

- **2.7 ft.<sup>3</sup> Work Volume**
- **-30°C to 200°C Range**
- **Environmentally Safe Refrigeration**
- **Remote Interfaces Built-in  
GPIB, RS232, RS422**
- **Portable Benchtop 115 VAC**
- **Integral User Temperature Probe**
- **PID Control**



## GENERAL PRODUCT INFORMATION

The MODEL EC127 is a portable, self-contained, temperature controlled test chamber. It was designed to provide a wide temperature test range for use in laboratory or production ATE or stand-alone product quality assurance and reliability testing. The chamber is cooled by its built in single stage environmentally safe vapor phase compressor system, and uses zero voltage controlled resistance heaters for heating the workspace.

The EC127 is equipped with Sun Systems' advanced controller which provides precise temperature setpoint control (+/- .1°C) as well as many safety and user convenience features. The controller has user configured upper and lower temperature limits, open and shorted probe detection, hardware watchdog timer and an independent mechanically adjustable over temperature protection system. Some of the built in user features are GPIB, RS-232 and RS-422 remote interfaces, simple local programming with room for 10 local programs in battery backed RAM, and a second user probe located in the workspace for your use. Since Sun Electronic Systems designs and manufactures the complete unit, you can be sure that we stand behind the complete unit and that all of the chamber subsystems function together optimally.

## CHAMBER CONSTRUCTION

The EC127 was designed to provide years of reliable service. The inner chamber is constructed of welded 304 stainless steel. The remainder of the cabinet is made of aluminum to resist rusting, and to make the chamber as light as possible, while still providing a strong, solid construction. The insulation system of the chamber has been designed to minimize thermal losses and insure safety. A dual centrifugal blower recirculation airflow system is employed to keep thermal gradients in the workspace to a minimum, and to quickly transfer heat to and from your device under test. The dual blower system provides greater than 300 ft.<sup>3</sup> per minute of air circulation. The Model EC127 was designed for ease of service, should that be necessary. Both side panels are removable for total access to the refrigeration and electrical systems. All control electronics are mounted on the easily removable front control panel to allow for fast controller servicing.

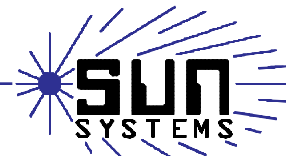
The chamber comes standard with a removable pull off door but can be ordered with a hinged door. A window can also be ordered for the door. Cable access ports can be ordered with the unit. The standard ports are 1", 2", and 3" circular ports to be mounted on the left side, right side, or door. If you have special port requirements, please call.

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## CONTROL SYSTEM

We designed the EC127 controller based on many years of experience manufacturing environmental test and control equipment. Any controller has two major functions. First to control the heating and cooling chamber functions to provide for safe, accurate and stable test chamber temperature. Secondly to provide a simple to use, but comprehensive user interface for local or remote control of the chamber.

Addressing the first function, the EC127 controller provides two electrically isolated 16 bit precision temperature sensors. The first sensor, located in the top of the chamber, is designated the chamber probe. Normally this sensor is used to monitor chamber air temperature for control. The second probe, or user probe, is a type K thermocouple that is located in the chamber so that you can position it on your product or anywhere in the work area to monitor or, using special control commands, control temperature. This dual probe configuration allows you to control the workspace temperature to your exact requirements. The controller uses PID control to hold the chamber to within +/- .1°C of the set point. Internally the controller handles linear ramping to the set point and guaranteed soak timing with user indication of time-out. The EC127 provides several safety features including upper and lower temperature set point limits, open and shorted sensor detection shutdown, and an independent redundant over temperature fail-safe system.

The user interface consists of a front panel for local operation and a number of built in remote ports for remote control for when the chamber is to be incorporated into an automated test system. The front panel provides 30 keys to allow direct entry of process control temperatures, ramping rates, soak times, etc. There are no up/down incrementing numbers or cryptic commands to remember. A two line alphanumeric display provides concise prompts to make setup as easy as possible. Up to ten local programs can be stored in the controllers battery backed memory and each program uses a Basic language like command structure allowing for looping and calling other programs as subroutines. A battery backed time of day clock is also built in to allow for automatic local program start (at a time of day) and for automatic power failure continue if power was off for less than user settable amount of time. Controlling the unit from any of the remote interfaces are also straight forward. The same alphanumeric commands are sent, in ASCII, as are used by the front panel.

Included with the manual is a floppy disk that contains example remote control programs and a free copy of our PC based chart recorder/logging program. Outputs are also provided for connection to an analog dual channel chart recorder for hardcopy confirmation of the test. An optional parallel printer port may also be ordered for data logging.

## SPECIFICATIONS

### Temperature Range

-30°C to +200°C  
-40°C achievable with LN<sub>2</sub> or LCO<sub>2</sub> Boost

### Interior Dimensions

20"W x 12"H x 19"D  
50.8cm W x 30.48cm H x 48.26cm D

### Exterior Dimensions

26"W x 30"H x 36"D  
66cm W x 76.2cm H x 91.44cm D  
Allow 6" around sides and rear for air cooling

### Power Requirements

115VAC, 15 AMP line service

### Net Shipping Weight (uncrated)

170 lbs (78 kg)

### Heating Rates (empty chamber)

+25°C to +100°C	15 minutes
+25°C to +120°C	21 minutes
+25°C to +150°C	30 minutes
+25°C to +200°C	45 minutes

### Cooling Rates (empty chamber)

+25°C to +5°C	4 minutes
+25°C to 0°C	6 minutes
+25°C to -10°C	11 minutes
+25°C to -25°C	25 minutes
+25°C to -30°C	38 minutes

### Active Load Capacity

100 watts device under test loading at -20C

### Warranty

One Year

**Contact Sun Systems for information on our complete line of Environmental Chambers and Temperature & Process Controllers.**

07/02

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