

PROCESS & TEMPERATURE CONTROLLER

MULTISPAN

PTC- 1202A

CE

PV = Process value

SV = Set Value

TECHNICAL SPECIFICATION

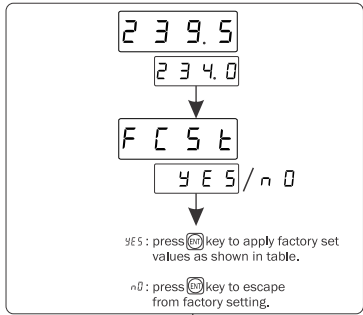
INPUT SPECIFICATION:		
Input Types	Input	Range
	J	0 to 600 °C
	K	0 to 1200 °C
	PT-100	-99 to 400 °C
	PT.1	-99.9 to 400.0 °C
	0-10V DC	-999 to 9999
Resolution	0-20mA DC	-999 to 9999
	4-20mA DC	-999 to 9999
	J,K,PT-100 = 1 °C	
	PT.1 = 0.1 °C	
Indication Accuracy	0-10V DC,0-20mA DC,4-20mA DC = 0.1,0.01,0,001,0001	
	±1% of FSD ± 1 Count (FSD : full scale deflection)	

DISPLAY AND KEYS:	
Display	Upper : 4 digit, 7 seg 0.8" RED LED Lower : 4 digit, 7 seg 0.56" Green LED
Keys	SET, INC, DEC, ENT

DIMENSION:	
Size	96 (H) x 96 (W) x 54 (D) mm
Panel Cutout	92 (H) x 92 (W) mm

CONTROL METHOD:	
Heating	1) PID control with Auto-Tuning 2) ON-OFF control
Cooling	1) BL,TP (Blower Time Proportion) 2) ON-OFF control
Alarm	High/Low/Inband/Outband/ Absolute Low/Absolute Outband

FACTORY SETTING



FACTORY SETTING		
SR.	PARAMETER	VALUES
1	PB	20.0 ° C
2	IT	300
3	DT	75
4	CT	15 sec
5	MR	0 °C
6	OFFSET	0 °C
7	HYSTERISIS-1	3 °C
8	HYSTERISIS-2	3 °C
9	C-PB	4.0 ° C
10	C-ON	1 Sec
11	C-OFF	48 Sec
12	CRFC	0

PARAMETER MESSAGE DESCRIPTION

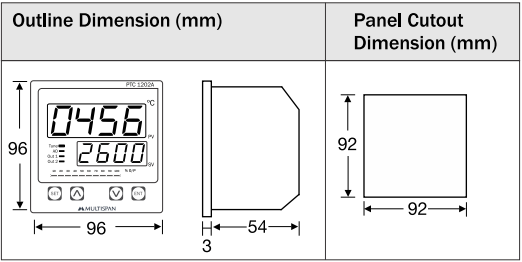
5Et	Controlling O/P Set Point
SEt 1	Set Point 1 For O/P 1
SEt 2	Set Point 2 For O/P 2
LOi	Low Set Point 1
H Ii	High Set Point 1
LOi 2	Low Set Point 2
H Ii 2	High Set Point 2
PR55	Password
i nPt	Input (Sensor)
SLL	Set Low Limit
SHL	Set High Limit
DFSt	Offset
Pb	Proportional Band For PID Action
I t	Integral Time Constant
dEt	Derivative Time Constant
Et	Cycle Time For PID Action
rr	Manual Reset
C-Pb	Cooling PB
C-On	Cooling On Time
C-OF	Cooling Off Time
HYS 1	Hysteresis 1

OUTPUT SPECIFICATION	
Relay Output	
Relay	2 nos.
Relay Type	1 C/O (NO-C-NC)
Rating	5A, 230V AC/30 V DC
Analog Output	
4 to 20mA DC	
Transmitter supply	
24V DC	
Modbus Communication	
RS-485	

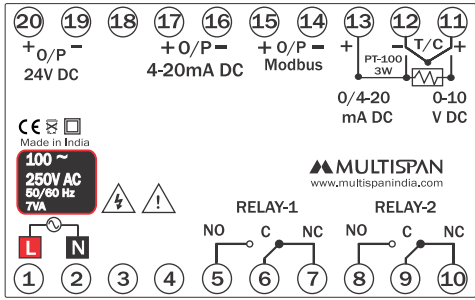
AUXILIARY SUPPLY	
Supply voltage	100 to 250V AC, 50-60Hz
Power consumption (VA RATING)	Approx 7 VA @ 230V AC MAX

ENVIRONMENT CONDITION	
Operating Temp.	0 °C to 55 °C
Relative Humidity	UP to 95% RH (non-condensing)
Protection Level	IP-65 (Front side) As per IS/IEC 60529 : 2001

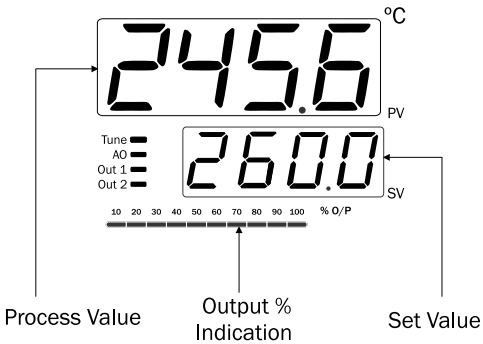
MECHANICAL INSTALLATION



TERMINAL CONNECTION



DISPLAY INDICATION



KEY OPERATION

FUNCTION	PRESS KEY
OPERATOR MODE	
To enter in parameter setting	SET Press for 5 sec
For start/stop PID auto tuning	▲ Press 6 sec
To go in factory setting mode	▲ + ▼ Press 3 sec
To Reset soak process	ENT Long Press
PARAMETER SETTING MODE	
To set parameter value	SET
To increment parameter value.	▲
To decrement parameter value.	▼
Set parameter to be save & exit.	ENT

SAFETY PRECAUTION

All safety related codifications, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating personnel as well as the instrument.

If all the equipment is not handled in a manner specified by the manufacturer, it might impair the protection provided by the equipment.

Read complete instructions prior to installation and operation of the unit.

WARNING : Risk of electric shock.

MECHANICAL INSTALLATION GUIDELINES

1. Prepare the panel cutout with proper dimensions as shown above.
2. Fit the unit into the panel with the help of clamp given.
3. The equipment in its installed state must not come in close proximity to any heating source, caustic vapors, oils steam, or other unwanted process byproducts.
4. Use the specified size of crimp terminal (M3.5 screws) to wire the terminal block. Tightening the screws on the terminal block using the tightening torque of the range of 1.2 N.m.
5. Do not connect anything to unused terminals.

MAINTENANCE

1. The equipment should be cleaned regularly to avoid blockage of ventilating parts.
2. Clean the equipment with a clean soft cloth. Do not use isopropyl alcohol or any other cleaning agent.
3. Fusible resistor must not be replaced by operator.

INSTALLATION GUIDELINES

1. This equipment, being built-in-type, normally becomes a part of main control panel and in such case the terminals do not remain accessible to the end user after installation and internal wiring.
2. Do not allow pieces of metal, wire clippings, or fine metallic fillings from installation to enter the product or else it may lead to a safety hazard that may in turn endanger life or cause electrical shock to the operator.
3. Circuit breaker or mains switch must be installed between power source and supply terminal to facilitate power 'ON' or 'OFF' function. However this mains switch or circuit breaker must be installed at convenient place normally accessible to the operator.
4. Use and store the instrument within the specified ambient temperature and humidity ranges as mentioned in this manual.

WARNING GUIDELINES

- WARNING : Risk of electric shock.**
1. To prevent the risk of electric shock, power supply to the equipment must be kept OFF while doing the wiring arrangement. Do not touch the terminals while power is being supplied.
 2. To reduce electro magnetic interference, use wire with adequate rating and twists of the same of equal size shall be made with shortest connection.
 3. Cable used for connection to power source, must have a cross section of 1mm or greater. These wires should have insulations capacity made of at least 1.5kV.
 4. When extending the thermocouple lead wires, always use thermocouple compensation wires for wiring for the RTD type, use a wiring material with a small lead resistance (5Ω max per line) and no resistance differentials among three wires should be present.
 5. A better anti-noise effect can be expected by using standard power supply cable for the instrument.

PARAMETER MESSAGE DESCRIPTION

HYS2	Hysteresis 2
OUT 1	OutPut 1 Mode
SOAKP	Soak Time Select
SPnd	Soak Mode
SPUt	Soak Unit
SPtñ	Soak Time Value
ñEñD	Soak Time Memory
End	Soak Time End
Et 1	Control Action 1
OUT2	Output 2 Mode
Et 2	Control Action 2
ALñ 1	Alarm 1
ALñ 2	Alarm 2
S2nd	Set 2 Mode
rdL	Relay 1 Delay Time
rdL	Relay 2 Delay Time
ALtñ	Alarm Time
Pi d	PID Action
OnOF	ON-OFF Action
BLtP	Blower TP Action
HIGH	High Alarm
LOi	Low Alarm
Out-b	OutBand Alarm
Ab-L	Absolute Low Alarm
In-b	In Band Alarm
Ab-D	Absolute Out Band Alarm
SEC	Second
ñi n	Minute
HOUr	Hour
HEAt	Heating Mode
COOL	Cooling Mode
ALrñ	Alarming Mode
OFF	OFF Mode
YES	Yes
nD	No
SAvE	Save
Indi	Set 2 Individual to Set 1
Relv	Set 2 Reletive to Set 1
FCSt	Factory Setting
ROUT	Analog Output
bASc	Basic Configuration
Pu	Retransmission O/P On PV
Su	Retransmission O/P On SV
4-2D	Manual Selection Of 4-20 mA Analog O/P
PERC	Percentage wise Selection Of 4-20 mA Analog O/P (Manually)
EOñ	Controlling Output

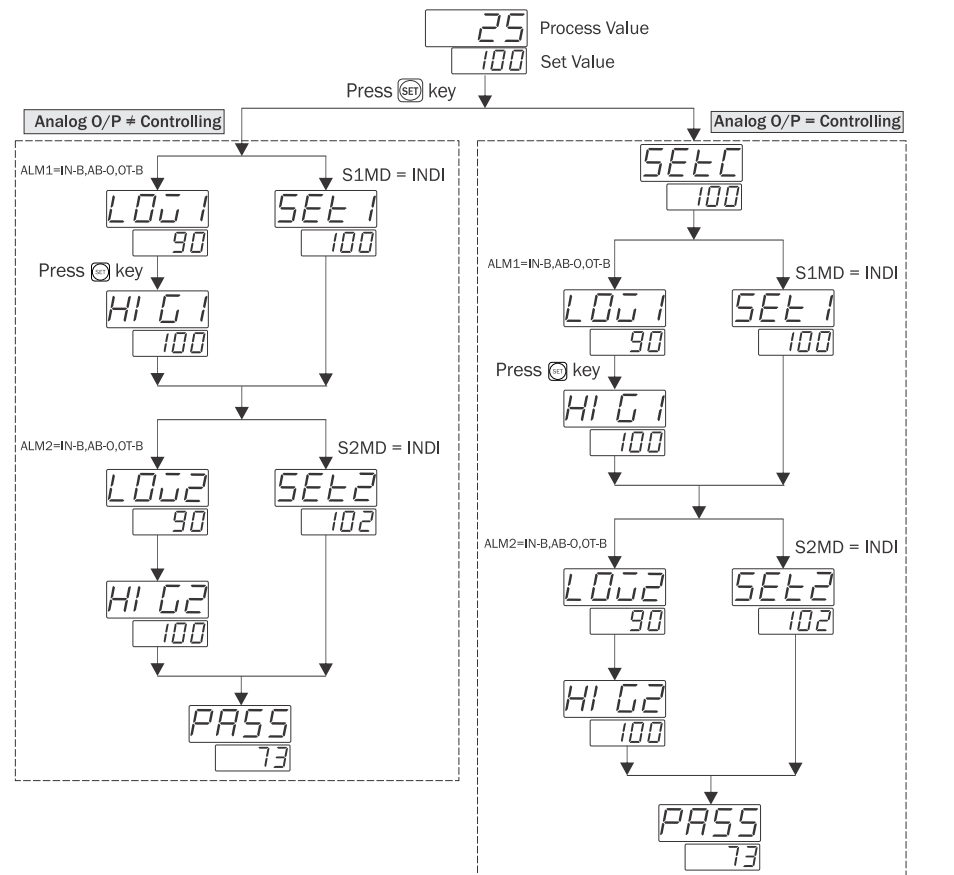
PARAMETER MESSAGE DESCRIPTION

LOPC	Low percentage	nOnE	None Parity
Hi PC	High percentage	EuEn	Even Parity
For'd	Forward	Odd	Odd Parity
rEur	Reverse	Si nt	Sign Integer
LrnS	Low Range for analog input	FLDt	Float datatype
HrnS	High Range for analog input	CntL	Controlling Output
CrFC	Correction Factor for analog input	AutD	Auto
FLtr	Filter Time	Addr	Address
SLL	Signal Low Limit for 4-20mA input	bAUd	Baudrate
rLY 1	Relay 1 parameter setting	Prty	Parity
rLY 2	Relay 2 parameter setting	dRtR	Datatype
ñbUS	Modbus Parameter setting		

RANGE FOR CONTROL PARAMETER

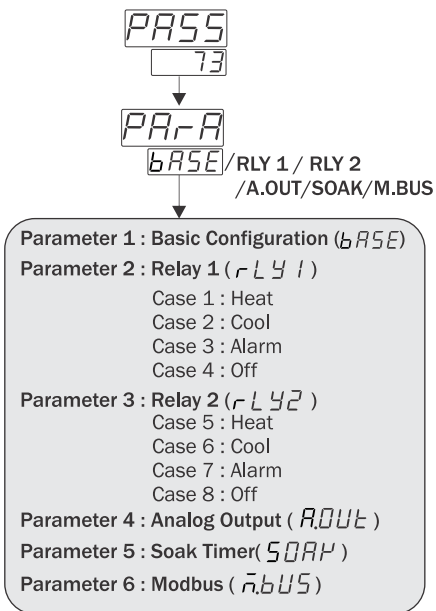
SR.	PARAMETER	RANGE FOR J,K,PT-100	RANGE FOR PT.1	RANGE FOR ANALOG INPUT
1	PB	0.0 to 999.9 °C	0.0 to 999.9 °C	0.0 to 999.9
2	IT	0 to 9999	0 to 9999	0 to 9999
3	DT	0 to 9999	0 to 9999	0 to 9999
4	CT	4 to 99 sec	4 to 99 sec	4 to 99 sec
5	MR	-9 to 9 °C	-9.0 to 9.0 °C	DP 3 -0.099 to 0.099 DP 2 -0.99 to 0.99 DP 1 -9.9 to 9.9 DP 0 -99 to 99
6	OFFSET	-20 to 20 °C	-20.0 to +20.0 °C	DP 3 -0.999 to 0.999 DP 2 -9.99 to 9.99 DP 1 -99.9 to 99.9 DP 0 -999 to 999
7	HYS1	1 to 100 °C	0.1 to 100.0 °C	DP 3 0.001 to 0.999 DP 2 0.01to 9.99 DP 1 0.1 to 99.9 DP 0 1 to 999
8	HYS2	1 to 100 °C	0.1 to 100.0 °C	DP 3 0.001 to 0.999 DP 2 0.01 to 9.99 DP 1 0.1 to 99.9 DP 0 1 to 999
9	C-PB	2.0 to 25.0 °C	2.0 to 25.0 °C	2.0 to 25.0
10	C-ON	1 to 20 sec	1 to 20 sec	1 to 20 sec
11	C-OF	5 to 200 sec	5 to 200 sec	5 to 200 sec
12	R1DL	0.00 to 99.59 mm.ss	0.0 to 99.59 mm.ss	0.00 to 99.59 mm.ss
13	R2DL	0.00 to 99.59 mm.ss	0.0 to 99.59 mm.ss	0.00 to 99.59 mm.ss
14	ALTM	0 to 99 sec	0 to 99 sec	0 to 99 sec
15	CRFC	-	-	DP 3 -0.999 to 0.999 DP 2 -9.99 to 9.99 DP 1 -99.9 to 99.9 DP 0 -999 to 999
16	FLTR	-	-	0.1 to 10.0 Sec
17	SLL	-	-	0.0 to 5.0 mA

PARAMETER SETTING



Password 73 Explanation

To set Controlling Output Mode press **SET** + **key**

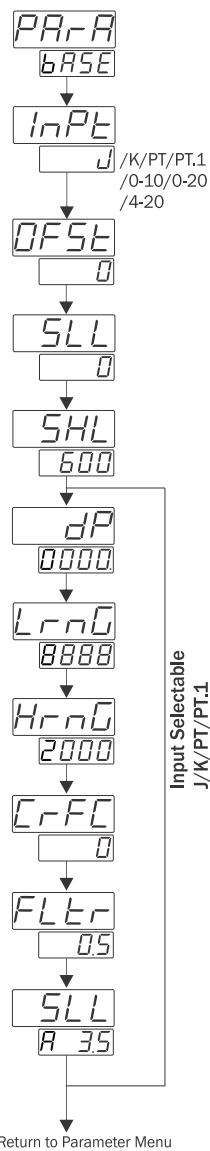


Note : In case 4 & 8 relay will be in off condition

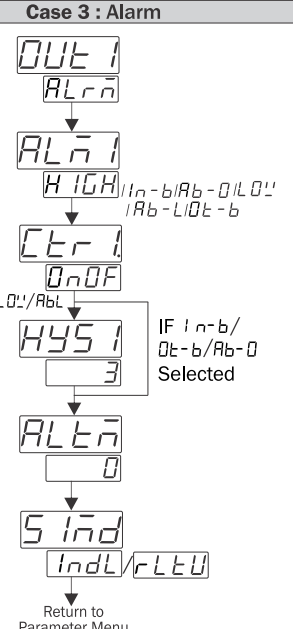
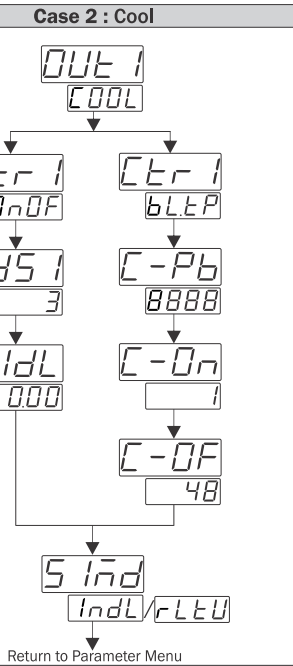
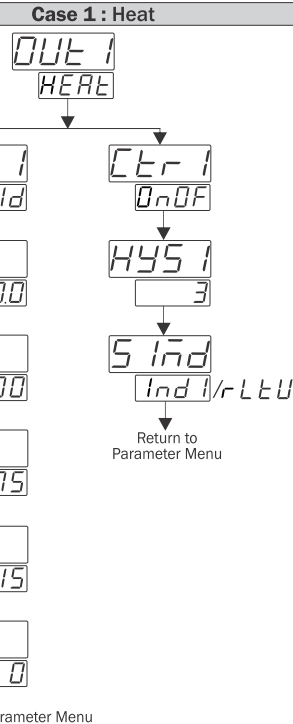
Case 4 & 8 : OFF

OUT 1
OFF

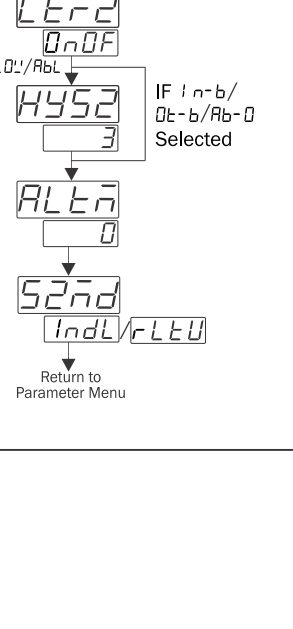
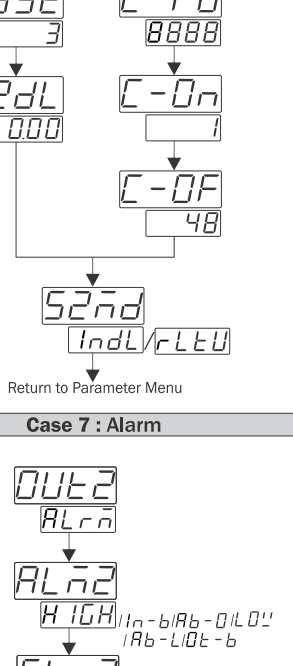
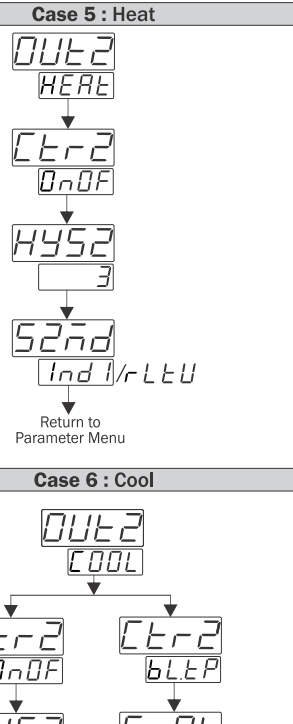
Parameter 1 : Basic Configuration (bASE)



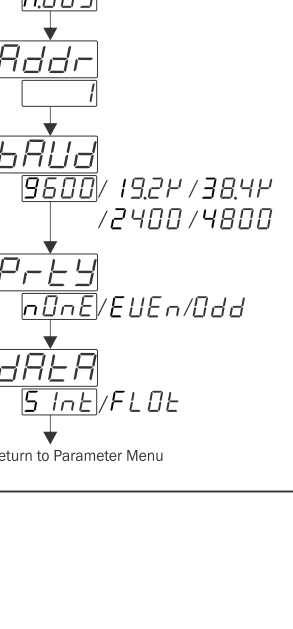
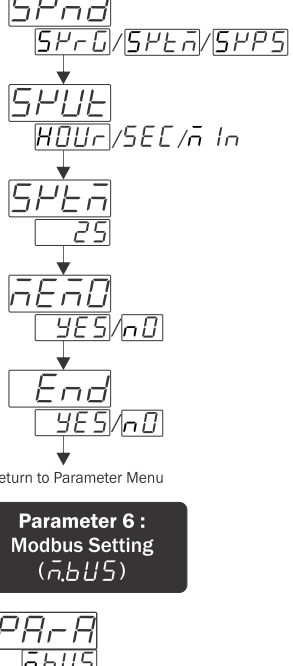
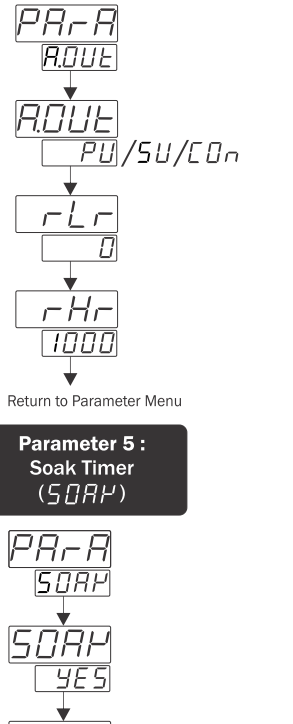
Parameter 2 : Relay 1 (rLY1)



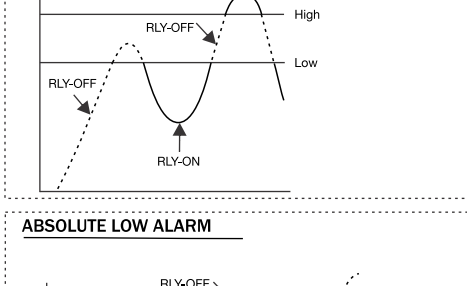
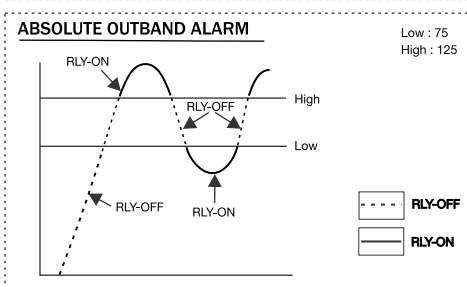
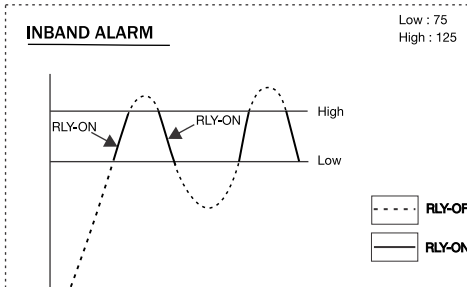
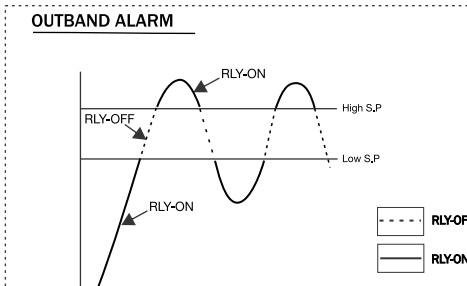
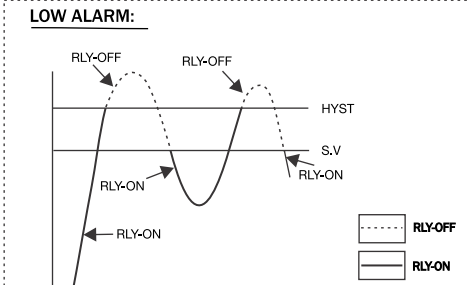
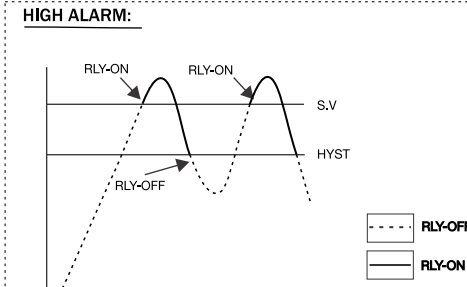
Parameter 3 : Relay 2 (rLY2)



Parameter 4 : Analog Output (AOUE)



CONTROL FUNCTION



MODBUS : PTC-L12

Salve Address :	1 to 127
Baudrate :	2400,4800,9600,19200,38400
Parity :	None,Even,Odd
Datatype :	Sign integer, Float
Read Function Register :	0x03 and 0x04
Write Function Register :	0x06 and 0x10

Note :- When Parameter 32100 = no available
When Process Value 32101 = Initialization Value
When Process Value 32102 = Sensor Open
When Process Value 32103 = Sensor Reverse
When Process Value 32104 = Over Range
When Process Value 32105 = I/P Signal Lower then SLL

Sr.No	Access Type	Parameter	Register	
			Data Type	
			Integer	Float
1	R	Process Value	0	0
2	R	R1 Status	1	2
		Selection Value		
		On 1		
		Off 0		
3	R	R2 Status	2	4
		Selection Value		
		On 1		
		Off 0		
4	R	Control Percentage	3	6
5	R	Analog Output Value	4	8
6	R/W	Set1	5	10
7	R/W	Low Set1	6	12
8	R/W	High Set1	7	14
9	R/W	Set2	8	16
10	R/W	Low Set2	9	18
11	R/W	High Set2	10	20
16	R/W	Input	14	28
		Selection Value		
		J 0		
		K 1		
		PT-100 2		
		PT.1 3		
		0 - 10V DC 4		
		0 - 20mA DC 5		
		0 - 40mA DC 6		
17	R/W	Out1 Mode	15	30
		Selection Value		
		Heat 0		
		Cool 1		
		Alarm 2		
		Off Mode 3		
18	R/W	Control Action1	16	32
		Selection Value		
		Pid 0		
		On-Off 1		

Sr.No	Access Type	Parameter	Register	
			Data Type	
			Integer	Float
19	R/W	Alarm1	17	34
		Selection Value		
		End Alarm 0		
		Abs Low 1		
		High Alarm 2		
		In Band 3		
		Abs Out Band 4		
		Out Band 5		
		Low Alarm 6		
20	R/W	Hys1	18	36
21	R/W	Delay Time1	19	38
22	R/W	Alarm Time1	20	40
23	R/W	Out2 Mode	21	42
		Selection Value		
		Heat 0		
		Cool 1		
		Alarm 2		
		Off Mode 3		
24	R/W	Control Action2	22	44
		Selection Value		
		Pid 0		
		On-Off 1		
		Blower TP 2		
25	R/W	Alarm2	23	46
		Selection Value		
		End Alarm 0		
		Abs Low 1		
		High Alarm 2		
		In Band 3		
		Abs Out Band 4		
		Out Band 5		
		Low Alarm 6		
26	R/W	Hys2	24	48
27	R/W	Delay Time2	25	50
28	R/W	Alarm Time2	26	52
29	R/W	Set2 Mode	27	54
		Selection Value		
		Individual 1		
		Relative 0		
30	R/W	Soak	35	70
31	R/W	Soak Mode	36	72
		Selection Value		
		Soak Time Normal 0		
		Soak Pass 1		
		Soak Remaining 2		
32	R/W	Soak Unit	37	74
		Selection Value		
		Sec 0		
		Min 1		
		Hour 2		

If Analog Output = Controlling, then refer below register table

Sr.No	Access Type	Parameter	Register	
			Data Type	
			Integer	Float
1	R	Process Value	0	0
2	R	R1 Status	1	2
		Selection Value		
		On 1		
		Off 0		
3	R	R2 Status	2	4
		Selection Value		
		On 1		
		Off 0		
4	R	Control Percentage	3	6
5	R	Analog Output Value	4	8
6	R/W	Set C	5	10
7	R/W	Set1	8	16
8	R/W	Low Set1	9	18
9	R/W	High Set1	10	20
10	R/W	Set2	11	22
11	R/W	Low Set2	12	24
12	R/W	High Set2	13	26
13	R/W	Input	14	28
		Selection Value		
		J 0		
		K 1		
		PT-100 2		
		PT.1 3		
		0 - 10V DC 4		
		0 - 20mA DC 5		
		0 - 40mA DC 6		
14	R/W	Controlling O/P Mode	15	30
		Selection Value		
		Heat 0		
15	R/W	Control Action of controlling O/P	16	32
		Selection Value		
		Pid 0		
16	R/W	Relay 1 Mode	21	42
		Selection Value		
		Heat 0		
		Cool 1		
		Alarm 2		
		Off Mode 3		
17	R/W	Control Action of Relay 1	22	44
		Selection Value		
		On-Off 1		
		Blower TP 2		

Sr.No	Access Type	Parameter	Register	
			Data Type	
			Integer	Float
18	R/W	Alarm 1	23	46
		Selection Value		
		End Alarm 0		
		Abs Low 1		
		High Alarm 2		
		In Band 3		
		Abs Out Band 4		
		Out Band 5		
		Low Alarm 6		
19	R/W	Hys1	24	48
20	R/W	Delay Time1	25	50
21	R/W	Alarm Time1	26	52
22	R/W	Set1 Mode	27	54
		Selection Value		
		Individual 1		
		Relative 0		
23	R/W	Relay 2 Mode	28	56
		Selection Value		
		Heat 0		
		Cool 1		
		Alarm 2		
		Off Mode 3		
24	R/W	Control Action2	29	58
		Selection Value		
		On-Off 1		
25	R/W	Alarm2	30	60
		Selection Value		
		End Alarm 0		
		Abs Low 1		
		High Alarm 2		
		In Band 3		
		Abs Out Band 4		
		Out Band 5		
		Low Alarm 6		
26	R/W	Hys2	31	62
27	R/W	Delay Time2	32	64
28	R/W	Alarm Time2	33	66
29	R/W	Set2 Mode	34	68
		Selection Value		
		Individual 1		
		Relative 0		
30	R/W	Soak	35	70
31	R/W	Soak Mode	36	72
		Selection Value		
		Soak Time Normal 0		
		Soak Pass 1		
		Soak Remaining 2		
32	R/W	Soak Unit	37	74
		Selection Value		
		Sec 0		
		Min 1		
		Hour 2		
33	R/W	Soak Time	38	76

Sr.No	Access Type	Parameter	Register	
			Data Type	
			Integer	Float
33	R/W	Soak Time	38	76
34	R/W	Memory	39	78
		Selection Value		
		NO 0		
		Yes 1		
35	R/W	End Save	40	80
36	R	Run Soak Value	41	82
37	R	Soak Status	42	84
		Selection Value		
		End 0		
		Run 1		
		Hold 2		
38	R/W	Set Low Limit	43	86
39	R/W	Set High Limit	44	88
40	R/W	Offset	45	90
41	R/W	DP Process	46	92
		Selection Value		
		0000 0		
		0.0 1		
		0.00 2		
		0.000 3		
42	R/W	Low Range	47	94
43	R/W	High Range	48	96
44	R/W	CRFC	49	98
45	R/W	FLTR Process	50	100
46	R/W	Signal Low Limit	51	102
47	R/W	PB	52	104
48	R/W	IT	53	106
49	R/W	DT	54	108
50	R/W	CT	55	110
51	R/W	MR	56	112
52	R/W	C PB	59	118
53	R/W	C ON	60	120
54	R/W	C OF	61	122
55	R/W	Auto Tune	62	124
		Selection Value		
		No 0		
		Yes 1		
56	R/W	Address	63	126
57	R/W	Baudrate	64	128
		Selection Value		
		B 2400 0		
		B 4800 1		
		B 9600 2		
		B 19200 3		
		B 38400 4		
58	R/W	Parity	65	130
		Selection Value		
		None 0		
		Even 1		
		Odd 2		

Sr.No	Access Type	Parameter	Register	
			Data Type	
			Integer	Float
59	R/W	Data Type	66	132
		Selection Value		
		Sign Integer 0		
		Float 1		
60	R/W	Analog Output Type	67	134
61	R/W	RT Low Range	68	136
62	R/W	RT High Range	69	138

Data type = Sign Integer show value as per following

Input	Actual Value	DP Selection
J,K,Pt	Value/1	Fix
Pt.1	Value/10	Fix
Where Parameter is 1,6-14,19,25,32,44-46,48,49,57,69,70		
0-10V DC	Value/1	0
0-20 mA DC	Value/10	1
4-20mA DC	Value/100	2
	Value/1000	3
Where Parameter is 5 ,20,26,33		
0-10V DC	Value/10	Fix
0-20 mA DC		
4-20mA DC		
Where Parameter is 4,51-53,72,73		
0-10V DC	Value/100	Fix
0-20 mA DC		
4-20mA DC		

For Analog O/P = Controlling

Sr.No	Access Type	Parameter	Register	
			Data Type	
			Integer	Float
34	R/W	Memory	39	78
		Selection Value		
		NO 0		
		Yes 1		
35	R/W	End Save	40	80
36	R	Run Soak Value	41	82
37	R	Soak Status	42	84
		Selection Value		
		End 0		
		Run 1		
		Hold 2		
38	R/W	Set Low Limit	43	86
39	R/W	Set High Limit	44	88
40	R/W	Offset	45	90
41	R/W	DP Process	46	92
		Selection Value		
		0 0		
		0.0 1		
		0.00 2		
		0.000 3		
42	R/W	Low Range	47	94
43	R/W	High Range	48	96
44	R/W	CRFC	49	98
45	R/W	FLTR Process	50	100
46	R/W	Signal Low Limit	51	102
47	R/W	PB	52	104
48	R/W	IT	53	106
49	R/W	DT	54	108
50	R/W	CT	55	110
51	R/W	MR	56	112
52	R/W	C PB	59	118
53	R/W	C ON	60	120
54	R/W	C OF	61	122
55	R/W	Auto Tune	62	124
		Selection Value		
		No 0		
		Yes 1		
56	R/W	Address	63	126
57	R/W	Baudrate	64	128
		Selection Value		
		B 2400 0		
		B 4800 1		
		B 9600 2		
		B 19200 3		
		B 38400 4		
58	R/W	Parity	65	130
		Selection Value		
		None 0		
		Even 1		
		Odd 2		

Sr.No	Access Type	Parameter	Register	
			Data Type	
			Integer	Float
59	R/W	Data Type	66	132
		Selection Value		
		Sign Integer 0		
		Float 1		
60	R/W	Analog Output Type	67	134
63	R/W	Control Mode	70	140
		Selection Value		
		Forward 1		
		Reverse 0		
64	R/W	Low Percentage	71	142
65	R/W	High Percentage	72	144

Data type = Sign Integer show value as per following

Input	Actual Value	DP Selection
J,K,Pt	Value/1	Fix
Pt.1	Value/10	Fix
Where Parameter is 1,6-14,19,25,32,44-46,48,49,57,69,70		
0-10V DC	Value/1	0
0-20 mA DC	Value/10	1
4-20mA DC	Value/100	2
	Value/1000	3
Where Parameter is 5 ,20,26,33		
0-10V DC	Value/10	Fix
0-20 mA DC		
4-20mA DC		
Where Parameter is 4,51-53,72,73		
0-10V DC	Value/100	Fix
0-20 mA DC		
4-20mA DC		