

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

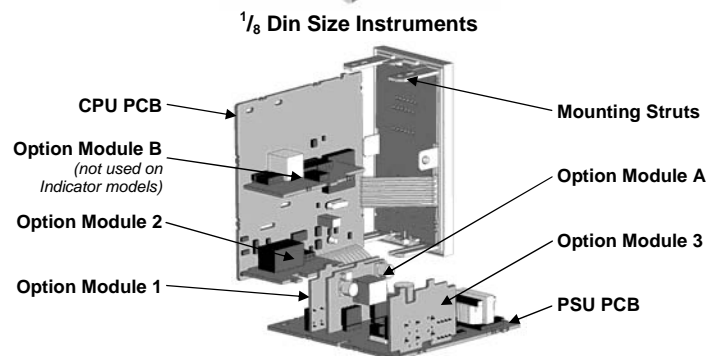
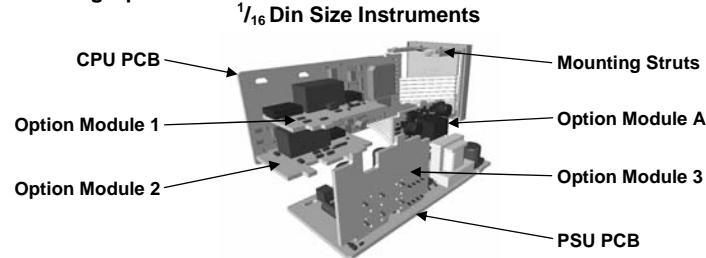
**CAUTION:** Installation should be only performed by technically competent personnel. Local Regulations regarding electrical installation & safety must be observed.

## 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.

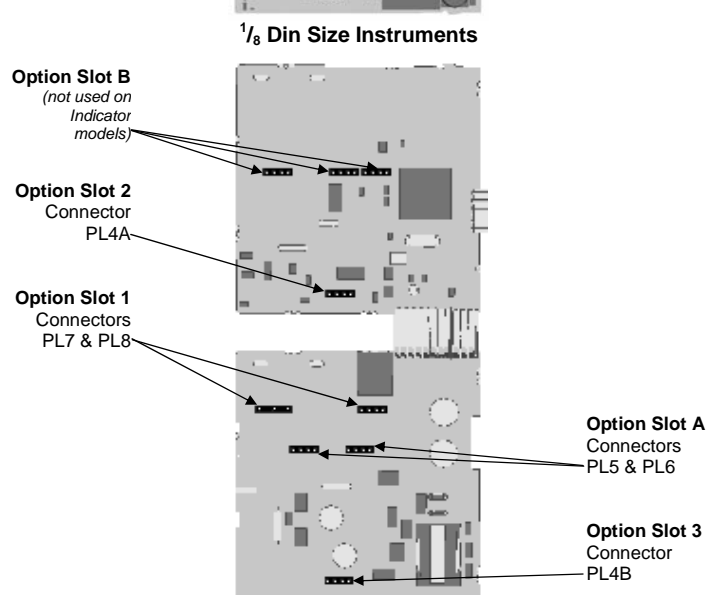
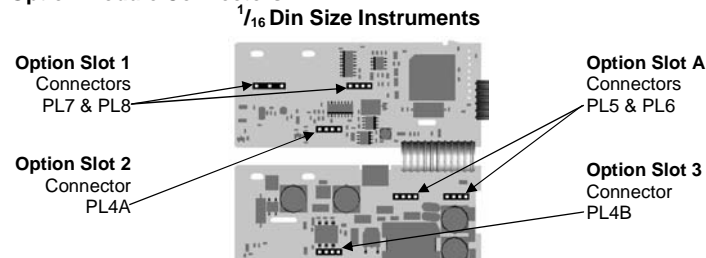
### Installing Option Modules



- 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

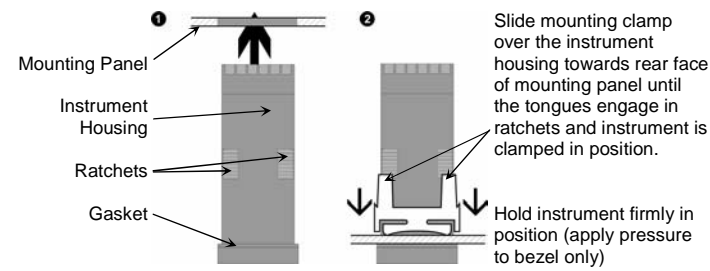


### Panel-Mounting

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 48n-4mm (1/16 Din) or 96n-4mm (1/8 Din)

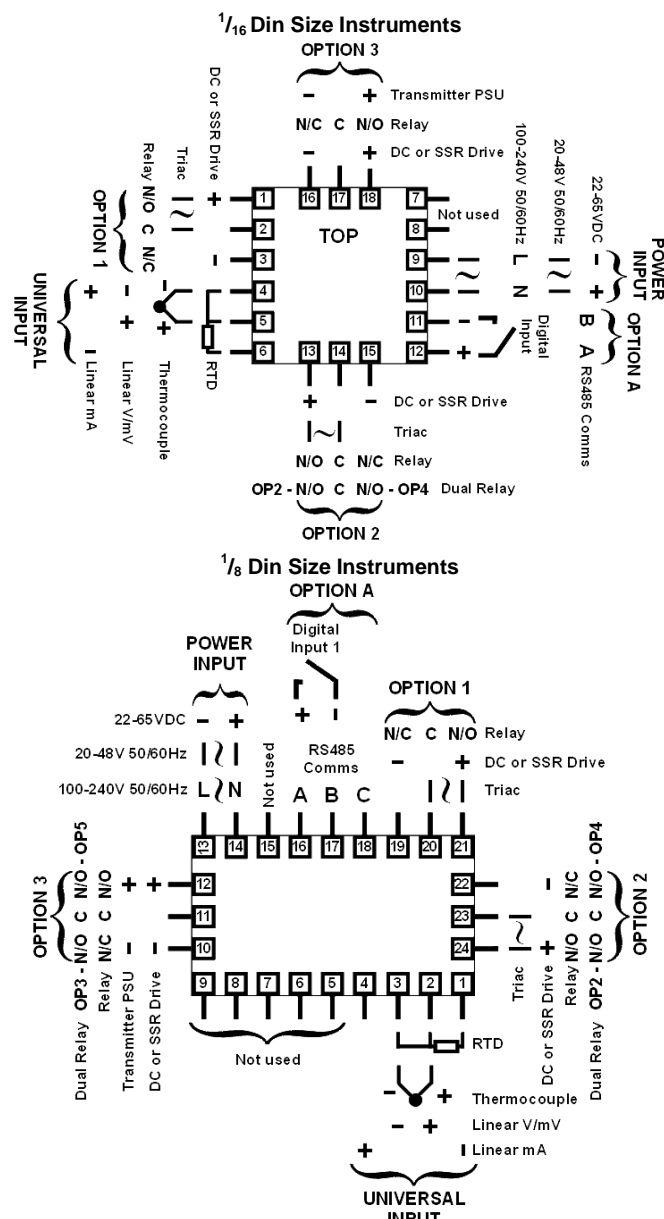


**CAUTION:** Do not remove the panel gasket; it is a seal against dust and moisture.

### 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	PtRh20% 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
JL	J: -128.8 - 537.7 °C	SL	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
KL	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
KL	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
LL	L: 0 - 762 °C	P24C	PtRh20% vs. 40%: 0 - 1850 °C	0.10	0 - 10 V DC
LF	L: 32 - 1403 °F	P24F	PtRh20% 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 = R)
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		
		0.20	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-r	Red to Green on any alarm	G-r	c
Serial Communication Protocol	Prot	ASC1	ASCII		
		r7bn	Modbus with no parity	r7bn	P
		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...

Table with 5 columns: Parameter, Legend, Set Value, Adjustment Range & Description, Default Value, Units Display. Rows include Comms Write, Digital Input Usage, and Config Lock.

### 4. SETUP MODE

Note: Configuration must be completed before adjusting Setup parameters. First select Setup mode from Select mode (refer to section 2).

Table with 5 columns: Parameter, Legend, Set Value, Adjustment Range & Description, Default Value, Units Display. Rows include Input Filter Time Constant, Process Variable Offset, Raw PV value, High Alarm 1, Low Alarm 1, Alarm 1 Hysteresis, High Alarm 2, Low Alarm 2, AI 2 Hysteresis, High Alarm 3, Low Alarm 3, AI 3 Hysteresis, High Alarm 4, Low Alarm 4, AI 4 Hysteresis, High Alarm 5, Low Alarm 5, AI 5 Hysteresis, Scaling Breakpoint 1, Display Value 1, Scaling Breakpoint 2, Display Value 2, Scaling Breakpoint 3, Display Value 3, Scaling Breakpoint 4, Display Value 4, Scaling Breakpoint 5, Display Value 5, Scaling Breakpoint 6, Display Value 6, Scaling Breakpoint 7, Display Value 7, Scaling Breakpoint 8, Display Value 8, Scaling Breakpoint 9, Display Value 9, Tare Feature, Setup Lock Code.

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.

Table with 5 columns: Parameter, Legend, Value, Description, Units Display. Rows include Instrument parameters, Input Over Range, Input Under Range, Input Sensor Break, Option 1-4 Error, Option A Error, Option B Error.

Note: CHH, CLLJ 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 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 SP in configuration mode), they can only be adjusted via Setup mode.

Table with 5 columns: Legend, Value, Display Strategy and When Visible, Description, Units Display. Rows include Proc, Max PV Value, Min PV Value, Elapsed Time, Alarm 1-5 Value, Active Alarm Status.

#### 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 key or 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 1/8 Din Indicator Units Display and LED's

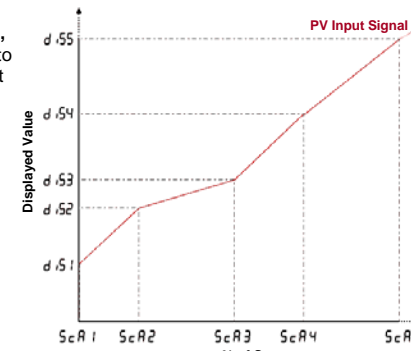
In Operator Mode, a Units display shows C or F when temperature values are shown. This display is also used in other modes as a confirmation of the parameter type currently shown in the main display.

#### Multi-Point Scaling

When enabled (PAPS = EnAb), 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 SP) 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 (tArE = EnAb), 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.

Press until the process variable is displayed. Hold down and together for three seconds until the display shows YESP.

Release both keys and press 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 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 and press to return to Select mode.

Table with 5 columns: Parameter, Legend, Value, Description, Units Display. Rows include Input type, Option 1-3 module type fitted, Option 2 module type fitted, Option 3 module type fitted, Auxiliary Option A module type fitted, Firmware type, Firmware issue, Product Rev Level, Manufacture Date, Serial number 1-3.

### 8. SERIAL COMMUNICATIONS

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

### 9. SPECIFICATIONS

#### UNIVERSAL INPUT

Thermocouple: ±0.1% of full range, ±1LSD (±1°C for Thermocouple CJC). Calibration: 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).

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.

#### DIGITAL INPUT

Voltage Input: Reset or Tare occurs on high (2 to 24VDC) to low (<0.8VDC, or only. High alarms activate for thermocouple/RTD sensor break, low alarms activate for mA/V DC sensor break.

#### 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.

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.

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.

Linear DC: Accuracy: ±0.25% (mA @ 250Ω, V @ 2kΩ). Resolution: 8 bits in 250mS (10 bits in 1s typical, >10 bits in >1s typical).

Transmitter PSU: Power Rating: 24V TxPSU Module; Unregulated 20 to 28V DC into 910Ω min Linear output Module; Regulated 0.0 to 10.0V into 500Ω min.

Serial Communications: Physical: RS485, at 1200, 2400, 4800, 9600 or 19200 bps. Protocols: Selectable between Modbus and West ASCII.

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.

Environmental: Standards: CE, UL & ULC. EMI: Complies with EN61326 (Susceptibility & Emissions). Safety: Complies with EN61010-1 & UL3121.

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.