SRV

WIDE VISCOSITY RANGE INLINE PROCESS VISCOMETER

rheonics

inline process
density and viscosity
monitoring

- Repeatable measurements in both newtonian and non-newtonian
- Hermetically sealed, available in 316L stainless steel and Hastelloy C22 wetted parts
- Built in fluid temperature measurement

Specifications

Fluid Measurements

Viscosity Range	3 to 10,000 cP
	0.5 to 50,000 cP (available)
Viscosity Accuracy	5% of reading (standard)
	1% & higher accuracy available
Reproducibility	Better than 0.1% of reading
Temperature	Pt1000 (DIN EN 60751 class B)

Calibrated to NIST traceable viscosity standards.

Operational Environment

Process Fluid Temperature	-40 up to 285 °C
	-40 up to 545 °F
Pressure Range	up to 10,000 psi
	up to 690 bar

Mechanical

Material (Wetted parts)	Stainless steel 316L
	Hastelloy C22
Variant	Flush, Short, Long insertion
Process Connection	Threaded, Flange, Sanitary
	EHEDG certified hygienic available
Ingress Protection	IP69K
	Limited by the M12 connector IP rating
Electrical Connection	M12 (8-pin, A-coded)

Electronics & Communication

Analog output	4-20 mA (3 channel)
	{Viscosity, Density, Temp.}
Digital output	Modbus RTU (RS-485)
	Ethernet (Ethernet/IP,
	Modbus TCP, Profinet)
	USB
	HART
Wireless output	
	Bluetooth LE 4.0

Display	Multi-line LCD
	(SME-TRD)
Operational temp.	-20 to 65 °C
Power supply	24 V DC
SME-TR(D)	IP65/66
SME-DRM	IP40/50
Software	Data acquisition and service control panel
	iOS and Android app

Protected by US and International patents granted and pending

rheonics · Switzerland · USA · www.rheonics.com · info@rheonics.com +41 52 511 32 00 +1 713 364 5427

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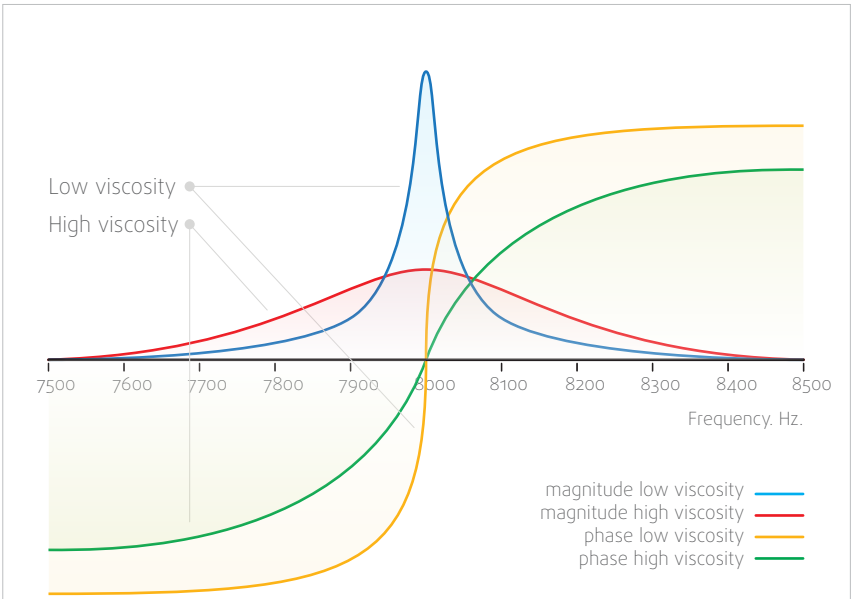
Operating principle

The rheonics SRV measures viscosity by means of a balanced torsional resonator, one end of which is immersed in the fluid under test. The more viscous the fluid, the higher the mechanical damping of the resonator. By measuring the damping, the product of viscosity x density may be calculated by rheonics' proprietary algorithms. The resonator is both excited and sensed by means of an electromagnetic transducer mounted in the sensor's body. Thanks to rheonics' patented symmetric resonator design, the transducer is isolated from the fluid in a hermetically sealed capsule, while maintaining excellent mechanical isolation from the sensor's mounting. Damping is measured by the rheonics patented sensing and evaluation electronics. Based on rheonics' proven gated phase-locked loop technology, the electronics unit offers stable and repeatable, high-accuracy readings over the full range of specified temperatures and fluid properties.



Response of the same resonator immersed in two fluids of different viscosities

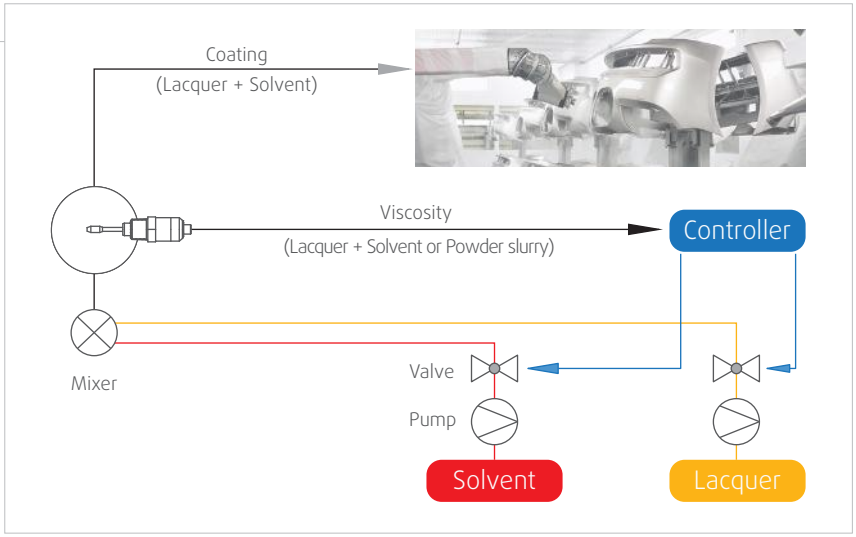
Application

Painting and coating

- Optimize solvents and lacquer use in the process
- Control the coating process regardless of temperature
- Eliminates the need for costly destructive testing
- Ensure uniform film thickness and adhesion
- Eliminate manual sampling and laboratory time
- Reduce wastage & ensure quality of end product
- Small form factor for direct installation in printing presses and painting nozzles

Polymers and Slurries

- Monitor the viscosity change through the complete polymerization process
- End-point detection and real-time monitoring
- Avoid blockage through instantaneous and early detection of viscosity build-up
- Check incoming raw material quality and ensure outgoing product quality
- Ensure process control and stability
- Scale from pilot plants to production rapidly without further application engineering



Other applications:

- Pump efficiency optimization and pipeline leak monitoring
- HFO/MDO viscosity monitoring in fuel conditioning units on-board ships
- SAGD heavy oil viscosity control for transport through heating and slurry formation
- Viscosity monitoring and control in multiple food manufacturing processes for making dough, chocolate, cream, cheese, jams, mayonnaise , etc
- Ink viscosity monitoring and control for printing
- Lubricants viscosity monitoring and control

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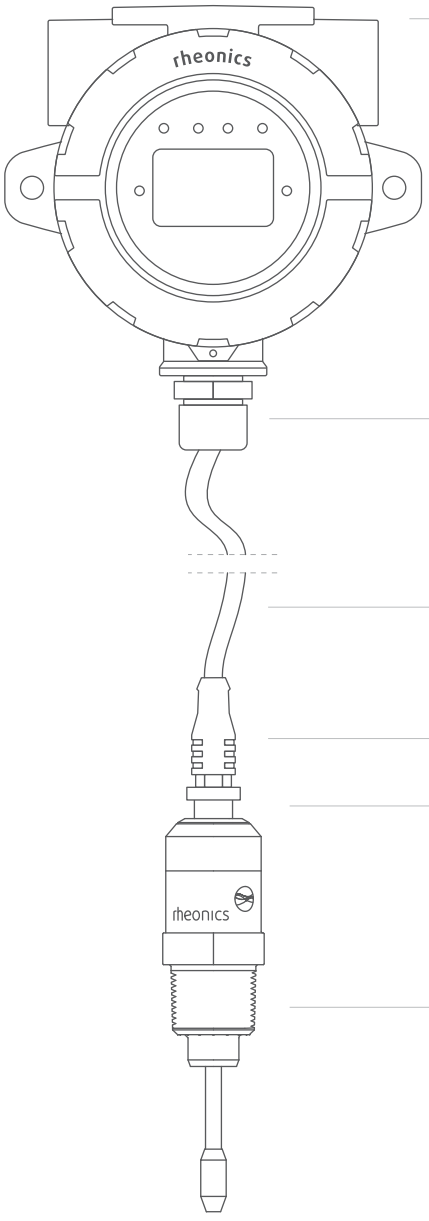
Mechanical & Electrical



Cable Gland
- Standard
- Ex Rated

Sensor Cable
- Up to 1,500m (4,921 ft.)

M12 connector
- IP67 | IP68 | IP69K

Electronics (select between)

SME-TRD

SME-TR

- Transmitter housing (IP66)
- Onsite and remote installation of electronics head
- Available with and without display for field use

SME-DRM

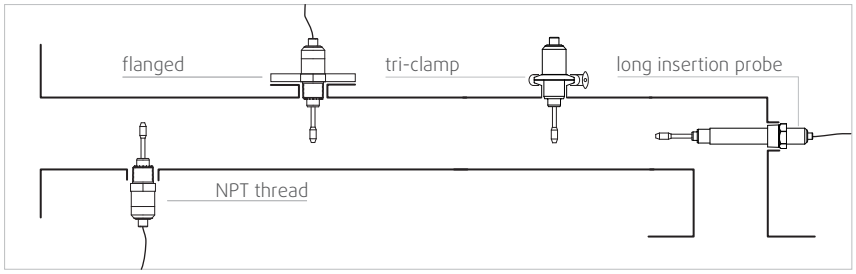
- DIN rail mount
- Extra-small form factor for easy installation
- Ethernet connection

Process fluid wetted materials available
- 316L stainless steel (standard)
- Available with custom coatings, Hastelloy C22

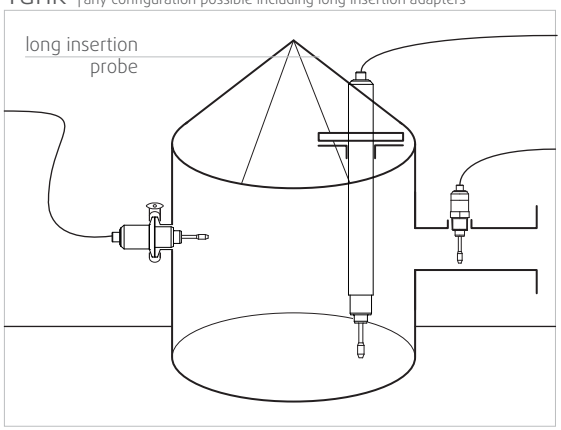
Process connection
- Flush, Short and Long insertion probes
- Threaded, Flange, Tri-clamp, Varinline, Ingold, API, 6A
- EHEDG certified hygienic version

Mounting

Pipe †any configuration possible



Tank †any configuration possible including long insertion adapters



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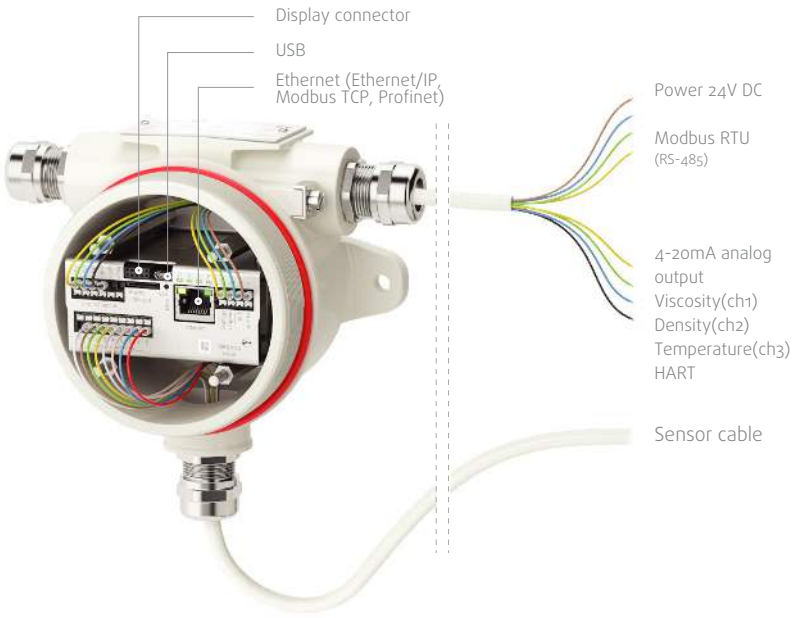
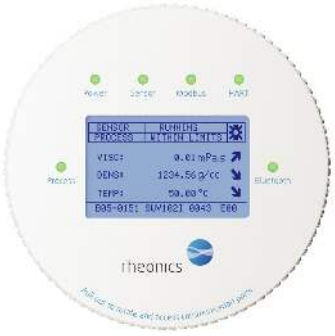
Electronics installation



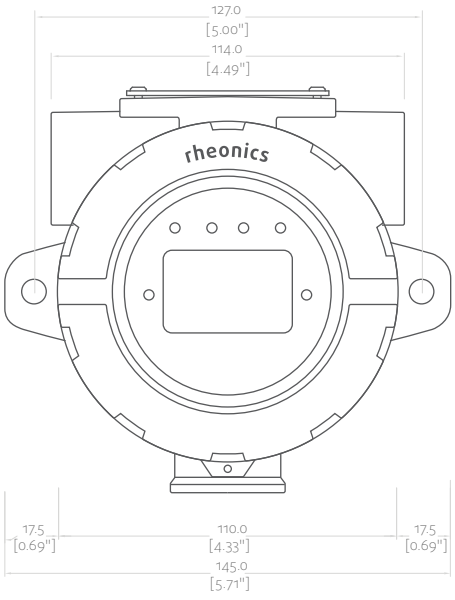


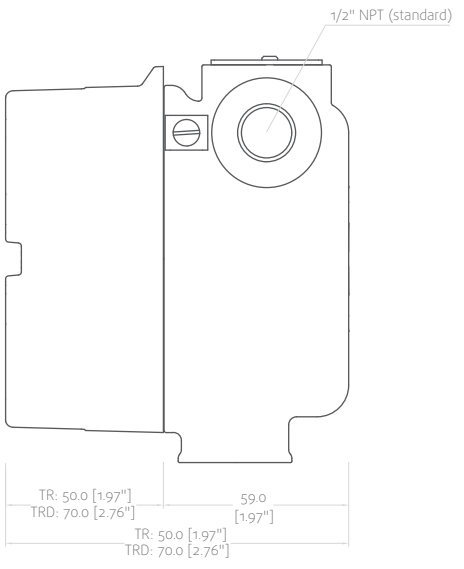
Industrial high-contrast LCD

Bluetooth LE 4.0

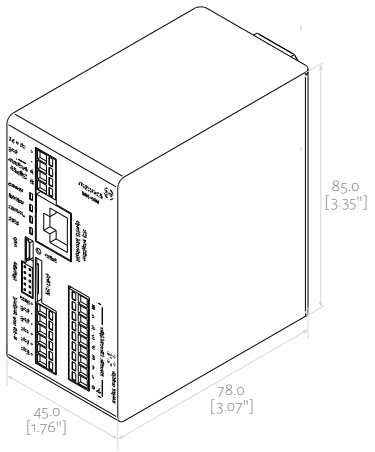
Status LED

Dimensions





SME-TR / SME-TRD



SME-DRM

The sizes provided are approximate and may not be exact.

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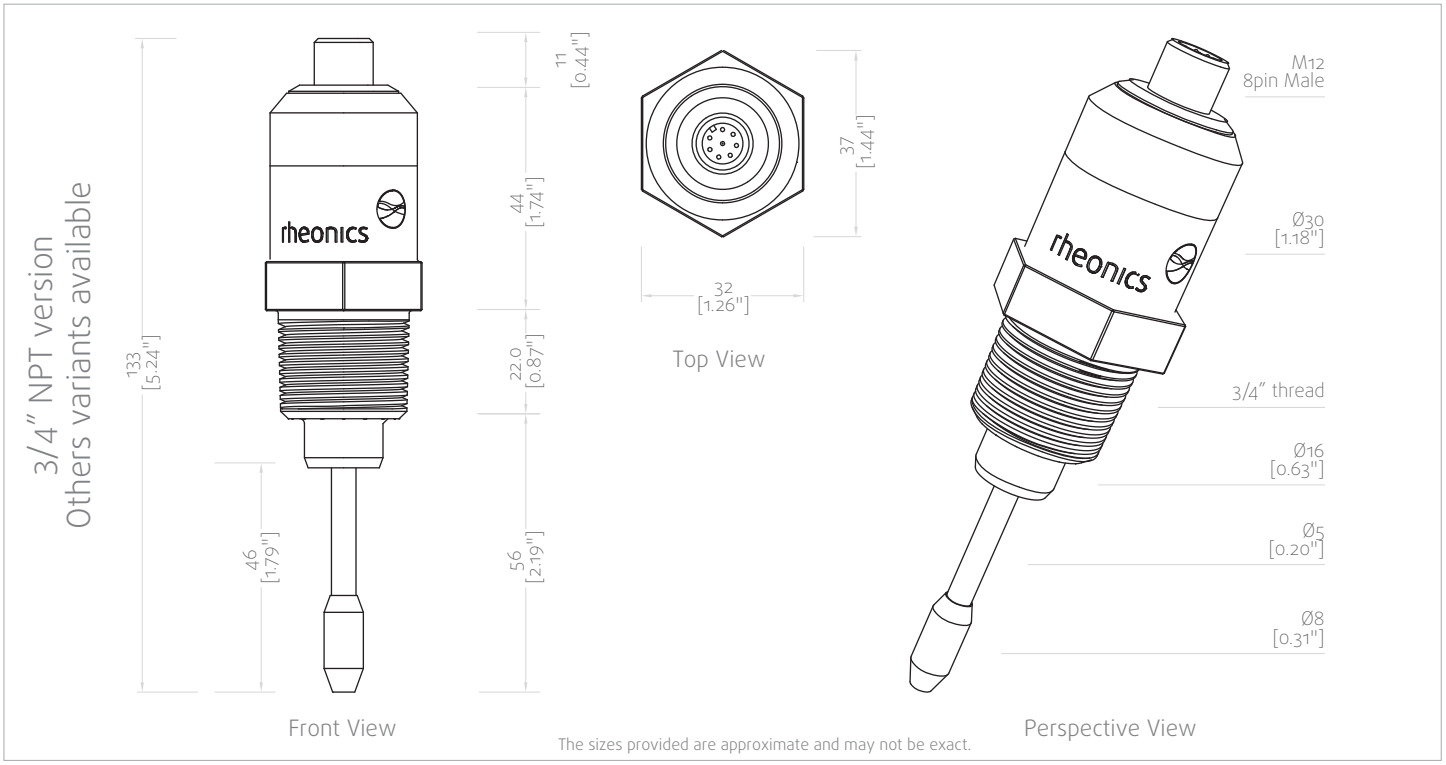
SRV dimensions



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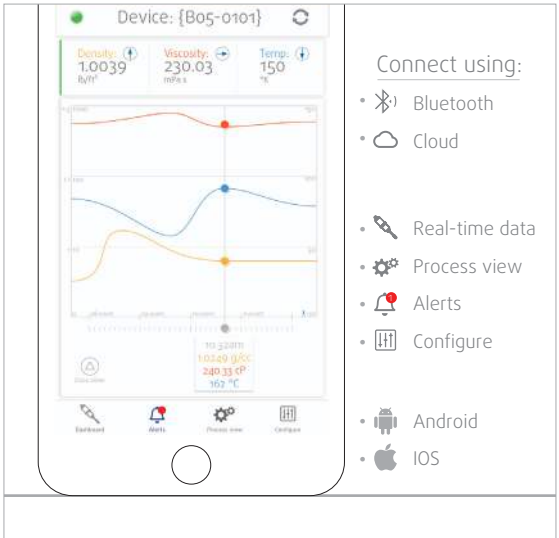
Software

rheonics Application



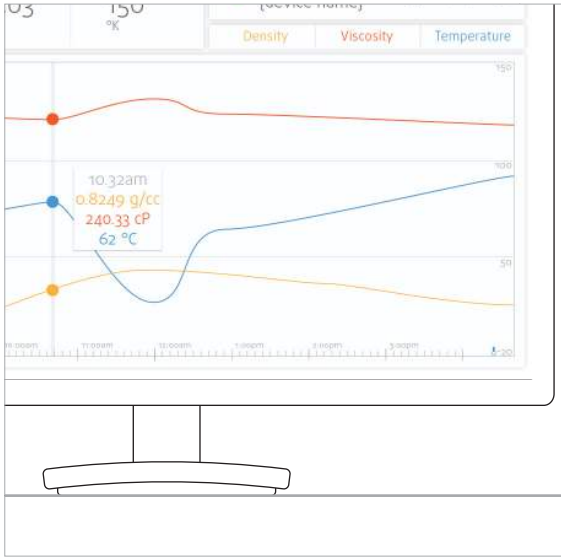
Connect using:

- Bluetooth
- Cloud

- Real-time data
- Process view
- Alerts
- Configure

- Android
- IOS

PC Data Acquisition & Analysis



Connect over:

- USB
- Ethernet

- Bluetooth
- Cloud
- Configure sensor
- Check calibration
- Firmware upgrade

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Ordering

We recommend using the online RFQ form: https://rheonics.com/request-for-quotation/

For sensor accessories visit: https://rheonics.com/product-accessories/

Ordering code example

SRV	V1	STD	E1	C1,C2	T1	P1	X1
	Viscosity range	Calibration	Electronics	Communication	Temperature	Pressure	Process Connection

Order code	Name	Short description
Viscosity range (select all)		
V1	3-3000 cP	Standard calibrated range
V2	3 - 50,000 cP	Extended calibrated range
V3	0.5 - 3000 cP	Extended lower calibrated range
V4	custom	Customer specified calibrated range within 0.5 - 50,000 cP
Calibration (select all)		
STD	Standard calibration	
CUS	Customer specific calibrations - specify viscosity range, accuracy required and operational conditions	
Electronics (select one)		
E1	SME-TRD	Transmitter housing with display
E2	SME-TR	Transmitter housing with solid cover
E3	SME-DRM	DIN-rail mount housing
Communication (select all)		
C1	4-20 mA	3 channels of 4-20 mA analog signal
C2	Modbus RTU (RS-485)	Modbus RTU over RS-485
C3	USB	USB 2.0 compliant service and data acquisition port
C4	Ethernet	Ethernet over RJ45 connector
C5	Bluetooth LE 4.0	Bluetooth module for short range wireless communication (only for E1)
C6	Modbus TCP	Modbus TCP over Ethernet
C7	Ethernet/IP	Ethernet/IP protocol
C8	HART	HART over analog channels
C9	Profinet	Profinet protocol
Temperature (select one)		
T1	125 °C (250 °F)	Sensor rated for operation in process fluids up to 125 °C (250 °F)
T2	150 °C (300 °F)	Sensor rated for operation in process fluids up to 150 °C (300 °F)
T3	200 °C (400 °F)	Sensor rated for operation in process fluids up to 200 °C (400 °F)
T4	Max. operating temp.	Specify your required maximum temperature
Pressure (select one)		
P1	15 bar (200 psi)	Sensor rated for process fluids pressure up to 15 bar (200 psi)
P2	70 bar (1000 psi)	Sensor rated for process fluids pressure up to 70 bar (1000 psi)
P3	200 bar (3000 psi)	Sensor rated for process fluids pressure up to 200 bar (3000 psi)
P4	350 bar (5000 psi)	Sensor rated for process fluids pressure up to 350 bar (5000 psi)
P5	500 bar (7500 psi)	Sensor rated for process fluids pressure up to 500 bar (7500 psi)
Process Connection (select one)		
X1	Threaded	Threaded process connection - 3/4" NPT or G1/2"
X2	Flange	Flange adapter, specify DN/PN - Hygienic EHEDG certified version available
X3	Tri-clamp	Tri-clamp flange, specify size - Hygienic EHEDG certified version available
X4	Hygienic	Specify Hygienic connection required
X5	FPC version	Long insertion probe, specify insertion length and flange - Hygienic EHEDG certified version available

Contact Information

rheonics GmbH
Klosterstrasse 19
8406 Winterthur
Switzerland
+41 52 511 32 00

rheonics Inc.
3 Sugar Creek Center Blvd, Ste 100
Sugar Land, TX 77478
United States of America
+1 713 364 5427

www.rheonics.com
info@rheonics.com
rheonics
@rheonics
+41 52 511 3200

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