MECHANICAL INSTALLATION

BSP FITTING:

This version has a 1" BSP parallel thread that can be screwed into a tapped bush in the tank. Take care when fitting to avoid twisting the probe within the head box.

FLANGE FITTING:

This version has a 125mm dia stainless steel flange plate, with four 9mm dia fixing holes on a 101.6mm PCD. It requires a 25mm dia hole in the centre for the probe itself.

ELECTRICAL CONNECTIONS

WIRING

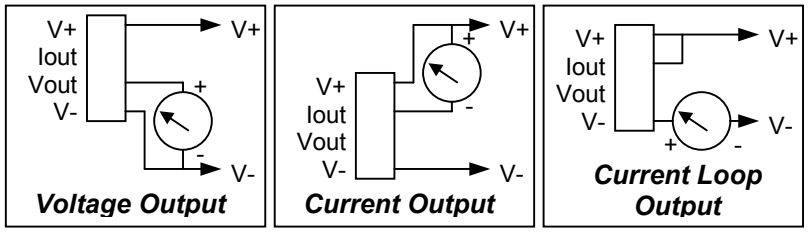
To maintain the IP rating of the head box, use a multi-core cable 6.5…8.0mm dia, and ensure the gland is fully tightened. All terminals are isolated from the case/earth. In an electrically-noisy environment it may be necessary to use a screened cable. V- should be connected to the screen. Ensure all 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 ***Winston*** will give both voltage and current outputs, derived from a DC power supply in the range 7…30V between its 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 limits shown in the specification, but would typically be 0…5V and 0…10mA or 4…20mA.

CURRENT LOOP OUTPUT:

If link JP2 is set to the CURRENT LOOP position, the ***Winston*** 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.

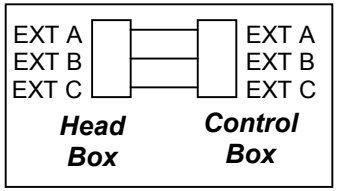


HIGH/LOW TRIP OUTPUTS:

The Winston can be equipped with two relays designated HIGH TRIP and LOW TRIP. The High Trip relay 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).

CONTROL BOX – HEAD BOX:

If the electronics are supplied in a separate control box, a three-core cable is required to connect it to the head box on the probe. The connections are as illustrated. In an electrically-noisy environment it may be necessary to use a screened cable. EXT A should be the screen. All other connections are made to the control box.



CALIBRATION AND MODE SETTING

The ***Winston*** is factory-calibrated to give 0…10mA current output, 0…5V voltage output and 4…20mA current loop output for a span equal to the full length of the probe immersed in water (other calibrations can be factory-set to order). The user can alter the calibration in the field by selecting different modes. The operating mode is set using a 4-pole switch. The switch positions are defined 0 if the switch is down (off) and 1 if it is up (on):

1234

0000 Normal – Damped output
This is the normal operating mode. The outputs are damped to stabilise them if the liquid is agitated.

1000 Calibrate Probe
Any object coming close to the red sensor lead can change the calibration. Ensure that the lead is clear of all other wiring and close to the circuit board so that when the lid is replaced it will not come close to the lead and hence change the settings.

To prevent the gauge being inadvertently set to calibrate mode, it must be primed after setting the switches to 1000 by pressing the UP & DOWN buttons simultaneously. The meter will indicate 50% to show that the probe is primed in calibrate mode**. After the probe is primed access the switches and buttons using a plastic object such as a pen to avoid influence from body capacitance.**

After priming, press the DOWN button to set the gauge to Calibrate Minimum mode. The meter output will drop to zero, and the gauge will record the lowest level measured (typically with the probe dry) as the minimum. Exit this mode by changing any of the switches.

After priming, press the UP button to set the gauge to Calibrate Maximum mode. The meter output will change to 100%, and the gauge will record the highest level measured (typically with the probe fully immersed) as the maximum. Exit this mode by changing any of the switches.

0100 Set Minimum Current Output
Pressing the UP or DOWN button will adjust the current output or the current loop output (depending on the setting of link JP2), which can be viewed on the meter. The user can thus adjust the meter for the reading required for the minimum level.

1100 Set Maximum Current Output
This mode allows the user to adjust the current output or current loop output for the reading required for the maximum level. Note that it is allowable to set the maximum to less than the minimum if required.

0010 Set Minimum Voltage Output
1010 Set Maximum Voltage Output
These are similar to the above, but apply to the voltage output.

0110 Set High Level Trip
In this mode the meter outputs indicate the high level trip point. It can be set as required by pressing the UP and DOWN buttons.

1110 Set Low Level Trip
In this mode the meter outputs indicate the low level trip point. It can be set as required by pressing the UP and DOWN buttons.

0001 Set Hysteresis
In this mode the meter outputs indicate the hysteresis applied to both the high & low level trip point – the hysteresis value can be varied by pressing the UP and DOWN buttons. The high level trip will reset when the level falls to (set point – hysteresis), and the low level trip will reset when the level rises to (set point + hysteresis).

1001 Normal – Undamped Output
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.

0101 Cylindrical Tank Compensation
In this mode the gauge will correct the reading to be proportional to the volume of liquid in a cylindrical tank. It assumes that the probe extends across diameter of the tank.

MAINTENANCE

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

SPECIFICATIONS

Power requirements:	Voltage and/or current output only:	7.0…30.0VDC 2mA + current output
	If using trip level outputs:	10.0…30.0VDC 40mA max + current output
	If using current loop output: (volt drop across gauge)	7.0…30.0VDC 4mA minimum
Maximum Output Span:	Voltage Output: Current Output: Current Loop Output:	0…10.0V 0…25.0mA 3.5…25.0mA
Maximum Output Drive:	Current Output: Voltage Output:	Vsupply – 5V 2mA
Trip outputs:		Volt-free contacts rated 240VAC 1A (Subject to health and safety regulations)
Maximum voltage on any terminal relative to case earth:		240VAC
Resolution:	Conductive liquid (e.g. water) Non-conductive liquid (e.g. oil)	0.2mm 1mm
Accuracy:		±(2 x resolution) ±0.25% of maximum output span
Fixing:	Thread: Flange:	1" BSP Parallel 125mm dia, four 9mm holes on 101.6mm PCD
Dimensions:	Head Box: Optional Control Box:	67 x 98 x 35mm, sealed to IP67 67 x 98 x 35mm, sealed to IP67

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

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Winston

CAPACITIVE LEVEL GAUGE

The ***Winston*** accurately measures the level of a liquid using capacitive techniques. It can be used with a wide range of conductive and non-conductive liquids, either in a tank or free-flowing. There is no electrical contact with the liquid, other than an earth connection. It produces a current output and a voltage output, which can be used to drive meters or any other monitoring instruments. It also gives high and low trip outputs that can be used to provide alarms or to control pumps or valves.

The operating modes allow the user to calibrate the probe to any required range for any type of liquid, calibrate the voltage and current outputs for any required meter range, set high/low trip points and hysteresis, and to electronically damp the reading if required (to give a steady reading if the liquid is agitated).

The probe consists of a stainless steel tube with a concentric Teflon-insulated wire. Breather holes at the top and bottom of the tube allow the liquid to flow freely into and out of it. The electronics are housed in a small head box, which also contains the electrical terminals and switches to configure the operating mode.

If the gauge is used in an inaccessible location (e.g. in a marine fuel tank) the electronics can be supplied in a separate control box, which can be fitted behind the dashboard.