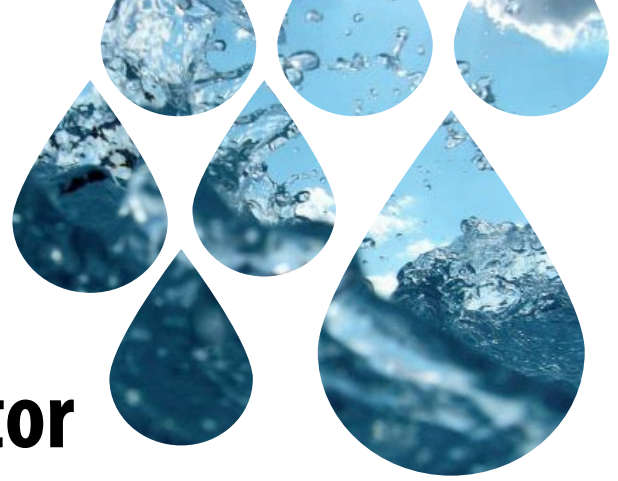


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# Suspended Solids Monitor

## Model Q46/88



Suspended Solids Sensor

Monitoring suspended solids in wastewater and industrial process water can be useful for either process control or for alarming of unusual conditions. In biological treatment systems, monitoring suspended solids in the aeration tank can assist operators in maintaining optimum MLSS (Mixed Liquor Suspended Solids) concentration. In industrial clarifiers, suspended solids monitoring can warn of upset conditions that might result in the discharge of solids that exceed plant permits.

ATI's Model Q46/88 Suspended Solids Monitor provides real time monitoring of suspended solids in a variety of water and wastewater applications. A submersible sensor immersed in process tanks or effluent channel senses particulates in the water using an optical backscatter technique that allows measurement over a wide range. Results are displayed on the Q46 electronic unit mounted near the sensor with a variety of outputs provided as standard.

## SENSOR OPERATION

Suspended solids sensors are optical devices operating in the infrared region. Unlike turbidity sensors that use 90 degree scatter to optimize sensitivity, suspended solids sensors use “backscatter” to allow solids measurements at much higher levels. Operation with infrared light insures very long sensor life and minimizes the effects of changing sample color.

Sensors are designed to withstand the rigorous conditions of wastewater and industrial process streams and to last for years of service with nothing more than occasional cleaning of the sensing surface. There are no protruding surfaces near the sensing element to avoid accumulation of fibrous materials. The sensor is simply pipe mounted using mounting adapters available from ATI.

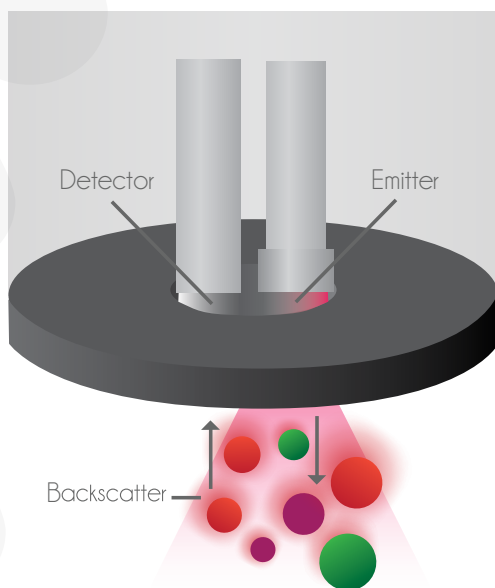
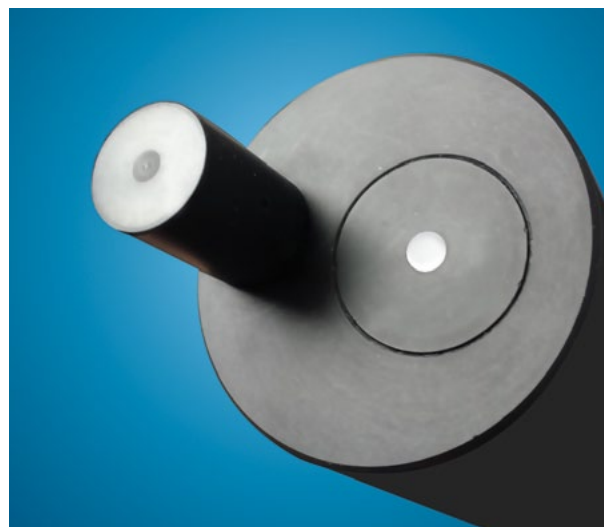


Diagram Cross-Section



Suspended Solids Sensor

## FEATURES

**AC or DC Power Options.** Power options include universal 100-240 VAC +/- 10%, or 12-24 VDC.

**Extra Outputs.** Expansion board to add a third 4-20 mA analog output or to add three additional non-isolated low power relays.

**Flexibility.** Wide range capability, with selectable ranges of 0-2,000, 0-20,000, and 0-200.0 NTU provide maximum application flexibility.

**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 turbidity and temperature.

**PID Output.** Standard PID control function assignable to one analog output.

**Digital Communications.** Communication options for Profibus-DP, Modbus-RTU, or Ethernet-IP.

**Relay Contacts.** Three SPDT relays are standard, with relay functions programmable for alarm, control, or trouble indication. Three additional low power relays available as an option.

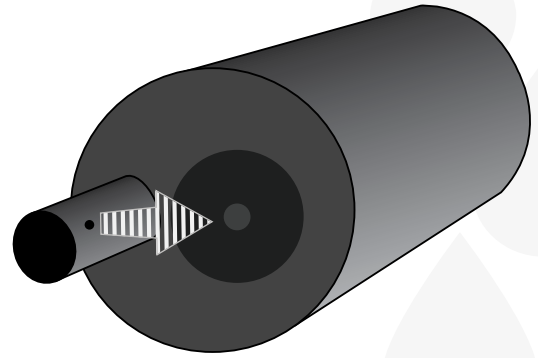
**Flexible Mounting.** NEMA 4X (IP-66) enclosure is suitable for wall, pipe, or panel mounting.

**Clear Display.** Back-lit large LCD display provides clear visibility in any lighting condition. A scrolling second line on the display provides additional information and programming prompts.

**Sensor Diagnostics.** System automatically checks for sensor fouling, “dry cell”, and light source intensity.

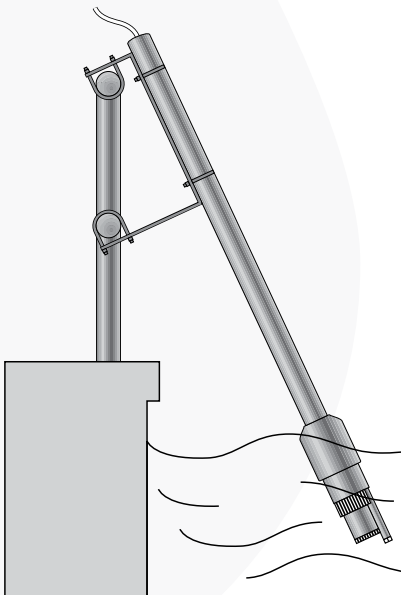
## SENSOR CLEANING OPTION

Optical sensors used for monitoring biologically active systems such as aeration tanks or aerobic digestors will require periodic cleaning to maintain the integrity of the measurement. Biological slime deposited on the optical surface will degrade the ability to transmit IR light into the sample. The frequency of cleaning varies widely depending on the turbulence in the process. Course bubble diffusion systems tend to scour the sensor while fine bubble diffusion systems result in more rapid sensor fouling.



Cleaning can be done manually by simply wiping the sensor as needed, but ATI also offers an automatic air-blast cleaning system as an option. The “Q-Blast” air cleaning system is controlled by the Q46/88 Suspended Solids Monitor and provides a compact air compressor system that periodically applies pulses of compressed air across the optical surface to remove accumulated biofouling. This system greatly reduces the requirement for manual maintenance, with cleaning frequency programmed to occur as often as necessary.

**Q-Blast**  
*Trust the Original*  
Air-Blast System.



## INSTALLATION

Suspended Solids sensors are generally pipe mounted using 1" PVC pipe. A special 1" FNPT adapter screws to the back of the sensor and can be purchased separately or as part of a complete mounting assembly. Q46/88 Monitors may be either wall or pipe mounted and are weatherproof for outdoor use. In addition, the Q46 electronics can be separated from the sensor by up to 100 feet using a junction box and the electronic monitor may be panel mounted using an optional panel mount bracket kit.

# Q46/88 SPECIFICATIONS

## ELECTRONIC MONITOR

<b>Display Range</b>	0-100.0 / 0-1000 mg/l, 0-10,000 mg/l
<b>Accuracy</b>	2.0% of selected range
<b>Repeatability</b>	1.0% of selected range
<b>Non-Linearity</b>	2% of selected range
<b>Temperature Drift</b>	0.01% of span/°C
<b>Power</b>	100-240 VAC, +/- 10%, 50/60 Hz 12-24 VDC, 500 mA max.
<b>Analog Outputs</b>	Two isolated 4-20 mA, 500 $\Omega$ load max. (3rd output optional)
<b>Relays</b>	Three SPDT, 6A @250 VAC, 5A @24 VDC (3 additional SPST non-isolated, 1A @30 VDC optional)
<b>Display</b>	4-digit, 0.75" numeric LCD with 12-digital second line, LED back light.
<b>Enclosure</b>	NEMA 4X Polycarbonate V-0 Flammability
<b>Operating Conditions</b>	-20 to 60°C (-4 to 140°F)
<b>Weight</b>	6 lbs. (2.7 kg) with sensor, flowcell and accessories
<b>Digital Output</b>	Profibus DP, Modbus RTU or Ethernet IP
<b>Mounting</b>	Wall mounting kit standard, Panel mount bracket and pipe u-bolts available
<b>Size</b>	5.6"W x 4.9"H x 6.4"D

## SENSOR

<b>Sensor Type</b>	Optical Backscatter
<b>Materials</b>	PVC
<b>Measurement Angel</b>	180° Backscatter
<b>Response Time</b>	95% in 60 seconds
<b>Temperature Limit</b>	0-50°C
<b>Sensor Cable</b>	4-conductor sensor cable, 30 ft standard, 350 ft max
<b>Pressure Limit</b>	100 PSIG max.
<b>Temperature Element</b>	Integral to Sensor

## ORDERING INFORMATION

Model Q46/88 A-B-C Suspended Solids

### Suffix A - Power

- 1 - 100-240 VAC, +/-10%, 50/60 Hz
- 2 - 12-24 VDC, (requires 300 mA)
- 3 - 100-240 V +/- 10%, 50/60 Hz with Q-Blast Auto-Clean Assembly
- 4 - 12-24V VDC with Q-Blast Auto-Clean Assembly (requires 1.0 A)

### Suffix B - Optional Output

- 1 - None
- 2 - One additional 4-20 mA output
- 3 - Three additional low power relays (SPST, 0.5 A max.)  
(Required when options A3 or A4 is selected.)

### Suffix C - Digital Output

- 1 - None
- 2 - Profibus-DP
- 3 - Modbus-RTU
- 4 - Ethernet-IP

## ACCESSORIES

- 00-1637** Q-Blast system plate assembly with power junction box
- 07-0100** Universal Junction Box, NEMA 4X
- 31-0001** 5 conductor sensor interconnect cable (max. 1000 ft.)
- 00-0624** Mounting bracket kit for sensor
- 00-0043** Pipe adapter for sensor
- 05-0094** Panel Mount Bracket Kit
- 47-0005** 2" U-bolt, 304SS
- 00-0930** Auto-Clean Monitor Mounting Bracket

## NOTES:

- 1 - Pipe mount requires two 2" U-bolts (47-0005)



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