

SL-900 SERIES

SPECIFICATIONS

- **Multi point discrete level switch**
- **Ideal solution for the detection and measurement of ultra-pure chemical fluids**
- **Provides single/ multiple discrete point levels with a very high degree of precision**

The Model SL-900 Series Ultrasonic Micromasurement System is an ideal solution for the detection and measurement of ultra-pure chemical fluids in the semiconductor industries. Measuring a fluid level accurately and reliably in the chemical vapor deposition process is of the utmost importance to the semiconductor wafer fabrication process. The Measurement Specialties SL-900 Series provides single or multiple discrete point levels with a very high degree of precision. The SL-900 Series ultrasonic system is well suited for high viscosity liquids such as DMAH, titanium precursors and copper precursors.

FEATURES

- 316 L stainless steel machined sensor body
- Sensor material has an electropolished finish ($R_a = 25 \mu\text{in}$ – minimum)
- Miniature sensor size reduces liquid volume displacement
- Works with the following chemicals independent of dielectric, viscosity, color, density and opacity of chemical fluids: DMAH, TAETO, CVD, TDEAT, CUTMUS, TEOS, DCE, TCA
- High pressure vessel application up to 250 PSIG (1724 kPa) (consult factory for higher pressure applications)
- Accuracy of each discrete point level is ± 2 mm
- Repeatability of ± 1 mm is typical
- Single point low level as close as 1/4" (6 mm) from bottom of vessel for 5/8" tube and 5/16" for 1/2" tube

APPLICATIONS

- Semiconductor industries
- Pharmaceutical industries
- High pressure vessels

PERFORMANCE SPECIFICATIONS

Parameter	Typical Value
Accuracy	±2 mm
Repeatability	±1 mm typical
Input Power	24 VDC, 115 VAC/230 VAC, 50/60 Hz (optional)
Output	Relay – 0.5 A, dry contacts, (NO)
Sink	50 mA max

Parameter	Typical Value
Housing	NEMA 1
Mounting	3/4" VCR®, 1/2" VCR® standard
Sensor Material	316 L stainless steel (standard)
Operating Pressure	Up to 250 PSIG (1724 kPa)
Temperature	Sensor: -20 to 200 °F (-29 to 93 °C) Electronics: -20 to 170 °F (-29 to 77 °C)

MECHANICAL DIMENSIONS in inches [mm]

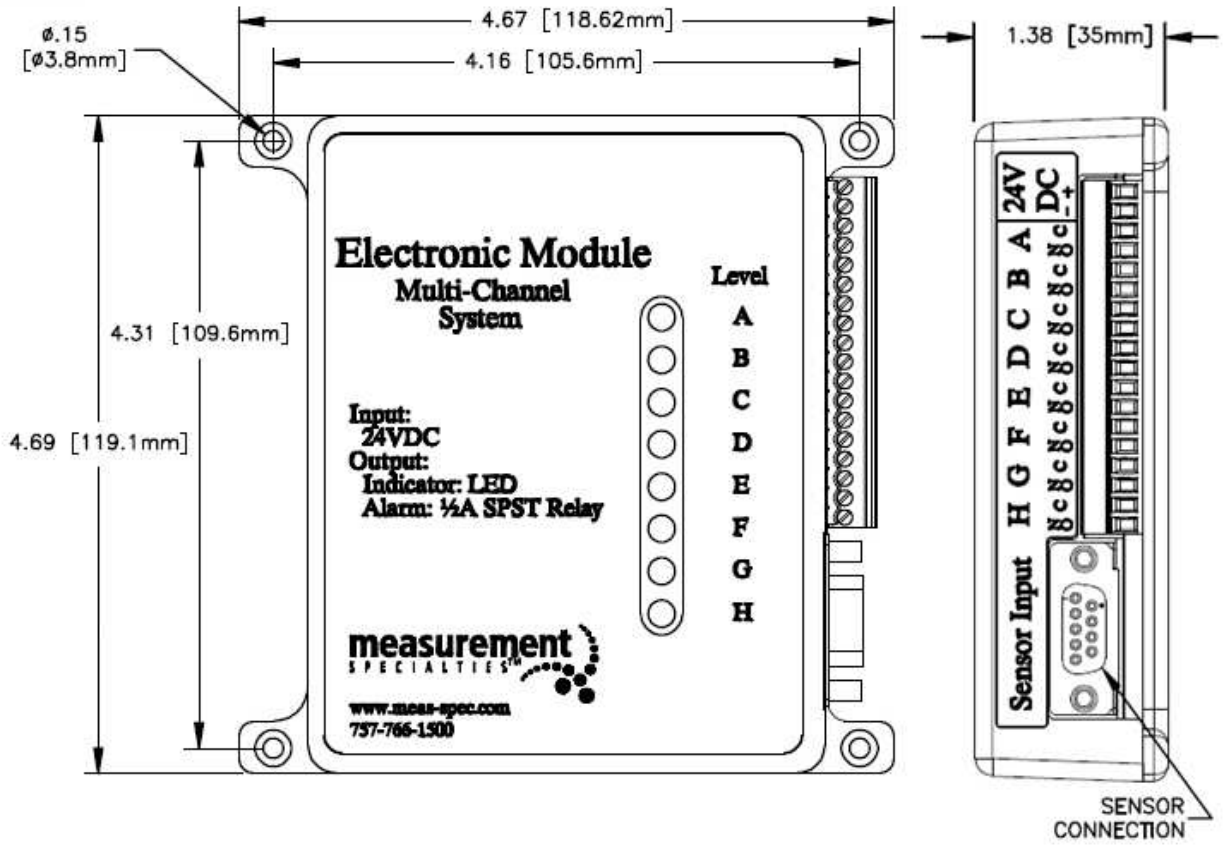


Figure 1: 8 Point Electronics

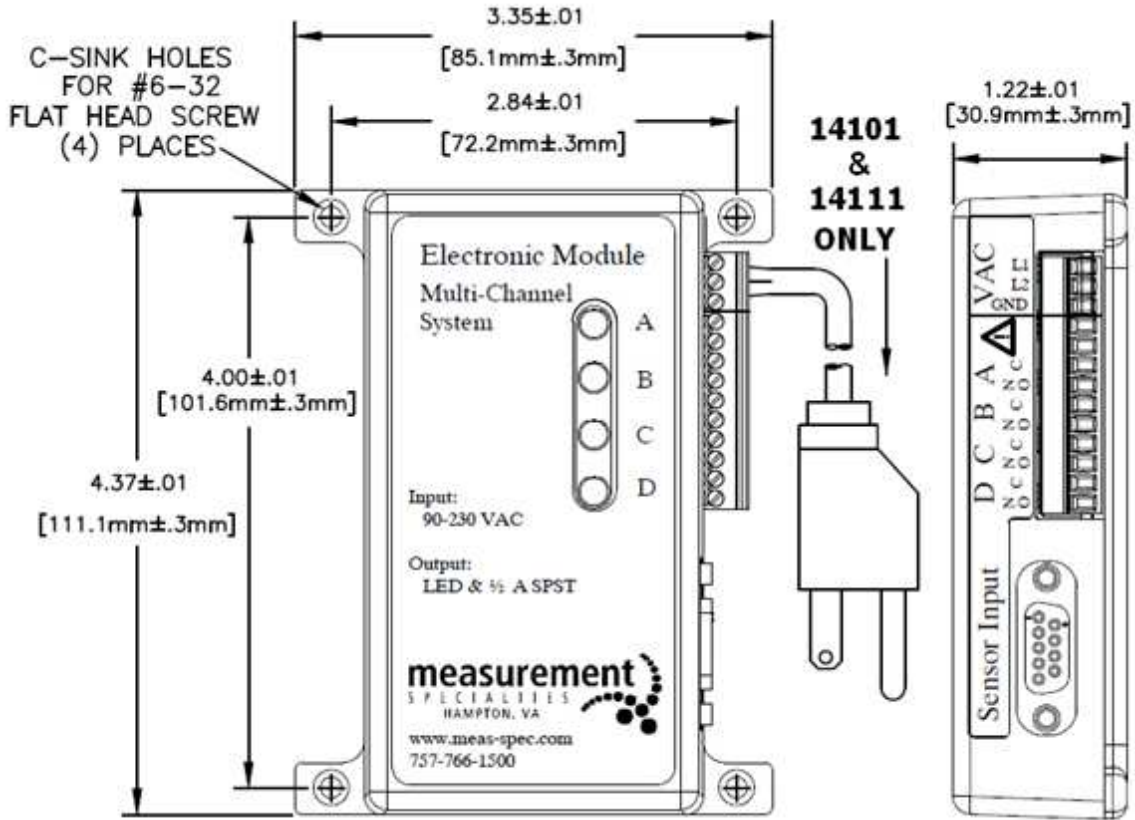


Figure 2: 4 Point Electronics (Note – 115 VAC version shown)

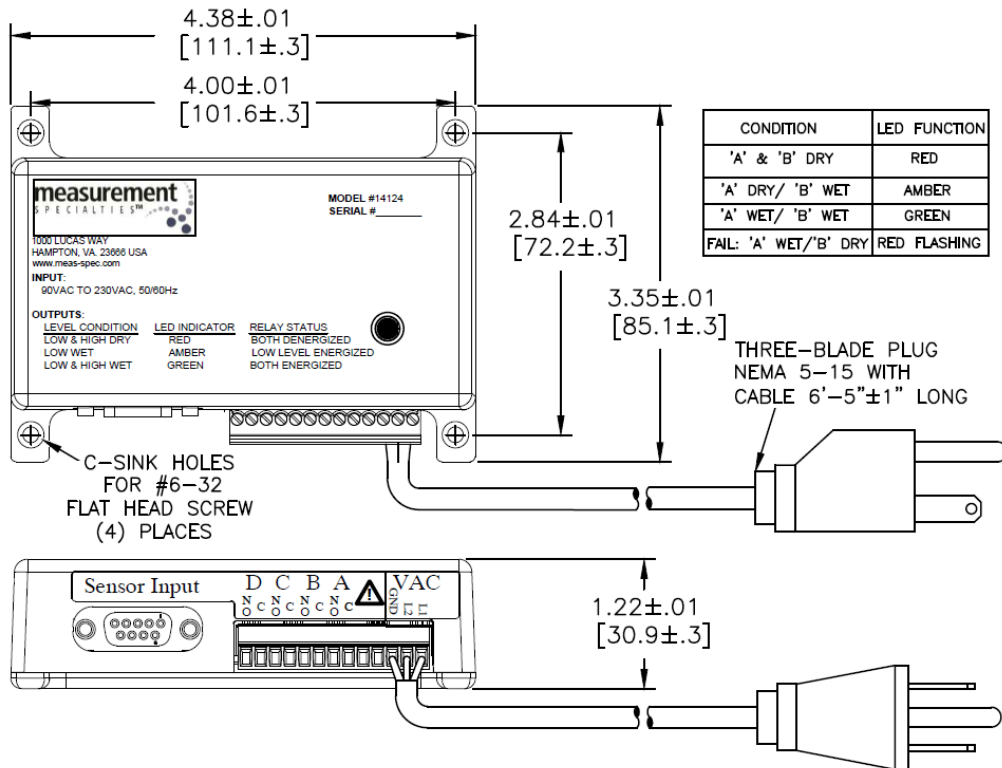


Figure 3: 2 Point Electronics (Note – only available in 115 VAC version)

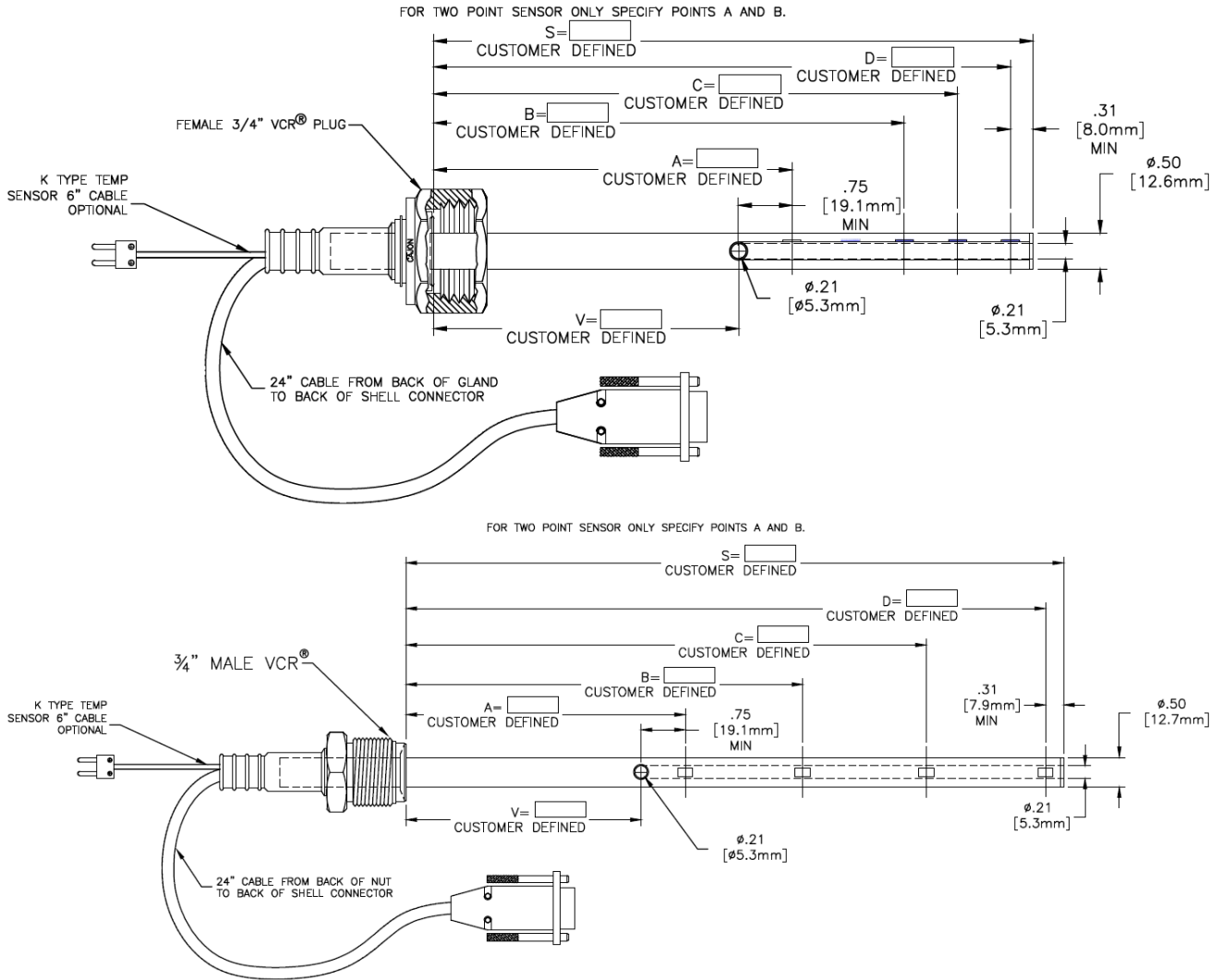


Figure 4: SL-900 series with 1/2" OD tube. The top drawing shows a sensor with a 3/4" female VCR® fitting while the bottom drawing shows it with a 3/4" male VCR® fitting. Alternatively, 1/2" VCR® fittings are also available with the 1/2" tubes.

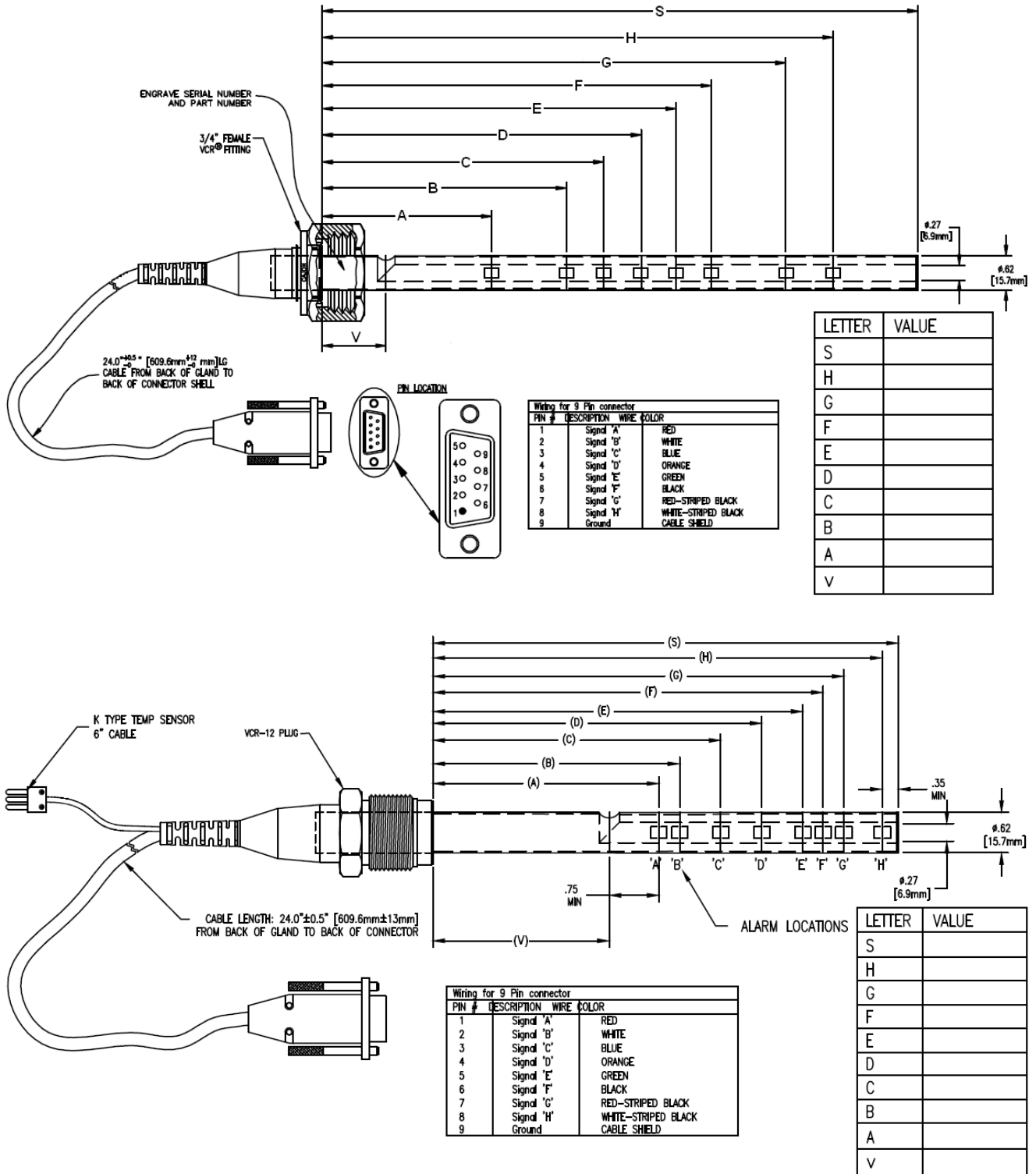


Figure 5: SL-900 series with 5/8" OD tube. The top drawing shows the sensor with a 3/4" female VCR® fitting while the bottom drawing shows it with a 3/4" male VCR® fitting.

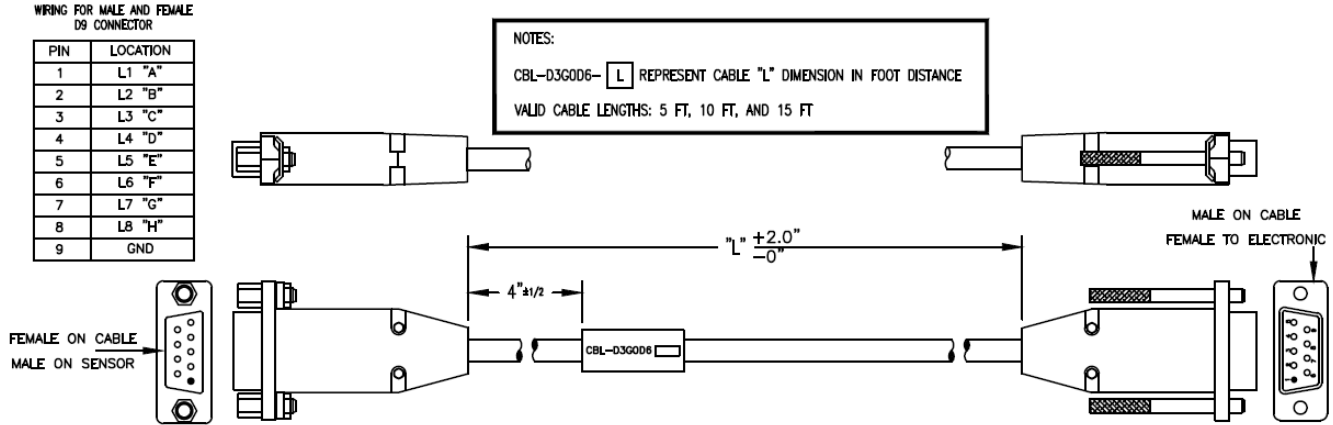


Figure 6: 8 Point extension cable

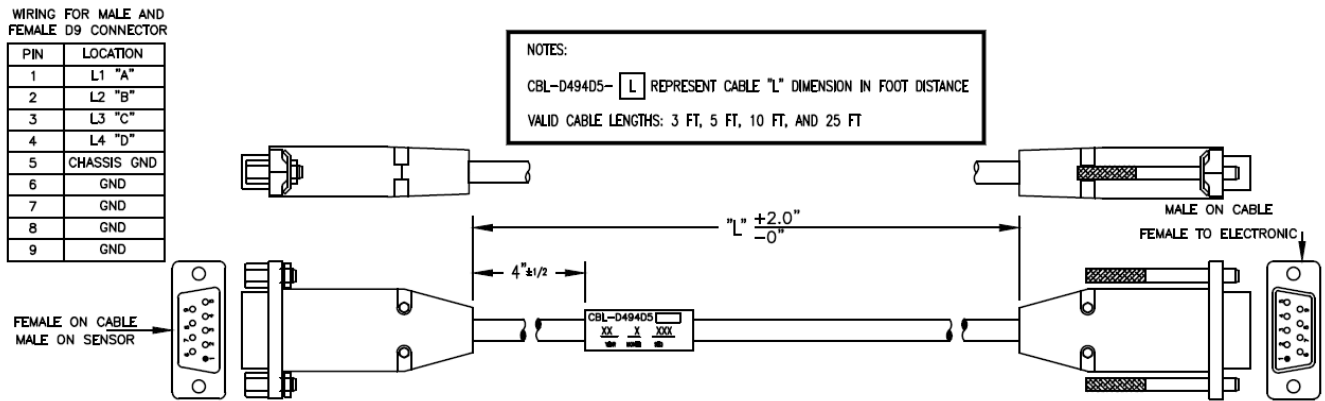


Figure 7: 2 or 4 Point extension cable

OPERATION

The sensor is mounted on the top of the vessel through VCR® metal gasket face seal fitting for single/multiple discrete point level, which is mounted in the liquid medium. The electronics generate a continuous wave ultrasonic signal that completely illuminates the liquid sensing area. The absence of liquid in the sensing area causes the ultrasonic signal to dissipate, which the electronics sense as a “dry” condition. When liquid is present, the amplitude of the ultrasonic signal increases which the electronics sense as a “wet” condition

ORDERING INFORMATION

A. SL-900 Electronics:

Points	Input Voltage	Outputs	Part Number
2	90-230 VAC	A Single, Tri-Color LED & ½ A, N.O. Contact	14124
2-4	90-230 VAC	Four, Dual-Color LEDs & 4, ½ A, N.O. Contacts	14101
2-4	24 VDC	Four, Dual-Color LEDs & 4, ½ A, N.O. Contacts	14102
2-4	90-230 VAC	Four, Dual-Color LEDs & 4, ½ A, N.C. Contacts (Cable Fault)	14111
2-4	24 VDC	Four, Dual-Color LEDs & 4, ½ A, N.C. Contacts (Cable Fault)	14112
5-8	24 VDC	Eight, Dual-Color LEDs & 8, ½ A, N.O. Contacts	14002

All electronics are programmed with the latest revision of software for that model. All electronics are laser engraved on back with part number and serial number.

B. SL-900 Extension Cables:

Length	Number of Points	Part Number
3 feet	2-4	CBL-D494D5-03
5 feet	2-4	CBL-D494D5-05
10 feet	2-4	CBL-D494D5-10
20 feet	2-4	CBL-D494D5-20
25 feet	2-4	CBL-D494D5-25
5 feet	5-8	CBL-D3G0D6-05
10 feet	5-8	CBL-D3G0D6-10
15 feet	5-8	CBL-D3G0D6-15
20 feet	5-8	CBL-D3G0D6-20

All cables have thumbscrews on male connector (for electronics) and standoffs on female connector (for sensor). All cables will be labeled with part number and not serialized.

C. SL-900 Sensor Options:

# Of Points	Connection	Outer Tube
2-4	1/2" male VCR® (plug)	1/2" OD
2-4	1/2" female VCR® (nut)	1/2" OD
2-4	3/4" male VCR® (plug)	1/2" OD
2-4	3/4" female VCR® (nut)	1/2" OD
2-8	3/4" male VCR® (plug)	5/8" OD
2-8	3/4" female VCR® (nut)	5/8" OD

Additional Sensor Options:

Standard sensor insertion length is 6-12 inches. Lengths of 12-24 inches are available at an additional charge. Please specify length in inches when placing an order.

Optional K-type thermocouple available for an additional charge (only with 1/2" or 5/8" OD tubes).

All sensors wired to standard 9-pin connector with standard hardware. Sensor cables are available in lengths of 6", 12", 18", and 24".

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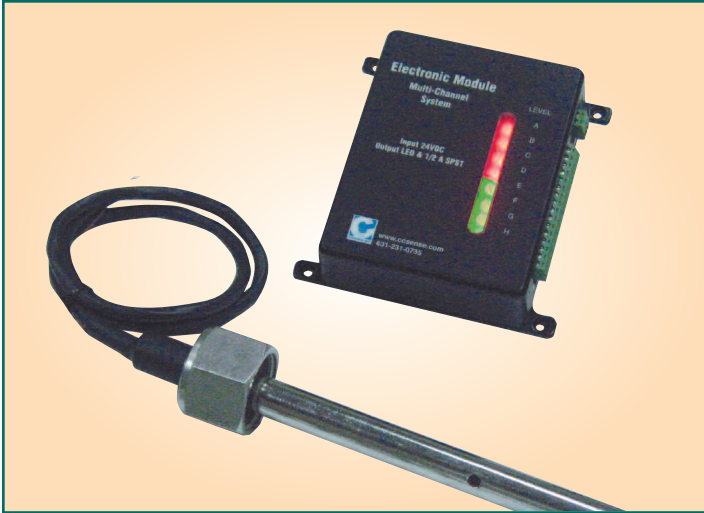
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SL-900 SERIES

Multi Points Discrete Level Switch For Semi Conductor/Pharmaceutical Industry



For Semi-Conductor/Pharmaceutical Industry



The Model SL-900 Series Ultrasonic **Micromasurement** System is an ideal solution for the detection and measurement of **ultra pure chemical fluids** in the **semiconductor** industries using **Very Small Sensor (VSS)** technology. Measuring a fluid level accurately and reliably in the **chemical vapor deposition process** is of the utmost importance to the **semiconductor wafer fabrication** process. The Cosense SL-900 Series provides **single/ multiple** discrete point levels with a very high degree of precision. The SL-900 Series ultrasonic system is well suited for **high viscosity liquids** such as **DMAH, titanium precursors and copper precursors**.

STANDARD FEATURES:

- 316LSS sensor material
- Sensor material finish 10 URA electropolished
- Miniature sensor size reduces liquid volume displacement
- Works with the following chemicals independent of dielectric, viscosity, color, density and opacity of chemical fluids: DMAH, TAETO, CVD, TDEAT, CUTMUS, TEOS, DCE, TCA
- High pressure vessel application up to 250 psig (1724 KPA) (consult factory for higher pressure application)
- Accuracy of discrete point level $\pm 1\text{mm}$
- Single point low level as close as 1/8" (3mm) from bottom of vessel

■ Consult Factory For Special OEM Applications

HOW TO ORDER SL-900 Select Individually 1, 2, 3

1	ELECTRONIC		INPUT VOLTAGE		OUTPUTS	
	P/N	Points	24VDC	115-230VAC	Relay	LEDs
	14101	4		•	•	•
	14102	4	•		•	•
	14002	8	•		•	•

2	SENSOR		MOUNTING			
	P/N	Points	3/4" Male VCR	3/4" Female VCR	1/2" Male VCR	1/2" Female VCR
	19101	4	•			
	19102	4		•		
	19103	4			•	
	19104	4				•
	19181	8	•			
	19182	8		•		

Add-K for optional K-Type temperature sensor
Example: 19101-K

3	SENSOR EXTENSION CABLES	
	Cable P/N	Sensor Extension Cable, DB9 Male to DB9 Female
	CBL-D3G0D6	-5 = 5 feet long -10 = 10 feet long

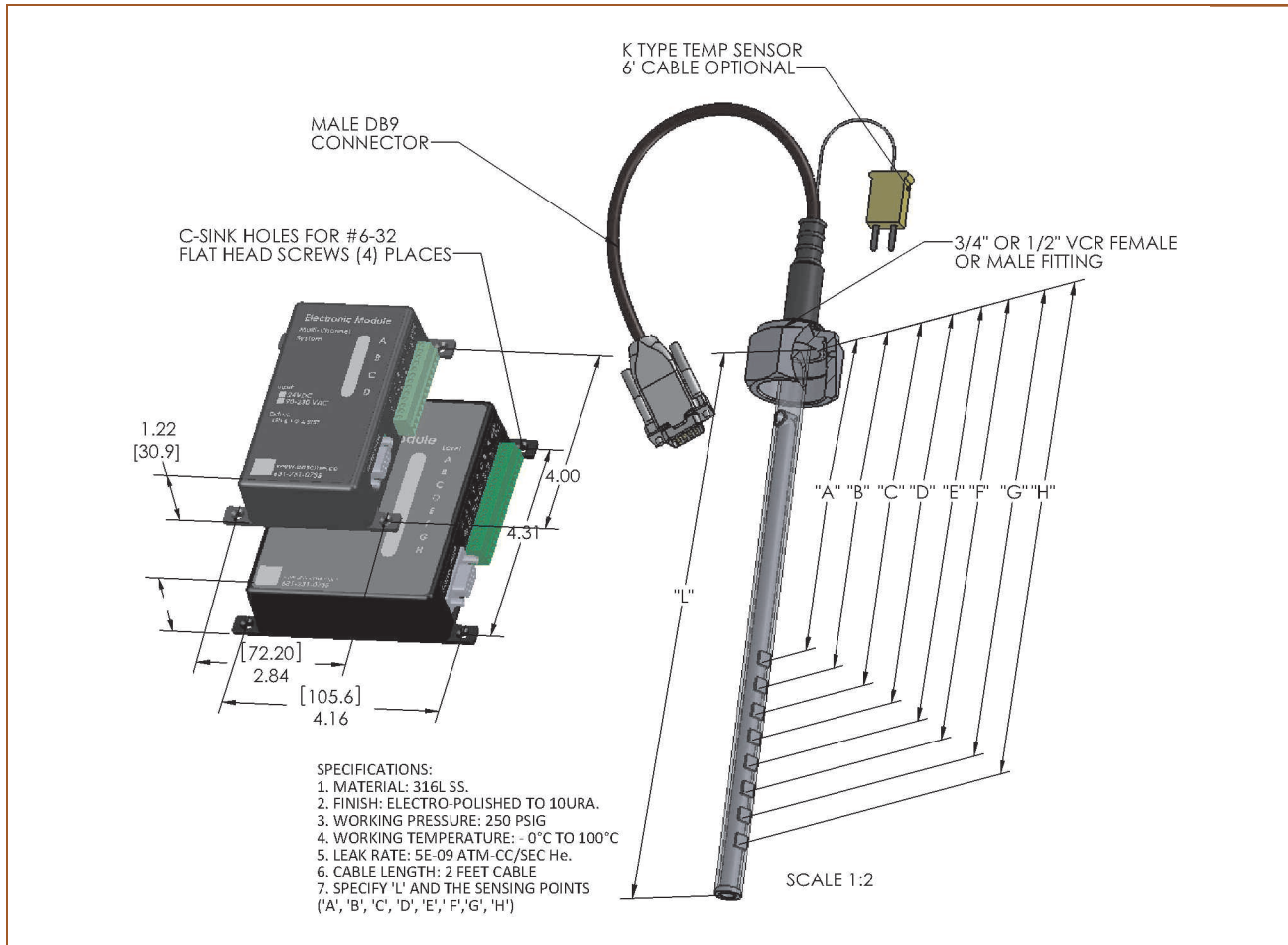
*Consult factory for other lengths

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website: www.cosense.com ■ e-mail: sales@cosense.com

SL-900 SERIES

DIMENSIONAL DRAWINGS



SPECIFICATIONS:

- Repeatability:** ±0.04" (±1 mm) (typical)
- Input Power:** 24VDC, 115VAC/230VAC, 50/60 Hz (optional)
- Output:** Relay - 0.5 amp, dry contacts, (NO., C.)
- Sink:** 50mA Max
- Sensor Material:** 316LSS (Standard)
- Temperature Range:** Sensor -20°F to +200°F (-29°C to 93°C), Electronics -20°F to +170°F (-29°C to 77°C)
- Pressure:** Operating: Up to 250 psig (1724 KPA)
- Mounting:** 3/4" VCR, 2-1/2" VCR Standard, specify (See How To Order)
- Housing:** Integral/Remote

OPERATION:

The sensor is mounted on the top of the vessel through VCR® metal gasket face seal fitting for single/multiple discrete point level, which is mounted in the liquid medium. The electronics generate a continuous wave ultrasonic signal that completely illuminates the liquid sensing area. The absence of liquid in the sensing area causes the ultrasonic signal to dissipate, which the electronics sense as a "dry" condition. When liquid is present, the amplitude of the ultrasonic signal increases which the electronics sense as a "wet" condition.

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www.cosense.com



PERFORMANCE GUARANTEE

If within 30 days of delivery the unit does not perform according to our claims and was properly installed in an application that does not exceed our stated performance specifications, the unit may be returned for full credit.

WARRANTY: Cosense equipment is warranted against intrinsic defects for a period of eighteen months from the date of shipment. Specifications to change without notice.

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