

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 ($R_a = 25 \mu\text{m}$ – 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

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CONNECT WITH A SPECIALIST

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]

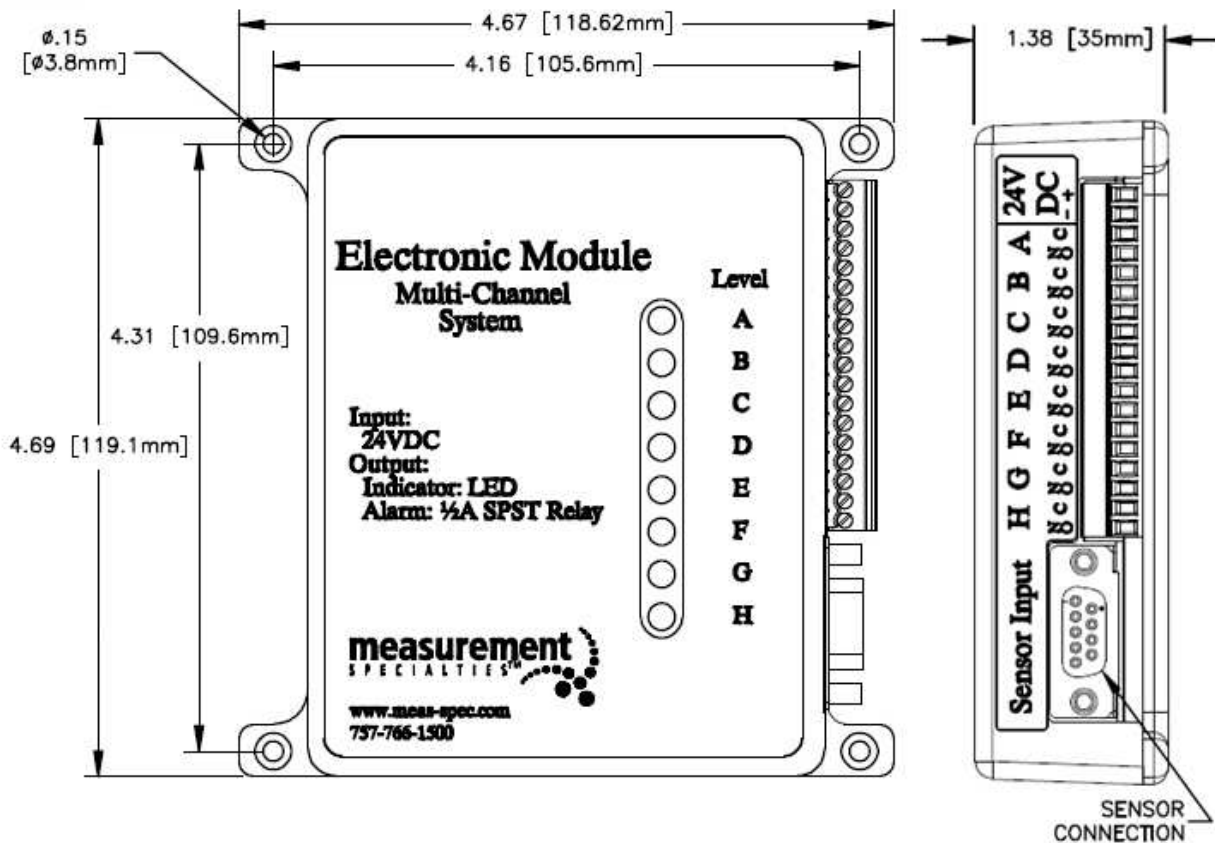


Figure 1: 8 Point Electronics

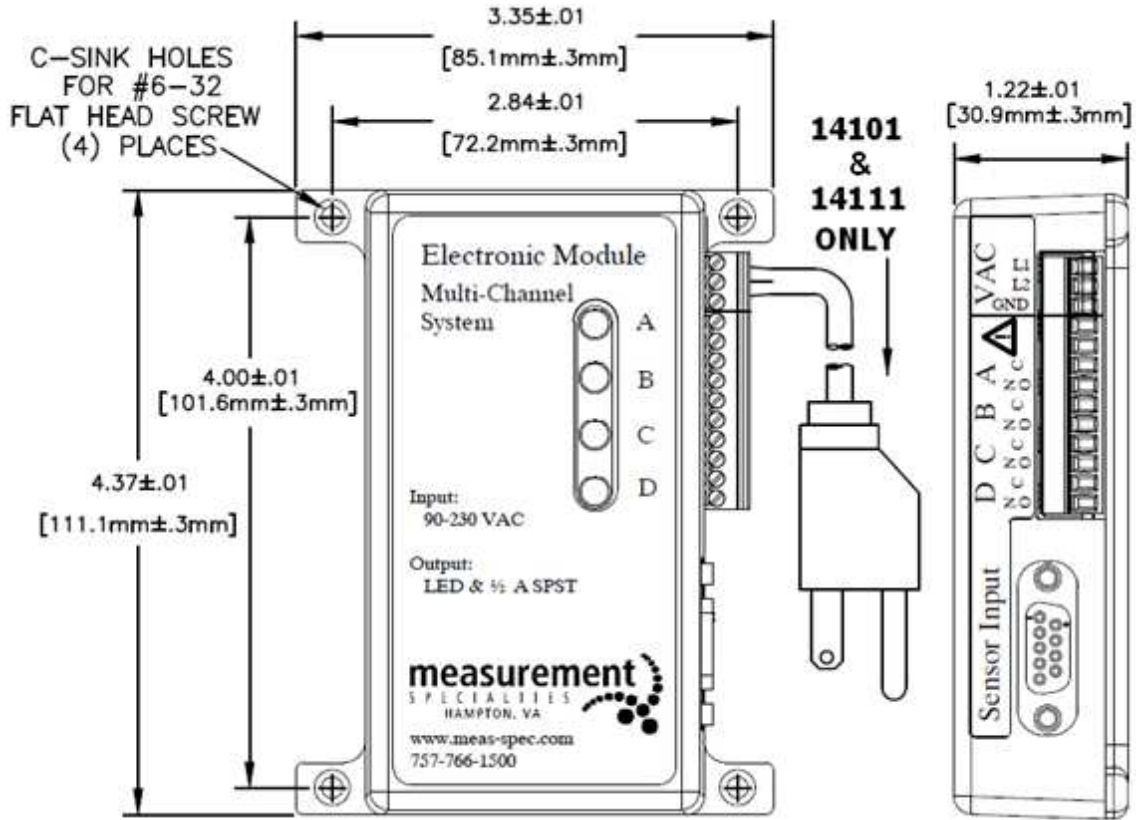


Figure 2: 4 Point Electronics (Note – 115 VAC version shown)

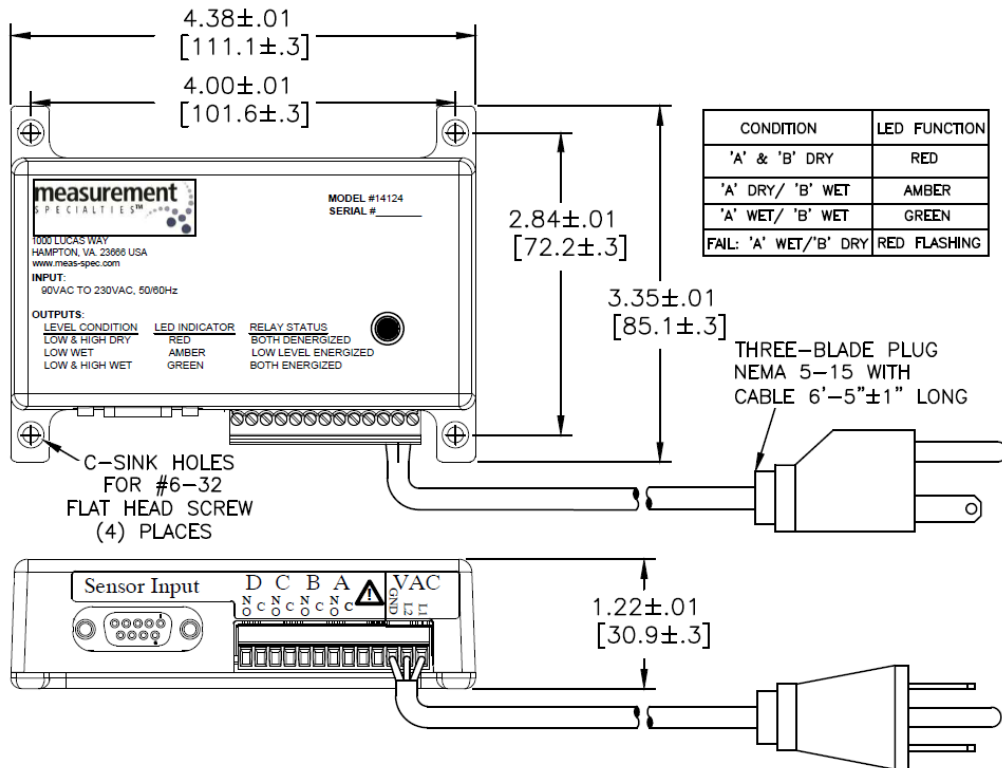


Figure 3: 2 Point Electronics (Note – only available in 115 VAC version)

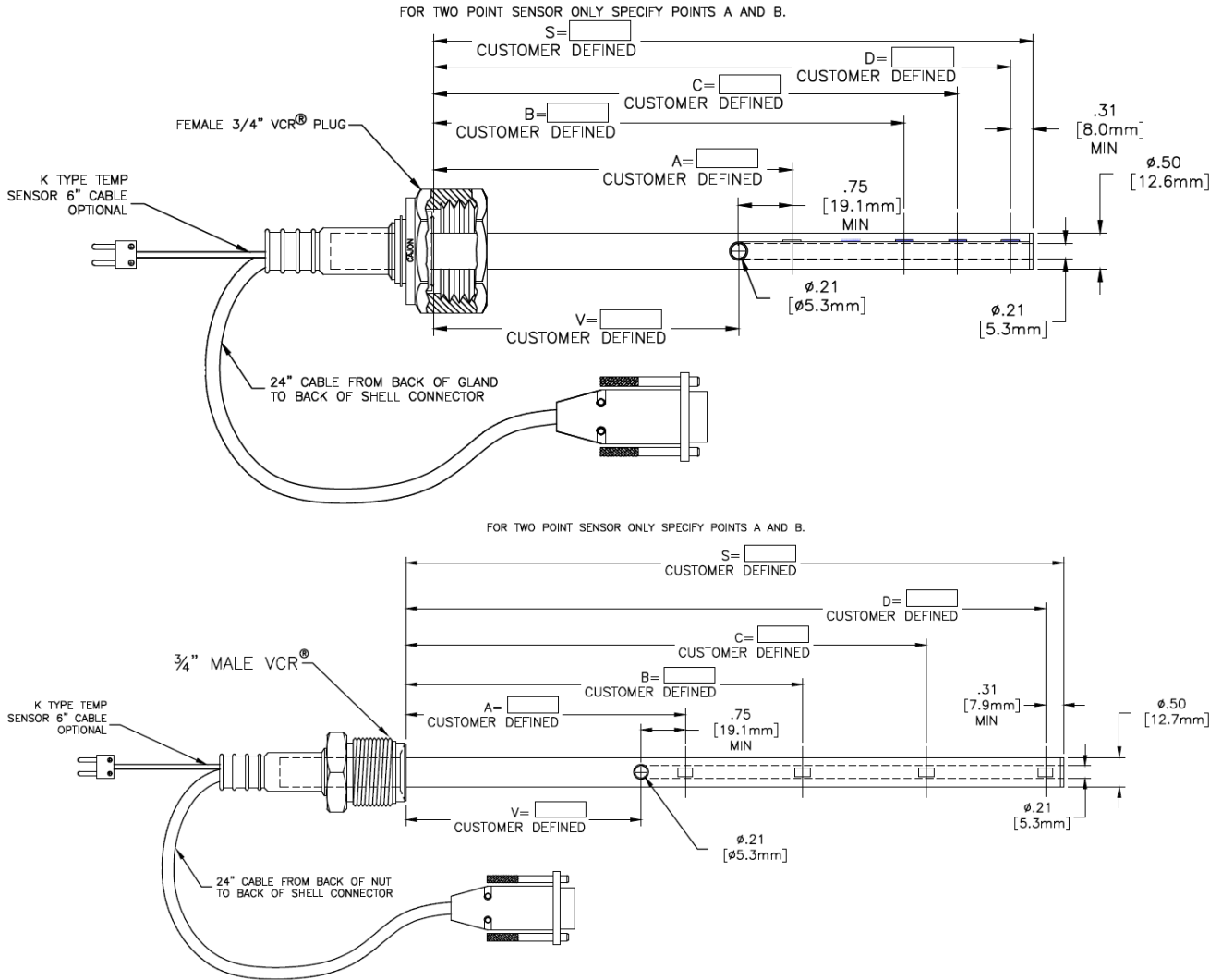


Figure 4: SL-900 series with 1/2" OD tube. The top drawing shows a sensor with a 3/4" female VCR® fitting while the bottom drawing shows it with a 3/4" male VCR® fitting. Alternatively, 1/2" VCR® fittings are also available with the 1/2" tubes.

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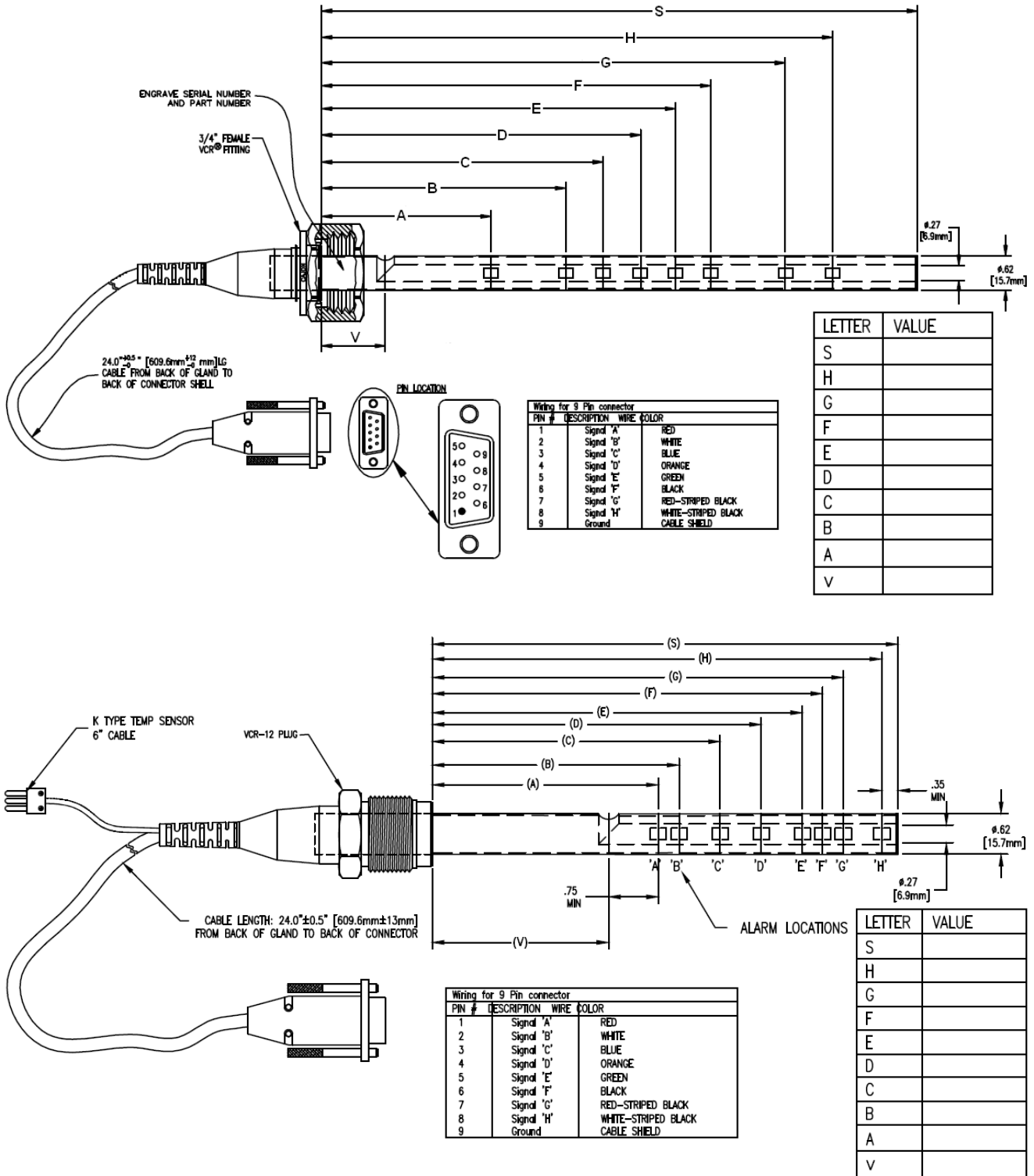


Figure 5: SL-900 series with 5/8" OD tube. The top drawing shows the sensor with a 3/4" female VCR® fitting while the bottom drawing shows it with a 3/4" male VCR® fitting.

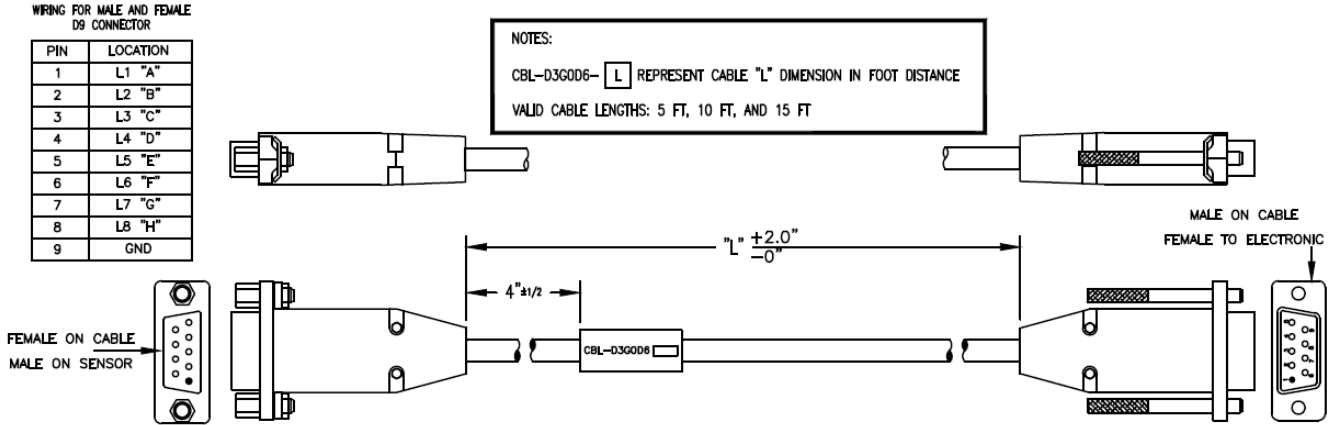


Figure 6: 8 Point extension cable

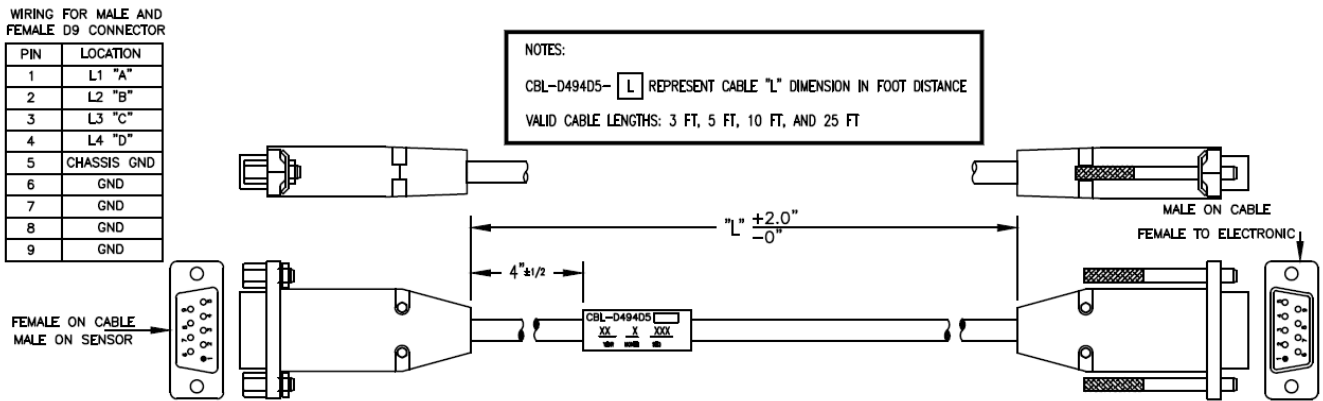


Figure 7: 2 or 4 Point extension cable

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	11011139-00
2-4	90-230 VAC	Four, Dual-Color LEDs & 4, ½ A, N.O. Contacts	11025495-00
2-4	24 VDC	Four, Dual-Color LEDs & 4, ½ A, N.O. Contacts	11025445-00
2-4	90-230 VAC	Four, Dual-Color LEDs & 4, ½ A, N.C. Contacts (Cable Fault)	11011138-00
2-4	24 VDC	Four, Dual-Color LEDs & 4, ½ A, N.C. Contacts (Cable Fault)	11010929-00
5-8	24 VDC	Eight, Dual-Color LEDs & 8, ½ A, N.O. Contacts	11025485-00

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

D. Standard Catalogue Sensors:

Input	Output	Operating Temp	Pressure Range	Process Connection	Part Number
24 VDC	LED and Relay (via Electronic Modules)	0° to 100°C	0 – 250 psi	1/2" VCR, Female	10215333-00
24 VDC	LED and Relay (via Electronic Modules)	0° to 100°C	0 – 250 psi	3/4" VCR, Female	091-10426
11.5 - 24 VDC	Relay (via Integrated Electronics)	5° to 65°C	0 – 165 psi	3/4" VCR, Female	10216190-00

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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