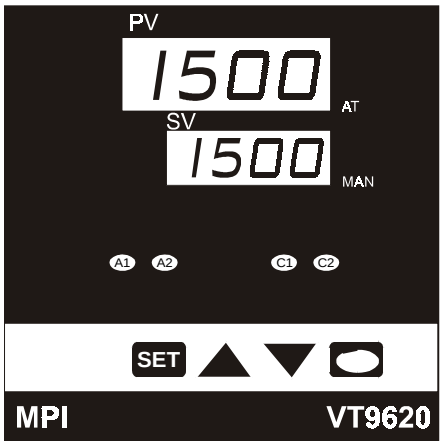
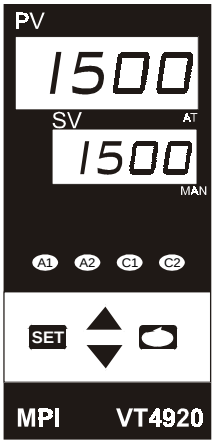
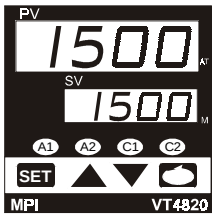
TEMPERATURE CONTROL
VT20 SERIES

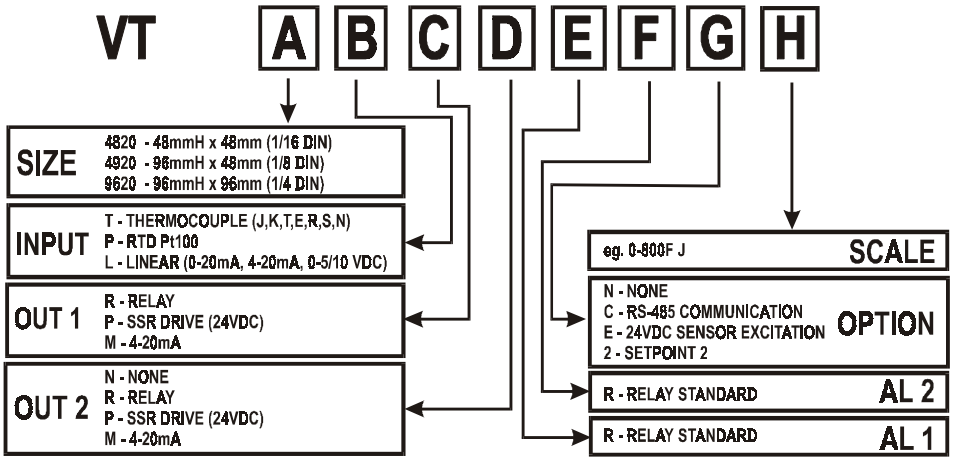






STANDARD
PID AUTOTUNE
ULC, UL, CE pending
6 SECURITY OPTIONS
PROGRAMMABLE
T/C, RTD or LINEAR INPUT
2 CONFIGURABLE ALARMS
LATCH or NO LATCH ALARM
AUTO / MANUAL

OPTIONS
SECOND SETPOINT
24VDC EXCITATION
Rs485 COMMUNICATION



SPECIFICATIONS

1. INPUT

*Thermocouple	J, K, T, R, S, N, C, E
*RTD	Pt100 ohms RTD (DIN 43760 / JIS)
*Linear	-10mV to 60mV
*Range	User configurable
*Accuracy	+/-1C for T/C, +/-0.2C for RTD,+/-0.05% for Linear
*Cold Junction Comp	0.1C/C ambient typical.
*Input Impedance	10M ohms for T/C, 100K ohms for Linear Voltage, 2.7 Ohms for 0 (4)- 20 mA/
*Excitation Current for RTD	0.2mA Max.
*Sample Rate	200mS

2. CONTROL

*Proportional Band	0.0-300.0%
*Integral Time	0-3600sec
*Derivative Time	0-900sec
*On-Off	With adjustable hysteresis 0-1000deg
*Cycle Time	0-100 seconds.
*Control Action	Configurable for Direct (cooling) or Reverse (Heating)

3. POWER

*Rating	85 - 265 VAC 50/60Hz 5VA max

4. OUTPUT

*Relay	5A/240VAC resistive.
*Pulsed Voltage	Isloated 24 VDC 100mA Max.
*Current	Isolated 0 (4) - 20 mA Max load 500 ohms.
*Linear Volts	1~5, 0~5, 0~10VDC. MAX 100mA
*Alarm	Relay output, (SPST) 10A/240VAC resistive.

5. ENVIRONMENTAL

*Operating Temp	-10 - 50C
*Humidity	< 90%
*Insulation	20M ohms minimum @ 500VDC
*EMC Emission	EN500081-1:1992, EN55022:1994
*EMC Immunity	EN 50082-1:1992, IEC 801-3, IEC 801-4:1988
*Weight	VT4820-180g, VT4920-240g, VT9620-280g

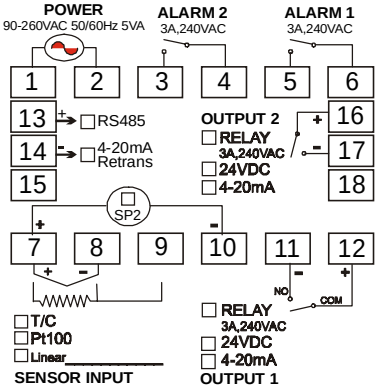
6. PHYSICAL DIMENSIONS

*VT4820	48mmW x 48mmH x 100mmD
*VT482USER LEVEL0 Cutout	45mmW x 45mmH +/-0.5mm
*VT4920	96mmW x 48mmH x 80mmD
*VT4920 Cutout	91mmW x 45mmH +/-0.5mm
*VT9620	96mmW x 48mmH x 80mmD
*VT9620 Cutout	91mmW x 91mmH +/-0.5mm

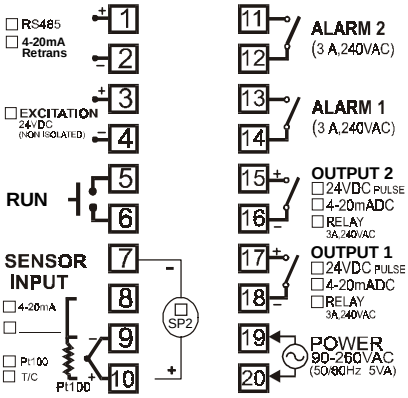
TOLL FREE (800) 817-3486 PH (416) 675-7329 FX (416) 675-7349

TERMINAL CONFIGURATION

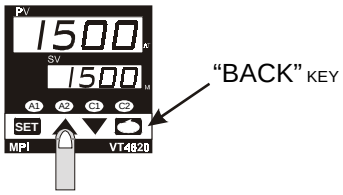
VT4820



VT4920 / VT9620

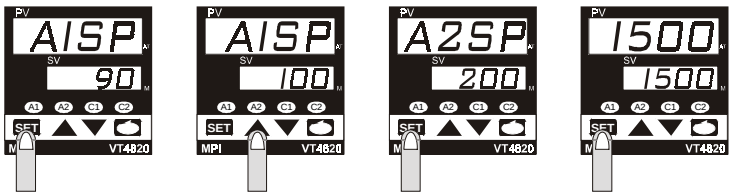


CHANGE SETPOINT



TO CHANGE SETPOINT,
PRESS "UP" OR "DOWN" KEY

ENTER USER LEVEL



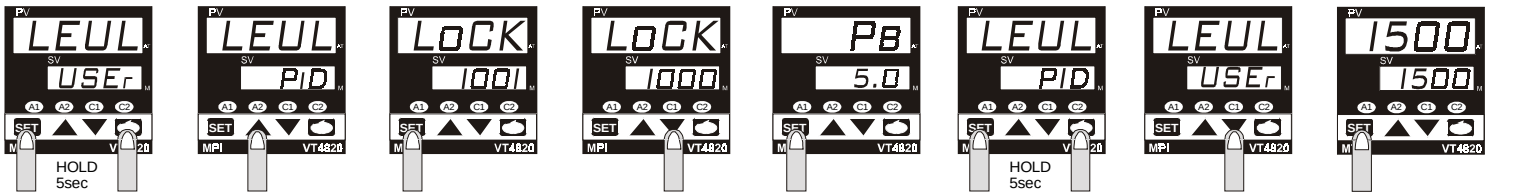
TO ENTER USER LEVEL
PRESS SET KEY UNTIL
PROPER PARAMETER

TO CHANGE VALUE,
PRESS "UP" OR "DOWN"

PRESS "SET" TO ENTER
NEW VALUE AND GO
TO NEXT PARAMETER

TO EXIT PRESS "SET"
UNTIL PROCESS VALUE

CHANGE LOCK SETTING



PRESS "SET" and "BACK"
FOR 5sec

PRESS "UP" TO ENTER
"PID" LEVEL

REPEATEDLY PRESS
"SET" UNTIL "LoCK"

PRESS "UP" and "DOWN"
TO GET PROPER VALUE
* SEE CHART

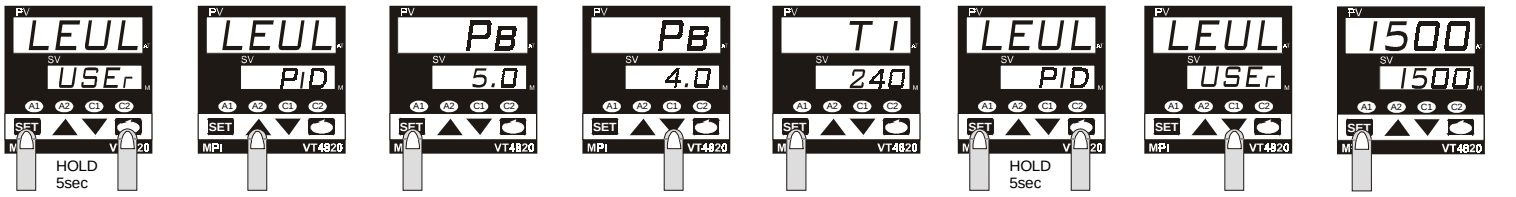
PRESS "SET"

TO RETURN TO NORMAL
PRESS "SET" and "BACK"
FOR 5sec

PRESS "DOWN" FOR
"USER" LEVEL

TO RETURN TO NORMAL
PRESS "SET"

ENTER PID LEVEL - (ENSURE LOCK = "IOOO" or "IOOI")



PRESS "SET" and "BACK"
FOR 5sec

PRESS "UP" TO ENTER
"PID" LEVEL

PRESS "SET" TO
SCROLL THROUGH
MENU

PRESS "UP" and "DOWN"
TO GET PROPER VALUE
* SEE CHART

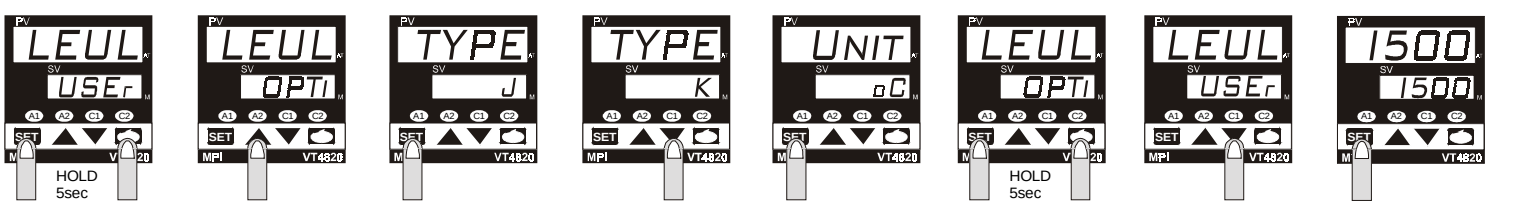
PRESS "SET"

TO RETURN TO NORMAL
PRESS "SET" and "BACK"
FOR 5sec

PRESS "DOWN" FOR
"USER" LEVEL

TO RETURN TO NORMAL
PRESS "SET"

ENTER OPTION LEVEL - (ENSURE LOCK = "IOOI")



PRESS "SET" and "BACK"
FOR 5sec

PRESS "UP" TWICE TO
ENTER "OPTI" LEVEL

PRESS "SET" TO
SCROLL THROUGH
MENU

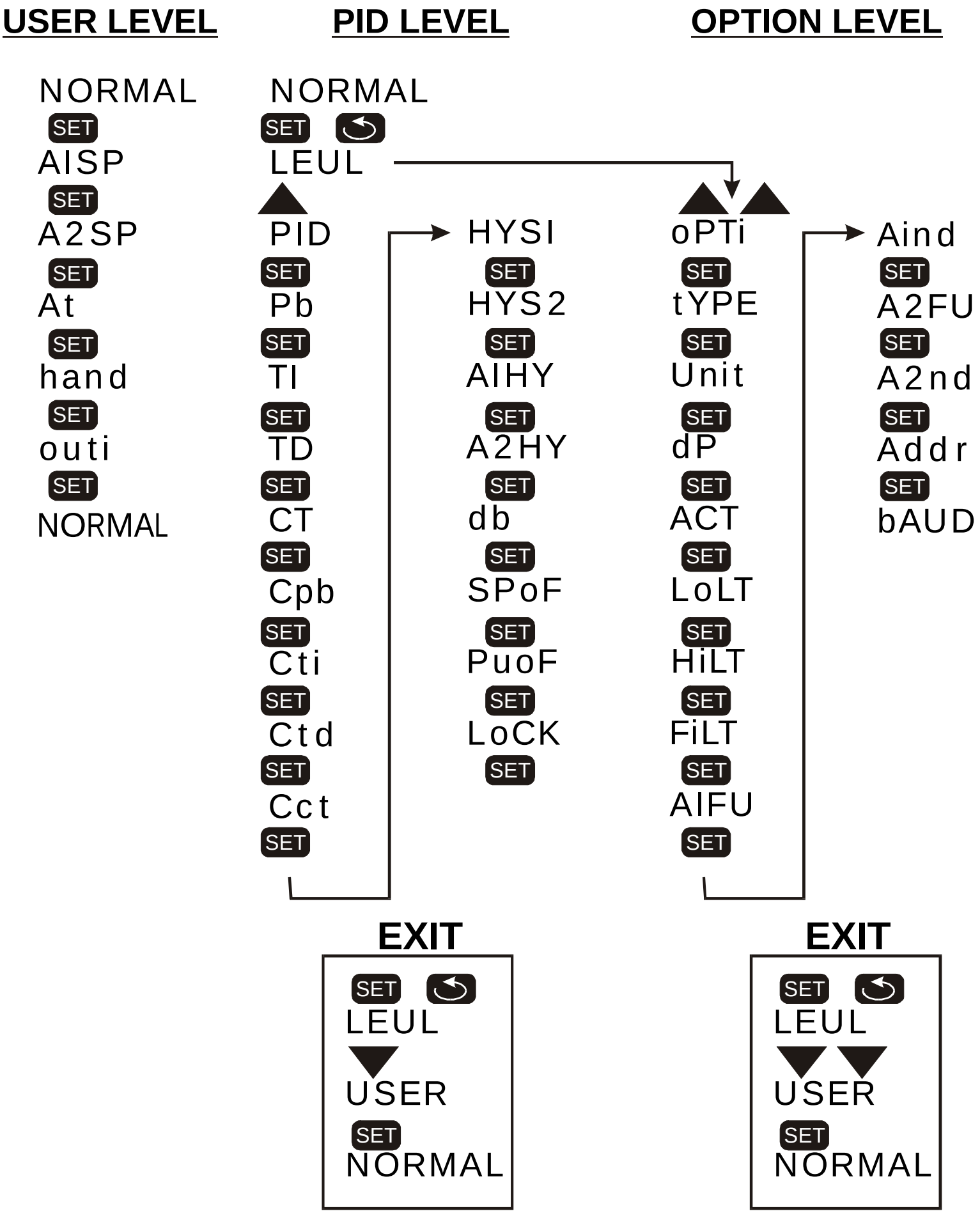
PRESS "UP" and "DOWN"
TO GET PROPER VALUE
* SEE CHART

PRESS "SET"

TO RETURN TO NORMAL
PRESS "SET" and "BACK"
FOR 5sec

PRESS "DOWN" TWICE
FOR "USER" LEVEL

TO RETURN TO NORMAL
PRESS "SET"


USER LEVEL
PID LEVEL
OPTION LEVEL
NORMAL
SET
AISP
SET
A2SP
SET
At
SET
hand
SET
outi
SET
NORMAL
NORMAL
SET
LEUL
PID
SET
Pb
SET
TI
SET
TD
SET
CT
SET
Cpb
SET
Cti
SET
Ctd
SET
Cct
SET
HYSI
SET
HYS2
SET
AIHY
SET
A2HY
SET
db
SET
SPoF
SET
PuoF
SET
LoCK
SET
oPTi
SET
tYPE
SET
Unit
SET
dP
SET
ACT
SET
LoLT
SET
HiLT
SET
FiLT
SET
AIFU
SET
Aind
SET
A2FU
SET
A2nd
SET
Addr
SET
bAUD
EXIT
SET
LEUL
USER
SET
NORMAL
EXIT
SET
LEUL
USER
SET
NORMAL

USER LEVEL

PARA METER	INITIAL SV	SETTING RANGE	UNIT	PARAMETER
AISP	0	LoLt - HiLT	F,C,ENG	ALARM 1 SETPOINT
A2SP	0	LoLt - HiLT	F,C,ENG	ALARM 2 SETPOINT
At	no	no,YESI,YES2		AUTOTUNE NO - DISABLED YESI - STANDARD AUTOTUNE YES2 - AUTOTUNE 10% BELOW SETPOINT
HAnd	no	no, YES		MANUAL CONTROL - USED TO ENABLE/DISABLE

PID LEVEL

PARA METER	INITIAL SV	SETTING RANGE	UNIT	PARAMETER
Pb	5.0	0.0-300.0	%	PROPORTIONAL BAND (OUT1) - CAN BE MANUALLY ADJUSTED AUTOTUNE CALCULATES THIS AUTOMATICALLY ON/OFF CONTROL - SET AS Pb=0
ti	240	0-3600	sec	INTEGRAL (RESET) TIME (OUT1) - CAN BE MANUALLY ADJUSTED AUTOTUNE CALCULATES THIS AUTOMATICALLY
td	60	0-900	sec	DERIVATIVE (RATE) TIME (OUT1) - AUTOTUNE CALCULATES THIS AUTOMATICALLY
Ct	15	0-100	sec	CYCLE TIME (OUT1) - HIGHER VALUE, SLOWS CONTROL RESPONSE PULSED VOLT OUTPUT - SET Ct=1 4-20mA OUTPUT - SET Ct=0
CPb	5.0	0.0-300.0		PROPORTIONAL BAND(OUT2) - CAN BE MANUALLY ADJUSTED ON/OFF CONTROL - SET AS Pb=0
Cti	240	0-3600		INTEGRAL (RESET) TIME(OUT2) - CAN BE MANUALLY ADJUSTED
Ctd	60	0-900		DERIVATIVE (RATE) TIME(OUT2) - CAN BE MANUALLY ADJUSTED
CCt	15	0-100		OUT2 CYCLE TIME - HIGHER VALUE, SLOWER CONTROL RESPONSE PULSED VOLT OUTPUT - SET Ct=1 4-20mA OUTPUT - SET Ct=0
HYSI	0.0	0.0-200.0	F,C,ENG	HYSTERISIS (OUT1) - DEAD BAND FOR OUTPUT 1
HYS2	0.0	0.0-200.0	F,C,ENG	HYSTERISIS (OUT2) - DEAD BAND FOR OUTPUT 2
AIHY	0.0	0.0-200.0	F,C,ENG	ALARM 1 HYSTERISIS
A2HY	0.0	0.0-200.0	F,C,ENG	ALARM 2 HYSTERISIS
db	0.0	-100.0-100.0	F,C,ENG	DEAD BAND VALUE - AREA OF OVERLAP OF OUT1 and OUT2
SPOF	0.0	-100.0-100.0	F,C,ENG	SET VALUE OFFSET - CHANGES SET VALUE READING
PUoF	0.0	-100.0-100.0	F,C,ENG	PROCESS VALUE OFFSET - CHANGES PROCESS VALUE READING
LoCK	1001			PARAMETER LOCK 0000 - ALL PARAMETERS LOCKED OUT 0001 - SP ADJUSTABLE 0011 - SP, AISP, A2SP, ADJUSTABLE 0111 - USER LEVEL ADJUSTABLE 1000 - USER, PID LEVELS ADJUSTABLE 1001 - OPTION LEVEL IS OPEN - FIRST GET TO 1000 THEN WHILE PRESSING "UP" PRESS AND RELEASE "BACK"

OPTION LEVEL

PARA METER	INITIAL SV	SETTING RANGE	UNIT	PARAMETER
tYPE	J			SENSOR INPUT (RANGE) J - THERMOCOUPLE (0~1000degC or 32~1832degF) K - THERMOCOUPLE (0~1370degC or 32~2372degF) t - THERMOCOUPLE (-270~400degC or -199~1832degF) E - THERMOCOUPLE (0~750degC or 32~1472degF) b - THERMOCOUPLE (0~1800degC or 32~3272egF) r - THERMOCOUPLE (0~1600degC or 32~2912degF) s -THERMOCOUPLE (0~1600degC or 32~2912degF) n - THERMOCOUPLE (0~1300degC or 32~2372degF) C - THERMOCOUPLE (0~1600degC or 32~2912degF) d-Pt - PT100 RTD (DIN) (-199~400degC or -199~752degF j-Pt - PT100 RTD (JIS) (-199~400degC or -199~752degF) LinE - LINEAR INPUT (-1999~9999)
Unit	F		F,C,ENG	UNIT OF MEASURE
dP	0000	0000, 000.0		DECIMAL POSITION
Act		DIR / REV		OUT1 CONTROL ACTION dir - DIRECT ACTION FOR COOLING rEV - REVERSE ACTION FOR HEATING
LoLT		LO RANGE	F,C,ENG	LOW LIMIT OF SPAN
HiLT		HI RANGE	F,C,ENG	HIGH LIMIT OF SPAN
FiLT	5.0	0.0~100.0		FILTER TIME CONSTANT - HIGHER VALUE SLOWS PV RESPONSE
AIFU				ALARM 1 FUNCTION dif.H - DIFFERENTIAL HIGH (DEG ABOVE SETPOINT) dif.L - DIFFERENTIAL LOW (DEG BELOW SETPOINT) bd.Hi - BAND HIGH (DEG HI/LO FROM SETPOINT) bd.Lo - BAND LOW (DEG BAND FROM SETPOINT) Lo - PROCESS LOW (ON ABOVE ALARM VALUE) Hi - PROCESS HIGH (ON BELOW ALARM VALUE) nonE - NONE
AInd				AL1 MODE SELECTION nonE - STANDARD ALARMS StdY - PREVENTS ALARM ON POWER UP UNTIL SETPOINT REACHED LAtH - WHEN ALARM ON, WILL NOT SWITCH OFF UNTIL POWER OFF St.LA - STANDBY AND LATCH MODE
A2FU				ALARM 2 FUNCTIONsame as AL1 FUNCTION
A2nd				AL2 MODE SELECTION same as AL1 MODE SELECTION
Add		1~255		ADDRESS - RS485 COMMUNICATION
bAUD		2.4k,4.8k 9.6k,19.6k		

ACCESSING "ENGR" AND "FAct"

To enter “EnGr” engineering level and “FAct” factory level.

1. **go to “LocK” parameter in PID level**
2. **Set the value of LOCK to be 0000.**
3. **Press and hold the “down” key ,do not release the “down” key before pressing and release “back” key 5 times. Now setting the “lock” to 1111 is possible.**
4. **Go to level selection. The “Opti” “EnGr” and “FAct” is open to be edited.**

"ENGR" LEVEL

PARA METER	INITIAL SV	SETTING RANGE	UNIT	PARAMETER
ch01	2000	0-2000		OUT1 - 4-20mA SCALE - HIGH
cL01	0	0-2000		OUT1 - 4-20mA SCALE - LOW
ch02	2000	0-2000		OUT2 - 4-20mA SCALE - HIGH
cL02	0	0-2000		OUT2 - 4-20mA SCALE - LOW
rtSH	2000	0-2000		RETRANSMISSION 4-20mA - HIGH
rtSL	0	0-2000		RETRANSMISSION 4-20mA - LOW
PvSv	Pv	Pv, Sv		PV or SV RETRANSMISSION
SV2	SP-1	SP-1, SP-2		SETPOINT CONTROL SP-1 - INTERNAL SETPOINT SP-2 - REMOTE SETPOINT INPUT (FACTORY OPTION 4-20mA)
Mr				MANUAL RESET - DO NOT ADJUST
Ar				ANTI RESET - DO NOT ADJUST

"FAct" LEVEL

PARA METER	INITIAL SV	SETTING RANGE	UNIT	PARAMETER
1-02	AISP			USER LEVEL - 2nd PARAMETER(FIRST ALWAYS SETPOINT)
1-03	A2SP			USER LEVEL - 3rd PARAMETER
1-04	AT			USER LEVEL - 4rd PARAMETER
1-05	AT			USER LEVEL - 5th PARAMETER
1-06	AT			USER LEVEL - 6th PARAMETER
1-07	AT			USER LEVEL - 7th PARAMETER
1-08	AT			USER LEVEL - 8th PARAMETER
2-01	Pb			PID LEVEL - 1st PARAMETER
2-02	ti			PID LEVEL - 2nd PARAMETER
2-03	td			PID LEVEL - 3rd PARAMETER
2-04	td			PID LEVEL - 4th PARAMETER
2-05	td			PID LEVEL - 5th PARAMETER
2-06	td			PID LEVEL - 6th PARAMETER
2-07	td			PID LEVEL - 7th PARAMETER
2-08	td			PID LEVEL - 8th PARAMETER
2-09	td			PID LEVEL - 9th PARAMETER
2-10	td			PID LEVEL - 10th PARAMETER
2-11	td			PID LEVEL - 11th PARAMETER
2-12	td			PID LEVEL - 12th PARAMETER
2-13	td			PID LEVEL - 13th PARAMETER
2-14	td			PID LEVEL - 14th PARAMETER
2-15	PVOF			PID LEVEL - 15th PARAMETER

ALARM FUNCTION

There are two independent alarm outputs available in VT30 series controllers. Each alarm can be set to be one of six alarm function (process high, process low, deviation high, deviation low, band high and band low) from **AIFU** or **A2FU**. When the alarm output is not used, set to **nonE** to prevent alarm action

ALARM FUNCTION

AIFU A2FU	
NonE	NO ALARM → PV
Hi	PROCESS HIGH: ALARM ON at A1SP → PV
Lo	PROCESS LOW: ALARM ON until A1SP → PV
DIF.H	DEVIATION HIGH: ALARM ON at SV+A1SP (SV) → PV
DIF.L	DEVIATION LOW: ALARM ON until SV-A1SP (SV) → PV
BD.HI	BAND HIGH: ALARM ON SV-A1SP, SV, ALARM ON SV+A1SP → PV
BD.LO	BAND LOW: ALARM ON SV-A1SP, ALARM ON SV, SV+A1SP → PV

ALARM MODE

A special alarm mode can be set from and

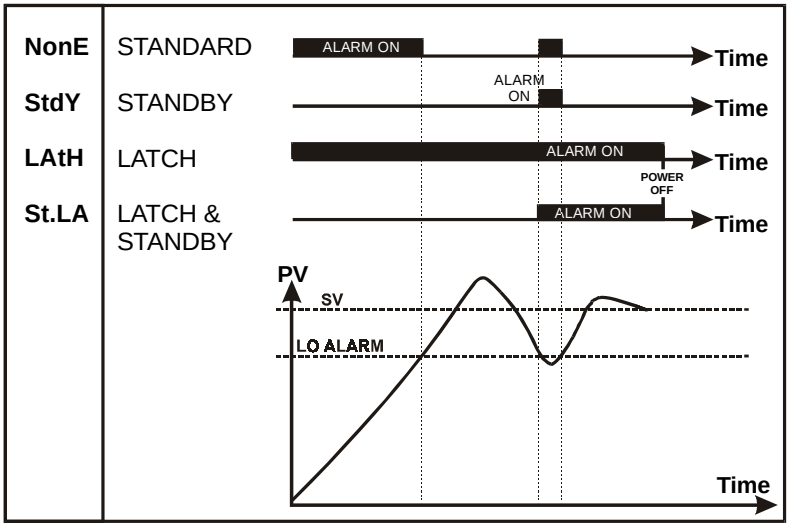
nonE : **No special mode**

StdY : **Standby mode**
When selected, in any alarm function, prevents an alarm on power on. The alarm is enabled only when the process value reaches set point. Also known as “Startup inhibit” and is useful for avoiding alarm trips during startup.

LAtH : **Latch mode**
When selected, the alarm output and indicator latch as the alarm occurs. The alarm output and indicator will be energized even if the alarm condition has been cleared unless the power is shut off.

St.LA : **Standby and Latch mode**

ALARM MODE



CALIBRATION PROCEDURE FOR VT20/30 AND VD2000

Do not proceed through this section unless there is a definite need to calibrate the controller. All previous calibration data will be lost. Do not attempt calibration unless you have available appropriate calibration equipments. If calibration data is lost. You will need to return the controller to the supplier who may charge you a service fee to re-calibrate the controller.

Equipment needed:

- Standard millivolt source with range 0-100mV, accuracy 0.01%.
- Standard RTD simulator with range 0-500 C, accuracy 0.01%.
- Standard thermometer with range 0-50 C, accuracy 0.2 C.
- Standard current source with range 0-20mA, accuracy 0.01%.
- 4 1/2 digits Multimeter.
- Srtandard Thermocouple simulator.

T/C calibration

1. Press the Up and Down key together and then turn the power on.
2. The PV display will show T.cjc. use the up and down keys ti change its value until this value coincide with the ambient temperature in degree C which is measured by the standard thermometer.
3. Press “SET” key to get “LocA” paramter
4. Set the standard millivolt source to be 0.0mV.
5. Adjust the “LocA” value to 0.00 by using up and down keys.
6. Press “SET” key to get “HicA” parameter.
7. Set the standard millivolt source to be 50.0 mV.
8. Adjust the “HicA” value to 50.00 by using up and down keys
9. Press “SET” key to get “Gain” parameter.
10. Do not adjust the “Gain” value. Turn the power off.calibration is done.

RTD calibration

1. Press “SET” key and turn the power on.
2. The PV display will show “rtd.L”.
3. set the standard RTD simulator to be 0.0 C.
4. Adjust the “rtd.L” value to 0.0 by using up and down keys.
5. press “SET” key to get “rtd.H” parameter.
6. Set the standard RTD simulator to be 400.0 C.
7. adjust the “rtd.H” value to 400.0 by using up and down key.
8. Press “SET” key to save the calibration data and turn the power off. Calibration is done.

4-20 mA control output module calibration

1. Connect the multimeter to control output terminals to measure the current value.
2. Select the “EnGr” level
3. Press “SET” key until “CH01” (output 1) or “CH02” (output 2) appear on the PV display.
4. Using up and down key to adjust the value until the reading of multimeter being 20.00 mA.
5. Press “SET” key to get “CL01” (output 1) or “CL02” (output 2)
6. Using up and down key to adjust the value until the reading of multimeter being 4.00 mA.
7. The 4-20 mA control output module calibration is done.

4-20 mA retransmission output calibration procedure is same as control output module but only the calibration parameter is changed to “rtS.H” and “rts.L”