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1 Introduction

Thank you for purchasing this high quality METTLER TOLEDO laboratory meter. With the FiveGo™ portables for pH, conductivity, and DO measurement, we wish to simplify your measuring process and your workflows.

The FiveGo™ portables are much more than just a series portable meters with an excellent price/performance ratio. The meters offer a number of user-friendly features, including

- **Waterproof operation**
The IP67 waterproof rating that allows free operation in wet or damp environments
- **Optimized ease of use**
Simple menus for quick and easy operation
- **Excellent ergonomics**
Handle the instrument with comfort and ease

2 Safety Measures

2.1 Definition of signal warnings and symbols

Safety notes are marked with signal words and warning symbols. These show safety issues and warnings. Ignoring the safety notes may lead to personal injury, damage to the instrument, malfunctions and false results.

Signal words

| | |
|------------------|--|
| WARNING | for a hazardous situation with medium risk, possibly resulting in severe injuries or death if not avoided. |
| CAUTION | for a hazardous situation with low risk, resulting in damage to the device or the property or in loss of data, or minor or medium injuries if not avoided. |
| Attention | (no symbol) for important information about the product. |
| Note | (no symbol) for useful information about the product. |

Warning symbols



General hazard



Toxic substance



Inflammable or explosive substance

2.2 Product specific safety notes

Your instrument represents state-of-the-art technology and complies with all recognized safety rules, however, certain hazards may arise in extraneous circumstances. Do not open the housing of the instrument; it does not contain any parts that can be maintained, repaired or replaced by the user. If you experience problems with your instrument, contact your authorized METTLER TOLEDO dealer or service representative.

Intended use



This instrument is designed for a wide range of applications in various areas and is suitable for measuring pH.

The use therefore requires knowledge and experience in working with toxic and caustic substances.

The manufacturer shall not be held liable for any damage resulting from incorrect usage divergent to the operating instructions. Furthermore, the manufacturer's technical specifications and limits must be adhered to at all times and in no way exceeded.

Location



The instrument has been developed for indoor operation and may not be used in explosive environments.

Use the instrument in a location which is suitable for the operation, protected from direct sunlight and corrosive gases. Avoid powerful vibrations, excessive temperature fluctuations and temperatures below 0 °C and above 40 °C.

After use, place the instrument back in the carrying case to reduce instruments exposure to UV radiation and prolong material quality and appearance.

Protective Clothing

It is advisable to wear protective clothing in the laboratory when working with hazardous or toxic substances.



A lab coat should be worn.



Suitable eye protection such as goggles should be worn.



Use appropriate gloves when handling chemicals or hazardous substances, checking their integrity before use.

Safety notes



WARNING

Chemicals

All relevant safety measures are to be observed when working with chemicals.

- a) Set up the instrument in a well-ventilated location.
- b) Any spills should be wiped off immediately.
- c) When using chemicals and solvents, comply with the instructions of the producer and the general lab safety rules.



WARNING

Flammable solvents

All relevant safety measures must be observed when working with flammable solvents and chemicals.

- a) Keep all sources of flame away from the workplace.
- b) When using chemicals and solvents, comply with the instructions of the producer and the general lab safety rules.

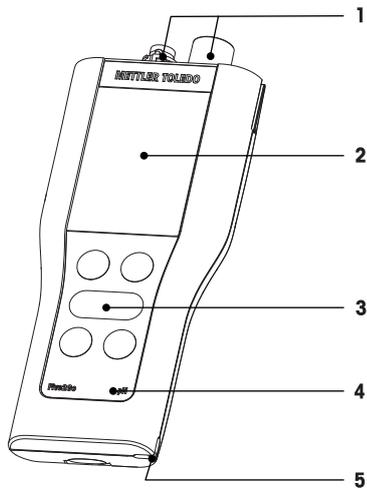
FCC Rules

This device complies with Part 15 of the FCC Rules and Radio Interference Requirements of the Canadian Department of Communications. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

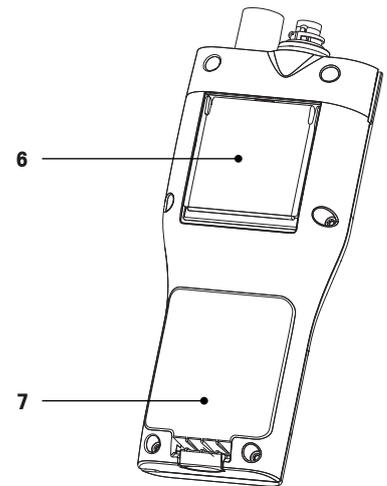
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

3 Design and Function

3.1 Overview

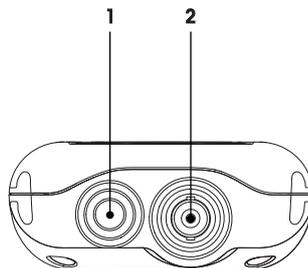


- 1 Sensor connections
- 2 Display
- 3 Keypad
- 4 Type label



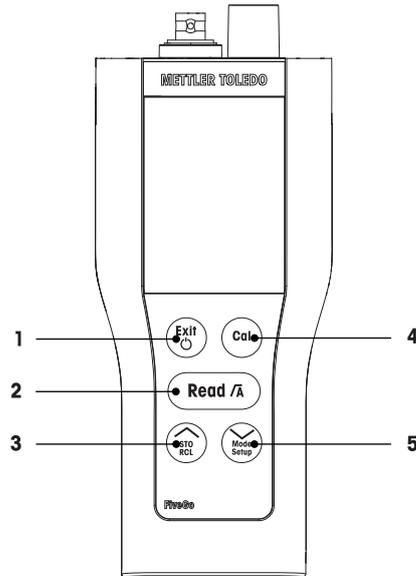
- 5 Slot for wrist strap
- 6 Table top stand
- 7 Battery compartment

3.2 Sensor connections



- 1 RCA (Cinch) socket for temperature input
- 2 BNC socket for mV/pH signal input

3.3 Keypad

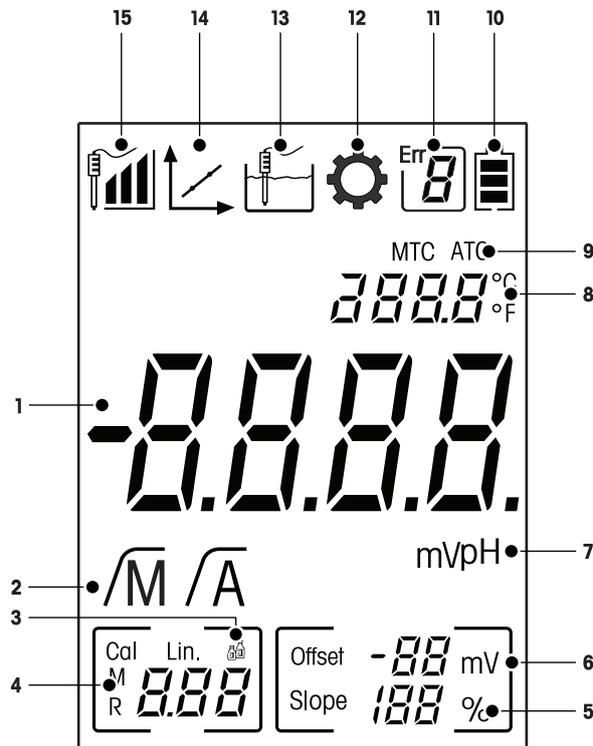


| | Key | Naming | Press and release | Press and hold |
|---|---|------------------------|--|--|
| 1 |  | On / Off / Exit | <ul style="list-style-type: none"> Switch meter on Back to measurement screen | <ul style="list-style-type: none"> Switch meter off |
| 2 |  | Read / Endpoint format | <ul style="list-style-type: none"> Start or endpoint measurement Confirm setting | <ul style="list-style-type: none"> Turn auto endpoint on or off |
| 3 |  | Store / Recall | <ul style="list-style-type: none"> Store current reading to memory Increase value during setting Scroll up through the memory | <ul style="list-style-type: none"> Recall stored data |
| 4 |  | Calibration | <ul style="list-style-type: none"> Start calibration | <ul style="list-style-type: none"> Recall calibration data |
| 5 |  | Mode / Setup | <ul style="list-style-type: none"> Decrease value during setting Scroll down through the memory | <ul style="list-style-type: none"> Enter setup mode |

3.4 Display and icons

When turning on the instrument, the startup screen appears for 3 seconds. The startup screen shows all icons which can appear on the display. In the following table you find a short description about these icons.

Startup screen



| | Icon | Description |
|----|------------------|--|
| 1 | --- | pH measurement value |
| 2 | √A / √M | Endpoint format: √A Automatic √M Manual |
| 3 | | Buffer/Standard settings |
| 4 | --- | Memory information |
| 5 | Slope | Slope is one of two quality indicators for the attached sensor and is determined during calibration. |
| 6 | Offset | Offset reading |
| 7 | mV / pH | Currently used measurement unit |
| 8 | --- | Temperature information |
| 9 | MTC / ATC | MTC (Manual temperature capture) ATC (Automatic temperature capture) |
| 10 | | Power status <ul style="list-style-type: none"> fully charged half charged lowly charged fully discharged |
| 11 | | Error code |
| 12 | | Setup mode |

| | Icon | Description |
|----|---|--|
| 13 |  | Measurement mode |
| 14 |  | Calibration mode: Indicates calibration mode and appears whenever you are performing a calibration or reviewing calibration data. |
| 15 |  | Electrode performance  Slope: 95-105% / Offset: \pm 0-20 mV (Electrode in good condition)  Slope: 90-94% / Offset: \pm 20-35 mV (Electrode needs cleaning)  Slope: 85-89% / Offset: \geq 35 mV (Electrode is faulty) |

3.5 Setup menu navigation

For general navigation in the setup menu read the following information:

- Press and hold **Setup** to enter the setup menu.
- Press **Exit** to exit the setup menu.
- Use  and  do increase or decrease values.
- Press **Read** to confirm a change.

The following parameters can be changed in the order as shown.

| Parameter | Description | Range |
|--|----------------------------|---------------------------------|
| MTC | Manual temperature setting | 0.0...100.0°C / 32.0...212°F |
|  | Buffer standard setting | B1, B2, B3, B4 |
| °C, °F | Temperature unit | °C, °F |

3.6 Measurement modes

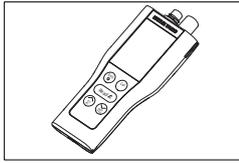
With the F2 pH/mV meter it is possible to measure the following parameters of a sample:

- pH
- mV

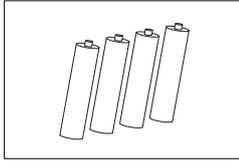
To change the unit, press **Mode** on the measurement screen until the desired appears.

4 Putting into Operation

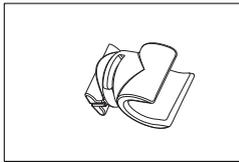
4.1 Scope of delivery



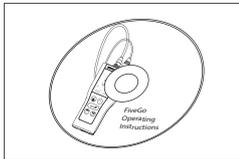
FiveGo™ F2 instrument
for pH/mV measurement



Battery LR03/AAA 1.5V
4 pcs.

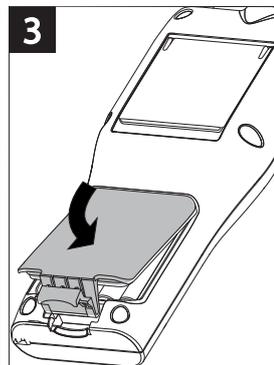
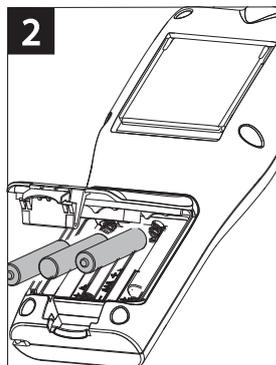
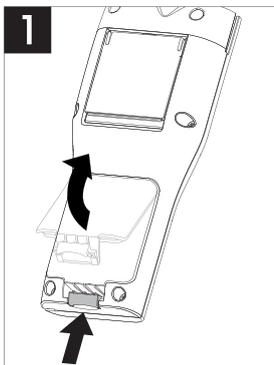


FiveGo™ electrode clip
1 pc.

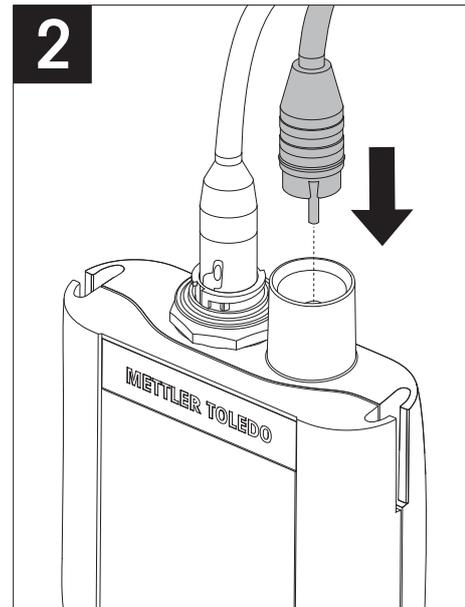
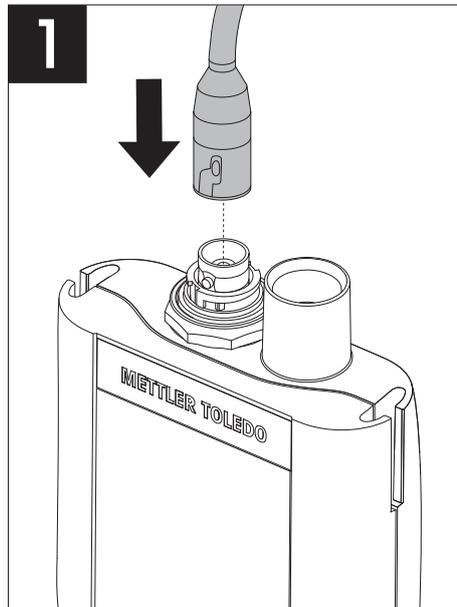


CD-ROM including operating instructions

4.2 Installing the batteries



4.3 Connecting sensors

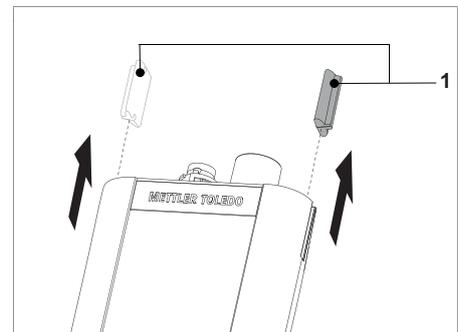


4.4 Installing optional equipment

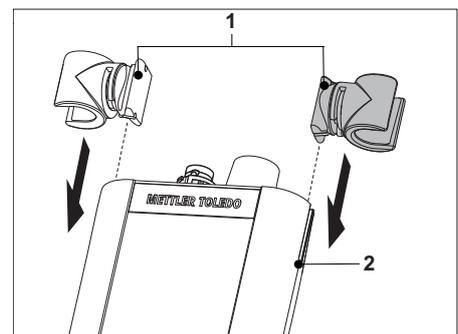
4.4.1 FiveGo™ electrode clip

For a safe placing of the electrode you can mount an electrode clip on the side of the instrument. The electrode clip is part of delivery. You can mount it on either sides of the instrument according to your preference.

- Remove the protective clips (1).

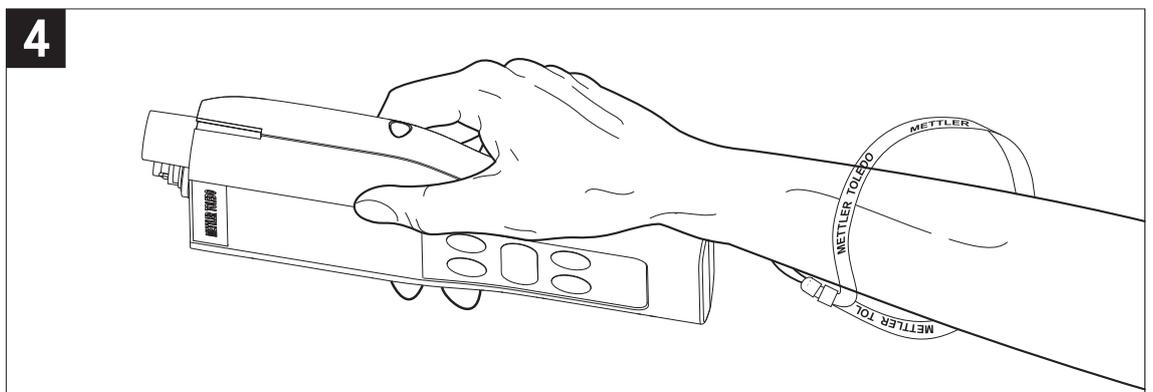
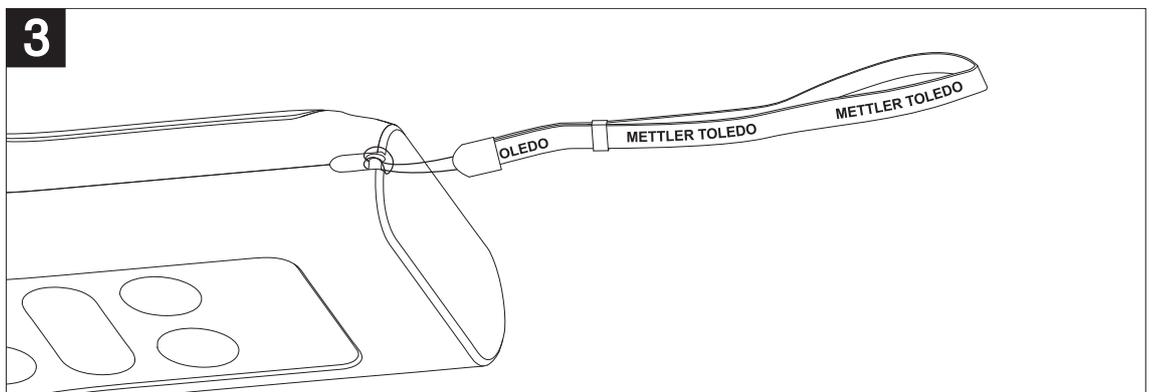
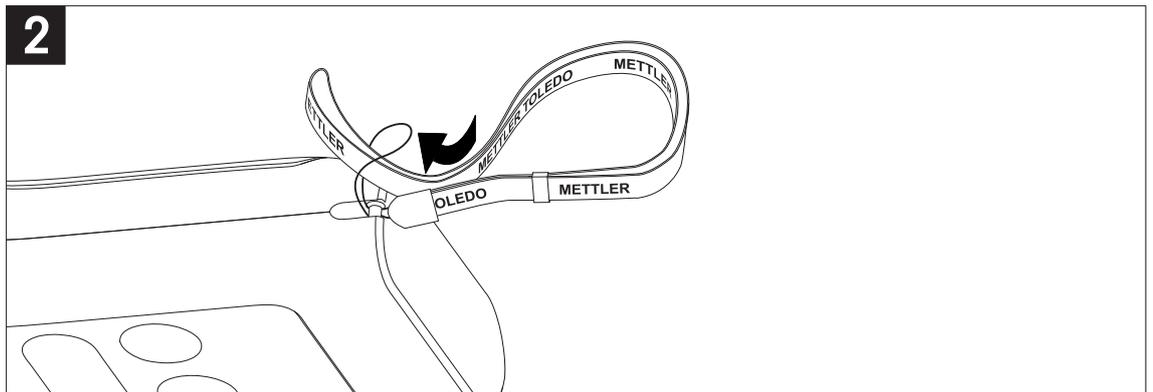
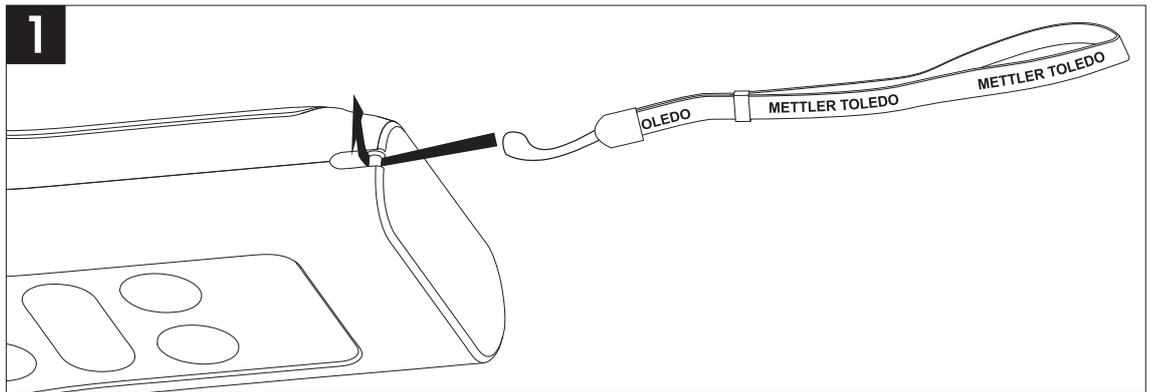


- Push the electrode clip (1) into the recess (2) of the instrument.



4.4.2 Wrist strap

For better protection against damage caused by dropping, you can mount the wrist strap as shown in the following diagrams.

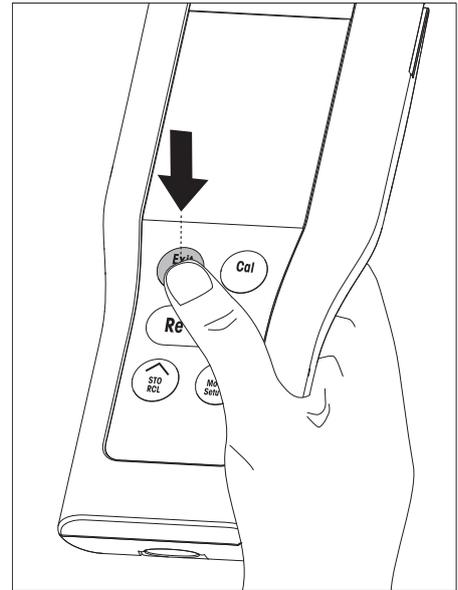


4.5 Switching the instrument on and off

- 1 Press and release  to switch on the instrument.
 - ⇒ All segmented digital numbers and icons are displayed for 3 seconds. After that the installed software version appears (e.g. 1.00) and the instrument is ready for use.
- 2 Press  for 3 seconds and release to switch off the instrument.

Note

By default after 10 minutes not in use, the instrument shuts down automatically.



5 Operation of the Instrument

5.1 General settings

5.1.1 Endpoint Formats

The FiveGo™ offers two different endpoint formats, automatic and manual. To switch between the automatic and manual endpoint modes, press and hold **Read**.

Automatic endpoint

With the automatic endpoint, the measurement stops automatically as soon as the input signal is stable. This ensures an easy, quick and precise measurement.

Manual endpoint

Unlike the automatic endpoint, user interaction is required to stop the measurement reading in manual mode. To manually endpoint a measurement, press **Read**.

5.1.2 Temperature capture

Automatic temperature capture (ATC)

For better accuracy, we recommend the use of either a sensor with a built-in or a separate temperature probe. If a temperature probe is recognized by the meter, **ATC** and the sample temperature are displayed.

Note

The meter accepts NTC 30 kΩ temperature sensors.

Manual temperature capture (MTC)

If the meter does not detect a temperature probe, it automatically switches to the manual temperature mode and **MTC** appears. The entered MTC temperature is used for temperature compensation.

- 1 To set the MTC temperature, press and hold **Setup**.
⇒ The temperature value is blinking. The default setting is 25 °C.
- 2 Select the temperature value by using  and .
- 3 Press **Read** to confirm your settings.
- 4 Continue with buffer group selection or press **Exit** to return to measurement screen.

5.1.3 Predefined buffer groups

The buffer group is selected in the setup menu.

| | | | | | | |
|----|------|------|------|-------|-------|------------|
| B1 | 1.68 | 4.01 | 7.00 | 10.01 | | (at 25 °C) |
| B2 | 2.00 | 4.01 | 7.00 | 9.21 | 11.00 | (at 25 °C) |
| B3 | 1.68 | 4.00 | 6.86 | 9.18 | 12.46 | (at 25 °C) |
| B4 | 1.68 | 4.01 | 6.86 | 9.18 | | (at 25 °C) |

- After confirmation of the MTC temperature, the current buffer group is blinking.
 - 1 Select the buffer group by using  and .
 - 2 Press **Read** to confirm.
 - 3 Continue with temperature unit setting or press **Exit** to return to measurement screen.

Note

It is not needed to calibrate a pH electrode with all pH values of a buffer group. Select the buffer group which contains the ones you are using for calibration. During calibration, the order in which the buffers are used is not relevant. The instrument has an auto buffer recognition function. This allows to calibrate in any order.

5.1.4 Temperature unit

The temperature unit is changed in the setup menu.

- After selection and confirmation of the predefined buffer group the temperature unit starts blinking.
 - 1 Select the temperature unit (°C or °F) using  and .
 - 2 Press **Read** to confirm and get back to the measurement screen.

5.2 Performing a calibration

For better accuracy, we recommend the use of either a sensor with a built-in or a separate temperature probe. If you use the MTC mode, you should enter the correct temperature value and keep all buffer and sample solutions at the set temperature. To ensure the most accurate pH reading, you should perform a calibration regularly.

The FiveGo™ pH meter allows you to run 1-, 2- and 3-point calibrations. If you select your calibration buffer group from one of the four predefined groups stored in the meter, the buffers are automatically recognized and displayed during calibration (auto buffer recognition).

5.2.1 Performing a 1-point calibration

- An electrode is connected to the instrument.
 - 1 Place the electrode in a calibration buffer.
 - 2 Press **Cal**.
 - ⇒  and  appear on the display.

During measurement the pH value based on the previous calibration is shown. Depending on the endpoint format, the instrument stops measuring when the signal is stable (auto endpoint) or after pressing **Read** (manual endpoint).
 - ⇒ At endpoint,  disappears from the display and the pH value of the recognized buffer at measured temperature is shown.
 - 3 If you do not want to proceed with the 2-point calibration, press **Read** to finish the 1-point calibration.
 - or –
 - If you want to reject the 1-point calibration press **Exit**.
 - or –
 - Proceed with next calibration point and go to Performing a 2-point calibration [▶ 19].

Note

With the 1-point calibration only the offset is adjusted. If the sensor was previously calibrated with multi-point calibration the previously stored slope will remain. Otherwise the theoretical slope (100 %) will be used.

5.2.2 Performing a 2-point calibration

- Perform the first calibration point as described in the section Performing a 1-point calibration [▶ 19].
 - 1 Rinse the electrode with deionized water.
 - 2 Place the electrode in the next calibration buffer and press **Cal**.
 - ⇒  and  appear on the display.

During measurement the pH value based on the previous calibration is shown. Depending on the endpoint format, the instrument stops measuring when the signal is stable (auto endpoint) or after pressing **Read** (manual endpoint). Slope and offset are then calculated.
 - ⇒ At endpoint,  disappears from the display and the pH value of the recognized buffer at measured temperature is shown.
 - 3 If you do not want to proceed with a 3-point calibration press **Read** to finish and save the 2-point calibration.
 - or-
 - if you want to reject the 2-point calibration, press **Exit**.
 - or-
 - if you want to proceed with the next calibration point go to Performing a 3-point calibration.

Note

With the 2-point calibration, both slope and offset are updated and shown on the right side of the display

5.2.3 Performing a 3-point calibration

- Perform the same steps as described in Performing a 2-point calibration [▶ 19].
- Repeat steps 1, 2 and 3 of Performing a 2-point calibration [▶ 19] for the third calibration point.

Note

With the 3-point calibration, both slope and offset are updated and shown on the right side of the display. The slope and offset values are calculated using least square method through the three calibration points (linear calibration).

5.3 Performing a measurement

5.3.1 Measurement mode

The FiveGo™ pH/mV meter offers two different reading modes: pH and mV.

- Press the **Mode** button to switch between pH and mV mode.

5.3.2 Performing a pH measurement

- An electrode is connected to the instrument.
 - Make sure that the pH reading mode is selected.
- 1 Place the electrode in the sample and press **Read** to start the measurement.
 - ⇒ The decimal point blinks.
 - ⇒ The display shows the pH of the sample.
 - ⇒ If the automatic endpoint is selected, and the signal has stabilized, the display freezes, \sqrt{A} appears and the decimal point stops blinking. In case the **Read** button was pressed before the automatic endpoint, the display freezes and \sqrt{M} appears.
 - 2 If the manual endpoint is chosen, press **Read** to manually endpoint the measurement. The display freezes and \sqrt{M} appears.

Note

Press and hold **Read** to switch between the automatic and manual endpoint format.

5.3.3 Performing a mV measurement

- An electrode is connected to the instrument.
 - Make sure that the mV mode is selected.
- Continue as described in steps 1 and 2 of the section Performing a pH measurement [► 21].

5.4 Using the memory

5.4.1 Storing a measurement result

The instrument can store up to 200 endpointed results.

- Press **STO** when the measurement has endpointed.
 - ⇒ **M001** indicates that one result has been stored, and **M200** that the maximum of 200 results have been stored.

Note

If you press **STO** when **M200** is displayed, **Err 6** indicates that the memory is full. To store further data you will have to clear the memory.

5.4.2 Recalling from memory

- 1 Press and hold **RCL** to recall the stored values.
- 2 Press  or  to scroll through the stored results.
 - ⇒ **MR 001** to **MR 200** indicates which result is currently displayed.
- 3 Press **Exit** to go back to the measurement screen.

5.4.3 Clearing the memory

- 1 Press and hold **RCL** to recall the stored values from memory.
- 2 Press **RCL** until **ALL** appears on the display.
- 3 Press **Read** to delete all measurement results.
 - ⇒ **CLr** starts blinking on the display.
- 4 Press **Read** to confirm the deletion
 - or -
 - Press **Exit** to cancel the deletion.

5.5 Self-diagnosis

- 1 Switch the meter on.
- 2 Press **Read** and **Cal** simultaneously until the meter displays the full screen.
 - ⇒ Each icon blinks one after the other whereby you can check if all icons are correctly shown on the display.
 - ⇒ After that, **b** starts to blink and 5 hardkey-icons are shown on the display.
- 3 Press any hardkey.
 - ⇒ The specific icon disappears from the display.
- 4 Press each hardkey once.
 - ⇒ When the self-diagnosis is completed successfully, **PAS** appears. If the self-diagnosis has failed, **Err 2** appears.

Note

You must press all hardkeys within 1 minute. Otherwise **FAL** appears and the self-diagnosis has to be redone.

5.6 Factory reset



Note

Loss of data!

With a factory reset all user-specific settings will be set to standard. Also all data memories will be deleted.

- The instrument is switched off.

- 1 Press and hold **Read**, **Cal** and **Exit** simultaneously for 2 seconds.
⇒ **RST** appears on the display.
- 2 Press **Read**.
- 3 Press **Exit**.
⇒ The instrument switches off.
⇒ All settings are reset.

6 Maintenance

6.1 Cleaning the housing



Note

Damage to the instrument!

Ensure that no liquid enters the interior of the instrument.

Wipe off any spills immediately.

The meter does not require any maintenance other than an occasional wipe with a damp cloth. The housing is made of acrylonitrile butadiene styrene (ABS). This material is sensitive to some organic solvents, such as toluene, xylene and methyl ethyl ketone (MEK).

- Clean the housing of the instrument using a cloth dampened with water and a mild detergent.

6.2 Electrode maintenance

- Make sure pH electrodes are always kept filled with the appropriate filling solution.
- For maximum accuracy, any filling solution that may have crystallized and encrusted the outside of the electrode should be removed with deionized water.
- Always store the electrode according to the manufacturer's instructions and do not allow it to dry out.

If the electrode slope falls rapidly, or if the response becomes sluggish, the following procedures may help. Try one of the following, depending on your sample. Run a new calibration after treatment.

| Symptom | Procedure |
|------------------------------------|---|
| Fat or oil build-up. | Degrease the membrane with cotton wool soaked in either acetone or a soap solution. |
| Membrane has dried out. | Soak the tip of the electrode overnight in 0.1 M HCl. |
| Protein build-up in the diaphragm. | Remove deposits by soaking the electrode in an HCl/pepsin solution. |
| Silver sulfide contamination. | Remove deposits by soaking electrode in a thiourea solution. |

Note

- Cleaning and filling solutions should be handled with the same care as that given to toxic or corrosive substances.
- For pH electrode trouble shooting you can also turn to www.electrodes.net

6.3 Error messages

| Error | Description | Resolution |
|-------|---|--|
| Err 1 | Memory access error | Reset to factory settings |
| Err 2 | Self-diagnosis failed | Repeat the self-diagnosis procedure and make sure that you finish pressing all five keys within one minute. |
| Err 3 | Measured values out of range | Make sure that the electrode wetting cap has been removed and the electrode is properly connected and placed in the sample solution. If no electrode is connected, put the shorting plug in the socket. |
| Err 4 | Measured buffer temperature out of range (5 to 40 °C) | Keep the temperature within the range for calibration (5 to 40 °C). |
| Err 5 | Offset out of range | Make sure you have the correct buffer and that it is fresh. Disconnect, clean and replace the electrode. |
| Err 6 | Slope out of range | Make sure you have the correct buffer and that it is fresh. Disconnect, clean and replace the electrode. |
| Err 7 | Meter cannot recognize the buffer (Wrong buffer) | Make sure you have the correct buffer and that it is fresh. Disconnect, clean and replace the electrode. |
| Err 8 | Memory is full | Clear the memory |
| Err 9 | Measurement data cannot be stored twice | --- |

6.4 Error limits

| Message | Description | Range not accepted | |
|---------|--|---|---|
| Err 3 | Value out of range | <ul style="list-style-type: none"> • pH • mV • Temperature | <ul style="list-style-type: none"> • < 0.00 or > 14.00 • < -1999 or > 1999 • < 0 or > +100 |
| Err 4 | Buffer temperature out of range | T | < 5 °C or > 40 °C |
| Err 5 | Offset out of range | Offset | ≤ -35 or ≥ 35 mV |
| Err 6 | Slope out of range (following cal. points) | Slope | ≤ 85% or ≥ 110% |
| Err 7 | Wrong buffer | Signal difference between two buffers | < 60 mV |

6.5 Disposal

In conformance with the European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.

Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment. If you have any questions, please contact the responsible authority or the distributor from which you purchased this device. Should this device be passed on to other parties (for private or professional use), the content of this regulation must also be related.

Thank you for your contribution to environmental protection.



7 Product Portfolio

| Meter and Kits | Description | Order No. |
|----------------|--|-----------|
| F2-Meter | FiveGo™ pH/mV meter without sensor | 30266946 |
| F2-Standard | FiveGo™ pH/mV meter standard kit with LE438 IP67 sensor | 30266889 |
| F2-Food | FiveGo™ pH/mV meter food kit with LE427 IP67 puncture sensor and carrying case | 30266881 |
| F2-Field | FiveGo™ pH/mV meter field kit with LE438 IP67 sensor and carrying case | 30266882 |

8 Accessories

| Parts | Order No. |
|--|-----------|
| FiveGo™ carrying case (incl. 4 sample bottles) | 30239142 |
| FiveGo™ electrode clip (1 pc) and electrode clip covers (2 pcs.) | 30239144 |
| Wrist strap (METTLER TOLEDO) | 30122304 |
| Battery cover | 30254145 |
| Table top stand | 30254146 |
| Sample bottles (4 pcs.) | 30239143 |
| BNC shortening plug | 30133643 |
| Sensors | Order No. |
| LE438 IP67 | 30247153 |
| LE438 | 51340242 |
| LE407 | 51340330 |
| LE408 | 51340347 |
| LE409 | 51340331 |
| LE410 | 51340348 |
| LE420 | 51340332 |
| LE422 | 30089747 |
| LE427 IP67 | 30259840 |
| LE427 | 51340333 |
| ATC probe, temperature sensor | 51300164 |
| Solutions | Order No. |
| pH 2.00 buffer sachets, 30 x 20 mL | 30111134 |
| pH 2.00 buffer solution, 250 mL | 51350002 |
| pH 2.00 buffer solution, 6 x 250 mL | 51350016 |
| pH 4.01 buffer sachets, 30 x 20 mL | 51302069 |
| pH 4.01 buffer solution, 250 mL | 51350004 |
| pH 4.01 buffer solution, 6 x 250 mL | 51350018 |
| pH 7.00 buffer sachets, 30 x 20 mL | 51302047 |
| pH 7.00 buffer solution, 250 mL | 51350006 |
| pH 7.00 buffer solution, 6 x 250 mL | 51350020 |
| pH 9.21 buffer sachets, 30 x 20 mL | 51302070 |
| pH 9.21 buffer solution, 250 mL | 51350008 |
| pH 9.21 buffer solution, 6 x 250 mL | 51350022 |
| pH 10.01 buffer sachets, 30 x 20 mL | 51302079 |
| pH 10.01 buffer solution, 250 mL | 51350010 |
| pH 10.01 buffer solution, 6 x 250 mL | 51350024 |
| pH 11.00 buffer sachets, 30 x 20 mL | 30111135 |
| pH 11.00 buffer solution, 250 mL | 51350012 |
| pH 11.00 buffer solution, 6 x 250 mL | 51350026 |
| Rainbow sachets I (10 sachets of pH 4.01 / 7.00 / 9.21) | 51302068 |
| Rainbow sachets II (10 sachets of pH 4.01 / 7.00 / 10.00) | 51302080 |
| Rainbow bottles I (2 x 250 mL of pH 4.01 / 7.00 / 9.21) | 30095312 |
| Rainbow bottles II (2 x 250 mL of pH 4.01 / 7.00 / 10.00) | 30095313 |
| Electrolyte 3 mol/L KCl, 25 mL | 51343180 |
| Electrolyte 3 mol/L KCl, 250 mL | 51350072 |
| Electrolyte 3 mol/L KCl, 6 x 250 mL | 51350080 |

| Solutions | Order No. |
|--|------------------|
| HCl/Pepsin solution (removes protein contamination), 250 mL | 51350100 |
| Reactivation solution for pH electrodes, 25 mL | 51350104 |
| Thiourea solution (removes silver sulfide contamination), 250 mL | 51350102 |

9 Technical Data

General

| | | |
|---------------------------|----------------------------|---|
| Power requirements | Batteries | 4 x LR03/AAA 1.5 V Alkaline - or - 4 x AAA 1.2 V NiMH rechargeable |
| | Battery life | > 200 h |
| Dimensions | Height | 188 mm |
| | Width | 77 mm |
| | Depth | 33 mm |
| | Weight (without batteries) | 260 g |
| Display | LCD | 3.1" Segmented LCD, b/w |
| Ambient conditions | Operating temperature | 0...40 °C |
| | Relative humidity | 5%...85% (non-condensing) at 31 °C, linearly descending to 50% at 40 °C |
| | Overvoltage category | Class II |
| | Pollution degree | 2 |
| | Maximum operating altitude | 2000 m above sea level |
| | Range of application | For indoor use |
| Materials | Housing | ABS |
| | Window | Polymethyl methacrylate (PMMA) |
| | IP Protection class | IP67 |

Measurement

| | | |
|----------------------|------------------------------|-------------------------------------|
| Parameters | pH, mV | |
| Sensor inputs | pH/mV | BNC, impedance > 10 ¹² Ω |
| | Temperature | Cinch, NTC 30 kΩ |
| pH | Measuring range | pH 0.00...14.00 |
| | Resolution | 0.01 |
| | Accuracy (electronic) | ± 0.01 |
| mV | Measuring range | -1'999...1'999 mV |
| | Resolution | 1 mV |
| | Limits of error | ±1 mV |
| | Units | mV |
| Temperature | Measuring range | 0...100 °C (32...212 °F) |
| | Resolution | 0.1 °C |
| | Limits of error | ± 0.5 °C |
| | ATC/MTC | Automatic switch |
| Calibration | Calibration points | 3 |
| | Predefined buffer groups | 4 |
| | Automatic buffer recognition | Yes |
| | Calibration method | Linear |
| Data storage | Memory size | 200 |

10 Appendix

B1 METTLER TOLEDO USA (Ref. 25 °C)

| T [°C] | 1.68 | 4.01 | 7.00 | 10.01 |
|-----------|-------------|-------------|-------------|--------------|
| 5 | 1.67 | 4.00 | 7.09 | 10.25 |
| 10 | 1.67 | 4.00 | 7.06 | 10.18 |
| 15 | 1.67 | 4.00 | 7.04 | 10.12 |
| 20 | 1.68 | 4.00 | 7.02 | 10.06 |
| 25 | 1.68 | 4.01 | 7.00 | 10.01 |
| 30 | 1.68 | 4.01 | 6.99 | 9.97 |
| 35 | 1.69 | 4.02 | 6.98 | 9.93 |
| 40 | 1.69 | 4.03 | 6.97 | 9.89 |

B2 METTLER TOLEDO Europe (Ref. 25 °C)

| T [°C] | 2.00 | 4.01 | 7.00 | 9.21 | 11.00 |
|-----------|-------------|-------------|-------------|-------------|--------------|
| 5 | 2.02 | 4.01 | 7.09 | 9.45 | 11.72 |
| 10 | 2.01 | 4.00 | 7.06 | 9.38 | 11.54 |
| 15 | 2.00 | 4.00 | 7.04 | 9.32 | 11.36 |
| 20 | 2.00 | 4.00 | 7.02 | 9.26 | 11.18 |
| 25 | 2.00 | 4.01 | 7.00 | 9.21 | 11.00 |
| 30 | 1.99 | 4.01 | 6.99 | 9.16 | 10.82 |
| 35 | 1.99 | 4.02 | 6.98 | 9.11 | 10.64 |
| 40 | 1.98 | 4.03 | 6.97 | 9.06 | 10.46 |

B3 JJG119 (Ref. 25 °C)

| T [°C] | 1.680 | 4.003 | 6.864 | 9.182 | 12.460 |
|-----------|--------------|--------------|--------------|--------------|---------------|
| 5 | 1.669 | 3.999 | 6.949 | 9.391 | 13.210 |
| 10 | 1.671 | 3.996 | 6.921 | 9.330 | 13.011 |
| 15 | 1.673 | 3.996 | 6.898 | 9.276 | 12.820 |
| 20 | 1.676 | 3.998 | 6.879 | 9.226 | 12.637 |
| 25 | 1.680 | 4.003 | 6.864 | 9.182 | 12.460 |
| 30 | 1.684 | 4.010 | 6.852 | 9.142 | 12.292 |
| 35 | 1.688 | 4.019 | 6.844 | 9.105 | 12.130 |
| 40 | 1.694 | 4.029 | 6.838 | 9.072 | 11.975 |

B4 JIS Z 8802 (Ref. 25 °C)

| T [°C] | 1.679 | 4.008 | 6.865 | 9.180 |
|-----------|--------------|--------------|--------------|--------------|
| 5 | 1.668 | 3.999 | 6.951 | 9.395 |
| 10 | 1.670 | 3.998 | 6.923 | 9.332 |
| 15 | 1.672 | 3.999 | 6.900 | 9.276 |
| 20 | 1.675 | 4.002 | 6.881 | 9.225 |
| 25 | 1.679 | 4.008 | 6.865 | 9.180 |
| 30 | 1.683 | 4.015 | 6.853 | 9.139 |
| 35 | 1.688 | 4.024 | 6.844 | 9.102 |
| 40 | 1.694 | 4.035 | 6.838 | 9.068 |

To protect your product's future:

METTLER TOLEDO Service assures the quality, measuring accuracy and preservation of value of this product for years to come.

Please request full details about our attractive terms of service.

www.mt.com/phlab

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Subject to technical changes.

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