

USER'S OPERATING MANUAL FOR AUTOCLAVE CONTROLLER
(Models: VAC-44)



VAC-44
(48 X 48)

SPECIFICATIONS : -

1. DISPLAY TYPE

: 8 - Digit 7 segment LED

Model no.	VAC-44	Color
Display height (PV)	0.39"	White
Display height (SV)	0.24"	Green

2. STATUS LED'S Status

HTR : Heater Control Output
P/E : Purg / Exhaust Output Status
EOC : End Of Cycle Status
ST : Soak Timer Running Status
SP : Set Point Status
PR : Pressure Status

3. INPUT

Sensor input : RTD Pt-100
Resolution : $\pm 0.1^\circ\text{C}$
Accuracy : $\pm 0.3^\circ\text{C}$
Sampling Time : 125 msec.
LWC for Pt-100 : Built in up to 18E max.
Digital Filter : 1 to 10 Sec.

4. RELAY OUTPUT

Contact type : N/O, COM
Contact Rating : 5A @ 250VAC or 30 VDC
Life expectancy : > 5,00,000 operations
Isolation : Inherent

5. SSR DRIVE OUTPUT

Drive Capacity : 12V @ 30mA.
Isolation : Non-Isolated.

6. FUNCTION

Output 1 : Heater output (Factory Set)
1) Relay
2) SSR
Output 2 : Purge / Exhaust (Factory Set)
1) Relay
2) SSR
Output 3 : End Of Cycle Output (Factory Set)
1) Relay
2) SSR

Control Action : ON-OFF/PID (Select)

7. ENVIRONMENTAL

Operating Range : 0 ~50°C, 5~90% Rh
Storage Humidity : 95% Rh (Non-condensing)

8. POWER SUPPLY

Supply Voltage : 90~270VAC, 50/60Hz.
Consumption : 4W Maximum.

9. PHYSICAL

Housing : ABS Plastic

INSTALLATION GUIDELINES

1. Prepare the cut-out with proper dimension as shown in figure.
2. Remove clamp from Controller.
3. Push the Timer through panel cut-out and secure the Controller in its place by tightening the side clamp.

SAFETY INSTRUCTION

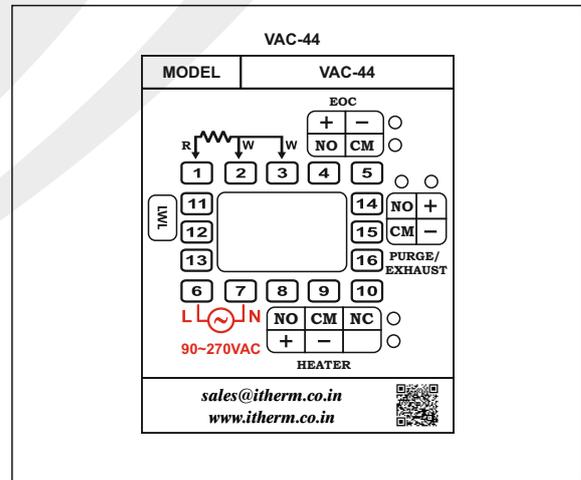
MECHANICAL

- ❖ Ambient temperature and relative humidity surrounding the Controller must not exceed the maximum specified limits.
- ❖ The Controller in its installed state must be protected against excessive electrostatic or electromagnetic interferences.

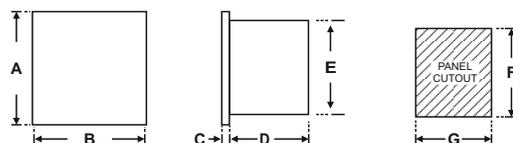
ELECTRICAL

- ❖ The Controller must be wired as per wiring diagram & it must comply with local electrical regulation.
- ❖ The Electrical noise generated by switching inductive loads might create momentary Fluctuation in display, latch up, data loss or permanent damage to the instrument. To reduce this use snubber circuit across the load.

TERMINAL CONNECTIONS :



OVER ALL DIMENSIONS & PANEL CUT OUT (IN MM)



Dim Model	A	B	C	D	E	F	G	H
VAC-44	48	48	8	75	43	44	44	9

PROGRAMMING

USER LIST : To access the user list Press & Release SET key once.

Para Meter	Lower Display	Upper Display	Range	Description	Default
Control Set Point	SP	0.0	0 ~ HSPL	User can set the required setpoint at which the controller will maintain the PV.	121 °C
Soak Time	SOAKt	20	1 ~ 999	The time base for Soak Timer is in minutes. Once the PV reaches SV the SOAK timer starts decrementing.	20 min.
Air Setpoint	Ar.SP	0.0	0 ~ SP	User can set the required AIR setpoint at which the output will go off after initiation of cycle. The AIR output remains ON till it reaches AIR SETPOINT.	100 °C
Exhaust Setpoint	EHSP	0.0	0 ~ HSPL	User can set the required EXHAUST setpoint which would be taken into account after the completion of cycle. Once the cycle gets over, Exhaust output remains ON until EXHAUST SETPOINT.	30 °C
Cycle End Setpoint	CE.SP	0.0	0 ~ SP	User can set the required CYCLE END setpoint at which the alarm goes on once the PV comes below this setpoint.	30 °C
High Alarm Deviation Setpoint	AL.SP	0.1	0.1 ~ 10.0	User can set the required HIGH ALARM DEVIATION setpoint. If the PV goes above this, the alarm output remains high.	5 °C
Fail Safe Deviation Setpoint	SF.SP	0.3	0.3 ~ 20.0	User can set the required FAIL SAFE DEVIATION setpoint. If the PV goes above this, the cycle is aborted and heater is switched off along with air outlet valve is opened to release the pressure.	10 °C

CONTROL LIST : To enter in this mode press SET & DOWN key simultaneously for 3 sec.

Para Meter	Lower Display	Upper Display	Range	Description	Default
Lock Code	LOCK	0	1 ~ 9999	Set this parameter to 15 (Default LOCK CODE) to access Control List. User has a choice to set different Lock Code via USER LOCK CODE in Config. List.	15
Proportional Band	Pb	1.5	0.0 to 99.9°C	This parameter sets bandwidth over which the output power is adjusted depending upon the error (SV - PV). The value of this parameter is automatically set by AUTO TUNE Function. If set to 0.0, the control action becomes ON-OFF.	1.5 °C
Integral Time	Int	96	0 to 3600 Sec.	This parameter sets the time taken by the PID algorithm to remove steady state error. Value of this parameter is automatically set by AUTO TUNE Function. This parameter will not be prompted if the value of PROPOTIONAL BAND is set to 0.	96
Derivative Time	dt	24	0 to 300 Sec.	This parameter defines how strongly the Controller will react to the rate of change of PV. Value of this parameter is automatically set by AUTO TUNE Function. This parameter will not be prompted if the value of either PROPOTIONAL BAND or INTEGRAL TIME is set to 0.	24
Cycle Time	CYCLt	16.0	1.0 to 100.0 Sec.	User can set this value based on process being controlled & type of Output being selected. For Relay O/P,cycle time should be more than 12 sec & for SSR O/P,cycle time should be less than 10 sec. This parameter will not be prompted if the value of PROPOTIONAL BAND is set to 0.	16 Sec.
Control Hys.	CHYS	0.2	0.1 to 10.0	This parameter will be prompted only if PROPOTIONAL BAND is set to 0.It sets the dead band between ON & OFF switching of the Output. Larger value of hysteresis minimize the number of ON-OFF operation of load. This increases life of actuators like contactors but also produces large errors. (between PV & SV)	0.2
Air Hys.	AHYS	0.2	0.1 to 9.9	It sets the dead band between ON & OFF switching of the Air output.	0.2

Para Meter	Lower Display	Upper Display	Range	Description	Default
Hold Back Strategy	HOLD	nOnE		Timer will not pause if HOLDBACK STRATEGY is selected to NONE.	DN
		uP		Timer will pause if PV is outside holdback band and above setpoint.	
		dn		Timer will pause if PV is outside holdback band and below setpoint.	
		both		Timer will pauser if PV is outside holdback band both above and below setpoint.	
Hold Band	Hbnd	0.1	0.1 to 5.0 Sec	It sets the temperature limits with respect to the setpoint for the soak timer to stop.	0.1
Soak Time Delay	St.dL	0	0 to 99 Sec	The value of this parameter sets the activation time for ALARM when SOAK TIMER is over. Setting this parameter to '0' will make ALARM output continuously ON at the end of SOAK time till USER starts next	20 Sec
Power Fail Recovery Method	Pr.FL	Abrt		At every power on, a new cycle will have to be issued.	ABRT
		St.rt		The timer re-runs the complete soak time.	
		COnt		The soak timer resumes operation for the balance time.	

CONFIGURATION LIST :

- (1) To enter in this mode, Press and hold SET & UP key simultaneously for 3 sec.
- (2) Press UP or DOWN key to scroll between parameter options.
- (3) Press SET key to store the current parameter & move on to the next parameter.

Para Meter	Lower Display	Upper Display	Description	Default
Lock Code	LOCK	0	Set this parameter to 15 (DEFAULT LOCK CODE) to access CONFIGURATION LIST. User has a choice to set different Lock Code between 1 to 9999 via USER LOCK CODE in CONFIGURATION LIST.	15
Higher SP Limit	HSPL	135.0	Sets the maximum limit for setpoint adjustment. It can be set from 0.0 to 150.0	135.0 °C
Process Value Offset	Pv.OF	0.0	Function of this parameter is to add/subtract a constant value to the measured PV to obtain final PV for control applications. This parameter value can be altered : (i) To compensate for known thermal gradient. (ii) To match the display values with another recorder or indicator measuring the same PV.	0 °C
Input Filter	FLt.1	1	The controller is equipped with an adaptive digital filter which is used to filter out any extraneous pulses on the PV. The filtered PV Value is used for all PV dependent functions. If the PV signal is fluctuating due to noise, increase the filter time constant value.	4
Unit for Pressure	Un It	PSI	Unit for pessure will be PSI.	PSI
		KGCM	Unit for pessure will be KGCM.	
Auto Tune	tUnE	dSbL	If Disabled, this parameter will not be prompted if user presses Shift key for 3 secs.	DSBL
		EnbL	If Enabled, this parameter will be prompted if user presses Shift key for 3 secs.	
Control Setpoint	SP	dSbL	If Disabled, User cannot View & Edit the Control Setpoint in User List.	ENBL
		EnbL	If Enabled, User can View & Edit the Control Setpoint in User List.	
Air Setpoint	Ar.SP	dSbL	If Disabled, User cannot View & Edit the AIR Setpoint in User List.	ENBL
		EnbL	If Enabled, User can View & Edit the AIR Setpoint in User List.	

Para Meter	Lower Display	Upper Display	Description	Default
Exhaust Setpoint	EHSP	d5bL	If Disabled, User cannot View & Edit the Exhaust Setpoint in User List.	ENBL
		↓ ↑ EnbL	If Enabled, User can View & Edit the Exhaust Setpoint in User List.	
Cycle End Setpoint	CE.SP	d5bL	If Disabled, User cannot View & Edit the Cycle End Setpoint in User List.	ENBL
		↓ ↑ EnbL	If Enabled, User can View & Edit the Cycle End Setpoint in User List.	
High Alarm Deviation Setpoint	AL.SP	d5bL	If Disabled, User cannot View & Edit the Alarm Setpoint in User List.	ENBL
		↓ ↑ EnbL	If Enabled, User can View & Edit the Alarm Setpoint in User List.	
Fail Safe Deviation Setpoint	SF.SP	d5bL	If Disabled, User cannot View & Edit the Fail Safe Deviation Setpoint in User List.	ENBL
		↓ ↑ EnbL	If Enabled, User can View & Edit the Fail Safe Deviation Setpoint in User List.	
Device ID	DU.id	1	User can set Device Id for communication between 1 to 255.	1
Baud	9600	9600 ↓ ↑ 1920 ↓ ↑ 3125 ↓ ↑ 3840 ↓ ↑ 7680	By this parameter user can select baud rate for communication purpose.	9600
Parity	0_81	n_81 ↓ ↑ n_82 ↓ ↑ 0_81 ↓ ↑ 0_82 ↓ ↑ E_81 ↓ ↑ E_82	By this parameter user can select parity for communication purpose.	O_81

Parameter	Lower Display	Upper Display	Description	Default
Lower Display	LDSP	EOGL	By pressing Up Key, Lower Display will toggle between Timer-value(SOAK), Control Setpoint and Pressure.	Auto
		↓ ↑ EnEr	By setting this parameter, Lower display will only show Timer-value(SOAK).	
		↓ ↑ SP	By setting this parameter, Lower display will only show Control Setpoint.	
		↓ ↑ Pr	By setting this parameter, Lower display will only show Pressure.	
		↓ ↑ AutO	By setting this parameter, Lower display will show setpoint till it reaches Air Setpoint after which it displays Pressure till Soak Timer starts and once Soak Timer starts it shows Soak Time value.	
User Lock Code	ULOC	15	Default USER LOCK CODE is 15 to access Control & Configuration List. User has a choice to set its own USER LOCK CODE between 1 to 9999, this is to prevent unauthorized access of Control & Configuration List.	15

AUTO TUNING MODE : To enter in this mode, Press & hold SHIFT key for minimum 3 sec in the Run Mode.

Parameter	Lower Display	Upper Display	Description	Default
Auto Tuning Mode	tunE	nO ↓ ↑ YES	This function will be executed only if Auto Tune Mode is kept Enable in the CONFIGURATION LIST. Auto Tuning Function can be started by setting this parameter to 'YES'. The AT led continuously flashes till Auto tuning function is in progress. During Auto-tuning, Controller learns the process characteristics by itself & calculates required P,I & D values. User can cancel or abort this feature by setting this parameter to 'NO'.	No



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