TELEDYNE ISCO
Everywhereyoulook™

2100 Series Flow Modules

Isco 2100 Series Flow Modules

If your work involves any or all of the applications below, our 2100 Series Flow Modules will give you exceptional power and versatility - along with data handling and reporting features that are unmatched in the industry.

- Capacity Assessment
- Inflow and Infiltration Studies
- Sewer Overflow Studies
- Sanitary Sewer Evaluation
- Open channel flow measurement, with or without a primary device

For decades...

water and wastewater flow monitoring has required storing, handling, and maintaining cumbersome, single-purpose equipment. Gathering all but the most basic data meant having to coordinate instruments from different manufacturers, each with varying design and technology. Once collected, comprehensive analysis and reporting were often difficult, if not impossible — except through time-consuming manual editing that seldom provided concise results that could be reported using easy-to-understand graphics.

Teledyne Isco has developed...

the industry's first and only line of flow monitoring instruments that eliminates all the inherent drawbacks of previous designs, while delivering a new level of data collecting and reporting capability that is literally changing the face of flow monitoring around the globe.

Check out our Case Study Library to learn how others are using Teledyne Isco Flow Modules www.isco.com/flowcasestudies

Choosing the Right Technology

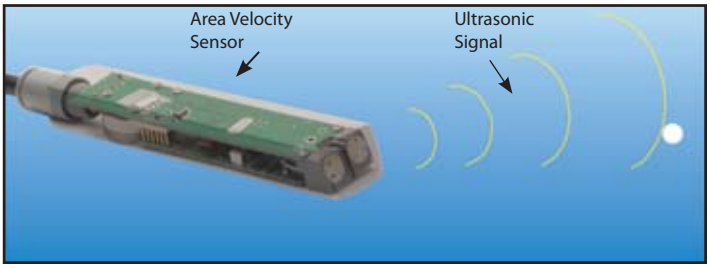
To provide you with the most appropriate flow monitoring method for your application, Teledyne Isco has developed instruments based on separate technologies. Whichever you choose, industry-leading quality, superior performance, and lasting durability are assured.

Continuous Wave Doppler Method

Teledyne Isco Area Velocity Flow sensors use continuous-wave Doppler technology. The sensor continuously transmits an ultrasonic signal, and measures the frequency shift of the returned signal reflected by air bubbles and particles in the flow.

An integrated differential pressure transducer measures liquid depth to determine flow area. Flow rate is then calculated by multiplying the area of the flow stream by its mean velocity.

The area velocity method is best suited where weirs and flumes are not practical, and where submerged, full-pipe, surcharged, and reverse flow conditions may occur.

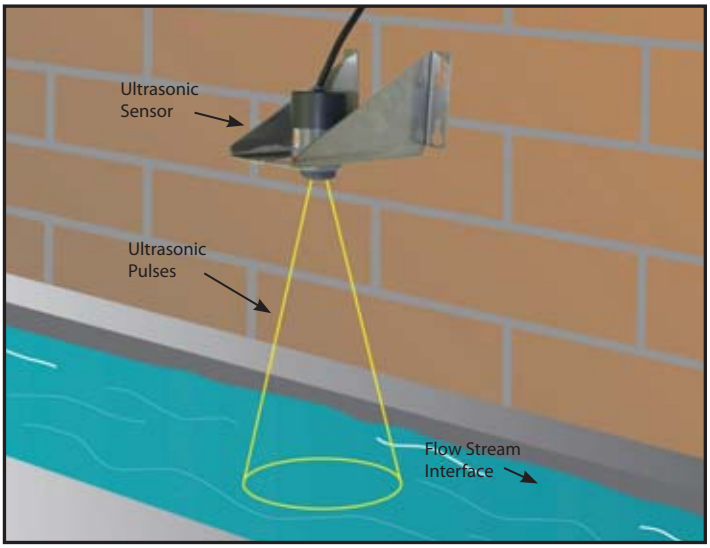


Ultrasonic Method

The sensor, mounted above the flow stream, transmits sound pulses that reflect off the liquid surface. The elapsed time between transmitted and returned signals determines liquid level.

Flow rate is then calculated using one of the meter's built-in flow conversions, or a user-defined level-to-flow relationship.

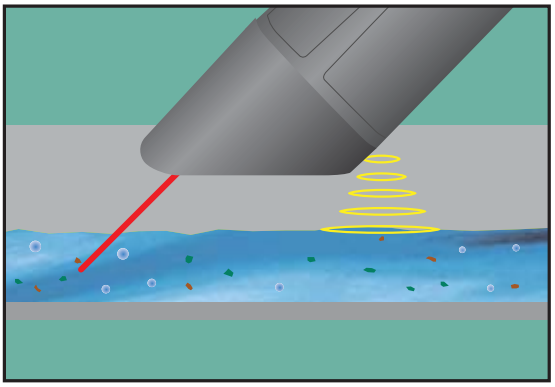
The ultrasonic method is appropriate for non-contact level based flow measurement in streams containing harsh chemicals, grease, or suspended solids.



Laser Doppler Method

Mounted above the stream, the sensor uses non-contact Laser Doppler technology to remotely measure velocity at single or multiple points below the surface, while simultaneously measuring with a non-contact ultrasonic level. The wetted area is calculated from the level and multiplies with the velocity to calculate the flow.

The Laser Doppler method suitable for a wide range of waste water applications including shallow water flows. The non-contact sensor avoids the need of unsafe and time consuming confined space entry for the preventive maintenance.



A Breakthrough in Flow Meter Technology

- NEMA 4X, 6P, (IP68) enclosure
- No wire harness
- Power-efficient digital electronics allow up to 15 months of battery life
- 38,400-baud communication

Superior Sensor Design

- Microprocessor-based digital Area Velocity, Ultrasonic and LaserFlow sensors
- Field interchangeable
- Built-in temperature compensation
- Digital communication between sensor and module eliminates RF interference
- Chemical-resistant outer coverings

Powerful Extras

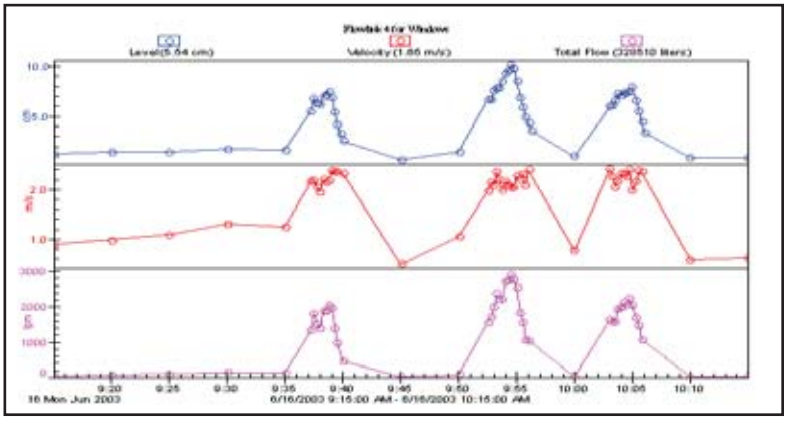
- Secured, roll-over data storage in non-volatile "flash memory"
- Variable-rate data storage can automatically switch when conditions vary
- Record and store input voltage information
- Built-in flow conversion for the specified primary device or natural stream boundary
- Diagnostic data helps identify application related issues

2100 Series Flow Modules use all-digital electronics for maximum performance and durability.

Choice of two ultrasonic sensors: for small pipes or channels up to 72" level range, and large pipes or channels up to 144" level range.

Teledyne Isco's low-profile area velocity sensor measures velocity down to one inch of water.

With mounting bracket in place, deploy, access, and remove without confined space entry.



Variable-rate data storage can automatically switch when conditions vary, providing maximum information while saving power and memory. In the example above, the 5-minute storage rate changes to 30 seconds when the level rises to 1.5 inches, capturing important information that would have been missed without this unique feature.

2100 Series Flow Modules

Compact, Modular Design

Stack up the flow monitoring power — with as many as four 2100 Series Flow Modules on a single battery module! Mix and match modules to build a compact, integrated flow system.

- Monitor multiple flow streams from just one stack
- Set up and retrieve data from all modules on the same stack, or networked together with a single connection
- Use multiple battery modules in one stack for extended service life
- Rugged sensors with digital electronics

2110 Ultrasonic Flow System

- Sensor with deflector eliminates deadband in small pipes, resists condensation
- Stationary mounts available for floor, suspension, wall, or in-pipe use
- Non-contact level sensing

2150 Area Velocity System

- Microprocessor-based digital probe ensures calibration stability (preventing level drift)
- No need for span calibration
- One-point calibration in the field
- No temperature drift
- Low-profile probe measures velocity in as little as one inch of flow depth
- Automatic correction for silt level
- Automatic gain control for varying flow conditions
- Sensor is unaffected by the "draw-down effect"

2160 LaserFlow™ System

- Non-contact velocity and level measurement
- Single or multipoint velocity measurement below the liquid's surface
- No dead band from measurement point
- The non-contact sensor avoids the need of unsafe and time consuming confined space entry for preventive maintenance

2150EX Area Velocity System

ATEX Group II, Category 1G & 2G, Area Velocity Module for use in Hazardous Zones 0, 1, and 2 CSA Class1, Div.1, Groups C&D Intrinsically Safe

All the outstanding features found in our 2150 Area Velocity Module, in an intrinsically safe package.

- 1G EEx ia II B T4 (-40° C to +60° C)
- Conductive ABS enclosures with stainless steel connections
- Meets U.S., Canadian, and European intrinsic safety standards
- Expandable system with intrinsically safe isolators
- Rechargeable battery options

2194EX Network Interface Module

The 2194EX Module uses a built-in barrier to allow interfacing between a 2150EX located within a hazardous environment, and an external power supply and/or other Isco 2100 Series modules in safe locations.

- Ideal for permanent installations with AC or DC power supply
- Provides interface to all 2100 Series communication modules
- Allows data retrieval without manhole entry

2151 and 2151P Area Velocity Systems

CSA Class 1, Div.1, Groups C&D Intrinsically Safe

- Meets U.S. and Canadian intrinsic safety standards
- Expandable system with intrinsically safe isolators
- Standard or wall-mount styles

The 2151P is designed for installation with permanent AC or DC power supply.

As easy as 1, 2, 3.

1

2

3

Easy to set up, Easy to use!

1. Two alkaline lantern batteries deliver up to 15 months of power.
2. High-capacity desiccant cartridge prevents moisture build-up.
3. Quick-disconnect input makes setup or sensor changes a snap.

Remote Communication Choices

2103 Land-line Phone Modem Module

Dial up flow data with your desktop phone.

Minimize the need for expensive on-site visits and confined space entry.

The 2103 Modem Module provides reliable, two-way dial-up communication between down-hole 2100 Series Flow Modules and your desktop computer, equipped with Teledyne Isco Flowlink software.

A dial-out feature enables the system to transmit a text message alarm to your digital cell phone or pager.

- System configuration and data retrieval
- Schedule automatic downloading using Teledyne Isco Flowlink
- Error correction protocols compensate for excessive line noise

2103Ci/2103Gi Cellular Phone Modem

Gather data with cell phone speed and convenience.

All the features of the 2103 Modem with the convenience of cell phone access.

The 2103Ci and 2103Gi Modem Modules enable remote two-way dial-up communication with 2100 Series instruments via cell phone modem and your desktop computer, equipped with Teledyne Isco Flowlink software (via internet).

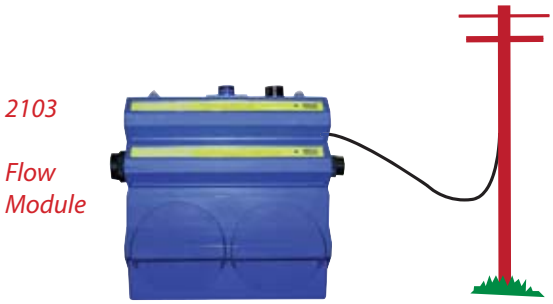
Send packaged data from the field to your server, via internet, at set intervals with cost-effective 1XRTT/GPRS service.

A dial-out feature enables the system to transmit a text message alarm to your digital cell phone or pager.

- CDMA or GSM cellular technology
- Push data to a server by 1XRTT or GPRS
- External, in-street (buried), manhole cover antenna options
- Automatic wake-up schedule for efficient power management

Two-way communication with down-hole flow modules from the comfort of your office.

Realize substantial savings in time and manpower with your choice of the following systems.



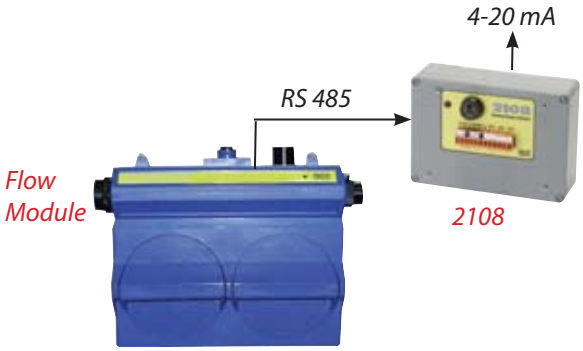
2108 Analog Output Module

4-20 mA signals for monitoring and control.

The 2108 Analog Output Module provides current outputs for use with any Teledyne Isco 2100 Series Area Velocity Module, and for Ultrasonic Flow Modules.

This allows easy interface with SCADA/DCS or other secondary instrument systems.

- As with any 2100 Series Module, the 2108 may be cable-connected up to 3,000 feet from other modules
- DIN rail mountable
- Three independent, isolated 4-20 mA outputs per module
- Outputs are freely programmable for any parameter measured by Isco flow modules
- Retrieve data from instruments using Flowlink software

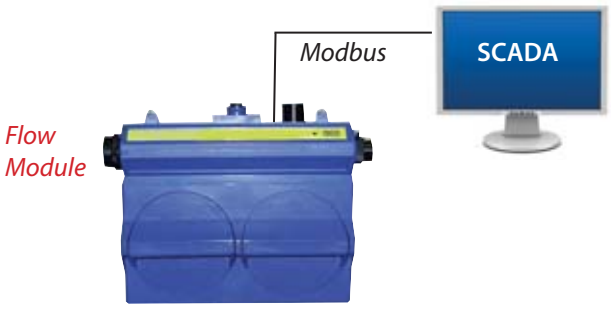


Modbus

Serial Output

The 2100 Series provides digital RS-232 modbus output. It can be used to interface with external communication modules, SCADA systems, or other devices.

- ASCII protocol
- Polling via direct-connect or modem
- Modified serial output for user-supplied data collection platform
- Process control

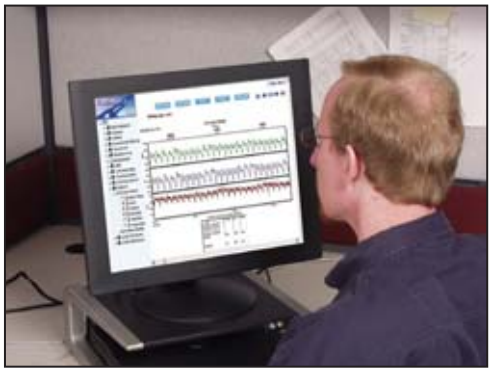


Internet

Real-time data from the field.

Access data online whenever you want — and from wherever you are.

- View data in line graph or scatter plot form
- Export data directly from the web page to your desktop
- Site or parameter selection, timescale, and zooming — each with just a single click



System Interfacing

2105 Interface Module

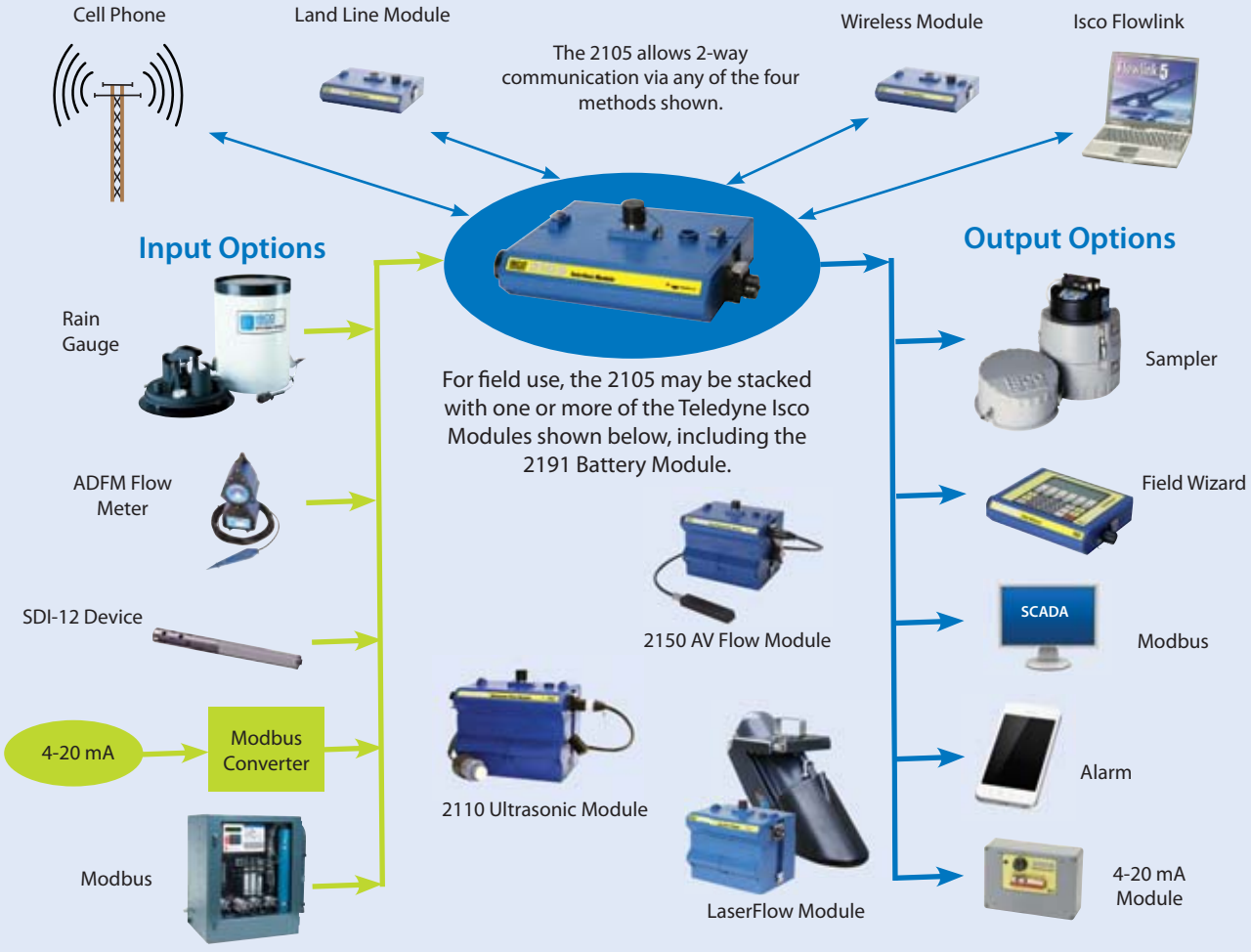
Advanced interface and communication solution.

Our 2105 Interface Module can integrate multiple field instruments and provide a common platform for logging and remote communication. Teledyne Isco's 2100 Series flow modules, Isco's pulse-Doppler flow meters, and Isco rain gauges are directly compatible. It can also be used with non-Isco instruments that have SDI-12 or Modbus output. Additional inputs (4-20 mA, etc.) are possible using readily available aftermarket converters.

The 2105 will monitor and record data taking intelligent action such as sampler enabling and multiple alarm generation based on user-defined conditions.

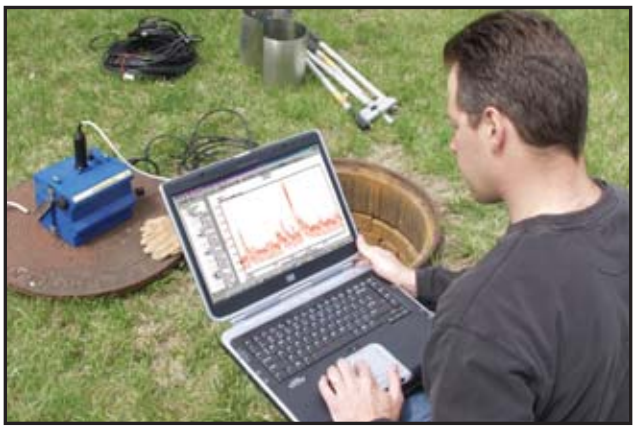
CDMA/1XRTT or GSM/GPRS communication is possible with our built-in cell phone options. Data can also be accessed online via a web page.

The 2105 system shown here interfaces a rain gauge, flow meters, automatic sampling, and a multiparameter sonde.



On-site Data Retrieval

Flowlink® Software



The industry's premier flow data management software.

- Download and process data on site
- Unmatched data management capability
- Variety of data downloading and handling options
- Advanced data editing and analysis capability
- Powerful reporting and presentation choices

Field Wizard®

A durable, weatherproof module for on-site data retrieval.

Don't risk damage to your fragile notebook PC.

This robust module provides on-site display of current readings, information about stored data, diagnostics, and more.

Interrogate all 2100 Series Flow Modules in the stack at one time, and store more than 14 days' data from up to 20 modules!

- Rugged NEMA 4X, 6P (IP 68) enclosure
- Large easy-to-read keypad
- Efficient data retrieval, system configuration, and level calibration
- Quickly transfer data to a PC running Isco Flowlink Software

2102 Communication Module

Eliminate constant manhole entry with safe, convenient drive-up data retrieval.

Connect with your Isco 2100 Series Flow Modules from the safety and convenience of your vehicle.

- Robust digital spread-spectrum radio signal
- Plug and Play setup - no interfacing needed
- Low power consumption
- Data retrieval, system configuration, and level calibration

2100 Series Accessories

Antennas

Manhole Antenna

In-street Antenna

Magnetic Base Antenna

Power Products

Rechargeable Batteries
(lead-acid)

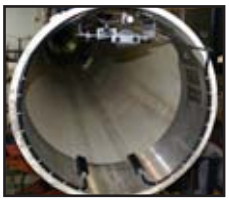
120 VAC/ 12VDC
Power Converter

2196EX Battery Module with
rechargeable lead-acid batteries
for use in hazardous areas

Sensor Mounts

Area Velocity

Auger Bracket
(for stream beds)

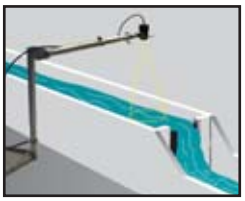


Scissor (shown)
or Spring Ring

Ultrasonic

Wall-mounted Bracket

In-pipe Assembly
(requires Scissor Ring assembly)



Floor Stand

LaserFlow Mounts

Permanent

Wall-Mounted Bracket Components

Temporary

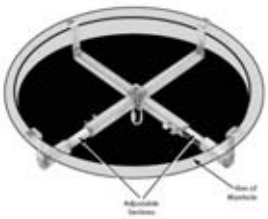
Hanging Bracket Components

Spreader Bar

Sensor Retrieval Tool

Related Products

Street Level Installation Tool



ProHanger
(instrument suspension device)

4501 Pump Station Monitor

Flowlink Data Management Software

Product Data Sheets

Individual Product Data Sheets containing further information and detailed specifications are available for 2100 Series Modules and most other Teledyne Isco products. Visit us online at www.isco.com.

FlowCalc

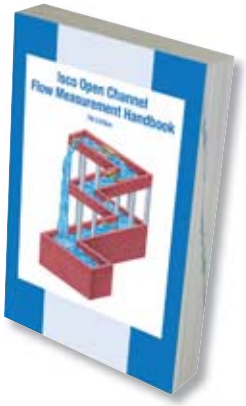
Teledyne Isco's FlowCalc mobile app calculates flow rates in open, non-full channels and pipes. Teledyne Isco is the first company in the world to provide these features in an application for iOS and Android mobile devices.

Open Channel Flow Measurement Handbook

An essential and extensive resource for professionals who deal with open channel flow.

More than 500 pages of comprehensive information, including standard discharge tables for a wide variety of primary devices.

For a free online version visit:
https://flowhandbook.teledyneisco.com



For more information on these and other Teledyne Isco Environmental Products,
visit our website at www.isco.com.

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