Thermo Gauge Instruments Inc. Precision Blackbodies

# Model HT-95000 Black Body Calibration System

The Thermo Gauge model HT-9500 is a complete high temperature IR calibration system based on the Thermo Gauge tried and proven graphite tube design. The system includes a horizontal graphite tube cavity for high temperature source, control optical pyrometer, and digital temperature controller.

## FEATURES

1. Digital temperature controller
2. Calibrated NIST traceable optical pyrometer.
3. High emissivity (emissivity>.99)
4. Nitrogen or Argon purge gas to protect graphite tube.
5. High temperature operation from 500 C to 3000 C

## COMMON USES

1. Optical pyrometer calibration. The most common use is to calibrate working pyrometers and recertify them for service.
2. Emissivity determination of material samples.
3. Determination of IR detector characteristics.
4. Heat flux calibration by using the flat plate.

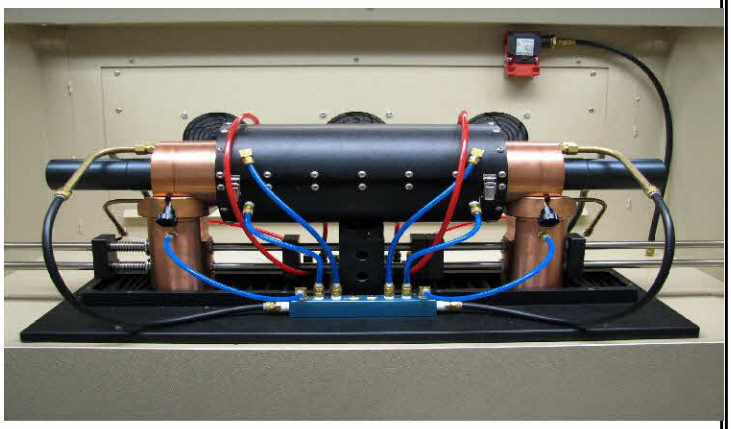
## HT-9500 CALIBRATION SYSTEM RAPID HEATING CONCEPT

The Thermo Gauge HT-1000TC builds on the highly successful design of the Thermo Gauge black bodies and employees the rapid heating concept. This design allows very fast heat up and cool down times. That means more data can be recorded with less time.

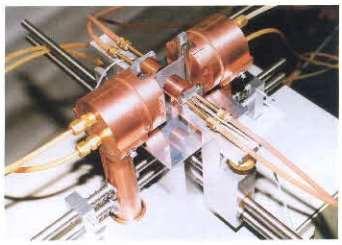
The rapid heating concept is based on the principle of direct resistance heating of a graphite heater element with large amounts of power into a poorly insulated heater element. This heats the heater element very quickly. The fast response time allows for a great savings in calibration time and technician man hours.

## BLACK BODY ASSEMBLIES

The HT-9500 can be fitted with 4 different black body assemblies or the flat plate assembly. The aperture sizes for the black bodies are 5/8", 1", 1.5", and 2". Below is a picture of a 1" black body assembly.



The HT-9500 can also be fitted with a flat plate target that is used for heat flux gage calibration. Below are two pictures of the flat plate calibration system. The flat plate is commonly used for fire testing, material certification, and aerospace research.



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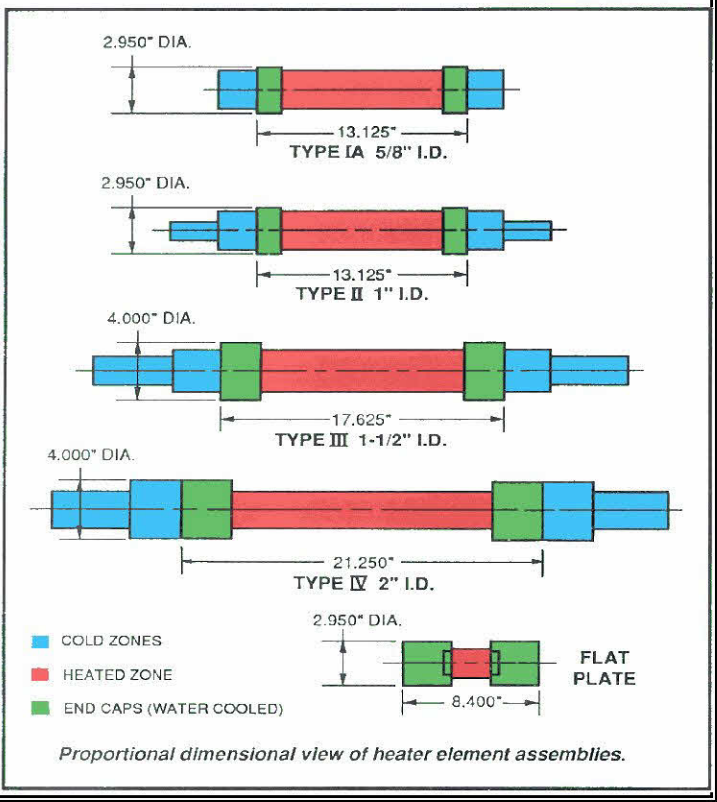
| Specifications | |
|---|---|
| **Temperature Range** | 500 C to 3000 C<br>932 F to 5432 F |
| **Resolution** | 0.1 degrees |
| **Heating Rate** | 200 C per minute for black body<br>500 C per second for flat plate |
| **Cooling Time** | Above 1000 C >100C per minute<br>Below 1000 C > 25 C per minute |
| **Stabilization Time** | Typical 3 minutes, slower at low temperature end |
| **Stability** | 0.1 C |
| **Dimensions** | 35 wide x 45 long x 55 tall. See drawing. |
| **Weight** | 800 lbs<br>363 kg |
| **Power** | 48 KVA |
| **Cooling water** | 5 - 8 GPM depending on cavity<br>Typical 60 psi, Maximum 100 psi |
| **Purge gas** | Nitrogen or Argon, (not used for flat plate target) |
| **NIST Traceable** | Optical pyrometer or standard Gardon style heat flux gage. |

| Part Number | Voltage | Description |
|---|---|---|
| **110103112** | 480V, 60Hz | With 5/8" aperture Black Body cavity. |
| **110103122** | 480V, 60Hz | With 1" aperture Black Body cavity. |
| **110103132** | 480V, 60Hz | With 1.5" aperture Black Body cavity. |
| **110103142** | 480V, 60Hz | With 2" aperture Black Body cavity. |
| **110107112** | 400V, 50Hz | With 5/8" aperture Black Body cavity. |
| **110107122** | 400V, 50Hz | With 1" aperture Black Body cavity. |
| **110107132** | 400V, 50Hz | With 1.5" aperture Black Body cavity. |
| **110107142** | 400V, 50Hz | With 2" aperture Black Body cavity. |



*Proportional dimensional view of heater element assemblies.*

## FACILITY REQUIREMENTS

In all cases the installation must comply with all local codes.

1. **Electrical supply:** 240, 380, 400, 480 volts AC single phase (choose correct part number)
2. **Cooling water:** A cooling system capable of removing 24000 BTU/hour is required. Recirculation may be used with a large holding tank.
3. **Purge gas:** Nitrogen (below 2000 C) Argon (above 2000C), 50 psi. The purge gas flow is preset and purge is controlled automatically.

Shipping weight: 1100 lbs
System is shipped in 1 wood box, 60" x 60" x 60", with approval stamp. Shipment is to be by air freight and FOB Factory.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