Triton® TR82

Turbidity and SS Sensors

ECD ELECTRO-CHEMICAL DEVICES

The Triton® TR82 Sensors

- Turbidity and Suspended Solids Sensors
- Optical Configurations
  - Minimize error from reflecting surfaces
  - Front Mounted Optics
- Measurement Range
  - 0-1000 NTU
  - 0-4000 NTU (mg/L)
  - <30 NTU (calibration in Flow cell or Debubbler
- Waterproof or Water-Resistant Cable, 10 ft., 20 ft. or 30 ft. lengths

Triton® TR82 Immersion Sensor Design

- TR82 Immersion Sensor Design
  - Immersion Assembly
  - 1” compression fitting for mounting into the Immersion Stand Pipe.
  - Retractable assembly

Triton® TR82 Flow Thru Design

- TR82 Flow Thru Design
  - Flow Cell

Flow Through Assembly

  - Debubbler

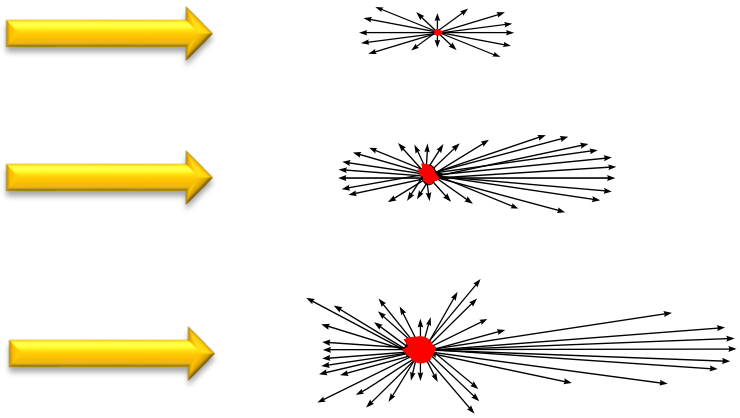
Debubbler Assembly

Compatible with T80 Transmitter

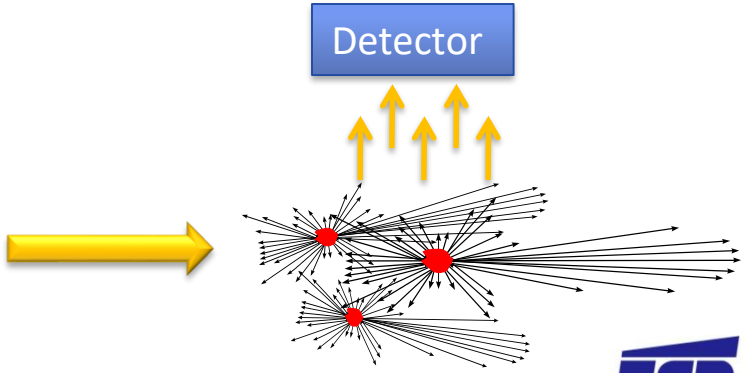
- Single or Dual Channel Capability
- Mix and Match the Sensors
  - TR82 alone or
  - TR82 and pH, pION, ORP, DO, Conductivity or another TR82
- Display NTU, FNU, mg/L, ppm, % solids
- Familiar T80 Interface
- Easy Calibration
  - Zero (default 0mV=0 mg/l)
  - 50% diluted Sample
    - Place sensor in 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



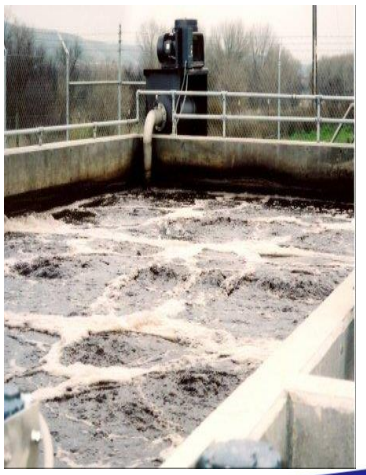
How is Turbidity Measured?

- 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



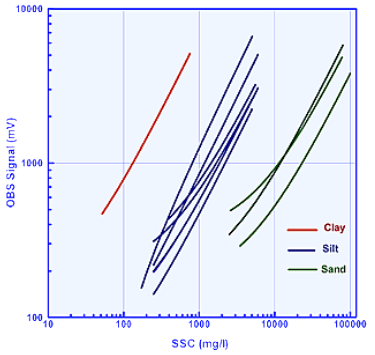
6-10 g/l

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 TR82 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 1000260-5
    - Standpipe, 1”OD by 5 ft length,
    - 1” compression fitting and
    - T-Handle
  - PN 1000260-99
    - Standpipe is user supplied
    - 1” slip x 1” FNPT adapter
    - 1” compression fitting and
    - T-Handle
- Flow Through Tee
  - PN 1000280-1, 2, 3
    - 2” FNPT , ¾”(Slip or NPT)
    - PVC Tee interior “Stealth Coating”
  - PN 1000305-1
    - 2” FNPT , ¾”(Slip or NPT)
    - PVC Tee interior “Stealth Coating”
    - Sprayer Cleaner
- De-Bubbler
  - PN 1000370-2
    - ¾” FNPT
    - PVC Tee interior “Stealth Coating”
- Compression Fitting
  - PN 3600066.PP
    - 1” MNPT x 1” compression


Flow Through Cell with optional spray cleaner


De-Bubbler Flow Cell


Immersion Assembly


Valve Retractable

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