

pH Controller with Isolated Transmitter, Model 112pH



Features

- Accurate pH display with calibration facility on front panel.
- Large 0.8" Red 7 Segment Display
- Independent 2 Set Point controller with separate relays for each set limit
- Auto Temp Compensation using external PT100
- Isolated 4-20mA transmitter output for logging, remote display etc.
- Digital calibration for pH-7 and pH-4
- Slim enclosure of only 50mm depth

Specifications

- Display : 3½ Digit Red, 0.8" character height LED display
- Range : 0.00 to 14.00 pH
- Auto Temp : 0-100°C using PT100 ext. sensor compensation
- 2 Relay Outputs : Contact rating 5A at 220V AC
- Relay Logic : Acid Relay ON for pH > Set Limit + Hysteresis
Base Relay ON for pH < Set Limit - Hysteresis
- Calibration : Standard pH-7 : 7.00 ± 1
Slope pH-4 : 4.00 ± 1
- Accuracy : 0.5% ± 1 Digit
- Transmitter Out : 4-20mA Isolated transmitter output for 0-14.00pH
Maximum termination resistance is 250Ω
- Input Impedance: >10¹² Ω
- Supply : 220V AC ±10% @ 50/60Hz
- Size : Front facia - 96mm x 96mm x 50mm
Cut Out - 92mm x 92mm
- Enclosure : Plastic ABS
- Weight : 700gms

INSTALLATION

The pH sensor has a very high Input Impedance and hence should be connected using the shortest shielded co-axial cable as possible. Usually the sensor has a 1m lead. You may extend it up to a maximum of 5m using co-axial BNC couplers (Never make joints as this will pick-up noise)

Ensure that the original bottle connected to the pH sensor is unscrewed from the sensor before dipping the sensor into the solution. This bottle is provided only for storage purposes of the sensor. Never let the sensor dry. Always keep it in some solution.

A PT100 sensor is connected for temperature compensation. If not available, a fixed resistance corresponding to the PT100 resistance at room temperature must be terminated in lieu of the PT100 sensor. In actual usage, if auto-temperature compensation is desired, the 110Ω resistance is removed and a PT100 temperature sensor is wired in its place. This must then be dipped in the solution under test.

Further, it is important to note that the pH sensor cable and the PT100 sensor cables are highly sensitive to noise and therefore must not be bundled with high voltage or high current cables. The very high input impedance of the pH sensor is prone to pick up noise, so avoid sparking etc. in its vicinity. It may be a good idea to provide shielding by running the wire through a grounded metallic tube.

Once the power wiring is completed, connect pH sensor using BNC input connector at rear.

If automatic temperature compensation is desired, remove the resistance from the rear terminals and connect a PT100 sensor instead. If temp. is different connect the appropriate resistance in case on non-availability of PT100 sensor

The following table gives the resistance offered by a PT100 sensor for different temperatures.

10°C	15°C	20°C	25°C	30°C	35°C
103.9Ω	105.8Ω	107.7Ω	109.7Ω	111.6Ω	113 Ω

Calibration

- Dip the sensor in a standard solution of pH-7. If the sensor reads 7.00 then further pH 7 calibration is not required. If reading is not 7.00, then press the CAL switch, the display shows "CAL7" and then the current pH value with MSB digit blinking. Use Increment and Decrement switches to set the display to 7.00. Then press the CAL switch again. The display shows 7.00
- Now, dip the sensor in a standard solution of pH-4. If the sensor reads 4.00 then further pH 4 calibration is not required. If reading is not 4.00, then press the CAL switch, the display shows "SPAN" and then the current pH value with MSB digit blinking. Use Increment and Decrement switches to set the display to 4.00. Then press the CAL switch again. The display shows 4.00
- It is advisable to repeat the above 2 steps once more. Also, when the sensor is shifted from one solution to another, give the sensor sufficient time to stabilize. Also ensure you do not contaminate the solution when shifting the sensor from one to the other. Ensure that the sensor is cleaned regularly.

Factory Calibration:

- In case, the calibration needs to be reverted back to factory calibration, press the UP and Down keys together.
- The Display shows "FCAL". Keep the switches pressed till "done" is displayed.
- This will revert the calibration to factory calibration. Any calibration done by the user will be lost.

Acid Set Limit

- Press '**ACID**' Set Limit. The display shows the current set Acid Limit
- Acid Relay OFF for $\text{pH} < \text{Acid Set Limit}$.
- Acid Relay ON for $\text{pH} > \text{Acid Set Limit} + \text{Acid Hysterisis}$
- Use Increment and Decrement switches to make changes while keeping ACID switch pressed. Once changes are done, release the ACID switch to save changes.

Base Set Limit

- Press '**BASE**' Set Limit. The display shows the current Set Base Limit
- Base Relay OFF for $\text{pH} > \text{Base Set Limit}$
- Base Relay ON for $\text{pH} > \text{Base Set Limit} - \text{Base Hysteriris}$
- Use Increment and Decrement switches to make changes while keeping BASE switch pressed. Once changes are done, release the BASE switch to save changes.

Configuration Settings

- Press the Mode switch. The display shows '**Hys1**'. This represents the **Base Hysterisis**.
- Then the display changes to show its value.
- Use Increment and Decrement switches to make changes. Once changes are done, press the Mode switch to save setting and go to next setting.

- Press the Mode switch. The display shows '**Hys2**'. This represents the **Base Hysterisis**.
- Then the display changes to show its value.
- Use Increment and Decrement switches to make changes. Once changes are done, press the Mode switch to save setting and go to next setting.

Isolated Re-transmission output

- An isolated 4-20mA re-transmission output is provided.
- The 4-20mA output is calibrated for 0-14.00pH
- Maximum termination resistance is 250Ω