



GCC30

#### Options:

- Over-temperature protection to DIN 12-880 class 2 (recommended to protect valuable contents & for unattended operation)
- 300°C optional maximum temperature
- Optional liquid nitrogen injection system to reach -150°C (including 2m insulated stainless steel pipe & pressure relief valves)
- Access ports for cables & pipes
- Programmable controls with additional segments & multi-program capability
- Interior light (subject to temperature limitations) or through window illumination kit
- Additional shelves as required
- A wide range of sample loading & handling accessories can also be supplied
- Paperless DAQ (Data Acquisition) graphical recorders available.

**Access Ports:** A nominal 50mm diameter cable port is located centrally on the left hand side of the inner chamber wall.

**Air Circulation:** Forced air circulation is provided by a rear mounted fan. The fan is mounted behind an air guide to prevent it being touched by the operator.

**Shelves and Runners:** The chamber is supplied with three pairs of fixed shelf runners. Two perforated stainless steel shelves are supplied.

**Temperature Control:** The temperature of the chamber is controlled by a Eurotherm 3216 digital indicating microprocessor based three term time/temperature program controller. The controller is fully adjustable and may be "tuned" by the customer to suit the temperature and load in the chamber.

**Under/Over Temperature Control:** A Eurotherm 2132 controller is fitted as a low and high temperature cut out. If a fault causes the main set point temperature to be exceeded then a safety contactor will isolate the heating elements and solenoid valves. The over temperature circuit must be manually reset when the chamber has warmed up or cooled down and the fault has been cleared.

**Heating System:** The chamber is heated by mineral insulated metal sheathed elements. The low surface watt loading of the elements ensures a long and reliable service life.

**Cooling System:** The chamber is cooled by liquid Nitrogen. A cool channel circuit in the controller switches a solenoid valve to control the direct injection of liquid into the chamber. A second solenoid valve in the supply line is controlled by the under temperature controller and will switch off the liquid Nitrogen if the direct injection valve fails in an open condition. Appropriate pressure relief valves are included to ensure a safe working system. A two metre length of insulated flexible stainless steel hose is supplied for connection of the equipment to the customers bulk supply.

**Build Standards:** The oven is designed and built to good engineering practice in a facility having a certificated quality assurance scheme to ISO 9001:2008. It complies fully with the relevant UK and European Union Health and Safety at Work legislation. It is compliant with the EU Low Voltage and EMC directives and carries the CE mark.

| Model  | Temp. range (°C) | Heat-up time to Max. (mins) | Temp. stability °C PID | Temp. uniformity 300°C (± °C) | Cool-down time to -60°C (mins) | Dimensions         |                    | Shelves Fitted/ accepted | Shelf loading Each/ total (kg) | Max. Power 200 °C | Power Supply |
|--------|------------------|-----------------------------|------------------------|-------------------------------|--------------------------------|--------------------|--------------------|--------------------------|--------------------------------|-------------------|--------------|
|        |                  |                             |                        |                               |                                | Internal HxWxD(mm) | External HxWxD(mm) |                          |                                |                   |              |
| GCC30  | -60 to 200       | 26                          | ±0.5                   | ±5.0                          | 12                             | 310x300x300        | 570x765x770        | 2/3                      | 10<br>20                       | 750               | single phase |
| GCC60  | -60 to 200       | 26                          | ±0.5                   | ±5.0                          | 12                             | 410x400x380        | 670x865x870        | 2/5                      | 10<br>30                       | 1000              |              |
| GCC120 | -60 to 200       | 26                          | ±0.5                   | ±5.0                          | 12                             | 660x500x380        | 920x965x870        | 2/9                      | 10<br>40                       | 1500              |              |

Uniformity values are measured with vents closed in a steady state chamber after a stabilisation period. Shelf loadings are based on evenly distributed weight. Gas cylinders & Dewars are not included as part of the standard offer.

### GCC-Series, Gas Cooled Chambers

Direct injection liquefied gas cooling using liquid CO<sub>2</sub> to achieve -60°C (or optionally using liquid nitrogen to achieve -150°C) & rapid heating to 200°C as standard (or optionally 300°C) all under the control of a sophisticated 8 segment pair controller. Enables the most rigorous temperature test profiles to be used for accelerated age testing or environmental simulation.

**Thermal Range:** The working temperature range of the chamber is -75°C to +400°C.

**Thermal Performance:** The equipment has sufficient power to enable a heating rate of up to 10°C/minute with a small thermal load. Temperature stability under steady state conditions is better than ±0.5°C.

Temperature uniformity throughout the empty chamber measured not less than 75mm from any surface is better than ±0.5°C.

**Internal Chamber Construction:** The internal chamber is fabricated from 304 grade polished stainless steel. All the joints are externally sealed to prevent moisture entering the insulation when the chamber is used at temperatures below ambient.

**External Construction:** The main case of the chamber is fabricated from mild steel rectangular hollow section panelled with zinc coated mild steel sheet. All external surfaces are finished with grey powder paint.

**Thermal Insulation:** The inner chamber is insulated with high quality ceramic fibre and mineral wool blanket of adequate thickness to ensure a safe outer case temp.

**Chamber Door:** The chamber is fitted with a single door that is hinged on the left hand side and opens to give full access to the chamber. The door is fabricated from zinc coated mild steel sheet for the exterior and 304 grade stainless steel for the interior. The door is fitted with silicone rubber door seals to reduce heat leakage through the joints.