

# 2408 2404



## Barber-Colman / Eurotherm Temperature/Process Controllers

### Ideal for

- single and multi-zone ovens, furnaces and kilns
- environmental chambers
- simple ratio & 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 motorised valve control can be configured, satisfying both electrical and gas heating applications. Advanced adaptive tuning algorithms optimise control performance.

The controllers accept a range of plug-in modules for heating, cooling, analogue retransmission, second process value input and remote setpoint. **High speed Modbus, PROFIBUS and ASCII** communications provide easy connection to PLCs, supervisory control and data logging systems.

Heater current may be displayed and open or short circuit faults detected by Eurotherm's advanced load diagnostics.

### Specifications

#### Dimensions:

2408: 48W x 96H x 150Dmm

2404: 96W x 96H x 150Dmm

#### Control modes:

PID, On/Off or motorised valve

#### Supply voltages:

85-264Vac, 15watts max.

20-29Vdc/dc, 15watts max.

#### Operating ambient:

0-55°C, 0-90%RH non-condensing

#### Inputs:

See Sensor Inputs in the Configuration coding

#### Output ratings:

Relay: 2A, 264Vac resistive

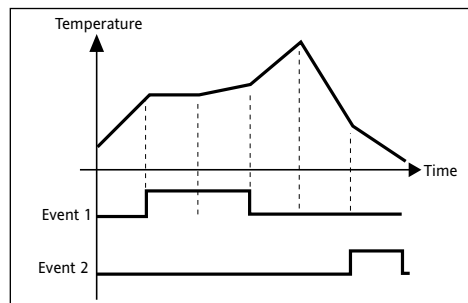
Logic: 18Vdc, 20mA

Triac: 1A 264Vac resistive

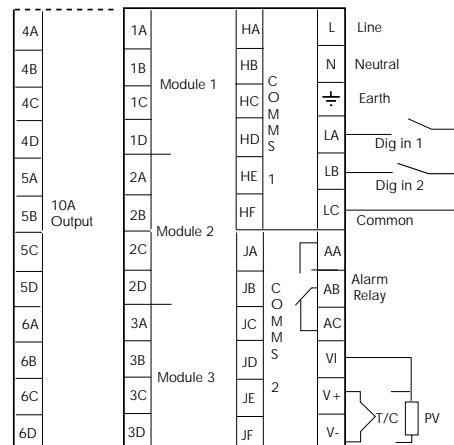
DC: 0-20mA or 0-10Vdc configurable

### Setpoint programming

20 setpoint programs can be stored, each with 16 ramp-dwell segments and eight event outputs.



### Rear terminal connections



# Ordering codes

Model Number	Function	Supply Voltage	Module 1	Module 2	Module 3	Alarm Relay	10amp Output	Comms 1	Comms 2	Manual
Hardware coding							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  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 a heater break 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.	<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>Motorised valve control</b> VC Valve positioner VG 1x8 seg Prog VP 1x16 seg Prog V4 4x16 seg Prog VM 20x16 seg Prog (note 1)  <b>Supply Voltage</b> VH 85-264Vac VL 20-29Vac/dc  <b>Table A: alarm codes</b> FH High alarm FL Low alarm DB Dev. band alarm DL Dev. low alarm DH Dev. high alarm  <b>Table B: DC retransmission</b> D6 Fitted unconfigured First character V- PV retrans S- Setpoint retrans O- Output retrans Z- Error retrans Second character -1 0-20mA -2 4-20mA -3 0-5V -4 1-5V -5 0-10V	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 Or alarm 1 from table A <b>Logic: (Non-isolated)</b> L2 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 QD Heat & cool QD Mode 2 + cool	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 Or alarm 2 from table A <b>Dual relay</b> RR Fitted unconfigured PP Program events 1 & 2 <b>Logic</b> L2 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> Select from Table B <b>Potentiometer input</b> VU Fitted unconfigured VS Valve position feedback VR Setpoint input	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 Or alarm 3 from table A <b>Logic</b> L2 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> W2 4-20mA setpoint W5 0-10V setpoint WP Second PV input <b>DC retrans. (Isolated)</b> Select from Table B <b>Potentiometer input</b> VU Fitted unconfigured VS Valve position feedback VR Setpoint input  <b>Alarm relay</b> XX Not fitted <b>Alarm 4 relay</b> RF Fitted unconfigured Table A alarm options plus: RA Rate of change alarm PDS Alarms LF Heater break detect HF Current monitoring heater break SF Current monitoring SSR failure PO Program event 7 (not with 8-seg prog) PE Program END output	XX Not fitted R6 Fitted unconfigured RH Heating  <b>Comms 1</b> 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) <b>4 wire RS422</b> F2 Fitted unconfigured FM Modbus protocol FE El-Bisynch protocol (note 1) <b>PDS Output</b> M7 Fitted unconfigured PT PV retrans TS Setpoint retrans OT Output retrans <b>Profibus Module</b> PB High speed RS485  <b>Comms 2</b> XX Not fitted <b>PDS Input</b> M6 Fitted unconfigured RS Setpoint input <b>PDS Output</b> M7 Fitted unconfigured PT PV retrans TS Setpoint retrans OT Output retrans  <b>Manual</b> XXX No manual ENG English SPA Spanish

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

Sensor Input	Setpoint Min	Setpoint Max	Display Units	Digital Input 1 & 2	Options
<b>Standard Sensor Inputs</b> J J Thermocouple K K Thermocouple T T Thermocouple L L Thermocouple N N Thermocouple-Nicrosil/Nisil R R Thermocouple-Pt/Pt13%Rh S S Thermocouple-Pt/Pt10%Rh B B Thermocouple-Pt/Pt30%Rh -6%Rh P Platine II Thermocouple Z RTD/PT100 DIN 43760 <b>Factory Downloaded Input</b> C C Thermocouple - W5%Re/W26%Re (Hoskins) D D Thermocouple - W3%Re/W25%Re E E Thermocouple 1 Ni/Ni18%Mo Thermocouple 2 Pt20%Rh/Pt40%Rh Thermocouple 3 W/W26%Re (Engelhard) Thermocouple 4 W/W26%Re (Hoskins) Thermocouple 5 W5%Re/W26%Re (Engelhard) Thermocouple 6 W5%Re/W26%Re (Bucose) Thermocouple 7 Pt10%Rh/Pt40%Rh Thermocouple 8 Exergen K80 I.R. pyrometer <b>Process Inputs</b> V 0 to 10Vdc linear A 4 to 20mA linear (note 4)	Min °C Max -210 1200 -200 1372 -200 400 -200 900 -250 1300 -50 1700 -50 1768 0 1820 0 1369 -200 850 Min °C Max 0 2319 0 2399 -250 1000 0 1399 0 1870 0 2000 0 2010 10 2300 0 2000 200 1800 -45 650	C Celsius F Fahrenheit K Kelvin X Linear input	XX Disabled AM Manual select SR Remote SP select S2 Second setpoint EH Integral hold 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	<b>Control action</b> XX Reverse acting (standard) <b>DP</b> Direct acting <b>Power feedback</b> XX Enabled on logic, relay & triac heating PD Feedback disabled <b>Cooling options</b> HO Hold program 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	

Distributed Worldwide by [www.mcgooff-bethune.com](http://www.mcgooff-bethune.com)  
 Email: [sales@mcgooff-bethune.com](mailto:sales@mcgooff-bethune.com)  
 +1-770-840-9811

