

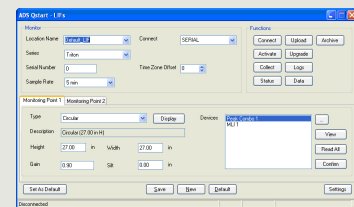
ADS Flow Monitoring Software

IntelliServe is web-hosted software providing real-time operational intelligence on the status of flow activity throughout the wastewater collection system. IntelliServe utilizes dynamic (or smart) alarming to inform clients about the occurrence of rain events, flow performance abnormalities, and data anomalies at the flow monitoring locations.

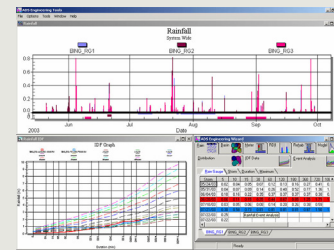
Slicer.com is web-hosted software providing a powerful set of engineering tools designed for both the consulting and municipal engineer. Slicer.com's inflow and infiltration tools examine wastewater collection system dry and wet weather flow data and provide rigorous performance measurements in one-tenth the time of other analysis tools.

FlowView Portal is web-hosted software providing robust report delivery, enabling the user to manage data, customize reports, and select viewing parameters. FlowView Portal has a virtually unlimited database for storing and accessing historical data, using data for comparison and trend analysis purposes, and sharing information electronically.

Profile is desktop software providing the industry's best data analysis tools, from basic flow monitoring data to complex hydraulic analysis. Profile is intuitive software that saves time and improves data quality by compiling project data into one location for analysis and reporting.

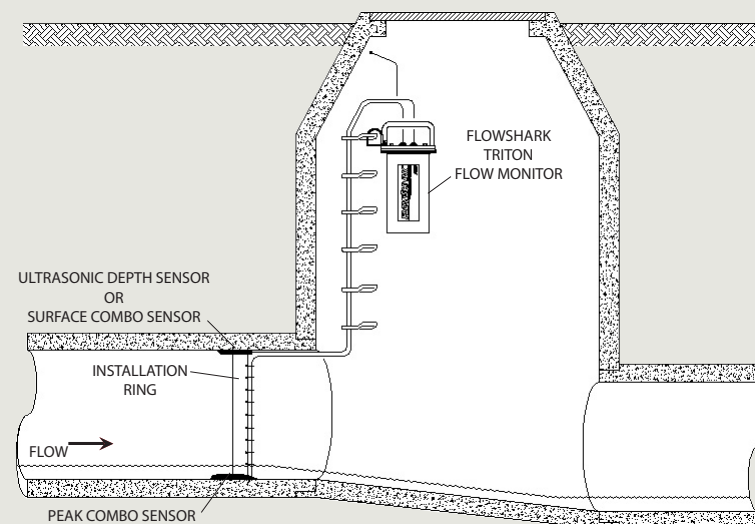


Qstart is desktop software providing field crews with a simple, easy-to-use tool for quickly activating and configuring ADS flow monitors. Qstart enables the user to collect and review the monitor's depth and velocity data in hydrograph and tabular views simultaneously.



Comprehensive Flow Monitoring from ADS

Comprehensive flow monitoring involves subdividing a sewershed into small and uniformly-sized meter basins to facilitate RDII volume and sewer operational capacity measurement at each metering point. This allows for distinguishing the causes from the symptoms. If the basin size is small enough, RDII in collection systems can follow Pareto's 80/20 principle. This principle indicates that 80% of the total volume of RDII entering a collection system will enter into just 20% of the system. Therefore, rehabilitation can be performed on a smaller portion of the system, saving time and expense.



All ADS sensors are mounted within the pipe section where depth and velocity are uniform as the flow passes the sensors. This ensures accurate flow quantification.



ADS ENVIRONMENTAL SERVICES®
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HARDWARE

FLOWSHARK® TRITON

The new FlowShark® Triton from ADS is a "Fit-for-Purpose" open channel flow monitor for use in sanitary, combined, and storm sewers. It is designed to be the most adaptable and versatile flow monitoring device available for collection systems. It is a single pipe or dual pipe flow measurement system and is certified to the highest level of Intrinsic Safety.

FlowShark Triton

This multiple technology flow monitor will power almost every available sensor technology that is used in wastewater applications today. It is the most versatile and competitively-priced, multiple-technology flow monitor on the market. The three multiple technology sensor options available in the FlowShark Triton include a Peak Combo Sensor, a Surface Combo Sensor, and an Ultrasonic Level Sensor (*see inside for technology and specifications*). This array of monitoring technologies provides a fit-for-purpose monitoring platform.

The FlowShark Triton is also adaptable to a wide range of customer applications and budgets. It can be configured as an economical single sensor monitor or dual sensor monitor. It offers a longer battery life and fewer parts for a more reliable system. This provides a lower purchase price and a lower lifetime ownership cost. The FlowShark Triton has the lowest power cost per data sample of any Intrinsically Safe flow monitor available.



About **ADS**

A leading technology and service provider, ADS Environmental Services® has established the industry standard for open channel flow monitoring and has the only ETV-verified flow monitoring technology for wastewater collection systems. These battery-powered monitors are specially designed to operate with reliability, durability, and accuracy in sewer environments.

FlowShark Triton Features

- Versatile and durable multiple technology sensors
- Two sensor ports supporting 3 interchangeable sensors providing up to 6 sensor readings at a time
- Single or dual pipe/monitoring point measurement capabilities
- Wireless or serial communication for field versatility
- Industry-leading battery life with a GSM/GPRS wireless connection providing up to 15 months at the standard 15-minute sample rate (*varies with sensor configuration*)
- External power option available with an ADS External Modem Unit (EMU) or External Modem Unit/Multiplexer (EMUX) and 12-volt DC power supply
- Modbus protocol enabling Telog® RU-33 units and RTUs, such as those supporting SCADA systems, to obtain available data
- Monitor-Level Intelligence (MLI®) to improve accuracy and allow the FlowShark Triton to operate in a wide range of hydraulic conditions
- Superior noise reduction design for maximizing acoustic signal detection from depth and velocity sensors
- Five software packages for accessing flow information: Qstart™ (configuration and activation); Profile® (configuration, data collection, analysis, and reporting); IntelliServe® (web-based alarming); Slicer.com® (I/I analysis); and FlowView Portal® (online data presentation and reporting)
- Intrinsically-Safe (IS) certification by IECEx for use in Zone 0/Class I, Division 1, Groups C & D, ATEX Zone 0, and CSA Class 2258 03
- Thick, seamless, high-impact, ABS plastic canister with aluminum end cap (meets IP68 standard)
- Protective dome for circuit board to limit exposure of electronics when opening the canister or changing the battery

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Multiple Technology Sensors

The FlowShark Triton features three depths and two velocities with three sensor options. Each sensor provides multiple technologies for continuous running of comparisons.

Peak Combo Sensor



Dimensions: 6.76 inches (172 mm) long x 1.23 inches (31 mm) wide x 0.83 inches (21 mm) high

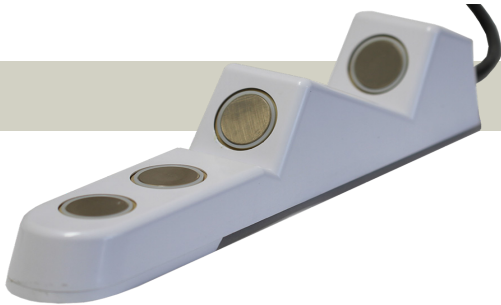
This versatile and economical sensor includes three measurement technologies in a single housing: ADS-patented continuous wave peak velocity, uplooking ultrasonic depth, and pressure depth.

Continuous Wave Velocity
Range: -30 feet per second (-9.1 m/s) to +30 ft/sec (9.1 m/s)
Resolution: 0.01 feet per second (0.003 m/s)
Accuracy: +/- 0.2 feet per second (0.06 m/s) or 4% of actual peak velocity (whichever is greater) in flow velocities between -5 and 20 ft/sec (-1.52 and 6.10 m/s)

Uplooking Ultrasonic Depth
Performs with rotation of up to 15 degrees from the center of the invert; up to 30 degrees rotation with Silt Mount Adapter
Operating Range: 1.0 inch (25 mm) to 5 feet (152 cm)
Resolution: 0.01 inches (0.254 mm)
Accuracy: 0.5% of reading or 0.125 inches (3.2 mm), whichever is greater

Pressure Depth
Range: 0-5 PSI up to 11.5 feet (3.5 m); 0-15 PSI up to 34.5 feet (10.5 m); or 0-30 PSI up to 69 feet (21.0 m)
Accuracy: +/-1.0% of full scale
Resolution: 0.01 inches (0.25 mm)

Surface Combo Sensor



Dimensions: 10.61 inches (269 mm) long x 2.03 inches (52 mm) wide x 2.45 inches (62 mm) high

This revolutionary new sensor features four technologies including surface velocity, ultrasonic depth, surcharge continuous wave velocity, and pressure depth.

Surface Velocity *
Minimum air range: 3 inches (76 mm) from the bottom of the rear, descended portion of the sensor
Maximum air range: 42 inches (107 cm)
Range: 1.00 to 15 feet per second (0.30 to 4.57 m/s)
Resolution: 0.01 feet per second (0.003 m/s)
Accuracy: +/-0.25 feet per second (0.08 m/s) or 5% of actual reading (whichever is greater) in flow velocities between 1.00 and 15 ft/sec (0.30 and 4.57 m/s)

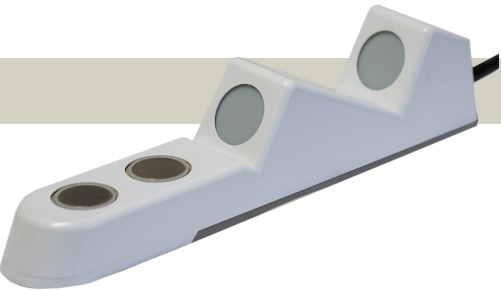
** The flow conditions existing in some applications may prevent the surface velocity technology from being used.*

Ultrasonic Depth
(Does not require electronic offsets)
Minimum dead band: 1.0 inches (25.4 mm) from the face of the sensor or 5% of the maximum range, whichever is greater
Maximum operating air range: 10 feet (3.05 m)
Resolution: 0.01 inches (0.25 mm)
Accuracy: +/- 0.125 inches (3.2 mm) with 0.0 inches (0 mm) drift, compensating for variations in air temperature

Surcharge Continuous Wave Velocity (Under submerged conditions, this technology provides the same accuracy and range as **Continuous Wave Velocity** for Peak Combo Sensors)

Surcharge Pressure Depth (Under submerged conditions, this technology provides the same accuracy and range as **Pressure Depth** for Peak Combo Sensors)

Ultrasonic Level Sensor



Dimensions: 10.61 inches (269 mm) long x 2.03 inches (52 mm) wide x 2.45 inches (62 mm) high

This non-intrusive, zero-drift sensing method results in a stable, accurate, and reliable flow depth calculation. Two independent ultrasonic transducers allow for independent cross-checking.

Ultrasonic Depth (See **Ultrasonic Depth Specifications Above**)

Product Specifications

Connectors
U.S. Military specification MIL-C 26482 series 1, for environmental sealing, with gold-plated contacts

Communications Options
- Quad band GSM/GPRS wireless modem
- Direct connection to PC using serial communication cable

Monitor Interfaces
Supports simultaneous interfaces with up to two combo sensors

Power
Internal - Battery life with a GPRS modem:
- Over 15 months at a 15-minute sample rate*
- Over 6 months at a 5-minute sample rate*
External - Optional external power available with ADS External Modem Unit (EMU) or External Multiplexer (EMUX) with an ADS- or customer-supplied 12-volt DC power supply

** Rate based on collecting data once a day and varies according to sensor configuration*

Operating and Storage Temperature
-4 degrees to 140 degrees F (-20 degrees to 60 degrees C)

Connectivity
- Modbus ASCII
- Modbus RTU
- Telog RU-33

Intrinsic Safety Certification
- Certified under the ATEX European Intrinsic Safety standards for Zone 0 rated hazardous areas
- Certified under IECEx (International Electrotechnical Commission Explosion Proof) Intrinsic Safety standards for use in Zone 0/Class I, Division 1, Groups C&D rated hazardous areas
- CSA Certified to CLASS 2258 03 - Process Control Equipment, Intrinsically Safe and Non-Incendive Systems - For Hazardous Locations, Ex ia IIB T4 Ga

Other Certifications/Compliances
- FCC Part 15 and Part 68 compliant
- Carries the EU CE mark
- ROHS (lead-free) compliant
- Canada IC CS-03 compliant

ADS FLOW MONITORING APPLICATIONS

- Billing
- Inflow/Infiltration
- Model Calibration
- Combined Sewer Overflows (CSOs)
- Stormwater Monitoring
- Capacity Analysis
- Spill Notification

Examples of Return on Investment Using ADS Products and Services



Orange County, California

Investing \$5.5 million in an updated strategic plan based on comprehensive flow and rainfall monitoring saved OCSD \$46.5 million, a net savings of \$41 million. The savings resulted from an improved flow monitoring plan that, acknowledging the impact of RDII, involved locating 150 flow monitors in equivalent-sized basins with proper hydraulic isolation.

Saved \$41 million using a strategic monitoring plan

City of Los Angeles, California

Investing \$4.5 million calibrating its hydraulic model during wet weather and then recalibrating during dry weather flow conditions saved the city \$498 million in capital project eliminations and deferments, generating a 100-fold return on investment.

Saved \$498 million in capital project eliminations and deferments costs



Belmont North, Indianapolis, Indiana

Investing approximately \$650,000 in flow monitoring and \$1 million in rehabilitation saved Indianapolis over \$7 million in proposed relief line construction costs. This also reduced the contract period by 3 years and virtually eliminated basement floodings.

Saved \$7 million in proposed relief line construction costs