Triton TR82

Turbidity Measurement

Drinking Water, Industrial Water, Water Treatment

Suspended Solids

Waste Water Treatment Paper and Pulp Processing
Environmental Run-Off

ELECTRO-CHEMICAL DEVICES

Triton TR82 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 T80 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
  Parallel sensor surface design to enhance self cleaning with moderate flow. Sensor with spray cleaning option or with flow cells that can be fitted with spray cleaners.

Description

The Triton TR82 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 TR82 uses and 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 TR82 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 TR82 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, StablCal or SDVB beads.

The Triton TR82 sensors are available in (4) different ranges. The sensors are 10 inch by 1 inch diameter with CPVC sensor body. This Triton TR82 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 TR82 sensors can interface with the ECD T80 transmitter or the ECD LQ800 multi-channel controller. The T80 is a single or dual channel transmitter with one or two 4-20 mA outputs with MODBUS RTU and optional (3) Alarm Relays or HART 7 communication. The T80 Transmitter allows the turbidity or suspended solids measurement to be combined with other measurements using the ECD S80 pH, ORP, pIon, Conductivity or Dissolved Oxygen, DO82 sensors and other ECD sensors. The LQ800 is an 8 channel controller interfacing with all ECD analytical sensors and analyzers and other process sensors such as level, flow or pressure.

Triton TR82 Series Turbidity/SS Sensors

Sensor with Process Fitting

Flow Through Assembly

Debubbler Assembly

The Triton TR82 uses a nephelometric 90˚ 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 TR82 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 0˚ to 50˚C. 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.

TR82 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 4 conductor cable available with 10 ft (3m), 20 ft (3.1m) or 30 ft (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 TR82 should be oriented so that the flow of the water can clean remove particles that could adhere to the sensor face. Optional self cleaning functions are available, such as, spray cleaning attachments and flow cell with automated spray cleaning. In simple immersion applications, periodic cleaning is required for all turbidity sensors, which could entail simply removing the sensor and wiping the optical surface with a soft cloth to remove any dirt or biofilms.

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.

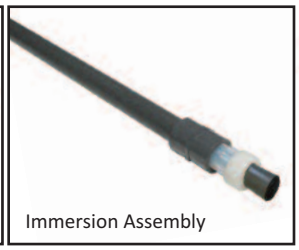
The Triton TR82 sensors are factory calibrated in formazine, NTU (Nephelometric Turbidity units) and are ready to use in most clean water applications. The factory calibration is permanently stored in the sensor's memory and these values are also used for diagnostic purposes throughout the sensor's life. Additional nonvolatile memory are used to log user initiated calibration data.

The TR82 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 90˚ NIR scattered measurement method, the TR82 Turbidity sensor is reliable, accurate and requires minimal maintenance, it is the solution.

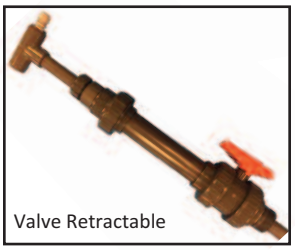
Sensor sensing surface area

Flow Through Cell with optional spray cleaner

De-Bubbler Flow Cell



Immersion Assembly



Valve Retractable

Triton® TR82 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:

1" NPT Nylon compression fitting

Electrical connection

4-wire measuring cable(Standard)

Cable Length:

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

Model Triton TR82 Turbidity Sensor, Part # Guide					
TR82	Sensor Housing Material				
	1	Front Mounted Optics / CPVC Sensor Body			
	2	Front Mounted Optics / Polypropylene Body			
		Process Connection			
		0	None		
		1	1" 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	
			04	10 ft (3.0 m) Water Resistant Outdoor Cable	
			05	20 ft (6.1 m) Water Resistant Outdoor Cable	
			06	30 ft (9.1 m) Water Resistant Outdoor Cable	
				Measurement Ranges	
				0	0-1000 NTU
				2	0-4000 NTU (mg/L SS)
				4	<30 NTU (Calibration in Flow Cell/DB)
(Example) TR82-	**1**	**0**	**01**	**2**	

Model Triton TR82 Installation Assemblies	
Part #	**Description**
1000260-5	Immersion Assembly, 5 ft x 1"OD standpipe, with 1" compression fitting and T-Handle
1000260-99	Immersion Assembly, User supplied standpipe, with 1" Compression fitting and T-Handle
1000280-1	Flow Through Tee, 4" PVC tee base reduced to 2" FNPT entries
3600066.NY	1" MNPT Nylon Gland Fitting

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices

1500 North Kellogg Drive

Anaheim, California, USA 92807

Phone: +1-714-695-0051

+1-800-729-1333

Fax: +1-714-695-0057

email: sales@ecdi.com

web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM