



MW180 MAX

pH/ mV/ EC/ TDS/ NaCl/ Temperature
Bench Meter



3. SPECIFICATIONS

	Range	Resolution	Accuracy @ 25 °C (77 °F)	Calibration
pH	-2.00 to 20.00 pH	0.01 pH	±0.01 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 Two custom buffers
	-2.000 to 20.000 pH	0.001 pH	±0.002 pH	
ORP	±2000.0 mV	0.1 mV	±1 mV	
EC	0.00 to 29.99 µS/cm	0.01 µS/cm	±1% of reading (±0.05 µS/cm or 1 digit, whichever is greater)	
	30.0 to 299.9 µS/cm	0.1 µS/cm		
	300 to 2999 µS/cm	1 µS/cm		
	3.00 to 29.99 mS/cm	0.01 mS/cm		
	30.0 to 200.0 mS/cm up to 500.0 mS/cm absolute conductivity*	0.1 mS/cm		
TDS	0.00 to 14.99 ppm (mg/L)	0.01 ppm	±1% of reading (±0.03 ppm or 1 digit, whichever is greater)	
	15.0 to 149.9 ppm (mg/L)	0.1 ppm		
	150 to 1499 ppm (mg/L)	1 ppm		
	1.50 to 14.99 g/L	0.01 g/L		
	15.0 to 100.0 g/L up to 400.0 g/L absolute TDS* (with 0.80 factor)	0.1 g/L		
Salinity	0.0 to 400.0 % NaCl	0.1% NaCl	±1% of reading	
	2.00 to 42.00 PSU	0.01 PSU		
	0.00 to 80.00 g/L	0.01 g/L		
Temperature	-20.0 to 120.0 °C (-4.0 to 248.0 °F)	0.1 °C (0.1 °F)	±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			
Conductivity temperature coefficient	0.00 to 6.00 % / °C (EC & TDS only) Default value: 1.90 % / °C			
TDS factor	0.40 to 0.80, Default value: 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			

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

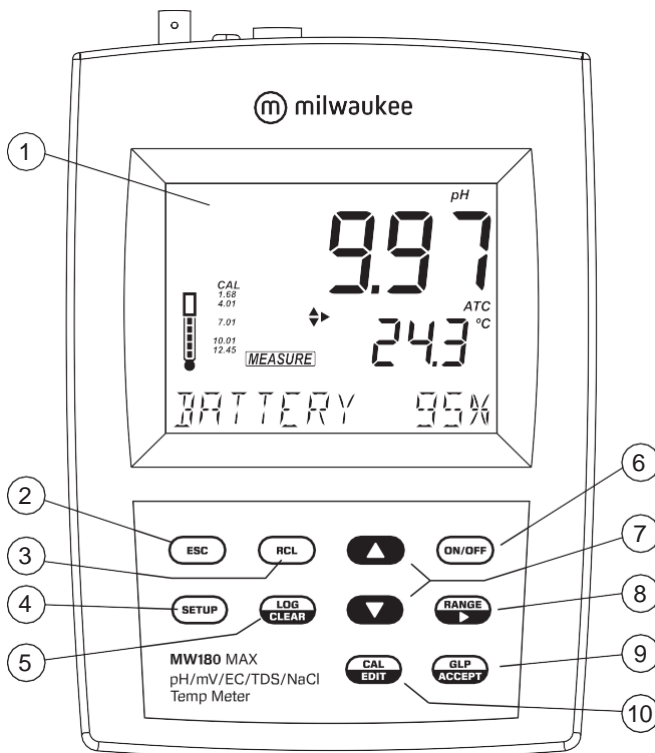
PC connectivity	1 USB port, 1 micro USB port
Power supply	12 VDC adapter (included)
Battery type	internal
Battery life	8 hours
Environment	0 to 50 °C; maximum RH 95%
Dimensions	230 x 160 x 95 mm (9.0 x 6.3 x 3.7")
Weight	0.9 kg (2.0 lb.)
Warranty	3 years

PROBE SPECIFICATIONS

MA917B/1	pH range	0 to 14 pH
	Temperature range	0 to 70 °C (32 to 158 °F)
	Operating temperature	20 to 40 °C (68 to 104 °F)
	Reference electrolyte	KCl 3.5M
	Reference junction	Ceramic, single
	Reference type	Double, Ag/AgCl
	Maximum pressure	0.1 bar
	Body	Glass; tip shape: sphere
	Connector	BNC
	Dimensions	Shaft length: 120 mm (5.5"); Ø 12 mm (0.5")
EC/TDS/NaCl probe MA814DB/1	Cable	Length 1 m (3.2 ft)
	Temperature range	0 to 60 °C (32 to 140 °F)
	Temperature sensor	NTC10K
	4-ring type	Stainless steel
	Body	ABS
Temperature probe MA831R	Connector	DIN, 7 pins
	Dimensions	Total length: 140 mm (5.5") Active part: 95 mm (3.7"); Ø 16.3 mm (0.64")
	Cable	Length 1 m (3.2 ft)
	Temperature sensor	NTC10K
Temperature probe MA831R	Body	Stainless steel
	Connector	RCA
	Dimensions	Total length: 190 mm (7.5") Active part: 120 mm (5.5"); Ø 3,6 mm (1.4")
	Cable	Length 1 m (3.2 ft)

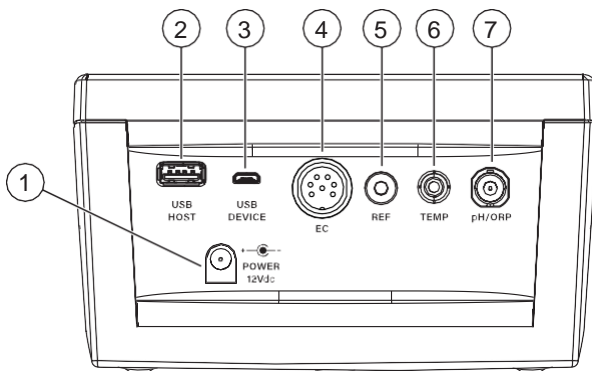
4. FUNCTIONAL & DISPLAY DESCRIPTION

Front Panel



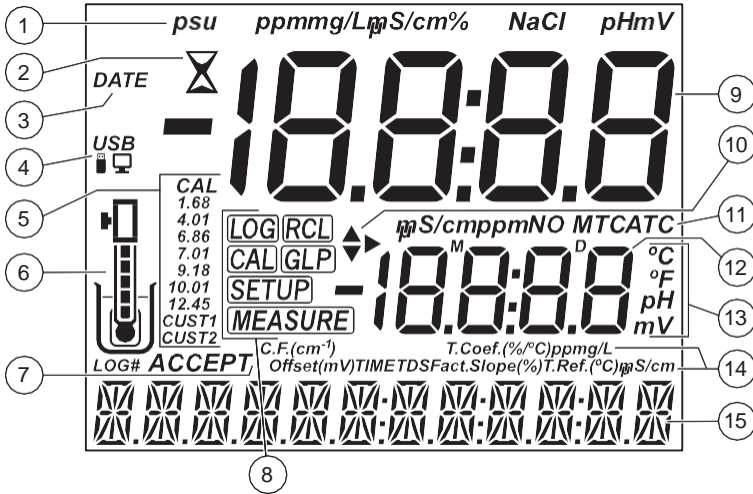
1. Liquid Crystal Display (LCD)
2. ESC key, to exit current mode
3. RCL key, to recall the logged values
4. SETUP key, to enter setup mode
5. LOG/CLEAR key, to log the reading or to clear calibration or logging
6. ON/OFF key
7. ▲▼ directional keys for menu navigation, select setup parameters and calibration solutions
8. RANGE/► key, to select setup parameters and toggle between measurement units
9. GLP/ACCEPT key, to enter GLP or to confirm selected action
10. CAL/EDIT key, to enter/edit calibration settings, edit setup settings

Rear Panel



1. Power supply socket
2. USB type A socket
3. Micro USB socket
4. DIN probe connector
5. Reference electrode connector
6. RCA connector for temperature probe
7. BNC electrode connector

Display Description

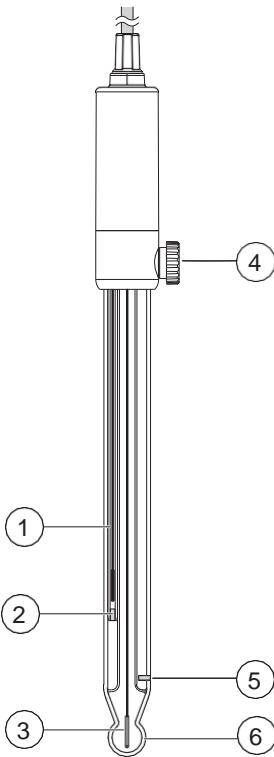


1. Measurement units
2. Stability indicator
3. DATE tag
4. USB connection status
5. pH calibration buffers
6. Probe symbol and probe condition
7. LOG tag and ACCEPT tag
8. Mode tags (LOG, RCL, CAL, GLP, SETUP, MEASURE)
9. First LCD line, measurement reading
10. Arrow tags, to navigate the menu in either direction
11. Measurement units / Temperature compensation status (NO TC, MTC, ATC)
12. Second LCD line, temperature reading
13. Temperature and measurement units
14. Measurement units / offset & slope indicators / TDS settings
15. Third LCD line, message area

5. PROBE DESCRIPTION

MA917B/1 for pH measurement.

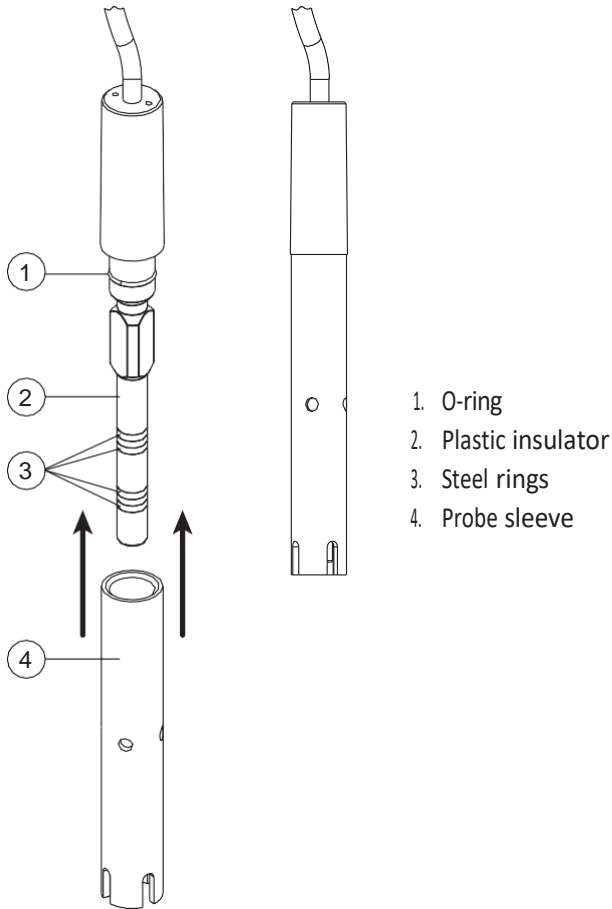
- Double junction design, reduces risk of clogging with the reference cell physically separated from the intermediate electrolyte.
- Refillable, with **MA9011** 3.5M KCl. This solution is silver free. Silver can cause silver precipitate to form at the junction resulting in clogging. Clogging causes erratic and slow readings. The ability to refill the electrolyte also extends the life of the electrode.
- Glass body, is easily cleaned and resistant to chemicals.
- Round tip, provides the largest possible surface area for faster readings and is well suited to testing liquid samples.



1. Reference wire
2. Inner reference junction
3. Sensing wire
4. Reference fill cap
5. Outer reference junction
6. Glass bulb

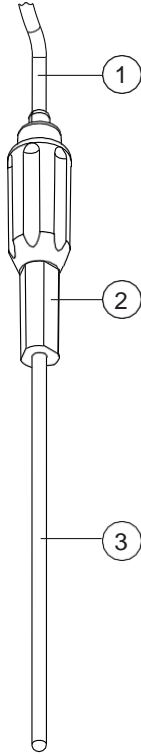
MA814DB/1 for conductivity, TDS, salinity and temperature measurement.

- Direct signal processing for noise-free measurements
- Accurate and integrated temperature measurement



MA831R for temperature measurement and automatic temperature compensation (ATC).

- Made of stainless steel for corrosion resistance
- Used in conjunction with the pH electrode to utilize the instrument's ATC capability



1. Cable
2. Handle
3. Stainless steel tube

6. GENERAL OPERATIONS

6.1. POWER CONNECTION & BATTERY MANAGEMENT

MW180 can be powered from the supplied 12 VDC adapter, through a PC USB port (or standard 5V USB charger) or from the built-in rechargeable battery.

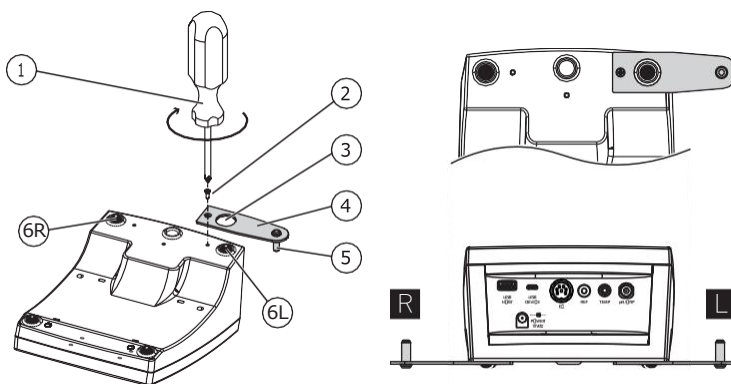
The built-in rechargeable battery provides about 8 hours of continuous use. Fully charge the battery before first use.

To conserve battery, the meter will turn off automatically after 10 minutes of inactivity. To configure this option see Auto Off in GENERAL SETUP OPTIONS section.

At power on the instrument performs an auto-diagnostic test. All LCD segments are displayed for a few seconds, then starts in the previously selected measurement mode.

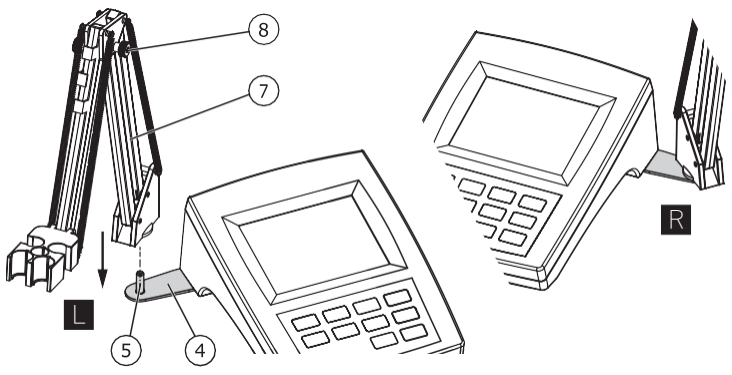
6.2. MOUNTING THE ELECTRODE HOLDER

- Take the **MA9315** electrode holder from the box.
- Identify the metal plate (4) with the integrated pin (5) and the screw (2).
The plate may be attached to either sides of the meter, left (L) or right (R).
- Turn the meter over, with the display facing down.



- Align the rubber foot (6R or 6L) with the hole (3) on the plate (4). Make sure the pin (5) is facing down.
- Use a screwdriver (1) to tighten the screw (2) and lock in place.

- Position the meter with the display facing up.
- Take the electrode holder (7) and insert it into the pin (5). The pin securely holds the electrode holder in place.
- For increased arm rigidity, tighten the metal knobs (8) on both sides.



63. CONNECTING THE PROBES

63.1. MA917B/1 pH Probe

MA917B/1 is connected to the meter through a BNC connector (labeled pH/ORP).

With the meter off:

- Connect the probe to the BNC socket on the top right of the meter.
- Align and twist the plug into the socket.
- Place the probe into the holder and secure the cable in clips.

63.2. MA814DB/1 EC/TDS/NaCl Probe

MA814DB/1 is connected to the meter through a DIN connector

With the meter off:

- With the meter off, connect the probe to the DIN socket on the top of the meter.
- Align the pins and key then push the plug into the socket.
- Place the probe into the holder and secure the cable in clips.