

Micromac 1000

Portable Analyzer

for Water Online Monitoring



LFA: Loop Flow Analysis patented technique

MAC-1000 is an on-line portable analyzer, available either in mono or sequential multiparametric configuration (**MAC-1000 MP**), providing the highest level of analytical automation, based on combined colorimetric and fluorimetric analytical methods.

MAC-1000 is the only available high sensitivity multiparametric portable analyzer in the market; it uses the well known wet chemistry methods normally used in the laboratories.

The analyzer can measure any type of water samples; a wide range of applications is available, including high sensitivity methods for nutrients analysis in seawater.

EASY TO USE

Sample analysis using MAC-1000 is easy and friendly; the operator can run a sample only selecting a two keys analysis function on the integrated keyboard.

MAC-1000 can perform in a full automated way very complex analytical cycles; the results are displayed in concentration units and provided through the analogic or the RS-232 port.

ALWAYS READY FOR ANALYSIS

At the end of each analytical cycle the analyzer remain in stand by mode, without reagents consumption, always ready for the next sample.

EASY TO INSTALL

After the factory tests, the analyser is delivered ready to be installed, start-up kit is included; it is sufficient to prepare the reagents, to connect the sample line, the waste and the power supply to start the measurement.

SAMPLE DILUTION

The analysis can be run either on the whole sample either after dilution on operator request.

OFF SCALE REANALYZE

Dilution mode will be automatically activated on over range samples, with a dilution factor (factory selected) up to 100 times.

FEATURES/BENEFITS

- § Portable, easy to install and to be managed
- § Low reagents consumption: only a few hundreds microliters of reagents per analysis; low reagents and disposable cost
- § Fully automated operation; no operator attending required
- § Automatic calibration mode: it is enough to select the calibration function to perform a new calibration

Results data storage: the analyzer can store up to 400 measuring results including date, time and optical density.

Application Data

Application	Measuring range	WW	SFW	DW	SW
Alkalinity (methyl orange)	0-100 mg/L up to 20g/L ppm CaCO ₃	J	J	J	
Alluminum	0-0.4 up to 10 ppm as Al ²⁺	J	J	J	J
Ammonia (colorimetric)	0-0.2 up to 200 ppm as N-NH ₃	J	J	J	J
Ammonia (OPA fluorimetric)	0-0.2 up to 1.0 ppm as N-NH ₃		J	J	J
Arsenic Total dissolved	0- 0.5 ppm	J	J	J	
Boron	0-2 up to 50 ppm as B		J	J	J
Calcium	0-5 up to 200 ppm as Ca ²⁺	J	J	J	
Chloride	0-100 up to 500 ppm as Cl ⁻	J	J	J	
Chlorine free & Total	0-0.5 up to 10 ppm as Cl ₂	J		J	
Chromium 6+	0-0.3 up to 30 ppm as Cr ⁶⁺	J	J	J	J
Chlorine Total	0-0.5 up to 10 ppm as Cl ₂	J		J	
Color	0-100 units	J	J		
Copper	0-0.1 up to 20 ppm as Cu ²⁺	J	J	J	J
Cyanide Index	0-0.3 up to 300 ppm as CN	J	J		
Ethylene Glycol	0-15 up to 50 ppm	J			
Hardness	0-10 up to 500 ppm as CaCO ₃	J	J	J	
Hydrazine	0-0.1 up to 5 ppm	J	J		
Iron Total dissolved	0-0.1 up to 1000 ppm as Fe ²⁺	J	J	J	J
Manganese	0-0.5/1/2.0/5.0/10/20/50 ppm	J	J	J	J
Nickel	0-0.5 up to 30 ppm as Ni	J	J	J	J
Nitrate+Nitrite UV photoreduction	0-0.2 up to 1000 ppm as N-NO ₃	J	J	J	J
Nitrate+Nitrite Hydrazine reduction	0-5 up to 1000 ppm as N-NO ₃	J	J	J	
Nitrite	0-0.05 up to 20 ppm as N-NO ₂	J	J	J	J
Nitrogen Total	0-5 up to 1000 ppm N	J	J	J	J
Phenol Index	0-0.1 up to 0.50 ppm	J	J		
Ortophosphate	0-0.2 up to 200 ppm as P-PO ₄	J	J	J	J
Silicates	0-0.2 up to 200 ppm as SiO ₂		J	J	J
Sulfide	0-2 ppm	J	J	J	J
Total Phosphorous	0-3 up to 200 ppm as P	J	J	J	J
Zinc	0-0.5 up to 1000 ppm as Zn	J	J	J	J

Technical data

Measuring principle: Colorimetric

Detector: multi-beam colorimeter with silicon detector

Measurement type: cyclic (cyclic&sequential MP version)

Measuring interval: programmable

Measuring time: 4-8mins, depending on the analytical method

Number of parameters: up to 4

Number of measuring points: 1

Output signals: n.2 4-20 mA load 400 Ohm linear response or 0-5 Vdc. RS-232 serial output

Input signals: digital contacts with optoisolated for analysis and calibration start

Sample delivery:

- **Pressure:** atmospheric
- **Temperature:** 10° - 30 °C
- **Volume:** 20/30 ml
- **Connections:** Standard 3.2 x 1.6 mm or others on request

Available versions:

- **Micromac 1000 base:** monoparametric
- **Micromac 1000 MP:** multiparametric, up to 4
- **Micromac 1000 Nutrients:** multiparametric analysis of NH₃, NO₂+NO₃, NO₃, PO₄.

Operating temperature: 4°-30 °C

Waste: pressure free

Mounting: integrated carrying case

Protection: IP55; IP65 on request

Reagents replacement: from 4 to 10 weeks, depending on the configured methods

Reagent compartment cooling: optional, Peltier cell

Autonomy: up to one month, depending on measurement interval time

Hardware: PC-104 industrial CPU; integrated keyboard and graphic matrix display

Data output: standard RS 232 serial port; RS 485 available on request

Power supply: 12 Vdc, provided through the main connecting cable

Power absorption: 4 W in stand by, 10 W during analysis

Weight: 13 Kg without reagents

Dimensions: 550 x 350 x 110 cm (l x h x w)

Note:

Not all analytical method can be available for MP version.

Please verify the requested MP configuration with our application specialists.

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