



Model 1200SE Series Dry Block Temperature Calibrators

- ❑ **Easy-to-Use Precision Temperature Calibrator**
 - *Lightweight, Portable for Lab and General Use*
 - *Simple Single Step Zero Setting*
- ❑ **Temperature Range: 392 to 2200° F (300 to 1200° C)**
- ❑ **Excellent Performance Characteristics**
 - *Accuracy: $\pm 4.0^{\circ}\text{F}$ ($\pm 2.0^{\circ}\text{C}$)*
 - *Stability: $\pm 1.0^{\circ}\text{F}$ ($\pm 0.5^{\circ}\text{C}$)*
- ❑ **Display in °F or °C to 0.1 Resolution**
- ❑ **Fast Cooling and Heating**
- ❑ **User-selectable Slope Rates for Controlled Thermo Switch Testing**
- ❑ **Self Diagnostics Includes Semi-Auto Switch Test and Hysteresis Test**

PRODUCT DESCRIPTION

The AMETEK Model 1200SE Series Dry Block Temperature Calibrators are easy-to-use, portable, precision calibration instruments. The Model 1200SE Series calibrators provide fast, reliable temperature calibration of RTDs, thermocouples, thermo switches, thermistors, plus other common temperature sensing devices. These units are ideal for high temperature applications such as kilns, boilers and incinerators.

Utilizing a compressed air cooling system, the cooling period is only 10-20 minutes. An integrated valve controllable from the processor allows complete control of the cooling period in both manual and personal computer operations.

The Model 1200SE also features an ultra-stable thermocouple to ensure that the temperature is kept to within $\pm 1^{\circ}\text{F}$ ($\pm 2.0^{\circ}\text{C}$) at temperatures $< 1100^{\circ}\text{C}$ and $+2^{\circ}\text{F}$ ($\pm 3.2^{\circ}\text{C}$) at temperatures $> 1100^{\circ}\text{C}$. This gives you a true value with minimal fluctuation. A special high temperature insertion tube is drilled to your exact specifications to maintain optimum contact between the sensor and the dry block.

There are two models: the standard Model 1200SE and the Model 1200SE-RS with RS232C serial data communications. The Model 1200SE-RS is supplied with RS232C serial data communications and calibration software allowing for automated temperature calibration from a remote personal computer. Options also exist that allow the user to convert RTD, Thermocouple and transmitters into a temperature reading on the personal computer. Units may be specified with a separate heating/cooling tower.

The calibrators include an easy-to-read, high-contrast LED display which indicates temperature in either °F or °C. Special indicators are provided that alert the operator to current conditions, including a stability indicator that indicates when a stable temperature has been reached. Additional indicators are supplied including SET, READ, HEAT, COOL, mA, HOLD and SLOPE.

A membrane-style keypad with tactile feedback is located on the front of the calibrator. Dedicated function keys are used to setup and operate the calibrator. Function keys include:

SET	Let's the user select any temperature
READ	Calibrator will heat/cool to a selected SET temperature and READ the actual temperature
DISP HOLD	Manually freeze a display as long as the key is depressed
SLOPE IN	Used to store selected slope rates into memory
°C/°F	Select desired temperature readout scale
MEMO	Store or recall SET temperature or SLOPE rate (Up to three)
SLOPE	Activates slope mode
SWITCH HOLD	Used to determine set point of temperature switches
mA MEMO IN	Used to display mA measurement from 0 to 24mA
TEMP SET	Used to increase or decrease temperature in 0.1 degree increments
SET ZERO	Fixed memory for set temperature

FEATURES

Fast, Efficient Heating and Cooling Times

Model 1200SE Series calibrators feature fast heating and cooling times. The instrument, including the insertion tube, reaches the maximum heating temperature (2192°F/1200°C) from 73.4°F (23°C) in just 35 minutes.

Instrument cooling time is also efficient. The instrument reaches maximum cooling temperature (572°F/300°C) from 2192°F (1200°C) in 20 minutes.

Serial Data Interface

The Model 1200SE-RS calibrator is equipped with RS232C serial data communications. Software is supplied with this option. Simply connect the calibrator with your personal computer, place sensor in thermowell, connect sensor to calibrator, fill-in the "windows" displayed, and start your test. The software allows you to print, save and depict actual test data in a graphical format.

Calibration Software

Using the calibrator's RS232 serial data port, the instrument may be interfaced with a personal computer running AMETEK's AMECAL-T Plus application software. This WINDOWS-based software is easy to use and provides the user with the ability to perform automated calibration with documented results and a printed certification.

AMECAL-T Plus software presents the user with a hierarchy of operations that effectively guides you through the setup, calibration and certification processes. Calibration is greatly simplified and may be completed in relatively short time periods. Calibration requirements are selected by the user through icons, pulldown menus and extensive prompts. Users may select heating sources such as liquid baths, ovens or dry-block calibrators. You may also select between an internal or external reference such as the AMETEK DTI Digital Temperature Indicator so that extremely high resolution and accuracy are achieved. Plus the AMECAL-T Plus software supplies you with a way to create and print customized certificate formats which comply with Quality Standards such as ISO 9000, GMP, HACCP and others.

Users select the calibration requirements needed including:

- ☐ Sensor
- ☐ Heating Source
- ☐ Scenario
- ☐ Reference Indicator
- ☐ External Reference Sensor
- ☐ Input Device
- ☐ Temperature Points/Procedure

Both calibration procedures and results are stored in a built-in identification/tag number database. Procedures may be queried by the user with results presented in a real certificate format. Certificate formats may be customized by the user including the ability to automatically number your certificate. The certificate may be displayed at any time.

Other features include input scaling which automatically converts mA into °F/°C. You may also present information graphically and view in real-time the calibration trends being created. Trend information may be stored for later analysis.

Self Diagnostics

The Model 650SE Series calibrators feature extensive diagnostics that help identify and isolate faults. Using the front display, the instrument indicates using error codes, diagnostic conditions that may be impeding the instrument's operability. Typical faults and their displays are:

— — — 0	No RS232 or damaged interface
— — — 1	No RS232 contact with personal computer
-100.0	RTD sensor open or short circuit
E0007	Program execution failure
E0008	Memory access failure
E0009	Timer malfunction

The instruments also perform a variety of self diagnostics at startup including a semi-automatic switch test and hysteresis test, validation tests for indicators and 4-20mA transmitter measurement.

User-selectable Slope Rates

The Model 1200SE Series calibrators can have up to three user-selected slope rates for either heating or cooling. The following chart shows the selectable slope ranges.

Temperature Range	572 to 1112°F 300 to 600°C	1112 to 1832°F 600 to 1000°C	1832 to 2200°F 1000 to 1200°C
HEATING			
Max. slope/minute	113°F/45°C	86°F/30°C	68°F/20°C
Min. slope/minute	1°F/1°C	1°F/1°C	1°F/1°C
COOLING			
Max. slope/minute	41°F/5°C	48°F/9°C	68°F/20°C
Min. slope/minute	1°F/1°C	1°F/1°C	1°F/1°C

FUNCTIONAL SPECIFICATIONS

Temperature Range

Model 1200 SE 572 to 2201°F (300 to 1205°C)

Model 1200 SE-2 572 to 2201°F (300 to 1205°C)

Accuracy

±4°F (±2°C)¹

Stability

±1°F (±0.5°C)¹

Notes: ¹ Measured at bottom of well with certified traceable thermocouple.

Display Resolution

1°F (1°C)

Heating Time - From 572°F to 2201°F (300°C to 1205°C), including insertion tube

35 minutes, approximate

Cooling Time - From 2201°F to 572°F (1205°C to 300°C), including insertion tube

20 minutes, approximate for air cooling

120 minutes, approximate for fan cooling

Current Input

0 to 24mA

Resolution mA Input

0.01mA

Thermo Switch

5Vdc

Analog Output

5mVdc per °C

Serial Data Interface

RS232C (Model 1200SE-RS Only)

PHYSICAL SPECIFICATIONS

Power

115Vac 50/60Hz

230Vac 50/60Hz

Temperature Well

Well Depth 6.3-inches (160mm)

Well Diameter 1.06-inches (27mm)

Weight

26.4 lbs (12kg)

Dimensions (L x W x H)

14.6 x 5.3 x 15.9-inches

370 x 135 x 405mm

Operating Temperature

41 to 104°F (5 to 40°C)

Storage Temperature

-4 to 140°F (-20 to 60°C)

Humidity

0 to 90% RH

Protection Class

10IP

CE Conformance

EN50081-1 (1992)³

EN50081-2 (1993)³

EN50082-1 (1992)³

EN50082-2 (1995)³

EN61000-3-2 (1995)³

EN61000-3-3 (1995)³

EN61010-1 (1993)⁴

Notes: ³ CE Regulation EMC 89/336/EEC

⁴ CE Low Voltage Directive 73/23/EEC

ORDERING INFORMATION

MODEL 1200SE SERIES DRY BLOCK TEMPERATURE CALIBRATOR

Order Number	Description
Base Number and Range	
76N-1200SE-115R	Model 1200SE Calibrator, HT Insert, 392 to 2192°F (200 to 1200°C), 6.3-inch well depth
76-650SE-115R	Model 1200SE Calibrator with Metal Carrying Case, HT Insert, 392 to 2192°F (200 to 1200°C)
With RS232 Serial Data Communications	
76N-650SE-115RS	Model 1200SE Calibrator with RS232 Communications, HT Insert, 392 to 2192°F (200 to 1200°C)
76-650SE-115RS	Model 1200SE Calibrator with RS232 Communications and Metal Carrying Case, HT Insert, 392 to 2192°F (200 to 1200°C)

Accessories	Description
60K150	Metal Carrying Case for Model 1200SE Series Calibrators
65-Modul RTD	RTD Module for Model 1200SE-RS Calibrators with RS232 Communications
65-Modul VDC	VDC Module for Model 1200SE-RS Calibrators with RS232 Communications
65-Modul T/C-H	TC Module for Model 1200SE-RS Calibrators with RS232 Communications
60F105	Kerlan Insulation (1 meter length)
60F170	Insertion Tool (0.75- and 1-inch)
60F172	Insertion Tool (0.375-inch)
60F107	Insulation Plug

Note: All Model 1200SE Series Dry Block Temperature Calibrators are supplied with NIST Certification Data.



AMETEK is a leading global manufacturer of electrical and electromechanical products for niche markets. Listed on the New York Stock Exchange (AME) since 1930, AMETEK's annual sales are approaching \$1 billion. Operations are in North America, Europe and Asia, with about one-third of sales to markets outside the United States.

Headquarters
8600 Somerset Drive
Largo, Florida 33773
Tel (727) 536-7831
Tel (800) 527-9999
Fax (727) 539-6882

AMETEK Denmark A/S
Gydevang 32-34
Post Office Box 30
DK-3450
Allerød Denmark
Tel 45 4816 8000
Fax 45 4816 8080

**AMETEK Precision
Instruments Europe GmbH**
Rudolf-Diesel-Strasse 16
D-40670, Meerbusch
Germany
Tel 49 2159 9136 0
Fax 49 2159 9136 39

AMETEK Singapore Pvt. Ltd.
10 Ang Mo Kio Street 65
#05-12 TECHPOINT
Singapore 569059
Tel 65 484 2388
Fax 65 481 6588
E-Mail aspl@ametek.com.sg

Internet Addresses:
www.ametek.com
www.chatillon.com

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Pub Code SS-CP-2230-0898
Issued 08/98

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Printed in U.S.A.