**XIO Features**

- Process variables measured by the TRITON+ can be converted to two (2) 4-20mA loop output signals for SCADA systems or local display and control
- Logging capabilities of the TRITON+ can be used for two (2) 4-20mA input process variables measured by other instrumentation
- Alarms produced by the TRITON+ Monitor Level Intelligence (MLI) device can be output on the two (2) XIO relay contacts for process actuation
- Two (2) switch, solid state or dry contact digital inputs can be sampled and logged
- Design facilitates easy field wiring
- Supports easy plug and play configuration and start-up
- Associated Apparatus IECEx certification for use with approved equipment in Zone 0 (equivalent to Class I, Division 1, Groups C & D); ATEX Zone 0; and CSA Class I, Zone 0, IIB hazardous areas
- Rugged indoor/outdoor NEMA 4x case with hinged clear cover
- Accepts 85-264 VAC, 120-375 VDC; 47-62 Hz; 1.1A@110/0.59A @250 VAC
- Supplies 8 – 11.5 VDC, 500mA power to the TRITON+ flow monitors

**XBUS Features**

- Supplies Modbus RTU, ASCII and TCP communications
- Wireless Modbus via TRITON+ internal modem communications
- Connects to wired networks via RS485 or RS232
- Supports easy plug and play configuration and start-up
- Associated Apparatus IECEx certification for use with approved equipment in Zone 0 (equivalent to Class I, Division 1, Groups C & D); ATEX Zone 0; and CSA Class I, Zone 0, IIB hazardous areas
- Rugged indoor/outdoor NEMA 4x case with hinged clear cover
- Accepts 85-264 VAC, 120-375 VDC; 47-62 Hz; 1.1A@110/0.59A @250 VAC
- Supplies 8 – 11.5 VDC, 500mA power to the TRITON+ flow monitors

**ExPAC Features**

- Designed to be housed in another enclosure
- Associated Apparatus IECEx certification for use with approved equipment in Zone 0 (equivalent to Class I, Division 1, Groups C & D); ATEX Zone 0; and CSA Class I, Zone 0, IIB hazardous areas
- Requires DC power input between 9 and 36 volts and a minimum of 15 watts
- Supplies DC power of 8 to 11.5 volts, 500mA to the TRITON+ flow monitors
- RS485 and RS232 Modbus output connections to SCADA systems
- Wireless Modbus via TRITON+ internal modem communications
- Supports Modbus RTU, ASCII and TCP/IP communications

**TRITON+ Features**

- Versatile performance that is easy to install and operate
- Two sensor ports supporting 4 interchangeable sensors providing up to 6 sensor readings at a time
- Single or dual pipe/monitoring point measurement capabilities
- Multi-carrier cellular 3G/4G, LTE, LMR2200, Cellular, iDEN, Iridium, and Iridium Certus wireless communications; direct serial communications also available
- Industry-leading battery life with a wireless connection providing up to 15 months at the standard 15-minute sample rate (varies with sensor configuration)
- External power and Modbus network connectivity option available with an ADS ExPAC™ and a 9-36 VDC power supply powering your ADS XBUS™
- Analog and digital I/O expansion (4-20 mA and dry contacts) available with an ADS External I/O unit (XIO™)
- Modbus protocols enabling RTUs to help simplify SCADA system integration
- Supports the delivery of CSV files to an FTP site at user-defined intervals, and direct monitor SMS and e-mail messaging
- Supports actuation of a water quality sampler for flow proportional or level-based operation
- Monitor Level Intelligence (MLI) enables the TRITON+ to effectively operate over 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: Qsit™ configuration and activation; FlowView Operations (web-based alarming); Slicer.com™ (flow analysis); FlowView Portal™ (online data presentation and reporting); and ProfileX™ (data collection, analysis, and reporting)
- Intrinsic Safe (0) certification by ATEX, IECEx and CSA for use in Zone 0 (equivalent to Class I, Division 1, Groups C & D) hazardous areas
- Thick, seamless, high-impact, ABS plastic canister with aluminum end cap (meets IP68 standard)
- Innovative circuit board dome-enclosure protects and limits exposure of electronics when opening the canister to change the battery

---

**About ADS**

A leading technology and service provider, ADS™ LLC 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.

---

**To Learn more, visit** www.adsenv.com/TRITON+
Multiple Technology Sensors

The 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, ultrasonic depth, and pressure depth.

- **Continuous Wave Velocity**
  - Range: 300 ft/sec per second (-9.1 m/s to +30 ft/sec/ (9.1 m/s)
  - Resolution: 0.02 ft/sec 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/sec)

- **Uploading Ultrasonic Depth**
  - Performs with rotation of up to 360 degrees from the center of the invert; up to 30 degrees rotation with 5LH Mount Adapter
  - Operating Range: 1.2 inch (25 mm) to 25.0 feet (152 cm)
  - Resolution: 0.001 inch (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)
  - Resolution: 0.01 inches (0.25 mm)
  - Accuracy: +/-1.0% of full scale

**Long Range Depth Sensor**
Dimensions: 9.15 inches (232.4 mm) long x 4.40 inches (111.8 mm) wide x 4.22 inches (107.2 mm) high (without bracket)

A narrow, powerful ultrasonic beam allows this depth sensor to perform well over long ranges.

- **Beam Angle**: +/-3 degrees
- **Temperature Compensation**: Additional compensation for variable temperature air column supported
- **Submersion**: Detects submersion when fully covered with liquid.

**Surface Combo Sensor**
Dimensions: 10.61 inches (269 mm) long x 2.03 inches (52 mm) wide x 2.45 inches (62 mm) high (without bracket)

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 ft/sec per second (0.30 to 4.57 m/sec)
  - Resolution: 0.01 ft/sec 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/sec)

- **Ultrasonic Depth**
  - Does not require electronic offsets
  - Minimum sampling interval: 3 inches (76 mm) from the sensor surface or 3% of the maximum range, whichever is greater
  - Maximum operating range: 10 feet (3.05 m)
  - Resolution: 0.01 inch (0.254 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 Sensor)

**Ultrasonic Level Sensor**
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.

**TRITON+ Specifications**

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

- **Communications**
  - Domestic coverage, Verizon® 4G LTE-M modem, FCC ID: R17ME910CN
  - Global coverage, commercial UMTS/HSPA+/GSM modem, FCC ID: R17ME911
  - Domestic coverage, Verizon CDMA/EEVD-D modem, FCC ID: R17DE910-1DB

- **Direct connection to PC using an ADS USB serial cable**

- **Monitor Interfaces**
  - Supports simultaneous interfaces with up to two combo sensors
  - Supports optional Analog and Digital I/O with ADS 300: two 4-20 mA inputs and outputs, two switch inputs and two relay outputs

- **Power**
  - Internal: Battery life with a cellular modem:
    - Over 15 months at a 1-minute sample rate*
    - Over 6 months at a 5-minute sample rate*
  - External: Optional external power available with ADS
    - External Power and Communications Unit (ExPAC) with an ADS-
      - or customer-supplied 9.36 Volts DC power supply

- **Temperature Compensation**: Additional compensation for variable temperature air columns supported
- **Submersion**: Detects submersion when fully covered with liquid.
- **Operating and Storage Temperature**
  - 4 degrees to 140 degrees F (-20 degrees to 60 degrees C)

**ADS Flow Monitoring Software**

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

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

**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.

**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.

**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.

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