

Isco Non-Contact LaserFlow™ Velocity Sensor

The LaserFlow™ remotely measures flow in open channels with non-contact Laser Doppler Velocity technology and non-contact Ultrasonic Level technology. The sensor uses advanced technology to measure velocity with a laser beam at single or multiple points below the surface of the wastewater stream. (*Patent Pending*)

The LaserFlow is ideal for a broad range of wastewater monitoring applications. It is compatible with both the Teledyne Isco Signature® Flow Meter and the Teledyne Isco 2160 LaserFlow Module, depending on the type of installation.

During submerged conditions, flow measurement continues without interruption with optional Doppler Ultrasonic Area Velocity technology.

With its specially designed mounting bracket in place, the LaserFlow can be deployed and removed from above ground, eliminating unsafe and time-consuming confined space entry. A variety of communication options enable programming and data retrieval from a remote location. Information about data quality can be recorded and transmitted alongside the flow data.

Applications

- ◆ Permanent and portable flow measurement for CSO, SSO, I&I, SSEs, CMOM, and other sewer monitoring programs.
- ◆ Shallow flow measurement in large and small pipes.
- ◆ Wastewater treatment plant influent, process, and effluent flow measurement.
- ◆ Industrial process and discharge flow measurement
- ◆ Stormwater conveyance and outfall (sunshade required)
- ◆ Irrigation canals and channels (sunshade required)



Standard Features

- ◆ Non-contact velocity and level measurement
- ◆ Single or Multiple Point measurement below the liquid surface
- ◆ Robust, submersible enclosure with IP68 ingress protection
- ◆ No deadband from measurement point in non-contact level and velocity measurements.
- ◆ No need for manual velocity profiling
- ◆ Bidirectional velocity measurement

Options and Accessories

- ◆ Flow measurement during submerged conditions via Ultrasonic Doppler technology
- ◆ Redundant flow measurement w/ simultaneous Continuous Wave Doppler or Ultrasonic Level Sensing
- ◆ Installation in Class 1 Zone 1 areas (pending approval)

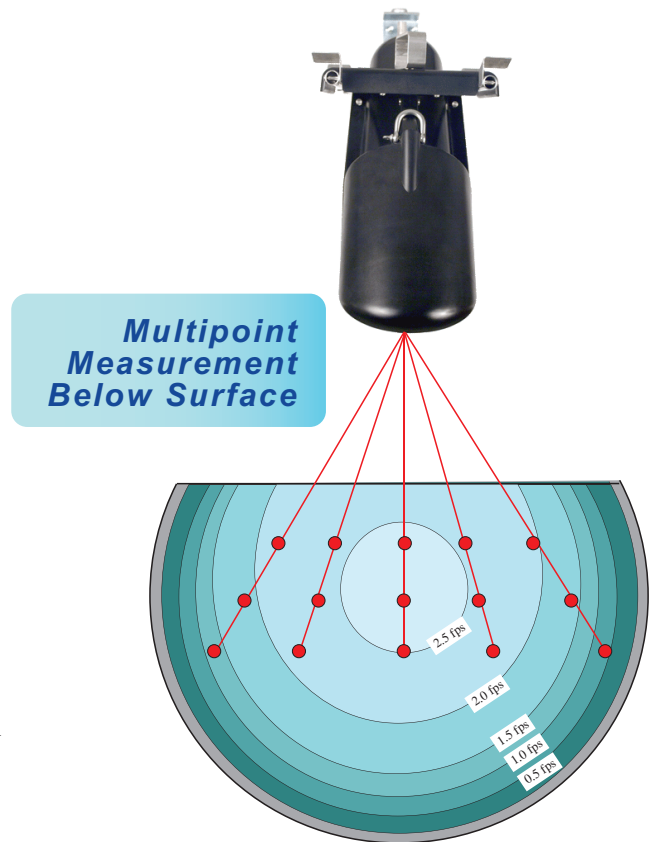


Single- or Multipoint Measurement

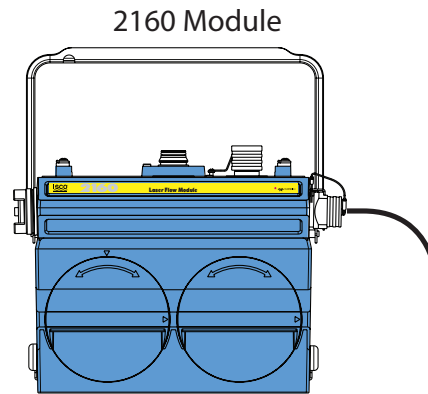
Depending on your application needs, the LaserFlow™ device can be programmed to take velocity measurements at single or multiple points below the water's surface, producing an accurate mean velocity reading.

System Versatility

From industrial applications to manhole installations, the LaserFlow's versatile configuration options give you the flexibility to measure flow in most open channel applications. The sensor is compatible with both the **Isco Signature® Flow Meter** for permanent discharge compliance monitoring, and the **Model 2160 LaserFlow Module** for everything from portable surveys to permanent installations. Both flow meters have a variety of communication options for remote data access and programming, eliminating the need for frequent site visits.

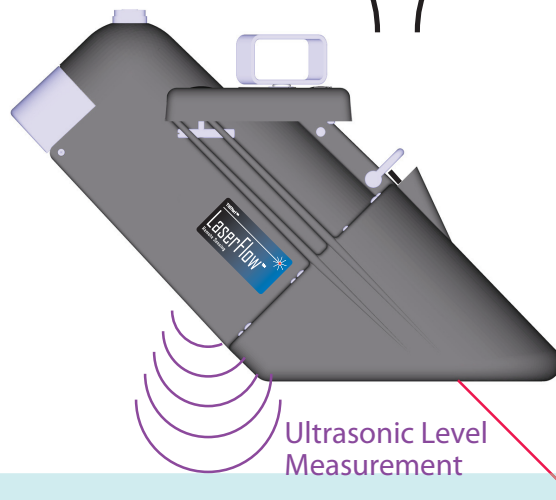


AC Powered Sites



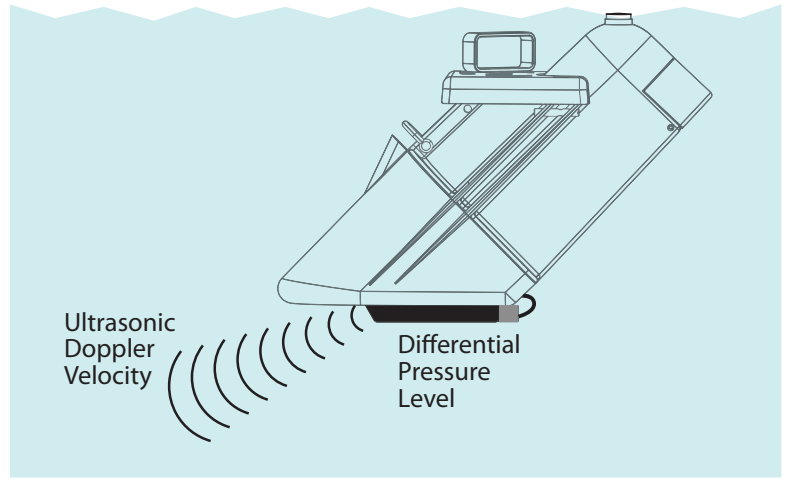
Battery Powered Sites

OR



Optional Submerged Functionality

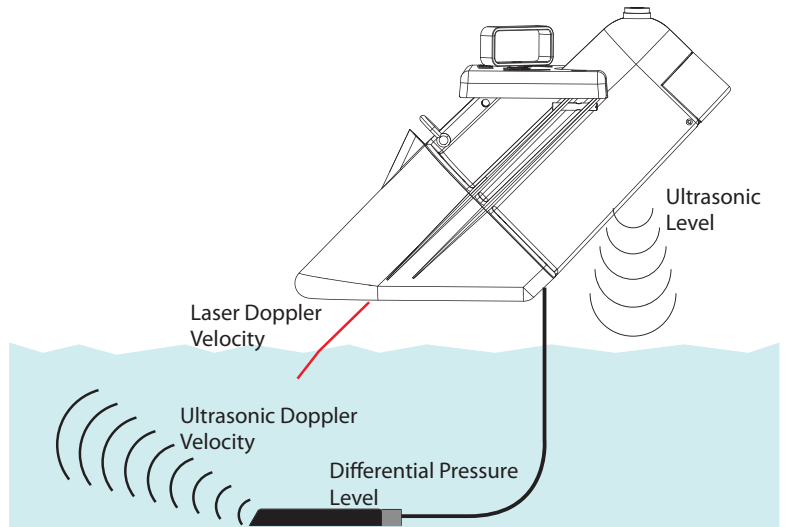
During submerged conditions, flow measurement continues without interruption with the optional TIENet™ 350 Area Velocity sensor, which combines Doppler Ultrasonic velocity measurement with Differential Pressure level measurement.



Optional Redundant Measurement

For redundant flow measurement at critical monitoring sites, a unique flexibility is added by the optional TIENet 350 AV sensor when mounted at the bottom of the pipe.

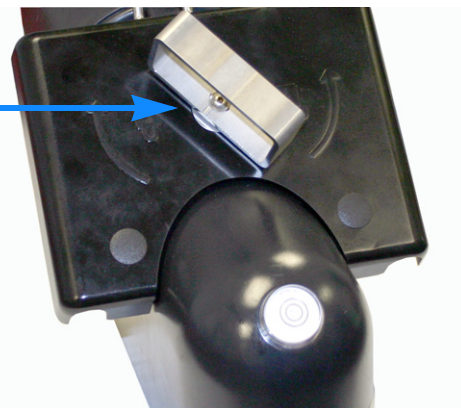
The 350 provides redundant velocity, level, and flow data from the same site as the LaserFlow device.



Easy and Secure Retrieval/Replacement Without Manhole Entry

Following initial installation and adjustment, the sensor can be installed or removed as needed without manhole entry in most situations, using the optional retrieval arm (shown at left) to grasp the handle.

The handle's simple but effective locking mechanism (shown below) holds the sensor firmly in place, and is easy to engage and release from above ground.



Specifications

Primary Measurement: TIENet™ LaserFlow™ Device	
Size (HxWxL)	38.01 x 26.21 x 56.7 cm (14.96 x 10.3 x 22.32 in)
Weight	8.7 kg (19.2 lbs)
Materials	Conductive Carbon Filled ABS, SST, Conductive Kynar, Anodized Aluminum, UV-Rated PVC
Cable Lengths	5, 10, 15, or 23 m
Enclosure	IP68
Certifications	CE EN61326; FDA CDRH 21CFR1040; IEC 60825-1
Laser Class	Class 3R Laser Product
Temperature Range	Operating: 0 to 60 °C (32 to 140 °F) Storage: -40 to 60 °C (-40 to 140 °F)
Power Required	Input voltage: 8 to 26 VDC 12VDC Nominal
Flow Accuracy	±5% of Reading. (Typical, under normal flow conditions)
Velocity	
Technology	Non-Contact Laser Doppler
Measurement Range	-4.6m/s to 4.6 m/s (-15 ft/s to 15 ft/s)
Maximum Depth	3m (10 ft)
Measurement	Bi-Directional ^a
Accuracy	±0.5% of reading ±0.03 m/s (0.1 ft/s)
Minimum Velocity	0.25 m/s (0.8 ft/s)
Level	
Technology	Non-Contact Ultrasonic
Measurement Range	0 to 3 m (0 to 10 ft) from measurement point
Accuracy @ 22 °C (72 °F)	±0.006 m (0.02 ft) at ≤1 ft level change ±0.012 m (0.04 ft) at >1 ft level change
Temperature Coefficient within compensated range	± 0.0002 x D (m) per degree C ± 0.00011 x D (ft) per degree F (Where D = Distance from transducer to liquid surface)
Beam Angle	10° (5° from center line)
Ultrasonic Signal	50KHz

a. Turbidity > 20 NTU; Distance from liquid surface to bottom of sensor < 48 inches.

Optional Secondary Measurement: TIENet™ 350 AV Sensor	
Probe Size (HxWxL)	19 x 33 x 152 mm (0.75 x 1.3 x 6.0 in)
Materials	Sensor: Epoxy, chlorinated CPVC, SST Cable: UV-Rated PVC
Certifications	CE EN61326
Temperature Range	0 to 70 °C (32 to 158 °F)
Velocity	
Technology	Submerged Continuous Wave Doppler Ultrasonic
Measurement Range	-1.5 to 6.1 m/s (-5 to 20 ft/s)
Velocity Measurement	Bi-Directional
Accuracy	±0.03 m/s (±0.1 ft/s) from -5 to 5 ft/s ±2% of reading from 5 to 20 ft/s, Uniform velocity profile
Minimum Depth	25 mm (0.08 ft)
Frequency	500 kHz
Level	
Technology	Submerged Differential Linear Pressure Transducer
Measurement Range	0.01 to 3.05 m (0.033 to 10 ft)
Accuracy	± 0.01%FS ^b
Maximum Depth	10.5 m (34 ft)
Stability	±0.007 m/yr (±0.023 ft/yr)

^b Maximum non-linearity, hysteresis, & temperature error from actual liquid level.

Contact your Teledyne Isco representative for complete ordering information.



Water is life. Protect it.

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**Certified
ISO 9001**