

Triton[®] TR80 w/wiper Turbidity and SS Sensors



The Triton[®] TR80 Sensors

- ❖ Turbidity and Suspended Solids Sensors NIR 90° scattered light
- ❖ Optical Configurations
 - Minimize error from reflecting surfaces
 - Front Mounted Optics
- ❖ Measurement Range
 - 0-1000 NTU
 - 0-4000 NTU (mg/L); 0-100,000 ppm TSS SAND, MUD
 - <30 NTU (calibration in Flow cell or Debubbler)
- ❖ Waterproof or Water-Resistant Cable, 10 ft., 20 ft. or 30 ft. lengths, and longer
- ❖ Wiper assembly with titanium assembly rod





Triton[®] TR80 Immersion Sensor Design

- ❖ TR82 Immersion Sensor Design
 - Immersion Assembly
 - 1-1/4" compression fitting for mounting into the Immersion Stand Pipe.
 - Retractable assembly



Triton[®] TR80 Flow Thru Design

❖ TR82 Flow Thru Design

- Flow Cell



Flow Through Assembly

- Debubbler



Debubbler Assembly

Compatible with T80 Transmitter

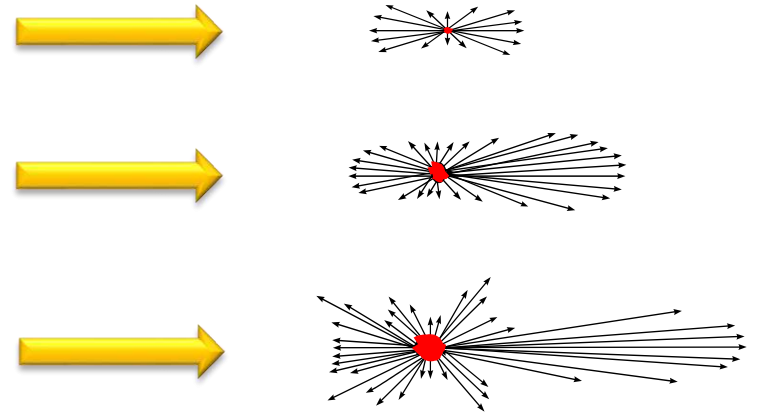
- ❖ Single or Dual Channel Capability
- ❖ Mix and Match the Sensors
 - TR80 alone or
 - TR80 and pH, pION, ORP, DO, Conductivity or another TR82
- ❖ Display NTU, FNU, mg/L, ppm, % solids
- ❖ Familiar T80 Interface
- ❖ Easy Calibration
 - Zero (default 0mV=0 mg/l)
 - 50% diluted Sample
 - Place sensor in a large bucket of the sample diluted 50%
 - Press CAL 2
 - 100% Sample
 - Place sensor in a large bucket of the sample
 - Press CAL 3
 - DONE!



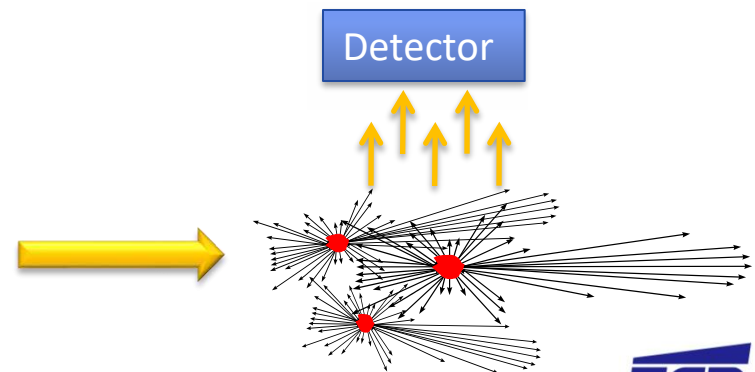


How is Turbidity Measured?

- ❖ The Degree Light is Scattered is Dependent on the Particle's Size, Shape, Color and Refractive Index.
- ❖ Forward Scattering is **very dependent** on Particle size.
- ❖ Scattering at 90° is **less dependent** on Particle size.
- ❖ Measurement of the light at 90° is referred to as Nephelometric.



Nephelometric Measurement



How is Turbidity Measured?

- ❖ Measurement units
 - **FNU**: Formazine Nephelometric Unit
 - **NTU**: Nephelometric Turbidity Unit
 - **FTU**: Formazine Turbidity Unit
 - **FNU=NTU=FTU**
- ❖ The Standard Calibration for all three is with Formazine, 400 FNU
- ❖ Other Measurements
 - Grams per Liter, g/l
 - Parts Per Million, ppm
 - % Concentration, %



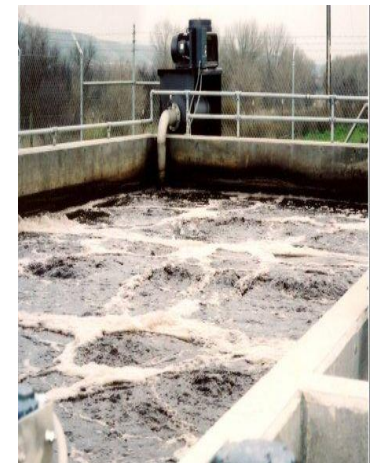
0.05 - 1 FNU



20-50 FNU



500-1000 FNU



6-10 g/l

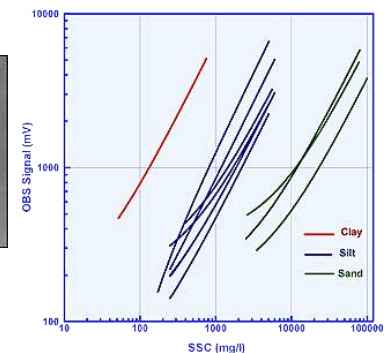


How it works

- ❖ A Near Infrared Vertical Cavity Surface Emitting Laser diode emits a 42° cone of 850 nm light.
- ❖ The Light is scattered by particles in the water sample.
- ❖ The back scattered light between 140° and 160° is measured with a photo diode and converted turbidity units.
- ❖ The NIR wavelengths from Sunlight are blocked with a rejection filter.
- ❖ Turbidity is not temperature dependant but electronics are so temperature compensation is implemented.

Turbidity and Suspended Solids

- ❖ Turbidity measurements in NTU do not correlate with suspended solids measurements in mg/L primarily due to particle size.
- ❖ 100 ppm of 100- μm suspended sand will scatter light with the same intensity as 10 ppm of 10- μm suspended silt or 1 ppm of 1- μm suspended clay.
 - All have the same NTU value
 - All have different mg/l values
- ❖ For NTU calibrate the TR6 in formazine or SVDB (Amco Clear[®])
- ❖ For mg/L, ppm or % solids calibrate the TR80 in a well agitated volume of the actual sample.



Range and Accuracy

❖ Ranges

- Turbidity (low/high)
 - <30 NTU
 - 0 - 1000 NTU
 - 0 - 4,000 NTU
 - 0-5000 mg/l
- Mud: 5,000 to 10,000 mg/l
- Sand: 50,000 to 100,000 mg/l
- Range depends on sediment size, particle shape, and reflectivity.

❖ Accuracy

- Turbidity: 2% of reading or 0.1 NTU
- Mud: 2% of reading or 1 mg/l
- Sand: 4% of reading or 10 mg/l
- Whichever is larger



Accessories and Spare Parts

- ❖ Immersion assembly,
 - PN 1000334-5
 - Standpipe, 1"OD by 5 ft length,
 - 1" compression fitting and
 - T-Handle
 - PN 1000334-99
 - Standpipe is user supplied
 - 1" slip x 1" FNPT adapter
 - 1" compression fitting and
 - T-Handle
- ❖ Flow Through Tee
 - PN 1000280-5, -6, -7
 - 2" FNPT, $\frac{3}{4}$ " (Slip or NPT)
 - PVC Tee interior "Stealth Coating"
 - PN 1000305-5
 - 2" FNPT, $\frac{3}{4}$ " (Slip or NPT)
 - PVC Tee interior "Stealth Coating"
 - Sprayer Cleaner
- ❖ De-Bubbler
 - PN 1000370-3
 - $\frac{3}{4}$ " FNPT
 - PVC Tee interior "Stealth Coating"
- ❖ Compression Fitting
 - PN 3600220
 - 1-1/4" MNPT compression





Thank You

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