

EXA PH 2-WIRE pH/ORP Analyzer
PH202G/PH202SJ



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PH202G/PH202SJ

Bulletin 12B07D02-01E

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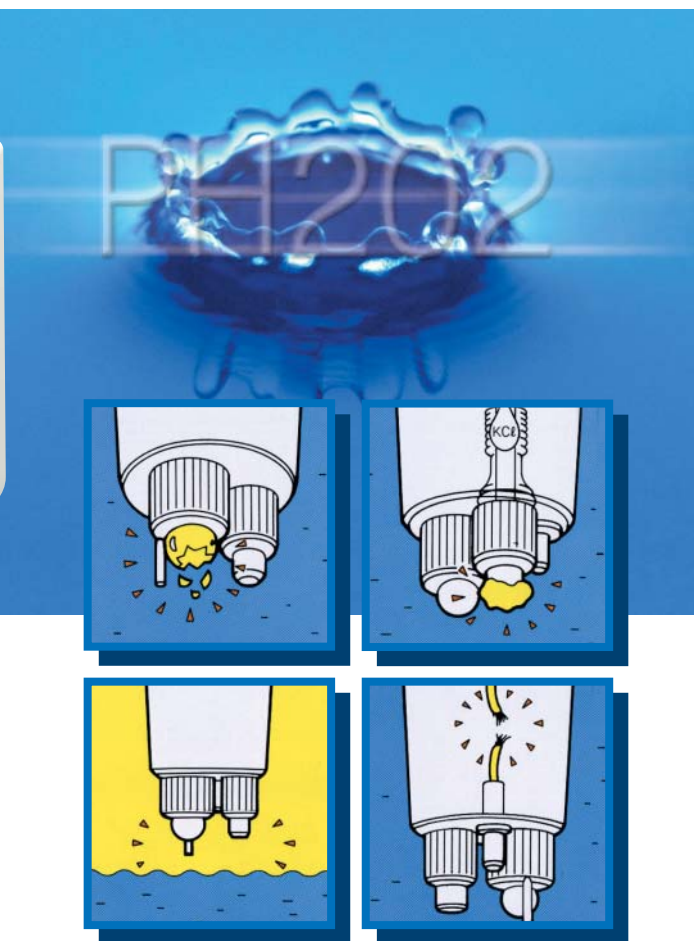
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THE LAST WORD IN INTELLIGENT pH/ORP ANALYZER

Flexibility, low maintenance and low installation costs are among the benefits of the PH202G and PH202SJ pH/ORP analyzers. Designed to meet the exacting requirements of measuring pH and ORP in the modern industrial environment, it contains many features to ensure peak precision whatever the application.

The PH202G and PH202SJ 2-wire (loop powered) analyzers are housed in a robust IP65 field mountable case. The need for expensive cabling is minimized. The famous EXA sensor diagnostics are enhanced by an improved impedance check, and the addition of a logbook feature.

Microprocessor-aided calibration uses internal buffer tables and stability checking to ensure maximum accuracy with minimum effort. Process temperature compensation enhances accuracy in applications where the influence of temperature is seen in process pH changes. pH and ORP or rH measurements can be made simultaneously when an appropriate sensor combination is used.



FEATURES

Universal pH/ORP

The PH202G and PH202SJ can measure pH and ORP or rH simultaneously when an appropriate sensor combination is used.

Dual amplifier system

The input amplifiers both have a very high input impedance ($\geq 10^{12}\Omega$). This means the PH202G and PH202SJ are capable of accepting glass and metal measuring and reference sensors.

On-line sensor checking

The impedance of the measuring electrode (pH-glass or ORP-metal electrode) and reference electrode are independently measured.

Process temperature compensation

The strong change in pH with temperature is caused by the dissociation constant of water changing. In order to reliably control the pH of solutions it is necessary to compensate for the changes. The EXA transmitters have a simple-to-operate system of process temperature compensation.

Freely configurable ITP, slope and asymmetry

Together with the ability to configure the ITP (isothermal point), the system can be adapted to accept almost all sensor types.

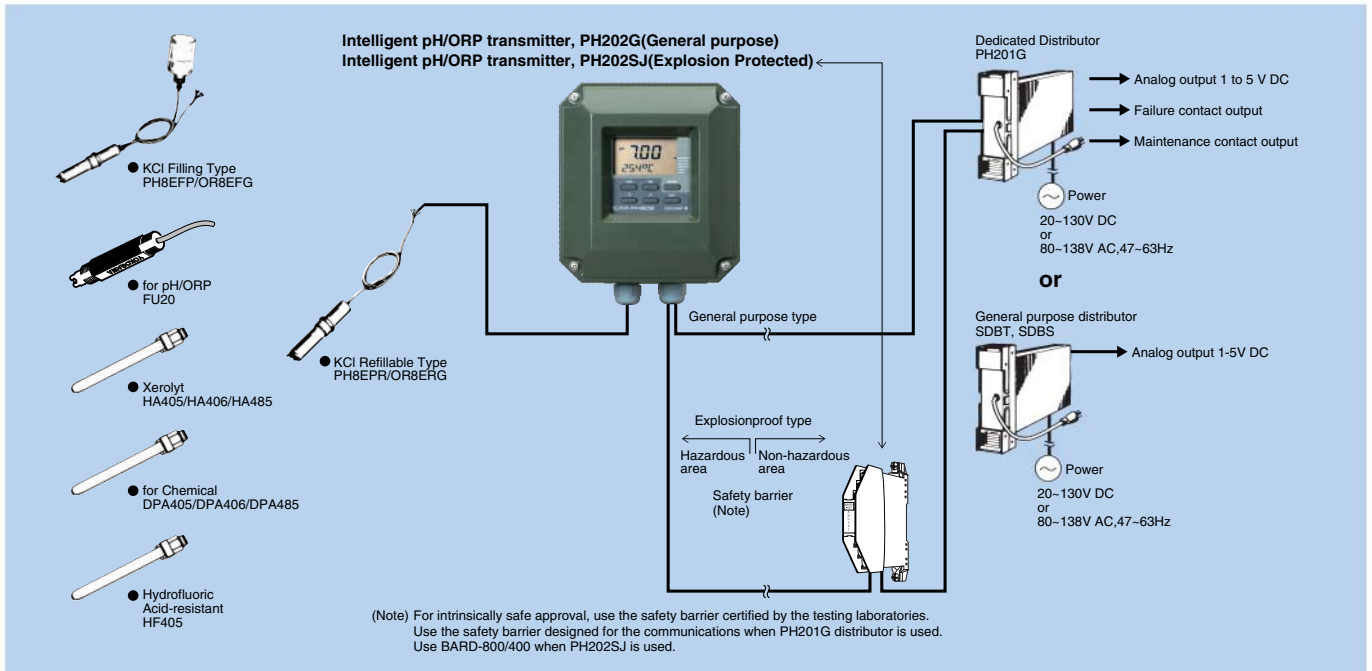
Easy to use EXA control panel

The PH202G and PH202SJ transmitters use a 3-level operating system to take full advantage of the microprocessor. Advanced functions are separated from conventional operation to avoid confusion. They can be activated as required for each individual application.

Password protection for all levels of software

All three levels can be separately protected against unauthorized access by a password system using a three-digit code.

System configuration example



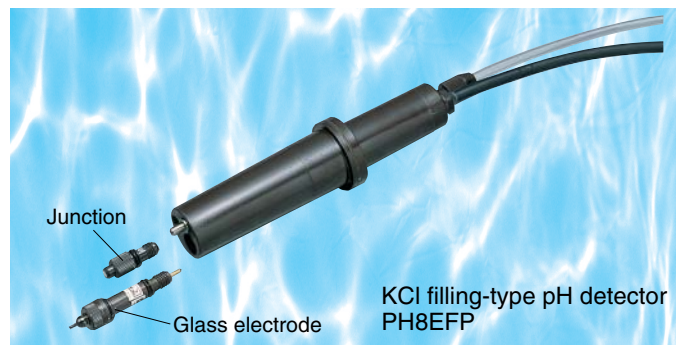
Highly Reliable pH Detectors

Ryton Sensor Body

The sensor body is made of Ryton, a corrosion- and heat-resistant material with excellent mechanical strength. This pH detector covers virtually any application and can be utilized commonly by all types, both submersion and flow-through, regardless of whether equipped with a cleaning system or not. ORP detector is also available.

Pt1000ΩRTD Temperature Sensor

The temperature sensor is a Pt1000ΩRTD which gives one-touch auto calibration even higher accuracy. It also permits conversion of measurements to a reference temperature.



Special Detectors for Special Applications

Solid Electrolyte pH Detector for Use in Emulsions, Suspensions or Other Demanding Processes

The solid electrolyte pH detector Model HA405 uses a solid polymer, Xerolyt, as an internal electrolyte. No junction requirement enables precise pH measurements in demanding processes such as emulsions, suspensions, or heavily contaminated solutions. ORP detector is also available.

pH Detector for Chemical Processes: Chlorine or Organic Solvent-Containing Solutions

The pH detector for chemical processes Model DPA405 is filled with a high-viscosity gel under pressure and features a high alkali membrane, allowing for longer uptime and reliable pH measurements, even in high- Na^+ applications such as electrolysis. ORP detector is also available.

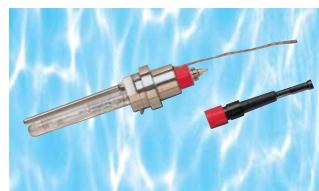
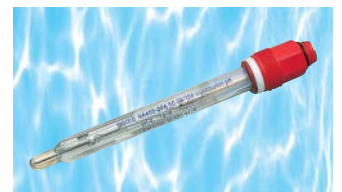
Hydrofluoric Acid-Resistant pH Detector

The hydrofluoric acid-resistant pH detector Model HF405 is a Xerolyt-based electrode, using a hydrofluoric acid-resistant, pH-sensitive membrane as a glass membrane, which enables long-term pH measurements even in hydrofluoric acid-containing solutions where general pH detector cannot be used.

(The use in solutions containing organic solvent may shorten the electrode life.)

pH Detector for Small Culture Tanks with Excellent Operability and Maintainability

The pH detector for small tanks Model DPAS405 features a special reference electrode Argenthal that minimizes reading fluctuation even with repeated exposure to steam sterilization, showing excellent resistance against steam sterilization. This allows the electrode to be used for pH measurements in such applications requiring steam sterilization as small culture tanks. ORP detector is also available.



SPECIFICATIONS

Input specifications	Dual high impedance inputs (2 x 10 ¹² Ω) with provision for liquid earth connection. Suitable for inputs from glass pH & reference electrodes and ORP metal electrodes.	Temperature compensation	Range : -30 °C to 140 °C (for 8.55kΩ sensor -10 °C to 120 °C) Sensor types: Pt100Ω, Pt1000Ω, 3kΩ PTC, 5.1kΩ PTC, 8.55kΩ NTC, 350Ω PTC, 6.8kΩ PTC, 10kΩ PTC Automatic or manual compensation to Nernst equation. Adjustable ITP (Iso-thermal point of intersection).
Input ranges	pH : -2 to 16 pH ORP : -1500 to 1500 mV Temperature : -30 °C to 140 °C (For 8k55Ω sensor : -10 °C to 120 °C) (Measuring range may also be limited by the specification of the used detector)	Calibration	Semi-automatic using preconfigured JIS(NIST) buffer tables 4, 7 & 9, or with user defined buffer tables, with automatic stability check. Manual adjustment to grab sample. Slope and Asymmetry Potential setting.
Output ranges	pH : min 1 pH, max 20 pH ORP : min.span 100 mV, max.span 3000 mV rH : min 2 rH, max 55 rH	Display	Custom liquid crystal display, with a main display of 3h digits 12.5 mm high. Message display of 6 alphanumeric characters, 7 mm high. Warning flags and units (pH and mV).
Output signal	4 to 20 mA DC loop powered, isolated from input. maximum load resistance: For the PH202G 200Ω or less with the PH201G 50Ω or less with the SDBT For the PH202SJ 175Ω or less with the PH201G 25Ω or less with the SDBT With the possibility of 21 mA "FAIL" signal (burn up) and 3.6 mA (burn down).	Power supply	Nominal 24 volt DC loop powered system. 17 to 40 volts dependent on load.
		Performance	(In combination with pH detector.) Repeatability : 0.05 pH Response time : 10 seconds (90% response, using pH detector and buffer solution both equalized to 20 °C, with adequate agitation.) Accuracy : ±0.1 pH (using the PH8EFP or PH8EHP) ±0.15 pH (using other detectors)

※ Refer to GS 12B07D02-E for details.

Model & Code

2-Wire pH/ORP Transmitter (Non-explosionproof type)

[Style : S3]

Model	Suffix Code	Option Code	Specification
PH202G	-----	-----	2-Wire pH/ORP Transmitter (*1)
Type	-E	-----	mA with HART
Language	-J -E	----- -----	Japanese English
Option	Mounting Hardware Hood Tag Plate Conduit Adapter	/U /PM /H /H2 /SCT /AFTG /ANSI /TB /X1	Pipe, wall mounting bracket (Stainless steel) Panel mounting bracket (Stainless steel) Hood for sun protection (Carbon steel) Hood for sun protection (Stainless steel) Stainless steel tag plate G 1/2 1/2 NPT Screw terminal Epoxy baked finish (*3)

2-Wire pH/ORP Transmitter (TIIS Certification)

[Style : S2]

Model	Suffix Code	Option Code	Specification
PH202SJ	-----	-----	Intrinsically safe type transmitter (*1)
Type	-1	-----	TIIS Certification (*5)
Language	-J -E	----- -----	Japanese English
Option	Mounting Hardware Hood Tag Plate Conduit Adapter	/U /PM /H /H2 /SCT /AFTG /ANSI /TB /SPS /X1 /PAC	Pipe, wall mounting bracket (Stainless steel) Panel mounting bracket (Stainless steel) Hood for sun protection (Carbon steel) Hood for sun protection (Stainless steel) Stainless steel tag plate G 1/2 1/2 NPT Screw terminal Teflon coated SUS steel screws (resistance to salt corrosion) (*2) Epoxy baked finish (*3) Cable gland for separate type detector (*4)

(*1) The PH202G and PH202SJ can be also used as ORP transmitter. (Setting can be made in the field.)

(*2) The SUS screws with teflon coating are used at the four corners of the cover.

(*3) The housing is coated with epoxy resin. (*4) Cable gland for separate type pH detector (pH sensor, reference sensor and temperature element are not integrated) *PAC* contains the items on the following table.

(*5) "TIIS Certification" as a certified explosion approval from the Technology Institution of Industrial Safety.

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VigilantPlant is Yokogawa's automation concept for safe, reliable, and profitable plant operations. VigilantPlant aims to enable an ongoing state of Operational Excellence where plant personnel are watchful and attentive, well-informed, and ready to take actions that optimize plant and business performance.

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