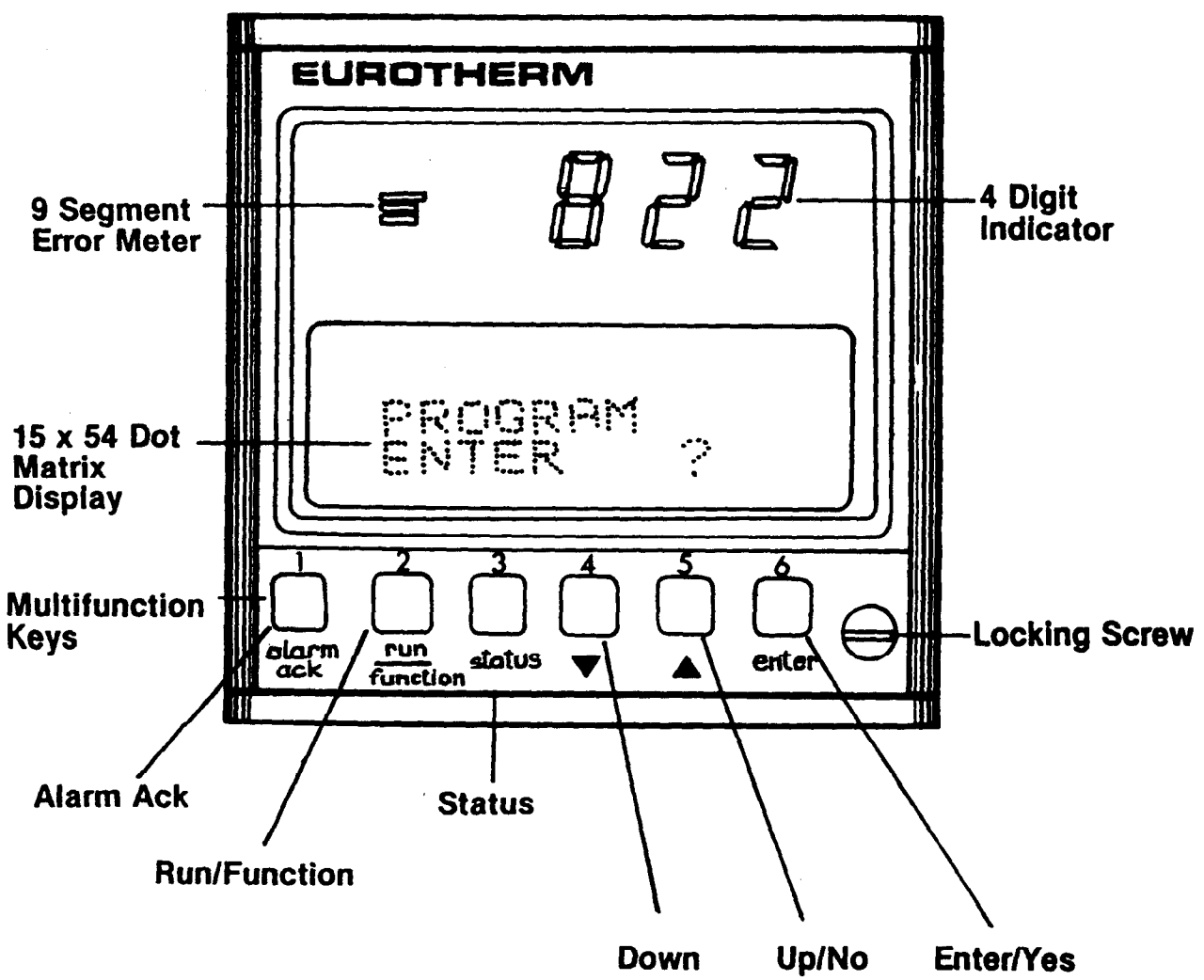
EUROTHERM

CONTROLLER/ PROGRAMMER

TYPE 822

OPERATING AND INSTALLATION INSTRUCTIONS



Part No. HA018931

822W -3

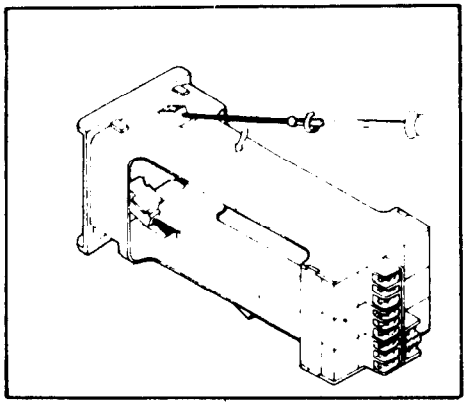
CONTENTS

This operating booklet covers the following software versions:

Main microprocessor:- up to 5.0
Display microprocessor:- up to 5
Communications microprocessor:- up to 6

The version number is displayed in the Configuration Read Mode.

1.0 INSTALLATION



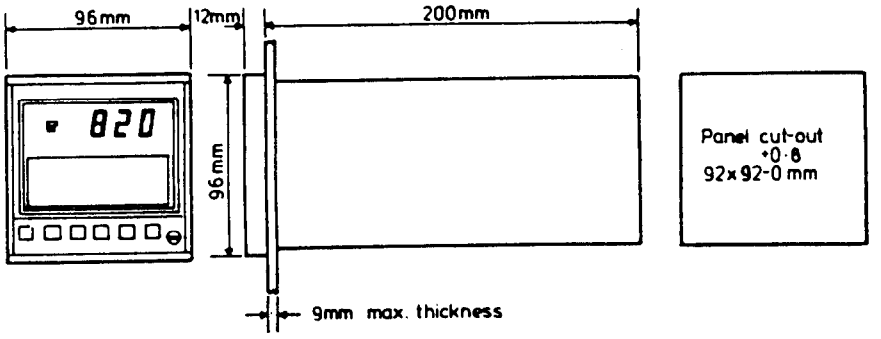
The instrument plugs into a panel mounting sleeve which requires a DIN-size 92mm by 92mm cut-out as illustrated. Remove the instrument from the sleeve by turning the screw, in the bottom right-hand corner, counter-clockwise. (If the screw is already at its maximum counter-clockwise position it should be possible to extract the instrument from the sleeve by turning the screw fully clockwise and then counter-clockwise).
The instrument will start to withdraw from the sleeve and once the screw has been turned to its furthest extent the instrument can be withdrawn by hand.
Remove the top and bottom mounting clamps from the sleeve by gently levering outwards and easing downwards inside the sleeve. Insert the sleeve through the cut-out via the front of the panel. Fit the mounting clamps in the slots from inside the sleeve and from the rear of the mounting panel, tighten with a screwdriver.
By hand, ease the instrument into the sleeve until the top and bottom edges of the bezel meet the sleeve moulding. Turn the screw in the bottom right-hand corner clockwise until tight. The instrument will be pulled completely into the sleeve, engaging the rear treminals and be fully secured.
Note: Do not attempt to dismantle the instrument without referring to the Maintenance Manual.

WARNING
When wiring up this instrument please bear in mind that it is microprocessor based and therefore under exceptional circumstances may be susceptable to transient voltages from external connections. Sensible precautions should therefore be taken in the routing of wiring so as to minimise any interferance. Refer to the instructions on external connections.

External Connections
For the optimum instrument performance to be guaranteed it is recommended that the following are adhered to:

Supply voltages- connections to ancillary equipment, such as contactors, must be taken directly from the supply and NOT from the supply terminals of the 822 instrument.
Earthing- an effective earth system must be provided. If more than one 822 instrument is installed each instrument must be seperately earthed to a common earth point, NOT linked together.
Inputs and Outputs- the wiring of inputs and outputs **MUST** be kept separate from the other instrument wiring. Where posible screened leads should be used with the screen being connected to the earth terminal on the instrument, terminal 18.
General- All low level inputs and outputs such as thermocouple, resistance thermometer and logic should be kept seperate from supply and relay output cabling.

2.0 DIMENSIONAL DETAILS



3.0 CONNECTIONS AND WIRING

Electrical connections are made via 3-way terminal blocks on the rear of the instrument. All connections are low current and a 16/0.20mm wire size is adequate. Labels on the instrument and sleeve indicate the specific connections for the instrument. The versions of software in this instrument are identified on the label on the side of the instrument. The instrument supply is fused with a 250mA fuse located top rear of the inside of the instrument on the power supply board.

3.1 Rear Terminal Connections

3.2 Supply

1	LINE
2	
3	N(Mp)

Power supply, 85V to 264V, is connected to terminals 1 and 3. The LINE is connected to terminal 1 and the Neutral to terminal 3.

Instrument Earth

18	

This terminal is the safety earth for the instrument and MUST be connected to an external ground at all times.

Suppression Earth

7	

To suppress radio frequency interferance terminal 7 is taken to earth. (Normally connected to the instrument earth terminal 18).

3.3 Inputs

Note: On this instrument a filter module is fitted above the input terminal block. Ensure that the GREEN lead is connected to terminal 18 and the BLUE lead is connected to terminal 26 for RTD inputs or to terminal 27 for all other inputs.

Thermocouple

25	T/C+
27	T/C-

Thermocouple connections are made to terminals 25 and 27, positve lead to 25 and negative lead to 27.

Resistance Thermometer

25	V1
26	
27	V2

Platinum resistance three-wire thermometers are connected to terminals 25, 26 and 27. Connect the single connection side of the bulb to termianl 25 and the double connection to terminals 26 and 27.

DC Signals

25	DC I/P+
27	DC I/P-

Inputs are connected to the terminals as shown. Maximum input acceptable is 50V dc.

Pyrometer

25	+
27	-

Connect the positive lead to terminal 25 and the negative lead to to terminal 27.

3.4 Outputs

Relay

4	N/O
5	N/C
6	COM

Relay controller is fitted with an output relay, which has a single changeover contact connected internally between terminals 4, 5 and 6. Relay contact is rated at 2A/264V rms. Slow cycle time-proportioning or on-off control is available. Contact suppression is provided between the N/O contacts and the wiper.

Logic

8	+
9	-
29	+
30	-

A logic output is provided at terminals 8 and 9 output 1 and at terminals 29 and 30 for output 2. These outputs are isolated dc signals with time proportioning or on/off action.

Isolated DC

8	+
9	-
29	+
30	-

An isolated dc output is provided at terminals 8 and 9 for output 1 and at terminals 29 and 30 for output 2. These dc outputs share a common isolated power supply rail.

Triac

4	LOAD
6	LINE

28	LOAD
29	LINE

With controllers provided with triac output, connections are made to terminals 4 and 6 for output 1 and to terminals 28 and 29 for output 2. The live supply is connected to LINE terminals 6 and 28 respectively. One side of the load is connected to the LOAD terminals, the other side of the load should be connected to the neutral line. THe triac is rated at 1A/264V rms.

3.5 Alarms

31	COM
32	N/C
33	N/O

34	COM
35	N/C
36	N/O

Controllers are provided with relay alarm outputs which are internally connected to terminals 31, 32 and 33 for Alarm 1 and to 34, 35 and 36 for Alarm 2. Relay contact rating is 1A/264V rms. Contact suppression is provided between the N/C contacts and the wiper with the relay de-energised in alarm (fail safe). Suppression is provided between the N/O contacts and the wiper with the relay 'energised in alarm'.

3.6 Communications

One of three communication boards can be fitted to the 822, a digital, analogue or a logic communications board.

Rear terminal connections for each board are as follows:

TERMINAL	DIGITAL	ANALOGUE	LOGIC
10	DIG IN 1	DIG IN 1	DIG IN 1
11	DIG IN 2	DIG IN 2	DIG IN 2
12	COMMON	COMMON	COMMON
13	DIG OUT 1	DIG OUT 1	DIG OUT 1
14	As required	As required	DIG IN 3
15	for digital	for analogue	DIG OUT 2
16	comms.	comms.	DIG OUT 3
17			DIG OUT 4
18	EARTH	EARTH	EARTH

Digital Communications

Digital Communications - RS 422

12	COM
14	RX+
15	RX-
16	TX+
17	TX-
18	

Terminal 12 is the common and is normally connected internally to earth terminal 18.
The RS 422 interface utilises terminals 14 and 15 for the positive and negative receiver lines and terminals 16 and 17 for the positive and negative transmitter lines.

Digital Communications - RS 232

12	COM
14	RX
16	TX
18	

Terminal 12 is the common line. Terminal 14 and 16 are the receiver and transmitter lines for the RS 232 interface.
Terminals 12 and 18 are not normally linked.

Digital I/O

10	DIG IN 1
11	DIG IN 2
12	COM
13	DIG OUT

See General Digital I/O

Data Logger

Data Logger - RS 422

12	COM
14	ENABLE+
15	ENABLE-
16	TX+
17	TX-
18	

Data Logging is initiated by connecting terminal 15 to terminal 12 OR by driving terminal 14, ENABLE +, 2V positive with respect to terminal 12, and logging will continue at specified rate until the condition is removed.
Terminal 12 is not normally internally linked to terminal 18.

Data Logger - RS 232

12	COM
14	ENABLE+
15	ENABLE-
16	TX
18	

Data Logging is initiated by connecting terminal 15 to terminal 12 OR by driving terminal 14, ENABLE +, 2V positive with respect to terminal 12, and logging will continue at specified rate until the condition is removed. Terminal 12 is not normally internally linked to terminal 18.

Digital I/O

10	DIG IN 1
11	DIG IN 2
12	COM
13	DIG OUT

See General Digital I/O

Analogue Communications

Inputs and Outputs

14	I/P+
15	I/P-
16	O/P+
17	O/P-

Terminals 14 and 15 are for the remote analogue inputs, positive and negative respectively (+20V max.) Common mode range is 20V dc against any terminals on this communications board. Terminal 16 and 17 are for the analogue output positive and negative respectively.

External Potentiometer

10	POT+
12	POT-
14	I/P+
15	I/P-

When an external potentiometer is used as remote input, the positive of the potentiometer is connected to terminal 10 and the negative side to the common terminal 12. The slider of the potentiometer should be taken to terminal 14, the remote I/P positive, and link terminal 12 to remote I/P negative, terminal 15.

Digital I/O

10	DIG IN 1
11	DIG IN 2
12	COM
13	DIG OUT

See General Digital I/O

Logic Communications

Inputs and Outputs

10	DIG IN 1
11	DIG IN 2
12	COM
13	DIG OUT 1
14	DIG IN 3
15	DIG OUT 2
16	DIG OUT 3
17	DIG OUT 4

The three digital inputs and four digital outputs can be configured to operate various functions as listed in TABLE 1.

General Digital I/O

The analogue and digital communications boards in the 822 each have two digital inputs and one digital output signal available. The logic communications board has three digital inputs and four digital outputs. All the digital inputs and outputs may be configured to perform various functions. For digital inputs the switch is made by linking the appropriate input to terminal 12 (Common). If the switch is open circuit, the input floats to its high (inactive) state and control reverts to the 822 front panel. When a digital input is switched low then this overides the appropriate front panel selection and the parameter is forced to the appropriate state i.e. manual, setpoint 2 or keylock. Opening the switch will then reverse the selection.
The digital input operates differently if the input has been configured as a RUN/RESET or HOLD INPUT. It allows dual control of programs from both the 822 front panel and the rear terminals; e.g. a program can be RUN from the rear terminals and a RESET or HOLD actioned from the front keys.

RUN/RESET	Closing the switch causes the last program selected to run, starting with segment 1. Opening the switch causes a running program to be reset and returns the instrument to controller mode.
HOLD	Closing the switch causes a running program to be held. Opening the switch allows the held program to resume running.

The digital outputs are open collector pull down to common (terminal 12)

TABLE 1

The DIG IN/OUT functions can be configured as follows:

	DIG IN			DIG OUT				COM
FUNCTION	1	2	3	1	2	3	4	
TERMINAL	10	11	14	13	15	16	17	12
None	All	All	L	All	L	L	L	
Manual	All	All	L	All	-	-	-	
Dual PID	All	All	-	All	-	-	-	
Remote	All	All	-	All	-	-	-	
Keylock	All	All	-	All	-	-	-	
Run/Reset	All	All	L	-	-	-	-	
Hold	All	All	L	-	-	-	-	
End	-	-	-	All	-	-	L	
Logic Out 1	-	-	-	D/A	-	-	-	
Logic Out 2	-	-	-	-	L	-	-	
Logic Out 3	-	-	-	-	-	L	-	
Logic Out 4	-	-	-	-	-	-	L	
EOS	-	-	-	-	-	-	L	
Reset	-	-	-	-	-	-	L	
Holdback	-	-	-	-	-	-	L	
Running	-	-	-	-	-	-	L	
Wait	-	-	L	-	-	-	-	

All = Digital, analogue and logic communications
D/A = Digital and analogue communications
L = Logic communications only

Standard instruments, when fitted with a logic communications, are configured to function as follows:

DIG IN 1 - Run/Reset
DIG IN 2 - Hold
DIG IN 3 - Manual

DIG OUT 1 - End
DIG OUT 2 - Logic out 2
DIG OUT 3 - Logic out 3
DIG OUT 4 - Logic out 4

Any other configuration can easily be achieved by entering the Configuration mode as detailed in para. 5.5.

Signal Descriptions

NONE	The input/output signal is not used
MAN	When used as an output signal indicates if manual power control has been selected. If used as an input selects the manual power operation and locks out the selection of AUTO.
DUAL PID	As an output signal shows which internal setpoint has been selected. When an input signal selects the alternate setpoint and locks out the manual selection of setpoint.
REMOTE	As an output signal indicates if a remote setpoint has been selected. When an input this signal selects the remote setpoint and locks out the auto/manual selection.
KEYLOCK	This input signal disables the front panel keys. As a output it indicates that the keylock has been selected.
RUN/RESET	This input signal runs a selected program. Removing this signal resets the program.
HOLD	This input signal puts a running program into a hold state. Removing this signal causes the held program to continue running.
END	This output indicates that the program is in the end state.
LOG. OUT 1	Program controlled logic output.
LOG. OUT 2	Program controlled logic output.
LOG. OUT 3	Program controlled logic output.
LOG. OUT 4	Program controlled logic output.
RUNNING	This output indicates that the program is running.
RESET	This output indicates that the program is reset.
HOLDBACK	This output indicates that the program is running and holdback is operating.
WAIT	When selected this input signal is necessary to enable program segments to finish and pass control to the next segment of the program. WAIT is normally used in conjunction with the end of segment (EOS) signal to slave the 822 to external equipment, though it can be used on its own.
EOS	This output signal appears 66 or 80ms before the normal End Of Segment and it is removed when the next segment starts. It is normally used with the WAIT signal though it can be used on its own.

4.0 OPERATION

The 822 instrument is the basic Eurotherm 820 controller with the added functions of a programmer. It is therefore essential that the controller parameters are set up first before any programming functions are carried out. When a program is reset the instrument reverts to operating as a basic controller.

4.1 Operating Controls

All operations are conducted by use of the six front panel keys, numbered 1 to 6.

Key 1 - to acknowledge an alarm/return to operator mode
Key 2 - to select functions/run programs
Key 3 - monitor current program status/select remote indications
Key 4 - to decrease a parameter value
Key 5 - to increase a parameter value/NO key
Key 6 - enter a parameter value/YES key

To select the required instrument function press the FUNCTION key, key 2, and press key 5 to scroll through the following functions in turn.

FUNCTION AUTO
Press key 6 if the instrument is required to operate as a controller in the automatic mode, controlling the process value to the internal setpoint.

FUNCTION MANUAL
Press key 6 if the instrument is required to operate as acontroller in the manual mode, allowing the power to the load to be manually adjusted.

FUNCTION PROGRAM
Press key 6 if the instrument is required to run a program.

When an AUTO or MANUAL function is selected the instrument will operate as a controller.

4.2 Operating Modes

There are four modes of operation providing different levels of access for security.

1. Operating mode - for normal (limited) access
2. Supervisor mode - for supervisor access
3. Commissioning mode - for engineer access
4. Configuration mode - for reconfiguring the instrument

4.3 Indications

Measured Value
When power is connected, the instrument will be in the Operating mode and the upper fluorescent indicator panel will display the measured value in digital form with the associated analogue error indicator bars.
The lower display indicates that the instrument is in automatic operation giving a continous indication of the mean output power.
Note: When switching off, or a power failure occurs, the selected lower display will be retained on power-up.

Setpoint

To access the setpoint press the ENTER key (6) and the setpoint will appear on the lower display. To change the setpoint, press the respective up/down keys and enter the new setpoint by pressing the ENTER key (6). Setpoint will not change until key 6 has been pressed. To return the normal display press key 6 again. For instruments with dual PID two setpoint are displayed. Press key 6 to display setpoint 1. To display setpoint 2 press and hold in key 6 and press key 3; press keys 6 and 3 again to return to setpoint 1. Changes to either setpoint is carried out by pressing the respective keys followed by the ENTER key (6).

Remote Inputs

If a setpoint from a remote source is input this can be monitored by pressing the Status key, key 3. Press key 6 to monitor the actual setpoint (remote + local) and press key 6 again to display the local setpoint. Press key 1 to return to the normal operating display.

Error Indications

The nine segment bars, situated to the left of the upper digital readout provide error indications of measued value with respect to the setpoint as a percentage of the full range. Illumination of the centre bar alone indicates that the controlled value is within 0.5% of full scale setpoint.

4.4 Security Codes

A security code can be inserted in this instrument so inhibiting access to the Commissioning mode unless the code is known.

Access to the security level is achieved by pressing and holding in key 6 and pressing key 1 when in the Configuration Read Mode. A banner will run across the lower display:

"SECURITY CODE ENTRY NONE = 6666"

Press key 6 and "NEW CODE NO. ?" is displayed.

If no security code is required on the instrument, enter 6666 by pressing key 6 four times. To enter this code press key 6 again and the display will revert back to the Operator mode. Access to the Commissioning mode is now entered by pressing and holding the in key 6 and pressing key 1 in the Supervisory mode.

* If a security code is required enter the code, which must be four digits, using the 1 to 6 keys. (If after entering the fourth digit you wish to alter what you have selected press any of the keys 1 to 5 and the display will revert to "NEW CODE NO. ?". Now enter your required code). After the fourth digit, press key 6 to enter the code. The display will now revert back to the Operator mode. Access to the Commisioning Mode is now by using this new code number which must be entered when the display indicates:

"SECURITY NO. ?"

The security code can be changed at any time by following the above procedure.

* N.B. If you change the code make a note of the number.

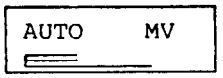
5.0 PID CONTROLLER

All applicable parameters and their values are displayed on the lower display. Only alarms and maximum power levels can be changed in the Supervisor mode. In order to change control parameters it is necessary to put the instrument into the commissioning mode. All changes are only accepted by operation of the ENTER key.

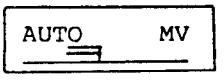
Below are listed all the possible indications which can be displayed in the lower display for each mode of operation. Only those parameters applicable to the instrument configuration are displayed.

E.g. Output 2 parameters are not displayed for instruments configured with only output 1.

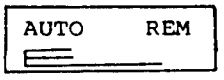
5.1 Operator Mode



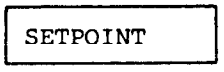
Single output units: bargraph indicates mean output power. Engineering units for the measured input value are shown. When in the automatic mode the display is being updated continuously, which causes the display to blink on each update. To select the remote setpoint (if configured) enter the Supervisor Mode and press key 3.



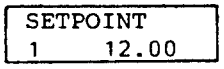
A unit with two outputs: bargraph indicates mean output power for each output. Output 1 indicates 0 to +100% and output 2 indicates 0 to -99.8%.
Engineering units for the measured input value are shown.

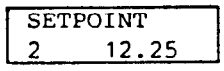


Indicating that a remote setpoint is selected. To change to the local setpoint enter the Supervisor Mode and press key 3.

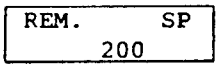


Setpoint is selected by pressing key 6 and is adjustable between the setpoint high and low settings which are preset in the Commissioning Mode.

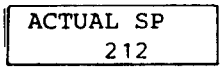




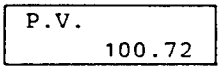
Only displayed when dual PID seected. To toggle between the two setpoints press both 6 and 3 keys. To change a setpoint press the respective keys when on the selected setpoint and enter the new setpoint by pressing the ENTER key.



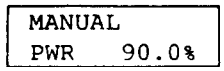
Remote setpoint setting is indicated. Monitored by pressing the Status key (3). If setpoint track is configured the local setpoint tracks the remote setpoint.



When using a remote setpoint the actual setpoint, local setpoint plus remote setpoint, can be displayed by pressing key 6 when the remote setpoint is being monitored.



Only displayed if 5 digits selected in configuration. Allows operator to select AUTO, SETPOINT or PV on lower display.



Select by pressing key 2 and selecting FUNCTION MANUAL. Manual power when output 1 on. Press key 2 to revert to AUTO.

MANUAL PWR 99.2%	Manual power when output 2 on. If ON/OFF control configured for output 2, only non zero setting will give -100% power (ON).
ALARM 1* DVL 1.25	Indicates alarm 1 triggered. Type of alarm is shown and its setting.
ALARM 2* DVH 15.80	Indicates alarm 2 triggered. Type of alarm is shown and its setting.

Note: The symbol * refers to a triggered alarm. If both alarms are triggered, then the last alarm activated is displayed. Acknowledge an alarm by pressing key 1. This is indicated by the display reverting to the AUTO mode and the error bars flash, signifying that tha alarm has been acknowledged but not cleared.

NO SENSOR PWR 50.0%	When an open circuit sensor is detected the preset power setting is indicated. This occurs when the measured value exceeds the setpoint high limit by 5% or is more than 5% below the display monimum. The upper display will indicate 9999 and the error bars flash once per second. This power is output until the fault is rectified.
CHECK CONFIG.	This is a fault message stating that the CONFIGURATION has been incorrectly set and requires checking. Contact your nearest Eurotherm Engineer if this message is displayed.
CHECK CALIB.	This is a fault message stating that the CALIBRATION has been incorrectly actioned or not carried out. Contact your nearest Eurotherm Engineer if this message is displayed.

5.2 Supervisor Mode

To access the Supervisor Mode press and hold in key 6 and press key 1, the first display will now appear. Press key 6 to scroll through all the displays. (Use either multiple single presses or continuous pressure on key 6). The supervisor has access to alarms, power settings and remote selection.

N.B. All alarms can be set within the span of the instrument but please note that a deviation band alarm is limited to above 1% of the span.

A remote setpoint is activated by operation of key 3 in this mode (if remote setpoint configured).

ALARM 1 DVL 2.50	The alarm 1 parameter can be changed by pressing the updown keys. For deviation low/high alarms, setting adjustable from 0% to 100% below/above S/P. Deviation band alarm, adjustable from +1% to +100% of S/P. Full scale low/high, adjustable from display min display max.
ALARM 2 DVL 1.25	The alarm 2 parameter can be changed by pressing the up/down keys.
MAX.O/P1 PWR100.0%	The maximum output 1 power limit can be changed by pressing the up/down keys. Adjustable from 0 to 100%.

Note: This parameter is not displayed if ON/OFF control has been selected.

MAX.O/P2 PWR 80.0%	The output 2 power limit can be changed by pressing the up/down keys. Adjustable from 0 to -99.8%. Note: This parameter is not displayed if ON/OFF control is selected or if output 2 is not selected.
CONT. SPT 400.	When a program is selected the controller setpoint can changed by pressing the up/down keys. Not displayed if a program is not selected.

5.3 Commissioning Mode

This level has two modes of access:

1. When in the Supervisor mode, if no security code has been requested, press and hold in key 6 and press key 1.
2. If a security code has been set in this instrument, when keys 6 and 1 are pressed the security number will be requested. To proceed into the commissioning mode this number must be entered. (See the first two displays below). Enter the security code using the numbered keys 1 to 6, then press key 6 to enter.

SECURITY NO. ?	When the security number is requested enter the number by pressing the appropriately numbered keys 1 to 6.
SECURITY NO---- ?	Each figure entered is acknowledged by the symbol "-". When all four figures have been entered, press key 6 to enter the code. An invalid entry will return the user to the Operating Mode.

If no security code is requested or one has been entered 822 ENTER PRG will be displayed. Press key 5 until 822 COMMISION appears then press key 6 to enter.

To scroll through the commissioning mode press key 6. All changes are affected by pressing the keys to alter the setting and key 6 to enter the new value. Press key 6 to scroll to the next parameter. For access back to the Operating Mode at any time press key 1.

SETPOINT HI 100	The setpoint high stop. Adjustable beteen setpoint low and the maximum display range.
SETPOINT LO 0	The setpoint low stop. Adjustable between display minimum and setpoint high.
CYCLE T 1 5.0S	Cycle time for output 1. adjustable between 0.1 and 65 seconds at half power, and for slow cycle between 5 and 65 seconds. Note: Not displayed if ON/OFF control or analogue output configured.
PROPBAND 1 0.1%	Proportional band for output 1. Adjustable between 0.1% and 999.5%. Note: Not displayed if ON/OFF control configured.
INTEG. T 1 60.S	Integral time adjustable between 0 and 9995 seconds. Zero setting = no integral. Note: Not displayed if ON/OFF control configured.
MAN. RESET 1 20%	Manual reset for output 1. Adjustable between 0 and 100%. Note: Only displayed when integral time is set to zero.

DERIV. T 1 5.7S	Derivative time adjustable between 0 and 999.5 seconds. Zero setting = derivative off. Note: Not displayed if ON/OFF control configured.
CUTBACK HI 20.50	High cutback point. Adjustable between 0 and display range. Zero setting = cutback off. Note: Not displayed if ON/OFF control configured.
CUTBACK LO 5.00	Low cutback point. Adjustable between 0 and display range. Zero setting = cutback off. Note: Not displayed if ON/OFF control configured.
DEADBAND 1.0%	Deadband for ON/OFF control. Adjustable between 0.1 and 10.0%.
REL.COOL 1 1.0	Cool gain for output relative to output 1. Adjustable between 0.1 and 10. Only displayed if output 2 configured.
H:C DBAND 5.0%	Heat/Cool deadband. Adjustable between -5% and +5% of the proportional band selected. Only displayed if output 2 configured. Negative deadbands are equivalent to overlap of the two output channels by the specified negative deadband setting. Dual PID only*
CYCLE T. 2 10.0S	Cycle time for output 2. Adjustable between 0.1 and 65 seconds at half power. Only displayed if output 2 configured. Note: Not displayed if ON/OFF control or analogue output configured.
PROPBAND 2 10.0%	Proportional band at setpoint 2 in dual setpoint mode. Adjustable between 0.1 and 999.5%.
INTEG T 2 40.S	Integral time at setpoint 2 in dual setpoint mode. Adjustable between 1 and 9995 seconds. Note:Only displayed when integral time for output 1 is not zero.
MAN RESET 2 50%	Manual reset at setpoint 2 in dual setpoint mode. adjustable between 0 and 100%. Note: Only displayed when integral time on output 1 is set to zero.
DERIV. T. 2 80.0S	Derivative time at setpoint 2 in dual setpoint mode. Adjustable between 0 and 999.5 seconds.
REL COOL 2 6.0	Relative cool gain at setpoint 2 in dual setpoint mode. Adjustable between 0.1 and 10.
O/P BIAS 5.0%	Provides rapid changes of output. Adjustable between -99.8% and 100.0%. Note: Not displayed if ON/OFF control configured.
NO SENSOR PWR 50.0%	The percentage power that is input when a sensor is open circuit or the input 5% greater than display max. or 5% less than display min.

E. SCALER 0.50	The emmissivity scaler parameter is adjusted to the target emmissivity. Adjustable between 0.50 and 1.00. Note: Only displayed with pyrometers.
LOG RATE 10	Rate at which data is logged when acting as a data logger. Adjustable between 0 and 20 minutes, with one minute resolution, where 0 = off.

5.4 Configuration Read Mode

The level below the commissioning mode is a CONFIGURATION READ mode which allows the user to read the current instrument configuration.
Note* No changes can be effected, it is an inspection mode only.
To read the configuration press and hold in key 6 and press key 1 when in the Commissioning mode. A banner will run across the lower display:

'INSTRUMENT CONFIGURATION - READ ONLY'

Scroll through the parameters by pressing key 6.
Press key 1 at any time to return to the Operator Mode.
The parameter listed vary according to how the instrument is configured.
Below are listed the range of displays applicable:

I/P TYPE -	indicating what input is being used followed by the type of input.
O/P 1 -	indicating what type of output is being used on channel 1 followed by how it functions.
O/P 2 -	indicating what type of output, if any is being used on channel 2 followed by how it functions.
DUAL PID -	indicates if selected or not for dual PID.
SETPOINT HOLD -	indicates if selected that the setpoint will stay at the value last set in the auto mode.
SETPOINT TRACK-	indicates if selected that the setpoint will equal the process value last achieved in manual mode.
COMMS -	indicates what type and functions of communications.
ALARM HYS -	indicates the alarm hysteresis setting.
ALARM 1 -	indicates the type of alarm on channel 1 followed by how it functions.
ALARM 2 -	indicates the type of alarm on channel 2 followed by how it functions.
D.P POS -	indicates the decimal point position on the displays.
INV.P.BAR -	indicates that the sense of the power bar has reversed if selected, so that a full power bar will indicate 0% power.
MANUAL -	indicating the state of the MANUAL operation of the instrument. This permits the MANUAL key to be disabled.
UNITS -	indicates what sensor input units are being used.
MAX MV IN -	indicates maximum millivolts input - linear inputs only.
MIN MV IN -	indicates minimum millivolts inputs - linear inputs only.
DISP MAX -	indicates the maximum display range set.
DIS MIN -	indicates the mimnimum display range set.
S/W VERS	indicates the microprocessor software versions in the
4.2-4-6	order: Main - Display - Communications

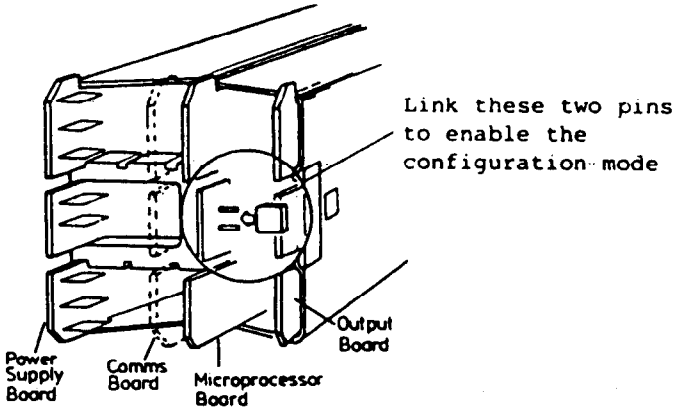
5.5 Configuration Mode

Configuration of the 822 instrument provides instructions; by means of simple messages, on how to enter parameters and to alter instrument configuration. This enables the engineer to carry out internal changes to the functioning of the instrument in the field. To reconfigure the logic communications or change the address of a digital or data logger instrument proceed as follows:

1. Access to the Configuration Mode.

To obtain access to the configuration mode proceed as follows:-

(1) Switch off the supply to the instrument.
(2) Withdraw the instrument from the sleeve as detailed in para 1.0.
(3) Short together the two pins on the rear of the Microprocessor board, (see diagram below).
(4) Insert the instrument into the sleeve as detailed in para 1.0.
(5) Switch on the power supply to the instrument.



Rear of Instrument

(6) A series of questions will now be displayed, action as stated.

Instrument Address

If the 822 is configured as a digital or data logger communicating instrument the first display on entering the Configuration Mode is 'ADDRESS'. To change the address of the instrument proceed as follows:

ADDRESS 2.1	Press the up/down keys to select the address required and press key 6 to enter the new address. Press key 6 again.
CALIBRATE	Press key 5 for NO
CONFIGURE	Press key 5 for NO
EXIT ?	Press key 6 to exit
COMPLETED	Switch off power.

Note:If a security code has been previouly entered in the instrument, during the Commissioning Mode, that code will be displayed under the COMPLETED message.

On completion switch off the power supply to the instrument, withdraw the instrument from the sleeve and remove the shorting link on the microprocessor board. Refit the instrument into the sleeve as detailed in para 1.0.

Logic Configuration

If the 822 has been configured for logic communications the first display on entering the Configuration Mode is 'CALIBRATE', proceed as follows:

CALIBRATE	Press key 5
CONFIGURE	Press key 6
I/P TYPE TC ?	Press key 6

Continue to press key 6 for each question displayed until one of the following questions appears then action as stated to select the Logic I/O.

COMMS NONE ?	Press key 5
COMMS DIGITAL ?	Press key 5
COMMS ANALOG ?	Press key 5
COMMS DATA LOG ?	Press key 5
COMMS LOGIC I/O ?	Press key 6

The next question asked will be what function is required on the DIGITAL 1 INPUT? Press key 5 to scroll through all the functions available and when the required one is displayed press key 6 to enter.
When the DIG 1 INPUT has been entered the functions for the DIGITAL 2 INPUT will be displayed, action as above.
Repeat for the DIGITAL 3 INPUT and the four DIGITAL OUTPUTS, 1, 2, 3 and 4.

Functions available:

DIG IN 1 : None, Manual, Dual PID, Remote, Keylock, Run/Reset, Hold
DIG IN 2 : None, Manual, Dual PID, Remote, Keylock, Run/Reset, Hold
DIG IN 3 : None, Manual, Wait, Run/Reset, Hold

DIG OUT 1 : None, Manual, Dual PID, Remote, Keylock, End
DIG OUT 2 : None, Logic out 2
DIG OUT 3 : None, Logic out 3
DIG OUT 4 : None, Logic out 4, EOS, Reset, End, Holdback, Running

Once DIG OUT 4 function has been entered press key 6 to all the following displays until EXIT is displayed. Press key 6 again. COMPLETED will now be displayed.

If a security code has been previouly entered in the instrument, during the Commissioning Mode, that code will be displayed under the COMPLETED message.
N.B. This is a useful facility which provides the only identification of any security code previously entered and forgotten.

Do NOT switch off the instrument until COMPLETED is displayed, signifying that all settings, changes, calibration, etc. have been actioned and accepted. If the instrument is switched off before COMPLETED is displayed, the checksum of the configuration in the memory will default, CHECK CONFIG will appear in the Operator Mode, and the configuration mode has to be re-entered and reset.

On completion switch off the power supply to the instrument, withdraw the instrument from the sleeve and remove the shorting link on the microprocessor board. Refit the instrument into the sleeve as detailed in para 1.0.

6.0 PROGRAMMER

When the instrument is selected for PROGRAM function it will operate as a programmer. Programs are entered and edited in the Commissioning mode and run and monitored in the Operator mode.

6.1 Running Programs

LOAD/RUN selected

Assuming a program has been entered, with LOAD/RUN selected, in the Commissioning mode, switch on the instrument and proceed as follows:

AUTO	Press key 2 and then press key 5 to scroll through the functions until FUNCTION PROGRAM is displayed.
FUNCTION PROGRAM ?	Press key 6 to enter.
PROGRAM PRG 3?	Using the up/down keys set the program number, between 1 and 16, that is required to be run. Press key 6 to enter the selected program and press key 6 again to run the program.

LOAD/RUN not selected

Assuming a program has been entered, with LOAD/RUN not selected, in the Commissioning mode, switch on the instrument and proceed as follows:

AUTO	Press key 2 and then press key 5 to scroll through the functions until FUNCTION PROGRAM is displayed.
FUNCTION PROGRAM ?	Press key 6 to enter.

PROGRAM PRG 3?	Using the up/down keys set the program number, between 1 and 16, that is required to be run, press key 6 to enter the selected program. Press key 6 to load and key 2 to action the program.
P= 3 START ?	Indicating that program 3 is loaded and ready to start. Press key 6 to start program running or reset by pressing key 5.
P= 3 RESET ?	Indicating that program 3 is loaded but if not required to run can be reset by pressing key 6.

6.2 Indications

If the program has not been entered in the Commissioning mode, the following will be displayed:

PROGRAM 3 EMPTY!	Indicates that this program has not been commissioned and is empty, press key 6 to return to the beginning.
P= 3 S= 1 %	Indicating that program 3 is running and executing segment 1. At the end of each segment the segment number will automatically change to the next one.

Operator Mode

'WARNING*ALL PROGRAMS DELETED*WARNING'

This warning message is displayed when the instrument detects illegal programs in the program storage area. Press key 6 to remove.
NB. When this message is displayed the instrument reverts to the Controller Mode and all programs are deleted.

6.3 Control of Programs

The Operator can place a HOLD on a program, RESET a program, jump segments in a program or freeze a program and go into manual.

Load/Run selected

HOLD 3 %	To put a HOLD on program 3 press key 2.

Load/Run not selected.

P= 3 S= 2 HOLD ?	To put a HOLD on a program press key 2. A request for a HOLD will be displayed, press key 6 to action.
HOLD 3 %	Indicating that a HOLD has been placed on program 3.

Options in hold

P= 3 S= 2 RESET?	To remove a HOLD press key 2. The Operator now has the following options; RESET the program, continue to RUN the program, skip the current segment and select the NEXT SEG in the main program or freeze the program and go into aMANUALoperation. Press key 5 to scroll through these options and then press key 6 to enter the one required.
P= 3 S= 2 RUN ?	
P= 3 S= 2 NEXT SEG ?	
P= 3 S= 2 MANUAL ?	

Altering a Running Program

The program setpoint can be adjusted while a program is running except for a ramp segment where the program must first be put into a hold. The ramp rates and final values can also be altered.

6.4 Monitoring Programs

The Operator has a choice of display and a facility to examine the status of the program segment being currently executed.

Displays

The Operator can select one of the following, press key 6 to scroll between the displays.

P= 3 %	Indicating that program 3 is loaded and percentage power being output is shown.
P= 3 200.0	Indicating that program 3 is loaded and the setpoint is 200.0.

Once a program is running the mimic or the current program/segment number can be displayed.

P = 3 S = 2 %	Indicating that program 3 is executing segment 2 and showing the percentage power being output.
P = 3 S = 2 200.0	Indicating that program 3 is executing segment 2 and the setpoint is 200.0.
P= 3 HB %	Indicating that HOLDBACK is in operation, allowing the measured value to catch up the setpoint, and when HOLDBACK ceases the display reverts to normal.
	Displays an outline of the progam which is filled in as each segment of the program is run.

6.5 Status of Programs

The STATUS key, key 3, permits the Operator to examine the program currently being executed. The status of a program can be displayed when a program is loaded but not running, running or has ended.

Program loaded

STATUS P= 3	Program 3 is loaded but not running. Press key 6 for status of program 3.
LEVEL 0 150.5	Indicates the level from which the program will start. (If servo mode has been selected in program entry this level will indicate the local setpoint.)

Program running

STATUS P= 3 S= 2	Program 3 is running, executing segment 2. Repeated depression of key 6 allows all the status information, pertinent to a segment, to be scolled.

PRG. SPT 150.0	Indicating that the program start setpoint is 150.5.
RAMP TO 200.0	Indicating that the current segment is ramping to 200.0
RAMP/MIN 10.0	Indicating that the current segment is ramping at 10.0 units per minute.
PROGLOOPS LEFT 4	Indicating the number of times the program has to run, including the current cycle.
SUBPROG P= 10 S= 5	Indicating that a subprogram has been called up to run in a segment of the curent program. This example is indicating that subprogram 10 is executing segment 5 of the subprogram, which may have been called up to run in segment 2 of the main program number 3. The status of subprogram segments can be actioned as for segments of the main program.
SUBLOOPS LEFT 1	Indicating the number of times the subprogram has to run, including the current cycle.
STATUS HOLD	If a HOLD has been placed on a program it will be indicated.

Program ended

STATUS P= 3 END	Program 3 has ended.
PRG. SPT 120.0	Indicating that the final setpoint is 120.0. Note: Not shown if SHUTDOWN selected.
RELAY 1 OFF	Indicating that RELAY 1 has been selected OFF.
RELAY 2 ON	Indicating that RELAY 2 has been selected ON.
POWER OFF	Indicating that shut down has been selected and all output power is turned off.
END TEMP 150C	Indicating that the temperature at the end of the program has been set to 150°C. Note: Not shown if SHUTDOWN selected.

If the current segment changes to a new segment, while program status is being displayed, the display will revert to the initial status display, but will now relate to the new segment.

At any time during status monitoring pressing key 1 returns the display to the Opertor mode.

7.0 PROGRAM ENTRY

Programs can only be entered in the Commissioning Mode.
To access the Commissioning Mode from the Operator Mode hold in key 6 and press key 1 twice.

If a security code has been set in this instrument the security number will now be requested. Enter the four digit code using the appropriately numbered keys 1 to 6, each digit entered is acknowledged by the symbol '_'. Press key 6 to enter the code.

If no security code has been requested or the correct security code has been entered, one of the following should be displayed; press key 5 to scroll between them:

822 ENTER PRG	up to 16 programs can be entered/edited
822 CLEAR PRG	facility to clear all existing programs
822 ..MIMIC..	permits a mimic diagram to be displayed of each program entered
822 IO DEFINE	allows various options, relays and logic signals to be set to default states
822 COMMISION	allows entry to all the normal controller commissioning parameters

ENTER PROGRAMS

822 ENTER PRG	Press key 6 to enter new or edit existing programs.
76% FREE PRG 3?	This indicates the percentage of total space left in memory and the program number of the last program actioned in this mode. Select the required program number that is to be entered or edited by means of the up/down keys. Enter the program number by pressing key 6.
MEM FULL QUIT ?	Existing programs have occupied all the available memory space and no additional program information can be accepted. If a new program is required a previous program must be cleared or abbreviated.

Press key 5 to toggle between these next two displays.

P=3 S=0 NEW ?	Indicating that program number 3 segment 0 is selected. If a new program is to be entered, press key 6.
P=3 S=0 QUIT ?	Indicating that program number 3 segment 0 is selected. Press key 6 if no action is to be taken with this program and it will exit back to the start of the program entry procedure.

7.1 Program Start Level

Press key 5 to toggle between these next two displays.

SERVO YES ?	If an existing or new program has been selected and it is required that the program starts with the setpoint equal to the measured value, press key 6.
SERVO NO ?	If the program is required to start at a value other than the measured value, press key 6.
LEVEL 0 20.5	With no servo selected an initial setpoint can be set to the required level by operation of the updown keys. Press key 6 to enter that level.

7.2 Program Segments

Now the program number has been entered and the start level of the first segment determined, the individual segments can be allocated to either be a RAMP, DWELL, STEP, SUBPROG or END of program. Press key 5 to scroll to the required function.

7.2.1 Ramp

P= 3 S= 1 RAMP ?	Asking the question if a RAMP is required in segment 1 of program 3. Press key 6 for yes or key 5 for no.
RAMP RATE /MIN ? RAMP RATE /HOURS ?	A ramp can be selected to operate in hours or minutes. Press key 5 to scroll between the two rates and when displaying the one required press key 6 to enter.

Note: The range of ramp rates available is determined by the decimal point position on the measured value display, and whether 'HOUR' or 'MIN' has been selected:-

Decimal Point Position	/HOUR	/MIN
XXXX.	0.1 to 999.9	1.0 to 9999.
XXX.X	0.01 to 99.99	0.1 to 999.9
XX.XX	0.001 to 9.999	0.01 to 99.99
X.XXX	0.001 to 9.999	0.001 to 9.999

TO LEVEL 200.0	The level to which it is required to ramp to can now be set by operation of the up/down keys. Press key 6 to enter the level set.

7.2.2 Dwell

P= 3 S= 2 DWELL ?	Asking if a DWELL is required in segment 2 of program 3. Press key 6 if a dwell is required or key 5 if not.
DWELLTIME HOURS DWELLTIME MINS	If a dwell is selected it can be set in hours or minutes. Press key 5 to scroll between the two rates and when displaying the one required press key 6 to enter.

DWELLTIME 10.30H
DWELLTIME 10.0M

Operate up/down keys to set desired time in hour or minutes. Press key 6 to enter the rate required.

7.2.3 Step

If a STEP function is selected, the level to which the program is required to step must be entered. With a STEP a percentage of holdback must be set to stop the rate of change of setpoint exceeding the rate of change of the process value. The holdback limits the difference between the setpoint and measured value to whatever percentage of span is selected.

P= 3 S= 3 STEP ?

Asking the question if a STEP is required in segment 3 of program 3? Press key 6 if required or key 5 if not.

TO LEVEL 80.5

Set the level by operation of the up/down keys. Press key 6 to enter this level.

HOLDBACK 1.0%

The percentage HOLDBACK can be either 0.1%, 1% or 10%. Scroll through them using key 5 and press key 6 to enter the required one.

7.2.4 Sub-program

Other programs can be called up and used as sub-programs in the current program being entered. When entering a program and allocating segments as ramps, dwells, etc., it is possible to allocate a sub-program to a segment. When that segment is called to run the sub-program will be run.
Of the total 16 programs available only programs 1 to 8 can use sub-programs. Programs 9 to 16 can be allocated as sub-programs or be main programs in their own right..
E.g. Program 12 can be used as a program itself or as a sub-program to program 3.

P= 3 S= 4 SUBPROG ?

Indicating that program 3 segment 4 can be allocated a sub-program. Press key 6 if required.

SUBPROG 12

Select sub-program number, between 9 and 16, by operation of the updown keys, press key 6 to enter. Press key 6 to scroll to next segment.

P= 3 S= 5 RAMP ?

Segment 5 of program 3 can now be allocated as a ramp, dwell, step, sub-program or end as required.

7.2.5 End

When all segments of a program have been entered END is selected to terminate the program.
If END is selected for segment 1 of a program the program will have no contents and will automatically be removed from the program store. This allows individual programs to be cleared.

P= 3 S= 3 END ?

To allocate segment 3 of program 3 as the end of the program, press key 6.

7.3 Segment Options

Under 822 IO DEFINE the user has the ability to turn ON or OFF program options to simplify program entry. If selected OFF in program commissioning options will not appear in the program enter procedure.

7.3.1 Holdback

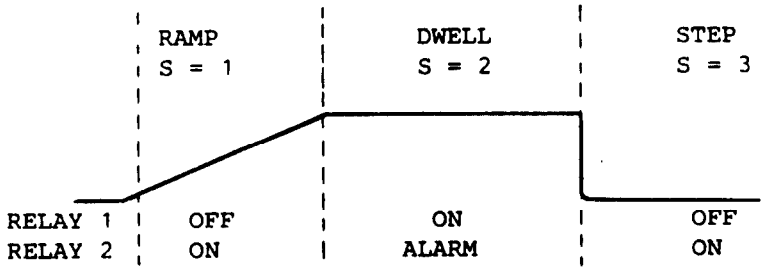
A percentage holdback is available, if required, on a ramp or dwell segment.

7.3.2 Relays

There are two relays which are normally used for alarm indications when the instrument is operating as a controller.

In the programming mode these relays are normally left as alarms but optionally can be made to be energised (ON) or de-energised (OFF) on a segment basis. This enables the relays to be used as program control logic outputs.

NB: If a relay is used as a logic output in this segment, all alarm conditions in this segment will be ignored.



Relay 1 is providing a logic output in segment 2 for the dwell.
Relay 2 is providing a normal alarm but disabled from giving alarm signals in segments 1 and 3 (de-energised alarm).

7.3.3 Special PID

Default - automatically defaults to the controller PID settings.
Special - can be set as required for duration of a segment to optimise system performance.

PID TERMS DEFAULT ?	Press key 6 if the controller PID settings are to be used. Press key 5 if SPECIAL PID terms are required.
PID TERMS SPECIAL	Press key 6 if required.
PROPBAND 10.0%	Operate the up/down keys to set the required proportional band. Press key 6 to enter.
INTEG. T. 5. S	Operate the up/down keys to set the required integral time. Press key 6 to enter.
DERIV. T. 120.0S	Operate the up/down keys to set the required derivative time. Press key 6 to enter.

Note 1 : If the integral time is set to zero in the controller commissioning MAN RESET is displayed instead of the INTEG TIME.

Note 2 : If the instrument is configured as an ON/OFF controller the DEADBAND % is displayed instead of the PID terms.

7.3.4 Logic Outputs

If digital or analogue communications is fitted and LOGIC OUT 1 is configured the next question will be:

LOG.OUT 1 ON ?	Press key 6 if the logic output 1 is required to be switched ON during this segment. Press key 5 if not required.
LOG.OUT 1 OFF ?	Press key 6 if the logic output 1 is required to be switched OFF during this segment.

If a logic I/O interface is fitted and configured the next question will be:

LOGIC I/O NO ?	Press key 6 if none of the logic I/O functions configured are to be actioned, otherwise press key 5.
LOGIC I/O YES ?	Press key 6 if the logic I/O functions configured are to be actioned.

The following will be displayed only if they have been configured:

LOG.OUT 2 ON ?	Press key 6 if required to be ON during this segment, otherwise press key 5.
LOG.OUT 2 OFF ?	Press key 6 if required to be OFF during this segment.
LOG.OUT 3 ON ?	Press key 6 if required to be ON during this segment, otherwise press key 5.
LOG.OUT 3 OFF ?	Press key 6 if required to be OFF during this segment.
LOG.OUT 4 ON ?	Press key 6 if required to be ON during this segment, otherwise press key 5.
LOG.OUT 4 OFF ?	Press key 6 if required to be OFF during this segment.
EOS ON ?	Press key 6 if required to be ON during this segment, otherwise press key 5.
EOS OFF ?	Press key 6 if required to be OFF during this segment.
WAIT ON ?	Press key 6 if required to be ON during this segment, otherwise press key 5.
WAIT OFF ?	Press key 6 if required to be OFF during this segment.

7.4 Repeat Programs

At the end of each segment, if segment number is less than 16, operation of key 6 will action the function mode for the next segment requirement. When the segment number is 16 (maximum number of segments per program) or END has been set, a request is made to loop (cycle) the program up to 9999 times.

P= 3 LOOP 20	Indicating that program 3 is to be executed 20 times. Number of loops required can be set by operation of the up/down keys. Press key 6 to enter. At the end of a program the final power level can be set as required.
SHUT DOWN YES ?	When the program is completed the output power can be turned off instantly. Press key 6 to action.
SHUT DOWN NO ?	If it is needed to set a setpoint level at the end of the program, press key 6.
END LEVEL 204	The end level can be set between the setpoint high and low levels by operation of the up/down keys. Press key 6 to enter.

At the end of the program the two relays can be allocated functions as either alarms, energised (on) or de-energised (off) as detailed in the options.

Programs can be entered at any time, however, if an attempt is made to enter/edit a program that is already running the following message will appear:

PROGRAM RUNNING!	Running programs may not be altered but can be monitored. (The only exception is when the program is actioning a RAMP the rate and final value can be altered whilst the program is *running. Set the new value using the up/down keys and press key 6 to enter and the ramp will instantly start operating to this new value). Pressing key 6 will remove the PROGRAM RUNNING display, and further depressions of key 6 will allow the contents of the program to be examined but no alterations can be actioned. The '?' normally displayed will not be shown.

7.5 Program Storage

The memory available for program storage is approximately 164 locations. (Note: in June 1985 instruments will have extra memory providing storage for approximately 1000 locations). The display, when entering programs, indicates the percentage of storage space left in memory. Below are listed the number of locations used by programs and segments.

Each individual program uses..... 7 locations (start and end)
Each program with a start temperature
(not servo) uses..... 6 Additional locations
Each program with an end temperature
(not shutdown) uses..... 6 Additional Locations
Each program with a loop count
(greater than 1) uses..... 4 Additional Locations

Each step segment uses..... 7 Locations
Each dwell segment uses..... 7 Locations
Each ramp segment uses..... 13 Locations
Each sub-program segment uses..... 2 Locations
If options are selected, each segment uses... 2 Additional Locations
If Logic I/O is selected, each segment uses.. 1 Additional Location
If special PID terms are selected, each
segment uses..... 18 Additional Locations

8.0 CLEAR PROGRAMS

This function clears all existing programs. To clear individual programs see END function under the Program Enter instructions. To access, enter the Commissioning Mode and scroll through by pressing key 5 until the following is displayed:

822 CLEAR PRG	Press key 6 to action.
CLEAR ALL PRGS NO?	Press key 6 if existing programs are to be retained. Press key 5 if not.
CLEAR ALL PRGS YES?	Press key 6 if existing programs are to be cleared. Press key 5 if not.

9.0 MIMIC

A filled-in mimic diagram can be displayed for any stored program. To access, enter the Commissioning Mode and scroll through by pressing key 5 until the following is displayed:

822 ..MIMIC..	Press key 6 to enter.
DISLPAY PRG 4.?	Requesting the program number for which the mimic is required to be displayed. Select the program number by means of the up/down keys and enter by pressing key 6.
	Press key 6 again to display the mimic and if the program is greater than 12 segments long use the up/down keys to view the undisplayed portion. Press key 1 to return to the Operator Mode or key 6 to return to the functions in the Commissioning Mode.
PROGRAM 4 EMPTY!	This indicates that this program has not been entered and is therefore not stored. Press key 6 to return to functions in the Commissioning Mode.

10.0 DEFINE INPUTS/OUTPUTS

Background options and input/output default states for relays and logic I/O signals can be actioned. To access, enter the Commissioning Mode and scroll through by pressing key 5 until the following is displayed:

822 IO DEFINE	Press key 6 to action.
PROG OPTS NO ?	Press key 6 to enter. Program options will be bypassed when setting segments in program entry. Press key 5 if not required.
PROG OPTS YES ?	Press key 6 to enter. Program options will appear for action when setting segments in program entry. Press key 5 if not required.

RST/HLD ENABLED ?	Press key 6 to enter. Permits a program reset/hold to be actioned by the operator. Press key 5 if not required.
RST/HLD DISABLED?	Press key 6 to enter. Prevents an operator reseting or holding a running program.
LOAD/RUN YES ?	Press key 6 to enter. Permits a program to automatically start running when selected by the operator and a hold to be actioned by a single key depression. Press key 5 if not required.
LOAD/RUN NO ?	Press key 6 to enter. A program has to be loaded and run seperately. Press key 5 if not required.
DISPLAY MIMIC ?	To automatically select the mimic display in the Operator mode press key 6 to enter. Press key 5 if not required.
DISPLAY SETPOINT?	To automatically select the setpoint display in the Operator mode press key 6 to enter. Press key 5 if not required.
DISPLAY POWERBAR?	To automatically select the power bar display in the Operator mode press key 6 to enter. Press key 5 if not required.
CONT.MODE RLY ?	When the instrument is in controller mode relays 1 and 2 can be set to function as ON, OFF or as ALARMS. Press key 5 to scroll between each function and then key 6 to enter.
CONT.MODE LOG ?	When the instrument is in controller mode logic 1, 2, 3 and 4 can be set to function as ON or OFF. Press key 5 to scroll between each function and then key 6 to enter.
PROG LOAD RLY ?	When the program is loaded relays 1 and 2can be set to action as ON, OFF or as ALARMS. Press key 5 to scroll between each function and then key 6 to enter.
PROG LOAD LOG ?	When the program is loaded logic 1, 2, 3 and 4 can be set to action as ON or OFF. Press key 5 to scroll between each function and then key 6 to enter.
PROG END LOG ?	When the program is ended logic 1, 2, 3 and 4 can be set to action as ON or OFF. Press key 5 to scroll between each function and then key 6 to enter.

11.0 CONTROLLER COMMISSIONING

822 COMMISION	Press key 6 to enter. All the controller parameters can now be accessed by operation of key 6.

Values can be changed by operation of the up/down keys, and new settings entered by pressing key 6. Press key 6 again to scroll to the next parameter. When all the parameters have been set return to the Operator Mode by pressing key 1.