASCII Text	AUX Shorted	Data Type: Visible String
BM_32	47	RW	ALL			Data Type: DS-62 Calibration by Hand
Status_Class	47.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0004	Data Type: Unsigned16 Default: FUNCTION CHECK = 0x0004
Logbook_Entry	47.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	47.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	47.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	47.5			ASCII Text	Cal by Hand	Data Type: Visible String
BM_33	48	RW	ALL			Data Type: DS-62 Calibration Automatic
Status_Class	48.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0004	Data Type: Unsigned16 Default: FUNCTION CHECK = 0x0004
Logbook_Entry	48.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	48.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	48.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	2	Data Type: Unsigned8
Text	48.5			ASCII Text	Cal Auto	Data Type: Visible String

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BM_34	49	RW	ALL			Data Type: DS-62 AI Hi Hi Limit Exceeded
Status_Class	49.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0008	Data Type: Unsigned16 Default: LIMITS = 0x0008
Logbook_Entry	49.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	49.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	49.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	49.5			ASCII Text	AI Hi Hi Limit	Data Type: Visible String
BM_35	50	RW	ALL			Data Type: DS-62 AI Hi Limit Exceeded
Status_Class	50.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0008	Data Type: Unsigned16 Default: LIMITS = 0x0008
Logbook_Entry	50.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	50.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	50.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	50.5			ASCII Text	AI Hi Limit	Data Type: Visible String
BM_36	51	RW	ALL			Data Type: DS-62 AI Lo Lo Limit Exceeded
Status_Class	51.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0008	Data Type: Unsigned16 Default: LIMITS = 0x0008
Logbook_Entry	51.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	51.3			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	51.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	51.5			ASCII Text	AI Lo Lo Limit	Data Type: Visible String

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Table C-13. Alarm Transducer Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BM_37	52	RW	ALL			Data Type: DS-62 AI Lo Limit Exceeded
Status_Class	52.1			The STATUS_CLASS to which this Binary Message will belong to.	0x0008	Data Type: Unsigned16 Default: LIMITS = 0x0008
Logbook_Entry	52.2			False: Do not store in Logbook True: Store in Logbook	FALSE	Data Type: Boolean
Output_Reference	52.6			Used to control exactly one DO, this parameter will have the number of connected DO Block in the device	0	Data Type: Unsigned8
Supervision	52.4			0: Supervision switched OFF; Message Inactive 1: Supervision switched OFF; Message active 2: Supervision ON	0	Data Type: Unsigned8
Text	52.5			ASCII Text	AI Lo Limit	Data Type: Visible String
Extended Parameters						
SIMULATE_ENABLED	53	RW	ALL	0: Disabled 1: Enabled	0	Data Type: Unsigned8 Enable or disable simulation. Simulation must be enabled to cause the alerts to be activated when the corresponding binary message. Supervision = 1.

View Lists

View lists allow the values of a set of parameters to be accessed at the same time.

Table C-14. Alarm Transducer Block, View 1

Index Number	Parameter
1	ST_REV
6.1	MODE_BLK.ACTUAL
6.2	MODE_BLK.PERMITTED
6.3	MODE_BLK.NORMAL
7.1	ALARM_SUM.CURRENT
7.2	ALARM_SUM.UNACKNOWLEDGED
7.3	ALARM_SUM.UNREPORTED
7.4	ALARM_SUM.DISABLED
8	STATUS_CLASSES
9	ACTIVE_MESSAGES

Logbook Function Block

Parameters

The logbook includes time stamp with each alert.

- Read/Write Capability: RO - Read Only, RW - Read Write
- Mode: The block mode(s) required to write to the parameter
- Double indentation and shared Index Number indicates sub-parameter

Table C-15. Logbook Function Block Parameter Definitions

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
BLOCK_OBJECT	0	RO			-	Data Type: DS-32 First parameter of every block. Contains characteristics of the block, eg. Block type and profile number.
RESERVED	0.1				250	Data Type: Unsigned8
BLOCK_OBJECT	0.2			2: Function Block	2	Data Type: Unsigned8 Identifies the block.
PARENT_CLASS	0.3			1-5: Reserved 6: Auxiliary 7-127: Reserved	6	Data Type: Unsigned8 Identifies which class the device belongs to.
CLASS	0.4			2: BM Logbook	2	Data Type: Unsigned8 Identifies the type of device.
DEV_REV	0.5				1	Data Type: Unsigned16 Contains information about the device's revision. Increased when there is a new firmware release.
DEV_REV_COMP	0.6				1	Data Type: Unsigned16 Represents the lowest device revision which is supported by the device.
DD_REVISION	0.7				0	Data Type: Unsigned16
PROFILE	0.8			Octet 1: Number of PA profiles within PI Profile Class. Set to 0x40. Octet 2: 0x01: Class A, all standard params have their own memory place. 0x02: Class B, all standard params have their own memory place. 0x81: Class A, all standard params in 1 memory place. 0x82: Class B, all standard params in 1 memory place. 253: Manufacturer specific block structures	0x4002	Data Type: Octet String Profile Class given by PI, and description of profile.
PROFILE_REVISION	0.9			**Octet 1:** Number before the decimal point. **Octet 2:** Number after the decimal point.	0x0302	Data Type: Unsigned16 Profile revision used for this device.

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Table C-15. Logbook Function Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
EXECUTION_TIME	0.10				0	Data Type: Unsigned8
NUMBER_OF_PARAMETERS	0.11				0x1C	Data Type: Unsigned16 Number of used parameters in the block.
ADDRESS_OF_VIEW_1	0.12			Octet 1 (MSB): Slot Octet 2 (LSB): Index of View_1 parameter for access	0x062C	Data Type: Unsigned16 Address of View 1 parameter, see table C-16.
NUMBER_OF_VIEWS	0.13				0x01	Data Type: Unsigned8 Number of view objects of the block.
Static Revision ST_REV	1	RO		0 to 65535	0	Data Type: Unsigned16 The revision level of the static data associated with the function block. The revision value will be incremented each time a static parameter value in the block is changed.
Tag Description TAG_DESC	2	RW	ALL		null	Data Type: Octet String The user description of the intended application of the block.
Strategy STRATEGY	3	RW	ALL		0	Data Type: Unsigned16 The strategy field can be used to identify grouping of blocks. This data is not checked or processed by the block.
Alert Key ALERT_KEY	4	RW	ALL	0 to 255	0	Data Type: Unsigned8 The identification number of the plant unit. This information may be used in the host for sorting alarms, etc.
TARGET_MODE	5	RW	ALL	Bit 7: OOS (Causes COMMAND to change to RESET) Bit 3: Auto (Causes COMMAND to change to START)	AUTO	Data Type: DS-37 Target mode of the block
Block Mode MODE_BLK	6	RO		Bit 7: OOS Bit 3: Auto		Data Type: DS-69 Valid Bits: 7:OOS, 4:MAN, 3:AUTO The actual, target, permitted, and normal modes of the block. Target: The requested block mode Actual: The current mode of the block Permitted: Allowed modes for Target Normal: Most common mode for Target
ACTUAL	6.1				N/A	
PERMITTED	6.2				OOS+AUTO	
NORMAL	6.3				AUTO	
Alarm Summary ALARM_SUM	7	RO		Octet 1: Bits 0 - 6: Reserved Bit 7: Update Event - Set after any STATIC parameter is changed. Octet 2: Reserved		Data Type: DS-42 Current alert status, unacknowledged states, unreported states, and disabled states of the alarms associated with the function block.
CURRENT	7.1				0	Data Type: Octet String Current active alerts. Cleared after 20s (condensed status) or 10s (classic status).
UNACKNOWLEDGED	7.2				0	Not used
UNREPORTED	7.3				0	Not used
DISABLED	7.4				0	Not used
BATCH	8					Data Type: DS-67 Not used
COMMAND	9	RW	ALL	0: RESET (Causes TARGET_ MODE to go to OOS) 5: START (Causes TARGET_ MODE to go to AUTO) 10: CLEAR ALL ENTRIES	5	Data Type: Unsigned16 This is used to switch on and off as well as resume or reset the Logbook function block.

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Table C-15. Logbook Function Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
STATUS	10	RO	N/A	0: Reserved 1: NO_INIT 2: IDLE 3: RUNNING 4-127: reserved 128-255: manufacturer specific	3	Data Type: Unsigned8 Contains the state of the function which is currently executed or presents the result of the execution.
SIZE_OF_ENTRIES	11	RO	N/A		260	Data Type: Unsigned16 Shows the number of different entries which the Logbook can take up at the same time.
NUMBER_OF_ENTRIES	12	RO	N/A		0	Data Type: Unsigned16 Contains the actual number of entries in the Logbook.
TURN_NUMBER	13	RO	N/A		0	Data Type: Unsigned16 Counts how many times the logbook has completely been filled.
NEWEST_ENTRY	14	RO	N/A	Default Value: Should point to a non-existent DS-62 entry with the following values: Status_Class = 0 Logbook_Entry = TRUE Output_Reference = 0 Supervision = 0 Text = "Empty Logbook" Status_Class definition: 1: Failure 2: Maintenance Required 3: Function Check 4: Limits 5: Advisory		Data Type: DS-64 Contains the newest entry of the Logbook. As long as no entries have been stored in the Logbook, it shall point to a default value (see default value for this parameter).
Type	14.1				255	Data Type: Unsigned16 Contains the type of entry: 1-16 = Status information for status class n 255 = Binary Message
Value	14.2				0	Data Type: Unsigned16 Depends on the value of Type: Type = 1-16 --> Value = OR sum of the class states of the specific class Type = 255 --> Value = Number of Binary Message
Active	14.3				FALSE	Data Type: Boolean True = Binary Message becomes Active False = Binary Message becomes Inactive
Time	14.4				0	Data Type: BinaryDate The time the entry was logged into the logbook.
OLDEST_ENTRY	15	RO	N/A	Default Value: Should point to a non-existent DS-62 entry with the following values: Status_Class = 0 Logbook_Entry = TRUE Output_Reference = 0 Supervision = 0 Text = "Empty Logbook" Status_Class definition: 1: Failure 2: Maintenance Required 3: Function Check 4: Limits 5: Advisory		Data Type: DS-64 Contains the oldest entry of the Logbook. As long as no entries have been stored in the Logbook, it shall point to a default value (see default value for this parameter).
Type	15.1				255	Data Type: Unsigned8 Contains the type of entry: 1-16 = Status information for status class n 255 = Binary Message
Value	15.2				0	Data Type: Unsigned16 Depends on the value of Type: Type = 1-16 --> Value = OR sum of the class states of the specific class Type = 255 --> Value = Number of Binary Message
Active	15.3				FALSE	Data Type: Boolean True = Binary Message becomes Active False = Binary Message becomes Inactive
Time	15.4				0	Data Type: BinaryDate The time the entry was logged into the logbook.

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Table C-15. Logbook Function Block Parameter Definitions (Continued)

Label PARAMETER_NAME	Index Number	RO / RW	Block Mode	Range	Initial Value	Description
ACTUAL_POST_READ_NUMBER	16	RW	ALL		0	Data Type: Unsigned16 Shows the number of the Logbook entry which will be returned by the next read access to the parameter POST_READ_ENTRY. This parameter provides a flow control of the entry access of the Logbook. It decreases after each POST_READ_ENTRY parameter read access. If the oldest entry was read then this parameter switches to the number of the newest one. If the value 0 (zero) is written to ACTUAL_POST_READ_NUMBER then the parameter POST_READ_ENTRY is set to the newest entry. This parameter is never write protected by any write locking mechanism.
POST_READ_ENTRY	17	RO		Default Value: Should point to a non-existent DS-62 entry with the following values: Status_Class = 0 Logbook_Entry = TRUE Output_Reference = 0 Supervision = 0 Text = "Empty Logbook" Status_Class definition: 1: Failure 2: Maintenance Required 3: Function Check 4: Limits 5: Advisory		Data Type: DS-64 A read access to this parameter returns the logbook entry with the number given by ACTUAL_POST_READ_NUMBER. Every read access automatically decreases ACTUAL_ POST_READ_NUMBER by one, i.e. the read pointer is shifted to the next older entry. As long as no entries have been stored in the Logbook, it shall point to a default value (see default value for this parameter).
Type	17.1				255	Data Type: Unsigned8 Contains the type of entry: 1-16 = Status information for status class n 255 = Binary Message
Value	17.2				0	Data Type: Unsigned16 Depends on the value of Type: Type = 1-16 --> Value = OR sum of the class states of the specific class Type = 255 --> Value = Number of Binary Message
Active	17.3				FALSE	Data Type: Boolean True = Binary Message becomes Active False = Binary Message becomes Inactive
Time	17.4				0	Data Type: BinaryDate The time the entry was logged into the logbook.
Reserved by PI	18-27					

View Lists

View lists allow the values of a set of parameters to be accessed at the same time.

Table C-16. Logbook Function Block, View 1

Index Number	Parameter
1	ST_REV
6.1	MODE_BLK.ACTUAL
6.2	MODE_BLK.PERMITTED
6.3	MODE_BLK.NORMAL
7.1	ALARM_SUM.CURRENT
7.2	ALARM_SUM.UNACKNOWLEDGED
7.3	ALARM_SUM.UNREPORTED
7.4	ALARM_SUM.DISABLED
10	STATUS
14.1	NEWEST_ENTRY.TYPE
14.2	NEWEST_ENTRY.VALUE
14.3	NEWEST_ENTRY.ACTIVE
14.4	NEWEST_ENTRY.TIME

Appendix D Module Definitions, IO Bytes, and Data Length

A GSD file contains information about the device capabilities.

Modules are defined within the GSD. Each module represents a distinct sub set of parameter values for a specific function block in the DVC6200p; each function block can have one or more modules defined.

Slots originate in the Class 1 Master (Configuration Host) and represent an address range of bytes. Typically, slots will define address ranges for Input values (I) and other address ranges for Output values (Q).

If a Slot is not used it must NOT be null or blank. It must be assigned as an Empty Module.

Modules are assigned to specific Slots. For example any of the AO modules must be assigned to Slot 1. If a DO module is required it must be assigned to Slot 3. The slot assignments are defined in the device GSD file *FC051037.gsd*.

Slot Definition	Module
Slot (1) = AO	2 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15
Slot (2) = AI	16 1,16,17
Slot (3) = DO	18 1,18,19,20,21,22,23,24
Slot (4) = DI 1	1 25 1,25
Slot (5) = DI 2	2 25 1,25

Note

The AO module is always assigned to the first slot. In some systems the first slot is defined as 0; consequently the AO module will be defined as Slot 0, the AI module will be defined as Slot 1, etc.

The example below shows an AO Module, number 5, assigned to Slot 1. The slots that are not used have been assigned as an EMPTY_MODULE. Different Class 1 Masters will present different views and may have a different number of configurable slot locations.

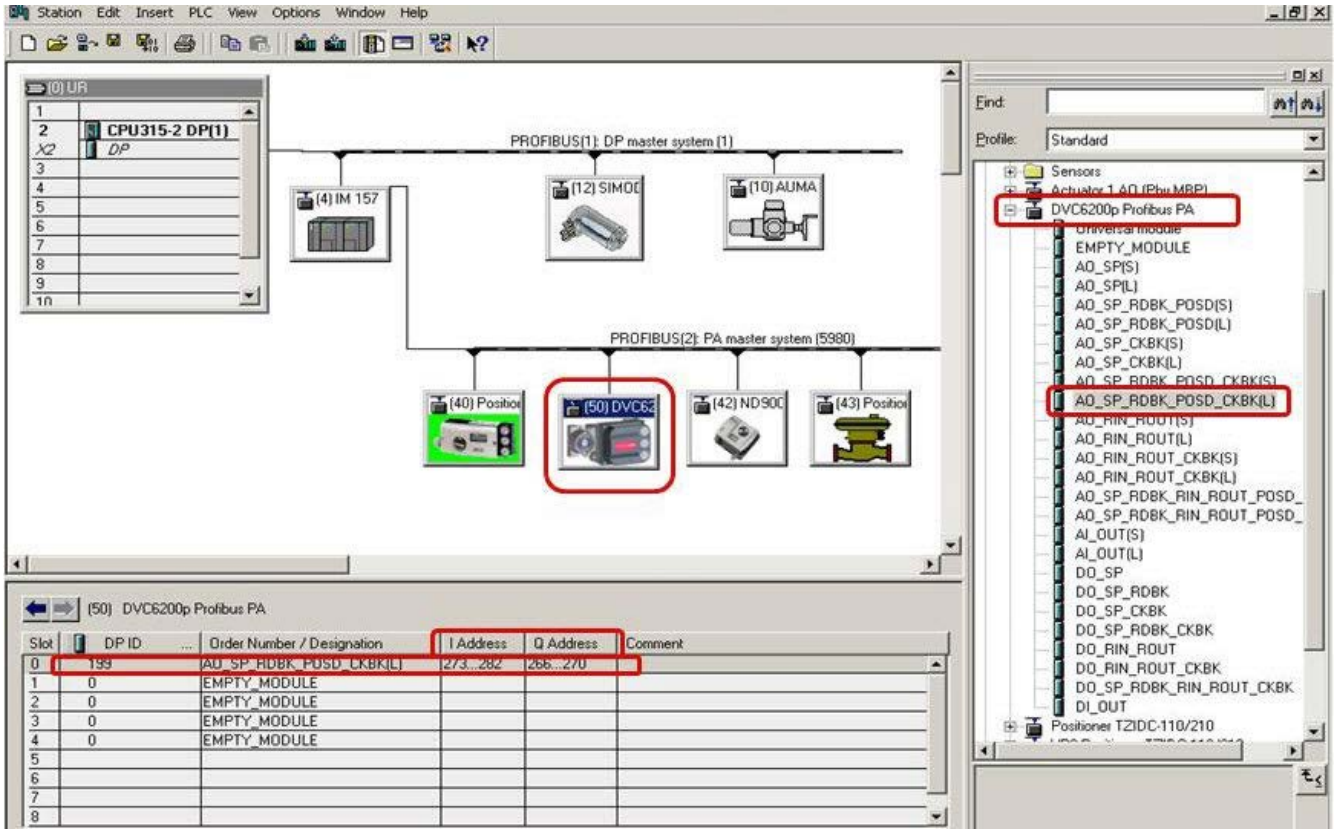
(21) DVC6200p Profibus PA

Slot	DPID	Order Number / Designation
1	198	AO_SP_RDBK_POSD(L)
2	0	EMPTY_MODULE
3	0	EMPTY_MODULE
4	0	EMPTY_MODULE
5	0	EMPTY_MODULE
6		

The below example is from a STEP 7 SIMATIC Manager. On the right pane the DVC6200p is selected. All of the modules available for the device are listed. In this example Module 9 has been selected.

With the graphic image of the DVC6200p highlighted slot assignments are made in the table for the DVC6200p.

The AO module 9 has been assigned to Slot 0 (the first slot) in this example. Unused slots must be defined as EMPTY_MODULE as shown below and not as Blank or Null. Most control systems define the Inputs (I) and Output (Q) address ranges automatically.



AO Module

Slot 1 Assignment

Module	Module Name	Input Bytes	Output Bytes
1	EMPTY_MODULE	0	0
2	AO_SP(S)	0	5
3	AO_SP(L)	0	5
4	AO_SP_RDBK_POSD(S)	7	5
5	AO_SP_RDBK_POSD(L)	7	5
6	AO_SP_CKBK(S)	3	5
7	AO_SP_CKBK(L)	3	5
8	AO_SP_RDBK_POSD_CKBK(S)	10	5
9	AO_SP_RDBK_POSD_CKBK(L)	10	5
10	AO_RIN_ROUT(S)	5	5
11	AO_RIN_ROUT(L)	5	5
12	AO_RIN_ROUT_CKBK(S)	8	5
13	AO_RIN_ROUT_CKBK(L)	8	5
14	AO_SP_RDBK_RIN_ROUT_POSD(S)	15	10
15	AO_SP_RDBK_RIN_ROUT_POSD(L)	15	10

Module 2
AO_SP(S)

Module Definition	AO_SP(S)
Input data length	0
Output data length	5
Parameter data length	0
Identifiers	0xA4

AO_SP(S)
AO_SP(L)

SP	Setpoint		
	Output (master view)		
	Initial Address	0	SP - floating-point number
		1	
		2	
		3	
		4	SP - status

Module 3
AO_SP(L)

Module Definition	AO_SP(L)
Input data length	0
Output data length	5
Parameter data length	0
Identifiers	0x82, 0x84, 0x8, 0x5

Module 4
AO_SP_RDBK_POSD(S)

Module Definition	AO_SP_RDBK_POSD(S)
Input data length	7
Output data length	5
Parameter data length	0
Identifiers	0x96, 0xA4

Module 5
AO_SP_RDBK_POSD(L)

Module Definition	AO_SP_RDBK_POSD(L)
Input data length	7
Output data length	5
Parameter data length	0
Identifiers:	0xC6, 0x84, 0x86, 0x8, 0x5, 0x8, 0x5, 0x5, 0x5

AO_SP_RDBK_POSD(S)
AO_SP_RDBK_POSD(L)

READBACK, POS_D, SP	Readback, position discrete, setpoint		
	Input (master view)		
	Initial Address	0	READBACK - floating-point number
		1	
		2	
		3	
		4	READBACK - status
		5	POS_D
		6	POS_D - status
	Output (master view)		
	Initial Address	0	SP - floating-point number
		1	
		2	
		3	
		4	SP - status

Module 6
AO_SP_CKBK(S)

Module Definition	AO_SP_CKBK(S)
Input data length	3
Output data length	5
Parameter data length	0
Identifiers	0x92, 0xA4

Module 7
AO_SP_CKBK(L)

Module Definition	AO_SP_CKBK(L)
Input data length	3
Output data length	5
Parameter data length	0
Identifiers	0xC3, 0x84, 0x82, 0x8, 0x5, 0xA

AO_SP_CKBK(S)
AO_SP_CKBK(L)

Checkback, SP	Checkback, setpoint		
	Input (master view)		
	Initial Address	0	CHECKBACK
		1	
		2	
	Output (master view)		
	Initial Address	0	SP - floating-point number
		1	
		2	
		3	
		4	SP - status

Module 8
AO_SP_RDBK_POSD_CKBK(S)

Module Definition	AO_SP_RDBK_POSD_CKBK(S)
Input data length	10
Output data length	5
Parameter data length	0
Identifiers	0x99, 0xA4

Module 9
AO_SP_RDBK_POSD_CKBK(L)

Module Definition	AO_SP_RDBK_POSD_CKBK(L)
Input data length	10
Output data length	5
Parameter data length	0
Identifiers	0xC7, 0x84, 0x89, 0x8, 0x5, 0x8, 0x5, 0x5, 0x5, 0xA

AO_SP_RDBK_POSD(S)
AO_SP_RDBK_POSD(L)

READBACK, POS_D, SP	Readback, position discrete, setpoint		
	Input (master view)		
	Initial Address	0	READBACK - floating-point number
		1	
		2	
		3	
		4	READBACK - status
		5	POS_D
		6	POS_D - status
	Output (master view)		
	Initial Address	0	SP - floating-point number
		1	
		2	
		3	
		4	SP - status

Module 10
AO_RIN_ROUT(S)

Module Definition	AO_RIN_ROUTS(S)
Input data length	5
Output data length	5
Parameter data length	0
Identifiers	0xB4

Module 11
AO_RIN_ROUT(L)

Module Definition	AO_RIN_ROUT(L)
Input data length	5
Output data length	5
Parameter data length	0
Identifiers	0xC4, 0x84, 0x84, 0x8, 0x5, 0x8, 0x5

AO_RIN_ROUTS(S)
AO_RIN_ROUTS(L)

RCAS_OUT RCAS_IN	Remote cascade output, remote cascade input		
	Input (master view)		
	Initial Address	0	RCAS_OUT - floating-point number
		1	
		2	
		3	
		4	RCAS_OUT - status
	Output (master view)		
	Initial Address	0	RCAS_IN - floating-point number
		1	
		2	
		3	
		4	RCAS_IN - status

Module 12
AO_RIN_ROUT_CKBK(S)

Module Definition	AO_RIN_ROUT_CKBK(S)
Input data length	8
Output data length	5
Parameter data length	0
Identifiers	0x97, 0xA4

Module 13
AO_RIN_ROUT_CKBK(L)

Module Definition	AO_RIN_ROUT_CKBK(L)
Input data length	8
Output data length	5
Parameter data length	0
Identifiers	0xC5, 0x84, 0x87, 0x8, 0x5, 0x8, 0x5, 0xA

AO_RIN_ROUT_CKBK(S)
AO_RIN_ROUT_CKBK(L)

RCAS_OUT CHECKBACK RCAS_IN	Readback cascade output, checkback, remote cascade input		
	Input (master view)		
	Initial Address	0	RCAS_OUT - floating-point number
		1	
		2	
		3	
		4	RCAS_OUT - status
		5	CHECKBACK
		6	
		7	
	Output (master view)		
	Initial Address	0	RCAS_IN - floating-point number
		1	
		2	
		3	
		4	RCAS_IN - status

Module 14

AO_SP_RDBK_RIN_ROUT_POSD_CKBK(S)

Module Definition	AO_SP_RDBK_RIN_ROUT_POSD_CKBK(S)
Input data length	15
Output data length	10
Parameter data length	0
Identifiers	0x9E, 0XA9

Module 15

AO_SP_RDBK_RIN_ROUT_POSD_CKBK(L)

Module Definition	AO_SP_RDBK_RIN_ROUT_POSD_CKBK(L)
Input data length	15
Output data length	10
Parameter data length	0
Identifiers	0xCB, 0x89, 0x8E, 0x8, 0x5, 0x8, 0x5, 0x8, 0x5, 0x8, 0x5

AO_SP_RDBK_RIN_ROUT_POSD_CKBK(S)
AO_SP_RDBK_RIN_ROUT_POSD_CKBK(L)

READBACK, RCAS_OUT, POS_D, CHECKBACK, SP, RCAS_IN	Readback, remote cascade output, position discrete, checkback, setpoint, remote cascade input		
	Input (master view)		
	Initial Address	0	READBACK - floating-point number
		1	
		2	
		3	
		4	READBACK - status
		5	RCAS_OUT - floating-point number
		6	
		7	
		8	
		9	RCAS_OUT - Status
		10	POS_D
		11	POS_D - Status
		12	CHECKBACK
		13	
		14	
	Output (master view)		
	Initial Address	0	SP - floating-point number
		1	
		2	
		3	
		4	SP - status
		5	RCAS_IN - floating-point number
		6	
		7	
		8	
		9	RCAS_IN - Status

AI Module

Slot 2 Assignment

Module	Module Name	Input Bytes	Output Bytes
16	AI_OUT(S)	5	0
17	AI_OUT(L)	5	0

Module 16

AI_OUT(S)

Module Definition	AI_OUTS(S)
Input data length	5
Output data length	0
Parameter data length	0
Identifiers	0x94

Module 17

AI_OUT(L)

Module Definition	AI_OUTS(L)
Input data length	5
Output data length	0
Parameter data length	0
Identifiers	0x42, 0x84, 0x5

DO Module

Slot 3 Assignment

Module	Module Name	Input Bytes	Output Bytes
18	DO_SP	0	2
19	DO_SP_RDBK	2	2
20	DO_SP_CKBK	3	2
21	DO_SP_RDBK_CKBK	5	2
22	DO_RIN_ROUT	2	2
23	DO_RIN_ROUT_CKBK	5	2
24	DO_SP_RDBK_RIN_ROUT_CKBK	7	4

Module 18
DO_SP

Module Definition	DO_SP
Input data length	0
Output data length	2
Parameter data length	0
Identifiers	0xA1

Module 19
DO_SP_RDBK

Module Definition	DO_SP_RDBK
Input data length	2
Output data length	2
Parameter data length	0
Identifiers	0xC1, 0x81, 0x81, 0x83

Module 20
DO_SP_CKBK

Module Definition	DO_SP_CKBK
Input data length	3
Output data length	2
Parameter data length	0
Identifiers	0xC1, 0x81, 0x82, 0x92

Module 21
DO_SP_RDBK_CKBK

Module Definition	DO_SP_RDBK_CKBK
Input data length	5
Output data length	2
Parameter data length	0
Identifiers	0xC1, 0x81, 0x84, 0x93

Module 22
DO_RIN_OUT

Module Definition	DO_RIN_ROUT
Input data length	2
Output data length	2
Parameter data length	0
Identifiers	0xC1, 0x81, 0x81, 0x8C

Module 23
DO_RIN_ROUT_CKBK

Module Definition	DO_RIN_ROUT_CKBK
Input data length	5
Output data length	2
Parameter data length	0
Identifiers	0xC1, 0x81, 0x84, 0x9C

Module 24
DO_SP_RDBK_ROUT_CKBK

Module Definition	DO_SP_RDBK_RIN_ROUT_CKBK
Input data length	7
Output data length	4
Parameter data length	0
Identifiers	0xC1, 0x83, 0x86, 0x9F

DI Module

Slot 4 DI1 Assignment
Slot 5 DI2 Assignment

Module	Module Name	Input Bytes	Output Bytes
25	DI_OUT	2	0

Module 25

DI_OUT

Module Definition	DI_OUT
Input data length	2
Output data length	0
Parameter data length	0
Identifiers	0x91

Glossary

Algorithm
A set of logical steps to solve a problem or accomplish a task. A computer program contains one or more algorithms.

Alphanumeric
Consisting of letters and numbers.

ANSI (acronym)
The acronym ANSI stands for the American National Standards Institute

ANSI Class
Valve pressure/temperature rating.

Bench Set
Pressure, supplied to an actuator, required to drive the actuator through rated valve travel. Expressed in pounds per square inch.

Byte
A unit of binary digits (bits). A byte consists of eight bits.

Configuration
Stored instructions and operating parameters for a FIELDVUE Instrument.

Control Loop
An arrangement of physical and electronic components for process control. The electronic components of the loop continuously measure one or more aspects of the process, then alter those aspects as necessary to achieve a desired process condition. A simple control loop measures only one variable. More sophisticated control loops measure many variables and maintain specified relationships among those variables.

Controller
A device that operates automatically to regulate a controlled variable.

Deadband
Region around a reference point that must be exceeded before a new event occurs.

Deviation
Usually, the difference between set point and process variable. More generally, any departure from a desired or expected value or pattern.

Device ID
Unique identifier embedded in the instrument at the factory.

Drive Signal
The signal to the I/P converter from the printed wiring board. It is the percentage of the total microprocessor effort needed to drive the valve fully open. In most applications, drive signal ranges from 55% to 75%.

Feedback Signal
Indicates to the instrument the actual position of the valve. The travel sensor provides the feedback signal to the instrument printed wiring board assembly. A mechanical linkage connects the travel sensor to the valve stem or shaft.

Firmware
The combination of a hardware device and computer instructions and data that reside as read-only software on that device.

Note

1. This term (firmware) is sometimes used to refer only to the hardware device or only to the computer instructions or data, but these meanings are deprecated.

2. The confusion surrounding this term has led some to suggest that it be avoided altogether. The term is included here because of its use in older documentation and culture.

Gain
The ratio of output change to input change.

Hardware Revision
Revision number of the Fisher instrument hardware. The physical components of the instrument are defined as the hardware.

Instrument Level
Determines the functions available for the instrument.

Leak Class
Defines the allowable leakage by a valve when it is closed. Leak class numbers are listed in two standards: ANSI/FCI 70-2 and IEC 534-4.

Linearity, dynamic
Linearity (independent) is the maximum deviation from a straight line best fit to the opening and closing curves and a line representing the average value of those curves.

Memory
A type of semiconductor used for storing programs or data. FIELDVUE instruments use three types of memory: Random Access Memory (RAM), Read Only Memory (ROM), and Non-Volatile Memory (NVM).

Non-Volatile Memory (NVM)
A type of semiconductor memory that retains its contents even though power is disconnected. NVM contents can be changed during configuration unlike ROM which can be changed only at time of instrument manufacture. NVM stores configuration restart data.

Octet
See byte

Parallel
Simultaneous: said of data transmission on two or more channels at the same time.

Pressure Sensor
A FIELDVUE instrument internal device that senses the output pressure from the pneumatic relay.

PROFIBUS PA (Process Automation)
A protocol used to monitor measuring equipment or control digital controllers/positioners via a process control system in process automation applications.

Random Access Memory (RAM)
A type of semiconductor memory that is normally used by the microprocessor during normal operation that permits rapid retrieval and storage of programs and data. See also Read Only Memory (ROM) and Non-Volatile Memory (NVM).

Rate
Amount of change in output proportional to the rate of change in input.

Read-Only Memory (ROM)
A memory in which information is stored at the time of instrument manufacture. You can examine but not change ROM contents.

Seat Load
Force exerted on the valve seat, typically expressed in pounds force per lineal inch of port circumference. Seat load is determined by shutoff requirements.

Software
Computer programs, procedures, and possibly associated documentation and data pertaining to the operation of a computer system.

Temperature Sensor
A device within the FIELDVUE instrument that measures the instrument's internal temperature.

Travel
Movement of the valve stem or shaft which changes the amount the valve is open or closed.

Travel Sensor
A device within the FIELDVUE instrument that senses valve stem or shaft movement. The travel sensor in the DVC6200p is the Hall Effect sensor that measures the position of the magnet assembly.

Travel Sensor Motion

Increasing or decreasing air pressure causes the magnet assembly to move up or down or the rotary shaft to turn clockwise or counterclockwise. Device Setup asks if it can move the valve to determine travel.

Tuning

The adjustment of control terms or parameter values to produce a desired control effect.

Tuning Set

Preset values that identify gain and rate settings for a FIELDVUE instrument. The tuning set and supply pressure together determine an instrument's response to input signal changes.

Watch Dog Timer

A timer that the microprocessor must pulse periodically. If the microprocessor is unable to pulse the timer, the instrument shuts down.

Zero Power Condition

The position of the valve (open or closed) when the electrical segment power to the instrument is removed. Zero Power Condition (ZPC) is determined by relay and actuator action where: for Relay A and C, Port A will be at atmosphere pressure, and if double-acting, Port B will be at supply pressure. For Relay B, Port B will be at supply pressure.

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