

3200 Series Temperature/Process Controllers

Benefits

The innovative range of 3200 controllers offer precision control of temperature and other process variables together with many advanced features not normally found in this class of controller.

- Precision Auto-tuning Eurotherm PID control
- Optional 8 step profiler/programmer
- Very simple to set up and use with quick codes and configurable menu lists

Key Features

- 8 Segment programmer
- Heater failure detection
- Current monitoring
- Customizable Operator messages
- Recipes
- Modbus communications
- Analog and digital retransmission
- Remote setpoint
- Type approved EN14597 TR, EAC, CCC (Exempt)
- Multi-language support (English, French, German, Spanish and Italian)





3200 Series Temperature/Process Controllers Specification

The emphasis of the 3200 Series Temperature/Process Contoller is on ease of use. A simple "Quick Start" code is used to configure all the functions essential for controlling your process. This includes input sensor type, measurement range, control options, and alarms, making "Out the Box" operation truly achievable. In operator mode, every parameter has a scrolling text message describing its function and is available in English, German, French, Spanish or Italian. More advanced features are configured using Eurotherm iTools, a PC-based configuration wizard which is an easy to use and instructive guide to all the functions in the controller.

Heater Current Monitoring

A current transformer input provides display of the heater current and a health check on the load. Heater diagnostics including full and partial open circuit, and short circuit are displayed as scrolling alarm messages as well as providing an alarm output. On the 3208 and 3204 a front panel ammeter displays the heater current.

Setpoint Programmer

Heat treatment profiles can be programmed using the 8-segment programmer. Holdback ("guaranteed soak") can be used at the beginning of each segment. A digital event output can be triggered in any segment to initiate actions within the process.

Custom Text Messaging

Custom messages can be created with Eurotherm iTools and downloaded to the 3200 controller to display when an event, alarm or process condition occurs. This provides the operator with good visibility of the status of the process.

Remote Setpoint

An option exists for the 3200 controller to have a Remote Analog Input. This can be either volts or mA and is used to allow the setpoint to be generated by a master controller or PLC.

Recipes

Using Eurotherm iTools, recipes can be created that may be used to change the operating parameters of the 3200 controller simply by selecting a new recipe using the HMI or digital input. This is very useful where multiple products are processed using the same controller but require different parameters to be set.

Timer

An internal timer is configurable as an interval timer, delay timer, or to provide a soft start for hot runner control.

Setpoint Retransmission

Sending the setpoint or other parameters from the 3200 controller to slave devices can be achieved either by using conventional analog communications or using Master Modbus communications. Master Modbus in the 3200 controller allows a broadcast of a single parameter to the network.

A typical application is a setpoint being retransmitted to a number of slave controllers in a multi-zone furnace.

Modbus Communications

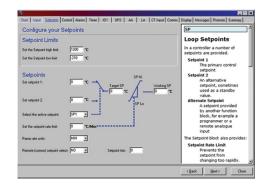
All units support both EIA232 and 2-wire EIA485 communications using the Modbus protocol. The 3216 supports 4-wire EIA485.

Configuration Adaptor

Eurotherm iTools configuration to all 3200 controllers can be achieved by using a USB configuration adaptor. It provides Eurotherm iTools with the ability to communicate with and configure devices without the need for any power being connected.

Eurotherm iTools Wizard

Used to simplify the set up of 3200 series controllers. The wizard guides the user through the configuration process with interactive help and graphical demonstrations of features.



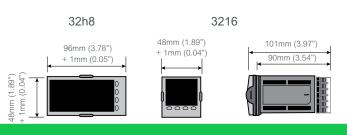
3200 Series Temperature/Process Controllers Specification

General		
Environmental Pe	rformance	
Temperature limits Operation:		0 to 55°C
	Storage:	−10 to 70°C
Humidity limits	Operation:	5 to 90% RH non condensing
	Storage:	5 to 90% RH non condensing
Panel sealing		IP65, Nema 12 / NEMA 4X (3216 only)
Shock		BS EN61010
Vibration		2 g peak, 10 to 150 Hz
Altitude		<2000 metres
Atmospheres		Not suitable for use in explosive or
		corrosive atmosphere*
EEPROM		Rated lifetime 100,000 write operations
Electromagnetic (Compatibility (EM	C)
Emissions and immu	nity	BS EN61326
Electrical Safety		
BS EN61010		Installation cat. II; Pollution degree 2
INSTALLATION CATE	EGORY II	
The rated impulse vo	oltage for equipment	on nominal 230V mains is 2500V.
	rity caused by conde	occurs. Occasionally, however, a ensation shall be expected.
Operator Interface		
Туре		LCD TN with backlight
Main PV display		4 digits, green
Lower display	3216, 3208, 3204:	5 . 5
, ,	32h8:	9 character starburst, green
Status beacons		Units, outputs, alarms, active setpoint
Power Requireme	ents	
	3216:	100 to 240 V ac, -15%, +10%, 48 to 62 Hz, max 6 W
		24 V ac, -15%, +10% 24 V dc, -15% +20% ±5% ripple voltage max 6 W

CE, UL, cUL listed (file E57766) May be field calibrated to control instrument accuracy required in AMS2750E EN14597 TR CCC Exempt EAC Transmitter PSU (not 3216) Rating 24 V dc, >28 mA, <33 mA Isolation 264 V ac, double insulated Communications Serial Communications Option Protocol Modbus RTU slave Modbus RTU Master broadcast (1 parameter) Isolation 264V ac, double insulated Transmission standard EIA232 or EIA485 (2-wire) EIA485 (4-wire) on 3216 only **Process Variable Input** Calibration accuracy <±0.25% of reading ±1LSD (Note 1) Sample rate 264 V ac double insulation from the PSU and Isolation communication Resolution (µV) <0.5 µV with 1.6 sec filter Resolution (effective bits) >17 bits Linearisation accuracy < 0.1% of reading Drift with temperature <50 ppm (typical) <100 ppm (worst case) Common mode rejection 48-62 Hz, >-120 dB Series mode rejection 48-62 Hz, >-93 dB Input impedance 100 MO Cold junction compensation >30:1 rejection of ambient change External cold junction Reference of 0° C Cold junction accuracy <±1° C at 25° C ambient Linear(process) input range -10 to 80 mV, 0 to 10 V with 100 K Ω /806 Ω external divider module K, J, N, R, S, B, L, T, C, custom download Thermocouple types Resistance thermometer types 3-wire Pt100 DIN 43760 Bulb current No compensation error for 22 Ω in all leads Lead compensation

Mechanical Details





Off to 59.9 s

2-point gain & offset

User adjustable over full range

Panel cut out				
	3208	3204	32h8	3216
Cut Out Dimension	92mm (-0.0 +0.8) x 45mm (-0.0 +0.6)	92mm (-0.0 +0.8) x 92mm (-0.0 +0.8)	92mm (-0.0 +0.8) × 45mm (-0.0 +0.6)	45mm (-0.0 +0.6) × 45mm (-0.0 +0.6)
	3.62" (-0.0 +0.03") x 1.77" (-0.0 +0.02)	3.62" (-0.0 +0.03") x 3.62" (-0.0 +0.03)	3.62" (-0.0 +0.03") × 1.77" (-0.0 +0.02)	1.77" (-0.0 +0.02") × 1.77" (-0.0 +0.02)
Product Weight	350g	420g	350g	250g
	12.34oz	14.81oz	12.34oz	8.81oz

Input filter

Zero offset

User calibration

AA Relay	
Туре	Form C (changeover)
Rating	Min 100 mA @ 12 V dc, max 2 A @ 264 V ac resistive
Functions	Control outputs, alarms, events
Current Transformer Inp	out
Input range	0-50 mA rms, 48/62 Hz 10 Ω burden resistor fitted inside module
Calibration accuracy	<1% of reading (typical), <4% of reading (worst case)
Isolation	By using external CT
Input impedance	<20 Ω
Measurement scaling	10, 25, 50 or 100 Amps
Functions	Partial load failure, SSR detected fault
Digital Input (DigIn A/B,	B not on 3216)
Contact closure	Open >600 Ω , closed <300 Ω
Input current	<13 mA
Isolation	None from PV or system 264 V ac double insulated from PSU and communications
Functions	Includes alarm acknowledge, SP2 select, manual keylock, timer functions standby select RSP select
Logic I/O Module	
Output	
Rating	ON 12 V dc @ <44 mA, OFF <300 mV @ 100 μA
Isolation	None from PV or system 264 V ac double insulated from PSU and communications
Functions	Control outputs, alarms, events
Digital Input	
Contact closure	Open >500 Ω , closed <150 Ω
Isolation	None from PV or system 264 V ac double insulated from PSU and communications
Functions	Includes alarm acknowledge, SP2 select, manual keylock, timer functions standby select RSP select
Relay Output Channels	
Туре	Form A (normally open)
Rating	Min 100 mA @ 12 V dc, max 2 A @264 V ac resistive
Functions	Control outputs, alarms, events
Triac Output	
Rating	0.75 A (rms) 30 to 264 V (rms) resistive load
Isolation	264 V ac double insulated
Functions	Control outputs, alarms, events
Analog Output (Note 3)	
OP1, OP2	
Rating	0-20 mA into <500 Ω
Accuracy	± (<1% of Reading + <100 μA)
Resolution	13.5 bits
Isolation	264 V ac double insulated from PSU and comms Module code C provides full 264 V ac double isolated
Functions	Control outputs, retransmission
OP 3 (not on 3216)	
Rating	0-20 mA into <500 Ω
Accuracy	±(<0.25% of Reading + <50 μA)
Resolution	13.6 bits
Isolation	264 V ac double insulated
Functions	Control outputs, retransmission

Remote Setpoint Input	
Calibration accuracy	<±0.25% or reading ±1LSD
Sample rate	4 Hz (250 ms)
Isolation	264 V ac double insulation from instrument
Resolution	<0.5 mV (for 0-10 V) or <2 µA (for 4-20 mA)
Resolution (effective bits)	>14 bits
Drift with temperature	<50 ppm (typical) <150 ppm (worst case)
Common mode refection	48-62 Hz, >-120 dB
Series mode rejection	48-62 Hz, >-90 dB
Input impedance	Voltage: 223 KΩ and Current: 2R49
Normal input range:	0 to 10 V and 4 to 20 mA
Max input range	-1 V to 11 V and 3.36 mA to 20.96 mA
Software Features	
Control	
Number of loops	1
Loop update	250ms
Control types	PID, ON/OFF, VP
Cooling types	Linear, fan, oil, water
Modes	Auto, manual, standby, forced manual
Overshoot inhibition	High, low
Alarms	
Number	4
Туре	Absolute high & low, deviation high, low or band, rate of change
Latching	Auto or manual latching, non-latching, event only
Output assignment	Up to 4 conditions can be assigned to one O/P
Other Status Outputs	
Functions	Including sensor break, manual mode, timer status, loop break, heater diagnostics, program event
Output assignment	Up to 4 conditions can be assigned to one O/P
Setpoint Programmer	
Program function	1 program x 8 segments with 1 event output (Note 4)
Start mode	Servo from PV or SP
Power fail recovery	Continue at SP or Ramp back from PV
Holdback ("Guaranteed soak")	Inhibits dwell timing until PV within limits
Timer	
Modes	Dwell when setpoint reached Delayed control action Soft start limits power below PV threshold
Current Monitor	
Alarm types	Partial load failure, over current, SSR short circuit, SSR open circuit
Indication type	Numerical or ammeter
Custom Messages	
Number	15 scrolling text messages
No of characters	127 characters per message max
Languages	English, German, French, Spanish, Italian
Selection	Active on any parameter status using conditional command
Recipes	
Number	15 scrolling text messages
Selection	HMI interface, communications or digital I/O
Notes	

- 1. Calibration accuracy quoted over full ambient operating range and for all input linearization types.
- $2. \ \ Contact \ Eurotherm \ for \ details \ of \ availability \ of \ custom \ downloads \ for$ alternative sensors.
- 3. Voltage output can be achieved by external adaptor.
- 4. By using recipes five SP programs can be stored.

Order Code Hardware/Options Coding



Basic Product		
3216	48 x 48mm unit	
3208	48 x 96mm unit	
32h8	96 x 48mm horizontal unit	
3204	96 x 96mm unit	

1 Function		
CC	Standard controller	
CP	Standard programmer	
VC	Motorized valve controller	
VP	Motorized valve programmer	

2 Supply Voltage	
VH	85-264 V AC
VL	24 V AC/DC

3 Outputs			
3216			
	OP1	OP2	
XXXX	None fitted	d None	fitted
LXXX	Logic	None t	fitted
LRXX	Logic	Relay	
RRXX	Relay	Relay	
LLXX	Logic	Logic	
LDXX	Logic	0-20 n	nA
DDXX	0-20 mA	0-20 n	nA
DRXX	0-20 mA	Relay	
RCXX	Relay	Isolate	d 0-20 mA
LCXX	Logic Isolated 0-20 mA		d 0-20 mA
DCXX	0-20 mA	Isolate	d 0-20 mA
LTXX	Logic	Triac	
TTXX	Triac	Triac	
3208/32	3208/32h8/3204		
	OP1	OP2	OP3
LRRX	Logic	Relay	Relay

3 Outputs			
3216			
	OP1	OP2	
XXXX	None fitte	d None f	itted
LXXX	Logic	None f	itted
LRXX	Logic	Relay	
RRXX	Relay	Relay	
LLXX	Logic	Logic	
LDXX	Logic	0-20 m	
DDXX	0-20 mA		A
DRXX	0-20 mA	Relay	
RCXX	Relay		d 0-20 mA
LCXX	Logic		d 0-20 mA
DCXX	0-20 mA		d 0-20 mA
LTXX	Logic	Triac	
TTXX	Triac	Triac	
3208/32	2h8/3204		
	OP1	OP2	OP3
LRRX	Logic	Relay	Relay
RRRX	Relay	Relay	Relay
LLRX	Logic	Logic	Relay
LRDX	Logic	Relay	0-20 mA
RRDX	Relay)	0-20 mA
DDDX	0-20 mA		0-20 mA
LLDX	Logic	- 3	0-20 mA
LDDX	Logic		0-20 mA
DRDX	0-20 mA		
Not available with Low Voltage PSU			

Triac

Triac

Triac

Triac

Relay

Relay

0-20 mA 0-20 mA

0-20 mA

0-20 mA

4 AA F	Relay (OP4)
X	Not fitted
R	Relay
	ons Board
XXX	Not fitted
XXL	Logic input
XCL	CT + Logic IP
2XL	RS232 Comms + Logic IP
4XL	2-wire RS485 comms +
	Logic IP
2CL	RS232 Comms CT +
	Logic IP
4CL	2-wire RS485 Comms CT
	+ Logic IPP
RCL	Remote SP CT + Logic IP
6 Fasc	ia Color
G	Green
S	Silver
W	Washdown (not 32h8/04)

7 Product Language

English

French

German

Spanish

Italian

ENG

FRA

GER

SPA

ITA

8 Manua	al Language
ENG	English
FRA	French
GER	German
SPA	Spanish
ITA	Italian
9 Warra	nty
XXXXX	Standard
WL005	Extended
10 Certificates	
XXXXX	None
CERT1	Certificate of Conformity
CERT2	Factory Calibration
	certificate

XXXXX	None	
12 Specials and Accessoriess		
XXXXX	None	
RES250	250R resistor for	
	0-5 V DC OP	
RES500	500R resistor for	
	0-10 V DC OP	

11 Custom Label

3200 Controller Accessories

HA029714	Installation guide
HA027986	Engineering manual
SUB35/ACCESS/249R.1	2.49R Precision resistor
CTR100000/000	10 A Current transformer
CTR200000/000	25 A Current transformer
CTR400000/000	50 A Current transformer
CTR500000/000	100 A Current transformer
ITOOLS/NONE/USB	USB configuration kit
SUB21/IV10	0-10 V input adaptor

LTRX

TTRX

LTDX

TDDX

TTDX

Logic

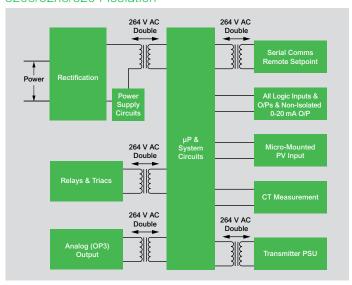
Triac

Logic

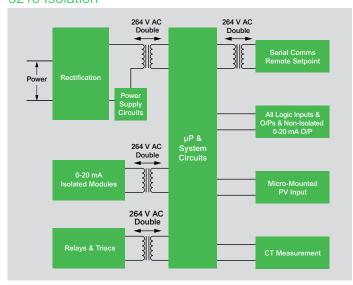
Triac

Triac

3208/32h8/3204 Isolation



3216 Isolation



Optional Quick Start Code (Optional)



1 Input	Туре		
Thermoo	Thermocouple		
В	Туре В		
J	Type J		
K	Туре К		
L	Type L		
N	Type N		
R	Type R		
S	Type S		
Т	Туре Т		
С	Custom/Type C		

1	туре г	
С	Custom/Type C	
RTD		
Р	Pt100	
Linear		
М	0-80 mV	
2	0-20 mA	
4	4-20 mA	
X	Unconfigured	
2 Setno	aint Limite	

Х	Unconfigured
2 Setpo	oint Limits
Full PV I	
С	Deg C full range
F	Deg F full range
Centigra	ade
0	0 to 100 deg C
1	0 to 200 deg C
2	0 to 400 deg C
2 3 4	0 to 600 deg C
4	0 to 800 deg C
5	0 to 1000 deg C
6	0 to 1200 deg C
7	0 to 1400 deg C
8	0 to 1600 deg C
9	0 to 1800 deg C
Fahrenh	eit
G	2 to 212 deg F
Н	32 to 392 deg F
J	32 to 752 deg F
K	32 to 1112 deg F
L	32 to 1472 deg F
М	32 to 1832 deg F
N	32 to 2192 deg F
Р	32 to 2552 deg F
R	32 to 2912 deg F
Т	32 to 3272 deg F
Х	Unconfigured

2 0	tt-4 (OD4)
	tput 1 (OP1)
XX	Unconfigured
	DC, Triac or Logic outputs
Contro	
Н	Heat (PID)
С	Cool (PID)
J K	Heat (on/off)
	Cool (on/off) Output
0	ized in alarm
1	High alarm Low alarm
2	Deviation high
3	Deviation low
4	Deviation band
Alarm	Output
	ergized in alarm
5	High alarm
6	Low alarm
7	Deviation high
8	Deviation low
9	Deviation band
DC O	utputs
Contro	l
Н	4-20 mA heating
С	4-20 mA cooling
J	0-20 mA heating
K	0-20 mA cooling
Retrar	nsmission
D	4-20 mA setpoint
E	4-20 mA process value
F	4-20 mA output
N	0-20 mA setpoint
Y	0-20 mA process value
Z	0-20 mA output
Logic	
W	Alarm acknowledge
M	Manual select
R L	Timer/Prog Run
P	Keylock Setpoint 2 select
T	Timer/prog Reset
ĺυ	Remote SP select
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Di 0/4I+

Recipe 2/1 select

Remote up button Remote down button

Standby select

Time/prog Run/reset Timer/prog Hol

		3208/h8 3208/h8 /04 only	
		utput 2 (OP2)	
	XX	Unconfigured	
	Rela	y, DC, Triac or Logic Output	S
	Н	Heat (PID)	
	C	Cool (PID)	
	Ĵ	Heat (on/off)	
	K	Cool (on/off)	
ı	Aları	m Output	
	_	gized in alarm	i
1	0	High alarm	
	1	Low alarm	
	2	Deviation high	
	3	Deviation low	
	4	Deviation band	
ı	Aları	m Output	
	De-e	nergized in alarm	
1	5	High alarm	
	6	Low alarm	
	7	Deviation high	
	8	Deviation low	
	9	Deviation band	
	DC (Dutputs	
	Cont	rol	
	Н	4-20 mA heating	
	С	4-20 mA cooling	
	J	0-20 mA heating	
	K	0-20 mA cooling	
Į	Retra	ansmission	
	D	4-20 mA setpoint	
	E	4-20 mA process value	
	F	4-20 mA output	
	N	0-20 mA setpoint	
	Y	0-20 mA process value	
	Z	0-20 mA output	
	5 A	A Relay (OP4)	
	5 A		_
		Unconfigured	
		y, DC, Triac or Logic Output	S
	Cont		
	Н	Heat (PID)	
	C	Cool (PID)	
	J K	Heat (on/off) Cool (on/off)	
		m Output	1
		gized in Alarm	1
	0	High alarm	
	1 2	Low alarm Deviation high	
	3	Deviation low	
J		Dovidion low	

Н	Heat (PID)		
С	Cool (PID)		
J	Heat (on/off)		
K	Cool (on/off)		
Alarm C	Alarm Output		
Energiz	ed in Alarm		
0	High alarm		
1	Low alarm		
2	Deviation high		
3	Deviation low		
4	Deviation band		
Alarm Output			
De-Ene	rgized in Alarm		
5	High alarm		
6	Low alarm		
7	Deviation high		
8	Deviation low		
9	Deviation band		
6 CT Ir	put Scaling		
XX	Not fitted		
1	10 Amps		
2	25 Amps		
5	50 Amps		

100 Amps

7-8 Dig	Input A, Dig Input B
X	Unconfigured
W	Alarm acknowledge
М	Manual select
R	Timer/Prog Run
L	Keylock
Р	Setpoint 2 select
Т	Timer/prog Reset
U	Remote SP select
V	Recipe 2/1 select
Α	Remote up button
В	Remote down button
G	Time/prog Run/reset
1	Timer/prog Hold
Q	Standby select
0 0 1	1.0 (0.00)
	ut 3 (OP3)
XX	Unconfigured

	1	Timer/prog Hold
	Q	Standby select
		,
	9 Outp	ut 3 (OP3)
	XX	Unconfigured
	Relay, D	C, Triac or Logic Outputs
İ	Control	
	Н	Heat (PID)
	С	Cool (PID)
	J	Heat (on/off)
	K	Cool (on/off)
	Alarm C	, ,
İ	Energize	ed in Alarm
	0	High alarm
	1	Low alarm
	2	Deviation high
	3	Deviation low
	4	Deviation band
	Alarm C	Output
	De-Energized in Alarm	
	De-Enei	rgized in Alarm
	De-Enei	rgized in Alarm High alarm
	5	High alarm
	5 6	High alarm Low alarm
	5 6 7	High alarm Low alarm Deviation high
	5 6 7 8	High alarm Low alarm Deviation high Deviation low Deviation band
	5 6 7 8 9	High alarm Low alarm Deviation high Deviation low Deviation band
	5 6 7 8 9 DC Out	High alarm Low alarm Deviation high Deviation low Deviation band
	5 6 7 8 9 DC Out ₁ Control	High alarm Low alarm Deviation high Deviation low Deviation band outs
	5 6 7 8 9 DC Out ₁ Control	High alarm Low alarm Deviation high Deviation low Deviation band outs 4-20 mA heating
	5 6 7 8 9 DC Outp Control H	High alarm Low alarm Deviation high Deviation low Deviation band puts 4-20 mA heating 4-20 mA cooling
	5 6 7 8 9 DC Out _l Control H	High alarm Low alarm Deviation high Deviation low Deviation band outs 4-20 mA heating 4-20 mA cooling 0-20 mA cooling 0-20 mA cooling
	5 6 7 8 9 DC Out; Control H C	High alarm Low alarm Deviation high Deviation low Deviation band outs 4-20 mA heating 4-20 mA cooling 0-20 mA cooling 0-20 mA cooling
	5 6 7 8 9 DC Outrol H C J K Retrans	High alarm Low alarm Deviation high Deviation low Deviation band outs 4-20 mA heating 4-20 mA cooling 0-20 mA heating 0-20 mA cooling mission 4-20 mA setpoint
	5 6 7 8 9 DC Outp Control H C J K Retrans	High alarm Low alarm Deviation high Deviation low Deviation band outs 4-20 mA heating 4-20 mA cooling 0-20 mA heating 0-20 mA cooling mission
	5 6 7 8 9 DC Outi Control H C J K Retrans	High alarm Low alarm Deviation high Deviation low Deviation band outs 4-20 mA heating 4-20 mA cooling 0-20 mA cooling 0-20 mA cooling mission 4-20 mA setpoint 4-20 mA process value

10 Lowe	r Display
Χ	Unconfigured
T	Setpoint
S	Target setpoint
Р	Output power %
R	Time remaining
E	Elapsed time
1	1st alarm setpoint
D	Dwell/ramp — time/target
С	SP with output meter
M	SP with ammeter
Α	Load amps
N	None

0-20 mA process value 0-20 mA output

Y Z

V

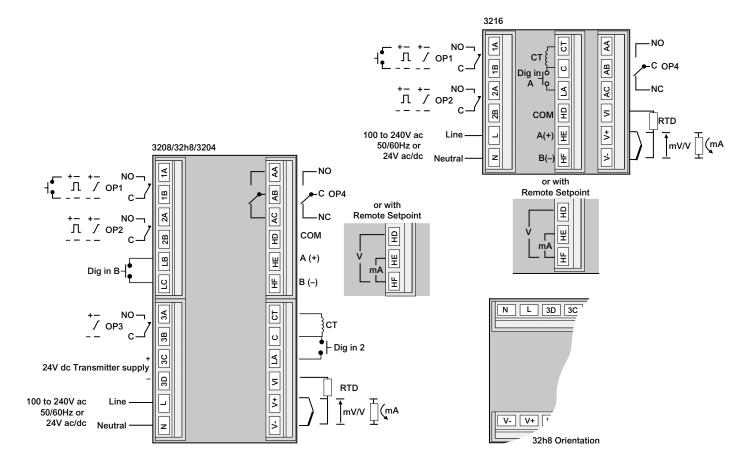
А В

G

Q

3200 Series Temperature/Process Controllers Specification

Rear Terminals



eurotherm.com/3200

Life Is On Schneider

Eurotherm USA 44621 Guilford Drive, Suite 100 Ashburn, Virginia 20147 Phone: +1 703-724-7300 www.eurotherm.com Contact your local sales representative