

# Water Quality Monitor

## Q46/85 Peracetic Acid

### OVERVIEW

Peracetic acid (PAA) is an extremely strong oxidizer widely used in the food industry for disinfection of piping systems and processing equipment. It is also used for spray washing food products and for disinfecting cooling water system.

The Q46/85 Peracetic Acid Monitor provides real-time measurement of low levels of peracetic acid in solution. The PAA monitor uses a direct sensing polarographic probe that is typically used in a flow cell, though a submersible sensor is also available. A permeable diffusion membrane isolates the sensing electrodes from the measured sample, providing long-term stability without electrode fouling problems. The measurement is selective for PAA and is not affected by changes in hydrogen peroxide concentration, which is always present in PAA solutions.

### FEATURES

- **Flexibility.** Programmable range options from 0...20.0 ppm up 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 PAA 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

- Food and Beverage
- Medical Disinfection
- Egg Washers
- Cooling Water
- Wastewater

### SENSOR OPERATION

Peracetic acid sensors are amperimetric devices isolated from the water by a peroxide permeable membrane. As PPA diffuses through this membrane, it comes in contact with an active electrode and is reduced on the surface. The net effect is that the sensor generates a current proportional to PAA 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.

Peracetic acid 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 0.2 ppm and respond to changes in concentration within about 60 seconds, making them useful for automatic control.



Figure 1: Peracetic acid sensor

## FLOW OPTIONS

Peracetic acid 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. For open tank installation, a submersible sensor is available. Sample agitation is required as PAA sensors cannot be used in still water.

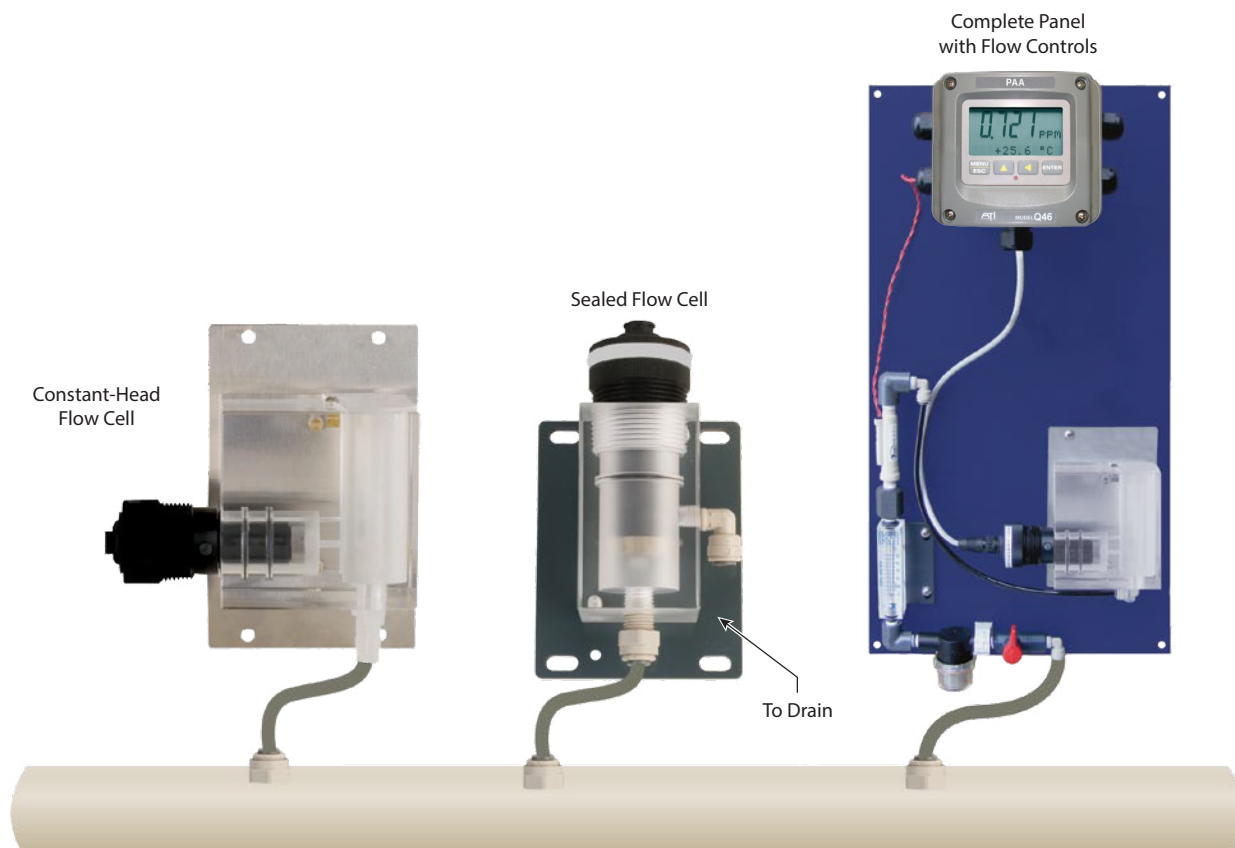


Figure 2: Flow options for flow cells

## SPECIFICATIONS

### Electronic Monitor

|                              |                                                                          |
|------------------------------|--------------------------------------------------------------------------|
| <b>Display Range</b>         | 0...20.00, 0...200.0 or 0...2000 ppm                                     |
| <b>Accuracy</b>              | ±0.3 ppm or 2% of full scale                                             |
| <b>Repeatability</b>         | ±0.1 ppm                                                                 |
| <b>Non-Linearity</b>         | 0.1% of selected range                                                   |
| <b>Temperature</b>           | 0.01% of span/°C                                                         |
| <b>Power</b>                 | 90...260V AC, 50/60 Hz, 10 VA max.<br>12...24V DC, 500 mA max.           |
| <b>Relays</b>                | Two isolated 4...20 mA, 500 Ω load max. (3rd output optional)            |
| <b>Display</b>               | 4-digit, 0.75 in. numeric LCD with 12-digital second line, LED backlight |
| <b>Enclosure</b>             | NEMA 4X Polycarbonate V-0 Flammability                                   |
| <b>Operating Temperature</b> | -4...140° F (-20...60° C)                                                |
| <b>Weight</b>                | 6 lb (2.7 kg) with sensor, flow cell and accessories                     |
| <b>Zero Drift</b>            | < 0.01 ppm/month                                                         |

### Sensor and Flow Cell

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

## ORDERING INFORMATION

### QJ-A-B-C-D-E-F Peracetic Acid Monitor

|                                   |                                                    |                                   |                                                      |
|-----------------------------------|----------------------------------------------------|-----------------------------------|------------------------------------------------------|
| <b>Suffix A - Power</b>           |                                                    | <b>Suffix D - Digital Output</b>  |                                                      |
| 1                                 | 100...240V AC, ±10%, 50/60 Hz                      | 1                                 | None                                                 |
| 2                                 | 12...24V DC (requires 500 mA)                      | 2                                 | Profibus DP                                          |
| <b>Suffix B - Sensor Type</b>     |                                                    | 3                                 | Modbus RTU                                           |
| 1A                                | Sensor with contant-head flow cell and 25 ft cable | 4                                 | Ethernet/IP                                          |
| 2A                                | Submersible sensor with 25 ft cable                | 5                                 | Modbus TCP/IP                                        |
| 3A                                | Sensor, sealed low volume flow cell                | 6                                 | Datalogger                                           |
| 4A                                | Sensor, 1-1/2 in. flow tee                         | <b>Suffix E - Optional Output</b> |                                                      |
| 5A                                | Sensor, Sealed Flow Cell                           | A                                 | None                                                 |
| 6A                                | Flow sensor only, no flow cell                     | B                                 | One additional 4...20 mA output                      |
| WW                                | None                                               | C                                 | Three additional low power relays (SPST, 0.5 A max.) |
| <b>Suffix C - pH Sensor Input</b> |                                                    | <b>Suffix F - System Assembly</b> |                                                      |
| 1                                 | None                                               | 1                                 | None                                                 |
| 2                                 | Q22P pH sensor, battery preamp, 25 ft cable        | 2                                 | Panel with flow controls, without flow switch        |
| 3                                 | Standard pH sensor, 25 ft cable, adapter           | 3                                 | Panel with flow controls, with flow switch           |
| 4                                 | Standard pH sensor, 25 ft cable, sealed flow cell  |                                   |                                                      |

## ACCESSORIES

|                |                                                                  |
|----------------|------------------------------------------------------------------|
| <b>07-0100</b> | Universal junction box, NEMA 4X                                  |
| <b>31-0038</b> | 7-conductor sensor interconnect cable (max. 100 ft)              |
| <b>05-0094</b> | Panel mount bracket kit                                          |
| <b>47-0005</b> | 2 in. U-bolt, 304 SS                                             |
| <b>55-0057</b> | 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).

