

## 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

## SPECIFICATIONS

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

## 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](http://www.milwaukeeinstruments.com) (USA & CAN) or [www.milwaukeeinstruments.eu](http://www.milwaukeeinstruments.eu).



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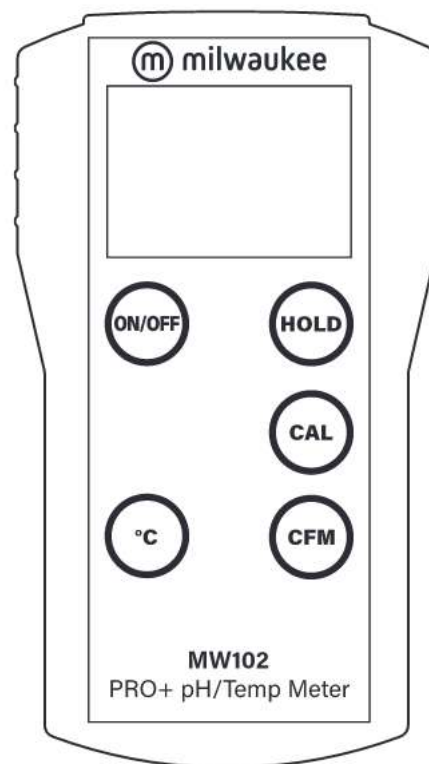
## RECOMMENDATION

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.

## USER MANUAL

### MW102 PRO+

### Portable 2-in-1 pH/Temperature Meter



## 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)
- Instruction manual
- 9 V battery (1 pc.)

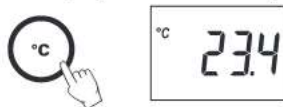
## OPERATION

- The meter is supplied complete with a 9 V battery. Slide off the battery compartment cover on the back of the meter and install the battery into battery clip connector while observing polarity.
- Always remove the electrode protective cap before taking any measurement. If the electrode has been left dry, soak the tip ( $\approx 2.5$  cm) in MA9015 Storage Solution for a few hours (or overnight) to reactivate.

- Connect the pH electrode and the temperature probe to the sockets on the meter's top. The temperature probe can be used independently to take temperature measurements, or it can be used in conjunction with the pH electrode to utilize the meter's ATC capability.



- Turn the instrument on by pressing the ON/OFF key.
- Before taking any measurements, make sure that the meter has already been calibrated.
- Immerse the pH electrode tip (2.5 cm) into the sample and stir gently.
- The pH measurement is ready when the hourglass symbol turns off.
- To display measured temperature, press and hold the °C key. When the key is released, the display will return to the pH reading.



- The HOLD function is activated by pressing the HOLD key. The measured value is frozen on the display and the "HOLD" tag lights up. Release "HOLD" by pressing HOLD key again.



- After completing measurements, switch the meter off and store the electrode with a few drops of storage solution in the protective cap.



### Error message on display:

- Blinking full scale value: reading is out of range;
- "Eb": battery low voltage indication;
- "Ec": wrong buffer solution;
- "Ec" together with "°C" blinking: the temperature of the calibration is out of accepted range;
- "Clr": the calibration data has been lost and recalibration is needed.

## CALIBRATION PROCEDURE

### A) Preparation:

Select two pH calibration buffers: pH 7.01 and a second to bracket your measurement range.

1. pH 7.01 (MA9007)
2. pH 4.01 (MA9004) for measuring in the acid range (pH lower than 7) or pH 10.01 (MA9010) for measuring in the alkaline range (pH higher than 7).

Use two beakers for each reference solution.

One beaker for rinsing the electrode, the other for calibration. This way contamination between solutions during calibration is minimized.

### B) Procedure:

#### Offset calibration

- Remove the electrode protective cap and rinse the tip with some pH 7.01 solution, then immerse the electrode tip and the temperature probe into a pH 7.01 buffer solution.
- Press the CAL key to enter the Calibration mode.
- The display flashes "pH 7.01" and hourglass lights up.
- Wait till the hourglass symbol on the display turns off and the "pH" tag stops blinking, then press the CFM key to confirm the offset calibration.



**Note:** Pressing the CAL key again will change the buffer value, allowing a single point calibration at pH 4.01 or pH 10.01.

### Slope calibration

- After completing the pH 7.01 calibration the next buffer pH 4.01 will flash on the display.



- Press CAL key to display pH 10.01 if desired.
- Rinse the pH electrode and the temperature probe in the rinse buffer beaker, then immerse them into the second buffer beaker.
- Wait until the hourglass symbol on the LCD turns off, then press the CFM key to confirm slope calibration.



**Notes:** To exit the calibration mode, turn the meter off by pressing the ON/OFF key.

To perform a single point calibration (offset) at pH 7.01, press the ON/OFF key when the second buffer is displayed.

To delete calibration press CAL and CFM keys together.

## BATTERY REPLACEMENT

When the batteries become weak, the battery symbol on the LCD starts blinking to advise that only a few hours of working time is remaining.

The meter is also provided with BEPS (Battery Error Prevention System), which avoids any erroneous reading due to low battery level. The instrument will display "Eb" for a while and then turn off.

Prompt battery replacement is required.

Battery replacement must only take place in a non-hazardous area using a 9 V alkaline battery.

Turn the meter off, slide the battery compartment cover located at the rear of the meter off and replace the 9 V battery with a new one.

Make sure the battery contacts are fully engaged in the connector, seat the battery in its compartment and replace the cover.

