MICROMAC C
On-line analyzer for potable, surface and waste water monitoring

*LFA: Loop Flow Analysis patent pending

MICROMAC C is a microprocessor controlled colorimetric on-line analyzer, specifically designed for automatic monitoring on several types of water matrices.

ROBUST AND RELIABLE

Designed for industrial and environmental on-line applications, it ensures the highest level of robustness in the electronics, mechanics and hydraulics components. With a complete separation between electronics and hydraulics and a simple and robust LFA* hydraulics, it allows long term and reliable operations.

EASY TO INSTALL

The analyzer is delivered from factory only after a long and successful series of final tests. It is provided ready for installation, without any further adjustment and it is provided with a spares set for start-up operations.

AUTOMATIC CALIBRATION

As soon as a user selectable Calibration Time expires, the analyzer performs a Calibration Cycle, storing and checking the new calibrant O.D. If new measured O.D. exceeds selected limits, a digital alarm is generated.

SAMPLE DILUTION

Each sample can be analyzed “as it is” or in dilution mode. Dilution mode can be activated also on off scale samples, with a dilution factor (factory selected) up to 100 times.

MEASURING INTERVAL

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

OFF SCALE REANALYZE

The analyzer identifies off scale samples and starts the analysis in dilution mode automatically.

FEATURES/BENEFITS

Fully automatic operation

Long autonomy; low maintenance, low operating cost

Low reagents consumption; short preparation time, low disposable costs

Easy operation; fully documented plug in analyzer, no special training is required

Electronics and hydraulics completely separated

Serial interface for PC or printer connection (optional).

Standard applications

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 $N\text{-}NH_3$	J	J	J	J
Ammonia (OPA fluorimetric)	0-0.2 up to 1.0 ppm as $N\text{-}NH_3$		J	J	J
Arsenic Total dissolved	0- 0.5 ppm	J	J	J	
Arsenic Total	0-0.5 ppm	J	J	J	
Boron	0-2 up to 50 ppm as B		J	J	J
Cadmium dissolved	0-100 ppb	J	J		
Cadmium Total	0-100 ppb	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	
Chlorine 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
Chromium Total	0-1 up to 20 mg/L	J	J	J	
COD (Dichromate method)	0-50 up to 500 ppm COD	J	J		
Color	0-100 units	J	J		
Copper	0-0.1 up to 20 ppm as Cu^{2+}	J	J	J	J
Copper Total	0-0.4 up to 5 ppm as Cu^{2+}	J	J		
Cyanide Free (air stripping)	0-200 ppb	J	J	J	
Cyanide Free (distillation)	0-0.2/0.5/10/20 ppm	J	J	J	
Cyanide Index	0-0.3 up to 300 ppm as CN	J	J		
Cyanide Total	0-0.2/0.5/10/20 ppm	J	J	J	
Ethylene glycol	0-15 up to 50 ppm	J			
Fluoride	0.02-1/10/50/100 ppm			J	
Hardness	0-10 up to 500 ppm as CaCo3	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
Iron Total	0-0.1/0.5/1/2/5 ppm	J	J	J	
Lead dissolved	0-0.5/1 ppm up to 20 ppm	J	J		
Lead Total	0-0.5/1 to 20 ppm	J	J		
Manganese	0-0.5/1/2.0/5.0/10/20/50 ppm	J	J	J	J
Manganese Total	0-2 ppm	J	J		
Monochlorammine & Total Ammonia	0-2 up to 5 ppm as N		J	J	
Nickel	0-0.5 up to 30 ppm as Ni	J	J	J	J
Nickel Total	0-1.0 up to 20 ppm as Ni	J	J		
Nitrate+Nitrite Hydrazine reduction	0-5 up to 1000 ppm as $N\text{-}NO_3$	J	J	J	
Nitrate+Nitrite UV photoreduction	0-0.2 up to 1000 ppm as $N\text{-}NO_3$	J	J	J	J

Application	Measuring range	WW	SFW	DW	SW
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 Volatile	0-500 ppb	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
Sucrose	0- 100 up 1000 ppm	J			
Sulfide	0-2 ppm	J	J	J	J
TOC	0-20 mg/l up to 1000 mg/l	J	J	J	J
Total Nitrogen & Total Phosphorous	0/3/5/10 ppm as P 0-5/10/20/50 ppm as N	J	J	J	J
Total Phosphorous	0-3 up to 200 ppm as P	J	J	J	J
Total Phosphorous	0-0.5 ppm	J	J	J	J
Zinc	0-0.5 up to 1000 ppm as Zn	J	J	J	J
Zinc Total	0-0.5/1/2/5/10 mg/L up to 0-1000 mg/L	J	J		

WW = Waste Water; SFW = SurFace Water; DW = Drinking Water, SW = Sea Water

Multiparametric option

MICROMAC C NUTRIENTS:
To analyze sequentially in one single unit NH_3, NO_2+NO_3, NO_2 and PO_4.
Sequential multiparametric option allows to measure up to four parameters.

MICROMAC C TN&TP:
To analyze Total N & Total P in the same device.
The measurement is performed in a special combined mode, with one hour of measurement time.

Our application laboratory has already developed several multiparametric configurations.

Please verify your needs with our specialists.

Self cleaning filtration unit

For waste water or other dirty samples application a self cleaning filtration unit can be installed close to the analyzer.
Thanks to the integrated PLC, the filtration unit runs periodically a self cleaning cycle, using compressed air generated externally or even internally (as option).
One filtration unit can be used to supply a clean water sample up to 10 analyzers.

EASY TO INSTALL
The filtration unit is delivered completely assembled on a stainless steel and PVC frame, ready for connection to a sample line. It is sufficient to connect the sample line, the waste line and the analyzer's sampling line.

LOW MAINTENANCE
Self cleaning cycle and long life pump tube ensures low maintenance cost.

ANALYZER CONTROLLED
Micromac activates the filtration unit only when the analytical cycle starts.

STAINLESS STEEL FILTER
A stainless steel filter ensures long operation and no corrosion with the most common matrix.

Technical Specifications

MEASURING PRINCIPLE: Colorimetric

COLORIMETER: dual beam, silicon detector

MEASUREMENT TYPE: cyclic (cyclic and sequential for MP version)

MEASURING INTERVAL: programmable

MEASURING TIME: 6 to 30 minutes depending on the specific method

NUMBER OF MEASURING POINTS: up to 6

OUTPUT SIGNAL: 4-20 mA load 400 Ohm linear response (galvanic isolator available as option), or 0-5 V separated for each stream

INPUT SIGNALS:

• **Analysis:** 1 digital contact with fotocoupler, galvanically isolated

• **Calibration:** 1 digital contact with fotocoupler, galvanically isolated

ALARM SIGNALS

• **Limit Signal:** 1 potential free switch SPDT, max load 24 AC DC 0.5 A separated for each stream

• **Dilution mode:** 1 potential free switch SPDT, max load 24 AC DC 0.5 A

• **General alarm:** 1 potential free switch SPDT, max load 24 AC DC 0.5 A, separated for each stream

ALARM MESSAGES: on LCD display

SAMPLE DELIVERY:

• **Pressure:** atmospheric

• **Temperature:** 10° - 30 °C

• **Volume:** 50 ml per analysis

Connection: Standard silicone 2x4, other on request

Waste: pressure free silicone 2x4 mm

REAGENTS REPLACEMENT: from 3 to 10 weeks, depending on the method

ENVIRONMENTAL TEMPERATURE: 10 ° - 30 °C

REAGENTS COOLER: optional, by Peltier cell

MOUNTING: wall

PROTECTION: IP55; IP65 on request

HARDWARE: PC104 industrial standard microcontroller, integrated keyboard with a graphical display

COMMUNICATION PORT: RS-232, RS-485 (optional)

POWER SUPPLY: 12 Vcc; external power supply from 110/220 Vac to 12 Vcc is included.

ABSORPTION: 4W stand by, 10 W analysis

WEIGHT: 25 Kg without reagents

DIMENSION: 800x450x300 mm (hxwxd)

SELF CLEANING FILTRATION UNIT:

optional, recommended for dirty samples and waste water samples. Self cleaning stainless steel filter, PLC controlled. Mounted on stainless steel support ready for wall mounting and sample connection.

POWER SUPPLY: 12Vdc

SAMPLE PRESSURE: min 0.3 bar

SAMPLE RATE: 30 l/h max 1 bar

COMPRESSED AIR FOR SELF

CLEANING: max 2 bar

For further details about the measuring methods, please refer to the specific application sheet.

SYSTEA S.p.A.

HEADQUARTER AND MANUFACTURING FACILITY:
VIA PADUNI, 2A - 03012 ANAGNI (FR) - ITALY
TEL: +39 0775-776058 FAX +39 0775-772204
A member of Consorzio NDI
Web Site: http://www.systea.it Email: info@systea.it

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