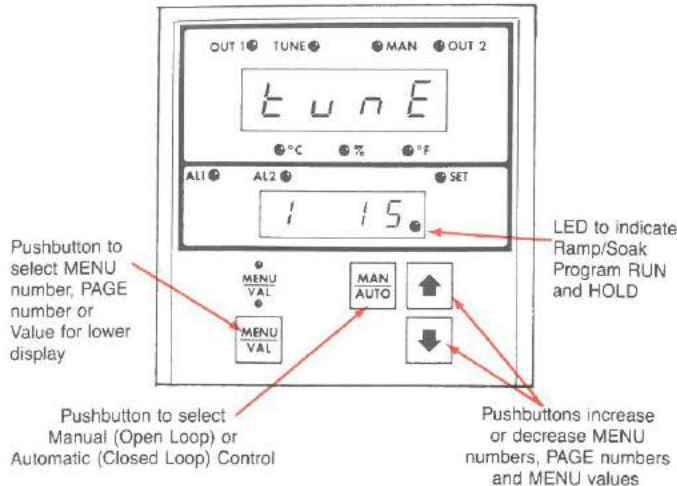


Chromalox® 2001 PLUS! QuickInfo

Pushbutton Functions



Getting to PAGE/MENU Numbers

To flip through the 2001 PLUS' programming PAGES, you must be at MENU 0 on any PAGE:

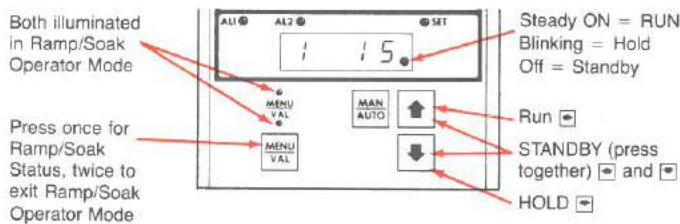
- Press **MENU VAL** until the MENU LED is lit
- Press **↓** until MENU # is 0
- Press **MENU VAL** again to enter PAGE select
- Press **↑** or **↓** until desired PAGE is selected

After PAGE is selected, proceed to MENU selection

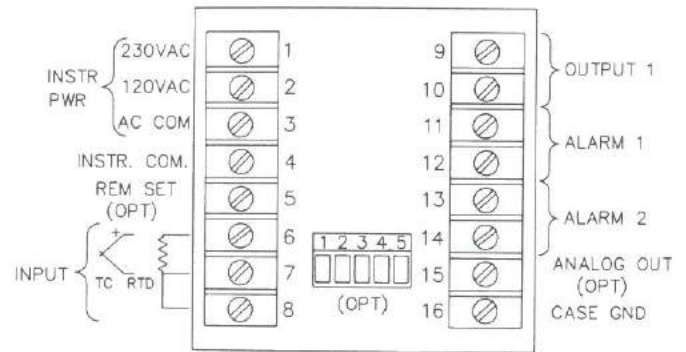
- Press **MENU VAL** to enter MENU select, MENU LED lights
- Press **↑** until desired MENU # is selected
- Press **MENU VAL** to display the value for the selected PAGE/MENU, VAL LED is lit
- Press **↑** or **↓** to change MENU value
- Press **MENU VAL** to return to MENU select

Ramp/Soak Operator Mode and Indications

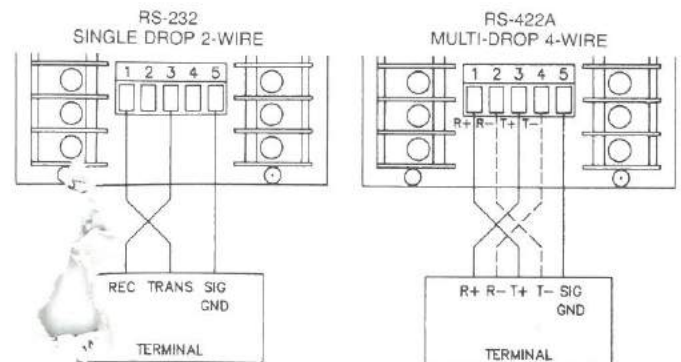
- Go to PAGE 4/MENU 1, then press **MENU VAL**
- Both MENU and VAL LEDs light, indicating Ramp/Soak Operator Mode
- Upper display indicates Process Variable, lower display indicates Set Point
- Press **MENU VAL** again. Controller displays:
StRt — Ramp/Soak Status
int — Current Interval Number
tōGō — Time Remaining in Current Interval
LōōP — Loops Remaining
- In Ramp/Soak Operator Mode, pushbuttons and LEDs have Ramp/Soak Functions as shown in the diagram below.



Controller Wiring



Digital Interface Connector Wiring



PAGE 0: Display (Status Only) d ISP			
CUE	MENU	DISPLAY SELECTION	SEC. LEVEL
R SP	1	Active Set Point	A
Proc	2	Process Variable	
dPSP	3	Deviation from Process Set Point	
outc	4	Output Command in % of full ON	
rPSP	5	Remote Process Set Point	
StRt	6	Ramp/Soak Operating State	
int	7	Current Interval Number	
tōGō	8	Time Left to go in Current Interval	
LōōP	9	Number of Loops Remaining	

Chromalox®
INSTRUMENTS AND CONTROLS

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EMERSON ELECTRIC CO



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PAGE 1: Control Operations EtrL

CUE	MENU SELECTION	AVAILABLE SETTINGS	FACTORY SETTING	SEC. LEVEL
1	Process Set Point	Instrument Sensor Range	0	B
2	Manual Reset (Offset)	-99.9 to 99.9	0.0	B
3	Proportional Band	0.1 to 999.9% span	5.0%	C
4	Automatic Reset	0.00 to 99.99 repeats/minute	0.00	C
5	Rate	0 to 500 seconds	0	C
6	Control Action	<i>d</i> = direct (cooling) <i>r</i> = reverse (heating)	<i>r</i> = reverse (heating)	C
7	Control Type	<i>P</i> , <i>d</i> = PID <i>onoF</i> = ON/OFF	<i>P</i> , <i>d</i> = PID	C
8	Output Limit	0 to 100% ON	100% ON	C
9	Output Cycle Time	0.1 to 60.0 seconds	See User's Manual, Sec. 4	C
10	Deadband	1 to 100°F (for temp. inputs) 0.00 to 6.25% span (analog input)	5°F	C
11	Alarm #1 Set Point	JT/C -100 to 1400°F TT/C -350 to 750°F KT/C -100 to 2100°F NT/C -100 to 2300°F ET/C -100 to 1100°F ST/C 50 to 3000°F	Sensor Range Maximum	C
12	Alarm #2 Set Point	RT/C 50 to 3000°F RTD -200 to 1000°F Analog (see PAGE 2/MENU 1-4)	Sensor Range Minimum	C
13	Alarm #1 Type	<i>H</i> <i>idE</i> = High, NDE* <i>ddE</i> = ± Deviation, NDE <i>LDdE</i> = Low, NDE <i>H</i> <i>iE</i> = High, NE** <i>PddE</i> = + Deviation, NDE <i>LD E</i> = Low, NE <i>-ddE</i> = - Deviation, NDE	<i>H</i> <i>idE</i> = High, NDE	C
14	Alarm #2 Type	<i>Pd E</i> = + Deviation, NE <i>-d E</i> = - Deviation, NE <i>d E</i> = ± Deviation, NE <i>Eo</i> = Event Output without LED indication <i>Eo L</i> = Event Output with LED indication	<i>LDdE</i> = Low, NDE	C
15	Self-Tuning	0 = Manual (none) 4 = Power-Up, Overdamped 1 = Power-Up, Standard 5 = In Process, Overdamped 2 = In Process, Standard 6 = Both, Overdamped 3 = Both, Standard		C
16	Disintegration Time	0 to 100 seconds	10 seconds	C
17	Sensor Selection	J,K,E,T,N,R,S Thermocouple, °F or °C .00385 or .00392 RTD, °F or °C 4-20mA or 1-5Vdc		C
18	Digital Filter	0 = Off 1 = On	1 = On	C
19	Remote Set Point	0 = Off 1 = On	0 = Off	C
20	Security Lock	0 to 999 (Security Codes)	458 = Level C	A

PAGE 4: Ramp/Soak Program Set Up rSPG

CUE	MENU SELECTION	AVAILABLE SETTINGS	FACTORY SETTING	SEC. LEVEL
1	Ramp/Soak Operation Commands Ramp/Soak Status Displays	SEE RAMP/SOAK OPERATION INSTRUCTIONS. Status Only Display		B
2	Ramp/Soak Enable	0 = Off (Single Set Point Control) 1 = On (Ramp/Soak Control)	0 = Off	C
3	Time Units	1 = 1 to 9999 seconds 3 = 0.01 to 99.99 hours 2 = 0.1 to 999.9 minutes	1 = seconds	C
4	Standby Set Point	Sensor Range	J,K,E,T,NT/C = 0°F R,ST/C = 50°F RTD = 0°F	C
5-36	Interval Time Spans and Set Points, Intervals 1-16	See User's Manual, Section 4		C
37	Continuous Operation	0 = Off 1 = On	0 = Off	C
38	Loop from the end of Interval A	A = 1 to 16	1	C
39	to the beginning of Interval B	B = 1 to 16	1	C
40	C number of times	C = 0 to 999	0 = No Looping	C
41	Standby Events	0 = Event 1 OFF; Event 2 OFF 1 = Event 1 ON; Event 2 OFF 2 = Event 1 OFF; Event 2 ON 3 = Event 1 ON; Event 2 ON	0 = Event 1 OFF; Event 2 OFF	C
42-57	Interval 1-16 Events	See MENU 41	0 = Event 1 OFF	C
58	Guaranteed Soak Differential	0.00 to 99.99% of input sensor range	.50%	C
59	Ramp/Soak Remote Operation	0 = No Remote Operation 1 = RUN to HOLD 2 = RUN to STANDBY	0 = No Remote Operation	C

* NDE = Normally De-Energized (Contacts Closed in Alarm) **NE = Normally Energized (Contacts Open in Alarm)

Model Identification Codes

Throughout the manual you will find references to "codes." This refers to the code number in the model identification, which corresponds to a specific output type, option or input type. For example, when wiring the control output, "code 4" corresponds to Current/Voltage control output.

Control Output

Your controller comes to you with one of four output types, as indicated by the control output "code." In the programming you will select PID or ON/OFF control type, as well as direct or reverse acting control. Should your applications needs change, you may purchase and install a different type of control output module to change the output type.

Alarm Outputs

Every 2001PLUS! controller is equipped with 2 Alarm Relay Outputs. How you choose to use these alarms, as high, low or deviation alarms, is selected in the programming and may be easily reconfigured at any time. You will also select normally-energized (contact closed on alarm) or normally-deenergized (contact open on alarm), with upper and lower set point limits, if desired.

Event Outputs

The Alarm Outputs may be selected to function as Event Outputs for Ramp/Soak. If selected as Event Outputs, they act as normally-deenergized outputs.

Input Types

The input codes correspond to more than one specific type of input. For example, "Code 1" corresponds to J, K, E, T and N thermocouple types and the 4-20 mA/1-5 Vdc input. In the programming, you will "tell" the 2001PLUS! which sensor type you intend to use.

Auxiliary Input/Output Options

The code for Auxiliary Analog Inputs/Outputs and Digital Communications represents a single option or combination of options. In the programming you will make selections pertinent to the options your controller has.

Programming Structure

The PAGE/MENU programming is structured into groups of like adjustments, function and parameters. These groups of adjustments are called PAGES. There are a total of 4 PAGES of programming selections and adjustments. Each PAGE contains a list of MENU numbers, each MENU number being an individual selection or adjustment. Every parameter has its own PAGE/MENU number "address" that you can go directly to, without stepping through a long list of unnecessary entries. Many of the parameters also have alphanumeric command cues, making

Figure 1.3
Model Identification Table

MODEL	MICROPROCESSOR-BASED 1/4 DIN TEMPERATURE CONTROLLER					
2001	Proportional or ON/OFF Control, Dual Display of Process and Set Point, Self Tuning, Auto/Manual Control, Alphanumerics, Scale °F, °C or %, Reverse or Direct Acting, Two Alarm Relays, Ramp/Soak					
	CODE	CONTROL OUTPUT				
	1	Relay - 1 N.O. Form A Contact, 5A at 120 Vac, 2.5A at 230 Vac				
	2	Triac - 1 Amp at 120 or 230 Vac				
	4	Analog, Field Select 4-20 mA or 1-5 Vdc				
	7	Solid State Relay Drive - 20 Vdc at 40 mAdc				
		CODE	NOT USED			
		0	Add to complete model number			
		CODE	ALARM OUTPUT			
		2	2 Relay Outputs - 1 N.O. Form A Contact, each 5A at 120 Vac, 2.5A at 230Vac			
		CODE	AUXILIARY INPUT/OUTPUT OPTIONS			
		0	None			
		1	Analog Remote Set Point, Field Select 4-20 mA/1-5 Vdc			
		*	Analog Remote Set Point, 1-5Vdc Analog Process Readout Signal			
			*Specify input sensor type Code:			
		* Code	Input * Code Input			
		J	J T/C S S T/C			
		K	K T/C N N T/C			
		E	E T/C D RTD, .00385 (DIN standard)			
		T	T T/C A RTD, .00392 (American standard)			
		R	R T/C			
		8	Non-Isolated RS232/RS422 Digital Communications			
		9	Non-Isolated RS232/RS422 Digital Communications, 1-5Vdc Analog Remote Set Point			
		CODE	SENSOR TYPE			
		1	Thermocouple, Field Select J -100 to 1400°F -73 to 760°C K -100 to 2100°F -73 to 1149°C E -100 to 1100°F -73 to 593°C T -350 to 750°F -212 to 399°C N -100 to 2300°F -73 to 1260°C			
		2	Analog, Field Select 4-20 mA or 1-5 Vdc Thermocouple, Field Select R 50 to 3000°F 10 to 1649°C S 50 to 3000°F 10 to 1649°C			
		4	Analog, Field Select 4-20 mA or 1-5 Vdc RTD, 100 ohm Pt, -200 to 1000°F (128 to 538°C), Field Select Alpha = 0.00385 or Alpha = 0.00392 Analog, Field Select 4-20 mA or 1-5 Vdc			
2001 -	2	0	2	E	1	Typical Model Number