

# Fisher™ FIELDVUE™ L2t

Liquid Level Controller



The Fisher FIELDVUE L2t level controller is part of the rugged L2 series of liquid level controllers. It uses a displacer type sensor to detect liquid level or the interface of two liquids of different specific gravities. This controller is ideal for level on gas separators and scrubber applications. The L2t design is an environmentally conscious solution with zero emissions. Standard construction uses materials that comply with the requirements of NACE MR0175-2002.

The device delivers a 4 to 20 mA output signal. The sensor uses a threaded 2 NPT or an NPS 2 CL150 through CL1500 slip-on flange connection to the vessel.

## Features

- Improved Reliability

Moving to throttling control reduces equipment wear and creates smooth and continuous control by eliminating the full-stroke cycling associated with discrete control.

Use of the L2t reduces equipment inventory requirements as the level controller is adaptable for both throttling and on/off applications.

- User-friendly Setup

The L2t controller features simple push-button calibration and setup, with no tools required.

Field upgrades to the L2t require no mechanical changes to vessels equipped with standard 2 NPT connections.

- Environmentally Friendly

This zero-emission solution exceeds regulatory requirements and mitigates environmental concerns when used with electric actuation.

**Figure 1. Fisher L2t Liquid Level Controller**



**Table 1. Specifications - Housing and Sensor**

Available Configuration	Maximum Displacer Insertion Length <sup>(4)</sup>
Sensor: Displacer-type liquid level sensor for mounting to side of tank. Displacer travel is transmitted to controller by pivotal movement of displacer rod.	Standard lever arm length plus one 6-in. extension, horizontal or vertical
Input Signal	Displacer Material and Maximum Sensor Working Pressure <sup>(5)</sup>
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 either vertical displacer with standard lever arm length Default: 2.8 in., user configurable if other range desired Minimum Span Level Change 102 mm / 4 in. <sup>(1)</sup> Maximum Span Level Change 305 mm / 12 in. <sup>(1)</sup>	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 S31603 SST Displacer: CL600 pressure temperature ratings per ASME B16.34 up to maximum pressure of 99.3 bar / 1440 psig Note: For slip-on flange connection, maximum sensor working pressure must be consistent with the flange ratings.
Minimum Specific Gravity <sup>(2)</sup>	Displacer Material and Sensor Temperature Limits <sup>(5)</sup>
0.4	PVC Displacer: -18 to 71 °C / 0 to 160 °F S31603 SST Displacer: -40 to 204 °C / -40 to 400 °F
Output Signal	Operating Ambient Temperature Limits <sup>(5)</sup>
4 to 20 mA and two discrete switches Reverse acting via configuration or calibration	-29 to 71 °C / -20 to 160 °F
Sensor to Vessel Connection	Construction Materials
■ 2 NPT threaded or ■ NPS 2 CL150 through 1500 slip-on flange connection <sup>(3)</sup>	Controller Case and Cover: Aluminum Sensor Sensor Body: LCC O-rings: Fluorocarbon Pivot Assembly: Stainless steel Displacer: ■ Polyvinylchloride (PVC) or ■ S31603 SST Spring: Stainless steel
Controller Connection	
Case Vent: 1/4 in. with vent screen assembly located on the back of the case	
Displacer Size	Dimensions
■ 48 x 305 mm, 541 cm <sup>3</sup> / 1-7/8 x 12 in., 33 in. <sup>3</sup>	Refer to Figure 2

**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 dimensions in Figure 2).
- Converting from a threaded NPT connection to a flange connection is to be done by the end-user. Refer to Converting a Threaded NPT Connection to a Flange Connection instruction Manual Supplement (D103277X012), available at Emerson.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.

**Table 2. Specifications - Transmitter**

Input Signal Source	Travel Limit Trip Points
Hall Effect Sensor and magnet array	Two
Transmitter Output Signal	Reference Accuracy
<p><b>Analog</b></p> <p>4 to 20 mA DC</p> <p>High saturation: 20.5 mA</p> <p>Low saturation: 3.8 mA</p> <p>High alarm <sup>(1)</sup>: &gt; 21.0 mA</p> <p>Low Alarm <sup>(1)</sup>: &lt; 3.6 mA</p> <p><b>Digital</b></p> <p>HART 1200 Baud Frequency Shift Keyed (FSK)</p> <p>HART Version 7</p> <p>HART impedance requirements must be met to enable communication. Total shunt impedance across the master device connections (excluding the master and transmitter impedance) must be between 230 and 600 ohms.</p> <p>HART receive impedance:</p> <p style="padding-left: 20px;">Rx: 28.06k ohms</p> <p style="padding-left: 20px;">Cx: 5.84 nF</p> <p><b>Output Current Limit:</b> 30 mA DC maximum</p>	<p>±1% of output span. Includes combined effects of hysteresis, linearity and deadband.</p> <p>Limit Switch: 2% of travel span.</p>
	Sensor Refresh Rate
	100 ms / 10 Hz
	Repeatability
	±0.25% of span
Recommended Power Supply	Electromagnetic Compatibility
<p>24 to 30 V DC; 25 mA</p> <p>Instrument has reverse polarity protection.</p> <p>A minimum compliance voltage of 17.75 V DC (due to HART impedance requirement) is required to guarantee HART communication</p>	Meets EN61326-1:2013 and EN61326-3-2:2008
Integral Limit Switch	General Electrical Safety - Environmental Conditions
<p>Two isolated solid state limit switches, configurable throughout the calibrated travel range or actuated from a device alert</p> <p>Off State: 0 mA (nominal)</p> <p>On State: up to 1 A</p> <p>Supply Voltage: 8 to 30 V DC <sup>(2)</sup></p>	<p>Use: Indoor and Outdoor</p> <p>Altitude: up to 2000 m</p> <p>Relative Humidity: 9.2 to 90%</p> <p>Supply Voltage Fluctuations: N/A, not connected to Mains</p> <p>Transient Overvoltage: Category I</p> <p>Pollution Degree: 4</p> <p>Wet Locations: Yes</p>

-continued-

**Table 2. Specifications - Transmitter (continued)**

Vibration Testing Method	Hazardous Area Approvals - PENDING
Tested per ISA-75.13.01-2013, tested 2 million cycles dwell at resonance for each axis	cCSAus - Intrinsically Safe, Dust Ignition-proof ATEX - Intrinsically Safe, Increased Safety "e", Dust by intrinsic safety or by enclosure IECEX - Intrinsically Safe, Increased Safety "e", Dust by intrinsic safety or by enclosure
Hazardous Area Approvals and Other Classifications	Electrical Housing
cCSAus - Flameproof (Ex d), Explosion-proof, Class I Div. 1, Class I Div. 2 (Canada & United States) ATEX - Flameproof IECEX - Flameproof CML – Certification Management Limited (Japan) ECAS - Emirates Conformity Assessment Scheme (UAE) NEPSI - National Supervision and Inspection Centre for Explosion Protection and Safety of Instrumentation (China) SANS - South Africa National Standards Taiwan - Ministry of Labor Proof of Registration	cCSAus - Type 4X, IP66 ATEX - IP66 IECEX - P66  <b>Construction Materials</b> Housing and Cover: Aluminum Alloy Elastomers: Silicone Pipe Plug: Steel with NCF coating
<p><b>NOTE:</b> Specialized instrument terms are defined in ANSI/ISA Standard 51.1 - Process Instrument Terminology.</p> <ol style="list-style-type: none"> <li>1. Only one High/Low alarm available in a given configuration. Alarms are NAMUR NE43 compliant.</li> <li>2. In the event of power loss the switches will go to the open state.</li> </ol>	

**Table 3. Product Selection**

<b>Base Instrument Model</b>	
L2t	Liquid Level Sensor
<b>Displacer Material</b>	
A	PVC Displacer
B	S31603 SST Displacer
<b>Displacer Size</b>	
A	48 x 305 mm, 541 cm <sup>3</sup> / 1-7/8 x 12 in., 33 in. <sup>3</sup>
<b>Sensor Connection</b>	
A	Threaded 2 NPT
B	NPS 2 CL50 through 1500 slip-on flange connection
<b>Hazardous Area Approval Agency/Location/Protection</b>	
A	EMC compliance to CE, IEC 61010 and IEC 61000-4
B	CCSAus Flameproof, Explosion-proof, Class I Division 1, Class 1 Division 2 Pending: Intrinsically Safe, Dust Ignition-proof
C	IECEX Flameproof Pending: Intrinsically Safe, e, Increased Safety "e", Dust by intrinsic safety or enclosure Includes Certified Blanking Element, Includes RCM mark for import into Australia and New Zealand
D	ATEX Flameproof Pending: Intrinsically Safe, e, Increased Safety "e", Dust by intrinsic safety or enclosure
E	CML (Japan) - Flameproof
F	NEPSI (China) - Flameproof
G	ECAS (UAE) - Flameproof
H	SANS (South Africa) - Flameproof
I	Taiwan (Ministry of Labor Proof of Registration) - Flameproof



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