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INSTRUMENTOS DE MEDICIÓN INDUSTRIAL

Medidor industrial de pH-ORP-Temperatura, pHG-1901

SB-PHG1901

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PHG-1901

Industrial Online pH Meter

Operation Manual

User's Notice

- Please observe the operating instructions and precautions when using this meter.
- In case of any abnormality or damage of the instrument in use, please contact the distributor or the Shanghai Boqu Instrument Co., Ltd instead of repairing it by yourself.
- To ensure a more accurate measurement, the instrument should be calibrated to fit the electrode from time to time; if your electrode is bought about one year ago, you'd better replace it.
- Electrify to preheat the instrument for 30 minutes before calibration.
- When the instrument has been used for one year, send it to the metrological institutions or Shanghai Boqu Instrument Co., Ltd.
- Check it. Don't use it again unless it passes the inspection.
- Due to the upgrading of the product, this manual is subject to change without prior notice.

Introduction

pHG-1901 series of microcomputer-based industrial control instruments are precision meters for the measurement of the pH value of solutions. With complete functions, stable performance, simple operation and other advantages, they are optimal instruments for industrial measurement and pH control.

The pHG-1901 series instruments adopt back light LCD display with indication of errors, automatic temperature compensation, 2-point calibration, isolated 4-20mA current output, dual relay control, adjustable delay, alarming with upper and lower thresholds, power-down memory and over ten years of data storage without backup batteries.

pHG-1901 series instruments can match all types of pH electrodes.

Technical Parameters

1. Measuring range: 0.00-14.00pH
2. Resolution: 0.01pH
3. Level: 0.05
4. Stability: ± 0.05 pH/24h

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5. Adjustable range of calibration: Zero point \pm 1.45pH
Slope: 80%-100%
 6. pH standard solution: 6.86/4.01/9.18
 7. Control range: 0-14.00pH
 8. Temperature compensation:
Automatic temperature compensation: 0-100 $^{\circ}$ C
Manual temperature compensation: 0-80 $^{\circ}$ C
 9. Output signal: 4-20mA
 10. Communication Interface: RS485 option
 11. Control Interface: On/off relay output connect point.
 12. Relay load: MA x 220VAC 5A
MA x 115VAC/ 10A
 13. Relay retardation: 0.1-1.00 adjustable
 14. Signal output load \leq 750 Ω
 15. Signal input impedance \geq 1 \times 10¹² Ω
 15. Working voltage: AC 220V \pm 22V
50/60Hz
 16. Dimension: 96 \times 96 \times 115 mm
 17. Hole size: 91 \times 91mm
 18. Weight: 0.6Kg
 19. Working conditions of the instrument:
 - ①Ambient temperature: 0 ~ 60 $^{\circ}$ C
 - ②Relative air humidity \leq 90%
 - ③Except for the earth magnetic field, there is no interference of other strong magnetic fields around.

Panel Cut-out

Cut out a rectangle on the cabinet or mounting panel of the instrument (See Fig. 1).

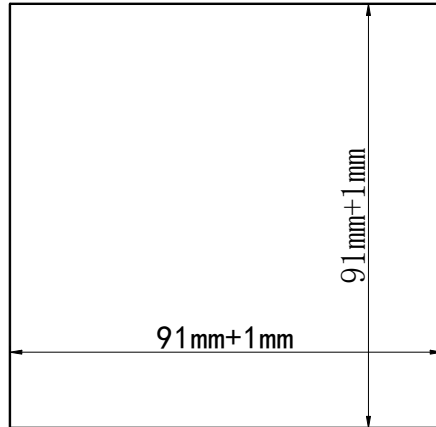


Fig. 1

Installation of the Fixing Bracket

Insert the bracket into the front side of the opening on the back of the instrument, and install and fasten the two **locking strips** (See Fig. 2).

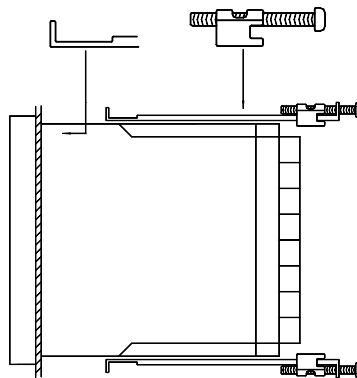


Fig. 2

Front Panel

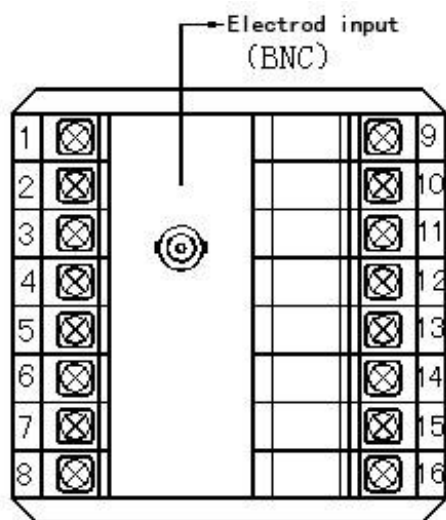


Fig. 3

1. **Hi**: High-point alarm indicator light
2. **Lo**: Low-point alarm indicator light

3. ↑ key: Increase
4. ↓ key: Decrease
5. SET key: Menu selection
6. CAL/ENT key: Confirm
7. Fun key: Switch between PH value and mV value

Rear Panel



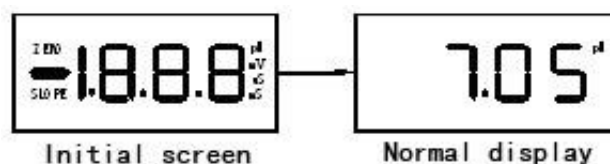
1. NO: high point relay normally open switch
2. COM: high point relay common terminal
3. NC: high point relay terminal normally closed
4. NO: low point relay normally open
5. COM: low point relay common terminal
6. NC: low point relay normally closed terminal
7. 220v
8. 8.0v
9. Ref.: Reference electrode negative
10. TEMP: temperature compensation
11. TEMP: temperature compensation
12. N/A 13. N/A 14. N/A
15. 4 ~ 20 mA + 16. 4 ~ 20 mA -

Calibration of the Instrument

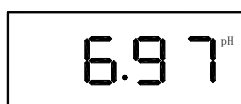
1. Please verify that the wire connection of the instrument is correct prior to

calibration.

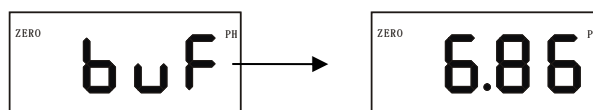
2. Switch on the instrument, and the initial screen will appear, followed by the normal display.



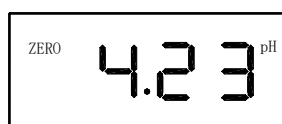
3. Clean the electrode with distilled water, dry it with filter paper and insert it into the standard buffer solution at pH6.86 to stir gently till the displayed number becomes stable. (The number shown below is for reference only.)



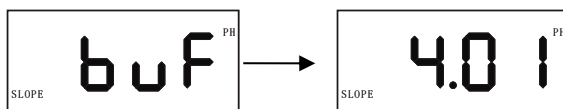
4. Press the SET key till “ZERO” appears on the upper left corner of the screen with flashing on “BUF” and “6.86” alternately, indicating that the instrument is waiting for the zero-point calibration.



5. When you press the CAL/ENT key, “ZERO” and “6.86” will appear on the screen, indicating that the zero-point calibration of the instrument is completed.
6. Take the electrode out of standard buffer solution at pH6.86, clean it and dry it with filter paper, and then insert it into the standard buffer solution at pH4.01 (or pH9.18) to stir gently till the displayed number becomes stable.(The number shown below is for reference only.)

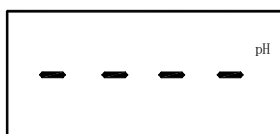


8. Press the SET key till “SLOPE” appears on the lower left corner of the screen with flashing on “BUF” and “4.01” alternately, indicating that the instrument is waiting for the slope calibration.



9. When you press the CAL/ENT key, “SLOPE” and “4.01” will appear on the screen, indicating that the slope calibration of the instrument is completed.

10. Press the SET key till the screen display goes as follows, which indicates that the calibration is over.

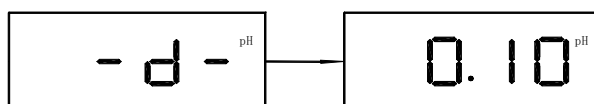


In calibration, the standard solution error or electrode problem might make the measuring result of the instrument exceed the zero point or the allowable range of slope, when the calibration of the instrument will be disabled.

Adjustment of Relay Retardation

In order to prevent the relay from beating continuously or control the breadth of the pH value, this instrument is provided with this function set as follows:

Press the SET Key till “-d-” and a digit flash alternately on the screen, indicating that the instrument is waiting for the adjustment of relay retardation.



Then press the ↑ or ↓ key to adjust the relay retardation. (The range of adjustment is 0-14. You can adjust it in your desire. The default value is 0.10.) After adjustment, press the SET key, and the screen will be displayed as follows.

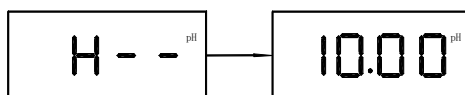


Then the instrument will memorize this digit, which will put the adjustment to an end.

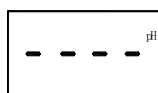
Setting the Control Program

Setting the High Alarm Point

1. Press the SET Key till “H— —” and “10.00” flash alternately on the screen, when the high-point alarm indicator light will also flash, indicating that the instrument has entered the high-point alarm setting.

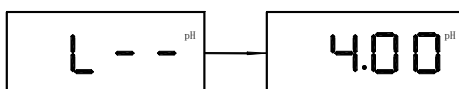


2. Press \uparrow or \downarrow to determine the high-point control digit.
3. Press the SET key till the screen is displayed as follows, indicating that the high-point setting is over and that the instrument has entered the control mode.

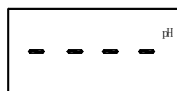


Setting the Low Alarm Point

1. Press the SET Key till “L— —” and “4.00” flash alternately on the screen, when the low-point alarm indicator light will also flash, indicating that the instrument has entered the low-point alarm setting.

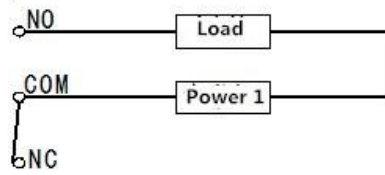


2. Press \uparrow or \downarrow to determine the low-point control digit.
3. Press the CAL/ENT key till the screen is displayed as follows, indicating that the low-point setting is over and that the instrument has entered the control mode.

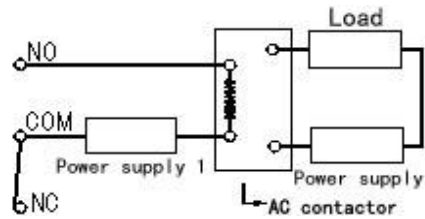


Relay Control

4. If the rated current of the control load is lower than the current borne by the relay, one can adopt the following connection. (Power supply 1 cannot exceed 220V.)



- 5 If the rated current of the control load is higher than the current borne by the relay, one can add an AC contactor and adopt the following connection.



Signal Output

4-20mA current output:

Output load: 500Ω

Error of I: ±0.04mA

Output current: $I = D \times (16/14) + 4.00$

Note: I represents the output current value. $4 \text{ mA} \leq I \leq 20 \text{ mA}$

D represents the displayed pH value. $0.00 \text{ pH} \leq D \leq 14.00 \text{ pH}$

Temperature Compensation

This instrument has automatic temperature compensation. If not connected to the thermal probe, the instrument defaults temperature at 25 °C . In case temperature compensation is required, just connect Terminal 9 and Terminal 10 to the PT1000 thermal probe.

Errors displaying

When the measured value exceeds the measuring scope, “E.rr” will be displayed on the screen.

pH standard buffer solution

TEMP°C	4.00	4.01	6.86	7.00	9.18	10.01
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0	4.00	4.00	6.98	7.12	9.46	10.32
5	4.00	4.00	6.95	7.09	9.39	10.25
10	4.00	4.00	6.92	7.06	9.33	10.18
15	4.00	4.00	6.90	7.04	9.28	10.12
20	4.00	4.00	6.88	7.02	9.23	10.06
25	4.00	4.01	6.86	7.00	9.18	10.01
30	4.01	4.02	6.85	6.99	9.14	9.97
35	4.02	4.02	6.84	6.98	9.17	9.93
40	4.03	4.04	6.84	6.97	9.07	9.89
45	4.04	4.05	6.83	6.97	9.04	9.86
50	4.06	4.06	6.83	6.97	9.02	9.83

Special functions setup

1. Keep pressing CAL/ENT key, then power on. Don't release the key until "F2" appears on the screen; the buffer solution can be changed or rectified into the standard solution groups with the pH value of 6.86/4.01/9.18 or 7.00/4.00/10.01. (Repeat the above steps, and it will resume the original state.)
2. Keep pressing "↑" key, then power on.. Don't release the key until "F3" appears on the screen; the current output can be changed from 4-20mA into 20-4mA. (Repeat the above steps, and it will resume the original state.)
3. Keep pressing "↓" key, then power on. Don't release the key until "F4" appears on the screen; the machine can be changed into a controller dedicated to the antimony electrode. (Repeat the above steps, and it will resume the original state.)
4. Press the MENU key, power on waiting for display F1, then release the key, the key lock. (Repeat again to restore the original status) in order to avoid unnecessary personnel chaotic operation, add this special function.
5. When there is no calibration buffer, but some errors meter (in comparison with good meter), the meter has display value correct function, press the ↑ and ↓ key simultaneously in the measurement state, the screen displays the value 0, high and low warning lights lighting at the same time, then, you can press the ↑, ↓ keys to adjust the value, press the ENTER key to confirm after adjust finished, the instrument will go to the measuring interface.
6. Press FUN key, Power on, release the key until display F5 appears on the screen, set the function to restore the factory. When you are not sure that all your settings (including the correction value) when you are correct, you can recover factory data by restoring the factory set function.

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INSTRUMENTOS DE MEDICIÓN INDUSTRIAL



LLÁMANOS

+52(81) 8115-1400 / +52 (81) 8173-4300

LADA Sin Costo:
01 800 087 43 75

E-mail:
ventas@twilight.mx

www.twilight.mx