

Model LL-V

Vertical Entry Liquid Level Sensor



DESCRIPTION

The Model LL-V Liquid Level Sensor is designed for vertical entry into a tank or stilling well for complete submersion in the fluid. The all-welded stainless steel housing and pressure sensing diaphragm provides corrosion resistance to most fluids. The electrical cable exits through a 1/2-14 NPT threaded conduit fitting which allows the attachment of a variety of tubing or flex-

ible conduit. The electrical cable is vulcanized to a welded-on stainless steel ferrel. The four conductor electrical cable has an atmospheric vent tube inside the cable jacket and is attached to the "true gage" all-welded chamber inside the sensor to provide an atmospheric zero reference.

FEATURES

- True gage design
- Conduit connection
- Submerible
- All-welded stainless steel construction
- 0.1 % accuracy

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PERFORMANCE SPECIFICATIONS

Characteristic	Measure
Pressure ranges	0 mm to 508 mm [0 in to 20 in], 0 mm to 762 mm [0 in to 30 in], 0 mm to 1270 mm [0 in to 50 in], 0 mm to 2540 mm [0 in to 100 in], 0 mm to 3048 mm [0 in to 120 in], 0 mm to 3810 mm [0 in to 150 in], 0 mm to 5080 mm [0 in to 200 in], 0 mm to 7620 mm [0 in to 300 in], 0 mm to 12700 mm [0 in to 500 in] of water column 1, 2, 5, 10, 15, 25, 50 psig
Accuracy ³	±0.1 % full scale (static error band)
Output	0 Vdc to 5 Vdc or 4 mA to 20 mA
Resolution	Infinite

ENVIRONMENTAL SPECIFICATIONS

Characteristic	Measure
Temperature, operating	-18 °C to 82 °C [0 °F to 180 °F]
Temperature, compensated	16 °C to 71 °C [60 °F to 160 °F]
Temperature effect, zero	±0.0025 % full scale/°F
Temperature effect, span	±0.0025 % reading/°F

MECHANICAL SPECIFICATIONS

Characteristic	Measure
Media	Liquids compatible with stainless steel
Overload, safe	150 %
Overload, burst	400 %
Pressure port	Screened flush diaphragm
Dead volume	Not applicable
Wetted parts material	Stainless steel
Weight	0.40 kg [14 oz]
Case material	All welded stainless steel

RANGE CODES

Range Code	Available ranges
WC	20 in H ₂ O
WE	30 in H ₂ O
WG	50 in H ₂ O
WI	100 in H ₂ O
WK	120 in H ₂ O
WM	150 in H ₂ O
WP	200 in H ₂ O
WR	300 in H ₂ O
WS	500 in H ₂ O
AP	1 psig
AR	2 psig
AT	5 psig
AV	10 psig
BJ	15 psig
BL	25 psig
BN	50 psig

OPTION CODES

Range Code	Many range/option combinations are available in our quick-ship and fast-track manufacture programs. Please see http://sensing.honeywell.com/TMsensor-ship for updated listings.
Pressure ranges	0 mm to 508 mm [0 in to 20 in], 0 mm to 762 mm [0 in to 30 in], 0 mm to 1270 mm [0 in to 50 in], 0 mm to 2540 mm [0 in to 100 in], 0 mm to 3048 mm [0 in to 120 in], 0 mm to 3810 mm [0 in to 150 in], 0 mm to 5080 mm [0 in to 200 in], 0 mm to 7620 mm [0 in to 300 in], 0 mm to 12700 mm [0 in to 500 in] of water column 1, 2, 5, 10, 15, 25, 50 psig
Temperature compensation	1a. 16 °C to 71 °C [60 °F to 160 °F]
Internal amplifiers	2c. 0 Vdc to 5 Vdc output 2j. 4 mA to 20 mA, three-wire output 2k. 4 mA to 20 mA, two-wire output ⁷
Internal amplifier enhancements	3d. Remote buffered shunt calibration
Pressure ports	Flush

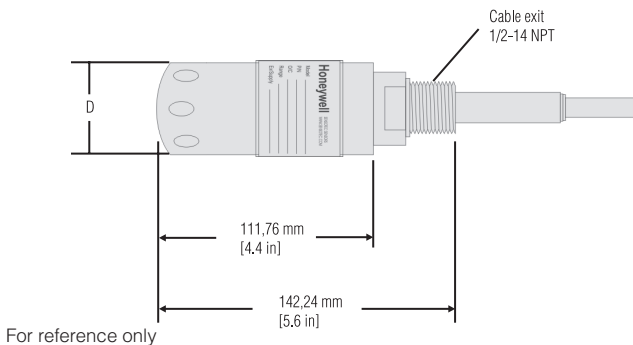
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INTERNAL AMPLIFIERS

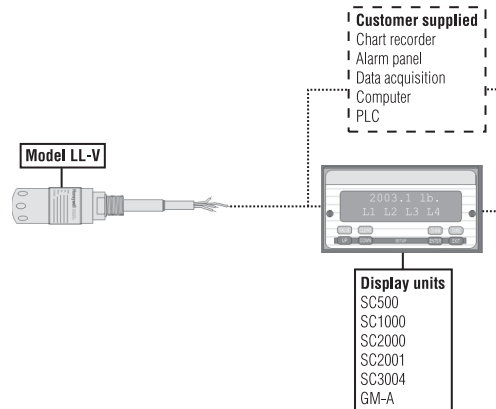
Amplifier specifications	Voltage output: Option 2c	Current three-wire: Option 2j	Current two-wire: Option 2k
Output signal	0 Vdc to 5 Vdc @ 45 mA	4 mA to 20 mA	4 mA to 20 mA
Input power (voltage)	11 Vdc to 28 Vdc	22 Vdc to 32 Vdc ⁶	9 Vdc to 28 Vdc
Input power (current)	40 mA	65 mA	4 mA to 28 mA
Frequency response	3000 Hz	2500 Hz	2500 Hz
Power supply rejection	60 dB	60 dB	60 dB
Operating temperature	-18 °C to 82 °C [0 °F to 180 °F]	-18 °C to 82 °C [0 °F to 180 °F]	-18 °C to 85 °C [0 °F to 185 °F]
Reverse voltage protection	Yes	Yes	Yes
Short circuit protection	Momentary	Yes	Yes
Wiring code: cable ^{2,4,5}	R (+) Supply Bl* Output common/ G* Supply return W (+) Output B Shunt Cal 1 Br Shunt Cal 2	R (+) Supply Bl* Output common/ G* Supply return W (+) Output B Shunt Cal 1 Br Shunt Cal 2	R (+) Supply Bl (+) Output W Case ground

* Black and green wires are internally connected.

MOUNTING DIMENSIONS AND CHARACTERISTICS



TYPICAL SYSTEM DIAGRAM



SPECIAL REQUIREMENTS (CONSULT FACTORY)

Have a special requirement? New case pressure, different cable lengths, electrical connectors, or materials? Consult our factory by calling +1 614-850-5000 (800-848-6564). Customization is key to our test and measurement business. Special outputs, wiring codes, and calibrations are all standard to us.

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NOTES

1. Brown cable is internally connected.
2. Interconnecting shunt cal. 1 with shunt cal. 2 terminal provides 50 % (unamplified units), 75 % (4 mA to 20 mA three-wire units), or 80 % (voltage amp. units) of full scale output for quick calibration. Shunt calibration comes standard with internal amplifier options 2c, 2j.
3. Static error band is the recommended performance specification. The static error band is calculated as the best fit straight line through zero, including the effects of non-linearity, hysteresis and non-repeatability.
4. G=Green; B=Blue; W=White; Bl=Black; Br=Brown; Y=Yellow; R=Red; O=Orange. Color specifying cable and number or letter specifying connector.
5. No mating connector necessary with cable option.
6. Input power (voltage) for internal amplifier options 2j depends on load resistance.
7. 5000 ohm bridge required.

Warranty. Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

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Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

For more information about Sensing and Control products, visit www.honeywell.com/sensing or call +1-815-235-6847
Email inquiries to info.sc@honeywell.com

WARNING **PERSONAL INJURY**

- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

WARNING **MISUSE OF DOCUMENTATION**

- The information presented in this catalogue is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

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