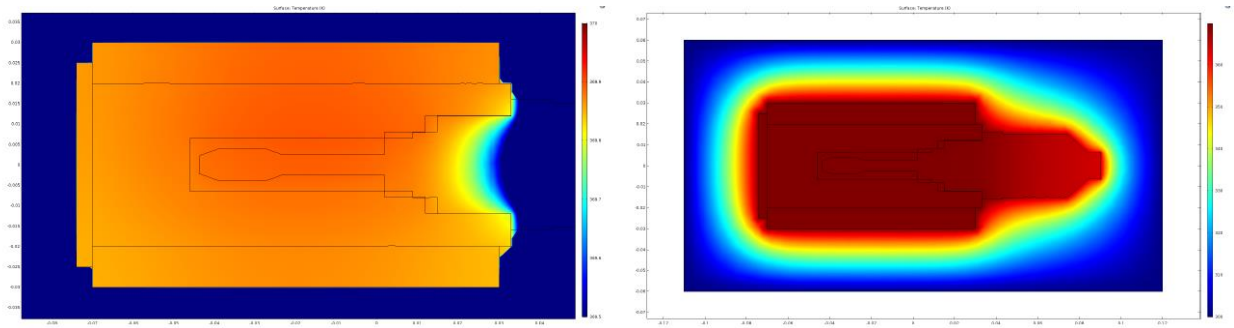
SR-STCM

SRV and SRD Smart Thermal Control Module

- 5 °C to 120 °C
- 0.005 °C temp. stability
- 0.05 °C temp. accuracy
- Integrated temperature controller
- Standalone operation
- Ethernet, Wi-Fi, RS485, USB ports for direct integration
- Desktop and in-line units

STCM is custom designed to ensure uniform temperature distribution across SRV and/or SRD even when installed in a flow loop with moving fluids. Heating and cooling is achieved through solid-state thermal devices with an advanced model-based controller. STCM was designed after extensive simulation and testing to ensure high level of thermal stability, accuracy and repeatability.

STCM eliminates the need for bulky and expensive thermal test chambers (climate chambers) for temperature control. It reduces the foot print to the same size as a typical small coffee machine while achieving 10x better stability and uniformity compared to a 100L commercial thermal chamber. It enables fluid analysis with SRV in field and mobile units without compromising data integrity.

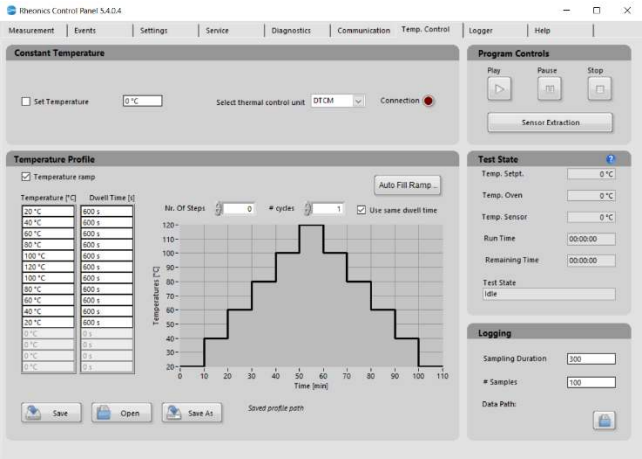


Thermal uniformity across the SRV during operation along with the fluid chamber

STCM Specification

Parameter	Value	Notes
Dimensions	314 x 165 x 450 (mm) 12.4 x 6.5 x 17.72 (inch)	As big as a typical desktop coffee machine
Power Input	110 / 220 V AC	Mains supply
Power consumption	max. 650W	
Total Weight	11.6 kg (25.6 lb)	Including SRV/SRD and fluid cell
Temperature range	5 °C to 120 °C 40 °F to 250 °F	
Sample Fluid	Sample volume 22ml Inline flow through model (STCM-FT)	Both static and inline flow-through models available
Temperature stability	0.005 °C	
Temperature accuracy	0.05 °C	Depends on calibration required
Ambient temperature	max. 65 °C max. 150 °F	
Controller	Integrated SMEBOX	Standalone Controller and Integrated CPU
Communication	Wi-Fi, USB-C, RS-485 (Modbus), Ethernet (TCP/IP, Modbus TCP)	Direct control of STCM and SRV/SRD from RCP software
Communication (Sensor direct)	Ethernet, RS-485 (Modbus), USB, SD-Card, Bluetooth LTE4.0, 4-20 mA	Same as a standard SRV/SRD electronics. Accessible through the integrated SMEBOX.

RCP Software – Data acquisition and temperature control



Simultaneous fluid measurement & precision temperature control

Constant temperature mode

Temperature ramps with varying dwell times

Target temperature modes – constant and ramp

Data export to excel and other statistical software

STCM is built for calibration verification, viscosity and density measurements at various temperatures, estimating temperature compensation factors for viscosity and density, estimation of activation energy from Arrhenius viscosity models.