

# REED

## Model 8689

Digital pH Pen

### Instruction Manual



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## Features

- Dual displays of temperature and pH
- °F or °C temperature measurement
- Automatic temperature compensation assures that readings are corrected for temperature offsets
- One touch calibration for up to 3 points
- Calibration values are adjustable
- Data hold
- Electrode status indication
- Replaceable pH electrode module
- Waterproof housing (IP65)
- Low battery indicator
- Auto power off after 20 minutes of inactivity
- Protective sensor cap keeps sensor moistened

## Specifications

pH Range:	0.00 to 14.00 pH
Resolution:	0.01 pH
Accuracy:	±0.05 pH
Temp. Range:	0 to 60.0°C
Resolution:	0.1°C
Accuracy:	±0.5°C
Power Supply:	4 LR44 button cell batteries
Dimensions:	176 x 39 x 39mm
Weight:	110g
Includes:	Batteries
Optional Accessories:	Replacement pH Electrode (Model 86P8) 4.0 pH Buffer Solution (Model PH-04) 7.0 pH Buffer Solution (Model PH-07) Accredited Calibration Certificate (CERTIPH1)

# Instrument Description

## Display Description

The 1st display shows the measured pH reading.

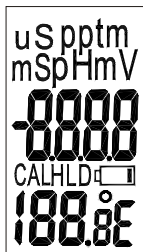
The 2nd display shows the temperature reading (C or F)

Cal - Calibration mode

HLD - Data hold

Battery icon to indicate low power

uS/ppt/ppm/mS/mV are invalid units in this pH pen



## Keypad Description



- Press to freeze the current reading
- Press again to release hold
- Press to adjust while in setting or calibration mode



- Press to enter calibration mode
- Press to save and enter next step while in setting mode
- Press to adjust while in calibration mode

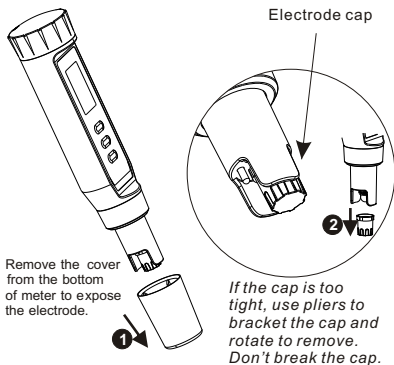


- Press to power the meter on/off
- Press for 2 seconds to enter the setting mode before power on
- Press with "HOLD" key to disable auto off function before power on

# Operating Instructions

Soak the electrode in water for at least 30 min before using to prevent delayed readings or to make the electrode wet if the pH electrode dries out. Remove the probe cover from meter (see Fig 1). Rotate the transparent cap to expose the electrode (see Fig 2)

Dip the electrode into the test solution. Press the Power button to power on the meter.



The LCD screen will flash “pH” when the meter is in measurement mode. The LCD will then display the measured pH and temperature. “pH” stop flashing when the reading is stable.

Once finished taking measurements, press the SET button, clean the electrode, put the transparent electrode cap and meter cover back on.

### *Data Hold*

Press the “HOLD” button to freeze the current reading. “HLD” will appear on the LCD screen. Press the “HOLD” button again to exit Hold Mode

### *Auto Power Off*

This meter will shut off automatically after 20 minutes of inactivity.

To disable the auto power off:

Before turning the unit on, press the “SET” button and “HOLD” button simultaneously until an “n” appears on the screen. Release the buttons to return to normal measuring mode.

Note: After the unit is turned off the Auto Power Off will be re-enabled by default.

## *Parameter Setting*

The Parameters Setting function could help you to check or program your meter. To enter the Setting function, when meter is off, press the “SET” button.

### ***Probe Slope and Offset Value***

After re-calibration, checking the Probe Slope and Offset Value could help to confirm if it is necessary to replace the probe.

While doing 3 points of calibration, there are two available Slope Values and one Offset Point.

- Range 1 (SL1): 0.00 to 2nd point
- Range 2 (SL2): 2nd point to 14.00pH.
- Offset Point is at pH7

While doing 1 or 2 points of calibration, the Slope Value SL1 equals to SL2. The offset point is still at pH7.

You will need to change the probe when the Slope Value is <75 or >115 (The unit is %). When the Offset value is out of the -60mV~ +60mV range, you will need to change the probe as well.

When the meter is off, press the “SET” button to enter setting mode. SL1 value will appear on LCD screen. Press the “CAL” button to view the SL2 value. Press the “CAL” button again to view the Offset Value.

### ***Temp. Unit Setting***

To change the temperature unit (C or F), press the “SET” button to enter the Parameter Setting function and press the “CAL” button. The default unit will flash on the LCD screen. Press the “HOLD” button to change the unit and press the “CAL” button to confirm.

### ***Parameter Reset***

To reset the meter to its default settings, press the “SET” button to enter the Parameter Setting function and press the “CAL” button. “No” will flash on the LCD screen. Press the “HOLD” button to change to “Yes” and press the “CAL” button to confirm. Before calibration it is recommend to reset the meter to its default settings to delete all the old calibration information.

## Calibration

Calibration is necessary and should be done regularly. The unique calibration design of this meter features automatic buffer recognition to avoid errors

1. Rinse the probe thoroughly with de-ionized water or rinse solution. Do not wipe the probe, as this will cause a build-up of electrostatic charge on the glass surface
2. Power on the meter
3. Dip the probe into the standard calibration buffer. The end of the probe must be completely immersed into the sample. Stir the probe gently to create a homogeneous sample. It is suggested to calibrate pH7 first and then 4 or 10 pH for a higher accuracy result
4. Press the “CAL” button to enter calibration mode. The “CAL” icon, auto recognized buffer value (see table), and “pH” will flash on the LCD screen.

	NIST		
Temp.(°C)	pH4.01	PH6.86	PH9.18
0	4.01	6.98	9.47
5	4.01	6.95	9.38
10	4.00	6.92	9.32
15	4.00	6.90	9.27
20	4.00	6.88	9.22
25	4.01	6.86	9.18
30	4.01	6.85	9.14
35	4.02	6.84	9.10
40	4.03	6.84	9.07
45	4.04	6.83	9.04
50	4.06	6.83	9.01

5. If the probe is damaged or the if the buffer is not specified as following, the primary LCD will keep flashing unless you turn off the meter. Acceptable pH buffer range: -pH3.00~5.00 -pH6.00~8.00 -pH8.50~10.50
6. If the probe successfully recognizes the buffer range, the buffer pH value and “CAL” will stop flashing.

- If your calibration buffer is not NIST, press the “HOLD” or “CAL” button. Adjust the calibrating point to the corresponding buffer value of the specific temperature. The adjustable range: 3.00 to 5.00, 6.00 to 8.00, 8.50 to 10.50
- Wait 30 seconds for the meter to complete the calibration automatically, if the reading is stable enough.
- Rinse the probe with de-ionized water or a rinse solution after calibration. Repeat step 3 ~ 8 to do multiple point calibration or exit by turning off the meter.

## Changing the Probe

Change probe when experiencing:

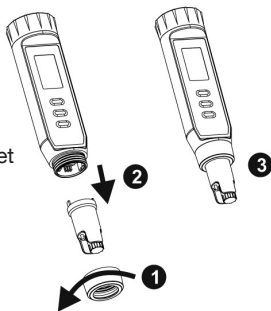
Slow response

Unstable reading

Slope value is <75% or >115% or the offset value is out of -60mV~+60mV

Three steps to change the probe:

- Loosen the washer
- Unplug the probe
- Reverse steps to install new probe



Note: Be sure to calibrate the meter after changing the probe.

## Maintenance

- Always keep the pH glass bulb wet by using the cap to protect and store the electrode
- Always rinse the pH electrode in de-ionized water or rinse solution before next use
- Never touch or rub the glass bulb
- Make sure the electrode is clean. Between measurements, rinse the electrode with de-ionized water. If the electrode has been exposed to a solvent immiscible with water, clean it with a solvent miscible with water e.g. ethanol or acetone and rinse carefully with water
- Store the electrode carefully

## *Troubleshooting*

### ***Power on but no display***

1. Make sure the time of pressing the power button is more than 0.3 sec.
2. Check the batteries are in place, make good contact, and have the correct polarity
3. Replace the batteries
4. Remove the batteries for one minute and then put back in the unit

### ***Slow response***

1. Clean probe by immersing the electrode in tap water for 10-15 min, then rinse thoroughly with distilled water or use a general purpose electrode cleaner
2. Replace the probe

### ***Unstable reading***

1. Stir the solution to make homogeneous
2. Make sure the electrode is completely immersed in the solution
3. Clean the probe and re-calibrate
4. Replace the probe
5. Move to another room and try again

### ***The reading does not change***

1. Check whether Data Hold is on

### ***Error Codes***

E02: The value is below the lowest range

E03: The value is above the highest range

E04: Temperature is out of range

E13: Slope or Offset Value of the pH probe is out of range

Solution: Re-calibrate, replace the probe, or replace the calibration buffer

E31: Measuring circuit failure

Solution: Power on meter four times, if the error still appears, send in the meter for repairs

E32: Memory saving/reading failure

Solution: Power on meter four times, if the error still appears, send in the meter for repairs

E33: Reference voltage failure

Solution: Power on meter four times, if the error still appears, send in the meter for repairs

## Battery Replacement

1. Turn off the meter
2. Loosen the battery cover in a counter-clockwise direction
3. Replace the old batteries with four new button cells LR44
4. Make sure the batteries are in place and the polarity is correct
5. Put back the battery cover and turn it tightly in clockwise direction

Note: It is suggested to re-calibrate the meters after changing batteries. Remove battery from instruments that you do not plan to use for a month or more.

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