

3200 Series

Temperature/ Process Controllers

Improve process efficiency, product quality and minimise waste

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.

The emphasis 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. Partial load failure, heater open circuit and SSR faults are detected and 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.

- 8 Segment programmer
- Heater failure detection
- Current monitoring
- Internal timer
- Scrolling text messages
- Recipes
- Modbus comms
- Modbus SP retransmission
- Analogue retransmission
- Remote setpoint
- Help text
- Type approved to EN14597 TR
- Multi-language support (English, French, German, Spanish and Italian)



Setpoint programmer

Heat treatment profiles can be programmed using the 8-segment programmer. Holdback, at the beginning of each segment can be used to guarantee the soak periods. 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 to display when an event, alarm or process condition occurs. This provides the operator with good visibility of the status of the process.

Control Optimise Simplify

Eurotherm[®]

by **Schneider** Electric

Remote setpoint

An option exists for the 3200 to have a Remote Analogue 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 simply by selecting a new recipe using the 3200 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 to slave devices can be achieved either using conventional analogue communications or using Master Modbus communications. Master Modbus in the 3200 allows a broadcast of a single parameter to the network.

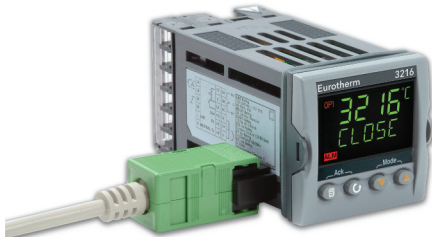
A typical application is a setpoint being retransmitted to a number of slave controllers in a multi-zone furnace.

Modbus communications

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

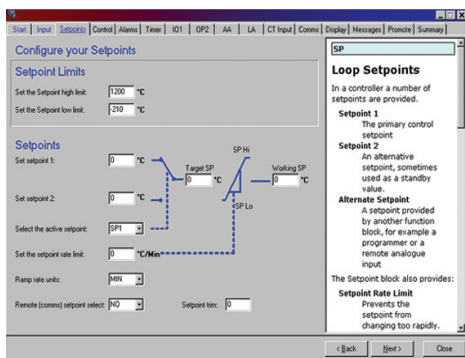
Configuration adaptor

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.



Specification

General

Environmental performance

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	
Shock:	BS EN61010	
Vibration:	2g peak, 10 to 150Hz	
Altitude:	<2000 metres	
Atmospheres:	Not suitable for use in explosive or corrosive atmosphere*	

Electromagnetic compatibility (EMC)

Emissions and immunity: BS EN61326

Electrical safety

BS EN61010: Installation cat. II; Pollution degree 2

INSTALLATION CATEGORY II

The rated impulse voltage for equipment on nominal 230V mains is 2500V.

POLLUTION DEGREE 2

Normally, only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation shall be expected.

EN14597 TR APPROVAL

Registration Number TR1229.

Physical

Dimensions:	3216:	48W X 48H X 90Dmm
	3208:	48W X 96H X 90Dmm
	3204:	96W X 96H X 90Dmm
	32h8 (horizontal):	96W X 48H X 90Dmm
Weight:	3216:	250g
	3208:	350g
	3204:	420g
	32h8 (horizontal):	350g
Panel:	3216:	1/16 DIN mounting 45W x 45Hmm cut out
	3208:	1/8 DIN mounting 45W x 92Hmm cut out
	3204:	1/4 DIN mounting 92W x 92Hmm cut out
	32h8 (horizontal):	1/8 DIN mounting 92W x 45Hmm cut out
Panel depth:	All:	101mm

Operator interface

Type:	LCD TN with backlight
Main PV display:	4 digits, green
Lower display:	
	3216, 3208, 3204: 5 character starburst, green
	32h8: 9 character starburst, green
Status beacons:	Units, outputs, alarms, active setpoint

Power requirements

3216:	100 to 240V ac, -15%, +10%,
	48 to 62 Hz, max 6W
	24V ac, -15%, +10%.
	24V dc, -15% +20%
	±5% ripple voltage max 6W
3208, 32h8, 3204:	100 to 240V ac, -15%, +10%,
	48 to 62 Hz, max 8W
	24V ac, -15%, +10%.
	24V dc, -15% +20%
	±5% ripple voltage max 8W

Approvals

CE, cUL listed (file E57766), Gost-R
 May be field calibrated to control instrument accuracy required in AMS2750E
 EN14597 TR
 CCC Exempt

Transmitter PSU (not 3216)

Rating:	24V dc, >28mA, <33mA
Isolation:	264V 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:	4Hz (250ms)
Isolation:	264V ac double insulation from the PSU and communication
Resolution (µV):	<0.5µV with 1.6 sec filter
Resolution (effective bits):	>17 bits
Linearisation accuracy:	< 0.1% of reading
Drift with temperature:	<50ppm (typical) <100ppm (worst case)
Common mode rejection:	48-62Hz, >-120db
Series mode rejection:	48-62Hz, >-93dB
Input impedance:	100MΩ
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 80mV, 0 to 10V with 100KΩ/806Ω external divider module
Thermocouple types:	K, J, N, R, S, B, L, T, C, custom download (Note 2)
Resistance thermometer types:	3-wire Pt100 DIN 43760
Bulb current:	0.2mA
Lead compensation:	No error for 22Ω in all leads
Input filter:	Off to 59.9s
Zero offset:	User adjustable over full range
User calibration:	2-point gain & offset

AA relay

Type:	Form C (changeover)
Rating:	Min 100mA@12V dc, max 2A@264V ac resistive
Functions:	Control outputs, alarms, events

Current transformer input

Input range:	0-50mA rms, 48/62Hz 10Ω burden resistor fitted inside module
Calibration accuracy:	<1% of reading (Typical), <4% of reading (Worst case)
Isolation:	By using external CT
Input impedance:	<20Ω
Measurement scaling:	10, 25, 50 or 100 Amps
Functions:	Partial load failure, SSR fault

Digital input (DigIn A/B, B not on 3216)

Contact closure:	Open >600Ω, closed <300Ω
Input current:	<13mA
Isolation:	None from PV or system 264V 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 12V dc@<44mA, OFF <300mV@100µA
Isolation:	None from PV or system. 264V ac double insulated from PSU and communications
Functions:	Control outputs, alarms, events

Digital input

Contact closure:	Open >500Ω, closed <150Ω
Isolation:	None from PV or system 264V ac double insulated from PSU and communications
Functions:	Includes alarm acknowledge, SP2 select, manual keylock, timer functions standby select, RSP select

Relay output channels

Type:	Form A (normally open)
Rating:	Min 100mA@12V dc, max 2A@264V ac resistive
Functions:	Control outputs, alarms, events

Triac output

Rating:	0.75A (rms) 30 to 264V (rms) resistive load
Isolation:	264V ac double insulated
Functions:	Control outputs, alarms, events

Analogue output (Note 3)

OP1, OP2

Rating:	0-20mA into <500Ω
Accuracy:	± (<1% of Reading + <100µA)

Resolution:	13.5 bits
Isolation:	264V ac double insulated from PSU and comms Module code C provides full 264V ac double insulated
Functions:	Control outputs, retransmission

OP 3 (not on 3216)

Rating:	0-20mA into <500Ω
Accuracy:	±(<0.25% of Reading + <50µA)
Resolution:	13.6 bits
Isolation:	264V ac double insulated
Functions:	Control outputs, retransmission

Remote setpoint input

Calibration accuracy:	<±0.25% or reading ±1LSD
Sample rate:	4Hz (250ms)
Isolation:	264V ac double insulation from instrument
Resolution:	<0.5mV (for 0-10V) or <2µA (for 4-20mA)
Resolution (effective bits):	>14bits
Drift with temperature:	<50ppm (typical) <150ppm (worst case)
Common mode refection:	48-62Hz, >-120dB
Series mode rejection:	48-62Hz, >-90dB
Input impedance:	Voltage: 223KΩ and Current: 2R49
Normal input range:	0 to 10V and 4 to 20mA
Max input range:	-1V to 11V and 3.36mA to 20.96mA

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
Type:	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
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
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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:	5 recipes with 38 parameters
Selection:	HMI interface, communications or digital IO

Notes

1. Calibration accuracy quoted over full ambient operating range and for all input linearisation 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	Motorised valve controller
VP	Motorised valve programmer

2 Supply Voltage	
VH	85-264V ac
VL	24V ac/dc

3 Outputs			
3216			
	OP1	OP2	
XXXX	None fitted	None fitted	
LXXX	Logic	None fitted	
LRXX	Logic	Relay	
RRXX	Relay	Relay	
LLXX	Logic	Logic	
LDXX	Logic	0-20mA	
DDXX	0-20mA	0-20mA	
DRXX	0-20mA	Relay	
RCXX	Relay	Isolated 0-20mA	
LCXX	Logic	Isolated 0-20mA	
DCXX	0-20mA	Isolated 0-20mA	
LTXX	Logic	Triac	
TXX	Triac	Triac	
3208/32h8/3204			
	OP1	OP2	OP3
LRRX	Logic	Relay	Relay
RRRX	Relay	Relay	Relay
LLRX	Logic	Logic	Relay
LRDX	Logic	Relay	0-20mA
RRDX	Relay	Relay	0-20mA
DDDX	0-20mA	0-20mA	0-20mA
LLDX	Logic	Logic	0-20mA
LDDX	Logic	0-20mA	0-20mA
DRDX	0-20mA	Relay	0-20mA
Not available with Low Voltage PSU			
LTRX	Logic	Triac	Relay
TTRX	Triac	Triac	Relay
LTDX	Logic	Triac	0-20mA
TDDX	Triac	0-20mA	0-20mA
TTDX	Triac	Triac	0-20mA

4 AA Relay (OP4)	
X	Not fitted
R	Relay

5 Options Board	
XXX	None 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 IP
RCL	Remote SP CT + Logic IP

6 Fascia Colour	
G	Green
S	Silver
W	Washdown (not 32h8/04)

7 Product Language	
ENG	English
FRA	French
GER	German
SPA	Spanish
ITA	Italian

8 Manual Language	
ENG	English
FRA	French
GER	German
SPA	Spanish
ITA	Italian

9 Warranty	
XXXXX	Standard
WL005	Extended

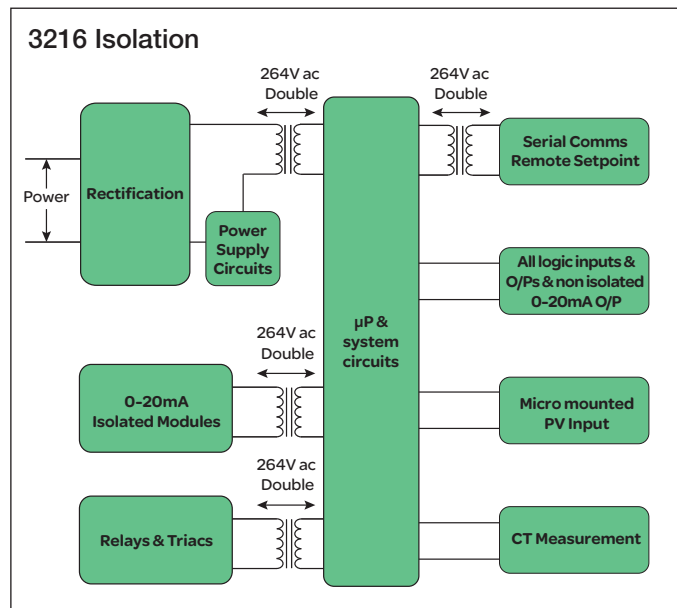
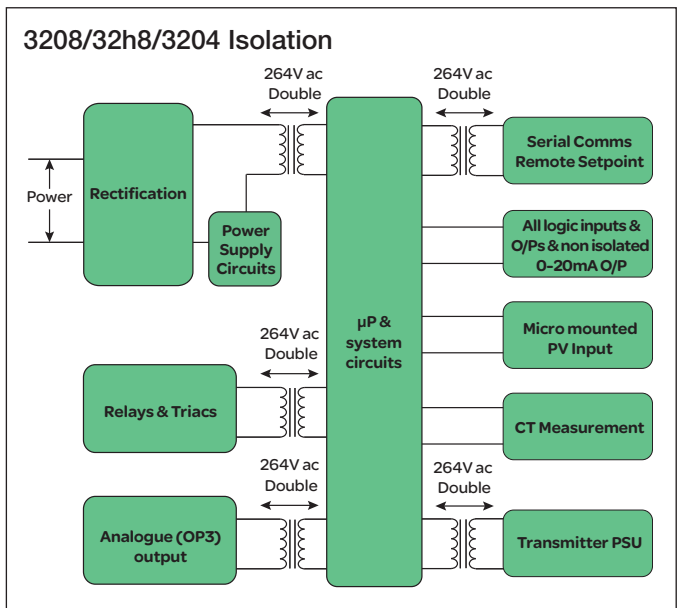
10 Certificates	
XXXXX	None
CERT1	Certificate of Conformity
CERT2	Factory Calibration certificate

11 Custom Label	
XXXXX	None

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

3200 Accessories

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



Optional quick start code (Optional)



1 Input Type

Thermocouple	
B	Type B
J	Type J
K	Type K
L	Type L
N	Type N
R	Type R
S	Type S
T	Type T
C	Custom/Type C
RTD	
P	Pt100
Linear	
M	0-80mV
2	0-20mA
4	4-20mA
X	Unconfigured

2 Setpoint Limits

Full PV Range	
C	Deg C full range
F	Deg F full range
Centigrade	
0	0 to 100 deg C
1	0 to 200 deg C
2	0 to 400 deg C
3	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
Fahrenheit	
G	2 to 212 deg F
H	32 to 392 deg F
J	32 to 752 deg F
K	32 to 1112 deg F
L	32 to 1472 deg F
M	32 to 1832 deg F
N	32 to 2192 deg F
P	32 to 2552 deg F
R	32 to 2912 deg F
T	32 to 3272 deg F
X	Unconfigured

3 Output 1 (OP1)

XX	Unconfigured
Relay, DC, Triac or Logic outputs	
Control	
H	Heat (PID)
C	Cool (PID)
J	Heat (On/off)
K	Cool (On/off)
Alarm output	
Energised in alarm	
0	High alarm
1	Low alarm
2	Deviation high
3	Deviation low
4	Deviation band
Alarm output	
De-energised in alarm	
5	High alarm
6	Low alarm
7	Deviation high
8	Deviation low
9	Deviation band
DC outputs	
Control	
H	4-20mA heating
C	4-20mA cooling
J	0-20mA heating
K	0-20mA cooling
Retransmission	
D	4-20mA setpoint
E	4-20mA Process value
F	4-20mA output
N	0-20mA setpoint
Y	0-20mA Process value
Z	0-20mA output
Logic input	
W	Alarm acknowledge
M	Manual select
R	Timer/Prog Run
L	Keylock
P	Setpoint 2 select
T	Timer/prog Reset
U	Remote SP select
V	Recipe 2/1 select
A	Remote up button
B	Remote down button
G	Time/prog Run/reset
I	Timer/prog Hold
Q	Standby select

4 Output 2 (OP2)

XX	Unconfigured
Relay, DC, Triac or Logic outputs	
Control	
H	Heat (PID)
C	Cool (PID)
J	Heat (On/off)
K	Cool (On/off)
Alarm output	
Energised in alarm	
0	High alarm
1	Low alarm
2	Deviation high
3	Deviation low
4	Deviation band
Alarm output	
De-energised in alarm	
5	High alarm
6	Low alarm
7	Deviation high
8	Deviation low
9	Deviation band
DC outputs	
Control	
H	4-20mA heating
C	4-20mA cooling
J	0-20mA heating
K	0-20mA cooling
Retransmission	
D	4-20mA setpoint
E	4-20mA Process value
F	4-20mA output
N	0-20mA setpoint
Y	0-20mA Process value
Z	0-20mA output

5 AA Relay (OP4)

XX	Unconfigured
Relay, DC, Triac or Logic outputs	
Control	
H	Heat (PID)
C	Cool (PID)
J	Heat (On/off)
K	Cool (On/off)
Alarm output	
Energised in alarm	
0	High alarm
1	Low alarm
2	Deviation high
3	Deviation low
4	Deviation band
Alarm output	
De-energised in alarm	
5	High alarm
6	Low alarm
7	Deviation high
8	Deviation low
9	Deviation band

6 CT Input Scaling

XX	Not fitted
1	10 Amps
2	25 Amps
5	50 Amps
6	100 Amps

7-8 Dig Input A, Dig Input B

X	Unconfigured
W	Alarm acknowledge
M	Manual select
R	Timer/Prog Run
L	Keylock
P	Setpoint 2 select
T	Timer/prog Reset
U	Remote SP select
V	Recipe 2/1 select
A	Remote up button
B	Remote down button
G	Time/prog Run/reset
I	Timer/prog Hold
Q	Standby select

9 Output 3 (OP3)

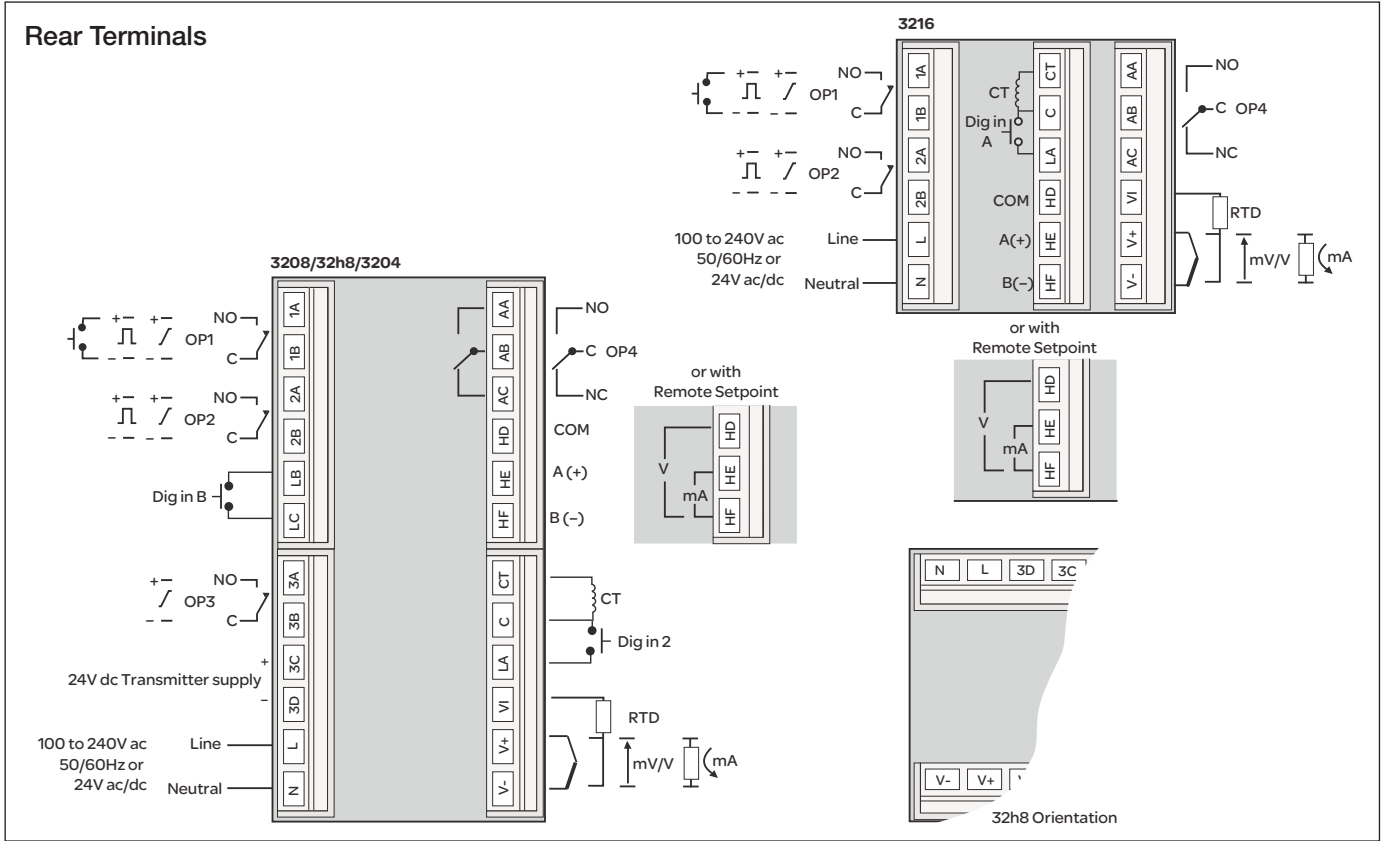
XX	Unconfigured
Relay, DC, Triac or Logic outputs	
Control	
H	Heat (PID)
C	Cool (PID)
J	Heat (On/off)
K	Cool (On/off)
Alarm output	
Energised in alarm	
0	High alarm
1	Low alarm
2	Deviation high
3	Deviation low
4	Deviation band
Alarm output	
De-energised in alarm	
5	High alarm
6	Low alarm
7	Deviation high
8	Deviation low
9	Deviation band
DC outputs	
Control	
H	4-20mA heating
C	4-20mA cooling
J	0-20mA heating
K	0-20mA cooling
Retransmission	
D	4-20mA setpoint
E	4-20mA Process value
F	4-20mA output
N	0-20mA setpoint
Y	0-20mA Process value
Z	0-20mA output

10 Lower Display

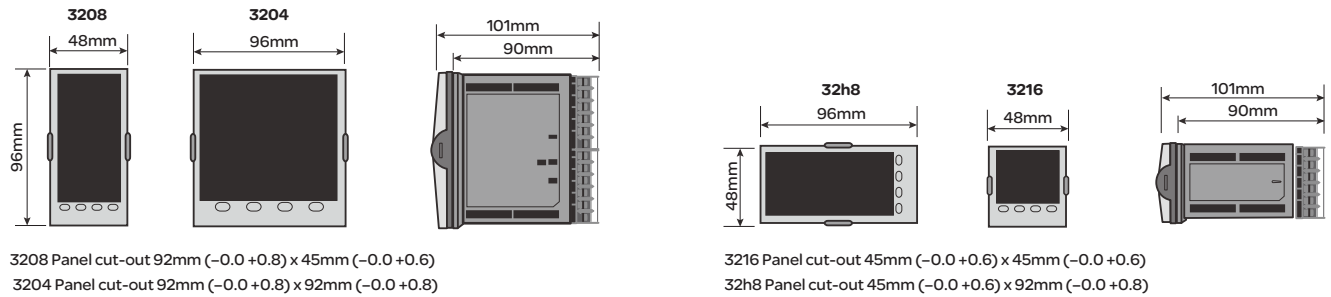
X	Unconfigured
T	Setpoint
S	Target setpoint
P	Output power %
R	Time remaining
E	Elapsed time
1	1st alarm setpoint
D	Dwell/ramp - Time/target
C	SP with output meter
M	SP with ammeter
A	Load amps
N	None



Rear Terminals



Mechanical Details



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