

WATER SUPPLIES DEPARTMENT
STANDARD SPECIFICATION E-81-07
MOVING-COIL CIRCULAR DIAL INDICATOR

1. **GENERAL**

Indicators are used in plants to give the operator a quick view of the measured signal with linear characteristic such as flow and level etc. It shall be of moving-coil circular dial type in vertical frontal presentation for flush panel mounting.

The indicator shall comply with the latest version of relevant IEC Standards as listed below or other international standards currently enforced on the date of tender invitation where applicable:

IEC 60051	Direct acting indicating analogue electrical measuring instruments and their accessories
IEC 60529	Degrees of protection provided by enclosures (IP code)
IEC 61554	Panel mounted equipment – Electrical measuring instruments – Dimensions for panel mounting

2. **DESIGN**

Unless stated otherwise in the Particular Specification, the indicator shall meet the following requirements:-

Input current range	: 4 - 20 mA d.c.
Input resistance	: Less than 10 ohm
Accuracy	: Class index 1.5 to IEC 60051
Scale graduation	: Linear scale
Full scale deflection angle	: 240 °
Scale length	: Not less than 100 mm
Scale marking	: Anti-parallax with black scale markings and lettering on matt white background. Indicators for water level shall have a red line with the inscription "T.W.L." marked on the scale to indicate the top water level.

Maximum continuous overload	: 1.2 times rated current continuously
Maximum short duration overload	: 10 times rated current for 5 seconds
Damping time	: Less than 3 seconds
Bezel colour	: Semi-matt black
Meter window	: Non-reflecting glass or polycarbonate
Operating temperature	: 0-55 °C
Operating humidity	: 0-75% relative humidity average in long term

3. CONSTRUCTION

The moving parts of the indicator shall be impact-proof to mechanical shock or vibration.

The nominal overall bezel dimensions for square indicators shall be 96 x 96 mm (w x h) according to IEC 61554 and the indicator shall not protrude more than 10 mm from the panel face at the front if it is required to be installed on the panel. When wall mounting is specified, the indicator shall be housed in a standard manufactured modular enclosure in compliance with IP 54 to IEC 60529 requirements. Space heater and hygrostat shall be installed inside the panel to maintain the humidity at appropriate level for indicator's operation.

4. EQUIPMENT PARTICULARS

The contractor should refer to the Particular Specification for the following particulars of the equipment :-

- (a) Scale and special marking requirements.
- (b) Mounting requirements.

- End of this Specification -