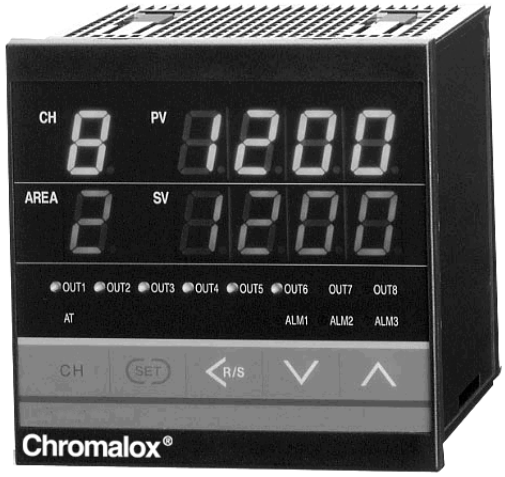
3300 SERIES

Multiloop Controller

PDS 3300



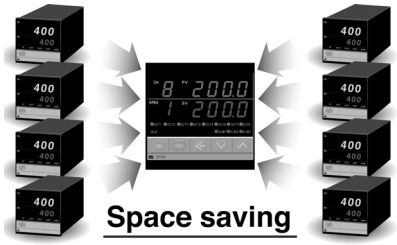
- **3340: 4 loops of PID Heat, Cool or Heat/Cool Control**
- **3380: 8 loops of PID Heat or Cool Control**
- **Auto-Tuning PID Control**
- **Up to 11 total outputs, 4 or 8 for control, others for alarm**
- **Thermocouple, RTD or Analog inputs**
- **Modular Outputs, Relay, SSR drive, Triac or analog**
- **Heater Breakdown Option with CT Inputs**
- **RS-232, RS-422, RS-485 Communications Option with MODBUS Protocol**

Chromalox®
PRECISION HEAT AND CONTROL

FEATURES

Space and Time Savings:

The 3340/3380 can control up to a maximum of 8 channels in a compact 1/4 DIN package. The 1/4 DIN controller reduces panel size and panel cutouts. By increasing zone density, the 3340/3380 can now make PID temperature control for 3 to 8 zones affordable in a multi-loop form factor, aiding designers of control equipment to save labor costs, installation costs, electric panel size, and operation cost.



In comparison to other multi-loop packages, the 3340/3380 has a straight forward user interface that does not require a PLC programmer or other support hardware to operate. The display, pushbuttons, outputs and software are integrated in this single multi-loop package. Although all inputs are scanned at least once per second, the display of the 3340/3380 will display the temperatures of each channel on an adjustable scan rate so the operator can view all channels without touching any pushbuttons.

Flexible Outputs:

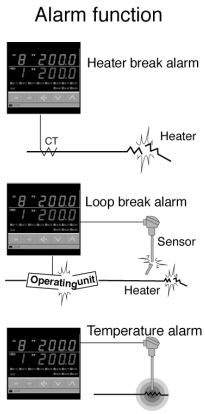
The control outputs are available as Relay, Triac, SSR drive, or Analog. The Relay and SSR drive control outputs are plug-in modules that can be exchanged individually in the field. These modules simplify application changes and field service.

A total of 11 outputs are available: In the 3340 four loop controller, these can be used as:

- 8 control (4 Heat, 4 Cool) plus 3 alarms
- 4 control, with up to 7 alarm outputs

In the 3380 eight loop unit, 8 outputs and up to 3 alarms

Alarms:



Alarm 1 is standard with all controllers. It is mapped to all the control loops and can be used as an Absolute High and Low Process Alarm, or as a high, low, high and low, or band Deviation alarm or as a loop break alarm. All Alarm set points can be individual for each loop or can be grouped. Two additional alarms give the user the flexibility of having a low, high and high-high alarm arrangement.

Heater Break Alarm:

Alarm 2 can be ordered as a Heater Break Alarm. For loads with multiple heaters this feature alarms when individual heaters fail. This provides maintenance of a process before the problem becomes critical.

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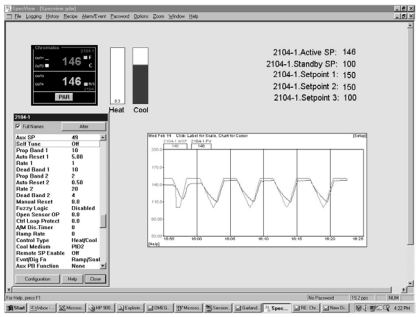
3340/3380 Multiloop Controller

With this feature the 3340/3380 is equipped with Current Transformer (CT) inputs. External CTs send a signal to the 3340/3380 which is converted to the load current. Two ranges are available 0-30 Amps and 0-100 Amps. Eight single phase loads can be monitored by the 3380 and four single or three phase loads can be monitored by the 3340.

Digital Communications:

With the Digital Communications option the 3340/3380 can communicate with a remote PLC or Computer via an RS-232 interface or an RS-422/485 interface, if multiple 3340/3380s are connected. The 3340/3380s communicate using MODBUS Protocol.

An optional ChromaSoft/SpecView software program communicates with multiple Chromalox controllers from a single computer. This flexible Windows based package allows an operator to view, change, data log any controller parameter.



Multi-Memory Area:

Temperature set point, PID constants, alarm set point, ramp to set point rate, channel used/unused for each loop can be stored in a "memory area". The eight memory area allows for quick changes to alternate processes or products. The memory area can be selected via the front faceplate or digital inputs.

Digital Inputs:

Optional digital inputs are available to select Stop and Run or one of the eight "Memory Areas".

Splashproof Option: The IP65 protection prevents dust and splashed liquids from rain and accidental splashing of the front overlay.

Channel (CH) Display [Green]
- Displays channel Number.
- Displays Character "A" showing batch setting.

Memory area (AREA) Display [Orange]
Displays memory area number.

Indication Lamps: Autotuning (AT) lamp (Green)
Flashes with the autotuning activated in the display channel.

Channel Key
- Used when the channel number is changed.
- Used to display the character "A" showing batch setting.
- Used for start/stop of scan display.

Process Value (PV) Display [Green]
Displays PV or various parameter symbols.

Set Value (SV) Display [Orange]
Displays SV or various parameter set values.

UP Key
Increase values.

DOWN Key
Decrease values.

Set Key
Used for parameter selection and set value registration.

Shift & R/S Key
- Shift digits when settings are changed.
- Selects the RUN/STOP.

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3340/3380 Multiloop Controller

SPECIFICATIONS

Control Modes:	PID with Autotuning
	PID Heat/Cool with Autotuning (3340 only)
	Air or water cooling selectable
	PI, PD, P or On/Off Selectable
Control Adjustments:	
Control Set Point	Input Span
Set Point Limits	Within Span High and Low
Dead band	2 degrees or .2% factory setting (default)
	Adjustable up to full span
Proportional Band (P)	Input Span (PB=0 selects On/Off control)
Cool Proportional Band	1-1000% of the Heat Proportional Band
Integral (I)	1 to 3600sec (0= Off)
Derivative (D)	1 to 3600 sec (0=Off)
Anti reset windup	1 to 100% of Proportional Band (0 turns off Integral)
Heat Cycle Time	1-100 sec (no setting for current output)
Cool Cycle Time	1-100 sec (no setting for current output)
H/C Overlap Deadzone	-Span to +Span (within –1999 to +1999)
	Minus setting Overlap
Ramp Rate	0 to span/minute (0=off)
PV bias	-span to +span (within –1999 to 9999)
Alarm Adjustments	
Alarm Type	High Process
	Low Process
	Deviation Low, High, High-Low, Band
	Loop Break Alarm
	Heater Break Alarm
	FAIL – Automatic alarm on controller failure
Alarm Inhibit/Hold	Available on all except Deviation Band, Set value, FAIL
	Inhibit on: Power Up, From STOP to RUN, Set point Changes
	Memory area changes
Ranges	Process Alarm: Input span
	Deviation Alarm: -span to +span
Alarm Differential	2 degrees (temperature input), 0.2%(Voltage input)default
	Adjustable to span
Loop Break Alarm	Off, 0.1 to 200.0 minutes, dead band: 0 to span,
	LBA output is allocated to Alarm 1
Heater Break Alarm	(Requires external current transformers (CT)
	Input Range 0-30A or 0-100A
	Display Range 0.0 to 100.0A
	Accuracy ±5% of input value or ±2A
	HBA is allocated to Alarm 2
Sensor Inputs	Thermocouple, RTD or Voltage
Input Update Rate	0.5sec (3340), 1 sec (3380)
Input Break Action	Upscale: Thermocouple and RTD
	Downscale: Voltage input
Input Filter	1-100 sec. Time constant 0=off
	First order digital filter
Influence of external Resistance	0.2 μV/Ω(Thermocouple)
Influence of lead wire Resistance	10Ω maximum

3340/3380 Multiloop Controller

Thermocouple

Type	Max Range ˚F	Max Range ˚C	Accuracy
J	0 to 2192 -199.9 to 999.9	0-1200 -199.9 to 999.9	±0.3% of reading + 1 digit or ±2˚C(4˚F) Accuracy under –100C not guaranteed
K	0 to 2502 -199.9 to999.9	0 to 1372 -199.9 to 800.0	±0.3% of reading + 1 digit or ±2˚C(4˚F) Accuracy under –100C not guaranteed
E	0 to 1820	0 to 1000	±0.3% of reading + 1 digit or ±2˚C(4˚F)
T	-199.9 to 752.0	-199.9 to 400.0	±0.3% of reading + 1 digit or ±2˚C(4˚F) Accuracy under –100C not guaranteed
R	0 to 3216	0 to1769	±0.3% of reading + 1 digit or ±2˚C(4˚F) Accuracy 0 to 399C not guaranteed
S	0 to 3216	0 to1769	±0.3% of reading + 1 digit or ±2˚C(4˚F) Accuracy 0 to 399C not guaranteed
B	0 to 3308	0 to 1820	±0.3% of reading + 1 digit or ±2˚C(4˚F) Accuracy 0 to 399C not guaranteed
N	0 to 2372 0.0 to 999.9	0 to 1300 0.0 to 800.0	±0.3% of reading + 1 digit or ±2˚C(4˚F)
PLII	0 to 1390	0 to 2534	±0.3% of reading + 1 digit or ±2˚C(4˚F)
W5Re/W26Re	0 to 4000	0 to 2320	±0.3% of reading + 1 digit or ±2˚C(4˚F)
U	-199.9 to 999.9	-199.9 TO 600.0	±0.3% of reading + 1 digit or ±2˚C(4˚F) Accuracy under –100C not guaranteed
L	0 to 1600	0 to 800	±0.3% of reading + 1 digit or ±2˚C(4˚F)

All thermocouple ranges can be limited within their Max Ranges.

RTD non-isolated

Type	Max Range ˚F	Max Range ˚C	Accuracy
100Ω PLT IEC	-199.9 to 999.9	-199.9 to 649.0	±0.3% of reading + 1 digit or ±0.8˚C(1.6˚F)
100Ω PLT JIS	-199.9 to 999.9	-199.9 to 649.0	±0.3% of reading + 1 digit or ±0.8˚C(1.6˚F)

RTD ranges can be limited within their Max Range.

Voltage non-isolated

Type	Adjustable Range	Accuracy
0-10, 0-5, 1-5 Vdc	-1999 to 9999 (0.0 to 100.0 default) Decimal Point in 1/10, 1/100, 1/1000	±0.3% of reading + 1 digit

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3340/3380 Multiloop Controller

Control Outputs (up to 8)	
Relay	NO Form A contact, 3A (resistive) at 250VAC, 300,000 cycles or more at rated load
SSR drive(Voltage Pulse)	12Vdc, 20ma max
Triac	0.5A @ 40C or less
Current	0 to 20ma into 0 to 600Ω 4 to 20ma into 0 to 600Ω
Alarm Outputs	
Relay	3 Relays, NO Form A contact, 1A (resistive) at 250VAC Out 5-8 on 3340 can be used as alarms, 3A at 250VAC via Alarm 3 settings
Electrical Life	300,000 cycles or more at rated load
Contact Input (Optional)	
Number of input	5 inputs
Rating	Non-voltage contact input Open: 500kΩ or more, Close: 10Ω or less
Function	Run (close) Stop(open) Memory area selection, 3 inputs binary (0-7) Data Set
Communications (Optional)	
Hardware	RS232C 3 wire single drop RS-422 4 wire multi-drop, up to 31 units RS-485 2 wire multi-drop, up to 31 units
Protocol	Modbus
Baud Rate	2400,4800,9600,19200 bps
Bit configuration	Start bit: 1 Data Bits: 8 Parity bit: None, Odd, Even
Environment	IP65 Protection (Optional)
Supply Voltage:	100 to 240VAC (±10%) 24VAC/VDC (±10%)
Power Consumption	Up to 20VA
Memory Backup	Non-Volatile memory
Ambient temperature	0˚ to 50˚C (32˚ to 122˚F)
Ambient Humidity	45 to 85% non-condensing
Weight	1.2 lb. (560g)
Operating environment	Free from corrosive and flammable gas and dust, Free from exposure to direct sunlight
Standard Compliance:	CE Mark, UL Recognized, CSA Certified

3340/3380 Multiloop Controller

ORDERING INFORMATION

Model

3340 Four Loop Autotuning PID Controller

Code	Input
1	Thermocouple J, K, R, S, B, E, PLII, N, T, U, L
3	Analog Vdc 0-5, 0-10, 1-5 Vdc
4	RTD, 100 ohm Plt

Code	Control Output 1-4, Heat or Cool
R	Relay 3 amp, 250 Vac
V	SSR drive, 12 Vdc at 20 ma
T	Triac, 0.5 A
7	0-20 ma up to 600ohms
8	4-20 ma up to 600ohms

Code	Output 5-8, Alarm or Cooling Control
0	No outputs
R	Relay 3 amp, 250 Vac
V	SSR drive, 12 Vdc
T	Triac, 0.5 A
7	0-20 ma up to 600ohms
8	4-20 ma up to 600ohms

Code	Instrument Power
3	24 Vac/Vdc
4	100-240 Vac

Code	Alarm 1
1	Relay, 1A, 250 Vac

Code	Alarm 2
0	No alarm
1	Relay, 1A, 250 Vac
2	Heater Break Alarm, 0-30A Single Phase Input*
3	Heater Break Alarm, 0-100A Single Phase Input*
4	Heater Break Alarm, 0-30A Three Phase Input*
5	Heater Break Alarm, 0-100A Three Phase Input*

Code	Alarm 3
0	No alarm
1	Relay, 1A, 250 Vac

Code	Contact In
0	None
1	5 Digital Inputs

Code	Digital Communications
0	None
6	RS-485/RS-422 Modbus
8	RS 232 - Modbus

Code	Splashproof Cover
0	Not Included
1	IP65

3340-	1	V	R	4	1	0-	0	0	6	1	**Typical Model Number**

NOTE: Each alarm output is common to all channels.
*Heater break is not available when the control output is 0-20mA or 4-20 mA.

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3340/3380 Multiloop Controller

ORDERING INFORMATION

Model

3380 Eight Loop Autotuning PID Tempeature Controller

Code Input
- **1** Thermocouple J, K, R, S, B, E, PLII, N, T, U, L
- **3** Analog Vdc 0-5, 0-10, 1-5 Vdc
- **4** RTD, 100 ohm Plt

Code Control Output 1-4
- **R** Relay 3 amp, 250 Vac
- **V** SSR drive, 12 Vdc at 20 ma
- **T** Triac, 0.5 A
- **7** 0-20 ma up to 600ohms
- **8** 4-20 ma up to 600ohms

Code Control Output 5-8
- **R** Relay 3 amp, 250 Vac
- **V** SSR drive, 12 Vdc at 20 ma
- **T** Triac, 0.5 A
- **7** 0-20 ma up to 600ohms
- **8** 4-20 ma up to 600ohms

Code Instrument Power
- **3** 24 Vac/Vdc
- **4** 100-240 Vac

Code Alarm 1
- **1** Relay, 1A, 250 Vac

Code Alarm 2
- **0** No alarm
- **1** Relay, 1A, 250 Vac
- **2** Heater Break Alarm, 0-30A Single Phase Input*
- **3** Heater Break Alarm, 0-100A Single Phase Input*

Code Alarm 3
- **0** No alarm
- **1** Relay, 1A, 250 Vac

Code Contact In
- **0** None
- **1** 5 Digital Inputs*

Code Digital Communications
- **0** None
- **6** RS-485/RS-422 Modbus*
- **8** RS 232 - Modbus*

Code Splashproof Cover
- **0** Not Included
- **1** IP65

3380-	1	V	8	4	1	3-	0	0	6	1	**Typical Model Number**

NOTE: Each alarm output is common to all channels.

* Heater Break alarm and communication/contact input cannot be specified on the same hardware.

* Heater Break is not available when the control output is 0-20 mA or 4-20 mA.

3340/3380 Multiloop Controller

Stocked Items

3340

Part Number	PCN	Description
3340-1R04100000	317884	4 channel, with 4 Relay, TC
3340-4R04100000	317892	4 channel, with 4 Relay, RTD
3340-1V04100000	317905	4 channel, with SSR Drive, TC

3380

Part Number	PCN	Description
3380-1RR4100000	317770	8 channel, with 8 Relay, TC
3380-4RR4100000	317788	8 channel, with 8 Relay, RTD
3380-1TT4100000	317809	8 channel, with 8 Triac, TC
3380-4TT4100000	317817	8 channel, with 8 Triac, RTD
3380-1VV4100000	317825	8 channel, with 8 SSR drive, TC
3380-4VV4100000	317833	8 channel, with 8 SSR drive, RTD
3380-1VV4111000	317841	8 channel, with 8 SSR drive, TC, 2 additional alarms
3380-4VV4111000	317850	8 channel, with 8 SSR drive, RTD, 2 additional alarms
3380-1VV4100060	317868	8 channel, with 8 SSR drive, TC, RS485
3380-4VV4100060	317876	8 channel, with 8 SSR drive, RTD, RS485

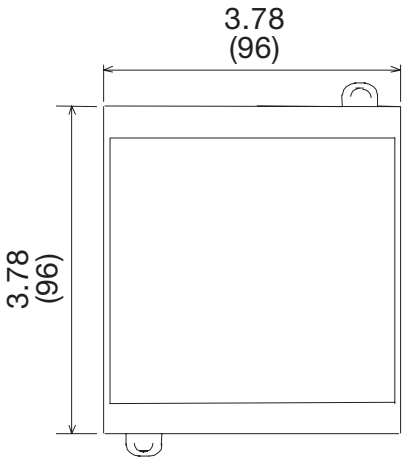
Accessories

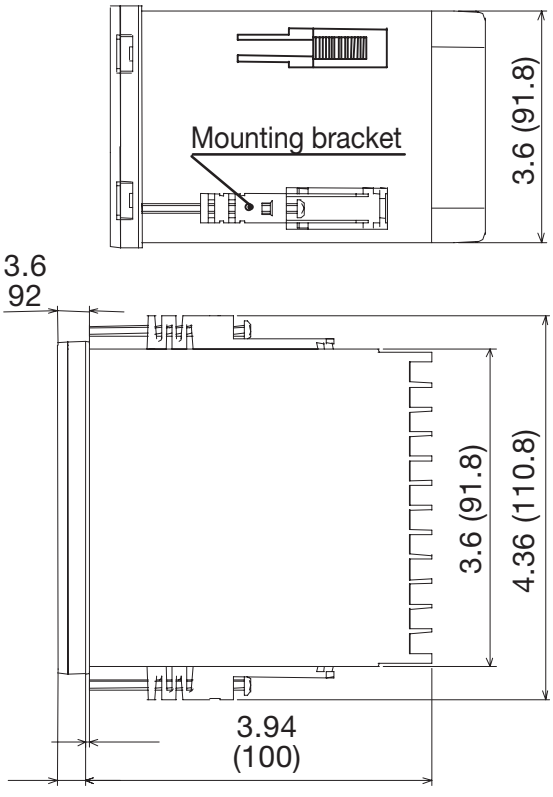
Part Number	PCN	Description
700462222	339135	Current Transformer, 0-30.0Aac for Heater Break Option
700462223	339143	Current Transformer, 0-100.0Aac for Heater Break Option
700562224	339151	Control Relay module for outputs 1-8
700462225	339160	SSR drive module for outputs 1-8
0149-01305	314448	Snubber

Dimensions

Units: Inches (mm)

Up to 4 mounting brackets can be used.





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