

Fisher™ L2sj

Low Emission Liquid Level Controller



The rugged Fisher L2sj low emission liquid level controller uses a displacer type sensor to detect liquid level. This controller features a rugged, low emission proportional relay with integral action. The device delivers a direct acting on/off pneumatic output signal to a control/dump valve.

Features

- **Designed for use with Natural Gas**— The L2sj controller is intended for use with natural gas as the pneumatic supply.
 - **Increased Revenue**— Reduced emissions result in an increase in natural gas available to the sales line.
 - **Reduced Operating Costs**— Integral action relay with rugged metal seats requires less maintenance and provides more dependable liquid level control, which can improve uptime.
 - **Reduced Carbon Footprint**— A low-bleed relay helps to conserve natural gas to reduce greenhouse gas emissions. The relay provides a steady state consumption rate that is less than the 6 scfh requirement set for the oil and gas industry by the US Environmental Protection Agency (New Source Performance Standards Subpart OOOO, EPA-HQ-QAR-2010-0505).
 - **NACE Service Ready**— Sensor and vessel connection complies with the requirements of NACE MR0175-2002.
 - **Ease of Field Setup**— Simplified dry and wet setup and adjustments. Setup and Adjustments illustrated inside L2sj cover as shown in Figure 1.
- **Field-Configurable Vertical or Horizontal Displacer**— Displacer may be adjusted in the field for vertical or horizontal operation without additional parts.
 - **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.
 - **Low Supply Pressure**— Can operate down to 0.34 bar / 5 psi instrument supply pressure for coal seam applications.

Figure 1. Fisher L2sj Low Emission Liquid Level Controller



Table 1. Specifications

Available Configuration	Sensor to Vessel Connection
Controller: On/Off / Direct Acting Sensor: Displacer-type liquid level sensor for mounting to side of vessel	■ 2 NPT threaded or ■ NPS 2 CL150 through 1500 slip-on flange connection
Input Signal	Controller Connections
Liquid Level (gas over liquid)	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
Liquid Level Span ⁽¹⁾	Displacer Size
See Table 2	■ 48 x 305 mm, 541 cm ³ / 1-7/8 x 12 in., 33 in ³ ⁽³⁾ or ■ 76 x 152 mm, 688 cm ³ / 3 x 6 in., 42 in ³ ⁽⁴⁾
Minimum Specific Gravity	Displacer Insertion Length
3 x 6 in. displacer: 0.6 1-7/8 x 12 in. displacer: 0.75	See Figure 3 and 4
Output Signal	Maximum Sensor Working Pressure ⁽⁵⁾
Control: Pneumatic On/Off Range: 0 psi (off) or full supply pressure (on) Action: Direct acting (increasing level increases output signal)	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
Supply Pressure Requirements	Sensor Temperature Limits ⁽⁶⁾
Any desired pressure between 0.34 and 2.4 bar / 5 and 35 psig	Note: For slip-on flange connection, maximum sensor working pressure must be consistent with the flange rating
Supply Medium	Sensor Temperature Limits ⁽⁶⁾
Air or Natural Gas	PVC Displacer: -18 to 71 °C / 0 to 160 °F S31603 SST Displacer: -40 to 204 °C / -40 to 400 °F
Steady-State Air Consumption ⁽²⁾	
< 0.01 normal m ³ /hr / < 0.3 scfh at 1.4 bar / 20 psig supply pressure	

-continued-

Table 1. Specifications (continued)






Operative Ambient Temperature Limits ⁽⁶⁾	Hazardous Area Classification
Controller: -29 to 71 °C / -20 to 160 °F	Complies with the requirements of ATEX Group II Category 2 Gas and Dust
Standard Supply, and Output Pressure Gauge Indications	  II 2 G D Ex h IIC Tx Gb EX h IIIC Tx Db
Triple scale gauges in 0 to 60 psig / 0 to 0.4 MPa / 0 to 4.0 bar	Maximum surface temperature (Tx) depends on operating conditions Gas: T6 Dust: T71 Meets Customs Union technical regulation TP TC 012/2011 for Groups II/III Category 2 equipment  II Gb c T*X   III Db c T*X
<p>NOTE: Specialized instrument terms are defined in ANSI/ISA Standard 51.1 - Process Instrument Terminology.</p> <ol style="list-style-type: none"> 1. Level change required for full change in output signal. 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). 3. Supplied with one 6 in. extension. 4. Supplied with one 3 in. extension. 5. The pressure and temperature limits in this document and any applicable code limitations should not be exceeded. 	

Table 2. Liquid Level Span

SENSOR	SPECIFIC GRAVITY OF LIQUID		
	0.6	0.75	1
Vertical Displacer	Span mm / in.		
1-7/8 x 12 in. Displacer with 6 in. extension	n/a	135 / 5.3	102 / 4.0
3 x 6 in. Displacer 3 in. extension	57 / 2.25	46 / 1.8	35 / 1.35
Horizontal Displacer			
3 x 6 in. Displacer with 3 in. extension	22 / 0.85	17 / 0.67	13 / 0.5
Notes 1. Level change required for full change in output signal. 2. Span adjuster set for maximum sensitivity. 3. 1.4 bar / 20 psig supply pressure. 4. For vessels with fast dump cycles, actual liquid span will be larger			

Figure 2. Setup and Adjustments Label (Inside Fisher L2sj Cover)

SETUP AND ADJUSTMENTS

DRY DISPLACER SETUP

1. SET SUPPLY PRESSURE TO 25 PSIG.
2. SET SPAN ADJUSTOR TO THE MAXIMUM SENSITIVITY.
3. TURN SPRING ADJUSTOR TO TIGHTEN THE SPRING TO IT'S MAXIMUM EXTENSION.
IF THE OUTPUT PRESSURE RISES, LOOSEN THE SPRING UNTIL THE OUTPUT PRESSURE EXHAUSTS TO 0 PSIG.
4. CHECK THE SETUP:
 - A. PRESS DOWN FIRMLY ON THE DISPLACER ROD END AND OBSERVE THE AMOUNT OF TIME IT TAKES FOR THE OUTPUT PRESSURE TO REACH SUPPLY PRESSURE.
 - B. SLOWLY RELEASE THE DISPLACER ROD AND OBSERVE THE AMOUNT OF TIME IT TAKES FOR THE OUTPUT PRESSURE TO EXHAUST TO 0 PSIG.
 - C. THE TIME OBSERVED IN STEP A SHOULD EQUAL THE TIME IN STEP B. IF NOT, LOOSEN THE SPRING FOR QUICKER EXHAUST ACTION.

L2sj

LOW EMISSION
LEVEL CONTROLLER

DISPLACER ROD END

SPAN ADJUSTOR

MAXIMUM SENSITIVITY

SPRING ADJUSTOR

RELAY POST

MAXIMUM EXTENSION

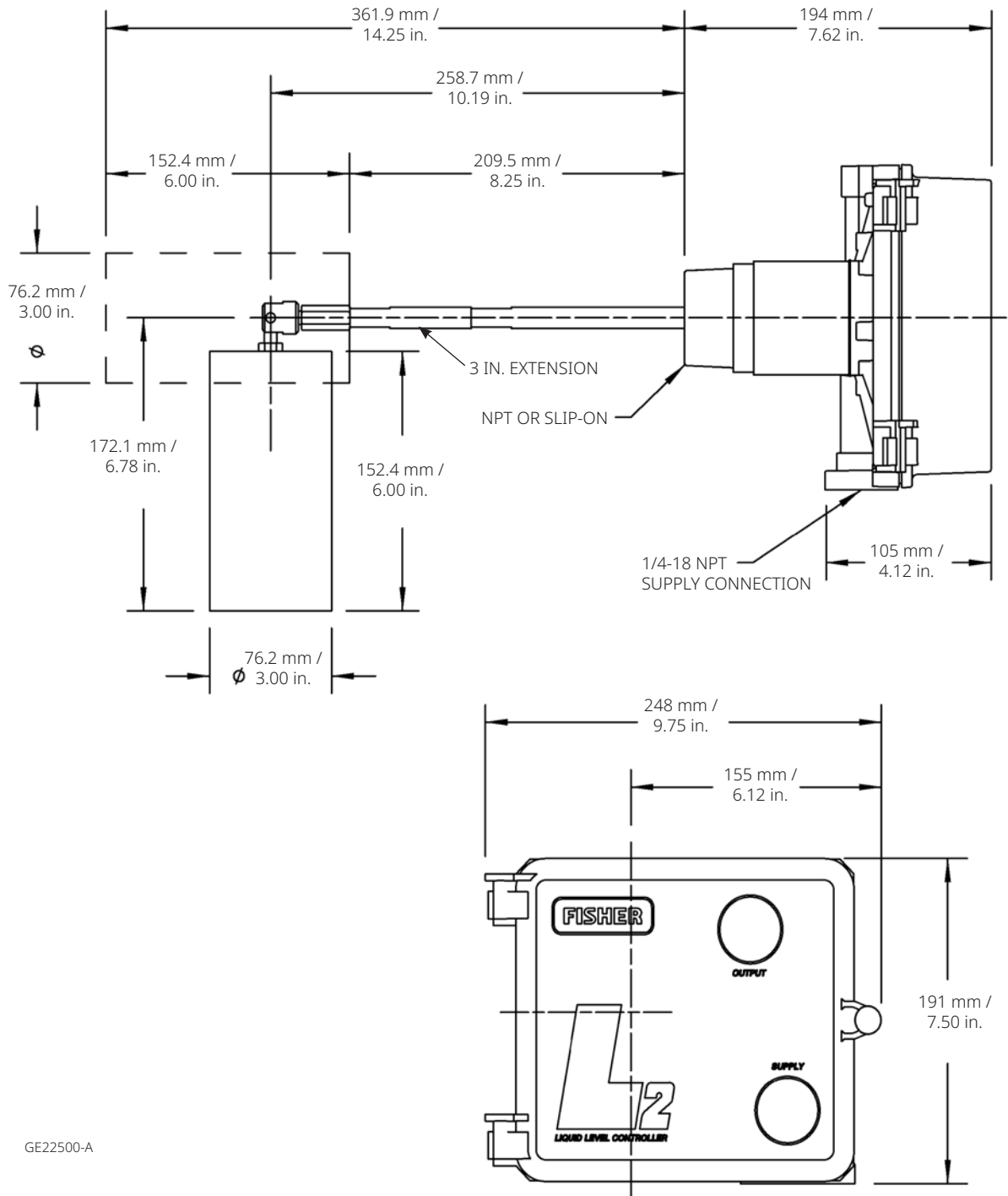
WET DISPLACER ADJUSTMENTS

- TO RAISE THE POSITION WHERE THE L2sj CATCHES A RISING LEVEL, LOOSEN THE SPRING.
- TO LOWER THE POSITION WHERE THE L2sj CATCHES A RISING LEVEL, TIGHTEN THE SPRING.
IF THE SPRING IS AT IT'S MAXIMUM EXTENSION, EXTEND THE RELAY POST SLIGHTLY.
- TO INCREASE THE LEVEL SPAN, DECREASE THE SENSITIVITY BY SLIDING THE SPAN ADJUSTOR TO THE RIGHT.

NOTE: ALWAYS OBSERVE ONE OR MORE DUMP CYCLES TO VERIFY L2sj SETTINGS AND ADJUSTMENTS.

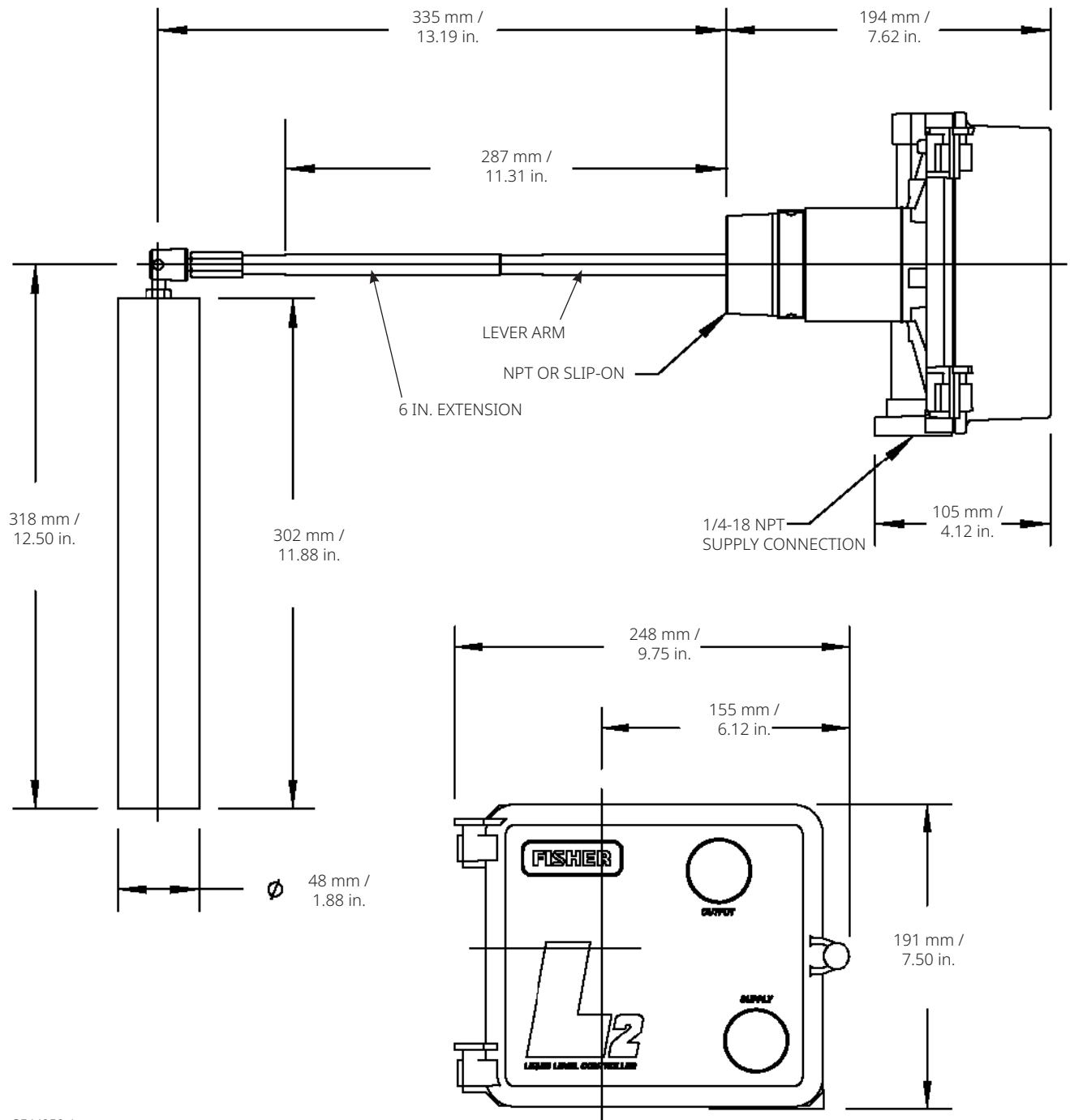
GE16844

Figure 3. Dimensions: 76 x 152 mm / 3 x 6 in. with 76 mm / 3 in. Extension



GE22500-A

Figure 4. 48 x 305 mm / 1-7/8 x 12 In. with 152 mm / 6 in. Extension



GE44250-A

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