

TECHNICAL SPECIFICATION

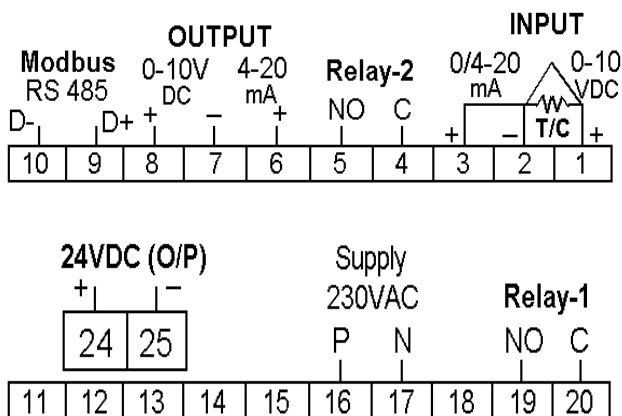
INPUT SPECIFICATION:

Sr.	INPUT	Range
1	TC-J	0 To 700 °C
2	TC-K	0 To 1300 °C
3	TC-T	0 To 350 °C
4	TC-R	0 To 1650°C
5	TC-S	0 To 1650°C
6	TC-E	0 To 650°C
7	TC-N	0 To 1250°C
8	PT	-100 To 400°C
9	PT-1	-100.0 To 400.0°C
10	0-10VDC	-1999 To 9999
11	0-5VDC	-1999 To 9999
12	4-20mA	-1999 To 9999
13	0-20mA	-1999 To 9999
Indication Accuracy		±1% of FSD ± 1°C (FSD: full scale deflection)
Resolution		J,K,T,R,S,E,N,PT-100 = 1°C PT.1 = 0.1°C 0-10V DC,0-5VDC,0-20mA DC,4-20mA DC = 0.1,0.01,0.001,0001

OUTPUT SPECIFICATION:

Analog Output	
Controlling Output	4-20mADC/0-10VDC
Relay Output/ SSR Output (Factory Set)	
Relay/SSR	2
Relay Type	(NO-C)
Rating	Relay:10A, 230VAC/30V DC SSR: 12VDC,30mA
24VDC Transmitter supply & RS485 (Modbus)	

TERMINAL CONNECTION



USB SPECIFICATION:

USB Port	(USB 2.0) Mass Storage
USB Function	Retrieving logged data only
Storage Device Format	FAT32
Data Fetch File Format	CSV Microsoft Excel Supported
Data Retrieving Option	Full data fetch
Logging Sample	5000 (Internal Memory)
Pendrive Support	Up to 16GB
Data logging time	Settable Up 5 to 9999 SEC.

COMMUNICATION SPECIFICATION

Protocol	Modbus RTU Serial
Standard	RS - 485
Communication method	2 wire half duplex
Communication rate	9600,19200
Address range	1-127
Data type	Integer

AUXILIARY SUPPLY:

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

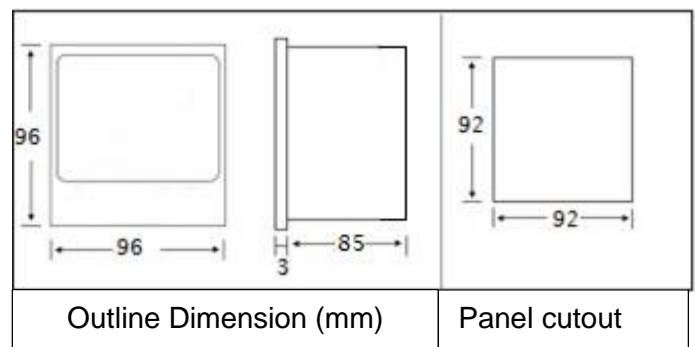
ENVIRONMENT CONDITION:

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

DIMENSION&DISPLAY:

Size	96(H) X 96(W) X 85(D)/ Cutout 92(H) X 92(W)
Display	128 x 64 Bit Graphical LCD

MECHANICAL INSTALLATION



MODBUS PARAMETER

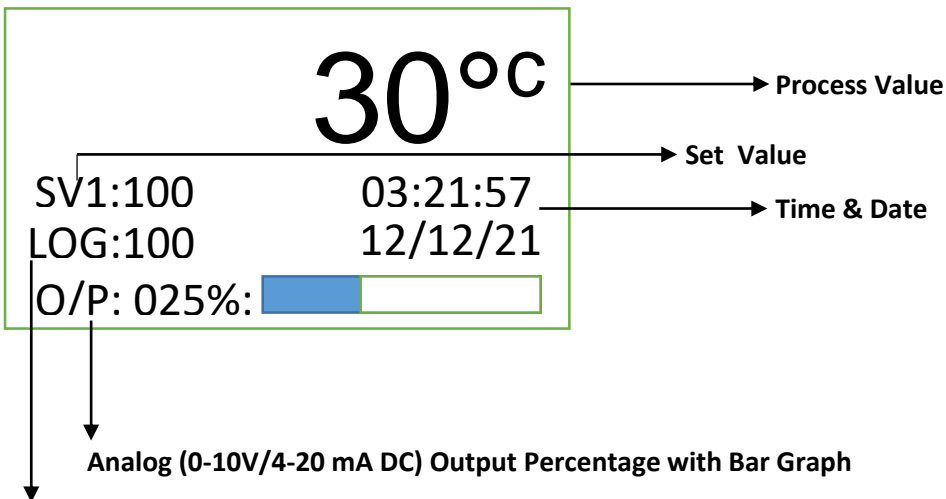
Read/Write	Parameter	Read Function Register(0x03/0x04) ADDRESS(INT)	Write Function Register (0x06/0x10) ADDRESS(INT)	REMARK
R	Process Value	40001/30001	-	
R/W	Set Value1	40002/30002	40002	
R/W	Set Value2	40003/30003	40003	
R/W	Set Value3	40004/30004	40004	
R/W	Retransmission Low Value	40005/30005	40005	
R/W	Retransmission High Value	40006/30006	40006	
R/W	Input*	40007/30007	40007	
R/W	Lower Range(0-10V,4-20mA)	40008/30008	40008	
R/W	Higher Range(0-10V,4-20mA)	40009/30009	40009	
R/W	OFFSET	40010/30010	40010	
R/W	CRFC(0-10V,4-20mA)	40011/30011	40011	
R/W	SSL	40012/30012	40012	
R/W	SHL	40013/30013	40013	
R/W	4-20 Output Action*	40014/30014	40014	
R/W	Relay1 Mode*	40015/30015	40015	
R/W	Relay2 Mode*	40016/30016	40016	
R/W	Hysteresis1	40017/30017	40017	
R/W	Hysteresis2	40018/30018	40018	
R/W	Hysteresis3	40019/30019	40019	

*INPUT (Range: 0-12) 0:TC-J, 1:TC-K, 2:TC-T, 3:TC-R, 4:TC-S, 5:TC-E, 6:TC-N, 7:PT, 8:PT.1, 9:0-10V, 10:0-5V, 11: 4-20mA, 12: 0-20mA

*4-20 Output Action (Range: 0-2) 0: ONOF, 1: PID, 2: Retransmission

*Relay1/2 Mode (Range: 0-5) 0:HEAT,1:COOL,2:H-AL,3:L-AL,4:IB-A,5:OB-A

DISPLAY PARAMETER



USB Data Log

LOG BLINKING (IF 90% Memory Used)

NOTE: IF LOG Memory is full then all previous data will be Deleted and Logging start again

PARAMETER SETUP

Press Left (←) AND Right (→) key Enter into Parameter Menu

Enter Password
00000

Press Up (↑) or Down (↓) Key to Change Value of Digit
Press Left (←) or Right (→) key to Change Digit
Press SET Key to Enter Password (Default Password 00000)
Press ENT Key for Exit Menu

1.IO Setup
2.USB COPY
3.LOG Setup
4.Communication

Press Up (↑) or Down (↓) Key to Select Menu
Press SET Key to Enter Into Menu
Press ENT Key for Exit Menu

1.IO Setup	7.Relay Mode
2.USB COPY	8.PID Setup
3.LOG Setup	9.Hystersis
4. Communication	10.OFFSET
5.Analog Input	11.Date & TIME
6.Analog Output	12 Change Password

IO Setup (Input-Output Setup):

INPUT : TC-J
OUTPUT : 4-20mA
CONTROL: PID

Press Up (↑) or Down (↓) Key for Select Menu
Press Left (←) or Right (→) key for Desire Value
Press SET Key for Enter Value
Press ENT Key for Exit Menu

INPUT	TC-J,TC-K,TC-T,TC-R,TC-S,TC-E,TC-N,PT,PT-1,0-10VDC,0-5VDC,4-20mA,0-20mA
OUTPUT	0-10VDC,4-20mA
CONTROL	ONOF,PID,RT (Retransmission)

4-20mA/0-10VDC Output Control Action:-

ONOF: 4mA/0 VDC when OFF, 20mA/10VDC when On [Heat mode]

PID: 4-20mA/0-10VDC Output according to PID equation

Retransmission: 4-20mA/0-10VDC output according to Retransmission Low Value -> Retransmission High Value

[Ex.1. Input (TC-J), RTLO (Retransmission Low Value) = 0 °C RTHI (Retransmission High Value) =200°C 0 °C->4mA,50°C->8mA,100°C->12mA, 150°C->16mA, 200°C->20mA.

Ex.2. Input (4-20mA), Low Range=0, High Range=1000,RTLO=0 & RTHI=1000 4-20mA Output according 4-20mA Input.]

PID Auto-Tuning

- The Auto-tuning function automatically computes and sets the proportional band (P), integral time (I), Derivative time (D), cycle time as per process characteristics.
- While Auto-tune is in progress, lower display alternate shows AT & set-point. Lower display stops alternating between AT & set-point at the completion of Auto-tuning.
- Press **UP (↑)** Key 6 sec. to start tuning .

USB COPY:

USB LOG : 0005
COPY LOG: YES
COPY:0002/0005

Press Left (←) or Right (→) key to YES/NO
For Copy Log into Pen-drive Select YES & Press SET Key.
Wait till Process Completion.

LOG Setup:

USB LOG SETUP
LOG RESET : NO
LOG TIME : 30
LOG MEMO: Internal/External

Press Up (↑) or Down (↓) Key for Select Menu
Press Left (←) or Right (→) key for Desire Value
Press SET Key for Enter Value
Press ENT Key for Exit Menu

USB Data Log (Internal Memory): 5000 max [IF LOG Memo: Internal]

LOG BLINKING (IF 90% Memory Used)

NOTE: IF LOG Memory is full then all previous data will be Deleted and Logging start again

USB Data Log (External Memory): [IF LOG Memo: External]

Log directly Copy to the pen Drive for this pen drive must be connected in USB Host

Communication:

SLAVE ID : 001
BuadRate : 9600
Parity : None

Press Up (↑) or Down (↓) Key for Select Menu
Press Left (←) or Right (→) key for Desire Value
Press SET Key for Enter Value
Press ENT Key for Exit Menu

Analog Input:

DECIMAL : 00.00
LOW : 00.00
HIGH : 10.00

Press Up (↑) or Down (↓) Key for Select Menu
Press Left (←) or Right (→) key for Desire Value
Press SET Key for Enter Value
Press ENT Key for Exit Menu

Analog Output:

Analog O/P Limit
LOW(%) : 0
HIGH(%) : 100

Press Up (↑) or Down (↓) Key for Select Menu
Press Left (←) or Right (→) key for Desire Value
Press SET Key for Enter Value
Press ENT Key for Exit Menu

Relay Mode Heat/COOL/HIGH-AL/LOW-AL/IN-BAND/OUT-BAND

Relay Mode
RELAY1 : HEAT
RELAY2 : HEAT

Press Up (↑) or Down (↓) Key for Select Menu
Press Left (←) or Right (→) key for Desire Value
Press SET Key for Enter Value
Press ENT Key for Exit Menu

PID Setup

PB :30.0
IT :240
DT :60
CT :20

Proportion Band
Integration Time
Derivative Time
Cyclic Time

Press Up (↑) or Down (↓) Key for Select Menu
Press Left (←) or Right (→) key for Desire Value
Press SET Key for Enter Value
Press ENT Key for Exit Menu

Hysteresis

HYS1 : 00.00
HYS2 : 00.00
HYS3 : 10.00

Press Up (↑) or Down (↓) Key for Select Menu
Press Left (←) or Right (→) key for Desire Value
Press SET Key for Enter Value
Press ENT Key for Exit Menu

OFFSET

OFFSET:0000

Press Left (←) or Right (→) key for Desire Value
Press SET Key for Enter Value
Press ENT Key for Exit Menu

Date & Time

DATE :29 HOUR:22
MONTH:12 MIN:20
YEAR :20 SEC: 20

Press Up (↑) or Down (↓) Key for Select Menu
Press Left (←) or Right (→) key for Desire Value
Press SET Key for Change (Date & Time)
Press ENT Key for Exit Menu

Change Password

Enter Password
00000

Enter Current Password

Press Up (↑) or Down (↓) Key to Change Value of Digit
Press Left (←) or Right (→) key to Change Digit
Press SET Key for Enter Value or Press ENT Key for Exit Menu

Set New Password
00000

Set New Password

Press Up (↑) or Down (↓) Key to Change Value of Digit
Press Left (←) or Right (→) key to Change Digit
Press SET Key for Enter Value

SET POINT SETUP

Press SET Key Enter into Set-Point Menu

IF 4-20mA/0-10VDC-O/P Control Action: ONOF/PID

SetValue1 : 100
SetValue2 : 105
SetValue3 : 110

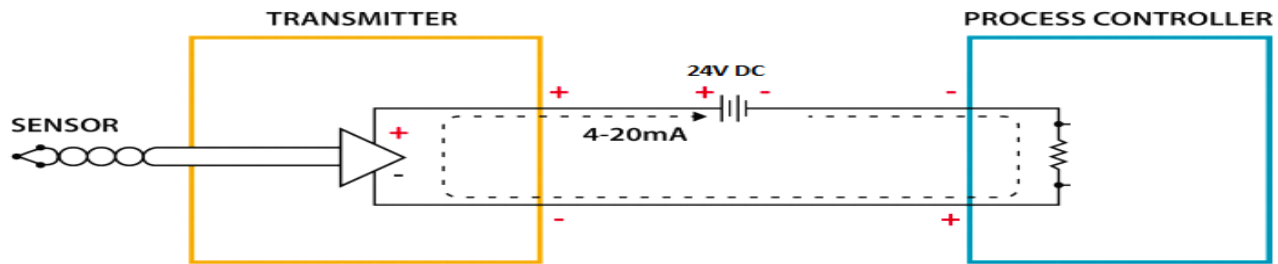
Press Up (↑) or Down (↓) Key for Select Menu
Press Left (←) or Right (→) key for Desire Value
Press SET Key for Enter Value
Press ENT Key for Exit Menu

IF 4-20mA/0-10VDC-O/P Control Action: Retransmission

RT-LOW :100
RT-HIGH :600
SetValue2 :105
SetValue3 :110

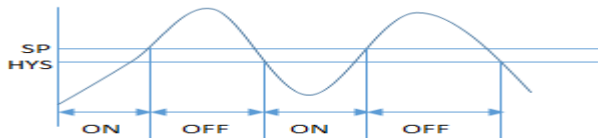
Press Up (↑) or Down (↓) Key for Select Menu
Press Left (←) or Right (→) key for Desire Value
Press SET Key for Enter Value
Press ENT Key for Exit Menu

4-20 mA Current Loop:



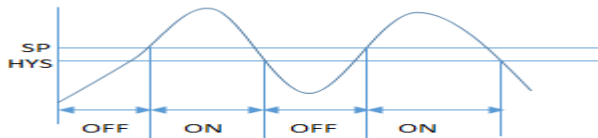
Relay1 & Relay2 Operating Modes

- **Heat Mode:**



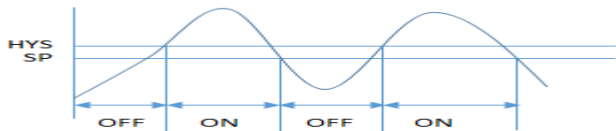
Initially Relay will be on condition. When Process value equals to Set Point Relay will turn off. When Process value equal to Set Point- Hysteresis then again Relay will be on.

- **Cool Mode:**



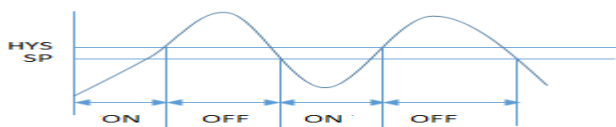
Initially Relay will be off condition. When Process value equals to Set Point Relay will turn on. When Process value equal to Set Point+ Hysteresis then again Relay will turn off.

- **High Alarm Mode [H-AL]:**



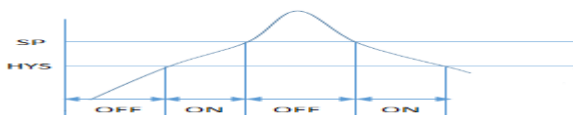
Initially Relay will be off condition. When Process value equals to Set Point + Hysteresis Relay will turn on. When Process value equal to Set Point then again Relay will turn off.

- **Low Alarm Mode [L-AL]:**



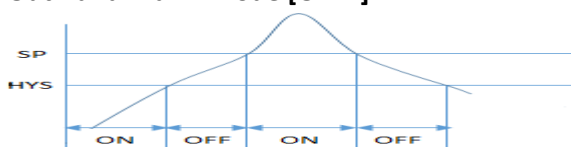
Initially Relay will be on condition. When Process value equals to Set Point + Hysteresis Relay will turn off. When Process value equal to Set Point then again Relay will turn on.

- **In Band Alarm Mode [IB-A]:**



Relay will be on between Set point & Hysteresis condition. If Set Point=100 & Hysteresis=3 than Relay on between 97to100

- **Out Band Alarm Mode [OB-A]:**



Relay will be off between Set point & Hysteresis condition. If Set Point=100 & Hysteresis=3 than Relay off between 97to100.