

BATTERY REPLACEMENT

The battery level indicator on the LCD indicate the battery life. When displayed blinking, the battery should be replaced. The meter is equipped with BEPS (Battery Error Prevention System) which automatically turns the meter off when battery level is too low to guarantee accurate measurements.

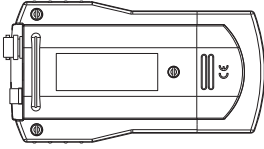
1. Turn the meter off.

2. Remove the battery cover on the back of the meter by putting slight pressure with your thumb on the two ridges and sliding it off.

3. Remove the old battery.

4. Insert a new 9 V battery in the battery compartment while paying attention to the correct polarity.

5. Close the battery compartment by sliding the cover back on.



SPECIFICATIONS

Range	-2.00 to 16.00 pH ±200.0 mV -5.0 to 105.0 °C (23.0 to 221.0 °F)
Resolution	0.01 pH 0.1 mV 0.1 °C / 0.1 °F
Accuracy (@ 25 °C)	±0.02 pH ±0.5 mV ±0.5 °C / 1.0 °F
Temperature Compensation	Automatic; -5.0 to 105.0 °C (23.0 to 221.0 °F)
Calibration	Automatic, at 1 or 2 points
pH Electrode	SE220 (included)
Temperature Probe	MA831R (included)
Environment	0 to 50 °C (32 to 122 °F) RH 95 % max.
Battery Type	1 x 9 V alkaline (included)
Battery Life	approx. 750 hours of use after 8 minutes of non-use
Dimensions	143 x 80 x 32 mm
Weight	220 g (meter with battery)

OPTIONAL 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	General cleaning solution, 230 mL bottle
M10000B	Rinse solution, 20 mL sachet (25 pcs.)
SE220	pH electrode with BNC connector and 1m cable
MA831R	Temperature probe

CERTIFICATION

Milwaukee Instruments conform to the CE European Directives.

Disposal of Electrical & Electronic Equipment. Do not treat this product as household waste. Hand it over to the appropriate collection point for the recycling of electrical and electronic equipment.

Disposal of waste batteries. This product contains batteries. Do not dispose of them with other household waste. Hand them over to the appropriate collection point for recycling.

Please note: proper product and battery disposal prevents potential negative consequences for human health and the environment. For detailed information, contact your local household waste disposal service or go to www.milwaukeeinstruments.com (USA & CAN) or www.milwaukeeinstruments.eu.

RECOMMENDATION

Before using this product, make sure it is entirely suitable for your specific application and for the environment in which it is used. Any modification introduced by the user to the supplied equipment may compromise the meter's performance. For your and the meter's safety do not use or store the meter in hazardous environment. To avoid damage or burn, do not perform any measurement in microwave ovens.

WARRANTY

This instrument is warranted against defects in materials and manufacturing for a period of 2 years from the date of purchase. Probe is warranted for 6 months. This warranty is limited to repair or free of charge replacement if the instrument cannot be repaired. Damage due to accidents, misuse, tampering or lack of prescribed maintenance is not covered by warranty. If service is required, contact your local Milwaukee Instruments Technical Service. If the repair is not covered by the warranty, you will be notified of the charges incurred. When shipping any meter, make sure it is properly packaged for complete protection.

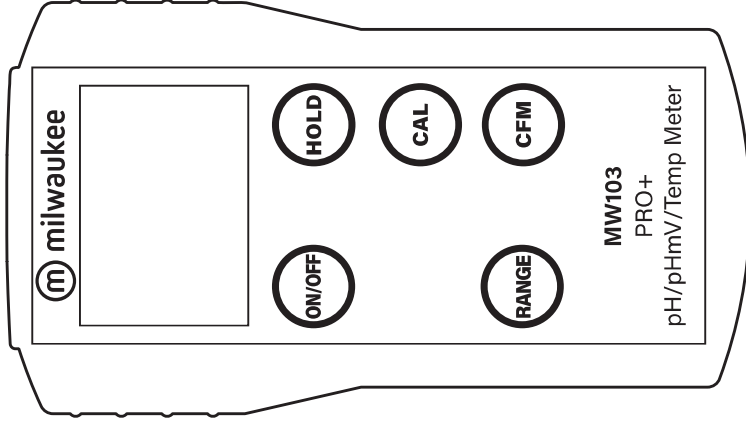
Milwaukee Instruments reserves the right to make improvements in design, construction and appearance of its products without advance notice.

ISTMW103 03/26



USER MANUAL

MW103 PRO+ Portable 2-in-1 pH/pHmV/Temperature Meter



milwaukeeinstruments.com (USA & CAN)
milwaukeeinstruments.eu



PRELIMINARY EXAMINATION

Each meter is supplied complete with:

- SE220 pH electrode
- MA831R Temperature probe
- pH 4.01 Buffer solution (20 mL)
- pH 7.01 Buffer solution (20 mL)
- 9 V battery (1 pc.)
- Instruction manual

METER SET UP

Tip: If any salt crystals appear on the pH sensor, do not be alarmed. They are non-toxic and this is normal. Simply, rinse with warm water.

- Remove the battery cover on the back of the meter by putting slight pressure with your thumb on the two ridges and sliding it off.
- Firmly press supplied battery into the clip connector, while paying attention to the correct polarity.
- Replace the battery cover by sliding back on.

Note: If the pH electrode bulb and / or junction are dry, soak the tip (≈ 2.5 cm) in MA9015 Storage Solution for a few hours (or overnight).

- Loosen and remove the clear plastic cap from the bottom of the electrode by holding the clear plastic part of the cap with one hand and turning the black part of the cap left with the other.

- Slide the cap down and off.
- Connect the electrode and the temperature probe to the connectors on top of the meter.
- Connecting the MA831R temperature probe allows the meter to operate and measure temperature and to function in pH measurements performing automatic temperature compensation (ATC).

Note: The meter is now ready for calibration.

GUIDELINES

- Set up a routine internal schedule where measurement integrity is validated.
- Do not handle the sensing surfaces of the sensors.
- Use a sachet of M10000B or DI water for rinse solution in a beaker and a separate calibration beaker for each buffer.
- Do not return the used buffers to the bottles of "fresh" buffer. Discard buffers after use. Discard rinse after use.
- For measurements across a temperature gradient, allow the electrodes to reach thermal equilibrium before conducting calibrations.
- During calibration, the temperature probe should be in the calibration buffer.

Note: This meter may be calibrated to one point 7.01, 4.01 or 10.01 or a 2 point calibration (generally recommended) for higher accuracy.

CALIBRATION PROCEDURE

Offset Calibration

- Remove the electrode protective cap and rinse the tip with pH 7.01 buffer solution. Use steps above for cap removal.
- For most applications it is recommended to start with pH 7.01 buffer (MA9007).
- Use calibration buffers that bracket the samples pH.
- For acidic samples, use pH 4.01 buffer (MA9004).
- For alkaline samples, use pH 10.01 buffer (MA9010).
- Swirl the electrode tip and temperature probe in pH 7.01 buffer solution.

- Press the CAL key to enter the Calibration mode.

- "pH 7.01" is displayed blinking and the stability indicator (hourglass symbol) lights up.

- When the stability indicator turns off and the "pH" tag stops blinking, press the CFM key to confirm the offset calibration.

Note: Continue to second point calibration, follow slope steps.

Slope Calibration

- After completing the offset calibration (pH 7.01), the default value pH 4.01 buffer is displayed blinking. (Should you want pH point 10.01, simply hit the CAL key).

- Rinse the tip of the pH electrode and temperature probe in the second rinse beaker.
- Next, swirl the electrode tip and temperature probe in pH 4.01 buffer solution.

- Wait for the reading to stabilize (the hourglass will stop blinking), then press the CFM key to confirm slope calibration.

Note: The meter is now calibrated and ready for measurements.

For a Single Point Calibration 7.01, 4.01, or 10.01

- Turn the meter on by pressing the ON/OFF key.

- Press the CAL key. "7.01" appears flashing by default. Should you want to use 4.01 or 10.01, press the CAL key again until your value appears.

- Place the electrode and the temperature probe into the chosen buffer after rinsing in M10000B rinse solution or distilled water.

- The selected value is displayed blinking and the stability indicator (hourglass symbol) and pH tag lights up and blinks.

- When the stability indicator turns off and the "pH" tag stops blinking, press the CFM key to confirm your single point calibration choice.

- You are now ready for measuring.

Note: To delete calibration data in the meter, press CAL and CFM keys together. "CLR" will appear on the LCD. Your data is now cleared.

METER OPERATION

Tip: Before use and for best results, be sure the meter is calibrated and the electrode and temperature probe are in good working order.

- Press the ON/OFF key to turn the meter on.
- Rinse probes with purified water between buffers and sample measurements.
- Blot (never rub!) the sensor with a lint-free tissue between buffers and samples.
- Place the electrode tip (≈ 2.5 cm) and the temperature probe into the sample and stir gently to ensure the sensor is measuring a representative sample.
- Once the hourglass symbol turns off, record measurement data.
- Press the RANGE key to cycle through pH, mV, and temperature parameters.
- To switch between °C and °F, use the RANGE button to select temperature mode, then press and hold RANGE key. The meter will switch to °C or °F.



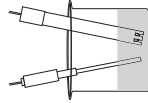
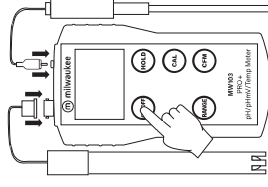
Note: The mV mode of this meter is intended for the use of evaluating the offset and slope condition of the pH sensor being used with the meter ONLY. IT IS NOT for ORP MEASUREMENTS.

Should the offset and slope mV values be high or low, try cleaning the pH sensor in MA9016 Cleaning Solutions for approximately 20 minutes, then rinse with distilled water and soak in MA9015 Storage Solution for a few hours or overnight. If the offset and slope conditions do NOT improve, it may be time to order a new pH sensor.

Note: During non-use times, always store the pH sensor wet by placing the cap back on filled with MA9015 Storage Solution up to the marker on the outside of the plastic cap. For longer-term storage, greater than 1 month, remove the 9 volt battery.

Error Messages

- Full scale value displayed blinking » reading is under/over range
- "Eb" » low battery voltage
- "Ec" » wrong buffer solution
- "Ee" together with "°C" blinking » temperature outside specified range
- "Clr" » calibration is required



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