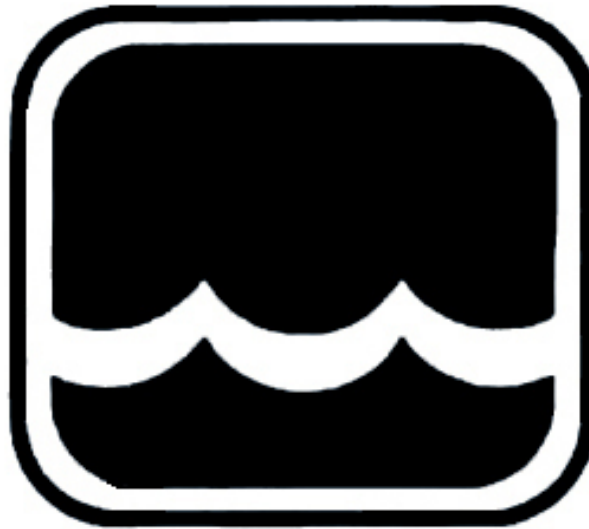




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**PRODUCT NAME: 3675 & 3676 1/4 DIN pH/ORP
CONTROLLER**



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The models 3675 & 3676 are precise instruments for the measurement and control of pH and mV (ORP).

Two output relays are provided for ON/OFF control. The isolated 4-20 mA current output covers the input control range of 0 to 14 pH and 0 to 1400 mV.

Both models are housed in a rugged 1/4 DIN plastic case. This allows the meters to fit into standard panel cutouts, while providing industrial weatherproof and environmental housings.

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I) Inspection

- a) Your 3675 and/or 3676 1/4 DIN pH/ORP Controller unit was carefully inspected and certified by our Quality Assurance Team before shipping. If any damage has occurred during shipping, please notify Global Water Instrumentation, Inc. and file a claim with the carrier involved.

II) The Meter

- a) LCD (Model 3675) Or LED ((Model 3676) Display
 - b) High Alarm Set Point Switch
 - c) High Alarm Set Point Led
 - d) High Alarm Set Point Control
 - e) pH Standardiation Tion Control
 - f) pH Slope Control
 - g) Low Alarm Set Point Switch
 - h) Low Alarm Set Point Led
 - i) Low Alarm Set Point Control
-
- a) pH/mV Electrode BNC Input
 - b) ATC Probe Input
 - c) Isolated 4-20 mA Output
 - d) Reference Electrode Input
 - e) Earth Ground
 - f) AC Power Input
 - g) High Alarm Output Relay
 - h) Low Alarm Output Relay
-
- a) pH/mV Input BNC Connector
 - b) Mounting Bracket
 - c) pH/mV Select Switch



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II) Temperature Compensation

- a) These meters are designed to be used with a PT-100 RTD temperature probe for Automatic Temperature Compensation operations. The alpha value of PT-100 element is 0.00385.

A precision 0.1% resistor can be connected across the ATC input terminals to simulate a fixed process temperature.

Table 1

Temperature °C	Resistor value Ω
0	100.00
10	103.90
20	107.79
25	109.73
30	111.67
40	115.54
50	119.40
60	123.24
70	127.07
80	130.89
90	134.78
100	138.50

III) Rear Panel Connection

- a) Connect the AC line to the rear terminals of the instrument. The instrument can be powered by 115V AC or 230V AC, 50/60Hz. Make sure that the Earth terminal is connected to the earth lead of the AC power line.
- b) Connect the proper load to the output relays. Be sure that the load does not exceed the relay rating, 5 Amp at 115V AC and 2.5 Amp at 230V AC for RESISTIVE load only.
- c) Set the pH/mV switch to the position for pH or mV operations.
- d) Load Connections: Connect the proper load to the 4-20 mA output terminals. Make sure that the load impedance is less than 550 Ω and the common mode voltage does not exceed 500V DC.
- e) Electrode Connections: If you are using a combination pH (mV) electrode, connect the electrode cable to the pH/mV electrode BNC input connector. If you are using separate pH (mV) electrode BNC input connector then connect the



reference electrode to the Reference Input terminal.

- f) Temperature Compensation Input Connections: Using the ATC mode, connect the ATC input terminals. A precision 0.1% resistor can be connected across the ATC terminals to simulate a fixed process temperature. Refer to Table 1 on page 4.

IV) Mounting Procedure

- a) Make a cutout on any panel, with a thickness of 1/16 in (1.5 mm) to 3/8 in. (9.5 mm).
- b) Remove the mounting brackets assembly from the panel meter and insert the panel meter into the cutout.
- c) Replace the mounting brackets assembly onto the panel meter and fasten the mounting screws to secure the panel meter to the mounting panel.

V) pH Calibration

Refer to Rear Panel Connection Scheme and Temperature Compensation on page 4.

- a) Rinse the pH electrode and ATC probe with distilled water.
- b) Measure the temperature of the buffer 7 solution with a precision thermometer.
- c) Immerse the pH electrode and ATC/TEMP probe in buffer 7. Allow sufficient time for the pH electrode and ATC probe to reach temperature equilibrium with the buffer 7.
- d) Adjust the STAND control for the instrument to display the buffer value corresponding to the temperature measured in step b. Refer to Table 2 on page 6.
- e) Remove the pH electrode and ATC probe from buffer 7 and rinse with distilled water.
- f) Measure the temperature of a second buffer with a precision thermometer.
- g) Immerse the pH electrode and ATC probe in the second buffer. Allow sufficient time for the pH electrode and ATC probe to reach temperature equilibrium with the second buffer. For accurate pH measurements, the second buffer should be close in pH and temperature values to process under test. In practice, pH buffer 4 and 10 are commonly used.



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- h) Adjust the SLOPE control for the instrument to display the buffer value corresponding to the temperature measured in step 6 (f). Refer to Table 2.
- i) Remove the pH electrode and ATC probe from the second buffer and rinse with distilled water. The instrument is dual point calibrated and is now ready for measurements.

Table 2 - Temperature Coefficient Of The Ph Buffers

BUFFERS			
°C	10.01	7.00	4.01
0	10.32	7.11	4.00
5	10.25	7.08	4.003
10	10.18	7.06	4.00
15	10.12	7.03	4.00
20	10.06	7.01	4.00
25	10.01	7.00	4.01
30	9.97	6.98	4.02
35	9.93	6.98	4.02
40	9.89	6.97	4.03
45	9.86	6.97	4.04
50	9.83	6.97	4.06
55	9.80	6.97	4.07
60	9.78	6.98	4.10

VI) Isolation Voltage

The differential voltage between the outputs and the load should not exceed the maximum values. Exceeding the maximum values may cause permanent damage to the instrument and load.

- a) Relay Output:
The maximum isolation voltage of the relay output contacts is 1500V DC, The voltage differential between the relay output contacts and the load should not exceed 1500V DC.
- b) Current Output:
The maximum isolation voltage of the 4-20 mA output is 500V DC. The voltage differential between the 4-20 mA output and the load should not exceed 500V DC.



VII) Output Load

- a) Relay Output:
The current through the relay output contacts should not exceed 5 Amp at 115V AC and 2.5 Amp at 230V AC in order not to cause permanent damage to the relay contacts. This rating is specified for RESISTIVE loads only.
- b) Current Output
The maximum load is 550 Ω . Output current inaccuracies may occur for load impedance in excess of 550 Ω .

VIII) Controller Output Features

The output of the meter consists of two alarm relays and an isolated 4-20 mA output. The operation of the meter is described below.

- a) CONTROLLER INPUT RANGE
 - 1. Relay Outputs:
 - pH 0 to 14.00 pH
 - mV ± 1999 mV
 - 2. Current Output:
 - pH 0 to 14.00 pH
 - mV 0 to 1400 mV

IX) Alarm Relay And Led Formats

- a) HIGH ALARM set point:
 - 1. Press the HIGH ALARM set point switch. The instrument will indicate the alarm set point value. The alarm set point value can be adjusted by the HIGH ALARM set point control.
 - 2. Release the HIGH ALARM set point switch. The instrument will indicate the measured processes value.
 - 3. The High ALARM set point LED will be ON and the HIGH ALARM output relay will be energized when the measured value is greater then the alarm set point value. The HIGH ALARM set point LED will be OFF and the HIGH ALARM output relay will be de-energized when the measured value is less then the alarm set point value.
- b) LOW ALARM set point:



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1. Press the LOW ALARM set point switch .The instrument will indicate the alarm set point value. The alarm set point value can be adjusted by the LOW ALARM set point control.
2. Release the LOW ALARM set point switch. The instrument will indicate the measured process value.
3. The LOW ALARM set point LED will be ON and the LOW ALARM output relay will be energized when the measured value is less than the alarm set point value. The LOW ALARM set point LED will be OFF and the LOW ALARM output relay will be de-energized when the measured value is greater than the alarm set point value.

c) SET POINT HYSTERESIS:

The hysteresis for the meters is factory set to ± 0.1 pH (10 mV).For HIGH ALARM set points, the trigger ON point is 0.1pH (10 mV) above the set point values and trigger OFF point is 0.1pH (10 mV) below the set point values. For LOW ALARM set points, the trigger ON point is 0.1 pH (10 mV) below the set point values and the trigger OFF point is 0.1 pH (10 mV) above the set point values.

X) Isolated 4-20 mA Output

a) pH MODE OUTPUT:

The 4-20 mA Output is 4mA at 0 pH and 20 mA at 14 pH. The pH value can be obtained by measuring the output current, A, based on the following equation.

b) mV MODE OUTPUT:

The 4-20 mA output is 4 mA at 0 mV and 20 mA at 1400 mV. The mV value can be obtained by measuring the output current, A, based on the following equation.

$$mV = (A-4) \times (1400/16)$$

Example: A=12 mA for mV=700

pH MODE

mV MODE

XI) Trouble Shooting

Other issues

- a) Call us for tech support: 800-876-1172 or 916-638-3429 (many problems can be solved over the phone). Fax: 916-638-3270 or Email: globalw@globalw.com.

Be prepared to describe the problem you are experiencing including specific



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details of the application and installation and any additional pertinent information.

- b) In the event that the equipment needs to be returned to the factory for any reason, please call to obtain an RMA# (Return Material authorization). Do not return items without an RMA# displayed on the outside of the package.

Clean and decontaminate the 3675 and/or 3676 if necessary.

Include a written statement describing the problems.

Send the package with shipping prepaid to our factory address. Insure your shipment, as the warranty does not cover damage incurred during transit.

- c) When calling for tech support, please have the following information ready;
 - 1. Model #.
 - 2. Unit serial number.
 - 3. P.O.# the equipment was purchased on.
 - 4. Our sales number or the invoice number.
 - 5. Repair instructions and/or specific problems relating to the product.

XII) Warranty

- a) Global Water Instrumentation, Inc. warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from date of shipment from factory. Global Water's obligations under this warranty are limited to, at Global Water's option: (I) replacing or (II) repairing; any products determined to be defective. In no case shall Global Water's liability exceed the products original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by Global Water Instrumentation, Inc., or which has been subject to misuse, negligence, or accident. It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.
- b) The warranty begins on the date of your invoice.