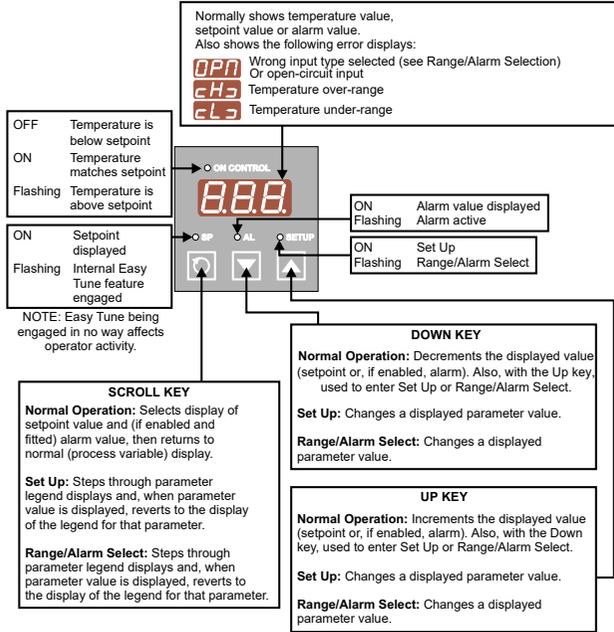# 1/16-DIN SIMPLIFIED CONTROLLER CONCISE PRODUCT MANUAL (59224-5)

OPERATING MODE

Note: Set all Range/Alarm and Setting Up parameters as desired before starting normal operations.

Normally shows temperature value, setpoint value or alarm value.
Also shows the following error displays:

OPn Wrong input type selected (see Range/Alarm Selection) Or open-circuit input
cHg Temperature over-range
cLg Temperature under-range

OFF	Temperature is below setpoint
ON	Temperature matches setpoint
Flashing	Temperature is above setpoint

ON	Setpoint displayed
Flashing	Internal Easy Tune feature engaged

NOTE: Easy Tune being engaged in no way affects operator activity.

ON	Alarm value displayed
Flashing	Alarm active

ON	Set Up
Flashing	Range/Alarm Select

SCROLL KEY

Normal Operation: Selects display of setpoint value and (if enabled and fitted) alarm value, then returns to normal (process variable) display.

Set Up: Steps through parameter legend displays and, when parameter value is displayed, reverts to the display of the legend for that parameter.

Range/Alarm Select: Steps through parameter legend displays and, when parameter value is displayed, reverts to the display of the legend for that parameter.

DOWN KEY

Normal Operation: Decrements the displayed value (setpoint or, if enabled, alarm). Also, with the Up key, used to enter Set Up or Range/Alarm Select.

Set Up: Changes a displayed parameter value.

Range/Alarm Select: Changes a displayed parameter value.

UP KEY

Normal Operation: Increments the displayed value (setpoint or, if enabled, alarm). Also, with the Down key, used to enter Set Up or Range/Alarm Select.

Set Up: Changes a displayed parameter value.

**Range/Alarm Select:** Changes a displayed parameter value.

Front Panel
Adjusting Setpoint and Alarm Value

The normal display shows temperature value. Use the Scroll key to select display of setpoint value and (if enabled - see **SETTING UP**) alarm value. If adjustment of these parameters is enabled (see **SETTING UP**), use the Up/Down keys to adjust the displayed parameter value. Use the Scroll key to restore the temperature value display.
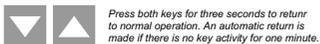
SETTING UP

NOTE: Set all Range/Alarm parameters as desired before starting Setup operations.

Press both keys for three seconds
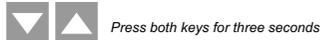
Parameter	Displayed Legend	Available Values/Settings	
Setpoint value	SP	Numeric, in the range Range Max. to Range Min.	
Alarm Value (only if alarm is fitted)	AI	Numeric, depending upon alarm type: Process High/Low - Range Max. to Range Min. Deviation/Band - ±input range span	
Process Variable Offset value [1]	OFS	Numeric - ±input range span	
Control Output Cycle Time [2]	Ct	Numeric - 0.5secs. to 512secs. if SSR output - 1sec.to 512secs. if relay output	
Setpoint Lock	SPL	OFF	Setpoint change allowed in normal operation
		On	Setpoint change prevented in normal operation
Alarm Value Enable (only if alarm is fitted)	AEn	En	Adjustment/display enabled in normal operation
		diS	Adjustment/display disabled in normal operation

Press both keys for three seconds to return to normal operation. An automatic return is made if there is no key activity for one minute.

If the legend is displayed, brings up the legend for the next parameter; If the value is displayed, brings up the legend for that parameter.

NOTES ON SETTING UP

1. The Process Variable (PV) Offset modifies the actual process variable (PV) value as follows:

$$\text{Modified PV} = \text{Actual PV} + \text{PV Offset}$$

The modified PV value is used for all PV-dependent functions (control, display, alarm). Choose this value with care; it is, in effect, a calibration adjustment. **There is no indication when this parameter is in effect (i.e. has been set to a non-zero value).**

2. The cycle time required is dependent upon the process being controlled and the type of output being used. For a relay output, the cycle time should be as large as possible (whilst remaining compatible with the process control requirements) to maximise relay life. For an SSR output, the cycle time may have a lower value.
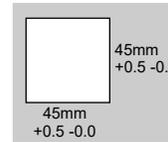
INSTALLATION

⚠️ **CAUTION:** Installation should only be performed by personnel who are technically-competent and authorised to do so. Local Regulations regarding electrical installation & safety must be observed.
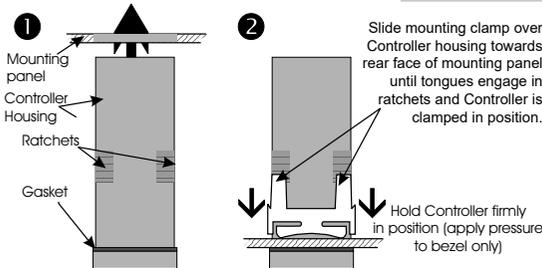
⚠️ WARNING: This product can expose you to chemicals including arsenic, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov
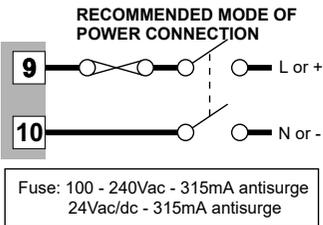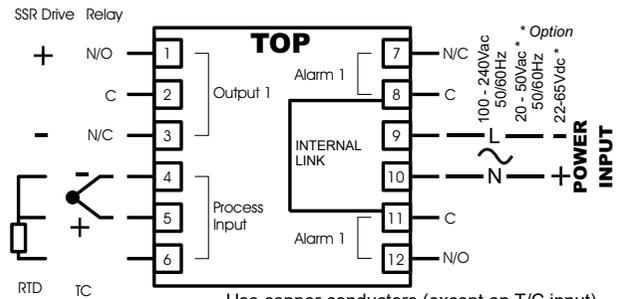
Panel-Mounting

The mounting panel must be rigid and may be up to 6.0mm (0.25 inches) thick. The cut-outs required for the Controllers are shown on the right. Controllers may be mounted side-by-side in a multiple installation for which the the cut-out width (for n Controllers) is (48n - 4)mm or (1.89n - 0.16) inches.
The panel-mounting procedure is shown below:

45mm +0.5 -0.0
45mm +0.5 -0.0

1 Mounting panel
Controller Housing
Ratchets
Gasket

2 Slide mounting clamp over Controller housing towards rear face of mounting panel until tongues engage in ratchets and Controller is clamped in position.

Hold Controller firmly in position (apply pressure to bezel only)

Rear Terminal Connections

SSR Drive   Relay

+ N/O 1
C 2 Output 1
– N/C 3
4
5 Process Input
6

RTD   TC

TOP

7 N/C
Alarm 1
8 C   100 - 240Vac 50/60Hz   20 - 50Vac * 50/60Hz
9 L   22-65Vdc *
INTERNAL LINK
10 N   POWER INPUT
11 C
Alarm 1
12 N/O

* Option

Use copper conductors (except on T/C input).
Single strand wire gauge: Max 1.2mm (18SWG)
Cable rating 80°C min

RECOMMENDED MODE OF POWER CONNECTION

9 —○—○—○—○— L or +
10 —○—————○— N or -

Fuse: 100 - 240Vac - 315mA antisurge
24Vac/dc - 315mA antisurge

RANGE/ALARM SELECTION

CAUTION: The parameters in this mode must be adjusted only by personnel technically-competent and authorised to do so.

Entry

Range/Alarm Selection Mode is entered as follows:

1. Press the Scroll and Up keys till the display flashes.
2. When the display starts to flash, release the Scroll and Up keys and press the Down key. The **SET** indicator will then start to flash and the legend of the first parameter in the sequence (Input Type and Range) will be displayed; 1.5 seconds later the value for that parameter will be displayed.

Parameter Selection/Adjustment

In this mode, the Scroll key is used to select the required display, as follows:

From previous parameter legend display or entry into Range/Alarm Selection Mode

Parameter legend → Automatic change after 1.5 seconds → **Parameter value**

To next parameter legend display
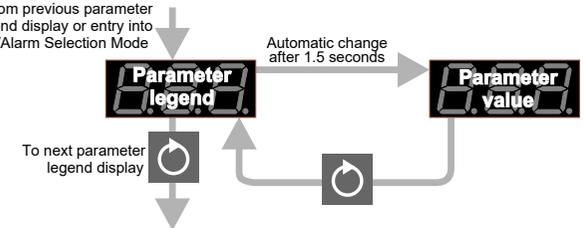
Once the required parameter value is displayed, the Up/Down keys can be used to alter that value; new values are implemented immediately. The parameter sequence is:

Parameter	Displayed Legend	Available Values		
Input Type and Range	InP	**Temperature Units**		

Temperature Units

Value	Units
0	°C
1	°F

Input Range Maximum [1]

Value	Max.	Value	Max.
1	100	5	500
2	200	6	600
3	300	7	700
4	400	8	800

Value	Input Sensor Type
1	Thermocouple Type J/L
2	Thermocouple Type K
3	Thermocouple Type N
4	Thermocouple Type T [2]
5	RTD (-50 to Range Max.)
6	RTD 0.0 to Range Max. - 1 decimal position [1]

NOTES: 1. The RTD range will always be 0.0- 99.9, whatever the Range Maximum setting may be.
2. Absolute Range Max. = 400°C (700°F) for TC Type T.

Parameter	Displayed Legend	Available Values	
Control Action	CtL	r P	Reverse-acting PID control
		d P	Direct-acting PID control
		r o	Reverse-acting ON/OFF control
		d o	Direct-acting ON/OFF control
Alarm Type and Action (available only if an Alarm Option is fitted) NOTE: The operation of the different types of alarm is illustrated overleaf.	ALt	PHd	Process High Alarm, direct-acting
		PLd	Process Low Alarm, direct-acting
		dEd	Deviation Alarm, direct-acting
		bAd	Band Alarm, direct-acting Process
		PHr	High Alarm, reverse-acting Process
		PLr	Low Alarm, reverse-acting
		dEr	Deviation Alarm, reverse-acting
		bAr	Band Alarm, reverse-acting

Return to Normal Operation

1. Select a parameter legend display.
2. During the 1.5-second legend display, press the Up and Down keys simultaneously for three seconds.

NOTE: An automatic return is made to normal operation if there is no key activity in Range/Alarm Selection mode for one minute.

Default Indication

This display (all decimal points ON) indicates that all Setting Up parameters have been set to their default values (caused by a change to one or more of the critical Range/Alarm Selection parameters). To clear this display, alter one of the Setting Up parameters.

Process Variable below Setpoint   Setpoint   Process Variable above Setpoint
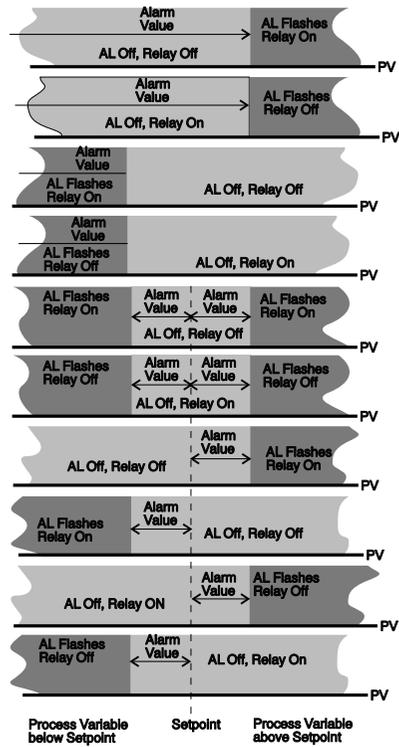
SPECIFICATION

UNIVERSAL INPUT

Input Impedance:	Greater than 100MΩ resistive,
Isolation:	Isolated from all outputs (except SSR) at 240V AC.

OUTPUTS

Relay

Contact Type/Rating:	Single pole double throw (SPDT); 2A resistive at 120/240V AC.
Lifetime:	>500,000 operations at rated voltage/current. Isolated from all other inputs/outputs.

SSR Drive/TTL

Drive Capability:	SSR = 0 to 10V nominal into 500Ω min.
Isolation:	Not isolated from input. Isolated from Supply and Relay Outputs

OPERATING CONDITIONS FOR INDOOR USE

Ambient Temperature (Operating):	0°C to 55°C
Ambient Temperature (Storage):	−20°C to 80°C
Altitude:	<2000m
Relative Humidity:	20% - 95% non-condensing
Supply Voltage:	100 - 240Vac 50/60Hz (standard) 7.5VA 20 - 50Vac 50/60Hz (option) 7.5VA or 22 - 65Vdc (option) 5W maximum.

ENVIRONMENTAL

Approvals:	CE, UL & cUL
EMI Susceptibility:	Complies with EN61326-1:2013
EMI Emissions:	Complies with EN61326-1:2013.
Safety Considerations:	Complies with UL61010-1 Edition 3.
Front Panel Sealing:	To IP66.

PHYSICAL Dimensions

Depth:	110mm (behind panel)	
Front Panel:	Width:	48mm
	Height:	48mm
Weight:		0.21kg maximum

Safety and Warning Symbols

 Risk of electric shock.

 Caution, refer to the manual.

 Alternating or direct current could be present.

 Equipment protected through-out by double insulation.