



rheonics

inline process
density and viscosity
monitoring

SRV

WIDE VISCOSITY RANGE INLINE PROCESS VISCOMETER

- Repeatable measurements in both newtonian and non-newtonian, single- and multi-phase fluids
- Hermetically sealed, all 316L stainless steel 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 1% of reading
Temperature	Pt1000 (DIN EN 60751 class B)
Calibrated to NIST traceable viscosity standards.	

Operational Environment

Process Fluid Temperature	-40 up to 200 °C
Ambient Temperature	-40 up to 150 °C
Pressure Range	up to 5,000 psi

Mechanical

Material (Wetted parts)	316L Stainless Steel
Diameter x Length	Ø35 x 140 mm
Process Connection	3/4" NPT Flange & sanitary connections available
Ingress Protection	IP68
Electrical Connection	M12 (8-pin, A-coded)

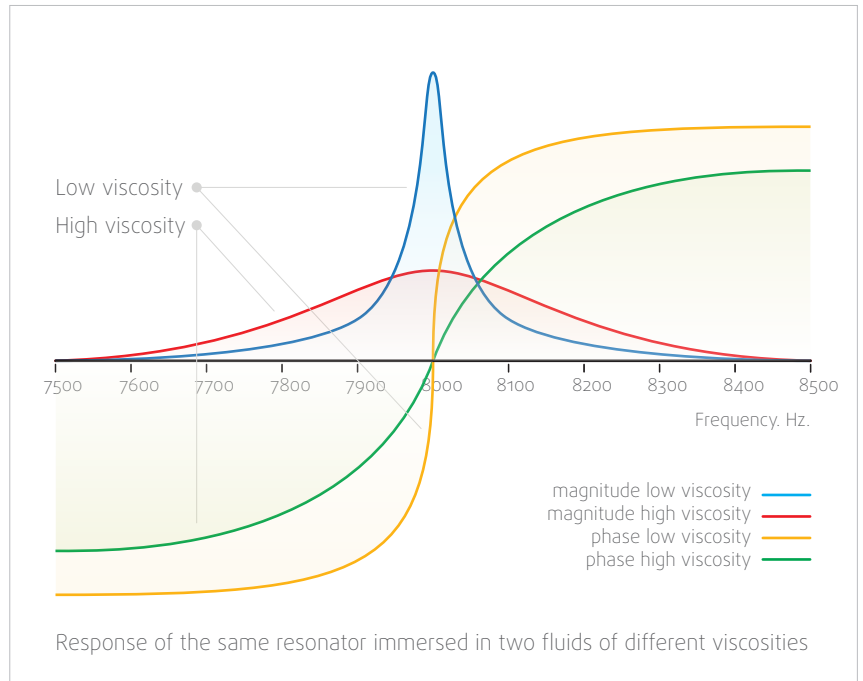


Electronics & Communication

Analog output	4-20 mA (3 channel) {Viscosity, Density, Temp.}	Display	Multi-line LCD (max. 55°C)
Digital output	Modbus RTU (RS-485) Ethernet USB	Operational temp.	max. 55 °C
Wireless output	Bluetooth LE 4.0	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

Operating principle

The rheonics SRV measures viscosity by means of a 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 \times 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.



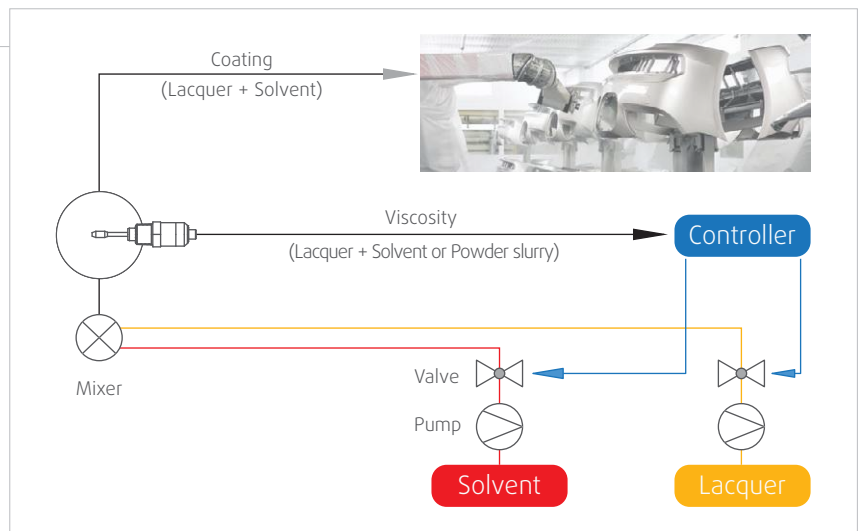
Application

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

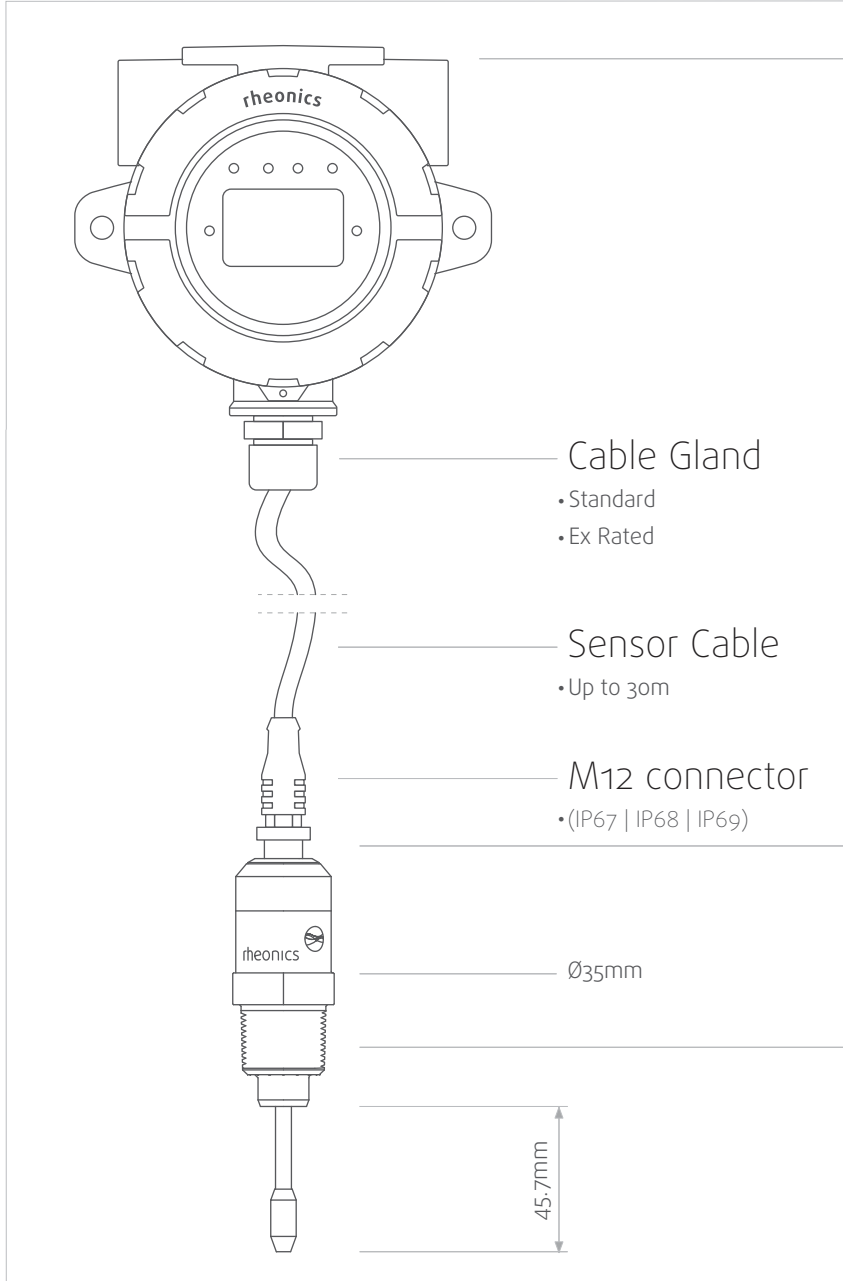
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Mechanical & Electrical



Electronics (select between)



SME-TRD



SME-TR

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



SME-DRM

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

Mechanical

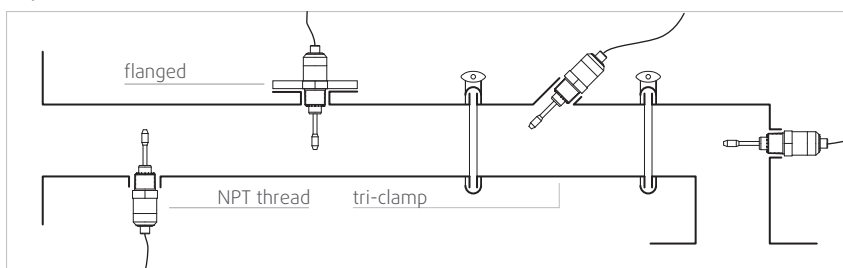
- 316L stainless steel (standard)
- Available with custom coatings
- Long insertion adapters for installation in larger pipes and tanks

Process connection

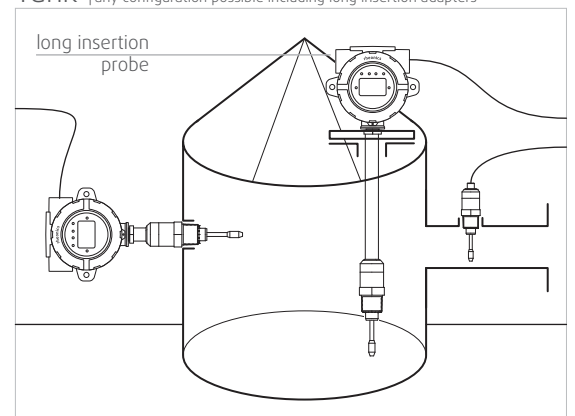
- 3/4" NPT (standard)
- Adapters available for Flange and Tri-clamp
- Sanitary fittings optional

Mounting

Pipe †any configuration possible



Tank †any configuration possible including long insertion adapters





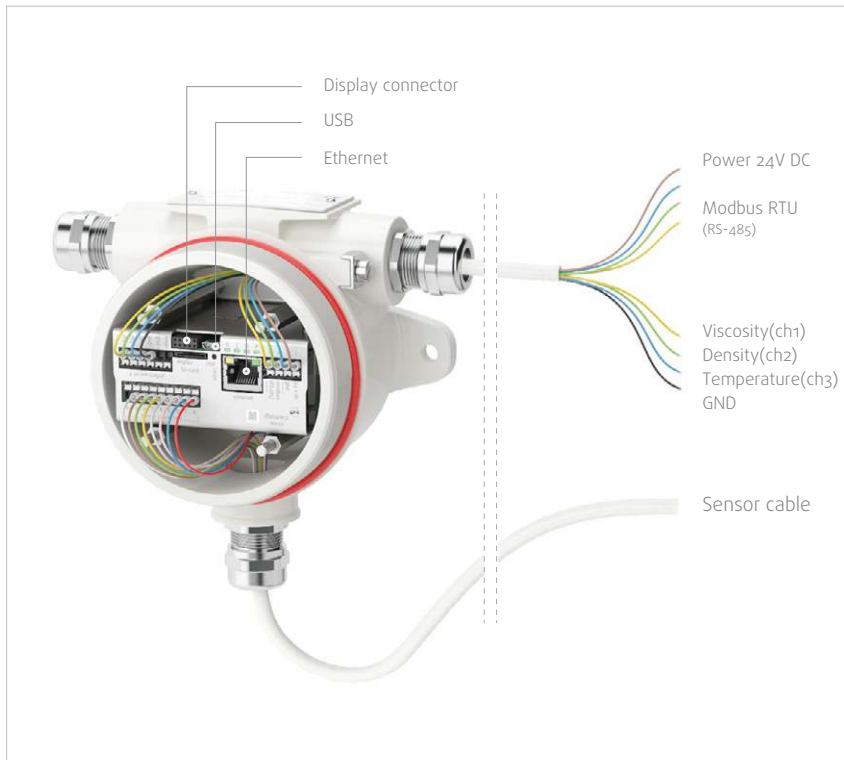
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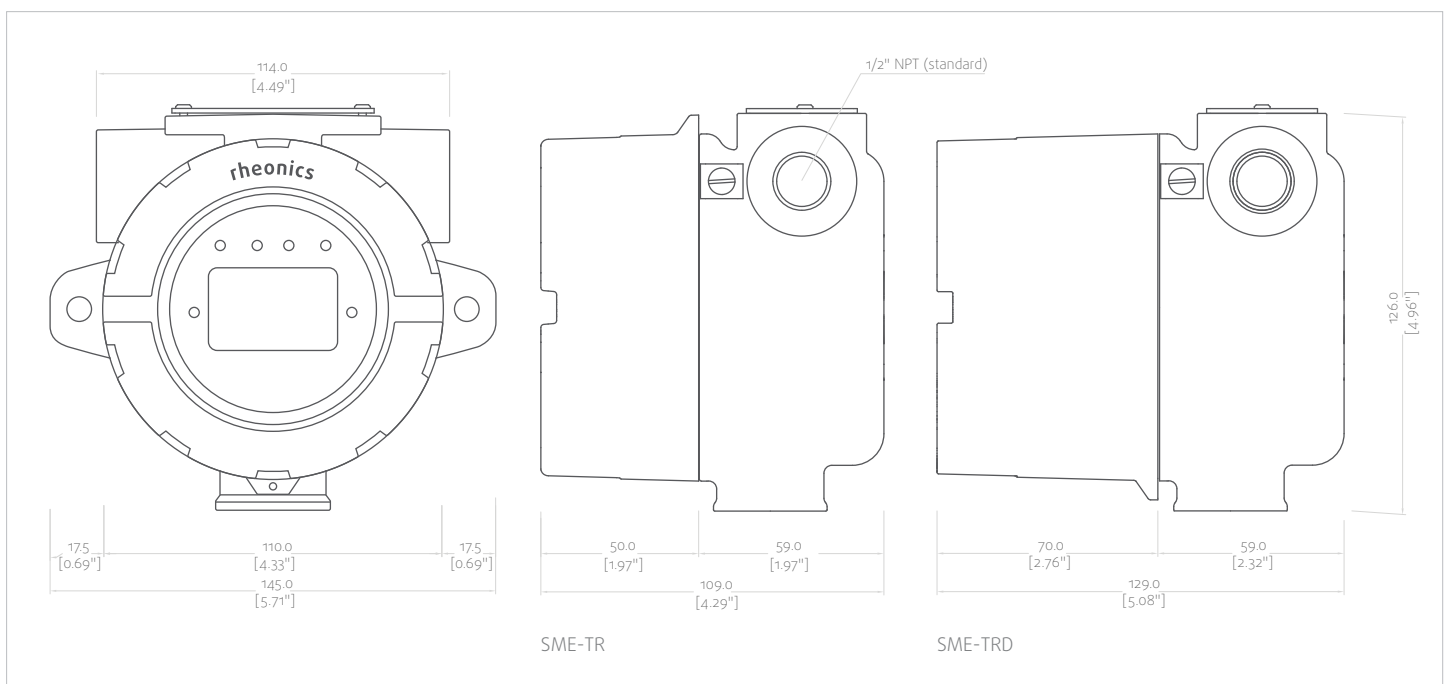
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Electronics installation



Dimensions





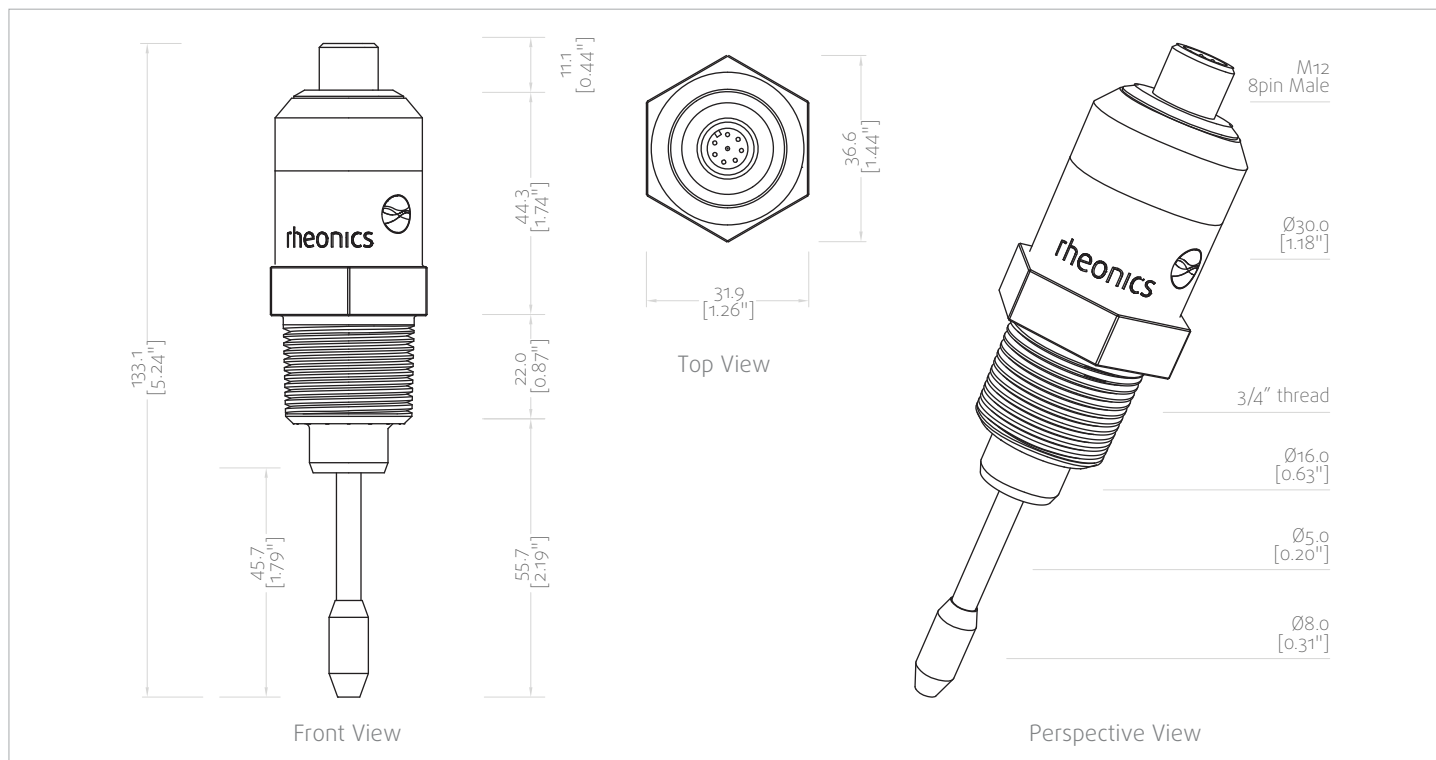
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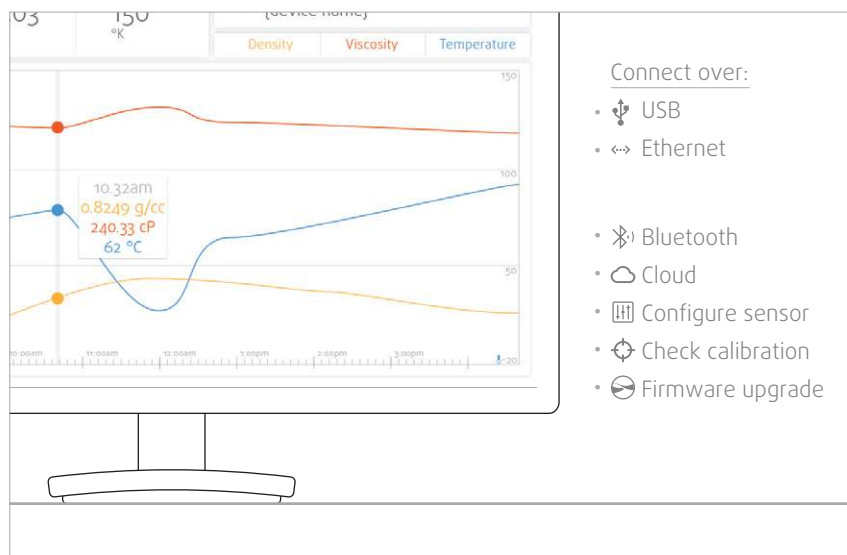
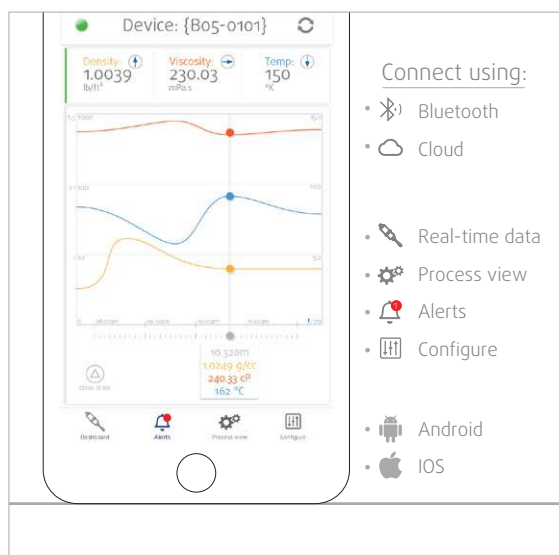
SRV dimensions



Software

rheonics Application

PC Data Acquisition & Analysis





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Ordering

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	
EXT	Extended calibration with multiple fluids for wider range and higher accuracy	
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 TCP/IP with RJ45 connector
C5	Bluetooth LE 4.0	Bluetooth module for short range communication, only available with display module
Temperature (select one)		
T1	125 °C	Sensor rated for operation in process fluids up to 125 °C (250 °F)
T2	150 °C	Sensor rated for operation in process fluids up to 150 °C (300 °F)
T3	200 °C	Sensor rated for operation in process fluids up to 200 °C (400 °F)
T4	> 200 °C	Sensor rated for operation in process fluids above 200 °C (400 °F)
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)
Process Connection (select one)		
X1	3/4" NPT	Standard
X2	Flange	Flange adapter, specify DN/PN
X3	Tri-clamp	TC adapter, specify size
X4	Sanitary	DIN 11851 Hygienic union, specify size
X5	Custom	Specify connector dimensions

Accessories		
Sensor cable	5m, 10m, 30m	8 core cable for connecting sensor to transmitter (PUR or PEEK sheaths)
Cable gland	1/2" NPT	1/2"NPT Standard and Ex cable glands
Transmitter mounting bracket		Mounting bracket for SME-TR and SME-TRD transmitter housings

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