

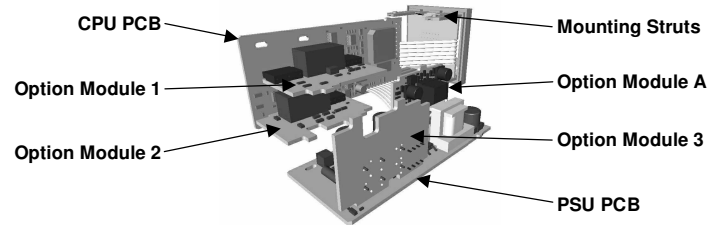
1/16 DIN CONTROLLER with HC INPUT CONCISE PRODUCT MANUAL (59404-1)



CAUTION: Installation should be only performed by technically competent personnel. Local Regulations regarding electrical installation & safety must be observed.

1. INSTALLATION

Installing Option Modules

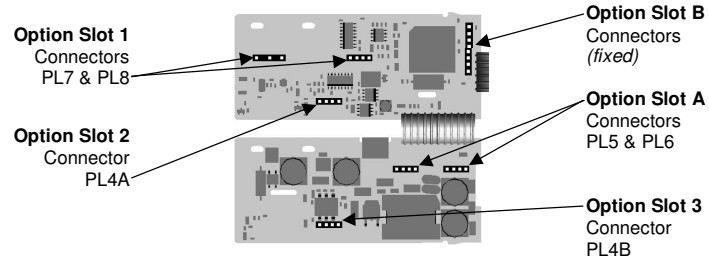


To access modules 1 or A, first detach the PSU and CPU boards from the front by lifting first the upper, and then lower mounting struts. Gently separate the boards.

- Plug the required option modules into the correct connectors, as shown below.
- Locate the module tongues in the corresponding slot on the opposite board.
- Hold the main boards together while relocating back on the mounting struts.
- Replace the instrument by aligning the CPU and PSU boards with their guides in the housing, then slowly push the instrument back into position.

Note: Option modules are automatically detected at power up.

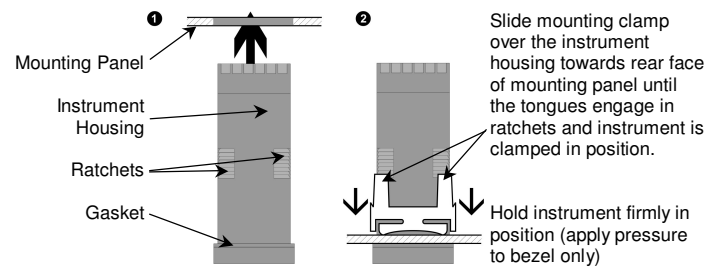
Option Module Connectors



Panel-Mounting

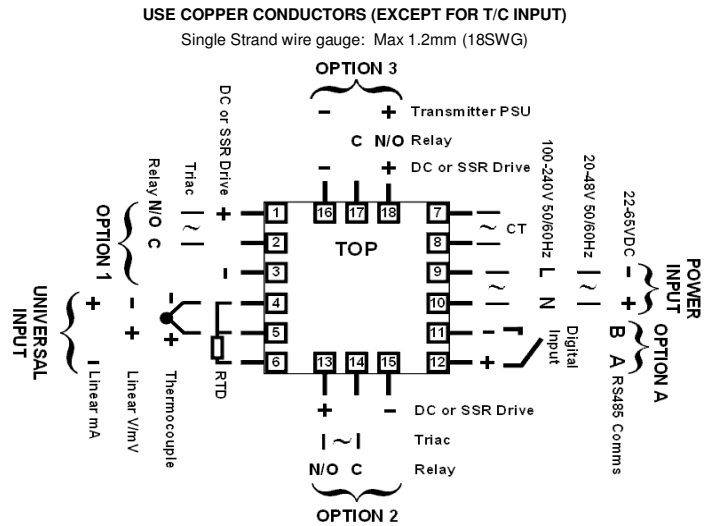
The mounting panel must be rigid, and may be up to 6.0mm (0.25inch) thick.

For n multiple instruments mounted side-by-side, cut-out is 48 n -4mm wide.



CAUTION: Do not remove the panel gasket; it is a seal against dust and moisture.

Rear Terminal Wiring



These diagrams show all possible option combinations. The actual connections required depends on the exact model and options fitted.



CAUTION: Check information label on housing for correct operating voltage before connecting supply to Power Input
Fuse: 100 – 240V ac – 1amp anti-surge
24/48V ac/dc – 315mA anti-surge

Note: At first power-up the message **Go to Conf** is displayed, as described in section 7 of this manual. Access to other menus is denied until configuration mode is completed.

2. SELECT MODE

Select mode is used to access the configuration and operation menu functions. It can be accessed at any time by holding down **⏏** and pressing **⏏**.

In select mode, press **⏏** or **⏏** to choose the required mode, press **⏏** to enter. An unlock code is required to prevent unauthorised entry to Configuration, & Setup modes. Press **⏏** or **⏏** to enter the unlock code, then press **⏏** to proceed.

Mode	Upper Display	Lower Display	Description	Default Unlock Codes
Operator	OPtr	SLCt	Normal operation	None
Set Up	SEtP	SLCt	Tailor settings to the application	10
Configuration	ConF	SLCt	Configure the instrument for use	20
Product Info	Info	SLCt	Check manufacturing information	None
Auto-Tuning	Atun	SLCt	Invoke Pre-Tune or Self-Tune	0

Note: The instrument will always return automatically to Operator mode if there is no key activity for 2 minutes.

3. CONFIGURATION MODE

First select Configuration mode from Select mode (refer to section 2). Press **⏏** to scroll through the parameters, then press **⏏** or **⏏** to set the required value. Press **⏏** to accept the change, otherwise parameter will revert to previous value. To exit from Configuration mode, hold down **⏏** and press **⏏**, to return to Select mode.

Note: Parameters displayed depends on how instrument has been configured. Refer to user guide (available from your supplier) for further details. Parameters marked * are repeated in Setup Mode.

Parameter	Lower Display	Upper Display	Adjustment range & Description		Default Value
Input Range/Type	inPt	See following table for possible codes			JC
Code	Input Type & Range	Code	Input Type & Range	Code	Input Type & Range
bC	B: 100 - 1824 °C	LC	L: 0.0 - 537.7 °C	P24F	PIRh20% vs 40%: 32 - 3362 °F
bF	B: 211 - 3315 °F	LF	L: 32.0 - 999.9 °F		
CC	C: 0 - 2320 °C	NC	N: 0 - 1399 °C	PtC	Pt100: -199 - 800 °C
CF	C: 32 - 4208 °F	NF	N: 32 - 2551 °F	PtF	Pt100: -328 - 1472 °F
JC	J: -200 - 1200 °C	RC	R: 0 - 1759 °C	PtC	Pt100: -128.8 - 537.7 °C
JF	J: -328 - 2192 °F	RF	R: 32 - 3198 °F	PtF	Pt100: -199.9 - 999.9 °F
J.C	J: -128.8 - 537.7 °C	SC	S: 0 - 1762 °C	0.20	0 - 20 mA DC
J.F	J: -199.9 - 999.9 °F	SF	S: 32 - 3204 °F	4.20	4 - 20 mA DC
KC	K: -240 - 1373 °C	TC	T: -240 - 400 °C	0.50	0 - 50 mV DC
KF	K: -400 - 2503 °F	TF	T: -400 - 752 °F	10.50	10 - 50 mV DC
P.C	K: -128.8 - 537.7 °C	TC	T: -128.8 - 400.0 °C	0.5	0 - 5 V DC
P.F	K: -199.9 - 999.9 °F	TF	T: -199.9 - 752.0 °F	1.5	1 - 5 V DC
LC	L: 0 - 762 °C	P24C	PIRh20% vs. 40%: 0 - 1850 °C	0.10	0 - 10 V DC
LF	L: 32 - 1403 °F				2.10
Note: Decimal point shown in table indicates temperature resolution of 0.1°					

Note: Decimal point shown in table indicates temperature resolution of 0.1°

Parameter	Lower Display	Upper Display	Adjustment range & Description	Default Value
Scale Range Upper Limit	rUL		Scale Range Lower Limit +100 to Range Maximum	Range max (Lin=1000)
Scale Range Lower Limit	rLL		Range Minimum to Scale Range Upper Limit -100	Range min (Linear=0)
Decimal Point Position	dPoS		0=XXXX, 1=XXX.X, 2=XX.XX, 3=X.XXX (non-temperature ranges only)	I
Control Type	CtYP	SnGL	Primary only	SnGL
Primary Output Control Action	CtrL	rEu	Primary & Secondary (e.g. heat & cool)	rEu
		d r	Reverse Acting	
		P_H	Direct Acting	
		P_Lo	Process High Alarm	
		dE	Process Low Alarm	
		bAnd	Deviation Alarm	
		nonE	Band Alarm	
			No alarm	
High Alarm 1 Value*	PhA I		Range Minimum to Range Maximum in display units	Range Max
Low Alarm 1 Value*	PLA I			Range Min
Band Alarm 1 Value*	bAL I		1 LSD to span from setpoint in display units	S
Dev. Alarm 1 Value*	dAL I		+/- Span from setpoint in display units	S
Alarm 1 Hysteresis*	AHY I		1 LSD to full span in display units	I
Alarm 2 Type*	ALA2			P_Lo
High Alarm 2 Value*	PhA2		Options as for alarm 1	Range Max
Low Alarm 2 Value*	PLA2			Range Min
Band Alarm 2 Value*	bAL2			S
Dev. Alarm 2 Value*	dAL2		Options as for alarm 1	S
Alarm 2 Hysteresis*	AHY2			I
Loop Alarm Time Type	LAE n		d .5A (disabled), Auto (2x ArSt time) or PAn (LAt time value)	d .5A
Manual Loop Alarm Time*	LAt I		0.0 I to 99.59 (1s to 99m 59s)	99.59
Alarm Inhibit	Inh I		nonE No alarms Inhibited	nonE
		ALA I	Alarm 1 inhibited	
		ALA2	Alarm 2 inhibited	
		both	Alarm 1 and alarm 2 inhibited	
		P r	Primary Power	
		SEc	Secondary Power	
		A 1_d	Alarm 1, Direct	
		A 1_r	Alarm 1, Reverse	
		A2_d	Alarm 2, Direct	
		A2_r	Alarm 2, Reverse	
		LP_d	Loop Alarm, Direct	
		LP_r	Loop Alarm, Reverse	
		Or_d	Logical Alarm 1 OR 2, Direct	
		Or_r	Logical Alarm 1 OR 2, Reverse	
		Ad_d	Logical Alarm 1 AND 2, Direct	
		Ad_r	Logical Alarm 1 AND 2, Reverse	
		rEt5	Retransmit SP Output	
		rEtP	Retransmit PV Output	
		hb_d	Heater Break Alarm Direct	
		hb_r	Heater Break Alarm Reverse	
		AnYd	Any Alarm Direct	
		AnYr	Any Alarm Reverse	
		0.5	0 to 5 V DC output	
		0.10	0 to 10 V DC output	
		2.10	2 to 10 V DC output	
		0.20	0 to 20 mA DC output	
		4.20	4 to 20 mA DC output	
Retransmit Output 1 Scale Maximum	ro IH		-1999 to 9999 (display value at which output will be maximum)	Range max
Retransmit Output 1 Scale Minimum	ro IL		-1999 to 9999 (display value at which output will be minimum)	Range min
Output 2 Usage	USE2		As for output 1	Sec or AI2
Linear Output 2 Range	tYP2		As for output 1	0.10
Retransmit Output 2 Scale Maximum	ro2H		-1999 to 9999 (display value at which output will be maximum)	Range max
Retransmit Output 2 Scale Minimum	ro2L		-1999 to 9999 (display value at which output will be minimum)	Range min
Output 3 Usage	USE3		As for output 1	A 1_d

Parameter	Lower Display	Upper Display	Adjustment range & Description	Default Value
Linear Output 3 Range	tYP3		As for output 1	0.10
Retransmit Output 3 Scale Maximum	ro3H		-1999 to 9999 (display value at which output will be maximum)	Range max
Retransmit Output 3 Scale Minimum	ro3L		-1999 to 9999 (display value at which output will be minimum)	Range min
Display Strategy	d .5P		1, 2, 3, 4, 5 or 6 (refer to section 8)	I
Serial Communications Protocol	Prot	r7bn	Modbus with no parity	r7bn
		r7bE	Modbus with Even Parity	
		r7bo	Modbus with Odd Parity	
		1.2	1.2 kbps	
		2.4	2.4 kbps	
		4.8	4.8 kbps	
		9.6	9.6 kbps	
		19.2	19.2 kbps	
Comms Address	Addr	I	1 to 255	I
Comms Write	CoEn	r_Lu	Read/Write	r_Lu
		r_O	Read only	
Digital Input 1 Usage	d .iU	d .5 I	Setpoint 1 / Setpoint 2 select	d .5 I
		d .AS	Automatic / Manual select	
Configuration Lock Code	CLoc		0 to 9999	20

4. SETUP MODE

Note: Configuration must be completed before adjusting Setup parameters. First select Setup mode from Select mode (refer to section 2). The MAN LED will light while in Setup mode. Press **⏏** to scroll through the parameters, then press **⏏** or **⏏** to set the required value.

To exit from Setup mode, hold down **⏏** and press **⏏** to return to Select mode.

Note: Parameters displayed depends on how instrument has been configured.

Parameter	Lower Display	Upper Display	Adjustment Range & Description	Default Value
Input Filter Time Constant	F .LE		OFF or 0.5 to 100.0 secs	2.0
Process Variable Offset	OFFS		±Span of controller	0
Primary Power	PPLW			
Secondary Power	SPLW		Current power levels (read only)	N/A
Primary Proportional Band	Pb_P		0.0% (ON/OFF) and 0.5% to 999.9% of input span	10.0
Secondary Proportional Band	Pb_S			
Automatic Reset (Integral Time)	ArSt		1 sec to 99 mins 59 secs and OFF	5.00
Rate (Derivative Time)	rArE		00 secs to 99 mins 59 secs	1.15
Overlap/Deadband	OL		-20 to +20% of Primary and Secondary Proportional Band	0
Manual Reset (Bias)	b .AS		0% (-100% if dual control) to 100%	25
Primary ON/OFF Differential	d .iP		0.1% to 10.0% of input span centered about the setpoint.	
Secondary ON/OFF Diff.	d .iS		(Entered as a percentage of span)	0.5
Prim. & Sec. ON/OFF Differential	d .iFF			
Setpoint Upper Limit	SPUL		Current Setpoint to Range max	R/max
Setpoint Lower limit	SPLL		Range min to Current Setpoint	R/min
Primary Output Power Limit	OPUL		0% to 100% of full power	100
Output 1 Cycle Time	Ct I			
Output 2 Cycle Time	Ct2		0.5, 1, 2, 4, 8, 16, 32, 64, 128, 256 or 512 secs.	32
Output 3 Cycle Time	Ct3			
High Alarm 1 Value	PhA I		Range Minimum to Range Maximum	R/max
Low Alarm 1 Value	PLA I			R/min
Deviation Alarm 1 Value	dAL I		±Span from SP in display units	S
Band Alarm 1 Value	bAL I		1 LSD to span from setpoint	S
Alarm 1 Hysteresis	AHY I		1 LSD to full span in display units	I
High Alarm 2 Value	PhA2		Range Minimum to Range Maximum	R/max
Low Alarm 2 Value	PLA2			R/min
Deviation Alarm 2 Value	dAL2		±Span from SP in display units	S
Band Alarm 2 Value	bAL2		1 LSD to span from setpoint	S
Alarm 2 Hysteresis	AHY2		1 LSD to full span in display units	I
Manual Loop Alarm Time*	LAt I		0.0 I to 99.59 (1s to 99m 59s)	99.59
Auto Pre-tune	APt			
Auto/Manual Control Selection	PaEn		d .5A (disabled) or EnAb (enabled)	d .5A
Setpoint Select Shown In Operator Mode	SSEn			
Setpoint Ramp Adjustment Shown In Operator Mode	SPr		d .5A (disabled) or EnAb (enabled)	d .5A

Continued on next page...

Parameter	Lower Display	Upper Display Adjustment Range & Description	Default Value
SP Ramp Rate Value	rP	1 to 9999 units/hour or Off (blank)	Off
Setpoint Increment Value	SP in	0 to +input span	I
Programmable Sensor Break	PSb	d.SA (disabled) or EnAb (enabled)	EnAb
Preset Power Output	PPo	0%(-100% if dual control) to 100%	0
Heater Current High Scale Limit	htrH	0.0 to 100.0	0.0
Low Heater Break Alarm Value	Lhb	0 to Heater Current High Scale Limit	0.0
High Heater Break Alarm Value	Hhb		0.0
Short Circuit Heater Break Alarm	S_hb	d.SA (disabled) or EnAb (enabled)	EnAb
Soft Start Setpoint	SSSP	Setpoint upper limit to setpoint lower limit*	R/min
Soft Start Time	SSt	0 to 99min 59secs	0
Soft Start Output Power Limit	SSOL	0 to Output Power Limit	Output Power Limit
Setpoint Value	SP	Scale range upper to lower limits. (when dual or remote setpoint options are used, SP is replaced by SP 1 or SP2 or SP 1 or SP2 before the legend indicates the currently active SP)	Scale Range Minimum
Setpoint 1 Value	_SP 1		
Setpoint 2 Value	_SP2		
Setup Lock Code	SLoc	0 to 9999	10

***Note: Soft start will not run if the process variable is greater than the soft start setpoint. Soft start will be held if Pre-tune does not complete by the soft start time**

5. AUTOMATIC TUNING MODE

First select Automatic tuning mode from Select mode (*refer to section 2*). Press **↩** to scroll through the modes, then press **▲** or **▼** to set the required value. To exit from Automatic tuning mode, hold down **↩** and press **▲**, to return to Select mode. Pre-tune is a single-shot routine and is thus self-disengaging when complete. If **APt** in Setup mode = **EnAb**, Pre-tune will attempt to run at every power up*. Refer to the full user guide (available from your supplier) for details on controller tuning.

Parameter	Lower Display	Upper Display	Default Value
Pre-Tune	Ptun	On or OFF . Indication remains OFF if automatic tuning cannot be used at this time*	OFF
Self-Tune	Stun		
Tune Lock	tLoc	0 to 9999	0

*** Note: Automatic tuning will not engage if either proportional band = 0. Also, Pre-tune will not engage if setpoint is ramping, the PV is less than 5% of input span from the setpoint.**

6. PRODUCT INFORMATION MODE

First select Product information mode from Select mode (*refer to section 2*). Press **↩** to view each parameter. To exit from Product Information mode, hold down **↩** and press **▲** to return to Select mode. **Note: These parameters are all read only.**

Parameter	Lower Display	Upper Display	Description
Input type	In_ 1	Un 1	Universal input
Option 1 Module Type Fitted	OPn 1	nonE	No option fitted
		rLY	Relay output
		SSr	SSR drive output
		br 1	Triac output
Option 2 Module Type Fitted	OPn2	L in	Linear DC voltage / current output
			As Option 1
Option 3 Module Type Fitted	OPn3	nonE	No option fitted
		rLY	Relay output
		SSr	SSR drive output
		L in	Linear DC voltage / current output
Auxiliary Option A Module Type Fitted	OPnA	dc24	Transmitter power supply
		nonE	No option fitted
		r485	RS485 communications
		d.i	Digital Input*
Auxiliary Option B Module Type Fitted	OPnb	nonE	No option fitted
Firmware Type	FLuJ	HC rP	Heater Current input
Firmware Issue	ISS		
Product Revision Level	PrL		

Parameter	Lower Display	Upper Display	Description
Date Of Manufacture	dOrM		Manufacturing date code (<i>mmyy</i>)
Serial Number 1	Sn 1		First four digits of serial number
Serial Number 2	Sn2		Middle four digits of serial number
Serial Number 3	Sn3		Last four digits of serial number

7. MESSAGES & ERROR INDICATIONS

These messages indicate that an error has occurred or there is a problem with the process variable input signal or its wiring. **Caution: Do not continue with the process until the issue is resolved.**

Parameter	Upper Display	Lower Display	Description
Instrument Parameters Are In Default Conditions	Goto	ConF	Configuration & Setup required. This screen is seen at first turn on, or if hardware configuration has been changed. Press ↩ to enter the Configuration Mode, next press ▲ or ▼ to enter the unlock code number, then press ↩ to proceed
Automatic Loop Alarm Overridden	AErr	LAEn	Loop Alarm set for Auto but Pb.P is set to 0.0% (ON/OFF control). Loop Alarm uses the manual Loop Alarm Time until PID control is restored. Ensure LAEn is set correctly
Input Over Range	CHHJ	Normal	Process variable input > 5% over-range
Input Under Range	CLLJ	Normal	Process variable input > 5% under-range
Input Sensor Break	OPEN	Normal	Break detected in process variable input sensor or wiring
Option 1 Error	Err	OPn 1	Option 1 module fault
Option 2 Error		OPn2	Option 2 module fault
Option 3 Error		OPn3	Option 3 module fault
Option A Error		OPnA	Option A module fault
Option B Error		OPnb	Option B module fault

8. OPERATOR MODE

This mode is entered at power on, or accessed from Select mode (*see section 2*). **Note: All Configuration mode and Setup mode parameters must be set as required before starting normal operations.** Press **↩** to scroll through the parameters, then press **▲** or **▼** to set the required value. **Note: All Operator Mode parameters in Display strategy 6 are read only (see d.SP in configuration mode), they can only be adjusted via Setup mode.**

Upper Display	Lower Display	Display Strategy and When Visible	Description
PV Value	Active SP Value	1 & 2 (<i>initial screen</i>)	PV and target value of selected SP <i>Local Setpoints are adjustable in Strategy 2</i>
PV Value	Actual SP Value	3 & 6 (<i>initial screen</i>)	PV and actual value of selected SP (e.g. ramping SP value). <i>Read only</i>
PV Value	Heater Current	1 & 2 (<i>initial screen</i>)	PV and heater current value. ---A shown when soft start running
PV Value	(Blank)	4 (<i>initial screen</i>)	Process variable only <i>Read only</i>
Active SP Value	(Blank)	5 (<i>initial screen</i>)	Target value of selected setpoint only. <i>Read only</i>
SP1 Value	_SP 1	_ lit if active SP = SP1	Target value of SP1 <i>Adjustable except in Strategy 6</i>
SP2 Value	_SP2	_ lit if active SP = SP2	Target value of SP2 <i>Adjustable except in Strategy 6</i>
Actual SP Value	SPrP	rP is not blank	Actual (ramping) value of selected SP. <i>Read only</i>
Ramp Rate	rP	SPr enabled in Setup mode	SP ramping rate, in units per hour <i>Adjustable except in Strategy 6</i>
Soft Start Time Remaining	SS-E	Only visible when soft start is running	The time remaining until soft start finishes
Active Alarm Status	ALSt	When one or more alarms are active. AL indicator will also flash	<div>Alarm 2 active HL2 1</div> <div>Alarm 1 active HL1</div> <div>Loop Alarm active L /</div> <div>Short Circuit Alarm S</div> <div>High HB Alarm H /</div> <div>Low HB Alarm L</div>

Manual Control

If **PoEn** is set to **EnAb** in Setup mode, manual control can be selected/de-selected by pressing the **MAN** key in Operator mode, or by changing the status of a digital input if **d.i** has been configured for **d.AS** in Configuration mode. While in Manual Control mode, the **MAN** indicator will flash and the lower display will show **Pxxx** (where xxx is the current manual power level). Switching to/from manual mode is via Bumpless Transfer. Press **▲** or **▼** to set the required output power.

Caution: Manual power level is not restricted by the OPuL or SSOL power limit.

9. SOFT START FEATURE

Soft start is used when a gentle start-up phase is required before rising to the full working temperature. During soft-start, a dedicated soft start setpoint (**SSSP**) is used that controls the process to a lower temperature. The period for which the soft start setpoint is applied is set by Soft Start Time (**SSt**). During the soft start time the output power is limited by the Soft Start Output Power Limit (**SSOL**) and setpoint ramping is inhibited.

Start-up Setpoint: Bounded by Scale Range Maximum and Scale Range Minimum. Setpoint ramping is not applied

Time Remaining: 0 (Soft start disabled) to 99mins 59secs in 1 second increments

Soft Start Power Primary output power limit used during soft start -100% to 100% Limit:

Cycle Time: Cycle time used during soft start equals ¼ displayed cycle time, but is never less than 0.5 seconds.

Operating mode: Assumes reverse-acting control. Heater current monitoring is suspended while soft start is running.

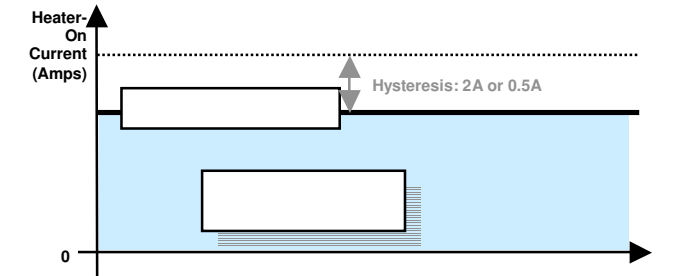
10. PROGRAMMABLE SENSOR BREAK

When the Programmable Sensor Break feature is enabled, and a sensor break is detected, the output is set to an average power value calculated by the instrument. When the Programmable Sensor Break (**PSb**) feature is disabled, and a sensor break is detected, the output is set to the Preset Power Output value (**PPo**).

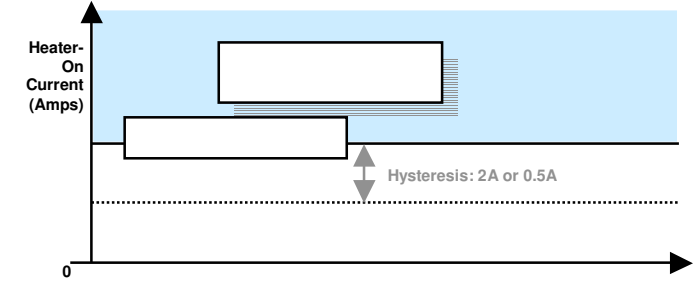
11. HEATER BREAK ALARMS

The heater current monitor is used to diagnose faults in the heater elements. A Low Heater Break Alarm is typically used for early detection of heater element failure; it detects whether the heater current is lower than it should be. A High Heater Break Alarm can sometimes be useful for detecting partial shorts between heater elements, etc; it detects whether the heater current is higher than it should be. Short Circuit Heater Break Alarm is typically used to detect if the heater control device is stuck in the ON condition - welded relay contacts, failed SSR etc. This alarm is based on the heater current acquired whilst the Output is off. When soft start is running Heater current monitoring is suspended. This is because for soft start the output is cycled very fast, and a valid heater current reading may not be possible.

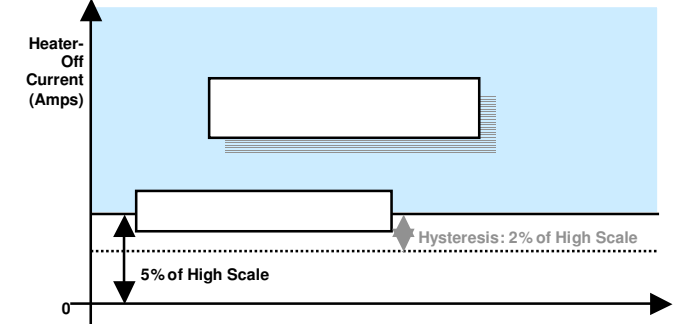
Low Heater Break Alarm



High Heater Break Alarm



Short Circuit Heater Break Alarm



12. SERIAL COMMUNICATIONS

Refer to the full user guide (available from your supplier) for details.

13. SPECIFICATIONS

UNIVERSAL INPUT

Thermocouple Calibration:	±0.1% of full range, ±1LSD (±1 °C for Thermocouple CJC). BS4937, NBS125 & IEC584.
PT100 Calibration:	±0.1% of full range, ±1LSD. BS1904 & DIN43760 (0.00385Ω/Ω/°C).
DC Calibration:	±0.1% of full range, ±1LSD.
Sampling Rate:	4 per second.
Impedance:	>10MΩ resistive, except DC mA (5Ω) and V (47kΩ).
Sensor Break Detection:	Thermocouple, RTD, 4 to 20 mA, 2 to 10V and 1 to 5V ranges only. <i>Control outputs go to a calculated average power value or to the programmable output power.</i>
Isolation:	Isolated from all outputs (except SSR driver). Universal input must not be connected to operator accessible circuits if relay outputs are connected to a hazardous voltage source. Supplementary insulation or input grounding would then be required.

HEATER CURRENT INPUT

Accuracy:	±2% of input range ±1 LSD.
Sampling Rate:	2 per second.
Internal burden:	15Ω
Heater current span:	0 to 50mA, rms (sinusoidal input waveform). Scaleable up to 100A
Isolation:	Via external current transformer.

DIGITAL INPUTS

Volt-free(or TTL):	Open(2 to 24VDC) = SP1, Local SP or Auto Mode. Closed(<0.8VDC) = SP2, Remote SP or Manual Mode.
Isolation:	Reinforced safety isolation from inputs and other outputs.

OUTPUTS

Relay Contact Type & Rating:	Single pole (SP); 2A resistive at 120/240VAC.
Lifetime:	>500,000 operations at rated voltage/current.
Isolation:	Isolated from input and other outputs.
SSR Driver Drive Capability:	SSR drive voltage >10V into 500Ω min.
Isolation:	Not isolated from universal input or other SSR driver outputs.
Triac Operating Voltage:	20 to 280Vrms (47 to 63Hz).
Current Rating:	0.01 to 1A (full cycle rms on-state @ 25°C); derates linearly above 40°C to 0.5A @ 80°C.
Isolation:	Reinforced safety isolation from inputs and other outputs.

Linear DC Resolution:	8 bits in 250mS (10 bits in 1s typical, >10 bits in >1s typical).
Isolation:	Reinforced safety isolation from inputs and other outputs.
Transmitter PSU Power Rating:	19 to 28V DC (24V nominal) into 910Ω minimum resistance.
Isolation:	Reinforced safety isolation from inputs and other outputs.

SERIAL COMMUNICATIONS

Physical:	RS485, at 1200, 2400, 4800, 9600 or 19200 bps.
Protocols:	Modbus/RTU.
Isolation:	Reinforced safety isolation from all inputs and outputs.

OPERATING CONDITIONS (FOR INDOOR USE)

Ambient Temperature:	0°C to 55 °C (Operating), -20 °C to 80 °C (Storage).
Relative Humidity:	20% to 95% non-condensing.
Supply Voltage and Power:	100 to 240VAC ±10%, 50/60Hz, 7.5VA (for mains powered versions), or 20 to 48VAC 50/60Hz 7.5VA or 22 to 65VDC 5W (for low voltage versions).

ENVIRONMENTAL

Standards:	CE, UL, ULC.
EMI:	Complies with EN61326 (Susceptibility & Emissions).
Safety Considerations:	Complies with EN61010-1 & UL3121. Pollution Degree 2, Installation Category II.
Front Panel Sealing:	To IP66 (IP20 behind the panel).

PHYSICAL

Front Bezel Size:	48 x 48mm
Depth Behind Panel:	110mm
Weight:	0.21kg maximum.