LT9000 LEVEL TRANSMITTER
OWNERS MANUAL

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LT 9000 LEVEL TRANSMITTER

1. DESCRIPTION

A. General Description

The LT 9000 is a continuous level transmitter that detects the level of an electrically conductive liquid in a tank or other container. The LT 9000 can also sense the level of an interface such as oil/water. In some cases the LT 9000 may be able to measure the level of a dry material.
The basic unit is made up of a solid stainless steel probe, attached to an explosion proof housing. The probe must be coated with a non-conductive material such as Halar, Ryton or Teflon, when it is used in a conductive material. Inside the explosion proof housing are all calibration adjustments and sensing electronics.
The electronics are calibrated by on-board zero and span adjustments to yield a 4-20 mA output.

B. Specifications

Electrical

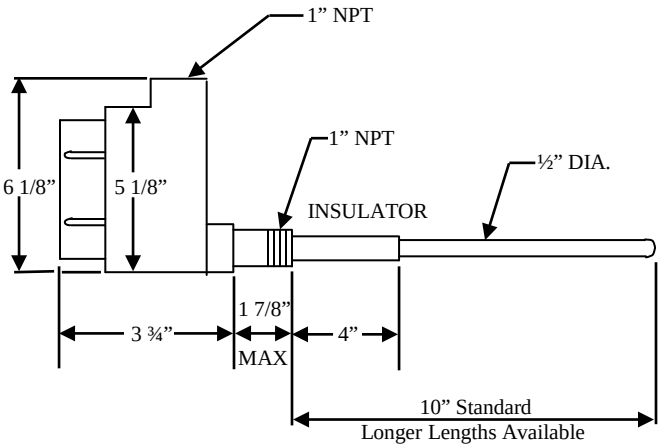
Power:	115 VAC (±15%) 50/60 Hz, or 24VDC.
Output	4-20 ma into a load of 1K ohm max.
Fuse:	On-board, 0.50A @ 125 volts.
Frequency:	10,000 Hz to 300,000 Hz.

Environmental

Enclosure:	Cast Aluminum; Class I, Group D, Class II, Group E, F, G
Temperature:	Probe: -30°F to 340°F – Halar -30°F to 450°F - Ryton Electronics: -40°F to 185° F
Pressure:	Probe: 1" NPT 1500 psi @ 75° F; 3/4" NPT 300 psi @ 75° F
Construction:	Probe: All wetted parts, 316 SS Viton, Teflon and Coating material. Electronics: Housed in cast aluminum explosion proof enclosure.

Specifications subject to change without notice.

C. Ordering Information



LT9000 – 115VAC –H– 10*

Model
Supply Voltage
“H” – Halar coated probe
“R” – Ryton coated probe
“T” – Teflon Coated Probe
Probe length in inches

*This describes an LT9000, powered by a 115 VAC, with a Halar coated probe, 10” long. The probe length is measured from the end of the nipple to the tip of the probe.

2. THEORY OF OPERATION

The LT 9000 produces a series of electrical pulses on the probe. The frequency of these pulses is approximately 10KHz to 300KHz (determined by the span of adjustment).
The rise time of the pulses increases proportional to the level of liquid in contact with the probe. The change in the rise time (that is the delay time to fully charge the pulse) is measured and converted to a 4-20 mA signal that is very linear.
The output is repeatable, provided the characteristics of the product being measured are constant.

3. INSTALLATION

*CAUTION: ALL INSTALLATION AND WIRING MUST CONFORM TO NEC AND ALL OTHER LOCAL ELECTRICAL CODES. TAKE SPECIAL CARE IN OBSERVING HAZARDOUS AREA SAFETY PROCEDURES. WE ASSUME NO LIABILITY FOR IMPROPERLY INSTALLED OR WIRED UNITS.

A. Inspection

After unpacking the LT9000, visually inspect the unit for any damages. If your unit has a coated probe, please inspect the coating for any damage that may have occurred in shipping. Please advise the factory or your local distributor of any damage.

B. Physical Installation

1) The LT9000 is installed into the vessel roof using a 1" NPT connection.
   This can be either a threaded coupling or a tapped entry such as a flange. A bracket may be fabricated for open top containers.
2) Always check for physical room around the location you have chosen to allow for installation. Allow a 6" turning radius to screw the probe into the mounting thread, and clearance above for the length of the probe.
3) **CAUTION:** Always take the necessary safety precautions when cutting or welding the mounting entry for the LT9000.
   a) Tag and lock out the electrical power to the equipment that services the vessel.
   b) Check liquid or dry powders that create a gas in the vessel for oxygen as well as the explosion factor. (All dust will explode.)
   c) Vessels that are cross vented have to be isolated.
4) Screw the LT9000 into the connection provided.
5) The LT9000 has a 1" NPT conduit entry. When wiring these units, conform to the National Electrical Code and any other city or company codes.
6) Always route the conduit so that water will not flow into the housing. To assure proper installation, install an EYS type seal and fill with explosion proof sealing compound.
7) The proper wire for the 4-20 mA signal wires is a twisted pair of wires. A twisted shielded pair may be necessary for some installations.

C. Removing the Electronics

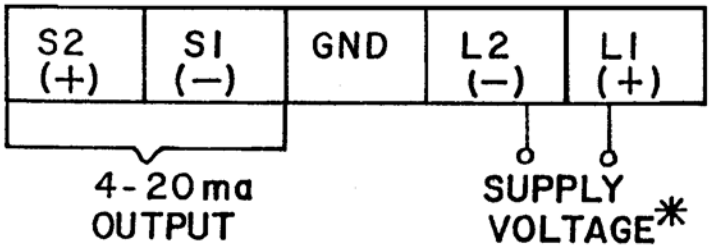
1) To remove the 4-20 mA card, simply unplug it from the baseboard. When reinstalling, this card is made so that it cannot be plugged in backwards.

2) To remove the baseboard you must:
   a) Disconnect power at the main power source.
   b) Remove the 4-20 mA card.
   c) Disconnect wires from the terminal strip.
   d) Remove the green grounding screw.
   e) Unplug the blue antenna lead.
   f) Hold the top of the card guide and lift out.
   To reinstall, reverse the above procedure.

D. Typical Applications and Wiring Diagrams

As follows:

LT 9000 TERMINAL LAYOUT



* NOTE: EACH LT9000 IS INTENDED FOR ONLY ONE SUPPLY VOLTAGE. THE VOLTAGE IS PRINTED ON THE BASEBOARD.

FOR 115VAC: Hook the hot lead to L1 and the neutral to L2, with the appropriate Ground.

FOR 24 VDC: Observe + and - polarity.

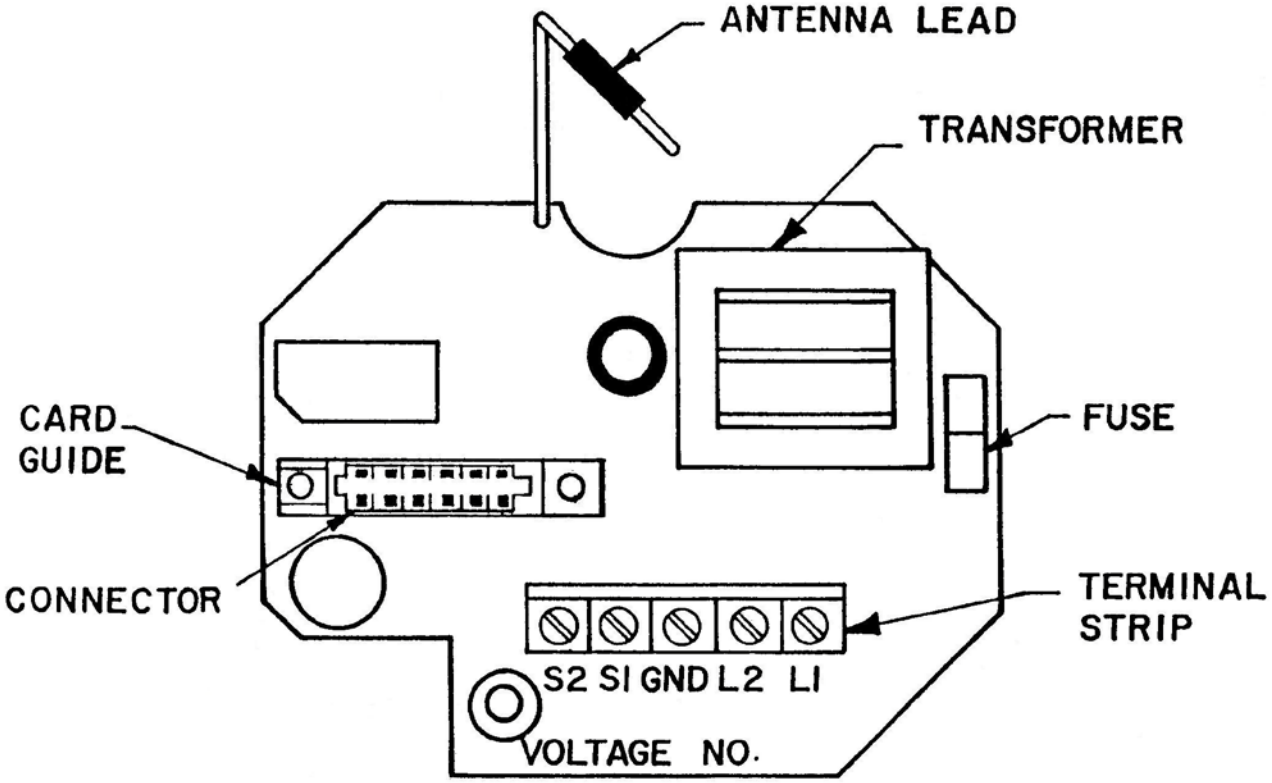
The GND terminal is hooked to the explosion proof housing via the printed circut card. The GND terminal should have the green grounding wire for AC power applications.

For DC power the GND can be used for

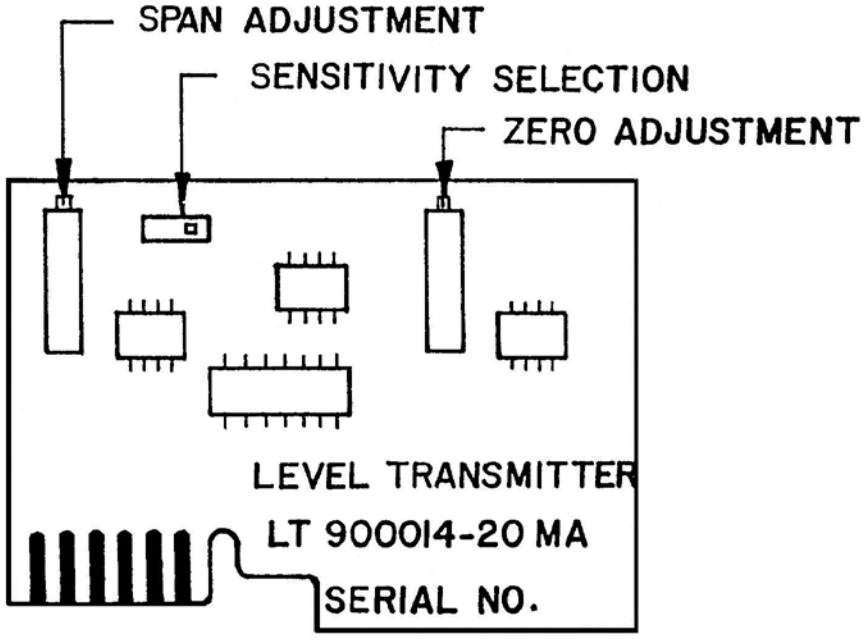
1) Grounding the power supply
   or
2) Grounding 1 leg of the 4-20 ma
   or
3) Not used
   or
4) Terminating the shield of a twisted shielded pair of wires

The 4-20 ma output is isolated. It may be grounded at only one point in the loop.

Please consult the factory or your distributor if you have any questions.

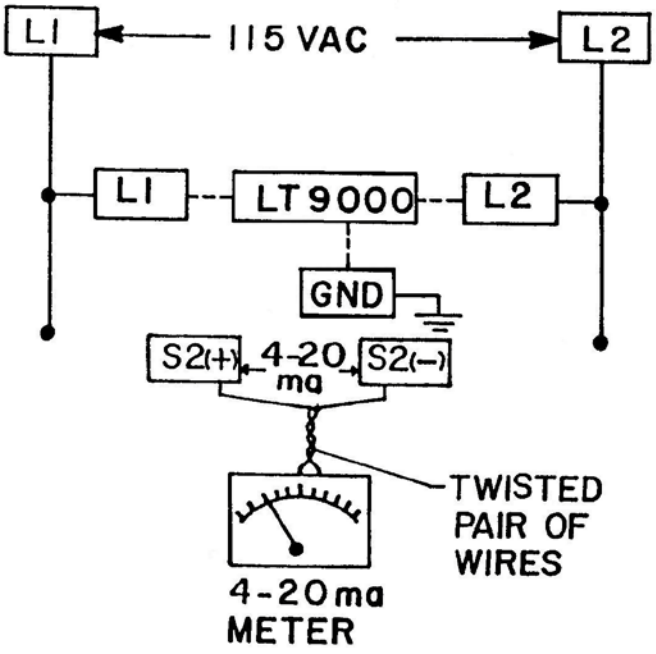


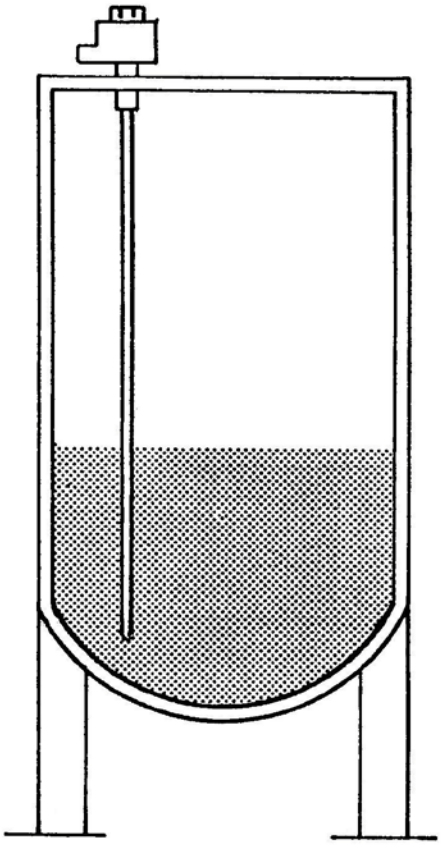
LT 9000 BASEBOARD

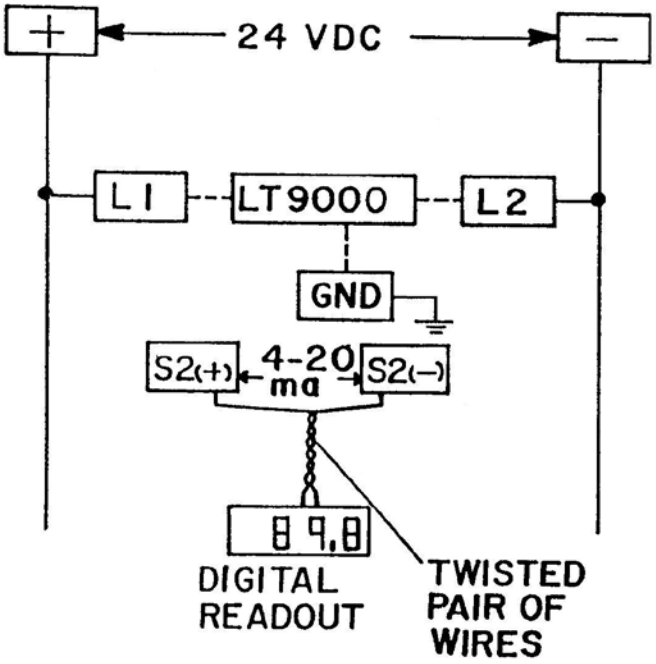


LT 9000 SENSING CARD

TYPICAL WIRING







TOTAL LOOP RESISTANCE FOR 4-20ma SIGNAL MUST NOT EXCEED 1000 OHMS

4. CALIBRATION

The LT 9000 has 2 adjustment potentiometers, one for the zero adjustment (4 mA) and one for the span adjustment (20 mA). There is also a sensitivity selector switch marked LOW and HIGH.

1. Set the sensitivity switch to Low or High. Low is used for applications with probes that are over 10' long. High is used for probes less than 10' in length.
   If you select High sensitivity and the signal can not be adjusted downward when spanning the unit, then the calibration must be done at the Low setting.
   If you select Low sensitivity and the signal can not be spanned up to 20 mA, then the calibration must be done at the High setting.

2. The zero and span of the LT9000 interact with each other. Raising the span will raise the zero a proportional amount. For this reason it may be necessary to cycle the level in the tank a few times. If your 4-20 mA signal is going to a digital panel meter, an exact 4-20 mA may not be necessary, as you can still scale the meter with its internal adjustments.

3. Connect a current meter in series with the 4-20 mA loop or across the S1 and S2 terminals of the LT9000.

4. When the fluid level is either below the probe, or at the point you want a 4 mA signal, turn the zero pot until the current meter reads 4 mA.

5. Raise the fluid level to the point you want a 20 mA signal, and turn the span pot until the current meter reads 20 mA.

6. Repeat steps 4 and 5 if necessary.

7. In critical applications, it is always a good proceedure to have an independent level switch as a high level alarm.

8. When the calibration has been verified, remove the calibrating current meter from the loop and complete the installation.

PLEASE CONSULT THE FACTORY OR YOUR DISTRIBUTOR IF YOU HAVE ANY QUESTIONS OR REQUIRE ASSISTANCE.

6. WARRANTY

All components of the LT9000 are warranted to be free from defects in material and workmanship for a period of two years from the date of purchase . This warranty applies to general purchaser and to components installed, serviced and operated according to instructions.

Babbitt International, Inc. will repair or replace, at its option, FOB at its plant or any other location designated, any part which proves to be defective in manufacture or workmanship.

All claims must be made in writing within the warranty period. No claims outside of the warranty period will be honored.

Warranties are not applied to any components which have been damaged by improper installation, use, exposure to unusual atmospheric conditions or components which have been misused, abused, damaged by neglect or accident. This warranty shall not apply to any components which have been altered or repaired without the prior written consent of Babbitt International, Inc.

Babbitt International, Inc. assumes no responsibility or liability for any labor or material back charges, without written authorization. Any products returned must be with prior written authorization.

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