

OENOREG+ WINE CONTROLLERS CONCISE MANUAL (59551-1)

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

1. OVERVIEW

The Oenoreg+ controllers from West have been designed with the following key features specifically for reliable temperature control during Wine production ensuring the highest quality of the wine.

- > Dual control outputs for Heating & Cooling via SPDT relays
- > Individual activation of Heating and Cooling control
- > Double set point with Heating and Cooling
- > Optional Density measurement with management of alarm
- > Timer function T1/T2
- > Two Displays strategies
- > Platinum probe input 100 Ohms at 0° C (Pt100 3 wires)
- > Double digital display: Process Variable (Green) and Setpoint (Red)
- > Access and direct adjustment of the Setpoint
- > Process Variable offset correction
- > Alarm management and serial communication

2. FRONT FASCIA

48 x 96 mm – 1/8 DIN

48 x 48 mm – 1/16 DIN



- Switch and LED for cooling circuit
- Switch and LED for heating circuit
- LED for TIMER function
- LED for outputs state Heat/Cool

- > Two 4-Digit Displays

The Green top display shows the Process Variable
The Red bottom display shows the desired Setpoint.
When using double Setpoint, the Setpoint for heating and cooling are alternated in the display, with the matching LED illuminated.

- > Three LED (light emitting diode) mode indicator lights.

The Heat LED above the Heat switch illuminates when the heating circuit active.
The Heat LED is ON, to show the heating circuit is activated.
The Heat LED is OFF, to show the heating circuit is deactivated.
The Heat LED flashes (double Setpoint mode only) when the heating circuit is activated, and the heat Setpoint is shown as the lower Red alternates.

The Cool LED above the Cool switch illuminates when the cooling circuit is active.
The Cool LED is ON, to show the cooling circuit is activated.
The Cool LED is OFF, to show the cooling circuit is deactivated.
The Cool LED flashes (double Setpoint mode only) when the cooling circuit is activated, and the Cool Setpoint is shown as the lower Red alternates.

The central Timer LED illuminates when timer function is active.
The Timer LED is ON, to show that the timer function is activated.
The Timer LED is OFF, to show that the timer function is deactivated.

- > Two red LED output indicator arrow lights.

The up arrow ▲ shows that the relay output for heating is ON.
The down arrow ▼ shows that the relay output for cooling is ON.

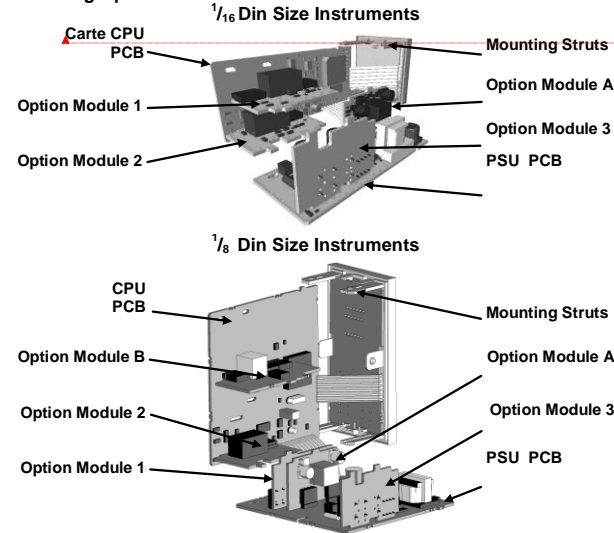
- > An operator keypad with 4 function switches

Heat switch. Press & hold this for 2 secs to activate or deactivate the heating circuit.
Cool switch. Press & hold this for 2 secs to activate or deactivate the cooling circuit.
Momentarily press both switches together to display the density measurement (if this option is fitted).

3. INSTALLATION

The models covered by this manual have two different DIN case sizes (refer to section 12). Some installation details vary between models. These differences have been clearly shown.

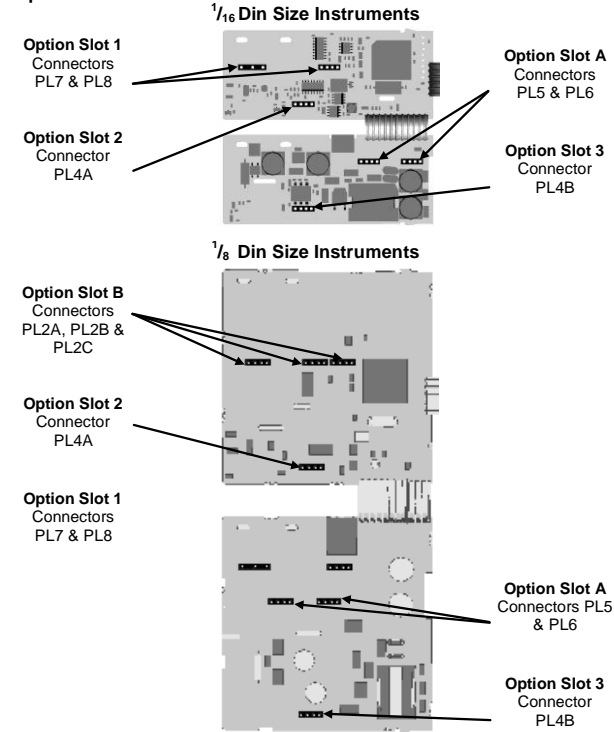
Installing Option Modules



To access modules 1, A or B, first detach the PSU and CPU boards from the front by lifting first the upper, and then lower mounting struts. Gently separate the boards.
a. Plug the required option modules into the correct connectors, as shown below.
b. Locate the module tongues in the corresponding slot on the opposite board.
c. Hold the main boards together while relocating back on the mounting struts.
d. 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

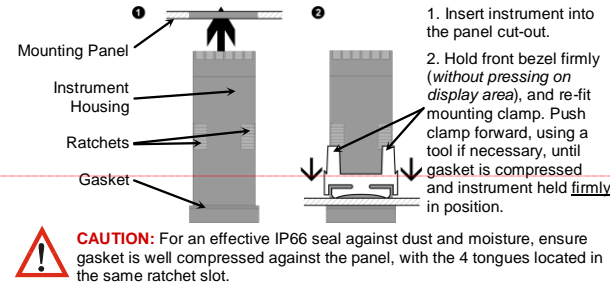


Panel-Mounting

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

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

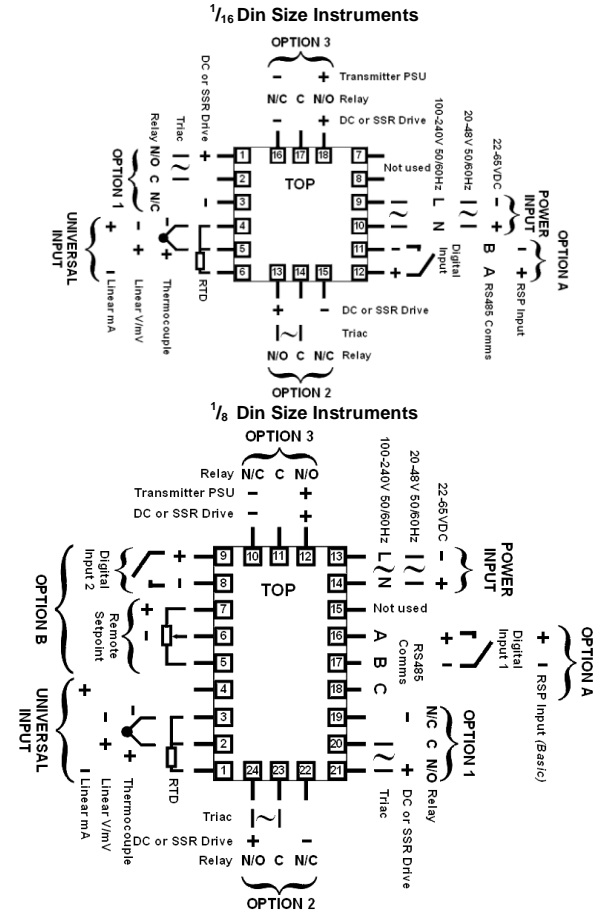
For n multiple instruments mounted side-by-side, cut-out A is 48n-4mm Din. Tolerance +0.5, -0.0mm



CAUTION: For an effective IP66 seal against dust and moisture, ensure gasket is well compressed against the panel, with the 4 tongues located in the same ratchet slot.

Rear Terminal Wiring

USE COPPER CONDUCTORS (EXCEPT FOR T/C INPUT)
Single Strand wire gauge: Max 1.2mm (18SWG)



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 **LoCo Conf** is displayed, as described in section 9 of this manual. Access to other menus is denied until configuration mode is completed

4. SELECT MODE

Select mode is used to access the configuration and operation menu functions. It can be accessed at any time by holding down **SEtP** and pressing **OnF**. In select mode, press **UP** or **DN** to choose the required mode, press **ENT** to enter. An unlock code is required to prevent unauthorised entry to Configuration, & Setup modes. Press **UP** or **DN** to enter the unlock code, and then press **ENT** 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
Timer mode	TmM	SLCt	Timer	0

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

5. CONFIGURATION MODE

First select Configuration mode from Select mode (refer to section 4). Press **ENT** to scroll through the parameters, then press **UP** or **DN** to set the required value. Press **ENT** to accept the change, otherwise parameter will revert to previous value. To exit from Configuration mode, hold down **SEtP** and press **ENT**, 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	rnPt		See following table for possible codes	JC	
Code	Input Type & Range	Code	Input Type & Range	Code	Input Type & Range
bC	B: 100 - 1824 °C	L	L: 0.0 - 537.7 °C	P24	PIRh20% centre 40%: 32 - 3362 °F
bF	B: 211 - 3315 °F	L	L: 32.0 - 999.9 °F	P24	
C	C: 0 - 2320 °C	N	N: 0 - 1399 °C	PtF	Pt100: -199 - 800 °C
C	C: 32 - 4208 °F	N	N: 32 - 2551 °F	PtF	Pt100: -328 - 1472 °F
J	J: -200 - 1200 °C	R	R: 0 - 1759 °C	PtL	Pt100: -128.8 - 537.7 °C
J	J: -328 - 2192 °F	R	R: 32 - 3198 °F	PtL	Pt100: -199.9 - 999.9 °F
J	J: -128.8 - 537.7 °C	S	S: 0 - 1762 °C	0.20	0 - 20 mA CC
J	J: -199.9 - 999.9 °F	S	S: 32 - 3204 °F	4.20	4 - 20 mA CC
K	K: -240 - 1373 °C	T	T: -240 - 400 °C	0.50	0 - 50 mV CC
K	K: -400 - 2503 °F	T	T: -400 - 752 °F	10.50	10 - 50 mV CC
K	K: -128.8 - 537.7 °C	T	T: -128.8 - 400.0 °C	0.5	0 - 5 V CC
K	K: -199.9 - 999.9 °F	T	T: -199.9 - 752.0 °F	1.5	1 - 5 V CC
L	L: 0 - 762 °C		PIRh20% vs. 40%: 0 - 1850 °C	0.10	0 - 10 V CC
L	L: 32 - 1403 °F			2.10	2 - 10 V CC

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	dPo5		0=xxxx, 1=xxx.x, 2=xx.xx, 3=x.xxx (non temperature range only)	1
Density Input Range	r inP	0.20	0 to 20 mA DC input	0.10
		4.20	4 to 20 mA DC input	
		0.10	0 to 10 V DC input	
		2.10	2 to 10 V DC input	
		0.5	0 to 5 V DC input	
		1.5	1 to 5 V DC input	
	100	0 to 100mV DC input	Available on full RSP (Slot B) only	
	Pot	Potentiometer (2KΩ minimum)		
RSP Upper Limit	rSPu		-1999 to 9999	Range max
RSP Lower Limit	rSPL		-1999 to 9999	Range min
RSP Offset	rSPo		Constrained within Scale Range Upper & Scale Range Lower limits	0
Decimal place	rSPP		0 to 3	0
Setpoint number	SEtP		1 SP or 2 SP	1 SP
Alarm 1Type		P_H i	Process High Alarm	P_H i
		P_Lo	Process Low Alarm	
		dE	Deviation Alarm	
		bAnd	Band Alarm	
		nonE	No alarm	
High Alarm 1 value*			Range Minimum to Range Maximum	Range Max
Low Alarm 1 value*				Range Min
Dev. Alarm 1 value*	dRL i		+/- Span from setpoint in display units	S
Band Alarm 1 value*	bRL i		1 LSD to span from setpoint	S
Alarm 1 Hysteresis*	AHY i		1 LSD to full span in display units	1
Alarm 2 Type*	ALR2	P_H i	Density high alarm	P_H i
		P_Lo	Density low alarm	
High Alarm 2 value*			Range Minimum to Range	Range Max
Low Alarm 2 value*				Range Min
Alarm 2 Hysteresis*	AHY2		1 LSD to full span in display units	1

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Parameter	Lower Display	Upper Display	Adjustment range & Description	Default Value
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Loop Alarm	LAE n	d .5A (disabled) or EnAb (enabled)	d .5A
Loop Alarm Time	LAte	1 sec to 99 mins. 59secs	99.59
Alarm Inhibit	Inh	nonE	No alarms Inhibited
		ALA 1	Alarm 1 inhibited
		ALA 2	Alarm 2 inhibited
		both	Alarm 1 and alarm 2 inhibited
Output 1 Usage	USE 1	Pr	Primary Power
		SEc	Secondary Power
		A 1_d	Alarm 1, Direct
		A 1_r	Alarm 1, Reverse
		A 2_d	Alarm 2, Direct
		A 2_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
		t .r .n .t	Timer function
Linear Output 1 Range	tYP 1	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 1H	-1999 to 9999 (display value at which output will be maximum)	Range max
Retransmit Output 1 Scale minimum	ro 1L	-1999 to 9999 (display value at which output will be minimum)	Range min
Output 2 Usage	USE 2	As for output 1	Sec or AI2
Linear Output 2 Range	tYP 2	As for output 1	0.10
Retransmit Output 2 Scale maximum	ro 2H	-1999 to 9999 (display value at which output will be maximum)	Range max
Retransmit Output 2 Scale minimum	ro 2L	-1999 to 9999 (display value at which output will be minimum)	Range min
Output 3 Usage	USE 3	As for output 1	A 1_d
Linear Output 3 Range	tYP 3	As for output 1	0.10
Retransmit Output 3 Scale maximum	ro 3H	-1999 to 9999 (display value at which output will be maximum)	Range max
Retransmit Output 3 Scale minimum	ro 3L	-1999 to 9999 (display value at which output will be minimum)	Range min
Display Strategy	d .5P	1.2 (refer to section 10)	1
Serial Communications Protocol	PrOb	r .n .bn	Modbus with no parity
		r .n .bE	Modbus with Even Parity
		r .n .bo	Modbus with Odd Parity
Serial Communications Bit Rate	bRud	1.2	1.2 kbps
		2.4	2.4 kbps
		4.8	4.8 kbps
		9.6	9.6 kbps
Comms Address	Addr	1 to 255 (Modbus)	1
Comms Write	CoEn	r .L .w	Read/Write
		r .L .o	Read only
Lock code	CLoc	0 to 9999	20

6. SETUP MODE

Note: Configuration must be completed before adjusting Setup parameters.
 First select Setup mode from Select mode (refer to section 4).
 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 .iLt	OFF or 0.5 to 100.0 secs	2.0
Process Variable Offset	OFFS	±Span of controller	0
Primary Power	PP .L .d	Current power levels (read only)	N/A
Secondary Power	SP .L .d		
Primary Proportional Band	Pb .P	Normally set at 0 for wine temperature applications	0
Secondary Proportional Band	Pb .S		
Automatic Reset (Integral Time)	AR .St	Appears only if Pb .P > 0	5.00
Rate (Derivative Time)	r .RtE	Appears only if Pb .P > 0	1.15
Overlap/Deadband	OL	-20 to +20% of Primary and Secondary Proportional Band	0

Parameter	Lower Display	Upper Display Adjustment Range & Description	Default Value
Manual Reset (Bias)	b .rAS	0% (-100% if dual control) to 100%	25
Prin. & Sec. Differential ON/OFF	d .rFF	0.1% to 10.0% of input span (Entered as % of span)	0.5
Setpoint Upper Limit	SP .uL	Current Setpoint to Range max	R/max
Setpoint Lower limit	SP .lL	Range min to Current Setpoint	R/min
High Alarm 1 value	PhA 1	Range Minimum to Range Maximum	R/max
Low Alarm 1 value	PLA 1		R/min
Deviation Alarm 1 Value	dAL 1	±Span from SP in display units	5
Band Alarm 1 value	bAL 1	1 LSD to span from setpoint	5
Alarm 1 Hysteresis	AH 1	1 LSD to full span in display units	1
High Alarm 2 value	PhA 2	Range Minimum to Range Maximum	R/max
Low Alarm 2 value	PLA 2		R/min
Alarm 2 Hysteresis	AH 2	1 LSD to full span in display units	1
Heating Setpoint value	SP -H	High limit to the low limit of the range	Range Min
Cooling Setpoint value	SP -C		Range Max
SP Ramp Rate Value	rP	1 to 9999 units/hour or Off (blank)	Off
Setpoint Value	SP	Scale range upper to lower limits	Scale Range Minimum
Setup Lock Code	SLoc	0 to 9999	10
Actual SP Value	SP .rP	Instantaneous value of the ramping Setpoint Read only	

7. TIMER MODE

First select Timer mode from Select mode (refer to section 4).
 Press **⏏** to scroll through the different parameters and **▲** or **▼** to set the required value.
 To exit from Timer mode, hold down **⏏** and press **▲** to return to Select mode.
 The Timer LED is ON when the timer function is active, and OFF when the timer function is inactive.
 The timer output is ON during time T1 (durE) and OFF during time T2 (Int).

Parameter	Lower Display	Adjustment range & Description	Default Value
Timer Function	durE	ON time value T1	0
Lock Code	tLoc	OFF time value T2	0
		0 to 9999	0

8. PRODUCT INFORMATION MODE

First select Product information mode from Select mode (refer to section 4).
 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	OP .n .1	nonE	No option fitted
		r .L .Y	Relay output
		SS .r	SSR drive output
		tr .i	Triac output
		L .in	Linear DC voltage / current output
Option 2 module type fitted	OP .n .2		As Option 1
Option 3 module type fitted	OP .n .3		As Option 1
Auxiliary Option A module type fitted	OP .n .A	nonE	No option fitted
		r .4 .B .5	RS485 communications
		r .SP .i	Density Input
Auxiliary Option B module type fitted	OP .n .B	nonE	No option fitted
		r .SP .i	Density Input
Firmware type	F .L .d		Value displayed is firmware type number
Firmware issue	ISS		Value displayed is firmware issue number
Product Revision Level	Pr .L		Value displayed is Product Revision level
Date of manufacture	d .O .r .n .n		Manufacturing date code (mmyy)
Serial number 1	S .n .1		First four digits of serial number
Serial number 2	S .n .2		Middle four digits of serial number
Serial number 3	S .n .3		Last four digits of serial number

9. 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	Co .to	Co .n .F	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
	Input Over Range	CHH J	Normal Process Variable input > 5% over-range
Input Under Range	CLL J	Normal	Process Variable input > 5% under-range
Input Sensor Break	OPEN	Normal	Break detected in Process Variable input sensor or wiring
RSP Over Range	Normal	CHH J ++	RSP input over-range
RSP Under Range	Normal	CLL J ++	RSP input under-range
RSP Break	Normal	OPEN ++	Break detected in RSP input signal
Option 1 Error	Err	OP .n .1	Option 1 module fault
Option 2 Error		OP .n .2	Option 2 module fault
Option 3 Error		OP .n .3	Option 3 module fault
Option A Error		OP .n .A	Option A module fault or RSP in both A & B
Option B Error		OP .n .B	Option B module fault

10. 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

Upper Display	Lower Display	Display Strategy and When Visible	Description
PV Value	Active SP Value	1	PV and target value of selected SP
(Blank)	(Blank)	2	Both displays off (blank)

11. SERIAL COMMUNICATIONS

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

12. 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 (5kΩ) and V (47kΩ).
 Sensor Break Detection: Thermocouple, RTD, 4 to 20 mA, 2 to 10V and 1 to 5V ranges only. Control outputs turn off.
 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.

REMOTE SETPOINT INPUT

Accuracy: ±0.25% of input range ±1 LSD.
 Sampling Rate: 4 per second.
 Sensor Break Detection: 4 to 20 mA, 2 to 10V and 1 to 5V ranges only. Control outputs turn off if RSP is the active SP.
 Isolation: Slot A - Basic isolation, Slot B - Reinforced safety isolation from other inputs and outputs.

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 double throw (SPDT); 2A resistive at 120/240VAC.
 Lifetime: >500,000 operations at rated voltage/current.
 Isolation: Basic Isolation from universal input and SSR 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:
 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: 20 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
 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: 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 (48x48) = 110mm, 1/8 (48x96) = 100mm.
 Weight: 0.21kg maximum.

SUPPLEMENTARY INFORMATION FOR CSA

-Compliance shall not be impaired when fitted to the final installation.
 -Designed to offer a minimum of Basic Insulation only.
 -The body responsible for the installation is to ensure that supplementary insulation suitable for Installation Category II is achieved when fully installed.
 -To avoid possible hazards, accessible conductive parts of the final installation should be protectively earthed in accordance with EN6010 for Class 1 Equipment.
 -Output wiring should be within a Protectively Earthed cabinet.
 -Sensor sheaths should be bonded to protective earth or not be accessible.
 -Live parts should not be accessible without the use of a tool.
 -When fitted to the final installation, an IEC/CSA APPROVED disconnecting device should be used to disconnect both LINE and NEUTRAL conductors simultaneously.
 -A clear instruction shall be provided not to position the equipment so that it is difficult to operate the disconnecting device.