



Sensor Lab Foundry

Iron Thermal Analysis Instrument

SENSOR LAB FOUNDRY

INTRODUCTION

Sensor Lab Foundry offers a complete thermal analysis solution. The system utilizes cooling curves from special crucibles (QuiK-Cup® disposable measurement test cups) to calculate chemical composition (carbon equivalent, carbon and silicon) or to evaluate undercooling of cast iron melts. Measurements can be taken from two separate stations simultaneously. This precise and versatile measuring instrument has a wide range of features:

- An advanced measuring algorithm
- Live visualization of the cooling curve
- Result calculation configurable by material type
- Multiple communication output protocols
- Process range indication
- Direct access to result trending
- Local storage of up to 3000 measurements
- Ability to add custom equations
- Wireless measurements capability
- Remote client access
- Easy USB data export
- Compatible with the MeltControl 2020 measurement data system for foundries



OVERVIEW

The Sensor Lab Foundry instrument consists of a processing unit, connected to an optional external (touch) display. Connection to the measurement stations can be made either wired or wireless, using the QUBE® wireless units.

BENEFITS

- Two independent QuiK-Cup® measurement stations (wired and/or wireless)
- Automatic detection of standard Te and non-Te QuiK-Cup®
- Small size and light weight desktop style enclosure allowing easy installation
- Intuitive setup and operation
- Ranges and equations for different cast iron materials



IRON THERMAL ANALYSIS INSTRUMENT

APPLICATIONS

- White Iron Thermal Analysis (using the QCTe QuiK-Cup®)
 - Carbon Equivalent
 - Carbon
 - Silicon
- Grey Iron Thermal Analysis (using the QC QuiK-Cup®)
 - Carbon Equivalent
 - Eutectic Undercooling

The wireless cup stand with the QUBE®K wireless unit eliminates the need for expensive cabling between the cup stand and the instrument in the control room. This results in improved safety and measurement reliability, while reducing overall costs. The Sensor Lab Foundry uses a specially designed QUBE for type K thermocouples. The unit digitizes and transmits the temperature values to the Sensor Lab Foundry.

QUBE® K

- Type K wireless measurement unit
- Eliminate the need for expensive cabling
- Rugged, light weight and IP65 sealed design
- Reliable transfer of measurement data
- Programmable motion sensor
- Battery lifetime of minimum 3 days

QuiK-Cup®

- Disposable measurement cup
- Accurate, consistent, and quick measurement results
- Securely attached to the contact block
- Measures the cooling attributes of the molten iron



FEATURES

- Easy-to-use controls with intuitive, menu-controlled navigation
- Two independent QuiK-Cup® measurement stations with the option of wired or wireless operation with the QUBE® Wireless system
- Automatic detection between tellurium and non-tellurium QuiK-Cup® thermal analysis cups
- Small, light weight, fanless enclosure with robust connectors designed for the foundry environment
- User interface displayed on an external monitor, controlled by (optional) touchscreen or mouse inputs
- Material Specific Configuration
 - Custom Prediction Equations
 - Range Indication Limits
 - Displayed Results
- Live display of thermal analysis curve and up to 6 selected result values on the main screen
- Local storage of up to 3000 measurements
- Configurable automatic station switch at the start of a new measurement
- Programmable data transmission capability (Ethernet and RS232)
- Heat number input
- USB ports for downloading data and transferring instrument settings

TECHNICAL DATA

SENSOR LAB FOUNDRY

Sensor Lab Foundry Applications	Tellurium and Non-Tellurium Thermal Analysis	
Additional Calculation Functions	%C, %Si, CEV, SC, Z/H, HB, RM	
Measurement input	Two individual measurement stations	
Temperature Measurement	T/c type K, °C/°F, resolution 0.1°C/0.18°F	
Accuracy	+/- 0.5°C (0.9°F)	
Sample Rate	10 samples per second	
Display (VGA)	Optional 19" (touchscreen) monitor for measurement results and menu display VESA mounting option	
Operation	Menu Controlled Touchscreen or Mouse with(out) Keyboard (optional)	
Result Storage	3000 measurements	
Data Interfaces	Two serial RS-232 interfaces One serial RS-422 interface for wireless receiver box One LAN (Ethernet) port 3 USB ports Fully programmable data telegrams	
Solid state signal outputs	Ready, measuring, complete, and horn for both measuring stations 2 x 4 solid state relays, 100 – 240V, 47 – 63Hz, maximum 3.15A output	
Housing, dimensions and weight	Aluminum housing, protection rating IP51, weight approximately 6kg (13lbs) Dimensions: height = 153mm (6") width = 279mm (11") depth = 368mm (14.5") (handles included)	
Power input	Power supply	100 – 240V AC, 47 – 63Hz
Operating range	Ambient temperature	0°C (32°F) to 60°C (140°F)

QUBE K

Measurement Channels / Modes	One type K thermocouple channel	
Accuracy	Thermocouple: +/-0.5°C (0.9°F) at ambient between 0°C (32°F) and 50°C (122°F).	
LED Indicators	Power pack status and wireless link status	
Power pack life	Typically three days of continuous use	
Radio range	Over 100 line-of-sight meters	
Radio details	Frequency hopping 2.4GHz ISM unlicensed band, 10mW max transmit power	
Operating range	0°C (32°F) to 60°C (140°F)	
Dust/water protection:	IP65	
Size	length = 175mm (6.9"), width = 66.7mm (2.625"), height = 66.7mm (2.625")	
Weight (with power pack)	1052g (2.318lbs)	

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