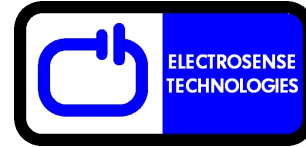


AQUAGAUGE™ Ultrasonic Liquid Level Sensor Installation and Operating Instructions.



1. Locate a suitable mounting point in the centre of the top of the tank and ensure that there is an opening at least 50mm in diameter to accommodate the sensor housing.
2. Measure the distance between the proposed mounting point and the bottom of the tank, i.e. distance H in diagram 2.
3. Set the corresponding 6 DIP switches shown in figure 1 and diagram 1 to the height, H, of the tank.
4. Mount the sensor on the tank such that the face of the ultrasonic element is parallel to the surface of the liquid in the tank.
5. Connect the 4-pin plug on the cable from the sensor case to the socket on the bottom of the M2M unit.

Operating Limitations

The normal detecting range, D, of the ultrasonic sensor is 30 to 350 cm. The range 0-30 cm is a dead-band and above about 350 cm the signal is often too weak to be measured. The resolution of the sensor is 1cm.

The distance, D, measured by the sensor is automatically subtracted from the height of the tank, H, to give the depth, L, of liquid that is relayed to the M2M unit, i.e. $L = H - D$

If distance D is read as more than H then a reading of 9999 cm will be returned for L.

Erratic or false readings can be caused by echoes from the side of the tank, contamination on the sensor face, extraneous acoustic signals, foam and turbulence on the surface of the liquid. The calculated distance to the liquid surface is based on the speed of sound in dry air at 25°C. The true speed of sound V_{air} , can vary with temperature T_c according to the following equation:
 $V_{air} = 331.5 + (0.6 \cdot T_c) \text{ m/s}$. Over the range 0-50 °C the maximum error is less than 10%. Variation in atmospheric humidity has a much smaller effect; however if a relatively volatile liquid is to be measured then the speed of sound can vary considerably if the tank is saturated with liquid vapour.

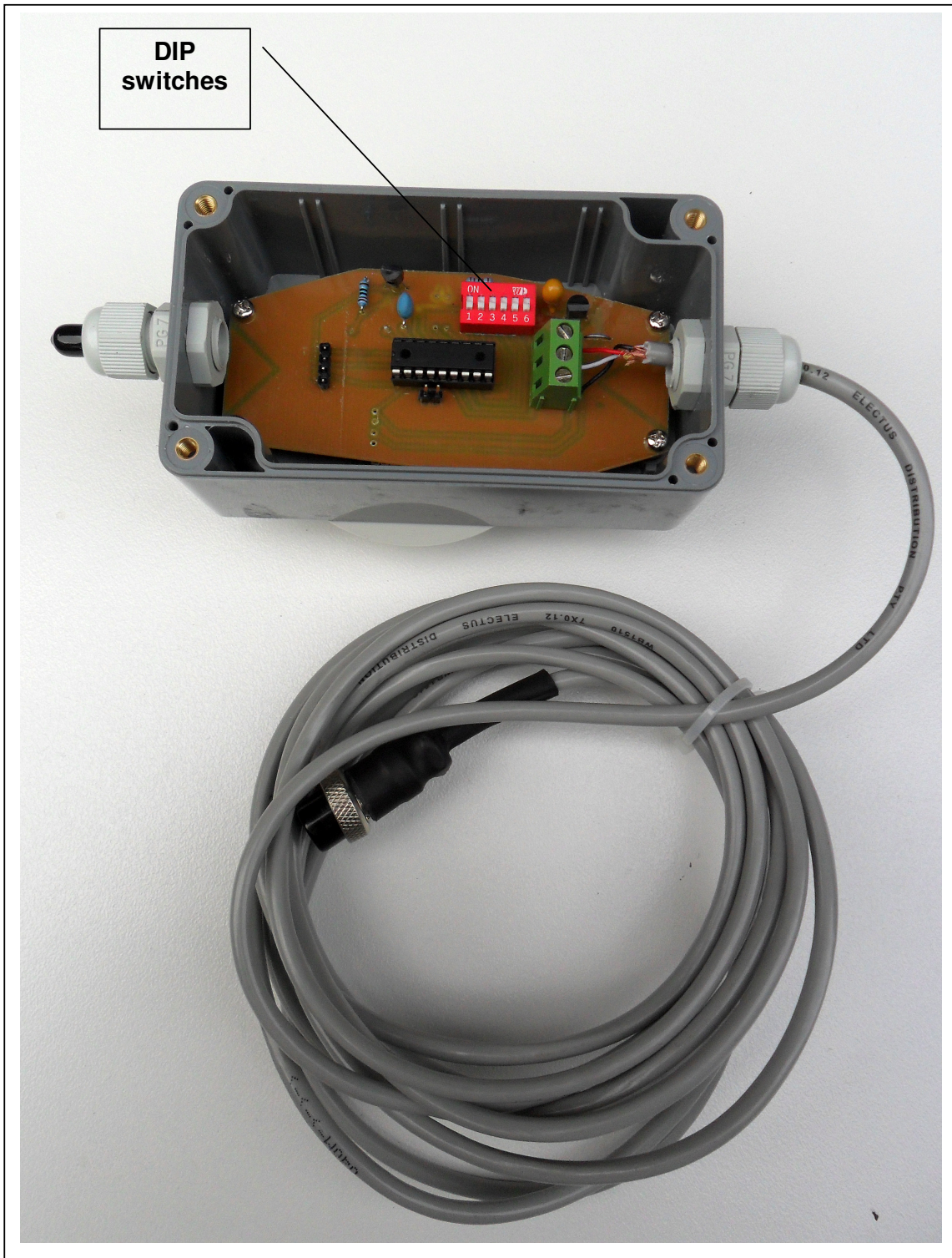
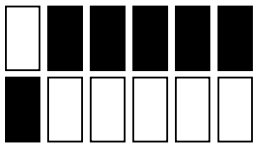
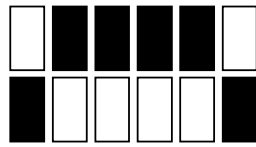


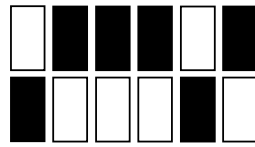
Figure 1.



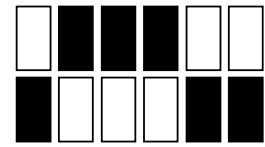
210cm



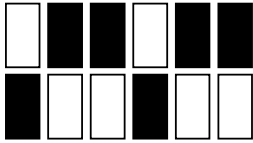
215cm



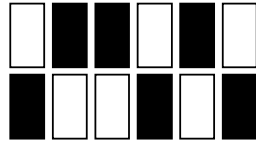
220cm



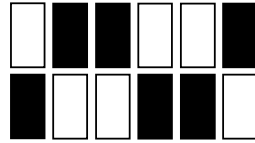
225cm



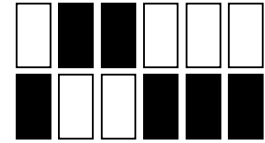
230cm



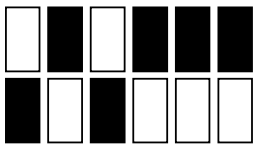
235cm



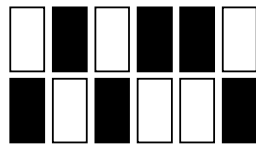
240cm



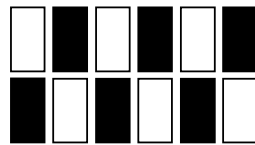
245cm



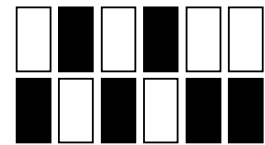
250cm



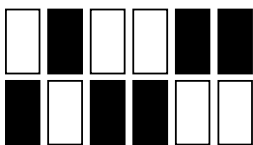
255cm



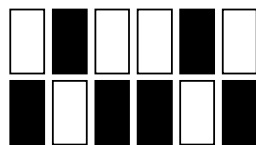
260cm



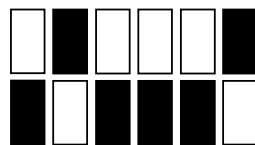
265cm



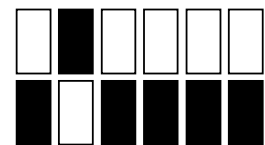
270cm



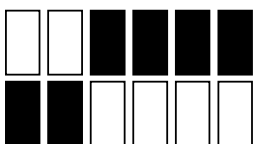
275cm



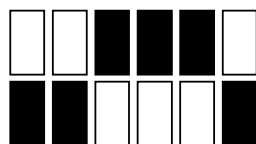
280cm



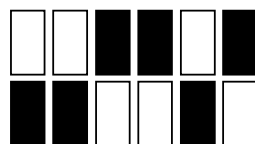
285cm



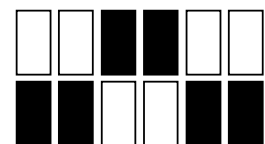
290cm



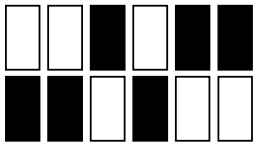
295cm



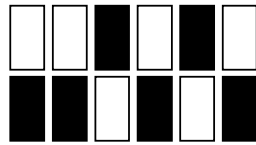
300cm



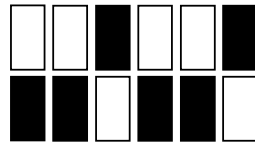
305cm



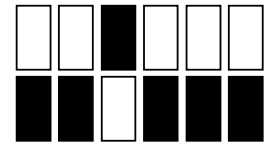
310cm



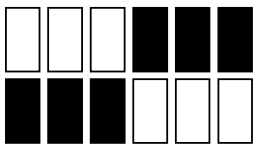
315cm



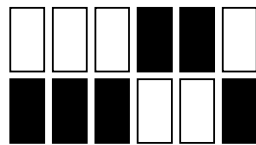
320cm



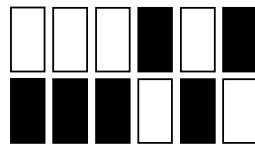
325cm



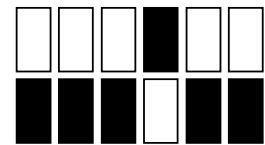
330cm



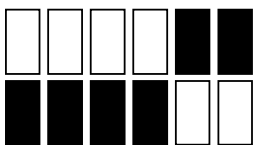
335cm



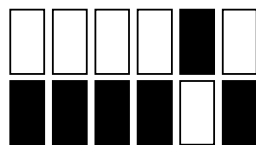
340cm



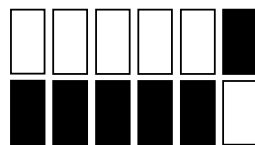
345cm



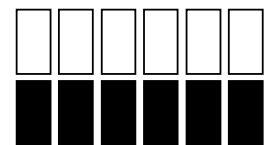
350cm



355cm



360cm



365cm

Diagram 2. System components

