Fisher™ FIELDVUE™ DLC3100 Digital Level Controller Management of Change Guide

Table of Contents

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Management of Change

Management of Change (MOC) is a procedure used to proactively manage changes that have the potential to impact safety or the process within a plant. Evaluating new techniques for improving MOC approval procedures can have an impact on plant efficiency. Historically, upgrading obsolete products or replacing existing process control equipment had been delayed or abandoned due to the extensive paperwork involved in completing a complex MOC approval sheet.

Background

Fisher™ FIELDVUE™ DLC3000 series digital level controllers have been in the industry for nearly two decades. The introduction of the DLC3100 digital level controller has significantly evolved the product line. There is an improved ease-of-use with an interactive local user interface for configuration. Also, the DLC3100 digital level controller can be used in safety instrumented systems (SIS) and is certified to SIL 2 capability. In addition, the DLC3100 digital level controller has been designed to allow the user to easily replace a DLC3010 with the new DLC3100 digital level controller.

Question & Answer Checklist

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

A: Only the instrument name changes from DLC3010 to DLC3100.

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: No.

4 **Q:** Have the codes and standards to which the new equipment has been designed changed?

A: No.

5 **Q:** Does the proposed modification change the Hazardous Area Classification?

A: No. Note that the I.S. entity parameters have changed. See Table 3.

6 **Q:** Does the proposed modification introduce new equipment that needs to be operated and, has a new operations list been stated?

A: The DLC3100 is operated the same as the DLC3010 digital level controller.

7 **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. The standard components that may be required for maintenance are different between the DLC3100 and DLC3010 digital level controllers, except the mounting and lever assembly.

8 **Q:** Does the proposed modification change the spares for existing pieces of equipment?

A: Yes. The LCD and push button assemblies and electronics board are different from DLC3010 digital level controller.

9 **Q:** Does the proposed modification introduce new equipment items that require periodic predictive maintenance?

A: No. The new equipment items that may require periodic maintenance are the same as the old equipment.

FIELDVUE DLC3010 and DLC3100 Instrument Comparison

The DLC3100 digital level controller with HART® communication uses different internal components, electronics, and covers than the DLC3010. This is detailed below in Table 1.

DLC3010 Component	DLC3100
Front Cover Assembly (with push buttons and LCD board)	New
Main Electronics Board Assembly	New
Sensor Module	New
Lever Assembly	No Change
Housing	New
Terminal Box	New
Firmware	New

Table 1. Components Comparison Between the DLC3010 and DLC3100 Digital Level Controllers

The DLC3100 digital level controller front cover comes with push buttons and a liquid crystal display for user setup and calibration, without the need of an external tool.

The main board and terminal assemblies are potted. Its modular design allows for easy replacement.

The sensor module is not field replaceable, as it requires factory calibration. There is a cover protecting the sensor module that has anti-tamper paint. This cover must not be removed at any time to ensure accuracy.

The DLC3010 digital level controller adapter ring and terminal box are integrated in the DLC3100 digital level controller housing. The terminal box is on the side of the housing and has two electrical conduit entries on the bottom. This bottom entry minimizes water ingress by self-draining when installed in its orientation.

The terminal assembly has six terminals. Three terminals on the left are for a Resistance Temperature Detector (RTD) connection, while the other three terminals on the right are for loop power. There are also two pins available for HART communication on the bottom right of the terminals.

Both the DLC3010 and DLC3100 digital level controllers use the same lever assembly. There is no change to the way that the lever assembly is coupled to the torque tube assembly. The threaded studs on the back of the housing allows the DLC3100 digital level controller to be mounted directly on a Fisher 249 sensor assembly.

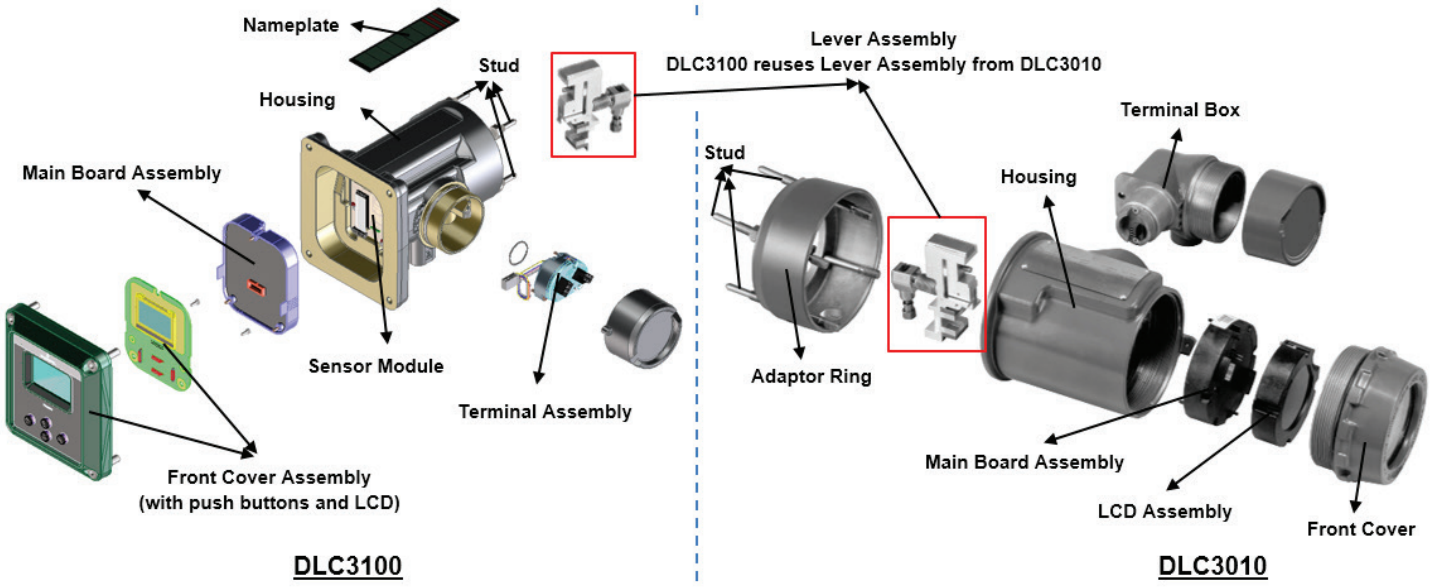

Figure 1: Component Comparison Between the DLC3100 and DLC3010 Digital Level Controllers

Feature	DLC3100 HART	DLC3100 SIS	DLC3010
Guided Setup	Yes	Yes	Yes
Calibration	Yes	Yes	Yes
Setup & Calibration Log	Yes	Yes	No
Local User Interface	Yes	Yes	No
Process Temperature Compensation	Yes (RTD/Manual)	Yes (RTD/Manual)	Yes (RTD/Manual)
Fluid Density Table	Yes	Yes	No
Burst Communication	No	No	Yes
Level Application	Yes	Yes	Yes
Interface Application	Yes	Yes	Yes
Density Application	Yes	No	Yes
Alert Event Record	Yes	Yes	No
Trip Recovery Mode	Auto	Auto/Manual	Auto
SIL 2 Capability	No	Yes	No
HART Version	5	5	5

Table 2: Features Comparison Among HART DLC3000 Series Digital Level Controllers

DLC3010 to DLC3100 Instrument Transition Design Comparison

Electrical – Entity parameters

Entity	DLC3010	DLC3100	Comment
Ui	30VDC	30VDC	No Change
Ii	226mA	130mA	-96mA
Pi	1.4W	0.9W	-0.5W
Ci	5.5nF	5.5nF	No Change
Li	0.4mH	0.01mH	-0.39mH

Table 3. Electrical Entity Parameters

Performance

- Accuracy = 0.2% of output span
- Hysteresis = <0.1% of output span
- Deadband = <0.05% of input span

Operating ambient temperature limits

- DLC3100 instrument operating range: -40°C to 80°C (-40°F to 176°F)
- LCD operating range: -20°C to 70°C (-4°F to 158°F)
- Push Buttons: Disabled when instrument temperature is below -20°C (-4°F) or above 70°C (158°F) where LCD display might be intermittent

Connection

- Two ½" NPT conduit entry from bottom of terminal box

Available Configurations

- DLC3100 HART
  - Alarm High – output current > 21mA
  - Alarm Low – output current < 3.6mA
- DLC3100 SIS
  - Alarm High – output current > 21mA
  - Alarm Low – output current < 3.6mA

Conclusion

The FIELDVUE DLC3000 series digital level controllers have been proven in use for many operating years. The design philosophy of the new DLC3100 instrument meets SIL2 capability and allows an easy transition from the legacy DLC3010, avoiding lengthy MOC approval documents.

For more information...

Bulletin 62.1: DLC3100 (D104216X012)

Instruction Manual (D104213X012)

Safety Manual (D104215X012)

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