

## PROBE INSERT TYPE ICT.7

The ICT.7 insert is a capacitance/current converter designed specifically for battery/24 volt operation. It is fitted with a continuously adjustable sensitivity control to enable its output to be easily set to 1 mA regardless of the length of the probe used or the type of material being measured. The output may be fed into any type of electrically operated indicator whose internal resistance does not exceed 1,000 ohms. Several indicators may be connected in series providing the total series resistance does not exceed 1,000 ohms. The insert if fitted with internal supply stabilisers and is thus unaffected by supply fluctuation.

## INSTALLATION

When fitted in free air any capacitance probe will have what is termed a "standing capacitance" value which will cause the insert to have an output even in this empty state. This output will depend upon the probe length and is removed by the use of padding capacitors, fitted to the insert during manufacture when the insert is fitted to the probe. The procedure used is explained here so that in the event of an insert change at site, zero can be correctly obtained.

## ZERO ADJUSTMENT

The probe should be installed into the empty container and the supply connected. No links are required at this stage and the sensitivity should be at its maximum clockwise setting. The output from the insert is measured on an indicating meter and must be set to approximately .01 mA ie around 1% of full scale reading. This can be achieved by rotation of the adjustable padding capacitor, (see connections).

If the output is high the adjuster must be screwed clockwise to reduce the output, or vice versa. If the range of adjustment is insufficient, fixed padding is added/removed to the two tags provided (see connections). If the reading is high, capacitance is added or vice versa. As a guide to the probe standing capacitance a figure in the range of 12-15 pF/ft. is typical. Thus, a 10 ft probe would require around 120 pF of padding capacitance. This figure applies to concentric or insulated probes only.

## SPAN ADJUSTMENT

Once the insert has been zeroed in situ the mechanical zero on the indicator meter should be adjusted to ensure the meter reads zero also. The container may now be filled. The meter reading will increase as the container is filled, when the container is full the reading should be checked and should be found to give a reading higher than full. The sensitivity adjusted can now be rotated anticlockwise to give a reading of exactly full scale. If the reading cannot be reduced sufficiently in this manner it may be necessary to fit a link to the terminals AB or AC to reduce the sensitivity to the required level. It is advisable, if possible, to recheck the zero when the container is next empty and reset the zero by use of the variable adjusting capacitor if necessary. Only a very minor, if any, adjustment will be required.

## SIMPLIFIED PROCEDURE

- 1) With no links fitted and the sensitivity adjuster fully clockwise, set the output to 1% of FSD with an empty tank by adjustment of the padding components.
- 2) Fill the tank and set full scale reading on the meter by adjusting the sensitivity control, fitting links only if required.

## ADJUSTMENT OF ICT.7 CONNECTED TO CLM.1 OR CLM.1/T CONTINUOUS LEVEL CONTROL MODULE

- 1) The zero adjustment of the ICT.7 should be set so that the standing current of the insert lies in the region 0.01 mA to 0.1 mA (10µA to 100µA). This may be achieved by connecting a meter as in the above diagram and following the 'Zero Adjustment' instructions. If no meter is available, assume that the zero adjustment is satisfactory.
  - 2) Reconnect the CLM.1 (CLM.1/T) module to terminal 2 of the ICT.7 insert and set the 'Span' control on the module to the centre of its rotation, with the container still empty.
  - 3) Fill the container to the required maximum level.
  - 4) Adjust the sensitivity of the insert via the sensitivity adjuster (in conjunction with links A-B or A-C if required) to give approximately full scale deflection on the panel meter.
  - 5) Note: If this cannot be achieved, then the zero adjustment of the insert is suspect.
- Adjustment of the maximum and minimum readings of the meter can now be made by adjusting the controls on the CLM.1 (CLM.1/T) module marked 'Span' and 'Zero' respectively.

## CONNECTIONS

