



## PRINCIPLE OF OPERATION

Rivertrace Engineering have developed a Viscosity System for Heavy Fuel Oil & Marine Distillate applications. The technique used in the SMART Sense sets it apart from other viscometer's as it incorporates an improved method of using the vibrating rod at resonance frequency. The technique is Electro Magnetic which is far more robust than other piezo electric methods.

Through this new principle it is now possible to measure accurately viscosity and temperature without frequent calibration or maintenance. The SMART Sense Viscosity System is designed for full flow, inline installation in Heavy Fuel Oil and Marine Distillate applications allowing for improved accuracy at lower viscosity when switching between HFO and Marine Distillate.

The SMART Sense Viscosity System comprises of an oscillating Viscosity Probe which is connected to the Viscosity Controller Module via a 5m cable.

The SMART Sense Viscosity Probe Housing has standard flanges for easy installation and retro-fitting against other makers probes.

The SMART Sense Viscosity Controller electronics are housed in a robust die-cast enclosure that can withstand the harshest environments in marine applications.

The SMART Sense PID Module consists of two separate controllers for displaying Viscosity and Temperature allowing for redundancy in the case of failure. These are attached to a aluminium anodised plate for fitting into the customer console.



**SMART Sense Viscosity Probe**



**SMART Sense Viscosity Controller Module**



**SMART Sense Probe & Housing Assembly (Straight)**



**SMART Sense PID Module**



## SPECIFICATION

<b>SMART Sense PROBE</b>	
Material	316L Stainless Steel
Viscosity Range cSt (Centistokes)	1 to 25, 1 to 50, Other Ranges on Request
Viscosity Accuracy	+/- 1.25%
Temperature Accuracy	+/- 0.5%
Fluid Temperature	200°C and 300°C
Protection Class	IP65
Weight	3.75Kg
<b>SMART Sense PROBE HOUSING</b>	
Housing	Cast Steel or 316L Stainless Steel
Flange Connections	DN40,50, DIN, JIS
Sensor Housing Orientation	Straight or Angled
Pressure Rating	PN40
Weight	6.5Kg DN40 & 8.0Kg DN50 (straight) 13Kg DN40 & 19.5KgDN 50 (angled)
<b>SMART Sense VISCOSITY CONTROLLER</b>	
Electronic Safety	IEC 101-1 (CE)
Enclosure Material	Cast Aluminium
Protection Class	IP66
Mounting	Wall Mounting
Output Signal for Viscosity	4-20mA (24v Rail) (other Signals available)
Output Signal for Temperature	4-20mA (24v Rail) ) (other Signals available)
Response Time	1 - 60 Seconds
Resolution	0.1 cSt
Repeatability	0.1 cSt
Power Consumption	8Va
Power supply Range	90 – 230v AC 50/60Hz (±20%)
Ambient Temperature	-20°C to +70°C
Humidity Range	0 - 95%RH
Dimensions (WxHxD)	85mm x 184mm x 145mm
Weight	1.5Kg
<b>SMART Sense PID Module</b>	
Front Plate Material	Aluminium Alloy - Anodised
Mounting	Console Mounting
Power Consumption (Each Module) @240vac	10Va
Power supply Range	100 – 240VAC 50/60Hz (±20%)
Ambient Temperature	0°C to +50°C
Ambient Humidity Range	45 - 85% RH
Dimensions (HxWxD)	100mm x 200mm x 100mm
Weight	1Kg

