

# Replacement of Fisher™ FIELDVUE™ DVC6200 HC Digital Valve Controllers (Firmware 7) with DVC7K-H (Firmware 1)

## Table of Contents

Management of Change .....2

Background .....2

Question and Answer Checklist .....2

Comparison of Instruments with  
Firmware 7 to Instruments with  
Firmware 6 and Older .....4

Required Updates to User Interface When Upgrading  
to DVC6200 Instruments with Firmware 7 .....7

Frequently Asked Questions .....7

Conclusion .....10



Figure 1. DVC7K (Firmware 1)

## Management of Change

Management of Change (MOC) is a procedure used to proactively manage changes that can potentially affect safety or general procedure within a process plant. Product changes often have a significant impact on plant efficiency throughout the transition period. In lieu of the complexity of completing an MOC approval process, this MOC Guide has been developed to prevent delays and difficulties while ensuring a successful product change.

## Background

To continue to increase the usefulness and value of the Fisher FIELDVUE digital valve controllers, additional features and functions have been implemented within the DVC7K. These additions include a Local User Interface available in thirteen configurable languages to enable tool free configuration and troubleshooting, an improved low power microprocessor for on board diagnostic analysis, additional on-board memory for field diagnostic capture and storage, battery backup to maintain instrument time and the addition of a position transmitter and two switches that can be used simultaneously.

This MOC Guide is not intended to be used as a stand-alone document. It must be used with the following documents, as applicable:

For the Fisher FIELDVUE DVC7K instrument:

- Instruction Manual for the DVC7K-H Digital Valve Controller ([D104767X012](#))
- Quick Start Guide for the DVC7K-H Digital Valve Controller ([D104766X012](#))

Contained in the following sections are design comparisons between the DVC7K instrument (FW1) and legacy DVC6200 instrument (FW7). These comparisons demonstrate how the design of technologies allows users to efficiently transition to new, more reliable Fisher products.

## Question and Answer Checklist

**1. Q:** Does the proposed modification cause any changes to the piping and instrumentation diagram (P&ID)?

**A:** Yes.

**2. Q:** Does the proposed modification change process chemistry, technology or operating and control philosophies?

**A:** No.

**3. Q:** Have the operating and design limits of the proposed modification changed?

**A:** Yes.

- 4. Q:** Have the codes and standards to which the new equipment has been designed changed?  
**A:** Yes.
- 5. Q:** Does the proposed modification change the Hazardous Electrical Area classification?  
**A:** Yes.
- 6. Q:** Does the proposed modification change existing or create new demands for battery backup or other power supply redundancy or reliability?  
**A:** No.
- 7. Q:** Does the proposed modification introduce new equipment that needs to be operated and, has a new operations list been stated?  
**A:** Yes.
- 8. Q:** Does the proposed modification introduce new equipment items that require spare parts, training manuals, maintenance procedures or training to teach the maintenance department how to maintain them?  
**A:** Yes.
- 9. Q:** Does the proposed modification change the spares for existing pieces of equipment?  
**A:** No.
- 10. Q:** Does the proposed modification introduce new equipment items that require periodic predictive maintenance?  
**A:** Yes.

## Comparison of DVC7K Firmware 1 with DVC6200 Firmware 7

**Table 1. FIELDVUE DVC7K Instrument Capabilities**

| CAPABILITIES                      | DVC7K (FW1)                                                                                                                                                                                                                                                                                                         | DVC6200 (FW7)                                                                                                                                                                                                                                                                                             |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Housing Material                  | Copper-Free Aluminum                                                                                                                                                                                                                                                                                                | Aluminum                                                                                                                                                                                                                                                                                                  |
| Paint                             | VOC Free Powder Coat                                                                                                                                                                                                                                                                                                | Wet Coat                                                                                                                                                                                                                                                                                                  |
| Weight                            | 3.9 kg / 8.9 lbs                                                                                                                                                                                                                                                                                                    | 3.5 kg / 7.7 lbs                                                                                                                                                                                                                                                                                          |
| Actuator Mounting Support         | Integral mounting to Fisher 657/667<br>Integral mounting to Fisher Rotary<br>Sliding Stem linear applications<br>Quarter-turn rotary application<br>IEC 60534-6-1 compliant actuators<br>IEC 60534-6-2 compliant actuators<br>VDI/VDE 3845 compliant actuators<br>VDI/VDE 3847-1 and 2<br>NAMUR compliant actuators | Integral mounting to Fisher 657/667<br>Integral mounting to Fisher GX<br>Integral mounting to Fisher Rotary<br>Sliding Stem linear applications<br>Quarter-turn rotary application<br>IEC 60534-6-1 compliant actuators<br>IEC 60534-6-2 compliant actuators<br>VDI/VDE 3845<br>NAMUR compliant actuators |
| Travel Feedback                   | Linkageless Non-Contact                                                                                                                                                                                                                                                                                             | Linkageless Non-Contact                                                                                                                                                                                                                                                                                   |
| Conduit/Pneumatic Entries         | Three 1/2" NPT / 1/4" NPT<br>Three 1/2" NPT / G 1/4<br>Three M20 / G 1/4                                                                                                                                                                                                                                            | Two 1/2" NPT / 1/4" NPT<br>Two M20 / 1/4" NPT                                                                                                                                                                                                                                                             |
| Integral mounting 67CFR Regulator | Vertical Orientation                                                                                                                                                                                                                                                                                                | Horizontal Orientation                                                                                                                                                                                                                                                                                    |
| Pressure Gauges                   | Optional Gauge Block and Gauges                                                                                                                                                                                                                                                                                     | Optional Gauges                                                                                                                                                                                                                                                                                           |
| Standard Temperature Construction | -40 to 85 °C / -40 to 185 °F                                                                                                                                                                                                                                                                                        | -40 to 85 °C / -40 to 185 °F                                                                                                                                                                                                                                                                              |
| Extreme Temperature Construction  | -45 to 85 °C / -49 to 185 °F                                                                                                                                                                                                                                                                                        | -52 to 85 °C / -62 to 185 °F                                                                                                                                                                                                                                                                              |
| Termination Hardware              | Cage Clamp without Output Option<br>Cage Clamp with Output Option                                                                                                                                                                                                                                                   | Terminals without Output Option<br>Cage Clamp with Output Option                                                                                                                                                                                                                                          |
| LUI – Local User Interface        | Full text configurable to 13 languages<br>Guided setup<br>Active Alert Recommended Actions                                                                                                                                                                                                                          | Not Available                                                                                                                                                                                                                                                                                             |
| Valve Health Status LED           | NE107 Valve Health LED                                                                                                                                                                                                                                                                                              | Not Available                                                                                                                                                                                                                                                                                             |
| Instrument Clock Battery Backup   | Available for Standard Temperature                                                                                                                                                                                                                                                                                  | Not Available                                                                                                                                                                                                                                                                                             |

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## Comparison of DVC7K Firmware 1 with DVC6200 Firmware 7 (Continued)

**Table 1. FIELDVUE DVC7K Instrument Capabilities (continued)**

| CAPABILITIES                  | DVC7K (FW1)                                                      | DVC6200 (FW7)                                                    |
|-------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|
| Operation/Action              | Single Acting, Direct<br>Single Acting, Reverse<br>Double Acting | Single Acting, Direct<br>Single Acting, Reverse<br>Double Acting |
| Low Bleed Relay               | Available                                                        | Available                                                        |
| Power Source                  | 4 to 20 mA DC<br>24 V DC (11 to 30 V DC at 8.5 mA)               | 4 to 20 mA DC<br>Multi-Drop (11 to 30 V DC at 10 mA)             |
| Setpoint Source               | 4 to 20 mA DC<br>24 V DC                                         | 4 to 20 mA DC                                                    |
| Minimum Voltage               | 10.2 V without HART<br>10.7 V with HART                          | 9.5 V without HART<br>10 V with HART                             |
| Output Options                | None<br>3 Outputs (1 Transmitter and 2 Switches)                 | None<br>1 Output (Transmitter or Switch)                         |
| Instrument Mode               | Automatic, Manual                                                | In Service, Out of Service                                       |
| HART Burst Mode               | Not Available                                                    | HART 7 Burst                                                     |
| HART Protocol                 | HART 7                                                           | HART 7<br>HART 5                                                 |
| Control Tiers                 | Throttling and On/Off<br>On/Off Only                             | Throttling                                                       |
| Application Mode              | Throttling<br>On/Off                                             | Not Available                                                    |
| Pressure Control and Fallback | Not Available                                                    | Available                                                        |
| Latch Behavior                | None, Zero Power, Last Position                                  | Not Available                                                    |
| Event Log                     | 1000 entries                                                     | 20 entries (Alerts Only)                                         |
| Characterization              | 3 to 20 entry table                                              | 20 entry table                                                   |
| Specification Sheet           | Fisher Specification Sheet<br>ISA 20 Specification Sheet         | Fisher Specification Sheet                                       |

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## Comparison of DVC7K Firmware 1 with DVC6200 Firmware 7 (Continued)

**Table 1. FIELDVUE DVC7K Instrument Capabilities (continued)**

| CAPABILITIES                         | DVC7K (FW1) | DVC6200 (FW7) |
|--------------------------------------|-------------|---------------|
| Non-Volatile Memory Defect Alert     | Available   | Available     |
| Volatile Memory Defect Alert         | Available   | ---           |
| Drive Signal Alert                   | Available   | Available     |
| Drive Current Alert                  | Available   | Available     |
| Transmitter Open Circuit Alert       | Available   | ---           |
| Electronic Defect Alert              | Available   | Available     |
| Device Misconfigured Alert           | Available   | ---           |
| Instrument Time is Approximate Alert | Available   | Available     |
| Calibration in Progress Alert        | Available   | Available     |
| Diagnostic in Progress Alert         | Available   | Available     |
| Temperature High Alert               | Available   | ---           |
| Temperature Low Alert                | Available   | ---           |
| Loop Current Fixed Alert             | Available   | Available     |
| Loop Current Saturated Alert         | Available   | Available     |
| Instrument Mode Alert                | Available   | ---           |
| Travel Feedback Error Alert          | Available   | ---           |
| Travel Deviation Alert               | Available   | Available     |
| Travel High Alert                    | Available   | Available     |
| Travel Low Alert                     | Available   | Available     |
| Travel Limit/Cutoff High Alert       | Available   | Available     |
| Travel Limit/Cutoff Low Alert        | Available   | Available     |
| Cycle Count High Alert               | Available   | Available     |
| Travel Accumulator High Alert        | Available   | Available     |
| Stroke Open Time Alert               | Available   | ---           |
| Stroke Close Time Alert              | Available   | ---           |
| Supply Pressure High Alert           | Available   | Available     |
| Supply Pressure Low Alert            | Available   | Available     |
| Pressure A Overpressurized Alert     | Available   | Available     |

## Required Updates to User Interface When Upgrading to DVC7K (FW1) from DVC6200 (FW7)

**Table 2. Device Description Requirements**

| HART Communication Protocol | DVC7K (FW1)                 | DVC6200 (FW7)               |
|-----------------------------|-----------------------------|-----------------------------|
| HART 7                      | Device Revision 1, DD Rev 1 | Device Revision 3, DD Rev 1 |
| HART 5                      | Not Applicable              | Device Revision 1, DD Rev 7 |

## Frequently Asked Questions

**1. Q:** Will there be new mountings for the DVC7K?

**A:** The DVC7K will use the same mountings as the DVC6200.

**2. Q:** Do I need to have different spare parts for the DVC7K?

**A:** Yes, some parts will change. However, the DVC7K shares the same I/P, Relay, magnetic array and mountings as the DVC6200.

**3. Q:** Can I configure my DVC7K with my current ValveLink software?

**A:** No, you cannot. However, you can set up your instrument with the Local User Interface (LUI) or using the Device Description (DD) on the Trex, your laptop using AMS Device Configurator or through any HART based Host System.

**4. Q:** How can I tell if there are active alerts in the DVC7K?

**A:** The LED will indicate if an alert is active. You can also see the active alerts, NE107 status and recommended actions on how to correct the alert from the LUI or using the DD. Figure 2 shows the NE107 Valve Health Indicators.

**Figure 2. NE107 Valve Health Indicators**

|                 |                                                                                     |                                                                                     |                             |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------|
| <b>Solid</b>    |  |  | <b>Good</b>                 |
| <b>Blinking</b> |  |  | <b>Maintenance Required</b> |
| <b>Blinking</b> |  |  | <b>Out of Specification</b> |
| <b>Blinking</b> |  |  | <b>Check Function</b>       |
| <b>Solid</b>    |  |  | <b>Failed</b>               |

**5. Q:** Can I disable the buttons on the Local User Interface (LUI)?

**A:** Not for first release. However, the LED light can be disabled from the LUI. Additionally, there are protection methods planned for future releases to provide more restriction on access to the device both locally and remotely.

**6. Q:** Can I use the transmitter and switches at the same time?

**A:** Yes, if the DVC7K is ordered with the options package it will support a 4 to 20 mA position transmitter and two switches.

**7. Q:** Does the DVC7K maintain time during a power outage?

**A:** Yes, there is a battery backup onboard the instrument for the standard temperature and high temperature option. The extreme temperature option will not provide a battery backup of the instrument time.

**8. Q:** What pneumatic and electrical connections are available in the DVC7K?

**A:** There are three options for electrical and pneumatic connections:

- i. Imperial = 1/4" NPT electrical and 1/4" pneumatic
- ii. Metric = M20 electrical and G1/4 pneumatic
- iii. Metric/Imperial = M20 electrical and 1/4" pneumatic

**9. Q:** Does the DVC7K support multiple languages?

**A:** Yes, we will support 13 languages at initial release: Arabic, Chinese, Czech, English, French, German, Italian, Japanese, Korean, Polish, Portuguese, Russian and Spanish.

**10. Q:** Does the DVC7K support HART 5?

**A:** The device is HART 7 compliant. HART 7 is backwards compatible with most HART 5 systems. The main difference between HART 7 and HART 5 is that with HART 5 you will not have access to the Long Tag. You will be limited to the 8 characters that you are limited to in your current HART 5 device.

**11. Q:** How will I do firmware upgrades, and how long will it take?

**A:** Upgrading to firmware 2 will require a specific cable to download the new firmware. It is estimated to take around two to three minutes and requires the instrument to be in Manual Mode.

After the implementation of Bluetooth® wireless technology and if Bluetooth is enabled on the device, future firmware upgrades can also be done on a Trex, tablet or phone utilizing the Emerson Bluetooth App.

**12. Q:** Is the On/Off Control Tier a different DVC7K?

**A:** The DVC7K has two Control Tiers. The Control Tier determines the control available for the instrument.

- Throttling Control (TC): Supports Throttling and On/Off Application Modes
- Discrete Control (DC): Supports On/Off Application Mode

**13. Q:** Does the On/Off Control Tier have a SIL certificate?

**A:** No, this is not for SIL rated applications. This is only for On/Off applications. An SIS DVC7K is on the roadmap but not part of first release.

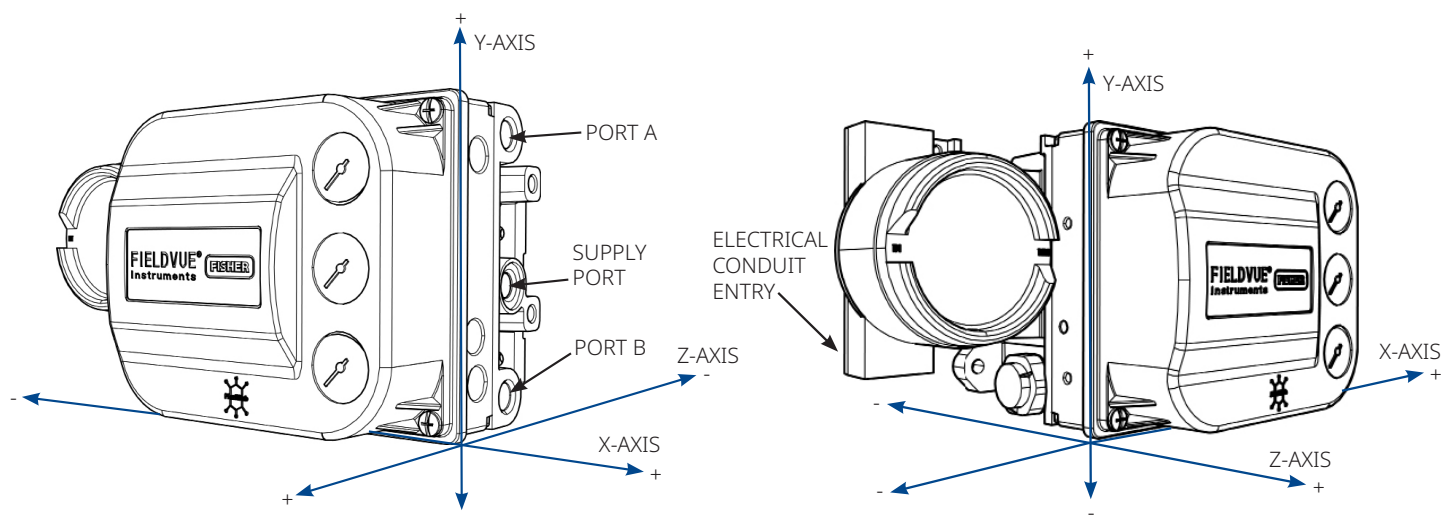
**14. Q:** Are there new alerts for the On/Off Control Tier?

**A:** Yes, there are stroke time degradation alerts that can be configured in the instrument.

**15. Q:** What are the differences in the pneumatic ports and electrical conduit entry points between the DVC7K and DVC6200 along the X, Y and Z axes?

**A:**

| DVC7K PORT                           | AXIS, MM / IN.        |                       |                       |
|--------------------------------------|-----------------------|-----------------------|-----------------------|
|                                      | X                     | Y                     | Z                     |
| Supply Port                          | 3.77 mm / 0.148 in.   | -25.65 mm / -1.01 in. | 39.01 mm / 1.54 in.   |
| Port A                               | -10.24 mm / -0.40 in. | -24.08 mm / -0.95 in. | -40.31 mm / -1.59 in. |
| Port B                               | -10.24 mm / -0.40 in. | 50.56 mm / 1.99 in.   | -40.31 mm / -1.59 in. |
| Lower, Left Electrical Conduit Entry | 18.28 mm / 0.72 in.   | -34.07 mm / -1.34 in. | 13.92 mm / 0.55 in.   |

**Figure 3. DVC6200 Perspective Drawing**

## Conclusion

The Fisher FIELDVUE DVC7K digital valve controller continues to be the most reliable digital valve controller in production. The design philosophy allows the user the flexibility to transition to the current DVC7K instrument minimizing MOC approval documents.

Please refer to the Fisher FIELDVUE DVC7K digital valve controller product bulletins, quick start guide and instruction manuals, available from your local [Emerson sales office](#), for complete features.



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