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808

SERIES

EUROTHERM
CONTROLS

Controllers/Programmers
including
Motorised Valve Controller

CE

Product data

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808 Vertical Controller/Programmer

847 Horizontal Controller/Programmer

809 Vertical MVC Controller/Programmer

849 Horizontal MVC Controller/Programmer

The Eurotherm Controls 808/847 instruments have become established as a range of high performance, versatile, accurate and reliable PID controllers, that are both easy to set-up and operate.

To complete the range a Motorised Valve Controller 809/849 version is also available.

Controller and Programmer - The 808/847 range is available as either PID or ON/OFF controller only, or controller with programmer features.
The 809/849 incorporates all the features of the 808/847, but provides Motorised Valve or Valve Position Control output.The raise and lower outputs can be selected to be either relay or triac drive as dictated by the process performance requirements.

Wide range of applications - This range of instruments includes both configurable software and plug-in-hardware options to provide a powerful solution to a wide variety of industrial processes in the plastics, heat treatment and medical industries.

Efficient use of panel space - The neat 1/8 DIN construction makes the instrument ideal for use in small ovens, furnaces, incubators, sterilisers and autoclaves; where it can be mounted either vertically or horizontally. It is also ideal for small multi loop applications such as extruders, since they can be mounted side by side in a single cut-out. The Motor Valve Controller can be used to control fuel flows such as oil, gas and steam via a motor driven valve.

Clear process visibility - Visibility of your process is provided by the dual displays available in each of the controllers in the range. These displays enable both the process variable and the setpoint to be viewed at the same time. Additional parameters required to control the process are readily available through the simple to use front panel keys. The powerful parameter 'Hide' feature enables the operator to see only those parameters which are important to your process. A 'Read only' feature is also available. These allow a specific user interface to be defined.

Setpoint profiling - Ramp to setpoint is available as standard, but the control of repetitive processes can be made simple by utilising the optional Programmer or Setpoint Profiling feature. This feature provides a four segment ramp-dwell-ramp-dwell facility.

Instrument tuning - To enable the instrument to be readily matched to your particular process equipment the 808 series of instruments offer an integral self tune facility.

Comprehensive digital communications -The ability to integrate your process into a supervisory environment, for remote monitoring and control is possible by the comprehensive Digital Communications option.

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TECHNICAL SPECIFICATION Quoted at 25°C unless otherwise stated

Inputs

General	Sample Period	8Hz 125 mS
	Calibration Error	Better than ± 0.25% of max. input range ± 1 LSD
	Sensor Break Detection	Set within display range
	Sensor Break Power	Range 0.0 to 100.0%
	Input Filter Constant	0.01 to 99.99 display units
Thermocouple	Standards	British BS4937 (1973) German DIN 43710 US ASTM E230 (1972) E, J, L, K, N, PLII, R, S, T
	Linearisation	Better than +/-0.2°C
	CJC	Internal, external 0°C, 45°C or 50°C
	Internal CJC Error	Typically 0.05°C/°C ambient change (20:1)
RTD	Standards	British BS1904 German DIN 43760 PT100
	Linearisation	Better than +/-0.1°C
	Bulb Current	184µA typical
	Connection	3 wire automatic lead resistance compensation
	Maximum Lead Resistance	10Ω per lead
Process	Ranges	- 10 to +50mV ; absolute maximum usable range -10 to + 60mV -40 to 200mV ; -200 to +1000mV, -1 to 5V ; -2 to +10V ; -5 to +25V ; -4 to +20mA with Input Adaptor (based on -10 to + 50mV input)

Outputs (2)

Relay	Maximum of 264V 2A into resistive load, with contact suppression. On/off or time proportional. Minimum load voltage 10V peak (Isolated from remainder of instrument) Leakage current through contact suppression components = 2mA @264V 50Hz Motor Valve Controller models include two relays
Triac	Range 80 to 264V 1A into resistive load. On/off or time proportional. Minimum current = 50mA MVC models include two triacs
Logic	18V ± 1V at 10mA (15mA short circuit current). On/off or time proportional (not isolated from PV)
DC	0-20mA or 4-20mA (16 volts maximum) (not isolated from PV)

Alarms (2)*

Relays	Maximum 264V 2A into resistive load, with contact suppression. Leakage current through contact suppression components = 2mA @ 264V 50Hz.
Logic	18 ± 1V at 10mA (15mA short circuit current)(not isolated from PV circuits)
Hysteresis	1°C
Type	Full scale high or low or deviation band
Range	Alarms may be set over complete instrument range
*Alarm 1	Non-energised (non-latching) in alarm state
*Alarm 2	Energised (non-latching) in alarm state

Auto Tune

A single shot self-tune system initiated on demand or at controller power up

Programming

Number of programs	One
Program length	Maximum of two segments of RAMP plus DWELL Ramps variable from 0.01 to 99.99 display units/min Dwells variable from 1 to 9999 mins
Program cycles	Maximum of 200 or continuous cycling
Holdback	Deviation band variable from 0 to span of the instrument
Run and Hold Functions	Set by front push buttons

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Parameters

Control	Auto/Manual	Bumpless transfer auto to manual and manual to auto. Manual output variable from 0 to heat power limit for heat only and -99.9 to heat power limit for heat/cool instruments.
	Setpoint Rate Limit	Control maximum rate of change of setpoint from current value to new target value. Ramp rate is a commissioning parameter
	Non-linear/Linear Cool	Output 2 (cool) when not on/off can be configured with either a linear or a non-linear output characteristic linear air cooling, non linear water or oil
Commissioning	Proportional Band*	0.5 to 4500°C (0.9 to 8100°F) or equivalent in %
	Integral Time	Off or 1 to 8000 seconds
	Derivative Time	Off or 1 to 999 seconds
	Cutback (Low ,High)	1 to display range
	Setpoint Rate Limit	0 to 99.99°C/min or °F/min
	Heat Cycle Time	0.3 to 80 seconds at 50% power
	Cool Cycle Time	0.3 to 80 seconds at 50% power
	Heat Power Limit	0% - 100% heat only outputs or -99% - 100% heat/cool outputs
	Relative Cool Gain*	0.1 to 10.0 of proportional band

*For on/off outputs proportional band and relative cool gain is equal to dead band and relative dead band.

Communication

	Protocol	Variable baud rate, RS232 or RS422 format, ASCII protocol to ANSI X 3.28 (1976) 2.5 A4 EI BISYNC®
	Baud Rates	300, 600, 1200, 2400, 4800 or 9600
	Format	One start bit - seven data bits - even parity bit - one stop bit
	Unit Address	Two digits (00 - 99)
	Digital Input	Closing logic input disables communications initiated user interface security

General

Display	Upper Display	4 x 7 segment 7mm high LED indicator
	Lower Display	4 x 7 segment 7mm high LED indicator
	Resolution	± 1 least significant digit
	Indicators	2 x LED's output states
Environmental	Supply Voltage	80 to 264V ac
	Supply Frequency	48 to 62Hz
	Power Consumption	5.0 watts
	Common Mode Rejection	≥ 120dB at 50/60Hz
	Series Mode Rejection	≥ 60dB at 50/60 Hz
	Max Common Mode Voltage	264V rms 50-60Hz with respect to neutral
	Triac Line Fuse	Special, 1A, 250V Eurotherm part no. CS022364
	Relative Humidity	5 to 95%, non-condensing
	Operating Temperature	0 - 50°C
	Safety Standards	EN61010, installation category 2. (Voltage transients must not exceed 2.5kV)
	Atmosphere	Electrically conductive pollution must be excluded from the cabinet in which this controller is mounted. This product is not suitable for use above 2000m or in corrosive or explosive atmospheres without further protection.
	Isolation	PV input, triac, relay and digital communication outputs all have reinforced isolation which provides protection against electric shook. The digital input, logic and dc outputs are electrically connected to PV.
	Electromagnetic Compatibility	Meets the general requirements of the generic Industrial standards - EN50081-2 and EN50082-2. See Installation handbook for more details
	Panel Sealing	The instrument fascia meets IP54 when mounted into a cutout as defined below and fitted with the optional gasket
Mechanical	Customer Connections	Screw terminals
	Dimensions	96mm(H) x 48mm(W) x 156mm(D)
	Mounting	Plug in with panel mounting sleeve - Panel cutout 92mm + 0.8 - 0.0, 45mm + 0.6 -0.0
	Weight	0.55Kg (1.2 lbs) including sleeve and clamp
	Vibration	MIL STD, 810D, Method 516-1

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ORDERING CODE

Complete order code consists of both Hardware and Configuration

HARDWARE

Basic Product	Output 1	Output 2	Alarm	Comms	Input Adaptor	Options

CONFIGURATION

Config. Type	Sensor Input	Range	Display Units	Output 1	Output 2	Alarm Output

Calibration for Linear Inputs

Input Signal			Display Range		
Lower Limit	Upper Limit	Units	Lower Limit	Upper Limit	Units

Basic Product	Code
808 Controller	808
847 Horizontal Controller	847
809 Motor Valve Controller	809
849 Horizontal MVC	849

Output 1 & 2	Code
Not fitted	0
DC analogue	D1
Logic	L1
Relay	R1
Triac (1)	T1
Dual relay (2)	VPR
Dual triac (2)	VPT

Alarms	Code
Not fitted	0
Relay	R1
Logic	L1

Communications	Code
Not fitted	0
RS232C	C2
RS422	C4

Input Adaptor	Code
Note (input range: -10 to +50 millivolts)	0
-40 to +200 millivolts)	IAV2
-200 to +1000 millivolts	IA1V
-4 to +20 milliamps	IAA02
-1 to +5 volts	IA5V
-2 to +10 volts	IA10V
-5 to +25 volts	IA25V

Options	Code
Linear process input & self tuning	QLS
Linear process input, setpoint programmer & self tuning	QLPS

Configuration Type	Code
Standard	E

Sensor Input	Code
Thermocouple type B	B
Thermocouple type E	E
Thermocouple type J	J
Thermocouple type K	K
Thermocouple type L	L
Thermocouple type Nicrosil/Nisil	N
Thermocouple type Platinell II	P
Thermocouple type R	R
Thermocouple type S	S
Thermocouple type T	T
DC analogue input	X
RTD (3-wire)	Z

Range		
°C	Input Sensors	Code
-250 to +250	T	A
-100 to +100	E, K, T	B
-1-100 to +400	E, J, K, L, T	C
-75.0 to +400.0	E, J, L, Z	D
0 to 100	E, J, K, L, N, P, R, S, T, Z	E
0 to 200	E, J, K, L, N, P, R, S, T, Z	F
0 to 300	E, J, K, L, N, P, R, S, T, Z	G
0 to 400	E, J, K, L, N, P, R, S, Z	H
0 to 600	E, J, K, L, N, P, R, S	J
0 to 800	E, J, K, N, P, R, S	K
0 to 1000	J, K, N, P, R, S	L
0 to 1200	K, N, P, R, S	M
0 to 1600	R, S	N
200 to 1800	B	P
Linear process inputs only		X

Note: Type Z gives 0.1° resolution

Display Units	Code
Degrees Celsius	C
Degrees Fahrenheit	F
Blank (linear process I/Ps only)	X

Output 1	Code
Slow cycling	1
Fast cycling (3)	2
0 to 20mA dc	3
4 to 20mA dc	4
On/off	5
Slow cycling, direct acting	6
Fast cycling, direct acting (3)	7
0 to 20mA dc, direct acting	8
4 to 20mA dc, direct acting	9

Output 2	Code
Off	0
Water cooling	1
Oil cooling	2
Fan cooling	3
Full scale low alarm	4
Full scale high alarm	5
Deviation alarm	6
0 to 20mA dc (linear)	7
4 to 20mA dc (linear)	8
'5%' linear, slow cycle	9

Alarm Output	Code
Off	0
Low alarm	4
High alarm	5
Deviation alarm	6

Coding examples:

808/R1/////QLS/EKJC100
Self-tuning Controller, Heat Only Slow Cycle Relay - Standard Config type K 0-600°C

808/D1/T1/R1/C4/IAA02/QLPS/EXXX415/4/20/mA/0/100/%
Self-tuning Programmer with Linear Input, DC Heat, Triac Water Cool, High Alarm Relay, RS422 Dig Comms, Standard Config, 4-20mA input

Notes:

(1) Triac output modules not available if configured as an alarm channel.

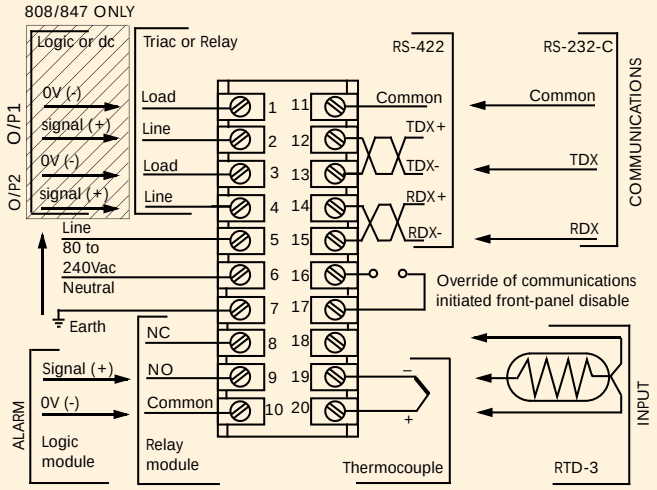
(2) Options for 809 and 849 only.

(3) Fast cycle available only with hardware modules T1 and L1.

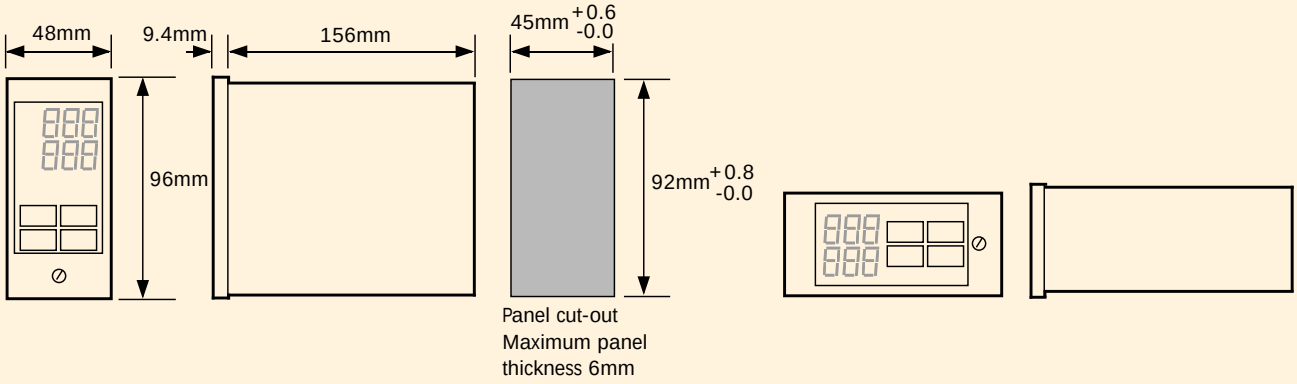
For IP54 splashproof front-panel rating order separate 1/8 DIN gasket kit.
Order Code: **SUB808/Spare/Gasket Kit**

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REAR TERMINAL CONNECTIONS



DIMENSIONAL DETAILS



EUROTHERM CONTROLS LIMITED

UK SALES OFFICE
Eurotherm Controls Limited
Faraday Close, Durrington
Worthing
West Sussex BN13 3PL
Telephone Sales: (01903) 695888
Technical: (01903) 695777
Service: (01903) 695444
Fax (01903) 695666

Sales and support in over
30 countries worldwide
For countries not listed enquiries/orders to:
Eurotherm Controls Limited
Export Dept.,
Faraday Close, Durrington, Worthing
West Sussex, BN13 3PL
Telephone (01903) 268500
Fax (01903) 265982
Telex 87114 EUROWG G

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Part No. HA023795 Issue 2 Printed in England 1196

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