

# 2408 and 2404 Temperature/Process Controllers



## Ideal for

- single and multi-zone ovens, furnaces and kilns
- environmental chambers
- simple ratio and cascade control

Available in 1/8 and 1/4 DIN panel sizes, the 2408 and 2404 are high stability controllers with an extensive range of options. Either PID, On/Off or motorized valve control can be configured, satisfying both electrical and gas heating applications. Advanced adaptive tuning algorithms optimize control performance.

The controllers accept a range of plug-in modules for heating, cooling, analog retransmission, second process value input and remote setpoint.

High speed Modbus, PROFIBUS, DeviceNet and ASCII communications provide easy connection to PLCs, supervisory control and data logging systems.

Twenty setpoint programs can be stored, with 16 ramp-dwell segments and 8 event outputs.

Eliminate ammeters by using Eurotherm's advanced load current monitoring facility. Heater current may be displayed and also open or short circuit faults detected. See page 3-50 for more information.

Multi-zone programming can be implemented using 'PDS' retransmission to deliver a master setpoint to up to three slave controllers, with holdback from any slave if the temperature deviates from the setpoint by more than a set value.

## Specifications

### Dimensions:

2408: 48W x 96H x 150D mm

2404: 96W x 96H x 150D mm

### Control modes:

PID, On/Off or motorized valve

### Supply voltages:

85-264Vac, 15 watts maximum

20-29Vac/dc, 15 watts maximum

### Operating ambient:

0-55°C, 0-90% RH non-condensing

### Inputs:

See Sensor Inputs in the Configuration coding

### Output ratings:

Relay: 2A, 264Vac resistive

Logic: 18Vdc, 20mA

Triac: 1A 264Vac resistive

DC: 0-20mA or 0-10Vdc configurable

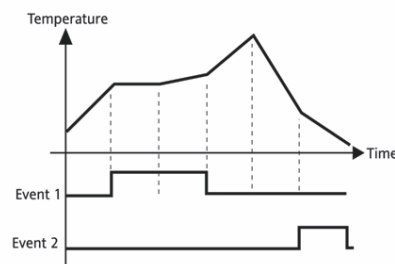
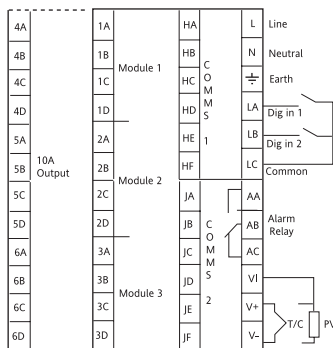
### Panel sealing:

IP65, plug-in from front panel

## Rear terminal connections

### Model 2408 and 2404

### Programmer Functionality





# Ordering codes

Hardware coding	Model Number	Function	Supply Voltage	Module 1	Module 2	Module 3	Alarm Relay	10 Amp Output	Comms 1	Comms 2	Manual
								Omit for 2408			

Model Number	Function	Module 1	Module 2	Module 3	10amp Output
<b>Panel size</b> 2408 48x96mm 2404 96x96mm <b>Profibus units</b> 2408f 48x96mm 2404f 96x96mm	<b>PID control</b> CC Controller only CG 1x 8 seg Prog CP 1x16 seg Prog P4 4x16 seg Prog CM 20x16 seg Prog (note 1) <b>On/Off Control</b> NF Controller only NG 1x8 seg Prog NP 1x16 seg Prog N4 4x16 seg Prog NM 20x16 seg Prog (note 1) <b>MotORIZED valve control</b> VC Valve positioner VG 1x8 seg Prog VP 1x16 seg Prog V4 4x16 seg Prog VM 20x16 seg Prog (note 1)	XX Not fitted <b>Relay: 2-pin</b> R2 Fitted unconfigured RH Heating output RU Valve raise output <b>Relay: change over</b> R4 Fitted unconfigured YH Heating output <i>Or alarm 1 from table A</i> <b>Logic: (Non-isolated)</b> LZ Fitted unconfigured LH Heating output M1 PDS Heater break detect (note 2) M2 PDS Current monitoring (note 3) <b>Triac</b> T2 Fitted unconfigured TH Heating output TU Valve raise output <b>DC control (Isolated)</b> D4 Fitted unconfigured H6 0-20mA heating H7 4-20mA heating H8 0-5V heating H9 1-5V heating HZ 0-10V heating <b>Digital I/O (unconfig'd)</b> TK Triple contact input TL Triple logic input TP Triple logic output <b>Dual relay</b> RR Fitted unconfigured RD Heat + cool RM VP raise & lower OPs <b>Dual triac</b> TT Fitted unconfigured TD Heat + cool TM VP raise & lower OPs <b>Logic+relay</b> LR Fitted unconfigured LD Heat + cool PD Mode 2 + cool <b>Logic+triac</b> LT Fitted unconfigured GD Heat & cool QD Mode 2 + cool <b>Transducer PS</b> G3 5Vdc transducer PSU G5 10Vdc transducer PSU	XX Not fitted <b>Relay: 2-pin</b> R2 Fitted unconfigured RC Cooling output RW Valve lower output <b>Relay: change over</b> R4 Fitted unconfigured YC Cooling output PO Program event 1 (not with 8-seg programmer) PE Program END output <i>Or alarm 2 from table A</i> <b>Dual relay</b> RR Fitted unconfigured PP Program events 1 & 2 <b>Logic</b> LZ Fitted unconfigured LC Cooling output <b>Triac</b> T2 Fitted unconfigured TC Cooling output TW Valve lower output <b>DC control (Isolated)</b> D4 Fitted unconfigured C6 0-20mA cooling C7 4-20mA cooling C8 0-5V cooling C9 1-5V cooling CZ 0-10V cooling <b>Digital I/O (unconfig'd)</b> TK Triple contact input TL Triple logic input TP Triple logic output <b>Power supply</b> MS 24Vdc transmitter <b>DC retrans. (Isolated)</b> <i>Select from Table B</i> <b>Potentiometer input</b> VU Fitted unconfigured VS Valve position feedback VR Setpoint input <b>Transducer PS</b> G3 5Vdc transducer PSU G5 10Vdc transducer PSU	XX Not fitted <b>Relay: 2-pin</b> R2 Fitted unconfigured <b>Relay: change over</b> R4 Fitted unconfigured PO Program event 4 (not with 8-seg programmer) PE Program END output <i>Or alarm 3 from table A</i> <b>Logic</b> LZ Fitted unconfigured <b>Triac</b> T2 Fitted unconfigured <b>Dual relay</b> RR Fitted unconfigured PP Program event 4 & 5 <b>Digital I/O (unconfig'd)</b> TK Triple contact input TL Triple logic input TP Triple logic output <b>Power supply</b> MS 24Vdc transmitter <b>DC remote input</b> D5 Fitted unconfigured W2 4-20mA setpoint W5 0-10V setpoint WP Second PV input <b>DC retrans. (Isolated)</b> <i>Select from Table B</i> <b>Potentiometer input</b> VU Fitted unconfigured VS Valve position feedback VR Setpoint input <b>Transducer PS</b> G3 5Vdc transducer PSU G5 10Vdc transducer PSU	XX Not fitted R6 Fitted unconfigured RH Heating

**Note 1.**  
Not available with profibus controllers.

**Note 2.**  
PDS heater break detect will transmit the power demand to a TE10S Solid State Relay and read back load current and alarm.

**Note 3.**  
PDS current monitoring will transmit the power demand signal to a TE10S Solid State Relay and read back load current and open and short circuit alarms.

**Note 4.**  
Setpoint limits: Include the decimal position required in the displayed value. Up to one for temperature inputs, up to two for process inputs.

**Note 5.**  
An external 1% current sense resistor is supplied as standard. If greater accuracy is required, a 0.1% 2.49Ω can be ordered as part no. SUB2K/249R.1.

Supply Voltage
VH 85-264Vac
VL 20-29Vac/dc

Comms 1
XX Not fitted
2 wire, RS485
Y2 Fitted unconfigured
YM Modbus protocol
YE El-Bisynch protocol (note 1)
RS232
A2 Fitted unconfigured
AM Modbus protocol
AE El-Bisynch protocol (note 1)
4 wire RS422
F2 Fitted unconfigured
FM Modbus protocol
FE El-Bisynch protocol (note 1)
PDS Output
M7 Fitted unconfigured
PT PV retrans
TS Setpoint retrans
OT Output retrans
Profibus Module
PB High speed RS485
DeviceNet®
DN DeviceNet

Comms 2
XX Not fitted
PDS Input
M6 Fitted unconfigured
RS Setpoint input
PDS Output
M7 Fitted unconfigured
PT PV retrans
TS Setpoint retrans
OT Output retrans

Manual
XXX No manual
ENG English
FRA French
GER German
NED Dutch
SPA Spanish
SWE Swedish
ITA Italian

Configuration coding (optional)	Sensor Input	Setpoint Min	Setpoint Max	Display Units	Digital Input 1	Digital Input 2	Control	Power	Options Cooling	Buttons	Program
		note 4	note 4								

Sensor Input Setpoint Min/Max
Refer to 2416 coding

Display Units
C Celsius
F Fahrenheit
K Kelvin
X Linear input

Digital Input 1 & 2
XX Disabled
AM Manual select
SR Remote SP select
S2 Second setpoint
AC Alarm acknowledge
RP SP rate limit enabled
RN Run program
HO Hold program
RE Reset program
RH Run/hold prog
KL Keylock
NT Run/Reset
TN Reset/Run
HB Program holdback
P2 Second PID
ST One shot tune enable
AT Adaptive tune enable
FA Select full access level
RB Simulates UP button
LB Simulates DOWN button
SB Simulates SCROLL button
PB Simulates PAGE button
B1 Least sig. BCD digit
B2 2nd BCD digit
B3 3rd BCD digit
B4 4th BCD digit
B5 5th BCD digit
B6 Most significant digit
SY Standby-all O/Ps OFF
SC Prog synchronization
SG Skip segment (without changing SP)
PV Select PV2
AG Advance to end of segment (& step to target SP)
M5 CTX (mode 5)

Options
<b>Control action</b>
XX Reverse acting (standard)
DP Direct acting
<b>Power feedback</b>
XX Enabled on logic, relay & triac heating
PD Feedback disabled
<b>Cooling options</b>
XX Linear cooling
CF Fan cooling
CW Water cooling
CL Oil cooling
CO On/Off cooling
<b>Front panel buttons</b>
XX Enabled
MD Auto/manual disabled
MR Auto/man & run/hold disabled
RD Run/hold disabled
<b>Programmer time units</b>
XX Dwell & ramp in mins
HD Dwell time in hours
HR Ramp rate in units/hrs

### Example ordering code

2408 - CC - VH - LH - RC - FL - FH - YM - TS - K - 0 - 1000 - C - AM - S2 - XX - XX - XX - MD - XX

2408, PID Controller, 85 to 264Vac, Logic heating, Relay cooling, Low alarm relay, High alarm relay, RS485, Modbus comms, PDSIO setpoint retrans, Type K thermocouple, 0 to 1000°C, Auto/manual select, 2nd setpoint select, Manual button disabled.