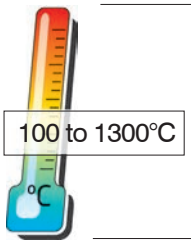
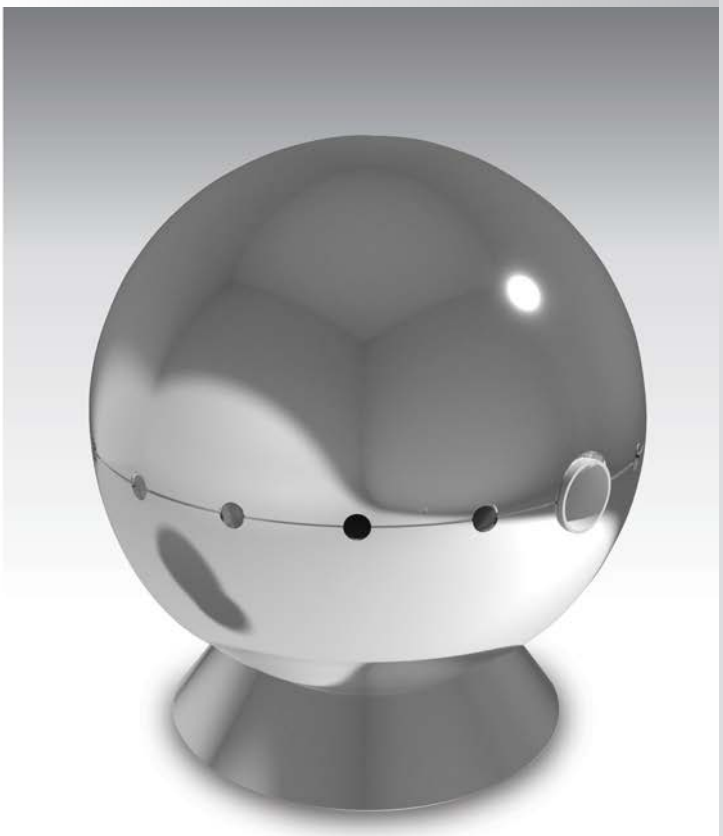


Blackbody Source
Cyclops



- Spherical Blackbody Source
- Wide Temperature Range 100°C to 1300°C
- Can be adapted for Thermocouple Calibration

The Cyclops Model 878 is a spherical blackbody source. It consists of an inner black sphere that sits inside a spherical furnace and is suitable for use as a radiation source for infrared thermometers.

Key Features and Design

Precision-Engineered Inner Sphere:

The inner black sphere, with a nominal diameter of 230mm, serves as the primary radiation source. It is accessed via an optical sighting tube, allowing precise alignment for infrared thermometers. The blackbody design ensures high emissivity, creating a stable and uniform radiation field, which is critical for accurate IR sensor calibration.

Choice of Aperture Sizes:

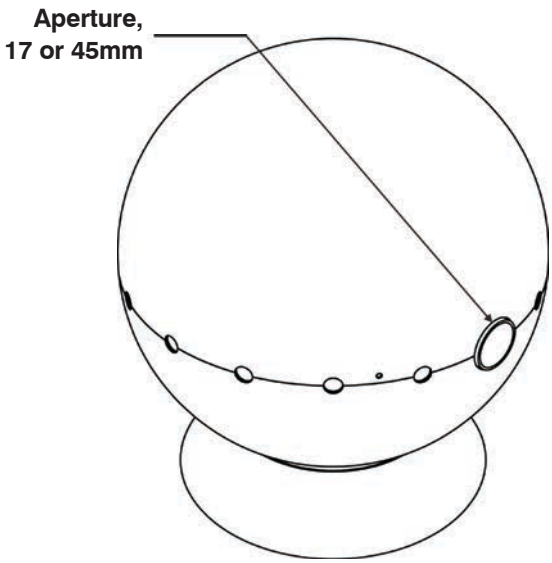
The furnace assembly is available with two aperture size options:

17mm aperture – Ideal for applications requiring high precision and a narrow field of view.

45mm aperture – Suitable for broader measurement needs, accommodating a wider range of infrared thermometers and sensors.

Optimized Furnace Construction:

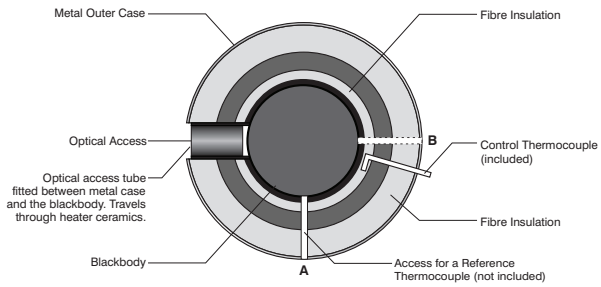
The spherical furnace is designed to maintain consistent temperature distribution across the inner sphere whilst minimising thermal gradients

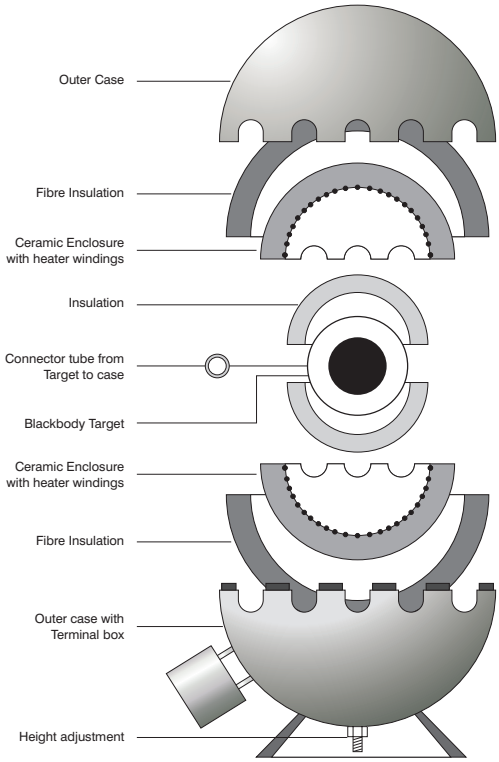


Model	878
Temperature Range	100°C to 1300°C
Emissivity	Greater than 0.999
Stability	±0.1°C
Display resolution	0.1°C to 999.9; 1°C from 1000 to 1300
Time to temperature	1.5 hours to 700°C 4 hours to 1300°C
PC Interface	included
Power	3kW typical
Voltage	100-130 or 208-240 Vac 50/60Hz
Dimensions	425mm Diameter
Weight	25 kg

Options
Ceramic Equalising Block to accept up to 8 thermocouples 878-02-08.

Cyclops Assembly Diagram Plan View (shown in section)





Performance Through Design

The Cyclops Model 878 spherical blackbody source is purpose-built to deliver high performance for the calibration of infrared thermometers and imagers.

Its unique construction comprises a series of concentric elements, each contributing to thermal stability and uniform emissivity.

The outer shell, made from spun metal, ensures mechanical strength and houses the internal insulation and heating components.

A layer of high-efficiency ceramic fibre insulation minimises heat loss and contributes to unifomity and thermal stability.

Nested within is a spherical ceramic mantle containing the heater windings, designed to distribute heat evenly.

At the centre lies the blackbody sphere, which serves as the radiating target. Its geometry and surface finish are optimised for high emissivity and uniform temperature.

The result is a blackbody source that meets the demands of both research and industrial calibration labs, delivering precision, efficiency, and ease of use in a compact system.

The external control system uses power feedback to stabilise against supply voltage changes providing greater stability. A digital filter circuit ensures high integrity of measurement, correcting for drift and noise

How to Order

Model 878 Cyclops. Please state supply voltage required
Please state target diameter either 17mm standard or 45mm to special order.
Reference Thermocouple Access Point is at position A as Standard, specify if required at point B.
State Target Diameter 17 or 45mm