

# Engineering Specification

## Conductivity/Resistivity Indicating Transmitter (Mettler-Toledo Thornton 200CR Series)

The indicating transmitter shall measure moderate to pure waters from two sensors simultaneously, with indication, alarm and output signals available for both measurements. The two channels of measurement shall have individual selection of measurement units as conductivity, resistivity or TDS. Optional comparison of the two measurements shall be provided with internal computation, display, alarm and output of percent rejection, ratio or difference.

The same model instrument shall be capable of high conductivity measurement and readout in conductivity or percent concentration units for hydrochloric acid, sulfuric acid or sodium hydroxide from one sensor. Instrument security shall be provided by user set security code and allow user selection of function menus to be secured.

High purity water temperature compensation shall fully accommodate the non-linear properties of changing water ionization using the most recent Thornton/Light conductivity data published in *Ultrapure Water Journal*. In addition, selection shall be available for cation/ammonia/ETA temperature compensation of power industry sample characteristics and for a user set linear temperature coefficient. Specialized temperature compensation shall also be provided when measuring percent concentrations of acid or sodium hydroxide.

The indicating transmitter shall operate from 90-130 or 180-250 VAC or nominal 24 VDC 4-wire power, as specified. It shall provide an illuminated display, readable in direct sunlight or darkness. It shall be provided with hardware for panel mounting or with optional kit for wall or pipe mounting, with NEMA 4X, IP65 rating, as specified. Connection to sensors shall be via supplied cables with connector within 1.5 feet (0.5 m) of the sensor for convenient installation, cleaning and replacement of the sensor and calibration of the transmitter. The transmitter shall allow overall sensor-to-transmitter wiring distances up to 200 feet (61 m) for each sensor.

The indicating transmitter shall be provided with four alarm setpoints, assignable to two SPDT mechanical relays. The setpoints may also be assigned to two additional solid state AC relays, if specified. Analog output signals shall include two isolated, powered 4-20 mA signals, assignable to either channel as conductivity, resistivity, comparison, etc. or temperature. Selectable RS232 or RS422 shall also be provided.

The instrument shall be ISO9001 factory calibrated to NIST-traceable standards and be provided with a certificate of calibration. Accessory NIST-traceable resistance calibration modules, interchangeable with the sensors, shall be available to permit full field calibration of conductivity/resistivity and temperature measurements, including leadwire effects.

Sensor cell constants shall be individually ISO9001 factory calibrated to ASTM-traceable standards, with final verification in 18+ Megohm-cm pure water for 0.1 cm<sup>-1</sup> sensors. They shall be provided with certificates of calibration. The indicating transmitter and sensor shall be Mettler-Toledo Thornton model 200CR Instrument and 240-series Sensor or approved equal.

For the most current product information visit:

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