Total Organic Carbon Analyzer for Water Model COT 9010

Water Quality Monitoring

Use of the Standard Addition method

Auto-validation of measurement results

No sample filtration required

Warning station

Main applications:

- Surface water quality monitoring
- Industrial wastewater monitoring (incinerators...)
- .....

Exclusive features:

- Operation on an unfiltered sample
- Fully automated measuring, calibration and cleaning sequences
- Cold oxidation (low pressure UV), persulfate assisted
- Electronic compensation of all variations in the measurement process
- Electrochemical measurement rather than colorimetric (no interferences due to color or suspended solids)
- Validity criteria calculated for each measurement before result transmission
- Large volume measuring cell for increased reproducibility
- Use of high precision pneumatic dozers
- Optional internal dilution for high TOC concentrations

Total Organic Carbon Analyzer in Water - Model COT 9010

Specifications :

- Measuring ranges: programmable from 0-20 to 0-220 mg/l
- Noise: 0.25 mg/l
- Lower detectable limit: 0.5 mg/l
- Display resolution: 0,01 mg/l
- Average response time: 20 minutes
- Minimum sample flow rate: 100 l/h
- Display: 2-line alphanumeric
- Control keyboard: 16 keys
- Power supply: 220 VAC +/-10 %, 4 A , 50 Hz
- Power consumption: 100Wh
- Temperature of use: + 5 to + 30°C
- Dimensions: 600 x 600 x 1870 mm (W x D x H)
- Weight: 120 kg

Utilities

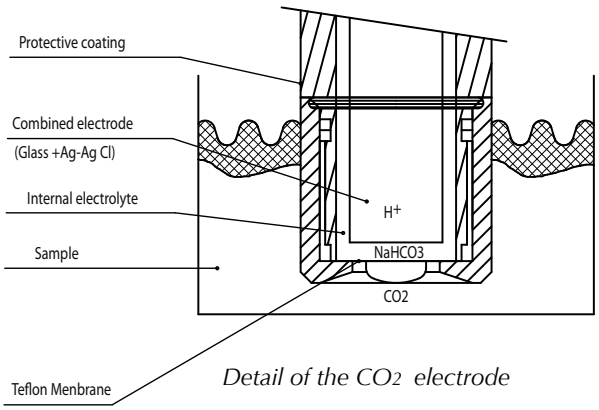
- Tap water consumption: 1 to 2 l per cycle
- Compressed air: 0.15 Nm^3/h, 5 bars
- Reagents :
  - orthophosphoric acid
  - sodium peroxodisulfate
  - sulphuric acid
  - sodium bicarbonate

Communication

- Serial: 1 RS 232 (mode J BUS possible)
- Analog ouput: 4-20 mA (option)
- Dry contacts: default, alarm

Options

- Interferent elimination kit (in case of high concentration of Chloride ions)
- Cryothermostat for closed loop cooling



Detail of the CO_2 electrode

Principle of operation:

Model COT 9010 measures Total Organic Carbon in water using a CO_2 selective electrode, after cold UV-persulate oxidation, and uses the standard addition method. Subsequently, it performs sequential analysis.

This measuring principle is unaffected by the possible color variations and by the turbidity of the sample, thus authorizing the introduction of the raw sample in the analyzer, with no filtration or ultra-filtration.

The sequential method both allows to perform automatic calibration of the electrode and to get rid of the sensor drifts. It also shows many other advantages for TOC measurement.

It eliminates the need of sophisticated pumps, such as peristaltic pumps, which generally liberate many monomers and plastic agents, and contribute to provide biased measurements.

The measurement cycle consists in three successive stages:

- mineral carbon removal (stripping),
- photochemical oxidation in liquid phase and at ambient temperature of organic matter into carbon dioxide CO_2 (mineralization),
- potentiometric measurement of formed CO_2, thanks to a gas diffusing electrode, which response characteristics were first determined by a calibration process.

A built-in micro-presssor controls all measurement and re-calibration automated procedures, calculates all parameters required for the determination of the final concentration, and detects eventual dysfunctions.

The sequential measuring mode provides a sufficient photochemical oxidation time period to guarantee an optimal oxidation rate.

Model COT 9010 systematically calculates a specific parameter (Ø), which takes into account all possible variations in the electrode response during the measurement period and check them against the results of the previous calibration.

This parameter gives valuable information about the good operation of the analyzer, and is used to validate the measurements.

Ø equals 1 when all conditions are identical between measurement and calibration: temperature, sample volume, reagents volumes...

When $Ø < 0.7$ or $Ø > 1.3$, the analyzer detects a default and initiate a new calibration sequence. If the default appears again during the next measurement, the analyzer stops and displays the following message «Ø out of range».

This «validity» parameter can be used to correct the measured concentration according to the calibration data.

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