

Water Quality Monitor

Q45S Wet H₂S Gas Detector

OVERVIEW

Odor control in wastewater treatment plants and sewage collection systems often requires the use of scrubber systems. Many of these scrubbers employ a wet process using hypochlorite solution to remove H₂S from air streams prior to discharge. Monitoring the hydrogen sulfide in both inlet and discharge air has presented problems for standard sulfide gas sensors. Badger Meter has developed sensor technology that now allows continuous monitoring in this type of application, where condensing humidity conditions are normal.

Designated model Q45S, the odor monitoring system uses our standard Q45 electronics package in conjunction with a special "Wet H₂S" sensor. Measurements may be made either at the inlet to scrubber systems where concentrations can run as high as 200 ppm, or at the outlet where concentrations are ideally down below 0.5 ppm. Special sensor configurations are available for either duct insertion or flow cell use.

Because Q45S systems are often monitoring gas streams with condensing levels of water vapor, provision has been made for eliminating water droplets from the sensor that could present a barrier to the diffusion of H₂S into the sensor. An optional air-purge system controlled by the transmitter will periodically deliver a blast of air across the critical sensor surfaces to remove water droplets. This system insures a clear gas diffusion path to the sensor and reliable measurements on a continuous basis.

Q45S transmitters provide a large, easy to read LCD display of H₂S concentration with a second display line to indicate other status information. An alarm contact is available for external alarming functions, and a second contact may be used for alarm purposes if the air purge system is not implemented in a given application. An isolated 4...20 mA output is provided for remote data transmission, and output spans are user programmable for ranges of 0...2,000 ppm up to 0...200.0 ppm.

A special battery-powered version of the Q45S is available for use in temporary installations. This system runs on 2 internal AA batteries and contains a data-logger for collecting information on existing air collection systems. AA batteries operate the unit for approx 10 days, (with backlight OFF). Data is easily downloaded to a standard PC using software supplied with the unit.



Figure 1: Monitor and sensor



Figure 2: An optional air-purge system controlled by the transmitter will periodically deliver a blast of air across the critical sensor surfaces to remove water droplets

INSTALLATION

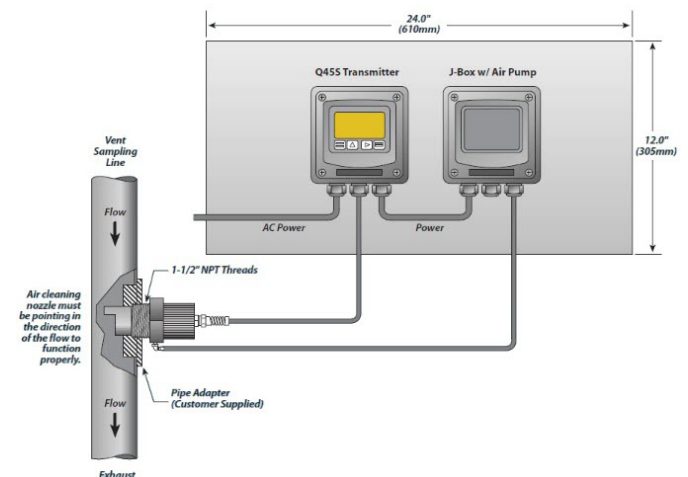
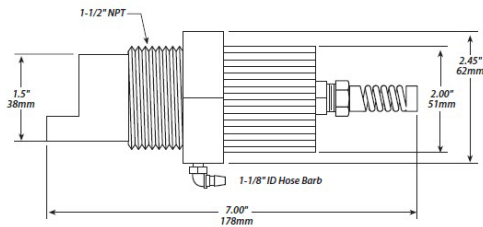


Figure 3: Installation

FEATURES

- **Special Wet H₂S Sensors.** System utilizes a special sensor designed to operate in condensing gas streams without the water vapor blinding typical of standard sulfide sensors.
- **Automatic Sensor Air Purge.** An automatic system for purging accumulated droplet water from the face of the sensor insures long-term operation without loss of sulfides in condensed water on the sensor face.
- **Two Internal Alarm Relays.** Q455 monitors contain relays that can be used for local alarm functions. One relay is used to control the air-purge system and the other is available for external alarms. Relays are programmable for setpoint, hysteresis and delay functions.
- **LCD Display.** Gas concentration is displayed in large, easy-to-read numbers. The display also provides a second information line indicating raw sensor output, mA output and other information. The display also allows easy programming using the 4 keys located on the front panel.
- **Internal Data Logger.** Available in the battery-powered version, the data-logger will store up to 10 days of data at 1 minute storage intervals.
- **Output Simulation.** Transmitter analog output can be set to user definable values and relay outputs can be set to specific states for complete simulation of detection system operation. Output and alarms may also be inhibited for maintenance and calibration.
- **Weather-proof NEMA 4X Enclosure.** Transmitters are designed for operation in typical wastewater treatment plant environments. The electronic assembly is CSA/UL certified.

DIMENSIONS



SPECIFICATIONS - ELECTRONIC MONITOR

Gas Type	Hydrogen sulfide
Sensor Type	Special wet gas sensor design
Display	0...2.000 ppm 0...20.00 ppm 0...200.0 ppm (programmable)
Response Time	90% in 60 seconds
Accuracy	Generally ±10% of value, but limited by available calibration gas
Sensitivity	0.1 ppm minimum
Zero Stability	± 0.04 ppm
Electronic Linearity	±0.5%
Span Drift	Dependent on operating environment but generally less than 3% per month
Analog Output	Isolated 4...20 mA, 575 Ω maximum
Power	115 or 230V AC, 50/60 Hz., 5 VA max Optional: AA battery-powered with data logger
Alarm Relays	Two SPDT, 5 A @ 230V AC resistive
Relay Coil	Programmable either normally energized or normally de-energized
Enclosure	NEMA 4X Polycarbonate, wall, pipe or panel-mounted
Controls	4 membrane switches on front of monitor
Operating Temperature	-4° ...122° F (-20°...50° C)
Operating Pressure	-0.2...10 PSIG
Weight	4 lb (1.8 Kg)

ORDERING INFORMATION

Model Q9-A-B Wet Hydrogen Sulfide Monitor

Suffix A - Power	
A	24V DC, 2-wire (single output only)
B	115V AC with 2 relays and 2 outputs
C	230V AC with 2 relays and 2 outputs
D	AA battery with two 0...2.5V outputs
Suffix B - Cleaning System	
1	No air pump
2	With air pump (Power options B and C only)

ACCESSORIES

00-1251	Calibration adaptor
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