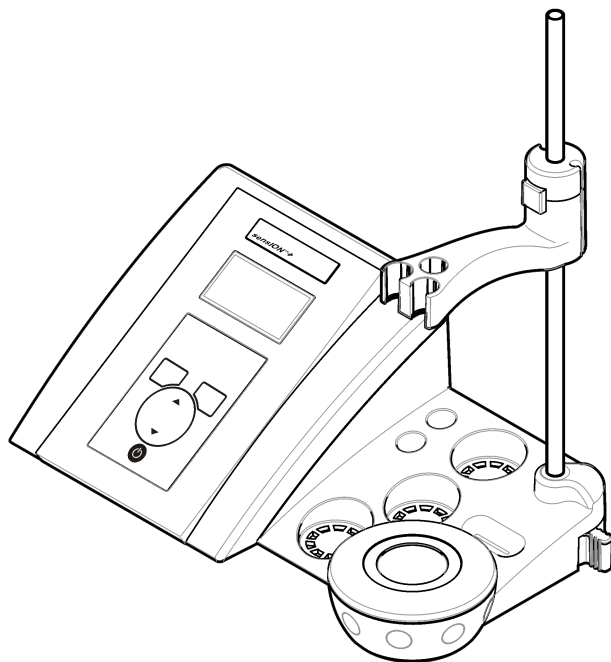




DOC022.98.90248

sensION™ + pH3

12/2015, Edition 4



User Manual
Bedienungsanleitung
Manuale dell'utente
Manuel d'utilisation
Manual del usuario
Manual do utilizador
Uživatelská příručka
Brugsanvisning
Gebruikershandleiding
Instrukcja obsługi
Bruksanvisning
Käyttäjän käsikirja
Ръководство на потребителя
Használati útmutató
Manual de utilizare
Naudotojo vadovas
Руководство пользователя
Kullanım Kılavuzu
Návod na obsluhu
Navodila za uporabo
Korisnički priručnik
Εγχειρίδιο χρήσης
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Specifications

Specifications are subject to change without notice.

Specification	Details
Dimensions	35 x 20 x 11 cm (13.78 x 7.87 x 4.33 in.)
Weight	1100 g (2.43 lb)
Meter enclosure	IP42
Power requirements (external)	100–240 V, 0.4 A, 47–63 Hz
Meter protection class	Class II
Storage temperature	–15 to +65 °C (5 to +149 °F)
Operating temperature	0 to 40 °C (41 to 104 °F)
Operating humidity	< 80% (non-condensing)
Resolution	pH: 0.01, ORP: 1 mV, temperature: 0.1 °C (0.18 °F)
Measuring error (± 1 digit)	pH: ≤ 0.01, ORP: ≤ 1 mV, temperature: ≤ 0.2 °C (≤ 0.36 °F)
Reproducibility (± 1 digit)	pH: ± 0.01, ORP: ± 1 mV, temperature: ± 0.1 °C (± 0.18 °F)
Connections	Combined or indicator probe: BNC connector (Imp. >10 ¹² Ω); Reference electrode: banana connector; A.T.C. type Pt 1000: banana or telephonic connector; magnetic stirrer: RCA connector
Temperature correction	Manual, Pt 1000 temperature probe (A.T.C.), NTC 10 kΩ probe
Measurement display lock	Continuous measurement, by stability
Display	Liquid crystal, backlit, 128 x 64 dots

Specification	Details
Keyboard	PET with protective treatment
Certification	CE

General information

Revised editions are found on the manufacturer's website.

Safety information

NOTICE

The manufacturer is not responsible for any damages due to misapplication or misuse of this product including, without limitation, direct, incidental and consequential damages, and disclaims such damages to the full extent permitted under applicable law. The user is solely responsible to identify critical application risks and install appropriate mechanisms to protect processes during a possible equipment malfunction.

Please read this entire manual before unpacking, setting up or operating this equipment. Pay attention to all danger and caution statements. Failure to do so could result in serious injury to the operator or damage to the equipment.

Make sure that the protection provided by this equipment is not impaired. Do not use or install this equipment in any manner other than that specified in this manual.

Use of hazard information

▲ DANGER

Indicates a potentially or imminently hazardous situation which, if not avoided, will result in death or serious injury.

▲ WARNING

Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a potentially hazardous situation that may result in minor or moderate injury.

NOTICE

Indicates a situation which, if not avoided, may cause damage to the instrument. Information that requires special emphasis.

Precautionary labels

Read all labels and tags attached to the instrument. Personal injury or damage to the instrument could occur if not observed. A symbol on the instrument is referenced in the manual with a precautionary statement.



This symbol, if noted on the instrument, references the instruction manual for operation and/or safety information.



Electrical equipment marked with this symbol may not be disposed of in European domestic or public disposal systems. Return old or end-of-life equipment to the manufacturer for disposal at no charge to the user.

Product overview

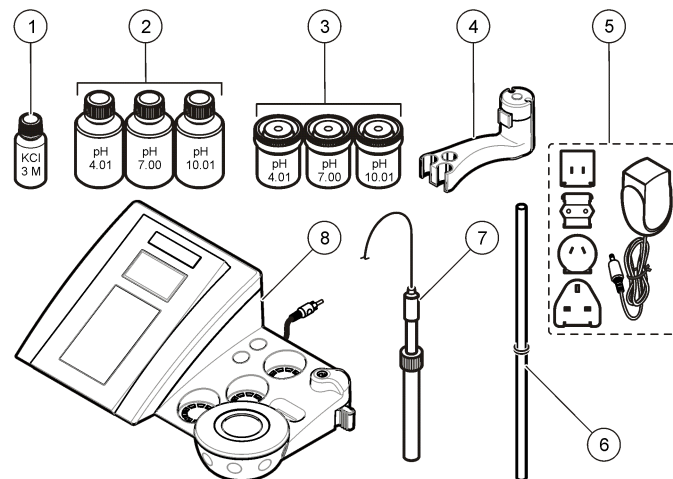
The sensION™+ meters are used with probes to measure various parameters in water.

The sensION™+ PH3 meter measures pH, ORP (mV) or temperature.

Product components

Refer to [Figure 1](#) to make sure that all components have been received. If any items are missing or damaged, contact the manufacturer or a sales representative immediately.

Figure 1 Meter components

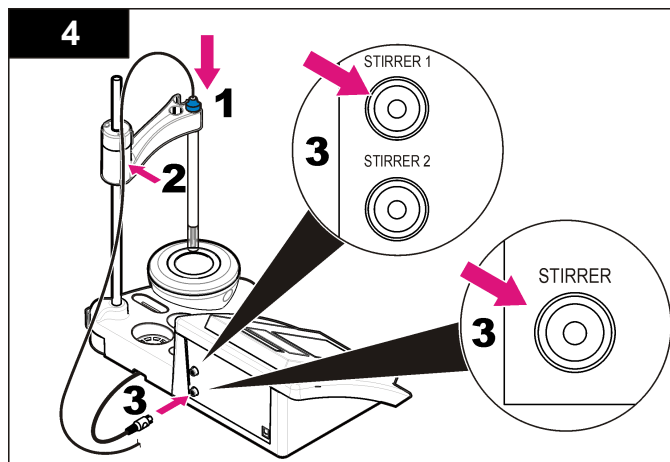
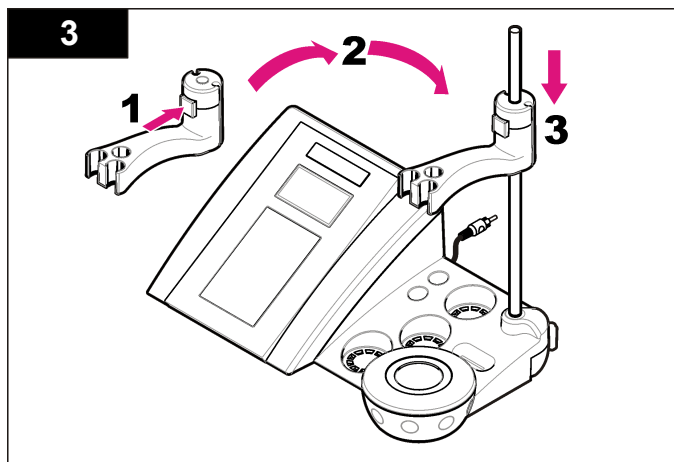
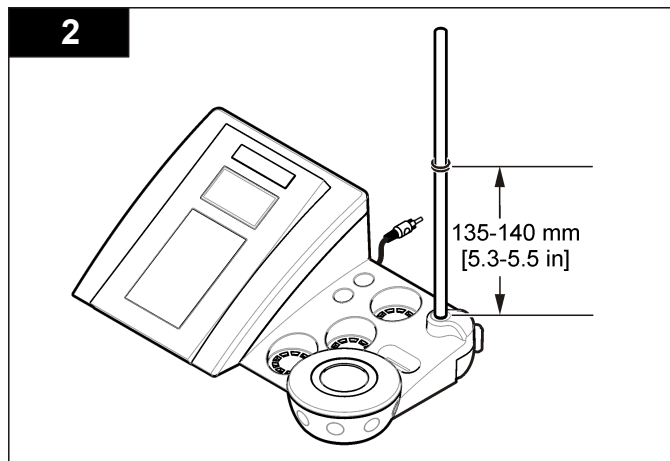
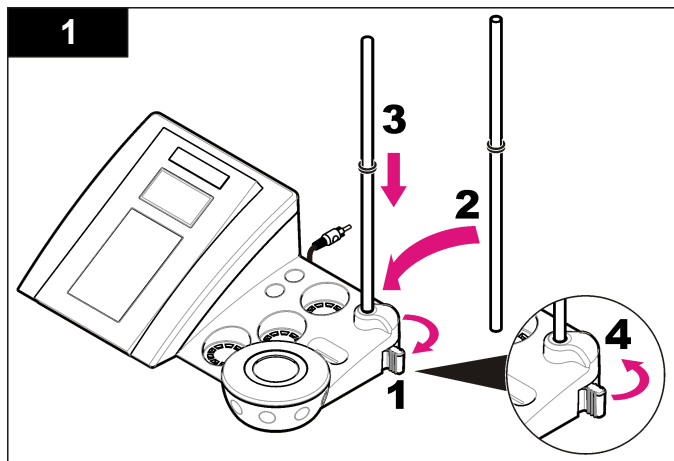


1 Electrolyte for the probe	5 Power supply
2 Buffer solutions (pH 4.01, pH 7.00 and pH 10.01)	6 Rod with o-ring
3 Calibration beakers (with magnetic bar inside)	7 Probe (included with kits only)
4 Probe holder	8 Meter


Installation

Assemble the probe holder

Follow the numbered steps to assemble the probe holder and to connect the magnetic stirrer.



Connect to AC power



⚠ DANGER

Electrocution hazard. If this equipment is used outdoors or in potentially wet locations, a Ground Fault Circuit Interrupt (GFCI/GFI) device must be used to connect the equipment to its main power source.

The meter can be powered by AC power with the universal power adapter.

1. Select the correct adapter plug for the power outlet from the adapter kit.
2. Connect the universal power adapter to the meter ([Figure 2](#)).
3. Connect the universal power adapter to an AC receptacle ([Figure 3](#)).
4. Turn the meter on.

Figure 2 Connector panel

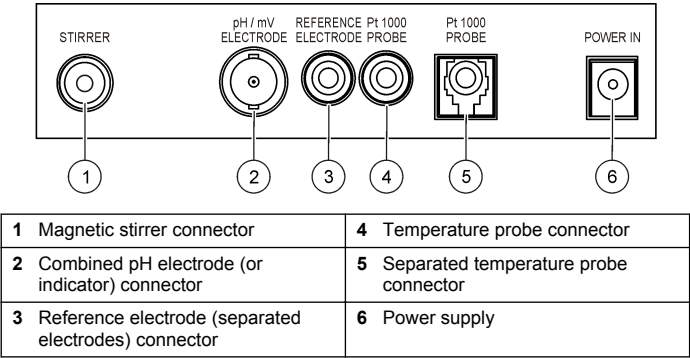
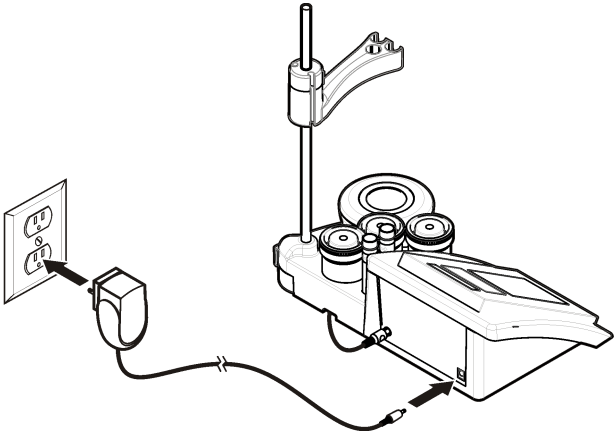


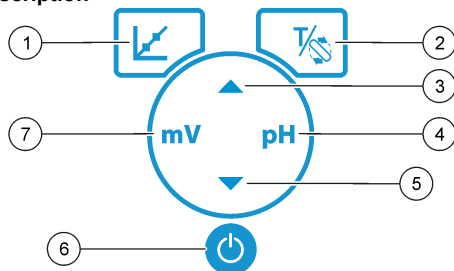
Figure 3 AC power connection



User interface and navigation

User interface

Keypad description

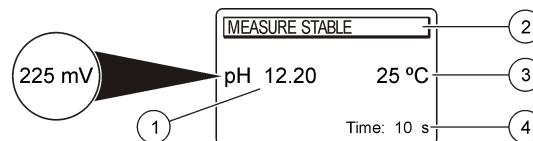


1 CALIBRATION key: start a calibration , view calibration data and change the calibration frequency	5 DOWN key: scroll to other options, change a value
2 TEMPERATURE and STIRRER key: change the temperature (°C, °F) or the stirring speed	6 ON/OFF: turn on or turn off the meter
3 UP key: scroll to other options, change a value	7 mV measurement key: start a ORP (mV) measurement
4 pH measurement key: start a pH measurement	

Display description

The meter display shows the concentration, units, temperature, calibration status, date and time.

Figure 4 Single screen display



1 Measurement unit and value (pH, ORP (mV))	3 Sample temperature (°C or °F)
2 Measurement mode or time and date	4 Visual measurement timer

Navigation

Use the calibrate key to calibrate the probe. Use the parameter key to take a sample measurement. Use the TEMPERATURE and STIRRER key to change the temperature (°C, °F) or the stirring speed. Use the arrow keys to scroll to other options or to change a value. Be sure to look at the display during tasks as the screens change quickly. Refer to each task for specific instructions.

Startup

Turn the meter on and off

NOTICE
Make sure that the probe is connected to the meter before the meter is turned on.

Push to turn on or turn off the meter. If the meter does not turn on, make sure that the AC power supply is properly connected to an electrical outlet.

Change the language


The display language is selected when the meter is powered on for the first time.

Use the ▲ or ▼ to select a language from a list. The meter returns automatically to the measurement screen after 3 seconds.

Note: ▲ To change the language from the main menu, push .

Standard operation




Calibration


⚠ DANGER	
	Chemical exposure hazard. Obey laboratory safety procedures and wear all of the personal protective equipment appropriate to the chemicals that are handled. Refer to the current safety data sheets (MSDS/SDS) for safety protocols.

Calibration procedure

This procedure is for general use with liquid calibration solutions. Refer to the documents that are included with each probe for additional information.


Note: Solutions should be stirred during calibration. For more information about the stirring settings, refer to [Change the stirring settings](#) on page 9.

1. Pour the buffers or calibration solutions into the labeled calibration beakers.
2. From the main menu push  to select pH or mV calibration.
3. Rinse the probe with deionized water and put the probe into the first calibration beaker. Be sure that there are no air bubbles in the membrane.
4. Push  to measure the first calibration solution. The next calibration solution is shown.
5. Rinse the probe with deionized water and put the probe into the second calibration beaker. Be sure that there are no air bubbles in the membrane.
6. Push  to measure the second calibration solution. The next calibration solution is shown.

7. Rinse the probe with deionized water and put the probe into the third calibration beaker. Be sure that there are no air bubbles in the membrane.
8. Push  to measure the third calibration solution. When the calibration is good, the display briefly shows 3rd Buffer OK and then returns to the main menu.

View the calibration data


Data from the most recent calibration can be shown.

1. From the main menu push .
2. Use the ▼ to view the last calibration data. The meter returns automatically to the measurement screen after 3 seconds.

Set the calibration reminder

The calibration reminder can be set between 0 to 23 hours or 1-7 days (default 1 day). The display shows the remaining time to the new calibration.

Note: When 0 days is selected, the calibration reminder is turned off.

1. From the main menu push  and then push ▼ until the display shows Cal. frequency.
2. Use the ▲ or ▼ to change the value. The meter returns automatically to the measurement screen after 3 seconds.

Sample measurements

Each probe has specific preparation steps and procedures for taking sample measurements. For step-by-step instructions, refer to the documents that are included with the probe.

Note: Solutions should be stirred during measurement. For more information about the stirring settings, refer to [Change the stirring settings](#) on page 9.

Note: The temperature is not shown during an ORP (mV) measurement when the temperature probe is not connected.

Push pH or ORP (mV) to take a sample measurement. During measurements, the parameter flashes and the timer shows the

stabilization time. To change the measurement parameter (if applicable), push and hold pH or ORP (mV).

To measure the sample continuously, push pH or ORP (mV) to start a measurement and push pH or ORP (mV) again during the stabilization. The parameter flashes to indicate the continuous measurement mode.

Advanced operation

Change the date and time

The date and time can be changed from the Date and Time menu.


1. Use the ▼ to enter the Date and Time menu. The date and time format: dd-mm-yyyy 24h.
The attribute to be changed will be automatically highlighted and will advance to the next attribute if no ▲ or ▼ is pushed.
2. To change an attribute, push ▲ or ▼ when the highlighted attribute is selected.
The current date and time will be shown on the display.

Adjust the display contrast

1. Push the ▲ and ▼ at the same time to enter the Display contrast menu.
2. Use the ▲ or ▼ to adjust the contrast of the display. The meter returns automatically to the measurement screen after 3 seconds.



Change the stirring settings

The stirring speed can be changed during calibration and during a measurement.

1. Push  during a calibration or during a measurement to enter the stirring menu.
2. Use the ▲ or ▼ to change the stirring speed in %.

Change the temperature units

The temperature units can be changed to Celsius or Fahrenheit.

1. From the main screen push .
2. Push  to select between Celsius or Fahrenheit.

Maintenance

CAUTION



Multiple hazards. Only qualified personnel must conduct the tasks described in this section of the document.

NOTICE

Do not disassemble the instrument for maintenance. If the internal components must be cleaned or repaired, contact the manufacturer.

Clean the instrument

NOTICE

Never use cleaning agents such as turpentine, acetone or similar products to clean the instrument including the display and accessories.

Clean the exterior of the instrument with a moist cloth and a mild soap solution.

Clean the probe

Clean the probe as needed. Refer to [Troubleshooting](#) on page 12 for more information about cleaning. Refer to the probe documentation for information about the probe maintenance.

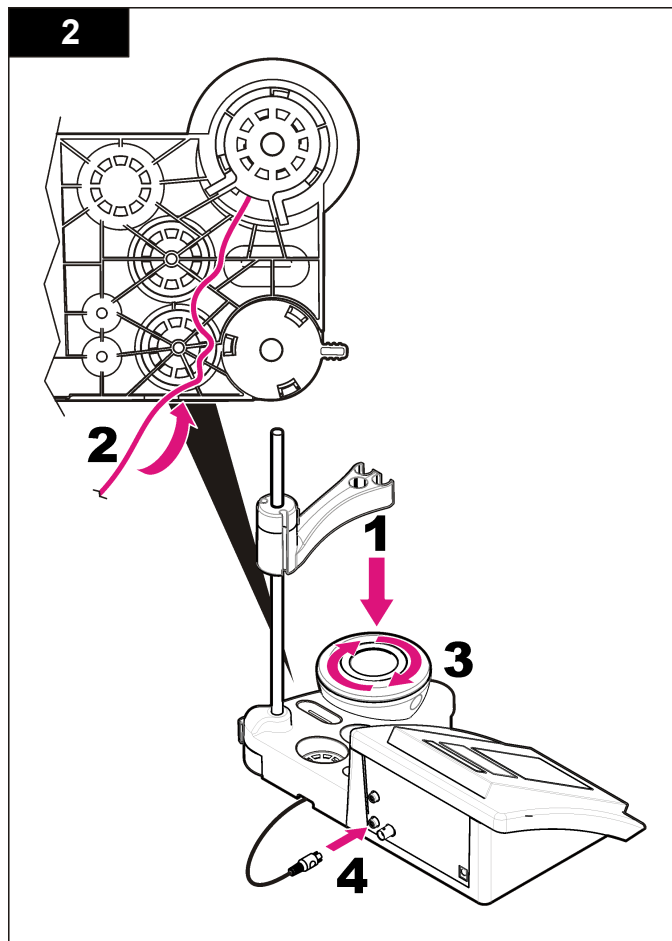
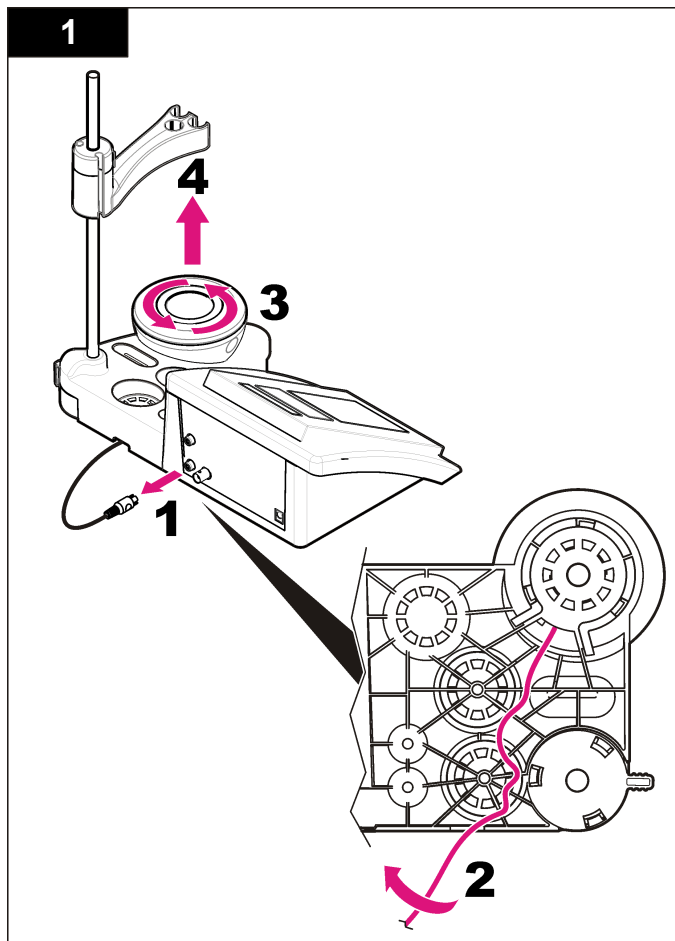
Use the cleaning agents listed in [Table 1](#) for contaminations on the pH probe.

Table 1 Cleaning agents for the pH probe

Contamination	Cleaning agent
Proteins	Pepsin cleaning solution
Grease, oils, fats	Electrode cleaning solution
Limescale	0.1 N HCl solution

Replace the magnetic stirrer

If the magnetic stirrer does not start, follow the numbered steps to replace the magnetic stirrer.



Troubleshooting

Refer to the following table for common problem messages or symptoms, possible causes and corrective actions.

Table 2 Calibration warnings and errors




Error/Warning	Solution
Asymmetry > 58 mV	Slope out of range (accepted values ± 58 mV). Repeat with  . Connect a new probe.
Buffer or electrode in poor conditions.	Repeat with  . Examine the probe: Clean the probe (refer to Clean the probe on page 9 for more information); make sure that there are no air bubbles in the membrane. Shake the probe like a thermometer; Connect a different probe to verify if problem is with probe or meter. Examine the buffer solution: Make sure that the buffer used matches the buffer specified in configuration; make sure of the temperature specification in configuration; use new buffer solution.
Sens. (a) < 70%	
BUFFER NOT RECOGNIZED	
UNSTABLE READING Time > 100 s	Repeat with  . Examine the probe: Clean the probe (refer to Clean the probe on page 9 for more information); make sure that there are no air bubbles in the membrane. Shake the probe like a thermometer; connect a different probe to verify if problem is with probe or meter. Make sure that the membrane and the diaphragm are properly immersed in the sample.

Table 2 Calibration warnings and errors (continued)



Error/Warning	Solution
Electrode in poor conditions.	Examine the probe: Clean the probe (refer to Clean the probe on page 9 for more information); make sure that there are no air bubbles in the membrane. Shake the probe like a thermometer; connect a different probe to verify if problem is with probe or meter.
Check the electrode	
SAME BUFFERS	Repeat with  . Examine the probe: Clean the probe (refer to Clean the probe on page 9 for more information); make sure that there are no air bubbles in the membrane. Shake the probe like a thermometer; connect a different probe to verify if problem is with probe or meter. Examine the buffer solution: Use new buffer solution.

Table 3 Measurement warnings and errors

Error/Warning	Solution
pH 12.78 19°C	Repeat with  .
pH out of range	Examine the probe: Clean the probe (refer to Clean the probe on page 9 for more information); make sure that there are no air bubbles in the membrane. Shake the probe like a thermometer; connect a different probe to verify if problem is with probe or meter.
Temp out of range °C	Examine the temperature sensor. Connect a different probe to verify if problem is with probe or meter.
Time > 150 s	Make sure that the membrane and the diaphragm are properly immersed in the sample. Examine the temperature. Examine the probe: Clean the probe (refer to Clean the probe on page 9 for more information); make sure that there are no air bubbles in the membrane. Shake the probe like a thermometer; connect a different probe to verify if problem is with probe or meter.

Replacement parts and accessories

Note: Product and Article numbers may vary for some selling regions. Contact the appropriate distributor or refer to the company website for contact information.

Replacement parts

Description	Item no.
sensION+ PH3 Lab pH-meter with accessories, without probe	LPV2000.98.0002
sensION+ PH31 Lab pH-meter, GLP, with accessories, without probe	LPV2100.98.0002
sensION+ MM340 Lab pH & Ion-meter, GLP, 2 channels, with accessories, without probe	LPV2200.98.0002
sensION+ EC7 Lab conductivity meter, with accessories, without probe	LPV3010.98.0002
sensION+ EC71 Lab conductivity meter, GLP, with accessories, without probe	LPV3110.98.0002
sensION+ MM374, 2 channel Lab meter, GLP, accessories, without probes	LPV4110.98.0002

Consumables

Description	Item no.
pH buffer solution 4.01, 125 mL	LZW9460.99
pH buffer solution 7.00, 125 mL	LZW9461.98
pH buffer solution 10.01, 125 mL	LZW9470.99
pH buffer solution 4.01, 250 mL	LZW9463.99
pH buffer solution 7.00, 250 mL	LZW9464.98
pH buffer solution 10.01, 250 mL	LZW9471.99
pH buffer solution 4.01, 1000 mL	LZW9466.99
pH buffer solution 7.00, 1000 mL	LZW9467.98

Consumables (continued)

Description	Item no.
pH buffer solution 10.01, 1000 mL	LZW9472.99
Electrolytic solution (KCl 3M), 125 mL	LZW9510.99
Electrolytic solution (KCl 3M), 250 mL	LZW9500.99
Electrolytic solution (KCl 3M), 50 mL	LZW9509.99
Electrolytic solution 0.1 M, 125 mL	LZW9901.99
Enzyme solution	2964349
Pepsin Cleaning Solution	2964349
Electrode cleaning solution	2965249
0.1 N HCl solution	1481253

Accessories

Description	Item no.
Magnetic stirrer with sensor holder, for sensION+ MM benchtop	LZW9319.99
3x50 mL printed beakers for benchtop pH calibration	LZW9110.98
Three-sensor holder, for sensION+ benchtop instruments	LZW9321.99
Holder and clamp for three sensors	LZW9155.99
Pyrex glass chamber, continuous flow measurements	LZW9118.99
PP protector, electrode storage	LZW9161.99

Standard solutions

Technical buffer solutions (DIN 19267)

Refer to [Table 4](#) pH and ORP (mV) values of specific buffer sets at varying temperatures.

Table 4 pH, ORP (mV) and temperature values

Temperature		pH					mV
°C	°F						
0	32	2.01	4.01	7.12	9.52	10.30	—
10	50	2.01	4.00	7.06	9.38	10.17	245
20	68	2.00	4.00	7.02	9.26	10.06	228
25	77	2.00	4.01	7.00	9.21	10.01	220
30	86	2.00	4.01	6.99	9.16	9.96	212
40	104	2.00	4.03	6.97	9.06	9.88	195
50	122	2.00	4.06	6.97	8.99	9.82	178
60	140	2.00	4.10	6.98	8.93	9.76	160
70	158	2.01	4.16	7.00	8.88	—	—
80	176	2.01	4.22	7.04	8.83	—	—
90	194	2.01	4.30	7.09	8.79	—	—