# ¹/₁₆ - ¹/₈ MAXVU CONTROLLER CONCISE PRODUCT MANUAL (59572-2)

**CAUTION: Installation should be only performed by technically competent personnel. It is the responsibility of the installing engineer to ensure that the configuration is safe. Local regulations regarding electrical installation & safety must be observed - e.g. US National Electrical Code (NEC) and/or Canadian Electrical Code. Impairment of protection will occur if the product is used in a manner not specified by the manufacturer.**

## 1. INSTALLATION

### Installation Guidance

- Standards compliance shall not be impaired when fitted into the final installation.
- Designed to offer a minimum of Basic Insulation only
- 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 EN61010 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.
- Do not to position the equipment so that it is difficult to operate the disconnecting device.
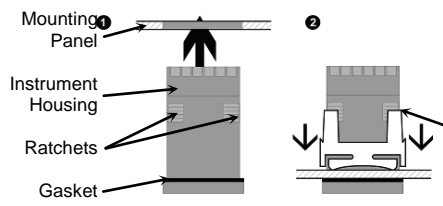
### Panel-Mounting

The mounting panel must be rigid, and may be up to 6.0mm (0.25inch) thick. Cut-out sizes are:
1/16: Width = 45mm, Height = 45mm
1/8: Width = 45mm, Height = 92mm

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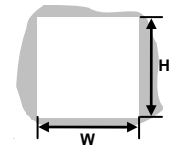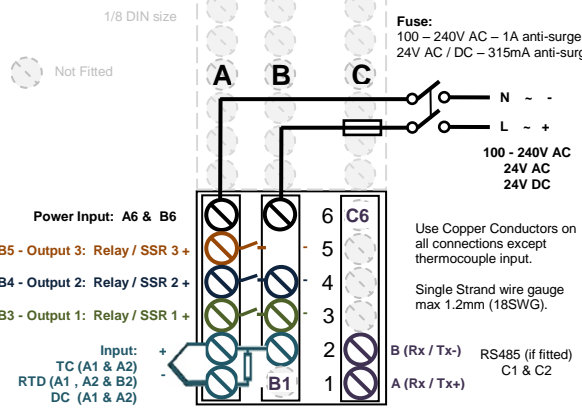
Tolerance +0.5, -0.0mm

❶ Insert instrument into the panel cut-out.

❷ Hold front bezel firmly (*without pressing on display area*), and fit mounting clamp. Push clamp forward, using a tool if necessary, until gasket is compressed and instrument is held firmly in position.

**CAUTION:** For an effective IP65 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

***This diagram shows all possible option combinations. Check the product configuration before wiring.***
**CAUTION:** Check information label on housing for correct operating voltage before connecting supply to Power Input

1/8 DIN size

Not Fitted

**Fuse:**
100 – 240V AC – 1A anti-surge
24V AC / DC – 315mA anti-surge

A  B  C

N ~ -
L ~ +

100 - 240V AC
24V AC
24V DC

**Power Input: A6 & B6**
A5 & B5 - Output 3: Relay / SSR 3 +
A4 & B4 - Output 2: Relay / SSR 2 +
A3 & B3 - Output 1: Relay / SSR 1 +

**Input:**
TC (A1 & A2)
RTD (A1 , A2 & B2)
DC (A1 & A2)

Use Copper Conductors on all connections except thermocouple input.

Single Strand wire gauge max 1.2mm (18SWG)

B (Rx / Tx+)
C1 & C2
A (Rx / Tx+)  RS485 (if fitted)

**NEVER DIRECTLY CONNECT DEDICATED CONFIGURATION SOCKET TO A USB PORT.**

## 2. FRONT PANEL

### Displays & Indicators

All versions of the instrument have the same basic front panel layout.
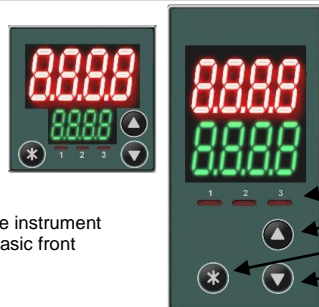
Output LED indicators

Up / Increment ⬆
Enter / Confirm ✱
Down / Decrement ⬇

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### Keypad & General Navigation

Menu navigation, parameter editing and keypad use are described below. *See the relevant manual sections for further information and exceptions.*

**General keypad usage & parameter editing:**
Press ◐ or ◑ keys to navigate between parameters
To edit a parameter, press ◑. The Parameter name (*lower display*) flashes when the parameter above can be edited / adjusted.
Press ◐ or ◑ to change the parameter value (*upper display*).
*Edited values stop changing at the parameters limits. A further press of ◐ or ◑ past the parameter limit "wraps" the value back to the start (e.g. 0, 1, 2… …98, 99,100 ◐ 0, 1, 2…)*
To confirm the change, press ◑ *within 60s* otherwise the change is rejected.

**To navigating to Setup or Advance Configuration from User Mode:**
Press and hold down ✱ and press ◐ for setup Mode, or
Press and hold down ✱ and press ◑ for advanced configuration.

**Returning to User Mode from other modes:**
After 120 seconds without key activity the unit returns automatically to the 1st User mode screen, or
Press and hold down ✱ and press ◐ to move back up one level.

## 3. FIRST POWER-UP (SETUP MODE)

When first powered up, or after a "reset" & power-cycle or time-out" sequence, the instrument enters and Setup Mode.
It remains in Setup until all screens are completed and the user exits the Setup Mode.

| Screen Name | Lower Display | Upper Display | Adjustment Range & Description | Default Value |
|---|---|---|---|---|
| Setup mode lock code | **S.Loc** | | Visible when attempting to enter Setup *unless instrument is new, following a reset with power-down or lock code is* **OFF**). Set value ( *I* to **9999**) matching the defined lock code to allow entry to the following screens. | 10 |
| Input Type | **tYPE** | **tc.J** | J Thermocouple / -200 – 1200ºC  -128.8 – 537.7ºC / -328 – 2192ºF  -199.9 – 999.9ºF | **tc.J** |
| | | **tc.H** | K Thermocouple / -240 – 1373ºC  -128.8 – 537.7ºC / -400 – 2503ºF  -199.9 – 999.9ºF | |
| | | **P 100** | PT100 / -199 – 800ºC  -128.8 – 537.7ºC / -328 – 1472ºF  -199.9 – 999.9ºF | |
| | | **tc.b** | B Thermocouple / 100 – 1824ºC / 211 – 3315ºF | |
| | | **tc.C** | C Thermocouple / 0 – 2320ºC / 32 – 4208ºF | |
| | | **tc.L** | L Thermocouple / 0 – 762ºC  0.0 – 537.7ºC / 32 – 1403ºF  32.0 – 999.9ºF | |
| | | **tc.n** | N Thermocouple / 0 – 1399ºC / 32 – 2551ºF | |
| | | **tc.r** | R Thermocouple / 0 – 1795ºC / 32 – 3198ºF | |
| | | **tc.S** | S Thermocouple / 0 – 1762ºC / 32 – 3204ºF | |
| | | **tc.t** | T Thermocouple / -240 – 400ºC  -128.8 – 400ºC / -400 – 752ºF  -199.9 – 752.0ºF | |
| | | **0.20** | 0 – 20mA DC | |
| | | **4.20** | 4 – 20mA DC | |
| | | **0.50** | 0 – 50mV DC | |
| | | **10.50** | 10 – 50mV DC | |
| | | **0.5** | 0 – 5V DC | |
| | | **1.5** | 1 – 5V DC | |
| | | **0.10** | 0 – 10V DC | |
| | | **2.10** | 2 – 10V DC | |
| Input Units | **Unit** | **C** | Temperature displayed as °C. | **C** |
| | | **F** | Temperature displayed as °F. | |
| Process Display Resolution | **dEc.P** | **0000** | No decimal places | **0000** |
| | | **000.0** | 1 decimal place | |
| | | **00.00** | 2 decimal places / *Not available for temperature inputs.* | |
| | | **0.000** | 3 decimal places | |
| Scale Input Upper Limit | **ScUL** | | Scale Input Lower Limit +100 display units to range maximum. (Only visible in Setup Mode when a dc linear type is selected) | Input max Lin=1000 |
| Scaled Range Lower Limit | **ScLL** | | Range minimum to Scale Input Upper Limit -100 display units. (Only visible in Setup Mode when a dc linear type is selected) | Input min Linear=0 |

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| | | | Screen Usage | Upper Display |
|---|---|---|---|---|
| Output 1 Usage | **Out1** | **HEAt** | Heat Power | **HEAt** |
| | | **COOL** | Cool Power | |
| | | **AL1** | Alarm 1 | |
| | | **AL2** | Alarm 2 | |
| | | **AL12** | Alarm 1 or 2 | |
| | | **LooP** | Control loop alarm (2 x Integral time) | |
| Output 2 Usage | **Out2** | As Output 1 Usage | | **AL1** |
| Output 3 Usage | **Out3** | As Output 1 Usage | | **AL2** |
| Alarm 1 Adjust | **AL_1** | | Range minimum to range maximum. **OFF** disables the alarm. Default high alarm | 1373 |
| Alarm 2 Adjust | **AL_2** | | Range minimum to range maximum. **OFF** disables the alarm. Default low alarm | -240 |
| Setpoint Adjust | **SP** | | Target setpoint adjustable between setpoint upper and lower limits | 0 |
| Automatic Tuning Start/Stop | **tunE** | **OFF** | Use current PID control terms or manually tune | **OFF** |
| | | **PrE** | Start a pre-tune routine | |
| | | **AtSP** | Start the tune at setpoint | |

## 4. USER MODE

| Screen Name | Lower Display | Upper Display | Screen Usage and Visibility |
|---|---|---|---|
| Basic Setpoint Control 1st Screen (*Automatic Mode*) | *Effective Setpoint* | *Process Variable* | Basic Setpoint Control enabled – automatic control. Press ◐ or ◑ to instantly adjust setpoint. If ramping, the target setpoint is shown whilst adjusting. **OFF** replaces the setpoint if control is disabled. |
| Basic Setpoint Control 1st Screen (*Manual Mode*) | *Manual Power* | *Process Variable* | Basic Setpoint Control enabled - manual control. Press ◐ or ◑ to instantly adjust manual power. The power value is shown as **Pxxx**. |

**The following screens are not shown when Basic Setpoint Control enabled** (see the display sub-menu **d.iSP** in Advance configuration – Section 6)

| Screen Name | Lower Display | Upper Display | Screen Usage and Visibility |
|---|---|---|---|
| User 1st Screen (*Automatic Mode*) | *Effective Setpoint* | *Process Variable* | Available in automatic control mode. If ramping, the target setpoint is shown while adjusting. **OFF** replaces setpoint if control is disabled. **dLY** replaces setpoint if control is delayed. |
| User 1st Screen (*Manual Mode*) | *Manual Power* | *Process Variable* | Available in manual control mode. Manual Power value is shown as **Pxxx** |

**Important: To appear in the User Mode the visibility setting for any of the parameters below must be SHuu in the OPEr sub-menu.**

| Screen Name | Lower Display | Upper Display | Screen Usage and Visibility |
|---|---|---|---|
| Alarm Status | **ALSt** | *Active Alarms* | Active only when alarms are active. **1** = Alarm 1 active **2** = Alarm 2 active **L** = Loop Alarm active. Any combination can be displayed here |
| Latch Status | **LAth** | *Latched Outputs* | Active only when an output is latched on. **1** = Output 1 **2** = Output 2 **3** = Output 3  Clear by pressing ✱. |
| Maximum PV | **M7A** | *Value* | Clear by pressing ✱. |
| Minimum PV | **M7.in** | *Value* | |
| Control Enable | **CntL** | **OFF** | Control output(s) disabled. (except in manual mode) |
| | | **On** | Control output(s) enabled. PID or On-Off control available. |
| Manual Control Enable | **M7CE** | **OFF** | Instrument in automatic control mode (manual control OFF). |
| | | **On** | Manual control ON. *Power is shown as Pxxx in 1st User screen.* |
| Time On Remaining | **O.t.i** | *Time left for ON timer* | Active when the ON Timer is decrementing. When time = 0 control is disabled. Screen persists until time = 0. |
| Delay Time Remaining | **d.t.i** | *Time left for delay timer* | Active when the Delay time is decrementing. When this time expires control is enabled. |

### Messages & Error Codes

Some messages provide useful information about the process, others indicate error, or problem with the process variable signal or its wiring.
**Caution: Do not continue with the process until the issue is resolved.**

| Screen Name | Lower Display | Upper Display | Screen Meaning and Visibility |
|---|---|---|---|
| Alarm Active | *Normal* | **-AL-** | One or more alarms are active (alternates with PV). Optional – see **d.iSP** |
| Output Latched | *Normal* | **Ltch** | One or more output are latched on (alternates with PV), and no alarm is active |
| Input Over Range | *Normal* | **-HH-** | Process variable input >5% over-range. |

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| Screen Name | Lower Display | Upper Display | Screen Meaning and Visibility |
|---|---|---|---|
| Input Under Range | *Normal* | **-LL-** | Process variable input >5% under-range. |
| Input Sensor Break | **OFF** | **OPEN** | Break detected in process variable input sensor or wiring. |
| Un-calibrated Input | **OFF** | **Err** | Selected input range has not been calibrated. |
| Manual Power | **Pxxx** | *Normal* | Manual power value replaces the setpoint. |
| Setpoint Ramping | **SPr** | *Normal* | Setpoint ramp is active (alternates with setpoint) |
| Control Disabled | **OFF** | *Normal* | Control is disabled, control outputs are off. |
| Control Delayed | **dLY** | *Normal* | Visible if control delayed by Delayed Start Time (**d.t.i**) |
| Automatic Tuning | **tunE** | *Normal* | Tuning is active (alternates with setpoint) |
| Automatic Tuning Errors | | | If the tune fails the display alternates between the tune error code and the setpoint. Remains visible until tune set to off. |
| | **tEr1** | | PV is within 5% of setpoint |
| | **tEr2** | | Setpoint is ramping |
| | **tEr3** | | Control is ON/OFF |
| | **tEr4** | *Normal* | Control is manual |
| | **tEr5** | | Pulse tune not able to run |
| | **tEr6** | | Sensor break |
| | **tEr7** | | Timer running |
| | **tEr8** | | Sensor break |

## 5. SPECIFICATIONS

### UNIVERSAL INPUT

| | |
|---|---|
| Thermocouple Calibration: | ±0.25% of full range, ±1LSD (±1°C for Thermocouple CJC). BS4937, NBS125 & IEC584. |
| PT100 Calibration: | ±0.25% of full range, ±1LSD. BS1904 & DIN43760 (0.00385Ω/Ω/°C). |
| DC Calibration: | ±0.2% 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 20mA, 2 to 10V and 1 to 5V ranges only. *Control outputs turn off.* |
| Isolation: | Isolated from all outputs (except SSR driver) by at least BASIC isolation. 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. Isolated from Mains Power Input by basic isolation. |

### OUTPUTS

**RELAYS (OPTIONAL)**

| | |
|---|---|
| Contacts: | SPST Form A relay; current capacity 2A at 250VAC. |
| Lifetime: | >150,000 operations at rated voltage/current, resistive load. |
| Isolation: | Basic Isolation from universal input and SSR outputs. |

**SSR Drivers (OPTIONAL)**

| | |
|---|---|
| Drive Capability: | SSR drive voltage >10V at 20mA |
| Isolation: | Not isolated from universal input or other SSR driver outputs. |

### SERIAL COMMUNICATIONS (OPTIONAL)

| | |
|---|---|
| Physical: | RS485, at 1200, 2400, 4800, 9600, 19200 or 38400 bps. |
| Protocols: | Modbus RTU. |
| Isolation: | Basic safety isolation from Universal input and SSR. Basic safety isolation to Mains and Relay Circuits. |

### OPERATING CONDITIONS

| | |
|---|---|
| Usage | For indoor use only, mounted in suitable enclosure |
| Ambient Temperature: | 0°C to 55°C (Operating), –20°C to 80°C (Storage). |
| Relative Humidity: | 20% to 95% non-condensing. |
| Altitude: | <2000m |
| Supply Voltage and Power: | 100 to 240VAC ±10%, 50/60Hz, 7.5VA (for mains powered versions), or 24VAC +10/-15% 50/60Hz 7.5VA or 24VDC +10/-15% 5W (for low voltage versions). |

### ENVIRONMENTAL

| | |
|---|---|
| Standards: | CE |
| EMI: | Complies with EN61326 (Susceptibility and Emissions). |
| Safety Considerations: | Complies with EN61010-1 |
| Front Panel Sealing: | Front to IP65 when correctly mounted, Rear of panel to IP20. |

### PHYSICAL

| | |
|---|---|
| Front Bezel Size: | ¹/₁₆ Din = 48 x 48 mm, ¹/₈ Din = 48 x 96 mm |
| Depth Behind Panel: | 67mm with sealing gasket fitted. |
| Weight: | 0.20kg maximum |

## 6. ADVANCED CONFIGURATION

The advanced configuration gives access to all of the features of the unit.

### Advanced Configuration Mode Navigation

Press ⊙ or ⊙ to navigate to the required sub-menu, then press ⊙ to enter.

### Advanced Configuration Main Menu

| Screen Name | Lower Display | Upper Display | Sub-Menu Usage and Visibility |
|---|---|---|---|
| Advanced Configuration Mode Lock Code | A.Loc | Value | Visible when attempting to enter Advanced Configuration unless lock code is OFF. Set value (1 to 9999) matching the defined lock code to allow entry to the following screens. Default code is 20. |
| User Settings | USEr | | Provides access to Control and Manual Mode enable/disable. Only shown if Basic User mode is select in d iSP (see below). |
| Input Setup | InPt | | Configuration parameters for the process input. |
| Input Calibration | CAL | | Single or two point calibration adjustments for the process input. |
| Output Setup | OUtP | Adu | Configuration parameters for the outputs. |
| Control Setup | COnt | | PID control tuning & configuration parameters. Hidden if no control output set. |
| Setpoint & Timer Setup | SPt i | | Setpoint and timer settings. |
| Alarm Setup | ALM | | Alarm configuration parameters. |
| Communications Setup | CoM | | Modbus communications settings. Only shown if RS485 option is fitted. |
| Display Settings | d iSP | | Enable Basic Mode and change lock codes. |
| Product Information | InFo | | View product serial number and manufacturing information. |

### User Sub-Menu: USEr

Provides access to Output Control Enable / Disable.

| Screen Name | Lower Display | Upper Display Adjustment Range & Description | Default Value |
|---|---|---|---|
| Alarm Status | ALSt | Active Alarms — Visible when alarms are active - L21 are active. 1 = Alarm 1 active, 2 = Alarm 2 active, 3 = Loop Alarm active | Blank |
| Latch Status | LAth | Latched Alarms — Active when an output is latched - 123 are active. 1 = Output 1, 2 = Output 2, 3 = Output 3 | Blank |
| Maximum PV | MA | Max/Min PV recorded whilst powered up or since last reset. To clear press ⊙ then to select YES. Press ⊙ to accept. | |
| Minimum PV | M in | | |
| Control Enable | CntL | OFF Control output(s) disabled. / On Control output(s) enabled. PID or On-Off control available. | On |
| Manual Control Enable | MCt | OFF Instrument in automatic control mode (manual control OFF). / On Manual control ON. Power is shown as Pxxx in 1st User screen. | OFF |

### Input Sub-Menu: InPt

| Screen Name | Lower Display | Upper Display Adjustment Range & Description | Default Value |
|---|---|---|---|
| Input Type | tYPE | Options available same as in setup mode (section 3) | tC_P |
| Input Units | Un it | C Temperature displayed as °C / F Temperature displayed as °F | C |
| Process Display Resolution | dEc.P | 0000 No decimal places / 000.0 1 decimal place / 00.00 2 decimal places / 0.000 3 decimal places. Not available for temperature inputs. | 0000 |
| Scaled Range Upper Limit | ScUL | Scale Input Lower Limit +100 display units to range maximum | Input max Lin=1000 |
| Scaled Range Lower Limit | ScLL | Range minimum to Scale Input Upper Limit -100 display units | Input min Linear=0 |
| Input Filter Time | F iLt | OFF or 0.5 to 100.0 seconds in 0.5 increments | 2.0 |

| Screen Name | Lower Display | Upper Display Adjustment Range & Description | Default Value |
|---|---|---|---|
| Cold Junction Compensation | CJC | On Enables the internal thermocouple CJC. | On |
| | | OFF Disables the internal CJC. External compensation must be provided for thermocouples. | |

### Input Calibration Sub-Menu: CAL

Single or two point calibration adjustments for the process input.
If the error is not constant across the sensor range, measure the error at a low point and high point in the process, and use two point calibration to correct it.

| Screen Name | Lower Display | Upper Display Adjustment Range & Description | Default Value |
|---|---|---|---|
| Single Point Offset | OFFS | Shifts the input value up or down by the offset amount across the entire range. | 0 |
| Low Calibration Point | L.CAL | The value at which the low point error was measured. | Lower Limit |
| Low Offset | L.OFF | Enter an equal, but opposite offset value to the observed low point error. | 0 |
| High Calibration Point | H.CAL | The value at which the high point error was measured. | Upper Limit |
| High Offset | H.OFF | Enter an equal, but opposite offset value to the observed high point error. | 0 |

### Output Setup Sub-Menu: OUtP

| Screen Name | Lower Display | Upper Display Adjustment Range & Description | Default Value |
|---|---|---|---|
| Output 1 Usage | Out1 | HEAt Heat Power / COOL Cool Power / AL1 Alarm 1 / AL2 Alarm 2 / AL12 Alarm 1 or 2 / LooP Control loop alarm (2 x Integral time) | HEAt |
| Output 1 Alarm Action | Act1 | d ir Output changes with the alarm / rEu Output changes in opposition to alarm | d ir |
| Output 1 Alarm Latching | LAc1 | OFF Latching off / On Latching on | OFF |
| LED Indicator 1 Inverting | Ind1 | d ir LED Indicator changes with the output / rEu LED Indicator changes in opposition to the output | d ir |
| Output 2 Usage | OUt2 | As Output 1 Usage | AL1 |
| Output 2 Alarm Action | Act2 | As Output 1 Alarm Action | d ir |
| Output 2 Alarm Latching | LAc2 | As Output 1 Alarm Latching | OFF |
| LED Indicator 2 Inverting | Ind2 | As LED Indicator 1 Inverting | d ir |
| Output 3 Usage | OUt3 | As Output 1 Usage | AL2 |
| Output 3 Alarm Action | Act3 | As Output 1 Alarm Action | d ir |
| Output 3 Alarm Latching | LAc3 | As Output 1 Alarm Latching | OFF |
| LED Indicator 3 Inverting | Ind3 | As LED Indicator 1 Inverting | d ir |

### Control Sub-Menu: COnt

PID control tuning & configuration parameters. Hidden if no control outputs are set.

| Screen Name | Lower Display | Upper Display Adjustment Range & Description | Default Value |
|---|---|---|---|
| Heat Proportional Band | H_Pb | In display units. 0.0 (ON.OF) and range: 0.5 to 999.9 units. | 16 1 |
| Cool Proportional Band | C_Pb | | 16 1 |
| Automatic reset (integral time) | In.t | 1 second to 99 minutes 59 seconds and OFF | 5.00 |
| Rate (derivative time) | dEr.t | OFF 0 seconds to 99 minutes 59 seconds | 1.15 |
| Overlap/Deadband | O_d | In display units, range -20 to +20% of Heat and Cool Proportional Band | 0 |
| ON/OFF differential | d iFF | In display units, centred about the setpoint, range: 0.1% to 10.0% of input span | 8 |
| Loop Alarm Time | LAt i | Visible when using On/Off control (i.e. when H_Pb or C_Pb = On.OF) Sets the time to wait before the loop alarm becomes active. | 99.59 |

| Screen Name | Lower Display | Upper Display Adjustment Range & Description | Default Value |
|---|---|---|---|
| Manual Reset (Bias) | b iAS | 0 to 100% (100% to 100% if heat/cool control) | 25 |
| Heat Cycle Time | HcYc | 0.1 to 512.0 seconds | 32.0 |
| Cool Cycle Time | CcYc | | 32.0 |
| Heat and Cool output Inhibit | OPLC | Inhibits simultaneous switching of both heat and cool outputs. | OFF |
| Heat Power Limit | HPL | % power upper limit 0 to 100% | 100 |
| Cool Power Limit | CPL | % power upper limit 0 to 100% | 100 |
| Power Up Action | PUP | LASt Powers up with control enable in the same state as on power fail / On Always powers up with control enabled | LASt |
| Automatic Tuning Start/Stop | tunE | OFF Use current PID control terms or manually tune / PrE Start a pre-tune routine / AtSP Start the tune at setpoint | OFF |

### Setpoint & Timer Sub-Menu: SPt i

Setpoint and timer settings. The timer can apply a delay before enabling control; a controlled ramp towards the target setpoint; a limit to the time at target setpoint before disabling control. Timer is not available in basic mode.

| Screen Name | Lower Display | Upper Display Adjustment Range & Description | Default Value |
|---|---|---|---|
| Timer Enable | tEnb | EnAb Enables the delay and on timers, functions at next power-up / control enable. / d iSA Delay and on timers, are ignored, but setpoint ramping is not disabled. | d iSA |
| Delayed Start Time | d_t i | The time from power-up or a control enable request before control begins, from 00.01 to 99.59 or OFF. (Hours.Minutes) Control disabled until time elapsed. | OFF |
| Ramp Rate | rAtE | The rate (in units / hour) from current PV to setpoint following power-up or control enable. From 0.001 to 9999 or OFF Setpoint changes also follow this rate. | OFF |
| On Time | O_t i | The time the target setpoint will be maintained once reached, from 00.0 to 99.59 or OFF. Control remains on indefinitely if set to INF. (Hours.Minutes) | INF |
| Setpoint Upper Limit | SPuL | The maximum allowed setpoint value, from current setpoint to scaled upper limit. | Upper Limit |
| Setpoint Upper Limit | SPLL | The minimum allowed setpoint value, from current setpoint to scaled lower limit. | Lower Limit |

① ② ③ ④
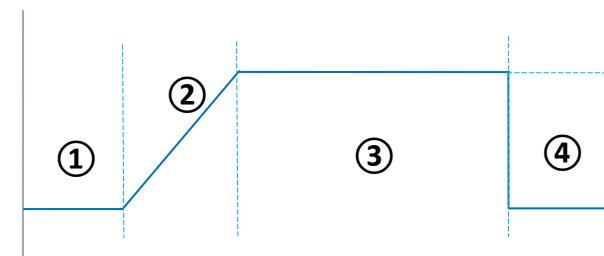
① At switch on or from control enable the unit will delay enabling control until the start timer (Delayed Start Time) expires.
② The setpoint then ramps from the current PV to the setpoint at the Setpoint Ramp Rate.
③ When a ramp rate is not defined the active setpoint will step directly to the target setpoint. Once the active setpoint reaches the target setpoint, the 'on' timer (On Time) starts.
④ When the on timer expires the control switches off.

If no time is defined for the on timer, control continues indefinitely unless manually disabled.

### Alarm Sub-Menu: ALM

| Screen Name | Lower Display | Upper Display Adjustment Range & Description | Default Value |
|---|---|---|---|
| Alarm 1 Type | AL1t | nonE None / P_h i Process High Alarm / P_Lo Process Low Alarm / dEu Deviation Alarm / bAnd Band Alarm | P_h i |
| Alarm 1 Value | AL_1 | Range minimum to range maximum disables the alarm. | 1373 |
| Alarm 1 Hysteresis | HYS1 | 0 to full span. | 1 |
| Alarm 2 Type | AL2t | As Alarm 1 | P_Lo |
| Alarm 2 Value | AL_2 | Range minimum to range maximum | -240 |

| Screen Name | Lower Display | Upper Display Adjustment Range & Description | Default Value |
|---|---|---|---|
| | | OFF disables the alarm. | |
| Alarm 2 Hysteresis | HYS2 | 0 to full span. | 1 |
| Alarm Inhibit | inh i | Inhibit these alarms if active at power-up and on change in setpoint. | nonE |
| | | nonE None / 1 Alarm 1 / 2 Alarm 2 / 1 2 Alarm 1 and Alarm 2 | |
| Alarm Notification | NotE | Alternating indication -AL- shown when these alarms are active. | 1 2 |
| | | nonE None / 1 Alarm 1 / 2 Alarm 2 / 1 2 Alarm 1 and Alarm 2 | |
| Sensor Break Alarm | SbAc | On activates both alarms when a sensor break is detected. | OFF |

### Communications Sub-Menu: CoM

Modbus communications settings. Only shown if RS485 option is fitted.

| Screen Name | Lower Display | Upper Display Adjustment Range & Description | Default Value |
|---|---|---|---|
| Modbus Address | Add | The device network address from 1 to 255 | 1 |
| Baud Rate | bAud | The communications data rate in kbps from 1.2 (1200), 2.4 (2400), 4.8 (4800), 9.6 (9600), 19.2 (19200), 38.4 (38400). | 9.6 |
| Parity | PrtY | Parity checking: Odd, EuEn or nonE | nonE |

### Display Sub-Menu: d iSP

Enable Basic Mode and change lock codes.

| Screen Name | Lower Display | Upper Display Adjustment Range & Description | Default Value |
|---|---|---|---|
| Setup Lock Code | S.Loc | View and adjust lock code to allow entry to the Setup Mode. Adjustable from 1 to 9999 or OFF to allow unrestricted access | 10 |
| Advanced Configuration Lock Code | A.Loc | View and adjust lock code to allow entry to the Advanced Configuration. Adjustable from 1 to 9999 or OFF to allow unrestricted access | 20 |
| Basic Setpoint Control Enable/Disable | bASc | Basic Setpoint Control allows user to only change the setpoint or manual power. | d iSA |
| Reset to Defaults | dFLt | Reset all parameters back to their factory defaults Reset by pressing ⊙ and selecting YES | YES |

### Operator Sub-Menu: OPtr

Controls what appears in the User Mode when Basic Mode is disabled.

| Screen Name | Lower Display | Upper Display | Sub-Menu Usage and Visibility |
|---|---|---|---|
| PV Maximum | MA | | H idE |
| PV Minimum | M in | | H idE |
| Alarm Status | ALSt | | H idE |
| Latch Status | LAtch | H idE / SHuU | Hide or show parameters in User Mode when Basic Mode is disabled. |
| Control Enabled | CntL | SHuU | |
| Manual Control Enabled | MCt | | H idE |
| Time On Remaining | Ont i | | H idE |
| Delay Time Remaining | dLt i | | H idE |

### Product Information Sub-Menu: InFo (Read-Only view)

| Screen Name | Lower Display | Description |
|---|---|---|
| Product Revision | PrL | The hardware/software revision level. |
| Firmware Type | FtYP | The firmware code type. |
| Firmware Issue | ISS | The firmware version number |
| Serial Number 1 | SEr1 | First four digits of serial number |
| Serial Number 2 | SEr2 | Middle four digits of serial number |
| Serial Number 3 | SEr3 | Last four digits of serial number |
| Date of Manufacture | dOM | Date of manufacture (mmyy) |