

Triton TR80 Turbidity Sensor with Automated Cleaning Wiper



Turbidity Measurement

Drinking Water, Industrial Water, Water Treatment

Total Suspended Solids (TSS)

Waste Water Treatment Paper and Pulp Processing
Environmental Run-Off

Triton TR80 Series Turbidity/SS Sensors

Applications

Clear Water Sensor

- All phases of drinking water processing
- Control of Clear Rinse Water
- Filter rupture or backwash
- Monitoring WWTP discharge
- Monitoring Surface Waters

Suspended Solids Sensor

- Activated sludge WWTP
- Return & Digested Sludge WWTP
- Filtrate in paper manufacturing
- Blending Mixing Applications
- Monitoring Environmental runoff

Features and Benefits

- **Intelligent Sensor Technology**
Factory Calibration Stored in Sensor, Self Monitoring Diagnostics, Interfaces with ETX Universal Transmitter, with MODBUS, HART, 4 to 20 mA and/or Relay outputs and LQ800 Multi-Channel Controller.
- **Multiple Installation Methods**
Immersion assembly
Flow through assembly
Gas debubbler assembly
- **Self-Cleaning Design**
Automated wiper design - can be programmed for frequency & duration

Description

The Triton TR80 is a nephelometric turbidity sensor designed for use in water and wastewater. Turbidity, the cloudiness or haziness of a water sample, is caused by particles suspended in the water, typically clay and silt. Since bacteria and viruses can be attached to these particles, turbidity has become a critical indicator of the overall water quality. The Triton TR80 uses an optical method for determining the turbidity, a light beam is directed into the sample where it is scattered by suspended particles in the water. The amount of scattering depends on the amount of material in the water, the wavelength of light, and the size and composition of the suspended particles. The Triton TR80 uses a near infrared LED light source and the 90° scattered light method in accordance with ISO 7027 / EN 27027 to assure accurate turbidity values under standardized and comparable conditions.

The TR80 incorporates an automated mechanical wiper design which can be programmed for frequency and duration. This can be controlled by the ETX Transmitter, LQ800 Multi-Channel Controller or manually activated by a remote switch.

The TR80 response depends on the size, shape and composition of the suspended particles. For this

reason, mg/L, ppm and % Solids measurements must be calibrated with suspended solids from the waters to be monitored. Turbidity measurements (NTU, FNU) can be calibrated with calibration standards such as Formazine, StabCal or SDVB beads.

The Triton TR80 sensors are available in (4) different ranges. The sensors are 10 inch by 1.315 inch diameter with a 3/4 MNPT thread on the back of the sensor. This allows the sensor to be inserted in to a 1" pipe coupling or to be mounted by the back of the sensor utilizing the 3/4 MNPT threads for standpipe installations. The body of the sensor is either CPVC or polypropylene material. The Triton TR80 sensor ranges are: **For other ranges please contact the factory**

< 30 NTU

0-1000 NTU

0-4000 NTU

0-5000 mg/l

5000-10,000 mg/l (MUD)

50,000-100,000 mg/l (SAND)

The Triton TR80 sensors can interface with the RealTech Controls ETX transmitter or the ECD LQ800 multi-channel controller.

Triton TR80 Series Turbidity/SS Sensors



Sensor with cleaning wiper Flow Through Assembly Debubbler Assembly

The Triton TR80 uses a nephelometric 90q NIR scattered light optical method for determining turbidity or suspended solids. A light beam is directed into the sample where it is scattered by suspended particles in the water. The amount of scattering depends on the amount of material in the water, the wavelength of light used and the size and composition of the suspended particles. Designed for use in environmental, water treatment, or drinking water, the Triton TR80 is suitable for most aqueous applications. It is not suitable for use in organic solvents or in solutions with an extreme pH value, only use when the pH is between 2-12 pH. The temperature range for the sensor is 0q to 50qC. Turbidity, the cloudiness or haziness of a water sample, is caused by particles suspended in the water, typically clay and silt. Since bacteria and viruses can be attached to these particles, turbidity has become a critical indicator of the overall water quality.

TR80 Installation is accomplished with a 1" stand pipe for immersion service, PVC flow cell for an in line flow through application, Valve Retractable, or De-Bubbler for Micro air bubble applications. Typically, applications of < 30 NTU range use a flow cell or de-bubbler assembly and must be calibrated as an assembly with the sensor for best accuracy. The standard cable is a 6 conductor cable available with 10 ff (3m), 20 ff (3.1m) or 30 ff (9.1) lengths, longer cable is available for special order.

The optical surface must remain clean for accurate measurements. The sensor sensing face of the TR80 should be oriented so that the flow of the water can clean and remove particles that could adhere to the sensor face. The TR80 incorporates an automated mechanical wiper design which can be programmed for frequency and duration. This can be utilized in any configurations such as: open tank using standpipes, immersion, pipe insertion and flow cells. In all installations the sensor should be able to be simply removed for standard maintenance.

Air bubbles in the water reflect light and will interfere with the measurement. Micro air bubbles can form when a water sample is depressurized. Care must be taken to ensure the water sample at the measurement point has a higher head pressure than the incoming sample. Water siphoning out from the measurement point can release dissolved gases in the flow cell and create noisy erratic readings. If air bubbles cannot be removed from the sample, an optional De-Bubbler flow cell can be used which removes air bubbles that are entrained in the sample flow.

The Triton TR80 sensors are factory calibrated in formazine, NTU (Nephelometric Turbidity units) and are ready to use in most clean water applications. The factory calibration is permanently stored in the sensor's memory and these values are also used for diagnostic purposes throughout the sensor's life. Additional nonvolatile memory are used to log user initiated calibration data.

The TR80 Turbidity Sensor is easy to install, it is easy to use with NTU factory calibration, it is Plug and Play. With the rugged construction including a rugged optical window, self-monitoring diagnostics and nephelometric 90q NIR scattered measurement method, the TR80 Turbidity sensor with wiper is reliable, accurate and requires minimal maintenance, it is the solution.



Sensor sensing surface area with cleaning wiper

Flow through Cell

De-Bubbler Flow Cell

Immersion Assembly

Valve Retractable

Triton TR80 Series Turbidity/SS Sensors

Specifications

Measuring principle:

Particle caused back scattering of near infrared light
90° scattered light method in accordance with ISO 7027/EN27027

Measuring Range:

- 1 sensor,
0.00-1000 mg/l or 0 ... 1000 NTU, FNU
- 3 sensor
0.00-5000 or greater mg/l or 0 ... 4000 NTU, FNU, ppm,mg/L
and % solids
- 4 sensor
0.00-30 mg/l or 0 ... 30 NTU, FNU

Process Temperature Range:

23 to 122°F / 5 to 50°C

Process pressure range:

50 psi / 3.5 bar max. in Flow Cell.

Wetted Materials

Sensor body: CPVC, Polypro optional
Sensing end: epoxy

Process Connection:

3/4" NPT Threads - back of sensor
1 1/4" MPNPT Gland Fitting or 1 inch pipe fitting/couplings

Electrical connection

6-wire measuring cable (Standard)

Cable Length:

10 ft (3.0 m), 20 ft (6.1 m), 30 ft (9.1 m) cables

Model Triton TR80 Turbidity Sensor, Part # Guide				
TR80	Sensor Housing Material			
	1	Front Mounted Optics with wiper / CPVC Sensor Body		
	2	Front Mounted Optics with wiper / Polypropylene Body		
		Process Connection		
	0	3/4" MNPT Threads on back of sensor		
	1	1 1/4" MNPT Nylon Gland Fitting		
	2	Flow Through Cell, 2 x 2" FNPT entries, 1 x 1" FNPT sensor port		
	5	Flow Through Cell, 2 x 2" FNPT entries, 1 x 1" FNPT sensor port with spray cleaner		
	8	De-Bubbler 3/4" FNPT entries		
		Cable Length		
	01	10 ft (3.0 m) Waterproof/Submersible Cable		
	02	20 ft (6.1 m) Waterproof/Submersible Cable		
	03	30 ft (9.1 m) Waterproof/Submersible Cable		
		Measurement Ranges		
	0	0-1000 NTU		
2	0-4000 NTU (mg/L SS)			
4	<30 NTU (Calibration in Flow Cell/DB)			
(Example) TR80-	1	0	01	2

Model Triton TR80 Installation Assemblies	
Part #	Description
1000334-5	Immersion Assembly, 5 ft x 1"OD standpipe, with 1" compression fitting and T-Handle
1000251-3	Retractable Valve Assembly - TR Series
1000280-5	Flow Through Tee, 4" PVC tee base reduced to 2" FNPT entries
3600220	1 1/4" MNPT PVC Gland Fitting

Specifications subject to change without notice.

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