Milwaukee

MARTINI instruments

2014 GENERAL CATALOGUE

Instruments for Water Analysis

pH
ORP
EC
TDS
DO
NaCl
Temp
Brix
NH_3-N
O_2/Kg
FNU
PO_4
Cl_2
Cl^-
Fe

SATISFACTION GUARANTEED

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Measurements made Easy

Milwaukee

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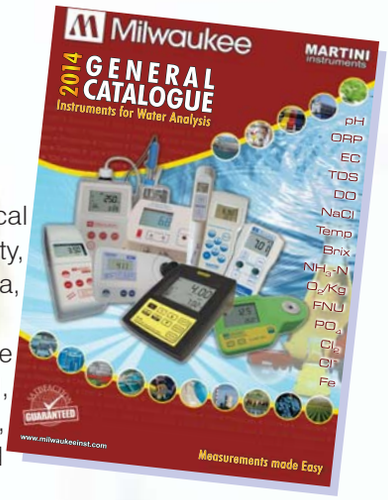

Milwaukee is a dynamic worldwide manufacturer of electrochemical Instrumentation for water analysis to measure pH, Redox, Conductivity, Salinity, Dissolved Oxygen, Temperature, Turbidity, Chlorine, Ammonia, Copper, Chloride, Phosphate, Iron, etc.
Milwaukee serves all markets where water quality measurements are required: Laboratory market, food and beverage, environmental, education and government, water and waste water treatment, pharmaceutical and biotechnology, chemical, agriculture and horticulture, hydroponics, aquariums, swimming pools, etc.
Thanks to your valuable feedback our R&D team has designed a new line of instruments - Martini Instruments - for laboratory and field measurements.

Many of our instruments combine 2 or more parameters providing added versatility and excellent value for money. With an extended range of products, from basic hand held instruments to high performance laboratory bench meters, Milwaukee products have a reputation for reliability and accuracy.
All of our instruments are supplied with probes, electrode holders, buffer solutions and most come in a hard carrying case (Martini portable meters and photometers) and are complete and ready for use.

Milwaukee Instruments are available worldwide through a selected network of distributors and associated companies that are committed to Total Customer Satisfaction.

Everyone in Milwaukee Instruments is committed to exceeding your expectations.

Global Offices

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Beauty of

Symbols

CE
CE certified products

IP65
IP65 rated housing protects instrument from water and dust

GLP (Good Laboratory Practices)
Good Laboratory Practices requires that time and date should be recorded with the parameters measured

USB Port
Communication is via opto-isolated USB port

RS232 Port
Communication via opto-isolated RS232 port

2 Years Warranty
Instruments are covered by 2 years warranty

3 Years Warranty
Instruments are covered by 3 years warranty

7 pH Memorized buffers
7 pH Memorized buffers for calibration

MEM
MEM key allows to memorize the last measurement

LOG
LOG key allows to save up to 50 measurements

ALARM
A LED light warns the user in the event the reading is outside the set point

2 Point Calibration
Calibration can be performed at 1 or 2 points

3 Point Calibration
Calibration can be performed at 1, 2 or 3 points

Multiparameter Instruments
Instruments that measure more than 1 parameter

Automatic Temperature Compensation
Automatically corrects the measured value based on the temperature of the solution

Manual Temperature Compensation
Is a method for temperature compensation through the manual input of sample temperature value

Auto-Buffer
Auto-Buffer Recognition ensures that correct buffer values are used during calibration

Dual Level Display
Displays simultaneously 2 parameters

Replaceable Electrode
Instrument with replaceable electrode

Software CD
The instrument is supplied with an application software

Self-diagnostics Messages.
Messages on the LCD to make the calibration easy and accurate

LED
The lightsource is the LED with different wave-lengths

Contents

Simplicity

Highlights in this Catalogue

pH Measurement in Meat and in Soil

A step by step guide with pictures, how to measure pH values in meat or in soil.

New

New

New Line of pH/ORP/EC and TDS Monitors and Controllers

The new MC Monitors are designed to continuously monitor pH, ORP, EC or TDS values directly in your reservoir. Each unit features a user selectable set-point. An LED visual alarm is activated and flashes when the pH, ORP, EC or TDS level rises either Above or Below (user selected) that set-point.

The new Milwaukee MC Controllers have a user selectable set point and a visual "Power Activated" LED notification light. Power to the controller box is turned on when the reading is Above or Below (user selected) the selected set point. These MC Controllers are ideal for CO_2 or ozone dosing.

Mi180: Multi parameter pH, ORP, Conductivity, TDS, NaCl and Temperature Bench Meter.

Mi180 measures 6 different parameters: pH, ORP, EC, TDS (Total Dissolved Solids), percentage of NaCl and temperature in a variety of ranges. pH calibration can be performed in 3 points selectable between 7 memorized buffers, to provide a very accurate calibration curve even when testing different samples, where very wide differences in pH can be found.

The auto-ranging feature for EC and TDS measurements automatically sets the resolution suitable to the tested sample. All measurements can be temperature compensated at 20 or 25°C and the compensation coefficient is selectable by the user. The automatic temperature compensation can also be disabled for measuring the actual conductivity value.
The stability indicator on the LCD ensures accuracy. Conductivity readings are performed with the 4-ring probe supplied with the meter. The GLP feature allows users to store and recall data on system status. PC compatible through an RS232 port or USB.

New

MA871: Digital Brix Refractometer.

The **MA871** is an optical instrument that employs the measurement of refractive index to determine the % Brix of sugar in aqueous solutions. The method is both simple and quick. Samples are measured after a simple user calibration with deionized or distilled water. Within seconds the instrument measures the refractive index of the sample and converts it to % Brix concentration units.

The **MA871** digital refractometer eliminates the uncertainity associated with mechanical refractometers and is easily portable for measurements in the field.

New

Mi150

pH/Temperature Laboratory Bench Meter

Mi150 is an advanced pH/Temp microprocessor-based bench meter. It is ideal for students and technicians who need fast and reliable measurements.
This meter is provided with a series of new diagnostic features which add an entirely new dimension to the measurement of pH, by allowing the user to dramatically improve the reliability of the measurement:

- Automatic Temperature Compensation (ATC) for good accuracy under fluctuating temperatures;
- Easy to read large custom LCD;
- Easy and Quick Push-button Calibration
- 7 memorized buffers (pH 1.68, 4.01, 6.86, 7.01, 9.18, 10.01 and 12.45) for calibration;
- Messages on the LCD to make the calibration easy and accurate;
- User-selectable "calibration time out" to remind when a new calibration is necessary;
- Stability Indicator prompts whenever reading stabilizes.

Moreover, it offers an extended temperature range from –20°C (–4°F) to 120°C (248°F), using the MA831R interchangeable temperature probe.

Specifications		Mi150
Range	pH	-2.00 to 16.00 pH
	Temp	-20.0 to 120.0°C / -4.0 to 248.0°F
Resolution	pH	0.01 pH
	Temp	0.1°C (0.1 °F)
Accuracy (@20°C / 68°F)	pH	±0.01 pH
	Temp	±0.4°C / ±0.8°F
Typical EMC Deviation	pH	±0.02 pH
	Temp	±0.4°C / ±0.8°F
pH Automatic Calibration		1 or 2 point-calibration, with 7 memorized buffers
Offset Calibration		±1 pH
Slope Calibration		from 80 to 108%
Temperature Compensation		automatic, from -20.0 to 120.0°C / -4.0 to 248.0°F or manual, without temperature probe
pH Electrode		**MA917B/1** (included)
Temperature Probe		**MA831R** (included)
Environment		0 to 50°C / 32 to 122°F; max RH 95%
Input Impedance		10^{12} Ohm
Power supply		12 VDC power adapter (included)
Dimensions		230 x 160 x 95 mm
Weight		0.9 kg

Glass Electrode & Temperature Probe

Choose from our wide selection of pH and ORP electrodes at pages 6 and 45.

Innovative Design

Compact-size ergonomic design with electrode holder that can hold multiple electrodes & probes.

Accessories

MA9001	pH 1.68 buffer solution, 230 mL bottle
MA9004	pH 4.01 buffer solution, 230 mL bottle
MA9006	pH 6.86 buffer solution, 230 mL bottle
MA9007	pH 7.01 buffer solution, 230 mL bottle
MA9009	pH 9.18 buffer solution, 230 mL bottle
MA9010	pH 10.01 buffer solution, 230 mL bottle
MA9012	Refilling solution for double junction electrode, 230 mL bottle
MA9015	Electrode storage solution, 230 mL bottle

MA9016	Electrode cleaning solution, 230 mL bottle
MA9112	pH 12.45 buffer solution, 230 mL bottle
MA9310	12 VDC Adapter, 220 V
MA9311	12 VDC Adapter, 110 V
MA9315	Electrode Holder
MA917B/1	Glass body, double junction refillable pH electrode
MA831R	Temperature probe

Ordering Information

Mi150 is supplied complete with:
- **MA917B/1** Double junction refillable pH electrode
- **MA831R** Temperature Probe
- **MA9315** Electrode Holder
- **M10004** pH 4.01 Sachet Buffer Solution
- **M10007** pH 7.01 Sachet Buffer Solution
- **M10010** pH 10.01 Sachet Buffer Solution
- **M10016** Sachet Electrode Cleaning Solution
- Graduate Pipet
- 12 VDC Adapter
- Instruction manual

Mi151

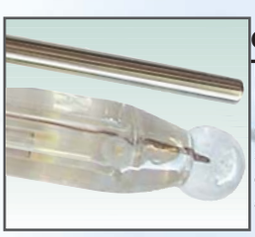
pH/ORP/Temperature Laboratory Bench Meter

This high performance economy microprocessor-based pH/ORP/Temp Bench meter is an ideal tool in schools, laboratories and production plants. It is provided with a series of new diagnostic features which add an entirely new dimension to the measurement of pH, by allowing the user to dramatically improve the reliability of the measurement:

- Automatic Temperature Compensation (ATC) for good accuracy under fluctuating temperatures;
- Hold Function freezes reading for easy viewing;
- Easy to read large custom LCD;
- Stability Indicator prompts whenever reading stabilizes;
- 7 memorized buffers (pH 1.68, 4.01, 6.86, 7.01, 9.18, 10.01 and 12.45) for calibration;
- Messages on the LCD to make the calibration easy and accurate;
- User-selectable "calibration time out" to remind when a new calibration is necessary.

Mi151 can also measure with ORP electrodes, thanks to its capability to measure mV with a resolution up to 0.1 mV. For accurate measurements, use the electrode holder supplied with the meter.

Specifications		Mi151
Range	pH	-2.00 to 16.00 pH
	mV	±699.9 mV / ±1999 mV
	Temp	-20.0 to 120.0°C / -4.0 to 248.0°F
Resolution	pH	0.01 pH
	mV	0.1 mV / 1 mV
	Temp	0.1°C (0.1°F)
Accuracy (@ 20°C)	pH	±0.01 pH
	mV	±0.2 mV / ±1 mV
	Temp	±0.4°C / ±0.8°F
Typical EMC Deviation	pH	±0.02 pH
	mV	±0.2 mV / ±1 mV
	Temp	±0.4°C / ±0.8°F
pH Automatic Calibration		1 or 2 point-calibration, with 7 memorized buffers
Offset Calibration		±1 pH
Slope Calibration		from 80 to 108%
Temperature Compensation		automatic, from -20.0 to 120.0°C / -4.0 to 248.0°F or manual, without temperature probe
pH Electrode		**MA917B/1** (included)
Temperature Probe		**MA831R** (included)
Environment		0 to 50°C / 32 to 122°F; max RH 95%
Input Impedance		10^{12} Ohm
Power supply		12 VDC power adapter (included)
Dimensions		230 x 160 x 95 mm
Weight		0.9 kg

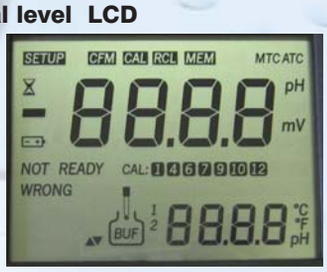


Glass Electrode & Temperature Probe

Choose from our wide selection of pH and ORP electrodes at pages 6 and 45.

Custom dual level LCD

Large and easy-to-read Custom dual level LCD Display with simultaneous readings and with user-friendly icons.



Accessories

MA9001	pH 1.68 buffer solution, 230 mL bottle
MA9004	pH 4.01 buffer solution, 230 mL bottle
MA9006	pH 6.86 buffer solution, 230 mL bottle
MA9007	pH 7.01 buffer solution, 230 mL bottle
MA9009	pH 9.18 buffer solution, 230 mL bottle
MA9010	pH 10.01 buffer solution, 230 mL bottle
MA9012	Refilling solution for double junction electrode, 230 mL bottle
MA9015	Electrode storage solution, 230 mL
MA9016	Electrode cleaning solution, 230 mL
MA831R	Temperature probe

MA9112	pH 12.45 buffer solution, 230 mL bottle
MA9310	12 VDC Adapter, 220 V
MA9311	12 VDC Adapter, 110 V
MA9315	Electrode Holder
MA917B/1	Glass body, double junction refillable pH electrode
MA921B/1	Platinum ORP electrode with 1 m cable (will be replaced by **SE300**)
SE300	Platinum ORP electrode with 1 m cable

Ordering Information

Mi151 is supplied complete with:

- **MA917B/1** Double junction refillable pH electrode
- **MA831R** Temperature Probe
- **MA9315** Electrode Holder
- **M10004** pH 4.01 Sachet Buffer Solution
- **M10007** pH 7.01 Sachet Buffer Solution
- **M10010** pH 10.01 Sachet Buffer Solution
- **M10016** Sachet Electrode Cleaning Solution
- Graduate Pipet
- 12 VDC Adapter
- Instruction manual

Mi160

pH/ORP/ISE/Temperature Laboratory Bench Meter

This new pH/ORP/ISE/Temp bench meter is ideal for very accurate and precise measurements for all laboratory needs. It can perform ion-selective measurements directly in ppm, as well as pH, ORP and temperature measurements. pH calibration can also be performed in 3 points selectable between 7 memorized buffers, to provide a very accurate calibration curve even when testing different samples, where very wide differences in pH can be found.

Thanks to the memory it can store up to 50 data sets for each range that can be downloaded to a PC via RS232 or USB. These instruments also have GLP features so, at any time, the user can recall the calibration data.

- 7 memorized buffers (pH 1.68, 4.01, 6.86, 7.01, 9.18, 10.01 and 12.45) for pH calibration
- pH calibration up to 3 points
- ISE calibration up to 2 points; six standard solutions available: 0.01, 0.1, 1, 10, 100, 1000 ppm
- Messages on the LCD to make the calibration easy and accurate
- Relative mV feature
- GLP feature, to view last calibration data for pH or ISE

Specifications		Mi160
Range	pH	-2.00 to 16.00 pH
	mV	±699.9 mV / ±2000 mV
	ISE	0.001 to 19999 ppm
	Temp	-20.0 to 120.0°C / -4.0 to 248.0°F
Resolution	pH	0.01 pH
	mV	0.1 mV / 1 mV
	ISE	0.001 (0.001 to 9.999) ppm; 0.01 (10.00 to 99.99) ppm; 0.1 (100.0 to 999.9) ppm; 1 (1000 to 19999) ppm
	Temp	0.1°C / 0.1°F
Accuracy (@20°C)	pH	±0.01 pH
	mV	±0.2 mV / ±1 mV
	ISE	±0.5% Full Scale
	Temp	±0.4°C / ±0.8°F
Rel mV offset		±2000 mV
pH Calibration		1, 2 or 3 point-calibration, with 7 memorized buffers
ISE Calibration		1 or 2 point calibration, 6 standard solutions available
Temperature Compensation		automatic, from -20.0 to 120.0°C / -4.0 to 248.0°F or manual, without temperature probe
pH Electrode		**MA917B/1** (included)
Temperature Probe		**MA831R** (included)
Logging		up to 50 records, LOG on demand or auto-logging
Environment		0 to 50°C / 32 to 122°F; max RH 95%
Input Impedance		10^{12} Ohm
Power Supply		12 VDC power adapter (included)
Dimensions		230 x 160 x 95 mm
Weight		1.1 kg

Easy PC Compatibility

RS232 or USB communication interface allows readings to be downloaded to a serial port.

Rear Connector Panel layout

Communication to the PC is done via opto-isolated USB and RS232 ports.

Accessories

MA9004 pH 4.01 buffer solution, 230 mL bottle
MA9007 pH 7.01 buffer solution, 230 mL bottle
MA9010 pH 10.01 buffer solution, 230 mL bottle
MA9015 Electrode storage solution, 230 mL
MA9016 Electrode cleaning solution, 230 mL
MA9112 pH 12.45 buffer solution, 230 mL bottle
MA831R Temperature probe
MA9310 12 VDC Adapter, 220 V
MA9311 12 VDC Adapter, 110 V
MA9315 Electrode Holder
MA917B/1 Glass body, double junction refillable pH electrode
MA921B/1 Platinum ORP electrode with 1 m cable (will be replaced by **SE300**)
SE300 Platinum ORP electrode with 1 m cable
MA9350 RS232 connection cable with 2 m cable
Mi5200 Application Software

Ordering Information

Mi160 is supplied complete with:
- **MA917B/1** Double junction refillable pH electrode
- **MA831R** Temperature Probe
- **MA9315** Electrode Holder
- **M10004** pH 4.01 Sachet Buffer Solution
- **M10007** pH 7.01 Sachet Buffer Solution
- **M10010** pH 10.01 Sachet Buffer Solution
- **M10016** Sachet Electrode Cleaning Solution
- **Mi5200** Application Software
- **MA9350** RS232 connection cable with 2 meters cable
- Graduate Pipet, 12 VDC Adapter & Instruction manual

pH Electrode basics

pH electrodes are constructed from a special composition glass which senses the hydrogen ion concentration. This glass is typically composed of alkali metal ions. The alkali metal ions of the glass and the hydrogen ions in solution undergo an ion exchange reaction, generating a potential difference. In a combination pH electrode, the most widely used variety, there are actually two electrodes in one body. One portion is called the measuring electrode, the other the reference electrode. The potential generated at the junction site of the measuring portion is due to the free hydrogen ions present in solution.

The potential of the reference portion is produced by the internal element in contact with the reference fill solution. This potential is always constant. In summary, the measuring electrode delivers a varying voltage and the reference electrode delivers a constant voltage to the meter. The voltage signal produced by the pH electrode is a very small, high impedance signal. The input impedance requires to be interfaced only with equipment with high impedance circuits.

Milwaukee has a wide assortment of pH and ORP electrodes to meet all your specific requirements. Finding the right electrode for a specific application is a very important task and in order to solve this selection problem it is important to consider the following:

- **Glass body electrode versus Epoxy (plastic) body electrode**: Glass body electrodes stand higher temperatures (typically 100°C against 80°C for plastic) and are more resistant to corrosive chemicals and solvents. They are easier to clean and are available in different shapes depending on the application. On the other hand plastic body electrodes are more rugged and the glass bulb is better protected.

- **Gel filled electrodes versus refillable electrodes**: refillable electrodes last longer since electrolyte can be changed for repeated usage. The response is faster due to a greater outflow of electrolyte into the sample and therefore less likely to clog. Gel filled electrodes require less maintenance and resist to higher pressure.

- **Double reference junction versus Single junction reference**: Double junction reference electrodes have a longer life and protects the sample measured from silver contamination from the electrolyte. The Silver wire is more protected and therefore gets less contaminated. The single junction electrodes normally cost less and are ideal for general purpose applications

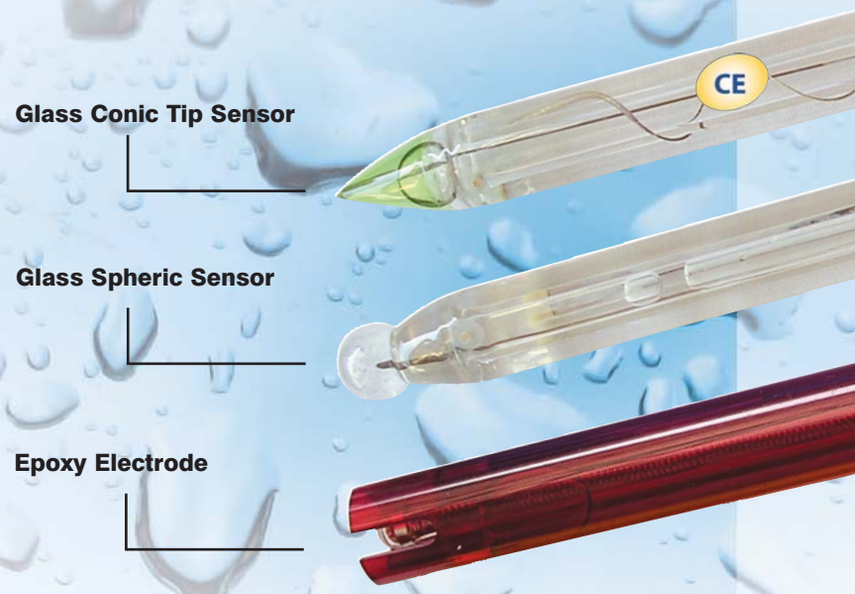
- **Conic shaped versus Sphere shaped**: The conic-shaped electrode is easier to clean and to maintain (ideal for applications such as dairy). Has a more rugged tip and therefore ideal for penetration. The sphere-shaped has a faster response time due to the larger surface area on the bulb.

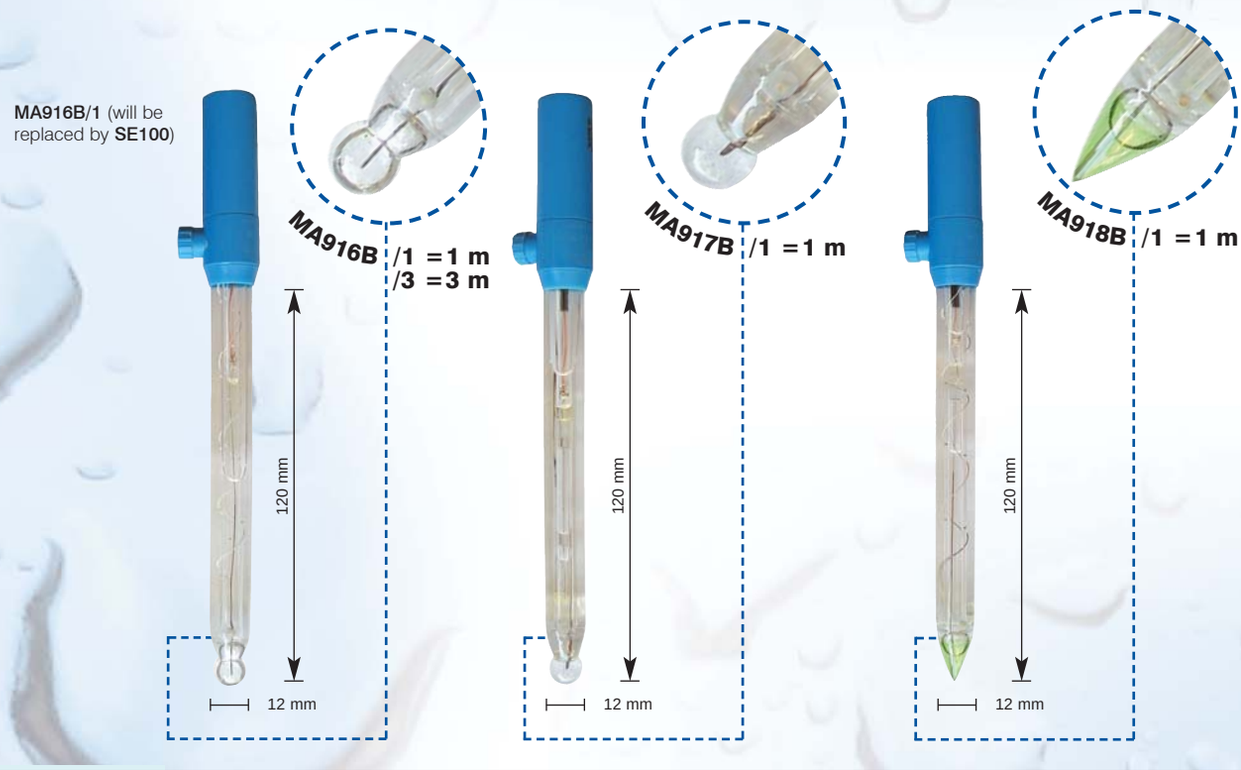
Model	MA919B/1	MA924B/1
Measuring Range	0 to 13 pH	±2000 mV
Temperature Range	-5 to 40 °C (23 to 104°F)	20 to 40 °C (68 to 104°F)
Shaft material	glass	glass
Reference Electrolyte	KCL 3.5M	KCL 3.5M
Reference Junction	open	open
Reference Type	double Ag/AgCl	double Ag/AgCl
Shape of membrane	spheric	Platinum ring
Max. Pressure	0,1 bar	0,1 bar
Connector type	BNC	BNC
Cable length	coaxial 1 meter	coaxial 1 meter
Shaft length	120 mm	120 mm
Diameter	8 mm	8 mm
Application	food laboratory	food laboratory

pH Electrode
basics

The pH electrode, due to the nature of its construction, needs to be kept moist at all times. In order to operate properly, glass needs to be hydrated. Hydration is required for the ion exchange process to occur. If an electrode should become dry, it is best to place it in some tap water for half an hour to condition the glass.

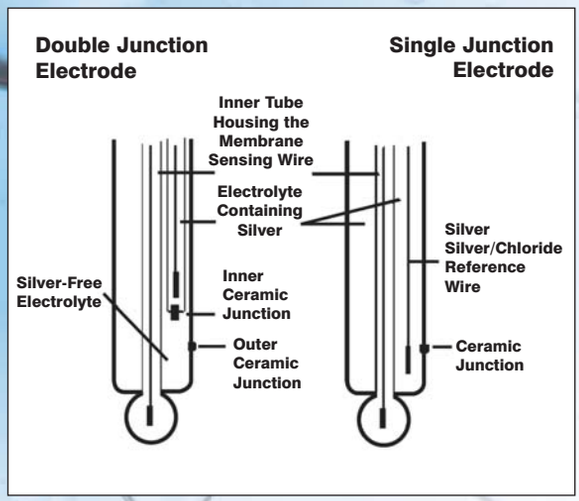
pH electrodes are like batteries; they run down with time and use. As an electrode ages, its glass changes resistance. This resistance change alters the electrode potential. For this reason, electrodes need to be calibrated on a regular basis. Calibration in pH buffer solution corrects for this change. Calibration of any pH equipment should always begin with buffer 7.0 as this is the "zero point." The pH scale has an equivalent mV scale. The mV scale ranges from +420 to -420 mV. At a pH of 7.0 the mV value is 0. Each pH change corresponds to a change of approx. ±60 mV. As pH values become more acidic the mV values become greater. pH electrodes have junctions which allow the internal electrolyte solution of the measuring electrode to leak out into the solution being measured.





Model	MA916B/1 - MA916B/3	MA917B/1	MA918B/1
Measuring Range	0 to 13 pH	0 to 14 pH	0 to 12 pH
Temperature Range	20 to 40°C (68 to 104°F)	20 to 40°C (68 to 104°F)	-5 to 30°C (23 to 86°F)
Shaft Material	glass	glass	glass
Reference Electrolyte	KCl 3.5M + AgCl	KCl 3.5M	KCl 3.5M + AgCl
Reference Junction	ceramic, single	ceramic, single	ceramic, triple
Reference Type	single, Ag/AgCl	double, Ag/AgCl	single, Ag/AgCl
Shape of membrane	spheric	spheric	conic
Max pressure	0.1 bar	0.1 bar	0.1 bar
Connector Type	BNC	BNC	BNC
Cable length	coaxial, 1 or 3 m	coaxial, 1 m	coaxial, 1 m
Shaft length	120 mm	120 mm	120 mm
Diameter	12 mm	12 mm	12 mm
Application	laboratory applications	laboratory applications	laboratory applications

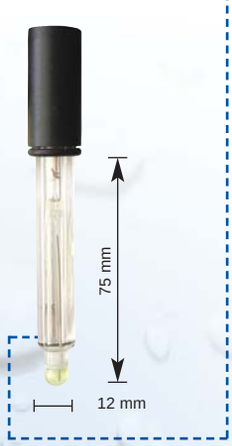
pH Electrode
basics



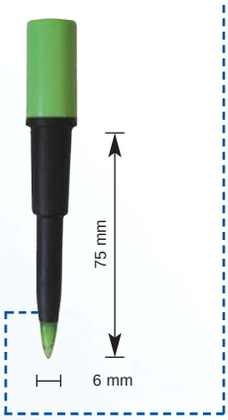
This junction can become clogged by particulates in the solution and can also facilitate poisoning by metal ions present in the solution. If a clogged junction is suspected it is best to soak the electrode in tap water to dissolve the material and clear the junction. When not in use it is best to store the electrode in either buffer 4.0 or buffer 7.0. Never store an electrode in distilled or deionized water as this will cause migration of the electrolyte solution from the electrode.

How long a pH electrode will last will depend on how it is cared for and the solutions it is used to measure. Typically, a gel-filled combination pH electrode will last six months to 1 year depending on the care and application.
How long an electrode will last is determined by how well the probe is maintained and the pH application. The harsher the system, the shorter the lifespan. For this reason it is always a good idea to have a back-up electrode on hand to avoid any system down time. Calibration is also an important part of electrode maintenance. This assures not only that the electrode is behaving properly but that the system is operating correctly.

MA915B /2 =2 m
/3 =3 m

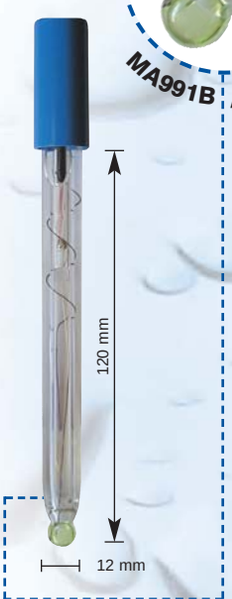


MA920B /1 =1 m



MA991B /1 =1 m

MA991B/1 (will be replaced by **SE120**)



Model	MA915B/2 - MA915B/3	MA920B/1	MA991B/1
Measuring Range	0 to 13 pH	0 to 12 pH	0 to 13 pH
Temperature Range	-5 to 40°C (23 to 104°F)	-5 to 40°C (23 to 104°F)	-5 to 40°C (23 to 104°F)
Shaft Material	glass	PVDF	glass
Reference Electrolyte	polymer	Viscolene	KCl 3.5M
Reference Junction	ground glass	open	ceramic, single
Reference Type	double, ground glass	single, Ag/AgCl	single, Ag/AgCl
Shape of membrane	spheric	conic	spheric
Max pressure	3 bar	0.1 bar	0.1 bar
Connector Type	BNC	BNC	BNC
Cable length	2 or 3 m	coaxial, 1 m	coaxial, 1 m
Shaft length	75 mm	75 mm	120 mm
Diameter	12 mm	6 mm	12 mm
Application	industrial applications	laboratory applications	laboratory applications

pH Electrode
basics

Temperature compensation: When measuring pH using a pH electrode the temperature error from the electrode varies based on the Nernst Equation as 0.03pH/10C/unit of pH away from pH7. The error due to temperature is a function of both temperature and the pH being measured. Temperature compensation can be achieved manually or automatically. Manual temperature compensation is usually achieved by entering the temperature of the fluid being measured into the instruments menu and then the instrument will display a "Temperature Compensated" pH reading.

This means that the temperature is corrected to the value expected at 25 Deg C. Automatic temperature compensation requires input from a temperature sensor and constantly sends a compensated pH signal to the display. Automatic temperature compensation is useful for measuring pH in systems with wide variations in temperature.

Model	MA905B/3	MA913B/3	MA923B/3
Measuring Range	0 to 13 pH	0 to 13 pH	±1999 mV
Temperature Range	-10 to 80°C (14 to 176°F)	20 to 40°C (68 to 104°F)	20 to 40°C (68 to 104°F)
Shaft Material		Epoxy	Epoxy
Reference Electrolyte	polymer	gel	gel
Reference Junction	double	ceramic, single	cloth
Reference Type		single, Ag/AgCl	single, Ag/AgCl
Shape of membrane		spheric	spheric pH: conic / ORP: Platinum sensor
Max pressure	6 bar	2 bar	3 bar
Connector Type	3/4" NPT - BNC	BNC	DIN
Cable length	3 m	coaxial, 3 m	7-pole, 3 m
Shaft length	120 mm	120 mm	120 mm
Diameter	22 mm	12 mm	14 mm
Application	industrial applications	water, waste water	water, waste water

Mi105

Portable pH/Temp Meter

Extended Range pH and Temperature Meter in a compact casing

The included electrode has a built-in temperature sensor and amplifier to prevent electrical interference.
The large display shows readings in an extended range from -2.00 to 16.00 pH and simultaneously shows temperature from -5.0 to 105.0°C or 23 to 221°F.

The **Mi105** has a stability indicator and hold feature that freezes the display for easy and accurate recording. The large display also has graphic symbols to guide you through all operations. The battery life of the meters guarantees over 500 hours of continuous use.
When switched ON it performs a self-check and displays the percentage of the remaining battery level to assure proper working condition. Calibration is performed automatically at 1 or 2 points using standard or NIST buffers.

Specifications		Mi105
Range(*)	pH	-2.00 to 16.00 pH
	Temp	-5.0 to 105.0°C / 23.0 to 221.0°F
Resolution	pH	0.01 pH
	Temp	0.1 °C / 0.1 °F
Accuracy	pH	±0.02 pH
(@25°C)	Temp	±0.5°C up to 60°C; ±1°C outside / ±1°F up to 140°F; ±2°F outside
Typical EMC	pH	±0.02 pH
Deviation	Temp	±0.2°C / ±0.4°F
Temperature Compensation		automatic, from -5 to 80°C
pH Calibration		automatic, 1 or 2 points
Probe		MA914BR/1, amplified pH/temperature probe (included)
Environment		0 to 50°C / 32 to 122°F; max RH 100%
Battery Type		1 x 9V alkaline (included)
Battery Life		approx. 500 hours of use
Auto-off		after 8 minutes of non-use
Dimensions		200×85×50 mm
Weight		260 g (with battery)

(*) The temperature range is limited to 80°C (176°F) if using the MA914BR/1 probe.

Calibration, Maintenance & Cleaning Solutions

Choose from our wide selection of calibration, maintenance and cleaning solutions at page 53.

Accessories

MA914BR/1 Combination amplified pH/Temp probe with BNC & RCA connectors and 1 m cable
M10004B pH 4.01 buffer solution 20 mL sachet (25 pcs)
M10006B pH 6.86 buffer solution 20 mL sachet (25 pcs)
M10007B pH 7.01 buffer solution 20 mL sachet (25 pcs)
M10009B pH 9.18 buffer solution 20 mL sachet (25 pcs)
M10010B pH 10.01 buffer solution, 20 mL sachet (25 pcs)
MA9004 pH 4.01 buffer solution, 230 mL bottle
MA9006 pH 6.86 buffer solution, 230 mL bottle
MA9007 pH 7.01 buffer solution, 230 mL bottle
MA9009 pH 9.18 buffer solution, 230 mL bottle
MA9010 pH 10.01 buffer solution, 230 mL bottle
MA9015 Electrode storage solution, 230 mL
MA9016 Electrode cleaning solution, 230 mL
M10000B Electrode rinse solution, 20 mL (25 pcs)

Ordering Information

Mi105 is supplied complete with MA914BR/1 pH/Temp amplified probe with 1 meter cable, 20 mL pH 4.01 and 7.01 sachet of calibration solution, 2x20 mL sachet of electrode cleaning solutions, 9V battery and instructions, all in a rugged carrying case.

Mi106

Portable pH/ORP/Temp Meter

Extended Range pH/ORP/Temperature Meter

The **Mi106** multi parameter portable meter is ideal for field measurements.
The included combined pH/ORP electrode has a built-in temperature sensor and amplifier to prevent electrical interference.
The large display shows readings in an extended range from -2.00 to 16.00 pH or ±2000 mV and simultaneously shows temperature from -5.0 to 105.0°C or 23 to 221°F.

The **Mi106** has a stability indicator and hold feature that freezes the display for easy and accurate recording.
The large display also has graphic symbols to guide you through all operations.
When switched ON it performs a self-check and displays the percentage of the remaining battery level to assure proper working condition.

Calibration is performed automatically at 1 or 2 points using standard or NIST buffers.

Specifications		Mi106
Range (*)	pH	-2.00 to 16.00 pH
	mV	-2000 to +2000 mV
	Temp	-5.0 to 105.0°C / 23.0 to 221.0°F
Resolution	pH	0.01 pH
	mV	1 mV
	Temp	0.1°C / 0.1°F
Accuracy (@25°C)	pH	±0.02 pH
	mV	±2 mV
	Temp	±0.5°C up to 60°C; ±1°C outside / ±1°F up to 140°F; ±2°F outside
Typical EMC Deviation	pH	±0.02 pH
	mV	±2 mV
	Temp	±0.2°C / ±0.4°F
Temperature Compensation		automatic, from -5 to 80°C / 23 to 176°F
pH Calibration		automatic, 1 or 2-point
ORP Calibration		factory calibrated
Probe		MA923D/1, amplified pH/ORP/temperature probe (included)
Environment		0 to 50°C / 32 to 122°F; max RH 95%
Battery Type		1 x 9V alkaline (included)
Battery Life		approx. 500 hours of use
Auto-off		after 8 minutes of non-use
Dimensions		200 × 85 × 50 mm
Weight		260 g (with battery)

(*) The temperature range is limited to 80°C (176°F) if using the MA923D/1 probe.

Hard Carrying Case

Each meter is supplied in a hard carrying case ideal for field measurements.

Accessories

MA923D/1 Combination amplified pH/ORP/Temp probe with DIN connector and 1 m cable
M10004B pH 4.01 buffer solution 20 mL sachet (25 pcs)
M10006B pH 6.86 buffer solution 20 mL sachet (25 pcs)
M10007B pH 7.01 buffer solution 20 mL sachet (25 pcs)

M10009B pH 9.18 buffer solution 20 mL sachet (25 pcs)
M10010B pH 10.01 buffer solution 20 mL sachet (25 pcs)
MA9004 pH 4.01 buffer solution, 230 mL bottle
MA9007 pH 7.01 buffer solution, 230 mL bottle
MA9015 Electrode storage solution, 230 mL
MA9016 Electrode cleaning solution, 230 mL
M10000B Electrode rinse solution, 20 mL sachet (25 pcs)

Ordering Information

Mi106 is supplied complete with MA923D/1 pH/ORP/Temp amplified probe with 1 meter cable, 20 mL pH 4.01 and 7.01 sachet of calibration solution, 2x20 mL sachet of electrode cleaning solutions, 9V battery, instructions, all in a rugged carrying case.

MW100/MW101/MW102/MW500

Entry level, inexpensive pH/ORP/Temperature Portable Meters for fast and reliable results

MW100, **MW101**, **MW102** and **MW500** are compact pH, ORP and Temperature Portable Meters with Faster Micro Processor. These handy and ergonomically designed portable meters are ideal for anyone working on a low budget and still requires fast and reliable measurements.

These portable meters are suitable for a wide range of applications, such as Educational, Agriculture and Horticulture, as well as water and environmental analysis.
These easier and faster to calibrate portable meters have a smaller, ergonomic and lighter case design. Other features include 100% larger and easier to read LCD Display and long battery life.

All meters are supplied with pH or ORP electrodes and calibration solutions.

- **MW100** performs pH measurements with a 0.1 pH resolution and with manual temperature compensation.
- **MW101** performs pH measurements with a 0.01 pH resolution and with manual temperature compensation.
- **MW102** is a microprocessor based pH/Temperature meter with extended range (-2.00 to 16.00 pH), Automatic Temperature Compensation, automatic calibration in 2 points and ±0.02 pH accuracy.
- **MW500** performs ORP measurements with a range of ±1000 mV.

Specifications		 **MW100** pH Meter	 **MW101** pH Meter	 **MW102** pH/Temp Meter	 **MW500** ORP Meter
Range	pH/ORP	0.0 to 14.0 pH	0.00 to 14.00 pH	-2.00 to 16.00 pH	±1000 mV
	Temp			-5 to 70°C	
Resolution	pH/ORP	0.1 pH	0.01 pH	0.01 pH	1 mV
	Temp			0.1°C	
Accuracy (@25°C)	pH/ORP	±0.2 pH	±0.02 pH	±0.02 pH	±5 mV
	Temp			±0.5°C	
Typical EMC Deviation	pH			±0.02 pH	
	Temp			±0.5°C	
Temperature Compensation		N.A.	manual, 0 to 50°C	automatic, 0 to 70°C	
Calibration		manual, 2-point through offset and slope trimmers	manual, 2-point through offset and slope trimmers	automatic, at 1 or 2 points	
pH Electrode		**SE220** (included)	**SE220** (included)	**SE220** (included)	
ORP Electrode					**SE300** (included)
Temperature Probe				**MA830R** (included)	
Environment		0 to 50°C, max RH 95%	0 to 50°C, max RH 95%	0 to 50°C; max RH 95%	0 to 50°C; max RH 95%
Battery Type		1 x 9V alkaline (included)	1 x 9V alkaline (included)	1 x 9V alkaline (included)	1 x 9V alkaline (included)
Battery Life		approx. 300 hours of use	approx. 300 hours of use	approx. 300 hours of use	approx. 300 hours of use
Auto-off				after 8 minutes of non-use	
Dimensions		145 x 80 x 40 mm	145 x 80 x 40 mm	145 x 80 x 40 mm	145 x 80 x 40 mm
Weight		220 g (with battery)	220 g (with battery)	220 g (with battery)	220 g (with battery)

Accessories

M10004B pH 4.01 buffer solution 20 mL sachet (25 pcs)
M10007B pH 7.01 buffer solution 20 mL sachet (25 pcs)
M10010B pH 10.01 buffer solution 20 mL sachet (25 pcs)
MA9004 pH 4.01 buffer solution, 230 mL bottle
MA9007 pH 7.01 buffer solution, 230 mL bottle

MA9015 Electrode storage solution, 230 mL
MA9016 Electrode cleaning solution, 230 mL
MA830R Temperature probe
MA9020 200-275 mV ORP solution, 230 mL bottle
SE220 pH electrode with BNC connector and 1 m cable
SE300 Platinum ORP electrode with 1 m cable

Ordering Information

MW100 and **MW101** are supplied complete with a SE220 pH electrode, pH 7.01 20 mL sachet of calibration solution, calibration screwdriver, 9V battery and instructions.
MW102 is supplied complete with a SE220 pH electrode, MA830R stainless steel temperature probe, pH 4.01 and pH 7.01 20 mL sachet of calibration solution, 9V battery and instructions.
MW500 is supplied complete with a SE300 platinum electrode, 9V battery and instructions.

Measuring pH in Meat

The pH changes occurring in a carcass during the first 24 h after slaughter are important for the quality of the final meat or meat products. Protein denaturation will occur if pH falls to too low a level or if a relatively low pH sets in at a time after slaughter where the carcass temperature is still high. This will result in meat with poor water holding capacity and in extreme cases in meat that is PSE. pH is measured electrochemically using either glass or solid state (IS-FET) electrodes. However, electrochemically based methods are slow to use and do not offer good precision on unhomogenized meat.

1. Calibrate the pH meter using pH 7 and pH 4 standardization buffers.

2. Cut meat sample into small pieces and weight approximatley 10 grams into a blender cup. Run duplicates on each sample.

3. Add 100 ml of distilled deionized water

4. Blend for 30 seconds on high speed.

5. Transfer sample to a beaker. Read the pH as soon as possible.

6. Add a stir bar to the beaker, turn on the stir plate and place the pH electrode in the sample. Wait for the ready light to come on before recording the pH value.

7. Blender cups, beakers and stir bars can be rinsed in distilled water between samples. The pH electrode should be rinsed with distilled water between each sample and periodically rinsed with acetone from a squeeze bottle to remove fat buildup.

pH55/pH56

Pocket-size pH/Temperature Meters with replaceable electrode

Years warranty 2 · ATC · IP65 · Points 2 · AUTO Buffer · Dual Display · Self diagnostics · CE · Electrode Replaceable

Waterproof pH testers with Large dual-level LCD that displays pH and temperature (°C or °F).
The large display shows readings in an extended range from -2.0 to 16.0 pH (**pH56** has a 0.01 pH resolution) and simultaneously shows temperature from -5.0 to 105.0°C or 23.0 to 221.0°F.
They have a stability indicator and hold function that freezes the display for easy and accurate recording.
The large display also has graphic symbols to guide you through all operations.
Complete with a temperature probe for faster and more precise temperature measurement they compensate automatically for temperature.
Calibration is made automatically in 1 or 2 points with memorized standard and NIST buffer sets. Auto power OFF saves battery power after non-use.

The double-junction electrode can be replaced in a very fast and simple way! The modular design allows easy electrode and battery replacement.

Specifications

		pH55	pH56
Range	pH	-2.0 to 16.0 pH	-2.00 to 16.00 pH
	Temp	-5.0 to 60.0°C / 23.0 to 140.0°F	-5.0 to 60.0°C / 23.0 to 140.0°F
Resolution	pH	0.1 pH	0.01 pH
	Temp	0.1°C / 0.1°F	0.1°C / 0.1°F
Accuracy (@25°C)	pH	±0.1 pH	±0.05 pH
	Temp	±0.5°C / ±1°F	±0.5°C / ±1°F
Typical EMC Deviation	pH	±0.1 pH	±0.02 pH
	Temp	±0.3°C / ±0.6°F	±0.3°C / ±0.6°F
Calibration		automatic, 1 or 2 points with 2 sets of memorized buffers (pH 4.01, 7.01, 10.01 or 4.01, 6.86, 9.18)	automatic, 1 or 2 points with 2 sets of memorized buffers (pH 4.01, 7.01, 10.01 or 4.01, 6.86, 9.18)
Temperature Compensation		automatic, from -5 to 60°C	automatic, from -5 to 60°C
Probe		Mi56P (replaceable)	Mi56P (replaceable)
Environment		-5 to 50°C / 32 to 122°F; max RH 100%	-5 to 50°C / 32 to 122°F; max RH 100%
Battery Type		4 x 1.5V; IEC LR44, A76 (included)	4 x 1.5V; IEC LR44, A76 (included)
Battery Life		approx. 300 hours of use	approx. 300 hours of use
Auto-off		after 8 minutes of non-use	after 8 minutes of non-use
Dimensions		200 x dia 38 mm	200 x dia 38 mm
Weight		100 g	100 g

Temperature Sensor

The **pH55** and **pH56**'s exposed temperature sensor provides fast response time, and its proximity to the pH electrode guarantees much more accurate temperature compensated readings.

Replaceable electrode

Replace the electrode in a fast and simple way yourself! Just unscrew the plastic ring on the top of the electrode and replace the electrode with a new one.

Accessories

Mi56P Replaceable electrode for pH55 & pH56
M10004B pH 4.01 buffer solution 20 mL sachet (25 pcs)
M10007B pH 7.01 buffer solution 20 mL sachet (25 pcs)
M10010B pH 10.01 buffer solution 20 mL sachet (25 pcs)
MA9004 pH 4.01 buffer, 230 mL bottle**MA9006** pH 6.86 buffer solution, 230 mL bottle
MA9007 pH 7.01 buffer solution, 230 mL bottle
MA9009 pH 9.18 buffer solution, 230 mL bottle
MA9010 pH 10.01 buffer solution, 230 mL bottle
MA9015 Electrode storage solution, 230 mL
MA9016 Electrode cleaning solution, 230 mL
M10000B Electrode rinse solution, 20 mL sachet (25 pcs)

Ordering Information

pH55 is supplied complete with protective cap, 20 mL, pH 4.01 and pH 7.01 sachets of calibration solution, carton box, batteries and instructions.

pH56 is supplied complete with protective cap, 20 mL pH 4.01 and pH 7.01 sachets of calibration solution, carton box, batteries and instructions.

ORP57/pH58

Pocket-size pH/ORP/Temperature Meters with replaceable electrode

Combination waterproof testers with advanced functions also include the new model **pH58** for simultaneous pH and ORP measurements and temperature, which is continuously displayed on the dual level LCD.
It shows readings in an extended range from -2.00 to 16.00 pH or ±1000 mV and simultaneously shows temperature from -5.0 to 105.0°C or 23 to 221°F.

The **pH58** has a stability indicator and hold feature that freezes the display for easy and accurate recording.
The large display also has graphic symbols to guide you through all operations.
Calibration is performed automatically at 1 or 2 points using standard or NIST buffers.

The modular design allows easy electrode and battery replacement.

Specifications

		ORP57	pH58
Range	pH		-2.00 to 16.00 pH
	ORP	±1000 mV	±1000 mV
	Temp	-5.0 to 60.0°C / 23.0 to 140.0°F	-5.0 to 60.0°C / 23.0 to 140.0°F
Resolution	pH		0.01 pH
	ORP	1 mV	1 mV
	Temp	0.1°C / 0.1°F	0.1°C / 0.1°F
Accuracy (@25°C)	pH		±0.05 pH
	ORP	±2 mV	±2 mV
	Temp	±0.5°C / ±1°F	±0.5°C / ±1°F
Typical EMC Deviation	pH		±0.02 pH
	ORP	±2 mV	±2 mV
	Temp	±0.3°C / ±0.6°F	±0.3°C / ±0.6°F
pH Calibration			automatic for pH, 1 or 2 points, from -5 to 60°C with 2 sets of memorized buffers (pH 4.01, 7.01, 10.01 or 4.01, 6.86, 9.18)
ORP Calibration		factory calibrated	factory calibrated
Probe		Mi57P (replaceable)	Mi58P (replaceable)
Environment		0 to 50°C; max RH 100%	-5 to 50°C; max. RH 100%
Battery Type		4 x 1.5V; IEC LR44, A76	4 x 1.5V; IEC LR44, A76
Battery Life		approx. 300 hours of use	approx. 250 hours of use
Auto-off		after 8 minutes of non-use	after 8 minutes of non-use
Dimensions		200 x dia 38 mm	200 x dia 38 mm
Weight		100 g	100 g

Replaceable combination pH/ORP electrode for pH58

Replace the electrode in a fast and simple way yourself! Just unscrew the plastic ring on the top of the electrode and replace the electrode with a new one.

Calibrations, Maintenance & Cleaning Solutions

Choose from our wide selection of calibration, maintenance and cleaning solutions at page 53.

Accessories

Mi57P	Replaceable electrode for ORP57
Mi58P	Replaceable electrode for pH58
M10004B	pH 4.01 buffer solution 20 mL sachet (25 pcs)
M10007B	pH 7.01 buffer solution 20 mL sachet (25 pcs)
M10010B	pH 10.01 buffer solution 20 mL sachet (25 pcs)
MA9004	pH 4.01 buffer solution, 230 mL bottle
MA9006	pH 6.86 buffer solution, 230 mL bottle
MA9007	pH 7.01 buffer solution, 230 mL bottle
MA9009	pH 9.18 buffer solution, 230 mL bottle
MA9010	pH 10.01 buffer solution, 230 mL bottle
MA9015	Electrode storage solution, 230 mL
MA9016	Electrode cleaning solution, 230 mL
MA9020	ORP test solution (200/275 mV), 230 mL bottle
M10000B	Electrode rinse solution, 20 mL sachet (25 pcs)

Ordering Information

ORP57 is supplied complete with protective cap, carton box, batteries and instructions.

pH58 is supplied complete with protective cap, 20 mL pH 4.01 and pH 7.01 sachets of calibration solution, carton box, batteries and instructions.

MC110/MC120
pH Monitors

New

The Smart pH monitor allows you to continuously monitor pH values directly in your reservoir. Features include: user selectable set point, visual LED alarm when values go above the set point and manual calibration.
Each monitor is powered by a 12 VDC adapter and is ideal for applications such as Hydroponic and Aquarium.

The pH monitors are very simple to operate:
1. hang your monitor above the reservoir;
2. connect the adapter to the meter and plug in the power supply (make sure that your power supply is in a safe area away from the water);
3. immerse 2/3 of the electrode in the solution;
4. the probe can now remain there permanently.

The monitors are supplied complete with a MA911B/2 pH electrode. Each monitor comes complete with a 12 VDC adapter and calibration solution.

Set point:
A visual LED alarms when value goes above or below the set point the user selected.

Specifications

		MC110	MC120
			
Range	pH	0.0 to 14.0 pH	0.0 to 14.0 pH
Resolution	pH	0.1 pH	0.1 pH
Accuracy (@25°C)	pH	±0.2 pH	±0.2 pH
Calibration		manual, 2 point, through trimmers on the meter front panel	manual, 2 point, through trimmers on the meter front panel
Set point		3.5 to 7.5 pH	5.5 to 9.5 pH
Alarm		active when measure is higher or lower than selected set point	active when measure is higher or lower than selected set point
pH Electrode		MA911B/2 (included)	MA911B/2 (included)
Environment		0 to 50°C / 32 to 122°F; max RH 95%	0 to 50°C / 32 to 122°F; max RH 95%
Power Supply		12 VDC power adapter (included)	12 VDC power adapter (included)
Dimensions		148,5 x 82,5 x 32 mm	148,5 x 82,5 x 32 mm
Weight		160 g (meter only)	160 g (meter only)

Accessories

M10004B pH 4.01 buffer solution, 20 mL sachet (25 pcs)
M10007B pH 7.01 buffer solution, 20 mL sachet (25 pcs)
M10010B pH 10.01 buffer solution, 20 mL sachet (25 pcs)
M100058B Cal-test solution for MC115, 20 mL sachet (25 pcs)
M10016B Electrode cleaning solution, 20 mL sachet (25 pcs)

MA9015 Electrode storage solution, 20 mL sachet (25 pcs)
MA9016 Electrode cleaning solution, 20 mL sachet (25 pcs)
MA911B/2 Double junction, gel filled pH electrode with 2 m cable

Ordering Information

MC110 is supplied complete with a 12VDC adapter, MA911B/2 pH electrode, 20 mL pH 7.01 sachet of calibration solution, calibration screwdriver and instructions.

MC120 is supplied complete with a 12VDC adapter, MA911B/2 pH electrode, 20 mL pH 7.01 sachet of calibration solution, calibration screwdriver and instructions.

MC122/MC510/MC125

pH & ORP Controllers

New

With Milwaukee's MC Controllers you can monitor and control pH and/or ORP levels.

The Milwaukee Instruments MC Controllers have a user selectable set point and a visual "Power Activated" LED notification light. Power to the controller box is turned on when the reading is Above or Below the selected set point. These MC Controllers are ideal for CO_2 or ozone dosing. This could be controlled by a solenoid valve (MA955).

With each Milwaukee Smart controller, your aquarium will have the individual attention that it needs.

Each unit comes with 12 VDC adapter, mounting kit, probe, probe holder and starter calibration solution for pH. (factory calibrated for ORP)
Professional pH controller especially designed for use with aquariums.

MA955 Solenoid valve for CO_2 dosing

Key features include:

- User selectable Hi/Low Set Point
- Manual 2 points calibration
- Visual LED alarm
- Supplied with 12 VDC adapter and mounting kit
- Power plug for CO_2 dosing
- Double junction pH electrode and/or platinum ORP electrode (BNC connector)

Specifications

	MC122	MC510	MC125
			
Range	0.0 to 14.0 pH	±1000 mV (ORP)	0.00 to 14.00 pH; ±1000 mV (ORP)
Resolution	0.1 pH	1 mV (ORP)	0.01 pH; 1 mV (ORP)
Accuracy (@25°C)	±0.2 pH	±5 mV (ORP)	±0.2 pH ; ± 5 mV (ORP)
Set point pH	5.5 to 9.5 pH		4 to 8 pH
Set point ORP		0 to 600 mV	-200 to 600 mV
Alarm	active when measurement is higher or lower than selected set point	active when measurement is higher or lower than selected set point	active when measurement is higher than the set points
Output Power Socket	active when measurement is higher or lower than selected set point (5A max)	active when measurement is higher or lower than selected set point	active when measurement is higher or lower than selected set point
pH Electrode	**MA911B/2** (included)		**MA911B/2** (included)
ORP Electrode		**MA921B/2** (included)	**MA921B/2** (included)
Environment	0 to 50°C / 32 to 122°F; max RH 95%	0 to 50°C / 32 to 122°F; max RH 95%	0 to 50°C / 32 to 122°F; max RH 95%
Power Supply	12 VDC power adapter (included)	12 VDC power adapter (included)	12 VDC power adapter (included)
Power Drivers	115VAC, 2A, 60Hz or 230VAC, 1A, 50Hz	115VAC, 2A, 60Hz or 230VAC, 1A, 50Hz	115VAC, 2A, 60Hz or 230VAC, 1A, 50Hz
Dimensions	148,5 x 82,5 x 32 mm	148,5 x 82,5 x 32 mm	148,5 x 82,5 x 32 mm
Weight	180 g (meter only)	180 g (meter only)	180 g (meter only)

Accessories

M10004B pH 4.01 buffer solution 20 mL sachet (25 pcs)
M10007B pH 7.01 buffer solution 20 mL sachet (25 pcs)
M10010B pH 10.01 buffer solution 20 mL sachet (25 pcs)
M10000B Electrode rinse solution 20 mL sachet (25 pcs)
MA9015 Electrode storage solution 20 mL sachet (25 pcs)

MA955 Solenoid valve with 1.5 m cable
MA911B/2 Double junction, gel filled pH electrode with 1 m cable
MA921B/2 ORP Electrode with BNC connector and 2 m cable

Ordering Information

MC122 is supplied complete with 12 VDC adapter, MA911B/2 pH electrode, 20 mL pH4.01 sachet of calibration solution, 20 mL pH7.01 sachet of calibration solution-calibration screwdriver and instructions.
MC510 is supplied complete with 12 VDC adapter, MA921B/2 ORP electrode and instructions.
MC125 is supplied complete with 12 VDC adapter, power plug socket for ozone dosing, MA911B/2 pH electrode, MA921B/2 ORP electrode, 20 mL pH7.01 sachet of calibration solution, calibration screwdriver and instructions.

Mi170

Autoranging EC/TDS/NaCl/Temperature Laboratory Bench Meter

Mi170 measures 4 different parameters - EC, TDS (Total Dissolved Solids), percentage of NaCl and temperature in a variety of ranges.

The auto-ranging feature for EC and TDS measurements automatically sets the resolution suitable to the tested sample. All measurements can be temperature compensated at 20 or 25°C and the compensation coefficient is selectable by the user.

The automatic temperature compensation can also be disabled for measuring the actual conductivity value. The stability indicator on the LCD ensures accuracy.

Conductivity readings are performed with the 4-ring probe supplied with the meter. The GLP feature allows users to store and recall data on system status.

PC compatible through an RS232 or USB port.

Specifications		Mi170
Range	EC	0.00 to 29.99 µS/cm; 30.0 to 299.9 µS/cm; 300 to 2999 µS/cm; 3.00 to 29.99 mS/cm; 30.0 to 200.0 mS/cm; up to 500.0 mS/cm actual conductivity (uncompensated EC)*
	TDS	0.00 to 14.99 mg/L (ppm); 15.0 to 149.9 mg/L (ppm); 150 to 1499 mg/L (ppm); 1.5 to 14.99 g/L (ppt); 15.0 to 100.0 g/L (ppt); up to 400.0 g/L actual TDS* (with 0.80 factor)
	NaCl	0.0 to 400.0%
	Temp	-20.0 to 120.0°C / -4.0 to 248.0°F
Resolution	EC	0.01 µS/cm; 0.1 µS/cm; 1.0 µS/cm; 0.01 mS/cm; 0.1 mS/cm
	TDS	0.01 mg/L; 0.1 mg/L; 1.0 mg/L; 0.01 g/L; 0.1 g/L
	NaCl	0.1%
	Temp	0.1°C / 0.1°F
Accuracy	EC	±1% of reading ±(0.05 µS/cm or 1 digit)
	TDS	±1% of reading ±(0.03 mg/L or 1 digit)
	NaCl	±1% of reading
	Temp	±0.4°C / ±0.8°F
Calibration	EC	1 point slope calibration with 6 memorized solutions (84.0 µS/cm, 1413 µS/cm, 5.00 mS/cm, 12.88 mS/cm, 80.0 mS/cm, 111.8 mS/cm)
	NaCl	1 point, with MA9066 calibration solution
	Temp	2 points, 0 to 50°C / 32 to 12 °F
Temp. Compensation		automatic or manual, from -20.0 to 120.0°C / -4.0 to 248.0°F
Temp. Coefficient		selectable from 0.00 to 6.00%/°C (EC and TDS only)
Probe		MA814DB/1 4-ring probe with built-in temperature sensor (included)
TDS Factor		0.40 to 0.80 (default value is 0.50)
Logging		up to 50 records, LOG on demand or auto-logging
GLP		last EC, NaCl calibration data
PC Interface		RS232 / USB Opto-isolated
Environment		0 to 50°C / 32 to 122°F; max RH 95%
Power supply		12 VDC power adapter (included)
Dimensions		230 x 160 x 95 mm
Weight		0.9 kg

(*) Uncompensated conductivity (or TDS) is the conductivity (or TDS) value without temperature compensation.

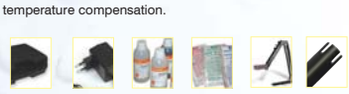
More accurate readings with the 4-RING MA814DB/1 EC/TDS/NaCl and Temperature probe!

Conductivity readings are performed by applying an alternate current to the 4-ring probe which creates a variable voltage depending on the conductivity.

Rear Connector Panel layout

Communication to the PC is done via opto-isolated USB and RS232 ports.

Accessories



MA814DB/1 EC/Temperature probe with DIN connector and 1 m cable
MA9060 12880 µS/cm calibration solution, 230 mL bottle
MA9061 1413 µS/cm calibration solution, 230 mL bottle
MA9063 84 µS/cm calibration solution, 230 mL bottle
MA9064 80000 µS/cm conductivity solution, 230 mL bottle
MA9065 111.8 mS/cm calibration solution, 230 mL bottle
MA9066 100% NaCl calibration solution, 230 mL bottle
MA9069 5000 µS/cm solution, 230 mL bottle
MA9310 12 VDC Adapter, 220 V
MA9311 12 VDC Adapter, 110 V
MA9315 Electrode holder
MA9350 RS232 connection cable with 2 meters cable
Mi5200 Application Software

Ordering Information

Mi170 is supplied complete with
- **MA814DB/1** EC/TDS/NaCl/Temperature Probe
- **MA9315** Electrode Holder
- **M10030** 12880 µS/cm calibration solution
- **M10031** 1413 µS/cm calibration solution
- **Mi5200** Application Software
- **MA9350** RS232 connection cable with 2 meters cable
- 12 VDC Adapter
- Instruction manual

Mi306

Automatic & Logging EC/TDS/NaCl Temp Meter

Mi306 is a waterproof portable logging microprocessor-based Conductivity/TDS/NaCl/temperature meter.
The autoranging feature of the EC and TDS ranges automatically sets the meter to the scale with the highest possible resolution.

The Auto Endpoint (HOLD) feature automatically freezes the display when a stable reading is reached. The measurements are automatically (ATC) or manually (MTC) compensated for temperature.
The temperature coefficient value is user selectable. It is possible to disable the temperature compensation and measure the actual conductivity (NoTC).
The Battery Error Preventing System (BEPS) switches the meter off when the batteries are too weak to support proper function. The meter can store measurements in memory by logging function for retrieval at a later time upon user request.

Mi306 also allows data transfer to computer through the RS232 port. Double LCD displays, for simultaneous readings of the specific conductivity and temperature.

Specifications		Mi306
Range	(Autoranging) EC	0.00 to 29.99 µS/cm; 30.0 to 299.9 µS/cm; 300 to 2999 µS/cm; 3.00 to 29.99 mS/cm; 30.0 to 200.0 mS/cm; up to 500.0 mS/cm actual(*) EC
	(Autoranging) TDS	0.00 to 14.99 mg/L; 15.0 to 149.9 mg/L; 150 to 1499 mg/L; 1.50 to 14.99 g/L; 15.0 to 100.0 g/L; up to 400.0 g/L actual(*) TDS (with 0.80 factor)
	NaCl	0.0 to 400.0 %
	Temp	0.0 to 60.0°C
Resolution	EC	0.01 µS/cm (from 0.00 to 29.99 µS/cm); 0.1 µS/cm (from 30.0 to 299.9 µS/cm); 1 µS/cm (from 300 to 2999 µS/cm); 0.01 mS/cm (from 3.00 to 29.99 mS/cm); 0.1 mS/cm (over 30.0 mS/cm)
	TDS	0.01 mg/L (from 0.00 to 14.99 mg/L); 0.1 mg/L (from 15.0 to 149.9 mg/L); 1 mg/L (from 150 to 1499 mg/L); 0.01 g/L (from 1.50 to 14.99 g/L); 0.1 g/L (over 15.0 g/L)
	NaCl	0.1 %
	Temp	0.1°C
Accuracy	EC	±1% of reading (±0.05 µS/cm or 1 digit whichever greater)
	TDS	±1% of reading (±0.053 ppm or 1 digit whichever greater)
	NaCl	±1% of reading
	Temp	±0.4°C
Typical EMC Deviation	EC	±1% of reading
	TDS	±1% of reading
	NaCl	±1% of reading
	Temp	±0.1°C
Logging		up to 250 records, LOG on demand
Communication		with PC through RS232 port
EC Calibration		1 point with 7 memorized buffers: 84 µS/cm, 1413 µS/cm, 5000 µS/cm, 80000 µS/cm, 111800 µS/cm
NaCl Calibration		1 point with MA9066 buffer (optional)
Temperature Compensation		automatic or manual from 0 to 60°C (can be disabled to measure actual conductivity and TDS)
Temperature Coefficient		0.00 to 6.00 %/°C (for EC and TDS only) Default value is 1.90%/°C
TDS Factor		0.40 to 0.80 (default value is 0.50) reference Temperature: 20 or 25°C
Probe		MA814D/1 EC probe with built-in temperature sensor & 1 m cable (included)
Auto-off		after 5 minutes of non use (can be disabled)
Battery Type / Battery Life		1 x 9V Battery (included) / approx. 100 hours of use
Casing		IP 67
Environment		0 to 50°C / 32 to 122°F; max RH 100%
Dimensions		200 x 85 x 50 mm
Weight		280 g

(*) Uncompensated conductivity (or TDS) is the conductivity (or TDS) value without temperature compensation.

Accessories

MA814D/1 4-ring EC probe with DIN connector and 1 m cable
M10030B 12880 µS/cm calibration solution, 20 mL sachet, 25 pcs.
M10031B 1413 µS/cm calibration solution, 20 mL sachet, 25 pcs.
M10035B 111.8 mS/cm calibration solution, 20 mL sachet, 25 pcs.
MA9060 12880 µS/cm calibration solution, 230 mL bottle
MA9061 1413 µS/cm calibration solution, 230 mL bottle
MA9063 84 µS/cm calibration solution, 230 mL bottle
MA9065 111.8 mS/cm calibration solution, 230 mL bottle
MA9066 100% NaCl calibration solution, 230 mL bottle
MA9069 5000 µS/cm solution, 230 mL bottle
MA9351 RS232 connection cable (5 to 9 pin) with 2 meters cable (for Mi306)
Mi5200 Application Software

Ordering Information

Mi306 is supplied in a hard carrying case complete with
- **MA814D/1** EC/TDS/Nacl/Temp probe with DIN connector and 1 meter cable
- **MA9060** 12880 µS/cm calibration solution
- **Mi5200** Application Software
- **MA9351** RS232 connection cable with 2 meters cable
- Instruction manual

MW301/MW302/MW401/MW402

Entry level, inexpensive Conductivity & TDS Portable Meters for fast and reliable results

MW301, **MW302**, **MW401** and **MW402** are compact Conductivity and TDS Portable Meters with Faster Micro Processor. These handy and ergonomically designed portable meters are ideal for anyone working on a low budget and still requires fast and reliable measurements. These portable meters are suitable for a wide range of applications, such as Educational, Agriculture and Horticulture, as well as water and environmental analysis.

These portable meters with Automatic Temperature Compensation have a smaller, ergonomic and lighter case design. Other features include 100% larger and easier to read LCD Display and long battery life.

Each meter is supplied complete with Conductivity/TDS probe with 1 meter cable and calibration solution.

Choose your portable EC & TDS meter according to the proper EC/TDS ranges for your application:

- **MW301**: 0 to 1990 µS/cm with a 10 µS/cm resolution;
- **MW302**: 0.0 to 10.0 mS/cm with a 0.1 mS/cm resolution;
- **MW401**: 0 to 1990 mg/L (ppm) with a 10 mg/L resolution;
- **MW402**: 0.0 to 10.0 g/L (ppt) with a 0.1 g/L resolution.

Specifications	 MW301	 MW302	 MW401	 MW402
Range	0 to 1990 µS/cm	0.0 to 10.0 mS/cm	0 to 1990 mg/L (ppm)	0.0 to 10.0 g/L (ppt)
Resolution	1 µS/cm	0.1 mS/cm	1 mg/L (ppm)	0.1 g/L (ppt)
Accuracy (@25°C)	±2% Full Scale	±2% Full Scale	±2% Full Scale	±2% Full Scale
Conversion Factor			0.5	0.5
Calibration Solutions (included)	1413 µS/cm (M10031B)	1413 µS/cm (M10031B)	1382 mg/L (M10032B)	6.44 g/L (M10038B)
Conductivity Probe	**SE510** (included)	**SE520** (included)	**SE510** (included)	**SE520** (included)
Temperature Compensation	automatic, from 5 to 50°C	automatic, from 5 to 50°C	automatic, from 5 to 50°C	automatic, from 5 to 50°C
Environment	0 to 50°C, max RH 95%	0 to 50°C, max RH 95%	0 to 50°C, max RH 95%	0 to 50°C, max RH 95%
Battery Type	1 x 9V alkaline (included)	1 x 9V alkaline (included)	1 x 9V alkaline (included)	1 x 9V alkaline (included)
Battery Life	approx. 300 hours of use	approx. 300 hours of use	approx. 300 hours of use	approx. 300 hours of use
Dimensions	145 x 80 x 40 mm	145 x 80 x 40 mm	145 x 80 x 40 mm	145 x 80 x 40 mm
Weight	220 g (with battery)	220 g (with battery)	220 g (with battery)	220 g (with battery)

Accessories

SE510 EC/TDS probe with DIN connector and 1 m cable for MW301, MW401
SE520 EC/TDS probe with DIN connector and 1 m cable for MW302, MW402
M10031B 1413 µS/cm calibration solution, 20 mL (25 pcs)
M10032B 1382 ppm (mg/L) calibration solution, 20 mL (25 pcs)
M10038B 6.44 ppt (g/l) calibration solution, 20 mL (25 pcs)
MA9060 12880 µS/cm calibration solution, 230 mL bottle
MA9061 1413 µS/cm calibration solution, 230 mL bottle
MA9062 1382 ppm TDS solution, 230 mL bottle

Ordering Information

MW301 is supplied complete with SE510 EC probe, 20 mL 1413 µS/cm sachet of calibration solution, screwdriver for calibration, 9V battery and instructions.
MW302 is supplied complete with SE520 EC probe, 20 mL 1413 µS/cm sachet of calibration solution, screwdriver for calibration, 9V battery and instructions.
MW401 is supplied complete with SE510 EC probe, 20 mL 1382 ppm sachet of calibration solution, screwdriver for calibration, 9V battery and instructions.
MW402 is supplied complete with SE520 EC probe, 20 mL 6.44 ppt sachet of calibration solution, screwdriver for calibration, 9V battery and instructions.

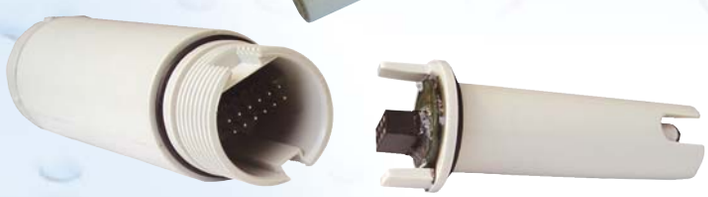
EC59/EC60

Pocket-size EC/TDS/Temp Meters

These new waterproof Pocket-size EC/TDS/Temp Meters include features such as a replaceable probe, temperature in °C or °F, automatic temperature compensation with adjustable β, battery level indicator, stability indicator, automatic shut-off and automatic calibration all in a floating, waterproof casing.

EC59 shows on the dual-level LCD the EC (3999 µS/cm) or TDS (2000 ppm) value. It also displays the temperature from 0.0 to 60.0°C (or 32.0 to 140.0°F) on the secondary level at the same time.

EC60 shows on the dual-level LCD the EC (20.00 mS/cm) or TDS (10.00 ppt) value. It also displays the temperature from 0.0 to 60.0°C (or 32.0 to 140.0°F) on the secondary level at the same time.



Years warranty 2

ATC

IP65

Dual Display

Self diagnostics

CE

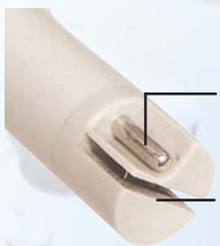
Electrode Replaceable

Specifications

		EC59	EC60
Range	EC	3999 µS/cm	20.00 mS/cm
	TDS	2000 ppm	10.00 ppt
	Temp	0.0 to 60.0°C / 32.0 to 140.0°F	0.0 to 60.0°C / 32.0 to 140.0°F
Resolution	EC	1 µS/cm	0.01 mS/cm
	TDS	1 ppm	0.01 ppt
	Temp	0.1°C / 0.1°F	0.1°C / 0.1°F
Accuracy (@20°C)	EC	2% Full Scale	2% Full Scale
	TDS	2% Full Scale	2% Full Scale
	Temp	±0.5°C / ±1°F	±0.5°C / ±1°F
Typical EMC Deviation	EC	2% Full Scale	2% Full Scale
	TDS	2% Full Scale	2% Full Scale
	Temp	±0.5°C / ±1°F	±0.5°C / ±1°F
Calibration		automatic, 1 point	automatic, 1 point
Temperature Compensation		automatic, with β=0.0 to 2.4%/°C	automatic, with β=0.0 to 2.4%/°C
Probe		Mi59P (replaceable)	Mi59P (replaceable)
Environment		0 to 50°C / 32 to 122°F; max RH 100%	0 to 50°C / 32 to 122°F; max RH 100%
Battery Type		4 x 1.5V; IEC LR44, A76 (included)	4 x 1.5V; IEC LR44, A76 (included)
Battery Life		approx. 100 hours of use	approx. 100 hours of use
Auto-off		after 8 minutes of non-use	after 8 minutes of non-use
Dimensions		200 x dia 38 mm	200 x dia 38 mm
Weight		100 g	100 g

Easy to read Display

Dual level LCD displays EC/TDS and temperature.



Replaceable EC/TDS/Temp probe

Exposed temperature sensor.

Replaceable EC/TDS probe.

Accessories

Mi59P Replaceable probe for EC59 & EC60
M10030B 12880 µS/cm calibration solution, 20 mL sachet, 25 pcs
M10031B 1413 µS/cm calibration solution, 20 mL sachet, 25 pcs
M10032B 1382 ppm (mg/L) calibration solution, 20 mL sachet, (25 pcs)
M10038B 6.44 ppt (g/L) calibration solution, 20 mL sachet, (25 pcs)
MA9060 12880 µS/cm calibration solution, 230 mL bottle
MA9061 1413 µS/cm calibration solution, 230 mL bottle
MA9016 Cleaning solution, 230 mL bottle
M10000B Rinse solution, 20 mL sachet, 25 pcs

Ordering Information

EC59 is supplied complete with protective cap, 20 mL 1413 µS/cm sachet of calibration solution, carton box, batteries and instructions.

EC60 is supplied complete with protective cap, 20 mL 12880 µS/cm sachet of calibration solution, carton box, batteries and instructions.

MC310
Conductivity Monitor

New

Reliable Conductivity monitors with Automatic temperature compensation and 1 point manual calibration powered by a 12 VDC adapter.

They are ideal for the hydroponic market and allow you to continuously monitor EC values directly in your reservoir.

Other features include: user selectable set point, visual LED alarm when values go above/below (selectable by the user) the set point.

The monitors are very simple to operate:

1. hang your monitor above your reservoir
2. connect the adapter to the meter and plug in the power supply (make sure that your power supply is in a safe area from the water!)
3. immerse 2/3 of the probe in the solution
4. the probe can now remain there permanently.

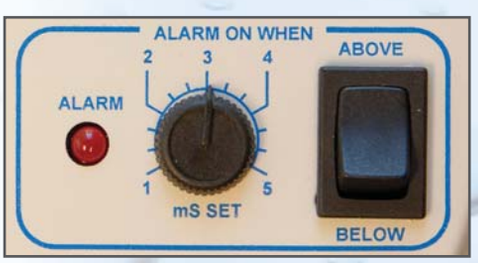
Specifications

MC310

Range	EC	0.0 to 10.0 mS/cm
Resolution	EC	0.1 mS/cm
Accuracy (@25°)		±2% Full Scale
Set point		1 to 5 mS/cm
Alarm		active when the measurement is higher/lower than the set point
Temperature Compensation		automatic, from 5 to 50°C
Environment		0 to 50°C; max RH 95%
Probe		MA812/2 (included)
Power Supply		12 VDC power adapter (included)
Dimensions		148,5 x 82,5 x 32 mm
Weight		180 g (meter only)

Set point:

A visual LED alarms when value goes above or below the set point the user selected.



Accessories

M10031B 1413 µS/cm calibration solution, 20 mL sachet (25 pcs)
M10032B 1382 ppm calibration solution, 20 mL sachet (25 pcs)
M10442B 1500 ppm calibration solution, 20 mL sachet (25 pcs)
M100020B Cal-Test solution for MC315, 20 mL sachet (25 pcs)

MA811/2 Conductivity probe with 2 m cable
MA812/2 Conductivity probe with 2 m cable

Ordering Information

MC310 is supplied complete with 12VDC adapter, MA811/2 EC probe, 20 mL 1413 µS/cm sachet of calibration solution, screwdriver for calibration and instruction.

MC410
TDS Monitor

Reliable TDS monitors with Automatic temperature compensation and 1 point manual calibration powered by a 12 VDC adapter.

They are ideal for the hydroponic market and allow you to continuously monitor TDS values directly in your reservoir.

Other features include: user selectable set point, visual LED alarm when values go above/below (selectable by the user) the set point.

The monitors are very simple to operate:

1. hang your monitor above your reservoir
2. connect the adapter to the meter and plug in the power supply (make sure that your power supply is in a safe area from the water!)
3. immerse 2/3 of the probe in the solution
4. the probe can now remain there permanently.

Specifications

MC410

Range	EC/TDS	0 to 1990 ppm
Resolution	EC/TDS	10 ppm
Accuracy (@25°)		±2% Full Scale
Conversion Factor		0.7
Set point		100 to 1900 ppm
Alarm		active when the measurement is higher/lower than the set point
Temperature Compensation		automatic, from 5 to 50°C
Environment		0 to 50°C; max RH 95%
Probe		MA812/2 (included)
Power Supply		12 VDC power adapter (included)
Dimensions		148,5 x 82,5 x 32 mm
Weight		180 g (meter only)

Set point:

On the MC410 a visual LED alarms when value goes above or below the set point the user selected.

Accessories

M10031B 1413 µS/cm calibration solution, 20 mL sachet (25 pcs)
M10032B 1382 ppm calibration solution, 20 mL sachet (25 pcs)
M10442B 1500 ppm calibration solution, 20 mL sachet (25 pcs)
M100020B Cal-Test solution for SMS315, 20 mL sachet (25 pcs)

M100040B Cal-Test solution for MC415, 20 mL sachet (25 pcs)
MA811/2 Conductivity probe with 2 m cable
MA812/2 Conductivity probe with 2 m cable

Ordering Information

MC410 is supplied complete with 12VDC adapter, MA812/2 TDS probe, 20 mL 1382 ppm sachet of calibration solution, screwdriver for calibration and instruction.

Mi190

Extended Range Bench Dissolved Oxygen Meter

3 Years warranty
LOG
RS232
USB
Software CD
ATC
Points 2
Dual Display
Self diagnostics
GLP
CE

Ideal for testing Dissolved Oxygen in the pharmaceutical and food Industry, as well as monitoring in water treatment plants. The user can choose to measure D.O. readings in mg/L or % of saturation of O_2.
This meter can be used for any type of water, as it allows measurements to compensate for temperature, altitude and salinity factors. The automatic logging interval can be set to perform analysis and store data into the memory.

All logged data can be downloaded to your PC through an RS232 or USB serial port. Memory can store up to 50 samples. **Mi190** features an automatic calibration procedure, at 1 or 2 points (at 0 and 100% of O_2 saturation). The polarographic probe supplied with the meter (MA840) measures the current generated by the reaction of O_2 with Ag.

Mi190 is supplied complete with MA840 DO probe with 3 m cable, 2 spare membranes, MA7041 electrolyte solution (30 mL), 12 VDC power adapter, probe holder and instruction manual.

Specifications		Mi190
Range	O_2	0.00 to 45.00 mg/L (ppm)
	% Saturation O_2	0.0 to 300%
	Temp	-5.0 to 55.0°C / 23.0 to 131.0°F
Resolution	O_2	0.01 mg/L (ppm)
	% Saturation O_2	0.1%
	Temp	0.1°C / 0.1°F
Accuracy	O_2	±1.5 Full Scale
	% Saturation O_2	±1.5 Full Scale
	Temp	±0.4°C / ±0.8°F
Logging		50 records, LOG on demand or auto-logging
DO Calibration		automatic, 1 or 2 point at 0% (MA9070) and 100% (in air)
Temperature Compensation		0.0 to 50.0°C / 32.0 to 122.0°F
Altitude Compensation		0 to 4000 m; resolution 100 m
Salinity Compensation		0 to 40 g/L; resolution 1 g/L
DO Probe		MA840 with DIN connector (included)
Temperature Probe		Included in DO probe
Calibration		2 points (0.0°C and 50.0°C / 32.0 to 122.0°F)
Logging		up to 50 records, LOG on demand or auto-logging
PC interface		RS232 / USB Opto-isolated
Power supply		12 VDC power adapter (included)
Environment		0 to 50°C / 32 to 122°F; max RH 100%
Dimensions		230 x 160 x 95 mm
Weight		0.9 Kg

Polarographic D.O. Probe

Polarographic D.O. probe with 3 meters cable

Rear Connector Panel layout

Communication to the PC is done via opto-isolated USB and RS232 ports.

Accessories

MA9070	Zero Oxygen Solution, 230 mL bottle
MA9071	Refilling Electrolyte Solution, 230 mL bottle
MA9310	12 VDC Adapter, 220 V
MA9311	12 VDC Adapter, 110 V
MA9315	Electrode Holder

MA841	Spare membrane (5 pcs)
MA840	DO probe with 3 meters cable
MA9350	RS232 connection cable with 2 m cable
Mi5200	Application Software

Ordering Information

Mi190 is supplied complete with:
- **MA840** DO probe with 3 meter cable
- **MA841** Spare membrane (2 pcs)
- **MA9071** Electrolyte solution
- **MA9315** Electrode Holder
- **Mi5200** Application Software
- **MA9350** RS232 connection cable with 2 meters cable
- 12 VDC Adapter
- Instruction manual

Mi605

Portable D.O. Meter for Field Applications

Mi605 is a portable, microprocessor-based, Dissolved Oxygen meter with automatic calibration and temperature compensation (ATC) specifically designed for spot sampling applications.
Dissolved Oxygen measurements can be displayed in parts per million (ppm=mg/L) or in % of saturation.
The temperature is indicated in Celsius from 0 to 50°C with 0.1 resolution. The meter compensates salinity and altitude automatically after manual input.

Calibration is very simple and fast: just expose the polarographic Dissolved Oxygen probe MA840, supplied with the instrument, to air and press the CAL button.
No need for chemical solutions!
A HOLD button allows the user to freeze the reading on the LCD.

The low battery indicator and the easy to replace screw on cap membranes make the Mi605 a compact instrument and ideal for all applications: aquaculture, wastewater, environmental and educational.

Specifications		Mi605
Range	O_2	0.0 to 45.00 mg/L (ppm)
	% Saturation O_2	0.0 to 300%
	Temp	0.0 to 50.0°C / 32 to 122°F
Resolution	O_2	0.01 mg/L (ppm)
	% Saturation O_2	0.1%
	Temp	0.1°C
Accuracy (@25°C)	O_2	±1.5% Full Scale
	% Saturation O_2	±1.5% Full Scale
	Temp	±0.5°C
Typical EMC Deviation	O_2	±0.3 mg/L (ppm)
	% Saturation O_2	±3.5%
	Temp	±0.5°C
Calibration		automatic in saturated air
Temperature Compensation		automatic, from 0 to 50°C / 32 to 122°F
Altitude Compensation		0 to 4000 m; 100 m resolution
Salinity Compensation		0 to 80 g/L; 1 g/L resolution
Probe		**MA840** (included)
Environment		0 to 50°C / 32 to 122°F; max RH 100%
Battery Type		1 x 9V alkaline (included)
Battery Life		approx. 100 hours of use
Auto-off		after 4 hours of non-use
Dimensions		200 × 85 × 50 mm
Weight		280 g (with battery)

Hard Carrying Case

Mi605 is supplied complete in a hard carrying case complete with a D.O. probe, spare membranes, calibration solutions, battery and instructions.

Accessories

MA9071 Refilling Electrolyte solution, 230 mL bottle
MA841 Spare membrane (5 pcs)
MA840 D.O. Probe

Ordering Information

Mi605 is supplied complete with MA840 polarographic D.O. probe with 3 meters cable, 2 spare membranes, 20 mL bottle of electrolyte solution, rugged carrying case, 9V battery and instructions.

MW600

Entry level, inexpensive Dissolved Oxygen Portable Meter for fast and reliable results

The **MW600** is a compact Portable Dissolved Oxygen meter with Faster Micro Processor. This handy and ergonomically designed portable meter is ideal for anyone working on a low budget and still requires fast and reliable measurements. This portable meter measures Dissolved Oxygen with a Polarographic probe and is suitable for a wide range of applications, such as Educational and Aquaculture, as well as water and environmental analysis.

Other features include smaller, ergonomic and lighter case design, 100% larger and easier to read LCD Display, low battery warning, easy to replace screw on cap membranes and long battery life.

Rugged Carrying Case (Optional) provides handy on-site meter calibration and measurements.

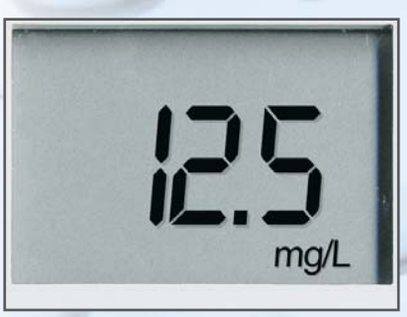
MW600 is supplied complete with a MA840 D.O. polarographic probe with 3 m cable, calibration screwdriver, 2 spare membranes, MA9071s (30 mL) electrolyte solution, battery and instructions.

The **MW600** calibrates easily in 2 points (at 100% saturated air and in 0 Oxygen solution) and has Automatic Temperature Compensation which guarantees the highest accuracy.

Specifications	MW600
Range O_2	0.0 to 19.9 mg/L
Resolution O_2	0.1 mg/L
Accuracy (@25°C) O_2	±1.5% Full Scale
Calibration	manual on 2 points (zero and slope)
Temperature Compensation	automatic from 0 to 30°C
Probe	**MA840** (included)
Environment	0 to 50°C / 32 to 122°F; max RH 95%
Battery Type	9V alkaline (included)
Battery Life	approximately 70 hours of use
Dimensions	145 x 80 x 40 mm
Weight	220 g (with battery)

Large and Easy-to-read Display

MW600 offers highly stable and accurate readings with large LCD display.



ALTITUDE & SALINITY COMPENSATION:

If the sample contains salts or if you are performing the measurements at altitude different from sea level, the readout values must be corrected, taking into account the lower degree of oxygen solubility.

Altitude Compensation: all the readouts are referred to sea level, thus the displayed measurements are higher than the actual values. In fact, altitude affects D.O. concentration by decreasing its value.

The table on the left reports the oxygen solubility at various temperatures and altitudes, based on sea level barometric pressure of 760 mmHg.

This gives an idea of the error that can be introduced at different altitudes and allows to calculate the quantity to be subtracted to correct the reading.

Altitude, Meters above Sea Level								
°C	0 m	300 m	600 m	900 m	1200 m	1500 m	1800 m	°F
0	14.6	14.1	13.6	13.2	12.7	12.3	11.8	32.0
2	13.8	13.3	12.9	12.4	12.0	11.6	11.2	35.6
4	13.1	12.7	12.2	11.9	11.4	11.0	10.6	39.2
6	12.4	12.0	11.6	11.2	10.8	10.4	10.1	42.8
8	11.8	11.4	11.0	10.6	10.3	9.9	9.6	46.4
10	11.3	10.9	10.5	10.2	9.8	9.5	9.2	50.0
12	10.8	10.4	10.1	9.7	9.4	9.1	8.8	53.6
14	10.3	9.9	9.6	9.3	9.0	8.7	8.3	57.2
16	9.9	9.7	9.2	8.9	8.6	8.3	8.0	60.8
18	9.5	9.2	8.7	8.6	8.3	8.0	7.7	64.4
20	9.1	8.8	8.5	8.2	7.9	7.7	7.4	68.0
22	8.7	8.4	8.1	7.8	7.7	7.3	7.1	71.6
24	8.4	8.1	7.8	7.5	7.3	7.1	6.8	75.2
26	8.1	7.8	7.5	7.3	7.0	6.8	6.6	78.8
28	7.8	7.5	7.3	7.0	6.8	6.6	6.3	82.4
30	7.5	7.2	7.0	6.8	6.5	6.3	6.1	86.0
32	7.3	7.1	6.8	6.6	6.4	6.1	5.9	89.6
34	7.1	6.9	6.6	6.4	6.2	6.0	5.8	93.2
36	6.8	6.6	6.3	6.1	5.9	5.7	5.5	96.8
38	6.6	6.4	6.2	5.9	5.7	5.6	5.4	100.4
40	6.4	6.2	6.0	5.8	5.6	5.4	5.2	104.4

Accessories

MA9070 Zero Oxygen calibration solution, 230 mL bottle
MA9071 Refilling Electrolyte solution, 230 mL bottle

MA840 D.O. Probe
MA841 Spare membrane (5 pcs)

Ordering Information

MW600 is supplied complete with MA840 probe, 2 spare membranes, 20 mL bottle of electrolyte solution, calibration screwdriver, 9V battery and instructions.

Mi180

pH/ORP/EC/TDS/NaCl/Temperature Laboratory Bench Meter

Mi180 measures 6 different parameters: pH, ORP, EC, TDS (Total Dissolved Solids), percentage of NaCl and temperature in a variety of ranges.
pH calibration can be performed in 3 points selectable between 7 memorized buffers, to provide a very accurate calibration curve even when testing different samples, where very wide differences in pH can be found.

The auto-ranging feature for EC and TDS measurements automatically sets the resolution suitable to the tested sample. All measurements can be temperature compensated at 20 or 25°C and the compensation coefficient is selectable by the user.

The automatic temperature compensation can also be disabled for measuring the actual conductivity value. The stability indicator on the LCD ensures accuracy. Conductivity readings are performed with the 4-ring probe supplied with the meter.
The GLP feature allows users to store and recall data on system status.

PC compatible through an RS232 port or USB.

3 Years warranty
LOG
MEM
RS232
USB
ATC
GLP
Points 2
Dual Display
MULTI
Software CD
Self diagnostics
CE

Specifications		Mi180
Range	pH	-2.00 to 16.00 pH; -2.000 to 16.000 pH
	mV	±699.9 mV; ±2000 mV
	EC	0.00 to 29.99 µS/cm; 30.0 to 299.9 µS/cm; 300 to 2999 µS/cm; 3.00 to 29.99 mS/cm; 30.0 to 200.0 mS/cm; up to 500.0 mS/cm (uncompensed EC*)
	TDS	0.0 to 14.99 mg/L (ppm); 15.0 to 149.9 mg/L (ppm); 150 to 1499 mg/L (ppm); 1.50 to 14.99 g/L (ppt); 15.0 to 100.0 g/L (ppt); up to 400.0 g/L actual TDS (with 0.80 factor)
	NaCl	0.0 to 400.0%
	Temp	-20.0 to 120.0°C / -4.0 to 248.0°F
Resolution	pH	0.01 pH; 0.001 pH
	mV	0.1 mV; 1 mV
	EC	0.01 µS/cm; 0.1 µS/cm; 1 µS/cm; 0.01 mS/cm; 0.1 mS/cm;
	TDS	0.01 mg/L; 0.1 mg/L; 1.0 mg/L; 0.01 g/L; 0.1 g/L
	NaCl	0.1%
	Temp	0.1°C / 0.1°F
Accuracy	pH	±0.01 pH; ±0.002 pH
	mV	±0.2 mV; ±1 mV
	EC	±1% of reading ±(0.05 µS/cm or 1 digit)
	TDS	±1% of reading ±(0.03 ppm or 1 digit)
	NaCl	±1% reading
	Temp	±0.4°C / ±0.8°F
Rel mV offset		±2000 mV
Calibration	pH	1, 2 or 3 points calibration, with 7 memorized buffers (pH 1.68, 4.01, 6.86, 7.01, 9.18, 10.01 and 12.45)
	EC	1 point slope calibration with 6 memorized solutions: (84 µS/cm, 1413 µS/cm, 5.00 mS/cm, 12.88 µS/cm, 80.0 µS/cm, 111.8 mS/cm)
	NaCl	1 point, with MA9066 solution
	Temp	2 point, at 0 and 50°C / 32 and 122°F
Temperature Compensation		automatic or manual, from -20.0 to 120.0°C / -4.0 to 248.0°F
Temperature Coefficient		selectable from 0.00 to 6.00%/°C (EC and TDS only)
pH Electrodes & Temp Probe		MA917B/1 & MA831R (included)
EC/TDS/NaCl/Temp Probe		MA814DB/1 (included)
TDS Factor		0.40 to 0.80 (default value is 0.50)
Logging		up to 50 records, LOG on demand or auto-logging
GLP		last pH, EC, NaCl calibration data
PC Interface		RS232 / USB Opto-isolated
Environment		0 to 50°C / 32 and 122°F; max RH 95%
Input Impedance		10^{12} Ohm
Power supply		12 VDC power adapter (included)
Dimensions		230 x 160 x 95 mm
Weight		0.9 kg

(*) Uncompensated conductivity (or TDS) is the conductivity (or TDS) value without temperature compensation.

Accessories

MA9004	pH 4.01 buffer, 230 mL bottle
MA9007	pH 7.01 buffer, 230 mL bottle
MA9010	pH 10.01 buffer, 230 mL bottle
MA9015	Electrode storage solution, 230 mL bottle
MA9016	Electrode cleaning solution, 230 mL bottle
MA9112	pH 12.45 buffer solution, 230 mL bottle
MA9060	12880 µS/cm calibration solution, 230 mL bottle
MA9061	1413 µS/cm calibration solution, 230 mL bottle
MA9063	84 µS/cm calibration solution, 230 mL bottle
MA9065	111.8 mS/cm calibration solution, 230 mL bottle
MA9066	100% NaCl calibration solution, 230 mL bottle
MA9069	5000 µS/cm solution, 230 mL bottle
MA9310	12 VDC Adapter, 220 V
MA9311	12 VDC Adapter, 110 V
MA9315	Electrode Holder
MA917B/1	Double junction refillable pH electrode
MA814DB/1	EC/TDS/NaCl/Temperature probe with DIN connector and 1 m cable
MA921B/1	Platinum ORP electrode with 1 m cable (will be replaced by **SE310**)
SE300	Platinum ORP electrode with 1 m cable
MA831R	Temperature probe
MA9350	RS232 connection cable with 2 meters cable

Ordering Information

Mi180 is supplied complete with
- **MA917B/1** pH Electrode
- **MA814DB/1** EC/TDS/NaCl/Temperature probe
- **MA831R** Temperature Probe
- **MA9315** Electrode Holder
- **M10004** pH 4.01 Sachet Buffer solution
- **M10007** pH 7.01 Sachet Buffer solution
- **M10010** pH 10.01 Sachet Buffer solution
- **M10030** 12880 µS/cm calibration solution
- **M10031** 1413 µS/cm calibration solution
- **M10016** Sachet Electrode Cleaning solution
- **Mi5200** Application Software
- **MA9350** RS232 connection cable with 2 meters cable
- Graduate Pipet, 12 VDC Adapter & Instruction manual

Mi805/Mi806

Portable pH/EC/TDS/Temperature Meters

Measures 4 parameters with 1 single probe. **Mi805** and **Mi806** offer you a combination of pH, Conductivity, total dissolved solids and temperature measurements.
You can select from a range of calibration buffers and also the temperature scale (°C or °F) can be selected. The multi-parameter probe MA851D/1, includes pH/EC/TDS and temperature, all in one rugged handle.

Other features include different TDS factors from 0.45 to 1.00, and a range of temperature coefficients (ß) from 0.0 to 2.4% for greater consistency and reproducibility. The Stability Indicator prompts the user when the reading stabilizes.

The Auto-Hold Function automatically freezes reading for later viewing. Large and Easy-to-Read display provides simultaneous readings of pH and Temperature or EC/TDS and temperature.

Specifications

		Mi805	Mi806
Range	pH	0.00 to 14.00 pH	0.00 to 14.00 pH
	EC	0 to 3999 µS/cm	0.00 to 20.00 mS/cm
	TDS	0 to 1999 ppm	0.00 to 10.00 ppt
	Temp	0.0 to 60.0°C / 32.0 to 140.0°F	0.0 to 60.0°C / 32.0 to 140.0°F
Resolution	pH	0.01 pH	0.01 pH
	EC	1 µS/cm	0.1 mS/cm
	TDS	1 ppm	0.01 ppt
	Temp	0.1°C / 0.1°F	0.1°C / 0.1°F
Accuracy (@25°C)	pH	±0.01pH	±0.01 pH
	EC/TDS	±2% Full Scale	±2% Full Scale
	Temp	±0.5°C / ±1°F	±0.5°C / ±1°F
Typical EMC Deviation	pH	±0.02 pH	±0.02 pH
	EC/TDS	±2% Full Scale	±2% Full Scale
	Temp	±0.5°C / ±1°F	±0.5°C / ±1°F
Temperature Compensation		automatic from 0 to 60°C; with ß adj. from 0.0 to 2.4%/°C	automatic from 0 to 60°C; with ß adj. from 0.0 to 2.4%/°C
pH Calibration		automatic, 1 or 2-point with automatic buffer recognition	automatic, 1 or 2-point with automatic buffer recognition
EC Calibration		automatic, 1 point	automatic, 1 point
EC/TDS Conversion Factor		adj. from 0.45 to 1.00	adj. from 0.45 to 1.00
Probe		MA851D/1 amplified pH/EC/TDS/Temperature probe with DIN connector and 1 m cable (included)	MA851D/1 amplified pH/EC/TDS/Temperature probe with DIN connector and 1 m cable (included)
Environment		0 to 50°C / 32 to 122°F; max. RH 100%	0 to 50°C / 32 to 122°F; max. RH 100%
Battery Type		1 x 9V alkaline (included)	1 x 9V alkaline (included)
Battery Life		approx. 300 hours	approx. 300 hours
Auto-off		after 8 minutes of non-use	after 8 minutes of non-use
Dimensions		200 x 85 x 50 mm	200 x 85 x 50 mm
Weight		260 g (with battery)	260 g (with battery)

Accessories

MA851D/1	Amplified pH/EC/TDS/Temperature probe with DIN connector and 1 m cable
MA9004	pH 4.01 buffer solution, 230 mL bottle
MA9006	pH 6.86 buffer solution, 230 mL bottle
MA9007	pH 7.01 buffer solution, 230 mL bottle
MA9009	pH 9.18 buffer solution, 230 mL bottle
MA9010	pH 10.01 buffer solution, 230 mL bottle
MA9015	Probe storage solution, 230 mL
MA9016	General cleaning solution, 230 mL
MA9060	12880 µS/cm solution, 230 mL
MA9061	1413 µS/cm solution, 230 mL
M10000B	Rinse solution, 20 mL (25 pcs.)

Ordering Information

Mi805 is supplied complete with MA851D/1 pH/EC/TDS/Temp amplified probe with 1 meter cable, 2x20 mL pH 4.01 and pH 7.01 sachet of calibration solution, 2x20 mL 1413 µS/cm sachet of calibration solutions, 2x20 mL sachet of electrode cleaning solutions, rugged carrying case, 9V battery and instructions.

Mi806 is supplied complete with MA851D/1 pH/EC/TDS/Temp amplified probe with 1 meter cable, 2x20 mL pH 4.01 and pH 7.01 sachet of calibration solution, 2x20 mL 12880 µS/cm sachet of calibration solutions, 2x20 mL sachet of electrode cleaning solutions, rugged carrying case, 9V battery and instructions.

MW801/MW802

Entry level, inexpensive pH/EC/TDS Portable Meters for fast and reliable results

MW801 and **MW802** are compact Portable Meters with Faster Micro Processor. These meters allow you to measure pH, EC (conductivity) and TDS with just one instrument and one single probe!

These easier and faster to calibrate portable meters have a smaller, ergonomic and lighter case design. Other features include 100% larger and easier to read LCD Display and long battery life.

Both meters calibrate manually in pH, Conductivity and TDS.

Each meter is supplied with the MA850 interchangeable probe with 1 meter cable to measure pH, Conductivity and TDS. The pH electrode utilizes a fiber junction to reduce contamination when measuring fertilizer solutions.

- The **MW801** with a Conductivity range that goes up to 1990 µS/cm and TDS range that goes up to 1990 ppm is an ideal tool for drinking water measurements.
- The **MW802**, with a conductivity range that goes up to 6.00 mS/cm and the TDS up to 4000 ppm is ideal for testing in crop production.

Specifications

		MW801	MW802
Range	pH	0.0 to 14.0 pH	0.00 to 14.00 pH
	EC	0 to 1990 µS/cm	0.00 to 6.00 mS/cm
	TDS	0 to 1990 ppm	0 to 4000 ppm
Resolution	pH	0.1 pH	0.10 pH
	EC	10 µS/cm	0.10 mS/cm
	TDS	10 ppm	10 ppm
Accuracy (@20°C)	pH	±0.2 pH	±0.20 pH
	EC/TDS	±2% Full Scale	±2% Full Scale
Calibration Solutions		M10007 (pH 7.01) M10032 (1382 ppm) M10031 (1413 µS/cm)	M10007 (pH 7.01) M10442 (1500 ppm) M10031 (1413 µS/cm)
Conversion Factor		0.5	0.68
Calibration		manual, at 1 point	manual, at 1 point
Temperature Compensation		automatic, from 0 to 50°C	automatic, from 0 to 50°C
Probe		**SE600** combination pH/EC/TDS probe	**SE600** combination pH/EC/TDS probe
Environment		0 to 50°C / 32 to 122°F; max RH 95%	0 to 50°C / 32 to 122°F; max RH 95%
Battery Type / Battery Life		1 x 9 V alkaline / 150 hours of use	1 x 9 V alkaline / 150 hours of use
Auto-off		after 8 minutes of non-use	after 8 minutes of non-use
Dimensions		185 x 82 x 45 mm	185 x 82 x 45 mm
Weight		165 g (with battery)	165 g (with battery)

Large and Easy-to-read Display

MW801 and **MW802** offer highly stable and accurate readings with large LCD display.

Combined interchangeable pH, Conductivity and TDS Probe

The pH electrode utilizes a fiber junction to reduce contamination when measuring fertilizer solutions.

Accessories

M10004B pH 4.01 buffer solution, 20 mL sachet (25 pcs)
M10007B pH 7.01 buffer solution, 20 mL sachet (25 pcs)
M10010B pH 10.01 buffer solution, 20 mL sachet (25 pcs)
M10031B 1413 µS/cm calibration solution, 20 mL sachet (25 pcs)
M10032B 1382 ppm calibration solution, 20 mL sachet (25 pcs)
M10442B 1500 ppm calibration solution, 20 mL sachet (25 pcs)
MA9015 Electrode storage solution, 230 mL bottle
SE600 pH/EC/TDS spare probe with 1 m cable

Ordering Information

MW801 is supplied complete with SE600 combination pH/EC/TDS probe, 20 mL sachet pH 7.01 buffer solution, 20 mL 1413 µS/cm sachet of calibration solution, 20 mL 1382 ppm sachet of calibration solution, 9V battery and instructions.
MW802 is supplied complete with SE600 combination pH/EC/TDS probe, 20 mL sachet pH 7.01 buffer solution, 20 mL 1413 µS/cm sachet of calibration solution, 20 mL 1500 ppm sachet of calibration solution, 9V battery and instructions.

MW700

Entry level, inexpensive LUX Portable Meters for fast and reliable results

MW700 is a portable Lux meter designed to perform light measurements. MW700 with Faster Micro Processor, has a smaller, ergonomic and lighter case design. Other features include 100% larger and easier to read LCD Display and long battery life.

These handy and ergonomically designed portable meters are ideal for anyone working on a low budget and still requires fast and reliable measurements. These portable meters are suitable for a wide range of applications, such as Educational, Agriculture and Horticulture, as well as water and environmental analysis.
Both models are supplied with a light sensor connected to the meter that measures from 0 to 50000 Lux.
Average indoor lighting ranges from 100 to 1000 Lux and average outdoor sun lights about 50000 Lux. Lux is a unit that indicates the density of light that falls on a surface.

The light is necessary for the development of the plants. In fact, it is necessary a sufficient contribution of light in order to favor the photosynthesis and the closing of the plants.
The supplement of light by means of lamps electrical workers is the method simpler and economic in order to bring the necessary light to the plants.

The human eye is sensitive only to blue, green, and red light, so in calculating the Lux falling on an object, only the light that the human eye sees is counted. When only infrared light falls on an object, the Lux is counted as zero since our eyes see nothing. Mathematically, a spectral weighting function becomes convolved with the actual illumination spectrum to calculate Lux exactly.

This is the formal definition of Lux and it makes Lux an unusual unit of measure.

Still, Lux can be thought of as a way of measuring light in terms of what our eyes perceive. The metric unit of measure for luminance of a surface. One Lux is equal to one Lumen per square meter.
One Lux equals 0.0929 footcandles.

Specifications	MW700
Range	0.000 to 1999 Lux 2000 to 19999 Lux 20000 to 50000 Lux
Range setting	manual through key buttons
Resolution	1 Lux 10 Lux 100 Lux
Accuracy	±6% of reading ±1 digit
Peak Wave Length	560 nm
Sensor Type	silicon photodiode
Sensor Sensitivity	100 scotopic Lux
Sensor Stability	±2% change per year (in the first two years)
Environment	0 to 50°C / 32 to 122°F; max RH 95%
Battery Type	1 x 9V (IEC 6LR61) alkaline
Battery Life	approximately 150 hours of continuous use
Auto-off	after about 5 minutes of non-use
Weight	approximately 270 g (meter with sensor)

Light Sensor

MW700 are provided with a light sensor connected to the meter through a coaxial cable.

Range keys

Press one of the three “Range keys” to select the proper scale according to the intensity of the light.

Ordering Information

MW700 is supplied complete with 9V battery and instructions.

Mi411

Free & Total Chlorine and pH Photometer

This latest laboratory grade Microprocessor photometer has an excellent repeatability and is ideal for field measurements.

Chlorine is the most commonly used water disinfectant. Applications vary from treatment of drinking water and wastewater to pool and spa sanitization and food processing to sterilization.

Martini Instruments has developed the **Mi411**, a portable microprocessor based instrument to measure three critical parameters to ensure good water quality: pH, free chlorine and total chlorine.

This instrument provides greater resolution, better accuracy and immediate results.

Mi411 is supplied in a hard carrying case including 2 cuvets, reagents for 100 tests, wiping tissue and instruction manual.

Self diagnostics

CE

3 in 1 Combination Photometer!

Specifications		Mi411 Free & Total Chlorine and pH
Range	Free Chlorine	0.00 to 5.00 mg/L Cl_2
	Total Chlorine	0.00 to 5.00 mg/L Cl_2
	pH	6.5 to 8.0 pH
Resolution	Free Chlorine	0.01 mg/L (0.00 to 3.50 mg/L); 0.10 mg/L (above 3.50 mg/L)
	Total Chlorine	0.01 mg/L (0.00 to 3.50 mg/L); 0.10 mg/L (above 3.50 mg/L)
	pH	0.1 pH
Accuracy	Free Chlorine	±0.04 mg/L @1.50 mg/L
	Total Chlorine	±0.04 mg/L @1.50 mg/L
	pH	±0.1 pH @7.2 pH
Method	Free Chlorine	adaptation of the USEPA method 330.5 and Standard Method 4500-Cl G
	Total Chlorine	adaptation of the USEPA method 330.5 and Standard Method 4500-Cl G
	pH	adaptation of the phenol red method
Light Source		tungsten lamp
Light Detector		silicon photocell and 525 nm narrow band interference filter
Environment		0 to 50°C / 32 to 122°F; max RH 100%
Battery Type		1 x 9V
Auto-off		after 10 minutes of non-use
Dimensions		192 x 104 x 52 mm
Weight		380 g

Hard Carrying Case

Mi411 comes complete in hard carrying case, making it ideal for field measurements.

Accessories

Mi504-100 Free & Total Chlorine reagent set (100 tests)
Mi509-100 pH reagent (100 tests)
Mi511-100 Free & Total Chlorine and pH reagent set (100 tests)
Mi524-100 Total Chlorine powder reagents (100 tests)
Mi526-100 Free Chlorine powder reagents (100 tests)

Mi0001 Glass cuvets (2 pcs)
Mi0002 Caps for cuvets (2 pcs)
Mi0003 Stoppers for cuvets (2 pcs)
Mi0005 9V battery (1 pc)

Ordering Information

Mi411 is supplied complete with 2 cuvets, Mi511-100 liquid reagents for 100 tests, hard carrying case, wiping tissue, 9V battery and instructions.

Mi405/Mi407/Mi408/Mi412

Ammonia, Iron & Phosphate Photometers

These user-friendly Colorimeters will give you direct readings in mg/L.

Ammonia detection in water treatment systems is particularly important for aquarium owners and fish farm operators. Ammonia is highly soluble in water and extremely toxic to fish. Fish farm owners must monitor and maintain careful control of ammonia levels to ensure optimum water conditions for their stock. Milwaukee offers 2 instruments for low and medium concentrations: **Mi405** with a range of 0.00 to 9.99 mg/L and **Mi407** from 0.00 to 3.00 mg/L

Iron is naturally present in water supplies and its presence in both potable and industrial applications is regarded as objectionable. Milwaukee offers **Mi408** Iron meter with a range of 0.00 to 5.00 mg/L.

Phosphates are present in natural waters and at concentrations typically found, do not pose any specific health threats to humans. However, excessive contamination of water courses from agricultural fertilizer run off or wastewater/effluent discharge can promote excessive algae or plant growth. Milwaukee offers **Mi412** with range 0.00 to 2.50 mg/L.

Specifications		Mi405 Ammonia MR	Mi407 Ammonia LR	Mi408 Iron HR	Mi412 Phosphate LR
Range	Ammonia	0.00 to 9.99 mg/L (NH_3-N)	0.00 to 3.00 mg/L (NH_3-N)		
	Iron			0.00 to 5.00 mg/L Fe	
	Phosphate				0.00 to 2.50 mg/L PO_4
Resolution	Ammonia	0.01 mg/L	0.01 mg/L		
	Iron			0.01 mg/L	
	Phosphate				0.01 mg/L
Accuracy	Ammonia	±0.10 mg/L @5.00 mg/L	±0.04 mg/L @1.50 mg/L		
	Iron			±0.03 mg/L @1.50 mg/L	
	Phosphate				±0.04 mg/L @1.00 mg/L
Method		adaptation of Nessler method	adaptation of Nessler method	adaptation of the USEPA method 315 B and Standard method 3500 - Fe B	adaptation of Ascorbic Acid method
Light Source		Blue LED 466 nm	Blue LED 466 nm	tungsten lamp	tungsten lamp
Light Detector		silicon photocell and 466 nm narrow band interference filter	silicon photocell and 466 nm narrow band interference filter	silicon photocell and 525 nm narrow band interference filter	silicon photocell and 610 nm narrow band interference filter
Environment		0 to 50°C / 32 to 122°F; max RH 100%	0 to 50°C / 32 to 122°F; max RH 100%	0 to 50°C / 32 to 122°F; max RH 100%	0 to 50°C / 32 to 122°F; max RH 100%
Battery Type		1 x 9 volt	1 x 9 volt	1 x 9 volt	1 x 9 volt
Auto-off		after 10 minutes of non-use	after 10 minutes of non-use	after 10 minutes of non-use	after 10 minutes of non-use
Dimensions		192 x 104 x 52 mm	192 x 104 x 52 mm	192 x 104 x 52 mm	192 x 104 x 52 mm
Weight		380 g	380 g	380 g	380 g

Accessories

Mi505-100 Ammonia MR liquid reagent (100 tests)
Mi507-100 Ammonia LR liquid reagent (100 tests)
Mi508-100 Iron HR liquid reagent (100 tests)
Mi512-100 Phosphate LR powder reagent (100 tests)

Mi0001 Glass cuvets (2 pcs)
Mi0002 Caps for cuvets (2 pcs)
Mi0003 Stoppers for cuvets (2 pcs)
Mi0005 9V battery (1 pc)

Ordering Information

Mi405, **Mi407**, **Mi408** and **Mi412** are supplied complete with 2 cuvets, reagents for 100 tests, hard carrying case, wiping tissue, 9V battery and instructions.

Mi404/Mi406/Mi413/Mi414

Free & Total Chlorine and Chloride Photometers

Milwaukee provides a range of chlorine photometers for all applications: swimming pool treatments, household cleaners, dishwasher additives, laundry powders/liquids and cooling water treatment products all contain chlorine as an oxidizing biocide. Drinking water contains residual chlorine to maintain water purity throughout the supply lines.

Milwaukee offers 3 microprocessor-based instruments with greater resolution, better accuracy and immediate results.
You can choose between three different models:
Mi404 for measuring free (0.00 to 5.00 mg/L) and total (0.00 to 5.00 mg/L) chlorine, **Mi406** for measuring free (0.00 to 5.00 mg/L) chlorine and **Mi413** for measuring free (0.00 to 10.00 mg/L) and total (0.00 to 10.00 mg/L) chlorine.

Chloride is a major constituent of sea water and is extremely corrosive in acidic environments. It requires close monitoring in applications such as marine boiler systems that are effected by seawater contamination.
Chlorides are used by the water treatment professional to determine cycles of concentration in low pressure boilers and cooling systems.
It is essential to monitor chloride concentrations in boiler systems to prevent metal parts being damaged.
In high levels, chloride can corrode stainless steel.

Specifications

		Mi404 Free & Total Chlorine	Mi406 Free Chlorine	Mi413 Free & Total Chlorine HR	Mi414 Chloride
Range	Free Chlorine	0.00 to 5.00 mg/L Cl_2	0.00 to 5.00 mg/L Cl_2	0.00 to 10.00 mg/L Cl_2	
	Total Chlorine	0.00 to 5.00 mg/L Cl_2		0.00 to 10.00 mg/L Cl_2	
	Chloride				0.00 to 20.00 mg/L Cl^-
Resolution	Free Chlorine	0.01 mg/L (0.00 to 3.50 mg/L); 0.10 mg/L (above 3.50 mg/L);	0.01 mg/L (0.00 to 3.50 mg/L); 0.10 mg/L (above 3.50 mg/L)	0.01 mg/L (0.00 to 3.50 mg/L); 0.10 mg/L (above 3.50 mg/L	
	Total Chlorine	0.01 mg/L (0.00 to 3.50 mg/L); 0.10 mg/L (above 3.50 mg/L)		0.01 mg/L (0.00 to 3.50 mg/L); 0.10 mg/L (above 3.50 mg/L)	
	Chloride				0.01 mg/L
Accuracy	Free Chlorine	±0.04 mg/L @1.50 mg/L	±0.04 mg/L @1.50 mg/L	±0.10 mg/L @5.00 mg/L	
	Total Chlorine	±0.04 mg/L @1.50 mg/L		±0.10 mg/L @5.00 mg/L	
	Chloride				±0.4 mg/L @10.0 mg/L
Method		adaptation of the USEPA method 330.5 and Standard Method 4500-Cl G	adaptation of the USEPA method 330.5 and Standard Method 4500-Cl G.	adaptation of the USEPA method 330.5 and Standard Method 4500-Cl G.	adaptation of mercury (II) thiocyanate method
Light Source		tungsten lamp	tungsten lamp	tungsten lamp	Blue LED 466 nm
Light Detector		silicon photocell and 525 nm narrow band interference filter	silicon photocell and 525 nm narrow band interference filter	silicon photocell and 525 nm narrow band interference filter	silicon photocell and 466 nm narrow band interference filter
Environment		0 to 50°C / 32 to 122°F; max RH 100%	0 to 50°C / 32 to 122°F; max RH 100%	0 to 50°C / 32 to 122°F; max RH 100%	0 to 50°C / 32 to 122°F; max RH 100%
Battery Type		1 x 9V	1 x 9V	1 x 9V	1 x 9V
Auto-off		after 10 minutes of non-use	after 10 minutes of non-use	after 10 minutes of non-use	after 10 minutes of non-use
Dimensions		192 x 104 x 52 mm	192 x 104 x 52 mm	192 x 104 x 52 mm	192 x 104 x 52 mm
Weight		380 g	380 g	380 g	380 g

Accessories

Mi504-100 Free & Total Chlorine liquid reagent set (100 tests)
Mi506-100 Free Chlorine liquid reagent set (100 tests)
Mi513-045 Free & Total Chlorine liquid reagent set (45 tests)
Mi514-100 Chloride liquid reagent set (100 tests)

Mi524-100 Total Chlorine powder reagents (100 tests)
Mi526-100 Free Chlorine powder reagents (100 tests)
Mi0001 Glass cuvets (2 pcs)
Mi0002 Caps for cuvets (2 pcs)
Mi0003 Stoppers for cuvets (2 pcs)

Ordering Information

Mi404, **Mi406**, **Mi413** and **Mi414** are supplied complete with 2 cuvets, reagents, hard carrying case, wiping tissue, 9V battery and instructions.

MW10/MW11

Low cost digital photometers to measure Free & Total Chlorine

CE

2 Years warranty

Self diagnostics

LED

Chlorine is the most commonly used water disinfectant. Applications vary from treatment of drinking water and wastewater to pool and spa sanitization and food processing to sterilization.

Milwaukee offers 2 models:

MW10 for measuring free chlorine (0.00 to 2.50 mg/L) and **MW11** to measure total chlorine (0.00 to 3.50 mg/L).

Key features include:

- User friendly;
- Smaller & Ergonomic case design;
- Inexpensive;
- Larger and Easier to read Display;
- Good accuracy and immediate results;

Specifications	 **MW10** **Free Chlorine**	 **MW11** **Total Chlorine**
Range	0.00 to 2.50 ppm	0.00 to 3.50 ppm
Resolution	0.01 ppm	0.01 ppm
Accuracy (@ 25 °C)	±0.03 ppm ±3% of reading	±0.03 ppm ±3% of reading
Typical EMC Dev.	±0.01 ppm	±0.01 ppm
Light Source	Light Emitting Diode @ 525 nm	Light Emitting Diode @ 525 nm
Light Detector	Silicon Photocell	Silicon Photocell
Method	Adaptation of USEPA method 330.5. The reaction between free chlorine and the DPD reagent causes a pink tint in the sample.	Adaptation of USEPA method 330.5. The reaction between free chlorine and the DPD reagent causes a pink tint in the sample.
Environment	0 to 50°C (32 to 122 °F) max. 95% RH non-condensing	0 to 50°C (32 to 122 °F) max. 95% RH non-condensing
Battery Type	1 x 1.5V AAA	1 x 1.5V AAA
Auto-Shut Off	After 2 minutes of non-use	After 2 minutes of non-use
Dimensions	81.5 x 61 x 37.5 mm (3.2 x 2.4 x 1.5")	81.5 x 61 x 37.5 mm (3.2 x 2.4 x 1.5")
Weight	64 g (2.25 oz.)	64 g (2.25 oz.)

They are supplied with 2 cuvets, 6 reagents, a battery and instruction manual.

Accessories

2720116 Free Chlorine powder reagent, (25 pcs)
2720216 Total Chlorine powder reagent (25 pcs)

Mi0011 Glass cuvets (2 pcs)
Mi0013 Stoppers for cuvets (2 pcs)
3000300 1.5V AAA batteries (1 pcs)

Ordering information:

All handy photometers are supplied in a carton box including 2 cuvets, 6 powder reagents, 1 x 1.5 V AAA battery and instructions.

MW12/MW13/MW14

Low cost digital photometers to measure Phosphate,Iron & Iodine

Iron is naturally present in water supplies and therefore needs to be monitored both in potable and industrial applications. Milwaukee offers the **MW14** Iron meter with a range of 0.00 to 5.00 mg/L.

Phosphates are present in natural waters and at concentrations typically found, do not pose any specific health threats to humans. However, excessive contamination of water courses from agricultural fertilizer run off or wastewater/effluent discharge can promote excessive algae or plant growth. Milwaukee offers **MW12** with a range of 0.00 to 2.50 mg/L.

Iodine is used as disinfectant in various applications - one of the most common is the poultry industry waste water treatment. Milwaukee offers **MW13** with a range of 0.0 to 12.5 mg/L.

Specifications	 MW12 Phosphate	 MW13 Iodine	 MW14 Iron
Range	0.00 to 2.50 ppm	0.0 to 12.5 ppm	0.00 to 5.00 ppm
Resolution	0.01 ppm	0.1 ppm	0.01 ppm
Accuracy (@ 25 °C)	±0.04 ppm ±4% of reading	±0.1 ppm ±5% of reading	±0.04 ppm ±2% of reading
Typical EMC Dev.	±0.01 ppm	±0.1 ppm	±0.01 ppm
Light Source	Light Emitting Diode @ 525 nm	Light Emitting Diode @ 525 nm	Light Emitting Diode @ 525 nm
Light Detector	Silicon Photocell	Silicon Photocell	Silicon Photocell
Method	Adaptation of the Standard Methods fo the Examination of Water and Wastewater, 20th edition, Ascorbic Acid method. The reaction between phosphate and the reagent causes a blue tint in the sample.	Adaptation of the Standard Methods for the Examination of Water and Wastewater, 18th edition, DPD method. The reaction between iodine and the reagent causes a pink tint in the sample.	Adaptation of the EPA Phenantroline method 315B, for natural and treated waters. The reaction between iron and reagent causes an orange tint in the sample.
Environment	0 to 50°C (32 to 122 °F) max. 95% RH non-condensing	0 to 50°C (32 to 122 °F) max. 95% RH non-condensing	0 to 50°C (32 to 122 °F) max. 95% RH non-condensing
Battery Type	1 x 1.5V AAA	1 x 1.5V AAA	1 x 1.5V AAA
Auto-Shut Off	After 2 minutes of non-use	After 2 minutes of non-use	After 2 minutes of non-use
Dimensions	81.5 x 61 x 37.5 mm (3.2 x 2.4 x 1.5")	81.5 x 61 x 37.5 mm (3.2 x 2.4 x 1.5")	81.5 x 61 x 37.5 mm (3.2 x 2.4 x 1.5")
Weight	64 g (2.25 oz.)	64 g (2.25 oz.)	64 g (2.25 oz.)

Accessories

2720115 Phosphate powder reagent, (25 pcs)
2720316 Iodine powder reagent (25 pcs)
2720416 Iron powder reagent, (25 pcs)

MI0011 Glass cuvets (2 pcs)
MI0013 Stoppers for cuvets (2 pcs)
3000300 1.5V AAA batteries (1 pcs)

Ordering information:

All handy photometers are supplied in a carton box including 2 cuvets, 6 powder reagents, 1 x 1.5 V AAA battery and instructions.

Mi490 - Photometer

PEROXIDE VALUE in the process of oil making

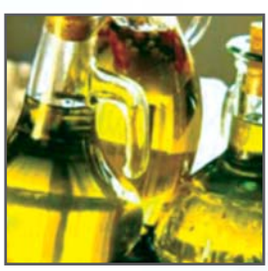
Mi490 is a user-friendly photometer for monitoring peroxide value in the process of oil making. This instrument will give you direct readings, with a range of 0.0 to 25.0 meq O_2/Kg .
The measurement of the oil's chemical degradation is the peroxide value, which measures the degree to which the oil is oxidized. Rancidification is the decomposition of fats and other lipids by hydrolysis and/or oxidation. Hydrolysis will split fatty acid chains away from the glycerol backbone in glycerides. These free fatty acids can then undergo further auto-oxidation. Oxidation primarily occurs with unsaturated fats by a free radical-mediated process.
One of the most widely used tests for oxidative rancidity, peroxide value is a measure of the concentration of peroxides and hydroperoxides formed in the initial stages of lipid oxidation. Milliequivalents of peroxide per kg of fat are measured by titration with iodide ion.
Peroxide values are not static and care must be taken in handling and testing samples. It is difficult to provide a specific guideline relating peroxide value to rancidity. High peroxide values are a definite indication of a rancid fat, but moderate values may be the result of depletion of peroxides after reaching high concentrations.

Easy Steps

Prepare the sample with oil and the reagent then insert it in the instrument and note the reading.

Accurate Readings

Mi490 will give you direct readings, with a range of 0.0 to 25.0 meq O_2/Kg in the process of oil making.



Mi490	Peroxide Value
Range	0.0 to 25.0 meq O_2 /Kg
Resolution	0.5 meq O_2 /Kg
Accuracy	±0.5 meq O_2 /Kg
Method	adaptation of the CE n. 2568/97 method
Environment	0 to 50°C; max RH 95%
Battery Type	4 x 1.5V AA
Auto-off	after 15 minutes of non-use
Dimensions	225 x 85 x 80 mm
Weight	0.5 kg

Accessories

Mi590-021	Peroxides reagent set (21 tests)
Mi0001	10 mL glass large cuvets (2 pcs)
Mi0002	Caps for large cuvets (2 pcs)
Mi0004	Tissue for wiping cuvets (4 pcs)
Mi0006	Battery 1.5V AA (4 pcs)

Ordering Information

Mi490 is supplied complete with:
reagents for 20 tests, 4 x 1 mL syringe, tissue for wiping cuvets, 4 x 1.5V AA batteries and instruction manual.

Mi415
Turbidity Meter

Turbidity refers to the concentration of undissolved, suspended particles present in a liquid.
Turbidity is a measure of the clarity of a sample.
For potable water applications turbidity is a good indicator of water quality.

Turbidity Measurement is achieved by analyzing the amount of light refracted from suspended particles such as clay, silt and organic material.
By measuring turbidity, by photometric or tube methods, it is possible to estimate suspended solids content.

Mi415 has two operating ranges; 0.00 to 50.00 FNU, and 50 to 1000 FNU that can accommodate the most turbid condition you may encounter.

Mi415 is supplied in a hard carrying case, complete with calibration solutions.

Specifications	Mi415 Turbidity Meter
Range	0.00 to 50.00 FNU; 50 to 1000 FNU
Resolution	0.01 FNU; 1 FNU
Accuracy	±0.5 FNU or ±5% of reading, whichever is greater
Method	detection of scattered light
Light Source	high emission infrared LED
Light Detector	silicon photocell
Environment	0 to 50°C / 32 to 122°F; max RH 100%
Battery Type	1 x 9V
Auto-off	after 5 minutes of non-use
Dimensions	192 x 104 x 52 mm
Weight	380 g

Introduction to Turbidity

The cloudy appearance of water (called Turbidity) is caused by suspended material.
The unit of measure adopted by the ISO Standard is the FNU (Formazine Nephelometric Unit) and by EPA is NTU (Nephelometric Turbidity Unit).
The other two methods used to test for turbidity and their measurement units are the JTU (Jackson Turbidity Unit) and the Silica unit (mg/L SiO_2).
See the conversion table of these methods and their units for your reference.

	JTU	FTU (NTU/FNU)	SiO_2 (mg/L)
JTU	1	19	2.5
FTU	0.053	1	0.13
SiO_2	0.4	7.5	1

Accessories

Mi515-100 AMCO-AEPA-1 @ 0 FNU calibration solution, 30 mL
AMCO-AEPA-1 @ 10 FNU, calibration solution, 30 mL
AMCO-AEPA-1 @ 500 FNU, calibration solution, 30 mL

Mi0011 Glass cuvets (2 pcs)
Mi0012 Caps for cuvets (2 pcs)
Mi0013 Stoppers for cuvets (2 pcs)
Mi0005 9V battery (1 pc)

Ordering Information

Mi415 is supplied complete with 2 cuvets, calibration solutions, hard carrying case, wiping tissue, 9V battery and instructions.

MA871/MA872/MA873/MA881

Digital Refractometers for Brix, Fructose, Glucose and Invert Sugar Measurements

The digital refractometers are optical instruments that employ the measurement of refractive index to determine the % Brix of sugar (**MA871**), % Fructose (**MA872**), % Glucose (**MA873**) and % Invert Sugar (**MA881**) in aqueous solutions.

The method is both simple and quick. Samples are measured after a simple user calibration with deionized or distilled water. Within seconds the instruments measure the refractive index of the sample and convert it to % Brix or % by weight concentration units.

The digital refractometers eliminate the uncertainty associated with mechanical refractometers and are easily portable for measurements in the field.

The measurement technique and temperature compensation employ methodology recommended in the ICUMSA Methods Book (Internationally recognized body for Sugar Analysis). Temperature (in °C or °F) is displayed simultaneously with the measurement on the large dual level display along with icons for Low Power and other helpful message codes.

Key features include:

- Dual-level LCD
- Automatic Temperature Compensation (ATC)
- Easy setup and storage
- Battery operation with Low Power indicator (BEPS)
- Automatically turns off after 3 minutes of non-use

Specifications	 **MA871 Brix**	 **MA872 Fructose**	 **MA873 Glucose**	 **MA881 Invert Sugar**
Range	0 to 85% Brix 0 to 80°C / 32 to 176°F	0 to 85% mass 0 to 80°C / 32 to 176°F	0 to 85% mass 0 to 80°C / 32 to 176°F	0 to 85% mass 0 to 80°C / 32 to 176°F
Resolution	0.1% Brix 0.1°C / 0.1°F	0.1% 0.1°C / 0.1°F	0.1% 0.1°C / 0.1°F	0.1% 0.1°C / 0.1°F
Accuracy	±0.2% Brix ±0.3°C / ±0.5°F	±0.2% ±0.3°C / ±0.5°F	±0.2% ±0.3°C / ±0.5°F	±0.2% ±0.3°C / ±0.5°F
Light Source	yellow LED	yellow LED	yellow LED	yellow LED
Measurement Time	approximately 1.5 seconds	approximately 1.5 seconds	approximately 1.5 seconds	approximately 1.5 seconds
Minimum Sample Volume	100 µL (cover prism totally)	100 µL (cover prism totally)	100 µL (cover prism totally)	100 µL (cover prism totally)
Sample Cell	SS ring and flint glass prism	SS ring and flint glass prism	SS ring and flint glass prism	SS ring and flint glass prism
Temperature Compensation	automatic between 10 and 40°C / 50 to 104°F	automatic between 10 and 40°C / 50 to 104°F	automatic between 10 and 40°C / 50 to 104°F	automatic between 10 and 40°C / 50 to 104°F
Case Material	ABS	ABS	ABS	ABS
Enclosure Rating	IP 65	IP 65	IP 65	IP 65
Battery Type	1 x 9V AA (included)	1 x 9V AA (included)	1 x 9V AA (included)	1 x 9V AA (included)
Battery Life	5000 reading	5000 reading	5000 reading	5000 reading
Auto-shut off	after 3 minutes of non-use	after 3 minutes of non-use	after 3 minutes of non-use	after 3 minutes of non-use
Dimensions	192 x 102 x 67 mm	192 x 102 x 67 mm	192 x 102 x 67 mm	192 x 102 x 67 mm
Weight	420 g	420 g	420 g	420 g

Ordering Information

MA871, **MA872**, **MA873** and **MA881** are supplied complete with Mi0005 9V battery and instruction manual.

Stainless Steel Sample Well and Prism

Place a few drops of the sample in the well and press the READ key.

MA882/MA883/MA884/MA885

Digital Refractometers for Grape Juice Must Measurements

The **MA882**, **MA883**, **MA884** and **MA885** are optical instruments that are based on the measurement of the refractive index of a solution. The measurement of refractive index is simple and quick and provides the vintner an accepted method for sugar content analysis. Samples are measured after a simple user calibration with deionized or distilled water. Within seconds the instrument measures the refractive index of the grape. This digital refractometers eliminate the uncertainty associated with mechanical refractometers and are easily portable for measurements in the field. The four instruments utilize internationally recognized references for unit conversion and temperature compensation.

- **MA882** measures %Brix;
- **MA883** measures °Baumé;
- **MA884** measures %Brix and Potential Alcohol (% vol);
- **MA885** measures %Brix, °Oechsle (°Oe) and °KMW (°Babo).

Temperature (in °C or °F) is displayed simultaneously with the measurement on the large dual level display along with icons for Low Power and other helpful message codes.

Key features include:

- Dual-level LCD
- Automatic Temperature Compensation (ATC)
- Easy setup and storage
- Battery operation with Low Power indicator (BEPS)
- Automatically turns off after 3 minutes of non-use

Specifications	 MA882	 MA883	 MA884	 MA885
Range	0 to 50% Brix 0 to 80°C / 32 to 176°F	0 to 28 °Baumé 0 to 80°C / 32 to 176°F	0 to 50% Brix 0 to 25% v/v Potential Alcohol 0 to 80°C / 32 to 176°F	0 to 50% Brix 0 to 230°Oechsle 0 to 42 °KMW 0 to 80°C / 32 a 176°F
Resolution	0.1% Brix 0.1°C / 0.1 °F	0.1 °Baumé 0.1°C / 0.1 °F	0.1% Brix 0.1% v/v Potential Alcohol 0.1°C / 0.1°F	0.1% Brix 0.1 °Oechsle 0.1 °KMW 0.1°C / 0.1°F
Accuracy	±0.2% Brix ±0.3°C / ±0.5°F	±0.1 °Baumé ±0.3°C / ±0.5°F	±0.2% Brix ±0.2 v/v Potential Alcohol ±0.3°C / ±0.5°F	±0.2% Brix ±1°Oechsle ±0.2 °KMW ±0.3°C / ±0.5°F
Light Source	yellow LED	yellow LED	yellow LED	yellow LED
Measurement Time	approximately 1.5 seconds	approximately 1.5 seconds	approximately 1.5 seconds	approximately 1.5 seconds
Minimum Sample Volume	100 µL (cover prism totally)	100 µL (cover prism totally)	100 µL (cover prism totally)	100 µL (cover prism totally)
Sample Cell	SS ring and flint glass prism	SS ring and flint glass prism	SS ring and flint glass prism	SS ring and flint glass prism
Temperature Compensation	automatic between 10 and 40°C /50 to 104°F	automatic between 10 and 40°C /50 to 104°F	automatic between 10 and 40°C /50 to 104°F	automatic between 10 and 40°C /50 to 104°F
Case Material	ABS	ABS	ABS	ABS
Enclosure Rating	IP 65	IP 65	IP 65	IP 65
Battery Type	1 x 9V AA (included)	1 x 9V AA (included)	1 x 9V AA (included)	1 x 9V AA (included)
Battery Life	5000 reading	5000 reading	5000 reading	5000 reading
Auto-shut off	after 3 minutes of non-use	after 3 minutes of non-use	after 3 minutes of non-use	after 3 minutes of non-use
Dimensions	192 x 102 x 67 mm	192 x 102 x 67 mm	192 x 102 x 67 mm	192 x 102 x 67 mm
Weight	420 g	420 g	420 g	420 g

Ordering Information

MA882, **MA883**, **MA884** and **MA885** are supplied complete with Mi0005 9V battery and instruction manual.

MA886

Digital Refractometer for Sodium Chloride Measurements

The **MA886** is an optical instrument that employs the measurement of the refractive index to determine sodium chloride concentration in aqueous solutions used in food preparation.

It is not intended for sea water salinity measurements.
The measurement of refractive index is simple and quick and provides the user an accepted method for NaCl analysis. Samples are measured after a simple user calibration with deionized or distilled water. Within seconds the instrument measures the refractive index of the solution.

The digital refractometer eliminates the uncertainty associated with mechanical refractometers and is easily portable for measurements where you need them.

The instrument utilizes internationally recognized references for unit conversion and temperature compensation. It can display the measurement of NaCl concentration 4 different ways: g/100 g, g/100 mL, Specific Gravity, and °Baumé. Temperature (in °C or °F) is displayed simultaneously with the measurement (on 3 of the ranges) on the large dual level display along with icons for Low Power and other helpful message codes.

Key features include:

- Dual-level LCD
- Automatic Temperature Compensation (ATC)
- Easy setup and storage
- Battery operation with Low Power indicator (BEPS)
- Automatically turns off after 3 minutes of non-use

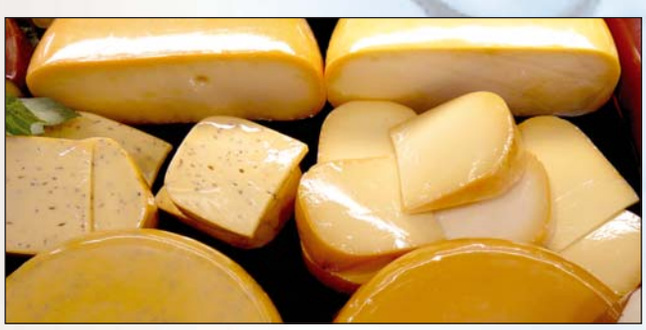
Specifications	MA886
Range	0 to 28 g/100 g 0 to 34 g/100 ml 1.000 to 1.216 Specific Gravity 0 to 26 °Baumé 0 to 80°C / 32 to 176°F
Resolution	0.1 g/100 g 0.1 g/100 ml 0.001 Specific Gravity 0.1 °Baumé 0.1°C / 0.1°F
Accuracy	±0.2 g/100 g ±0.2 g/100 ml ±0.002 Specific Gravity ±0.2 °Baumé ±0.3°C / ±0.5°F
Light Source	yellow LED
Measurement Time	approximately 1.5 seconds
Minimum Sample Volume	100 µL (cover prism totally)
Sample Cell	SS ring and flint glass prism
Temperature Compensation	automatic between 10 and 40°C (50 to 104°F)
Case Material	ABS
Enclosure Rating	IP 65
Battery Type	1 x 9V AA (included)
Battery Life	5000 reading
Auto-shut off	after 3 minutes of non-use
Dimensions	192 x 102 x 67 mm
Weight	420 g

Stainless Steel Sample Well and Prism

Place a few drops of the sample in the well and press the READ key.

Liquid Cristal Display (LCD)

Dual Level LCD with Primary and Secondary Display.



Ordering Information

MA886 is supplied complete with Mi0005 9V battery and instruction manual.

MA887

Digital Refractometer for Seawater Measurements

The **MA887** is an optical instrument that employs the measurement of the refractive index to determine the salinity of natural and artificial seawater, ocean water or brackish intermediates.
The digital refractometer eliminates the uncertainty associated with mechanical refractometers and is easily portable for ship, shore or home use.

The **MA887** refractometer is an optical device that is simple and quick to use. Samples are measured after a simple user calibration with distilled or deionized water. Within seconds, the refractive index and temperature are measured and converted into one of three popular measurement units; Practical Salinity Units (PSU), Salinity in parts per thousand (ppt), or Specific Gravity (S.G. (20/20)).

All conversion algorithms are based upon respected scientific publications using the physical properties of seawater (not sodium chloride). The temperature (in °C or °F) is also displayed on the large dual level display along with helpful message codes.

Key features include:
- Dual-level LCD
- Automatic Temperature Compensation (ATC)
- Easy setup and storage
- Battery operation with Low Power indicator (BEPS)
- Automatically turns off after 3 minutes of non-use

Specifications	MA887
Range	0 to 50 PSU 0 to 150 ppt 1.000 to 1.114 S.G. (20/20) 0 to 80°C / 32 to 176°F
Resolution	1 PSU 1 ppt 0.001 S.G. (20/20) 0.1°C / 0.1°F
Accuracy	±2 PSU ±2 ppt ±0.002 S.G. (20/20) ±0.3°C / ±0.5°F
Light Source	yellow LED
Measurement Time	approximately 1.5 seconds
Minimum Sample Volume	100 µL (cover prism totally)
Sample Cell	SS ring and flint glass prism
Temperature Compensation	automatic between 10 and 40°C (50 to 104°F)
Case Material	ABS
Enclosure Rating	IP 65
Battery Type	1 x 9V AA (included)
Battery Life	5000 reading
Auto-shut off	after 3 minutes of non-use
Dimensions	192 x 102 x 67 mm
Weight	420 g

Stainless Steel Sample Well and Prism

Place a few drops of the sample in the well and press the READ key.

Liquid Cristal Display (LCD)

Dual Level LCD with Primary and Secondary Display.

Ordering Information

MA887 is supplied complete with Mi0005 9V battery and instruction manual.

MA888

Digital Refractometer for Ethylene Glycol Measurements

The **MA888** is an optical instrument that employs the measurement of the refractive index to determine the % volume and freezing point of ethylene glycol based coolants or antifreeze.

The digital refractometer eliminates the uncertainty associated with mechanical refractometers and is easily portable for use in the field to optimize your cooling system.

The **MA888** refractometer is an optical device that is simple and quick to use. Samples are measured after a simple user calibration with distilled or deionized water. Within seconds, the refractive index and temperature are measured and converted into one of two measurement units; % Volume or Freezing Point.

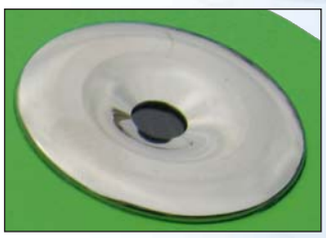
The instrument utilizes internationally recognized references for unit conversion and temperature compensation for ethylene glycol solutions (e.g. CRC Handbook of Chemistry and Physics, 87th Edition).

The temperature (in °C or °F) is also displayed on the large dual level display along with helpful message codes.

Key features include:

- Dual-level LCD
- Automatic Temperature Compensation (ATC)
- Easy setup and storage
- Battery operation with Low Power indicator (BEPS)
- Automatically turns off after 3 minutes of non-use

Specifications	MA888
Range	0 to 100% Volume 0 to -50 °C / 32 to -58 °F Freezing Point 0 to 80°C / 32 to 176°F
Resolution	0.1% Volume 0.1°C / 0.1°F Freezing Point 0.1°C / 0.1°F
Accuracy	±0.2% Volume ±0.5°C / ±1.0°F Freezing Point ±0.3°C / ±0.5°F
Light Source	yellow LED
Measurement Time	approximately 1.5 seconds
Minimum Sample Volume	100 µL (cover prism totally)
Sample Cell	SS ring and flint glass prism
Temperature Compensation	automatic between 10 and 40°C (50 to 104°F)
Case Material	ABS
Enclosure Rating	IP 65
Battery Type	1 x 9V AA (included)
Battery Life	5000 reading
Auto-shut off	after 3 minutes of non-use
Dimensions	192 x 102 x 67 mm
Weight	420 g



Stainless Steel Sample Well and Prism

Place a few drops of the sample in the well and press the READ key.

Liquid Cristal Display (LCD)

Dual Level LCD with Primary and Secondary Display.

Ordering Information

MA888 is supplied complete with Mi0005 9V battery and instruction manual.

pH600/CD600/CD601/CD610/CD611/CD97

pH/EC & TDS Economical Pocket Testers

Milwaukee's economical testers are easy-to-use and low cost instruments to measure quick and reliable pH, EC or TDS values.

Measuring electrical conductivity is the best way of checking the amount of salt or dissolved solids (TDS) in water. Milwaukee provides you with a range of pocket testers that will allow you to measure from very low to very high conductivity solutions.

All EC/TDS testers compensate for the temperature variance automatically.

Specifications	pH600	CD600	CD601
Range	0.0 to 14.0 pH	0 to 1990 ppm	0 to 1990 µS/cm
Resolution	0.1 pH	10 ppm	10 µS/cm
Accuracy	±0.1 pH	±2% full scale	±2% full scale
Calibration	manual, 1 point	manual, 1 point	manual, 1 point
Temperature Compensation		automatic from 5 to 50°C	automatic from 5 to 50°C
Environment	0 to 50°C / 32 to 122°F; max RH 95%	0 to 50°C / 32 to 122°F; max RH 95%	0 to 50°C / 32 to 122°F; max RH 95%
Battery Type / Battery Life	3 x 1.5V, alkaline / 700 hours of use	4 x 1.5V, alkaline / 350 hours of use	4 x 1.5V, alkaline / 350 hours of use
Dimensions / Weight	150 x 30 x 24 mm / 85 g	150 x 30 x 24 mm / 85 g	150 x 30 x 24 mm / 85 g

Specifications	CD610	CD611	CD97
Range	0 to 10000 ppm	0 to 20000 µS/cm	0 to 1000 ppm
Resolution	100 ppm	100 µS/cm	1 ppm
Accuracy	±2% full scale	±2% full scale	±10 ppm
Calibration	manual, 1 point	manual, 1 point	manual, 1 point
Temperature Compensation	automatic from 5 to 50°C	automatic from 5 to 50°C	automatic from 5 to 50°C
Environment	0 to 50°C / 32 to 122°F; max RH 95%	0 to 50°C / 32 to 122°F; max RH 95%	0 to 50°C / 32 to 122°F; max RH 95%
Battery Type / Battery Life	4 x 1.5V, alkaline / 350 hours of use	4 x 1.5V, alkaline / 350 hours of use	4 x 1.5V, alkaline / 350 hours of use
Dimensions / Weight	150 x 30 x 24 mm / 85 g	150 x 30 x 24 mm / 85 g	150 x 30 x 24 mm / 85 g

Accessories

M10004B pH 4.01 buffer solution 20 mL sachet (25 pcs)
M10007B pH 7.01 buffer solution 20 mL sachet (25 pcs)
M10010B pH 10.01 buffer solution, 20 mL sachet (25 pcs)
M10030B 12880 µS/cm calibration solution, 20 mL (25 pcs)

M10031B 1413 µS/cm calibration solution, 20 mL (25 pcs)
M10032B 1382 ppm (mg/L) calibration solution, 20 mL (25 pcs)
M10038B 6.44 ppt (g/L) calibration solution, 20 mL (25 pcs)
MA9015 Electrode storage solution, 230 mL
MA9016 Electrode cleaning solution, 230 mL

Ordering Information

pH600, **CD600**, **CD601**, **CD610**, **CD611** and **CD97** are supplied complete with protective cap, calibration screwdriver, batteries and instructions.

TH300/TH310

Pocket-sized thermometers with automatic calibration check

Scientists and laboratory technicians rely on the accuracy of their thermometers when performing routine measurements. For this reason, Milwaukee developed the **TH310**. This palm-sized unit is a highly accurate thermometer that is destined to make glass thermometers obsolete.

Remote temperature measurements require a versatile thermometer with a remote probe that can be used in a hard-to-reach places. The meter must also be easily readable at an angle. The **TH300** is equipped with a stainless steel general purpose probe and 1 meter cable to make remote reading a simple task.

The thermometers have easy-to-read display which shows clear readings at any angle.

Specifications	TH300	TH310
Range	-50.0 to 150.0°C	-50.0 to 150.0°C
Resolution	0.1°C	0.1°C
Accuracy (@20°C)	±0.5°C (-20 to 90°C)	±0.5°C (-20 to 90°C)
Typical EMC Deviation	±0.3°C	±0.3°C
Probe	Stainless steel with 1 m cable	Stainless steel
Switch ON/OFF	no	yes
Calibration Check	no	yes
Environment	0 to 50°C; max RH 95%	0 to 50°C; max RH 95%
Battery Type	1 x 1.4V	1 x 1.5V
Battery Life	1 year approx.	approx 3000 hours of continuos use
Dimensions	106 x 58 x 19 mm	66 x 50 x 25 mm
Weight	70 g	50 g

Ordering Information

TH310 is supplied with stainless steel probe with 1 meter cable, batteries and instruction manual.
TH300 is supplied with batteries and instruction manual.

MT6003

NPK Soil Test Kit

The primary nutrients essential to plant growth and quality are Nitrogen, Phosphorous and Potassium. **N** is associated with plant growth above the ground, **P** is responsible for flower and fruit production as well as overall plant health. **K** promotes disease resistance, water intake and strong root growth.

This kit provides accurate and professional tests and includes 25 sachets of Nitrogen (MT5009), Phosphorous (MT5010) and Potassium (MT5002), 3 x 100 mL bottles of extraction solution and 5 plastic test tubes. All results are compared to standards on laminated colour charts.

Measuring pH in Soil

pH is a measure of the activity of the hydrogen ion (H+) in the soil solution. If the concentration of H+ is high, the medium is said to be acid. If it is low, it is said to be alkaline. Most agricultural soils are found between the range 4 to 10 (when measured in water). For practical purposes, soil is neutral when pH is between 6 to 8, depending on plant requirements, and it is acidic when pH is less than 6 and alkaline when it is greater than 8.

1. Collect samples of soil.
Take samples from a homogeneous area per 1000m2.
In smaller places it is also suggested to take at least two samples (the more samples, the more accurate the measurement will be).
Don't take samples from soil where are obvious disorders.

Amount of sample:
Use the same amount of soil for every sample (for example: use identical size sachets)

Spot of sample
General: take the top 5 cm of the ground
Annuals: from 20-40 cm deep
Fruits: from 20-60 cm deep

2. Spread the soil on a paper and let it dry out in a shaded place, or put it into a 40C oven.

3. Shread the dry soil and mix the samples.
You will get a homogeneous sample.
It mustn't contain rocks or organic residues.
Take a sample from this mixture for the measurement.

4. Sift the soil through a 2mm sifter.

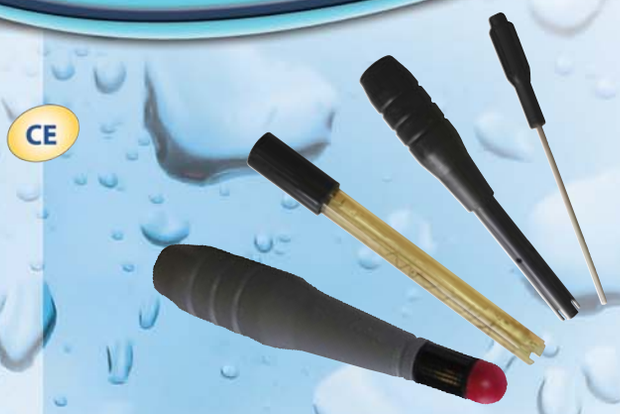
5. Weigh out 1 unit soil (100g is recommended) and put 2 unit (200g, 2dl) destillated water to it.

6. Stir it for 30 seconds.
Wait about five minutes.

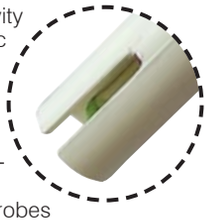
7. Stir it again then measure the pH of the solution.

Electrodes & Probes

pH, ORP, Conductivity, Dissolved Oxygen

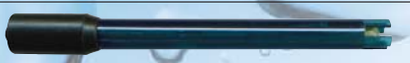


Milwaukee has a wide assortment of pH, ORP, Conductivity and other specialty sensors to meet all your specific requirements.



Finding the right electrode for a specific application is a very important task and in order to solve this selection problem it is important to consider the following: electrode body, reference construction and junction.
Below you will find a list of Milwaukee electrodes and probes with corresponding instruments they are supplied with.

OTHERS ELECTRODES & PROBES

	SE220	Double junction pH electrode with 1 meter cable and gel filled electrolyte solution (MW100 & MW101& MW102)
	SE300	Double junction orp platinum electrode with 1 meter cable and gel filled electrolyte solution (MW500)
	SE510	Conductivity/TDS probe with 1 meter cable (MW301 & MW401)
	SE520	Conductivity/TDS probe with 1 meter cable (MW302 & MW402)
	SE600	Combination probe for pH/EC/TDS with 1 meter cable for MW801 and MW802.
	MA811D/1	Conductivity/TDS probe with DIN connector and 1 meter cable (for SM301 & SM401)
	MA811/2	Conductivity/TDS probe with 2 meter cable (for SMS310)
	MA812D/1	Conductivity/TDS probe with DIN connector and 1 meter cable (for SM302 & SM402)
	MA812/2	Conductivity/TDS probe with 2 meter cable (for SMS410)
	MA814DB/1	4-ring Conductivity/TDS/NaCl/Temperature probe with DIN connector and 1 meter cable (for Mi170 & Mi180)
	MA814D/1	4-ring Conductivity/TDS/NaCl/Temperature probe with DIN connector and 1 meter cable (for Mi306)
	MA815/2	Conductivity probe with 2 meter cable (for SMS315)
	MA816/2	TDS probe with 2 meter cable (for SMS415)
	MA911B/2	Double junction, gel filled pH electrode with BNC connector, 2 m cable
	MA921B/2	Double junction, gel filled ORP electrode with platinum sensor, BNC connector, 2 m cable
	MA831R	Stainless steel Temperature probe with 1 meter cable
	MA840	Polarographic D.O. probe with 3 meter cable (for SM600 & Mi605)
	MA851D/1	pH/Conductivity/TDS/Temperature amplified probe with DIN connector and 1 meter cable (for Mi805 & Mi806)

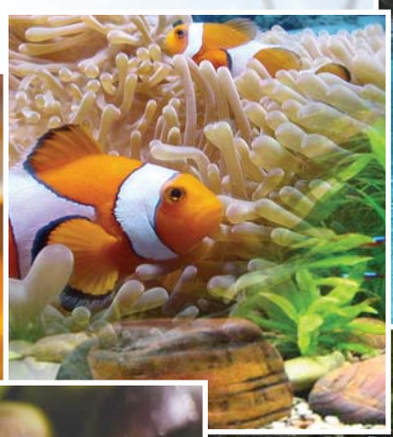
Electrode Selection Guide

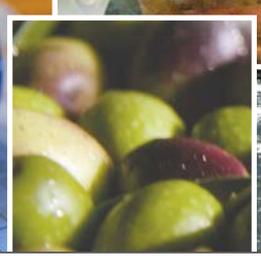
pH, ORP, Conductivity, Dissolved Oxygen

Milwaukee has a wide assortment of pH, ORP, Conductivity and other specialty sensors to meet all your specific requirements.

Before selecting an electrode, please consult the table below. The recommended electrodes are the ones best suited to each application, however we also ask you to verify the specifications on pages 6-7-8-9

Special electrodes for specific applications can also be manufactured upon request.





Applications	pH	MA905B/3	MA911B/1	SE220	MA913B/3	MA914BR/1	MA915B/2	MA916B/1	MA916B/3	MA917B/1	MA918B/1	MA919B/1	MA920B/1	MA923D/1	MA991B/1	ORP	MA921B/1	SE300	MA923B/3	MA924B/1	Conductivity	SE510	MA813D/1	D.O.	MA840
Agriculture / Soil testing					■		■				■														
Aquarium			■	■	■				■								■	■	■			■	■		■
Cheese													■							■					
Dairy products													■												
Emulsions											■														
Environmental, Pollution			■	■	■	■	■							■					■						■
Fish farming			■	■	■														■						■
Food and beverage (general use)													■												
Galvanizing waste solution		■			■														■						
Hi purity water		■			■						■														
Heavy duty applications																			■						■
In-line applications		■			■		■												■						
Laboratory (general use)			■	■	■	■	■	■		■				■	■				■			■	■		■
Meat													■												
Paints											■														
Paper					■																				
Photographic chemicals					■																				
Strong acid										■															
Swimming pools		■	■	■	■														■						
Water supply					■									■					■						■
Wine processing											■	■	■							■					■

Calibration, Maintenance & Cleaning Solutions

Milwaukee offers a wide range of calibration, maintenance & Cleaning solutions.

The use of calibration and cleaning solutions is fundamental for the correct use of electrodes and for obtaining the most accurate and reproducible readings. Often readings are not correct because the sensors have not been properly handled.

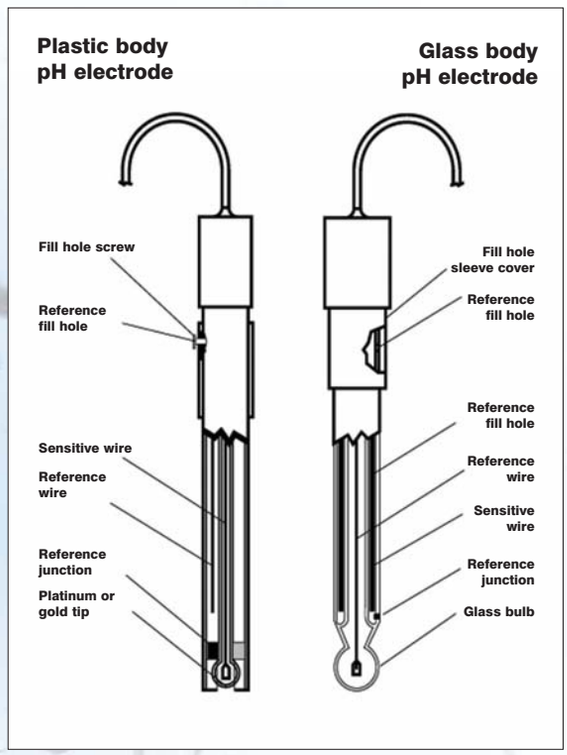
Milwaukee standard solutions are available in 230 mL bottles and 20 mL sachets.
Traditional buffer solutions are packed in 230 mL leak-proof bottles and are recommended for lab applications.

Sachets are sealed against light and air and are ideal for on-the-spot calibration.

Simply open, insert the tester or electrode into the sachet and calibrate. Sachets are sold in boxes of 25 pieces.

Calibration, Maintenance & Cleaning Solutions

MA9001	pH 1.68 Calibration Buffer Solution, 230 mL	MA9066	100% NaCl Calibration Solution, 230 mL
MA9004	pH 4.01 Calibration Buffer Solution, 230 mL	MA9069	5000 µS/cm Conductivity Calibration Solution, 230 mL
MA9006	pH 6.86 Calibration Buffer Solution, 230 mL	MA9070	Zero Oxygen Solution, 230 mL
MA9007	pH 7.01 Calibration Buffer Solution, 230 mL	MA9071	Electrolyte Solution for D.O. Probes, 230 mL
MA9009	pH 9.18 Calibration Buffer Solution, 230 mL	MA9112	pH 12.45 Calibration Buffer Solution, 230 mL
MA9010	pH 10.01 Calibration Buffer Solution, 230 mL	M10000B	Rinse Solution - Deionized Water (box of 25x20 ml sachet)
MA9011	Refilling Electrolyte Solution 3.5M KCl for pH/ORP electrodes, 230 mL	M10004B	pH 4.01 Calibration Buffer Solution (box of 25x20 ml sachet)
MA9012	Refilling Electrolyte Solution 1M KNO_3, 230 mL, food applications	M10006B	pH 6.86 Calibration Buffer Solution (box of 25x20 ml sachet)
MA9015	Storage Solution for pH/ORP electrodes, 230 mL	M10007B	pH 7.01 Calibration Buffer Solution (box of 25x20 ml sachet)
MA9016	Cleaning Solution for pH/ORP electrodes, 230 mL	M10009B	pH 9.18 Calibration Buffer Solution (box of 25x20 ml sachet)
MA9020	200-275 mV ORP Solution, 230 mL	M10010B	pH 10.01 Calibration Buffer Solution (box of 25x20 ml sachet)
MA9060	12880 µS/cm Conductivity Calibration Solution, 230 mL	M10016B	Cleaning Solution for electrodes (box of 25x20 ml sachet)
MA9061	1413 µS/cm Conductivity Calibration Solution, 230 mL	M10030B	12880 µS/cm Calibration Buffer Solution (box of 25x20 ml sachet)
MA9062	1382 ppm TDS Calibration Solution, 230 mL	M10031B	1413 µS/cm Calibration Buffer Solution (box of 25x20 ml sachet)
MA9063	84 µS/cm Conductivity Calibration Solution, 230 mL	M10032B	1332 ppm TDS Calibration Solution (box of 25x20 ml sachet)
MA9064	80000 µS/cm Conductivity Calibration Solution, 230 mL	M10038B	6.44 ppt TDS Calibration Solution (box of 25x20 ml sachet)
MA9065	111.8 mS/cm Conductivity Calibration Solution, 230 mL		



pH Electrode Storage and Maintenance

pH Electrode Storage and Maintenance
To ensure a quick response and free-flowing liquid junction, the sensing element and reference junction must not be allowed to dry out. The following instructions apply to refillable electrodes. For gel-filled electrodes, consult instruction manual.

Routine Storage
Soak electrode in a pH Electrode Storage Solution (MA9015). If a storage solution is unavailable, pH 4 buffer or pH7.01 may be used. The fill hole should be covered to prohibit evaporation of reference fill solution.

Maintenance
Cleaning your electrode between and after use will help extend the life of your electrode and avoid the cost of early replacement.

Routine Cleaning
Soak electrode in MA9016 cleaning solution for half an hour, followed by soaking it in storage solution (MA9015) for at least two hours.

Weekly Maintenance
Inspect electrodes for scratches, cracks, salt crystal buildup, or membrane/junction deposits.
Rinse off any salt buildup with distilled water, and remove any membrane/junction deposits as directed in cleaning procedures below.
The reference chamber should be drained, flushed with fresh filling solution, and refilled.

WARRANTY POLICY

Milwaukee warrants it's instruments to be free of manufacturing defects as follows: bench meters for 3 years, portable and pocket testers for 2 years and electrode/sensors for 6 months (unless otherwise specified).
The warranty period commences from the original date of sale to the user. Warranty is valid only when the product is used under normal conditions and in accordance with the operating limitations and prescribed maintenance procedures.

Miwaukee reserves the right to make improvements in design, construction and appearence of its products without advance notice.

Instrument service
Warranty and non-warranty service are performed by our technicians in Milwaukee headquarters. All items must have a Return Goods Authorization (RGA) number before returning the goods. This number can be obtained by contacting the Milwaukee technical service department at:

tech@milwaukeeinst.com

All products returned without an RGA number will be refused.

FURTHER INFORMATION

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