

CCS-2100/CCS-2100LT

Thermoelectrically Cooled Cold-Cranking Simulators



CANNON®



SAE J300 TEST EQUIPMENT
CANNON® CCS-2100/CCS-2100LT
Semi-Automatic Thermoelectrically Cold-Craking Simulators

ASTM Method 5293, SAE J300



CANNON Thermoelectrically-Cooled Cold-Craking Simulator

- Cooled by Built-in Solid-State Thermoelectric Modules
- Powerful VISCPRO® for Windows® Software
- Fully Automatic Operation
- Improved Precision Over Earlier Models

CANNON Thermoelectrically-Cooled Cold-Craking Simulators measure the apparent viscosity of oils at temperatures from -35°C to -5°C with the CCS-2100 and -40°C to -5°C with the CCS-2100LT within a viscosity range of $900\text{ mPa}\cdot\text{s}$ to $25,000\text{ mPa}\cdot\text{s}$. The CCS-2100/CCS-2100LT combines automatic sample loading, computer-controlled operation, and solvent-free cleaning to permit completely unattended operation. No further operator involvement is required after initial loading of the sample table and identification of samples. The CCS-2100 will automatically test up to 30 samples at one time, calculate their viscosities, and record the results, freeing the operator for other tasks. Improved temperature management of the rotor/stator eliminates the need for grouping the samples by temperature of analysis, as was necessary in older CCS models. In addition, a thermoelectric sample warming cycle greatly improves the sample flushing process. The CCS-2100 meets all the requirements of ASTM D 5293 and SAE J300.

The CCS-2100 models consist of a patented thermoelectrically-cooled rotor/stator, a Sample Table with capacity for 30 oil samples, and an integral CCS Series II Controller. The rotor/stator cell is attached to a vacuum system and a metering constant-displacement injection pump. The rotor/stator cell is cleaned by purging the previously measured sample with a portion of new sample prior to measuring its viscosity. Purged sample is drawn into a waste receiver by the vacuum system. Rotor speed is measured by a high resolution digital encoder. A proprietary software program then converts this data to sample viscosity. Viscosity calculations are based on test data and rotor/stator calibration information stored by the software. User interface options include an instrument calibration routine, configuration of test cycles, and multiple means of processing test data including save, print, and export via the RS-232 serial port for LIMS capture.

Required Accessories

A chiller capable of cooling water to 5°C is required. Supplied with the CCS-2100 is a Julabo FE500 Recirculating Cooler. The CCS requires a computer (not supplied) with the Windows XP or VISTA operating system. Cannon CL Standards provide certified dynamic viscosity data (in cP or $\text{mPa}\cdot\text{s}$) at temperatures from -5°C to -40°C . These standards are used to calibrate the CANNON Cold-Craking Simulator (CCS). See ASTM D 5293 and SAE Specification J300.

CCS-2100 Specifications (except for Waste Receiver)

Dimensions:	711 mm (28 inches) high x 333 mm (13-1/8 inches) wide x 645 mm (25-3/8 inches) deep (add at least 100 mm (4 inches) to depth for installation)
Weight:	46 kg (102 lbs.)
Shipping Weight:	Approximately 136 kg (300 lbs)
Electrical:	CCS-2100: 115 volts AC $\pm 10\%$, 60 Hz, 1000W CCS-2100F: 230 volts AC $\pm 10\%$, 50 Hz, 1000W
Operating Conditions:	$15\text{-}30^{\circ}\text{C}$, 10%-90% RH non-condensing, Installation Category II, Pollution degree 2
Computer:	Computer not included. Please contact CANNON for specifications.
Sample Volume:	40-50 mL required

Waste Receiver Specifications

Dimensions:	216 mm (8.5 inches) high x 267 mm (10.5 inches) x 305 mm (12 inches) deep
Weight:	8.2 kg (18 lbs)

Julabo® FE500 Recirculating Cooler Specifications

Dimensions:	572 mm (22.5 inches) high x 305 mm (14 inches) wide x 457 mm (18 inches) deep
Weight:	38.2 kg (84 lbs)
Working Temperature Range:	-20°C to $+40^{\circ}\text{C}$
Display:	LED, actual/setpoint values
Display Resolution:	0.1°C
Temperature Setting	Keypad
Safety:	Audible high/low temperature warning, freezing protection
Temperature Stability:	$\pm 0.5^{\circ}\text{C}$
Cooling Capacity:	450 Watts @ 5°C

Order Information

Catalog #	Item Description
9728-E46	CCS-2100 Automatic CCS, 115V, 60Hz, 1000W
9728-E47	CCS-2100F Automatic CCS, 230V, 50Hz, 1000W
9728-E50	CCS-2100LT, 115V
9728-E51	CCS-2100LT, 230V, 50Hz
9728-E53	CCS-2100LT, 230V, 60Hz



2139 High Tech Road • State College • PA • 16803
 800-676-6232 • 814-353-8000 • Fax 814-353-8007
 email: cannon@cannoninstrument.com • www.cannoninstrument.com