

Engineering Specification for 5000TOCi with M800

Engineering Specification EN-0121

The Total Organic Carbon (TOC) measuring system shall be capable of measuring TOC in sample water from a pure or ultrapure water source. The system shall consist of an independently mounted transmitter and up to four TOC sensors. The sensor shall connect to the transmitter using a single patch cable. Each sensor shall provide continuous measurement of a single pressurized sample stream with no interruption of sample flow or measurement, with a response time of less than 1 minute and a measurement up-date rate of 1 second. The communication between the TOC Sensor and the transmitter shall be digital in nature.

The TOC sensor shall accept samples with temperature in the range 5 - 100°C, conductivity < 2 μ S/cm, pH < 7.5*, pressure in the range 4–100 psig (0.3–6.9 bar) and maintain a flowrate of 20 mL/min using a closed-loop flow control system. The sensor case shall be sealed, and suitable for wall or pipe mounting as specified, at a distance up to 300 ft (91m) from the transmitter. The TOC measurement shall be determined by measuring conductivity and temperature at points in the flow stream before and after irradiating the sample water with high intensity 185-nanometer ultraviolet light to oxidize organics to conductive carbon dioxide. The TOC system shall operate from a power source of 100–130 or 200–240 VAC, 50/60 Hz, as specified.

The system shall use a two- or four- channel transmitter. The transmitter shall be capable of displaying TOC, temperature, inlet resistivity and conductivity (temperature compensated and un-compensated), measured from the TOC sensor.

The transmitter shall also be capable of monitoring additional analytical parameters including conductivity, pH, ORP or dissolved oxygen, and dissolved ozone. The transmitter shall also be capable of monitoring two pulsed flow sensors. The transmitter shall be equipped with a color touch-screen display capable of simultaneously displaying up to 8 measurement values for readout of all parameters, and shall be suitable for panel, pipe or wall mounting, as specified. The transmitter shall provide eight galvanically isolated mA output signals configurable to 0-20 or 4-20 mA range, configurable for TOC, conductivity, resistivity, temperature and any other parameters measured, and which are capable of being scaled using a linear, bi-linear, logarithmic or auto-ranging method. It shall provide 4 SPST relays rated at 250 VAC, 3 Amps and 4 SPST reed relays rated at 250 VAC or 0.5 Amps DC. The transmitter shall provide 8 user-configurable alarm setpoints, capable of being configured for USP and EP conductivity requirements. The transmitter and sensor shall provide USB serial interface for firmware updates.

The sensor and transmitter shall be ISO9001 factory calibrated to ASTM and NIST-traceable standards and be provided with certificates of calibration. The TOC system shall be capable of user calibration. The system shall consist of Mettler-Toledo Thornton 5000TOCi Sensor and M800 Transmitter.

*For power plant cycle chemistry samples, pH may be adjusted by measurement after cation exchange.

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