

# TRANSGAUGELPS CAPACITANCE LEVEL PROBE

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## INSTALLATION & COMMISSIONING PROCEDURE



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## TRANSGAUGELPS Level Probe

### INSTALLATION & COMMISSIONING

The probe is supplied for top fitting with either 1 " BSPT or 4 hole flange. A sealing washer or gasket is supplied with each unit.

The standard version is suitable for Fuel Oils; a special version is available for Water based liquids.

For multiple tank installations where there are different size tanks check the Serial No. on the Level against the Delivery Note and the supplied Drawing DIM7720 showing the probe dimensions.

Where a remote Dial Indicator is supplied the Serial No. should agree exactly with the Serial No on the Probe.

When fitting the probe into the tank – DO NOT OVERTIGHTEN on the thread. Only use sufficient force to achieve an air-tight seal. The use of any hard setting compounds should be avoided.

See enclosed Wiring Diagram to identify terminal outputs and connections.  
**IMPORTANT: Supply Voltage must not exceed 30 Vdc**

### CALIBRATION

The probe is pre-calibrated according to the information received at the time of ordering and it should not be necessary to make any adjustment. If the calibration is found to be incorrect or the tank dimensions have changed please contact Bayham Ltd for guidance with regard to the re-calibration procedure.

The alarms, where required, are also pre-calibrated but can be adjusted on site. Please contact Bayham Ltd for details.

### COMMISSIONING

When all electrical connections are made switch on the power and allow 2 – 3 minutes for the system to stabilise, then check the outputs or Indicator readings against a dip reading from the tank. A difference of up to 5% may be allowed to allow for variance in temperature.

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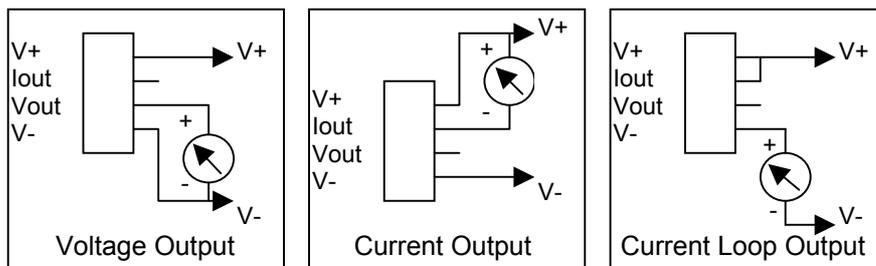
## ELECTRICAL CONNECTIONS

### WIRING

To maintain the IP rating of the head box, use a multi-core cable 6.5...8.0mm dia, and ensure the gland is fully tightened. All terminals are isolated from the case/earth. In an electrically –noisy environment it may be necessary to use a screened cable. V- should be connected to the screen. Ensure all wiring is kept away from the probe wire, since this could cause small errors in the calibration.

### VOLTAGE AND/OR CURRENT OUTPUT:

If link JP2 is set to the **NORMAL** position, the gauge will give both voltage and current outputs, derived from a DC power supply in the range 7...30V between V+ and V- terminals. This could typically be from a 12V or 24V battery. The voltage output is produced between the Vout and V- terminals, and the current output between the V+ and Iout terminals. Both outputs can be calibrated over any range within the limited shown in the specification, but would typically be 0...6V and 4...20mA.



### CURRENT LOOP OUTPUT:

If the link JP2 is set to the **CURRENT LOOP** position, the gauge will operate in a 2-wire mode, where it derives its power from the signal loop. In this mode (i.e. when **JP2** is set to **CURRENT LOOP**) the voltage output and the high and low trip outputs are disabled. The current output can be calibrated over any range within the limits shown in the specification, but would typically be 4...20mA.

**IMPORTANT:** Turn off the power supply to the board when switching from **NORMAL** to **CURRENT LOOP** and ensure the wiring connections are correct before restoring the power supply.

### HIGH/LOW TRIP OUTPUTS:

The gauge is equipped with two relays designated **HIGH TRIP** and **LOW TRIP**. The High Trip relays contacts close when the level exceeds a defined point, and open when it drops below the defined point less the hysteresis. Similarly, the Low Trip relay contacts close when the level drops below a defined point, and open when it exceeds the defined point plus the hysteresis. These trips are disabled in Current Loop mode (i.e. when **JP2** is set to **CURRENT LOOP**).

### MAINTENANCE

Since there are no moving parts, the **TransgaugeLPS** does not generally require maintenance. However, if the probe becomes contaminated with pollutants it can be flushed out through the breather holes.

# TRANSGAUGELPS

## CALIBRATION AND MODE SETTING

All units are factory-calibrated to give 0...6V and 4 –20mA outputs and switch positions as per the customer order. Where no switch levels are advised these are set to 10 & 90%

The switch positions are defined as 0 if the switch is Down (Off) and 1 if it is Up (On):

1	2	3	4	Switches
				<b>SIGNAL OUTPUTS</b>
				Pressing the <b>UP</b> and <b>DOWN</b> buttons will adjust the current/voltage outputs or the current loop output (depending on the setting of the link <b>JP2</b> ) which can be viewed on a meter . The user can thus set/adjust the outputs required for the maximum & minimum levels. This must be separately for each output type: JP2 Normal for Voltage & Current outputs – 3 wire connection NOTE: TURN OFF POWER SUPPLY WHEN JP2 Set as Current Loop disables switches – 2 wire connection CHANGING POSITION OF JP2
0	1	0	0	<b>Set Minimum Current Output</b>
1	1	0	0	<b>Set Maximum Current Output</b>
				Note that it is allowable to set the maximum to less than the minimum if required i.e. 20mA @ empty, 4mA @ full
0	0	1	0	<b>Set Minimum Voltage Output</b>
1	0	1	0	<b>Set Maximum Voltage Output</b>
				These are similar to the above, but apply to the voltage output.
				<b>SWITCH LEVELS (only applicable in NORMAL mode)</b>
0	1	1	0	<b>Set High Level Trip</b>
				In this mode the meter outputs indicate the high-level trip point. It can be set as required by pressing the <b>UP</b> and <b>DOWN</b> buttons.
1	1	1	0	<b>Set Low Level Trip</b>
				In this mode the meter outputs indicate the low-level trip point.
0	0	0	1	<b>Set Hysteresis</b>
				In this mode the meter outputs indicate the hysteresis applied to both the high and low level trip point. The hysteresis will be the difference between the indicated reading and the Minimum reading. It can be set as required by pressing the <b>UP</b> and <b>DOWN</b> buttons.
1	0	0	0	<b>CALIBRATE PROBE</b>
				To prevent inadvertent operation of this mode, the <b>UP</b> and <b>DOWN</b> buttons must be pressed simultaneously, then released, to initialise the Calibration mode. The signal output in this mode will be 50% of full scale to indicate that the gauge is initialised. Since the calibration is very sensitive, any object brought near to the red lead from the probe to its terminal will affect the reading. Ensure that it is stable and close to the printed circuit board, so the lid will not subsequently affect it. Do not move the lead after calibration. After initialisation, access the buttons and switches with a non-conductive pointed object such as a pen, to avoid influence from body capacitance.
				<b>Calibrate Full/Max Level</b> Pressing the <b>UP</b> button sets the gauge to Calibrate Maximum mode. The meter output will change to 100%. While in this mode it will record the highest level measured as the maximum. This must be done with the probe fully immersed or at the maximum level. Exit calibration mode by cancelling the switches.
				<b>Calibrate Empty/Min Level</b> Pressing the <b>DOWN</b> button sets the gauge to Calibrate Minimum mode. The meter output will drop to zero. After this the gauge will record the lowest level measured as the minimum. This must be done with the probe free of the liquid or at the minimum level. Exit calibration mode by cancelling the switches.
				<b>NOTE: When fitting new/replacement pcb Max. level should be calibrated first, otherwise it is only necessary to change Max. level</b>
1	0	0	1	<b>Normal – Undamped Output</b>
				This is an alternative operating mode, giving a fast response. It can be used if the user needs to monitor rapid fluctuations in level. It can also be used if the gauge is switched on and off in a power saving application. The gauge will give a valid reading within 250ms of power being applied.
0	0	0	0	<b>Normal – Damped Output</b>
				This is the normal operating mode. The outputs are damped to stabilise them if the liquid is agitated.

**Voltage and Current limits must be set before Calibration can be set. See “Calibrate Probe”**

## SPECIFICATIONS

<b>Power requirements:</b>	Voltage and/or current output only:	7.0...30.0 VDC 2mA + current output
	If using trip level outputs:	10.0...30.0VDC 40mA max + current output
	If using current loop output: (voltage drop across gauge)	7.0...30.0 VDC 4mA minimum
<b>Maximum Output Span:</b>		0...10.00V 0...25.00mA
<b>Maximum Output Drive:</b>	Current Output: Voltage Output:	(Vsupply – 5)V 2mA
<b>Trip outputs:</b>		Volt-free contacts rated 240VAC 1A (subject to health and safety regulations)
<b>Maximum voltage on any terminal relative to case earth</b>		240VAC
<b>Resolution:</b>	Conductive liquid (e.g. water)	0.2mm
	Non-conductive liquid (e.g. oil)	1mm
<b>Accuracy:</b>		$\pm(2 \times \text{resolution})$ +0.25% of maximum output span
<b>Fixing:</b>	Thread:	1" BSP Parallel
	Flange:	125mm dia, four 9mm holes on 101.6mm PCD
<b>Dimensions:</b>	Head Box:	67 x 98 x 35mm, sealed to IP67
	Optional Control Box:	67 x 98 x 35mm, sealed to IP67

**In the interest of improvement the above specifications are subject to change without notice.**