

1/16 - 1/8 DIN INDICATOR CONCISE PRODUCT MANUAL (59344-3)

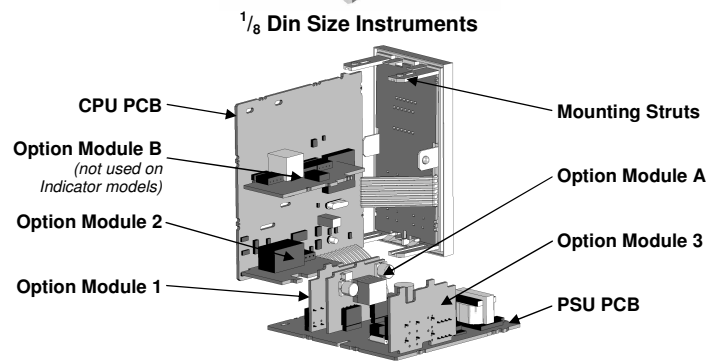
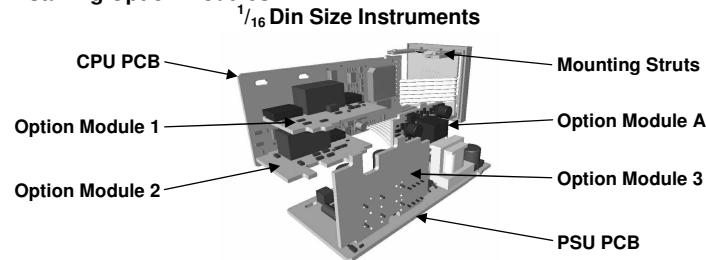
CAUTION: Installation should be only performed by technically competent personnel. Local Regulations regarding electrical installation & safety must be observed.

1. INSTALLATION

The two indicators covered by this manual have different DIN case sizes (refer to section 9). Some installation details vary between these models. These differences have been clearly shown.

Note: The functions described in sections 2 to 8 are common to both models.

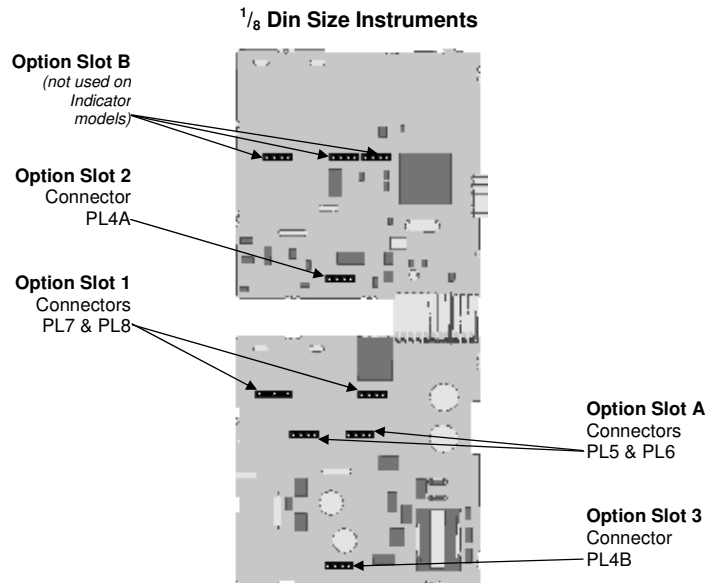
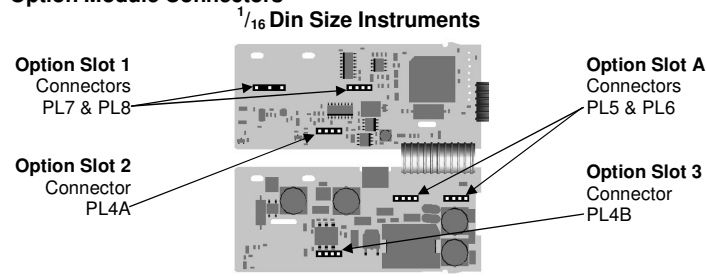
Installing Option Modules



- 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



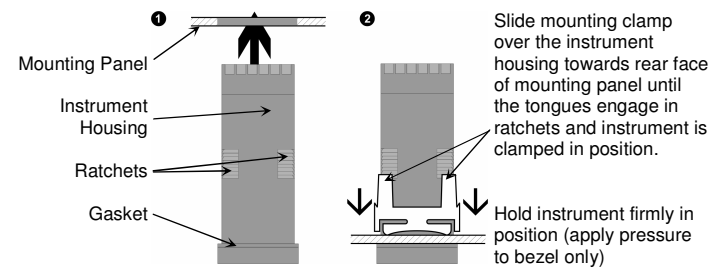
Panel-Mounting

The mounting panel must be rigid, and may be up to 6.0mm (0.25inch) thick. Cut-out sizes are:

Cut-Out Dim A
1/16 Din = 45mm
1/8 Din = 92mm

Cut-Out Dim B
1/16 & 1/8 Din = 45mm

For *n* multiple instruments mounted side-by-side, cut-out A is 48*n*-4mm (1/16 Din) or 96*n*-4mm (1/8 Din)

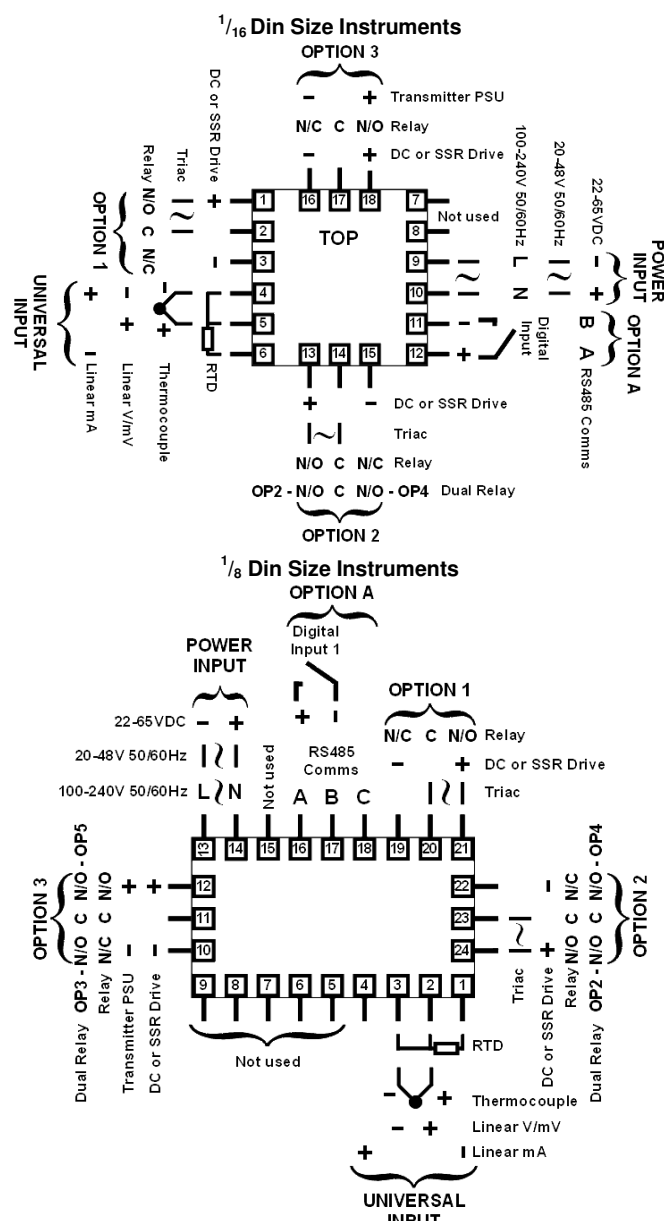


CAUTION: Do not remove the panel gasket; it is a seal against dust and moisture.

Rear Terminal Wiring

USE COPPER CONDUCTORS (EXCEPT FOR T/C INPUT)

Single Strand wire gauge: Max 1.2mm (18SWG)



Note: These diagrams show all possible option combinations. The actual connections required depend on the 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 5 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 **[C]** and pressing **[A]**. The **SLCt** legend is shown for 1 second, followed by the legend for the current mode. Press **[A]** or **[V]** to choose the required mode, then press **[C]** to enter. An unlock code is required to prevent unauthorised entry to Configuration, & Setup modes. Press **[A]** or **[V]** to enter the unlock code, then press **[C]** to proceed.

Mode	Legend for 1 sec followed by	Set Value	Description	Default Unlock Codes	Units Display (1/8 Din Only)
Operator		OPtr	Normal operation	None	
Set Up	SLCt	SEtP	Tailor settings for application	10	5
Configuration		ConF	Configure instrument for use	20	
Product Info		inFo	Instrument information	None	

Note: Automatic return to Operator Mode after 2 minutes without key activity.

3. CONFIGURATION MODE

First select Configuration mode from Select mode (refer to section 2). Press **[C]** to scroll through the parameters. While this key is pressed, and up to 1 second after, the parameter legend is shown, followed by the current value.

Press **[A]** or **[V]** to set the required value. Press **[C]** to display YESP, press **[A]** to accept the change, otherwise parameter will revert to previous value. To exit from Configuration mode, hold down **[C]** and press **[A]** 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	Legend for 1 sec followed by	Set Value	Adjustment Range & Description	Default Value	Units Display (1/8 Din Only)
Input Range/Type		inPt	See following table for possible codes	JL	r
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	PtC	Pt100: -199 - 800 °C
cC	C: 0 - 2320 °C	nC	N: 0 - 1399 °C	PtF	Pt100: -328 - 1472 °F
cF	C: 32 - 4208 °F	nF	N: 32 - 2551 °F	PtC	Pt100: -128.8 - 537.7 °C
JC	J: -200 - 1200 °C	rC	R: 0 - 1759 °C	PtF	Pt100: -199.9 - 999.9 °F
JF	J: -328 - 2192 °F	rF	R: 32 - 3198 °F	PtC	Pt100: -199.9 - 999.9 °F
Jc	J: -128.8 - 537.7 °C	Sc	S: 0 - 1762 °C	0.20	0 - 20 mA DC
JF	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
Kc	K: -128.8 - 537.7 °C	tC	T: -128.8 - 400.0 °C	0.5	0 - 5 V DC
KF	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	P24F	PIRh20% vs. 40%: 0 - 1850 °C	2.10	2 - 10 V DC

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

Parameter	Legend for 1 sec followed by	Set Value	Adjustment Range & Description	Default Value	Units Display (1/8 Din Only)
Scale Range Upper Limit	ruL		Scale Range Lower Limit +100 to Range Maximum	Max (Lin = 1000)	u
Scale Range Lower Limit	rLL		Range Minimum to Scale Range Upper Limit -100	Min (Lin = 0)	L
Decimal point position	dPoS		0=XXXX, 1=XXX.X, (non-temperature ranges only) 2=XX.XX, 3=X.XXX	1	P
Linear Range Engineering Units Display	LmU		None (Blank), °C or °F 1/8 Din units only where linear inputs represent temperature	nonE	C F
Multi-Point Scaling	mPPS	EnAb	Enables or disables the input multi-point scaling feature	dSR	S
Alarm 1Type	ALR1	P_H1	Process High Alarm	P_H1	1
High Alarm 1*	PhA1		Alarm 1 value, adjustable within scaled range, in display units	Max	1 (Alm1 only = A)
Low Alarm 1*	PLA1			Min	
Alarm 1 Hysteresis*	AHY1		1 LSD to full span in display units on safe side of alarm	1	-
Alarm 2Type	ALR2			nonE	2
High Alarm 2*	PhA2		Options as for alarm 1	Max	
Low Alarm 2*	PLA2			Min	
AI 2 Hysteresis*	AHY2			1	=
Alarm 3Type	ALR3			nonE	3
High Alarm 3*	PhA3		Options as for alarm 1	Max	
Low Alarm 3*	PLA3			Min	
AI 3 Hysteresis*	AHY3			1	=
Alarm 4Type	ALR4			nonE	4

Parameter	Legend for 1 sec followed by	Set Value	Adjustment Range & Description	Default Value	Units Display (1/8 Din Only)
High Alarm 4*	PhA4			Max	4
Low Alarm 4*	PLA4		Options as for alarm 1	Min	
AI 4 Hysteresis*	AHY4			1	4
Alarm 5 Type	ALR5			nonE	5
High Alarm 5*	PhA5		Options as for alarm 1	Max	
Low Alarm 5*	PLA5			Min	
AI 5 Hysteresis*	AHY5			1	5
Output 1 Usage	USE1	A1nd	Alarm 1, direct, non-latching		rEtP for linear outputs, A1nd for others
		A1nr	Alarm 1, reverse, non-latching		
		A1Ld	Alarm 1, direct, latching		
		A1Lr	Alarm 1, reverse, latching		
		A2nd	Alarm 2, direct, non-latching		
		A2nr	Alarm 2, reverse, non-latching		
		A2Ld	Alarm 2, direct, latching		
		A2Lr	Alarm 2, reverse, latching		
		A3nd	Alarm 3, direct, non-latching		
		A3nr	Alarm 3, reverse, non-latching		
		A3Ld	Alarm 3, direct, latching		
		A3Lr	Alarm 3, reverse, latching		
		A4nd	Alarm 4, direct, non-latching		
		A4nr	Alarm 4, reverse, non-latching		
		A4Ld	Alarm 4, direct, latching		
A4Lr	Alarm 4, reverse, latching				
A5nd	Alarm 5, direct, non-latching				
A5nr	Alarm 5, reverse, non-latching				
A5Ld	Alarm 5, direct, latching				
A5Lr	Alarm 5, reverse, latching				
012d	Logical Alarm 1 OR 2, direct				
012r	Logical Alarm 1 OR 2, reverse				
013d	Logical Alarm 1 OR 3, direct				
013r	Logical Alarm 1 OR 3, reverse				
023d	Logical Alarm 2 OR 3, direct				
023r	Logical Alarm 2 OR 3, reverse				
AnYd	Any active alarm, direct				
AnYr	Any active alarm, reverse				
rEtP	Retransmit PV Output				
dc10	0 to 10VDC (adjustable) transmitter power supply*				
Output 1 PV Retransmit Type	tYP1	0.5	0 to 5 V DC output		
		0.10	0 to 10 V DC output		
		2.10	2 to 10 V DC output	0.10	
		0.20	0 to 20 mA DC output		
4.20	4 to 20 mA DC output				
Retransmit OP 1 Scale maximum	ro1H		Display value between, -1999 & 9999 at which Output 1 will be at maximum	Range max	H
Retransmit OP 1 Scale minimum	ro1L		Display value between, -1999 & 9999 at which Output 1 will be at minimum	Range min	L
TxPSU 1 level	PSU1		Output 1 Power Supply (0 to 10VDC)*	10.0	1
Output 2 Usage	USE2		As for Output 1 Usage	A2nd	2
Output 2 PV Retransmit Type	tYP2		As for Output 1 PV Retransmit Type		2
Retransmit OP2 Scale Maximum	ro2H		As for Retransmit Output 1 Scale Maximum		H
Retransmit OP2 Scale Minimum	ro2L		As for Retransmit Output 1 Scale Minimum		L
TxPSU 2 level	PSU2		Output 2 Power Supply (0 to 10VDC)*	10.0	2
Output 3 Usage	USE3		As for Output 1 Usage	A3nd	3
Output 3 PV Retransmit Type	tYP3		As for Output 1 PV Retransmit Type		3
Retransmit OP3 Scale maximum	ro3H		As for Retransmit Output 1 Scale Maximum		H
Retransmit OP3 Scale minimum	ro3L		As for Retransmit Output 1 Scale Minimum		L
TxPSU 3 level	PSU3		Output 3 Power Supply (0 to 10VDC)*	10.0	3
Output 4 Usage	USE4		Alarm output options as for Output 1 Usage	A4nd	4
Output 5 Usage	USE5		As for Output 1 Usage	A5nd	5
Display Strategy	dSP		0, 1, 2, 3, 4 or 6 (refer to section 6)	0	d
Display Colour	CLor	rEd	Permanent Red		
		Grn	Permanent Green		
		r-G	Red to Green on any alarm	G-r	
Serial Communication Protocol	Prot	ASC1	ASCII		
		r7bn	Modbus with no parity	r7bn	
		r7be	Modbus with Even Parity		
r7ba	Modbus with Odd Parity				
Comms Bit Rate	bAud		1.2, 2.4, 4.8, 9.6 or 19.2 kbps	4.8	b
Comms Address	Addr		1 to 255 (Modbus), 1 to 99 (ASCII)	1	A

Continued on next page...

Parameter	Legend <i>for 1 sec followed by</i>	Set Value	Adjustment Range & Description	Default Value	Units Display (¹ / ₂ Din Only)
Comms Write	CoEn	r_{LW} r_{r0}	Read/Write Read only	r_{LW}	E
Digital Input Usage	d_{iU}	$rrLY$	Reset latched relay(s)	$rrLY$	I
		ErE	Initiate Tare (zero display)		
		r_{PU}	Reset min/max PV values		
		rE	Reset Alarm 1 elapsed time		
Config Lock	$CLoc$	r_{PU}	Reset Alarm 1 elapsed time & min/max PV values	20	C
			Config Mode lock code, 0 to 9999		

4. SETUP MODE

Note: Configuration must be completed before adjusting Setup parameters. First select Setup mode from Select mode (refer to section 2). Press C to scroll through the parameters (while this key is pressed, and for 1 sec after, the parameter legend is shown, then the current value). Press Δ or ∇ to change the value. To exit from Setup mode, hold down C and press Δ to return to Select mode.
Note: Parameters displayed depends on how instrument has been configured.

Parameter	Legend <i>for 1 sec followed by</i>	Set Value	Adjustment Range & Description	Default Value	Units Display (¹ / ₂ Din Only)
Input Filter Time Constant	F_{iLt}		OFF or 0.5 to 100.0 secs	2.0	t
Process Variable Offset	$OFFS$		\pm Span of controller	0.0	o
Raw PV value	S_{iU}		Linear input value, un-scaled (mA, mV or VDC)		blank
High Alarm 1	$PhA1$		Alarm 1 value, adjustable within scaled range, in display units	Max	1 (Alm1 only = A)
Low Alarm 1	$PLA1$			Min	
Alarm 1 Hysteresis	$AHY1$		1 LSD to full span in display units on safe side of alarm	I	-
High Alarm 2	$PhA2$		Options as for alarm 1	Max	2
Low Alarm 2	$PLA2$			Min	
AI 2 Hysteresis	$AHY2$			I	=
High Alarm 3	$PhA3$		Options as for alarm 1	Max	3
Low Alarm 3	$PLA3$			Min	
AI 3 Hysteresis	$AHY3$			I	=
High Alarm 4	$PhA4$		Options as for alarm 1	Max	4
Low Alarm 4	$PLA4$			Min	
AI 4 Hysteresis	$AHY4$			I	4
High Alarm 5	$PhA5$		Options as for alarm 1	Max	5
Low Alarm 5	$PLA5$			Min	
AI 5 Hysteresis	$AHY5$			I	5
Scaling Breakpoint 1	$ScA1$		Multi-point scaling breakpoint 1 value, adjustable from 0 to 100 in % of span	100	1
Display Value 1	d_{iS1}		Value to be displayed at multi-point scaling breakpoint 1, in display units	Range Max	
Scaling Breakpoint 2	$ScA2$		Multi-point scaling breakpoint 2, adjustable up to 100% of span. Must be $>ScA1$ value		2
Display Value 2	d_{iS2}		Value to be displayed at Multi-point scaling breakpoint 2, in display units		
Scaling Breakpoint 3	$ScA3$		Multi-point scaling breakpoint 3, adjustable up to 100% of span. Must be $>ScA2$ value		3
Display Value 3	d_{iS3}		Value to be displayed at Multi-point scaling breakpoint 3, in display units		
Scaling Breakpoint 4	$ScA4$		Multi-point scaling breakpoint 4, adjustable up to 100% of span. Must be $>ScA3$ value		4
Display Value 4	d_{iS4}		Value to be displayed at Multi-point scaling breakpoint 4, in display units		
Scaling Breakpoint 5	$ScA5$		Multi-point scaling breakpoint 5, adjustable up to 100% of span. Must be $>ScA4$ value		5
Display Value 5	d_{iS5}		Value to be displayed at Multi-point scaling breakpoint 5, in display units		
Scaling Breakpoint 6	$ScA6$		Multi-point scaling breakpoint 6, adjustable up to 100% of span. Must be $>ScA5$ value		6
Display Value 6	d_{iS6}		Value to be displayed at Multi-point scaling breakpoint 6, in display units		
Scaling Breakpoint 7	$ScA7$		Multi-point scaling breakpoint 7, adjustable up to 100% of span. Must be $>ScA6$ value		7
Display Value 7	d_{iS7}		Value to be displayed at Multi-point scaling breakpoint 7, in display units		
Scaling Breakpoint 8	$ScA8$		Multi-point scaling breakpoint 8, adjustable up to 100% of span. Must be $>ScA7$ value		8
Display Value 8	d_{iS8}		Value to be displayed at Multi-point scaling breakpoint 8, in display units		
Scaling Breakpoint 9	$ScA9$		Multi-point scaling breakpoint 9, adjustable up to 100% of span. Must be $>ScA8$ value		9
Display Value 9	d_{iS9}		Value to be displayed at Multi-point scaling breakpoint 9, in display units		
Tare Feature	ErE	$ErAb$ d_{iSA}	Enables or disables the input auto-zero Tare feature	d_{iSA}	r
Setup Lock Code	$SLoc$		0 to 9999	10	5

Note: Operator mode screens follow, without exiting from Setup mode.

5. MESSAGES & ERROR INDICATIONS

These messages indicate that the instrument may require attention, or there is a problem with the signal input connection. The message legend is shown for 1 second, followed by its value.
Caution: Do not continue with the process until the issue is resolved.

Parameter	Legend <i>for 1 sec followed by</i>	Value	Description	Units Display (¹ / ₂ Din Only)	
Instrument parameters are in default conditions	$GoTo$	$Conf$	Configuration & Setup is required. This screen is seen at first turn on, or if hardware configuration is changed. Press C to enter Configuration Mode, next press Δ or ∇ to enter the unlock code, then press C to proceed	C	
Input Over Range	Err	CHH	Input signal is $> 5\%$ over-range	E	
Input Under Range		CLL	Input signal is $> 5\%$ under-range ($> 10\%$ under-range for 4 to 20mA, 1 to 5V and 2 to 10V ranges)		
Input Sensor Break		$OPEN$	Break detected in input signal sensor or wiring		
Option 1 Error		$Err1$	Option 1 module fault		1
Option 2 Error		$Err2$	Option 2 module fault		2
Option 3 Error	$Err3$	Option 3 module fault	3		
Option A Error	$ErrA$	Option A module fault	A		
Option B Error	$Errb$	Shown if any module is fitted (option B not used on Indicators)	b		

Note: CHH, CLL or OPEN may also be displayed if an incorrect input type is selected.

6. 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 C to scroll through the parameters (while this key is pressed, and for 1 sec after, the parameter legend is shown, followed by the current value).
Note: All Operator Mode parameters in Display strategy 6 are read only (see d_{iSP} in configuration mode), they can only be adjusted via Setup mode.

Legend <i>for 1 sec followed by</i>	Value	Display Strategy and When Visible	Description	Units Display (¹ / ₂ Din Only)
$Proc$	PV Value*	Always	Process Variable value Read only Latched outputs can be reset	C , F or blank
PPA	Max PV Value	Strategies 0, 1, 3, 4, & 6	Maximum displayed value (inc CHH or $OPEN$) since PPA last reset. To reset, press ∇ or Δ for 3 seconds, display = ---- when reset	C , F or blank
PPm	Min PV Value	Strategies 0, 1, 3, 4, & 6	Minimum displayed value (inc CLL or $OPEN$) since PPm last reset. To reset, press ∇ or Δ for 3 seconds, display = ---- when reset	C , F or blank
Et	Elapsed Time	Strategies 0, 4 & 6 if alarm 1 configured. Format mm.ss to 99.59 then mmm.s (10 sec increments) Shows CHH if >999.9	Accumulated alarm 1 active time since Et last reset. To reset, press ∇ or Δ for 3 seconds, display = ---- when reset	E
$AL1$	Alarm 1 Value	Strategies 2, 3, 4 & 6 if alarm 1 configured	Alarm 1 value, adjustable except in Strategy 6	1 (Alm1 only = A)
$AL2$	Alarm 2 Value	Strategies 2, 3, 4 & 6 if alarm 2 configured	Alarm 2 value, adjustable except in Strategy 6	2
$AL3$	Alarm 3 Value	Strategies 2, 3, 4 & 6 if alarm 3 configured	Alarm 3 value, adjustable except in Strategy 6	3
$AL4$	Alarm 4 Value	Strategies 2, 3, 4 & 6 if alarm 4 configured	Alarm 4 value, adjustable except in Strategy 6	4
$AL5$	Alarm 5 Value	Strategies 2, 3, 4 & 6 if alarm 5 configured	Alarm 5 value, adjustable except in Strategy 6	5
$ALSt$	Active Alarm Status*	When one or more alarms are active	Alarm 4 active Alarm 2 active Alarm 3 active Alarm 5 active Latched outputs can be reset	I if alarm 1 active

Alarm Indication

The Active Alarm Status screen indicates any active alarms. In addition, the associated Alarm LED flashes.
For latching alarm outputs, the LED flashes when the alarm condition exists, and goes to ON when the alarm condition is no longer present if the output has not yet been reset.

*Resetting Latched Alarm Outputs

Any latched outputs can be reset whilst the Process variable or Alarm Status screens are displayed, by pressing the ∇ or Δ key, via the Digital Input (if fitted) or with a communications command via the RS485 module (if fitted).
Note: Outputs will only reset if their alarm condition is no longer present.
Caution: A reset will affect ALL latched outputs.

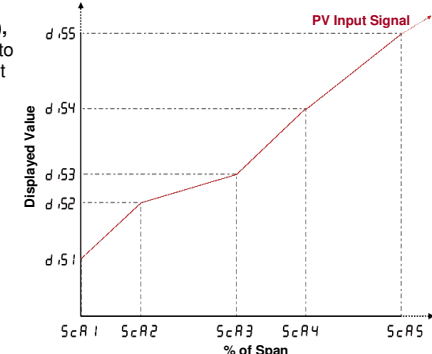
Additional ¹/₂ Din Indicator Units Display and LED's

In Operator Mode, a Units display shows C or F when temperature values are shown. This display is also used in other modes as a confirmation of the parameter type currently shown in the main display. The SET LED indicator is off in Operator Mode, Flashing in Configuration Mode and ON in Set-up mode. MIN ∇ and MAX Δ LED's light when these stored values are shown.

Multi-Point Scaling

When enabled ($PPPS = ErAb$), up to 9 breakpoints can be set to compensate for non-linear input signals.

For each breakpoint, the input scale value ($ScAn$) is entered in % of input span, followed by the value to be shown (d_{iSn}) in display units. Each breakpoint's input scale value must be higher than the previous value, but the display values can be higher or lower. Any scale value set to 100% becomes the last in the series.



Tare Feature

When Tare is enabled ($ErE = ErAb$), it can be used to set the displayed value to zero automatically, by making the PV Offset parameter equal, but opposite to, the current process variable value. Tare can be initiated via the Digital Input (if fitted), with a communications command via the RS485 module (if fitted) or by using the following key press sequence:

Press C until the process variable is displayed.
Hold down ∇ and Δ together for three seconds until the display shows $YES?$
Release both keys and press Δ within 3 seconds to confirm the request.

The display should read 0 briefly, then begin responding to input signal changes.

Note: Tare request is aborted if this sequence is not followed exactly.

7. PRODUCT INFORMATION MODE

First select Product information mode from Select mode (refer to section 2). Press C to view each parameter (while this key is pressed, and for 1 sec after, the parameter legend is shown, followed by its value). Hold down C and press Δ to return to Select mode. **Note: These parameters are all read only.**

Parameter	Legend <i>for 1 sec followed by</i>	Value	Description	Units Display (¹ / ₂ Din Only)
Input type	In_1	Un_1 $nonE$ rLY	Universal input No option fitted Relay output	t
Option 1 module type fitted	$OPn1$	SSr Er_1 L_{in}	SSR drive output Triac output Linear DC voltage / current output	1
Option 2 module type fitted	$OPn2$	$nonE$ rLY SSr Er_1 L_{in}	No option fitted Relay output SSR drive output Triac output Linear DC voltage / current output	2
Option 3 module type fitted	$OPn3$	$nonE$ rLY SSr L_{in} $dc24$	No option fitted Relay output SSR drive output Linear DC voltage / current output 24V DC Transmitter power supply	3
Auxiliary Option A module type fitted	$OPnA$	$nonE$ $r485$ d_{iU}	No option fitted RS485 communications Digital Input	A
Firmware type	FLW		Value displayed is firmware type number	F
Firmware issue	ISS		Value displayed is firmware issue number	n
Product Rev Level	P_rL		Value displayed is Product Revision Level	r
Manufactured Date	$d0^m$		Month & year of manufacture. Format <i>mmyy</i>	d
Serial number 1	S_n1		First four digits of serial number	A
Serial number 2	S_n2		Middle four digits of serial number	b
Serial number 3	S_n3		Last four digits of serial number	c

8. SERIAL COMMUNICATIONS

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

9. SPECIFICATIONS

UNIVERSAL INPUT

Thermocouple: $\pm 0.1\%$ of full range, $\pm 1\text{LSD}$ ($\pm 1^\circ\text{C}$ for Thermocouple CJC).
Calibration: BS4937, NBS125 & IEC584.
PT100 Calibration: $\pm 0.1\%$ of full range, $\pm 1\text{LSD}$.
BS1904 & DIN43760 ($0.00385\Omega/\text{C}^\circ$).

DC Calibration: $\pm 0.1\%$ of full range, $\pm 1\text{LSD}$.
Sampling Rate: 4 per second.
Impedance: $>10\text{M}\Omega$ resistive, except DC mA (5 Ω) and V (47k Ω).
Sensor Break Detection: Thermocouple, RTD, 4 to 20 mA, 2 to 10V and 1 to 5V ranges only. High alarms activate for thermocouple/RTD sensor break, low alarms activate for mA/V DC sensor break.

Isolation: Isolated from all outputs (except SSR driver).
Universal input must not be connected to operator accessible circuits if single relay outputs are connected to a hazardous voltage source. Supplementary insulation or input grounding would then be required.

DIGITAL INPUT

Voltage Input: Reset or Tare occurs on high (2 to 24VDC) to low $<0.8\text{VDC}$, or Open to Closed transition.
Isolation: Reinforced safety isolation from inputs and other outputs.

OUTPUTS

Relay
Contact Type & Rating: Single pole double throw (SPDT), latching or non-latching action (selectable); 2A resistive at 120/240VAC.
Lifetime: $>500,000$ operations at rated voltage/current.
Isolation: Basic isolation from universal input and SSR outputs.

Dual Relay

Contact Type & Rating: Single pole single throw (SPST), latching or non-latching action (selectable); 2A resistive at 120/240VAC.
Lifetime: $>200,000$ operations at rated voltage/current.
Isolation: Reinforced safety isolation from inputs and other outputs.

SSR Driver

Drive Capability: SSR drive voltage $>10\text{V}$ into 500 Ω 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

Accuracy: $\pm 0.25\%$ (mA @ 250 Ω , V @ 2k Ω). Degrades linearly to $\pm 0.5\%$ for increasing burden (to specification limits).
Resolution: 8 bits in 250ms (10 bits in 1s typical, >10 bits in >1 s typical).
Isolation: Reinforced safety isolation from inputs and other outputs.

Transmitter PSU

Power Rating: 24V TxPSU Module; Unregulated 20 to 28V DC into 910 Ω min Linear output Module; Regulated 0.0 to 10.0V into 500 Ω min.
Isolation: Reinforced safety isolation from inputs and other outputs.

SERIAL COMMUNICATIONS

Physical: RS485, at 1200, 2400, 4800, 9600 or 19200 bps.
Protocols: Selectable between Modbus and West ASCII.
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 $\pm 10\%$, 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: Complies with EN61010-1 & UL3121.
Considerations: Pollution Degree 2, Installation Category II.
Front Panel Sealing: To IP66 (IP20 behind the panel).

PHYSICAL

Front Bezel Size: ¹/₁₆ Din = 48 x 48mm, ¹/₈ Din = 96 x 48mm
Depth Behind Panel: ¹/₁₆ Din = 110mm, ¹/₈ Din = 100mm.
Weight: 0.21kg maximum.