

CTC Series

Compact Temperature Calibrator

CTC-320B/650B/1200A



Fast, timesaving, and reliable

Superior in speed and portability



The CTC series is a fast dry-block that offers both interchangeable inserts, the MVI stability circuitry, and calibration software. Both speed and portability are superior to liquid baths. Dry-block calibrators do not require hazardous liquids and provide a wide temperature range.

High flexibility



You are not limited by fixed holes. Inter-changeable insertion tubes are used to match the diameter of your sensor-under-test.

Wide temperature range



The CTC series covers a wide temperature range from 33 to 1205°C (91 to 2200°F). This makes it sufficient to cover many standard industrial temperature calibration applications.

CTC-320B: 33 to 320°C (91 to 608°F)

CTC-650B: 33 to 650°C (91 to 1202°F)

CTC-1200A: 300 to 1205°C (572 to 2200°F)

Timesaving features

Fast one-key-one-function access to the automatic switch test and auto stepping



Fast calibration



All our Jofra temperature calibrators feature a purpose-dedicated temperature regulator. This provides a very fast heating and cooling time as well as a short stabilization time. Performing a three point temperature calibration procedure is fast and saves time.

Liquid filled sensors and switches



The tall CTC models with an immersion depth of 190 mm / 7.5 in are ideal for calibration of liquid filled sensors. The specially designed non-linear heating elements in the CTC-650 B and the increased block mass provide a very homogeneous temperature throughout the block. It is essential for the quality of the calibration/test that the full length of the sensing part of the sensor is exposed to the same temperature. Calibrate analog reading devices or switches with very high repeatability.

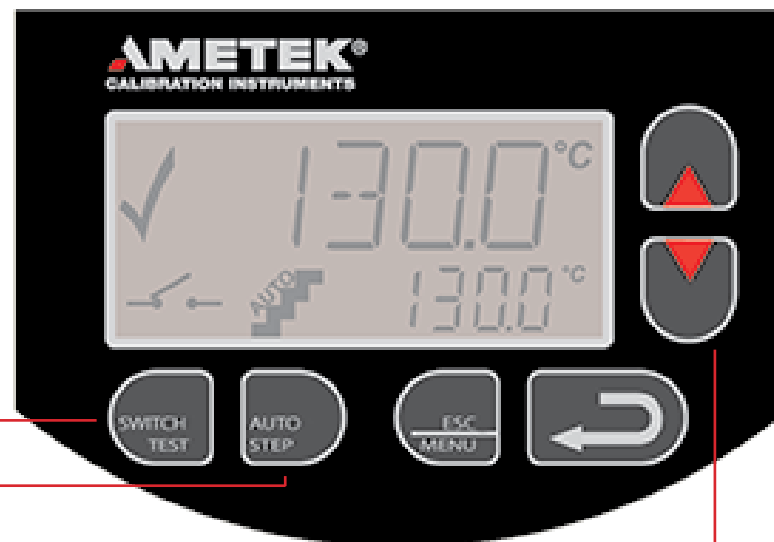
Easy-to-read Display

Easy-to-use operation

All instrument controls may be performed from the front panel. The heat source is positioned away from the panel. This design helps to protect the operator. The main functions on the CTC series are designed with one-key-one-function logic. This means that there are no sub-menus or difficult to remember multiple keystrokes necessary to access primary functions. The easy-to-read, backlit display features dedicated icons, which help in identifying instrument conditions and operational steps.

Automatic Switch Test

Operators can save a lot of time using the automatic thermostat test function to find values for the "Open" and "Close" temperatures. Additionally, this feature displays the hysteresis (deadband) between the two points. The feature ensures a very high repeatability when testing thermostats. Simply press the "SWITCH TEST" key to activate the function.



Auto Stepping

This feature saves manpower. The operator may stay in the control room, or another remote location, monitoring the output from the sensor-under-test while the calibrator is placed in the process and automatically changes the temperature using a programmed step value and rate. Up to 9 different temperature steps may be programmed, including the hold time for each step.



"Up" and "Down" Keys

The "Up" and "Down" arrow keys allow the user to set the exact temperature desired with a resolution of 0.1°.

Informative display and intuitive operation

All models feature a large, backlit LCD display panel, which is easy-to-read even in well-lit areas. Units feature an informative display that provides icons and information regarding the status of the CTC and the calibration in-progress.

Useful Features

The CTC is a very versatile calibrator series with many integrated functions.

Stability Indicator

A bold checkmark on the display indicates that the calibrator has reached the desired set temperature and is stable. The operator may change the stability criteria and establish a greater sense of security in the calibration results. A convenient countdown timer is activated five minutes before the unit reaches stability.



Instrument setups

The CTC series stores the complete instrument setup, including: engineering units, stability criteria, resolution, display contrast, slope (ramp) rate, auto-step settings, and maximum temperature.

Maximum Temperature

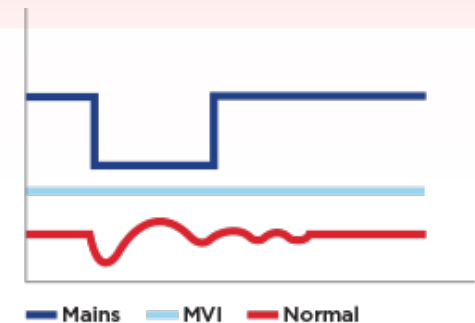
From the setup menu, the user can select the maximum temperature limit for the calibrator. This function prevents damage to the sensor-under-test caused by the application of excessive temperatures. The feature also aids in reducing drift resulting from extended periods of exposures to high temperatures. This feature can be locked with an access code.

Fast heating and cooling

The CTC-320 B and the CTC-650 B contain an innovative heating block profile. This design heats up the CTC-320 B to maximum temperature in just 20 minutes and the CTC-650 B in only 39 minutes. The fast performance of the heating block is due to the special profile that minimizes mass and yet, still accepts an insertion tube with a 25mm (1in) outer diameter. This design is a balanced compromise between temperature stability / homogeneity and rapid heating / cooling.

MVI - Mains Power Variance

Immunity improves temperature stability Unstable mains power supplies are a major contributor to calibration inaccuracies. Traditional temperature calibrators often become unstable in industrial environments where large electrical motors, heating elements, and other devices are periodically cycled on and off. The cycling of supply power can cause lower quality temperature regulators to perform inconsistently, leading to both inaccurate readings and unstable temperatures. The CTC series employ the MVI, thus avoiding such stability problems. The MVI circuitry continuously monitors the supply voltage and ensures a constant energy flow to the heating elements.



User specified settings

Re-calibration/adjustments

The CTC series has a very easy and straightforward procedure for re-calibration/adjustment. There is no need for a screwdriver or PC software. The only thing you need is a reliable reference thermometer.

Place the probe in the calibrator and follow the instructions on the display.

Support rod set

The support rod can be mounted on all CTC calibrators.

It is used to hold the sensor under test in its position while calibrating. Includes rod, sensor grip and fixture.

Calibrate up to 24 sensors at a time

Using the CTC together with the ASM Multi-scanner offers a great time-saving automatic solution to calibrate multiple temperature sensors at the same time. The ASM series is an eight channel scanner controlled by JofraCal software on a PC. Up to three ASM units can be stacked to calibrate up to 24 sensors at the same time. It can handle signals from 2-, 3- and 4 wire RTD's, TC's, transmitters, thermisters, temperature switches and voltage.

Protective carrying case

Our special designed protective carrying case gives excellent protection for the CTC calibrators. It has compartments for inserts, cables, manuals, plugs etc.

Calibration software included

The CTC is supplied with our highly versatile calibration software JofraCal.

All calibrations can be documented with a certificate, given that the CTC is controlled from a PC. When the calibrator has reached the desired temperature and stability it will prompt you to type in the UUT temperature. JofraCal documents all your calibration needs within temperature, pressure and process calibration.



Specifications CTC-320B

Temperature

Temperature Range

Temp. @ ambient 23°C / 73°F **33 to 320°C / 91 to 608°F**

Accuracy

CTC-320 with internal ref. sensor **±0.5°C / ±0.9°F**

Specification when using the internal reference. (Load 4 mm OD reference probe in the center of the insert).

Stability

CTC-320 **±0.1°C / ±0.18°F**

*Measured after the stability indicator has been on for 10 minutes.
Measuring time is 30 minutes.*

Settings

Resolution **1 or 0.1**

Units **°C or °F**

Heating Time

CTC-320 **23 to 320°C / 73 to 608°F ... 20 minutes**

Cooling Time

CTC-320 **320 to 100°C / 608 to 212°F ... 22 minutes**

Time to Stability (typical)

CTC-320 **8 minutes**

Mains Power

Voltage **115 V (90-127) / 230 V (180-254)**

Max Power Consumption **600 VA**

Frequency, US deliveries **60 Hz ±5**

Frequency, non US deliveries **50 Hz ±5, 60 Hz ±5**

Physical Specifications

Dimension L x W x H **241x139x408 mm / 9.5x5.5x16.1 in**

Weight

CTC-320 **7 kg / 15.5 lb**

Immersion Depth incl. insulation plug

CTC-320 **190 mm / 7.5 in**

Well diameter

CTC-320 **26 mm / 1.0 in**

Insert Dimensions (diameter x length)

CTC-320 **25,7 mm x 200 mm / 1.0 x 7.9 in**

Electrical

Switch Input (dry contact)

Test Voltage **Maximum 5 VDC**

Test Current **Maximum 2.5 mA**

Digital Interface

RS232 (9-pin Male)

Environmental

Operating Temperature

0 to 40°C / 32 to 104°F

Storage Temperature

-20 to 50°C / -4 to 122°F

Humidity

0 to 90% Rh, non-condensing

Protection Class

IP-10



Specifications CTC-650B

Temperature

Temperature Range

Range **33 to 650°C / 91 to 1202°F**

Accuracy

CTC-650 with internal ref. sensor **±0.6°C / ±1.08°F**

Stability

CTC-650 **±0.05°C / ±0.09°F**

*Measured after the stability indicator has been on for 10 minutes.
Measuring time is 30 minutes.*

Settings

Resolution **1 or 0.1**

Units **°C or °F**

Heating Time

CTC-650 **23 to 650°C / 73 to 1202°F ... 39 minutes**

*All specifications are given with an ambient temperature 23° C/73.4° F
± 3° C/5.9° F. Specified at 115 V/230 V.*

Cooling Time

CTC-650 **650 to 100°C / 1202 to 212°F ... 65 minutes**

Time to Stability (typical)

CTC-650 **8 minutes**

Mains Power

Voltage **115 V (105-127) / 230 V (210-254)**

Max Power Consumption **1150 VA**

Frequency, US deliveries **60 Hz ±5**

Frequency, non US deliveries **50 Hz ±5, 60 Hz ±5**

Physical Specifications

Dimension L x W x H **241x139x408 mm / 9.5x5.5x16.1 in**

Weight

CTC-650 **10,5 kg / 23 lb**

Immersion Depth

CTC-650 **190 mm / 7.5 in**

Well diameter

CTC-650 **26 mm / 1.0 in**

Insert Dimensions (diameter x length)

CTC-650 **25,7 mm x 200 mm / 1.0 x 7.9 in**

Electrical

Switch Input (dry contact)

Test Voltage **Maximum 5 VDC**

Test Current **Maximum 2.5 mA**

Digital Interface

RS232 (9-pin Male)

Environmental

Operating Temperature

0 to 40°C / 32 to 104°F

Storage Temperature

-20 to 50°C / -4 to 122°F

Humidity

0 to 90% Rh, non-condensing

Protection Class

IP-10



Specifications CTC-1200A

Temperature

Temperature Range

Range **300 to 1205°C / 572 to 2200°F**

Accuracy

CTC-1200 with internal ref. sensor **±2.0°C / ±3.6°F**

Stability

CTC-1200 **±0.1°C / ±0.18°F**

*Measured after the stability indicator has been on for 10 minutes.
Measuring time is 30 minutes.*

Settings

Resolution **1 or 0.1**
Units **°C or °F**

Heating Time

CTC-1200 **23 to 1205°C / 73 to 2200°F ... 45 minutes**

*All specifications are given with an ambient temperature 23° C/73.4° F
± 3° C/5.9° F. Specified at 115 V/230 V.*

Cooling Time

CTC-1200 **1205 to 300°C / 2200 to 572°F . 120 minutes**

Time to Stability (typical)

CTC-1200 **20 minutes**

Mains Power

Voltage **115 V (90-127) / 230 V (180-254)**

Max Power Consumption **650 VA**

Frequency, US deliveries **60 Hz ±5**

Frequency, non US deliveries **50 Hz ±5, 60 Hz ±5**

Physical Specifications

Dimension L x W x H **241x139x408 mm / 9.5x5.5x16.1 in**

Weight

CTC-1200 **12 kg / 26.5 lb**

Immersion Depth

CTC-1200 **110 mm / 4.3 in**

Well diameter

CTC-1200 **27 mm / 1.6 in**

Insert Dimensions (diameter x length)

CTC-1200 **25 mm x 155 mm / 1.0 x 6.1 in**

Electrical

Switch Input (dry contact)

Test Voltage **Maximum 5 VDC**

Test Current **Maximum 2.5 mA**

Digital Interface

RS232 (9-pin Male)

Environmental

Operating Temperature

0 to 40°C / 32 to 104°F

Storage Temperature

-20 to 50°C / -4 to 122°F

Humidity

0 to 90% Rh, non-condensing

Protection Class

IP-10



Inserts

Inserts for CTC-320 B are made of aluminum. Inserts for CTC-650 B are made of brass. Inserts for CTC-1200 A are made of high-temperature steel alloy. All specifications on hole sizes are referring to the outer diameter of the sensor-under-test. The correct clearance size is applied in all predrilled inserts.

Predrilled Inserts–metric (mm)

Probe Dia.	Part Numbers			
	Insert Code ¹	CTC-320B	CTC-650B	CTC-1200A ²
3 mm	003	n/a	n/a	124503
4 mm	004	60F359	60F423	124406
5 mm	005	123452	123460	124504
6 mm	006	60F361	60F425	124407
7 mm	007	123453	123461	124505
8 mm	008	105190	105195	124506
9 mm	009	105191	105196	124507
10 mm	010	105192	105197	124508
11 mm	011	105193	105198	124509
12 mm	012	105194	105199	124510
13 mm	013	123454	123462	n/a
14 mm	014	123455	123463	n/a
15 mm	015	123456	123464	n/a
16 mm	016	123457	123465	n/a
18 mm	018	123458	123466	n/a
20 mm	020	123459	123467	n/a
Package of the above inserts	—	124583	124687	124689

Predrilled Inserts–imperial (in)

Probe Dia.	Part Numbers			
	Insert Code ¹	CTC-320B	CTC-650B	CTC-1200A ²
1/8 in	125	60F358	60F422	124511
3/16 in	187	60F360	60F424	124512
1/4 in	250	60F362	60F426	124404
5/16 in	312	60F364	60F428	124513
3/8 in	375	60F366	60F430	124514
7/16 in	437	60F368	60F432	124515
1/2 in	500	60F370	60F434	124405
9/16 in	562	60F372	60F436	n/a
5/8 in	625	60F374	60F438	n/a
11/16 in	688	60F376	60F440	n/a
3/4 in	750	60F378	60F442	n/a
13/16 in	813	105184	60F444	n/a
7/8 in	875	60F377	60F446	n/a
Package of the above inserts	—	124684	124688	124690

Undrilled Inserts

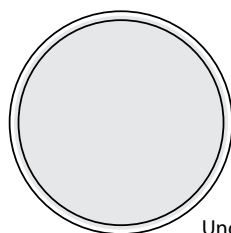
Inserts	Part Numbers		
	CTC-320B	CTC-650B	CTC-1200A ²
5-pack	60F356	60F420	124403
insulation plug	n/a	n/a	see below ²

Use of other inserts may reduce performance of the calibrator. To get the best results out of the calibrator, the insert dimensions, tolerance and material is critical. We highly advise using Jofra inserts, as they guarantee trouble free operation.

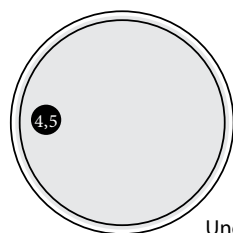
¹ Use insert code, when ordered as standard insert together with a calibrator.

² CTC-1200A only - Remember to order matching insulation plugs.

Do you need a customized insert?
Please contact us for more information.



Undrilled CTC-350/660



Undrilled CTC-1200

Ordering Information

Standard Delivery

- CTC dry-block calibrator (user specified)
- Mains power cable (user specified)
- Traceable certificate - temperature performance
- Insert (user specified)
- Tool for insertion tubes
- User manual
- Test cables (1 x red, 1 x black)
- RS232 cable (9-pin)
- JofraCal calibration software
- CTC-1200A includes matching insulation plug kit (3 pcs)

Base Model Number	
CTC320B	CTC-320B, 33 to 320°C (91 to 608°F)
CTC650B	CTC-650B, 33 to 650°C (91 to 1202°F)
CTC1200A	CTC-1200A, 300 to 1205°C (572 to 2200°F)

Power Supply (US deliveries 60 Hz only)	
115	115 VAC
230	230 VAC

Mains Power Cable Type	
A	European 230 V
B	USA/Canada 115 V
C	UK 240 V
D	South Africa 220 V
E	Italy 220 V
F	Australia 240 V
G	Denmark 230 V
H	Switzerland 220 V
I	Israel 230 V

Insert Type and Size	
XXX	1 x Single hole Insert (Please see insert section for correct code)

Calibration Certificate	
F	Traceable Certificate to International standards (standard)
H	Accredited Certificate - ISO17025

Accessories	
C	Carrying Case

CTC650B 230 A 006 H C CTC-650B with standard accessories, 230 VAC power with European power cord and insert: Pre-drilled 1x6 mm, Accredited certificate and carrying case

Accessories

122832Cleaning Brushes - 4mm - Package of 3 pcs
60F174Cleaning Brushes - 6mm - Package of 3 pcs
122822Cleaning Brushes - 8mm - Package of 3 pcs
65-F100Insulation in Tube, 100mm x Ø25mm
65-F101Insulation in Tube, 150mm x Ø25mm
65-F102Insulation in Tube, 200mm x Ø25mm
65-F103Insulation in Tube, 250mm x Ø25mm
65-F104Insulation in Tube, 300mm x Ø25mm
65-F105Insulation in Tube, 350mm x Ø25mm
65-F106Insulation in Tube, 400mm x Ø25mm
65-F107Insulation in Tube, 450mm x Ø25mm
105173Set of Insulation Plates (10 pcs)
125066Extra fixture for sensor grib
125067Extra sensor grib
125002Edgeport Converter with 4 pcs of RS232 ports
123409Carrying Case
124414.....CTC-1200 Insulation plug (3 pcs) 12mm-1/2in
124415CTC-1200 Insulation plug (3 pcs) 3, 4mm & 1/8in
124416CTC-1200 Insulation plug (3 pcs) 5, 6mm & 1/4, 3/16in
124518CTC-1200 Insulation plug (3 pcs) 7, 8, 9mm & 5/16in
124519CTC-1200 Insulation plug (3 pcs) 10,11mm & 3/8, 7/16in

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EN ISO/IEC 17025 Laboratory accreditation

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Because calibration is a matter of confidence!

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