

# 2012 GENERAL CATALOGUE

**Instruments for Water Analysis**

pH

ORP

EC

TDS

DO

NaCl

Temp

Brix

NH<sub>3</sub>-N

Fe

PO<sub>4</sub>

Cl<sub>2</sub>

Cl<sup>-</sup>

TN



**Measurements made easy**





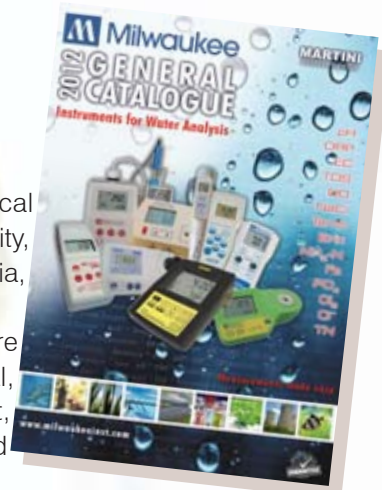


## COMMITTED TO TOTAL CUSTOMER SATISFACTION

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



**Europe, South America, Africa,  
Asia, Middle East and Pacific Rim**

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# Beauty of

# Symbols

	<b>CE</b> CE certified products
	<b>IP67</b> IP67 rated housing protects instrument from water and dust
	<b>GLP (Good Laboratory Practices)</b> Good Laboratory Practices requires that time and date should be recorded with the parameters measured
	<b>USB Port</b> Communication is via opto-isolated USB port
	<b>RS232 Port</b> Communication via opto-isolated RS232 port
	<b>2 Years Warranty</b> Instruments are covered by 2 years warranty
	<b>3 Years Warranty</b> Instruments are covered by 3 years warranty
	<b>7 pH Memorized buffers</b> 7 pH Memorized buffers for calibration
	<b>MEM</b> MEM key allows to memorize the last measurement
	<b>LOG</b> LOG key allows to save up to 50 measurements
	<b>ALARM</b> A LED light warns the user in the event the reading is outside the set point
	<b>2 Point Calibration</b> Calibration can be performed at 1 or 2 points
	<b>3 Point Calibration</b> Calibration can be performed at 1, 2 or 3 points
	<b>Multiparameter Instruments</b> Instruments that measure more than 1 parameter
	<b>Automatic Temperature Compensation</b> Automatically corrects the measured value based on the temperature of the solution
	<b>Manual Temperature Compensation</b> Is a method for temperature compensation through the manual input of sample temperature value
	<b>Auto-Buffer</b> Auto-Buffer Recognition ensures that correct buffer values are used during calibration
	<b>Dual Level Display</b> Displays simultaneously 2 parameters
	<b>Replaceable Electrode</b> Instrument with replaceable electrode
	<b>Software CD</b> The instrument is supplied with an application software
	<b>Self-diagnostics Messages.</b> Messages on the LCD to make the calibration easy and accurate
	<b>LED</b> The lightsource is the LED with different wave-lengths

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# Simplicity



# Highlights in this Catalogue

**New**

## NEW Handy Photometers.

The revolutionary new range of Milwaukee handy photometers are compact and easy to use, have a modern design, and measure Free Chlorine (MW10); Total Chlorine (MW11); Phosphate (MW12); Iodine (MW13) and Iron (MW14). Within a few minutes you can get the required result on the LCD and the meter automatically turns off after 2 minutes in order to save the battery life.



## 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<sub>2</sub> or ozone dosing.

**New**

**New**

## 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 uncertainty associated with mechanical refractometers and is easily portable for measurements in the field.





# 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.

Years  
warranty  
**3****MEM****ATC****MTC**Points  
**2**Dual  
DisplaySalt  
diagnosticsMemorized  
buffers  
**7****CE**

Specifications		Mi150
Range	pH Temp	-2.00 to 16.00 pH -20.0 to 120.0°C / -4.0 to 248.0°F
Resolution	pH Temp	0.01 pH 0.1°C (0.1 °F)
Accuracy (@20°C / 68°F)	pH Temp	±0.01 pH ±0.4°C / ±0.8°F
Typical EMC Deviation	pH Temp	±0.02 pH ±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 <sup>12</sup> 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 49.

### 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



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 <sup>12</sup> 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 49.

### 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

(\*) Available from the 1<sup>st</sup> of September 2011



## 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

Years warranty  
**3**

LOG

ATC

MTC

Points  
**3**

RS232

USB

Software  
CD

GLP

Dual  
DisplaySelf  
diagnosticsMemorized  
buffers  
**7**

CE

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)
Environment		0 to 50°C / 32 to 122°F; max RH 95%
Input Impedance		10 <sup>12</sup> 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

(\*) Available from the 1<sup>st</sup> of September 2011

## 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 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 Type	double Ag/AgCl	double Ag/AgCl
Reference Junction	open	open
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.  $\pm 60$  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.

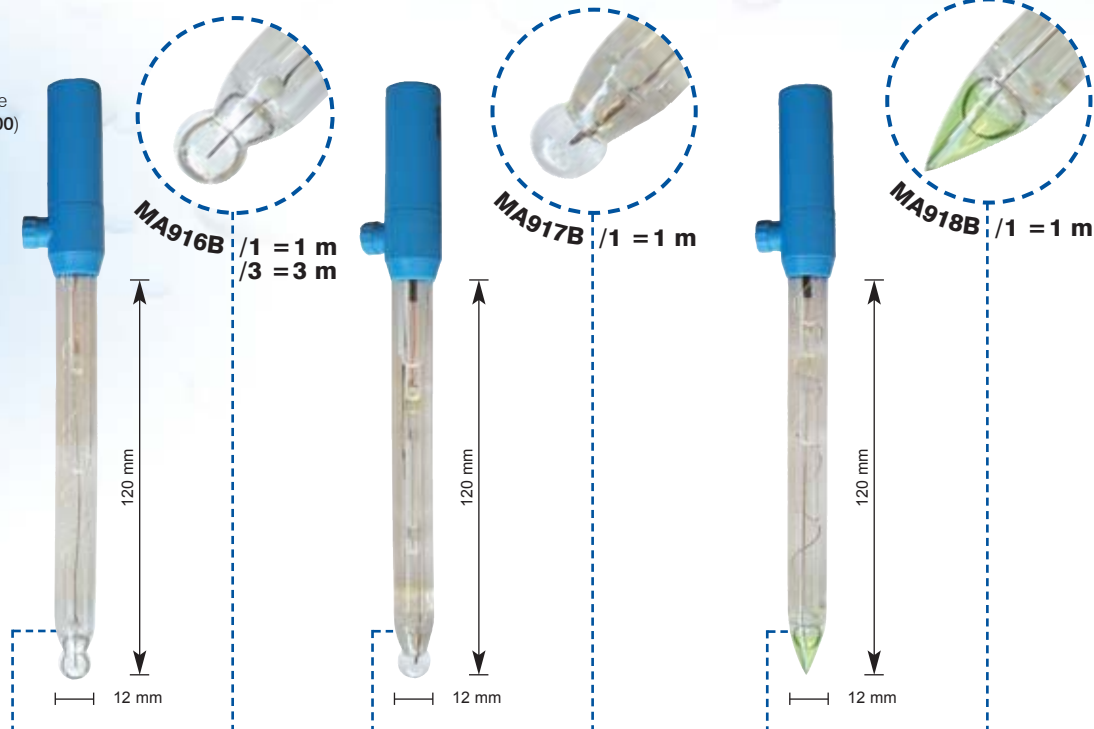
Glass Conic Tip Sensor

Glass Spheric Sensor

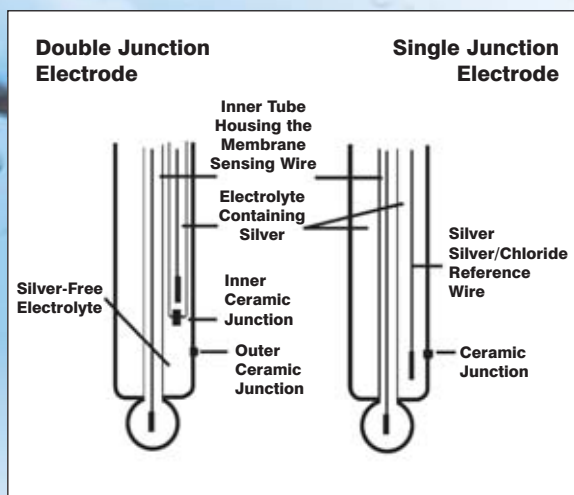
Epoxy Electrode

CE

MA916B/1 (will be replaced by SE100)

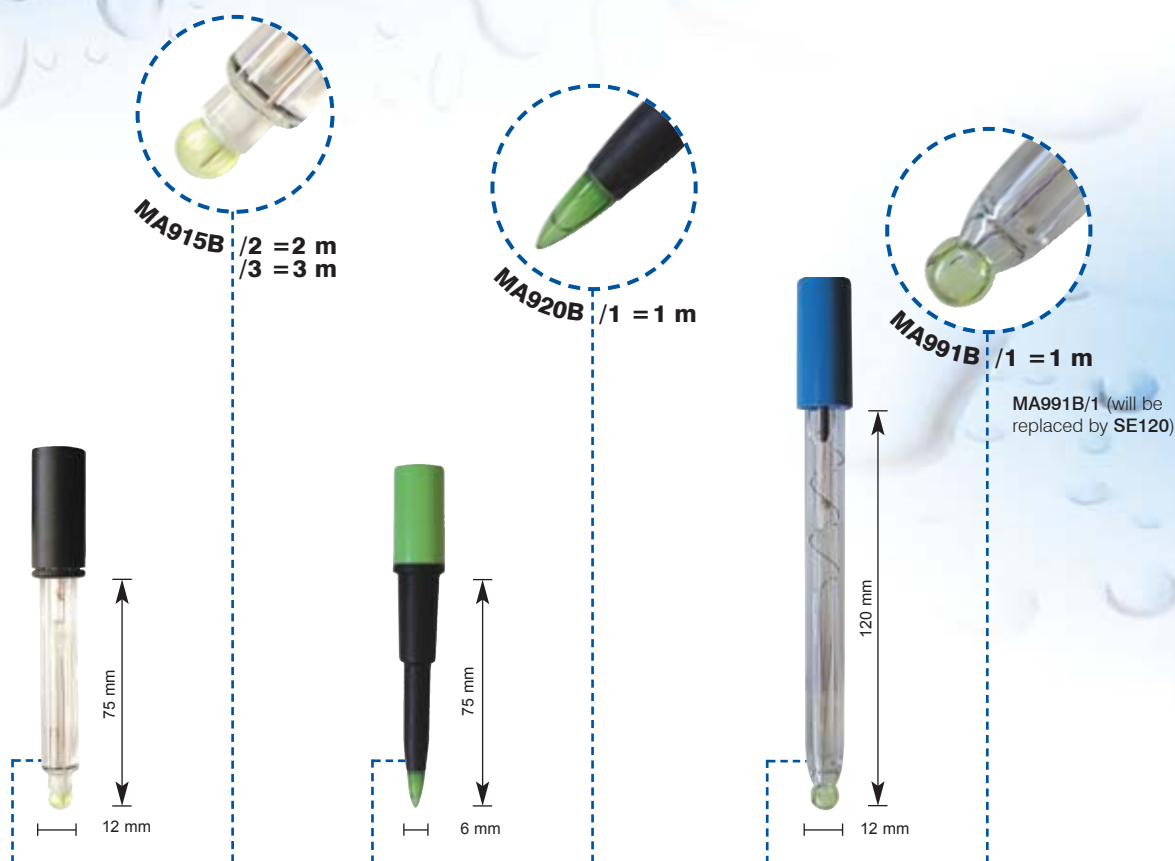


Model	MA916B/1 - MA916B/3	MA917B/1	MA918B/1
Measuring Range	0 to 13 pH	0 to 14 pH	0 to 12 pH
Temperature Range	20 to 40°C (68 to 104°F)	20 to 40°C (68 to 104°F)	-5 to 30°C (23 to 86°F)
Shaft Material	glass	glass	glass
Reference Electrolyte	KCl 3.5M + AgCl	KCl 3.5M	KCl 3.5M + AgCl
Reference Junction	ceramic, 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



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.



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

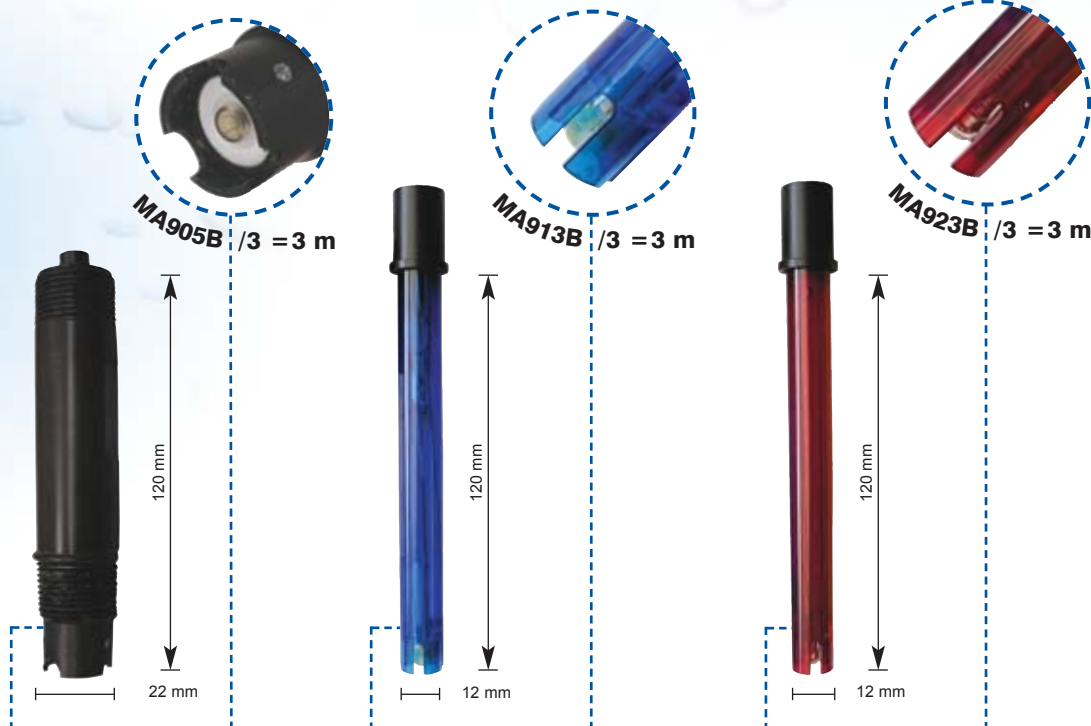
Temperature compensation: When measuring pH using a pH electrode the temperature error from the electrode varies based on the Nernst Equation as 0.03pH/10C/unit of pH away from pH7. The error due to temperature is a function of both temperature and the pH being measured. Temperature compensation can 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.

CE

DIN Connector

BNC Connector



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	polymer	Epoxy gel	Epoxy gel
Reference Electrolyte	double, Teflon	ceramic, single	cloth
Reference Junction		single, Ag/AgCl	single, Ag/AgCl
Reference Type		spheric	spheric
Shape of membrane			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, 1 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 (@25°C)	pH	±0.02 pH
	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		200x85x50 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 (will be replaced by SE240)
- SE240(\*)** 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)

(\*) Available from the 1<sup>st</sup> of September 2011

### 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  $\pm 2000$  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.



Years  
warranty  
**3**

ATC

Points  
**2**

Dual  
Display

Self  
diagnostics

CE

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	$\pm 0.02$ pH
	mV	$\pm 2$ mV
	Temp	$\pm 0.5^\circ\text{C}$ up to $60^\circ\text{C}$ ; $\pm 1^\circ\text{C}$ outside / $\pm 1^\circ\text{F}$ up to $140^\circ\text{F}$ ; $\pm 2^\circ\text{F}$ outside
Typical EMC Deviation	pH	$\pm 0.02$ pH
	mV	$\pm 2$ mV
	Temp	$\pm 0.2^\circ\text{C}$ / $\pm 0.4^\circ\text{F}$
Temperature Compensation		automatic, from -5 to $80^\circ\text{C}$ / 23 to $176^\circ\text{F}$
pH Calibration		automatic, 1 or 2-point
ORP Calibration		factory calibrated
Probe		MA923D/1, amplified pH/ORP/temperature probe (included)
Environment		0 to $50^\circ\text{C}$ / 32 to $122^\circ\text{F}$ ; 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 x 85 x 50 mm
Weight		260 g (with battery)

(\*) The temperature range is limited to  $80^\circ\text{C}$  ( $176^\circ\text{F}$ ) 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 (will be replaced by **SE260**)

**SE260(\*)** 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

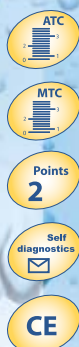
**M10000B** Electrode rinse solution, 20 mL sachet (25 pcs)

(\*) Available from the 1<sup>st</sup> of September 2011

### 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.

**New**



## 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  $\pm 0.02$  pH accuracy.
- **MW500** performs ORP measurements with a range of  $\pm 1000$  mV.

Specifications		 <b>MW100 pH Meter</b>	 <b>MW101 pH Meter</b>	 <b>MW102 pH/Temp Meter</b>	 <b>MW500 ORP Meter</b>
Range	pH/ORP Temp	0.0 to 14.0 pH	0.00 to 14.00 pH	-2.00 to 16.00 pH -5 to 70°C	$\pm 1000$ mV
Resolution	pH/ORP Temp	0.1 pH	0.01 pH	0.01 pH 0.1°C	1 mV
Accuracy (@25°C)	pH/ORP Temp	$\pm 0.2$ pH	$\pm 0.02$ pH	$\pm 0.02$ pH $\pm 0.5^\circ\text{C}$	$\pm 5$ mV
Typical EMC Deviation	pH Temp			$\pm 0.02$ pH $\pm 0.5^\circ\text{C}$	
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
- MA911B/1** pH electrode with BNC connector and 1 m cable (will be replaced by **SE220**)
- MA921B/1** Platinum ORP electrode with 1 m cable (will be replaced by **SE300**)

### 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.



# SM100/SM101/SM102/SM500

## Portable pH/ORP/Temp Meters

### Smart portable meters with no frills!





Milwaukee's low cost durable meters for quick and reliable measurements.

Milwaukee's Smart meters are manufactured to be easy to use, practical and accurate. Ideal for the classroom, laboratory or for general field use.

- **SM100** performs pH measurements with a 0.1 pH resolution and with manual temperature compensation.
- **SM101** performs pH measurements with a 0.01 pH resolution and with manual temperature compensation.
- **SM102** 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  $\pm 0.02$  pH accuracy.
- **SM500** performs ORP measurements with a range of  $\pm 1000$  mV.

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



Specifications					
		<b>SM100 pH Meter</b>	<b>SM101 pH Meter</b>	<b>SM102 pH/Temp Meter</b>	<b>SM500 ORP Meter</b>
Range	pH/ORP Temp	0.0 to 14.0 pH	0.00 to 14.00 pH	-2.00 to 16.00 pH -5 to 70°C	$\pm 1000$ mV
Resolution	pH/ORP Temp	0.1 pH	0.01 pH	0.01 pH 0.1°C	1 mV
Accuracy (@25°C)	pH/ORP Temp	$\pm 0.2$ pH	$\pm 0.02$ pH	$\pm 0.02$ pH $\pm 0.5^\circ\text{C}$	$\pm 5$ mV
Typical EMC Deviation	pH Temp			$\pm 0.02$ pH $\pm 0.5^\circ\text{C}$	
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		MA911B/1 (included)	MA911B/1 (included)	MA911B/1 (included)	
ORP Electrode					MA921B/1 (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)
- 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
- MA9020** 200-275 mV ORP solution, 230 mL bottle
- MA830R** Temperature probe

- SE220** pH electrode with BNC connector and 1 m cable
- SE300** pH electrode with BNC connector and 1 m cable
- MA911B/1** pH electrode with BNC connector and 1 m cable (will be replaced by SE220)
- MA921B/1** Platinum ORP electrode with 1 m cable (will be replaced by SE300)



### Ordering Information

**SM100** and **SM101** are supplied complete with a MA911B/1 pH electrode, pH 7.01 20 mL sachet of calibration solution, calibration screwdriver, 9V battery and instructions.

**SM102** 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.

**SM500** is supplied complete with a SE300 platinum electrode, 9V battery and instructions.



## pH55/pH56 Pocket-size pH/Temperature Meters with replaceable electrode

IP67 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

			
		<b>pH55</b>	<b>pH56</b>
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	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  $\pm 1000$  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.



Years warranty  
2

ATC

IP67

Points  
2

AUTO Buffer

Dual Display

Self diagnostics

CE

Electrode Replaceable

Specifications		ORP57	pH58
Range	pH ORP Temp	$\pm 1000$ mV -5.0 to 60.0°C / 23.0 to 140.0°F	-2.00 to 16.00 pH $\pm 1000$ mV -5.0 to 60.0°C / 23.0 to 140.0°F
Resolution	pH ORP Temp	1 mV 0.1°C / 0.1°F	0.01 pH 1 mV 0.1°C / 0.1°F
Accuracy (@25°C)	pH ORP Temp	$\pm 2$ mV $\pm 0.5^\circ\text{C}$ / $\pm 1^\circ\text{F}$	$\pm 0.05$ pH $\pm 2$ mV $\pm 0.5^\circ\text{C}$ / $\pm 1^\circ\text{F}$
Typical EMC Deviation	pH ORP Temp	$\pm 2$ mV $\pm 0.3^\circ\text{C}$ / $\pm 0.6^\circ\text{F}$	$\pm 0.02$ pH $\pm 2$ mV $\pm 0.3^\circ\text{C}$ / $\pm 0.6^\circ\text{F}$
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.



## pH51/pH52/pH53/ORP50 Microprocessor Waterproof pH/ORP/Temp Meters

Sharp waterproof Testers are designed for all applications. Their IP67 waterproof casings and double junction replaceable electrodes make them suitable also for heavy duty applications, such as wastewater treatment and agriculture.

The modular design allows easy electrode and battery replacement. Manual calibration on the pH51 prolongs the battery life up to 1500 hours.





**pH51** and **pH52** have a 0.1 pH resolution while **pH53** has 0.01 pH resolution.

**ORP50** reads ORP with a resolution of 1 mV. Choose your pH, ORP, Temp tester according to the proper pH, ORP, Temp ranges for your application:

- **pH51:** 0.0 to 14.0 pH;
- **pH52:** -2.0 to 16.0 pH, -5.0 to 60.0°C;
- **pH53:** -2.00 to 16.00 pH, -5.0 to 60.0°C;
- **ORP50:** ±1000 mV.



### Specifications

		 <b>pH51</b>	 <b>pH52</b>	 <b>pH53</b>	 <b>ORP50</b>
Range	pH/ORP Temp	0.0 to 14.0 pH	-2.0 to 16.0 pH -5.0 to 60.0°C / 23.0 to 140.0°F	-2.00 to 16.00 pH -5.0 to 60.0°C / 23.0 to 140.0°F	±1000 mV
Resolution	pH/ORP Temp	0.1 pH	0.1 pH 0.1°C / 0.1°F	0.01 pH 0.1°C / 0.1°F	1 mV
Accuracy (@25°C)	pH/ORP Temp	±0.1 pH	±0.1 pH ±1°C / ±2°F	±0.02 pH ±1°C / ±2°F	±2 mV
Typical EMC Deviation	pH Temp	±0.1 pH	±0.1 pH ±0.2°C / ±0.4°F	±0.03 pH ±0.2°C / ±0.4°F	±2 mV
Temperature Compensation			automatic	automatic	
Calibration		manual, at 2 points through trimmers	automatic, 1 or 2 points	automatic, 1 or 2 points	factory calibrated
Adj.offset trimmer					±120 mV
pH Electrode		MA73600 (replaceable)	MA73047 (replaceable)	MA73047 (replaceable)	
ORP Electrode					MA73500 (replaceable)
Environment		0 to 50°C, max RH 100%	-5 to 60°C; max RH 100%	-5 to 60°C; max RH 100%	0 to 50°C; max RH 100%
Battery Type		3 x 1.5V, alkaline	3 x 1.5V; alkaline (included)	3 x 1.5V; alkaline (included)	3 x 1.5V, alkaline (included)
Battery Life		More than 1500 hours of continuous use	approx. 200 hours	approx. 200 hours	approx. 1000 hours of continuous use
Dimensions		165 x 30 x 30 mm	165 x 30 x 30 mm	165 x 30 x 30 mm	165 x 30 x 30 mm
Weight		80 g	80 g	80 g	85 g

### Accessories

- MA73047** Replaceable pH electrode with built-in temperature sensor
- MA73500** Replaceable ORP electrode
- MA73600** Replaceable pH electrode
- 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)
- MA9015** Electrode storage solution, 230 mL
- MA9016** Electrode cleaning solution, 230 mL
- MA9020** 200/275 mV ORP solution, 230 mL bottle
- M10000B** Electrode rinse solution, 20 mL sachet (25 pcs)

### Ordering Information

All waterproof testers are supplied in a carton box complete with calibration solution, batteries, instruction manual and screwdriver (only pH51) for calibration.

ORP50 is supplied in a carton box complete with batteries and instruction manual.



## pH40/pH41/pH42 Microprocessor pH Testers

The Sharp pH Tester Series features an extendable cloth reference junction system which eliminates reading errors from clogged junctions. Using tweezers, the cloth junction can be extended to expose new unused portions greatly extending the life of the electrode.

The Sharp Tester microprocessor provides the user with push button calibration and automatic buffer recognition. Auto Shut-off after 10 minutes saves on battery life. All Sharp injection-molded testers are built with a rugged "one piece" splash-proof casing preventing water infiltration immersible up to the LCD.

pH40, pH41 and pH42 are supplied complete with calibration solution and batteries.

- **pH40:** pH tester with 0.0 to 14.0 pH range and  $\pm 0.2$  pH accuracy;
- **pH41:** pH tester with 0.0 to 14.0 pH range and  $\pm 0.1$  pH accuracy;
- **pH42:** pH tester with 0.00 to 14.00 pH range and  $\pm 0.02$  pH accuracy.



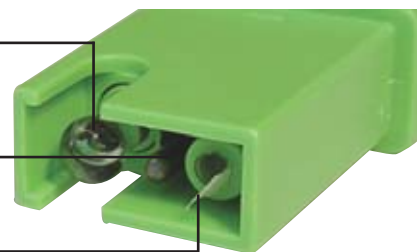
Specifications	pH40	pH41	pH42
Range	0.0 to 14.0 pH	0.0 to 14.0 pH	0.00 to 14.00 pH
Resolution	0.1 pH	0.1 pH	0.01 pH
Accuracy (@25°C)	$\pm 0.2$ pH	$\pm 0.1$ pH	$\pm 0.02$ pH
Calibration	automatic, 2 points	automatic, 2 points	automatic, 2 points
Temperature Compensation	automatic, 0 to 50°C / 32 to 122°F	automatic, 0 to 50°C / 32 to 122°F	automatic, 0 to 50°C / 32 to 122°F
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	4 x 1.5V alkaline (included)	4 x 1.5V alkaline (included)	4 x 1.5V alkaline (included)
Battery Life	approx. 300 hours of use	approx. 300 hours of use	approximately 300 hours of use
Auto-off	after 8 minutes of non-use	after 8 minutes of non-use	after 8 minutes of non-use
Dimensions	155 x 45 x 25 mm	155 x 45 x 25 mm	155 x 45 x 25 mm
Weight	150 g	150 g	150 g



Glass electrode

**316 Stainless Steel casing** for the temperature sensor compensates automatically for temperature in seconds

**Cloth junction:** The Sharp testers revolutionary new cloth junction ensures easy maintenance and longer life



### 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)

- MA9015** Electrode storage solution, 230 mL
- MA9016** Electrode cleaning solution, 230 mL
- M10000B** Electrode rinse solution, 20 mL sachet (25 pcs)



### Ordering Information

pH40, pH41 and pH42 are supplied in a box complete with pH 7.01 20 mL sachet of calibration solution, protective cap, 4 x 1.5V batteries and instructions.

# MC110/MC115/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 (for MC110 and MC120), visual LED alarm when values go above the set point and manual calibration.

The **MC115** with the Cal-test button will warn the user when the electrode needs to be calibrated again. 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 **MC110** and the **MC120** are supplied complete with a MA911B/2 pH electrode, the SMS115 with MA912B/2 pH electrode.

Each monitor comes complete with a 12 VDC adapter and calibration solution.

## Specifications

		 <b>MC110</b>	 <b>MC115</b>	 <b>MC120</b>
Range	pH	0.0 to 14.0 pH	0.0 to 14.0 pH	0.0 to 14.0 pH
Resolution	pH	0.1 pH	0.1 pH	0.1 pH
Accuracy (@25°C)	pH	±0.2 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	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)	MA912B/2 with BNC connector (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%	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)
Dimensions		148,5 x 82,5 x 40 mm	148,5 x 82,5 x 40 mm	148,5 x 82,5 x 40 mm
Weight		160 g (meter only)	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 SMS115, 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
- MA912B/2** pH electrode with BNC connector 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.

**MC115** is supplied complete with a 12VDC adapter, MA912B/2 pH electrode, 20 mL pH 4.01 and 7.01 sachets of calibration solution, 2x20 mL electrode cleaning solution sachets, 2x20 mL pH Cal-Test 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 ( user selected ) the selected set point. These MC Controllers are ideal for CO2 or ozone dosing.

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.

### 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 CO2 dosing
- Double junction pH electrode and/or platinum ORP electrode (BNC connector)



CE

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
pH Alarm	active when measurement is higher or lower than selected set point		active when measurement is higher than the set points
ORP Alarm		active when measurement is higher or lower than selected set point	active when measurements are higher or lower than selected set point
pH 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
ORP Output Power Socket		active when the measurement is higher or lower than selected set point	active when the 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 40 mm	148,5 x 82,5 x 40 mm	148,5 x 82,5 x 40 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.

## 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 $\mu\text{S}/\text{cm}$ ; 30.0 to 299.9 $\mu\text{S}/\text{cm}$ ; 300 to 2999 $\mu\text{S}/\text{cm}$ ; 3.00 to 29.99 $\text{mS}/\text{cm}$ ; 30.0 to 200.0 $\text{mS}/\text{cm}$ ; up to 500.0 $\text{mS}/\text{cm}$ actual conductivity (uncompensated EC)*
	TDS	0.00 to 14.99 $\text{mg}/\text{L}$ (ppm); 15.0 to 149.9 $\text{mg}/\text{L}$ (ppm); 150 to 1499 $\text{mg}/\text{L}$ (ppm); 1.5 to 14.99 $\text{g}/\text{L}$ (ppt); 15.0 to 100.0 $\text{g}/\text{L}$ (ppt); up to 400.0 $\text{g}/\text{L}$ 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 $\mu\text{S}/\text{cm}$ ; 0.1 $\mu\text{S}/\text{cm}$ ; 1.0 $\mu\text{S}/\text{cm}$ ; 0.01 $\text{mS}/\text{cm}$ ; 0.1 $\text{mS}/\text{cm}$
	TDS	0.01 $\text{mg}/\text{L}$ ; 0.1 $\text{mg}/\text{L}$ ; 1.0 $\text{mg}/\text{L}$ ; 0.01 $\text{g}/\text{L}$ ; 0.1 $\text{g}/\text{L}$
	NaCl	0.1%
	Temp	0.1°C / 0.1°F
Accuracy	EC	$\pm 1\%$ of reading $\pm (0.05 \mu\text{S}/\text{cm}$ or 1 digit)
	TDS	$\pm 1\%$ of reading $\pm (0.03 \text{mg}/\text{L}$ or 1 digit)
	NaCl	$\pm 1\%$ of reading
	Temp	$\pm 0.4^\circ\text{C}$ / $\pm 0.8^\circ\text{F}$
Calibration	EC	1 point slope calibration with 6 memorized solutions (84.0 $\mu\text{S}/\text{cm}$ , 1413 $\mu\text{S}/\text{cm}$ , 5.00 $\text{mS}/\text{cm}$ , 12.88 $\text{mS}/\text{cm}$ , 80.0 $\text{mS}/\text{cm}$ , 111.8 $\text{mS}/\text{cm}$ )
	NaCl	1 point, with MA9066 calibration solution
Temp. Compensation	EC	2 points, 0 to 50°C / 32 to 122°F
	Temp	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)
Log on Demand		up to 50 samples on each range (EC, TDS, NaCl)
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  $\mu\text{S}/\text{cm}$  calibration solution, 230 mL bottle
- MA9061** 1413  $\mu\text{S}/\text{cm}$  calibration solution, 230 mL bottle
- MA9063** 84  $\mu\text{S}/\text{cm}$  calibration solution, 230 mL bottle
- MA9064** 80000  $\mu\text{S}/\text{cm}$  conductivity solution, 230 mL bottle

- MA9065** 111.8  $\text{mS}/\text{cm}$  calibration solution, 230 mL bottle
- MA9066** 100% NaCl calibration solution, 230 mL bottle
- MA9069** 5000  $\mu\text{S}/\text{cm}$  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  $\mu\text{S}/\text{cm}$  calibration solution
  - M10031** 1413  $\mu\text{S}/\text{cm}$  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.

Years warranty  
2

LOG

RS232

ATC

MTC

Software CD

Self diagnostics

CE

Specifications		Mi306
Range	(Autoranging) EC (Autoranging) TDS NaCl Temp	0.00 to 29.99 $\mu\text{S/cm}$ ; 30.0 to 299.9 $\mu\text{S/cm}$ ; 300 to 2999 $\mu\text{S/cm}$ ; 3.00 to 29.99 $\text{mS/cm}$ ; 30.0 to 200.0 $\text{mS/cm}$ ; up to 500.0 $\text{mS/cm}$ actual(*) EC 0.00 to 14.99 $\text{mg/L}$ ; 15.0 to 149.9 $\text{mg/L}$ ; 150 to 1499 $\text{mg/L}$ ; 1.50 to 14.99 $\text{g/L}$ ; 15.0 to 100.0 $\text{g/L}$ ; up to 400.0 $\text{g/L}$ actual(*) TDS (with 0.80 factor) 0.0 to 400.0 % 0.0 to 60.0 °C
Resolution	EC TDS NaCl Temp	0.01 $\mu\text{S/cm}$ (from 0.00 to 29.99 $\mu\text{S/cm}$ ); 0.1 $\mu\text{S/cm}$ (from 30.0 to 299.9 $\mu\text{S/cm}$ ); 1 $\mu\text{S/cm}$ (from 300 to 2999 $\mu\text{S/cm}$ ); 0.01 $\text{mS/cm}$ (from 3.00 to 29.99 $\text{mS/cm}$ ); 0.1 $\text{mS/cm}$ (over 30.0 $\text{mS/cm}$ ) 0.01 $\text{mg/L}$ (from 0.00 to 14.99 $\text{mg/L}$ ); 0.1 $\text{mg/L}$ (from 15.0 to 149.9 $\text{mg/L}$ ); 1 $\text{mg/L}$ (from 150 to 1499 $\text{mg/L}$ ); 0.01 $\text{g/L}$ (from 1.50 to 14.99 $\text{g/L}$ ); 0.1 $\text{g/L}$ (over 15.0 $\text{g/L}$ ) 0.1 % 0.1 °C
Accuracy	EC TDS NaCl Temp	$\pm 1\%$ of reading ( $\pm 0.05 \mu\text{S/cm}$ or 1 digit whichever greater) $\pm 1\%$ of reading ( $\pm 0.053 \text{ ppm}$ or 1 digit whichever greater) $\pm 1\%$ of reading $\pm 0.4^\circ\text{C}$
Typical EMC Deviation	EC TDS NaCl Temp	$\pm 1\%$ of reading $\pm 1\%$ of reading $\pm 1\%$ of reading $\pm 0.1^\circ\text{C}$
Logging		up to 250 records, LOG on demand or auto-logging
Communication		with PC through RS232 port
EC Calibration		1 point with 7 memorized buffers: 84 $\mu\text{S/cm}$ , 1413 $\mu\text{S/cm}$ , 5000 $\mu\text{S/cm}$ , 80000 $\mu\text{S/cm}$ , 111800 $\mu\text{S/cm}$
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  $\mu\text{S/cm}$  calibration solution, 20 mL sachet, 25 pcs.
- M10031B** 1413  $\mu\text{S/cm}$  calibration solution, 20 mL sachet, 25 pcs.
- M10033B** 84  $\mu\text{S/cm}$  calibration solution, 20 mL sachet, 25 pcs.
- M10035B** 111.8  $\text{mS/cm}$  calibration solution, 20 mL sachet, 25 pcs.
- MA9060** 12880  $\mu\text{S/cm}$  calibration solution, 230 mL bottle
- MA9061** 1413  $\mu\text{S/cm}$  calibration solution, 230 mL bottle
- MA9063** 84  $\mu\text{S/cm}$  calibration solution, 230 mL bottle
- MA9065** 111.8  $\text{mS/cm}$  calibration solution, 230 mL bottle
- MA9066** 100% NaCl calibration solution, 230 mL bottle
- MA9069** 5000  $\mu\text{S/cm}$  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  $\mu\text{S/cm}$  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



**New**



MW300, MW301, 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  $\mu\text{S}/\text{cm}$  with a 10  $\mu\text{S}/\text{cm}$  resolution;
- **MW302:** 0.0 to 10.0  $\text{mS}/\text{cm}$  with a 0.1  $\text{mS}/\text{cm}$  resolution;
- **MW401:** 0 to 1990  $\text{mg}/\text{L}$  (ppm) with a 10  $\text{mg}/\text{L}$  resolution;
- **MW402:** 0.0 to 10.0  $\text{g}/\text{L}$  (ppt) with a 0.1  $\text{g}/\text{L}$  resolution.

### Specifications

	MW301	MW302	MW401	MW402
Range	0 to 1990 $\mu\text{S}/\text{cm}$	0.0 to 10.0 $\text{mS}/\text{cm}$	0 to 1990 $\text{mg}/\text{L}$ (ppm)	0.0 to 10.0 $\text{g}/\text{L}$ (ppt)
Resolution	10 $\mu\text{S}/\text{cm}$	0.1 $\text{mS}/\text{cm}$	10 $\text{mg}/\text{L}$ (ppm)	0.1 $\text{g}/\text{L}$ (ppt)
Accuracy (@25°C)	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale
Conversion Factor			0.5	0.5
Calibration Solutions (included)	1413 $\mu\text{S}/\text{cm}$ (M10031B)	1413 $\mu\text{S}/\text{cm}$ (M10031B)	1382 $\text{mg}/\text{L}$ (M10032B)	6.44 $\text{g}/\text{L}$ (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  $\mu\text{S}/\text{cm}$  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  $\mu\text{S}/\text{cm}$  calibration solution, 230 mL bottle
- MA9061** 1413  $\mu\text{S}/\text{cm}$  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  $\mu\text{S}/\text{cm}$  sachet of calibration solution, screwdriver for calibration, 9V battery and instructions.

**MW302** is supplied complete with SE520 EC probe, 20 mL 1413  $\mu\text{S}/\text{cm}$  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.



# SM301/SM302/SM401/SM402

## Portable Conductivity & TDS Meters

**SM301, SM302, SM401 and SM402** are conductivity and TDS Portable Meters, with Automatic Temperature Compensation, and are ideal for the educational and agricultural markets.

Soil conductivity is checked before fertilizer application to pinpoint field needs and after fertilization to establish its effectiveness. The EC testing provides all agricultural operation with a method to optimize chemical applications and minimize operational cost.

These instruments have been designed to meet the Grower's need for equipment suited to the aggressive environments found in agricultural and hydroponics applications.

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

- **SM301:** 0 to 1990  $\mu\text{S}/\text{cm}$  with a 10  $\mu\text{S}/\text{cm}$  resolution;
- **SM302:** 0.0 to 10.0  $\text{mS}/\text{cm}$  with a 0.1  $\text{mS}/\text{cm}$  resolution;
- **SM401:** 0 to 1990  $\text{mg}/\text{L}$  (ppm) with a 10  $\text{mg}/\text{L}$  resolution;
- **SM402:** 0.0 to 10.0  $\text{g}/\text{L}$  (ppt) with a 0.1  $\text{g}/\text{L}$  resolution.

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



Specifications	SM301	SM302	SM401	SM402
				
Range	0 to 1990 $\mu\text{S}/\text{cm}$	0.0 to 10.0 $\text{mS}/\text{cm}$	0 to 1990 $\text{mg}/\text{L}$ (ppm)	0.0 to 10.0 $\text{g}/\text{L}$ (ppt)
Resolution	10 $\mu\text{S}/\text{cm}$	0.1 $\text{mS}/\text{cm}$	10 $\text{mg}/\text{L}$ (ppm)	0.1 $\text{g}/\text{L}$ (ppt)
Accuracy (@25°C)	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale
Conversion Factor			0.5	0.5
Calibration Solutions (included)	1413 $\mu\text{S}/\text{cm}$ (M10031B)	1413 $\mu\text{S}/\text{cm}$ (M10031B)	1382 $\text{mg}/\text{L}$ (M10032B)	6.44 $\text{g}/\text{L}$ (M10038B)
Conductivity Probe	MA811D/1 (included)	MA812D/1 (included)	MA811D/1 (included)	MA812D/1 (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

- M10031B** 1413  $\mu\text{S}/\text{cm}$  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)
- MA811D/1** EC/TDS probe with DIN connector and 1 m cable

- MA812D/1** EC/TDS probe with DIN connector and 1 m cable
- MA9060** 12880  $\mu\text{S}/\text{cm}$  calibration solution, 230 mL bottle
- MA9061** 1413  $\mu\text{S}/\text{cm}$  calibration solution, 230 mL bottle
- MA9062** 1382 ppm TDS solution, 230 mL bottle



### Ordering Information

**SM301** is supplied complete with MA811D/1 EC probe, 20 mL 1413  $\mu\text{S}/\text{cm}$  sachet of calibration solution, screwdriver for calibration, 9V battery and instructions.

**SM302** is supplied complete with MA812D/1 EC probe, 20 mL 1413  $\mu\text{S}/\text{cm}$  sachet of calibration solution, screwdriver for calibration, 9V battery and instructions.

**SM401** is supplied complete with MA811D/1 EC probe, 20 mL 1382 ppm sachet of calibration solution, screwdriver for calibration, 9V battery and instructions.

**SM402** is supplied complete with MA812D/1 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  $\beta$ , 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  $\mu\text{S}/\text{cm}$ ) 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.



### Specifications

			
		<b>EC59</b>	<b>EC60</b>
Range	EC	3999 $\mu\text{S}/\text{cm}$	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 $\mu\text{S}/\text{cm}$	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	$\pm 0.5^\circ\text{C}$ / $\pm 1^\circ\text{F}$	$\pm 0.5^\circ\text{C}$ / $\pm 1^\circ\text{F}$
Typical EMC Deviation	EC	2% Full Scale	2% Full Scale
	TDS	2% Full Scale	2% Full Scale
	Temp	$\pm 0.5^\circ\text{C}$ / $\pm 1^\circ\text{F}$	$\pm 0.5^\circ\text{C}$ / $\pm 1^\circ\text{F}$
Calibration		automatic, 1 point	automatic, 1 point
Temperature Compensation		automatic, with $\beta=0.0$ to 2.4%/°C	automatic, with $\beta=0.0$ 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

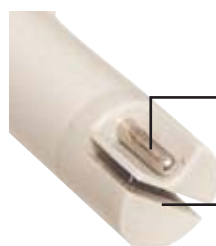
### Easy to read Display

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  $\mu\text{S}/\text{cm}$  calibration solution, 20 mL sachet, 25 pcs
- M10031B** 1413  $\mu\text{S}/\text{cm}$  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  $\mu\text{S}/\text{cm}$  calibration solution, 230 mL bottle
- MA9061** 1413  $\mu\text{S}/\text{cm}$  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  $\mu\text{S}/\text{cm}$  sachet of calibration solution, carton box, batteries and instructions.

**EC60** is supplied complete with protective cap, 20 mL 12880  $\mu\text{S}/\text{cm}$  sachet of calibration solution, carton box, batteries and instructions.



# C65/C66/T75/T76

## Sharp Waterproof Conductivity & TDS testers

These simple and easy-to-use testers are designed for all applications.

Its IP67 Waterproof casing and replaceable probe make them suitable also for heavy duty applications, such as Wastewater treatment and Agriculture.

The modular design allows easy probe and battery replacement.

4 models are available and all have Automatic Temperature Compensation:

- **C65:** Conductivity tester low range  
Range: 0 to 1999  $\mu\text{S}/\text{cm}$
- **C66:** Conductivity tester high range  
Range: 0.00 to 10.00  $\text{mS}/\text{cm}$
- **T75:** TDS tester low range  
Range: 0 to 1999 ppm (mg/L)
- **T76:** TDS tester high range  
Range: 0 to 9990 ppm (mg/L)



Years  
warranty  
2

ATC

IP67

CE

Electrode  
Replaceable

Specifications	C65 Waterproof EC	C66 Waterproof EC	T75 Waterproof TDS	T76 Waterproof TDS
Range	0 to 1999 $\mu\text{S}/\text{cm}$	0.00 to 10.00 $\text{mS}/\text{cm}$	0 to 1999 ppm (mg/L)	0 to 9990 ppm (mg/L)
Resolution	1 $\mu\text{S}/\text{cm}$	0.01 $\text{mS}/\text{cm}$	1 ppm (mg/L)	10 ppm (mg/L)
Accuracy	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale
Typical EMC Deviation	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale
Temperature Compensation	automatic from 5 to 50°C with $\beta = 2\%/^{\circ}\text{C}$	automatic from 5 to 50°C with $\beta = 2\%/^{\circ}\text{C}$	automatic from 5 to 50°C with $\beta = 2\%/^{\circ}\text{C}$	automatic from 5 to 50°C with $\beta = 2\%/^{\circ}\text{C}$
TDS Factor			0.5	0.5
Calibration	manual, at 1 point through trimmer	manual, at 1 point through trimmer	manual, at 1 point through trimmer	manual, at 1 point through trimmer
Probe	MA73075 (replaceable)	MA73076 (replaceable)	MA73075 (replaceable)	MA73076 (replaceable)
Environment	0 to 50°C; max RH 100%	0 to 50°C; max RH 100%	0 to 50°C; max RH 100%	0 to 50°C; max RH 100%
Battery Type	3 x 1.5V, alkaline	3 x 1.5V, alkaline	3 x 1.5V, alkaline	3 x 1.5V, alkaline
Battery Life	approx. 250 hours of continuous use	approx. 250 hours of continuous use	approx. 250 hours of continuous use	approx. 250 hours of continuous use
Dimensions	165 x 30 x 30 mm	165 x 30 x 30 mm	165 x 30 x 30 mm	165 x 30 x 30 mm
Weight	80 g	80 g	80 g	80 g

### Accessories

- MA73075** Replaceable Conductivity probe, LR  
**MA73076** Replaceable Conductivity probe, HR  
**M10030B** 12880  $\mu\text{S}/\text{cm}$  calibration solution, 20 mL (25 pcs)  
**M10031B** 1413  $\mu\text{S}/\text{cm}$  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)  
**M10080B** 800 ppm calibration solution 20 mL (25 pcs)

### Ordering Information

**C65** and **C66** are supplied complete with protective cap, 20 mL 1413  $\mu\text{S}/\text{cm}$  sachet of calibration solution, carton box, calibration screwdriver, batteries and instructions.

**T75** is supplied complete with protective cap, 20 mL 1382 ppm sachet of calibration solution, carton box, calibration screwdriver, batteries and instructions.

**T76** is supplied complete with protective cap, 20 mL 6.44 ppt sachet of calibration solution, carton box, calibration screwdriver, batteries and instructions.

## C61/C62/T71/T72

### High accuracy Conductivity and TDS Testers



These simple 1-point calibration testers are designed for the Horticultural and Agricultural market. They are built in a one-piece splash-proof casing and they are immersible up to the LCD.

All models have Automatic Temperature Compensation and the temperature sensor housing is made out of 316 inox steel instead of plastic. This ensures 100 times faster readings and higher accuracy. Models available are:

- **C61:** Conductivity tester low range  
Range: 0 to 1999  $\mu\text{S}/\text{cm}$
- **C62:** Conductivity tester high range  
Range: 0.00 to 19.99  $\text{mS}/\text{cm}$
- **T71:** TDS tester low range  
Range: 0 to 1999 ppm
- **T72:** TDS tester high range  
Range: 0.00 to 10.00  $\text{g}/\text{L}$  (ppt)



#### Specifications

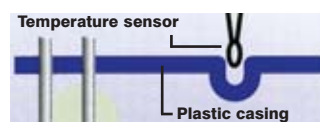
	<b>C61</b> Sharp EC	<b>C62</b> Sharp EC	<b>T71</b> Sharp TDS	<b>T72</b> Sharp TDS
Range	0 to 1999 $\mu\text{S}/\text{cm}$	0.00 to 19.99 $\text{mS}/\text{cm}$	0 to 1999 ppm	0.00 to 10.00 $\text{g}/\text{L}$
Resolution	1 $\mu\text{S}/\text{cm}$	0.01 $\text{mS}/\text{cm}$	1 ppm	0.01 $\text{g}/\text{L}$
Accuracy	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale
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
Battery Life	350 hours	350 hours	350 hours	350 hours
Dimensions	155 x 45 x 25 mm	155 x 45 x 25 mm	155 x 45 x 25 mm	155 x 45 x 25 mm

#### Stainless steel casing ATC

Temperature has a huge influence on TDS and EC, on the basis of a 2% error per degree Celsius. Even small temperature differences between the measured solution and the measuring instrument can lead to large reading errors. For instance, if the solution's temperature is 15°C, and the tester's is 35°C, the reading error is  $(35-15 \times 2\%)$  40%. Conventional testers with plastic casings for their temperature sensors also slow response times. It can take at least 10 minutes for conventional testers to fully compensate temperature differences. This causes reading error.

Sharp tester's new stainless steel encased temperature sensors can compensate in seconds, no matter how large the temperature difference. Sharp tester's fast response time guarantees high accuracy.

#### Conventional tester

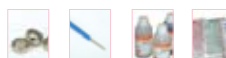


#### Sharp Tester



#### Accessories

- M10030B** 12880  $\mu\text{S}/\text{cm}$  calibration solution, 20 mL (25 pcs)
- M10031B** 1413  $\mu\text{S}/\text{cm}$  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)
- M10080B** 800 ppm calibration solution 20 mL (25 pcs)

#### Ordering Information

**C61** and **C62** are supplied complete with protective cap, 20 mL 1413  $\mu\text{S}/\text{cm}$  sachet of calibration solution, hard carrying case, calibration screwdriver, batteries and instructions.

**T71** and **T72** are supplied complete with protective cap, 20 mL 1382 ppm sachet of calibration solution, hard carrying case, calibration screwdriver, batteries and instructions.



# MC310/MC410/MC315/MC415

## Conductivity and TDS Monitors

Reliable Conductivity and 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 EC or TDS values directly in your reservoir.

Other features include: user selectable set point, visual LED alarm when values go below the set point (for **MC310** and **MC410**).

The CAL test feature on the **MC315** and **MC415** will warn the user (through a LED) when the probe needs to be calibrated again!

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.



New



### Specifications

					
		<b>MC310</b>	<b>MC410</b>	<b>MC315</b>	<b>MC415</b>
Range	EC/TDS	0.0 to 10.0 mS/cm	0 to 1990 ppm	0.00 to 9.99 mS/cm	0 to 1990 mg/L (ppm)
Resolution	EC/TDS	0.1 mS/cm	10 ppm	0.01 mS/cm	10 mg/L (ppm)
Accuracy (@25°)		±2% Full Scale	±2% Full Scale	±2% Full Scale	±2% Full Scale
Conversion Factor			0.7		approx. 0.7
Set point		1.5 to 3.5 mS/cm	700 to 1900 ppm		
Alarm		active when the measurement is higher/lower than the set point	active when the measurement is higher/lower than the set point		
Temperature Compensation		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%
Probe		MA811/2 (included)	MA812/2 (included)	MA815/2 (included)	MA816/2 (included)
Power Supply		12 VDC power adapter (included)	12 VDC power adapter (included)	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	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)	180 g (meter only)

### Accessories

- M10031B** 1413 µS/cm calibration solution, 20 mL sachet (25 pcs)
- M10032B** 1382 ppm calibration solution, 20 mL sachet (25 pcs)
- M10039B** 5.00 mS/cm 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

- MA811/2** Conductivity probe with 2 m cable
- MA812/2** Conductivity probe with 2 m cable
- MA815/2** Conductivity probe for SMS315 with 2 m cable
- MA816/2** Conductivity probe for SMS415 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** is supplied complete with 12VDC adapter, MA812/2 TDS probe, 20 mL 1382 ppm sachet of calibration solution, screwdriver for calibration and instruction.

**MC315** is supplied complete with 12VDC adapter, MA815/2 EC probe, 20 mL 1413 µS/cm sachet of calibration solution, 20 mL conductivity Cal-Test Solution, screwdriver for calibration and instruction.

**MC415** is supplied complete with 12VDC adapter, MA816/2 TDS probe, 20 mL 1382 ppm sachet of calibration solution, 20 mL conductivity Cal-Test Solution, screwdriver for calibration and instruction.

### Extended Range Bench Dissolved Oxygen Meter

New



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<sub>2</sub>.

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<sub>2</sub> saturation). The polarographic probe supplied with the meter (MA840/2) measures the current generated by the reaction of O<sub>2</sub> with Ag.

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



Specifications	Mi190
Range	O <sub>2</sub> 0.00 to 45.00 mg/L (ppm) % Saturation O <sub>2</sub> 0.0 to 300% Temp -5.0 to 55.0°C / 23.0 to 131.0°F
Resolution	O <sub>2</sub> 0.01 mg/L (ppm) % Saturation O <sub>2</sub> 0.1% Temp 0.1°C / 0.1°F
Accuracy	O <sub>2</sub> ±1.5 Full Scale % Saturation O <sub>2</sub> ±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	MA840/2 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)
Log on demand	up to 50 records
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 2 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)
- MA840/2** DO probe with 2 meters cable
- MA9350** RS232 connection cable with 2 m cable
- Mi5200** Application Software

#### Ordering Information

**Mi190** is supplied complete with:

- **MA840/2** DO probe with 2 meter cable
- **MA841** Spare membrane (5 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.



Years  
warranty  
2

ATC

Dual  
Display

Self  
diagnostics

CE

Specifications	Mi605
Range	O <sub>2</sub> 0.0 to 45.00 mg/L (ppm) % Saturation O <sub>2</sub> 0.0 to 300% Temp 0.0 to 50.0°C / 32 to 122°F
Resolution	O <sub>2</sub> 0.01 mg/L (ppm) % Saturation O <sub>2</sub> 0.1% Temp 0.1°C
Accuracy (@25°C)	O <sub>2</sub> ±1.5% Full Scale % Saturation O <sub>2</sub> ±1.5% Full Scale Temp ±0.5°C
Typical EMC Deviation	O <sub>2</sub> ±0.3 mg/L (ppm) % Saturation O <sub>2</sub> ±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 x 85 x 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.



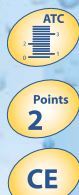
### Accessories

- 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, 5 spare membranes, 20 mL bottle of electrolyte solution, rugged carrying case, 9V battery and instructions.



**New**



## 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.

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.

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.

Specifications		MW600
Range	O <sub>2</sub>	0.0 to 19.9 mg/L
Resolution	O <sub>2</sub>	0.1 mg/L
Accuracy (@25°C)	O <sub>2</sub>	±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, 5 spare membranes, 20 mL bottle of electrolyte solution, calibration screwdriver, 9V battery and instructions.



## SM600

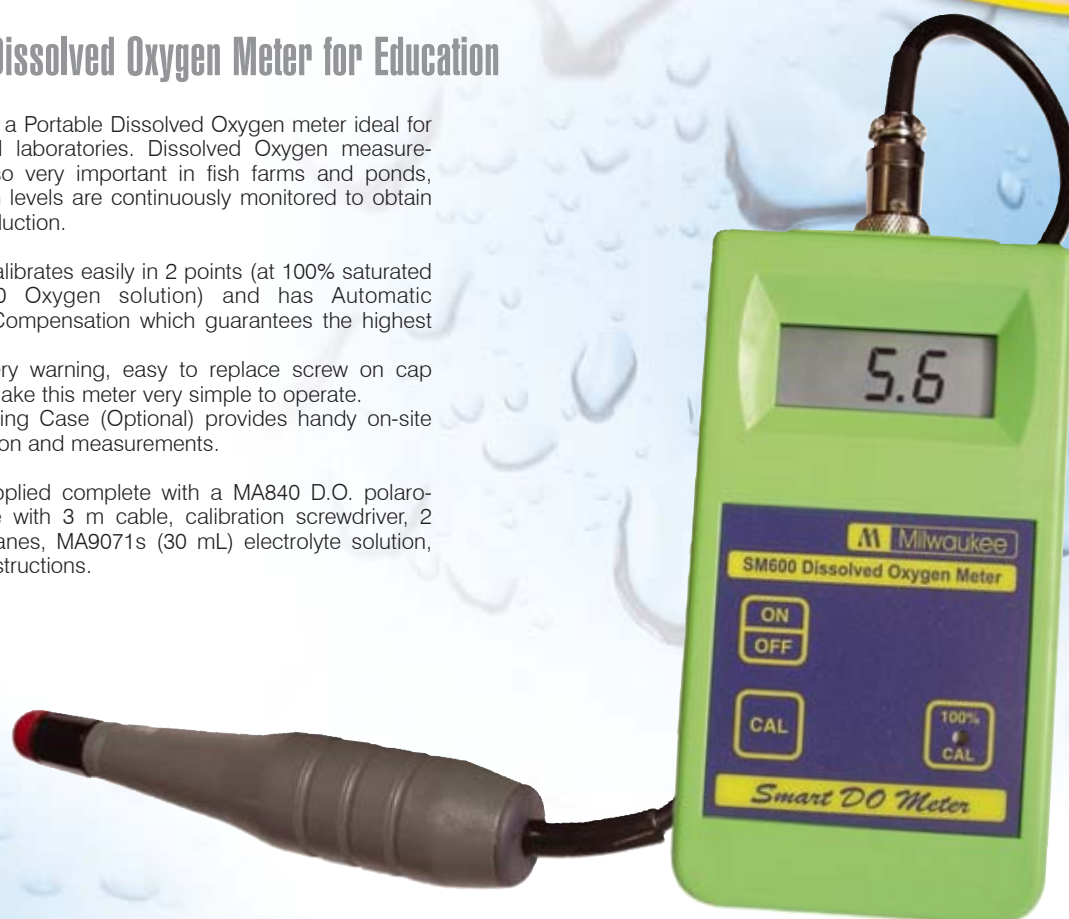
### Portable Dissolved Oxygen Meter for Education

The **SM600** is a Portable Dissolved Oxygen meter ideal for use in school laboratories. Dissolved Oxygen measurements are also very important in fish farms and ponds, where Oxygen levels are continuously monitored to obtain optimal reproduction.

The **SM600** calibrates easily in 2 points (at 100% saturated air and in 0 Oxygen solution) and has Automatic Temperature Compensation which guarantees the highest accuracy.

The low battery warning, easy to replace screw on cap membranes make this meter very simple to operate. Rugged Carrying Case (Optional) provides handy on-site meter calibration and measurements.

**SM600** 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.



Specifications	SM600
Range	O <sub>2</sub> 0.0 to 19.9 mg/L
Resolution	O <sub>2</sub> 0.1 mg/L
Accuracy (@25°C)	O <sub>2</sub> ±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)

#### Polarographic D.O. Probe

Polarographic D.O. probe with 2 meters cable



#### 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.

Salinity Compensation: the table below shows the influence of salt concentration in the measurement of oxygen.

In SM600 all the readouts are referred to 0 g/L of salinity value. In fact, salinity affects D.O. concentration by decreasing its value. The table below reports the oxygen solubility at various temperatures and salinity.

From the table it is possible to calculate the quantity to be subtracted to correct the reading.

Salinity (g/L) at Sea Level						
°C	0 g/L	10 g/L	20 g/L	30 g/L	35 g/L	°F
10	11.3	10.6	9.9	9.3	9.0	50.0
12	10.8	10.1	9.5	8.9	8.6	53.6
14	10.3	9.7	9.1	8.6	8.3	57.2
16	9.9	9.3	8.7	8.2	8.0	60.8
18	9.5	8.9	8.4	7.9	7.6	64.4
20	9.1	8.5	8.0	7.6	7.4	68.0
22	8.7	8.2	7.8	7.3	7.1	71.6
24	8.4	7.9	7.5	7.1	6.9	75.2
26	8.1	7.6	7.2	6.8	6.6	78.8
28	7.8	7.4	7.0	6.6	6.4	82.4

#### Accessories

**MA9070** Zero Oxygen calibration solution, 230 mL bottle

**MA9071** Refilling Electrolyte solution, 230 mL bottle

**MA840**  
**MA841**

D.O. Probe  
Spare membrane (5 pcs)



#### Ordering Information

**SM600** is supplied complete with MA840 probe, 5 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.

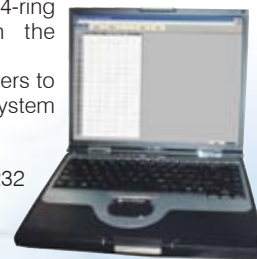
The auto-ranging feature for EC and TDS measurements automatically sets the resolution suitable to the tested sample. All measurements can be temperature compensated at 20 or 25°C and the compensation coefficient is selectable by the user.

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.



Specifications		Mi180
Range	pH mV EC TDS NaCl Temp	-2.00 to 16.00 pH; -2.000 to 16.000 pH ±699.9 mV; ±2000 mV 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 (uncompensated EC*) 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) 0.0 to 400.0% -20.0 to 120.0°C / -4.0 to 248.0°F
Resolution	pH mV EC TDS NaCl Temp	0.01 pH; 0.001 pH 0.1 mV; 1 mV 0.01 µS/cm; 0.1 µS/cm; 1 µS/cm; 0.01 mS/cm; 0.1 mS/cm; 0.01 mg/L; 0.1 mg/L; 1.0 mg/L; 0.01 g/L; 0.1 g/L 0.1% 0.1°C / 0.1°F
Accuracy	pH mV EC TDS NaCl Temp	±0.01 pH; ±0.002 pH ±0.2 mV; ±1 mV ±1% of reading ±(0.05 µS/cm or 1 digit) ±1% of reading ±(0.03 ppm or 1 digit) ±1% reading ±0.4°C / ±0.8°F
Rel mV offset		±2000 mV
Calibration	pH EC NaCl Temp	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) 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) 1 point, with MA9066 solution 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)
Log on demand		up to 50 samples on each range (pH, mV, EC, TDS, NaCl)
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 <sup>12</sup> 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.

### 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

### 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)
- SE310(\*) Platinum ORP electrode with 1 m cable
- MA831R Temperature probe
- MA9350 RS232 connection cable with 2 meters cable

(\*) Available from the 1<sup>st</sup> of September 2010

- 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 (β) 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.

Years  
warranty  
2

ATC

Points  
2Dual  
Display

MULTI

Self  
diagnostics

CE

### Specifications

		Mi805	Mi806
Range	pH EC TDS Temp	0.00 to 14.00 pH 0 to 3999 $\mu\text{S}/\text{cm}$ 0 to 1999 ppm 0.0 to 60.0°C / 32.0 to 140.0°F	0.00 to 14.00 pH 0.00 to 20.00 mS/cm 0.00 to 10.00 ppt 0.0 to 60.0°C / 32.0 to 140.0°F
Resolution	pH EC TDS Temp	0.01 pH 1 $\mu\text{S}/\text{cm}$ 1 ppm 0.1°C / 0.1°F	0.01 pH 0.1 mS/cm 0.01 ppt 0.1°C / 0.1°F
Accuracy (@25°C)	pH EC/TDS Temp	$\pm 0.01\text{pH}$ $\pm 2\%$ Full Scale $\pm 0.5^\circ\text{C}$ / $\pm 1^\circ\text{F}$	$\pm 0.01\text{pH}$ $\pm 2\%$ Full Scale $\pm 0.5^\circ\text{C}$ / $\pm 1^\circ\text{F}$
Typical EMC Deviation	pH EC/TDS Temp	$\pm 0.02\text{pH}$ $\pm 2\%$ Full Scale $\pm 0.5^\circ\text{C}$ / $\pm 1^\circ\text{F}$	$\pm 0.02\text{pH}$ $\pm 2\%$ Full Scale $\pm 0.5^\circ\text{C}$ / $\pm 1^\circ\text{F}$
Temperature Compensation		automatic from 0 to 60°C; with $\beta$ adj. from 0.0 to 2.4%/°C	automatic from 0 to 60°C; with $\beta$ 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 $\mu\text{S}/\text{cm}$ solution, 230 mL
MA9061	1413 $\mu\text{S}/\text{cm}$ 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 sachets of calibration solution, 2x20 mL 1413  $\mu\text{S}/\text{cm}$  sachets 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 sachets of calibration solution, 2x20 mL 12880  $\mu\text{S}/\text{cm}$  sachets of calibration solutions, 2x20 mL sachet of electrode cleaning solutions, rugged carrying case, 9V battery and instructions.

- Years warranty  
2
- ATC
- Points  
2
- Dual Display
- MULTI
- Self diagnostics
- CE

New



## 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  $\mu\text{S}/\text{cm}$  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 $\mu\text{S}/\text{cm}$	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 $\mu\text{S}/\text{cm}$	0.10 mS/cm
	TDS	10 ppm	10 ppm
Accuracy (@20°C)	pH	$\pm 0.2$ pH	$\pm 0.20$ pH
	EC/TDS	$\pm 2\%$ Full Scale	$\pm 2\%$ Full Scale
Calibration Solutions		M10007 (pH 7.01) M10032 (1382 ppm) M10031 (1413 $\mu\text{S}/\text{cm}$ )	M10007 (pH 7.01) M10442 (1500 ppm) M10031 (1413 $\mu\text{S}/\text{cm}$ )
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  $\mu\text{S}/\text{cm}$  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  $\mu\text{S}/\text{cm}$  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  $\mu\text{S}/\text{cm}$  sachet of calibration solution, 20 mL 1500 ppm sachet of calibration solution, 9V battery and instructions.



# SM801/SM802

## Portable pH/EC/TDS combination Meters

3 meters in 1! These meters allow you to measure pH, EC (conductivity) and TDS with just one instrument and one single probe!

The **SM801** with a Conductivity range that goes up to 1990  $\mu\text{S}/\text{cm}$  and TDS range that goes up to 1990 ppm is an ideal tool for drinking water measurements.

The **SM802**, 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. Soil and well water pH that is too acidic or alkaline can have an adverse effect on plant nutrient and water uptake and directly effect the efficiency of fertilizer, herbicides and pesticides.



Soil Conductivity is checked before fertilizer application to pinpoint field needs and after fertilization to establish its effectiveness.

Supplied with the MA850 interchangeable probe to measure pH, Conductivity and TDS.

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

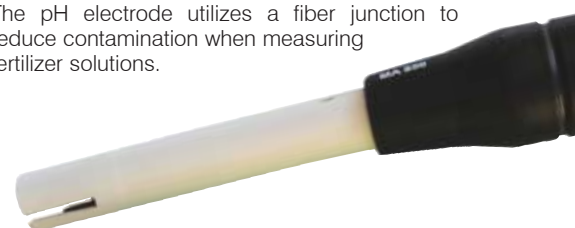
Both meters calibrate manually in pH, Conductivity and TDS.



Specifications		SM801	SM802
			
Range	pH EC TDS	0.0 to 14.0 pH 0 to 1990 $\mu\text{S}/\text{cm}$ 0 to 1990 ppm	0.00 to 14.00 pH 0.00 to 6.00 mS/cm 0 to 4000 ppm
Resolution	pH EC TDS	0.1 pH 10 $\mu\text{S}/\text{cm}$ 10 ppm	0.10 pH 0.01 mS/cm 10 ppm
Accuracy (@20°C)	pH EC/TDS	$\pm 0.2$ pH $\pm 2\%$ Full Scale	$\pm 0.20$ pH $\pm 2\%$ Full Scale
Calibration Solutions		M10007 (pH 7.01) M10032 (1382 ppm) M10031 (1413 $\mu\text{S}/\text{cm}$ )	M10007 (pH 7.01) M10442 (1500 ppm) M10031 (1413 $\mu\text{S}/\text{cm}$ )
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		MA850 combination pH/EC/TDS probe	MA850 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)

### Combined interchangeable pH, Conductivity and TDS Probe

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



### pH Calibration

Adjust the calibration knob until the LCD shows the pH value at the above measured temperature.

### EC/TDS Calibration

Turn the EC/TDS calibration knob until the display shows the EC or TDS reading at 25°C.



### 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  $\mu\text{S}/\text{cm}$  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  
**MA850** pH/EC/TDS spare probe with 1 m cable



### Ordering Information

**SM801** is supplied complete with MA850 combination pH/EC/TDS probe, 20 mL sachet pH 7.01 buffer solution, 20 mL 1413  $\mu\text{S}/\text{cm}$  sachet of calibration solution, 20 mL 1382 ppm sachet of calibration solution, 9V battery and instructions.

**SM802** is supplied complete with MA850 combination pH/EC/TDS probe, 20 mL sachet pH 7.01 buffer solution, 20 mL 1413  $\mu\text{S}/\text{cm}$  sachet of calibration solution, 20 mL 1500 ppm sachet of calibration solution, 9V battery and instructions.

MW700/SM700

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

CE

New



MW700

MW700 and SM700 are portable Lux meters 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.



SM700

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 and SM700
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)

Ordering Information

MW700 and SM700 are supplied complete with 9V battery and instructions.

Light Sensor

MW700 and SM700 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.



# 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 cuvettes, reagents for 100 tests, wiping tissue and instruction manual.

### 3 in 1 Combination Photometer!



Specifications		Mi411 Free & Total Chlorine and pH
Range	Free Chlorine Total Chlorine pH	0.00 to 5.00 mg/L Cl <sub>2</sub> 0.00 to 5.00 mg/L Cl <sub>2</sub> 6.5 to 8.0 pH
Resolution	Free Chlorine Total Chlorine pH	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) 0.1 pH
Accuracy	Free Chlorine Total Chlorine pH	±0.04 mg/L @1.50 mg/L ±0.04 mg/L @1.50 mg/L ±0.1 pH @7.2 pH
Method	Free Chlorine Total Chlorine pH	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 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 cuvettes (2 pcs)  
**Mi0002** Caps for cuvettes (2 pcs)  
**Mi0003** Stoppers for cuvettes (2 pcs)  
**Mi0004** Tissue for wiping cuvettes (4 pcs)  
**Mi0005** 9V battery (1 pc)



#### Ordering Information

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

## Mi405/Mi407/Mi408/Mi412 Ammonia, Iron & Phosphate Photometers



CE

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

		 <b>Mi405 Ammonia MR</b>	 <b>Mi407 Ammonia LR</b>	 <b>Mi408 Iron HR</b>	 <b>Mi412 Phosphate LR</b>
Range	Ammonia Iron Phosphate	0.00 to 9.99 mg/L (NH <sub>3</sub> -N)	0.00 to 3.00 mg/L (NH <sub>3</sub> -N)	0.00 to 5.00 mg/L Fe	0.00 to 2.50 mg/L PO <sub>4</sub>
Resolution	Ammonia Iron Phosphate	0.01 mg/L	0.01 mg/L	0.01 mg/L	0.01 mg/L
Accuracy	Ammonia Iron Phosphate	±0.10 mg/L @5.00 mg/L	±0.04 mg/L @1.50 mg/L	±0.03 mg/L @1.50 mg/L	±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 reagent (100 tests)  
**Mi507-100** Ammonia LR reagent (100 tests)  
**Mi508-100** Iron HR reagent (100 tests)  
**Mi512-100** Phosphate LR reagent (100 tests)

**Mi0001** Glass cuvettes (2 pcs)  
**Mi0002** Caps for cuvettes (2 pcs)  
**Mi0003** Stoppers for cuvettes (2 pcs)  
**Mi0004** Tissue for wiping cuvettes (4 pcs)  
**Mi0005** 9V battery (1 pc)

### Ordering Information

**Mi405, Mi407, Mi408 and Mi412** are supplied complete with 2 cuvettes, 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		 <b>Mi404</b> Free & Total Chlorine	 <b>Mi406</b> Free Chlorine	 <b>Mi413</b> Free & Total Chlorine HR	 <b>Mi414</b> Chloride
Range	Free Chlorine Total Chlorine Chloride	0.00 to 5.00 mg/L Cl <sub>2</sub> 0.00 to 5.00 mg/L Cl <sub>2</sub>	0.00 to 5.00 mg/L Cl <sub>2</sub>	0.00 to 10.00 mg/L Cl <sub>2</sub> 0.00 to 10.00 mg/L Cl <sub>2</sub>	0.00 to 20.00 mg/L Cl <sup>-</sup>
Resolution	Free Chlorine Total Chlorine Chloride	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)	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
Accuracy	Free Chlorine Total Chlorine Chloride	±0.04 mg/L @1.50 mg/L ±0.04 mg/L @1.50 mg/L	±0.04 mg/L @1.50 mg/L	±0.10 mg/L @5.00 mg/L ±0.10 mg/L @5.00 mg/L	±0.4 mg/L @10.0 mg/L adaptation of mercury (II) thiocyanate method
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.	
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 reagent set (100 tests)

**Mi506-100** Free Chlorine reagent set (100 tests)

**Mi513-045** Free & Total Chlorine reagent set (45 tests)

**Mi514-100** Chloride reagent set (100 tests)

**Mi524-100** Total Chlorine powder reagents (100 tests)



**Mi526-100** Free Chlorine powder reagents (100 tests)

**Mi0001** Glass cuvettes (2 pcs)

**Mi0002** Caps for cuvettes (2 pcs)

**Mi0003** Stoppers for cuvettes (2 pcs)

**Mi0004** Tissue for wiping cuvettes (4 pcs)

**Mi0005** 9V battery (1 pc)

### Ordering Information

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

CE

Years  
warranty  
2Self  
diagnostics

LED

New



## MW10/MW11

### Low cost digital photometers to measure Free & Total Chlorine

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

	 <b>MW10</b> <b>Free Chlorine</b>	 <b>MW11</b> <b>Total Chlorine</b>
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 cuvettes, 6 reagents, a battery and instruction manual.



#### Accessories

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



**3000100** Glass cuvettes with caps (2 pcs)  
**3000200** Tissue for wiping cuvettes (2 pcs)  
**3000300** 1.5V AAA batteries (1 pcs)

#### Ordering information:

All handy photometers are supplied in a carton box including 2 cuvettes, 6 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.






New

CE

Years  
warranty  
2Self  
diagnostics

LED

Specifications	 <b>MW12</b> Phosphate	 <b>MW13</b> Iodine	 <b>MW14</b> 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	±0.04 ppm ±4% of reading @ 25 °C	±0.1 ppm ±5% of reading @ 25 °C	±0.04 ppm ±2% of reading @ 25 °C
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 for 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)



- 3000100** Glass cuvetts with caps (2 pcs)  
**3000200** Tissue for wiping cuvetts (2 pcs)  
**3000300** 1.5V AAA batteries (1 pcs)

### Ordering information:

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

Self  
diagnostics

CE

New

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 reagents.



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<sub>2</sub>). See the conversion table of these methods and their units for your reference.

	JTU	FTU (NTU/FNU)	SiO <sub>2</sub> (mg/L)
JTU	1	19	2.5
FTU	0.053	1	0.13
SiO <sub>2</sub>	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 cuvetts (2 pcs)  
**Mi0012** Caps for cuvetts (2 pcs)  
**Mi0013** Stoppers for cuvetts (2 pcs)  
**Mi0004** Tissue for wiping cuvetts (4 pcs)  
**Mi0005** 9V battery (1 pc)



### Ordering Information

**Mi415** is supplied complete with 2 cuvetts, reagents, 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	 <b>MA871 Brix</b>	 <b>MA872 Fructose</b>	 <b>MA873 Glucose</b>	 <b>MA881 Invert Sugar</b>
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.



Years  
warranty  
**2**

ATC

Dual  
Display

Self  
diagnostics

CE

**New**



## 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

				
	<b>MA882</b>	<b>MA883</b>	<b>MA884</b>	<b>MA885</b>
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

### Ordering Information

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

**New**

Years  
warranty  
**2**

ATC

Dual  
Display

Self  
diagnostics

CE



### 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.



### Digital Refractometer for Seawater Measurements

Years warranty  
2

ATC

Dual Display

Self diagnostics

CE

New



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

#### Ordering Information

MA887 is 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.

#### Liquid Cristal Display (LCD)

Dual Level LCD with Primary and Secondary Display.





## 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, 87<sup>th</sup> 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



**New**

Years warranty  
**2**

ATC

Dual Display

Self diagnostics

CE

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.

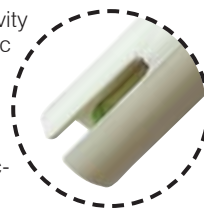


## Electrodes & Probes pH, ORP, Conductivity, Dissolved Oxygen

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)
	MA831R	Stainless steel Temperature probe
	MA840	Polarographic D.O. probe with 3 meter cable (for SMS600 & Mi605)
	MA850	Combination spare probe for pH/Conductivity/TDS with 1 meter cable (for SM801 & SM802)
	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.

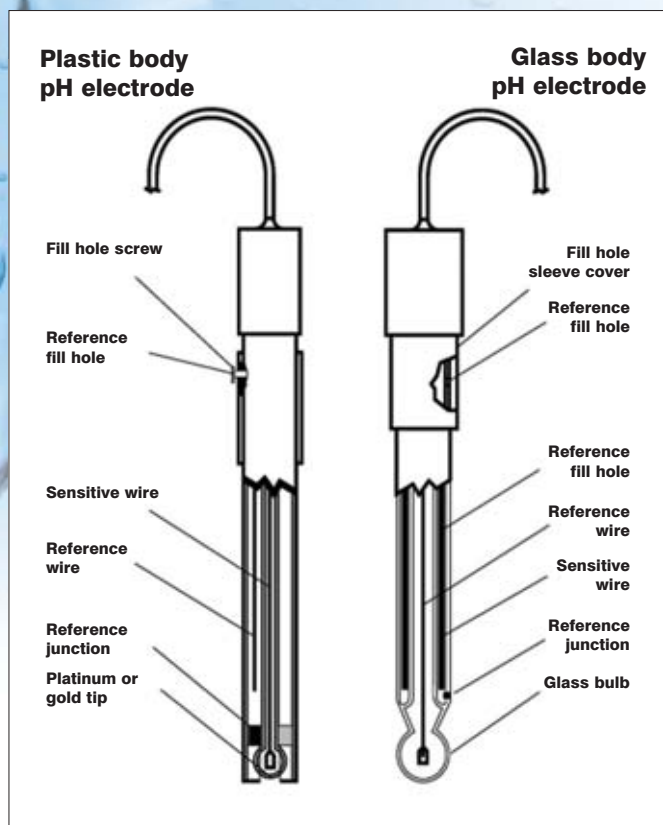


CE



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	MA818/5	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																									

## 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.

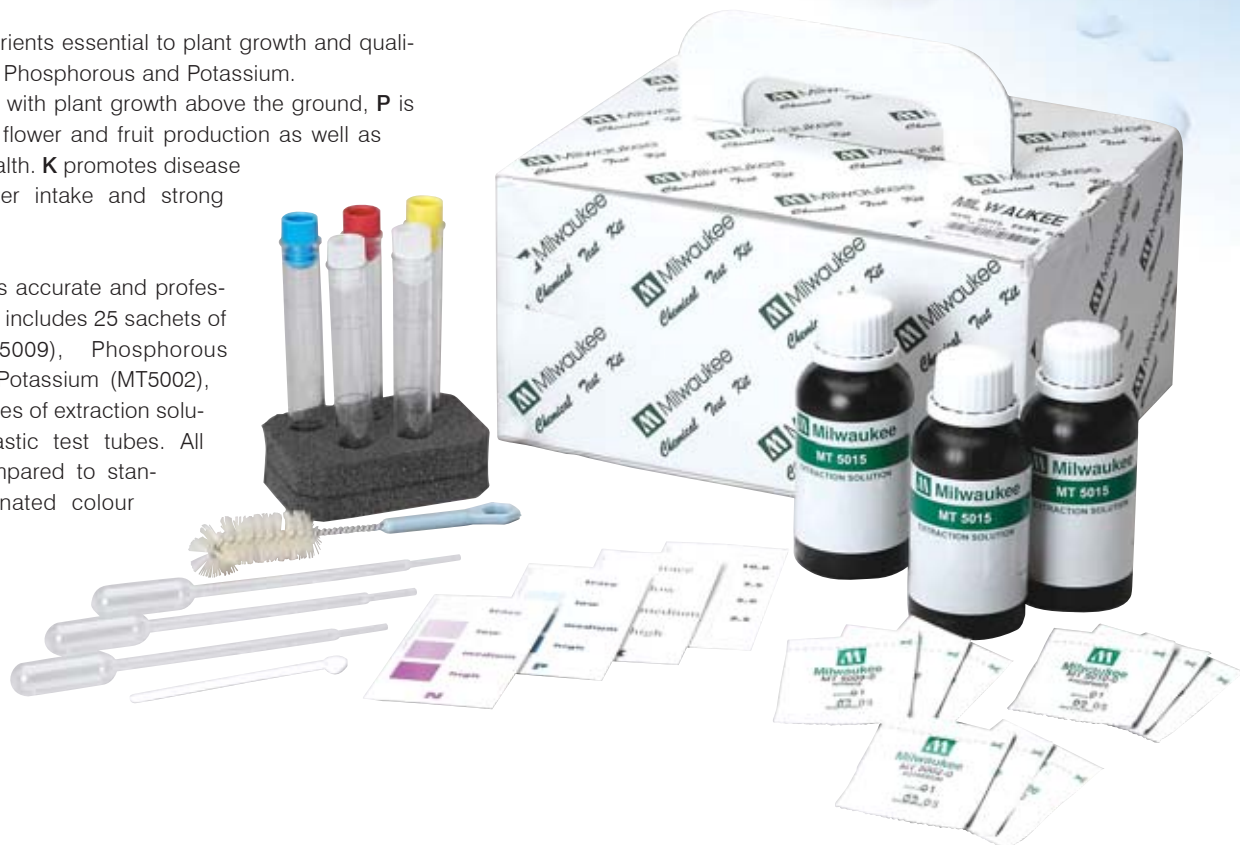
The reference chamber should be drained, flushed with fresh filling solution, and refilled.

## 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.





# 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.



CE

Specifications	 <b>pH600</b>	 <b>CD600</b>	 <b>CD601</b>
Range	0.0 to 14.0 pH	0 to 1990 ppm	0 to 1990 $\mu$ S/cm
Resolution	0.1 pH	10 ppm	10 $\mu$ S/cm
Accuracy	$\pm 0.1$ pH	$\pm 2\%$ full scale	$\pm 2\%$ full scale
Calibration	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	 <b>CD610</b>	 <b>CD611</b>	 <b>CD97</b>
Range	0 to 10000 ppm	0 to 20000 $\mu$ S/cm	0 to 1000 ppm
Resolution	100 ppm	100 $\mu$ S/cm	1 ppm
Accuracy	$\pm 2\%$ full scale	$\pm 2\%$ full scale	$\pm 10$ ppm
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  $\mu$ S/cm calibration solution, 20 mL (25 pcs)
- M10031B** 1413  $\mu$ S/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)
- M10080B** 800 ppm calibration solution 20 mL (25 pcs)
- MA9015** Electrode storage solution, 230 mL
- MA9016** Electrode cleaning solution, 230 mL
- M10000B** Electrode rinse solution, 20 mL (25 pcs)

## Ordering Information

pH600, CD600, CD601, CD610, CD611 and CD97 are supplied complete with protective cap, calibration screw-driver, batteries and instructions.

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.

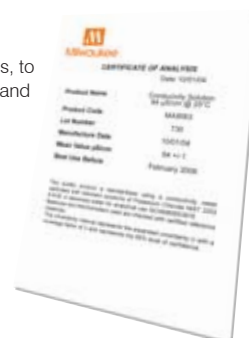


## Calibration, Maintenance & Cleaning Solutions

MA9001	pH 1.68 Calibration Buffer Solution, 230 mL	M10000B	Rinse Solution - Deionized Water (box of 25x20 ml sachet)
MA9004	pH 4.01 Calibration Buffer Solution, 230 mL	M10004B	pH 4.01 Calibration Buffer Solution (box of 25x20 ml sachet)
MA9006	pH 6.86 Calibration Buffer Solution, 230 mL	M10006B	pH 6.86 Calibration Buffer Solution (box of 25x20 ml sachet)
MA9007	pH 7.01 Calibration Buffer Solution, 230 mL	M10007B	pH 7.01 Calibration Buffer Solution (box of 25x20 ml sachet)
MA9009	pH 9.18 Calibration Buffer Solution, 230 mL	M10009B	pH 9.18 Calibration Buffer Solution (box of 25x20 ml sachet)
MA9010	pH 10.01 Calibration Buffer Solution, 230 mL	M10010B	pH 10.01 Calibration Buffer Solution (box of 25x20 ml sachet)
MA9011	Refilling Electrolyte Solution 3.5M KCl for pH/ORP electrodes, 230 mL	M10016B	Cleaning Solution for electrodes (box of 25x20 ml sachet)
MA9012	Refilling Electrolyte Solution 1M KNO <sub>3</sub> for double junction electrodes, 230 mL	M10030B	12880 $\mu$ S/cm Conductivity Calibration Solution (box of 25x20 ml sachet)
MA9015	Storage Solution for pH/ORP electrodes, 230 mL	M10031B	1413 $\mu$ S/cm Conductivity Calibration Solution (box of 25x20 ml sachet)
MA9016	Cleaning Solution for pH/ORP electrodes, 230 mL	M10032B	1332 ppm TDS Calibration Solution (box of 25x20 ml sachet)
MA9020	200-275 mV ORP Solution, 230 mL	M10033B	84 $\mu$ S/cm Conductivity Calibration Solution (box of 25x20 ml sachet)
MA9060	12880 $\mu$ S/cm Conductivity Calibration Solution, 230 mL	M10035B	111.8 mS/cm Conductivity Calibration Solution (box of 25x20 ml sachet)
MA9061	1413 $\mu$ S/cm Conductivity Calibration Solution, 230 mL	M10038B	6.44 ppt TDS Calibration Solution (box of 25x20 ml sachet)
MA9062	1382 ppm TDS Calibration Solution, 230 mL	M10442B	1500 ppm TDS Calibration Solution (box of 25x20 ml sachet)
MA9063	84 $\mu$ S/cm Conductivity Calibration Solution, 230 mL	M10080B	800 ppm TDS Calibration Solution (box of 25x20 ml sachet)
MA9064	80000 $\mu$ S/cm Conductivity Calibration Solution, 230 mL	M100020B	Cal-Test Solution for SMS315 (box of 25x20 ml sachet)
MA9065	111.8 mS/cm Conductivity Calibration Solution, 230 mL	M100040B	Cal-Test Solution for SMS415 (box of 25x20 ml sachet)
MA9066	100% NaCl Calibration Solution, 230 mL	M100058B	Cal-Test Solution for SMS115 (box of 25x20 ml sachet)
MA9069	5000 $\mu$ S/cm Conductivity Calibration Solution, 230 mL		
MA9070	Zero Oxygen Solution, 230 mL		
MA9071	Electrolyte Solution for D.O. Probes, 230 mL		
MA9112	pH 12.45 Calibration Buffer Solution, 230 mL		

## Certified Solutions

For those operators who request it, we provide standard solutions complete with certificate of analysis, prepared against NIST standards, to avoid any possible error in determining the actual value. The certificates show the date of production, batch number, accuracy rating and the expiration date.





## WARRANTY POLICY

Milwaukee warrants its instruments to be free of manufacturing defects as follows: bench meters for 3 years, portable meters 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.

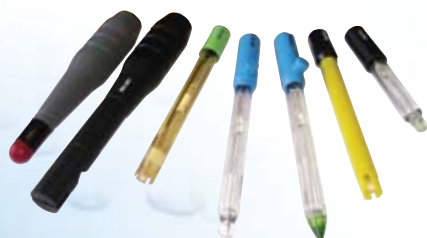
Milwaukee reserves the right to make improvements in design, construction and appearance of its products without advance notice.

### 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](mailto:tech@milwaukeeinst.com)

All products returned without an RGA number will be refused.



## FURTHER INFORMATION

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Visit our website at:

[www.milwaukeeinst.com](http://www.milwaukeeinst.com)

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## SPECIFIC APPLICATION LITERATURE

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Specific application catalogues and leaflets are also available. Please kindly send us an e-mail at:

[info@milwaukeeinst.com](mailto:info@milwaukeeinst.com)

### Bench Meters



### Portable Meters



pH  
 ORP  
 EC  
 TDS  
 DO  
 NaCl  
 Temp  
 Brix  
 NH<sub>3</sub>-N  
 Fe  
 PO<sub>4</sub>  
 Cl<sub>2</sub>  
 Cl<sup>-</sup>  
 TN

Authorized Distributor

