GENERAL CATALOGUE

Instruments for Water Analysis

Volume 19

milwaukee

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, 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 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 many come in a hard carrying case 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.

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Beauty of

Symbols

CE
CE Certified products

IP65
IP65 rated housing

IP67
IP67 rated housing

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

USB Port
Communication via opto-isolated USB port

2 Years Warranty
Instruments are covered by 2 years warranty

7 pH Memorized buffers
7 pH Memorized buffers for calibration

MEM
MEM key allows to memorize the last measurement

LOG
LOG key allows to save up to 1000 measurements

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

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

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

5 Point Calibration
Calibration can be performed at 3 or 5 points

Multiparameter instruments
Instruments that measure more than 1 parameter

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

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

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

Dual Level Display
Displays simultaneously 2 parameters

Replaceable Electrode
Instrument with replaceable electrode

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

LED
The lightsource is the LED with different wavelengths

Backlight
Backlit LCD

Contents

simplicity

Highlights in this Catalogue

The innovative line of Milwaukee MAX bench meters includes a lot of new features:

- pH extended range: -2.00 to 20.00 pH, -2.000 to 20.000 pH
- Rechargeable battery with 8 hrs battery life
- 2 USB ports: Standard USB socket to export data directly to a flash drive and micro USB to connect a computer for file export
- Data logging: 1000 logs can be stored in the built-in memory including readings, GLP data, date and time
- Different logging methods: manual log-on-demand (max. 200 logs); manual log-on-stability (max. 200 logs) and interval log (max. 600 samples; 100 lots)
- Electrode diagnostics feature checks and displays the condition of the pH electrode
- 5 points calibration (**MW151 MAX**)

The innovative line of Milwaukee MAX portable meters includes a lot of new features:

- IP67 waterproof casing
- pH extended range: -2.00 to 20.00 pH, -2.000 to 20.000 pH (**MW106 MAX**)
- Up to 5-point calibration with 7 standard calibration buffers and two custom buffers
- Micro USB to connect a computer for file export
- Data logging: 1000 logs can be stored in the built-in memory including readings, GLP data, date and time
- Different logging methods: manual log-on-demand (max. 200 logs); manual log-on-stability (max. 200 logs) and interval log (max. 600 samples; 100 lots)
- Electrode diagnostics feature checks and displays the condition of the pH electrode

The new Milwaukee MAX continuous monitors with 3 LCDS include a lot of new features:

- Easy Manual Calibration
- No Buttons to Program
- No Waiting for Software Confirmation
- Easy Wall Bracket Set-up (Brackets Included)
- Backlit LCD
- Two Point pH Calibration
- One Point TDS Calibration
- Replaceable pH Electrode
- “Easy Switch” TDS Conversion Technology Between 0.5 and 0.7

Measuring pH in cheese

Using **MW101 PRO** pH portable meter with a **MA920B/1** pH electrode for measuring pH in cheese. During the cheese making process, the pH is measured multiple times. Each type of cheese may have a slightly different process and pH level. It is important for manufacturers and companies to be aware of the differences and treat each cheese variety with the quality and care it deserves. Measuring the pH of cheese essentially gives the manufacturer control of the cheese process.

MAX Dissolved oxygen and temperature portable meter

MW605 MAX is a portable, IP67 rated meter designed for fresh and saltwater measurements of dissolved oxygen (DO).
The **MW605 MAX**meter is compatible with **MA860** galvanic DO probe. Galvanic probes require no conditioning and thus the instrument is ready to measure when it is powered on. Concentration measurements are automatically compensated for temperature and salinity. Temperature is automatically measured (in both degree Celsius and Fahrenheit) and compensated. Salinity and altitude can be configured in Setup.

Other features include:
- IP67 waterproof casing
- Auto-off feature to prolong battery life
- One or two % saturation calibration points at 100% (water saturated air) and 0% (zero oxygen solution)
- Dedicated GLP key to store and recall data on system status
- Available log space for up to 1000 records
- Logged data can be exported using a USB cable

MAX Combined pH/EC/TDS/Temp portable meters

MW805 MAX and **MW806 MAX** portable meters combine the main features of a benchtop unit into a portable, water-resistant meter that can measure up to 4 different parameters — pH, EC (Conductivity), TDS (Total Dissolved Solids), and temperature.

- IP67 waterproof casing
- Easy to read LCD display
- Auto-off feature to prolong battery life
- Internal clock and date to keep track of time-dependent functions (calibration timestamp, calibration time out)
- Up to 5-point pH calibration (selection from 7 standard calibration buffers and 2 custom buffers)
- Automatically (ATC) or manually temperature compensated (MTC) measurements, with a user-selectable compensation coefficient
- Available log space for up to 1000 records
- Logged data can be exported using a micro USB cable
- Dedicated GLP key to store and recall data on system status

MAX pH/ORP/EC/TDS/NaCl/Temp bench meter

MW180 MAX is a compact and versatile bench meter with a user-friendly interface that can measure six different parameters – pH, ORP, EC, TDS (Total Dissolved Solids), percentage of salinity (NaCl%) and temperature – when paired with the respective probe.

pH calibration can be performed in up to 5-point (selectable between 7 standard calibration buffers and two custom buffers), to improve measurement reliability even when testing samples with wide differences in pH.
The auto-ranging feature for both EC and TDS measurements automatically sets the most suitable resolution for the tested sample. All measurements can be automatically (ATC) or manually temperature compensated (MTC) with a user-selectable compensation coefficient. The temperature compensation can be disabled if the actual conductivity value is required (No TC).
MW180 MAX has GLP data review and the data can be transfered to a PC through a USB port.
A unique device identity code protects against the risks of loss and misuse.

Looking for research grade
Look no further than Milwaukee. O
top meters provide an affordable s
pH · ORP · EC · T

e instruments on a budget? Our new high performance Bench- solution to your measuring needs. TDS · Temp · DO

MW150 MAX: pH/ORP/Temp bench meter
MW151 MAX: pH/ORP/Temp bench meter with logging
MW160 MAX: pH/ORP/ISE/Temp bench meter with logging
MW170 MAX: Autoranging EC/TDS/NaCl/Temperature laboratory bench meter
MW180 MAX: pH/ORP/EC/TDS/NaCl/Temperature combination bench meter
MW190 MAX: Extended range dissolved oxygen meter

Key features:

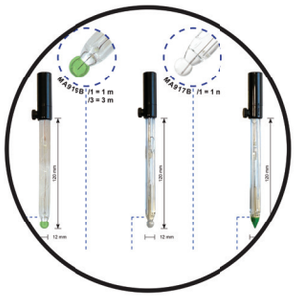
Built in rechargeable battery with 8 hours battery life supplied complete with battery charger, sensors, calibration solutions, electrode holder ready for use.

Data logging: 1000 logs can be stored in the built-in memory including readings, GLP data, date and time.
Different logging methods: manual log-on-demand (max. 200 logs); manual log-on-stability (max. 200 logs) and interval log (max. 600 samples; 100 lots).

Electrode diagnostics feature checks and displays the condition of the pH electrode

2 USB ports: Standard USB socket to export data directly to a flash drive and micro USB to connect a computer for file export

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



The complete Milwaukee sensor portfolio covers the whole scope of pH applications. These range from routine measurements to specific applications. To find your perfect match, go to page 58 – Electrode Selection Guide.

MW150 MAX

pH/ORP/Temperature Laboratory Bench Meter

Years warranty 2

MEM

ATC

MTC

Points 3

Dual Display

Self diagnostics

Memorized buffers 7

CE

GLP

MW150 MAX is an advanced pH/ORP/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:

- Up to 3-point automatic calibration with 7 standard calibration buffers
- Automatic or manual temperature compensation
- Built-in rechargeable battery with 8 hours battery life
- Auto-off feature to preserve battery energy
- Battery charger with battery monitor
- Dedicated GLP key
- Alphanumeric LCD displayed messages for user friendly, intuitive information/warning/error messages
- Internal clock and date to keep track of different time-dependent functions (calibration, timestamp, calibration time out)

Specifications		MW150 MAX
Range	pH	-2.00 to 20.00 pH
	mV	±2000.0 mV
	Temp	-20.0 to 120.0°C / -4.0 to 248.0°F
Resolution	pH	0.01 pH
	mV	0.1 mV
	Temp	0.1°C / 0.1°F
Accuracy (@25°C / 77°F)	pH	±0.01 pH
	mV	±1 mV
	Temp	±0.4°C / ±0.8°F
pH Calibration		up to 3-point automatic pH calibration, 7 standard calibration buffers (pH 1.68, 4.01, 6.86, 7.01, 9.18, 10.01 and 12.45), no custom buffers
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)
Power Supply		12 VDC adapter (included)
Battery life		8 hours
Auto-off		5, 10, 30, 60 minutes or off
Environment		0 to 50 °C; max RH 95%
Packaging dimensions		335 x 120 x 255 mm
Packaging weight		2 kg

Ordering Information:

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
MA9011 Refilling Electrolyte Solution 3.5M KCl for pH/ORP electrodes, 230 mL
MA9012 Refilling Electrolyte Solution 1M KNO3, 230 mL, food applications
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
MA924B/1 ±2000 mV Glass ORP electrode, refillable with BNC connector and 1 meter cable
MA831R Temperature probe

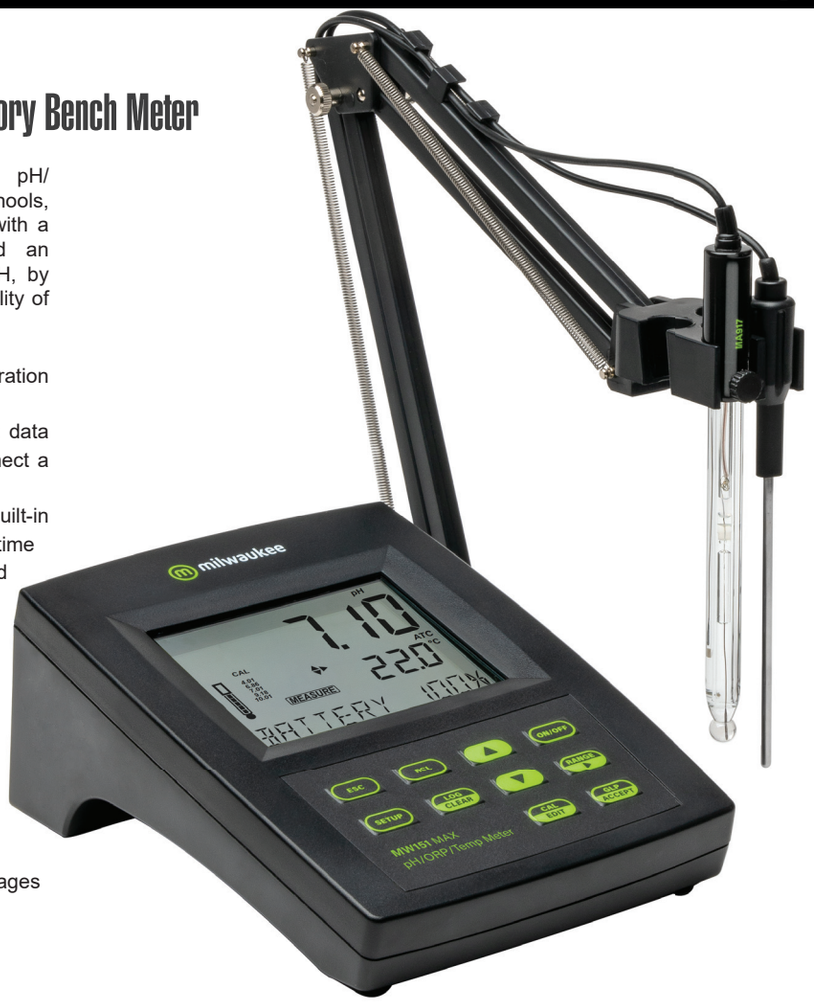
MW150 MAX is supplied complete with:
- **MA917B/1** Double junction refillable pH electrode
- **MA831R** Temperature Probe
- **MA9315** Electrode Holder
- **M10004** pH 4.01 Sachet Buffer Solution
- **M10007** pH 7.01 Sachet Buffer Solution
- **M10010** pH 10.01 Sachet Buffer Solution
- **M10016** Sachet Electrode Cleaning Solution
- **MA9310** 12 VDC Adapter
- Graduated pipette
- Instruction manual

MW151 MAX

pH/ORP/Temperature Logging Laboratory Bench Meter

This high performance 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:

- Up to 5-point calibration with 7 standard calibration buffers and two custom buffers
- 2 USB ports: Standard USB socket to export data directly to a flash drive and micro USB to connect a computer for file export
- Data logging: 1000 logs can be stored in the built-in memory including readings, GLP data, date and time
- Different logging methods: manual log-on-demand (max. 200 logs); manual log-on-stability (max. 200 logs) and interval log (max. 600 samples; 100 lots)
- Electrode diagnostics feature checks and displays the condition of the pH electrode
- Built-in rechargeable battery with 8 hours battery life
- Battery charger with battery monitor
- Dedicated GLP key
- Alphanumeric LCD displayed messages for user friendly, intuitive information/warning/ error messages



Years warranty 2
LOG
ATC
MTC
Points 5
Dual Display
Self diagnostics
Memorized buffers 7
CE
USB
GLP

Specifications		MW151 MAX
Range	pH	-2.00 to 20.00 pH / -2.000 to 20.000 pH
	mV	±2000.0 mV
	Temp	-20.0 to 120.0°C / -4.0 to 248.0°F
Resolution	pH	0.01 pH / 0.001 pH
	mV	0.1 mV
	Temp	0.1°C / 0.1°F
Accuracy (@25°C)	pH	±0.01 pH / ±0.002 pH
	mV	±1 mV
	Temp	±0.4°C / ±0.8°F
pH Calibration		up to 5-point automatic pH calibration, 7 standard calibration buffers (pH 1.68, 4.01, 6.86, 7.01, 9.18, 10.01 and 12.45) and two custom buffers
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)
Log		Maximum 1000 records; On demand, 200 samples; On stability, 200 samples Interval logging, 600 samples (max. 100 lots)
PC connectivity		1 USB port, 1 micro USB port
Power Supply		12 VDC adapter (included), 5 VDC USB adapter
Battery life		8 hours
Auto-off		5, 10, 30, 60 minutes or off
Environment		0 to 50 °C; max RH 95%
Packaging dimensions		335 x 120 x 255 mm
Packaging weight		2 kg

Ordering Information:

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
MA9011 Refilling Electrolyte Solution 3.5M KCl for pH/ORP electrodes, 230 mL
MA9012 Refilling Electrolyte Solution 1M KNO3, 230 mL, food applications
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
MA924B/1 ±2000 mV Glass ORP electrode, refillable with BNC connector and 1 meter cable

MW151 MAX 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
- **MA9310** 12 VDC Adapter
- Graduated pipette
- USB cable
- Instruction manual

MW160 MAX

pH/ORP/ISE/Temperature Laboratory Bench Meter

Years warranty 2
MEM
ATC
MTC
Points 3
Dual Display
Self diagnostics
Memorized buffers 7
CE
GLP

MW160 is a compact and versatile bench meter that can measure up to four different parameters — pH, ORP, ISE (directly in ppm) and temperature. The main operating modes are setup, calibration, measurement and logging. pH calibration can be performed in up to 3 points (using a selection of 7 standard calibration buffers), to improve measurement reliability, even when testing samples with wide differences in pH. ISE calibration can be performed in up to 2 points with 6 standard solutions available.The meter can store up to 50 data sets for each range (pH, ORP, ISE) that can be downloaded to a PC via RS232 or USB.

Other features include:

- Easy to read LCD display
- Relative mV feature
- Internal clock and date to keep track of different time-dependent functions (calibration timestamp, calibration time-out)
- User-selectable time-out alarm to alert the user that too much time elapsed since the last pH calibration
- GLP feature to recall last calibration data for pH and ISE

For accurate measurements use the electrode holder supplied with the meter.

Specifications		MW160 MAX
Range	**pH**	-2.00 to 16.00 pH
	mV	±699.9 mV / ±2000.0 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 ppm, 0.01 ppm, 0.1 ppm, 1 ppm
	Temp	0.1°C / 0.1°F
Accuracy (@20°C / 68°F)	**pH**	±0.01 pH
	mV	±0.2 mV / ±1 mV
	ISE	±0.5% Full scale
	Temp	±0.4°C / ±0.8°F
Relative mV offset		±2000 mV
pH Calibration		up to 3-point pH calibration, with 7 memorized buffers (pH 1.68, 4.01, 6.86, 7.01, 9.18, 10.01 and 12.45)
ISE calibration		1 or 2 points calibration, 6 standard solutions available: 0.01, 0.1, 1, 10, 100, 1000 ppm
Temperature Compensation		automatic from -20.0 to 120.0°C / -4.0 to 248.0°F or manual, without temperature probe
pH Electrode		**MA917B/1** (included)
Temperature Probe		**MA831R** (included)
Logging memory		Up to 50 records for each measurement range (pH, ORP, ISE)
Power Supply		12 VDC adapter (included)
PC connectivity		USB port and RS232 interface
Environment		0 to 50 °C; max RH 95%
Packaging dimensions		335 x 120 x 255 mm
Packaging weight		2.55 kg

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 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
MA924B/1	Glass ORP electrode
MA831R	Temperature probe
SE300	Platinum ORP electrode

Ordering Information:

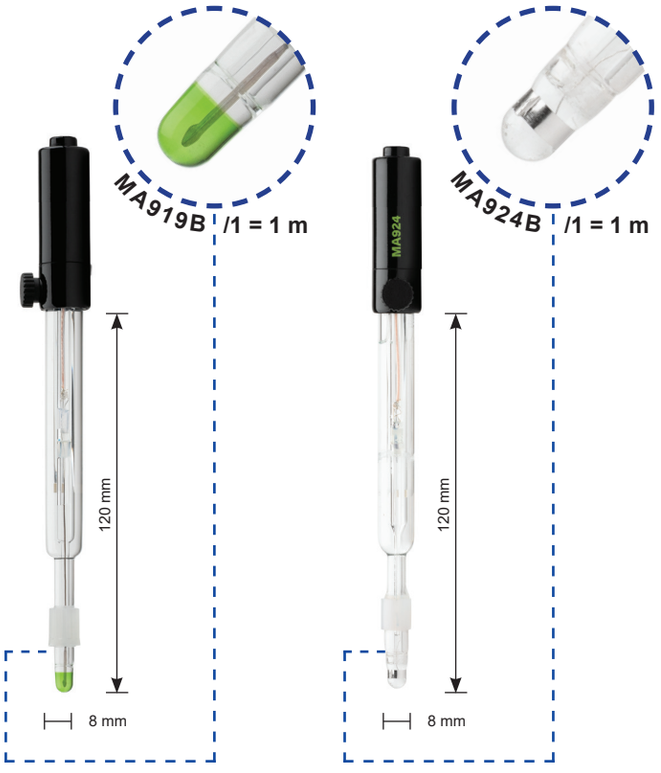
MW160 MAX is supplied complete with:

- **MA917B/1** Double junction refillable pH electrode
- **MA831R** Stainless steel temperature probe
- **M10004B** pH 4.01 buffer solution (sachet)
- **M10007B** pH 7.01 buffer solution (sachet)
- **M10010B** pH 10.01 buffer solution (sachet)
- **M10016B** Electrode cleaning solution (sachet)
- **MA9315** Electrode holder
- **MA9350** RS232 connector cable (2 m)
- Graduated pipette
- 12 VDC adapter
- Instrument quality certificate
- Instruction manual

pH Electrode
basics

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

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



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

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

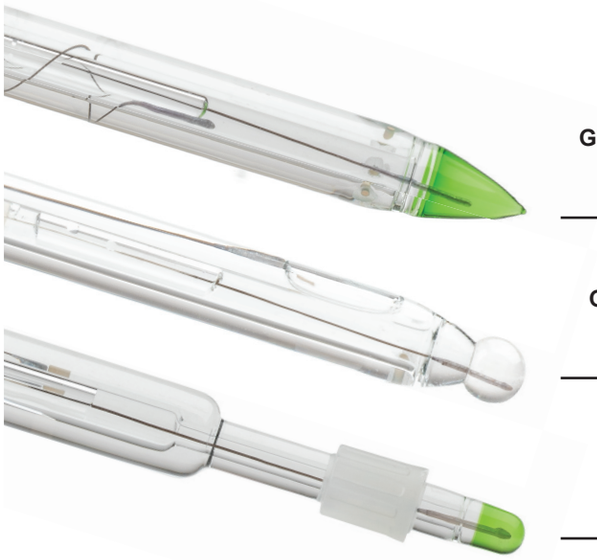
- **Gel filled electrodes versus refillable electrodes:** refillable electrodes last longer since electrolyte can be changed for repeated usage. The response is faster due to a greater outflow of electrolyte into the sample and therefore less likely to clog. Gel filled electrodes require less maintenance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

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

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

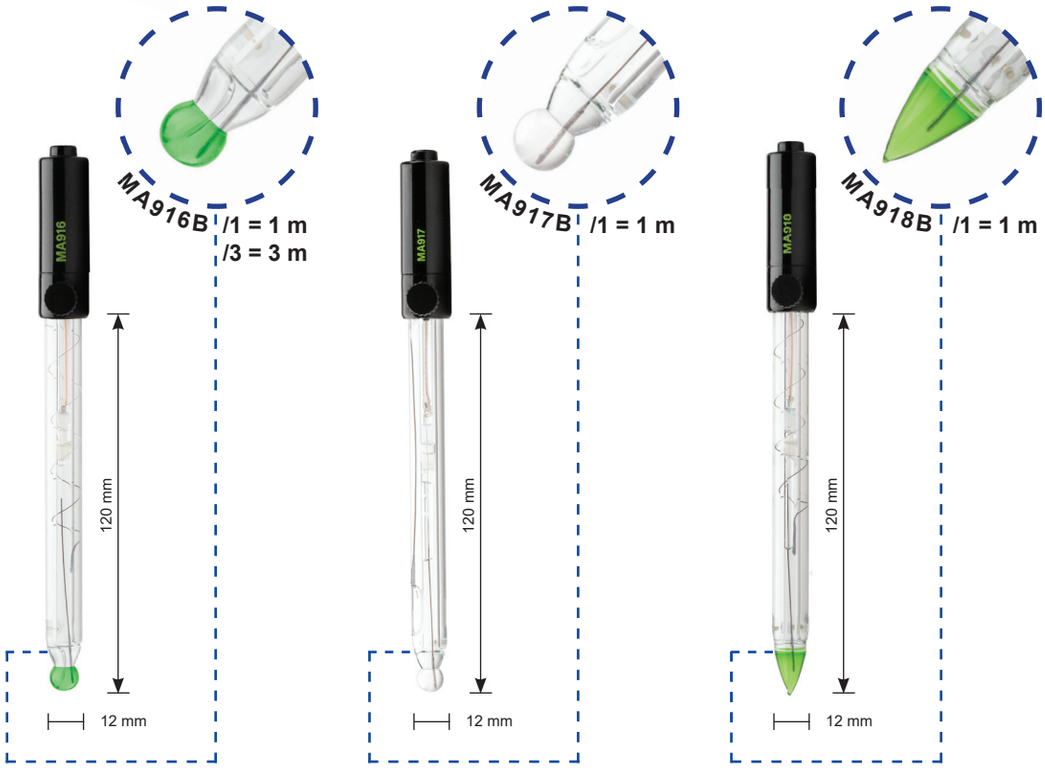
Model	MA919B/1	MA924B/1
Measuring Range	0 to 12 pH	±2000 mV
Temperature Range	-5 to 70 °C	0 to 70 °C
Shaft material	glass	glass
Reference Electrolyte	KCL 3.5M	KCL 3.5M
Reference Junction	open	open
Reference Type	double Ag/AgCl	double Ag/AgCl
Shape of membrane	spheric	Platinum ring
Max. Pressure	0,1 bar	0,1 bar
Connector type	BNC	BNC
Cable length	coaxial 1 meter	coaxial 1 meter
Shaft length	120 mm	120 mm
Diameter	8 mm	8 mm
Application	food laboratory	food laboratory

pH Electrode basics



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

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

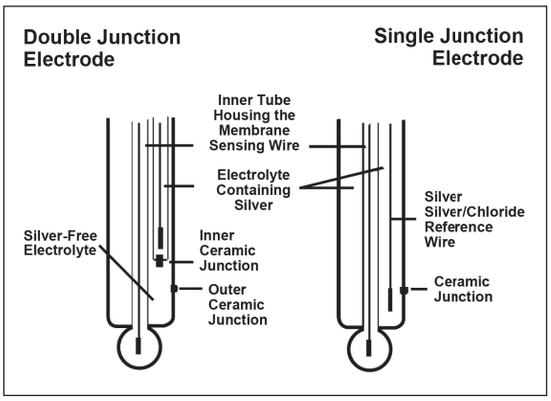


Model	MA916B/1 - MA916B/3	MA917B/1	MA918B/1
Measuring Range	0 to 12 pH	0 to 14 pH	0 to 12 pH
Temperature Range	0 to 60°C	0 to 70°C	-5 to 60°C
Shaft Material	glass	glass	glass
Reference Electrolyte	KCl 3.5M	KCl 3.5M	KCl 3.5M
Reference Junction	ceramic, single	ceramic, single	ceramic, triple
Reference Type	double, Ag/AgCl	double, Ag/AgCl	double, 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	food-laboratory applications

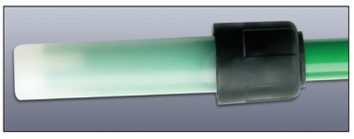
pH Electrode
basics

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

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

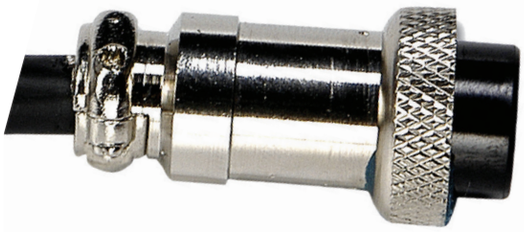


Electrode Storage Bottle Cap: All our pH and ORP electodres are supplied with a bottle storage cap which helps to keep the glass bulb always wet.

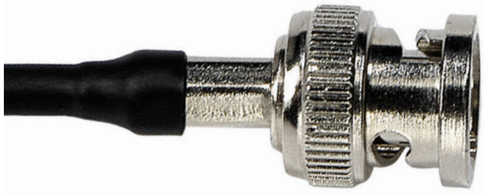


Model	MA920B/1	MA991B/1	MA905B/3	MA925B/3
Measuring Range	0 to 12 pH	0 to 13 pH	0 to 13 pH	±2000 mV
Temperature Range	-5 to 50°C	-5 to 70°C	-10 to 80°C	-5 to 100°C
Shaft Material	PVDF	glass	PVDF	PVDF
Reference Electrolyte	Viscolene	gel	polymer	polymer
Reference Junction	open	ceramic, single	double PTFE	PTFE
Reference Type	single, Ag/AgCl	single, Ag/AgCl	double Ag/AgCl	Ag/AgCl
Shape of membrane	conic	spheric	flat	flat Pt sensor
Max pressure	0.1 bar	0.1 bar	6 bar	6 bar
Connector Type	BNC	BNC	3/4" NPT - BNC	BNC
Cable length	coaxial, 1 m	coaxial, 1 m	3 m	3 meter
Shaft length	75 mm	120 mm	120 mm	135 mm
Diameter	6 mm	12 mm	22 mm	22 mm
Application	food-laboratory applications	laboratory applications	industrial applications	industrial applications

pH Electrode basics



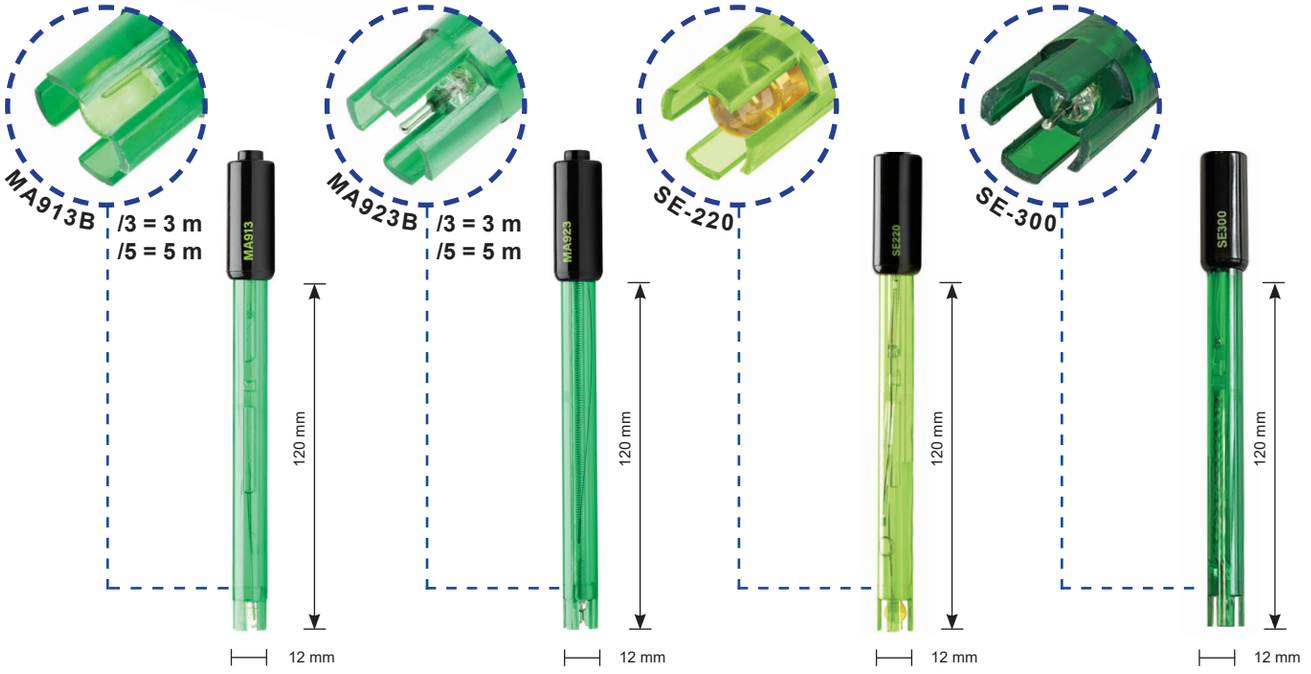
DIN Connector



BNC Connector

Temperature compensation: When measuring pH using a pH electrode the temperature error from the electrode varies based on the Nernst Equation as 0.03 pH/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.

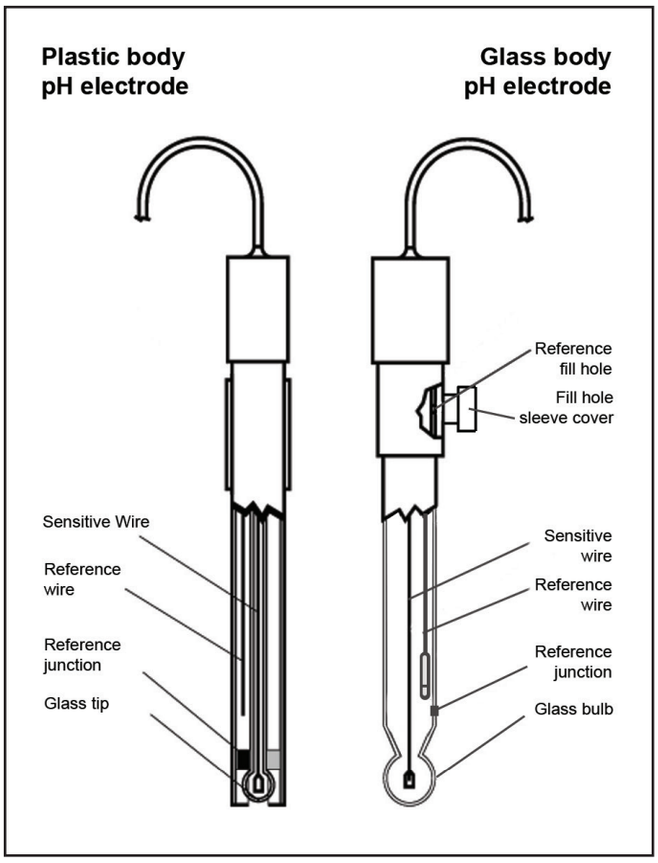
This means that the temperature is corrected to the value expected at 25 °C. Automatic temperature compensation requires input from a temperature sensor and constantly sends a compensated pH signal to the display. Automatic temperature compenstion is useful for measuring pH in systems with wide variations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



Model	MA913B/3 - B/5	MA923B/3 - B/5	SE-220	SE-300
Measuring Range	0 to 13 pH	±1999 mV	0 to 13 pH	±1999 mV
Temperature Range	20 to 60°C	20 to 60°C	-5 to 70 °C	20 to 60°C
Shaft Material	PEI	PEI	PEI	PEI
Reference Electrolyte	gel	gel	gel	gel
Reference Junction	ceramic, single	cloth	cloth	cloth
Reference Type	single, Ag/AgCl	single, Ag/AgCl	double Ag/AgCl	double, Ag/AgCl
Shape of membrane	spheric	spheric, platinum sensor	spheric	spheric, platinum sensor
Max pressure	2 bar	2 bar	2 bar	2 bar
Connector Type	BNC	BNC	BNC	BNC
Cable length	coaxial, 3 m or 5 m	7-pole, 3 m or 5 m	coaxial 1 meter	7-pole, 3 m or 5 m
Shaft length	120 mm	120 mm	120 mm	120 mm
Diameter	12 mm	12 mm	12 mm	12 mm
Application	swimming pool	swimming pool	drinking water, waste water	drinking water, waste water

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. For refillable electrodes make sure that the refill hole is open when measuring to ensure that the electrolyte solution flows properly through the reference junction

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. When not in use, the fill hole should be covered to prohibit evaporation of reference fill solution.

Maintenance & Cleaning

Cleaning your electrode between and after use will help extend the life of your electrode and avoid the cost of early replacement.
Soak electrode in MA9016 cleaning solution for half an hour, followed by soaking it in storage solution (MA9015) for at least two hours.
For long term storage, always keep the electrode in a bottle, filled with sufficient storage solution to cover the bulb and the junction.

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.

Normal aging

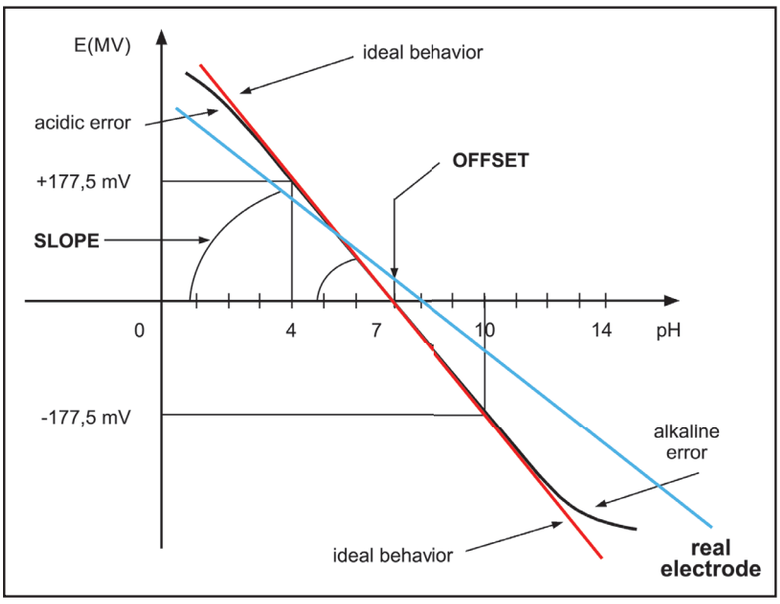
As pH electrodes age their efficiency is reduced. The aging is usually caused either by contamination of the glass membrane (which loses its sensitivity) or by blockage of the reference junction.
The lifespan of the pH electrode is 6 months to 1 year (under normal conditions).

Get accurate pH readings

The pH electrode is the most sensitive component of your pH instrument. Correct calibration procedures combined with proper maintenance will provide reliable measurements.

Calibration: The electrode must be calibrated regularly to ensure accurate, repeatable measurements. Although one-point calibration suffices for fairly reliable measurements, two or even three-point calibrations will give you more accurate results across the entire measurement range.

pH readings are only as accurate as the solution used for calibration. For high accuracy it is important to use uncontaminated buffers. Our 20 ml sachets always ensure a fresh solution and calibration can be performed directly in the sachet. Our 230 ml bottles are easy to use and reduce risk of contamination opposed to bigger bottles.



The calibration curve

MW105 MAX
Portable pH/ORP/Temp Meter

Years warranty 2 · ATC · Points 2 · Dual Display · Self diagnostics · CE · IP67 · GLP

The Milwaukee **MW105 MAX** meter combines all the features of a benchtop unit into a portable, IP67 rated meter. The instruments are provided with a series of new diagnostic features for improved pH measurement reliability:

- IP67 waterproof casing
- pH extended range: -2.00 to 20.00 pH
- up to 3-point automatic pH calibration, 7 standard calibration buffers (pH 1.68, 4.01, 6.86, 7.01, 9.18, 10.01 and 12.45)
- alphanumeric LCD displayed messages for user friendly, intuitive information / warning / error messages
- auto-off feature to preserve battery life
- internal clock and date to keep track of different time-dependent functions (calibration timestamp, calibration time out)
- dedicated GLP key

Hard Carrying Case

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

Specifications		MW105 MAX
Range	pH	-2.00 to 20.00 pH
	mV	±2000 mV
	Temp*	-20.0 to 120.0°C / -4.0 to 248.0°F
Resolution	pH	0.01 pH
	mV	1 mV
	Temp	0.1°C / 0.1°F
Accuracy (@25°C / 77°F)	pH	±0.02 pH
	mV	±1 mV
	Temp	±0.5°C up to 60°C; ±1°C outside / ±1°F up to 140°F; ±2°F outside
pH Calibration		automatic, up to 3 points calibration, 7 standard buffers available (1.68, 4.01,6.86, 7.01, 9.18, 10.01, 12.45)
ORP calibration		factory calibrated
Temperature compensation		automatic, from -5 to 80 °C (-23 to176 °F); manual
Probe		**MA906BR/1** amplified pH/temperature probe (supplied)
Temperature probe		Built-in temperature probe
Input impedance		10^{12} Ohm
Battery Type		3 x 1.5V alkaline AA (included)
Battery Life		Approx. 200 hours of use
Environment		0 to 50°C / 32 to 122°F; max RH 95%
Auto-off		5, 10, 30, 60 minutes or off
Packaging dimensions		305 x 280 x 115 mm
Packaging weight		1.22 kg

* Temperature range is limited to 80.0 °C, when using the MA906BR/1 probe

Accessories

MA906BR/1 amplified pH/temperature probe
M10000B Electrode rinse solution, 20 mL (25 pcs)
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
MA924B/1 Glass ORP electrode, with BNC connector and 1 meter cable

Calibration, Maintenance & Cleaning Solutions

Choose from our wide selection of calibration, maintenance and cleaning solutions at page 59.

Ordering Information

MW105 MAX is supplied complete with:
- **MA906BR/1** amplified pH/temperature probe
- **M10004** pH 4.01 buffer solution (20 mL sachet)
- **M10007** pH 7.01 buffer solution (20 mL sachet)
- **M10010** pH 10.01 buffer solution (20 mL sachet)
- **M10016** electrode cleaning solution (20 mL sachet)
- Graduated pipette
- 1.5V alkaline AA battery (3 pcs.)
- Instrument quality certificate
- Instruction manual

MW106 MAX
Portable pH/ORP/Temp Meter

The Milwaukee **MW106 MAX** meter combines all the features of a benchtop unit into a portable, IP67 rated meter.
The instruments are provided with a series of new diagnostic features for improved pH measurement reliability:

- IP67 waterproof casing
- pH extended range: -2.00 to 20.00 pH/ -2.000 to 20.000 pH
- up to 5-point automatic pH calibration, 7 standard calibration buffers (pH 1.68,4.01, 6.86, 7.01, 9.18, 10.01 and 12.45) and two custom buffers
- available log space for up to 1000 records
- alphanumeric LCD displayed messages for user friendly, intuitive information / warning / error messages
- auto-off feature to preserve battery life
- internal clock and date to keep track of different time-dependent functions (calibration timestamp, calibration time out)
- dedicated GLP key

Calibration, Maintenance & Cleaning Solutions

See page 59.

Specifications		MW106 MAX
Range	pH	–2.00 to 20.00 pH / -2.000 to 20.000 pH
	mV	±2000 mV
	Temp*	-20.0 to 120.0 °C (-4.0 to 248.0 °F)
Resolution	pH	0.01 pH / 0.001 pH
	mV	0.1 mV
	Temp	0.1°C / 0.1°F
Accuracy (@25°C)	pH	±0.01 pH / ±0.002 pH
	mV	±1 mV
	Temp	±0.5°C up to 60°C; ±1°C outside / ±1°F up to 140°F; ±2°F outside
pH Calibration		automatic, up to 5 points calibration, 7 standard buffers available (1.68, 4.01,6.86, 7.01, 9.18, 10.01, 12.45) and two custom buffers
ORP Calibration		factory calibrated
Temperature Compensation		automatic, from -5 to 80°C / 23 to 176°F
Probe		**MA906BR/1** amplified pH/temperature probe (supplied)
Temperature probe		Built-in temperature probe
Input impedance		10^{12} Ohm
Log		Max. 1000 log records (stored in up to 100 lots) On demand, 200 logs / On stability, 200 logs / Interval logging, 1000 logs
PC connectivity		1 micro USB port
Battery Type		3 x 1.5V alkaline AA (included)
Battery Life		approx. 200 hours of use
Auto-off		5, 10, 30, 60 minutes or off
Environment		0 to 50°C ; 95% RH
Packaging dimensions		305 x 280 x 115 mm
Packaging weight		1.22 kg

* Temperature range is limited to 80.0 °C, when using the MA906BR/1 probe

Hard Carrying Case

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

Accessories

MA906BR/1	amplified pH/temperature probe
M10000B	Electrode rinse solution, 20 mL sachet (25 pcs)
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
MA924B/1	Glass ORP electrode, with BNC connector and 1 meter cable

Ordering Information

MW106 MAX is supplied complete with:
- **MA906BR/1** amplified pH/temperature probe
- **M10004** pH 4.01 buffer solution (20 mL sachet)
- **M10007** pH 7.01 buffer solution (20 mL sachet)
- **M10010** pH 10.01 buffer solution (20 mL sachet)
- **M10016** electrode cleaning solution (20 mL sachet)
- Graduated pipette
- 1.5V alkaline AA battery (3 pcs.)
- USB cable
- Instrument quality certificate
- Instruction manual

MW100 PRO/MW101 PRO/MW102 PRO+

Budget pH/Temperature Portable Meters for fast and reliable results

MW100 PRO, MW101 PRO and MW102 PRO+ are compact microprocessor-based pH, and Temperature Portable Meters. 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 easy and fast to calibrate portable meters have a small, ergonomic and light case design. Other features include large and easy to read LCD and long battery life.

All meters are supplied with pH electrodes and calibration solutions in a carton box.

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

Specifications	 **MW100** **PRO pH Meter**	 **MW101** **PRO pH Meter**	 **MW102** **PRO+ pH/Temp Meter**
Range pH	0.0 to 14.0 pH	0.00 to 14.00 pH	-2.00 to 16.00 pH
Range Temp.			-5 to 70°C
Resolution pH	0.1 pH	0.01 pH	0.01 pH
Resolution Temp.			0.1°C
Accuracy (@25°C) pH	±0.2 pH	±0.02 pH	±0.02 pH
Accuracy (@25°C) Temp.			±0.5°C
Typical EMC Deviation pH			±0.02 pH
Typical EMC Deviation Temp.			±0.5°C
Temperature Compensation	N.A.	manual, 0 to 50°C	automatic, 0 to 70°C
Calibration	manual, 2-point through offset and slope trimmers	manual, 2-point through offset and slope trimmers	automatic at 1 or 2 points with memorized buffers (pH 4.01, 7.01, 10.01)
pH Electrode	**SE220** (included)	**SE220** (included)	**SE220** (included)
Temperature Probe			**MA831R** (included)
Environment	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)
Battery Life	approx. 300 hours of use	approx. 300 hours of use	approx. 300 hours of use
Auto-off			after 8 minutes of non-use
Packaging dimensions	212 x 145 x 67 mm	212 x 145 x 67 mm	212 x 145 x 67 mm
Packaging weight	440 g	420 g	500 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)
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
MA9015 Electrode storage solution, 230 mL
MA9016 Electrode cleaning solution, 230 mL
MA831R Temperature probe
SE220 pH electrode with BNC connector and 1 m cable

Ordering Information

MW100 PRO and **MW101 PRO** are supplied complete with a SE220 pH electrode, pH 7.01 20 mL sachet of calibration solution, calibration screwdriver, 9V battery and instructions.

MW102 PRO+ is supplied complete with a SE220 pH electrode, MA831R stainless steel temperature probe, pH 4.01 and pH 7.01 20 mL sachet of calibration solution, 9V battery and instructions.

Measuring pH in soil

Using MW101 PRO pH Portable Meter with a MA920B/1 pH Electrode for measuring pH in SOIL

pH is a measure of the activity of the hydrogen ion (H+) in the soil solution. If the concentration of H+ is high, the medium is said to be acid. If it is low, it is said to be alkaline. Most agricultural soils are found between the range of 4 to 10 (when measured in water).

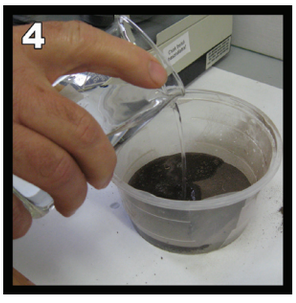
For practical purposes, soil is neutral when pH is between 6 to 8, depending on plant requirements, and it is acidic when pH is less than 6 and alkaline when it is greater than 8.

1. Collect samples of soil.
Take samples from a homogeneous area per 1000m^2.
In smaller places it is also suggested to take at least two samples (the more samples, the more accurate the measurement will be).
Don't take samples from soil where are obvious disorders.

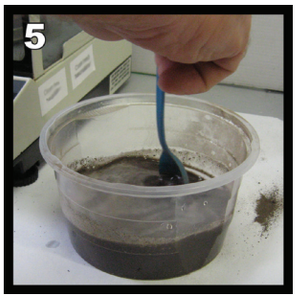
Amount of sample:
Use the same amount of soil for every sample (for example: use identical size sachets)

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

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



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



3. Sift the soil through a 2 mm sifter.

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

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

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

Measuring pH in cheese

Using MW101 PRO pH portable meter with a MA920B/1 pH electrode for measuring pH in cheese

The quality of cheese flavor and texture is the result of well-kept pH and temperature. pH makes sure quality standards have been met; in doing so, they are guaranteeing the safety of the cheese production. Most cheeses range from 5.1 to 5.9 in pH. However, this range will have exceptions to certain types of cheeses such as Camembert cheese which has a pH of 7.4.

During the cheese making process, the pH is measured multiple times. Each type of cheese may have a slightly different process and pH level. It is important for manufacturers and companies to be aware of the differences and treat each cheese variety with the quality and care it deserves. Measuring the pH of cheese essentially gives the manufacturer control of the cheese process.

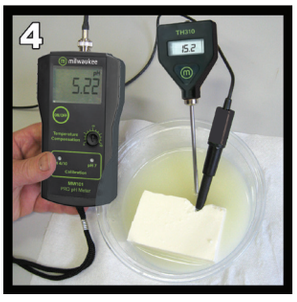
Cheese making process:

For optimal measurement put a sample into a beaker

1. Addition of the starter culture
(temperature should stay below 20°C)
pH level (rennet-induced): 5.1 -5.3
pH level (acid-induced): 4.

2. Coagulation (temperature 30°C)
Usually the pH level stay between: 5.35 – 5.45
In certain cases it can be as low as pH 4.

3. Pressing (room tempereture:
16-18°C for mild cheeses and 25°C
for hard cheeses
pH will decrease (pH 5.0 – 5.3)



4. Brining in salt solution
(temperature of solution: 15°C)
optimal pH level: 5.2
(except soft cheeses like Roquefort where
the pH level should be kept at pH 4.7)

During ripening pH level will increase till the optimal ready value.
See the table below

Optimal pH values of ready cheeses	
American, mild	4.98
Camembert	7.44
Cheddar	5.90
Cottage	4.75 - 5.02
Cream, Philadelphia	4.10 - 4.79
Dip	5.80
Edem	5.40
Old English	6.15
Roquefort	5.10 - 5.98
Parmesan	5.20 - 5.30
Snippy	5.18 - 5.21
Stilton	5.70
Swiss Gruyere	5.68 - 6.62

pH55 PRO/pH56 PRO

Compact, pocketable, waterproof pH/Temperature testers with replaceable electrode

Water-resistant 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 60.0°C or 23.0 to 140.0°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 fast and more precise temperature measurement they compensate automatically for temperature. Calibration is made automatically in 1 or 2 points with memorized standard and NIST buffer sets. Auto power OFF saves battery power after non-use.

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

Specifications		 pH55 PRO	 pH56 PRO
Range	pH	-2.00 to 16.00 pH	-2.00 to 16.00 pH
	Temp.	-5.0 to 60.0°C / 23.0 to 140.0°F	-5.0 to 60.0°C / 23.0 to 140.0°F
Resolution	pH	0.1 pH	0.01 pH
	Temp.	0.1°C / 0.1°F	0.1°C / 0.1°F
Accuracy (@25°C)	pH	±0.1 pH	±0.05 pH
	Temp.	±0.5°C / ±1°F	±0.5°C / ±1°F
Typical EMC Deviation	pH	±0.1 pH	±0.02 pH
	Temp.	±0.3°C / ±0,6°F	±0.3°C / ±0,6°F
Calibration		automatic, 1 or 2 points with 2 sets of memorized buffers (pH 4.01, 7.01, 10.01 or 4.01, 6.86, 9.18)	automatic, 1 or 2 points with 2 sets of memorized buffers (pH 4.01, 7.01, 10.01 or 4.01, 6.86, 9.18)
Temperature Compensation		automatic from -5 to 60°C	automatic from -5 to 60°C
Probe		**Mi56P** (replaceable)	**Mi56P** (replaceable)
Environment		-5 to 50°C / 32 to 122°F; max RH 100%	-5 to 50°C / 32 to 122°F; max RH 100%
Battery Type		4 x 1.5V; IEC LR44, A76 (included)	4 x 1.5V; IEC LR44, A76 (included)
Battery Life		approx. 300 hours of use	approx. 300 hours of use
Auto-off		after 8 minutes of non-use	after 8 minutes of non-use
Packaging dimensions		254 x 67 x 47 mm	254 x 67 x 47 mm
Packaging weight		200 g	200 g

Accessories

Mi56P Replaceable electrode for pH55 & pH56
M10000B Electrode rinse solution, 20 mL sachet (25 pcs)
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
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
MA753 Hard carrying case for 2 testers

Ordering Information

pH55 PRO and **pH56 PRO** is supplied complete in a carton box with protective cap, 20 mL pH 4.01 and pH 7.01 sachets of calibration solution.

Optionally **pH55 PRO** is also available in a kit (**Mi5559** or **Mi5560**) together with **EC59 PRO** or **EC60 PRO** EC/TDS/Temp Meters.

pH/Temperature Sensor

The **pH55 PRO** and **pH56 PRO**'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.

pH58 MAX

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

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

Combination water-resistant testers with advanced functions also include the model **pH58 MAX** for simultaneous pH and ORP measurements and temperature, which is continuously displayed on the dual level LCD. It shows readings in an extended range from -2.00 to 16.00 pH or ±1000 mV and simultaneously shows temperature from -5.0 to 105.0°C or 23 to 221°F.
The **pH58 MAX** has a stability indicator and hold feature that freezes the display for easy and accurate recording. The large display also has graphic symbols to guide you through all operations.
Calibration is performed automatically at 1 or 2 points using standard or NIST buffers.
The modular design allows easy electrode and battery replacement.

Specifications		pH58 MAX
Range	pH	-2.00 to 16.00 pH
	ORP	±1000 mV
	Temp.	-5.0 to 60.0°C / 23.0 to 140.0°F
Resolution	pH	0.01 pH
	ORP	1 mV
	Temp.	0.1°C / 0.1°F
Accuracy (@25°C)	pH	±0.05 pH
	ORP	±2 mV
	Temp.	±0.5°C / 1°F
Typical EMC Deviation	pH	±0.02 pH
	ORP	±2 mV
	Temp.	±0.3°C / ±0.6°F
pH Calibration		automatic for pH, 1 or 2 points from -5 to 60°C with 2 sets of memorized buffers (pH 4.01, 7.01, 10.01 or 4.01, 6,86, 9.18)
ORP Calibration		factory calibrated
Probe		**Mi58P** (replaceable)
Environment		-5 to 50°C; max RH 100%
Battery Type		4 x 1.5V; IEC LR44, A76
Battery Life		approx. 250 hours of use
Auto-off		after 8 minutes of non-use
Packaging dimensions		254 x 67 x 47 mm
Packaging weight		200 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.

Calibration, Maintenance & Cleaning Solutions

Choose from our wide selection of calibration, maintenance and cleaning solutions at page 59.

Accessories

Mi58P	Replaceable electrode for pH58
M10000B	Electrode rinse solution, 20 mL sachet (25 pcs)
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
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
MA753	Hard carrying case for 2 testers

Ordering Information

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

pH51/pH54

Pocket-size Waterproof pH Meters with replaceable electrode and manual calibration

Years warranty 2
IP65
Points 2
Self diagnostics
CE
Electrode Replaceable

Waterproof budget pH testers. Their waterproof casing 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 prolongs the battery life up to 1500 hours.

Specifications	 pH51	 pH54
Range	0.0 to 14.0 pH	0.00 to 14.00 pH
Resolution	0.1 pH	0.01 pH
Accuracy (@25°C)	±0.1 pH	±0.1 pH
Typical EMC Deviation	±0.1 pH	±0.1 pH
Calibration	manual at 2 points through trimmers	manual at 2 points through trimmers
pH electrode	**MA73600** (replaceable)	**MA73600** (replaceable)
Environment	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
Battery Life	more than 1500 hours of continuous use	more than 1500 hours of continuous use
Packaging dimensions	254 x 67 x 47 mm	254 x 67 x 47 mm
Packaging weight	186 g	186 g

Accessories

MA73600 Replaceable electrode for pH51 and pH54
M10000B Electrode rinse solution, 20 mL sachet (25 pcs)
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
MA753 Hard carrying case for 2 testers

Ordering Information

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

Packaging Information

Optionally **pH51** is also available in a kit (**Mi5165, Mi5166, Mi5175, Mi5176**) together with **C65**, **C66, T75** or **T76**.

Ordering Information

pH600 is supplied in a plastic hard carrying case, complete with protective cap, calibration screwdriver, batteries and instructions.

pH600

pH Economical Pocket Tester

Milwaukee's budget pH tester with 1 point calibration is an easy-to-use instrument for applications such as aquarium, swimming pool and hydroponics.

Specifications	pH600
Range	0.0 to 14.0 pH
Resolution	0.1 pH
Accuracy	±0.1 pH
Calibration	manual, 1 point
Environment	0 to 50°C / 32 to 122°F; max RH 95%
Battery Type / Battery Life	3 x 1.5V alkaline / 700 hours of use
Packaging dimensions	180 x 65 x 32 mm
Packaging weight	120 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)
MA9015 Electrode storage solution, 230 mL
MA9016 Electrode cleaning solution, 230 mL

MC110 PRO/MC120 PRO
pH Monitors

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

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

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

Specifications	 MC110 PRO	 MC120 PRO
Range	0.0 to 14.0 pH	0.0 to 14.0 pH
Resolution	0.1 pH	0.1 pH
Accuracy (@25°C)	±0.2 pH	±0.2 pH
Calibration	manual, 2 points through trimmers on the meter front panel	manual, 2 points through trimmers on the meter front panel
Set point	3.5 to 7.5 pH	5.5 to 9.5 pH
Alarm	active when measurement is higher or lower than selected set point	active when measurement is higher or lower than selected set point
pH Electrode	**MA911B/2** (included)	**MA911B/2** (included)
Environment	0 to 50°C / 32 to 122°F; max RH 95%	0 to 50°C / 32 to 122°F; max RH 95%
Power supply	12 VDC power adapter (included)	12 VDC adapter
Packaging dimensions	268 x 122 x 118 mm	268 x 122 x 118 mm
Packaging weight	820 g	820 g

Accessories

M10000B Electrode rinse solution, 20 mL sachet (25 pcs)
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)
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)
MA9310 12 VDC Adapter, 220 V
MA9311 12 VDC Adapter, 110 V
MA911B/2 Double junction, gel filled pH electrode with 2 m cable

User selectable Hi/Low Set Point

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

Ordering Information

MC110 PRO is supplied complete with MA9310 12VDC adapter, MA911B/2 pH electrode, 20 mL pH 7.01 sachet of calibration solution, calibration screwdriver and instructions, in a carton box.

MC120 PRO is supplied complete with MA9310 12VDC adapter, MA911B/2 pH electrode, 20 mL pH 7.01 sachet of calibration solution, calibration screwdriver and instructions, in a carton box.

MC122 PRO/MC510 PRO/MC125 PRO

pH & ORP Controllers

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

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

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

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

MA955 Solenoid valve for CO_2 dosing

Key features include:

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

Specifications	 MC122 PRO	 MC510 PRO	 MC125 PRO
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)	0.1 pH; 1 mV (ORP)
Accuracy (@25°C)	±0.2 pH	±5 mV (ORP)	±0.2 pH; ±5 mV (ORP)
Set point pH	5.5 to 9.5 pH		4 to 8 pH
Set point ORP		0 to 600 mV	-200 to 600 mV
Alarm	active when measurement is higher or lower than selected set point	active when measurement is higher or lower than selected set point	active when measurement is higher or lower than selected set points
Output power socket	relay, 230V / 117V; 8A	relay, 230V / 117V; 8A	relay, 230V / 117V; 8A
Output	active when measurement is higher or lower than selected set point	active when measurement is higher or lower than selected set point	active when measurement is higher or lower than selected set points
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
Packaging dimensions	276 x 129 x 138 mm	276 x 129 x 138 mm	276 x 129 x 138 mm
Packaging weight	1.1 kg	0.9 kg	1.4 kg

Accessories

M10000B Electrode rinse solution 20 mL sachet (25 pcs)
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 20 mL sachet (25 pcs)
MA9310 12 VDC Adapter, 220 V
MA9311 12 VDC Adapter, 110 V
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 PRO is supplied complete with MA9310 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, in a carton box.

MC510 PRO is supplied complete with MA9310 12 VDC adapter, MA921B/2 ORP electrode and instructions, in a carton box.

MC125 PRO is supplied complete with MA9310 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, in a carton box.

Control the pH of your tank/reservoir AUTOMATICALLY!

The **MC122 PRO** pH controller and dosing pump (**MP810/MP815**) provides fully automated pH control of aqueous solutions in hydroponic systems. It has been specifically designed to control the pH in mixing tanks for fertirrigation.
The small and precise flow of the peristaltic pump allows you to maintain ideal pH values in your tank.

After selecting the desired pH setting from 5.5 to 9.5 pH, the pH controller measures the pH value of the solution and automatically adds pH adjustment (acid or alkaline) to change the liquid's pH to the selected level.

The **MP815** pump is with adjustable flow rate and dosing can be reduced by using a timer to turn the pump on and off at regular intervals.

Specifications	MP810	MP810 US
Max. Flow	1.5 L/h	0.6 L/h
Max. Pressure	2 bar	1.5 bar
Squeeze tubing	Santoprene	Santoprene
Ext. Tube connection	6 mm	6 mm
Power supply	240 VAC, 50-60 Hz	110 VAC, 60 Hz
Power consumption	7.7 W	0.42 W
Packaging dimensions	138 x 165 x 123 mm	138 x 165 x 123 mm
Packaging weight	820 g	620 g

Specifications	MP815	MP815 US
Adjustable Flow	0.0 to 2.2 L/h	0.0 to 2.2 L/h
Max. Pressure	2 bar	1.5 bar
Squeeze tubing	Santoprene	Santoprene
Ext. Tube connection	6 mm	6 mm
Power supply	240 VAC, 50-60 Hz	110 VAC, 60 Hz
Power consumption	7.7 W	0.42 W
Packaging dimensions	138 x 165 x 123 mm	138 x 165 x 123 mm
Packaging weight	820 g	620 g

MC122 PRO pH Controller

Ordering Information

MP810 and **MP815** are supplied complete with mounting bracket, screws, 1.5 meter Ext. PE tubing, Filter, Fitting, 2,6 meter Power cable.

MC122 PRO is supplied complete with MA9310 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.

You can also order **MC122 PRO** with **MP810** in a kit (**MC720**).

MC720 kit, including MC122 pH Controller and MP810 Dosing Pump

Accessories

M10000B Electrode rinse solution 20 mL sachet (25 pcs)
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 20 mL sachet (25 pcs)
MA9310 12 VDC Adapter, 220 V
MA9311 12 VDC Adapter, 110 V
MA911B/2 Double junction, gel filled pH electrode with 1 m cable

MW170 MAX

Autoranging EC/TDS/NaCl/Temperature Laboratory Bench Meter

MW170 MAX is a compact and versatile bench meter that can measure up to four different parameters: EC, TDS, salinity (in PSU, g/L, percentage NaCl) and temperature.The main operating modes are setup, calibration, measurement and logging.

Features include:

- Easy to read LCD display
- Auto-off feature to prolong battery life
- All measurements can be temperature compensated automatically (ATC), or manually (MTC) with a user-selectable compensation coefficient. Temperature compensation can be disabled (NO TC) if the actual conductivity value is required.
- The auto-ranging feature for both EC and TDS measurements automatically sets the most suitable resolution for the tested sample.
- Available log space for up to 1000 records Logged data can be exported using a USB cable
- Dedicated GLP key to store and recall data on system status
- Built-in rechargeable battery with 8 hours battery life

Years warranty 2 · LOG · USB · ATC · MTC · Dual Display · Self diagnostics · GLP · CE

Specifications	MW170 MAX
Range EC	0.00 to 29.99 µS/cm; 30.0 to 299.9 µS/cm; 300 to 2999 µS/cm; 3.00 to 29.99 mS/cm; 30.0 to 200.0 mS/cm; up to 500.0 mS/cm absolute conductivity*
TDS	0.00 to 14.99 mg/L (ppm); 15.0 to 149.9 mg/L (ppm); 150 to 1499 mg/L (ppm); 1.5 to 14.99 g/L (ppt); 15.0 to 100.0 g/L (ppt); up to 400.0 g/L absolute TDS* (with 0.80 factor)
Salinity	0.0 to 400.0 % NaCl; 2.00 to 42.00 PSU; 0.00 to 80.00 g/L
Temp	-20.0 to 120.0°C / -4.0 to 248.0°F
Resolution EC	0.01 µS/cm; 0.1 µS/cm; 1.0 µS/cm; 0.01 mS/cm; 0.1 mS/cm
TDS	0.01 mg/L; 0.1 mg/L; 1.0 mg/L; 0.01 g/L; 0.1 g/L
Salinity	0.1% NaCl; 0.01 PSU; 0.01 g/L
Temp	0.1°C / 0.1°F
Accuracy EC (@ 25 °C / 77 °F)	±1% of reading (±0.05 µS/cm or 1 digit, whichever is greater)
TDS	±1% of reading (±0.03 ppm or 1 digit, whichever is greater)
Salinity	±1% of reading
Temp	±0.5 ºC; ±0.9 ºF
Calibration EC/TDS	Single cell factor calibration 6 standards: 84 µS/cm, 1413 µS/cm, 5.00 mS/cm, 12.88 mS/cm, 80.0 mS/cm, 111.8 mS/cm one-point offset: 0.00 µS/cm
Salinity	one-point with MA9066 Salinity calibration solution
Temp	2 points, 0 to 50°C / 32 to 122°F
Temp. Compensation	ATC – automatic, from -5 to 100 ºC (23 to 212 ºF) MTC – manual, from -5 to 100 ºC (23 to 212 ºF) No TC – without temperature compensation
Temp. Coefficient	0.00 to 6.00 % / ºC (EC & TDS only) Default value: 1.90 % / ºC
Probe	**MA814DB/1** 4-ring probe with built-in temperature sensor (included)
TDS Factor	0.40 to 0.80 Default value: 0.50
Log	Maximum 1000 records; On demand, max. 200 samples; On stability, max.200 samples Interval logging, max. 1000 samples (max. 100 lots)
PC connectivity	1 micro USB port
Environment	0 to 50 °C; max RH 95%
Power supply	12 VDC adapter (included)
Battery life	8 hours
Packaging dimensions	335 x 120 x 255 mm
Packaging weight	2.16 kg

(*) Absolute conductivity (or TDS) is the conductivity 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 a micro USB port.

Accessories

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

Ordering Information

MW170 MAX is supplied complete with

- **MA814DB/1** EC/TDS/NaCl/Temperature Probe
- **MA9315** Electrode Holder
- **MA9310** 12 VDC Adapter
- Instruction manual

Years warranty 2

LOG

USB

ATC

MTC

Self diagnostics

CE

IP67

GLP

MW306 MAX

Automatic & Logging EC/TDS/NaCl/Temperature Meter

MW306 MAX is a waterproof and portable meter with a user-friendly interface. Designed to measure four different parameters – EC, TDS, percentage of salinity in psu (NaCl%) and temperature – the meter is suitable for multiple applications.

- IP67 waterproof casing
- Data logging: 1000 logs can be stored in the built-in memory including readings, GLP data, date and time
- Different logging methods: manual log-on-demand (max. 200 logs); manual log-on-stability (max. 200 logs) and interval log (max. 600 samples; 100 lots)
- auto-ranging feature for both EC and TDS measurements automatically sets the most suitable resolution for the tested sample.
- GLP data review and the data can be transfered to a PC through a USB port.

Hard Carrying Case

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

Specifications		MW306 MAX
Range	EC	0.00 to 29.99 µS/cm; 30.0 to 299.9 µS/cm; 300 to 2999 µS/cm; 3.00 to 29.99 mS/cm; 30.0 to 200.0 mS/cm; up to 500.0 mS/cm absolute EC*
	TDS	0.00 to 14.99 mg/L; 15.0 to 149.9 mg/L; 150 to 1499 mg/L; 1.50 to 14.99 g/L; 15.0 to 100.0 g/L; up to 400.0 g/L absolute (*) TDS (with 0.80 factor)
	Salinity	0.0 to 400.0 % NaCl 2.00 to 42.00 PSU 0.00 to 80.00 g/L
	Temp	-20.0 to 120.0 ºC ; -4.0 to 248.0 °F
Resolution	EC	0.01 µS/cm; 0.1 µS/cm; 1 µS/cm; 0.01 mS/cm; 0.1 mS/cm
	TDS	0.01 mg/L; 0.1 mg/L; 1 mg/L; 0.01 g/L; 0.1 g/L
	Salinity	0.1% NaCl; 0.01 PSU; 0.01 g/L
	Temp	0.1 ºC; 0.1 ºF
Accuracy (@ 25 °C /77 °F)	EC	±1% of reading (±0.05 µS/cm or 1 digit, whichever is greater)
	TDS	±1% of reading (±0.03 ppm or 1 digit, whichever is greater)
	Salinity	±1% of reading
	Temp	±0.5 ºC; ±0.9 ºF
Calibration	EC/TDS	Single cell factor calibration 6 standards: 84 µS/cm, 1413 µS/cm, 5.00 mS/cm, 12.88 mS/cm, 80.0 mS/cm, 111.8 mS/cm one-point offset: 0.00 µS/cm
	Salinity	one-point with MA9066 Salinity calibration solution
Temperature Compensation		ATC – automatic, from -5 to 100 ºC (23 to 212 ºF) MTC – manual, from -20 to 120 ºC (23 to 212 ºF) NO TC – without temperature compensation
Temperature Coefficient		0.00 to 6.00 % / ºC (EC & TDS only) Default value: 1.90 % / ºC
TDS Factor		0.40 to 0.80 Default value: 0.50
EC Probe		**MA815D/1**
Log		Max. 1000 log records (stored in up to 100 lots) On demand, 200 logs / On stability, 200 logs / Interval logging, 1000 logs
PC connectivity		1 micro USB port
Power supply		12 VDC adapter (included)
Battery life		Approx. 200 hours of use
Auto-off		5, 10, 30, 60 minutes or off
Environment		0 to 50 °C; max RH 95%
Casing		IP67
Packaging dimensions		305 x 280 x 115 mm
Packaging weight		1.22 kg

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

Accessories

MA815D/1 4-ring EC/TDS/NaCl/Temperature probe with DIN connector and 1 meter cable
M10030B 12880 µS/cm calibration solution, 20 mL sachet, 25 pcs.
M10031B 1413 µS/cm calibration solution, 20 mL sachet, 25 pcs.
M10035B 111.8 mS/cm calibration solution, 20 mL sachet, 25 pcs.
MA9060 12880 µS/cm calibration solution, 230 mL bottle
MA9061 1413 µS/cm calibration solution, 230 mL bottle
MA9063 84 µS/cm calibration solution, 230 mL bottle
MA9065 111.8 mS/cm calibration solution, 230 mL bottle
MA9066 100% NaCl calibration solution, 230 mL bottle
MA9069 5000 µS/cm solution, 230 mL bottle

Ordering Information

MW306 MAX is supplied in a hard carrying case complete with
- **MA815D/1** 4-ring EC/TDS/NaCl/Temperature probe with DIN connector and 1 meter cable
- 12 VDC adapter
- Micro USB cable
- Instrument quality certificate
- Instruction manual

MW301 PRO/MW302 PRO/MW401 PRO/MW402 PRO

Budget Conductivity & TDS

Portable Meters for fast and reliable results

MW301 PRO, MW302 PRO, MW401 PRO and **MW402 PRO** are compact microprocessor-based Conductivity and TDS Portable Meters. 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 small and ergonomic case design. Other features include large and easy to read LCD 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 PRO**: 0 to 1999 µS/cm with a 1 µS/cm resolution;
- **MW302 PRO**: 0.0 to 10.0 mS/cm with a 0.1 mS/cm resolution;
- **MW401 PRO**: 0 to 1999 mg/L (ppm) with a 1 mg/L resolution;
- **MW402 PRO**: 0.0 to 10.0 g/L (ppt) with a 0.1 g/L resolution.

Specifications	MW301 PRO	MW302 PRO	MW401 PRO	MW402 PRO
Range	0 to 1999 µS/cm	0.0 to 10.0 mS/cm	0 to 1999 mg/L (ppm)	0.0 to 10.0 g/L (ppt)
Resolution	1 µS/cm	0.1 mS/cm	1 mg/L (ppm)	0.1 g/L (ppt)
Accuracy (@25°C)	±2% Full Scale	±2 Full Scale	±2% Full Scale	±2 Full Scale
Conversion factor			0.5	0.5
Calibration Solutions (included)	1413 µS/cm (M10031B)	1413 µS/cm (M10031B)	1382 mg/L (M10032B)	6.44 g/L (M10038B)
Conductivity probe	**SE510** (included)	**SE520** (included)	**SE510** (included)	**SE520** (included)
Temperature Compensation	automatic, from 5 to 50°C	automatic, from 5 to 50°C	automatic, from 5 to 50°C	automatic, from 5 to 50°C
Environment	0 to 50°C, max RH 95%	0 to 50°C, max RH 95%	0 to 50°C, max RH 95%	0 to 50°C, max RH 95%
Battery Type	1 x 9V alkaline (included)	1 x 9V alkaline (included)	1 x 9V alkaline (included)	1 x 9V alkaline (included)
Battery Life	approx. 300 hours of use	approx. 300 hours of use	approx. 300 hours of use	approx. 300 hours of use
Packaging dimensions	212 x 145 x 67 mm	212 x 145 x 67 mm	212 x 145 x 67 mm	212 x 145 x 67 mm
Packaging weight	440 g	440 g	440 g	440 g

Accessories

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

Ordering Information

MW301 PRO is supplied complete with SE510 EC probe, 20 mL 1413 µS/cm sachet of calibration solution, screwdriver for calibration, 9V battery and instructions.

MW302 PRO is supplied complete with SE520 EC probe, 20 mL 1413 µS/cm sachet of calibration solution, screwdriver for calibration, 9V battery and instructions.

MW401 PRO is supplied complete with SE510 EC probe, 20 mL 1382 ppm sachet of calibration solution, screwdriver for calibration, 9V battery and instructions.

MW402 PRO is supplied complete with SE520 EC probe, 20 mL 6.44 ppt sachet of calibration solution, screwdriver for calibration, 9V battery and instructions.

Packaging Information

MW301 PRO, MW302 PRO, MW401 PRO, MW402 PRO are supplied in a carton color box. Optionally they can be ordered in a hard carrying case (**Mi0028**).

EC59 PRO/EC60 PRO
Pocket-size EC/TDS/Temp Meters

Water-resistant pocket-size EC/TDS/Temp meters include features such as replaceable probe, temperature in °C or °F, automatic temperature compensation with adjustable β, battery level indicator, stability indicator, automatic shut-off and automatic calibration all in a floating, water-resistant casing.

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

EC60 PRO 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		 EC59 PRO	 EC60 PRO
Range	**EC**	3999 µS/cm	20.00 mS/cm
	TDS	2000 ppm	10.00 ppt
	Temp	0.0 to 60.0°C / 32.0 to 140.0°F	0.0 to 60.0°C / / 32.0 to 140.0°F
Resolution	**EC**	1 µS/cm	0.01 mS/cm
	TDS	1 ppm	0.01 ppt
	Temp	0.1°C / 0.1°F	0.1°C / 0.1°F
Accuracy (@20°C)	**EC**	±2% Full Scale	±2% Full Scale
	TDS	±2% Full Scale	±2% Full Scale
	Temp	±0.5°C / ±1°F	±0.5°C / ±1°F
Typical EMC Deviation	**EC**	±2% Full Scale	±2% Full Scale
	TDS	±2% Full Scale	±2% Full Scale
	Temp	±0.5°C / ±1°F	±0.5°C / ±1°F
Calibration		automatic, 1 point with 1413 µS/cm calibration solution	automatic, 1 point with 12880 µS/cm calibration solution
Temperature Compensation		automatic, with β=0.0 to 2.4%/°C	automatic, with β=0.0 to 2.4%/°C
Probe		**Mi59P** (replaceable)	**Mi59P** (replaceable)
Environment		0 to 50°C / 32 to 122°F; max RH 100%	0 to 50°C / 32 to 122°F; max RH 100%
Battery Type		4 x 1.5V; IEC LR44, A76 (included)	4 x 1.5V; IEC LR44, A76 (included)
Battery Life		approx. 100 hours of use	approx. 100 hours of use
Auto-off		after 8 minutes of non-use	after 8 minutes of non-use
Packaging dimensions		254 x 67 x 47 mm	254 x 67 x 47 mm
Packaging weight		180 g	180 g

Accessories

Mi59P Replaceable probe for EC59 & EC60
M10000B Rinse solution, 20 mL sachet, 25 pcs
M10030B 12880 µS/cm calibration solution, 20 mL sachet, 25 pcs
M10031B 1413 µS/cm calibration solution, 20 mL sachet, 25 pcs
M10032B 1382 ppm (mg/L) calibration solution, 20 mL sachet, (25 pcs)

M10038B 6.44 ppt (g/L) calibration solution, 20 mL sachet, (25 pcs)
MA9060 12880 µS/cm calibration solution, 230 mL bottle
MA9061 1413 µS/cm calibration solution, 230 mL bottle
MA9016 Cleaning solution, 230 mL bottle
MA753 Hard carrying case for 2 testers

Ordering Information

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

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

Optionally **EC59 PRO** and **EC60 PRO** is also availablbe in a kit (**Mi5559** or **Mi5560**) together with **pH55 PRO** pH/Temp Meter.

Replaceable probe

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

C65/C66/T75/T76

Pocket-size Waterproof Conductivity & TDS testers with replaceable probe and manual calibration

Waterproof testers designed for all applications. Their 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.

Years warranty 2 · ATC · IP65 · Self diagnostics · CE · Electrode Replaceable

Specifications	 C65	 C66	 T75	 T76
Range	0 to 1999 µS/cm	0.00 to 10.00 mS/cm	0 to 1999 ppm (mg/L)	0 to 9990 ppm (mg/L)
Resolution	1 µS/cm	0.01 mS/cm	1 ppm (mg/L)	10 ppm (mg/L)
Accuracy	±2% Full Scale	±2% Full Scale	±2% Full Scale	±2% Full Scale
Typical EMC Deviation	±2% Full Scale	±2% Full Scale	±2% Full Scale	±2% Full Scale
Temp. Compensation	automatic, with β=2%/°C	automatic, with β=2%/°C	automatic, with β=2%/°C	automatic, with β=2%/°C
TDS Factor			0.5	0.5
Calibration	manual at 1 point	manual at 1 point	manual at 1 point	manual at 1 point
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 use	approx. 250 hours of use	approx. 250 hours of use	approx. 250 hours of use
Packaging dimensions	254 x 67 x 47 mm	254 x 67 x 47 mm	254 x 67 x 47 mm	254 x 67 x 47 mm
Packaging weight	157 g	156 g	157 g	156 g

Accessories

MA73075 Replaceable conductivity probe, LR
MA73076 Replaceable conductivity probe, HR
M10000B Electrode rinse solution, 20 mL sachet (25 pcs)
M10030B 12880 µS/cm calibration solution, 20 mL sachet, 25 pcs
M10031B 1413 µS/cm calibration solution, 20 mL sachet, 25 pcs
M10032B 1382 ppm (mg/L) calibration solution, 20 mL sachet, (25 pcs)
M10038B 6.44 ppt (g/L) calibration solution, 20 mL sachet, (25 pcs)
M10080B 800 ppm calibration solution, 20 mL sachet (25 pcs)
MA753 Hard carrying case for 2 testers

Ordering Information

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

Optionally **C65**, **C66, T75** and **T76** is also availablbe in a kit (**Mi5165, Mi5166, Mi5175, Mi5176**) together with **pH51** pH Meter.

CD600/CD601/CD610/CD611/CD97

EC & TDS Economical Pocket Testers

Milwaukee's economical testers are easy-to-use and low cost instruments to measure quick and reliable EC or TDS values.
Milwaukee provides you with a range of pocket testers that will allow you to measure from very low to very high conductivity solutions.
All EC/TDS testers compensate for the temperature variance automatically.

Specifications	 CD600	 CD601	 CD610	 CD611	 CD97
Range	0 to 1990 ppm	0 to 1990 µS/cm	0 to 10000 ppm	0 to 20000 µS/cm	0 to 1000 ppm
Resolution	10 ppm	10 µS/cm	100 ppm	100 µS/cm	1 ppm
Accuracy	±2% Full scale	±2% Full scale	±2% Full scale	±2% Full scale	±10 ppm
Calibration	manual, 1 point	manual, 1 point	manual, 1 point	manual, 1 point	manual, 1 point
Temp. Comp.	automatic from 5 to 50°C	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%	0 to 50°C; max RH 95%
Battery Type	4 x 1.5V alkaline	4 x 1.5V alkaline	4 x 1.5V alkaline	4 x 1.5V alkaline	4 x 1.5V alkaline
Battery Life	350 hours of use	350 hours of use	350 hours of use	350 hours of use	350 hours of use
Packaging dim.	180 x 65 x 32 mm	180 x 65 x 32 mm	180 x 65 x 32 mm	180 x 65 x 32 mm	180 x 65 x 32 mm
Packaging weight	120 g	120 g	120 g	120 g	120 g

Accessories

M10030B 12880 µS/cm calibration solution, 20 mL (25 pcs)
M10031B 1413 µS/cm calibration solution, 20 mL (25 pcs)
M10032B 1382 ppm (mg/L) calibration solution, 20 mL (25 pcs)
M10038B 6.44 ppt (g/L) calibration solution, 20 mL (25 pcs)
MA9015 Electrode storage solution, 230 mL
MA9016 Electrode cleaning solution, 230 mL

Ordering Information

CD600, CD601, CD610, CD611 and **CD97** are supplied in a plastic hard carrying case, complete with protective cap, calibration screwdriver, batteries and instructions.

MC310 PRO/MC410 PRO
Conductivity/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 above/below (selectable by the user) the set point.

The monitors are very simple to operate:

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

User selectable Hi/Low Set Point

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

Specifications	 MC310 PRO	 MC410 PRO
Range	0.0 to 10.0 mS/cm	0 to 1990 ppm
Resolution	0.1 mS/cm	10 ppm
Accuracy (@25°C)	±2% Full Scale	±2% Full Scale
Conversion factor		0.7
Set point	1 to 5 mS/cm	100 to 1900 ppm
Alarm	active when the measurement is higher or lower than the set point	active when the measurement is higher or 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%
Probe	**MA812/2** (included)	**MA812/2** (included)
Power supply	12 VDC power adapter (included)	12 VDC power adapter (included)
Packaging dimensions	268 x 122 x 118 mm	268 x 122 x 118 mm
Packaging weight	820 g	820 g

Accessories

M10000B Electrode rinse solution, 20 mL sachet (25 pcs)
M10031B 1413 µS/cm calibration solution, 20 mL sachet (25 pcs)
M10032B 1382 ppm calibration solution, 20 mL sachet (25 pcs)
MA9061 1413 µS/cm calibration solution, 230 mL bottle
MA9062 1382 ppm TDS solution, 230 mL bottle
MA9310 12 VDC Adapter, 220 V
MA9311 12 VDC Adapter, 110 V
MA812/2 Conductivity probe with 2 m cable

Ordering Information

MC310 PRO is supplied complete with MA9310 12VDC adapter, MA812/2 EC probe, 20 mL 5.00 mS/cm sachet of calibration solution, screwdriver for calibration and instruction, in a carton box.

MC410 PRO is supplied complete with MA9310 12VDC adapter, MA812/2 TDS probe, 20 mL 1500 ppm sachet of calibration solution, screwdriver for calibration and instruction, in a carton box.

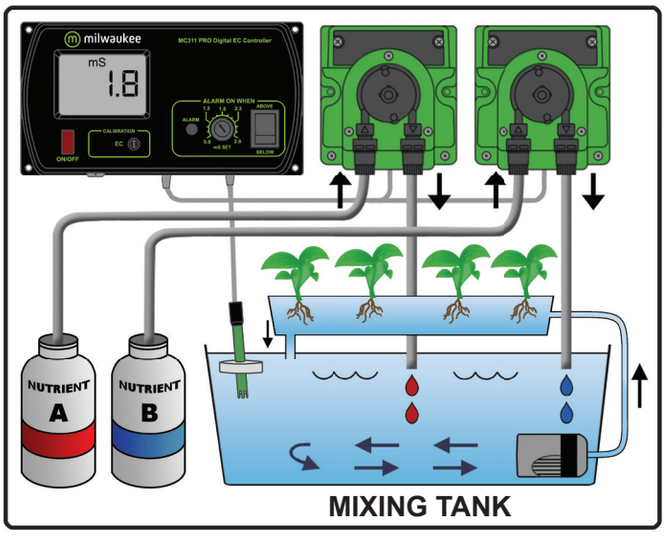
MC311 PRO
Conductivity Controller

MC740 & MC745 control the EC & nutrient dosage in your tank AUTOMATICALLY!

The **MC311 PRO** EC controller and dosing pump (**MP810**) provides fully automated EC control of aqueous solutions in hydroponic systems.
The **MC740** kit contains the **MC311 PRO** controller with one **MP810** dosing pump, the **MC745** kit contains the **MC311 PRO** controller with two **MP810** dosing pumps!

Accessories:

MA812/2 EC probe with 2 meter cable



Specifications	MC311 PRO
Range	0.0 to 10.0 mS/cm
Resolution	0.1 mS/cm
Accuracy (@25°C)	±2% Full scale
Set point	0.8 to 2.8 mS/cm
Alarm	active when measurement is higher or lower than the selected set point
Temp. compensation	automatic
Output	active when measurement is higher or lower than the selected set point
Power supply	12 VDC adapter
Packaging dimensions	278 x 132 x 138 mm
Packaging weight	1.1 kg

EC40 EC Waterproof Nutrient Stick

- Readings are displayed with 20 LEDs graph bar
- Range 0.2 to 4 mS/cm
- The alarm feature is user settable and is displayed on the LED bar
- No calibration required
- Auto-ON/OFF function
- The auto-check feature indicates the battery level
- Waterproof and floating design makes the stick an appropriate tool for stirring nutrient solutions in a bucket/tank

Graphite EC probe with ATC

Specifications	EC40
Range	0.2 to 4 mS/cm 2 to 40 CF 140 to 2800 ppm (0.7) 100 to 2000 ppm (0.5)
Resolution	0.1 mS/cm 1 CF 70 ppm 50 ppm
Accuracy	± 4% of reading ± 1 resolution point
Probe	Graphite probe in ABC+PC body
Temp. compensation	automatic
Battery Type	3 x 1.5V AA alkaline
Battery Life	approx. 3 years
Packaging dimensions	444 x dia 56 mm
Packaging weight	415 g

Years warranty 2
LOG
USB
ATC
GLP
Points 2
Dual Display
Self diagnostics
CE

MW190 MAX
Dissolved Oxgen/Temperature Bench Meter

MW190 MAX is a compact and versatile bench meter designed for testing dissolved oxygen in the pharmaceutical and food industry, as well as monitoring in water treatment plants. Concentration measurements are automatically compensated for temperature and salinity. Salinity and altitude can be configured in Setup.Temperature is automatically measured (in both degree Celsius and Fahrenheit) and compensated.

Other features include:

- Easy to read LCD display
- Built-in rechargeable battery with an 8-hour capacity
- Auto-off feature to prolong battery life
- Battery charger with battery monitor
- Internal clock and date to keep track of different time-dependent functions (calibration timestamp, calibration time out)
- Data logging: 1000 logs can be stored in the built-in memory including readings, GLP data, date and time
- Different logging methods: manual log-on-demand (max. 200 logs); manual log-on-stability (max. 200 logs) and interval log (max. 600 samples; 100 lots)
- Logged data can be exported using a USB cable or directly on a USB flash drive
- Dedicated GLP key to store and recall data on system status

For accurate measurements, use the electrode holder supplied with the bench meter.

Specifications	MW190 MAX
Range O_2	0.00 to 45.00 mg/L (ppm)
Range % Saturation O_2	0.0 to 300.0%
Range Temp	-20.0 to 120.0°C / -4.0 to 248.0°F
Resolution O_2	0.01 mg/L (ppm)
Resolution % Saturation O_2	0.1%
Resolution Temp	0.1°C (0.1°F)
Accuracy O_2	±1.5% of reading ±1 digit
Accuracy % Saturation O_2	±1.5% of reading ±1 digit
Accuracy Temp	±0.4°C (±0.8°F)
Calibration	One or two points 0% (MA9070) and 100% (water saturated air)
Temperature Compensation	automatic, from 0.0 to 50.0°C / 32.0 to 122.0°F
Altitude Compensation	-500 to 4000 m (with 100 m resolution)
Salinity Compensation	0 to 40 g/L (with 1 g/L resolution)
Probe	**MA845** (included)
Logging memory	Max. 1000 log records (stored in up to 100 lots) On demand, 200 logs, On stability, 200 logs Interval logging, 1000 logs
PC connectivity	1 USB type A port, 1 micro USB port
Environment	0 to 50°C / 32 to 122°F; max RH 95%
Power supply	12 VDC adapter (included)
Battery Life	8 hours
Packaging dimensions	335 x 120 x 255 mm
Packaging weight	2.2 kg

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
MA841 Spare membrane (5 pcs)
MA845 DO/Temp probe
MA9315 Electrode holder

Ordering Information

MW190 MAX is supplied complete with:
- **MA845** DO/Temp Polarographic probe
- **MA841** Spare membrane (2 pcs)
- **MA9071** Electrolyte solution
- **MA9315** Electrode holder
- 12 VDC Adapter
- USB cable
- Instruction manual

MW605 MAX

Dissolved Oxgen/Temperature Portable Meter

MW605 MAX is a portable, IP67 rated meter designed for fresh and saltwater measurements of dissolved oxygen (DO).
The MW605 meter is compatible with MA860 galvanic DO probe. Galvanic probes require no conditioning and thus the instrument is ready to measure when it is powered on.

Concentration measurements are automatically compensated for temperature and salinity. Temperature is automatically measured (in both degree Celsius and Fahrenheit) and compensated. Salinity and altitude can be configured in Setup.

Other features include:

- IP67 waterproof casing
- Auto-off feature to prolong battery life
- One or two % saturation calibration points at 100% (water saturated air) and 0% (zero oxygen solution)
- Dedicated GLP key to store and recall data on system status
- Available log space for up to 1000 records
- Logged data can be exported using a USB cable

Specifications	MW605 MAX
Range O_2	0.00 to 45.00 mg/L (ppm)
Range % Saturation O_2	0.0 to 300%
Range Temp	-20.0 to 120.0°C / -4.0 to 248.0°F
Resolution O_2	0.01 mg/L (ppm)
Resolution % Saturation O_2	0.1%
Resolution Temp	0.1°C (0.1°F)
Accuracy O_2	±1.5% of reading ±1 digit
Accuracy % Saturation O_2	±1.5% of reading ±1 digit
Accuracy Temp	±0.4°C (±0.8°F)
Calibration	One or two % saturation calibration points 0% (MA9070) and 100% (water saturated air)
Temperature Compensation	automatic, from 0.0 to 50.0°C / 32.0 to 122.0°F
Altitude Compensation	-500 to 4000 m (with 100 m resolution)
Salinity Compensation	Manual, from 0 to 40 g/L (with 1 g/L resolution)
Probe	**MA860** (included)
Logging memory	Max. 1000 log records (stored in up to 100 lots) On demand, 200 logs, On stability, 200 logs Interval logging, 1000 logs
PC connectivity	1 micro USB port
Environment	0 to 50°C / 32 to 122°F; max RH 95%
Battery Type	3 x 1.5V alkaline AA (included)
Battery Life	approx. 200 hours of use
Auto-off	after 4 hours of non-use
Packaging dimensions	305 x 280 x 115 mm
Packaging weight	1.4 kg

Accessories

MA9072S Refilling Electrolyte solution, 30 mL bottle
MA860 D.O. Probe
MA861 Spare membrane (5 pcs)

Ordering Information

MW605 MAX portable meter is delivered in a rugged carrying case and is supplied with:
MA860 Dissolved Oxygen and Temperature galvanic probe, MA861 Dissolved Oxygen membrane with o-ring (2 pcs.), MA9072S Oxygen electrolyte solution, Probe protective cap, 1.5V alkaline AA battery (3 pcs.), Micro USB cable, Instrument quality certificate and Instruction manual.

Hard Carrying Case

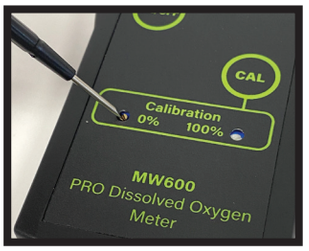
MW605 MAX is supplied complete in a hard carrying case complete with a D.O. probe, spare membranes, calibration solution, battery, micro USB cable and instructions.

MW600 PRO

Budget Dissolved Oxygen Portable Meter for fast and reliable results

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

Other features include small and ergonomic case design, large and easy to read LCD, low battery warning, easy to replace screw on cap membranes and long battery life.
MW600 PRO is supplied complete with a MA840 D.O. polarographic probe with 4 meter cable, calibration screwdriver, 2 spare membranes, MA9071 (30 mL) electrolyte solution, battery and instructions.



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

Large and easy-to-read display

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

Specifications	MW600 PRO
Range O_2	0.0 to 19.9 mg/L
Resolution O_2	0.1 mg/L
Accuracy (@25°C) O_2	±1.5% Full Scale
Calibration	manual on 2 points (zero and slope)
Temperature Compensation	automatic from 0 to 30°C
Probe	**MA840** (included)
Environment	0 to 50°C / 32 to 122°F; max RH 95%
Battery Type	9V alkaline (included)
Battery Life	approximately 70 hours of use
Packaging dimensions	268 x 122 x 118 mm
Packaging weight	880 g

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)
MA751 Hard carrying case

Ordering Information

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

MW180 MAX

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

MW180 MAX is a compact and versatile bench meter with a user-friendly interface that can measure six different parameters – pH, ORP, EC, TDS (Total Dissolved Solids), percentage of salinity (NaCl%) and temperature – when paired with the respective probe.
pH calibration can be performed in up to 5-point (selectable between 7 standard calibration buffers and two custom buffers), to improve measurement reliability even when testing samples with wide differences in pH.
The auto-ranging feature for both EC and TDS measurements automatically sets the most suitable resolution for the tested sample. All measurements can be automatically (ATC) or manually temperature compensated (MTC) with a user-selectable compensation coefficient. The temperature compensation can be disabled if the actual conductivity value is required (No TC).

MW180 MAX has GLP data review and the data can be transfered to a PC through a USB port.
A unique device identity code protects against the risks of loss and misuse.

Years warranty 2
LOG
MEM
USB
ATC
GLP
Points 2
Dual Display
MULTI
Self diagnostics
CE

Specifications		MW180 MAX
Range	pH	-2.00 to 20.00 pH; -2.000 to 20.000 pH
	ORP	±2000 mV
	EC	0.00 to 29.99 µS/cm; 30.0 to 299.9 µS/cm; 300 to 2999 µS/cm; 3.00 to 29.99 mS/cm; 30.0 to 200.0 mS/cm; up to 500.0 mS/cm (absolute cond.*)
	TDS	0.0 to 14.99 mg/L (ppm); 15.0 to 149.9 mg/L (ppm); 150 to 1499 mg/L (ppm); 1.50 to 14.99 g/L (ppt); 15.0 to 100.0 g/L (ppt); up to 400.0 g/L absolute TDS* (with 0.80 factor)
	Salinity	0.0 to 400.0% NaCl, 2.00 to 42.00 PSU, 0.00 to 80.00 g/L
	Temp	-20.0 to 120.0°C / -4.0 to 248.0°F
Resolution	pH	0.01 pH; 0.002 pH
	ORP	0.1 mV
	EC	0.01 µS/cm; 0.1 µS/cm; 1 µS/cm; 0.01 mS/cm; 0.1 mS/cm;
	TDS	0.01 mg/L; 0.1 mg/L; 1.0 mg/L; 0.01 g/L; 0.1 g/L
	Salinity	0.1% NaCl, 0.01 PSU, 0.01 g/L
	Temp	0.1°C / 0.1°F
Accuracy	pH	±0.01 pH; ±0.002 pH
	ORP	±1 mV
	EC	±1% of reading ±(0.05 µS/cm or 1 digit)
	TDS	±1% of reading ±(0.03 ppm or 1 digit)
	Salinity	±1% reading
	Temp	±0.5°C / ±0.9°F
Temperature Compensation		ATC – automatic, from -20 to 120 °C (-4 to 248 °F) MTC – manual, from -20 to 120 °C (-4 to 248 °F) NO TC – without temperature compensation
Temperature Coefficient		0.00 to 6.00%/°C (EC and TDS only)
TDS Factor		0.40 to 0.80 (default value is 0.50)
Logging memory		Two independent storage spaces. Each save location can contain max. 1000 log records (stored in up to 100 lots). On demand, 200 logs; on stability, 200 logs; interval logging, 1000 logs
pH Electrode		**MA917B/1** (included)
EC/TDS/NaCl/Temp. Probe		**MA814DB/1** (included)
Temperature probe		**MA831R**
PC connectivity		1 USB port, 1 micro USB port
Power supply		12 VDC adapter (included)
Battery type		internal
Battery life		8 hours
Environment		0 to 50°C; max RH 95%
Packaging dimensions		335 x 120 x 255 mm
Packaging weight		2.44 kg

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

Accessories

MA9004	pH 4.01 buffer, 230 mL bottle
MA9007	pH 7.01 buffer, 230 mL bottle
MA9010	pH 10.01 buffer, 230 mL bottle
MA9015	Electrode storage solution, 230 mL bottle
MA9016	Electrode cleaning solution, 230 mL bottle
MA9112	pH 12.45 buffer solution, 230 mL bottle
MA9060	12880 µS/cm calibration solution, 230 mL bottle
MA9061	1413 µS/cm calibration solution, 230 mL bottle
MA9063	84 µS/cm calibration solution, 230 mL bottle
MA9065	111.8 mS/cm calibration solution, 230 mL bottle
MA9066	100% NaCl calibration solution, 230 mL bottle
MA9069	5000 µS/cm solution, 230 mL bottle
MA9310	12 VDC Adapter, 220 V
MA9311	12 VDC Adapter, 110 V
MA9315	Electrode Holder
MA917B/1	Double junction refillable pH electrode
MA814DB/1	EC/TDS/NaCl/Temperature probe with DIN connector and 1 m cable
MA924B/1	±2000 mV Glass ORP electrode, refillable with BNC connector and 1 meter cable
SE300	Platinum ORP electrode with 1 meter cable
MA831R	Temperature probe
MA9350	RS232 connection cable with 2 meters cable

Ordering Information

MW180 MAX is supplied complete with
- **MA917B/1** pH Electrode
- **MA814DB/1** EC/TDS/NaCl/Temperature probe
- **MA831R** Temperature Probe
- **M10004** pH 4.01 Sachet Buffer solution
- **M10007** pH 7.01 Sachet Buffer solution
- **M10010** pH 10.01 Sachet Buffer solution
- **M10031** 1413 µS/cm calibration solution
- **M10016** Sachet Electrode Cleaning solution
- **MA9315** Electrode Holder
- Graduated pipette
- 12 VDC adapter
- USB cable
- Instrument quality certificate
- Instruction manual

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

MW805 MAX/MW806 MAX

Portable pH/EC/TDS/Temperature Meters

MW805 MAX and **MW806 MAX** portable meters combine the main features of a benchtop unit into a portable, water-resistant meter that can measure up to 4 different parameters — pH, EC (Conductivity), TDS (Total Dissolved Solids), and temperature.

- Easy to read LCD display
- Auto-off feature to prolong battery life
- Internal clock and date to keep track of time-dependent functions (calibration timestamp, calibration time out)
- Up to 5-point pH calibration (selection from 7 standard calibration buffers and 2 custom buffers)
- Automatically (ATC) or manually temperature compensated (MTC) measurements, with a user-selectable compensation coefficient
- Available log space for up to 1000 records
- Logged data can be exported using a micro USB cable
- Dedicated GLP key to store and recall data on system status

Specifications		MW805 MAX	MW806 MAX
Range	**pH**	-2.00. to 20.00 pH	-2.00. to 20.00 pH
	EC	0 to 4000 µS/cm	0.00 to 20.00 mS/cm
	TDS	0 to 2000 ppm (up to 3200 ppm with TDS 0.80 factor)	0.00 to 10.00 ppt (up to 16.00 ppt with TDS 0.80 factor)
	Temp.	-20.0 to 120.0°C	-20.0 to 120.0°C
Resolution	**pH**	0.01 pH	0.01 pH
	EC	1 µS/cm	0.1 mS/cm
	TDS	1 ppm	0.01 ppt
	Temp.	0.1°C	0.1°C
Accuracy (@25°C)	**pH**	±0.01 pH	±0.01 pH
	EC/TDS	±2% Full Scale	±2% Full Scale
	Temp.	±0.5°C	±0.5°C
Temperature compensation		ATC - automatic, from -20 to 120 °C MTC - manual, from -20 to 120 °C	ATC - automatic, from -20 to 120 °C MTC - manual, from -20 to 120 °C
pH Calibration		Up to 5-point automatic pH calibration, 7 standard buffers, 2 custom buffers	Up to 5-point automatic pH calibration, 7 standard buffers, 2 custom buffers
EC/TDS Calibration		Single cell factor calibration, 2 standards One-point offset: 0.00 µS/cm	Single cell factor calibration, 3 standards One-point offset: 0.00 µS/cm
Conductivity temp. coeff.		0.00 to 6.00%/°C	0.00 to 6.00%/°C
TDS Factor		0.40 to 0.80	0.40 to 0.80
Probe (included)		**MA852** amplified pH/EC/TDS/Temp probe with DIN connector and 1 m cable	**MA852** amplified pH/EC/TDS/Temp probe with DIN connector and 1 m cable
Logging memory		Up to 1000 log records On demand, up to 200 logs On stability, up to 200 logs Interval logging, up to 1000 logs Parameter-specific log store location	Up to 1000 log records On demand, up to 200 logs On stability, up to 200 logs Interval logging, up to 1000 logs Parameter-specific log store location
PC connectivity		1 micro USB port	1 micro USB port
Environment		0 to 50°C max RH 95%	0 to 50°C max RH 95%
Battery Type		3 x 1.5V alkaline AA (included)	3 x 1.5V alkaline AA (included)
Battery Life		approx. 200 hours of use	approx. 200 hours of use
Packaging dimensions		305 x 280 x 115 mm	305 x 280 x 115 mm
Packaging weight		1.44 kg	1.46 kg

Accessories

MA852	Amplified pH/EC/TDS/Temperature probe with DIN connector and 1 m cable
MA9004	pH 4.01 buffer solution, 230 mL bottle
MA9006	pH 6.86 buffer solution, 230 mL bottle
MA9007	pH 7.01 buffer solution, 230 mL bottle
MA9009	pH 9.18 buffer solution, 230 mL bottle
MA9010	pH 10.01 buffer solution, 230 mL bottle
MA9015	Probe storage solution, 230 mL
MA9016	General cleaning solution, 230 mL
MA9060	12880 µS/cm solution, 230 mL
MA9061	1413 µS/cm solution, 230 mL
M10000B	Rinse solution, 20 mL (25 pcs.)

Ordering Information

MW805 MAX is supplied complete with MA852 pH/EC/TDS/Temp amplified probe with 1 meter cable, 2x20 mL pH 4.01 and pH 7.01 sachet of calibration solutions, 2x20 mL 1413 µS/cm sachet of calibration solutions, 2x20 mL sachet of electrode cleaning solutions, rugged carrying case, batteries, micro USB cable and instructions.

MW806 MAX is supplied complete with MA852 pH/EC/TDS/Temp amplified probe with 1 meter cable, 2x20 mL pH 4.01 and pH 7.01 sachet of calibration solutions, 2x20 mL 12880 µS/cm sachet of calibration solutions, 2x20 mL sachet of electrode cleaning solutions, rugged carrying case, batteries, micsro USB cable and instructions.

MW801 PRO/MW802 PRO

Budget pH/EC/TDS Combined Portable Meters for fast and reliable results

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

These easy and fast to calibrate portable meters have a small and ergonomic case design. Other features include large and easy to read LCD 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 PRO** with a Conductivity range that goes up to 1990 µS/cm and TDS range that goes up to 1990 ppm is an ideal tool for drinking water measurements.
- The **MW802 PRO**, 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.

Years warranty 2

ATC

Points 2

Dual Display

MULTI

Self diagnostics

Specifications	MW801 PRO	MW802 PRO
Range pH	0.0 to 14.0 pH	0.00 to 14.00 pH
Range EC	0 to 1990 µS/cm	0.00 to 6.00 mS/cm
Range TDS	0 to 1990 ppm	0 to 4000 ppm
Resolution pH	0.1 pH	0.10 pH
Resolution EC	10 µS/cm	0.10 mS/cm
Resolution TDS	10 ppm	10 ppm
Accuracy (@25°C) pH	±0.2 pH	±0.20 pH
Accuracy (@25°C) EC/TDS	±2% Full Scale	±2% Full Scale
Calibration Solutions	M10007 (pH 7.01) M10031 (1413 µS/cm) M10032 (1382 ppm)	M10007 (pH 7.01) M10031 (1413 µS/cm)
Conversion Factor	0.5	0.68
Calibration	manual, at 1 point	manual, at 1 point
Temperature Compensation	automatic, from 0 to 50°C	automatic, from 0 to 50°C
Probe	**SE600** combination pH/EC/TDS/probe (included)	**SE600** combination pH/EC/TDS/probe (included)
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	1 x 9V alkaline	1 x 9V alkaline
Battery Life	150 hours of use	150 hours of use
Packaging dimensions	268 x 122 x 118 mm	268 x 122 x 118 mm
Packaging weight	640 g	720 g

Large and easy-to-read display

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

Combined SE600 pH/EC/TDS Probe

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

Accessories

M10000B Electrode rinse solution, 20 mL sachet (25 pcs)
M10004B pH 4.01 buffer solution, 20 mL sachet (25 pcs)
M10007B pH 7.01 buffer solution, 20 mL sachet (25 pcs)
M10010B pH 10.01 buffer solution, 20 mL sachet (25 pcs)
M10031B 1413 µS/cm calibration solution, 20 mL sachet (25 pcs)
M10032B 1382 ppm calibration solution, 20 mL sachet (25 pcs)
MA9015 Electrode storage solution, 230 mL bottle
MA9016 Cleaning solution, 230 mL bottle
SE600 pH/EC/TDS spare probe with 1 meter cable

Ordering Information

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

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

MW803 MAX/MW804 MAX

pH/Conductivity/TDS/Temperature Testers with replaceable electrode

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

The **MW803 MAX** and **MW804 MAX** are water-resistant testers with dual-level LCD that measure pH/Conductivity/TDS/Temperature in one single tester!

The large display shows readings in an extended range from 0.00 to 14.00 pH and 0 to 3999 µS/cm, 0 to 2000 ppm (MW803), 0 to 20.00 mS/cm, 0 to 10.00 ppt (MW804) and simultaneously shows temperature from 0.0 to 50.0°C or 32.0 to 122.0°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. The EC/TDS conversion factor is user selectable as well as the temperature compensation coefficient (β).

Ideal for quick and accurate measurements in swimming pools, aquariums and horticultural applications they can also be used in Industrial and Laboratory applications such as cooling towers, food processing, plating, drinking and waste water etc.

Specifications		 MW803 MAX	 MW804 MAX
Range	**pH**	0.00 to 14.00 pH	0.00 to 14.00 pH
	EC	0 to 3999 µS/cm	0 to 20.00 mS/cm
	TDS	0 to 2000 ppm	0 to 10.00 ppt
	Temp.	0.0 to 50.0°C / 32.0 to 122.0°F	0.0 to 50.0°C / 32.0 to 122.0°F
Resolution	**pH**	0.01 pH	0.01 pH
	EC	1 µS/cm	0.01 mS/cm
	TDS	1 ppm	0.01 ppt
	Temp.	0.1°C / 0.1°F	0.1°C / 0.1°F
Accuracy (@25°C)	**pH**	±0.05 pH	±0.05 pH
	EC/TDS	±2% Full scale	±2% Full scale
	Temp.	±0.5°C / ±1°F	±0.5°C / ±1°F
Temperature Compensation		automatic with ß=0.0 to 2.4%/°C	automatic with ß=0.0 to 2.4%/°C
Calibration		automatic, 1 point for EC and 1 or 2 points for pH	automatic, 1 point for EC and 1 or 2 points for pH
TDS Factor		0.45 to 1.00 (conv.)	0.45 to 1.00 (conv.)
Probe		**Mi60P** (replaceable)	**Mi60P** (replaceable)
Environment		0 to 50°C; 100% RH max.	0 to 50°C; 100% RH max.
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
Packaging dimensions		254 x 67 x 47 mm	254 x 67 x 47 mm
Packaging weight		220 g	220 g

pH/EC/TDS/Temp Sensor

The **MW803 MAX** and **MW804 MAX**'s exposed temperature sensor provides fast response time, and its proximity to the conductivity probe guarantees much more accurate temperature compensated readings.

Accessories

Mi60P	Replaceable probe for MW803 & MW804
M10000B	Rinse solution, 20 mL sachet (25 pcs)
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)
M10016B	Cleaning solution, 20 mL sachet (25 pcs)
M10030B	12880 µS/cm calibration solution, 20 mL sachet, 25 pcs
M10031B	1413 µS/cm calibration solution, 20 mL sachet, 25 pcs
M10032B	1382 ppm (mg/L) calibration solution, 20 mL sachet, (25 pcs)
M10038B	6.44 ppt (g/L) calibration solution, 20 mL sachet, (25 pcs)
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
MA9060	12880 µS/cm calibration solution, 230 mL bottle
MA9061	1413 µS/cm calibration solution, 230 mL bottle
MA9062	1382 ppm calibration solution, 230 mL bottle
MA753	Hard carrying case for 2 testers

Replaceable probe

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

Battery life

Percentage of battery power remaining will be displayed upon startup.

Packaging Information

MW803 MAX and **MW804 MAX** is supplied in a carton box. Optionally the MA753 hard carrying case can be purchased.

Ordering Information

MW803 MAX and **MW804 MAX** is supplied complete with protective cap, 20 mL pH 4.01 and pH 7.01 sachets of calibration solution, 20 mL 1413 µS/cm calibration solution (MW803 MAX), 20 mL 12880 µS/cm calibration solution (MW804 MAX), batteries and instructions.

MC810 MAX/MC811MAX

pH/EC/TDS/Temperature Monitors

The **MC810 MAX** and **MC811 MAX** monitors provide measurement and 24 hour continuous tracking of pH, conductivity (TDS with MC810 MAX and EC with MC811 MAX) and temperature.
Quick to setup and simple to use, these monitors can be calibrated at one or two points for pH, and at one point for TDS (**MC810 MAX**) or EC (**MC811 MAX**).
Results are monitored with 3 large LCD readouts, for simultaneous display of all three main parameters, and the temperature range is factory calibrated.
The unit can be mounted above the sample to be tested or rested on a flat surface next to the sample, and the 2 m probes cable length allows for a correct positioning and adequate viewing.
An external switch atop the **MC810 MAX** converts EC conductivity to TDS (ppm) using a fixed 0.5 or 0.7 conversion factor.

Features include:

- Easy Manual Calibration
- No Buttons to Program
- No Waiting for Software Confirmation
- Easy Wall Bracket Set-up (Brackets Included)
- Backlit LCD
- Two Point pH Calibration
- One Point TDS Calibration
- Replaceable pH Electrode
- "Easy Switch" TDS Conversion Technology Between 0.5 and 0.7

Specifications		MC810 MAX	MC811 MAX
Range	pH	0.0 to 12.0 pH	0.0 to 12.0 pH
	EC/TDS	0 to 1990 ppm	0.00 to 5.00 mS/cm
	Temp.	-10.0 to 60.0°C	-10.0 to 60.0°C
Resolution	pH	0.1 pH	0.1 pH
	EC/TDS	10 ppm	0.01 mS/cm
	Temp.	0.1°C	0.1°C
Accuracy	pH	±0.2 pH	±0.2 pH
	EC/TDS	±2% full scale	±2% full scale
(@25°C)	Temp.	±0.3°C	±0.3°C
Calibration	pH	manual, 2 points (trimmer)	manual, 2 points (trimmer)
	EC/TDS	manual, 1 point (trimmer)	manual, 1 point (trimmer)
pH electrode		**MA911B/2** (replaceable)	**MA911B/2** (replaceable)
EC probe		**MA811** (fixed)	**MA812** (fixed)
Temperature compensation		automatic from 5 to 50°C	automatic from 5 to 50°C
Power supply		12 VDC power adapter	12 VDC power adapter
Packaging dimensions		129 x 180 x 192 mm	129 x 180 x 192 mm
Packaging weight		1200 g	1165 g

Accessories

MA911B/2 Double junction, plastic body pH electrode with 2 m cable and BNC connector
MA9004 pH 4.01 buffer solution, 230 mL
MA9007 pH 7.01 buffer solution, 230 mL
MA9010 pH 10.01 buffer solution, 230 mL
MA9015 Electrode storage solution, 230 mL
MA9016 Electrode cleaning solution, 230 mL
MA9061 1413 µS/cm calibration solution, 230 mL
MA9062 1382 ppm TDS calibration solution, 230 ml
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
M10016B Electrode cleaning solution 20 mL sachet, 25 pcs
M10031B 1413 µS/cm calibration solution, 20 mL sachet, 25 pcs
M10032B 1382 ppm (mg/L) calibration solution, 20 mL sachet, 25 pcs
M10442B 1500 ppm (mg/L) calibration solution, 20 mL sachet, 25 pcs
MA9310 12 VDC Adapter, 220 V
MA9311 12 VDC Adapter, 110 V

Ordering Information:

The **MC810 MAX and MC811 MAX** monitors are supplied with:

- **MA911B/2** pH electrode
- **MA811** fixed TDS probe (MC810)
- **MA812** fixed EC probe (MC811)
- Fixed temperature probe
- **M10004** pH 4.01 buffer solution (sachet)
- **M10007** pH 7.01 buffer solution (sachet)
- **M10032** 1382 ppm calibration solution (sachet) (MC810)
- **M10442** 1500 ppm calibration solution (sachet) (MC810)
- **M10031** 1413 µS/cm calibration solution (sachet) (MC811)
- **M10016** Electrode cleaning solution (sachet, 2 pcs.)
- Calibration screwdriver
- 12 Vdc power adapter
- Instrument quality certificate
- Instruction manual

MW700 PRO

Budget LUX Portable Meters for fast and reliable results

The microprocessor-based **MW700 PRO** is a portable Lux meter designed to perform light measurements. **MW700 PRO** has a small, ergonomic and light case design. Other features include large and easy to read LCD and long battery life.

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

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

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

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

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

Specifications	MW700 PRO
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	1x9V (IEC 6LR61) alkaline
Battery life	approximately 150 hours of continuous use
Auto-off	after about 5 minutes of non-use
Packaging dimensions	212 x 145 x 67 mm
Packaging weight	400 g

Range keys

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

Ordering Information

MW700 PRO is supplied complete with 9V battery and instructions in a carton box.

MI411 PRO

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.

The **MI411 PRO** is 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 PRO is supplied in a hard carrying case including 2 cuvets, reagents for 100 tests, wiping tissue and instruction manual.

3 in 1 Combination Photometer!

Self diagnostics

CE

Hard Carrying Case

MI411 PRO comes complete in hard carrying case making it ideal for field measurements.

Specifications		MI411 PRO
Range	Free Chlorine	0.00 to 5.00 mg/L Cl_2
	Total Chlorine	0.00 to 5.00 mg/L Cl_2
	pH	6.5 to 8.0 pH
Resolution	Free Chlorine	0.01 mg/L (0.00 to 3.50 mg/L); 0.10 mg/L (above 3.50 mg/L)
	Total Chlorine	0.01 mg/L (0.00 to 3.50 mg/L); 0.10 mg/L (above 3.50 mg/L)
	pH	0.1 pH
Accuracy	Free Chlorine	±0.06 mg/L @ 1.50 mg/L
	Total Chlorine	±0.06 mg/L @ 1.50 mg/L
	pH	±0.1 pH @ 7.2 pH
Method	Free Chlorine	adaptation of the USEPA method 330.5 and Standard Method 4500-Cl G
	Total Chlorine	adaptation of the USEPA method 330.5 and Standard Method 4500-Cl G
	pH	adaptation of the phenol red method
Light Source		tungsten lamp
Light Detector		silicon photocell and 525 nm narrow band interference filter
Environment		0 to 50°C / 32 to 122°F; max RH 100%
Battery Type		1 x 9V
Auto-off		after 10 minutes of non use
Packaging dimensions		305 x 280 x 115 mm
Packaging weight		1.26 kg

Accessories

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

Mi0001 Glass cuvets (2 pcs)
Mi0002 Caps for cuvets (2 pcs)
Mi0003 Stoppers for cuvets (2 pcs)

Ordering Information

MI411 PRO is supplied complete with 2 cuvets, Mi511-100 liquid reagents for 100 tests, hard carrying case, wiping tissue, 9V battery and instructions.

MI405 PRO/MI407 PRO/MI408 PRO/MI412 PRO

Ammonia, Iron & Phosphate Photometers

Self diagnostics

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 PRO** with a range of 0.00 to 9.99 mg/L and **MI407 PRO** 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 PRO** 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 PRO** with range 0.00 to 2.50 mg/L.

Specifications	 **MI405 PRO** Ammonia MR	 **MI407 PRO** Ammonia LR	 **MI408 PRO** Iron HR	 **MI412 PRO** Phosphate LR
Range Ammonia	0.00 to 9.99 mg/L (NH_3-N)	0.00 to 3.00 mg/L (NH_3-N)		
Range Iron			0.00 to 5.00 mg/L (Fe)	
Range Phosphate				0.00 to 2.50 mg/L (PO_4)
Resolution Ammonia	0.01 mg/L	0.01 mg/L		
Resolution Iron			0.01 mg/L	
Resolution Phosphate				0.01 mg/L
Accuracy Ammonia	±0.30 mg/L @5.00 mg/L	±0.09 mg/L @1.50 mg/L		
Accuracy Iron			±0.06 mg/L @1.50 mg/L	
Accuracy Phosphate				±0.07 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 the 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 V	1 x 9 V	1 x 9 V	1 x 9 V
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
Packaging dimensions	305 x 280 x 115 mm	305 x 280 x 115 mm	305 x 280 x 115 mm	305 x 280 x 115 mm
Packaging weight	1.24 kg	1.22 kg	1.22 kg	1.3 kg

Accessories

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

Mi0001 Glass cuvets (2 pcs)
Mi0002 Caps for cuvets (2 pcs)
Mi0003 Stoppers for cuvets (2 pcs)

Ordering Information

MI405 PRO, **MI407 PRO**, **MI408 PRO** and **MI412 PRO** are supplied complete with 2 cuvets, reagents for 100 tests, hard carrying case, wiping tissue, 9V battery and instructions.

MI404 PRO/MI406 PRO/MI413 PRO/MI414 PRO

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 PRO** for measuring free (0.00 to 5.00 mg/L) and total (0.00 to 5.00 mg/L) chlorine, **MI406 PRO** for measuring free (0.00 to 5.00 mg/L) chlorine and **MI413 PRO** for measuring free (0.00 to 10.00 mg/L) and total (0.00 to 10.00 mg/L) chlorine.

Self diagnostics

CE

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.

Milwaukee offers the **MI414 PRO** microprocessor-based photometer for measuring chloride (0.00 to 20.00 mg/L).

Specifications		 MI404 PRO Free & Total Chlorine	 MI406 PRO Free Chlorine	 MI413 PRO Free & Total Chlorine HR	 MI414 PRO Chloride
Range	Free Chlorine	0.00 to 5.00 mg/L (Cl_2)	0.00 to 5.00 mg/L (Cl_2)	0.00 to 10.00 mg/L (Cl_2)	
	Total Chlorine	0.00 to 5.00 mg/L (Cl_2)		0.00 to 10.00 mg/L (Cl_2)	
	Chloride				0.00 to 20.00 mg/L (Cl^-)
Resolution	Free Chlorine	0.01 mg/L (0.00 to 3.50 mg/L); 0.10 mg/L (above 3.50 mg/L)	0.01 mg/L (0.00 to 3.50 mg/L); 0.10 mg/L (above 3.50 mg/L)	0.01 mg/L (0.00 to 3.50 mg/L); 0.10 mg/L (above 3.50 mg/L)	
	Total Chlorine	0.01 mg/L (0.00 to 3.50 mg/L); 0.10 mg/L (above 3.50 mg/L)		0.01 mg/L (0.00 to 3.50 mg/L); 0.10 mg/L (above 3.50 mg/L)	
	Chloride				0.01 mg/L
Accuracy	Free Chlorine	±0.06 mg/L @1.50 mg/L	±0.06 mg/L @1.50 mg/L	±0.17 mg/L @1.50 mg/L	
	Total Chlorine	±0.06 mg/L @1.50 mg/L		±0.17 mg/L @1.50 mg/L	
	Chloride				±1.0 mg/L @10.0 mg/L
Method		adaptation of USEPA method 330.5 and Standard Method 4500-Cl G	adaptation of USEPA method 330.5 and Standard Method 4500-Cl G	adaptation of USEPA method 330.5 and Standard Method 4500-Cl G	adaptation of mercury (II) thiocyanate method
Light Source		tungsten lamp	tungsten lamp	tungsten lamp	Blue LED 466 nm
Light Detector		silicon photocell and 525 nm narrow band interference filter	silicon photocell and 525 nm narrow band interference filter	silicon photocell and 525 nm narrow band interference filter	silicon photocell and 466 nm narrow band interference filter
Environment		0 to 50°C / 32 to 122°F max RH 100%	0 to 50°C / 32 to 122°F max RH 100%	0 to 50°C / 32 to 122°F max RH 100%	0 to 50°C / 32 to 122°F max RH 100%
Battery Type		1 x 9 V	1 x 9 V	1 x 9 V	1 x 9 V
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
Packaging dimensions		305 x 280 x 115 mm	305 x 280 x 115 mm	305 x 280 x 115 mm	305 x 280 x 115 mm
Packaging weight		1.24 kg	1.26 kg	1.52 kg	1.44 kg

Accessories

Mi504-100 Free & Total Chlorine liquid reagent set (100 tests)
Mi506-100 Free Chlorine liquid reagent set (100 tests)
Mi513-045 Free & Total Chlorine liquid reagent set (45 tests)
Mi514-100 Chloride liquid reagent set (100 tests)
Mi524-100 Total Chlorine powder reagents (100 tests)
Mi526-100 Free Chlorine powder reagents (100 tests)
Mi0001 Glass cuvets (2 pcs)
Mi0002 Caps for cuvets (2 pcs)
Mi0003 Stoppers for cuvets (2 pcs)

Ordering Information

MI404 PRO, MI406 PRO, MI413 PRO and **MI414 PRO** are supplied complete with 2 cuvets, reagents, hard carrying case, wiping tissue, 9V battery and instructions.

2 Years warranty

Self diagnostics

LED

CE

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)

MW11 to measure total chlorine (0.00 to 3.50 mg/L).

Key features include:

- User friendly;
- Small & Ergonomic case design;
- Inexpensive;
- Large and easy to read display;
- Good accuracy and immediate results;

Specifications	 **MW10** Free chlorine	 **MW11** Total chlorine
Range	0.00 to 2.50 ppm	0.00 to 3.50 ppm
Resolution	0.01 ppm	0.01 ppm
Accuracy (@25°C)	±0.03 ppm ±3% of reading	±0.03 ppm ±3% of reading
Typical EMC Dev.	±0.01 ppm	±0.01 ppm
Light Source	Light Emitting Diode @ 525 nm	Light Emitting Diode @ 525 nm
Light Detector	Silicon Photocell	Silicon Photocell
Method	Adaptation of USEPA method 330.5. The reaction between free chlorine and the DPD reagent causes a pink tint in the sample.	Adaptation of USEPA method 330.5. The reaction between free chlorine and the DPD reagent causes a pink tint in the sample.
Environment	0 to 50°C (32 to 122°F) max. 95% RH non-condensing	0 to 50°C (32 to 122°F) max. 95% RH non-condensing
Battery Type	1 x 1.5V AAA	1 x 1.5V AAA
Auto-off	after 2 minutes of non use	after 2 minutes of non use
Packaging dimensions	115 x 115 x 84 mm	115 x 115 x 84 mm
Packaging weight	180 g	180 g

Accessories

Mi526-25 Free Chlorine powder reagent, (25 pcs)
Mi524-25 Total Chlorine powder reagent (25 pcs)

Mi0011 Glass cuvets (2 pcs)
Mi0013 Stoppers for cuvets (2 pcs)

The handy photometers are supplied in a carton box including all accessories.

Ordering information:

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

MW12/MW13/MW14

Low cost digital photometers to measure Phosphate, Iron & Iodine

Years warranty 2

Self diagnostics

LED

CE

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 ourses from agricultural fertilizer run off or wastewater / effluent discharge can promote excessive algae or plant growth.

Milwaukee offers **MW12** with a range of 0.00 to 2.50 mg/L.

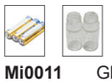
Iodine is used as disinfectant in various applications - one of the most common is the poultry industry waste water treatment.

Milwaukee offers **MW13** with a range of 0.0 to 12.5 mg/L.

Specifications	MW12 Phosphate	MW13 Iodine	MW14 Iron
Range	0.00 to 2.50 ppm	0.0 to 12.5 ppm	0.00 to 5.00 ppm
Resolution	0.01 ppm	0.1 ppm	0.01 ppm
Accuracy (@25°C)	±0.04 ppm ±4% of reading	±0.1 ppm ±5% of reading	±0.04 ppm ±2% of reading
Typical EMC Dev.	±0.01 ppm	±0.1 ppm	±0.01 ppm
Light Source	LED @ 525 nm	LED @ 525 nm	LED @ 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-off	after 2 minutes of non use	after 2 minutes of non use	after 2 minutes of non use
Packaging dimensions	115 x 115 x 84 mm	115 x 115 x 84 mm	115 x 115 x 84 mm
Packaging weight	180 g	180 g	180 g

Accessories

Mi512-25 Phosphate powder reagent (25 pcs)
Mi527-25 Iodine powder reagent (25 pcs)
Mi528-25 Iron powder reagent (25 pcs)



Mi0011 Glass cuvets (2 pcs)
Mi0013 Stoppers for cuvets (2 pcs)

Ordering information:

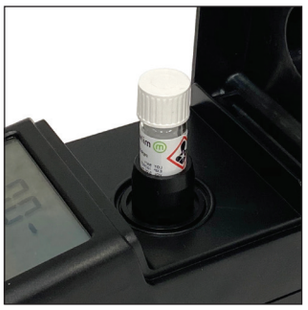
All handy photometers are supplied in a carton box including 2 cuvets, 6 powder reagents, 1 x 1.5 V AAA battery and instructions.

MI490
Peroxide Value Photometer for Edible Oils

MI490 is a user-friendly photometer for monitoring peroxide value in the process of oil making. This instrument will give you direct readings, with a range of 0.0 to 25.0 meq O_2/Kg .
The measurement of the oil's chemical degradation is the peroxide value, which measures the degree to which the oil is oxidized. Rancidification is the decomposition of fats and other lipids by hydrolysis and/or oxidation. Hydrolysis will split fatty acid chains away from the glycerol backbone in glycerides. These free fatty acids can then undergo further auto-oxidation. Oxidation primarily occurs with unsaturated fats by a free radical-mediated process.
One of the most widely used tests for oxidative rancidity, peroxide value is a measure of the concentration of peroxides and hydroperoxides formed in the initial stages of lipid oxidation. Milliequivalents of peroxide per kg of fat are measured by titration with iodide ion.
Peroxide values are not static and care must be taken in handling and testing samples. It is difficult to provide a specific guideline relating peroxide value to rancidity. High peroxide values are a definite indication of a rancid fat, but moderate values may be the result of depletion of peroxides after reaching high concentrations.

Easy Steps

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



Accurate Readings

MI490 will give you direct readings, with a range of 0.0 to 25.0 meq O_2/Kg in the process of oil making.

Specifications	MI490 Peroxide Value
Range	0.0 to 25.0 meq O_2 /Kg
Resolution	0.5 meq O_2 /Kg
Accuracy	±0.5 meq O_2 /Kg
Method	adaptation of the CE n. 2568/97 method
Environment	0 to 50°C; max RH 95%
Battery Type	4 x 1.5V AA
Auto-off	after 15 minutes of non-use
Packaging dimensions	340 x 260 x 118 mm
Packaging weight	1.76 kg

Accessories

Mi590-021 Peroxides reagent set (21 tests)

Ordering Information

MI490 is supplied complete with:
reagents for 10 tests, 4 x 1 mL syringe, tissue for wiping cuvets, 4 x 1.5V AA batteries and instruction manual.

MI415 PRO
Turbidity Meter

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

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

MI415 PRO 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 PRO is supplied in a hard carrying case, complete with all accessories.

Self diagnostics

CE

Specifications	MI415 PRO 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
Packaging dimensions	305 x 280 x 115 mm
Packaging weight	1.24 kg

Introduction to Turbidity

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

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

Accessories

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

Mi0011 Glass cuvets (2 pcs)
Mi0012 Caps for cuvets (2 pcs)
Mi0013 Stoppers for cuvets (2 pcs)

Ordering Information

MI415 PRO is supplied complete with 2 cuvets, calibration solutions, hard carrying case, wiping tissue, 9V battery and instructions.

MA871/MA872/MA873/MA881

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

2 Years warranty
ATC
Dual Display
Self diagnostics
CE

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

Key features include:

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

Specifications	 MA871 Brix	 MA872 Fructose	 MA873 Glucose	 MA881 Invert Sugar
Range	0 to 85% Brix 0 to 80°C / 32 to 176°F	0 to 85% mass 0 to 80°C / 32 to 176°F	0 to 85% mass 0 to 80°C / 32 to 176°F	0 to 85% mass 0 to 80°C / 32 to 176°F
Resolution	0.1% Brix 0.1°C / 0.1°F	0.1% 0.1°C / 0.1°F	0.1% 0.1°C / 0.1°F	0.1% 0.1°C / 0.1°F
Accuracy	±0.2% Brix ±0.3°C / ±0.5°F	±0.2% ±0.3°C / ±0.5°F	±0.2% ±0.3°C / ±0.5°F	±0.2% ±0.3°C / ±0.5°F
Light source	yellow LED	yellow LED	yellow LED	yellow LED
Measurement Time	approximately 1.5 seconds	approximately 1.5 seconds	approximately 1.5 seconds	approximately 1.5 seconds
Minimum Sample Volume	100 µL (cover prism totally)	100 µL (cover prism totally)	100 µL (cover prism totally)	100 µL (cover prism totally)
Sample Cell	SS ring and flint glass prism	SS ring and flint glass prism	SS ring and flint glass prism	SS ring and flint glass prism
Temperature Compensation	automatic between 10 and 40°C / 50 to 104°F	automatic between 10 and 40°C / 50 to 104°F	automatic between 10 and 40°C / 50 to 104°F	automatic between 10 and 40°C / 50 to 104°F
Case Material	ABS	ABS	ABS	ABS
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
Packaging dimensions	268 x 122 x 118 mm	268 x 122 x 118 mm	268 x 122 x 118 mm	268 x 122 x 118 mm
Packaging weight	660 g	663 g	666 g	644 g

Ordering Information

MA871, MA872, MA873 and **MA881** are supplied in a carton box, complete with 9V battery, pipette and instruction manual. Optionally you can also order the refractometers in a hard carrying case (**MA752**).

Stainless Steel Sample Well and Prism

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

MA882/MA883/MA884/MA885

Digital Refractometers for Grape Juice Must Measurements

The **MA882, MA883, MA884** and **MA885** are optical instruments that are based on the measurement of the refractive index of a solution. The meaurement 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.

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

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

Specifications	 MA882	 MA883	 MA884	 MA885
Range	0 to 50% Brix 0 to 80°C / 32 to 176°F	0 to 28 °Baumé 0 to 80°C / 32 to 176°F	0 to 50% Brix 0 to 25% v/v Potential Alc. 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 to 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 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
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
Packaging dimensions	268 x 122 x 118 mm	268 x 122 x 118 mm	268 x 122 x 118 mm	268 x 122 x 118 mm
Packaging weight	672 g	670 g	678 g	672 g

Ordering Information

MA882, MA883, MA884 and **MA885** are supplied in a carton box, complete with 9V battery, pipette and instruction manual.

Optionally you can also order the refractometers in a hard carrying case (**MA752**).

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
Battery Type	1 x 9V AA (included)
Battery Life	5000 reading
Auto-shut off	after 3 minutes of non-use
Packaging dimensions	268 x 122 x 118 mm
Packaging weight	661 g

Stainless Steel Sample Well and Prism

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

Liquid Crystal Display (LCD)

Dual Level LCD with Primary and Secondary Display.

Ordering Information

MA886 is supplied in a carton box, complete with 9V battery, pipette and instruction manual. Optionally you can also order the refractometers in a hard carrying case (**MA752**).

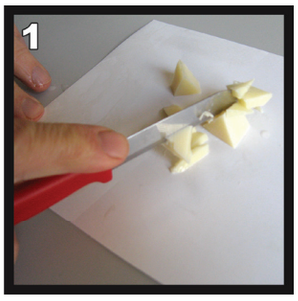
Measuring salt in cheese

Using MA886 Digital Sodium Chloride Refractometer

Sodium occurs naturally in many foods and is also added in the form of salt. The sodium content of food has important implications for health. Sodium is a nutrient and is part of the group of dietary minerals. Essential to life, it cannot be produced by the human body and thus has to be provided by the diet. The physiological requirements of sodium of the human body are relatively low (estimated at the equivalent of 1 to 2 gram of salt per day) and are met by the diet.

Fresh cheeses (non-salted) contain very little sodium (from 30 to 60 mg /100g). Hard cheeses – because of added salt – contain much higher levels of sodium (from 200 to 1600 mg/100g). Within a family of cheeses and depending on the brands, large variations exist between sodium contents of the cheeses, depending on lower or higher addition of salt by the cheese maker.

Measuring salt (sodium chloride) in cheese



1. Dicing:
Mincing the sample increases the surface area to allow as much salt to be released into the water as possible.

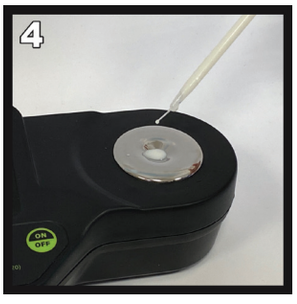
2. Dilution:
Dilute the sample with hot water to a 10% ratio.
After the sample melted, the fat will float to the top.

3. Collect the sample with a pipette from the layer underneath the fat

4. Using the plastic pipette, drip sample onto the prism surface. Fill the well completely.

5. Press the READ key.
The results are displayed in unit of interest

For optimal measurement put a sample into a beaker.



MA887

Digital Refractometer for Seawater Measurements

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

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

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

Key features include:

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

Specifications	MA887
Range	0 to 50 PSU 0 to 150 ppt 1.000 to 1.114 S.G. (20/20) 0 to 80°C / 32 to 176°F
Resolution	1 PSU 1 ppt 0.001 S.G. (20/20) 0.1°C / 0.1°F
Accuracy	±2 PSU ±2 ppt ±0.002 S.G. (20/20) ±0.3°C / 0.5°F
Light Source	yellow LED
Measurement Time	approximately 1.5 seconds
Minimum Sample Volume	100 µL (cover prism totally)
Sample Cell	SS ring and flint glass prism
Temperature Compensation	automatic between 0 and 40°C (50 to 104°F)
Case Material	ABS
Battery Type	1 x 9V AA (included)
Battery Life	5000 reading
Auto-shut off	after 3 minutes of non-use
Packaging dimensions	268 x 122 x 118 mm
Packing weight	668 g

Stainless Steel Sample Well and Prism

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

Liquid Crystal Display (LCD)

Dual Level LCD with Primary and Secondary Display.

Ordering Information

MA887 is supplied in a carton box, complete with 9V battery, pipette and instruction manual. Optionally you can also order the refractometers in a hard carrying case (**MA752**).

MA888

Digital Refractometer for Ethylene Glycol Measurements

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

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

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

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

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

Key features include:

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

Specifications	MA888
Range	0 to 100% Volume 0 to -50°C / 32 to -58°F Freezing Point 0 to 80°C / 32 to 176°F
Resolution	0.1% Volume 0.1°C / 0.1°F Freezing Point 0.1°C / 0.1°F
Accuracy	±0.2% Volume ±0.5°C / ±1.0°F Freezing Point ±0.3°C / ±0.5°F
Light Source	yellow LED
Measurement Time	approximately 1.5 seconds
Minimum Sample Volume	100 µL (cover prism totally)
Sample Cell	SS ring and flint glass prism
Temperature Compensation	automatic between 0 and 40°C (50 to 104°F)
Case Material	ABS
Battery Type	1 x 9V AA (included)
Battery Life	5000 reading
Auto-shut off	after 3 minutes of non-use
Packaging dimensions	268 x 122 x 118 mm
Packaging weight	667 g

Stainless Steel Sample Well and Prism

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

Liquid Crystal Display (LCD)

Dual Level LCD with Primary and Secondary Display.

Ordering Information

MA888 is supplied in a carton box, complete with 9V battery, pipette and instruction manual. Optionally you can also order the refractometers in a hard carrying case (**MA752**).

TH300/TH310

Pocket-sized thermometers with automatic calibration check

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

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

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

Specifications	TH300	TH310
Range	-50.0 to 150.0°C	-50.0 to 150.0°C
Resolution	0.1°C	0.1°C
Accuracy (@20°C)	±0.5°C (-20 to 90°C)	±0.5°C (-20 to 90°C)
Typical EMC Deviation	±0.3°C	±0.3°C
Probe	Stainless steel with 1 meter cable	Stainless steel
Switch ON/OFF	no	yes
Calibration Check	no	yes
Environment	0 to 50°C; max RH 95%	0 to 50°C; max RH 95%
Battery Type	1 x 1.4V	1 x 1.5V
Battery Life	approximately 1 year	approximately 3000 hours of continuous use
Packaging dimensions	225 x 91 x 47 mm	254 x 67 x 47 mm
Packaging weight	140 g	100 g

Ordering Information

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

MT6003

NPK Soil Test Kit

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

Mi455 PRO

Mini-titrator for the determination of FREE & TOTAL SULPHUR DIOXIDE in wine analysis

Mi455 PRO is a user-friendly microprocessor-based mini-titrator for the determination of free and total sulphur dioxide in the process of wine making. This mini-titrator will give you direct readings with a range of 0 to 400 ppm.
The instrument comes with a pre-programmed analysis method for free and total sulphur dioxide measurements on wine sample.

Specifications	Mi455 PRO Sulphur Dioxide
Range	0 to 400 ppm of SO_2
Resolution	1 ppm
Accuracy	5% of reading
Method	ripper titrimetric method
Princliple	equivelance point redox titration
Sample volume	50 mL
ORP electrode	MA924B/1 (included)
Pump debit	0.5 mL/min
Stirring speed	1500 rpm
Environment	0 to 50°C; max RH 95%
Power supply	220V/50 Hz; 10VA
Dimensions	350 x 310 x 250 mm
Weight	5,5 kg

Ordering Information

Mi455 PRO is supplied complete with:
Calibration standard SO_2, Titrant SO_2, Alkaline reagent for total SO_2, Acid reagent for total SO_2, Acid reagent for free SO_2, Stabilizer, SO_2, MA924B/1 ORP electrode, small stir bar, 2 x 50 mL beakers, 2 x 25 mL beakers, Refilling Electolyte Solution 3.5M KCl for ORP electrodes 230 mL bottle, test tube set, O-ring, 1 mL syringe, power cable and instruction manual.

Mi 456 PRO Mini-titrator for the determination of TITRATABLE TOTAL ACIDITY for wine analysis

Mi456 PRO is a user-friendly microprocessor-based mini-titrator for the determination of the titratable total acidity in the process of wine making. This minititrator gives you direct readings in g/L of tartaric acid, with a range of 0.0 to 25.0 g/L.
The instrument comes with a pre-programmed analysis method for the titratable total acidity measurements on wine sample.

Specifications	Mi456 PRO Titratable Total Acidity
Range	0.0 to 25.0 g/L of tartaric acid
Resolution	0.1 g/L
Accuracy	5% of reading
Method	acid-base titration method
Princliple	end-point titration
pH Calibration	1 point in selected end-point: 7.00 pH or 8.20 pH
Sample volume	2 mL
Temperature Compensation	Automatic from 0.0 to 100.0°C
pH Electrode	MA919B/1 (included)
Temperature Probe	MA831R (included)
Pump debit	0.5 mL/min
Stirring speed	1500 rpm
Environment	0 to 50°C; max RH 95%
Power supply	220V/50 Hz; 10VA
Dimensions	350 x 310 x 250 mm
Weight	5,5 kg

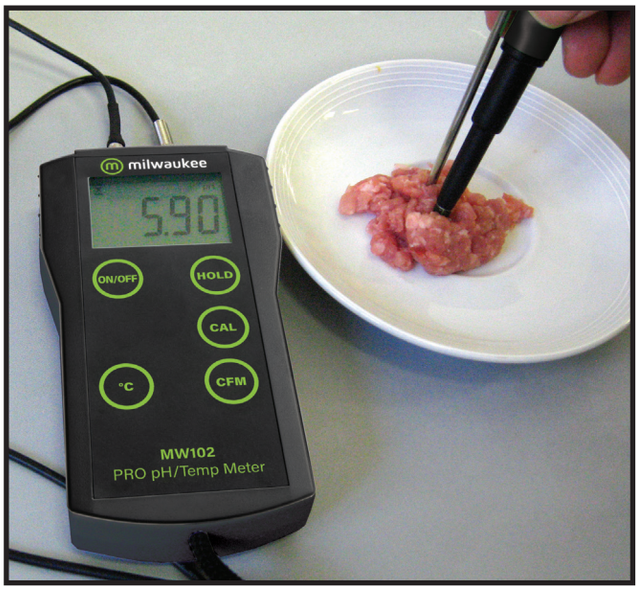
Mi456 PRO is supplied complete with:
Calibration standard TA, Titrant TA, Buffer pH 7.0, Buffer pH 8.2, MA919B/1 pH Electrode, MA831R Temperature probe, MA9011 Refilling Electolyte Solution 3.5M KCl, for pH electrodes 230 mL bottle, small stir bar, 2 x 50 mL beakers, 2000 µL pipette, test tube set, O-ring, 1 mL syringe, power cable and instruction manual.

Accessories

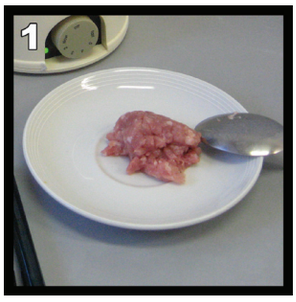
MA924B/1	ORP Electrode for Mi455
MA919B/1	pH Electrode for Mi456
MA831R	Temperature probe for Mi456
MA9011	Refilling Electrolyte Solution 3.5M KCl, for ORP electrodes, 230 mL bottle
Mi0009	Small stir bars (5 pcs)
Mi0020	50 mL beaker (4 pcs)
Mi0021	25 mL beaker (4 pcs)
Mi0022	2000 µL pipette (1 pc)
Mi0023	Pipette tips for 2000 µL pipette (4 pcs)

Measuring pH in meat

Using MW102 PRO+ pH portable meter with a MA920B/1 pH electrode

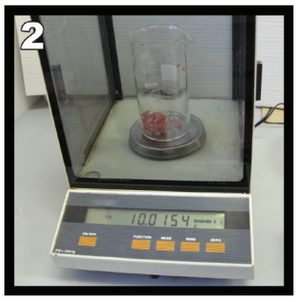


The pH changes occurring in a carcass during the first 24 hours after slaughter are important for the quality of the final meat or meat products. Protein denaturation will occur if pH falls to too low a level or if a relatively low pH sets in at a time after slaughter where the carcass temperature is still high. This will result in meat with poor water holding capacity and in extreme cases in meat that is PSE.



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

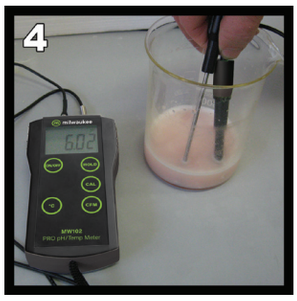
1. Cut meat sample into small pieces.



2. Weight approximatley 10 grams into a blender cup. Run duplicates on each sample.

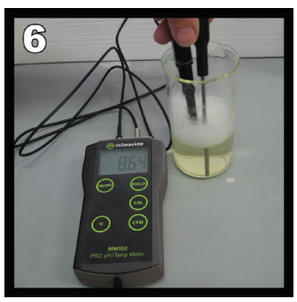
3. Add 100 ml of distilled deionized water and blend for 30 seconds on high speed.

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



5. By pressing the HOLD key you can activate the hold function. The measured value is frozen on the display and the “HOLD” tag lights up. Release “HOLD” by pressing HOLD key again.

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

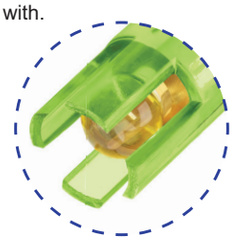


Spare Electrodes & Probes

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.



OTHER 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 (MW801 / MW802)
	**MA812/2**	Conductivity/TDS probe with 2 meter cable (MC310 / MC410)
	**MA814DB/1**	4-ring Conductivity/TDS/NaCl/Temperature probe with DIN connector and 1 meter cable (MW170)
	**MA815D/1**	4-ring Conductivity/TDS/NaCl/Temperature probe with DIN connector and 1 meter cable (MW306)
	**MA911B/2**	Double junction, gel filled pH electrode with BNC connector, 2 m cable
	**MA906BR/1**	pH/Temp amplified probe with 1 meter cable (MW105/MW106)
	**MA921B/2**	Double junction, gel filled ORP electrode with platinum sensor, BNC connector, 2 m cable
	**MA831R**	Stainless steel Temperature probe (MW150 / MW151 / MW160 / MW180)
	**MA840**	Polarographic D.O. probe with 4 meter cable (MW600)
	**MA845**	Dissolved Oxygen and Temperature polarographic probe (MW190)
	**MA860**	Dissolved Oxygen and Temperature galvanic probe (MW605)

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 9-12.

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

Applications	pH	MA905B/3	MA911B/2	SE220	MA913B/3	MA906BR/1	MA916B/1	MA917B/1	MA918B/1	MA919B/1	MA920B/1	MA991B/1	ORP	MA921B/1	SE300	MA923B/3	MA924B/1	MA925B/3	Conductivity	SE510	D.O.	MA840	MA845	MA860
Agriculture / Soil testing	■				■				■				■					■	■		■			■
Aquarium	■		■	■	■								■	■	■	■		■	■	■	■	■			■
Brewing	■									■	■		■				■		■		■				
Cheese	■										■		■				■		■		■				
Dairy products	■										■		■						■		■				
Emulsions	■								■				■						■		■				
Environmental, Pollution	■		■	■	■	■							■			■		■	■		■	■	■	■	■
Fish farming	■		■	■	■								■			■		■	■		■	■	■	■	■
Food and beverage (general use)	■										■		■						■		■		■		
Galvanizing waste solution	■	■			■								■			■		■	■		■				
Hi purity water	■	■			■				■				■					■	■		■				
Heavy duty applications	■												■			■			■		■				■
In-line applications	■	■			■								■			■		■	■		■				
Laboratory (general use)	■		■	■	■	■	■	■				■	■			■		■	■	■	■	■	■	■	
Meat	■										■		■						■		■				
Paints	■								■				■						■		■				
Paper	■				■								■					■	■		■				
Photographic chemicals	■				■								■					■	■		■				
Strong acid	■							■					■						■		■				
Swimming pools	■	■	■	■	■								■			■		■	■		■				
Water supply	■				■								■			■		■	■		■	■	■	■	■
Wine processing	■								■	■	■		■				■		■		■		■	■	■

Calibration, Maintenance & Cleaning Solutions

Calibration, Maintenance & Cleaning Bottle Solutions	
MA9001	pH 1.68 Calibration Buffer Solution, 230 mL
MA9004	pH 4.01 Calibration Buffer Solution, 230 mL
MA9006	pH 6.86 Calibration Buffer Solution, 230 mL
MA9007	pH 7.01 Calibration Buffer Solution, 230 mL
MA9009	pH 9.18 Calibration Buffer Solution, 230 mL
MA9010	pH 10.01 Calibration Buffer Solution, 230 mL
MA9011	Refilling Electrolyte Solution 3.5M KCl for pH/ORP electrodes, 230 mL
MA9012	Refilling Electrolyte Solution 1M KNO3, 230 mL, food applications
MA9015	Storage Solution for pH/ORP electrodes, 230 mL
MA9016	Cleaning Solution for pH/ORP electrodes, 230 mL
MA9020	200-275 mV ORP Solution, 230 mL
MA9060	12880 µS/cm Conductivity Calibration Solution, 230 mL
MA9061	1413 µS/cm Conductivity Calibration Solution, 230 mL
MA9062	1382 ppm TDS Calibration Solution, 230 mL
MA9063	84 µS/cm Conductivity Calibration Solution, 230 mL
MA9064	80000 µS/cm Conductivity Calibration Solution, 230 mL
MA9065	111.8 mS/cm Conductivity Calibration Solution, 230 mL
MA9066	100% NaCl Calibration Solution, 230 mL
MA9069	5000 µS/cm Conductivity Calibration Solution, 230 mL
MA9070	Zero Oxygen Solution, 500 mL + 12 g
MA9071	Electrolyte Solution for D.O. Probes, 230 mL
MA9112	pH 12.45 Calibration Buffer Solution, 230 ml

Get accurate pH readings!

Milwaukee offers a wide range of calibration, maintenance & Cleaning solutions. They are supplied in 230 mL leak-proof bottles and 20 mL single-use sachets.

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 cleaned and calibrated.

Certificate of analysis

Certificate of analysis is available only for calibration solutions when ordered in boxes of 16 bottles.

Calibration, Maintenance & Cleaning Solutions

Solution starter kits

pH-Start 	Calibration & maintenance & cleaning solutions for pH meters & testers, indluding: 230 mL bottle MA9004 pH 4.01 Calibration Buffer Solution, 230 mL bottle MA9007 pH 7.01 Calibration Buffer Solution, 230 mL bottle MA9015 Storage Solution, 230 mL bottle MA9016 Cleaning Solution
Combo-Start 	Calibration (pH & EC) & maintenance & cleaning solutions for combo meters & testers, including: 230 mL bottle MA9007 pH 7.01 Calibration Buffer Solution, 230 mL bottle MA9061 1413 µS/cm Conductivity Calibration Solution, 230 mL bottle MA9015 Storage Solution, 230 mL bottle MA9016 Cleaning Solution

20 mL single-use sachets

Calibration, Maintenance & Cleaning Sachet Solutions	
M1000AB	Combination pack of pH buffer solutions, including 10 sachets of M10007 (pH 7.01), 5 sachets of M10000 (rinse), 5 sachets of M10004 (pH 4.01), 5 sachets of M10010 (pH 10.01); each sachet supplies 20 mL
M10000B	Rinse Solution - Deionized Water (box of 25x20 ml sachet)
M10004B	pH 4.01 Calibration Buffer Solution (box of 25x20 ml sachet)
M10007B	pH 7.01 Calibration Buffer Solution (box of 25x20 ml sachet)
M10010B	pH 10.01 Calibration Buffer Solution (box of 25x20 ml sachet)
M10016B	Cleaning Solution for electrodes (box of 25x20 ml sachet)
M10030B	12880 µS/cm Calibration Buffer Solution (box of 25x20 ml sachet)
M10031B	1413 µS/cm Calibration Buffer Solution (box of 25x20 ml sachet)
M10032B	1382 ppm TDS Calibration Solution (box of 25x20 ml sachet)
M10038B	6.44 ppt TDS Calibration Solution (box of 25x20 ml sachet)
M10080B	800 ppm TDS solution (box of 25x20 ml sachet)

Sachet calibration solutions are practical and ready-to-use

Single-use sachets are sealed against light and air and are ideal for on-the-spot calibration.

- Table of reference temperatures
  A label presenting a reference table between pH or conductivity values and temperature is printed on all calibration solution sachets and bottles.
- Opaque packaging prevents UV light to contaminate the solution and alter the value.
- Expiration date and production batch number are reported on all Milwaukee calibration solutions.

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

Safety data sheets

Safety data sheets are available for all solutions and can be downloaded from our website: *https://milwaukeeinstruments.eu/SUPPORT/MSDS/*

WARRANTY POLICY

Milwaukee warrants it's instruments to be free of manufacturing defects as follows: instruments for 2 years, electrodes and sensors for 6 months (unless otherwise specified).

The warranty period commences from the original date of sale. 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 appearence of its products without advance notice.

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

tech@milwaukeeinst.com

Instruments

Electrodes

FURTHER INFORMATION

Latest updates on new products, technical tips, download MSDS

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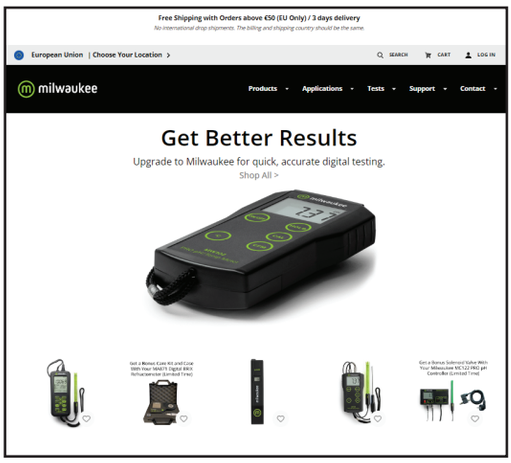
www.milwaukeeinstruments.eu

for the latest updates on new products, technical tips, download of MSDS.



SPECIFIC APPLICATION LITERATURE

Specific application catalogues and leaflets are also available and can be downloaded from our site. Alternatively for a hard copy request please kindly send us an e-mail at:

info@milwaukeeinst.com

milwaukee

Instruments for Water Analysis

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