PROCESS TEMPERATURE CONTROLLER

MULTISPAN **PTC-4202-M1**

PV = Process value
SV = Set Value

TECHNICAL SPECIFICATION

INPUT SPECIFICATION

	Input	Range
Input Types	J	0 to 600°C,
	K	0 to 1200°C,
	PT-100	-99 to 400°C,
	PT.1	-99.0 to 400.0°C,
	0-10V DC	-999 to 9999
	0-20mA DC	-999 to 9999
	4-20mA DC	-999 to 9999
Resolution	J,K,PT-100 = 1°C	
	PT.1 = 0.1°C	
	0-10V DC,0-20mA DC,4-20mA DC = 0.1,0.01,0.001,0001	
Indication Accuracy	±1% of FSD ± 1°C (FSD:- full scale deflection)	

DISPLAY AND KEYS

Display	Upper: 4 digit, 7 segment, 0.56" White
	Lower: 4 digit, 7 segment, 0.33" Green
Keys	SET, INC, DEC, ENT

DIMENSION

Size	52 (H) x 52 (W) x 111 (D) mm
Panel Cutout	45 (H) x 45 (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/ Absolute Low/ Inband/ Absolute Outband

OUTPUT SPECIFICATION

Relay Output	
Relay	2 nos.
Relay Type	(NO-C)
Rating	5A, 230V AC/30 V DC
24V DC Transmitter Supply	
Modbus Communication (RS-485)	

AUXILIARY SUPPLY

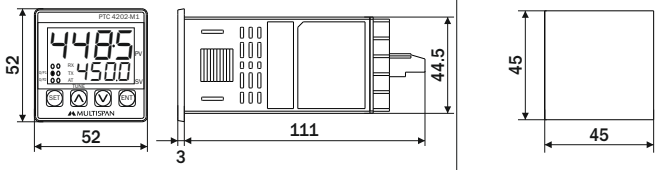
Supply voltage	100 to 270V AC, 50-60Hz
Power consumption (VA RATING)	Approx 7 VA @ 230V AC MAX

ENVIRONMENT CONDITION

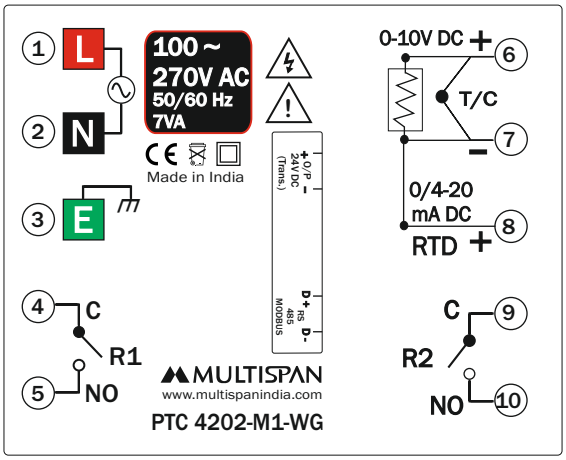
Operating Temp.	0°C to 55°C
Relative Humidity	UP to 95% RH (non-condensing)
Protection Level	IP-65 (Front side) As per IS/IEC 60529 : 2001

MECHANICAL INSTALLATION

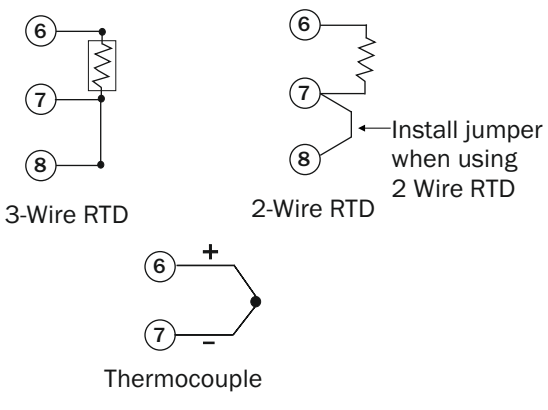
Outline Dimension (mm)	Panel Cutout Dimension (mm)



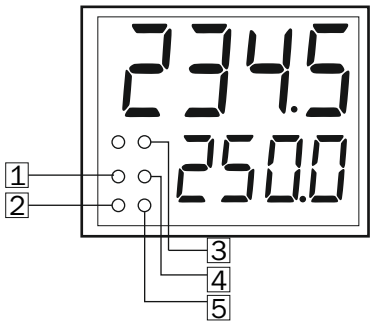
TERMINAL CONNECTION



Sensor Input



STATUS LED DESCRIPTION



1 - Output 1
2 - Output 2
3 - Receive
4 - Transmit
5 - Auto tuning

KEY OPERATION

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

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.

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.

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.

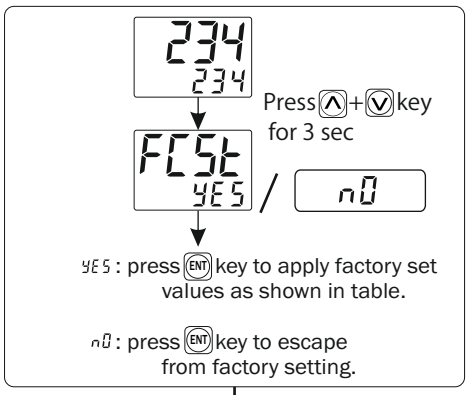
WARNING : Risk of electric shock.

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.

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℃
6	OFFSET	0℃
7	HYSTERISIS-1	3℃
8	HYSTERISIS-2	3℃
9	C-PB	4.0℃
10	C-ON	1 Sec
11	C-OFF	48 Sec
12	CRFC	0

PARAMETER MESSAGE DESCRIPTION

SEt 1	Set Point 1 For O/P 1
SEt2	Set Point 2 For O/P 2
LO.1	Low Set Point 1
HIG1	High Set Point 1
LO.2	Low Set Point 2
HIG2	High Set Point 2
PASS	Password
InPt	Input (Sensor)
SLL	Set Low Limit
SHL	Set High Limit
OFSt	Offset
Pb	Proportional Band For PID Action
It	Integral Time Constant
dt	Derivative Time Constant
Ct	Cycle Time For PID Action
ñr	Manual Reset
C-Pb	Cooling PB
C-On	Cooling On Time
C-OF	Cooling Off Time
HYS 1	Hysterisis 1

PARAMETER MESSAGE DESCRIPTION

HYS2	Hysterisis 2
OUt 1	OutPut 1 Mode
SOAP	Soak Time Select
SPñd	Soak Mode
SPUt	Soak Unit
SPñt	Soak Time Value
ñEñO	Soak Time Memory
End	Soak Time End
Ctr 1	Control Action 1
OUt2	Output 2 Mode
Ctr2	Control Action 2
ALñ 1	Alarm 1
ALñ2	Alarm 2
S2ñd	Set 2 Mode
r 1dL	Relay 1 Delay Time
r2dL	Relay 2 Delay Time
ALtñ	Alarm Time
PI d	PID Action
OnOF	ON-OFF Action
bL.tP	Blower TP Action
H IGH	High Alarm
Ab-L	Absolute Low Alarm
In-b	In Band Alarm
Ab-O	Absolute Out Band Alarm
SEC	Second
ñIn	Minute
HOUr	Hour
HEAt	Heating Mode
COOL	Cooling Mode
ALrñ	Alarming Mode
OFF	OFF Mode
YES	Yes
nO	No
SAvE	Save
Indi	Set 2 Individual to Set 1
rLtv	Set 2 Reletive to Set 1
FCSt	Factory Setting
bASE	Basic Configuration
ñbUS	Modbus
SI nt	Intenger
FLOt	Float
Addr	Address
bAUd	Baud Rate
PrtY	Parity
dAtA	Data Type
I SOL	Isolation

RANGE FOR CONTROL PARAMETER

Sr.	Parameter	Range for J,K,PT-100	Range for PT.1 Sensor	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	-0.009 to 0.009
				DP 2	-0.09 to 0.09
				DP 1	-0.9 to 0.9
				DP 0	-9 to 9
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-OFF	5 to 200 sec	5 to 200 sec	5 to 200 sec	
12	R1DL	0.0 to 99.59 mm.ss	0.0 to 99.59 mm.ss	0.0 to 99.59 mm.ss	
13	R2DL	0.0 to 99.59 mm.ss	0.0 to 99.59 mm.ss	0.0 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	

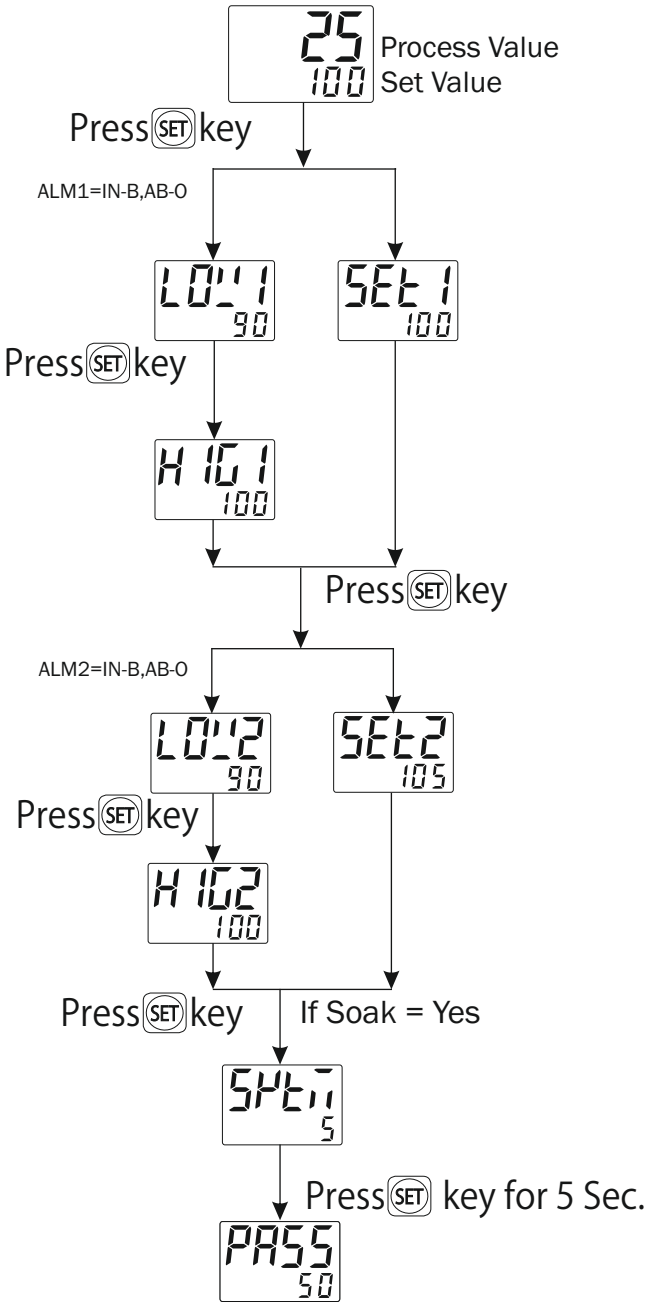
ERROR DISPLAY

When an error has occurred the display indicates error codes as given below.

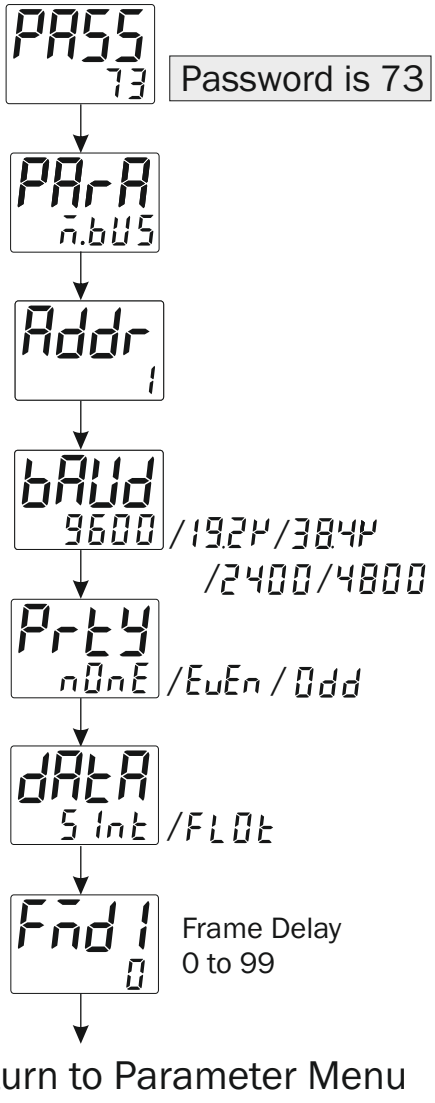
ERROR	MEANING
OPEn	Sensor is not connected or Over range condition or sensor break
SrE	Sensor connection is reversed
OUEr	Over range condition For 0 to 10V DC - exceed 10V DC For 4 to 20mA DC - exceed 20mA DC
LOG	When I/P is 4 to 20mA DC is selected, than I/P signal is lower than SLL (0-5mA)

PARAMETER SETTING

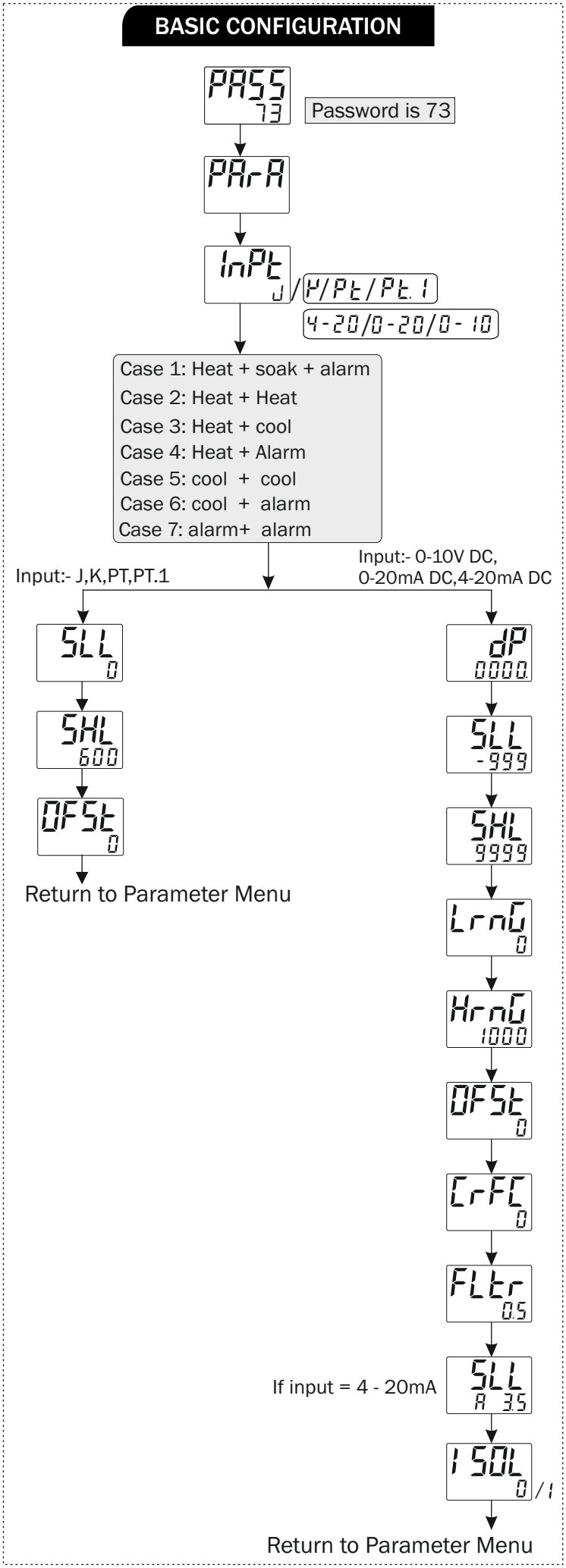
Set Point Setting



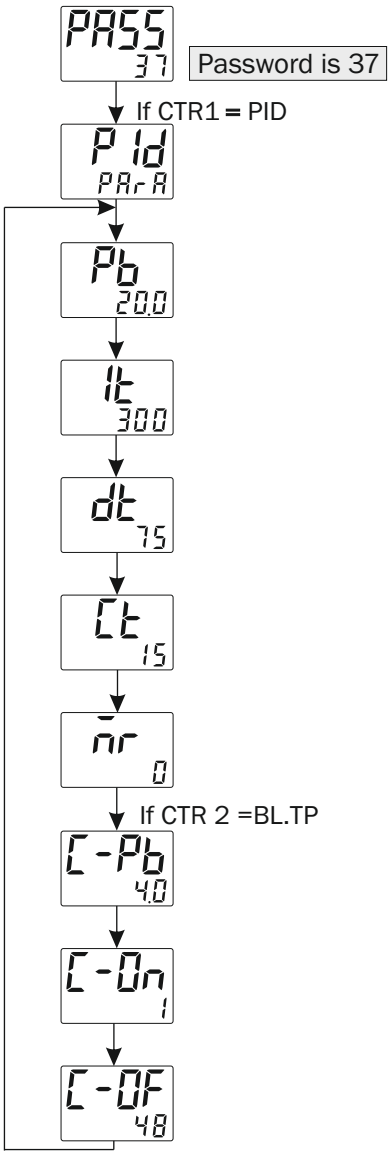
ModBus



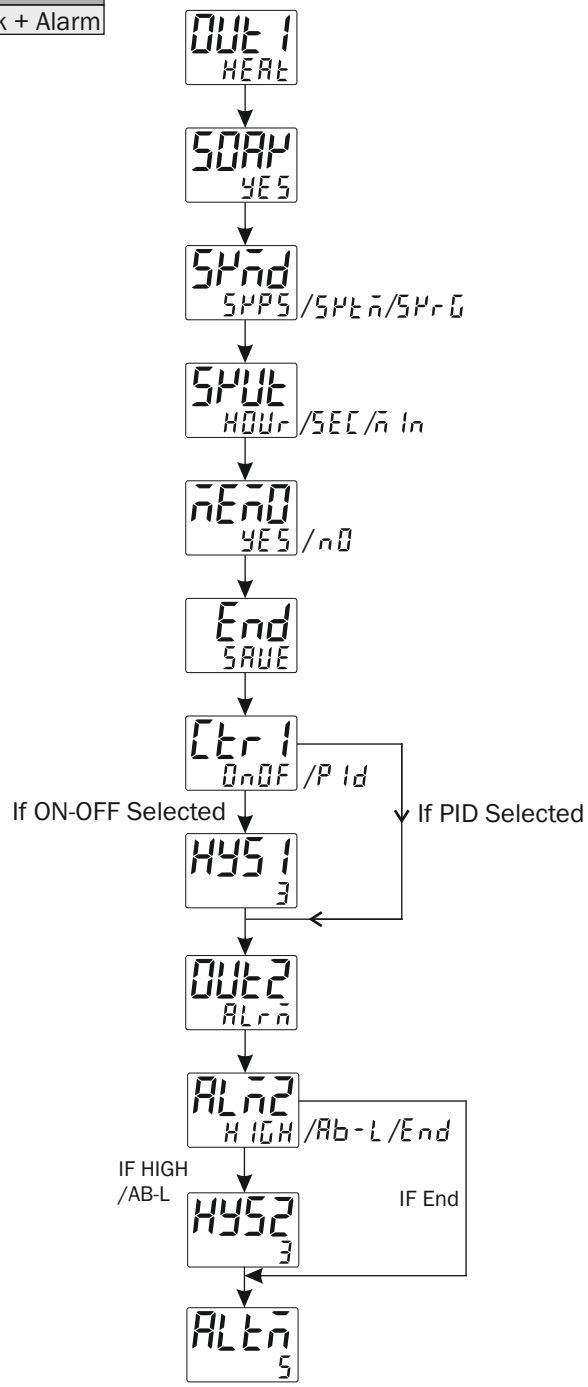
BASIC CONFIGURATION



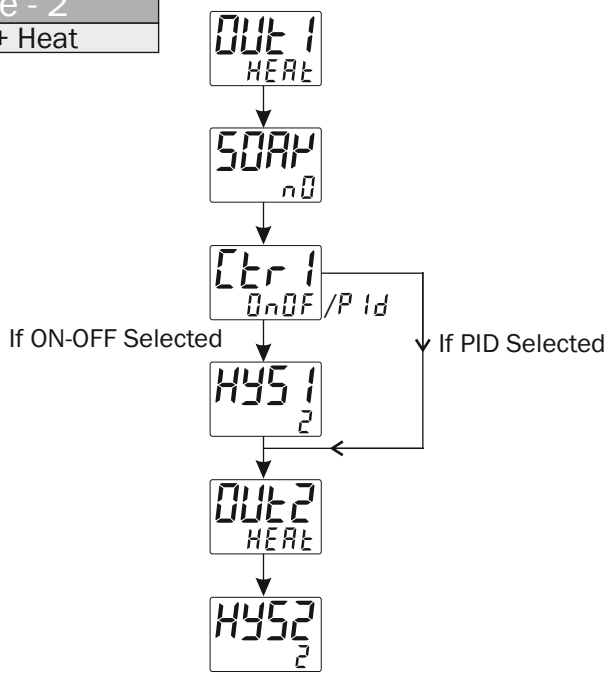
CONTROL PARAMETER SETTING



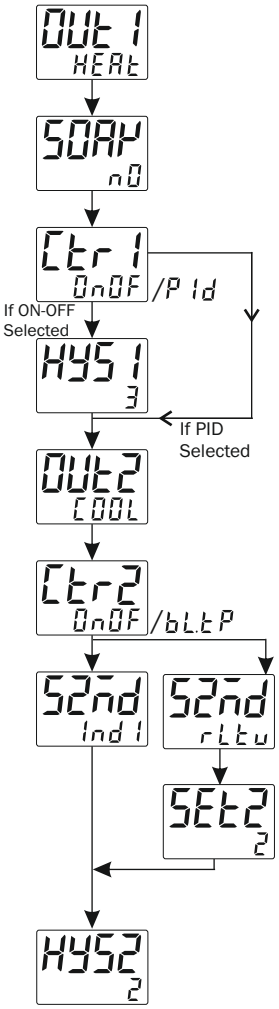
Case - 1
Heat + Soak + Alarm



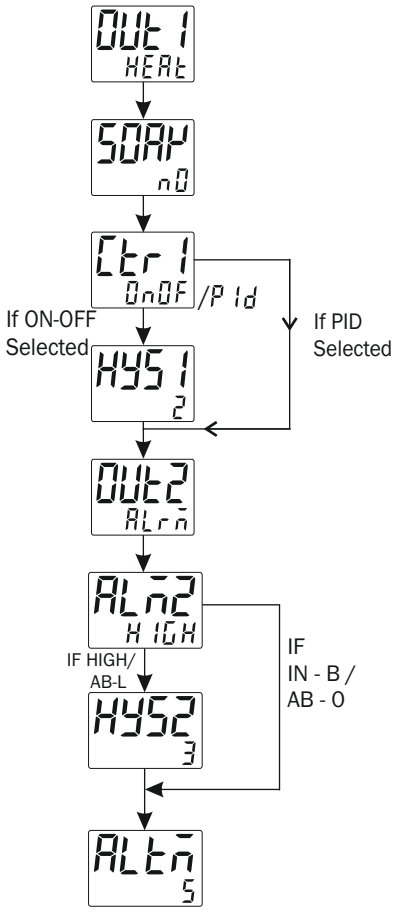
Case - 2
Heat + Heat



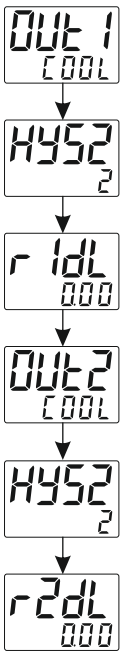
Case - 3
Heat + Cool



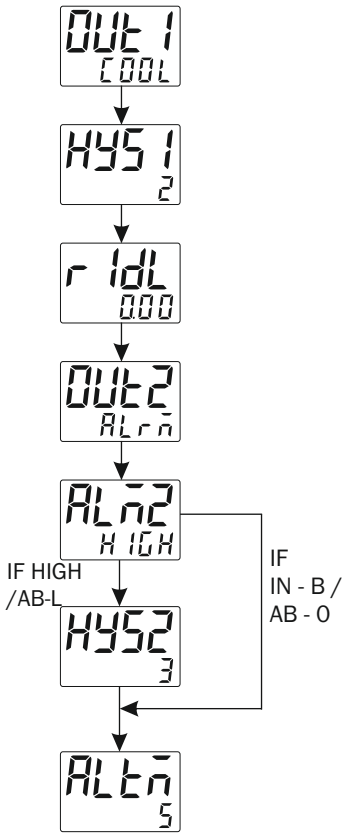
Case - 4
Heat + Alarm



Case - 5
Cool + Cool



Case - 6
Cool + Alarm



Case - 7
Alarm + Alarm