



Digital Refractometers for Sodium chloride, Salinity and Brix Measurements

The digital refractometers are optical instruments that employ the measurement of refractive index to determine the % Brix of sugar (MA871), % Brix, °Oechsle and °KMW in Grape Juice Must (MA885), Sodium chloride concentration (MA886), Salinity (MA887), in aqueous solutions.

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

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 of sugar	MA885 Grape Juice Must	MA886 Sodium chloride	MA887 Salinity
Range	0 to 85% Brix 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	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	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
Accuracy	±0.2% Brix ±0.3°C / ±0.5°F	±0.2% Brix ±1 °Oechsle ±0.2 °KMW ±0.3°C / ±0.5°F	±0.2 g/100 g; 100 ml ±0.002 Specific Gravity ±0.2 °Baumé ±0.3°C / ±0.5°F	±2 PSU ±2 ppt ±0.002 S.G. (20/20) ±0.3°C / 0.5°F
Light source	yellow LED			
Measurement time	approx. 1.5 seconds			
Minimum sample vol.	100 µL (cover prism totally)			
Sample cell	SS ring and flint glass prism			
Temp. compensation	automatic			
Case material	ABS			
Battery type	1 x 9V AA (included)			
Auto-shut off	after 3 minutes of non-use			
Dimensions / Weight	192 x 102 x 67 mm / 420 g			

MI415: Microprocessor digital turbidity meter

Turbidity refers to the concentration of undissolved, suspended particles present in a liquid. Turbidity is a measure of the clarity of a sample. For potable water applications turbidity is a good indicator of water quality. Turbidity measurement is achieved by analyzing the amount of light refracted from suspended particles such as clay, silt and organic material. By measuring turbidity, by photometric or tube methods, it is possible to estimate suspended solids content.

MI415 has two operating ranges; 0.00 to 50.00 FNU, and 50 to 1000 FNU that can accommodate the most turbid condition you may encounter.

MI415 is supplied in a hard carrying case, complete with calibration solutions.



Specification	MI415 PRO
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	infrared LED
Light detector	silicon photocell
Environment	0 to 50°C; max RH 100%
Battery Type	1 x 9V
Auto off	after 5 minutes of non use
Dimensions	192 x 104 x 52 mm
Weight	380 g

Low cost digital handy photometers

The revolutionary new range of Milwaukee handy photometers are compact and easy to use. Within a few minutes you can get the required result on the LCD and the meter automatically turns off after 2 minutes in order to save battery life.

- MW10:** Free chlorine photometer, 0.00 to 2.50 ppm range.
- MW11:** Total chlorine photometer, 0.00 to 3.50 ppm range.
- MW12:** Phosphate photometer, 0.00 to 2.50 ppm range.
- MW13:** Iodine photometer, 0.0 to 12.5 ppm range.
- MW14:** Iron photometer, 0.00 to 5.00 ppm range.



Specification	MI404 PRO Free & Total Chlorine	MI405 PRO Ammonia MR	MI411 PRO Free & Total Chlorine	MI412 PRO Phosphate LR	MI414 PRO Chloride
Range	0.00 to 5.00 mg/l (Cl ₂)	0.00 to 9.99 mg/l (NH ₃ -N)	0.00 to 5.00 mg/l (Cl ₂) 6.5 to 8.0 pH	0.00 to 2.50 mg/l (PO ₄)	0.00 to 20.00 mg/l (Cl ⁻)
Accuracy	±0.06 mg/l @1.50 mg/l	±0.30 mg/l u@5.00 mg/l	±0.06 mg/l @1.50 mg/l ±0.1 pH @7.2 pH	±0.07 mg/l @1.00 mg/l	±1.0 mg/l @10.0 mg/l
Method	Standard	Nessler	Standard	Standard	Standard
Reagents (included)	MI504-100	MI505-100	MI511-100	MI512-100	MI514-100
Light source	tungsten lamp	LED 466 nm	tungsten lamp	tungsten lamp	LED 466 nm
Calibration	automatic	automatic	automatic	automatic	automatic
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	after 10 minutes of non use
Dimensions / Weight	192 x 104 x 52 / 380 g	192 x 104 x 52 / 380 g	192 x 104 x 52 / 380 g	192 x 104 x 52 / 380 g	192 x 104 x 52 / 380 g

Electrodes, Probes and Solutions

Milwaukee has a wide assortment of pH, ORP, Conductivity and other specialty sensors and calibration, maintenance and cleaning solutions, 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.

Electrodes and Probes

MA815D/1	4-ring Conductivity/TDS/NaCl/Temperature probe with DIN connector and 1 meter cable
MA840	Polarographic D.O. probe with 3 meter cable
MA906BR/1	pH/Temp. Amplified Probe with 1 meter cable
MA814DB/1	4-ring Conductivity/TDS/NaCl/Temperature probe with DIN connector and 1 meter cable
SE220	Double junction pH electrode with 1 meter cable and gel filled electrolyte solution
MA916B/1	pH Glass Electrode with BNC Connector and 1 m cable
MA917B/1	Refillable Combined Glass pH Electrode with Double Junction and 1 meter cable
MA918B/1	Combined Glass pH Electrode with 3 Diaphragms, Double Junction and 1 meter cable
MA921B/1	Double junction Platinum ORP electrode with BNC Connector and 1 m cable

Calibration, Maintenance & Cleaning 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 230 ml
MA9015	Storage solution for pH/ORP electrodes 230 ml
MA9016	Cleaning solution 230 ml
MA9020	200-275 mV ORP solution 230 ml
MA9061	1413 µS/cm conductivity calibration solution 230 ml
MA9071	Electrolyte solution for D.O. probes 230 ml



Photometers for pH, free and total chlorine, iron, ammonia and phosphate measurement

The latest laboratory grade microprocessor photometers have an excellent repeatability and are 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.

All photometers come complete in hard carrying case and reagents for 100 tests, making it ideal for field measurements.



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SATISFACTION GUARANTEED

Laboratory Bench Meters for measuring pH, mV, TDS, Conductivity, NaCl and Temp

The high performance economy microprocessor-based bench meters are an ideal tool in schools, laboratories and production plants. They are provided with a series of new diagnostic features which add an entirely new dimension to the measurement of pH, ORP, TDS, EC, NaCl, Temp by allowing the user to dramatically improve the reliability of the measurement

- pH extended range: -2.00 to 20.00 pH, -2.000 to 20.000 pH (MW106)
- Logging: Maximum 1000 records (maximum 100 lots) On demand, 200; On stability, 200; Interval logging, 1000
- PC connectivity (MW151): 1 micro USB port
- auto-off feature to preserve battery life
- dedicated GLP key
- Built-in rechargeable battery with 8 hours battery life

Each meter is supplied in a carton box complete with sensors and calibration solutions.

Specifications	MW151 MAX	MW170 MAX	MW180 MAX
Range	pH -2.00 to 20.00 pH / -2.000 to 20.000 pH mV ±1000.0 mV / ±2000.0 mV EC —	—	-2.00 to 20.00 pH; -2.000 to 20.000 pH ±699.9 mV; ±2000 mV
TDS	—	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	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
NaCl	—	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 0.0 to 400.0%	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 0.0 to 400.0%
Calibration	pH up to 5-point, with 7 standard buffers EC —	— Single cell factor calibration 6 standards	up to 5 points, 7 memorized buffers 1-point slope calibration with 6 memorized solutions
Temp. compensation	—	—	—
Temp.	—20.0 to 120.0°C / -4.0 to 248.0°F	-20.0 to 120.0°C / -4.0 to 248.0°F	-20.0 to 120.0°C / -4.0 to 248.0°F
Temp. compensation	automatic, or manual	automatic, or manual, or without	automatic, or manual
Electrode/Probe	MA917B/1, MA831R	MA814DB/1	MA917B/1, MA814DB/1, MA831R
Log	—	Maximum 1000 records	—
PC interface	1 USB port, 1 micro USB port	1 micro USB port	RS232/USB opto-isolated
Power supply	12VDC adapter, 5 VDC USB adapter	12V DC adapter	12V DC adapter
Dimensions	230 x 160 x 95 mm / 0.9 Kg	230 x 160 x 95 mm / 0.9 Kg	230 x 160 x 95 mm / 0.9 Kg



Laboratory Bench meters for measuring pH, mV, Dissolved Oxygen and Temperature

MW150 is an advanced pH/ORP/Temp microprocessor-based bench meter. It is ideal for students and technicians who need fast and reliable measurements.

The **MW190** is ideal for testing Dissolved Oxygen in the pharmaceutical and food Industry, as well as monitoring in water treatment plants. The user can choose to measure D.O. readings in mg/L or % of saturation of O₂. This meter can be used for any type of water, as it allows measurements to compensate for temperature, altitude and salinity factors. The automatic logging interval can be set to perform analysis and store data into the memory.

Specifications	MW150 MAX	MW190 MAX
Range	pH / mV -2.00 to 20.00 pH / ±1000.0 mV / ±2000.0 mV O ₂ — % saturation O ₂ 0.0 to 300.0%	— 0.00 to 45.00 mg/l (ppm) 0.0 to 300.0%
Calibration	pH up to 3 points, with 7 memorized buffers O ₂ —	— 1 or 2 points 0% and 100%
Temp. compensation	—	—
Temp.	—20.0 to 120.0°C / -4.0 to 248.0°F	-20.0 to 120.0 °C (-4.0 to 248.0 °F)
Temp. compensation	automatic or manual	automatic, 0.0 to 50.0°C / 32.0 to 122.0°F
Altitude compensation	—	-500 to 4,000 m
Salinity compensation	—	0 to 40 g/l
Electrode / Probe	MA917B/1, MA831R	MA845
PC interface	—	1 USB type A port, 1 micro USB port
Power supply	12V DC adapter (included)	12V DC adapter (included)
Dimensions / Weight	230 x 160 x 95 mm / 0.9 Kg	230 x 160 x 95 mm / 0.9 Kg



Portable Meters for measuring pH/ORP/Conductivity/TDS/Dissolved oxygen and Temperature

MW series are compact 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 easier and faster to calibrate portable meters have a small, ergonomic case design. Other features include a large and easy to read LCD and long battery life. All meters are supplied with electrode/probe and calibration solutions in a carton box.

Specifications	MW101 PRO	MW102 PRO+	MW500 PRO
Range	pH/ORP 0.00 to 14.00 pH Temp. —	-2.00 to 16.00 pH -5 to 70°C	±1000mV
Accuracy	pH/ORP ±0.02 pH Temp. —	±0.02 pH ±0.5°C	±5mV
Temp. Compensation	—	—	—
Calibration	manual, 0 to 50°C	automatic, 0 to 70°C	—
pH Electrode	SE220 (included)	SE220 (included)	—
ORP Electrode	—	—	SE300 (included)
Temperature Probe	—	MA830R (included)	—
Environment	0 to 50°C, max RH 95%	0 to 50°C, max RH 95%	0 to 50°C, max RH 95%
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	—
Dimensions / Weight	145 x 80 x 40 mm / 220g	145 x 80 x 40 mm / 220 g	145 x 80 x 40 mm / 220 g

Specifications	MW301 PRO/MW302 PRO	MW401 PRO/MW402 PRO	MW801 PRO/MW802 PRO	MW600 PRO
Range	pH — EC 0 to 1900 µS/cm / 0.0 to 10.0 mS/cm TDS — O ₂ —	— 0 to 1900 mg/L / 0.0 to 10.0 g/L (ppt)	— 0.0 to 14.0 pH / 0.00 to 14.00 pH 0 to 1990 µS/cm / 0.00 to 6.00 mS/cm 0 to 1990 ppm / 0 to 4000 ppm	— — — 0.0 to 19.9 mg/L
Accuracy	pH — EC/TDS ±2% Full Scale O ₂ —	— ±2% Full Scale	— ±0.2 pH / ±0.20 pH ±2% Full Scale	— — — ±1.5% Full Scale
Conversion Factor	—	—	0.5 / 0.68	—
Calibration	—	—	—	—
Temp. Compensation	—	—	—	—
Probe	—	—	—	—
Environment	—	—	—	—
Battery Type	—	—	—	—
Battery Life	—	—	—	—
Auto-off	—	—	—	—
Dimensions	—	—	—	—
Weight	—	—	—	—

Laboratory Electrodes

Milwaukee has a wide assortment of pH, ORP sensors to meet all your 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.



Code	MA991B/1	MA919B/1	MA924B/1	MA917B/1	MA918B/1	MA920B/1
Range	0 to 13 pH	0 to 13 pH	±2000 mV	0 to 14 pH	0 to 12 pH	0 to 12 pH
Temp. range	-5 to 40°C	-5 to 40°C	20 to 40°C	20 to 40°C	-5 to 30°C	-5 to 40°C
Shaft material	glass	glass	glass	glass	glass	PVDF
Ref. electrolyte	KCL 3.5M	KCL 3.5M	KCL 3.5M	KCl 3.5M	KCl 3.5M + AgCl	Viscolene
Reference type	single, Ag/AgCl	double Ag/AgCl	double Ag/AgCl	double, Ag/AgCl	double, Ag/AgCl	single, Ag/AgCl
Reference junction	ceramic, single	open	open	ceramic	ceramic, triple	open
Shape of membrane	spheric	spheric	platinum ring	spheric	conic	conic
Max. pressure	0.1 bar	0.1 bar	0.1 bar	0.1 bar	0.1 bar	0.1 bar
Connector type	BNC	BNC	BNC	BNC	BNC	BNC
Cable	coaxial, 1 m	coaxial, 1 m	coaxial, 1 m	coaxial, 1 m	coaxial, 1 m	coaxial, 1 m
Shaft length	120 mm	120 mm	120 mm	120 mm	120 mm	75 mm
Diameter	12 mm	8 mm	8 mm	12 mm	12 mm	6 mm
Application	laboratory applications	food laboratory	food laboratory	laboratory applications	laboratory applications	laboratory applications

Portable meters for measuring pH, ORP, Conductivity, TDS, NaCl, Dissolved Oxygen and Temp

These pH, Conductivity, TDS, NaCl, Dissolved Oxygen, and Temperature portable meters are designed to provide laboratory results and accuracy even under harsh industrial condition. This new line of MW portable meters will suit all budgets and provide the user with flexibility in a wide range of applications.

- IP67 waterproof casing
- pH extended range: -2.00 to 20.00 pH, -2.000 to 20.000 pH (MW106)
- Logging: Maximum 1000 records (maximum 100 lots) On demand, 200; On stability, 200; Interval logging, 1000
- PC connectivity (MW106): 1 micro USB port
- 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

Each meter is supplied in a hard carrying case complete with sensors and calibration solutions.

Specifications	MW105 MAX	MW106 MAX	MW306 MAX	MW605 MAX	
Range	pH -2.00 to 20.00 pH mV ±2000 mV EC — TDS — NaCl — O ₂ — Temp. -20.0 to 120.0°C	-2.00 to 20.00 pH/-2.000 to 20.000 pH ±2000 mV	-2.00 to 20.00 pH/-2.000 to 20.000 pH ±2000 mV	— — — — — -20.0 to 120.0 °C	— — — — — -20.0 to 120.0 °C
Accuracy	pH ±0.02 pH mV ±1 mV EC — TDS — NaCl — O ₂ — Temp. ±0.5°C	±0.01 pH / ±0.002 pH ±1 mV	— — — — — ±1.5% of reading ±1 digit ±0.4 °C	— — — — — ±1.5% of reading ±1 digit ±0.4 °C	
Calibration	—	—	—	—	
Temp. Compensation	—	—	—	—	
Probe	—	—	—	—	
Environment	—	—	—	—	
Battery Type	—	—	—	—	
Battery Life	—	—	—	—	
Dimensions	—	—	—	—	
Weight	—	—	—	—	



Pocket size pH, ORP, EC, TDS and Temperature Multi-parameter meters with replaceable electrode

Waterproof pH testers with large dual-level LCD that displays pH, ORP, EC, TDS and temperature (°C or °F). They have a stability indicator and hold function that freezes the display for easy and accurate recording. The large display also has graphic symbols to guide you through all operations.

Complete with a temperature probe for faster and more precise temperature measurement they compensate automatically for temperature. Calibration is made automatically in 1 or 2 points with memorized standard and NIST buffer sets. Auto power OFF saves battery power after non-use.

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

Combo testers:

The **MW803** and **MW804** Combination testers with dual-level LCD measure pH/Conductivity/TDS/Temperature in one single tester!

Specifications	pH55 PRO/pH56 PRO	EC59 PRO/EC60 PRO	MW803 MAX/MW804 MAX
Range	pH -2.0 to 16.0 / -2.00 to 16.00 EC — TDS — Temp. -5.0 to 60.0°C	— 0 to 3999 µS/cm / 0 to 20.00 mS/cm 0 to 2000 ppm / 0 to 10.00 ppt -5.0 to 60.0°C	0.00 to 14.00 pH 0 to 3999 µS/cm / 0 to 20.00 mS/cm 0 to 2000 ppm / 0 to 10.00 ppt
Resolution	pH 0.1 pH / 0.01 pH EC — TDS — Temp. 0.1°C	— 1 µS/cm / 0.01 mS/cm 1 ppm / 0.01 ppt 0.1°C	0.01 pH 1 µS/cm / 0.01 mS/cm 1 ppm / 0.01 ppt 0.1°C
Accuracy	pH ±0.1 / ±0.05 EC — TDS — Temp. ±0.3°C	— ±2% Full scale ±2% Full scale ±0.3C	±0.05 pH ±2% Full scale ±2% Full scale ±2% Full scale ±0.5°C
Calibration	—	—	—
Temp. compensation	—	—	—
Probe (included)	—	—	—
Auto off	—	—	—
Dimensions / Weight	—	—	—

