

USER'S OPERATING MANUAL FOR VERTICAL AUTOCLAVE CONTROLLER

(Models: VA-Clave)



VA-Clave
(96 X 96)

SPECIFICATIONS :-

1. DISPLAY TYPE

: 8 Digit seven segment LED

Model no.	VA-Clave	Color
Display height (PV)	0.80"	White
Display height (SV)	0.56"	Pure Green

2. STATUS LED'S

:HTR : Heater Control Output Status
 P/E : Purg / Exhaust Output Status
 ALM : Alarm Output Status
 LWL : Low Water Level Status
 AT : Auto Tune Status
 ST : Soak Timer Running Status
 SP : Lower display will show SP1
 PR : Lower display will show calculated Pressure

ST, SP, PR : All Off :Lower display will show Input 2 Value

3. INPUT

Temperature Input : RTD Pt-100
 Pressure Input : 0~10 Volts ; 4~20mA
 Resolution : ± 0.1 °C
 Accuracy : ± 0.3 °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 (Selectable)
 1) Relay
 2) SSR
 Output 2 : Purg / Exhaust
 Output 3 : Alarm Output

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

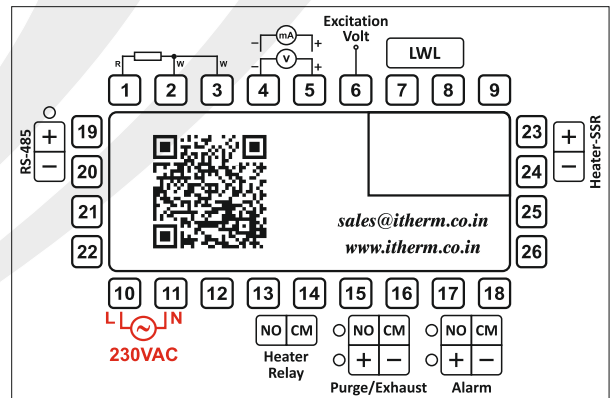
MECHANICAL

- ❖ 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.

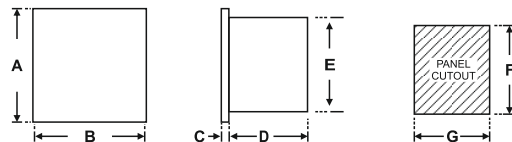
ELECTRICAL

- ❖ 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)



Model	Dim	A	B	C	D	E	F	G	H
VA-Clave		96	96	10	65	89	92	92	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.




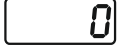



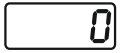







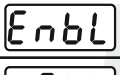


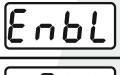


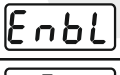

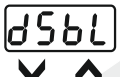


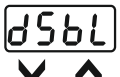


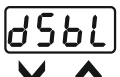


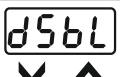

Para Meter	Lower Display	Upper Display	Range	Description	Default
Lock Code	LOCK	0	1 ~ 9999	Set this parameter to 15 (Default LOCK CODE) to access Control List. User has a choice to set different Lock Code via USER LOCK CODE in Config. List.	15
Proportional Band	Pb	1.5	0.0 to 99.9 °C	This parameter sets 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	StDL	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	PrFL	Abrt		At every power on, a new cycle will have to be issued.	ABRT
		Strt		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	PVof	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
OUTPUT TYPE	OPLY	rLY	User has to set this parameter very carefully in accordance with the output used. (Separate terminal for RELAY & SSR : - Refer electrical installation) Select Relay if LOAD is connected via contactor. Whenever user selects Relay, Cycle time will automatically set to 16 sec. User can modify cycle time via Control List.	RELAY
		SSr	Select SSR if LOAD is connected via SSR (DC voltage pulses). Whenever user selects SSR, Cycle time will automatically set to 1sec. User can modify cycle time via Control List.	
Input 2 Type	IP-2	nOnE	By setting input 2 type to NONE will disable input 2 function.	4~20 mA
		0-10	By setting input 2 type to 0-10, instrument will accept 0-10 VDC.	
		4-20	By setting input 2 type to 4-20, instrument will accept 4-20 mA.	

Para Meter	Lower Display	Upper Display	Description	Default
Input 2 Resolution			By this parameter user can select display resolution .	0
Process Value 2 Offset			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
Input 2 Filter			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
Analog Range Low			This parameter will only be prompted if input 2 type is 0-10 or 4-20. By this parameter user can select low scale for input signal which can be between -1999 to Analog Range High.	0
Analog Range High			This parameter will only be prompted if input 2 type is 0-10 or 4-20. By this parameter user can select high scale for input signal which can be between Analog Range Low to 9999.	1000
Unit for Pressure			Unit for pessure will be PSI.	PSI
			Unit for pessure will be KGCM.	
Auto Tune			If Disabled, this parameter will not be prompted if user presses Shift key for 3 secs.	DSBL
			If Enabled, this parameter will be prompted if user presses Shift key for 3 secs.	
Control Setpoint			If Disabled, User cannot View & Edit the Control Setpoint in User List.	ENBL
			If Enabled, User can View & Edit the Control Setpoint in User List.	
Air Setpoint			If Disabled, User cannot View & Edit the AIR Setpoint in User List.	ENBL
			If Enabled, User can View & Edit the AIR Setpoint in User List.	
Exhaust Setpoint			If Disabled, User cannot View & Edit the Exhaust Setpoint in User List.	ENBL
			If Enabled, User can View & Edit the Exhaust Setpoint in User List.	
Cycle End Setpoint			If Disabled, User cannot View & Edit the Cycle End Setpoint in User List.	ENBL
			If Enabled, User can View & Edit the Cycle End Setpoint in User List.	
High Alarm Deviation Setpoint			If Disabled, User cannot View & Edit the Alarm Setpoint in User List.	ENBL
			If Enabled, User can View & Edit the Alarm Setpoint in User List.	
Fail Safe Deviation Setpoint			If Disabled, User cannot View & Edit the Fail Safe Deviation Setpoint in User List.	ENBL
			If Enabled, User can View & Edit the Fail Safe Deviation Setpoint in User List.	

Parameter	Lower Display	Upper Display	Description	Default
Device ID Number 1	id-1	1	Set device id for communication. Range:- 1 to 9999 Note :- This device id is for Temperature.	1
Device ID Number 2	id-2	2	This is a VIEW ONLY parameter. This device id is for Pressure. The device id will be the very next id after temperature device id.	2
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
RS-485 response interval	Entu	1	Widen the time interval of receiving response (Set value x 20 ms)	1(20ms)
Lower Display	LdSP	EOGL ↓ ↑ tñEr ↓ ↑ SP ↓ ↑ Pr ↓ ↑ Aut0 ↓ ↑ IP2	By pressing Up Key, Lower Display will toggle between Timer-value(SOAK), Control Setpoint and Pressure. By setting this parameter, Lower display will only show Timer-value(SOAK). By setting this parameter, Lower display will only show Control Setpoint. By setting this parameter, Lower display will only show Pressure. 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. By setting this parameter, Lower display will only show Input 2.	Auto
User Lock Code	UL0C	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	n0 v ^ 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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