

# PRECISION & HIGH TEMPERATURE CALIBRATION SOURCES

## CS173 | CS174 | CS175 | CS350 | CS650

### Features

- A range of temperature calibration sources for laboratory & on-site calibration of thermometers
- Dry-block calibration source with precision temperature control for reliable, accurate operation
- Black-body source for the calibration of infra-red thermometers (Standard CS Series) with pocket for reference thermometer
- Ideal for compliance with quality standards such as ISO9001 and HACCP
- Temperature ranges up to +350°C (CS350) and +650°C (CS650)
- Low temperature calibration with the CS174 & CS175 (to typically -20°C or 40°C below ambient)
- Blank inserts for custom probe sizes (CS174-IN & CS175-IN)
- Temperature stability of better than 0.03°C (Standard CS Series) and 0.1°C (High Temperature CS350/CS650)



### Accurate, effective calibration of thermometers

Accurate temperature measurements are essential if you need to meet standards, regulations or guidelines.

Ensuring that your thermometers are reading accurately is an essential part of this process and using a reference calibration source can help you achieve this.

The Eurolec CS Series of precision and high temperature calibration sources allow you to verify the readings from probe or IR thermometers, providing you with the confidence that your measurements are accurate.

The CS Series of temperature calibration sources cover a wide range of temperatures and provide both insert (with 6 probe holes as standard), a black-body for Infra-red thermometers and the option of a blank insert (CS174-IN & CS175-IN). For high temperature calibration, the CS350 and CS650 instruments are ideal.

Where an additional level of verification is required over an extended temperature range, an external reference thermometer, such as the Eurolec RT162, can be used to provide temperature readings to a resolution of 0.01°C.

## CS173, CS174 & CS175 Series Precision Temperature Calibration Sources

- High accuracy & stable temperature sources
- User adjustable temperature
- User adjustable °C or °F display
- PID Controller with platinum film sensor
- Test point for reference thermometer for increased accuracy
- Low temperature calibration with the CS175/CS175-IN
- Wide temperature ranges:

Model CS173 +30.0 to +200.0°C

Model CS174 40°C below ambient  
(approx. -20.0°C) to +85.0°C with  
0.1°C Resolution

Model CS175 40°C below ambient  
(approx. -20.0°C) to +85.0°C with  
0.01°C Resolution

The CS Series is available in three versions, each of which provide a highly accurate, very stable temperature output which is ideal for the calibration and servicing of reference thermometers as well as general purpose temperature measurement instruments.

The CS175 and CS175-IN versions can be used for low temperature calibration (to typically -20°C or 40°C below the ambient temperature).

Each of the CS Series provides for dry-block calibration of probe thermometers as well as black-body calibration of infra-red thermometers.

All of the standard CS Series can also be used with an external reference thermometer, such as the Eurolec RT162 or PC Temp RT2, to provide a complete reference, verification and calibration system.

The units utilise a temperature control system and also feature a pocket for a reference thermometer when calibrating infra-red thermometers.

All models display can be configured to display temperature in °C or °F and include RS232 output as standard and an option for a USB connection.

The CS174 & CS175 are also available with removable inserts using the references CS174-IN & CS175-IN respectively.

These instruments are supplied with one insert with standard holes and one "blank" insert.

### Using a reference thermometer with a calibration source

Where the very highest level of precision and accuracy is demanded, the temperature output of the Calibration Source can be verified using an external reference thermometer.

This additional level can be essential where calibration is to be carried out over an extended temperature range.

All of the standard CS Series (CS173 to CS175) can also be used with an external reference thermometer, such as the Eurolec RT162 or PC Temp RT2, to provide a complete reference, verification and calibration system.



## CS350 & CS650

### High Temperature Calibration Sources

The CS350 and CS650 calibration sources provide high temperature levels allowing the calibration of probe thermometers at extended ranges.

Each instrument provides highly accurate, very stable temperature output which is ideal for the calibration and servicing of reference probe thermometers as well as general purpose temperature measurement instruments at high levels.

The CS350 and CS650 Series can also be used with an external reference thermometer, such as the Eurolec RT162 or PC Temp RT2 for temperatures up to 200°C, to provide a complete reference, verification and calibration system.

- Accurate & stable high temperature source
- User adjustable temperature
- PID Controller
- Front & Rear probe holes
- User adjustable °C or °F display
- Standard RS232 output with optional USB connection
- Test point for reference thermometer for increased accuracy
- Wide temperature ranges:

Model CS350 +30.0°C to +350.0°C

Model CS650 +30.0°C to +650.0°C

## Ordering Information

### Ordering Codes

The product codes shown on the back of this datasheet show the standard product ordering codes and the specifications for each product.

### Mains Power Cable

All of the CS Series are supplied with a UK/ Ireland 3 Pin IEC Mains Cable as standard.

An EU or US Style cable can be specified if required.

### Blank Inserts for CS174/CS175

The CS174 and CS175 Sources can be ordered as CS174-IN and CS175-IN respectively.

These will include an additional blank insert as well as the standard pre-drilled insert fitted to the instrument.

### Reference Thermometer

A reference thermometer can be ordered with the calibration sources to build a complete temperature calibration system.

The RT162 Benchtop Reference Thermometer or the PC Temp RT2 Handheld Thermometer are ideal for this application and can be ordered alongside the calibration source.

Use the order codes RT162 or PC Temp RT2 (up to +200°C)



## Technical Information

### CS Series Precision Temperature Calibration Sources

| SPECIFICATION                   | CS173                  | CS174                           | CS174-IN                        | CS175                           | CS175-IN                        |
|---------------------------------|------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Range                           | +30.0°C to +200.0°C    | 40.0°C below ambient to +85.0°C | 40.0°C below ambient to +85.0°C | 40.0°C below ambient to +85.0°C | 40.0°C below ambient to +85.0°C |
| Resolution                      | 0.1°C                  | 0.1°C                           | 0.1°C                           | 0.01°C                          | 0.01°C                          |
| Accuracy                        | ± 0.2°C ± 1 digit      | ± 0.2°C ± 1 digit               | ± 0.2°C ± 1 digit               | ± 0.05°C ± 1 digit              | ± 0.05°C ± 1 digit              |
| Emissivity                      | > 0.95                 | > 0.95                          | > 0.95                          | > 0.95                          | > 0.95                          |
| Stability                       | Better than 0.03°C     | Better than 0.03°C              | Better than 0.03°C              | Better than 0.03°C              | Better than 0.03°C              |
| Heating Time (Typical)          | 30°C to 150°C, 15 mins | 20°C to 60°C, 6 mins            | 20°C to 60°C, 6 mins            | 20°C to 60°C, 15 mins           | 20°C to 60°C, 15 mins           |
| Cooling Time (Typical)          | Non-forced             | 20°C to 0°C, 7 mins             | 20°C to 0°C, 7 mins             | 20°C to 0°C, 7 mins             | 20°C to 0°C, 7 mins             |
| Power Supply                    | 110vAC or 220vAC       | 110vAC to 220vAC                | 110vAC to 220vAC                | 110vAC to 220vAC                | 110vAC to 220vAC                |
| Operating Temperature (Ambient) | +5°C to +40°C          | +5°C to +40°C                   | +5°C to +40°C                   | +5°C to +40°C                   | +5°C to +40°C                   |
| Weight                          | 4 kg                   | 4.2 kg                          | 4.2 kg                          | 4.2 kg                          | 4.2 kg                          |
| Dimensions                      | 196mm x 179mm x 180mm  | 196mm x 179mm x 180mm           | 196mm x 179mm x 180mm           | 196mm x 179mm x 180mm           | 196mm x 179mm x 180mm           |

**Standard probe hole dimensions** | 1 x 2.0mm; 3 x 3.50 mm; 1 x 5.50 mm; 1 x 6.20mm; 1 x 8.50 mm. All probe holes have a depth of 77mm

### CS350 | CS650 High Temperature Calibration Sources

| SPECIFICATION            | CS350                                     | CS650                                       |
|--------------------------|---|---|
| Range                    | +30.0°C to +350.0°C                       | +30.0°C to +650.0°C                         |
| Resolution               | 0.1°C                                     | 0.1°C                                       |
| Accuracy                 | ± 0.5°C 30°C to +200°C<br>±1°C over 200°C | ± 0.7°C 30°C to +200°C<br>±1.5°C over 200°C |
| Stability                | Better than 0.1°C                         | Better than 0.1°C                           |
| Heating Time to max temp | 15 mins                                   | 25 mins                                     |
| Cooling Time (Typical)   | Non-forced natural cooling                | Non-forced natural cooling                  |
| Power Supply             | 110vAC to 220vAC                          | 110vAC to 220vAC                            |
| Operating Temperature    | +5°C to +40°C                             | +5°C to +40°C                               |
| Weight                   | 5 kg                                      | 6 kg  |
| Dimensions               | 253mm x 209mm x 180mm                     | 253mm x 209mm x 180mm                       |

#### CS350/650 probe hole dimensions (front)

3.1 x 130mm, 5.0 x 130mm, 6.2 x 118mm  
6.2 x 130mm, 6.2 x 130mm, 8.2 x 130mm  
10.2 x 130mm

#### CS 350/650 probe hole dimensions (rear)

2.0 x 45mm, 2.0 x 45mm, 3.5 x 45mm  
3.5 x 45mm, 3.5 x 45mm

Customised hole diameters may be available. Please contact Eurolec for more information.

Eurolec Instrumentation Ltd are continuously developing and improving their products and as such the company reserve the right to amend specifications without notice and supply products which differ from those described.