

# Signature® Flow Meter Expansion Box

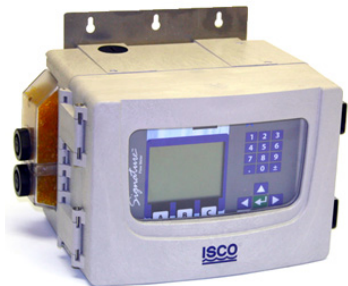
Custom Networking for Your Site Needs

Application Note



Expertise in Flow

## Signature® Flow Meter



### Standard Features:

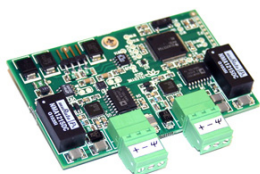
- Multi-parameter data logging
- Program & summary reports
- Data integrity verification
- Triggering, sampler enabling
- Compatible w/ Flowlink® software
- Multiple simultaneous flow technologies
- pH and temperature input
- SDI-12 input
- RS-485 input
- RS-485 output
- Analog outputs
- Remote communication via cell phone or Ethernet

## TIENet™ Expansion Box



- Rated IP67 (NEMA 4X, 6) w/ appropriate ID conduit connection, cord-grip fittings, or plugs
- Up to 3 TIENet terminal connections
- Option card mounting

## TIENet™ 308 4-20mA 2-Channel Analog Output Card



"The Future of Flow!™"

*Flow monitoring site requirements can often call for cable connections that are different from the available standard cable lengths of the devices.*

*The optional water-tight Signature Expansion Box enables a variety of configurations for adding length, as well as connecting multiple devices at once. The Expansion Box connects to a TIENet™ terminal strip in the Signature, and contains three additional strips inside, as well as a TIENet connection for an option card.*

## Adding Length Between Signature and Sensors

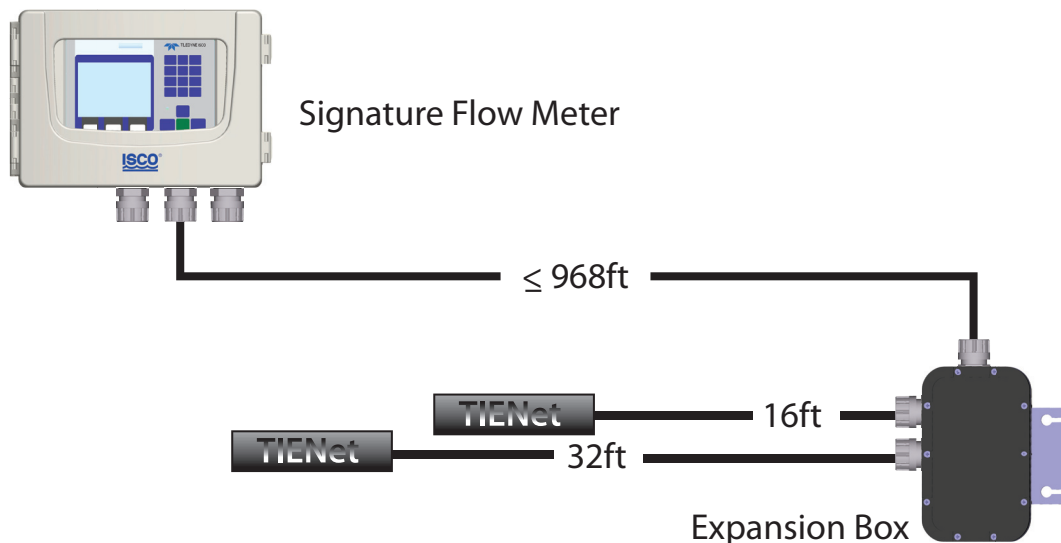
Distance can be increased by installing the Expansion Box closer to the field-mounted TIENet device(s) and adding a custom-length TIENet cable between the box and the Signature. The maximum recommended distance between the LaserFlow sensor and its power source is 45.7 meters (150 feet). The maximum recommended distance between all other system components is 305 meters (1,000 feet). Longer distances may result in signal degradation and drops in voltage.

The exception to this rule is the internally mounted TIENet 308 Analog Output Card, which can operate at up to 914 meters (3,000 feet) from the next device, for a maximum total of 1,219 meters (4,000 feet).

A Signature flow monitoring system can include up to nine TIENet™ devices connected to one Signature Flow Meter. When calculating the length of bulk cable required, factor in the length of the longest sensor cable.



TIENet Device	Standard Cable Length
301 pH Device	5m, 10m, 23m
310 Ultrasonic Sensor	16ft, 32ft, 75ft
306 Sampler Interface	5m, 10m, 23m
360 Laser Velocity Sensor	16ft, 32ft, 75ft
350 Area Velocity Sensor	5m, 10m, 23m 16ft, 32ft, 75ft LaserFlow surcharge kit: 350 w/ 2ft cable & TIENet plug



### Note

Cabling should be kept as short as possible in all installations.

## Area Velocity Applications

Signature systems using the expansion box with the TIENet 350 Area Velocity sensor must have a means to vent the sensor's reference air line.

### Distance of 100 Feet or Less:

If the total distance is 30.5 meters (100 feet) or less, the Signature's air system will normally supply adequate desiccated air through the TIENet cable air line to the interior of the expansion box. This means the 350 AV sensor is referenced at the Signature's installation location.

The un-vented TIENet expansion box can be used for these applications.

### Distances Greater than 100 Feet:

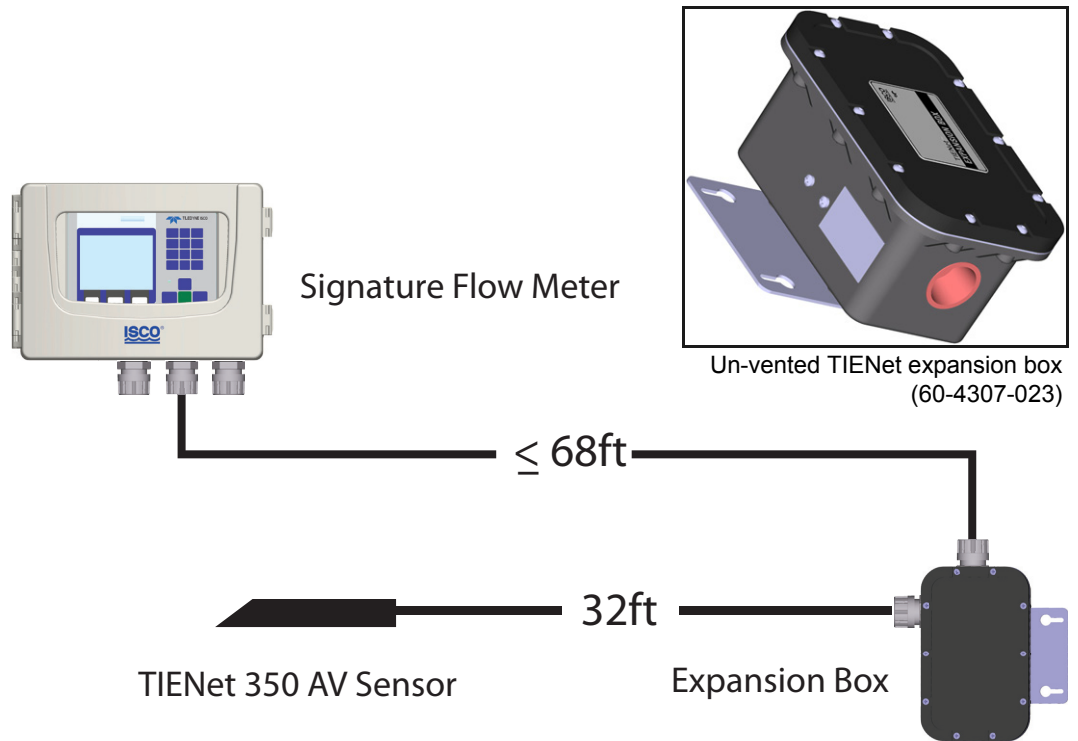
If the total distance is greater than 30.5 meters (100 feet), or a different reference location is required, the reference air line must be vented outside the expansion box.

The TIENet expansion box with reference air is designed for this purpose. The desiccator tube mounted on the side vents dried air to its interior.

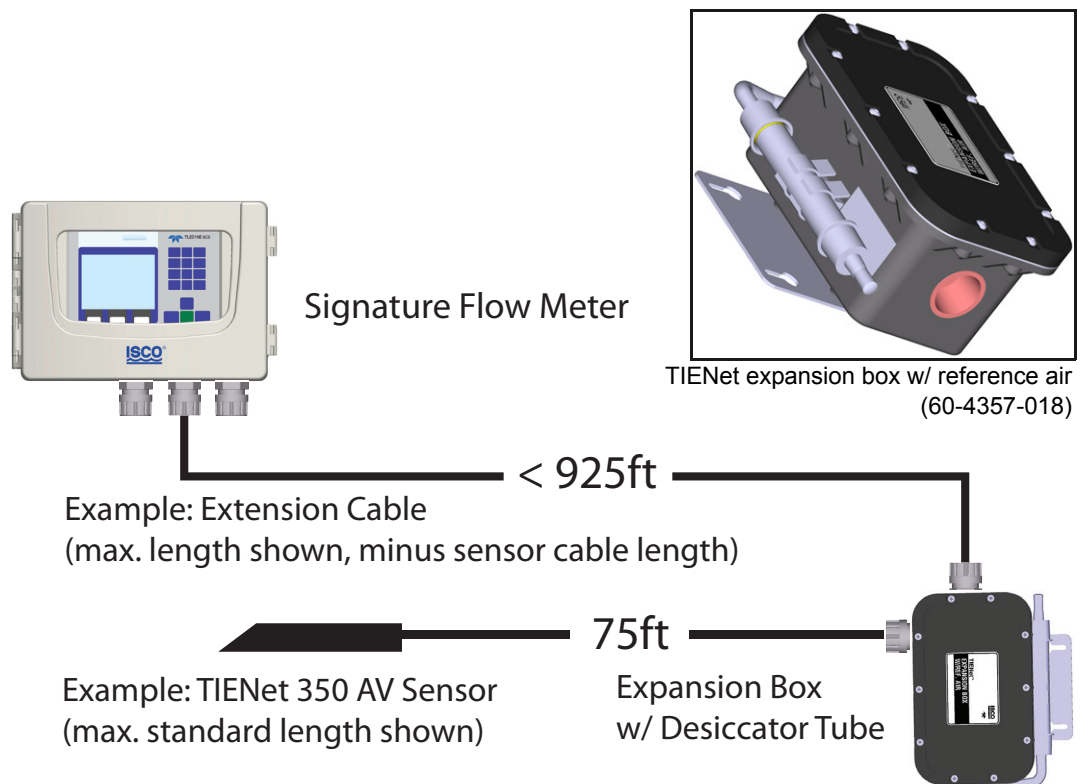
### Surcharge Option for LaserFlow™

When configuring extended distances for a LaserFlow system with the optional surcharge kit installed, factor in the length of both the LaserFlow sensor cable, and the 2-foot terminated 350 AV sensor cable.

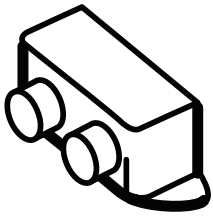
*Distance of 100ft or less: Normal venting inside the Signature Flow Meter.*



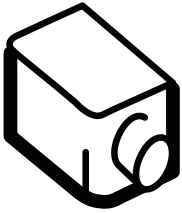
*Distance of 100 to 1,000 ft or different reference location: Vent outside the box.*



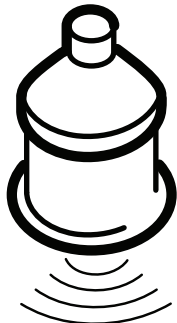
**External TIENet™ Devices from Teledyne Isco:**



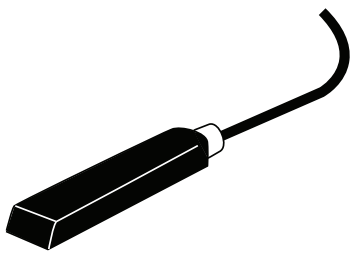
301 pH Device



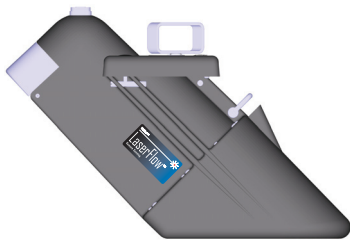
306 Sampler Interface



310 Ultrasonic Level Sensor



350 Area Velocity Sensor

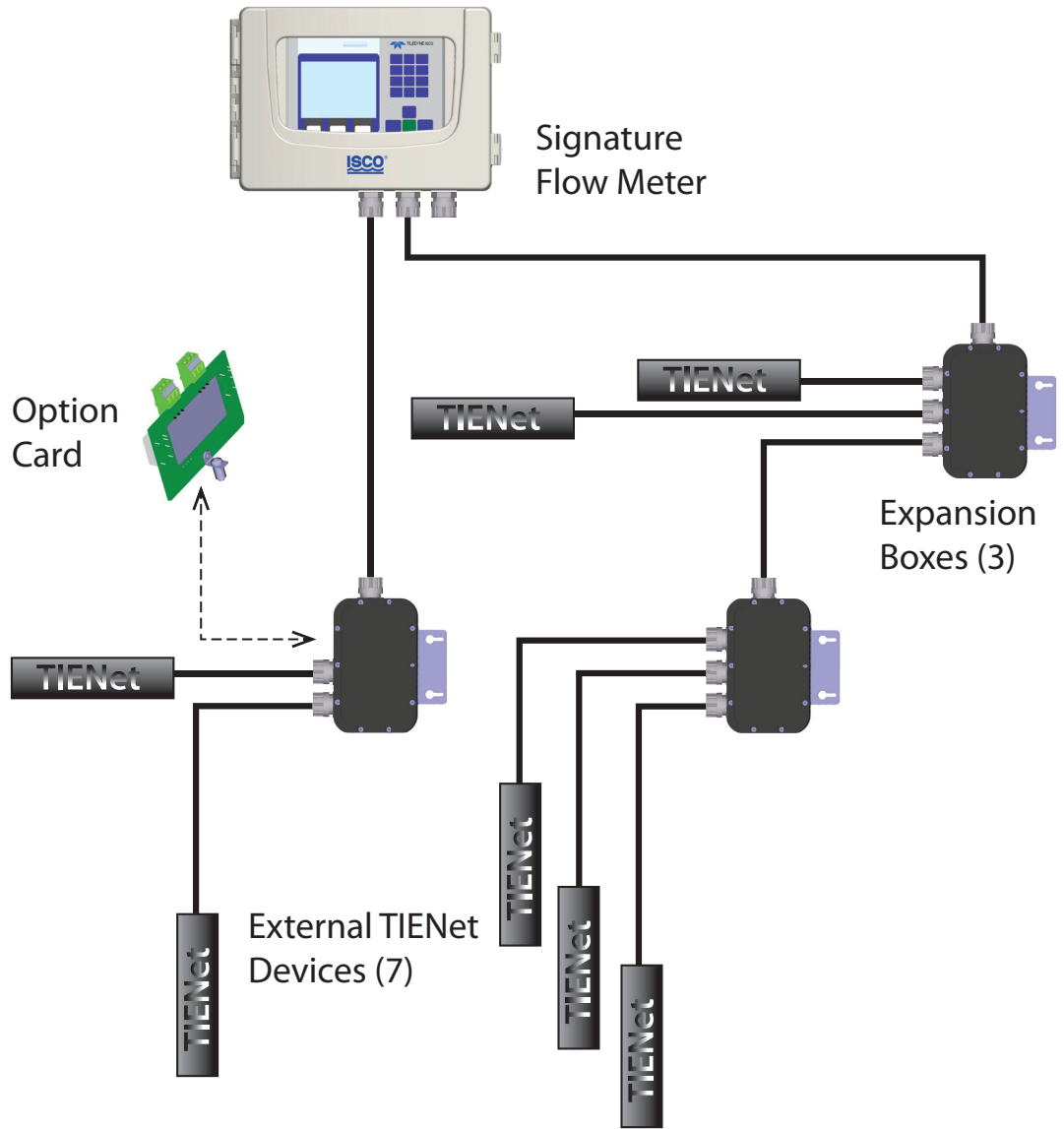


360 LaserFlow Velocity Sensor

**Configuring Multiple TIENet Devices**

As mentioned earlier, the Signature Flow Meter can have up to 9 connected TIENet devices running independently and simultaneously, including the internal 300 circuit board (all Signature flow meters), internal option cards, and 330 Bubbler Module.

Depending on the needs of the monitoring site, multiple expansion boxes can be used to connect multiple devices, creating any number of possible daisy-chain configurations.



**Teledyne Isco**

P.O. Box 82531, Lincoln, Nebraska, 68501 USA  
USA & Canada: (800) 228-4373 • Phone: (402) 464-0231 • Fax: (402) 465-3091  
Web site: [www.isco.com](http://www.isco.com) • E-mail: [iscoinfo@teledyne.com](mailto:iscoinfo@teledyne.com)

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