

## MAINTENANCE/REPAIR

### Important Points!

Regular maintenance of the total system is recommended to assure sustained optimum performance. These devices are not field repairable and should be returned to the factory if recalibration or other service is required. After first obtaining a Returned Goods Authorization (RGA) number, send the unit freight prepaid to the following. Please include a clear description of the problem plus any application information available.

Dwyer Instruments, Inc.  
Attn: Repair Department  
102 Highway 212  
Michigan City, IN 46360

### Important Points!

Product must be maintained and installed in strict accordance with the National Electrical Code and Dwyer product catalog and instruction bulletin. Failure to observe this warning could result in serious injuries or damages.

For hazardous area applications involving such things as (but not limited to) ignitable mixtures, combustible dust and flammable materials, use an appropriate explosion-proof enclosure or intrinsically safe interface device.

The pressure and temperature limitations shown on the individual catalog pages and drawings for the specified flow switches must not be exceeded. These pressures and temperatures take into consideration possible system surge pressures/temperatures and their frequencies.

Selection of materials for compatibility with the media is critical to the life and operation of Dwyer products. Take care in the proper selection of materials of construction, particularly wetted materials.

Life expectancy of switch contacts varies with applications. Contact Dwyer if life cycle testing is required.

Ambient temperature changes do affect switch set points, since the specific gravity of a liquid can vary with temperature.

Dwyer Products have been designed to resist shock and vibration; however, shock and vibration should be minimized.

Filter liquid media containing particulate and/or debris to ensure the proper operation of our products.

Electrical entries and mounting points in an enclosed tank may require liquid/vapor sealing.

Dwyer Products must not be field-repaired.

Physical damage sustained by the product may render it unserviceable.



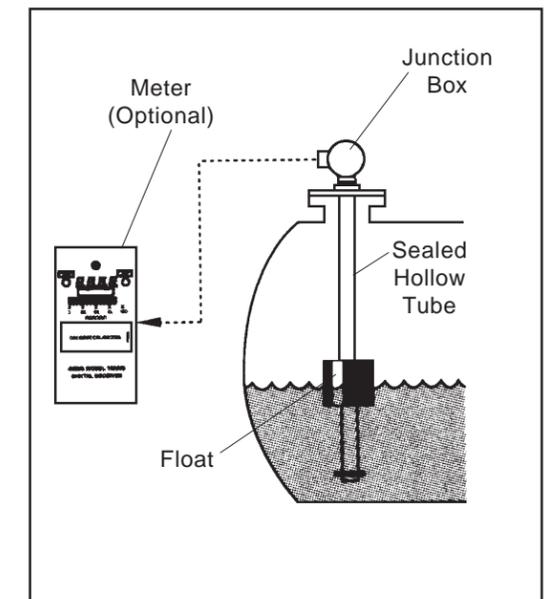
## Continuous Level Transmitters Series CLT

*Designed for continuous liquid level sensing, Dwyer transmitters are considered "components".*

### Operating Principle

The CLT Series utilizes reed switch/magnet technology. A magnet-equipped float rises or lowers with corresponding liquid level. The magnetic field generated from the float actuates a series of reed switches mounted within a sealed hollow tube. The series of reed switches is combined with resistors to form a voltage divider.

When a regulated DC voltage is applied to an CLT, the resulting voltage output is directly proportional to liquid level.



### Installation / Mounting

Units operate normally in any attitude, from vertical to a 30° inclination, up or down.

#### Thread Treatment

**Sealing:** When threading metal threads into a metal coupling, pipe sealant or Teflon tape is recommended. Due to potential compatibility problems, when sealing plastic threaded units, a compatible pipe sealant such as "No More Leaks" from Permatex is recommended.

**Tightening (Plastic to Metal):** When threading a plastic sensor into a metal coupling, the installer should use a suitable wrench and tighten the threads 1 to 1-1/2 additional turns past hand-tight. Over-torquing of the threads will result in damage to the plastic mounting plug.

**Tightening (Metal to Metal):** When threading a metal sensor into a metal coupling, the installer should use a suitable wrench and tighten the threads 1-1/2 turns past hand-tight.

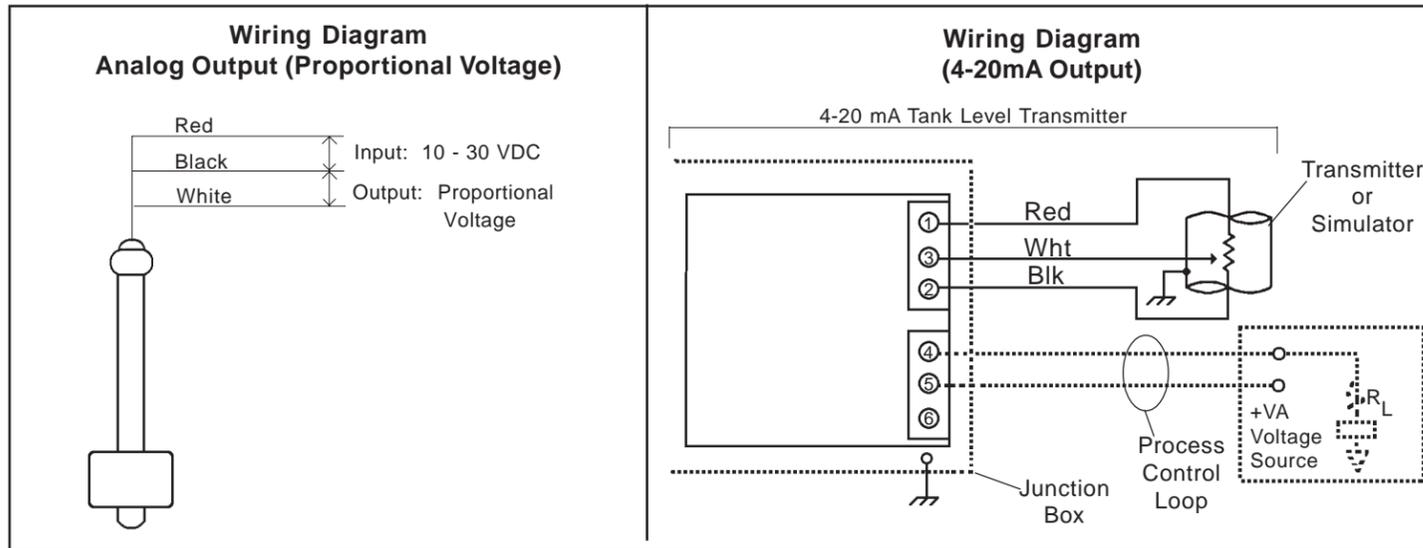
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## Wiring Diagrams

**Note:** For hazardous area applications, use an appropriate intrinsically safe interface device.

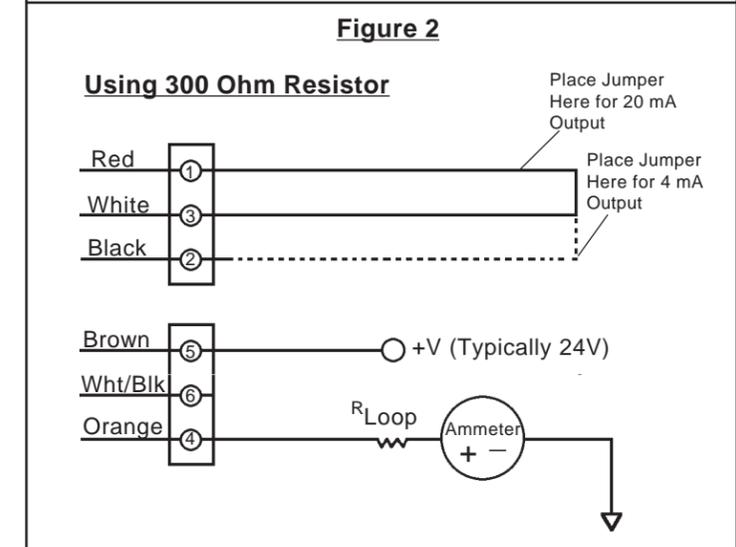
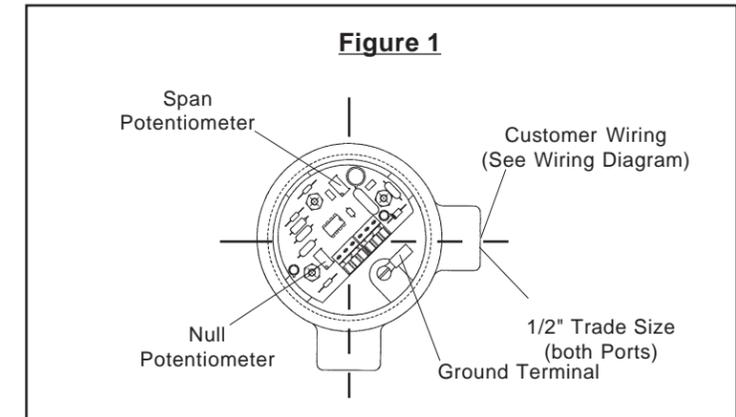


### Calibration

The signal conditioner on your CLT has been Factory-set. You do not need to calibrate.

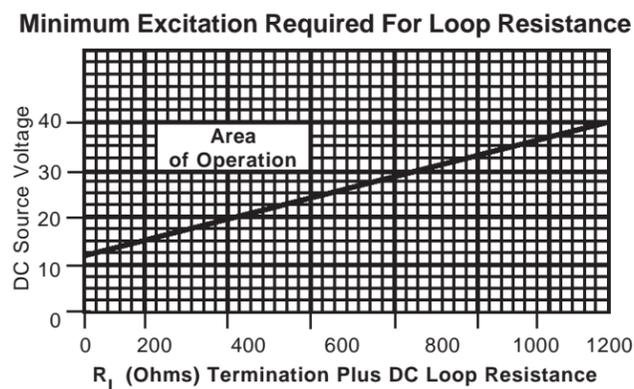
#### Steps:

- A. Calibration should be performed with the probe disconnected from the signal conditioner. Turn off power to loop. Disconnect the red, black and white wires from terminals 1, 2, and 3.
- B. Adjust both the null and span potentiometers at approximately mid-range. **(Figure 1)**
- C. Wire as shown per **Figure 2**, connecting a jumper wire in place of the black and white probe wires. Connect an ammeter in series to monitor loop current. Apply power to loop. Adjust null pot for 4mA.
- D. Remove power from loop. Reposition the jumper wire in place of red and white probe wires. Reapply power and with the span pot, set the output current to 20mA.
- E. Repeat Steps C and D for final adjustment.
- F. If power is maintained during jumper connections, current level may increase to 36mA. This is normal. Current will return to regular readings when connections are made.



### Excitation Required for Transmitters Using 4-20 mA Signal Conditioners

The minimum excitation required for operation of transmitters with 4-20 mA, DC signal converters (**See Chart**) can be determined for a given total loop resistance from the graph shown. (Total loop resistance = the sum of the DC termination resistance plus loop resistance.) For optimum operation, which is a function of source voltage ( $+V_A$ ) and total loop resistance, the source voltage value used should be above the minimum load line for the related loop resistance.



### Troubleshooting

Verify proper wiring, power supply, and loop resistance. If transmitter is not functioning properly, isolate the transmitter from the system and wire per **Figure 3**. Meter should read 4mA with float at bottom and 20mA with float on top of transmitter. If unit is still not operating properly, please consult Factory for further troubleshooting details.

