

Triton® TR80

The ECD Model Triton TR80 nephelometric turbidity sensor is a rugged, industrial grade solution designed for continuous, accurate turbidity measurement in demanding water and wastewater applications. Utilizing true nephelometric measurement principles, the TR80 delivers stable, repeatable results across a wide range of operating conditions while minimizing maintenance and lifecycle cost.



Triton TR80 Series Turbidity & Suspended Solids Sensors

» Intelligent Sensor Technology

- Factory calibration stored in sensor self monitoring diagnostics

» Interfaces with T80 Universal Transmitter

- Modbus
- Hart
- 4 to 20 mA
- Relay Outputs

» Multiple Installation Methods

- Immersion Assembly
- Flow Through Assembly
- Gas De-bubbler Assembly

» Self Cleaning Design

- Automated wiper design
- Programmable for frequency and duration

» True Nephelometric Measurement

- Complies with industry-standard 90° scattered light measurement for accurate, low-drift turbidity readings.

Consult our Technical Support staff for additional configuration options at +1-714-695-0051 or email: sales@ecdi.com

Description

The Triton® TR80 is a nephelometric turbidity sensor designed for use in water and wastewater. Turbidity, the cloudiness or haziness of 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, 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 T80 Transmitter 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:

- Formazin
- StablCal
- SDVB Beads

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 Solid Sensor

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

The Triton® TR80 sensors are designed to work with the T80 Transmitter. The T80 is a single or dual 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 suspended solids measurement to be combined with any of it's standard measurements using:

- S80 pH Sensor
- S80 ORP Sensor
- S80 pIon Sensors
- S80 Conductivity Sensor
- S80 Dissolved Oxygen Sensor
- DO 82 Sensor

The Triton® TR80 sensors are available in (4) different ranges. The sensors are 10 inches long by 1 inch diameter with a reference line scored into the PVC body. This indicates proper insertion depth of the sensor when used with the ECD compression fitting on the flow through tee. The Triton® TR80 sensor ranges are:

- 0 - 1000 NTU
- 0 - 4000 NTU
- 0 - 5000 NTU
- 5000 - 10,000 mg/L (MUD)
- 50,000 - 100,000 mg/L (SAND)



Description

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 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 0° to 50° C.

TR80 installation is accomplished with a:

- 1" Standpipe for immersion service
- PVC Flow Cell for an in-line flow through application
- or De-bubbler for micro air bubble applications

Either configuration is suitable for immersion service while only the Side Mounted Optical configuration is suitable for in-line service.

Applications of < 40 NTU range must use the side mounted optical configuration and for best accuracy, must be calibrated in a flow cell or de-bubbler assembly.

The standard cable is a water resistant 4 conductor cable. It is available with lengths of:

- 10 ft
- 20 ft
- 30 ft (9.1 meters)

The optical surface must remain clean for accurate measurements. The included sensor face of the TR80 should be oriented into the flow cell for optimum self cleaning. Periodic cleaning is required for all turbidity sensors. Simple maintenance procedures include removing the sensor and carefully wiping the optical window with a soft, non-abrasive cloth to eliminate dirt or biofilm accumulation.

The flow through assembly provides a port for accommodating a spray cleaning capability.

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 can not be removed from the sample then the optional wiper assembly effectively removes air bubbles that form or cling to the optical window.

The De-bubbler flow cell removes air bubbles that are entrained in the sample flow.

The Triton® TR80 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.

Two other nonvolatile memory banks are available to store user initiated calibration data.

The Triton® TR80 sensor is factory calibrated in NTU and designed for straightforward, plug-and-play integration with ECD transmitters.

With the rugged construction including a tough sapphire optical window, self monitoring diagnostics with plausible checking and an automated wiper based cleaner, the TR80 Turbidity sensor is reliable, accurate and requires minimal maintenance.

It is the solution to your everyday monitoring needs.



Immersion Holder



Flow Cell

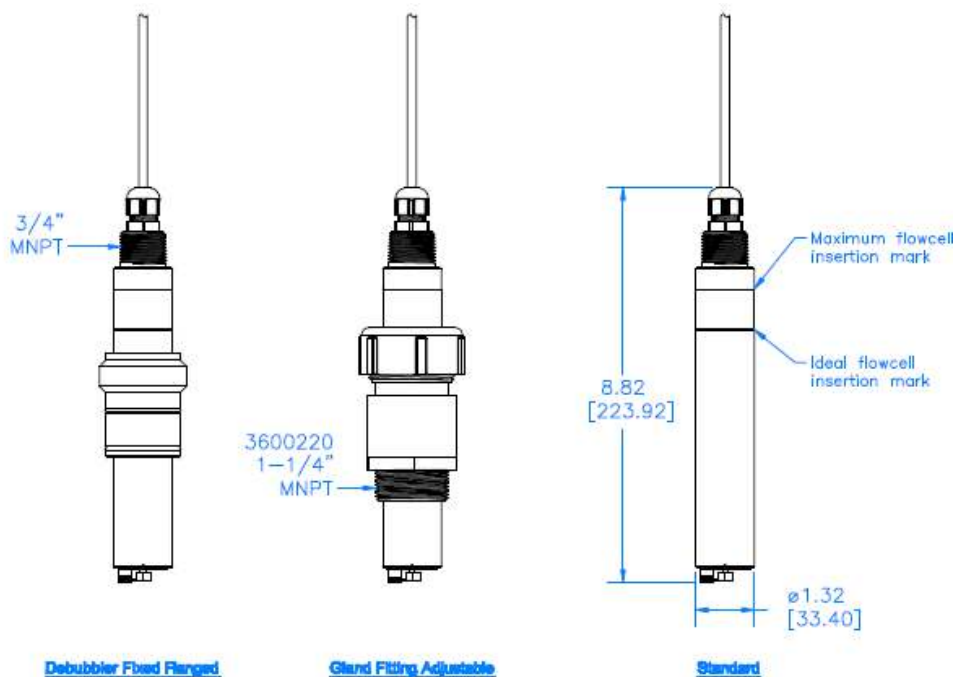


De-bubbler

Specifications

Measuring Principal	Particle caused back scattering of near infrared light 90° scattered light method in accordance with ISO 7011 / EN27087
Measuring Range	-0 Sensor 0.00 - 1000 mg/L or 0...1000 NTU, FNU
	-2 Sensor 0.00-5000 or greater mg/L or 0...4000 NTU, FNU, ppm, mg/L and % solids
	-4 Sensor 0.00 - 40 NTU
Process Temperature Range	-5 - 50° C
Temperature Compensation	Internal Temperature Compensation
Process Pressure Range	50 psi max in Flow Cell
Wetted Materials	Sensor body: CPVC, Polypro optional Sensing end: epoxy
Process Connections	3/4" NPT on back end of sensor
Electrical Connection	Water Resistant 5-wire measuring cable (Standard)
Cable Length	• 10 ft (3.0 m) • 20 ft (6.1 m) • 30 ft (9.1 meters)

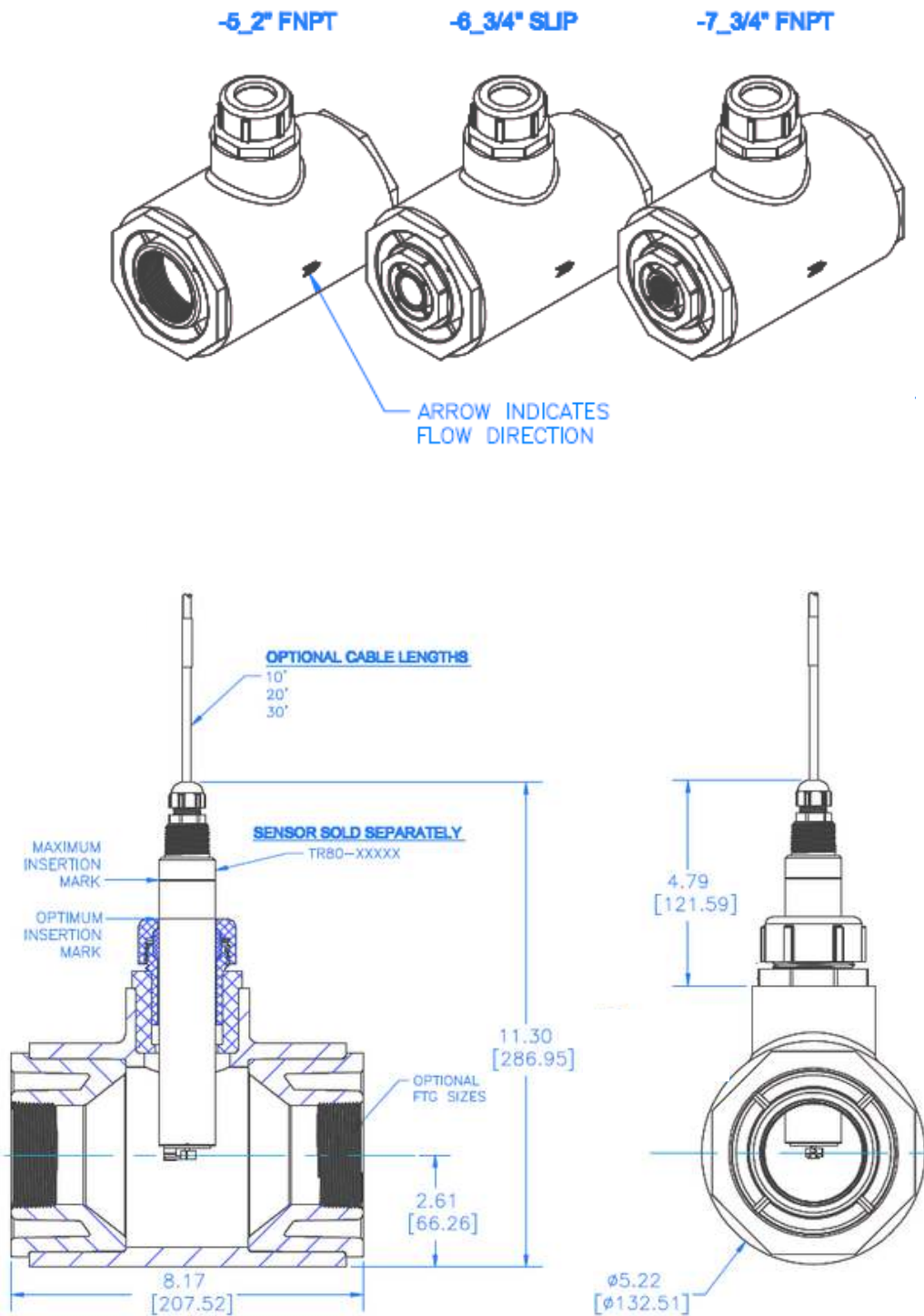
Dimensions



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Specifications

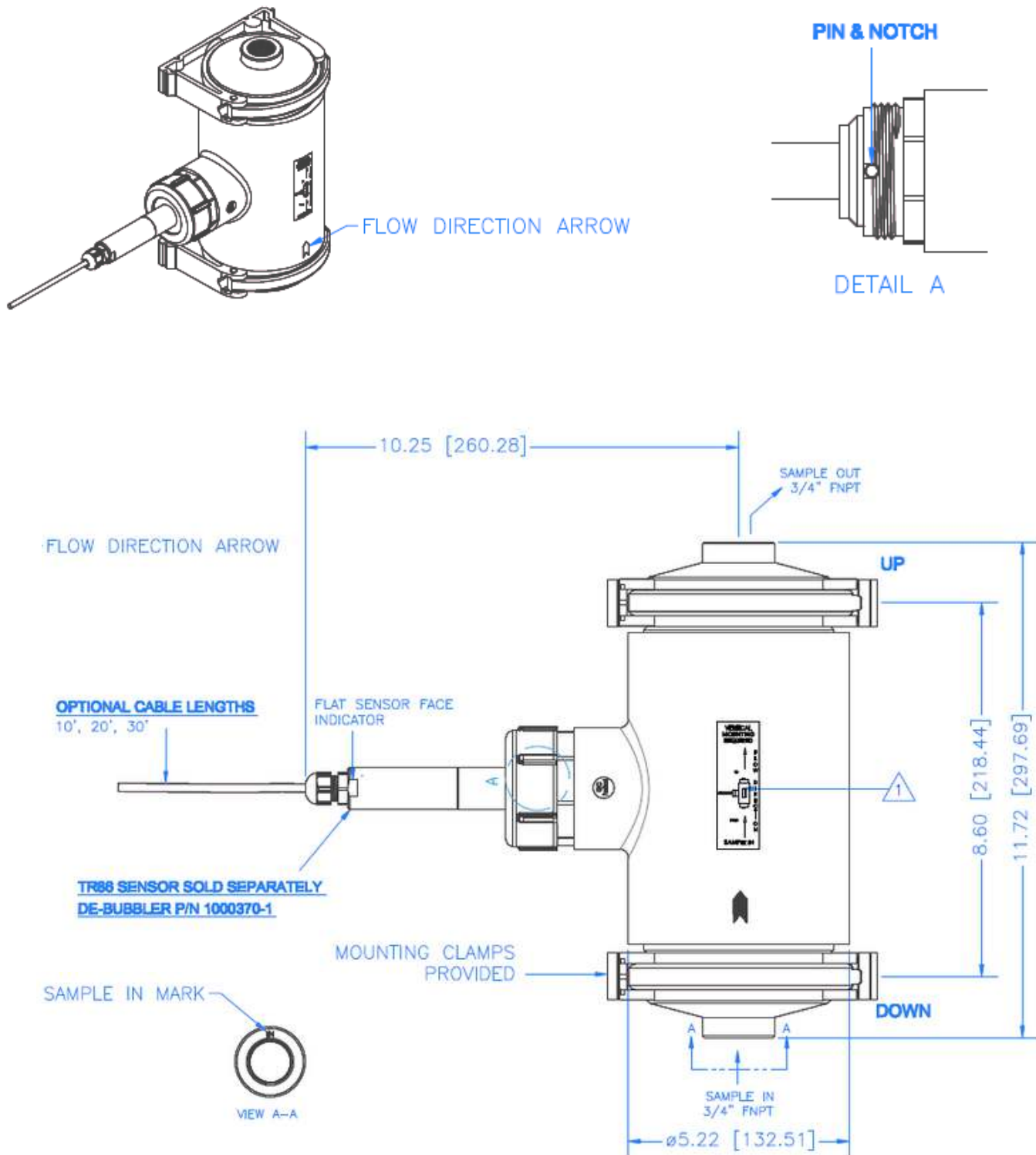
Flow Cell



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Specifications

Debubbler



- 1 INSTALL SENSOR WITH DETECTOR FACING SIDE OF FLOW CELL (KEYWAY NOTCH ON FLANGE MOUNT SEE DETAIL A). FLAT NEAR END OF SENSOR EXTENSION FACES SIDE OF FLOWCELL. ORIENT FLOW CELL VERTICAL AS SHOWN WITH ENTRY MARKED "IN" FACING DOWN FOR PROPER BUBBLE SEPARATION

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Order Information

A	B	C	D	E
TR80	1	0	02	2

Sample Order

TR80-10022

- A** Triton® TR80 Suspend Solids Sensor w/ Wiper
- B** Front Mounted Optics / CPVC
- C** None (Rear ¾" MNPT)
- D** 20 ft (6.1 meters) (Waterproof / Submersible Cable Style)
- E** 0 - 4000 NTU

A. Triton® TR80 Turbidity Sensor

Part No.

TR80 Triton® TR80 Suspended Solids Sensor with Wiper

B. Optical Style / Material

Part No.

- 1** Front Mounted Optics / CPVC
- 2 Front Mounted Optics / PolyPro

C. Process Connection

Part No.

- 0** None (Rear ¾" MNPT)
- 1 1 ¼" MNPT PVC Gland Fitting
- 2 Flow Through Cell, 2 x 2" FNPT Entries, 1 x 1" FNPT Sensor Port
- 3 Flow Through Cell, 2 x ¾" Slip Entries, 1 x 1" FNPT Sensor Port
- 4 Flow Through Cell, 2 x ¾" FNPT Entries, 1 x 1" FNPT Sensor Port
- 5 Flow Through Cell, 2 x 2" FNPT Entries, 1 x 1" FNPT Sensor Port, w/ Spray Cleaner
- 6 Flow Through Cell, 2 x ¾" Slip Entries, 1 x 1" FNPT Sensor Port, w/ Spray Cleaner
- 7 Flow Through Cell, 2 x ¾" FNPT Entries, 1 x 1" FNPT Sensor Port, w/ Spray Cleaner
- 8 De-Bubbler ¾" FNPT Entries
- 9 De-Bubbler Collar Only
- A Spray Cleaner for Immersion Style

D. Cable Type and Length

Part No.

- 01 10 ft (3.0 meters) (Waterproof / Submersible Cable Style)
- 02** 20 ft (6.1 meters) (Waterproof / Submersible Cable Style)
- 03 30 ft (9.1 meters) (Waterproof / Submersible Cable Style)

E. Measurement Range

Part No.

- 2** 0 - 4000 NTU
- 4 < 40 NTU (Calibrated in Flow Cell / De-Bubbler)

Note: T80 Transmitter must have relays for wiper.

Controllers for Triton® TR80 Sensors

Part No.

T80-1X-X1X-XX	Model T80 Version (Please See T80 Spec Sheet for build list) *Must have relays for wiper
LQ800-80-288-01	Model LQ800, 8 Channel Controller (Please See LQ800 Spec Sheet for build list)

Represented By:

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Equipment and Specifications may be updated periodically to enhance performance and reliability.



Order Information

A	B	C	D	E
TR80	1	0	02	2

Sample Order

TR80-10022

- (A) Triton® TR80 Suspend Solids Sensor w/ Wiper
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- (D) 20 ft (6.1 meters) (Waterproof / Submersible Cable Style)
- (E) 0 - 4000 NTU

Triton® TR80 Accessories

Part No.	Mountings
3600220	1¼" MNPT PVC Gland Fitting
1000222-2	NEMA 4X Junction Box, (2) cable glands, terminal strip, PVC box, 6" x 3" x 2" LWD
1000251-3	Retractable Valve Assembly TR Series
1000334-X	Immersion Assembly, ¾" NPT Adapter, Cap/Cable feed through (X = Length in feet)
1000334-5	Immersion Assembly, 5 ft x 1" OD Standpipe, w/ ¾" FNPT fitting and T-Handle cable feed through
1000334-99	Immersion Assembly Kit (User Supplied 1" OD Standpipe) includes ¾" compression fitting, 1" PVC FNPT to slip adapter and T-Handle style cable feed through
1000280-5	Flow Through Assembly, 4" PVC Tee with 2" FNPT Entries and Compression fitting for TR80 Sensor
1000280-6	Flow Through Assembly, 4" PVC Tee with ¾" Slip Entries and Compression fitting for TR80 Sensor
1000280-7	Flow Through Assembly, 4" PVC Tee with ¾" FNPT Entries and Compression fitting for TR80 Sensor
1000302	Clean Air Blaster TR80
1000305-4	Flow Thru Cell, 2 x 2" FNPT Entries, 1 x 1" FNPT Sensor Port w/ Spray Cleaner
1000305-5	Flow Thru Cell, 2 x ¾" Slip Entries, 1 x 1" FNPT Sensor Port w/ Spray Cleaner
1000305-6	Flow Thru Cell, 2 x ¾" FNPT Entries, 1 x 1" FNPT Sensor Port w/ Spray Cleaner
2000263	Rail Mounting Brackets, (2) Quick Release "U" Clamps for 2" Guard Rail
2200190-XX	Cable Assembly, In-Line Quick Disconnect (XX = Length in feet)
2000190	In-Line Cable Quick Disconnect Connector
1000370-3	De-Bubbler w/ ¾" FNPT Entries
	*must have TR80 w/ De-Bubbler style

Calibration

1000030-6	4000 NTU Calibration Kit, 1L Cal Cup, 50/100/200 mL graduated cylinder, volumetric cylinder, 4000 NTU Calibration Standard (Formazine), 500 mL
1000030-7	4000 NTU Calibration Kit, 1L Cal Cup, 50/100/200 mL graduated cylinder, volumetric cylinder
2010004	Cal Solution 4000 NTU Formazine, 500 mL
1000313-500	Calibration Cup – Check Unit for TR80 500 NTU
1000313-1000	Calibration Cup – Check Unit for TR80 1000 NTU
1000313-2000	Calibration Cup – Check Unit for TR80 2000 NTU
1000313-4000	Calibration Cup – Check Unit for Tr80 4000 NTU
1000313-HIGH	Calibration Cup - Check Unit for TR80 2000 NTU / 4000 NTU
1000313-LOW	Calibration Cup – Check Unit for TR80 500 NTU / 1000 NTU

Data Logger

1000300-1	4-20 mA USB Data Logger
9130007	Spare Battery for USB Data Logger *Dangerous Goods

Spare Parts

1000168-1	Service Kit for wiper arm; (5) Rubber Wipes, (2) Wiper Arms + Tools + Screws
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Note: This is a partial list of available configurations. For additional options or customization, please contact Electro-Chemical Devices Support Toll Free at: **(800) 729-1333** or your local ECD representative.

Represented By:



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