

MICROMAC HARDNESS

ON LINE ANALYZER FOR HARDNESS MONITORING IN WATER



MICROMAC HARDNESS is a microprocessor controlled On Line analyzer specifically designed for automatic Hardness monitoring on several types of water matrices.

✓ ROBUST AND RELIABLE

Designed for industrial and Environmental On Line applications ensures the highest level of robustness in the electronics, mechanics and hydraulics components. Complete separation between electronics and hydraulics plus a simple and robust LFA* hydraulics allows easy maintenance and long terms reliable operations.

**LFA: Loop Flow Analysis patent pending*

✓ EASY TO INSTALL

The analyzer is delivered after a long and successful series of factory tests ready for installation and setup; it is provided with complete set of spares for start up. To start monitoring is enough to connect reagents, sample line, waste line and power supply.

✓ AUTOMATIC CALIBRATION

When the Calibration Time interval expires the analyzer performs a Calibration Cycle, storing and checking the new calibrant O. D. If new O.D. exceeds selected limits, an alarm contacts is closed.

✓ SAMPLE DILUTION

Sample can be analyzed as it is or after automatic dilution. Automatic dilution is factory adjusted for high range applications.

✓ MEASURING INTERVAL

User selectable; between two measurements the analyzer remains in stand by mode, without reagents consumption.

✓ FEATURES AND BENEFITS

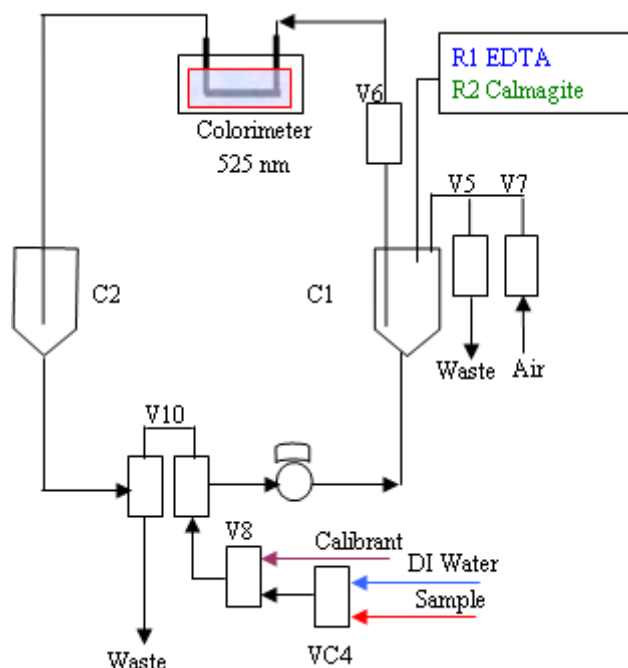
- Fully automatic operation
- Long autonomy; low maintenance, low operating cost
- Low reagents consumption; short preparation time; low disposable costs
- Easy operation; plug in analyzer, no special training is required
- Electronics and hydraulics completely separated
- Serial interface for local o remote PC connection (option)

Hardness measuring principle and hydraulic diagram

This automated method is an adaptation of the one outlined in Standards methods book.

After proper filtration, the sample is pumped inside the LFA reactor, where Mg/EDTA is added to bound the Ca ions present and release Mg ions. Then calmagite complex at pH 10 is added, that reacts with magnesium ions present in the sample plus the ones released by the Mg/EDTA complex; the formed purple red complex is measured colorimetrically at 525 nm.

The sample concentration is calculated against the calibration factor stored in the analyzer.



Technical Specifications

MEASURING PRINCIPLE: Colorimetric, Mg/EDTA, Calmagite

COLORIMETER: dual beam, silicon detector

MEASUREMENT TYPE: cyclic

MEASURING INTERVAL: programmable

MEASURING TIME: 10-18 minutes depending on the range

MEASURING RANGE: 0-100 up to 500 ppm CaCO₃ (0-10 up to 50°F), other ranges available on request

DETECTION LIMIT: typically better than 4% range 0-100ppm, calculated as for EPA p. 136 appendix B

REPEATABILITY: 3%; SD% of 7 replicates at 50%; range 0-100ppm

ACCURACY: 5%, average of 7 replicates at 50%; range 0-100ppm

OUTPUT SIGNAL: 4-20 mA

INPUT SIGNALS: n. 1 Analysis, n. 1 calibration; digital contacts

ALARMS: n. 1 High Limit, n. 1 General, n. 1 Calibration; potential free contacts

SAMPLE AND WASTE DELIVERY: pressure free;

SAMPLE TEMPERATURE: 10 °C - 30 °C

REAGENTS REPLACEMENT: 3/4 weeks depending on the operating temperature

PROTECTION: IP55

HARDWARE: PC104 industrial standard, Integrated keyboard and graphics display, RS232 option

POWER SUPPLY: 12 V DC external power supply included; 4W Standby; 10 W (mean) analysis

WEIGHT: 33 Kg without reagents;

DIMENSION: 800x420x280 mm (hwxwd)

Subject to change without notice



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