

Suspended Solids and Turbidity Analysis

Model 7110-MTF

The Model 7110 is a continuous on line transmitter that measures suspended solids content or turbidity. Depending on the sensor model selected, the measurement is displayed in mg/l, ppm, g/l, % or NTU. The principle of measurement is a patented light absorption method or scattered light technique. Two monochromatic LED's are pulsed at a frequency of several kilohertz. The signals from the two photo detectors are separately converted into logarithmic functions and analyzed relative to each other. This reliable field proven measurement technique compensates for sensor fouling and aging of the optical components.

Model 7110-MTF

Range Selection
Measuring Range
Power Supply
Power Consumption
Accuracy
Repeatability
Output
Max Load
Alarms

Suspended Solids / Turbidity Transmitter

NTU, g/l, mg/l, ppm, %
See sensor Specifications
115 Vac, 50/60 Hz or 24Vac/dc
20 VA
1.0%
0.5%
Isolated 0-20 mA or 4-20 mA
500 Ohms
2 Input contacts,
1 sensor cleaning contact,
1 diagnostic contact.
230 Vac, 3.0 A
-20° to 60°C (-4° to 140°F)
IP65 (NEMA 4X)
1.6kg (3.5 lbs.)



General Sensor Specifications

Measurement Principle	Four beam pulsed infrared light
Wave Length	880-920 nm
Light Source	Infrared LED's
Sample Temperature	0-50°C (32-122°F)
Sample Pressure	6 bar (87 psi)
Insertion Sensor Cable Length	0.8m (2.5 ft.), includes 10m (32.8 ft.) extension cable
Submersion Sensor Cable Length	13.0m (42.5 ft.)
Maximum Distance Sensor to Transmitter	200m (656 ft.)
Materials of Construction	316 SS/POM/Epoxy

Applications

- Primary and Secondary Clarifiers
- Return and Waste Activated Sludge Concentration
- Mixed Liquor
- Centrifuge Effluent Concentration
- Aeration Basins
- Final Effluent

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Technology

The light absorption technique is based on the principle that the intensity of light is attenuated proportionally to the concentration of solids contained in the liquid medium. It is precisely the difference between incident and captured light that is used for measurement. The theoretical basis is the Lambert-Beer Law.

Back scatter is based on the principal that the intensity of the incident light decreases exponentially in relation to the distance traversed and the concentration of solids in the liquid medium.

90° light scattering is based on the Tyndall effect. The intensity of the scattered light is proportional to the number of suspended particles.

Sensor Selection Guide

Select code T for submersion or code E for insertion.

Model	Technology	Range of Measurement		
		Minimum	Maximum	
7510-SAM T or E	Light Absorption	0-5.0g SiO ₂ /l	0-200g SiO ₂ /l	
		0-1.0g AS [*] /l	0-12g AS [*] /l	
		0.5g PS [*] /l	0-6.0g PS [*] /l	
7510-SAH T or E	Light Absorption	0-20g SiO ₂ /l	0-400g SiO ₂ /l	
		0-2g AS [*] /l	0-40g AS [*] /l	
		0-1g PS [*] /l	0-20g PS [*] /l	
7520-SAV T or E	Light Absorption	0-10g AS [*] /l	0-60g AS [*] /l 0-30g PS [*] /l	
7540-SRH ¹ T or E	Back Scatter	8-20g AS [*] /l	8-100g AS [*] /l	
7530-SSN ² T or E	90° Light Scattering	Minimum	Nominal	Maximum
		5-20g SiO ₂ /l 1-5 NTU	20-200mg SiO ₂ /l 5-50 NTU	2000mg SiO ₂ /l 1000 NTU 2000 NTU (non-linear)



Model 7900 KHE Ball Valve Assembly

* Activated Sludge

* Primary Sludge

¹ German Patent DE 41 42 957 A1

² German Patent DE 42 32 938 A1