# MICROPROCESSOR CONTROLLERS

Series 5000

PID Controllers to precisely measure and automatically control relative humidity, temperature and other linear processes such as CO_2, and pressure. Configurations include single or dual control units, ramp/soak profiling, analog or digital interfaces plus optional software to remotely control, chart, log and alarm.

Features:

☐ **Microprocessor PID control**

☐ **Single & dual controllers**

☐ **Easy installation & operation**

☐ **Accurate, precision sensors**

☐ **Humidity, temperature or combined configurations**

☐ **Control any linear process**

☐ **Single & multiple Ramp/Soak profiling**

☐ **90-240VAC power**
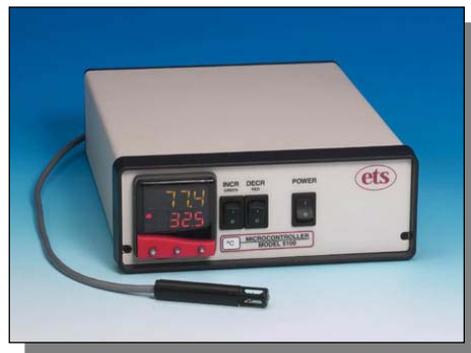
electro-tech systems, inc.

Description:

Series 5000 Controllers are highly flexible instruments that monitor and/or control not only humidity and temperature, but virtually any process measured with a sensor having a linear voltage output. Using a common platform, the controllers are available in both single and dual configurations. Dual controllers can be configured to control two linear parameters or control one and only monitor the other. The controllers can operate as stand-alone units or as part of a computer-controlled system using the optional software package that can control, monitor and log up to 32 control modules simultaneously.

Controllers are available with a choice of one or two control modules that can be mixed and matched in the dual units. The 3300 module continuously displays the measured parameter and when the Function button is depressed, displays the set point. It can also perform a single ramp/soak cycle. The 9500P module displays both the measured parameter and set point simultaneously, performs multiple ramp/soak cycles and includes a third set point for alarming. Point source LED's in both modules indicate the operating status of the control function. Front panel ON/OFF switches enable the respective operating systems to be placed in standby without disturbing controller settings.

Solid-state relays power standard North American AC outlets installed on the rear panel. Optional IEC outlets for 115/230V are available. Each module controls two power outlets: one for the increase and one for the decrease operating system such as humidifier/dehumidifier or heater/cooler.

Controllers can be programmed as either ON/OFF, or as proportional control where the process is constantly monitored and power to the operating system pulsed at a rate that maintains the parameter measured at the sensor, to within ±0.2 of the set point. Slow responding sensors such as those used to measure CO_2 may require lower resolution settings.

Humidity and humidity/temperature controllers include the Model 554 Temperature Compensated Humidity Sensor that measures over the entire 0-100% RH range with an accuracy of ±2% RH and ±0.9°F (0.5°C). The sensor contains both capacitive humidity and RTD temperature sensing elements. Temperature compensation improves relative humidity measurement accuracy when the temperature is significantly above or below ambient (72°F/23°C).

Temperature controllers include the Model 555 Temperature Sensor. This fast responding, integrated circuit device measures over the range of 0-100°C (32-212°F) with accuracy better than ±1.8°F (1°C). Thermocouple and RTD-2/Pt100 type sensors are available on special order. Other linear process control sensors can be supplied by ETS or provided by the user.

A 0-1V analog or a digital signal (when the optional communications board is installed) is provided for connection to a recorder or to communicate with the optional CALCOMMS Applications Software that provides enhanced display, charting and alarming. CALgrafix Process Monitoring & Configuration and CALopc Server (for interfacing with OPC compatible client software) software packages are also available. Communicates with Windows 95/98/p2000/NT/XP using the MODBUS® protocol via a fully isolated RS-232 (single unit only) or RS-485 (multiple units) link for CALCOMMS. The graphic WINDOWS™ based software provides PC supervision of any combination up to 32 control modules with the capability of remote adjustment, instrument configuration, cloning, saving and retrieving instrument settings
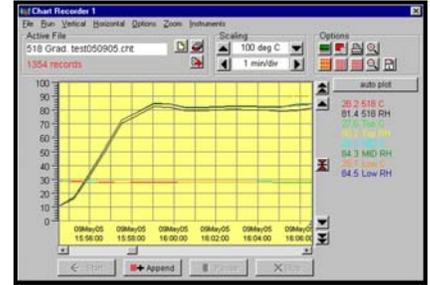
to files together with logging and charting. Up to 12 controller readings can be shown live on the screen in real time.

Controller Configuration

Charting

Controller Activity

Ordering

Series 5000 Controllers can be ordered in the exact configuration required using the chart below. Common configurations listed have 3300 control modules, ON/OFF operating system standby switches and do not have communications interface board(s).

Model 5100-230:   **Temperature Controller**
Model 5100-240:   **Humidity Controller**
Model 5200-240-230:   **Humidity/Temperature Controller**

BASE MODEL		LEFT CONTROLLER				RIGHT CONTROLLER		
		Controller Configuration	System Function	Computer Interface		Controller Configuration	System Function	Computer Interface
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1 - Single Unit 1 CAL controller 2 - Dual Unit 2 CAL controller		0 – Measure Only (No output relays & AC outlets) 1 – Standard Control w/o operating system ON/ OFF switches 2 – Standard Control with operating system ON/OFF switches 3 – Ramp Control w/o operating system ON/OFF switches 4 – Ramp Control with operating system ON/OFF switches	1 – Universal (No parameter ID) 2 – CO$_2$ 3 – Temperature 4 – Humidity 5 – Pressure (Other – number as needed)	0 – No computer interface board 1 – RS485 interface board 2 – RS232 interface board		0 – Measure Only (No output relays & AC outlets) 1 – Standard Control w/o operating system ON/ OFF switches 2 – Standard Control with operating system ON/OFF switches 3 – Ramp Control w/o operating system ON/OFF switches 4 – Ramp Control with operating system ON/OFF switches	1 – Universal (No parameter ID) 2 – CO$_2$ 3 – Temperature 4 – Humidity 5 – Pressure (Other – number as needed)	0 – No computer Interface board 1 – RS485 interface board 2 – RS232 interface board

Specifications:

Controller:	3300	9500P
Sensor input (std linear):	0-1.0V	0-5V (max)
Accuracy:	±0.5%	±0.1%
Resolution:	±0.1 of digital readout	
Calibration accuracy:	±0.25% (max sensor input)	
Sampling frequency:	Input - 10 Hz, CJC - 2 sec	
Display:	High Brightness LED	
Reading:	0.4" (10mm) Green	0.4" (10mm) Green
Set Point:	Same as Reading	0.35" (9mm) Orange
SP1:	Flashing square Green	Flashing square Green
SP2:	Flashing round Red	Flashing round Red
SP3 (Alarm):	None	Flashing round Red
Controls:		
Control module:	Function, Up, Down buttons	
Front Panel (Optional):	INCR - ON/OFF, DECR - ON/OFF	
Power (Input):	90-240VAC, 50/60 Hz, 1,000 VA max	
AC output control current:		
Std configuration:	4A	
Heater Control:	8A	
Solenoids	2A (extra low turnoff leakage current)	
Ramp/Soak:	1 cycle	126 seg./pgm, 31 pgm, max
COMM PORT: 9-Pin Sub-D		
Analog Output:	0-1V directly from sensor	
Communications: (CALCOMMS only)	MODBUS® protocol, Windows 95/98/2000/NT/XP, 200MHz/16MB RAM min	
Single unit link:	RS-232	
Multiple unit link:	RS-485	
Dimensions:	7.25"Wx9.0"Dx2.5"H (185x229x70mm)	
Weight:	3 lb (6.6kg)	3.5 lb (7.7kg)
Software:		
Standard support:	CALCOMMS Applications Software	
Optional support:	CALgrafix Process Monitoring & Configuration Software	
	CALopc Server Software	

Sensors:

Humidity/Temperature: Temperature compensated
   Humidity: Capacitive film
   Range: 0-100% (10mV/%RH)
   Accuracy: ±2% RH @ 73°F (23°C)
   Temperature: RTD
   Range: -40 to +185°F (-40 to +85°C) (10mV/°C)
   Accuracy: ±0.9°F (0.5°C)
   Size: 0.625" dia.x 6.5" L (15mm x 165mm)
   Cable length: 6.5' (2m)
   Housing: Polycarbonate, black (Ral 7016)
   Compliance: EN50081-2, EN50082-2
Temperature only: Solid state IC
   Range: 32-212°F (0-100°C) (10mV/°C)
   Accuracy: ±1.8°F (1.0°C)
   Size: 0.5" dia. x 2.5" L (12.5mm x 63mm)
   Cable length: 5' (1.5m)
   Housing: Delrin, black

Specifications are subject to change without notice