

59615-4 MaxVU Rail Standard Controller Concise Manual

1. INSTALLATION

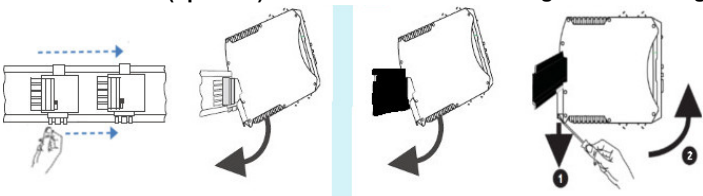
WARNING: This product can expose you to chemicals including arsenic, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov

Installation Guidance

- Installation should only be performed by technically competent personnel.
• Standards compliance shall not be impaired when fitting into the final installation.
• It is the responsibility of the installing engineer to ensure that the configuration is safe.
• Local regulations regarding the electrical installation & safety must be observed.
• Impairment of protection occurs if product is used in a manner not specified by the manufacturer.
• Due to the low weight of this instrument there are no special lifting or carrying considerations.
• Designed to offer a minimum of Basic Insulation only.
• Ensure supplementary insulation suitable for Installation Category II is achieved when 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 position the equipment so that it is difficult to operate the disconnecting device.
• Ventilation slots must not be covered, and adequate air circulation must be allowed.
• Use conductor sizes 30-12 AWG, minimum temp rating of cables to be 80°C.

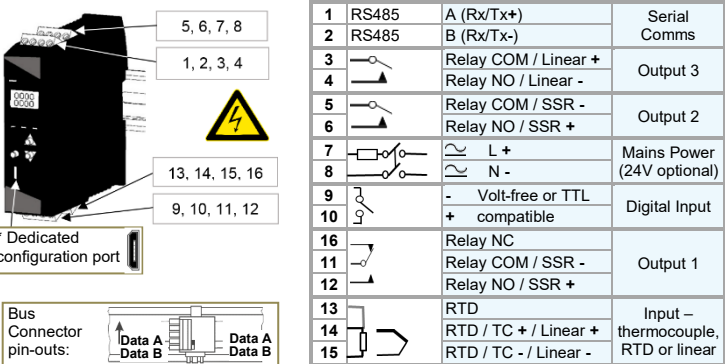
Bus Connector (optional)

Mounting & Unmounting



Terminal Wiring

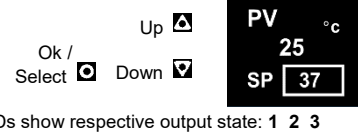
CAUTION: Check information label on housing for correct operating voltage before connecting supply to Power Inputs. Diagrams show all possible option combinations, check your exact product specification before connecting.



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

2. FRONT PANEL

Display shows PV (process variable), units, SP (setpoint), alarm/latch statuses, error & warning messages.



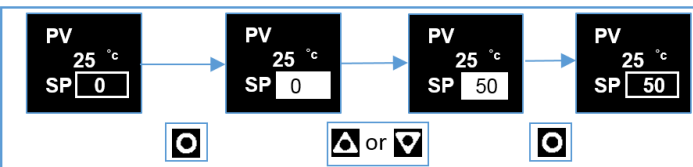
Display turns off after 5, 15 or 30 minutes without key press.

LEDs show respective output state: 1 2 3

Navigation & Editing

- Press **Up** or **Down** keys to navigate between parameters or menu items.
• Press **Left** or **Right** to highlight and edit a parameter value.
• Press **Enter** or **Escape** to change the parameter value, then press **Enter** within 60 seconds to confirm change.

For example, changing the setpoint (SP).



Navigating to Setup Mode or Advance Configuration from Operator Mode:

- Setup Mode - press **Enter** & **Left**.
• Advanced Configuration - press **Enter** & **Right**.

Returning to Operator Mode:

Press **Enter** & **Left** to move back one level. After 120 seconds without key presses the unit returns automatically to the first Operator Mode screen.

3. SETUP (& FIRST POWER UP)

Important Note: When powered up for the first time, or after a factory reset (default) the instrument enters Setup.

The device remains in Setup, or will keep powering up back into Setup, until all parameters have been reviewed and the user exits Setup.

Some parameters may be hidden depending on configuration & hardware.

Alternatively press **Enter** & **Left** to enter Setup from Operator mode and **Enter** & **Right** to exit.

Setup Lock	Enter code & press	Default
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Parameter	Description	Default Value		
>Input Type	J Thermocouple *	K Thermocouple		
	-200 – 1200°C -328 – 2192°F		-128.8 – 537.7°C -199.9 – 999.9°F	
	K Thermocouple *		-240 – 1373°C -400 – 2503°F	
	-128.8 – 537.7°C -199.9 – 999.9°F			
>Input Units	PT100 *	°C		
	-199 – 800°C -328 – 1472°F		-128.8 – 537.7°C -199.9 – 999.9°F	
	B Thermocouple		100 – 1824°C 211 – 3315°F	
	C Thermocouple		0 – 2320°C 32 – 4208°F	
>Input Decimal Place	L Thermocouple *	0000		
	0 – 762°C 32 – 1403°F		0.0 – 537.7°C 32.0 – 999.9°F	
	N Thermocouple		0 – 1399°C 32 – 2551°F	
	R Thermocouple		0 – 1795°C 32 – 3198°F	
	S Thermocouple		0 – 1762°C 32 – 3204°F	
	T Thermocouple *		-240 – 400°C -400 – 752°F	
	-128.8 – 400.0°C -199.9 – 752.0°F			
	Linear dc		0 - 20mA 0 - 50mV 0 - 5V 0 - 10V	4 - 20mA 10 - 50mV 1 - 5V 2 - 10V
	* Maximum of 1 decimal place for temperature inputs marked.			
	Scale Range Maximum		Maximum for application working range.	1000
	Scale Range Minimum		Minimum for application working range.	0
	None		Alarm Reset (clears latched alarms)	Ctrl Enable/Disable
>Input Digital I/P Action	Ctrl Auto/Manual Pre-Tune Start/Stop Tune at SP Start/Stop	Ctrl Enable/Disable		
>Output 1 Usage	Heat Cool Alarm 1 Alarm 2 Alm. 1or2 Loop Alarm	Heat		
>Output 2 Usage	Same options as Output 1 Usage	Alarm 1		
>Output 3 Usage	Same options as Output 1 Usage.	Alarm 2		
>Linear Out Usage	Heat Cool PV Retx SP Retx	PV Retx		
>Linear Out Type	0-10V 2-10V 0-20mA 4-20mA 0-5V 1-5V	0-10V		

>Linear Out Scale Range Maximum	Maximum PV value corresponding to maximum linear output.	Input type Max
>Linear Out Scale Range Minimum	Minimum PV value corresponding to minimum linear output.	Input type Min
>Alarm 1 Value	Range minimum to range maximum, or OFF (maximum +1). OFF disables alarm. Default PV High alarm type.	1373
>Alarm 2 Value	Same options as Alarm 1. Default PV Low alarm type.	-240
Setpoint	Target setpoint.	0
>Coms Unit Address	Modbus address from 1 to 255	1
>Coms Baud Rate	1200, 2400, 4800, 9600, 19200 & 38400	9600
>Coms Parity	Odd, Even or None	None
>Control Automatic Tuning	Off, Start Pre-Tune or Start Tune at SP *	Off
*Start Tune at SP not available for Heat & Cool processes.		
When you exit if necessary, press Enter and Left to clear Control is Enabled Pop Up Alert.		

4. OPERATOR MODE

Name	Details
User Screen	PV 25 °C SP 37 PV - top SP - bottom Temperature Unit - right.
Manual control	PV 25 °C P% 50 Manual Power is shown as P%.
Transmitter view enabled	PV 25 °C Transmitter parameter = Enable, SP is hidden. Important: The device still functions as a controller, using the local Setpoint.
Alarm State	Alarm State Alarm 1 Alarm 2 Loop To clear latches press Enter then Left to select Yes. Press Enter to accept. Alarm active Alarm set, but not active Alarm not set
Latch State	Latch State Out 1 Out 2 Out 3 Output Latched Latch set, but output not Latched Latch not set
Maximum PV	To clear press Enter then Left to select Yes. Press Enter to accept. Screens show the Maximum & Minimum PV reached.
Minimum PV	
Control Enable	OFF - Control output(s) disabled. (Ignored when in manual mode). ON - Control output(s) enabled.
Manual Control Enable	OFF - Automatic control, PID or On-Off control available. ON - Manual control, Manual Power shown as P% xxx.
Time On Remaining	On Timer Visible when On Timer is active. See Ramp & Timers diagram.
Delay Time Remaining	Delay Timer Visible when Delay Timer is active. See Ramp & Timers diagram.

Warnings & Error Messages

Caution: Do not continue your process until any issues are resolved.

Name	Details
Pop up Alerts: Warnings and Confirmations	Alarm 1 For example, Pop Up Alert for Alarm 1. Pop Up Alerts need to be acknowledged. Press Enter and Left to clear Pop Up Alert.
Pop up Alerts: Alarm 1, Alarm 2, Alarm 1 & 2, Starting Calibration, Calibration Ongoing, Calibration Fail, Control is Enabled, Tune Error messages, Tuning in progress, Setup not Completed & Offset in use (SP offset).	
ALARM	Alternates with PV to show Alarm is active.
LATCH	Alternates with PV. One or more outputs are latched on and no alarm is active.
HIGH	Process variable input > 5% over-range.
LOW	Process variable input > 5% under-range.
OPEN	Break detected in process variable input sensor, wiring or wrong input type selected. Shows OPEN until resolved, control is off.
ERROR	Selected input range is not calibrated. Shows ERROR until resolved, control is off.
TUNE	Alternates with SP. Auto-tuning is in progress.
P%	Manual power value replaces setpoint, shows P% xxx of power.
Ramp	Alternates with actual setpoint. Setpoint ramp is active.
OFF	Control is disabled. Control output(s) are off.
Control Delayed	Visible when Delay Timer is active. Control output(s) are off.
Tuning in progress	Alternates with setpoint. Tuning is active.

Display alternates between Tune Error & Setpoint. Remains visible until Automatic Tuning is turned Off.	
tErr1	PV within 5% of SP (for pre-tune)
tErr2	Setpoint is ramping
tErr3	Control is ON/OFF (not PID)
tErr4	Control is manual
tErr5	Tune at Setpoint not able to run
tErr6	Sensor Break
tErr7	Timer Running
tErr8	Control is Disabled

5. SPECIFICATIONS

Important: Check your product code for exact hardware fitted.

PROCESS INPUT

Thermocouple Calibration: ±0.25% of full range, ±1LSD & ±1°C for Thermocouple CJC. Factory calibration is accurate 0.25% of span above -100°C, below -100°C accuracy is within +/- 0.9%. To meet 0.25% accuracy below -100°C recalibrate using procedure in full manual. BS4937, NBS125 & IEC584.

PT100 Calibration: ±0.25% of full range, ±1LSD. BS1904 & DIN43760 (0.00385Ω/°C).

DC Calibration: ±0.25% of full range, ±1LSD.

Sampling Rate: 4 per second.

Impedance: >1MΩ resistive, except dc mA (5Ω) and V (47kΩ)

Sensor Break Detection: Thermocouple, RTD, 4 to 20mA, 10 to 50mV, 2 to 10V and 1 to 5V ranges only. Control outputs turn off at sensor break.

DIGITAL INPUT (Isolated or Non-Isolated version)

Functions: Reset Alarm, Control Enable/Disable, Auto/Manual, Pre-Tune Start/Stop or Tune at SP Start/Stop.

Signal: Non-isolated - Open or Close only. Isolated - Open (2 to 24Vdc) or Closed (<0.8Vdc). Open to Closed transition = Reset, Enabled, Auto or Start.

OUTPUTS

Relay Contacts: Form C SPDT (Op 1) / Form A SPST relay (other), 2A @ 250Vac.

Relay Lifetime: >150,000 operations at rated voltage/current, resistive load.

SSR Driver Capability: SSR drive voltage >10V at 20mA

DC Linear (Output 3 option only):

Types: 0 to 20mA, 4 to 20mA, 0 to 5V, 0 to 10V or 2 to 10V
Accuracy: ±0.25% (mA @ 250Ω, V @ 2kΩ). Degrades linearly to ±0.5% for increasing burden (to specification limits).

Load Resistance: Current Output 500Ω max, Voltage Output 500Ω min.

Resolution: 8 bits in 250ms (10 bits in 1s typical, >10 bits in >1s typical).

RS485 SERIAL COMMUNICATIONS (Modbus RTU)

Data Rate: 1200, 2400, 4800, 9600, 19200 or 38400 bps.

OPERATING CONDITIONS

Usage: For indoor use only, DIN-rail mounted in suitable enclosure.
Ambient Temp: <95% humidity 0°C to 55°C (Operating), -10°C to 80°C (Storage).
Relative Humidity: 20% to 95% non-condensing.
Altitude: < 2000m
Power Supply: Mains power version - 100 to 240Vac ±10%, 50/60Hz, 9VA
Low voltage version - 24Vac +10/-15% 50/60Hz 9VA or 24Vdc +10/-15% 5W.

ENVIRONMENTAL

Standards: CE, UL & cUL.

EMI: EN61326-1:2013, Table 2 & Class A.

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Safety: UL61010-1 Edition 3, EN61010-1 Version 2010, Pollution Degree 2 & Installation Class 2.

Protection Rating: IP20.

PHYSICAL

Unit Size: Height - 99mm; Width - 22.5mm; Depth - 121mm

Ventilation: A space of 80mm must be allowed above & below each unit.

Weight: 0.20kg maximum

ISOLATION

	PSU	Universal Input	Relay	SSR	Linear	RS485 Comms	Non-Isolated Digital Input	Isolated Digital Input	Config Port
PSU									
Universal Input									
Relay									
SSR									
Linear									
RS485 Comms									
Non-Isolated Digital Input									
Isolated Digital Input									
Configuration Port									
	Not Applicable		No Isolation				Reinforced Isolation		

