



Cambridge Viscosity®

The Technology Leader in Viscosity™

# VISCOpro 1600™

State-of-the-art viscosity monitoring



# VISCOpro 1600

The State-of-the-Art in Viscosity Monitoring

In process environments, ensuring proper viscosity is a key success factor. You need an accurate, reliable, and durable in-line viscometer capable of monitoring fluid resistance without requiring a lot of operator involvement or maintenance.

You need the Cambridge Viscosity VISCOpro1600 viscometer. Used alone or in a multi-channel configuration controlled by a touch-screen display, the VISCOpro1600 provides round-the-clock monitoring you can rely on.



The VISCOpro 1600 viscometer is a compact workhorse instrument for applications where minimal operator involvement is desired. It features built-in optional LCD display with readout in centipoise, cSt, or SSU for monitoring of critical fluid conditions. It also can be connected to a PLC controller for seamless integration into a proprietary data management system. The unit's sensor and electronics are encased in an explosion-proof housing for durability and reliability.

Thanks to Cambridge Viscosity's patented technology, only a very small amount of fluid (1 ml) is required to assure an accurate reading. Because of the small sample size and its automatic operation, the VISCOpro 1600 helps to maximize the efficiency of your process line and minimize waste. In addition, it works with any Cambridge Viscosity in-tank or in-line 300 series or 500 series sensor, giving you the flexibility to choose from a range of high-quality, maintenance-free options.

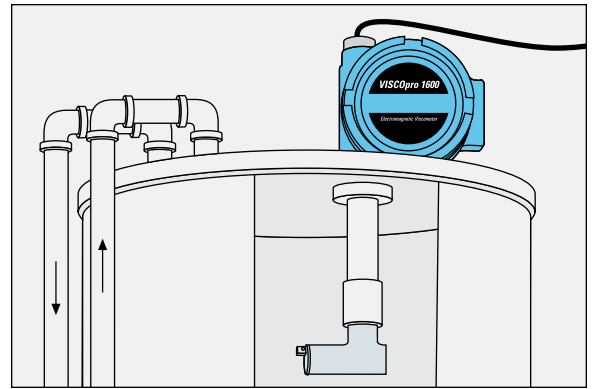
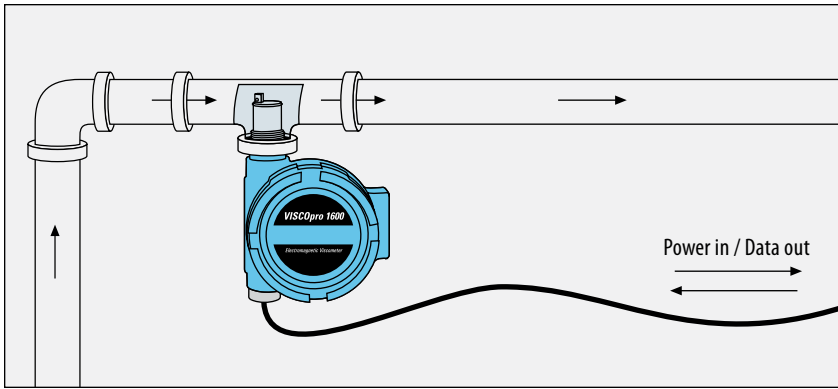


Diagram 1 (above) depicts an in-line installation of a VISOpro 1600 with an SPC 311 sensor. Its flexible design allows it to be installed in any position. Demonstrating the viscometer's flexibility, diagram 2 (above right) depicts an in-tank installation of a VISOpro 1600 with an SPC 321 sensor.



#### Optional Display

The optional explosion-proof display (right) clearly shows viscosity and temperature readings for each line or tank.

#### Key features and benefits

Innovatively designed, the VISOpro 1600 has a lot to offer. Among its key features and benefits are:

#### Automatic self-cleaning

With only one moving part, a piston, the VISOpro 1600 is almost completely maintenance-free. Samples are automatically kept fresh and clean by the constant piston motion that scrubs the sensor chamber. This assures maximum uptime and high return on investment.

#### Standard outputs for data capture

The VISOpro 1600 includes two 4-20mA outputs for remote recording to data acquisition and control systems. This makes it easy to interface the unit with Cambridge Viscosity or third-party PLC systems.

#### Factory settings

No programming is needed – Cambridge Viscosity did it all for you so you can just install it and begin operation quickly. The VISOpro 1600 can be set to measure viscosity in centipoises, cSt, or SSU.

#### Built-in temperature detector

Changes in temperature within the process line can affect the viscosity of the fluid. The VISOpro 1600 has a built-in temperature detector that senses the actual running temperature of the fluid.

### VISOpro1600 Features

- Continuous monitoring of viscosity, and temperature
- Two 4-20mA outputs for remote recording
- Two analog outputs and RS485 communication
- Compact, explosion-proof system
- Automatic self-cleaning
- Readout in centipoises, cSt, or SSU
- Optional LCD display



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## Compatible Viscosity Sensors



### Compatible In-Line Sensors

**301**

Ideal where threaded connections are desired, the 301 sensor mates directly to a tee or pipe with standard 1.25" NPT ends. Recommended for line sizes < 2".



**311**

Appropriate for most applications, the 311 sensor has a quick-disconnect flange for fast, tool-less removal. Recommended for line sizes < 2".



**372**

The 372 sensor installs directly into small-diameter process lines using 1/4" NPT fittings. Available with removable jacket.



**392**

Designed with a rugged, four-bolt stainless steel flange, the 392 sensor fits easily to any pipe line size over 1.5".



**571**

Small yet reliable, the 571 sensor is used for compressor, used oil analysis, on-engine, and hydraulic fluid applications. Designed to fit into 13/16 UNEF threaded ports.



### Compatible In-Tank Sensors

**321**

The 321 sensor can be fitted to any pipe configuration without welding. The sensor's head is attached to its stem at a 90-degree angle.



**322**

Typically used in permanent in-tank mounted applications, the 322 sensor's head is attached to its stem at a 45-degree angle.

## VISCOpro System Specification Comparison

|  | <b>ViscoPro1600</b>          | ViscoPro2000                             | ViscoPro8000                  |
|--|------------------------------|--|-------------------------------|
| Measurement Principle:                   | <b>Electromagnetic</b>       | Electromagnetic                          | Electromagnetic               |
| Repeatability:                           | <b>± .8% Reading</b>         | ± .8% Reading                            | ± .8% Reading                 |
| Viscosity Range:                         | <b>0.2-20,000cP</b>          | 0.2-20,000cP                             | 0.2-20,000cP                  |
| Max Pressure Ratings:                    | <b>1,000 psi</b>             | 1,000 psi                                | 1,000 psi                     |
| Self Clean/Recovery:                     | <b>Automatic</b>             | Automatic                                | Automatic                     |
| Continuous Analysis:                     | <b>Yes</b>                   | Yes w/logging                            | Yes w/graphing                |
| Viscosity Units:                         | <b>cP; cSt; cup sec; SSU</b> | cP; cSt; cup sec; SSU<br>User Selectable | User Selectable               |
| Temp: °C or °F:                          | <b>°C or °F Factory Set</b>  | °C or °F Selectable                      | User Selectable               |
| Sensor Temperature Range:                | <b>-40°C to 190°C</b>        | -40°C to 190°C                           | -40°C to 190°C                |
| Analog Outputs:                          | <b>4-20mA (2)</b>            | 4-20mA (4)                               | 4-20mA (1)<br>User Selectable |
| Digital Communications:                  | <b>RS485</b>                 | RS485/RS232                              | RS232, TCP/IP                 |
| Input power:                             | <b>12VDC</b>                 | 100-240 VAC/12-36 VDC                    | 100-240 VAC                   |
| Remote Trouble:                          | <b>Yes</b>                   | Yes                                      | Yes                           |
| Temperature Compensated Viscosity: (TCV) | <b>No</b>                    | Available                                | Available                     |
| Profibus, Modbus Compatible:             | <b>Yes, Optional</b>         | Yes, Optional                            | Yes, Optional                 |
| Temp/Viscosity Control:                  | <b>No</b>                    | PI                                       | PI                            |
| Alarm Output:                            | <b>Yes</b>                   | Yes                                      | Yes                           |
| Screen:                                  | <b>LCD Optional</b>          | Menu Driven LCD<br>PC Optional           | Touchscreen-<br>Multichannel  |
| FM, CE, ATEX Class 1, Div 1, Group C&D   | <b>Standard</b>              | Optional                                 | Optional                      |

## Technical specifications

|                             |  |
|-----------------------------|--|
| Power input:                | 12 VDC, 12 W   |
| Outputs:                    | (2) 4-20mA; 1 RS485  |
| Accuracy:                   | +/- 1.0% of full scale (correlates to ASTM D445)   |
| Repeatability:              | 0.8%   |
| Ranges:                     | 0.2-20,000cP (0.2-2cP, 0.25-5cP, 0.5-10cP, 1-20cP, 2.5-50cP, 5-100cP, 10-200cP, 25-500cP, 50-1,000cP, 100-2,000cP, 250-5,000cP, 500-10,000cP, 1,000-20,000cP)  |
| Wetted Components:          | Standard 316L/430 Stainless Steel, Optional Hastalloy and Sanitary Components  |
| Temperature Range:          | -40°C to 190°C (375°F)   |
| Maximum Operating Pressure: | 1000 psi (70.3 bar)  |
| Temperature Sensor Type:    | 4 wire Platinum RTD  |
| Certifications:             | FM, 3A, CE, ATEX – EExdIIC, [EEx d IIC T4, -20C<Ta<95C (For SPL Models), EEx d IIC T2, -20C<Ta<190C (For SPL Models)]<br>Factory Mutual - Class 1 Div.1, Group C, D:T3 NEMA4, IP-66<br>(Sensor model 571 - only CE certified. Ranges differ, call factory) |



## The Technology Leader in Viscosity<sup>SM</sup>

With more than 8,000 installations worldwide, Cambridge Viscosity is the proven leader in viscosity management technology. Founded in 1984 as Cambridge Applied Systems, the company offers a full range of real time in-line, in-vessel, pilot plant and lab viscometers. Users of its products include Fortune 500 companies and their equivalents throughout North America, Asia, Europe and South America.



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