

Fisher™ L2

Liquid Level Controller



Fisher L2 and L2 Snap level controllers are part of the rugged L2 series of liquid level controllers. They use a displacer type sensor to detect liquid level or the interface of two liquids of different specific gravities. These controllers are ideal for controlling level on gas separators and scrubbers. The reliability of the L2 design makes it well suited for liquid level applications in natural gas production, compression, and processing. The device delivers a pneumatic output signal to a control/dump valve. The sensor uses a threaded 2 NPT or an NPS 2 CL150 through 1500 slip-on flange connection to the vessel.

Features

- **More Reliable Control**— Two-stage proportional relay with integral action provides more dependable liquid level control.
- **Snap-Acting or Throttling Control**— One standard controller available as either throttling or snap-acting.
- **Vibration Resistant Sensor Dynamics**— O-ring friction and process pressure sensitivity are minimal. Performance stays constant with process pressure changes and controller remains vibration resistant.
- **NACE Service Ready**— Standard construction uses materials that comply with the requirements of NACE MR0175-2002.
- **Field-Configurable Vertical or Horizontal Displacer**— Displacer may be adjusted in the field for vertical or horizontal operation without additional parts.
- **Field-Reversible Output**— The controller can be adjusted in the field for direct or reverse action without additional parts. The controller also has adjustable gain sensitivity.
- **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.
- **Vent-Away Case**— The ability to pipe away exhaust permits using natural gas as the operating medium.
- **Easy Maintenance**— Both the controller and the sensor can be easily disassembled to inspect the process seals and for maintenance.

Figure 1. Fisher L2 Liquid Level Controller






Table 1. Specifications

Available Configurations			Supply Pressure Requirements
Controllers: Snap-acting or throttling Sensor: Displacer-type liquid level sensor for mounting to side of tank. Displacer travel is transmitted to controller by pivotal movement of displacer rod			Throttling and On/Off Controller Throttling: 1.4 bar / 20 psig for 0.2 to 1.0 bar / 3 to 15 psig output signal and 2.4 bar / 35 psig for 0.4 to 2.0 bar / 6 to 30 psig output signal On/Off: Any desired pressure between 1.4 and 3.4 bar/ 20 and 50 psig Snap-Acting Controller: Any desired pressure between 1.4 and 5.2 bar / 20 and 50 psig direct, and 1.4 and 2.4 bar / 20 and 35 psig reverse Do not use supply pressure below 1.4 bar / 20 psig
Input Signal			Supply Pressure Medium
Type: Liquid level or liquid-to-liquid interface Level Change Required for Full Change in Output Signal in a 1.0 Specific Gravity Liquid, with 1.4 bar / 20 psig Supply Pressure, Direct Action, and Standard 1-7/8 X 12-in. / 48 x 305 mm Vertical Displacer with Standard Lever Arm Length:			Air or Natural Gas
Control Mode	Minimum Span Level Change ⁽¹⁾	Maximum Span Level Change ⁽¹⁾	Steady-State Air Consumption ⁽³⁾
Throttling	102 mm / 4 in.	305 mm / 12 in.	Throttling Controller: ≤0.03 normal m ³ /hr / 1.0 scfh at 1.4 bar / 20 psig supply pressure
On/Off	127 mm / 5 in.	305 mm / 12 in.	Snap-Acting Controller: ≤0.03 normal m ³ /hr / 1.0 scfh at 1.4 bar / 20 psig supply pressure or ≤0.04 normal m ³ /hr / 1.5 scfh at 2.4 bar / 35 psig supply pressure in tripped condition; air consumption increases during trip
Snap-acting	13 mm / 0.5 in.	20 mm / 0.8 in.	
Minimum Specific Gravity ⁽²⁾			Sensor to Vessel Connection
Minimum specific gravity, or specific gravity differential for interface applications Throttling Controllers: 0.4 On/Off Controllers: 0.45 Snap-Acting Controllers: 0.1			■ 2 NPT threaded or ■ NPS 2 CL150 through 1500 slip-on flange connection ⁽⁴⁾
Output Signal			Controller Connections
Pneumatic ■ on/off or ■ proportional pressure signal Ranges Throttling: ■ 0.2 to 1.0 bar / 3 to 15 psig or ■ 0.4 to 2.0 bar / 6 to 30 psig On/Off: 0 (off) or full supply pressure (on) Action: Field-reversible between direct (increasing level increases output signal) and reverse (increasing level decreases output signal)			Supply: 1/4 NPT internal located on the bottom of the case Output: 1/4 NPT internal located on the top of the case Case Vent: 1/4 NPT internal with vent screen assembly located on the back of the case
			Standard Displacer Size
			48 x 305 mm, 541 cm ³ / 1-7/8 x 12 in., 33 in ³

-continued-

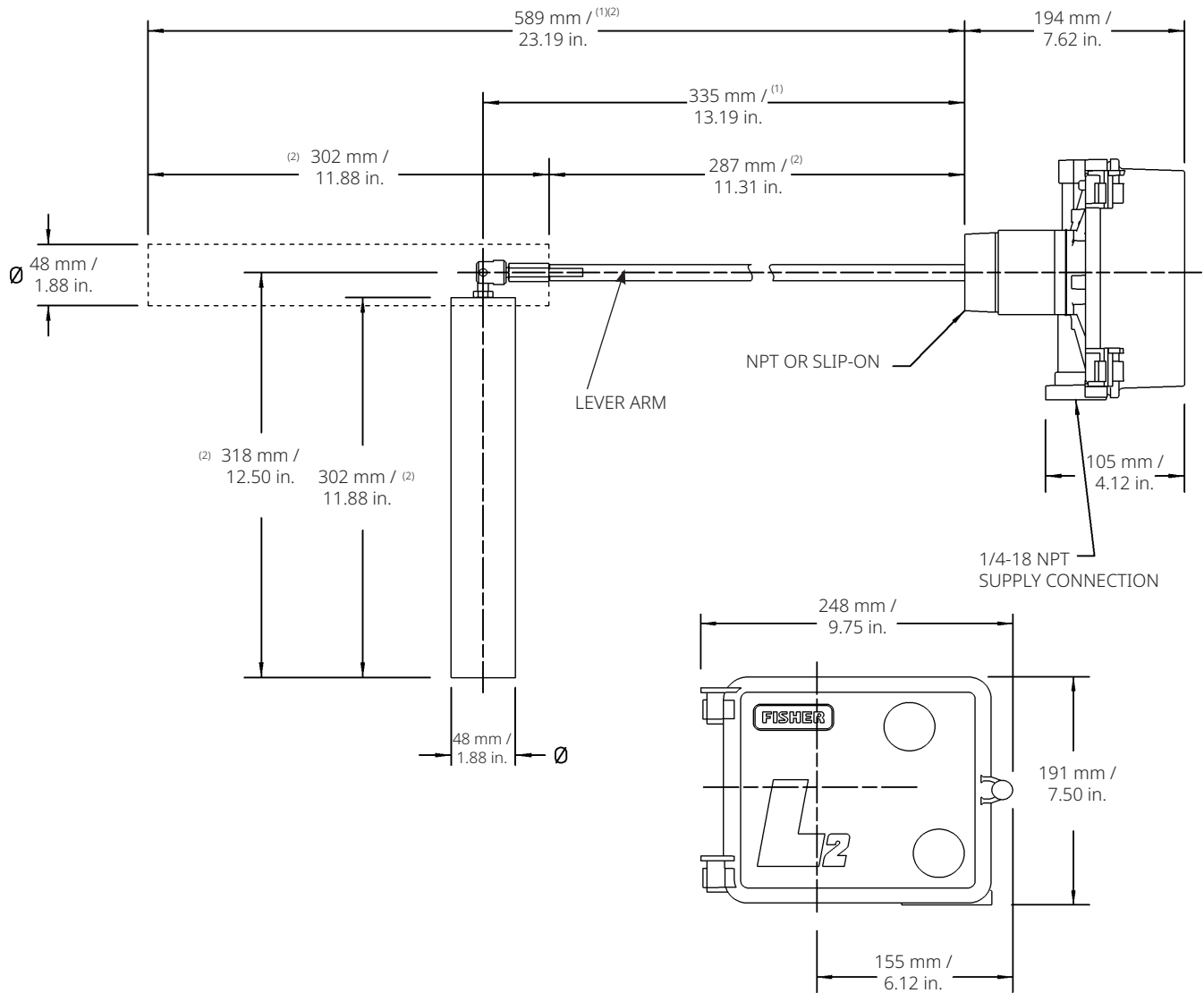
Table 1. Specifications (continued)

Maximum Displacer Insertion Length ⁽⁵⁾	Construction Materials
Standard lever arm length plus one 6-in. extension, horizontal or vertical	<p>Controller</p> <p>Case and Cover: Marine grade aluminum</p> <p>Relay Body: Thermoplastic</p> <p>Relay Trim: Stainless steel, nitrile</p> <p>Span Levers: Stainless steel</p> <p>Sensor</p> <p>Sensor Body: LCC</p> <p>O-Rings: Fluorocarbon</p> <p>Pivot Assembly: Stainless steel</p> <p>Displacer: ■ Polyvinylchloride (PVC) or ■ S31603 SST</p> <p>Sensor Spring: Stainless steel</p>
Displacer Material and Maximum Sensor Working Pressure ⁽⁶⁾	
<p>PVC Displacer: Consistent with CL1500 pressure temperature ratings per ASME B16.34 up to maximum pressure of 258.5 bar / 3750 psig. For PED (2014/68/EU) maximum pressure limited to 200 bar / 2900 psig</p> <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 slip-on flange connection, maximum sensor working pressure must be consistent with the flange ratings</p>	
Displacer Material and Sensor Temperature Limits ⁽⁶⁾	Dimensions
<p>PVC Displacer: -18 to 71 °C / 0 to 160 °F</p> <p>S31603 SST Displacer: -40 to 204 °C / -40 to 400 °F</p>	Refer to Figure 2
Operative Ambient Temperature Limits ⁽⁶⁾	Hazardous Area Classification
Controller: -29 to 71 °C / -20 to 160 °F	<p>Complies with the requirements of ATEX Group II Category 2 Gas and Dust</p> <p>  II 2 G D Ex h IIC Tx Gb EX h IIIC Tx Db</p> <p>Maximum surface temperature (Tx) depends on operating conditions</p> <p>Gas: T6 Dust: T71</p> <p>Meets Customs Union technical regulation TP TC 012/2011 for Groups II/III Category 2 equipment</p> <p> II Gb c T*X III Db c T*X </p>
Standard Supply, and Output Pressure Gauge Indications	
Triple scale gauges in 0 to 60 psig / 0 to 0.4 MPa / 0 to 4.0 bar	

NOTE: Specialized instrument terms are defined in ANSI/ISA Standard 51.1 - Process Instrument Terminology.

- Any deviation from the standard construction described in the input signal specification above requires special displacer sizing considerations. Contact your [Emerson sales office](#) for information.
- Minimum specific gravity values apply to both horizontal and vertical displacers with standard lever arm length (see dimension in Figure 2).
- Normal m3/hr-Normal cubic meters per hour (0 °C and 1.01325 bar, absolute). Scfh-Standard cubic feet per hour (60 °F and 14.7 psia).
- Converting from a threaded NPT connection to a flange connection is to be done by the end-user. Refer to IM Supplement: Converting a Threaded NPT Connection to a Flange Connection (D103277X012), available at Fisher.com or from your Emerson sales office.
- Standard lever arm length. See Figure 2.
- The pressure and temperature limits in this document and any applicable code limitations should not be exceeded.

Figure 2. Dimensions



Notes:

1. Dimensions include one standard 152 mm / 6 in. extension. Contact your Emerson sales office for optional extension lengths.
2. Dimensions valid with standard displacers only.

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