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1 Introduction

Thank you for purchasing this high quality METTLER TOLEDO portable meter. Everywhere you measure pH - the Pro2Go portables are designed to offer you fast quality data, one-handed operation and an investment that lasts. Whether you work in the laboratory or at-line, the Pro2Go meters will provide you with high quality measurement everywhere you go. The Pro2Go offers many exciting features, including:

- Simple and intuitive menus that shorten steps needed for setting up measurements and calibration
- T-pad hard keys for comfortable and fast navigation
- Rubber side-guards for comfortable, one-handed operation
- IP67 rating for the entire measurement system, including meter, sensor and the connection cables

2 Safety information

- This Instruction Manual contains a full description of the instrument and its use.
- Keep the Instruction Manual for future reference.
- Include the Instruction Manual if you transfer the instrument to other parties.

Only use the instrument according to the Instruction Manual. If you do not use the instrument according to the Instruction Manual or if it is modified, the safety of the instrument may be impaired and Mettler-Toledo GmbH assumes no liability.



Instruction Manuals are available online.

► www.mt.com/library

2.1 Definitions of signal words and warning symbols

Safety notes contain important information on safety issues. Ignoring the safety notes may lead to personal injury, damage to the instrument, malfunctions and false results. Safety notes are marked with the following signal words and warning symbols:

Signal words

WARNING A hazardous situation with medium risk, possibly resulting in death or severe injury if not avoided.

NOTICE A hazardous situation with low risk, resulting in damage to the instrument, other material damage, malfunctions and erroneous results, or loss of data.

Warning symbols



Electrical shock

2.2 Product specific safety notes

Intended use

This instrument is designed to be used by trained staff. The Pro2Go is intended for measuring pH/ORP.

Any other type of use and operation beyond the limits of use stated by Mettler-Toledo GmbH without consent from Mettler-Toledo GmbH is considered as not intended.

Responsibilities of the instrument owner

The instrument owner is the person holding the legal title to the instrument and who uses the instrument or authorizes any person to use it, or the person who is deemed by law to be the operator of the instrument. The instrument owner is responsible for the safety of all users of the instrument and third parties.

METTLER TOLEDO assumes that the instrument owner trains users to safely use the instrument in their workplace and deal with potential hazards. METTLER TOLEDO assumes that the instrument owner provides the necessary protective gear.

Safety notes



WARNING

Danger of death or serious injury due to electric shock!

Contact with parts that carry a live current can lead to death or injury.

- 1 Only use the METTLER TOLEDO AC adapter designed for your instrument.
- 2 Keep all electrical cables and connections away from liquids and moisture.
- 3 Check the cables and the plugs for damage and replace damaged cables and plugs.



NOTICE

Risk of damage to the instrument due to the use of unsuitable parts!

Using unsuitable parts with the instrument can damage the instrument or cause it to malfunction.

- Only use parts from METTLER TOLEDO that are intended to be used with your instrument.

2.3 Information on Standards

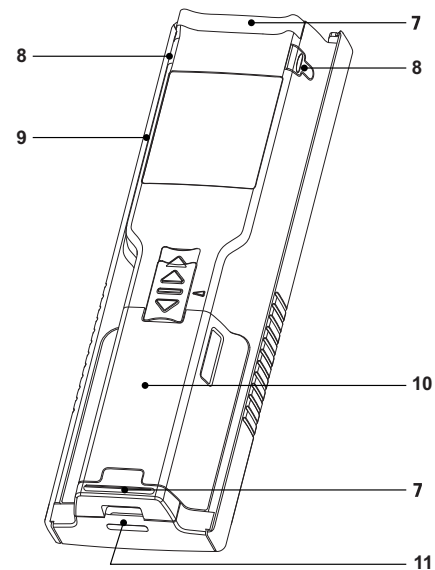
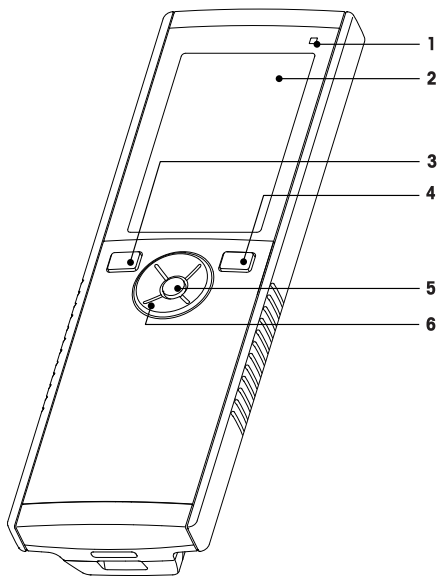
FCC Rules

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.

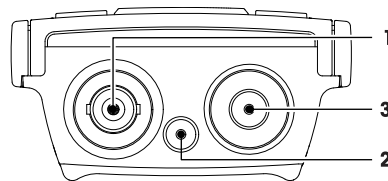
3 Design and Function

3.1 Overview



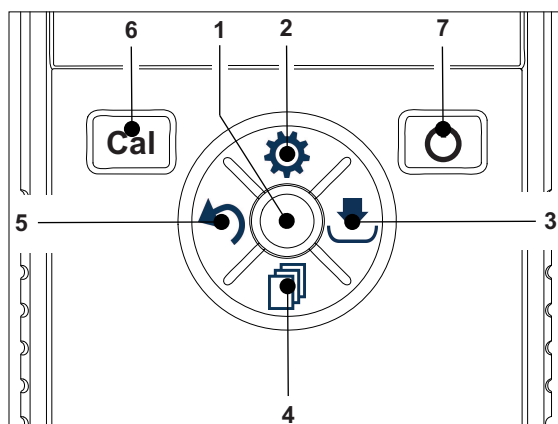
- | | | | |
|----------|-----------------|-----------|------------------------------------|
| 1 | Status LED | 7 | Rubber feet |
| 2 | Display | 8 | Fixing points for electrode holder |
| 3 | Calibration key | 9 | Micro-USB port |
| 4 | On/Off key | 10 | Battery compartment |
| 5 | Read key | 11 | Slot for wrist strap |
| 6 | T-Pad | | |

3.2 Sensor connections








- | | |
|----------|--|
| 1 | BNC socket for mV/pH signal input |
| 2 | Socket for reference electrode (2 mm banana) |
| 3 | RCA (Cinch) socket for temperature input |






3.3 T-Pad and hard keys








In Standard Screen

	Key	Press and Release	Press and hold
1	Read	Start and manually stop a measurement	Activate/Deactivate uFocus™
2	Settings/Up 	Open setup menu	---
3	Store/Right 	Save last measurement data	---
4	Mode/Down 	Switch measurement mode	---
5	Recall/Left 	Recall measurement data	---
6	Cal	Start calibration	Recall last calibration result
7	On/Off 	---	Switch instrument on (hold for 1 second) or off (hold for 3 seconds)

In calibration mode (indicated by )

	Key	Press and Release	Press and hold
1	Read	Manually stop calibration Save calibration result	---
2	Settings/Up 	---	---
3	Store / Right 	---	---
4	Mode/Down 	---	---
5	Recall/Left 	---	Discard calibration result
6	Cal	---	---
7	On/Off 	---	---

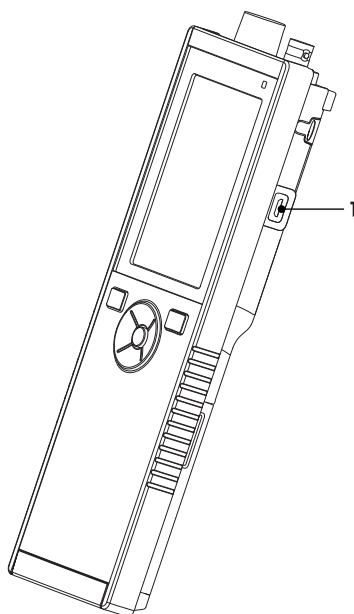
Settings and data menu

	Key	Press and release	Press and hold
1	Read	Select submenu Confirm setting	Exit menu
2	Settings / Up 	Edit value (increase) Navigate between menu points	Fast value increase
3	Store / Right 	Navigate between menu tabs (only in top level per tab)	---
4	Mode / Down 	Edit value (decrease) Navigate between menu points	Fast value decrease
5	Recall / Left 	Navigate between menu tabs (only in top level per tab) One level up (if not in top level) Move left (in input fields)	One level up (if entering value into input field)
6	Cal	---	---
7	On / Off 	---	---

3.4 Interface connection

The Micro-USB interface can be used for data transfer to a connected PC (EasyDirect pH software) and for external power supply. It is not possible to charge the batteries.

- 1 Micro-USB port











See also

📖 Installing power supply ▶ Page 13

3.5 Display icons

Icon	Description
	Power status 🔋 100% (fully charged) 🔋 75% 🔋 50% 🔋 25% 🔋 0% (fully discharged) 🔌 External power supply connected (USB)
	USB-PC connection: LabX®direct
	User mode R Routine 🎓 Expert 🌳 Outdoor
	Storage mode ⚙️ Automatic 📁 Manual
	Interval Reading is on
	GLP format is used
	ISM sensor has been detected and is properly connected
	Sensor state 📊 Slope: 95-105% / Offset: ± 0-20 mV (Electrode in good condition) 📊 Slope: 90-94% / Offset: ± 20-35 mV (Electrode needs cleaning) 📊 Slope: 85-89% / Offset: > 35 mV (Electrode is faulty) 📊 Slope: <85% or >105% (Electrode is defect)

Icon	Description
	Warning / Error occurred
	Sample ID
	Buffer Group
	User ID
	Sensor ID
	Endpoint type /A Automatic /M Manual
	Endpoint criteria <input type="radio"/> fast <input type="radio"/> normal <input checked="" type="radio"/> strict
	Wait icon

3.6 LED

To use the LED, it has to be enabled in the instrument setup, see section [Sounds and visuals ▶ Page 19]. The LED indicates different information of the device:

- Alarm Messages
- Measurement endpoint
- System Info

Instrument State	LED			Meaning
	green	red	orange	
Instrument turn ON	On for 5 s			<ul style="list-style-type: none"> • Instrument boot up
		Blinking		<ul style="list-style-type: none"> • Instrument has failed to boot correctly or failure after booting • Error message appears
Instrument running without calibration or measurement in progress		Blinking		<ul style="list-style-type: none"> • Calibration has expired and user has defined instrument to be blocked if sensor expires - error message displayed • Any other error occurred and is displayed
Measurement Mode	Pulsing			<ul style="list-style-type: none"> • Measurement in progress
	Solid			<ul style="list-style-type: none"> • Measurement complete
		Blinking		<ul style="list-style-type: none"> • Measurement outside limits • Error occurred
Calibration Mode	Pulsing			<ul style="list-style-type: none"> • Calibration in progress
	Solid			<ul style="list-style-type: none"> • Calibration complete
		Blinking		<ul style="list-style-type: none"> • Calibration not successful • Error occurred
Data Transfer	Pulsing			<ul style="list-style-type: none"> • Data transfer in progress
	Solid			<ul style="list-style-type: none"> • Data transfer complete
		Blinking		<ul style="list-style-type: none"> • Data transfer not successful • Error occurred
Sleep Mode			Solid	<ul style="list-style-type: none"> • Meter in Sleep Mode • Press On/Off to re-activate meter

3.7 Acoustic signal

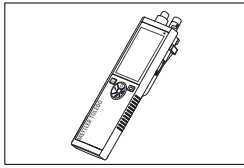
To use the acoustic signals, they have to be enabled in the instrument setup (see section [Sounds and visuals ▶ Page 19]). You can enable or disable the acoustic signal for the following features:

- Keypress
- Alarm Messages
- Measurement endpoint

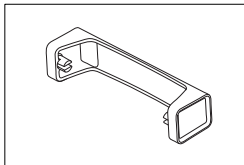
4 Putting into Operation

4.1 Scope of delivery

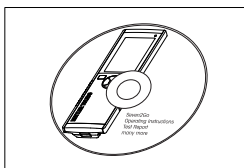
Check the completeness of the delivery. The following parts belong to the standard equipment of your new instrument. Further parts may be included depending on the ordered kit versions.



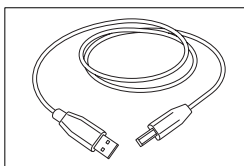
Portable instrument
for pH/ORP measurement



Meter base unit

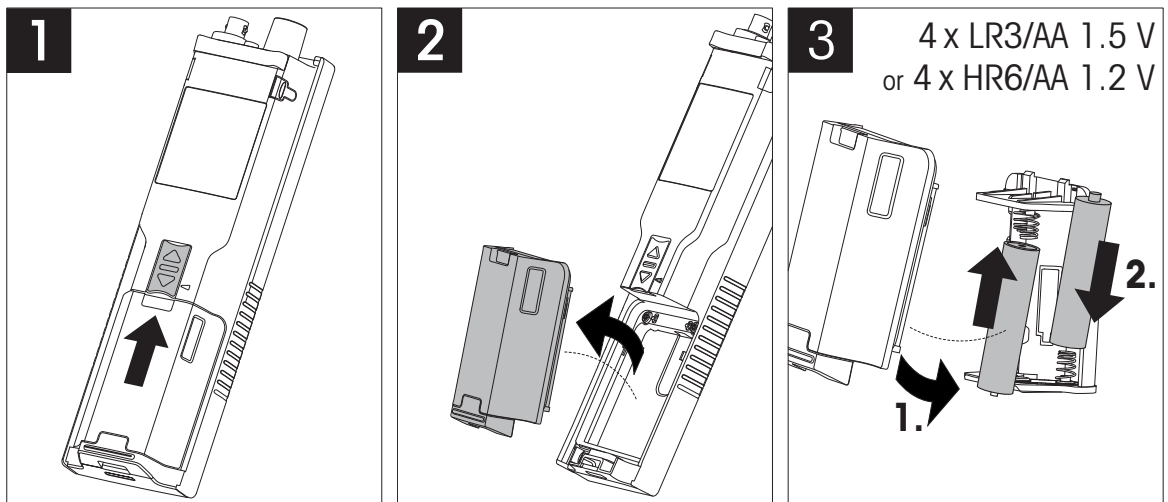


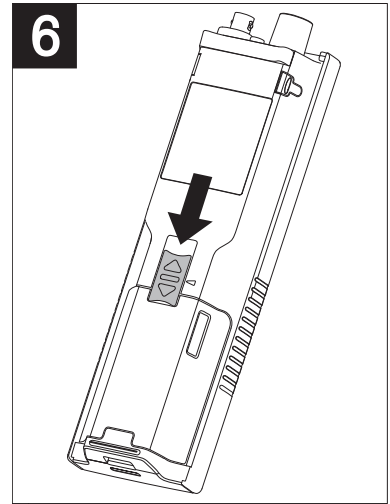
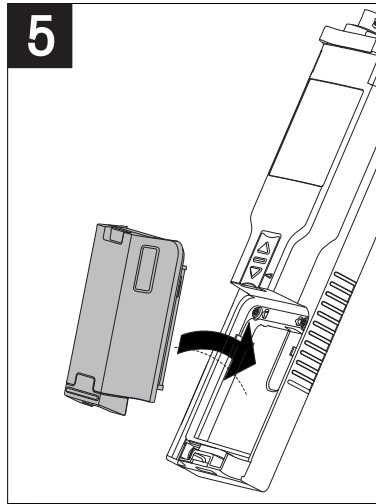
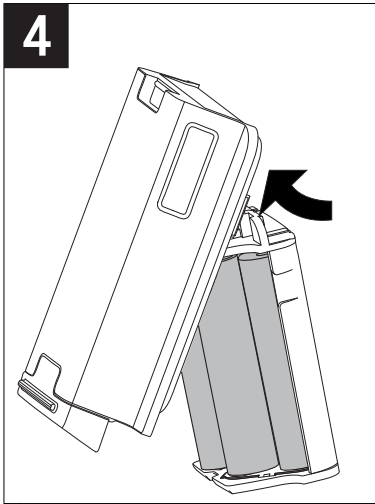
CD-ROM including operating instructions



USB-A to micro-USB cable for connection to PC,
length = 1 m

4.2 Installing the batteries





4.3 Installing power supply

The instrument is not supplied with an AC adapter.

Alternatively, the instrument can be supplied by an external power supply unit (not included in the scope of delivery) via the Micro-USB socket. Use an AC adapter that is suitable for all line voltages in the range of 100 to 240 V, 50/60 Hz and incorporates a USB socket. For connection, a suitable USB cable with an Micro-USB plug is required.



WARNING

Danger of death or serious injury due to electric shock!

Contact with parts that carry a live current can lead to death or injury.

- 1 Only use the METTLER TOLEDO AC adapter designed for your instrument.
- 2 Keep all electrical cables and connections away from liquids and moisture.
- 3 Check the cables and the plugs for damage and replace damaged cables and plugs.




NOTICE

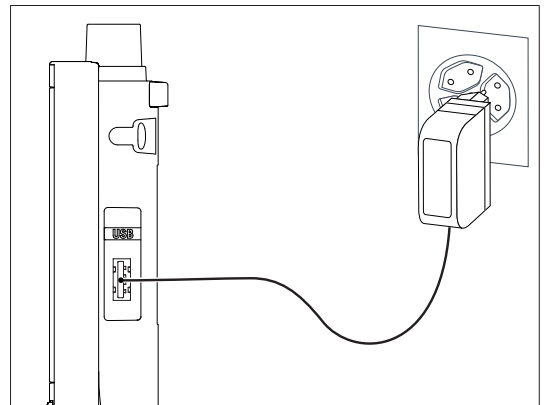
Danger of damage to the AC adapter due to overheating!

If the AC adapter is covered or in a container, it is not sufficiently cooled and overheats.

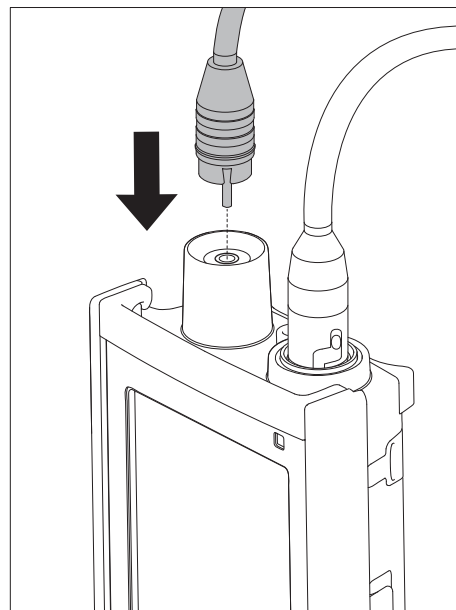
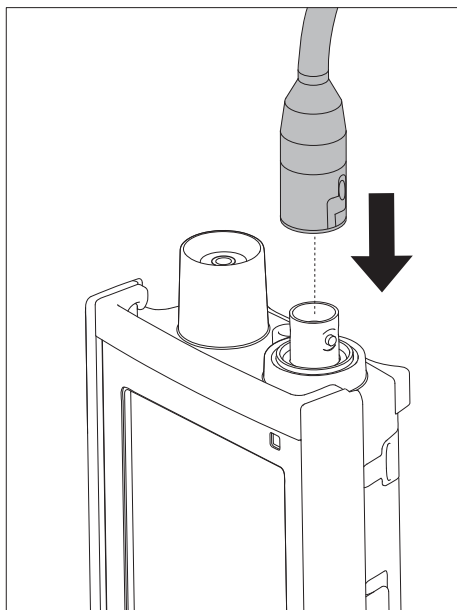
- 1 Do not cover the AC adapter.
- 2 Do not put the AC adapter in a container.

While the instrument is powered by the external power supply, the batteries are not being used. The icon  is shown on the screen.

- 1 Connect the cable of the AC adapter with the Micro-USB socket of the instrument.
- 2 Plug the AC adapter into the wall socket.
- 3 Install the cables in such a way that they cannot be damaged or interfere with operation.
- 4 Insert the plug of the AC adapter in a power outlet that is easily accessible.



4.4 Connecting sensors



ISM® sensor

When connecting an ISM® sensor to the meter, one of the following conditions has to be met for the calibration data to be transferred automatically from the chip of the sensor into the meter and usage for further measurements. After attaching the ISM® sensor the following steps must be followed:

- Switch on the meter.
- Press **Read** key or press **Cal** key.

The icon **ISM** appears on the display. The sensor ID of the sensor chip is registered and appears on the display.

The calibration history and the sensor-data and the diagnostics DLI, ACT, TTM can be reviewed in the data menu.

Note

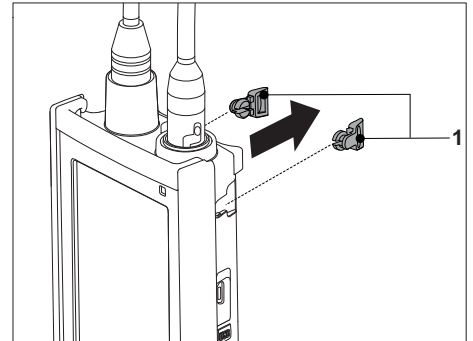
- We strongly recommend to switch off the meter when disconnecting an ISM sensor! In doing so, you make sure that the sensor is not removed while the instrument is reading data from or writing data to the ISM-chip of the sensor.

4.5 Installing optional equipment

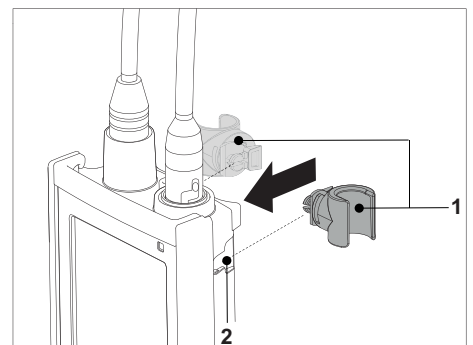
4.5.1 Electrode holder

The Pro2Go is delivered with a rubber holster. In case the rubber holster is not used it is possible to attach the electrode holder. For a safe placing of the electrode you can mount an electrode holder on the side of the instrument. The electrode holder is part of delivery. You can mount it on either sides of the instrument for your personal handling.

1 Remove the protective clips (1).



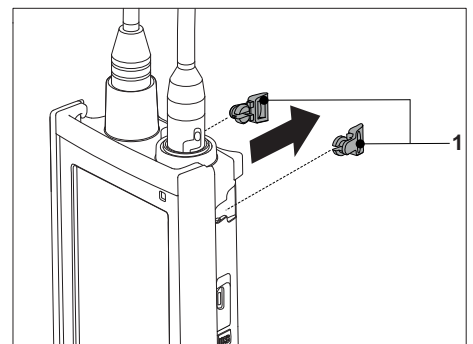
2 Push the sensor holder (1) into the recess (2) of the instrument.



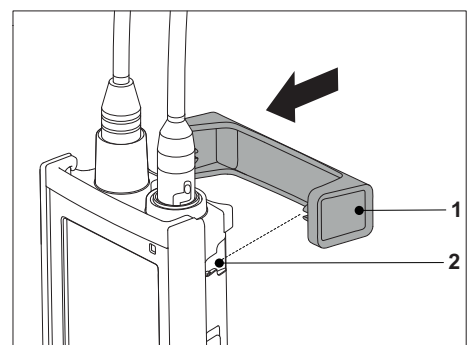
4.5.2 Meter base stabilizing unit

The Pro2Go is delivered with a rubber holster. In case the rubber holster is not used it is possible to attach the Meter base stabilizing unit. The meter base stabilizing unit should be mounted when using the instrument on a desk. It ensures a more firm and secure stand when pressing the keys.

1 Remove the protective clips (1).

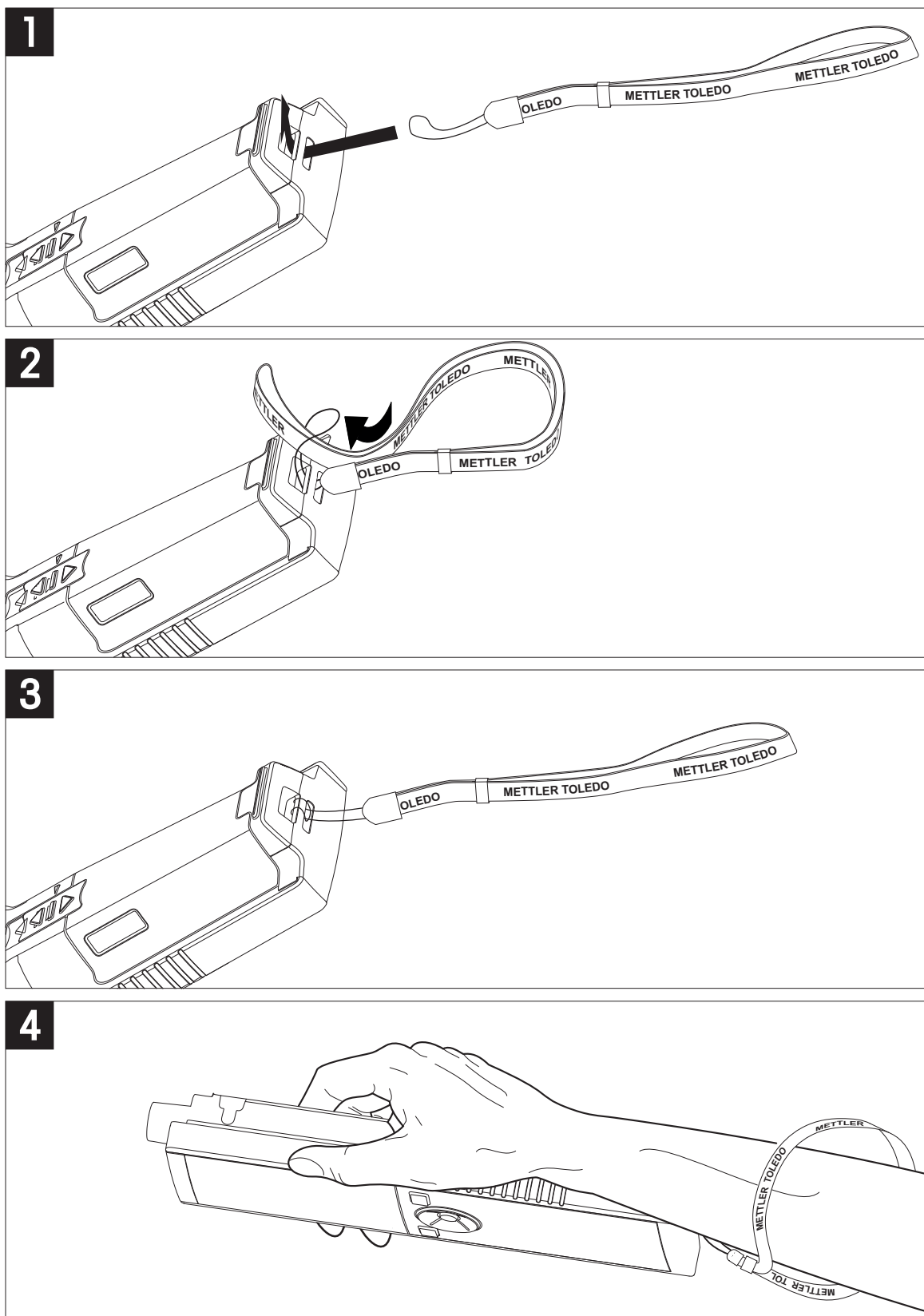


2 Push the meter base stabilizing unit (1) into the recesses (2) of the instrument.





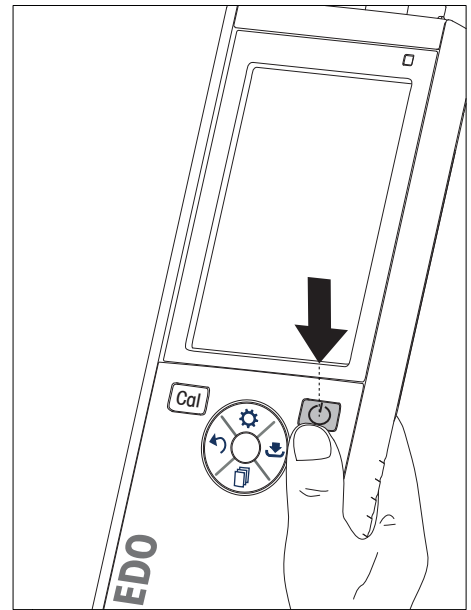
4.5.3 Wrist strap

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



4.6 Switching the instrument on and off



- 1 Press  to switch on the instrument.
 - ⇒ The firmware version, the serial number and the current date are displayed for about 5 seconds. After that 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 changes to sleep mode. This can be changed in the setup.
- When starting the meter for the first time, the display for entering time and date appears automatically. These settings can be changed later again.

See also

-  Power management ▶ Page 20
-  Time and date ▶ Page 19

5 Instrument Setup

- 1 Press  to enter the menu.
- 2 Go to .

Menu structure

1.	Data Storage
1.1	Storage Mode
1.1.1	Automatic Storage
1.1.2	Manual Storage
1.2	Storage Destination
1.2.1	Memory
1.2.2	PC
1.2.3	Memory + PC
2.	System Settings
2.1	Language
2.2	Time and Date
2.3	Access Control
2.4	Sounds & Visuals
2.5	User Mode
2.6	Power Management
3.	Factory Reset
4.	Instrument Self-test


5.1 Data storage

5.1.1 Storage mode

- **Automatic storage:**

In this storage mode, all measurement results are getting saved automatically to the selected storage destination.

- **Manual storage:**

In this mode, the user has to save a measurement result manually by pressing . For this, the user gets a message on the display after every measurement.

5.1.2 Storage destination

There are different possibilities to store the measurement results. The Pro2Go meter provides 2000 internal memory locations (M0001 - M2000).

- **Memory:**

The measurement results are saved in the internal memory.

- **PC:**

The measurement results are transferred only to the PC. For this a PC connection via USB is required.

- **Memory + PC:**

The measurement results are saved in the internal memory and transferred to the PC. For this a PC connection via USB is required.

5.2 System settings

5.2.1 Language

The following languages are available for the system:

- English
- German
- French
- Spanish
- Italian
- Portuguese
- Russian
- Chinese
- Japanese
- Korean

5.2.2 Time and date

When starting the meter for the first time, the display for entering time and date appears automatically. In the system settings, two time and four date display formats are available:

- **Time**
24-hour format (for example, 06:56 and 18:56)
12-hour format (for example, 06:56 AM and 06:56 PM)
- **Date**
24-06-2018 (day-month-year)
06-24-2018 (month-day-year)
24-Jun-2018 (day-month-year)
24/06/2018 (day-month-year)

5.2.3 Access control

PIN settings are available for:

- **System Settings**
- **Deletion of Data**
- **Instrument Login**

A maximum of 6 characters can be entered as PIN. When enabling an access control, the PIN must be defined and re-entered for verification.

Note

- Access control for system settings cannot be disabled as long as the instrument is operated in routine mode!

See also

 User modes ► Page 20

5.2.4 Sounds and visuals

An acoustic signal can be switched on or off for the following three cases:

- Key is pressed
- Alarm/warning message appears
- Measurement is stable and has endpoint (stability signal appears)

The LED can be switched on or off for the following three cases:

- Alarm message
- Measurement endpoint
- System info

5.2.5 User modes

The meter has three user modes:

Routine Mode:

Limited access rights. The user can only perform measurements, calibrations, review results and change basic settings. The concept of the routine mode is a GLP feature which ensures that important settings and stored data cannot be deleted or unintentionally changed. The following operations are blocked in routine mode:

- Deletion of data
- Measurement and Calibration settings (except choosing reference temperature)
- Create sensor ID
- Factory reset
- Instrument self-test
- System settings can be accessed by entering PIN code (by default 000000)

Expert Mode:

The factory default setting enables all functions of the meter.

Outdoor Mode:

The user has full access rights (like in expert mode). The screen is always in uFocus view and the following parameters are set to specific values to reduce battery consumption:

- Auto dimming after 20 s
- Auto shutdown after 10 min
- All LED signals off

5.2.6 Power management

Screen Brightness:

The screen brightness can be set from levels 1 to 16.


Auto Dimming:

You can activate the auto dimming function for power saving. For this you can define a time period from 5 - 300 s. This is the time when the period backlight is switched off after the instrument is not in use.

Energy Saving:

You can activate either auto sleep or auto shutdown for saving energy.

Auto Sleep

The instrument changes into the sleep modus (standby) after a defined time of not in use. The instrument does not shut down automatically. You can define a time period between 5 - 99 minutes. The orange LED light indicates that the instrument currently is in sleep mode. Press  to activate the meter.

Auto Shutdown

The instrument shuts down automatically after a defined time of not in use. You can define a time period between 5 - 99 minutes.





5.3 Factory reset



NOTICE



Loss of data!

With a factory reset all settings will be set to default values and all data memories will be deleted.

- 1 Press  to enter the setup menu.
- 2 Go to  > **Factory Reset**.
- 3 Press **Read** to confirm the factory reset or press  to cancel.
⇒ When confirmed, all settings have default values and the memory is fully cleared.
- 4 Press and hold  to exit the setup menu.

5.4 Instrument self-test

The instrument self-test allows to check if display, LED, beep and keys are working correctly.

- 1 Press  to enter the setup menu.
- 2 Go to  > **Instrument Self-test**.
- 3 Press **Read** to start the self-test.
 - ⇒ **Display:** All pixels of the display are shown black for 2 seconds, then white for 2 seconds.
 - ⇒ **LED:** The LED changes color to green, orange and flashing red.
 - ⇒ **Beep and keys:** The icons for the seven keys are shown on the screen, each keypress lets its icon disappear while a beep sounds. The keys must be pressed within 20 seconds.
- ⇒ If the self-test is successful, **OK** appears on the screen and the LED is green for 2 seconds. Otherwise **Self-test failure** appears and the LED flashes red. In both cases the instrument then goes back to normal mode.

6 pH/ORP Settings

1 Press  to enter the menu.

2 Go to **pH**.

1. Calibration Settings

1.1 Buffer Group / Standard

1.1.1 Predefined Buffer Groups

1.1.2 Customized Buffer Group

1.3 Calibration Reminder

2. Measurement Settings

2.1 Resolution

2.1.1 pH

2.1.2 mV

2.2 Stability Criterion

2.2.1 Strict

2.2.2 Standard

2.2.3 Fast

3. Endpoint Type

4. Interval Readings

5. Temperature Settings

5.1 Set MTC Temperature

5.2 Temperature Unit

6. Measurement Limits

6.1 pH Limit

6.2 mV Limit

6.3 ORP mV Limit

6.5 Temperature Limit

6.1 Calibration settings

6.1.1 Buffer Group/Standard

6.1.1.1 Predefined groups

The following pre-defined buffer groups are available:

- Mettler-9
- Mettler-10
- NIST Technical
- NIST Standard
- Hach
- Ciba (=94)
- Merck
- WTW
- JIS Z 8802

1 Press  to enter the setup menu.



2 Go to **pH** > **Calibration Settings** > **Buffer Group / Std.** > **Predefined Groups**.

3 Select a standard using  and .

4 Press **Read** to confirm.

⇒ A table with the specific buffers is shown on the screen.






5 Press **Read** to confirm.

- 6 Press  twice.
- 7 Press and hold  to exit the setup menu.

6.1.1.2 Customized group

This option is for users who would like to use their own buffer solutions for calibration of the pH sensor. Up to 5 temperature-dependent values can be entered in the table. You can enter buffers in the range of pH -2.000 to pH 20.000.

When switching from a predefined buffer to customized buffer, you should always save the table even if no values have changed.




- 1 Press  to enter the setup menu.
- 2 Go to **pH > Calibration Settings > Buffer Group / Std. > Customized Group**.
⇒ All values in the table can be modified. To do so follow these steps:
- 3 Select a temperature value by using  and  and press **Read**.
- 4 Change the selected temperature step by step using the TPad keys and press **Read** to confirm.
- 5 Navigate down to the next temperature and modify it in the same manner.
- 6 Repeat this for all five temperature values. To delete any value, press and hold **Read**.
- 7 Navigate to the column of the first buffer solution using the TPad keys.
- 8 Enter or modify the correct pH value for each temperature value in the above described way.
- 9 Navigate further right to proceed with second, third, fourth and fifth buffer solution. Clear all cells of the last columns if you use less than five buffers.
- 10 Navigate to Save and press **Read** to save your changes.
- 11 Press  twice.
- 12 Press and hold  to exit the setup menu.



Note

- The table must not have empty cells except at the bottom and at the right.
- The temperatures must be strictly increasing from top to bottom of the table.
- There must be a difference of at least 5 °C between two temperatures and at least 1 pH unit between two buffer solutions. Otherwise the error message **Wrong settings** pops-up when saving.
- Calibration is only possible within the defined temperature range (± 0.5 °C). For example, calibration at 26 °C fails if only pH values at 20 °C and 25 °C are defined.

6.1.2 Calibration reminder

When the calibration reminder is activated, the user is reminded to perform a new calibration after a certain user-defined interval (maximum 9999 h) has elapsed.

- 1 Press  to enter the setup menu.
- 2 Go to **pH > Calibration Settings > Calibration Reminder**.
- 3 Choose **On** or **Off** by using  and .
- 4 Press **Read** to confirm.
⇒ Another screen appears to enter the interval time.
- 5 Enter the interval time by using the TPad keys and press **Read** to save.
⇒ Another screen appears to select calibration expiration date. Select as of when the sensor should be blocked for further measurements as soon as the entered interval has elapsed.
⇒ **Immediately:**
The meter is immediately blocked for measurement when the predefined interval has elapsed.
⇒ **Exp: Reminder + 1 h:**
The meter is blocked for measurement 1 hour after the predefined interval has elapsed.
⇒ **Exp: Reminder + 2 h:**
The meter is blocked for measurement 2 hours after the predefined interval has elapsed.
⇒ **Continue Reading:**
The user can continue measuring when the predefined interval has elapsed.
- 6 Press **Read** to confirm.






- 7 Press .
- 8 Press and hold  to exit the setup menu.

6.2 Measurement settings

6.2.1 Resolution

The resolution of up to 3 decimal places for pH and mV can be chosen in the setup.






	X	X.X	X.XX	X.XXX
pH		•	•	•
mV	•	•		

- 1 Press  to enter the setup menu.
- 2 Go to **pH > Measurement Settings > Resolution**.
- 3 Choose **pH** or **mV**.
- 4 Choose the resolution by using  and  and press **Read** to confirm.
- 5 Press  twice.
- 6 Press and hold  to exit the setup menu.

6.2.2 Stability criterion

You can set 3 different stability criterias on your device:




- **Strict** :
Value varies less than 0.6 mV during 4 seconds which corresponds to 0.1 pH.
- **Fast** :
Value varies less than 0.1 mV during 6 seconds which corresponds to 0.05 pH.
- **Standard** :
Value varies less than 0.03 mV during 8 seconds or less than 0.1 mV during 20 seconds.

- 1 Press  to enter the setup menu.
 - 2 Go to **pH > Measurement Settings > Stability Criterion**.
 - 3 Choose the stability criterion by using  and  and press **Read** to confirm..
 - 4 Press .
 - 5 Press and hold  to exit the setup menu.
- ⇒ The specific icon is shown on the screen.

6.3 Endpoint type




Auto Endpoint

With the automatic endpoint the meter defines the end of an individual reading depending on programmed stability criterion for the signal. This ensures an easy, quick and precise measurement.

- 1 Press  to enter the setup menu.
- 2 Go to **pH > Endpoint Type**.
- 3 Select **Auto EP** and press **Read** to confirm.
- 4 Press .
- 5 Press and hold  to exit the setup menu.

Manual Endpoint

In this mode, the user is required to stop the measurement reading manually.



- 1 Press  to enter the setup menu.
- 2 Go to **pH > Endpoint Type**.
- 3 Select **Manual EP** and press **Read** to confirm.
- 4 Press .
- 5 Press and hold  to exit the setup menu.

6.4 Interval readings

A reading is taken every time after a certain interval (1 – 2400 s) defined in the menu has elapsed. The measurement series stops according to the selected endpoint format or manually by pressing **Read**.

Example:

To measure the pH value every 5 s until the automatic endpoint criteria is fulfilled, set the **Interval Time** to 5 s and the **Endpoint Type** to **Automatic**.




- 1 Press  to enter the setup menu.
- 2 Go to **pH > Interval Readings**.
- 3 Select **On** and press **Read** to confirm.
- 4 If interval readings has been enabled, enter the interval time digit by digit using the TPad keys.
- 5 Press **Read** save.
- 6 Press and hold  to exit the setup menu.

6.5 Temperature settings

If a temperature probe is recognized by the meter, **ATC** and the sample temperature are displayed. In case an electrode without temperature sensor is used, **MTC** is displayed and the sample temperature should be entered manually.

For pH and ion measurement, the meter uses this temperature to correct the readings according to the Nernst equation.

To set a MTC temperature follow these steps:




- 1 Press  to enter the setup menu.
- 2 Go to **pH > Temperature Settings > Set MTC Temperature**.
- 3 Enter the MTC temperature by using the TPad keys and press **Read** to save.
- 4 Press .
- 5 Press and hold  to exit the setup menu.

Note

- In **ATC** mode, the entered **MTC** temperature has no effect on the measurement.

Setting the temperature unit:

You can set the temperature unit to **°C** or **°F**.





- 1 Press  to enter the setup menu.
- 2 Go to **pH > Temperature Settings > Temperature Unit**.
- 3 Select the temperature unit and press **Read** to save.
- 4 Press .
- 5 Press and hold  to exit the setup menu.









6.6 Measurement limits

You can define limits (max. and min.) for every kind of measurement:


- **pH Limit**
- **mV Limit**
- **ORP**
- **Temperature Limit**

To set a measurement limit follow these steps:

- 1 Press  to enter the setup menu.
- 2 Go to **pH > Measurement Limits**.
- 3 Choose the desired measurement by using  and  and press **Read** to confirm.
- 4 Select **Yes** to activate the limit and press **Read** to confirm.
- 5 Press **Read** to activate or deactivate the max. Limit.
- 6 Press  and then press **Read** to select the max. limit value.

- 7 Change the max. limit value by using  and  and press **Read** to save.
- 8 Press  to switch to the min. limit.
- 9 Press **Read** to activate or deactivate the min. Limit.
- 10 Press  and then press **Read** to select the min. limit value.
- 11 Change the min. limit value by using  and  and press **Read** to save.
- 12 Go to **Save** and press **Read** to save your settings.
- 13 Press .
- 14 Press and hold  to exit the setup menu.


7 IDs

- 1 Press  to enter the menu.
- 2 Go to **ID**.

Menu structure

1.	Sample ID
1.1	Enter Sample ID
1.2	Auto Sequential
1.3	Select Sample ID
1.4	Delete Sample ID
2.	User ID
2.1	Enter User ID
2.2	Select User ID
2.3	Delete User ID
3.	Sensor ID / SN
3.1	Enter Sensor ID / SN
3.2	Select Sensor ID

7.1 Sample ID

- 1 Press  to enter the setup menu.
- 2 Go to **ID Settings > Sample ID**.

Go to **Enter Sample ID** to enter a new sample ID. An alphanumeric sample ID with up to 12 characters can be entered.


Auto sequential:

1. **Auto Sequential = On**
Using this setting will automatically increment the sample ID by 1 for each reading. If the last character of the sample ID is not a number, then the number 1 will be added to the sample ID with the second sample. This requires the sample ID to have less than 12 characters.
2. **Auto Sequential = Off**
The sample ID is not incremented automatically.

To select a sample ID out of a list of already entered sample IDs, go to **Select Sample ID**. A maximum of 10 sample IDs are stored in memory and listed for selection. If the maximum number of IDs has been stored, the meter will display the message **Memory is full**. If you wish to store more IDs, you must delete an ID out of the list in order to create a new ID.

To delete an existing sample ID out of the list, go to **Delete Sample ID**. Choose the sample ID you want to delete and press **Read**.

7.2 User ID


- 1 Press  to enter the setup menu.
- 2 Go to **ID Settings > User ID**.

Select **Enter User ID** to enter a new user ID. An alphanumeric user ID with up to 12 characters can be entered.

To select a user ID out of the list, go to **Select User ID**. A maximum of 10 user IDs are stored in memory and listed for selection. If the maximum number of IDs has been stored, the meter will display the message **Memory is full**. If you wish to store more IDs, you must delete an ID out of the list in order to create a new ID.

To delete an existing user ID out of the list, go to **Delete User ID**. Choose the user ID you want to delete and press **Read**.

7.3 Sensor ID

- 1 Press  to enter the setup menu.
- 2 Go to **ID Settings > Sensor ID / SN**.

Select **Enter Sensor ID / SN** to enter a new sensor ID and serial number (SN). An alphanumeric sensor ID and SN with up to 12 characters can be entered.

To select a sensor ID out of the list, go to **Select Sensor ID**. A maximum of 30 sensor IDs are stored in the memory and listed for selection. If the maximum number of IDs has been stored, the meter will display the message **Memory is full**. If you wish to store more IDs, you must delete an ID out of the list in order to create a new ID.

Note

- To delete a sensor from the list, delete its calibration data, see section Calibration data.

8 Sensor Calibration

The following procedure explain how to calibrate a pH electrode. Redox electrodes cannot be calibrated.

8.1 Performing a 1-point calibration

- A sensor is connected to the instrument.
- 1 Place the sensor in a calibration standard and press **Cal** to enter the calibration menu.
 - ⇒ ↵ appears on the display.
- 2 Press **Read** to start the calibration.
 - ⇒ Depending on the set endpoint format, the letter **A** (auto) or **M** (manual) is blinking during the calibration.
 - ⇒ When the endpoint is reached, the display freezes automatically. Independent on the set endpoint format, **Read** can be pressed to endpoint the calibration manually.
 - ⇒ The calibration result is displayed.
- 3 Press **Read** to save the calibration data or press ↶ to cancel.

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 (-59.16 mV/pH) will be used.

See also

📖 Calibration settings ▶ Page 22

8.2 Performing a 2-point calibration

- A sensor is connected to the instrument.
- 1 Perform the first point calibration as described in the section [Performing a 1-point calibration ▶ Page 29].
- 2 Rinse the sensor with deionized water.
- 3 Place the sensor in the second calibration standard and press **Read** to start the calibration.
 - ⇒ Depending on the set endpoint format, the letter **A** (auto) or **M** (manual) is blinking during the calibration.
 - ⇒ When the endpoint is reached, the display freezes automatically. Independent on the set endpoint format, **Read** can be pressed to endpoint the calibration manually.
- 4 Press **Read** to save the calibration data or press ↶ to cancel.

9 Sample Measurement



9.1 Selecting a measurement unit

With the Pro2Go meter it is possible to measure the following parameters of a sample:

- **pH**
- **ORP mV**

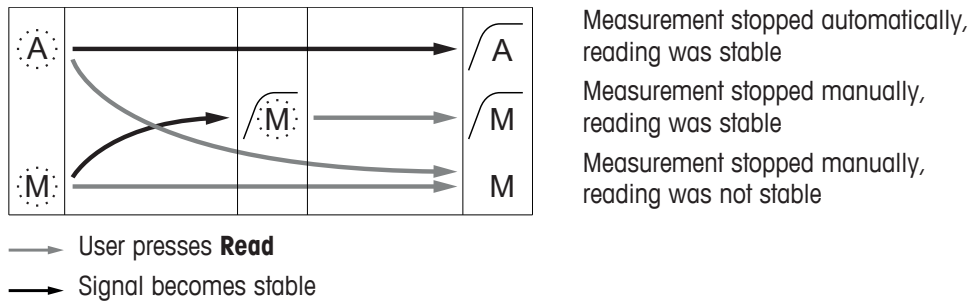
To change the measurement mode, press  as often as the desired appears.

9.2 Performing a pH measurement



- A pH electrode is connected to the instrument.
 - The electrode is calibrated.
 - The following measurement settings are done:
 - Resolution
 - Stability criterion
 - Endpoint type
 - MTC temperature (if no temperature probe is used)
 - Data storage mode and location
- 1 Press  once or several times to switch between the measurement modes until the unit (pH) is displayed.
 - 2 Place the electrode into the sample and press **Read** to start the measurement.
 - ⇒ The decimal point and - depending on the endpoint format setting - **A** (automatic) or **M** (manual) are blinking during the measurement.
 - 3 When the measurement has stopped, the display freezes. Independent on the set endpoint format, **Read** can be pressed to endpoint the measurement manually.
 - ⇒ The measurement result is displayed.
 - ⇒ If Data Storage Mode is set to **Automatic Storage**, the complete measurement data is automatically transferred to the set storage destination.
 - 4 If Data Storage Mode is set to **Manual Storage**, press  to transfer the data to the set storage location.

Information on the display

The following symbols appear on the display, depending on the endpoint setting.

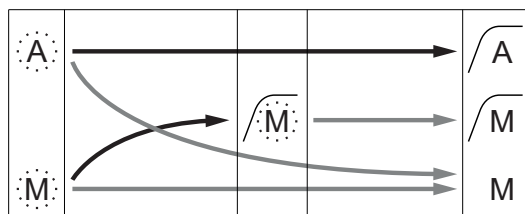


9.3 Performing a mV measurement

- A pH electrode is connected to the instrument.
 - The electrode is calibrated.
 - The following measurement settings are done:
 - Resolution
 - Stability criterion
 - Rel. mV offset (if measuring rel. mV)
 - Endpoint type
 - MTC temperature
 - Data storage mode and location
- 1 Press  once or several times to switch between the measurement modes until the relevant unit (mV) is displayed.
 - 2 Place the sensor into the sample and press **Read** to start the measurement.
 - ⇒ The decimal point and - depending on the endpoint format setting - **A** (automatic) or **M** (manual) are blinking during the measurement.
 - 3 When the measurement has stopped, the display freezes. Independent on the set endpoint format, **Read** can be pressed to endpoint the measurement manually.
 - ⇒ The measurement result is displayed.
 - ⇒ If Data Storage Mode is set to **Automatic Storage**, the complete measurement data is automatically transferred to the set storage destination.
 - 4 If **Storage Mode** is set to **Manual Storage**, press  to transfer the data to the set storage location.

Information on the display



The following symbols appear on the display, depending on the endpoint setting.



Measurement stopped automatically, reading was stable

Measurement stopped manually, reading was stable



Measurement stopped manually, reading was not stable

-  User presses **Read**
-  Signal becomes stable

See also

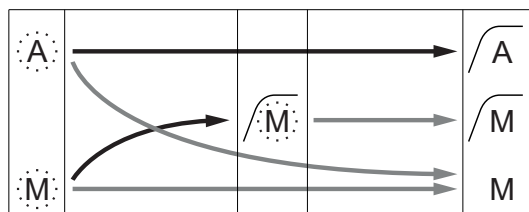
-  Performing a pH measurement ▶ Page 30

9.4 Performing a ORP mV measurement

- A pH electrode is connected to the instrument.
 - The electrode is calibrated.
 - The following measurement settings are done:
 - Resolution
 - Stability criterion
 - Rel. mV offset (if measuring rel. mV)
 - Endpoint type
 - MTC temperature
 - Data storage mode and location
- 1 Press  once or several times to switch between the measurement modes until the relevant unit (mV or rel. mV) is displayed.
 - 2 Place the sensor into the sample and press **Read** to start the measurement.
 - ⇒ The decimal point and - depending on the endpoint format setting - **A** (automatic) or **M** (manual) are blinking during the measurement.
 - 3 When the measurement has stopped, the display freezes. Independent on the set endpoint format, **Read** can be pressed to endpoint the measurement manually.
 - ⇒ The measurement result is displayed.
 - ⇒ If Data Storage Mode is set to **Automatic Storage**, the complete measurement data is automatically transferred to the set storage destination.
 - 4 If **Storage Mode** is set to **Manual Storage**, press  to transfer the data to the set storage location.

Information on the display

The following symbols appear on the display, depending on the endpoint setting.



Measurement stopped automatically, reading was stable

Measurement stopped manually, reading was stable

Measurement stopped manually, reading was not stable

→ User presses **Read**

→ Signal becomes stable

See also

-  Performing a pH measurement ▶ Page 30

10 Data Management

10.1 Data menu structure

Press  to enter and also to exit the setup menu.

1.	Measurement Data
1.1	Review
1.2	Transfer
1.3	Delete
2.	Calibration Data
2.1	pH
2.1.1	Review
2.1.2	Transfer
2.1.3	Delete
2.2	Ion
2.2.1	Review
2.2.2	Transfer
2.2.3	Delete
3.	ISM Data
3.1	Sensor information
3.2	Calibration History
3.3	ISM Diagnostics
3.4	ISM Setup

10.2 Measurement data

Review > All

Transfer > All

Delete > All:

All stored measurement data can be reviewed, transferred or deleted. The most recent data saved appears on the display.

Review > Partial

Transfer > Partial

Delete > Partial:

Partially selected measurement data can be reviewed, transferred or deleted. The measurement data can be filtered according to 4 criteria.

- Date/Time
- Sample ID
- Measurement mode
- Memory number

Note

- When filtering by date/time, the date must always be entered. If the time 00:00 is used, all results from the whole day are showed/transferred/deleted. Otherwise only the results exactly at the given date and time are affected.

Delete > All After Transfer:

All stored measurement data can be transferred to a PC with software LabX@direct. The measurement data will be deleted automatically after transfer.

10.3 Calibration data

Review:

The stored calibration data of the selected sensor can be reviewed.

Transfer:

All stored calibration data of the selected sensor can be transferred to a PC with software EasyDirect pH.

Delete:

The calibration data of the selected sensor is deleted. As the same time the sensor ID is deleted from the sensor ID list.

Note

- It is not possible to delete the active sensor. Choose a different one from the sensor ID list first.

10.4 ISM data

Pro2Go meters incorporate Intelligent Sensor Management (ISM[®]) technology. This ingenious functionality provides extra security, safety and eliminates mistakes. The most important features are:

Extra security!

- After connecting the ISM[®] sensor, the sensor is automatically recognized and the sensor ID and serial number are transferred from the sensor chip to the meter. The data is also printed on the GLP printout.
- After calibration of the ISM[®] sensor, the calibration data is automatically stored from the meter to the sensor chip. The most recent data is always stored where it should be – on the sensor chip!

Extra safety!

After connecting the ISM[®] sensor, the five most recent calibrations are transferred to the meter. These can be reviewed to see the development of the sensor over time. This information provides an indication if the sensor should be cleaned or renewed.

Eliminate mistakes!

After connecting an ISM[®] sensor, the last set of calibration data is automatically used for measurements.

Additional features are described below.

In the ISM data menu you have the following submenus:

Initial calibration data

When an ISM[®] sensor is connected, the initial calibration data in the sensor can be reviewed or transferred. The following data is included:

- Initial name of electrode (for example, InPro 3253i)
- Serial number (SN) and ordering number
- Slope between pH 4 and 7
- Zero point (offset value)

Calibration history

The last 5 calibrations data stored in ISM[®] sensor including current calibration can be reviewed or transferred.

ISM Diagnostics

When an ISM sensor is connected all of the following information is available in the menu ISM Diagnostics:

- CIP cycles
- SIP cycles
- AutoClave cycles
- DLI (Dynamic Lifetime Indication)
- ACT (Adaptive Calibration Timer)
- TTM (Time To Maintenance)
- Operating Time
- Rg and Rref
- max. Temperature, incl. Date

ISM Setup






The calibration history in this menu can be deleted. This menu is protected by a deletion PIN. Upon delivery, the PIN for deletion is set to 000000. Change the PIN to prevent unauthorized access.

10.5 Data export to PC (in preparation)

It is possible to transfer either all data or a user-defined set of data from the memory to a PC by using **EasyDirect**. The settings between the instrument and PC are adjusted automatically because USB connection is plug-and-play.

The following section describes how to proceed with the different configurations.

Data transfer from the meter to EasyDirect

- 1 Connect the instrument via USB-B to the PC.
⇒  appears on the display.
- 2 Press  to enter the setup menu.
- 3 Go to  > **Data Storage** > **Storage Destination** and select **EasyDirect**.
- 4 Press  for 3 s to leave the setup menu.
- 5 Open the software **EasyDirect** and select the correct instrument.
- 6 Press  to enter the data menu.
- 7 Go to **Measurement Data** > **Transfer** and select the data you want to transfer.
⇒ The transfer starts automatically after the data content is selected.

11 Maintenance

11.1 Cleaning the Instrument



NOTICE

Danger of damage to the instrument due to inappropriate cleaning agents!

The housing is made of acrylonitrile butadiene styrene/polycarbonate (ABS/PC). This material is sensitive to some organic solvents, such as toluene, xylene and methyl ethyl ketone (MEK). If liquids enter the housing they can damage the instrument.

- 1 Use only water and a mild detergent to clean the housing.
- 2 Wipe off any spills immediately.

- The instrument is turned off and disconnected from the electrical outlet.
- Clean the housing of the instrument using a cloth dampened with water and a mild detergent.

If you have questions about the compatibility of cleaning agents, contact your authorized METTLER TOLEDO dealer or service representative.

► www.mt.com/contact

11.2 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 0.1M 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.

11.3 Software update

A software update can only be done through your local METTLER TOLEDO Service Organization.

11.4 Repair of the instrument

Pro2Go meters can be repaired. Please contact your local METTLER TOLEDO Service Organization.

11.5 Disposal

In conformance with the European Directive 2012/19/EU 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.



12 Technical Data

Pro2Go General

Power rating (batteries)	Batteries	4 x LR6/AA 1.5 V Alkaline - or - 4 x HR6/AA 1.2 V NiMH rechargeable
	Battery life (Standby)	200...250 hrs
Power rating (USB powered)	Connection	Micro-USB
	Rating	5 V $\overline{=}$, 100 mA
Dimensions	Height	222 mm
	Width	70 mm
	Depth	35 mm
	Weight	290 g
Display	LCD	Graphic LCD display
Interfaces	PC connection	Micro-USB
Environmental conditions	Ambient temperature	0...40 °C (32...104 °F)
	Storage temperature	-20...60 °C (-4...140 °F)
	Relative humidity	5%...85% (non-condensing) at 31 °C, decreasing linearly to 50% at 40 °C
	Overvoltage category	Class II
	Pollution degree	2
	Maximum operating altitude	Up to 2000 m
	Range of application	For indoor use
	Materials	Housing
Window		Polymethyl methacrylate (PMMA)
IP Protection class		IP67
Data security / storage	ISM®	Yes
	Memory size	2000 (GLP conform)
Measurement		
Parameters	pH, mV	
Sensor inputs	pH	BNC
	Reference electrode	2 mm banana
	Temperature	RCA cinch
pH	Measuring range	-2...20
	Resolution	0.001 / 0.01 / 0.1
	Accuracy (sensor input) (ISM sensors show no additional error)	± 0.002
	mV	Measuring range
Resolution		0.1 mV
Accuracy (sensor input) (Not required for ISM sensors)		± 0.1 / 1 mV
Units		mV, rel. mV

Temperature	Measuring range	-5...130 °C (ATC) -30...130 °C (MTC)
	Resolution	0.1 °C
	Accuracy (sensor input)	± 0.2 °C ± 0.5 °C if T < 0 °C or T > 105 °C
	ATC/MTC	Yes
	Calibration (pH)	
	Calibration points	2
	Predefined buffer groups	<ul style="list-style-type: none"> • MT-9 • MT-10 • NIST Tech. • NIST Standard • Hach • Ciba • Merck • WTW • JIS Z 8802
	User-defined buffer groups	Yes (1)
	Automatic buffer recognition	Yes

13 Order Information

Parts	Order No.
Pro2Go portable pH Meter including USB cable, sensor cable AK9-BNC / RCA for ISM sensors, rubber holster, wrist strap, CD with documentation and software, Declaration of conformity, Test certificate	30386271
Rubber holster	30487344
USB cable for PC connection	30487345
Power adapter for USB cable (to operate instrument without batteries)	30487346
Sensor Cable AK9-BNC/RCA for ISM Sensors	30487466
EasyDirect pH PC Software	free download

14 Buffer tables

The following tables show different buffers that are automatically recognized.

14.1 Standard pH buffers

Mettler-9

T [°C]				
0	2.03	4.01	7.12	9.52
5	2.02	4.01	7.09	9.45
10	2.01	4.00	7.06	9.38
15	2.00	4.00	7.04	9.32
20	2.00	4.00	7.02	9.26
25	2.00	4.01	7.00	9.21
30	1.99	4.01	6.99	9.16
35	1.99	4.02	6.98	9.11
40	1.98	4.03	6.97	9.06
45	1.98	4.04	6.97	9.03
50	1.98	4.06	6.97	8.99
55	1.98	4.08	6.98	8.96
60	1.98	4.10	6.98	8.93
65	1.98	4.13	6.99	8.90
70	1.99	4.16	7.00	8.88
75	1.99	4.19	7.02	8.85
80	2.00	4.22	7.04	8.83
85	2.00	4.26	7.06	8.81
90	2.00	4.30	7.09	8.79
95	2.00	4.35	7.12	8.77

Mettler-10

T [°C]				
0	2.03	4.01	7.12	10.65
5	2.02	4.01	7.09	10.52
10	2.01	4.00	7.06	10.39
15	2.00	4.00	7.04	10.26
20	2.00	4.00	7.02	10.13
25	2.00	4.01	7.00	10.00
30	1.99	4.01	6.99	9.87
35	1.99	4.02	6.98	9.74
40	1.98	4.03	6.97	9.61
45	1.98	4.04	6.97	9.48
50	1.98	4.06	6.97	9.35
55	1.98	4.08	6.98	
60	1.98	4.10	6.98	
65	1.99	4.13	6.99	
70	1.98	4.16	7.00	
75	1.99	4.19	7.02	
80	2.00	4.22	7.04	
85	2.00	4.26	7.06	
90	2.00	4.30	7.09	
95	2.00	4.35	7.12	

NIST Technical Buffers

T [°C]					
0	1.67	4.00	7.115	10.32	13.42
5	1.67	4.00	7.085	10.25	13.21
10	1.67	4.00	7.06	10.18	13.01
15	1.67	4.00	7.04	10.12	12.80
20	1.675	4.00	7.015	10.07	12.64
25	1.68	4.005	7.00	10.01	12.46
30	1.68	4.015	6.985	9.97	12.30
35	1.69	4.025	6.98	9.93	12.13
40	1.69	4.03	6.975	9.89	11.99
45	1.70	4.045	6.975	9.86	11.84
50	1.705	4.06	6.97	9.83	11.71
55	1.715	4.075	6.97		11.57
60	1.72	4.085	6.97		11.45
65	1.73	4.10	6.98		
70	1.74	4.13	6.99		
75	1.75	4.14	7.01		
80	1.765	4.16	7.03		
85	1.78	4.18	7.05		
90	1.79	4.21	7.08		
95	1.805	4.23	7.11		

NIST standard buffers (DIN and JIS 19266: 2000–01)

T [°C]				
0				
5	1.668	4.004	6.950	9.392
10	1.670	4.001	6.922	9.331
15	1.672	4.001	6.900	9.277
20	1.676	4.003	6.880	9.228
25	1.680	4.008	6.865	9.184
30	1.685	4.015	6.853	9.144
37	1.694	4.028	6.841	9.095
40	1.697	4.036	6.837	9.076
45	1.704	4.049	6.834	9.046
50	1.712	4.064	6.833	9.018
55	1.715	4.075	6.834	8.985
60	1.723	4.091	6.836	8.962
70	1.743	4.126	6.845	8.921
80	1.766	4.164	6.859	8.885
90	1.792	4.205	6.877	8.850
95	1.806	4.227	6.886	8.833

Note

The pH(S) values of the individual charges of the secondary reference materials are documented in a certificate of an accredited laboratory. This certificate is supplied with the respective buffer materials. Only these pH(S) values shall be used as standard values for the secondary reference buffer materials. Correspondingly, this standard does not include a table with standard pH values for practical use. The table above only provides examples of pH(PS) values for orientation.

Hach buffers

T [°C]			
0	4.00	7.14	10.30
5	4.00	60	10.23
10	4.00	7.04	10.11
15	4.00	7.04	10.11
20	4.00	7.02	10.05
25	4.01	7.00	10.00
30	4.01	6.99	9.96
35	4.02	6.98	9.92
40	4.03	6.98	9.88
45	4.05	6.98	9.85
50	4.06	6.98	9.82
55	4.07	6.98	9.79
60	4.09	6.99	9.76

Note

Buffer values up to 60 °C as specified by Bergmann & Beving Process AB.

Ciba (94) buffers

T [°C]					
0	2.04	4.00	7.10	10.30	
5	2.09	4.02	7.08	10.21	
10	2.07	4.00	7.05	10.14	
15	2.08	4.00	7.02	10.06	
20	2.09	4.01	6.98	9.99	
25	2.08	4.02	6.98	9.95	
30	2.06	4.00	6.96	9.89	
35	2.06	4.01	6.95	9.85	
40	2.07	4.02	6.94	9.81	
45	2.06	4.03	6.93	9.77	
50	2.06	4.04	6.93	9.73	
55	2.05	4.05	6.91	9.68	
60	2.08	4.10	6.93	9.66	
65	2.07*	4.10*	6.92*	9.61*	
70	2.07	4.11	6.92	9.57	
75	2.04*	4.13*	6.92*	9.54*	
80	2.02	4.15	6.93	9.52	
85	2.03*	4.17*	6.95*	9.47*	
90	2.04	4.20	6.97	9.43	
95	2.05*	4.22*	6.99*	9.38*	

* Extrapolated

Merck Titrisole, Riedel-de-Haën Fixanale

T [°C]					
0	2.01	4.05	7.13	9.24	12.58
5	2.01	4.05	7.07	9.16	12.41
10	2.01	4.02	7.05	9.11	12.26
15	2.00	4.01	7.02	9.05	12.10
20	2.00	4.00	7.00	9.00	12.00
25	2.00	4.01	6.98	8.95	11.88
30	2.00	4.01	6.98	8.91	11.72
35	2.00	4.01	6.96	8.88	11.67
40	2.00	4.01	6.95	8.85	11.54
45	2.00	4.01	6.95	8.82	11.44
50	2.00	4.00	6.95	8.79	11.33
55	2.00	4.00	6.95	8.76	11.19
60	2.00	4.00	6.96	8.73	11.04
65	2.00	4.00	6.96	8.72	10.97
70	2.01	4.00	6.96	8.70	10.90
75	2.01	4.00	6.96	8.68	10.80
80	2.01	4.00	6.97	8.66	10.70
85	2.01	4.00	6.98	8.65	10.59
90	2.01	4.00	7.00	8.64	10.48
95	2.01	4.00	7.02	8.64	10.37

WTW buffers

T [°C]				
0	2.03	4.01	7.12	10.65
5	2.02	4.01	7.09	10.52
10	2.01	4.00	7.06	10.39
15	2.00	4.00	7.04	10.26
20	2.00	4.00	7.02	10.13
25	2.00	4.01	7.00	10.00
30	1.99	4.01	6.99	9.87
35	1.99	4.02	6.98	9.74
40	1.98	4.03	6.97	9.61
45	1.98	4.04	6.97	9.48
50	1.98	4.06	6.97	9.35
55	1.98	4.08	6.98	
60	1.98	4.10	6.98	
65	1.99	4.13	6.99	
70		4.16	7.00	
75		4.19	7.02	
80		4.22	7.04	
85		4.26	7.06	
90		4.30	7.09	
95		4.35	7.12	

JIS Z 8802 buffers

T [°C]				
0	1.666	4.003	6.984	9.464
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
38	1.691	4.030	6.840	9.081
40	1.694	4.035	6.838	9.068
45	1.700	4.047	6.834	9.038
50	1.707	4.060	6.833	9.011
55	1.715	4.075	6.834	8.985
60	1.723	4.091	6.836	8.962
70	1.743	4.126	6.845	8.921
80	1.766	4.164	6.859	8.885
90	1.792	4.205	6.877	8.850
95	1.806	4.227	6.886	8.833
0	1.666	4.003	6.984	9.464
5	1.668	3.999	6.951	9.395

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