

Water Quality Monitor

Q46/84 Hydrogen Peroxide

OVERVIEW

Hydrogen peroxide (H_2O_2) is an extremely strong oxidizer widely used in bleaching applications in the paper industry. It has also been used in a variety of applications including disinfection, odor control, oxygenation and cyanide oxidation. It is frequently used in wastewater collection systems to remove hydrogen sulfide that destroys concrete pipes and manhole structures. Peroxide applications in aqueous systems, like most chemical treatment processes, function most efficiently with accurate measurement and control.

The Q46/84 Hydrogen Peroxide Monitor is designed to continuously measure the concentration of H_2O_2 in aqueous systems. Using a direct peroxide sensor, the unit responds rapidly to changes in concentration, enabling operators to control chemical feed to maintain specific targets. With both digital and analog communications available, the Q46 is adaptable to a wide variety of peroxide monitoring applications.

FEATURES

- **Flexibility.** Programmable range options from 0...2 ppm to 0...200 ppm provide maximum application flexibility.
- **AC or DC Power Options.** Power options include universal 90...260V AC or 12...24V DC.
- **Analog Output Options.** Two isolated 4...20 mA outputs are standard, with an option for a third output, if required. Default setting provides analog outputs for H_2O_2 and temperature.
- **PID Output.** Standard PID control function assignable to one analog output.
- **Digital Communications.** Available in Profibus DP, Modbus RTU, Modbus TCP/IP, Ethernet/IP or Datalogger.
- **Relay Outputs.** Three SPDT relays are standard, with relay functions programmable for alarm, control or trouble indication. Three additional low power relays available as an option.
- **Flexible Mounting.** NEMA 4X (IP66) enclosure is suitable for wall, pipe or panel mounting.
- **Clear Display.** Backlit large LCD display provides clear visibility in any lighting conditions. A scrolling second line on the display provides additional information and programming prompts.



APPLICATIONS

- Cooling Water
- Potable Water Treatment
- Aquarium
- Odor Control
- Food and Beverage

SENSOR OPERATION

Hydrogen peroxide sensors are amperimetric devices isolated from the water by a peroxide permeable membrane. As peroxide diffuses through this membrane, it comes in contact with an active electrode and is oxidized on the surface. The net effect is that the sensor generates a current proportional to H_2O_2 concentration. An integral RTD in the sensor provides for automatic temperature compensation, allowing the sensor to operate accurately over a range of 0...50° C.

Peroxide sensors are capable of operating over a fairly broad concentration range, from a low range of 0...2 ppm up to a high range of 0...200 ppm. Systems will operate with good sensitivity down to 0.05 ppm and respond to changes in concentration within about 60 seconds, making them useful for automatic control.



Figure 1: Hydrogen peroxide sensor

FLOW OPTIONS

Hydrogen peroxide sensors require a steady flow of sample across the membrane at the tip of the sensing assembly. Badger Meter offers options for flow cells, including the standard constant-head overflow system and a sealed flow cell for pressures up to 50 psi. For simplicity of installation, complete flow control assemblies are available. Panel assemblies are available with or without a flow switch and can greatly reduce installation time.

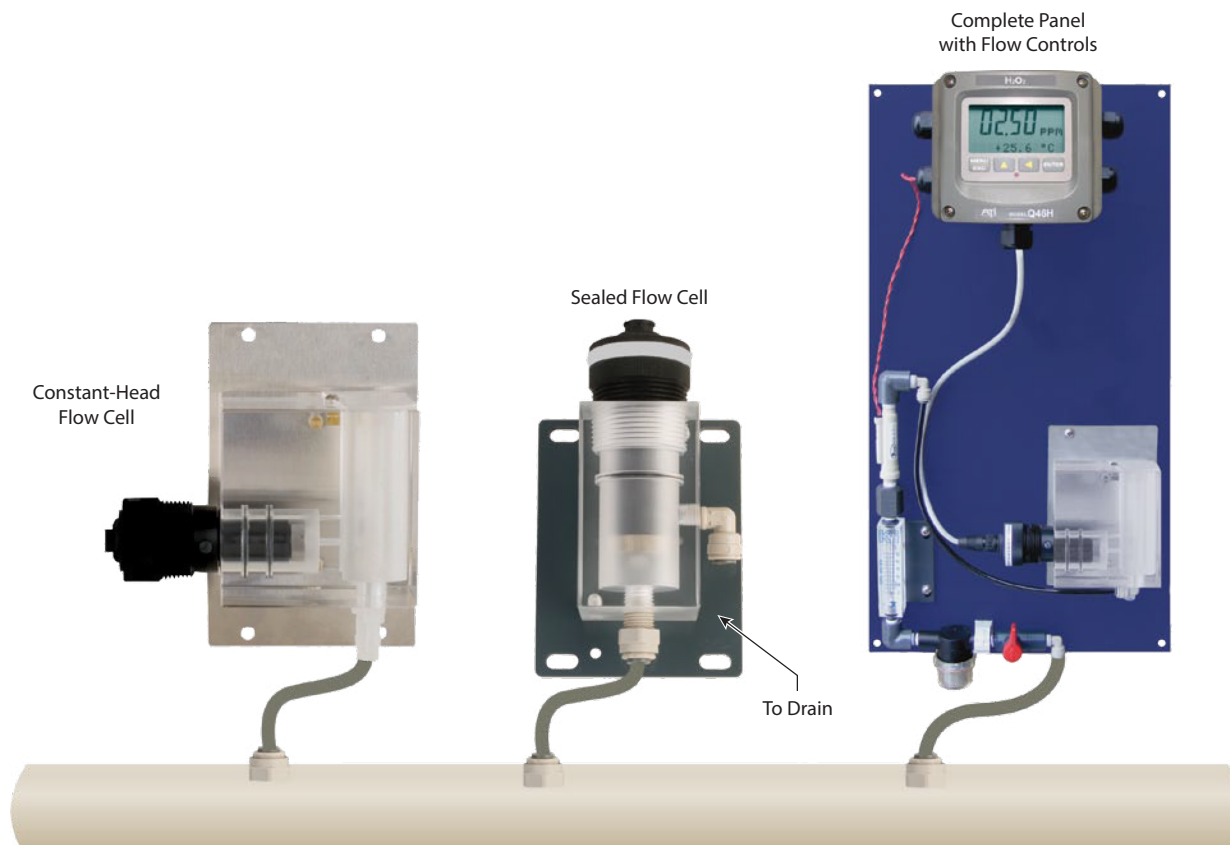


Figure 2: Flow options for flow cells

ADDITIONAL HYDROGEN PEROXIDE PRODUCTS

Badger Meter also offers a loop-powered dissolved peroxide monitor for those applications where extra outputs and/or relays are not required. A battery powered portable unit is also available with an internal data logger for temporary monitoring applications. And for safety around your peroxide system, Badger Meter manufactures a variety of portable and fixed point gas detectors. See below.



Portable H₂O₂ Gas Detector



PQ45 Portable H₂O₂ Datalogger



H₂O₂ Loop-Powered Transmitter

SPECIFICATIONS

Electronic Monitor

Display Range	0...2,000, 0...20.00 or 0...200.0 ppm
Accuracy	±0.1 ppm or 2% of full scale
Repeatability	±0.05 ppm
Non-Linearity	0.1% of selected range
Temperature	0.01% of span/°C
Power	90...260V AC, 50/60 Hz, 10 VA max. 12...24V DC, 500 mA max.
Analog Outputs	Two isolated 4...20 mA, 500 Ω load max. (3rd output optional)
Relays	Three SPDT, 6A @250V AC, 5A @ 24V DC (3 additional SPST non-isolated, 1A @ 30V DC optional)
Display	4-digit, 0.75 in. numeric LCD with 12-digital second line, LED backlight
Enclosure	NEMA 4X Polycarbonate V-0 Flammability
Operating Temperature	−4...140° F (−20...60° C)
Weight	6 lb (2.7 kg) with sensor, flow cell and accessories
Mounting	Wall mounting kit standard, panel mount bracket and pipe U-bolts available

Sensor and Flow Cell

H₂O₂ Sensor	Membraned-covered polarographic
Materials	PVC
Response Time	90% in 60 seconds
Temperature Limits	0...50° C
Pressure Limit	0...50 psig
Sensor Cable	25 ft (7.5 m) standard
Sensor Flow Cell	Clear acrylic constant-head overflow standard Sealed acrylic flow cell (optional)
Sample Connections	1/4 in. I.D. hose barb inlet, 1/2 in. I.D. hose bard drain for standard flow cell
Temperature Sensor	Internal Pt100 RTD
Sample Flow	5...15 gpm (0.3...1.0 lpm)

ORDERING INFORMATION

QI-A-B-C-D-E Hydrogen Peroxide

Suffix A - Power	
1	100...240V AC, ±10%, 50/60 Hz
2	12...24V DC (requires 500 mA)
Suffix B - Sensor Style	
WW	None
1A	Sensor with contant-head flow cell and 25 ft cable
5A	Sensor with sealed flow cell
Suffix C - Digital Output	
1	None
2	Profibus DP
3	Modbus RTU
4	Ethernet/IP
5	Modbus TCP/IP
6	Datalogger

Suffix D - Optional Output	
A	None
B	One additional 4...20 mA output
C	Three additional low power relays (SPST, 0.5 A max.)
Suffix E - System Assembly	
1	None
2	Panel with flow controls, without flow switch
3	Panel with flow controls, with flow switch
4	Panel with flow control & calibration pump assembly (no flow switch)

ACCESSORIES

07-0100	Universal junction box, NEMA 4X
31-0038	7-conductor sensor interconnect cable (max. 100 ft)
05-0094	Panel mount bracket kit
47-0005	2 in. U-bolt, 304 SS
55-0057	Fixed flow regulator, 400 cc/min 1/4 in. inlet and outlet, viton

NOTE: All systems are supplied with one package of membranes, one 120 cc bottle of electrolyte and one spare parts kit containing 3 of each of all O-rings and special screws.

NOTE: Pipe mount requires two 2 in. U-bolts (47-0005).

