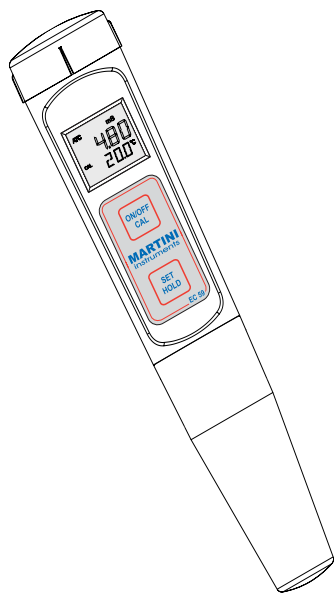


## USER MANUAL

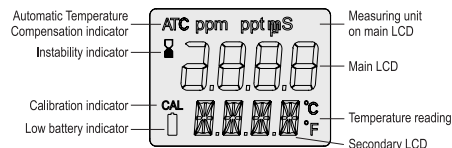
### EC 59 • EC 60

### Pocket-size EC/TDS/°C/°F Meters



**MARTINI**  
instruments

[www.milwaukeeinst.com](http://www.milwaukeeinst.com)



#### OPERATIONAL GUIDE

- Remove the probe cap and turn the meter on by pressing the ON/OFF button. All the used segments on the LCD will be visible for 1 second or as long as the button is pressed.
- Immerse the probe in the solution to be tested and select either EC or TDS mode with SET/HOLD.
- Stir gently and wait for the reading to stabilize, i.e. the hourglass symbol on the LCD turns off.
- The EC (or TDS) value is automatically compensated for temperature and will be displayed on the main LCD, while the temperature is shown on the secondary LCD.
- To freeze the display, while in measurement mode, press and hold the SET/HOLD button. The "HOLD" message appears on the secondary display and the reading will be frozen on the LCD.  
Press any button to return to normal mode.

- To turn the meter off, press the ON/OFF button. The "OFF" message will appear on the secondary display. Release the button.

#### Notes:

- Before taking any measurement, make sure the meter is calibrated (the CAL tag is on).
- After use always turn the meter OFF, rinse the probe with water and store it with the protective cap.

#### SETUP

Setup mode allows the selection of temperature (°C or °F), TDS conversion factor (CONV) and temperature coefficient (BETA).

To enter the Setup mode, press the ON/OFF button until "CAL" on the secondary LCD is replaced by "TEMP" and the current temperature unit (e.g. TEMP °C). Then:

- for °C/°F selection: use the SET/HOLD button; then press the ON/OFF button once to enter the buffer set selection or twice to return to the normal measurement mode.
- to change the TDS factor value: after setting the temperature unit, press ON/OFF once to show the current value (e.g. 0.50 CONV). Select the

desired value by using the SET/HOLD button, then press ON/OFF twice to return to the normal measurement mode.

- to change the temperature coefficient: after setting the TDS factor, press ON/OFF to show the current value of the temperature coefficient  $\beta$  (e.g. 2.1 BETA). Use the SET/HOLD button to set the desired value, then press ON/OFF to return to the normal measurement mode.

#### CALIBRATION PROCEDURE

For better accuracy, frequent calibration of the tester is recommended. Calibration is also necessary after probe replacement, after testing aggressive chemicals and where extreme accuracy is required.

- From normal EC operation mode, press and hold the ON/OFF/CAL button until the "OFF" message on the secondary LCD is substituted by "CAL". Release the button.
- Immerse the probe in the proper calibration solution: **M10031** (1413  $\mu\text{S/cm}$ ) for **EC 59** and **M10030** (12.88  $\text{mS/cm}$ ) for **EC 60**.
- Once the calibration has been automatically performed, the LCD will

show "OK" for 1 second and the meter will return to normal measurement mode.

- **Since there is a known relationship between EC and TDS readings, it is not necessary to calibrate the meter in TDS.**

**Note:** When the calibration procedure is completed, the CAL tag is turned on.

- To reset to the default values and clear a previous calibration, press the ON/OFF/CAL button after entering the calibration mode and before the calibration point is accepted. The secondary LCD displays "CLR" for 1 second, the meter resets to the default calibration and the CAL tag on the LCD turns off.

#### **PROBEREPLACEMENT**

- Remove the protective cap and unscrew the plastic ring on the top of the probe.
- Pull out the **MI59P** probe and replace it with a new one.
- Make sure the gaskets are in place before screwing back the ring.

#### **BATTERYREPLACEMENT**

When the batteries become weak, the battery symbol on the LCD will light up 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 readings due to low battery level by automatically switching the meter off.

It is recommended to replace the batteries immediately.

To replace the batteries unscrew the battery compartment cap and replace all four 1.5V batteries while paying attention to their polarity. Make sure the gasket is in place before screwing back the cap.

Batteries should only be replaced in a non-hazardous area using the battery type specified in this instruction manual.

#### **ACCESSORIES**

- MI 59P** Replaceable probe for **EC 59 & EC 60**
- M10030B** 12.88 mS/cm calibration solution, 20 ml sachet, 25 pcs
- M10031B** 1413  $\mu$ S/cm calibration solution, 20 ml sachet, 25 pcs
- MA9060** 12.88 mS/cm calibration solution, 230 ml bottle
- MA9061** 1413  $\mu$ S/cm calibration solution, 230 ml bottle
- MA9016** Cleaning solution, 230 ml
- M10000B** Rinse solution, 20 ml sachet, 25 pcs

#### **WARRANTY**

These instruments are warranted against defects in materials and manufacturing for a period of two years from the date of purchase. Probe is warranted for 6 months.

If during this period the repair or replacement of parts is required, where the damage is not due to negligence or erroneous operation by the user, please return the parts to either distributor or our office and the repair will be done free of charge.

Damages due to accidents, misuse, tampering or lack of prescribed maintenance are not covered.

#### **SPECIFICATIONS**

##### **Range**

3999  $\mu$ S/cm / 2000 ppm (**EC 59**)  
20.00 mS/cm / 10.00 ppt (**EC 60**)  
0.0 to 60.0°C / 32.0 to 140.0°F

##### **Resolution**

1  $\mu$ S/cm / 1 ppm (**EC 59**)  
0.01 mS/cm / 0.01 ppt (**EC 60**)  
0.1°C / 0.1°F

##### **Accuracy (@20°C)**

2% FS (EC/TDS) / 0.5°C /  $\pm$ 1°F

##### **Typical EMC Deviation**

2% FS (EC/TDS) /  $\pm$ 0.5°C /  $\pm$ 1°F

##### **Temperature Compensation**

Automatic, with  $\beta=0.0$  to 2.4%/°C

##### **Calibration**

Automatic, 1 point

##### **Probe** Replaceable **MI 59P**

##### **Environment**

0 to 50°C; 100% RH max.

##### **Battery Type**

4 x 1.5V; IEC LR44, A76

##### **Battery Life**

Approx. 100 hours of use

##### **Auto-off**

After 8 min. of non-use

##### **Dimensions / Weight**

200 x dia 38 mm / 100 g