

Models 2404/2408

PID Controllers

Installation and
Operation handbook

ENG



invensys

EUROTHERM

MODELS 2408 and 2404 PID CONTROLLERS

INSTALLATION AND OPERATION HANDBOOK

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5,484,206; Additional patents pending.

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Issue 11 of this handbook applies to software version 4 and includes RoHS statement.

Enhancements to Software Version 4

The following enhancements have been added to software versions 4.

- Isolated Single Logic Output Module
- Transducer Power Supply Module to provide 5 or 10Vdc to an external transducer. (Not intended for melt pressure control)
- DeviceNet communications
- Linear over range limits are +5% of high instrument range and –5% of low instrument range for all process input ranges (i.e. 0-20mA, 4-20mA, 0-10V)
- Sensor break or input open circuit faults are detected on all analogue inputs (PV1.PV2 and remote input channels)
- PV2 alarm, full scale high and low limits default to maximum and minimum display limits
- Deviation alarms are not inverted when direct acting control is selected. Alarm behaviour when using reverse acting control is unchanged
- The PD track valve positioning parameter (*Pd_{tr}*) has been removed

Controllers Affected:-

Standard controllers – which include programmers with up to 4 programs	Version 4.11 or later
Setpoint programming controllers with up to 20 programs	Version 4.61 or later
Profibus controllers – which include programmers with up to 4 programs	Version 4.32 or later

- The 10Amp output relay in module 4 is not available on controllers supplied after Jan 04

Related Information

- DeviceNet Communications Handbook part no. HA027506 which includes the parameter address map.
- Profibus Communications Handbook part no. HA026290
- EMC (Electromagnetic Compatibility) Installation Guide, part no. HA025464

These are available on www.eurotherm.co.uk.

Chapter 1 INSTALLATION

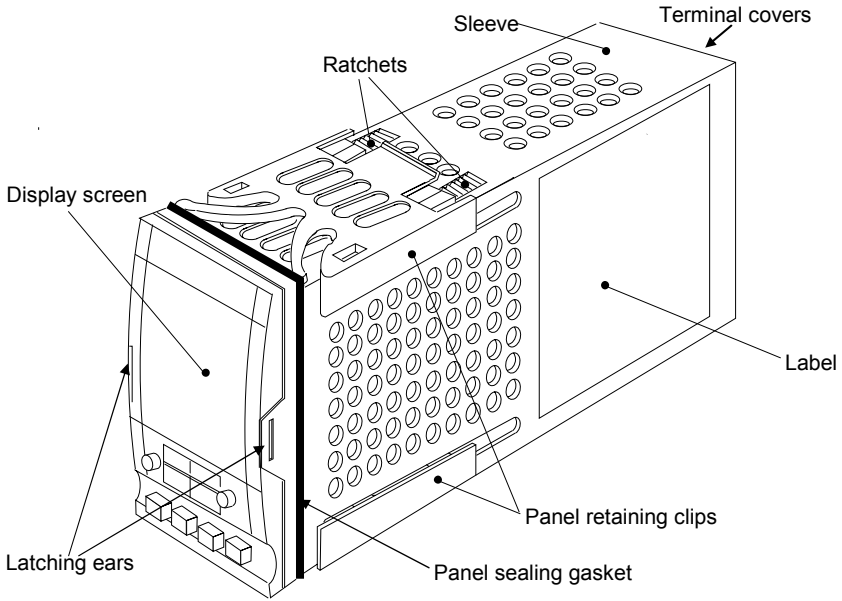


Figure 1-1 2408 1/8 DIN controller

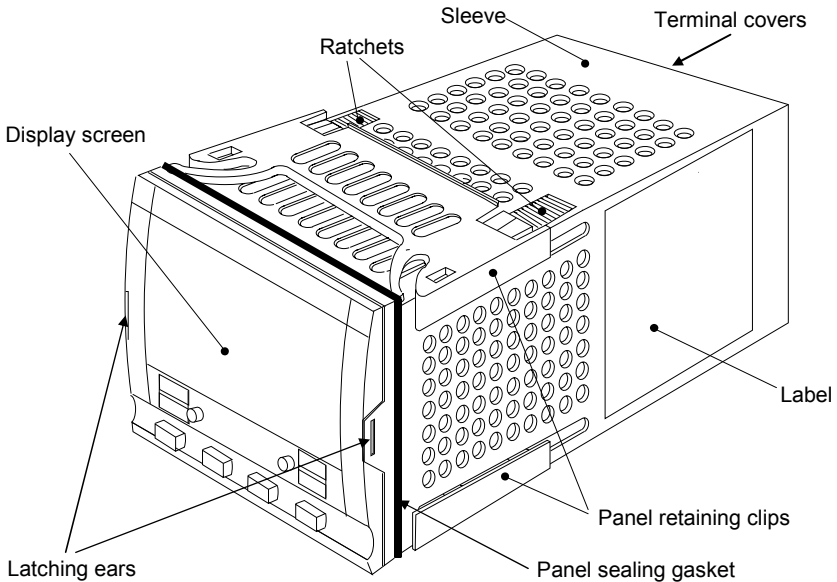


Figure 1-2 2404 1/4 DIN controller

Outline dimensions Model 2408

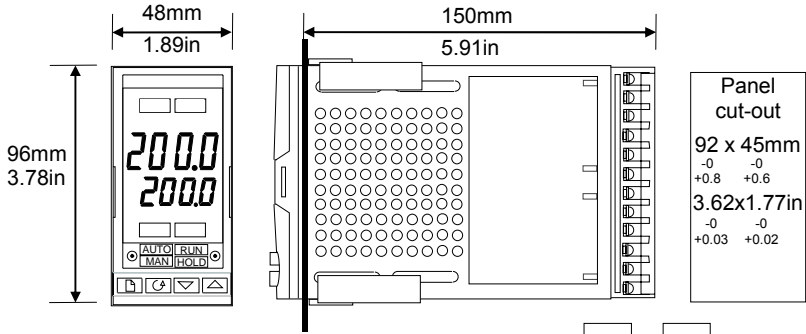
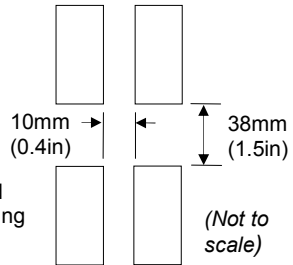


Figure 1-3
Outline dimensions of Model 2408 controller



Outline dimensions Model 2404

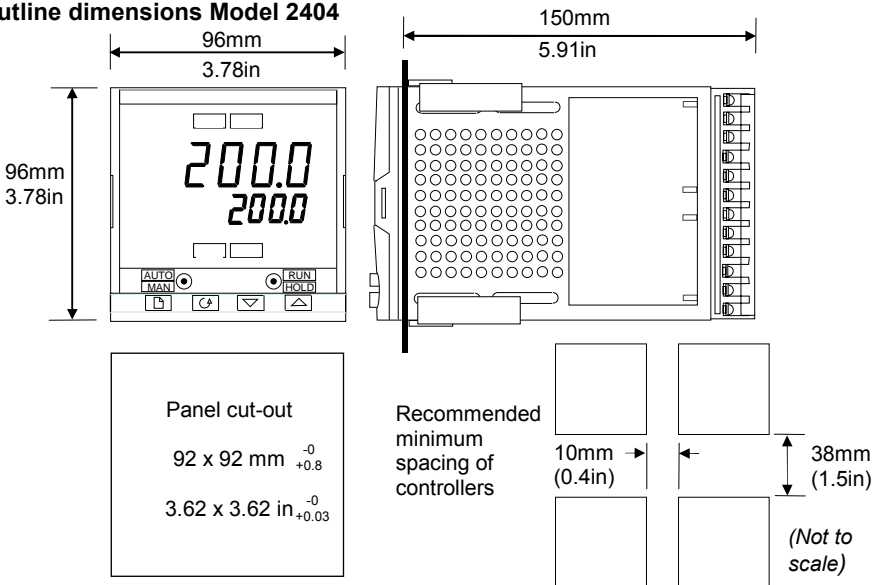


Figure 1-4 Outline dimensions Model 2404 controller

The electronic assembly of the controller plugs into a rigid plastic sleeve, which in turn fits into the standard DIN size panel cut-out shown in Figures 1-3 and 1-4.

INTRODUCTION

Models 2408 and 2404 are high stability, temperature or process controllers with self and adaptive tuning. They have a modular hardware construction which accepts up to three plug-in Input/Output modules and two interface modules to satisfy a wide range of control requirements. Two digital inputs and an optional alarm relay are included as part of the fixed hardware build.

The instruments are available as:

- standard controllers - which include a basic 8-segment programmer
Models 2408/CC and 2404/CC
- setpoint programming controllers: Models 2408/CP, P4, CM and
2404/CP, P4, CM
- motorised valve controllers - which include a basic 8-segment programmer
Models 2408/VC and 2404/VC
- setpoint programming motorised valve controllers: Models 2408/VP, V4, VM and
2404/VP, V4, VM

Before proceeding, please read the chapter called, *Safety and EMC Information*.

Controller labels

The labels on the sides of the controller identify the ordering code, the serial number, and the wiring connections.

Appendix A, *Understanding the Ordering Code*, explains the hardware and software configuration of your particular controller.

MECHANICAL INSTALLATION

To install the controller

1. Prepare the control panel cut-out to the size shown in Figure 1-3, or 1-4.
2. Insert the controller through the panel cut-out.
3. Spring the upper and lower panel retaining clips into place. Secure the controller in position by holding it level and pushing both retaining clips forward.

Note: If the panel retaining clips subsequently need removing, in order to extract the controller from the control panel, they can be unhooked from the side with either your fingers, or a screwdriver.

Unplugging and plugging-in the controller

If required, the controller can be unplugged from its sleeve by easing the latching ears outwards and pulling it forward out of the sleeve. When plugging the controller back into its sleeve, ensure that the latching ears click into place in order to secure the IP65 sealing.

NEW SLEEVE DESIGN MKIII

From Jan-03 an improved design of 1/8 DIN long sleeve is shipped with all new 2408 controllers and indicators. (The month and year of manufacture are shown in the last two pairs of digits of the instrument serial number).

Details

A new sealing gasket will be fitted onto the instrument bezel ①. This gasket replaces the gasket which was moulded into the front of the sleeve of all previous instruments.

The gasket previously moulded into the sleeve where it fits behind the panel is now supplied as a separate item ②.

Reasons for the Change

This change is to ensure that IP65 sealing is reliably achieved and less physical effort is required to insert the instrument into the new sleeve.

Recommendations

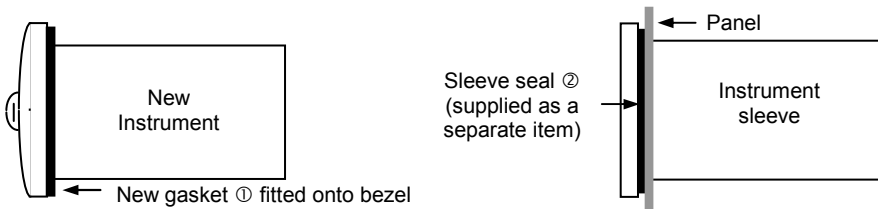
1. An instrument delivered after Jan 03 should be used with the sleeve supplied
2. If the instrument is required to replace one already in use, the existing sleeve should also be replaced
3. A new instrument can be fitted into an existing sleeve by carefully removing gasket ① but IP65 sealing will not be maintained
4. An existing instrument can be fitted into a new sleeve but IP65 sealing will not be maintained

It is, however, possible to achieve IP65 sealing for 3 and 4 above. A gasket kit is available by quoting Part No SUB24/GAS2408.

Then:-

5. To fit a new instrument in an older sleeve carefully remove gasket ①. Replace it with the thinner (1.25mm) gasket from the kit
6. To fit an existing instrument into a new sleeve fit the thicker (1.6mm) gasket from the kit between the instrument and the sleeve

The seal ② supplied as a separate item with a new instrument, should be placed over the sleeve prior to mounting it through the panel cut out as shown below:-



ELECTRICAL INSTALLATION

This section consists of five topics:

- Rear terminal layouts
- Fixed connections
- Plug-in module connections
- Typical wiring diagrams
- Motorised valve connections.

WARNING

You must ensure that the controller is correctly configured for your application. Incorrect configuration could result in damage to the process being controlled, and/or personal injury. It is your responsibility, as the installer, to ensure that the configuration is correct. The controller may either have been configured when ordered, or may need configuring now. See Chapter 6, Configuration.

Model 2408 rear terminal layout

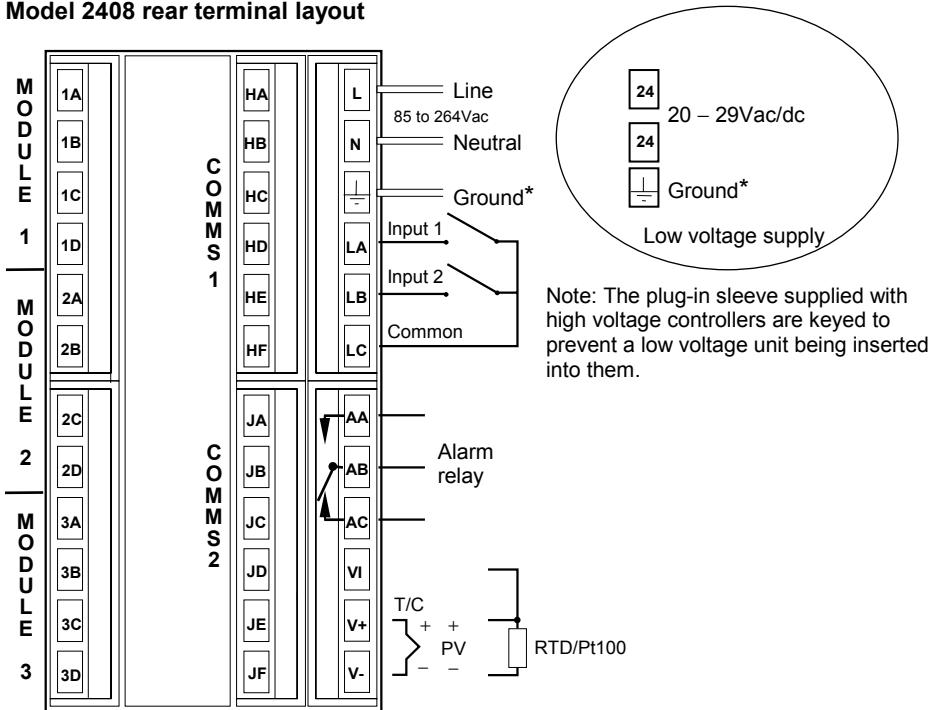


Figure 1-5 Rear terminal layout – Model 2408

* The ground connection is provided as a return for internal EMC filters. It is not required for safety purposes, but must be connected in order to satisfy EMC requirements.

Wire Sizes

All electrical connections are made to the screw terminals at the rear of the controller. They accept wire sizes from 0.5 to 1.5 mm² (16 to 22 AWG) and should be tightened to a torque of 0.4Nm (3.5lbin). If you wish to use crimp connectors, the correct size is AMP part number 349262-1. The terminals are protected by a clear plastic hinged cover to prevent hands, or metal, making accidental contact with live wires.

Rear terminal layouts

The rear terminal layouts are shown in Figures 1-5 and 1-6. The right-hand column carries the connections to the power supply, digital inputs 1 and 2, alarm relay and sensor input. The second and third columns from the right carry the connections to the plug-in modules. The connections depend upon the type of module installed, if any. To determine which plug-in modules are fitted, refer to the ordering code and wiring data on the controller side labels.

Model 2404 rear terminal layout

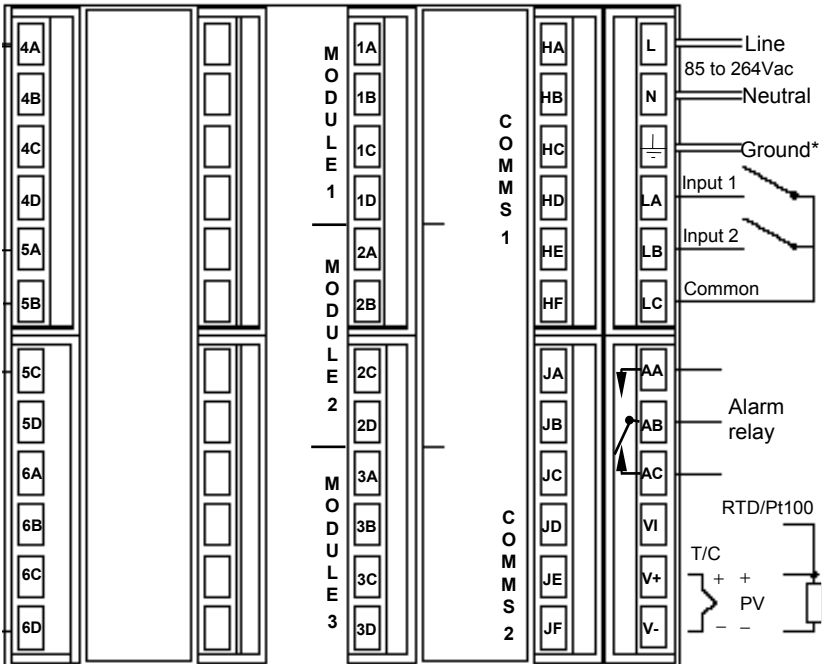
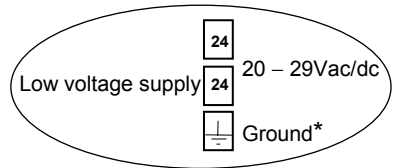


Figure 1-6 Rear terminal layout – Model 2404

Sensor input connections

The connections for the various types of sensor input are shown below.

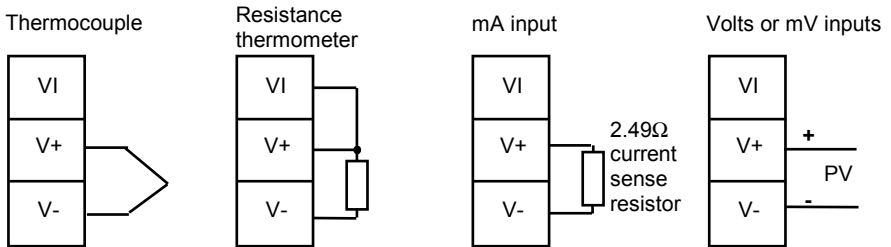


Fig 1-7 Sensor input connections

PLUG-IN MODULE CONNECTIONS

Module 1, 2 and 3

Module positions 1, 2 and 3 are plug-in modules. They can be either two terminal modules of the types shown in Figure 1-7, or four terminal modules of the types shown in Table 1-1.

The tables show the connections to each module and the functions that they can perform. Module 1 is normally used for heating and module 2 for cooling although the actual functions will depend upon how the controller has been configured.

PDS modes

Table 1-8 refers to PDS modes 1 and 2.

PDS stands for 'Pulse Density Signalling' Input/Output. This is a proprietary technique for bi-directional transmission of analogue and digital data over a simple 2-wire connection.

PDS 1 mode uses a logic output module to control a TE10S solid state relay and provides a load failure alarm.

PDS 2 mode uses a logic output module to control a TE10S solid state relay, provide load/SSR failure alarms, and read back the load current for display on the controller.

Two terminal modules

Note: Module 1 is connected to terminals 1A and 1B
 Module 2 is connected to terminals 2A and 2B
 Module 3 is connected to terminals 3A and 3B.

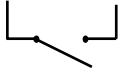

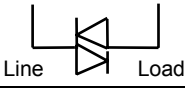
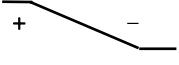
Module type	Terminal identity				Possible functions
	A	B	C	D	
Relay: 2-pin (2A, 264 Vac max.)			Unused		Heating, cooling, alarm, program event, valve raise, or valve lower
Logic - non-isolated (18Vdc at 20mA)			Unused		Heating, cooling, PDSIO mode 1, PDSIO mode 2, program event
Triac (1A, 30 to 264Vac)			Unused		Heating, cooling, program event, valve raise, or valve lower
DC output: - non-isolated (10Vdc, 20mA max.)			Unused		Heating, or cooling, or retransmission of PV, setpoint, or control output

Table 1-1 Two terminal module connections

Snubbers

The relay and triac modules have an internal 15nF/100Ω ‘snubber’ connected across their output, which is used to prolong contact life and to suppress interference when switching inductive loads, such as mechanical contactors and solenoid valves.

WARNING

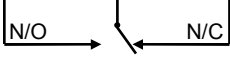

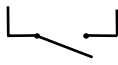
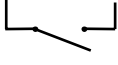
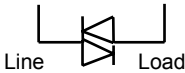
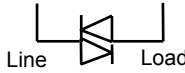

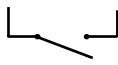


When the relay contact is open, or the triac is off, the snubber circuit passes 0.6mA at 110Vac and 1.2mA at 240Vac. You must ensure that this current, passing through the snubber, will not hold on low power electrical loads. It is your responsibility as the installer to ensure that this does not happen. If the snubber circuit is not required, it can be removed from the relay module (BUT NOT THE TRIAC) by breaking the PCB track that runs crosswise, adjacent to the edge connectors of the module. This can be done by inserting the blade of a small screwdriver into one of the two slots that bound it, and twisting.

Four terminal modules

Note: Module 1 is connected to terminals 1A, 1B, 1C and 1D

Module 2 is connected to terminals 2A, 2B, 2C and 2D

Module 3 is connected to terminals 3A, 3B, 3C and 3D

Module type	Terminal identity				Possible functions
	A	B	C	D	
Relay: changeover (2A, 264 Vac max.)					Heating, cooling, alarm, or program event output
DC control: Isolated (10V, 20mA max.)	+	-			Heating, or cooling
24Vdc transmitter supply *	+	-			To power process inputs
Potentiometer input 100Ω to 15KΩ *		+0.5Vdc		0V	Motorised Valve Position feedback
DC retransmission	+	-			Retrans. of setpoint, or process value
DC remote input or Process Value 2 (Module 3 only)	0-10Vdc	RT source	±100mV 0-20mA	COM	Remote Setpoint Second PV
Dual output modules					
Dual relay (2A, 264 Vac max.)					Heating + cooling Dual alarms Valve raise & lower
Dual Triac (1A, 30 to 264Vac)					Heating + cooling Valve raise & lower
Dual logic + relay (Logic is non-isolated)					Heating + cooling
Dual Logic + triac (Logic is non-isolated)					Heating + cooling
Triple logic input and output modules - see ratings on the next page					
Triple contact input	Input 1	Input 2	Input 3	Common	
Triple logic input	Input 1	Input 2	Input 3	Common	
Triple logic output	Output 1	Output 2	Output 3	Common	Program events

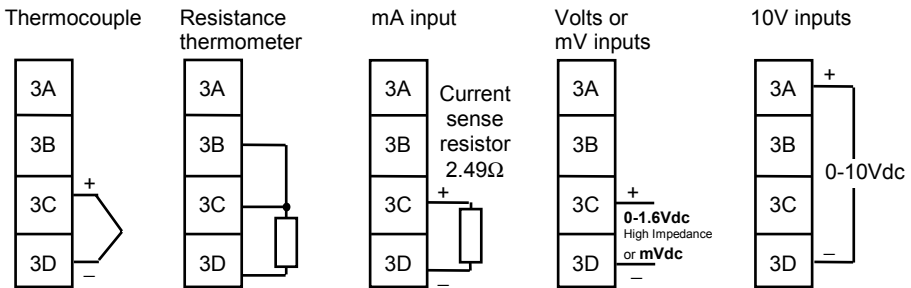
* Can be ordered fitted in module positions 2 & 3 only.

Module type	Terminal identity				Possible functions
	A	B	C	D	
Isolated Logic Output	+			-	This is a fully isolated module which can be fitted in all three module slots. It may be used for heating, cooling or events outputs up to 18Vdc at 20mA.
Transducer Power Supply	+	-			This provides fully isolated 5 or 10Vdc to power external transmitters up to 20mA. It can be fitted in module slots 1 and 2.

Table 1-2 Four terminal module connections

Connections for Process Value 2 in module position 3

The diagrams below show the connections for the various types of input. The input will have been configured in accordance with the ordering code.



Triple Logic Input and output ratings

- Triple logic input (current sinking)
 - OFF state: -3 to 5Vdc
 - ON state: 10.8 to 30Vdc(max), at 2 to 8mA
- Triple contact closure or open collector transistor input
 - Internally generated switching Vdc & mA: 15 to 19Vdc at 10 to 14mA
 - OFF state >28KΩ input resistance
 - OFF state voltage >14Vdc
 - ON state <100Ω resistance
 - ON state voltage <1.0Vdc
- Triple logic output (current sourcing)
 - OFF state output 0 to 0.7Vdc.
 - ON state output 12 to 13Vdc, at up to 8mA.

COMMUNICATION MODULES 1 AND 2

All 2408 and 2404 controllers can be fitted with up to two plug-in communications modules.

Only one of the two modules can be for serial communications and this will normally be installed in position COMMS 1 (although it is possible to install the serial communications module in position COMMS 2. Serial communications may be configured for either Modbus or EI bisynch protocol.

It is also possible to fit a PDS module in one or other of these positions.

Possible module types are shown in the table below.

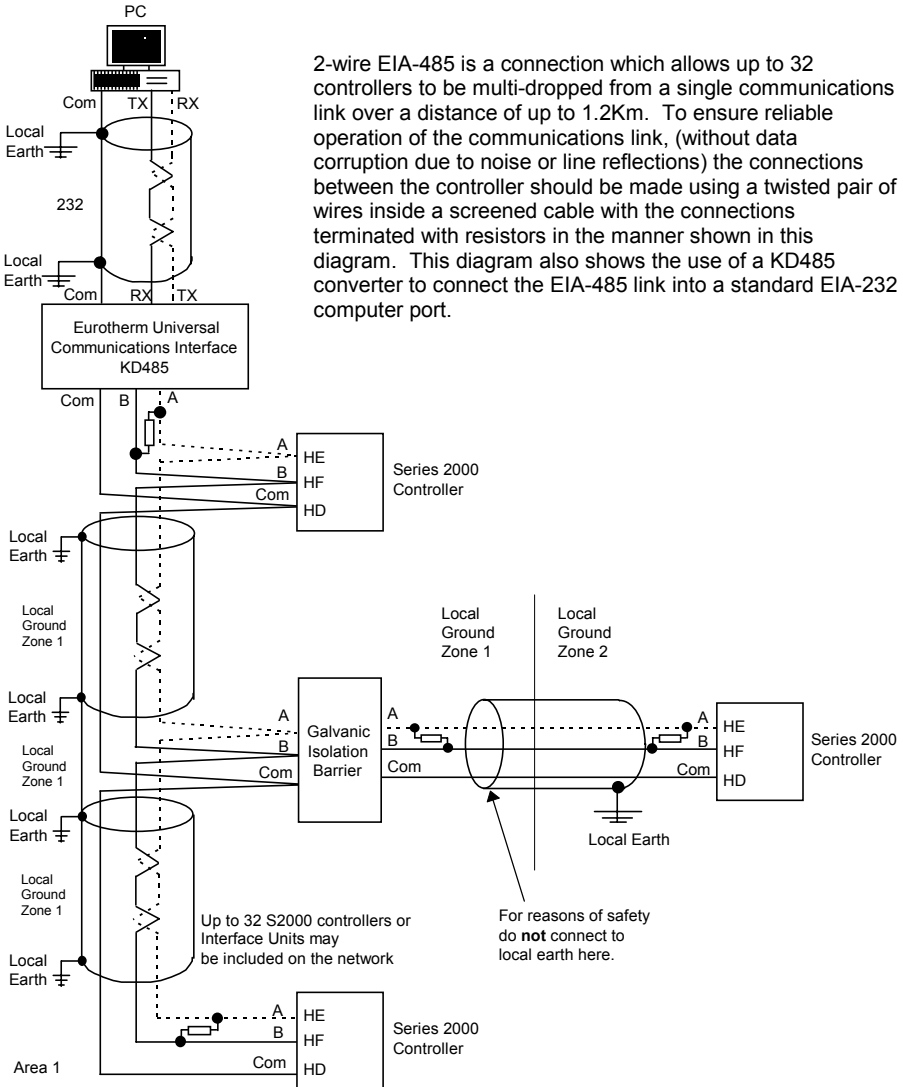
Communications module 1	Terminal identity (COMMS 1)					
	HA	HB	HC	HD	HE	HF
2-wire EIA-485 serial communications	–	–	–	Common	A (+)	B (–)
EIA-232 serial communications	–	–	–	Common	Rx	Tx
4-wire EIA-485 serial communications	–	A' (Rx+)	B' (Rx–)	Common	A (Tx+)	B (Tx–)
PDS Setpoint retransmission	–	–	–	–	Signal	Common

Communications module 2	Terminal identity (COMMS 2)		
	JD	JE	JF
PDS Setpoint retransmission	–	Signal	Common
PDS Setpoint input	–	Signal	Common

Table 1-3 Communication modules 1 and 2 connections

Wiring of 2-wire EIA-485 serial communications link

2-wire EIA-485 is a connection which allows up to 32 controllers to be multi-dropped from a single communications link over a distance of up to 1.2Km. To ensure reliable operation of the communications link, (without data corruption due to noise or line reflections) the connections between the controller should be made using a twisted pair of wires inside a screened cable with the connections terminated with resistors in the manner shown in this diagram. This diagram also shows the use of a KD485 converter to connect the EIA-485 link into a standard EIA-232 computer port.



Note:
 All resistors are 220 ohm 1/4W carbon composition.
 Local grounds are at equipotential. Where equipotential is not available wire into separate zones using a galvanic isolator.
 Use a repeater (KD845) for more than 32 units.

Figure 1-9 EIA-485 wiring

DeviceNet

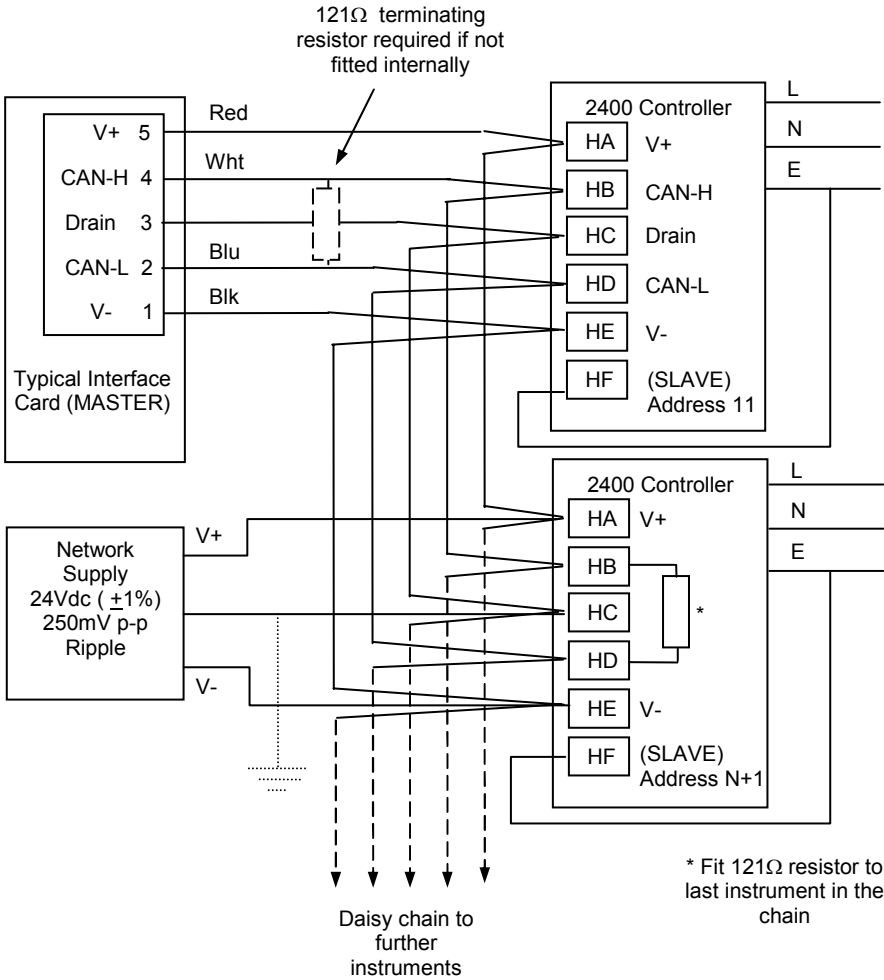
Instruments fitted with software versions 4 onwards can be fitted with DeviceNet communications. The following shows the wiring connections for DeviceNet.

Terminal Reference	CAN Label	Color Chip	Description
HA	V+	Red	DeviceNet network power positive terminal. Connect the red wire of the DeviceNet cable here. If the DeviceNet network does not supply the power, connect to the positive terminal of an external 11-25 Vdc power supply.
HB	CAN_H	White	DeviceNet CAN_H data bus terminal. Connect the white wire of the DeviceNet cable here.
HC	SHIELD	None	Shield/Drain wire connection. Connect the DeviceNet cable shield here. To prevent ground loops, ground the DeviceNet network in only one location.
HD	CAN_L	Blue	DeviceNet CAN_L data bus terminal. Connect the blue wire of the DeviceNet cable here.
HE	V-	Black	DeviceNet network power negative terminal. Connect the black wire of the DeviceNet cable here. If the DeviceNet network does not supply the power, connect to the negative terminal of an external 11-25 Vdc power supply.
HF			Connect to instrument earth

Note: Power taps are recommended to connect the DC power supply to the DeviceNet trunk line. Power taps include:

- A Schottky Diode to connect the power supply V+ and allows for multiple power supplies to be connected.
- 2 fuses or circuit breakers to protect the bus from excessive current which could damage the cable and connectors.
- The earth connection, HF, to be connected to the main supply earth terminal.

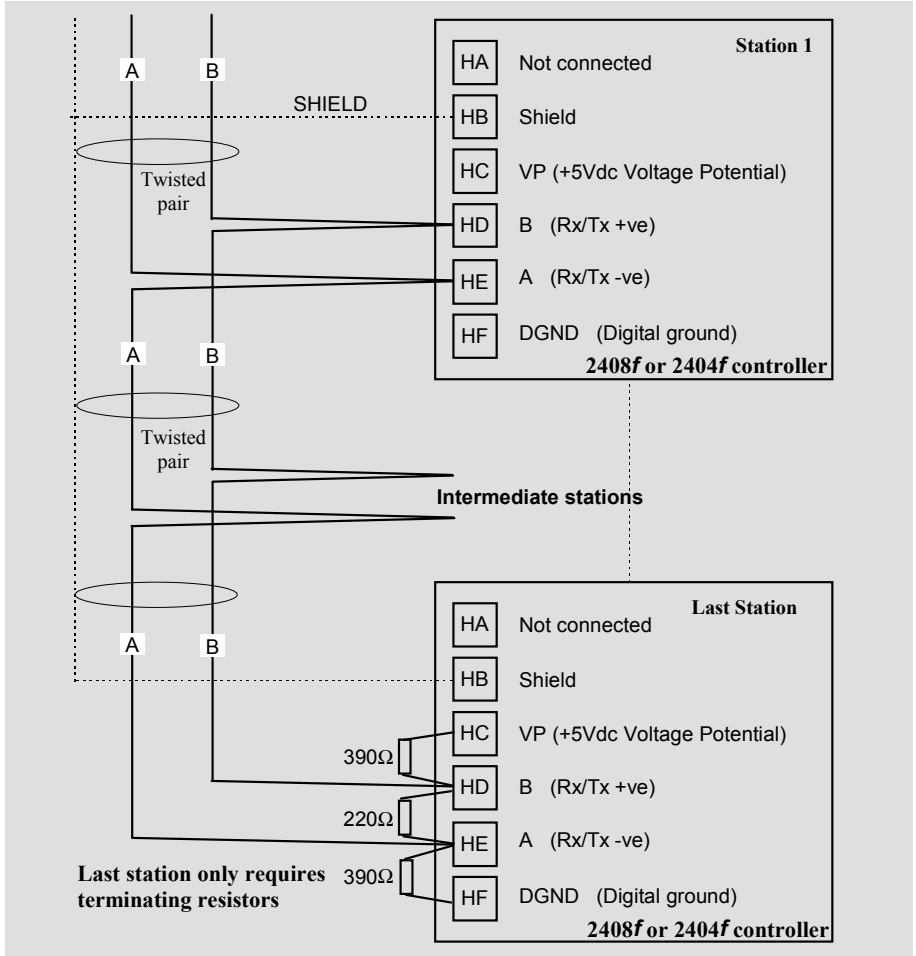
Example of Devicenet Wiring



To configure DeviceNet Communications see Chapter 6.

ProfiBus Wiring

Controllers supplied with model numbers 2408*f* and 2404*f* are fitted with ProfiBus communications modules fitted in the H slot. Further details of ProfiBus communications is given in Appendix E and the ProfiBus Communications handbook part number HA026290. This handbook can be downloaded from www.eurotherm.co.uk.



TYPICAL WIRING DIAGRAM

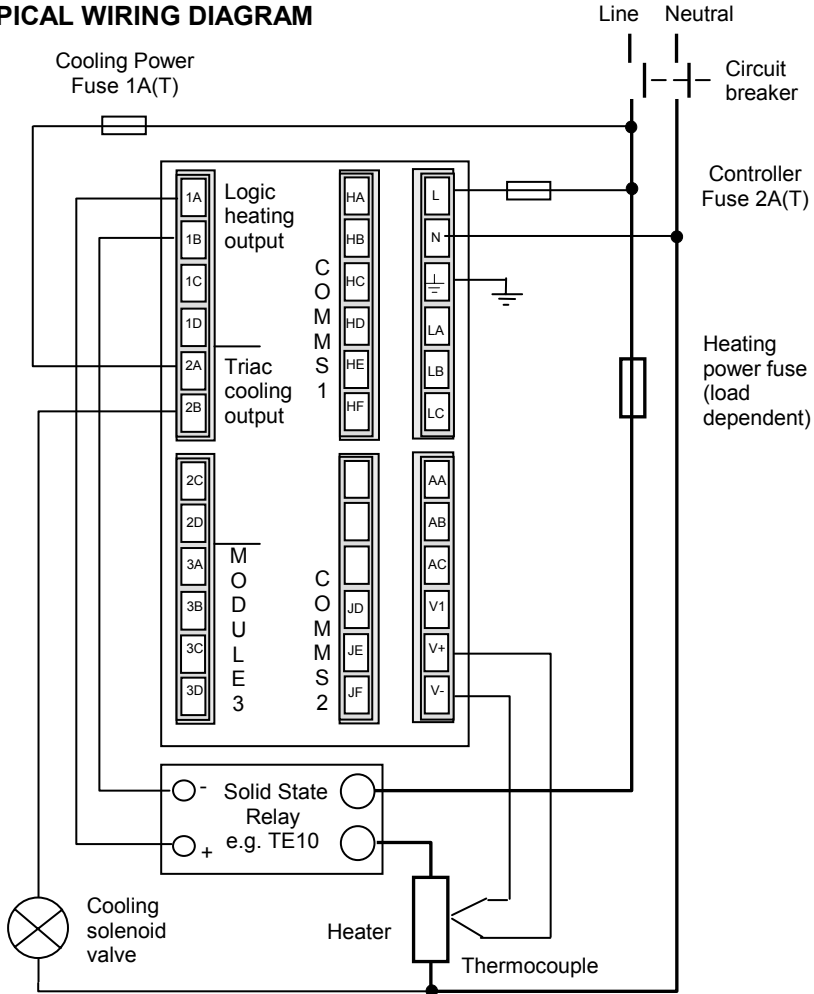


Fig 1-10 Typical wiring diagram, Model 2408 Controller

Safety requirements for permanently connected equipment state:

- A switch or circuit breaker shall be included in the building installation
- It shall be in close proximity to the equipment and within easy reach of the operator
- It shall be marked as the disconnecting device for the equipment.

Note: a single switch or circuit breaker can drive more than one instrument.

For logic drive capability see following chart:-

Logic Drive Fan Out

The logic outputs from the 2400 series controllers are capable of driving more than one solid state relay (SSR) in series or parallel. The following table shows the number of SSRs which can be driven depending on type of SSR. S = Series; P = Parallel.

	Drive mA	SVDA	RVDA	TE10S	425S		
		Logic DC	Logic DC	Logic DC	Logic 10V	Logic 24V	Logic 20mA
Logic	18V@20	4S 6P	4S 3P	3S 2P	3S 3P	1S 2P	6S 1P
Triple logic	12V@9	3S 3P	2S 1P	2S 1P	2S 1P	1	4S 1P

	450			TC1027 CE	TE200S	TC2000 CE	RS3D A
	Standard	TTL	Multi-drive	Logic V	Logic DC	Logic DC	Logic DC
Logic	2S 3P	1S2P	6S 1P	3S 3P	3S 3P	3S 1P	4S 2P
Triple logic	1	1	4S 1P	2S 1P	2S 1P	0	0

MOTORISED VALVE CONNECTIONS

Motorised valves will normally be wired either to dual relay, or dual triac, output modules installed in the Module 1 position, or to single channel relay and triac outputs installed in Module positions 1 and 2. In the latter case, the convention is to configure output 1 as the raise output and output 2 as the lower output.

Depending on the configuration, control of the valve is achieved in one of three ways:

1. With no position feedback potentiometer.
2. With a feedback potentiometer used to monitor the valve's position. It does not influence the control.
3. With a feedback potentiometer, where the valve's position is controlled in response to the signal from it.

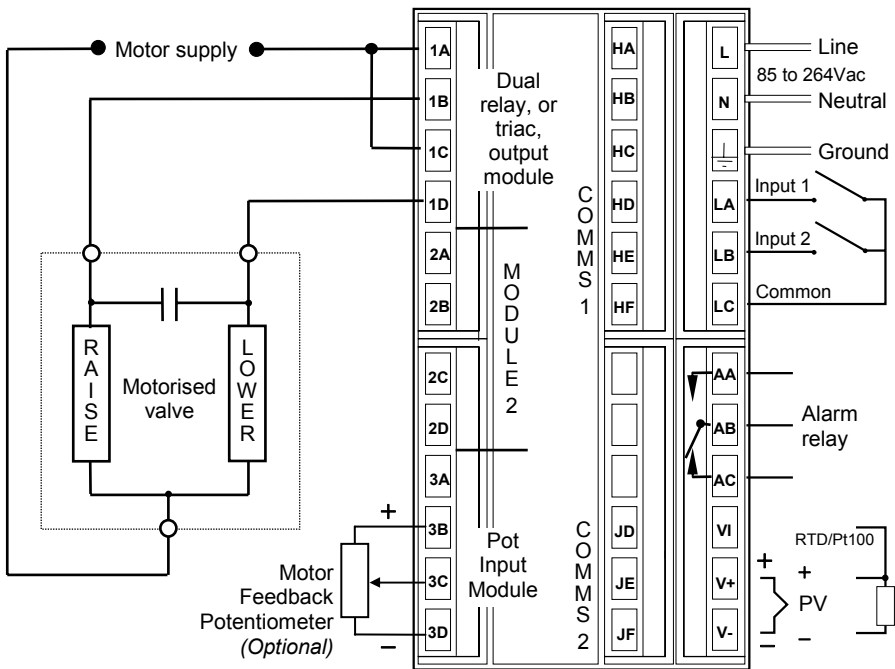


Fig 1-11 Motorised valve connections

Chapter 2 OPERATION

This chapter has nine topics:

- FRONT PANEL LAYOUTS
- BASIC OPERATION
- OPERATING MODES
- AUTOMATIC MODE
- MANUAL MODE
- PARAMETERS AND HOW TO ACCESS THEM
- NAVIGATION DIAGRAM
- PARAMETER TABLES
- ALARMS

FRONT PANEL LAYOUTS

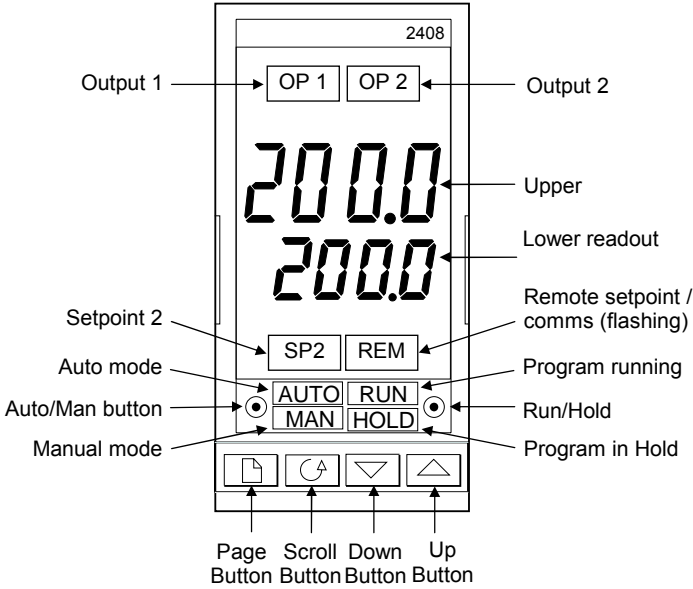


Figure 2-1 Model 2408 front panel layout

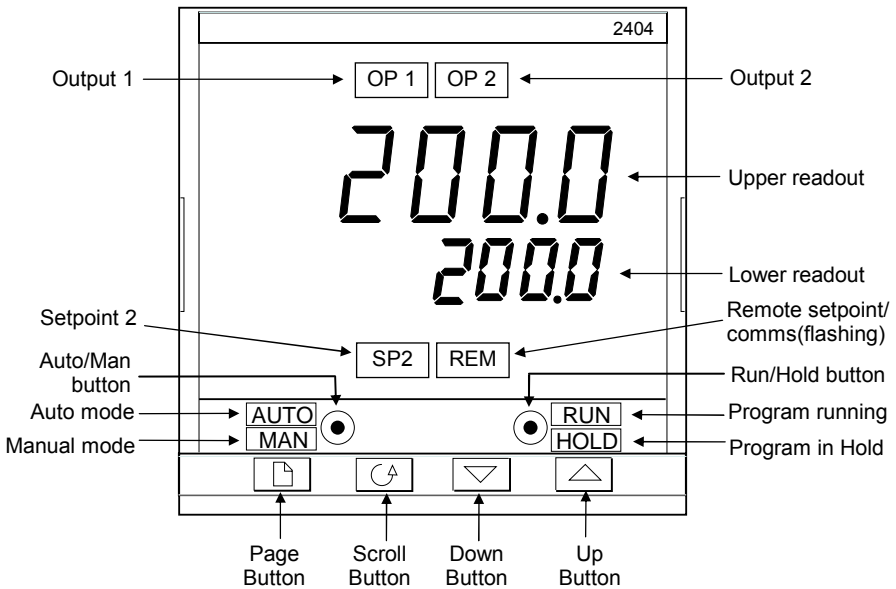


Figure 2-2 Model 2404 front panel layout







Button or indicator	Name	Explanation
OP1	Output 1	When lit, it indicates that the output installed in module position 1 is on. This is normally the heating output on a temperature controller.
OP2	Output 2	When lit, it indicates that the output installed in module position 2 is on. This is normally the cooling output on a temperature controller.
SP2	Setpoint 2	When lit, this indicates that setpoint 2, (or a setpoint 3-16) has been selected.
REM	Remote setpoint	When lit, this indicates that a remote setpoint input has been selected. 'REM' will also flash when communications is active.
	Auto/Manual button	<p>When pressed, this toggles between automatic and manual mode:</p> <ul style="list-style-type: none"> • If the controller is in automatic mode the AUTO light will be lit. • If the controller is in manual mode, the MAN light will be lit. <p>The Auto/Manual button can be disabled in configuration level.</p>
	Run/Hold button	<ul style="list-style-type: none"> • Press once to start a program (RUN light on.) • Press again to hold a program (HOLD light on) • Press again to cancel hold and continue running (HOLD light off and RUN light ON) • Press and hold in for two seconds to reset a program (RUN and HOLD lights off) <p>The RUN light will flash at the end of a program. The HOLD light will flash during holdback or when a PDS retransmission output is open circuit.</p>
	Page button	Press to select a new list of parameters.
	Scroll button	Press to select a new parameter in a list.
	Down button	Press to decrease a value in the lower readout.
	Up button	Press to increase a value in lower readout.

Figure 2-3 Controller buttons and indicators

BASIC OPERATION

Switch on the power to the controller. It runs through a self-test sequence for about three seconds and then shows the measured temperature, or process value, in the upper readout and the target value, called the *setpoint*, in the lower readout. This is called the **Home** display.

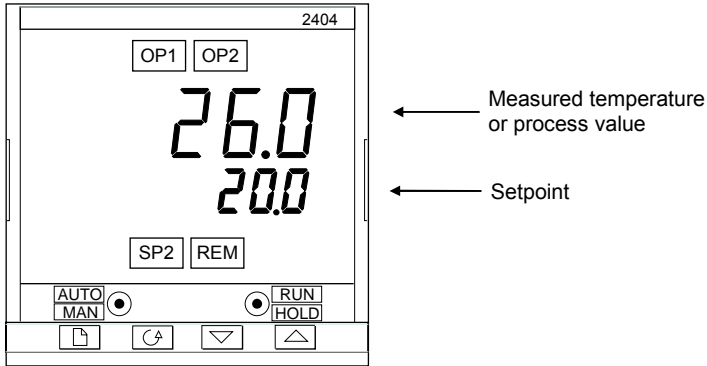






Figure 2-4 Home display

You can adjust the setpoint by pressing the  or  buttons. Two seconds after releasing either button, the display blinks to show that the controller has accepted the new value.

OP1 will light whenever output 1 is ON. This is normally the heating output when used as a temperature controller.

OP2 will light whenever output 2 is ON. This is normally the cooling output when used as a temperature controller.

Note: You can get back to this display at any time by pressing  and  together. Alternatively, you will always be returned to this display if no button is pressed for 45 seconds, or whenever the power is turned on.

Alarms

If the controller detects an alarm condition, it flashes an alarm message in the Home display. For a list of all the alarm messages, their meaning and what to do about them, see *Alarms* at the end of this chapter.

OPERATING MODES

The controller has two basic modes of operation:

- **Automatic mode** in which the output is automatically adjusted to maintain the temperature or process value at the setpoint.
- **Manual mode** in which you can adjust the output independently of the setpoint.

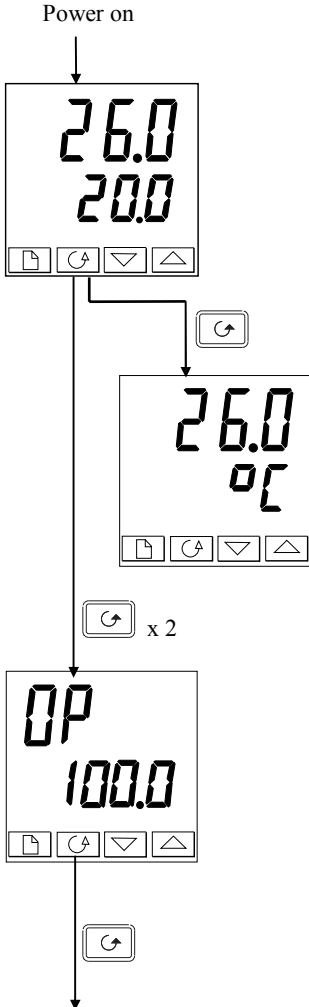
You toggle between the modes by pressing the **AUTO/MAN** button. The displays which appear in each of these modes are explained in this chapter.

Two other modes are also available:

- **Remote Setpoint mode**, in which the setpoint is generated from an external source. In this mode, the **REM** light will be on.
- **Programmer mode** which is explained in Chapter 5, *Programmer Operation*.

AUTOMATIC MODE

You will normally work with the controller in automatic mode. If the MAN light is on, press the AUTO/MAN button to select automatic mode. The AUTO light comes on.



The Home display

Check that the AUTO light is on.
The upper readout shows the measured temperature.
The lower readout shows the setpoint.

To adjust the setpoint up or down, press or .

(Note: If Setpoint Rate Limit has been enabled, then the lower readout will show the active setpoint. If or is pressed, it will change to show and allow adjustment of, the target setpoint.)

Press once.

Display units

A single press of will flash the display units for 0.5 seconds, after which you will be returned to the **Home** display.

Flashing of the display units may have been disabled in configuration in which case a single press will take you straight to the display shown below.

Press twice

% Output power demand

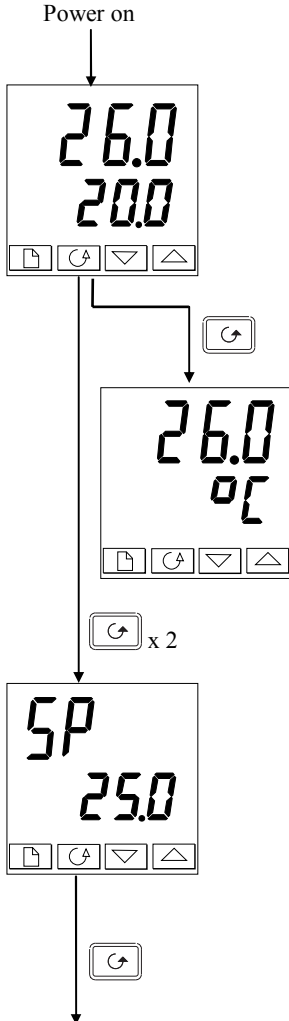
The % output power demand is displayed in the lower readout. This is a read-only value. You cannot adjust it. Press and together to return to the **Home** display.

Press

Pressing from the Output Power display may access further parameters. These may be in this scroll list if the 'Promote' feature has been used (see Chapter 3, *Edit Level*). When you reach the end of this scroll list, pressing will return you to the **Home** display.

MANUAL MODE

If the AUTO light is on, press the AUTO/MAN button to select manual mode. The MAN light comes on.



The Home display

Check that the MAN light is on.

The upper readout shows the measured temperature, or process value. The lower readout shows the % output.

To adjust the output, press or .

(Note: If Output Rate Limit has been enabled, then the lower readout will show the working output. If or is pressed, it will change to show and allow adjustment of, the target output.)

Press once.

Display units

A single press of flashes the display units for 0.5 seconds, after which you are returned to the Home display. Flashing of the display units may have been disabled in configuration, in which case a single press will take you straight to the display shown below.

Press twice.

Setpoint

To adjust the setpoint value, press or .

Press .

Pressing from the Output Power display may access further parameters. These may be in this scroll list if the 'Promote' feature has been used (see Chapter 3, *Edit Level*). When you reach the end of this scroll list, pressing will return you to the **Home** display.

PARAMETERS AND HOW TO ACCESS THEM

Parameters are settings, within the controller, that determine how the controller will operate. For example, alarm setpoints are parameters that set the points at which alarms will occur. For ease of access, the parameters are arranged in lists as shown in the navigation diagram on Pages 2-10 and 2-11. The lists are:

- | | | |
|-------------------------|----------------------|----------------------------|
| <i>Home list</i> | <i>PID list</i> | <i>Communications list</i> |
| <i>Run list</i> | <i>Motor list</i> | <i>Information list</i> |
| <i>Programming list</i> | <i>Setpoint list</i> | <i>Access list.</i> |
| <i>Alarm list</i> | <i>Input list</i> | |
| <i>Autotune list</i> | <i>Output list</i> | |

Each list has a ‘List Header’ display.

List header displays

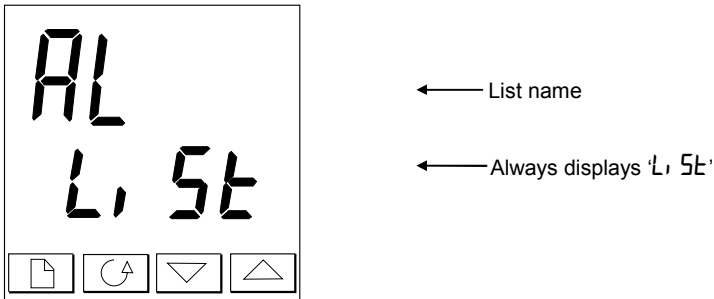


Figure 2-5 Typical list header display

A list header can be recognised by the fact that it always shows ‘L, 5t’ in the lower readout. The upper readout is the name of the list. In the above example, ‘AL’ indicates that it is the Alarm list header. List header displays are read-only.

To step through the list headers, press . Depending upon how your controller has been configured, a single press may momentarily flash the display units. If this is the case, a double press will be necessary to take you to the first list header. Keep pressing to step through the list headers, eventually returning you to the Home display.

To step through the parameters within a particular list, press . When you reach the end of the list, you will return to the list header. From within a list you can return to the current list header at any time can by pressing . To step to the next list header, press once again.

