

## PROCESS INSERTION VISCOMETER



### TYPICAL APPLICATION FIELDS

Chemical: polymers, resins, gels

Printing and coating: inks, paints, lacquers, varnishes

Refineries: diesel, gasoline, heavy fuel, bitumen

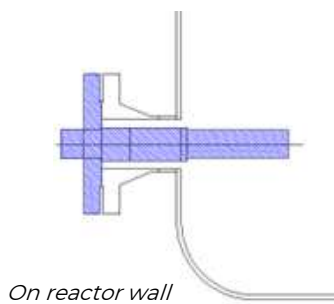
### EASY INSTALLATION ON STANDARD FLANGE SENSOR

Based on **Sofraser's vibrating type measuring principle**, the INVI is the compact sensor to be installed on small size nozzles and expands the mounting possibilities of Sofraser viscometers. The INVI can be used on many viscous fluids, process applications and quality control conditions and deliver a reliable viscosity information for an optimal process monitoring or control.

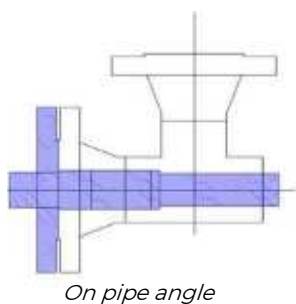
- **Nozzle installation:** The INVI sensor is especially designed to fit with nozzles already in place on the process line. No adaptation is required as it can be customized to be installed on any kind of flanges from 1"1/2 to 2"1/2 or larger, on reactors or pipes.
- **Dynamic viscosity and temperature:** Both viscosity and temperature are measured instantaneously and continuously at the heart of the process thanks to the **customizable insertion length**.
- **Improved process operations:** **Reliable, repeatable** and continuous measurements combined with superior quality result in permanent **production efficiency** and increased **profitability**.
- **Simple and long-lasting:** The INVI viscometer guarantees a rapid return on investment because it is **easy to install** and is **easy to use**. With non-wearing parts, the INVI requires almost **no maintenance**.
- **The All-in-One Solution:** Available with remote electronics, the INVI sensor can be matched with all models of Sofraser electronics and HMI processors. In its embedded electronics versions, with or without display, the INVI provides an All in-One solution. The embedded electronics drives the sensor and computes the raw data in order to provide viscosity and temperature information through its two current outputs or its RS485 port.



Whatever your industry, we understand and develop solutions for many applications. For a personalized approach, contact us at [instruments@sofraser.com](mailto:instruments@sofraser.com)



On reactor wall



On pipe angle

## INVI INSERTION VISCOMETER

### STANDARD FEATURES AND SPECIFICATIONS

Viscosity measuring range	<ul style="list-style-type: none"> <li>Any range from 0.1 – 10mPa.s to 100 – 1 0 000mPa.s</li> </ul>
Temperature measuring range	<ul style="list-style-type: none"> <li>Function of the operating range, up to 200°C/392°F</li> </ul>
Viscosity precision*	<ul style="list-style-type: none"> <li>±1% of full scale range</li> </ul>
Viscosity accuracy**	<ul style="list-style-type: none"> <li>+/-2% of full scale range</li> </ul>
Operating process temperatures	<ul style="list-style-type: none"> <li>Up to 0 to 200°C / 32 to 392°F for remote electronics</li> <li>Up to 0 to 100°C / 32 to 212°F for embedded electronics</li> <li>Up to 0 to 80°C / 32 to 167°F for embedded electronics with display</li> <li>Higher and lower temperatures on request</li> </ul>
Flange type/size Working pressure	<ul style="list-style-type: none"> <li>ANSI 2" - 150 lbs as standard / up to 20 bar / 290 psi</li> <li>Adaptation on any flange from 1"1/2 to 2"1/2 up to PN50/300 lbs</li> </ul>
Materials	<ul style="list-style-type: none"> <li>Stainless steel 316L (Hastelloy, 316Ti, ..., on request)</li> <li>2 FEP coated Viton O-ring seals</li> <li>Aluminium pressure die casting with chromatic and chemical paint for embedded electronics enclosure</li> </ul>
Insertion length ***	<ul style="list-style-type: none"> <li>205 mm as standard</li> <li>Other length, up to 1m / 39", on request</li> </ul>
Total length & weight ***	<ul style="list-style-type: none"> <li>280 mm and 3.8 kg (with remote electronics)</li> <li>395 mm and 5.2 kg (with embedded electronics)</li> </ul>
Protection Connection	<ul style="list-style-type: none"> <li>Water-tightness: IP66 for remote and embedded electronics</li> </ul>
Area classification	<ul style="list-style-type: none"> <li>Safe area for embedded electronics version</li> <li>Option for remote electronics version: ATEX – IECEx intrinsically safe for Zone 0 ATEX II 1 G Ex ia IIC Tl..T6 Ga</li> </ul>
Regulatory	<ul style="list-style-type: none"> <li>CE marked (European conformity)</li> </ul>
Options ***	<ul style="list-style-type: none"> <li>PTFE coating on wetted parts</li> </ul>

### For embedded electronics

Power supply	<ul style="list-style-type: none"> <li>24VDC stabilized and filtered</li> </ul>
Outputs	<ul style="list-style-type: none"> <li>2 current outputs for viscosity and temperature – 4/20mA - 12 bits – Zmax = 400 Ω</li> <li>RS485 Modbus RTU – maximum cable length 1 km</li> </ul>
Accessories	<ul style="list-style-type: none"> <li>SIS Sofraser Interface Sofraser to be used during starting up, settings, adjustments and periodical checking</li> </ul>

- \* From 10% to 90% of the full scale range. Depends on electronic resolution
- \*\* From 10% to 90% of the full scale range. Depends on calibration options
- \*\*\* Data and information applicable to the standard version of INVI sensor

In 1981, Sofraser invented & patented the world's first vibrating viscometer at resonance frequency also called tuning-type.

The vibration amplitude varies according to the viscosity of the product in which the rod is immersed.

The active part of the sensor, a vibrating rod held in oscillation at resonance frequency, is driven by constant electrical power.

With its exclusive Flow Damper technology that acts like an embedded Flow cell, the measurement stays stable in any conditions.

Sofraser remains unsurpassed regarding process reliability and precision.

