

Fisher™ L2e

Electric Level Controller



The rugged Fisher L2e electric on/off level controller uses a displacer type sensor to detect liquid level or the interface of two liquids of different specific gravities. This controller is ideal for controlling level in oil and gas separators, treaters, and scrubbers. The reliability of the L2e force balanced sensor design makes it well suited for applications in the oil and natural gas production, compression, and processing industries.

Features

- **Repeatable Electric Level Control**— In conjunction with the Fisher easy-Drive™ electric actuator, a fully electric level control loop is tunable for a wide variety of applications (see Figure 2).
- **Effective Level Loop Tuning**— Intuitive Zero and Span adjustments allow flexibility in setting loop performance over a level range of 5.0 to 305 mm / 0.2 to 12 in.
- **More Reliable Control**— Non-contact electronic switch (solid state relay) provides highly dependable and accurate liquid level control.
- **On-Line Field Support**— QR code on inside cover gives instrument technicians instant access to wiring, setup, calibration, tuning, and trouble-shooting
- **Environmentally Responsible**— Replacing a conventional pneumatic level loop with fully electric level control eliminates controller and dump valve venting and requires less maintenance.
- **Consumes Minimal Electrical Power**— Draws less than 15 mA in steady state and less than 500 mA peak during startup or switching transient.
- **Vibration Resistant Sensor Dynamics**— Controller performance and reliability does not degrade in high vibration installations, such as on compressor scrubbers.

Figure 1. Fisher L2 Liquid Level Controller



X0660



SCAN OR CLICK THE QR CODE FOR
L2E AND easy-Drive ELECTRIC
LEVEL LOOP FIELD SUPPORT

- **Field-Configurable Vertical or Horizontal Displacer**— Displacer may be adjusted in the field for vertical or horizontal operation without additional parts.
- **Field Technician Friendly**— The sensor can be easily disassembled to inspect or replace process seals. The controller, with no repairable or replaceable parts, is easily replaced in the field.
- **NACE Service Ready**— Standard construction uses materials that comply with the requirements of NACE MR0175-2002.
- **CL1500 Pressure Rating**— Sensor assembly is designed and specified for ASME B16.34 CL1500 service when using a Polyvinylchloride (PVC) displacer. For PED (2014/68/EU) maximum pressure is limited to 200 bar / 2900 psig.

Table 1. Specifications

Available Configurations	Controller Connection
<p>Controller: Differential gap (DG) electric control action with intuitive Zero and Span Adjustments</p> <p>Sensor: Displacer-type liquid level sensor for mounting to side of vessel</p>	<p>Electrical 1/2-14 NPT external conduit connection with 0.5 m / greater than 18 in. of 18 AWG lead wires, located at the bottom of the case</p>
Input Signal	Displacer Sizes
<p>Type: Liquid level or liquid-to-liquid interface</p> <p>Level Change Required for Full Change in State of Output: 5.0 to 305 mm / 0.2 to 12 in.</p> <p>Dynamic differential gap for the level in the vessel depends on factors such as valve sizing, actuator speed, molecular weight, pressure, and temperature of process fluids, input flow rate, and vessel size.</p>	<ul style="list-style-type: none"> ■ 48 X 305 mm, 541 cm³ / 17/8 X 12 in., 33 in³ ■ 76 X 152 mm, 688 cm³ / 3 X 6 in., 42 in³
Specific Gravity Limits	Maximum Displacer Insertion Length ⁽²⁾ , Horizontal or Vertical
<p>Minimum SG: 0.15</p> <p>Maximum SG</p> <p>PVC Displacer: 1.3</p> <p>SST Displacer: 1.1</p>	<p>1-7/8 x 12 Displacer with one 6-in. extension (optional use)</p> <p>3 x 6 Displacer with one 3-in. extension (optional use)</p>
Switch Contact Electrical Rating	Displacer Material and Maximum Mechanical Sensor Working Pressure ⁽³⁾
<p>1 amp resistive, 0.5 amp inductive / 28 VDC; contacts are not polarity sensitive</p> <p>Note: The easy-Drive™ actuator application draws 7 mA through the L2e contacts @ 5 VDC</p>	<p>PVC Displacer: Consistent with CL1500 pressure temperature ratings per ASME B16.34 up to maximum pressure of 258.5 bar / 3750 psig.</p> <p>For PED (2014/68/EU) maximum pressure limited to 200 bar / 2900 psig.</p>
Power Requirements	<p>S31603 SST Displacer: CL600 pressure temperature ratings per ASME B16.34 up to maximum pressure of 99.3 bar / 1440 psig</p> <p>Note: For slipon flange connection, maximum sensor working pressure must be consistent with the flange ratings</p>
<p>Voltage: 9 to 30 VDC</p> <p>Maximum Input Voltage Ripple: 400 mV</p> <p>Current draw:</p> <p>Less than 15 mA steady state</p> <p>Less than 500 mA peak startup or switching transient</p>	
Sensor to Vessel Connection	Operative Ambient Temperature Limits ⁽²⁾
<ul style="list-style-type: none"> ■ 2 NPT threaded or ■ NPS 2 CL150 through 1500 slip-on flange connection⁽¹⁾ 	<p>Controller: -40 to 85 °C / -40 to 185 °F</p>

-continued-

Table 1. Specifications (continued)


Operative Process Temperature Limits ⁽⁶⁾	Hazardous Area Classification
Sensor: ■ PVC Displacer: -18 to 71 °C / 0 to 160 °F ■ S31603 SST Displacer: -40 to 204 °C / -40 to 400 °F	Switch Only Refer to to GH04148 instruction manual (D104234X012) for switch information cCSAus Explosion-proof Class I Division 1, Groups ABCD Dust Ignition-proof Class II Division 1 2, Groups EFG Single Seal ⁽⁴⁾ ATEX  II 2 GD Flameproof Ex d IIC T5 (Ta ≤ at 85 °C) / T6 (Ta ≤ at 78 °C) Dust Ex tb IIIC T92 °C / T85 °C Db IP6X 1 A Max IECEx Flameproof Ex d IIC T5 (Ta ≤ at 85 °C) / T6 (Ta ≤ at 78 °C) Dust Ex tb IIIC T92°C / T85 °C Db IP6X 1 A Max Ingress Protection Rating per IEC 60529: IP66 Refer to D104234X012 for Special Conditions of Safe Use
Construction Materials	
Controller Case and Cover: Marine grade aluminum Switch: Aluminum 6061T Switch Body Internal O-ring: Fluorosilicone Rubber Span Levers: Stainless steel Springs: Stainless steel Sensor Sensor Body: LCC O-Rings: Fluorocarbon Pivot Assembly: Stainless steel Displacer: ■ Polyvinylchloride (PVC) or ■ S31603 SST Sensor Spring: Stainless steel	Canadian Registration (CRN) Refer to the L2 CRN which is deemed applicable to the L2e
	Dimensions
	Refer to Figure 3
<p>NOTE: Specialized instrument terms are defined in ANSI/ISA Standard 51.1 - Process Instrument Terminology.</p> <ol style="list-style-type: none"> 1. Converting from a threaded NPT connection to a flange connection is to be done by the end-user. Refer to Supplement: Converting a Threaded NPT Connection to a Flange Connection (D103277X012), available at Fisher.com or from your Emerson sales office. 2. Maximum span setting with 1-7/8 x 12 in. horizontal displacer plus 6 in. extension is not recommended due to potentially insufficient zero adjustment. 3. The pressure and temperature limits in this document and any applicable code limitations should not be exceeded. 4. Electronic switch pressure rating is based on maximum pressure at sensor. Controller housing vent is designed to drop maximum process pressure to xxx psig at switch. 	

Figure 2. Electric Level Loop Solutions

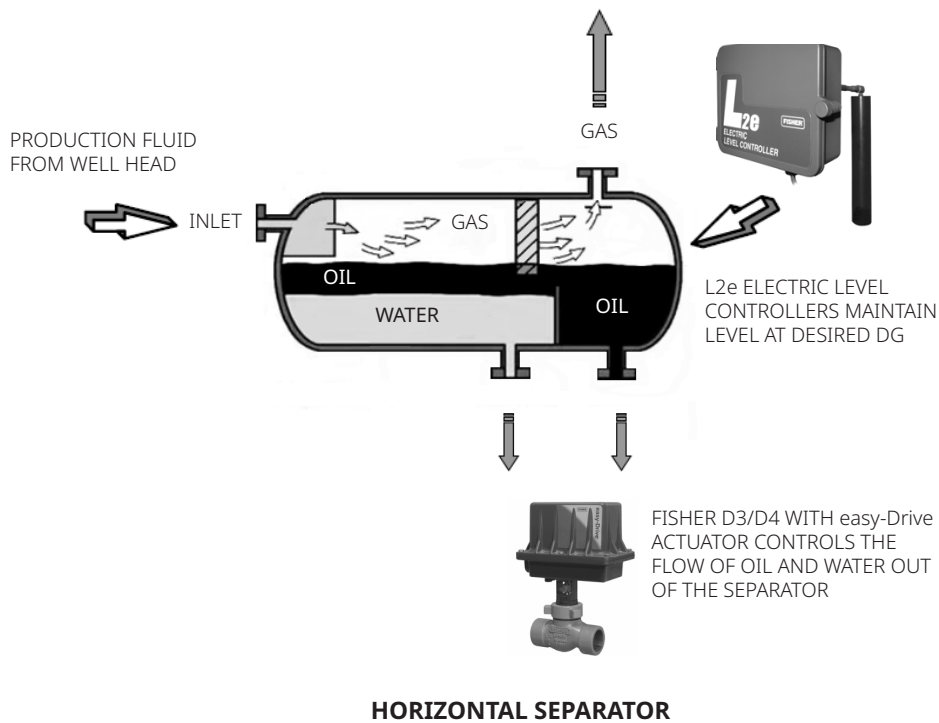
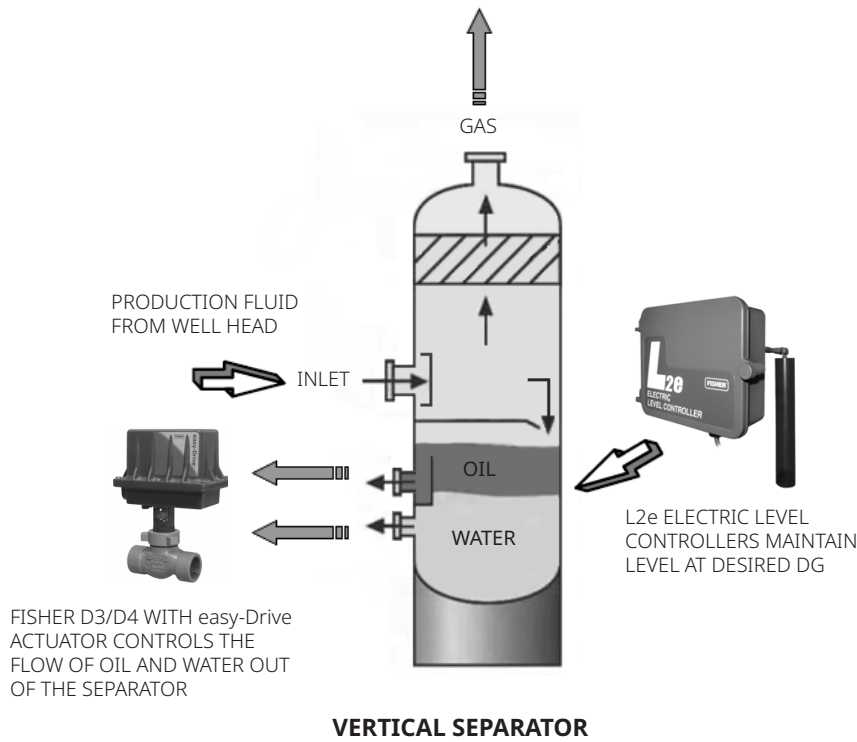
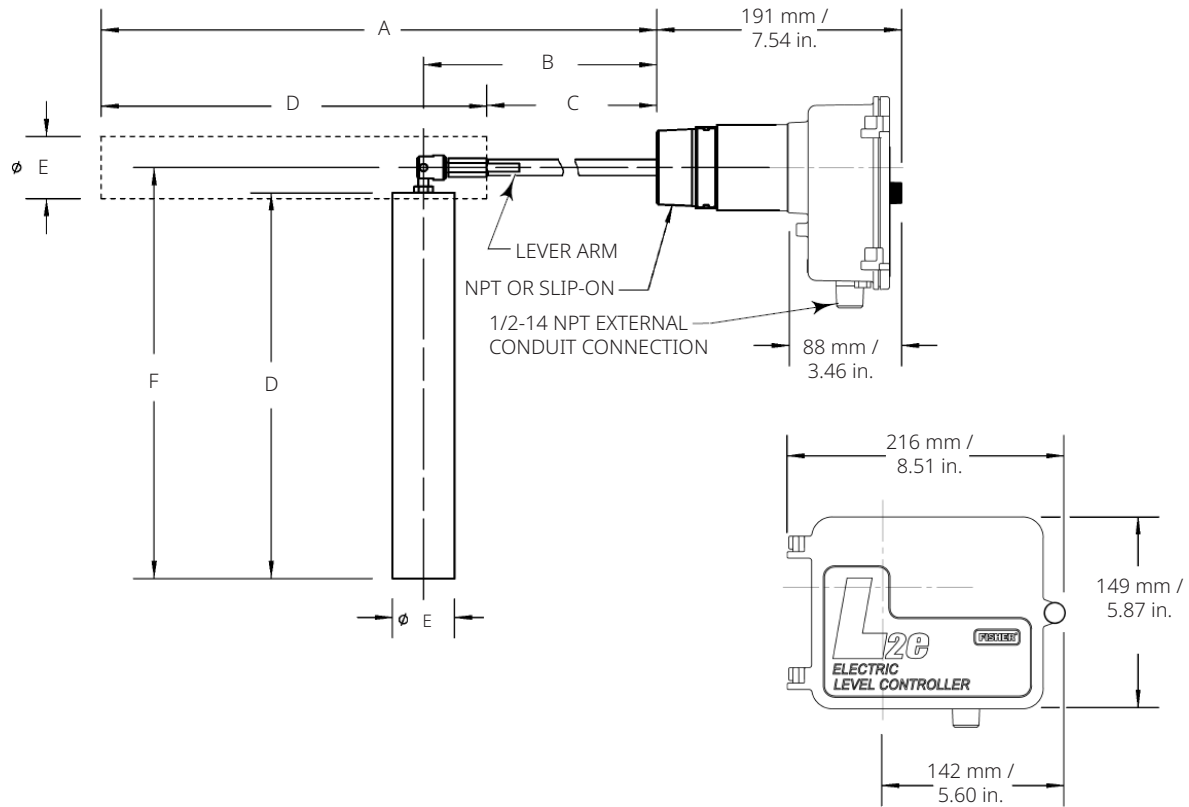


Figure 3. Dimensions



Sensor Configuration with Optional Extensions	A	B	C	D	E	F
	mm / in.					
1-7/8 x 12 PVC Displacer with one 6-in. Extension	589 / 23.19	335 / 13.19	287 / 11.31	302 / 11.88	48 / 1.88	318 / 12.50
3 x 6 PVC Displacer with one 3-in. Extension	363.4 / 14.31	258.7 / 10.19	211 / 8.31	152.4 / 6.00	76.2 / 3.00	168.1 / 6.62

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