

VINIREG+ WINE CONTROLLERS CONCISE MANUAL (59608-1)

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

1. OVERVIEW

The Vinireg+ controllers from West have been designed with the following key features specifically for reliable temperature control during wine production to ensure the highest quality wine.

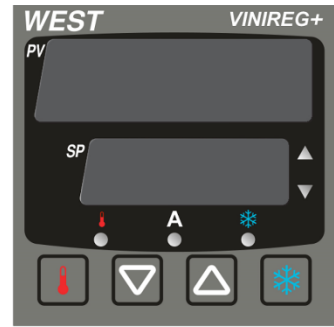
- Inversion of control mode via the front panel or via digital input
- Enabling each control output
- Extended communication parameters
- 2 display strategies

The Vinireg+ has many features enabling it to provide quality temperature control systems with high reliability.

- Platinum probe input 100 Ohms at 0° C (Pt100 3 wires)
- Double digital display: Process Variable (Green) and Setpoint (Red)
- Remote and direct adjustment of the setpoint
- Correction of the measured value
- Alarm management and serial communication

2. FRONT FASCIA

48 x 48 mm – 1/16 DIN



- Heat circuit
- Cool circuit
- Alarm LED
- Output LED - Heat or Cool

2 Digital displays

- The Green top display shows the Process Variable
- The Red bottom display shows the desired Setpoint.

Three LED (light emitting diode) mode indicator lights.

- The LED HOT above the HOT key indicates that the circuit 1 control is used in heating mode
- The LED COLD above the COLD button indicates that the circuit 1 control is used in cooling mode.
- A LED indicates that an alarm is active.

Two red LED output indicator arrow lights.

- The up arrow ▲ shows that the relay control output is ON.

An operator keyboard with 4 function keys

No digital input.

- Hot Button, it allows:
Hold for a period of 3 seconds, this button switches the control action in Heat mode.
- Cold Button, it allows:
Hold for a period of 3 seconds, this button switches the control action in cooling mode.
- When in Heat mode, hold for 3 seconds Hot button turns the controller into Stop mode
- When in Cool mode, hold for 3 seconds Cold button turns the controller into Stop mode.

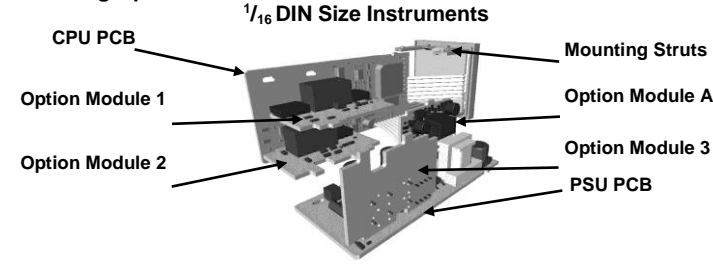
2 Display strategy:

- Display remains on display Strategy 1
- Display OFF in strategy 2.

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

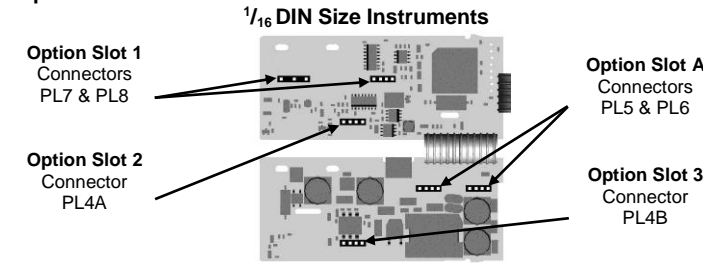


To access modules 1, A or B, first detach the PSU and CPU boards from the front by lifting first the upper, and then lower mounting struts. Gently separate the boards.

- 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

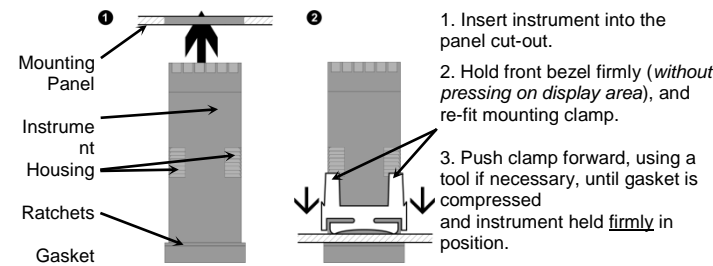
The mounting panel must be rigid, and may be up to 6.0mm (0.25inch) thick. Cut-out sizes are:

Cut-Out Dim A
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 48*n*-4mm Din.

Tolerance +0,5, -0,0mm

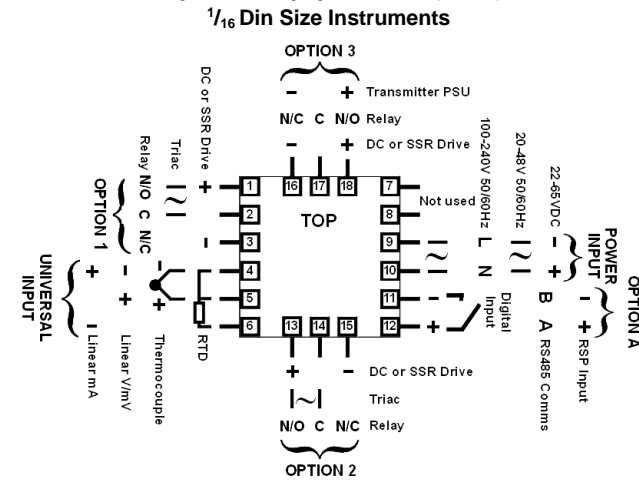


CAUTION: For an effective IP66 seal against dust and moisture, ensure gasket is well compressed against the panel, with the 4 tongues located in the same ratchet slot.

Rear Terminal Wiring

USE COPPER CONDUCTORS (EXCEPT FOR T/C INPUT)

Single Strand wire gauge: Max 1.2mm (18SWG)



These diagrams show all possible option combinations. The actual connections required depends on the exact 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

4. SELECT MODE – SLCT

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

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

5. CONFIGURATION MODE - ConF

First select Configuration mode from Select mode (refer to section 4). Press **▲** to scroll through the parameters, then press **▲** or **▼** to set the required value. Press **▲** to accept the change, otherwise parameter will revert to previous value. To exit from Configuration mode, hold down **▲** and press **▲**, 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	inPt		See following table for possible codes	JC
Code	Input Type & Range	Code	Input Type & Range	Code
bC	B : 100 - 1824 °C	LC	L : 0.0 - 537.7 °C	P24F
bF	B : 211 - 3315 °F	LF	L : 32.0 - 999.9 °F	
cC	C : 0 - 2320 °C	NC	N : 0 - 1399 °C	Pt100 : -199 - 800 °C
cF	C : 32 - 4208 °F	NF	N : 32 - 2551 °F	Pt100 : -328 - 1472 °F
JC	J : -200 - 1200 °C	RC	R : 0 - 1759 °C	Pt100 : -128.8 - 537.7 °C
JF	J : -328 - 2192 °F	RF	R : 32 - 3198 °F	Pt100 : -199.9 - 999.9 °F
Jc	J : -128.8 - 537.7 °C	Sc	S : 0 - 1762 °C	0 - 20 mA DC
Jf	J : -199.9 - 999.9 °F	Sf	S : 32 - 3204 °F	4 - 20 mA DC
Hc	K : -240 - 1373 °C	Lc	T : -240 - 400 °C	0 - 50 mV DC
Hf	K : -400 - 2503 °F	Lf	T : -400 - 752 °F	10 - 50 mV DC
Hc	K : -128.8 - 537.7 °C	Lc	T : -128.8 - 400.0 °C	0 - 5 V DC
Hf	K : -199.9 - 999.9 °F	Lf	T : -199.9 - 752.0 °F	1 - 5 V DC
Lc	L : 0 - 762 °C	P24C	PtRh20% vs. 40%: 0 - 1850 °C	0 - 10 V DC
Lf	L : 32 - 1403 °F			2 - 10 V DC

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	ruL	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	
Alarm 1Type	AL1	P_H	Process High Alarm	P_H
		P_Lo	Process Low Alarm	
		dE	Deviation Alarm	
		bRNd	Band Alarm	
		nonE	No alarm	
High Alarm 1 value*	PhA1	Range Minimum to Range Maximum	Range Max	
Low Alarm 1 value*	PLA1		Range Min	
Dev. Alarm 1 value *	dAL1	+/- Span from setpoint in display units	5	
Band Alarm 1 value*	bAL1	1 LSD to span from setpoint	5	
Alarm 1 Hysteresis*	AHY1	1 LSD to full span in display units	1	
Alarm 2 Type*	AL2		P_H	
High Alarm 2 value*	PhA2	As Alarm 1	Range Max	
Low Alarm 2 value*	PLA2		Range Min	
Dev. Alarm 1 value	dAL2		0.5	
Band Alarm 1 value	bAL2		0.5	
Alarm 2 Hysteresis*	AHY2	1 LSD to full span in display units	1	
Loop Alarm	LAEn	d ISA (disabled) or EnAb (enabled)	d ISA	
Loop Alarm Time	LAEt	1 sec to 99 mins. 59secs	99.59	
Alarm Inhibit	Inh	nonE	No alarms inhibited	nonE
		ALA1	Alarm 1 inhibited	
		ALA2	Alarm 2 inhibited	
		both	Alarm 1 and alarm 2 inhibited	
Output 1 Usage	USE1	Ctrl	Control output	Ctrl
		A1_d	Alarm 1, Direct	
		A1_r	Alarm 1, Reverse	
		A2_d	Alarm 2, Direct	
		A2_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	
		rEtP	Retransmit PV	
rEtS	Retransmit SP			
Linear Output 1 Range	LYP1	0.5	0 to 5 V DC output	0.10
		0.10	0 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	ro1H	-1999 to 9999 (display value at which output will be maximum)	Range max	
Retransmit Output 1 Scale minimum	ro1L	-1999 to 9999 (display value at which output will be minimum)	Range min	
Output 2 Usage	USE2	As for output 1	Sec or AI2	
Linear Output 2 Range	LYP2	As for output 1	0.10	
Retransmit Output 2 Scale maximum	ro2H	-1999 to 9999 (display value at which output will be maximum)	Range max	
Retransmit Output 2 Scale minimum	ro2L	-1999 to 9999 (display value at which output will be minimum)	Range min	
Output 3 Usage	USE3	As for output 1	A1_d	
Linear Output 3 Range	LYP3	As for output 1	0.10	
Retransmit Output 3 Scale maximum	ro3H	-1999 to 9999 (display value at which output will be maximum)	Range max	
Retransmit Output 3 Scale minimum	ro3L	-1999 to 9999 (display value at which output will be minimum)	Range min	

Display Strategy	d iSP	1.2 (refer to section 10)	1
Serial Communications Protocol	r7bn	Modbus with no parity	
	r7bE	Modbus with Even Parity	
	r7bo	Modbus with Odd Parity	
Serial Communications Bit Rate	bAud	1.2 2.4 4.8 9.6 19.2	4.8
		1.2 kbps 2.4 kbps 4.8 kbps 9.6 kbps 19.2 kbps	
Comms Address	Addr	1 to 255 (Modbus)	1
Comms Write	r_wJ	Read/Write	r_wJ
	r_o	Read only	
Digital Input	d iEn	HEAT/COOL control	d iSA
Lock code	CLoc	0 to 9999	20

6. SETUP MODE - SEtP

Note: Configuration must be completed before adjusting Setup parameters.

First select Setup mode from Select mode (refer to section 4).

Press \leftarrow to scroll through the parameters, then press Δ or ∇ to set the required value.

To exit from Setup mode, hold down \leftarrow and press Δ 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	\pm Span of controller	0
Power level	CPu	Current power levels (read only)	N/A
Primary Proportional Band	Pb_P	Normally set at 0 for wine temperature applications	0
Automatic Reset (Integral Time)	RrSt	Appears only if Pb_P >0	5.00
Rate (Derivative Time)	rRtE	Appears only if Pb_P >0	1.15
Manual Reset (Bias)	b iRS	0% (-100% if dual control) to 100%	25
Differential ON/OFF	d iF	0.0% to 50.0% of input span (Entered as % of span)	0.5
Setpoint Upper Limit	SPuL	Current Setpoint to Range max	R/max
Setpoint Lower limit	SPlL	Range min to Current Setpoint	R/min
High Alarm 1 value	PhA1	Range Minimum to Range Maximum	R/max
Low Alarm 1 value	PLA1	Maximum	R/min
Deviation Alarm 1 Value	dRAL1	\pm Span from SP in display units	5
Band Alarm 1 value	bAL1	1 LSD to span from setpoint	5
Alarm 1 Hysteresis	AH1	1 LSD to full span in display units	1
High Alarm 2 value	PhA2	Range Minimum to Range Maximum	R/max
Low Alarm 2 value	PLA2	Maximum	R/min
Deviation Alarm 2 value	dRAL2		0.5
Band Alarm 2 value	bAL2		0.5
Alarm 2 Hysteresis	AH2	1 LSD to full span in display units	1
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	

8. PRODUCT INFORMATION MODE - inFo

First select Product information mode from Select mode (refer to section 4).

Press \leftarrow to view each parameter. To exit from Product Information mode, hold down \leftarrow and press Δ to return to Select mode.

Note: These parameters are all read only.

Parameter	Lower Display	Upper Display	Description
Input type	In_i	Un_i	Universal input
		nonE	No option fitted
		rLY	Relay output
Option 1 module type fitted	OPn1	SSr	SSR drive output
		tr_i	Triac output
		L in	Linear DC voltage / current output
Option 2 module type fitted	OPn2	As Option 1	
Option 3 module type fitted	OPn3	As Option 1	
Auxiliary Option A module type fitted	OPnA	nonE	No option fitted
		r4B5	RS485 communications
		rSP_i	Density Input
Firmware type	FLUJ		Value displayed is firmware type number
Firmware issue	ISS		Value displayed is firmware issue number
Product Revision Level	PrL		Value displayed is Product Revision level

Parameter	Lower Display	Upper Display	Description
Date of manufacture	d0r7		Manufacturing date code (mmyy)
Serial number 1	Sn1		First four digits of serial number
Serial number 2	Sn2		Middle four digits of serial number
Serial number 3	Sn3		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	GoTo	Conf	Configuration & Setup required. This screen is seen at first turn on, or if hardware configuration has been changed. Press Δ to enter the Configuration Mode, next press ∇ or \leftarrow to enter the unlock code number, then press \rightarrow to proceed
Input Over Range	[HH]	Normal	Process Variable input > 5% over-range
Input Under Range	[LL]	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	[HH]**	RSP input over-range
RSP Under Range	Normal	[LL]**	RSP input under-range
RSP Break	Normal	OPEN**	Break detected in RSP input signal
Option 1 Error		OPn1	Option 1 module fault
Option 2 Error		OPn2	Option 2 module fault
Option 3 Error		OPn3	Option 3 module fault
Option A Error		OPnA	Option A module fault or RSP in both A & B

10. OPERATOR MODE - OPtR

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 (d iSP)	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 $\pm 0.1\%$ of full range, $\pm 1\text{LSD}$ ($\pm 1^\circ\text{C}$ for Thermocouple CJC).

Calibration: BS4937, NBS125 & IEC584.

PT100 Calibration: $\pm 0.1\%$ of full range, $\pm 1\text{LSD}$.
BS1904 & DIN43760 ($0.00385\Omega/\Omega/^\circ\text{C}$).

DC Calibration: $\pm 0.1\%$ of full range, $\pm 1\text{LSD}$.

Sampling Rate: 4 per second.

Impedance: $>10\text{M}\Omega$ resistive, except DC mA (5 Ω) and V (47k Ω).

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.

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 $>10\text{V}$ into 500 Ω 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 $>1\text{s}$ typical).

Isolation: Reinforced safety isolation from inputs and other outputs.

Transmitter PSU

Power Rating: 20 to 28V DC (24V nominal) into 910 Ω 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.

Altitude: $<2000\text{m}$

Supply Voltage and Power: 100 to 240VAC $\pm 10\%$, 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, cUL & CSA.

EMI: EN61326-1:2013.

Safety: UL61010-1 & CSA 22.2 No 1010.1., Pollution Degree 2 & Considerations: Installation Class II.

Front Panel Sealing: To IP66 (IP20 behind the panel).

PHYSICAL

Front Bezel Size: $1/16$ DIN = 48 x 48mm.

Depth Behind Panel: $1/16$ DIN (48x48) = 110mm.

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 Class II is achieved when fully installed.

-To avoid possible hazards, accessible conductive parts of the final installation should be protectively earthed in accordance with UL61010 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.