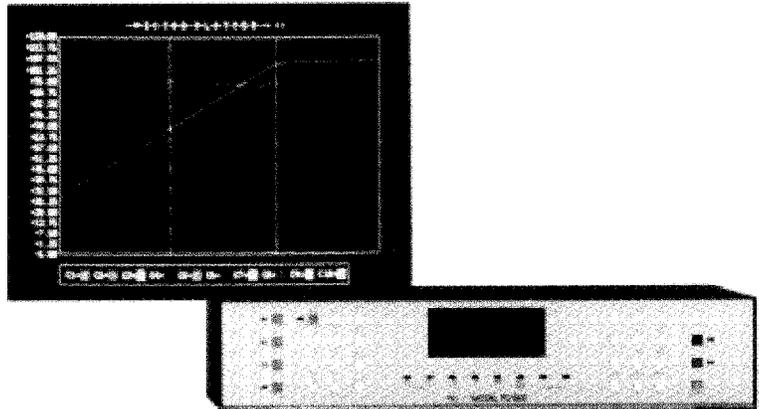


- **Eight Sensor Inputs**
- **Eight Alarm Outputs**
- **Local or Remote Operation**
- **IEEE-488**
- **RS-232 and RS-422**
- **°C, °F, or K**
- **Electronic Isolation**
- **Vector Plotting Software**
Free RS232 Program for a PC
- **User Selectable Process Limits**
Upper and Lower per channel
- **Printer Option**



General Description

The PC1000 Scanner option adds eight sensor inputs and eight open-collector alarm outputs to the PC1000 process controller. These sensor inputs can be configured to read J, K, or T thermocouples, voltage, or current. They are electronically isolated from each other and from the PC1000's internal circuitry. In addition, each channel supports a user selectable upper and lower process limit. When any channel's limit is exceeded, the scanner will alert the user by displaying an error message and by the associated open-collector alarm output. These outputs may be tied together in a wired-or configuration or used as individual alarms. With a maximum source/sink capability of 100ma, these outputs are ideally suited for high-power peripheral loads such as solid state relay enables, LEDs, and buzzers. Typical usage includes wired-or hook up to a buzzer to indicate when an alarm state is reached (in addition to the front panel display of the error message).

The new command set developed for the scanner allows users to monitor the process measurement values through both local (PC1000 front panel) and remote (RS-232, RS-422, and IEEE-488) operation. The limit commands may also be used in local programs enabling users to modify upper and lower limits as required during operation.

The probe calibration method used by the scanner gives end users a simple and effective means of adjusting or fine tuning the additional channels.

The method allows for absolute calibration, e.g. 0°C and 100°C probe calibration, or relative calibration based on the in-house standard readings. The users simply places the probe at a known temperature and enters the calibration command.

The scanner and PC1000 process controller combination enable users to monitor up to ten sensors, control to two of them, and all in a single controller package. The scanner fits inside the standard PC1000 chassis. When used in conjunction with Sun Electronic Systems' Printer Option, the scanner and PC1000 combination can log all 10 channel values at a software selectable interval.

Software Support

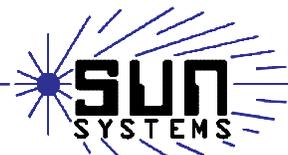
A graphic RS-232 chart recorder/data logger program is included with the scanner option. The program enables end users to monitor any remote accessible PC1000 parameter. These include the current value of any channel, the set points, and the rate settings. These values are then displayed on a user defined graph. In addition, the user may specify the sampling rate and an output file name for data logging. The program is easy to operate and will work on any IBM PC or compatible computer with VGA graphics and an RS-232 port. It provides an excellent means for monitoring process changes and logging data for future analysis.

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Application Note

The PC1000 process controller and scanner option provide a platform by which end users can both control thermal processes and monitor the results in one device. An example of this setup is shown in the figure below. The PC1000 is configured in dual loop temperature/humidity control mode. Channel 1 is the temperature sensor used by the PC1000 to monitor/control the dry temperature of the chamber. Channel 2 is the wet bulb sensor which the controller uses to determine the percent relative humidity. Based on this relative humidity calculation, the PC1000 determines whether to inject steam or dry gas into the chamber. Three channels on the scanner are being used to monitor the device under test (a motor). The probes are placed at different points in the motor and the results are graphically displayed on the computer. The motor's power source is running through a relay which is controlled by one of the open-collector alarm outputs of the scanner. If any of the temperatures on the motor's windings or bearings exceeds its user set upper limit, then the PC1000 will activate the alarm output, thereby turning off the motor. The graphic chart recorder program, which comes free with the scanner option, uses a simple RS-232 interface (through the computers COM port) to communicate with the PC1000. The results are being logged by the computer for future use in a spreadsheet program.

Example Local Program

Rate1= 2°C	Set ramping of 2°C/min for dry temp
Rate2 = 2 %	Set ramping of 2 %/min for %RH
Set1 = 90°C	Channel 1 controls to 90°C
Set2 = 85 %	Channel 2 controls to 85 %RH
Upl3=120°C	Disengage motor if C3,
Upl4=120°C	C4,or
Upl5=120°C	C5 exceeds 120°C
Out0:5,1	Turn on power to the motor.
Wait1=01:00:00	Wait at 90°C(set1) for 1 hr.

Specifications

Power Requirements

Power Consumption	35 watts
Input Voltage	110/240 ± 10%
Line Frequency	50/60 hz

Mechanical

Package	Fits inside PC1000 (3.5"Hx16.5"Wx15"D) 19" rack mountable
Rear Panel	3 additional slots

Environmental

0°C to 50°C ambient
local junction comp.

Safety

Sensor Malfunction	Open probe detection
Controller Malfunction	Hardware Watchdog timer
Process Errors	External Failsafe input
Process Limits	Upper/Lower per channel open-collector output
Line Voltage Loss	Battery-backed memory

Process Sensor Input Channels

Ranges

J	-200° to +760°C
K	-200° to +1250°C
T	-200° to +325°C
Voltage	0 to 5 volts
Current	0 to 20 mA

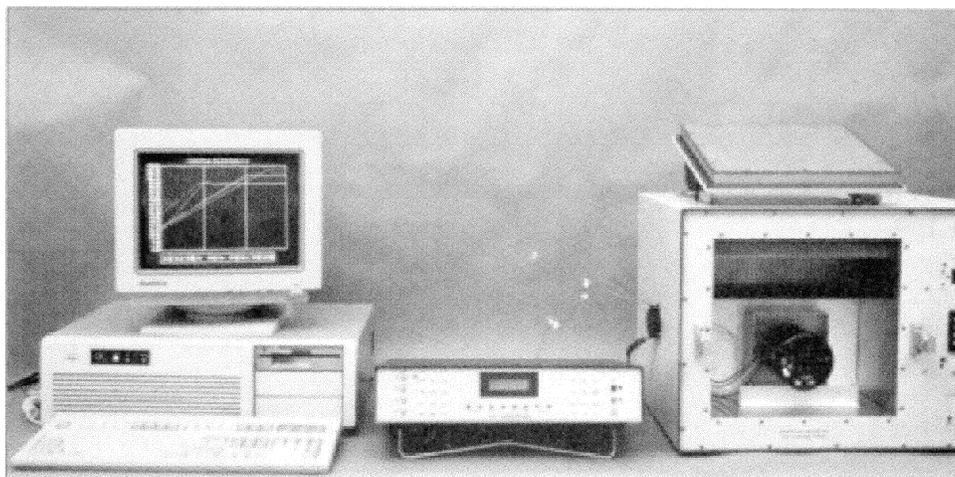
Resolution

15 bit conversion

Absolute Error Over Range

J , K & T	± 0.5°C
Voltage	± 500 µV
Current	± 2 µA
Electronic Isolation	240 volts

07/02



Call Sun Systems for further information on our complete line of temperature & process controllers and environmental chambers.

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