



Gravity Filter Backwash Monitor with Turbidity Sensor.

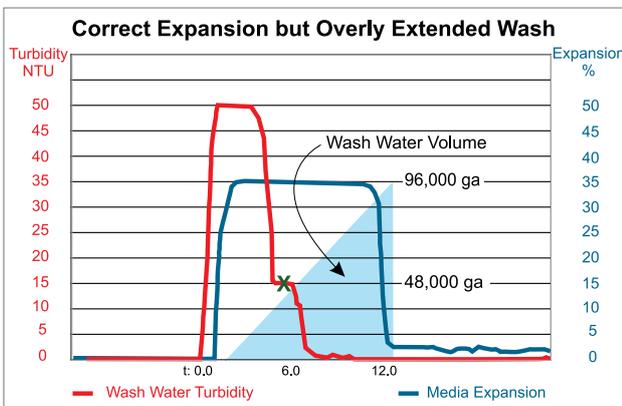




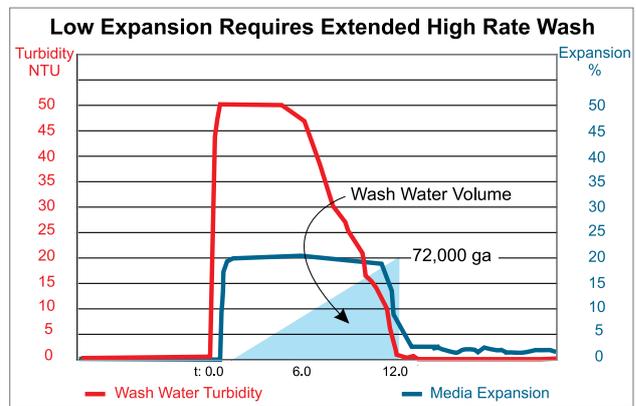
FilterSmart is a unique and powerful application of the industry-leading EchoSmart Interface Level Analyzer. Combining underwater ultrasonic level sensing with turbidity measurement, the FilterSmart Backwash Monitor is revolutionising gravity filter management.

Until now, operators have had to rely on two key surrogate measurements: flow rate and time. With FilterSmart, operators can directly measure the parameters of interest: media expansion and turbidity. Equipped with these tools, operators can develop Conditional Backwash Controls based on the actual conditions in the filter and target significant savings.

For effective backwashing at the lowest possible cost - optimise media expansion and wash duration to reduce water usage with FilterSmart.



This filter was backwashed with a good rate of expansion and was clean with only six minutes of High Rate Wash - as indicated by Backwash Turbidity of 15 NTU. The operator did not have the benefit of a continuous, in-filter turbidity measurement and continued the high rate wash for an additional six minutes at a cost of an additional 48,000 gallons of wash water and no increase in cleaning effect.



Insufficient media expansion extends the time required to purge turbidity from the filter and uses more wash water even at a reduced flow rate. Poor media expansion can also result in turbidity producing material remaining attached to media grains and not releasing in the wash

Media Expansion and Backwash Turbidity work hand-in-hand to assure consistent, optimised filter cleaning at the lowest possible cost. Only FilterSmart offers the solution!

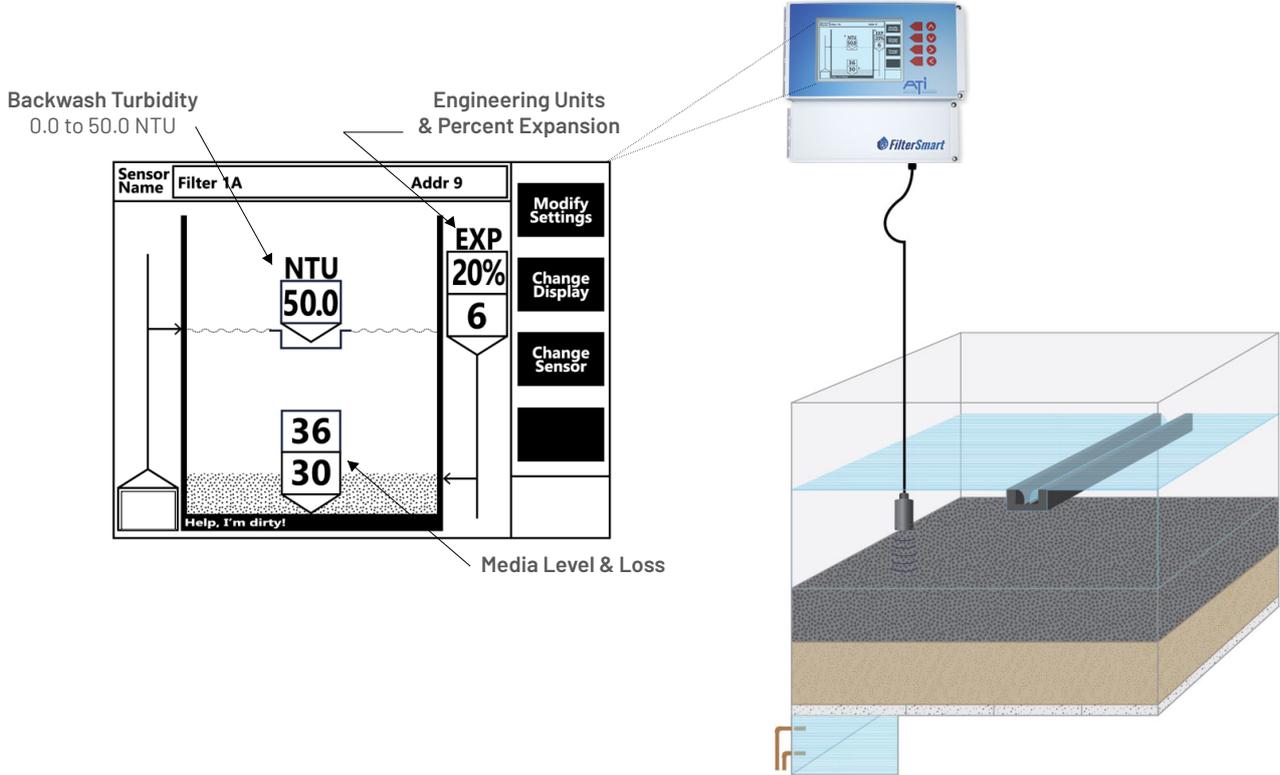
Why Media Expansion Matters

Media expansion is crucial to effective filter cleaning. Expansion occurs when the upward flow of water fluidises the media. When properly expanded, media grains collide with each other and knock loose the fine particles captured in the filter. If the expansion rate is too low, the scrubbing effect is reduced and the fines are not completely displaced. If the rate of expansion is too high, water is wasted and there is the added possibility of washing media out of the filter. With optimal media expansion, the filter is properly cleaned, wash water is reduced and media health is preserved.



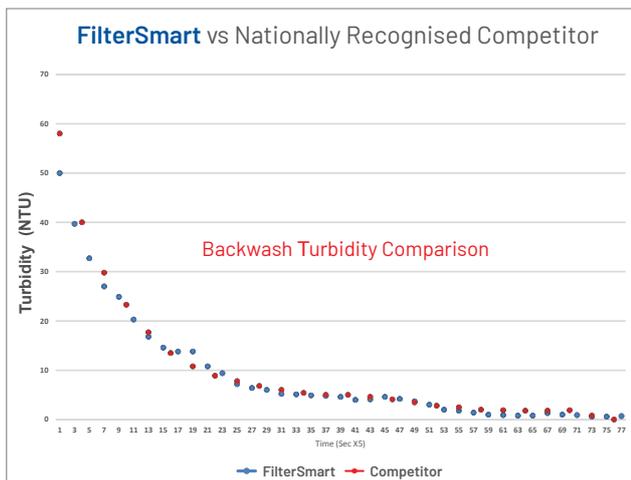
FilterSmart is the only instrument bundle designed specifically and uniquely for filter backwashing. It combines two measurements into one sensor to give you direct monitoring of the two parameters that are needed for cost-effective and efficient filter cleaning. FilterSmart is an essential tool for optimisation efforts.

Active Graphics Operator User Interface

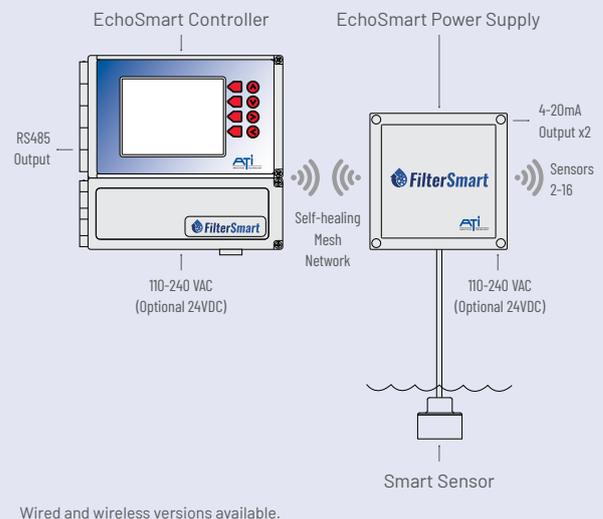


Comparison

FilterSmart provides two essential backwash control measurements at less than the cost of other suppliers' backwash turbidimeters alone. The data below is from a live performance comparison conducted by a surface water treatment plant in California.



Field networks of up to 16 sensors are possible with one FilterSmart controller.



Specifications

Smart Sensors

Media Level and Expansion

Measuring Principle
Underwater Acoustic

Range

1.0 ft. to 20.0 ft. (0.305 m to 6.1 m)

Screen Resolution

1.0 Unit of measure

Reported Resolution

0.1 Unit of measure

Accuracy

0.2 ft at 10.0 ft. (7mm at 3.05 m)

Turbidity

Measurement Principle 90 degrees
scattered light, pulsed LED

Range

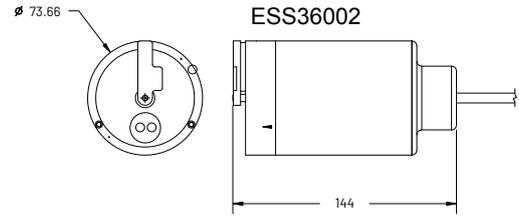
0-50 NTU

Repeatability*

1% @ 50 NTU

Certifications

CE



*Accuracy has been tested under controlled conditions using a Formazin solution and field results of +/- 2% across the measurement range can be expected with an installation on a properly grounded circuit. Since the sensor is installed in an active filter, turbidity readings can be affected by bubbles, poor electrical grounding, localized flow rate at the sensor and heavier suspended solids that may be present dynamically.

Controller

Ambient Conditions

Operation: -40° to +140°F (-40° to +60° C)

Power Requirements

100 to 240 VAC, 50/60 Hz - 1A

Power: 65 W Fused, Optional: 24VDC

Display

Graphical backlit monochrome screen

Resolution: 320 x 240 pixels

Viewing Area: 2.6 x 3.45 in (92 x 122 mm)

Communications

RS-485 Serial MODBUS RTU

(2) 4-20mA Output

(1) Media Level, Expansion,
or Percent Expansion

(1) Turbidity

Integral RF Module (Optional)

Relays (Optional)

Four relays: 10A @ 250 VAC; 10A @ 30VDC,
user selectable for high/low fault alarm

Mounting Configurations

Surface and pipe mounting

Enclosure

NEMA 4X, IP65; Polycarbonate

Dimensions

235 x 229 x 115 mm

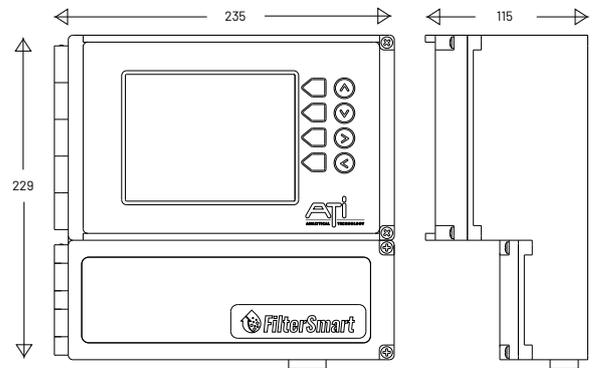
9.25 x 9.00 x 4.50 in

Weight

Approximately 1.36 kg
depending on configuration

Certifications

CE



Power Supply Unit

Ambient Conditions

Operation: -40° to +140°F (-40° to +60° C)

Power Requirements

100 to 240 VAC, 50/60 Hz - 1A

Power: 20 W - 1.34A, Optional: 24VDC

Communications

RS-485 MODBUS RTU

(2) 4-20mA Output

(1) Media Level, Expansion,
or Percent Expansion

(1) Turbidity

Integral RF Module (Optional)

Approvals:

FCC Part 15C, Industry Canada

Mounting Configurations

Surface and pipe mounting

Enclosure

NEMA 4X, IP65; Polycarbonate

Dimensions

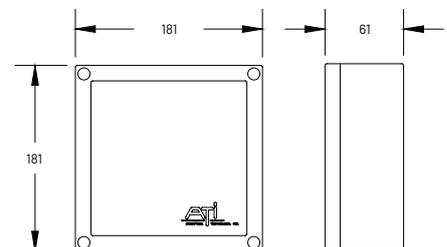
181 x 181 x 61 mm

Weight

Approximately 0.68 kg

Certifications

CE



ATi is a leading provider of engineered, analytical sensor monitoring solutions for water and gas applications and data analytics. Our pioneering and industry leading range of Smart Network Monitors, Water Quality Monitors and Gas Detectors provide innovative solutions for the most demanding of applications.

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