Fike®

Install Instructions

DUST LAYER ACCUMULATION (DLA) SENSOR

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DESCRIPTION

The Dust Layer Accumulation (DLA) sensor is an optional component that can be field mounted directly to the Dual-Flap Isolation (DFI) valve. The DLA function is to detect the buildup of dust that may have accumulated at the bottom of the valve, preventing the valve flaps from fully closing.

When the sensor is activated, the accumulated dust must be cleared to allow the isolation valve to fully close. The sensor will reset once the accumulated dust is removed. If the DLA sensor shows that it is still activated once accumulated dust is cleared, the sensor must be recalibrated.

SPECIFICATIONS

Dust Layer Accumulation Sensor	
Part Number:	02-15850
Switching function:	Normally open (NO)
Output type:	NAMUR
Sensing range:	10 mm (0.39 in)
Installation:	Flush
Approvals:	ATEX – IEC – cETLus
Electrical design:	Intrinsically safe circuits
Nominal voltage:	8.2 Vdc (R_i approx.. 1kΩ)
Operating voltage:	5 – 15 V
Current draw:	≤ 1.5mA measuring plate not detected ≥ 2.5 mA measuring plate detected
Temperature:	-20°C to 70°C (-4°F to 158 °F) ambient
Connection type:	Cable PUR, 2 m (6.56 ft.)
Core cross-section:	2 x 0.75 mm^2
Wiring:	2-wire (BN – brown, BU – blue)
Housing material:	Stainless steel 1.4305/AISI 303
Sensing face:	PTFE
Degree of protection:	IP67
Intrinsic Safety Barrier	
Part Number:	02-15293
No. of channels:	2, 1 PDT per channel
Noise immunity:	EN 61000-6-2
Degree of: protection:	IP20
Supply voltage: range	24 to 230 VAC/VDC (-20 to +10%, 50 to 60 Hz)
Max current: consumption:	< 80 mA
Connection method:	Screw connection
Stripping length:	0.28 in (7 mm)
Conductor cross: section	0.2 mm^2 … 2.5 mm^2 (stranded or solid)
Conductor cross-: section AWG	24 … 14
Torque:	0.5 Nm … 0. Nm

INSTALLATION

Adhere to the following steps to install the DLA sensor. Fike recommends that the DLA sensor be installed before mounting the isolation valve into the process line.

1. If installing the DLA sensor to an isolation valve installed in the process line, shut down the process before beginning sensor installation.
2. Remove the M30 plug from the DLA port located on the bottom of the isolation valve (Figure 1). Retain the plug for future use.

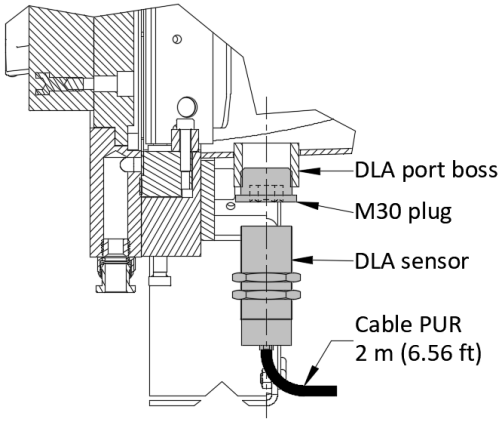

Figure 1– DLA Sensor Installation

3. Thread the DLA sensor into the DLA port so that the sensor face is flush with the end of the sensor port boss (Figure 2).

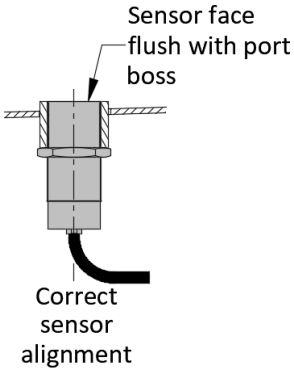

Figure 2 – Flush Mount DLA Sensor

4. Use a wrench to tighten the DLA nut to secure the sensor in place.
5. Locate the field junction box mounted to the DFI valve's flange stand and remove the cover.
6. Loosen the cable gland located in the upper right corner of the junction box; then remove the silicon grip plug.
7. Route the DLA sensor cable into the field junction box through the cable gland.
8. Connect the DLA sensor wire leads to terminals 5B and 6B (Figure 3) within the field junction box.

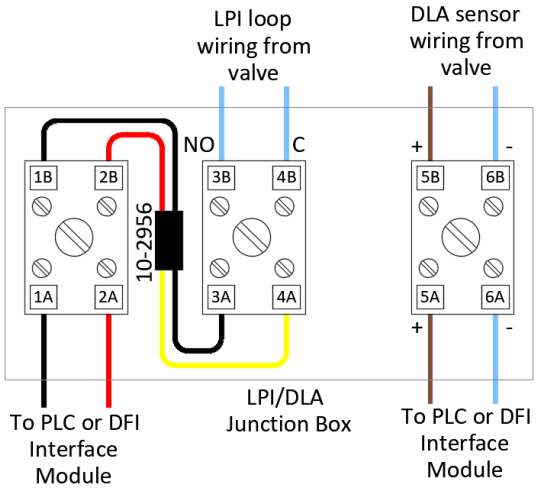

Figure 3 – LPI/DLA Field Junction Box Connections

9. Install the isolation valve in the process line. Refer to Fike document E06-162 DFI Valve Manual for installation instructions.
10. Remove the plug from the lower left corner or the junction box. This is a ¾" (22 mm) hole to allow connection of a cable gland or conduit fittings as required by the local AHJ.
11. Route the cable for monitoring the DLA sensor into the field junction box.
12. Connect the cable leads to terminals 5A and 6A (Figure 3) within the field junction box, observing correct wire polarity.

Note: If connecting the DLA sensor to a DFI Interface Module, refer to Fike document E06-166 DFI Valve Interface Module manual for wiring instructions.

Note: If connecting the DLA sensor directly to the facilities Programmable Logic Controller (PLC), install an intrinsic safety barrier (P/N 02-15293) or equivalent in the field wiring between the DFI valve and the PLC (Figure 4).

CAUTION: Before the valve can be placed into service, the DLA sensor must be calibrated based on the process fuel type. Calibration of the sensor must be performed after the isolation valve is installed in the process line and electrical connections are made.

13. Reinstall the cover onto the field junction box.
14. Verify that all electrical connections to the PLC or DFI Interface Module are made.
15. Apply power to the DLA sensor.
16. Locate the DLA sensor's adjustment screw and rotate it to set the "Zero Point" or the point at which the sensor's state indicator LED (yellow) switches from "ON" to "OFF."

TIP: If the LED is "ON," turn the adjustment screw counterclockwise until "OFF." If the LED is "OFF," turn the adjustment screw clockwise until "ON"; then slightly rotate the adjustment screw counterclockwise until the LED turns "OFF."

17. From the "Zero-Point," rotate the sensor's adjustment screw counterclockwise to set a 10 mm range for process fuel type. Table 1 lists the required adjustments for common fuel types.

Table 1 – DLA Sensor Calibration Based on Common Fuel Types

Process Fuel Type	# of turns to calibrate to 10 mm
Corn Starch (organic/non-fibrous)	7.5
Irganox 1330 (low melting plastics)	5.5
Powdered Sugar	3.5
Wood Flour (organic/fibrous)	2.5

18. Pour a small sample of the process fuel (enough to cover the sensor by a minimum of 10 mm) over the sensor and verify that the sensor's state indicator LED turns "ON."
19. Remove the process fuel sample and verify that the sensor's state indicator LED turns "OFF."

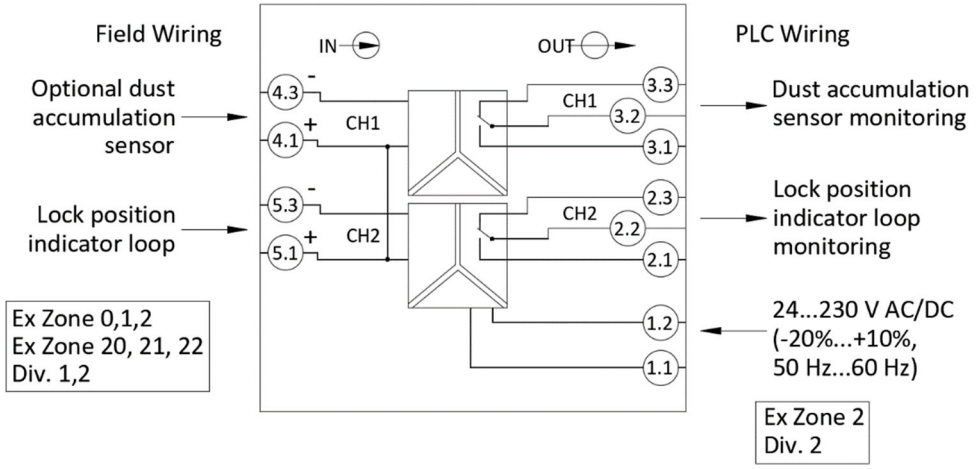

Figure 4 – Intrinsic Safety Barrier Wiring