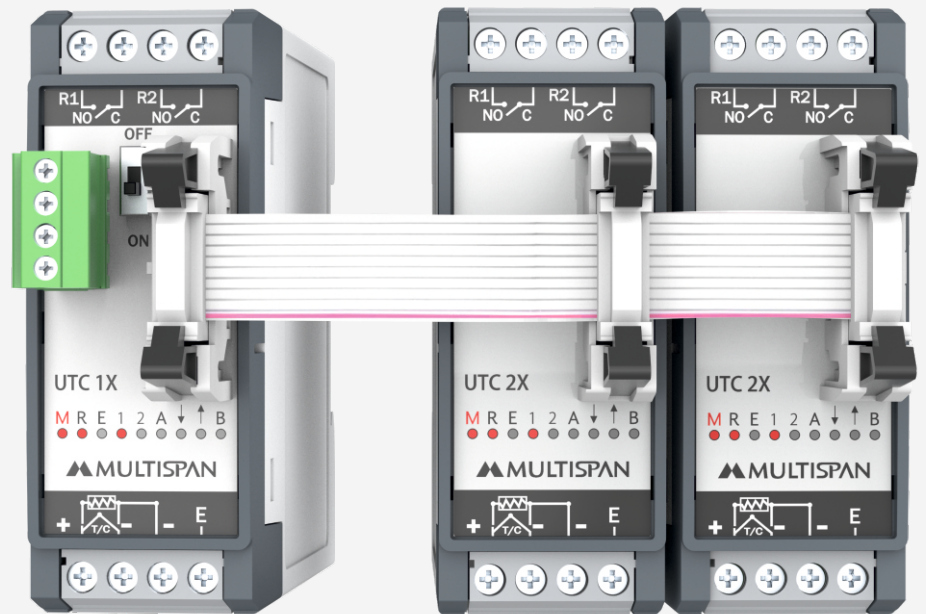




MODULER TEMPERATURE CONTROLLER

UTC-1X & UTC-2X

APPLICATIONS

Packaging Machinery

Extrusion Machinery

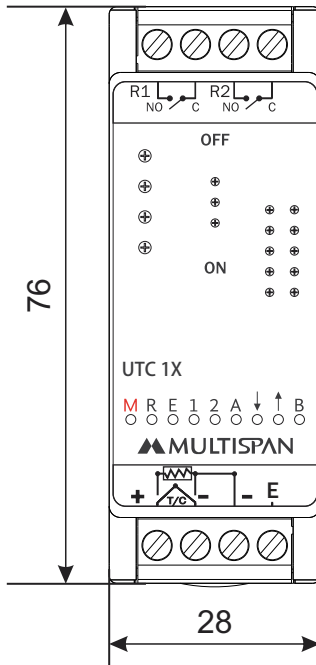
Furnace & Boilers

Ovens & Incubators

Food Industry

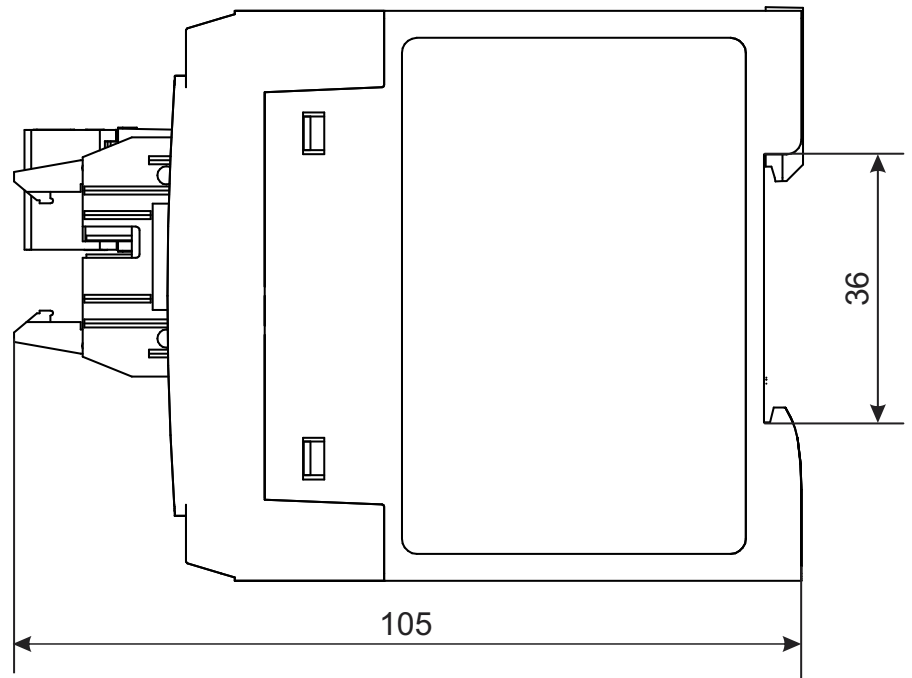
Mechanical Dimensions

Body Dimensions



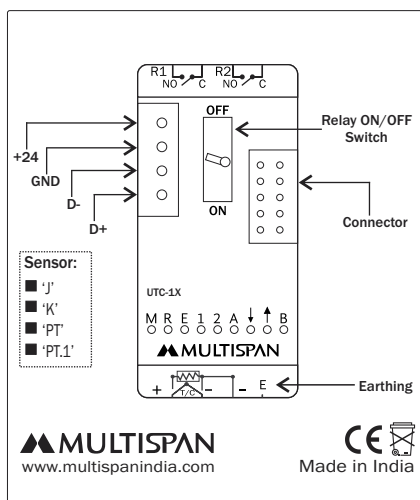
FRONT VIEW

All dimensions are in mm

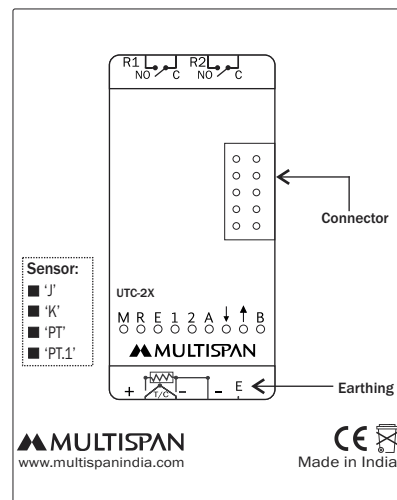


RIGHT SIDE VIEW

Connection Diagram



UTC-1X



UTC-2X

TECHNICAL DATA

Input	J / K / PT-100 / PT.1
Range	J: 0 to 600°C , K: 0 to 1200°C, PT 100: -99 to 400°C, PT.1 -99.0 to 400.0°C
Output	2 Relay, 1 C/O contact, 230V AC, 5A With RS 485 Modbus
Control Action	PID / TP / ON-OFF (Configurable)
Mode	Heating / Cooling
Power Supply	24V DC

Input	
Input Type	J, K, PT 100, PT.1
Accuracy	± 1% of FSD
ADC Resolution	12 Bit
Display Resolution	Thermocouple : 1°C RTD : 0.1°C
Sample Rate	6 Sample / Sec
CJC Error	± 2°C
Sensor Open	All Input
Sensor Burnout Current	1.10uA
RTD Excitation Current	0.2mA
CMRR	>120 dB (Typical)
Input Impedance	>1M
Max Voltage	20V DC

Output	
Control Type	PID , TP , ON-OFF
Relay Control Output	
Relay	2 Nos. (NO - C)
Rating	5A @230V AC/ 24V DC Resistive Load

Modbus Communication	
Slave Address	1 to 127
Baud Rate	2400, 4800, 9600, 19200, 38400
Parity	None, Even, Odd
Datatype	Sign, Integer, Float

Power Supply	
Standard	24V DC

Table 1 (Sensor Range)	
J	0 to 600°C
K	0 to 1200°C
PT 100	-99 to 400°C
PT.1	-99.0 to 400.0°C

Environmental

Ambient Temperature	0 to 55 °C
Relative Humidity	95% RH Non-Condensing
Protection	Conformal Coating on PCB

Mechanical Characteristics

Mounting Type	DIN Rail Mount
Dimension (HxWxD) mm	76 x 28 x 105
Material	Polycarbonate (PC)
Front Enclosure	ABS
Terminal Screw Size	M3
Screw Torque (N.m)	0.5
Wire Gauge (AWG)	28 - 12
Weight (Approx) gms	Unpacked : 110 Packed : 140

Blind Temperature Controller
MULTISPAN
UTC-1X & 2X



TECHNICAL SPECIFICATION

INPUT SPECIFICATION:

Table with 2 columns: Input, Range. Rows include J (0 to 600 °C), K (0 to 1200 °C), PT-100 (-99 to 400 °C), and PT.1 (-99.9 to 400.0 °C).

DIMENSION:

Table with 2 columns: Size, 76 (H) x 27 (W) x 105 (D) mm.

OUTPUT SPECIFICATION

Table with 2 columns: Relay Output, Modbus Communication. Rows include Relay (2 nos.), Relay Type (1 C/O (NO-C)), Rating (5A, 230V AC), and RS-485.

AUXILIARY SUPPLY

Table with 2 columns: Supply voltage, 24V DC.

ENVIRONMENT CONDITION

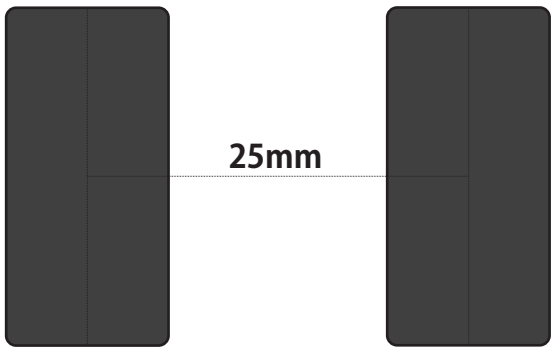
Table with 2 columns: Operating Temp. (0 °C to 55 °C), Relative Humidity (UP to 95% RH (non-condensing)).

MECHANICAL INSTALLATION

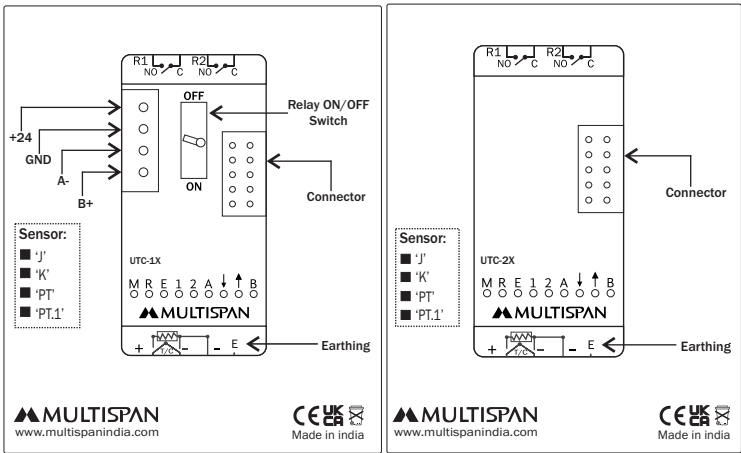
Table with 2 columns: Outline Dimension (mm), Panel Dimension (mm). Includes diagrams for UTC 1X and UTC 2X units showing dimensions like 27.5, 76, and 105.

Din rail Mounting Distance

52.5mm - 2.067 inches



TERMINAL CONNECTION



UTC 1X

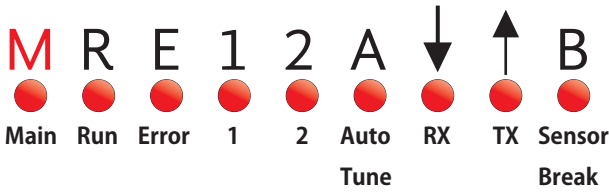
UTC 2X

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

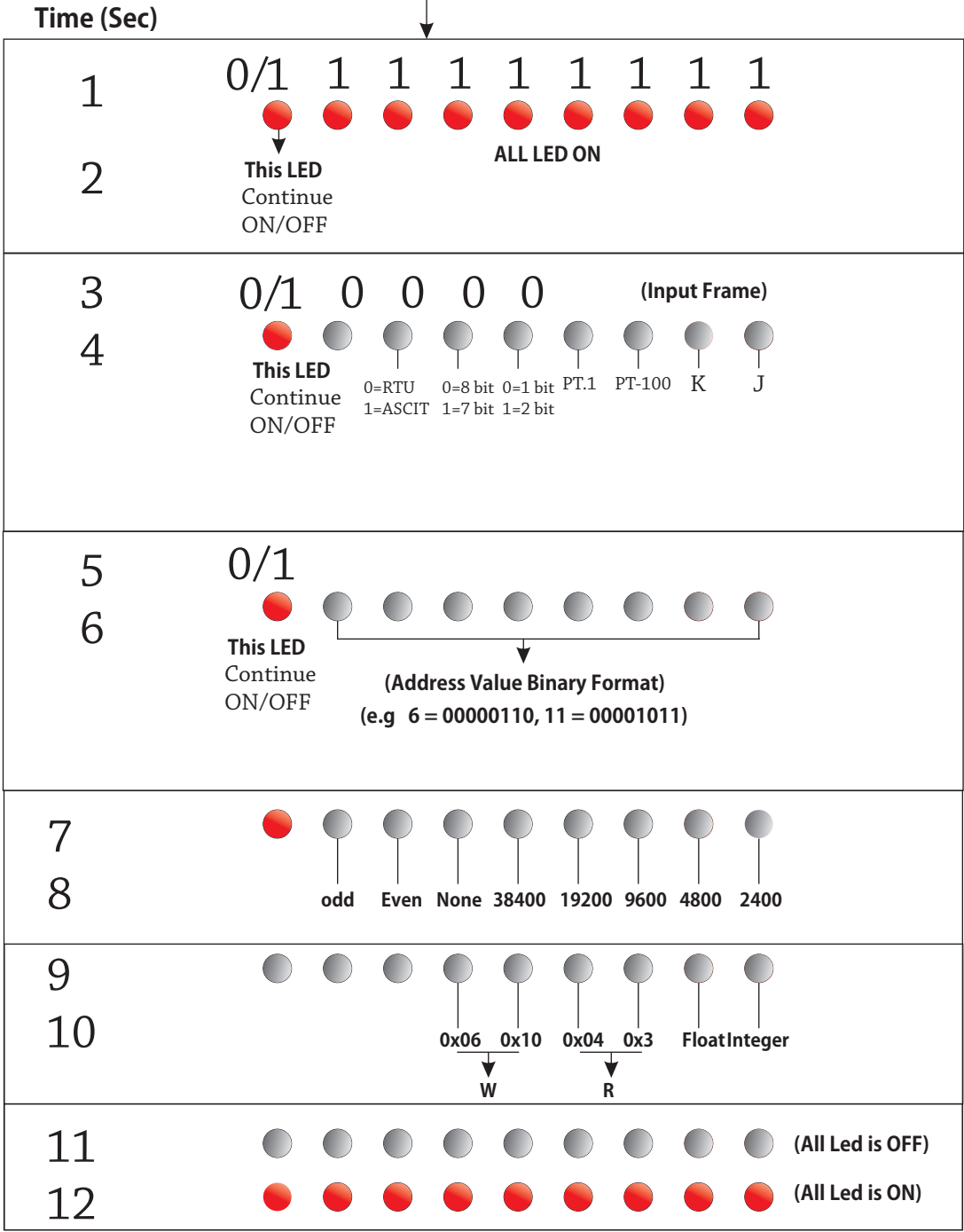
- 1. The equipment should be cleaned regularly to avoid blockage of ventilating parts.
- 2. Clean the equipment with a clean soft cloth. Do not use isopropyl alcohol or any other cleaning agent.
- 3. Fusible resistor must not be replaced by operator.



Blind UTC-1X/UTC-2X

Every time the instrument is turn ON, Following pattern will be LED Indication

Power ON Instrument



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.

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 (5 Ωmax 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.

Modbus Setting: BLIND UTC 1X and 2X (Modbus manual)

1. Device Address: 1 To 127
2. Baudrate: 2400, 4800,9600,19200,38400 (bps)
3. Parity: None,Even,Odd
4. DataType: Sign Integer, Float
5. Read Function Registers: 0x03 and 0x04
6. Write Function Registers: 0x06 and 0x10
7. NA = 32100 (Not Available)

Read / Write	Parameter	Read Function		Data Type = Sign Integer				Read Function		Data Type = Float			
		0x03	0x04					0x03	0x04				
		Address		Range				Address		Range			
R	Temperature	30000	40000	as per input sensor range				30000	40000	as per input sensor range			
R	Relay1 Status	30001	40001	0 off				30002	40002	0 off			
R	Relay2 Status	30002	40002	1 on				30004	40004	1 on			
R	PID Control Output	30003	40003	0 to 1000%				30006	40006	0.0 to 100.0%			
NA	NA	NA	NA	NA				NA	NA	NA			
R/W	SET 1 (Setpoint 1)	30005	40005	SLL to SHL				30010	40010	SLL to SHL			
R/W	SET 2 (Setpoint 2)	30006	40006	S2MD=0	SLL to SHL			30012	40012	S2MD=0	SLL to SHL		
				S2MD=1	INPT = 0,1,2	-50 to 50				S2MD=1	INPT = 0,1,2	-50 to 50	
					INPT = 3	-500 to 500					INPT = 3	-50.0 to 50.0	
NA	NA	NA		NA				NA		NA			
R/W	INP (Input Sensor)	30008	40008	0 - J 1 - K 2 - PT 3 - PT.1	(0 to 600) (0 to 1200) (-99 to 400) (-999 to 4000)			30016	40016	0 - J 1 - K 2 - PT 3 - PT.1	(0 to 600) (0 to 1200) (-99 to 400) (-99.9 to 400.0)		
R/W	SLL (Set Low Limit)	30009	40009	0 to SHL -99 to SHL -999 to SHL				30018	40018	Input = 0,1 Input = 2 Input = 3	0 to SHL -99 to SHL -99.9 to SHL		
R/W	SHL (Set High Limit)	30010	40010	SLL to 600 SLL to 1200 SLL to 400 SLL to 4000				30020	40020	Input = 0 Input = 1 Input = 2 Input = 3	SLL to 600 SLL to 1200 SLL to 400 SLL to 400.0		
R/W	OFST (Offset)	30011	40011	Input=0,1,2 -20 to 20 Input=3 -200 to 200				30022	40022	Input=0,1,2 -20 to 20 Input=3 -20.0 to 20.0			
R/W	HYS1 (Hysterisys 1)	30012	40012	Input=0,1,2 1 to 50				30024	40024	Input=0,1,2 1 to 50			
R/W	HYS2 (Hysterisys 2)	30013	40013	Input=3 1 to 500				30026	40026	Input=3 0.1 to 50.0			
NA	(NA)	(NA)		(NA)				(NA)		(NA)			
R/W	PB (for PID action)	30015	40015	0 to 9999				30030	40030	0.0 to 999.9			
R/W	IT (for PID action)	30016	40016					30032	40032	0 to 9999			
R/W	DT (for PID action)	30017	40017					30034	40034				
R/W	CT (for PID action)	30018	40018					30036	40036	1 to 99 Sec			
R/W	MR (for PID/TP action)	30019	40019	Input=0,1,2 -9 to 9 Input=3 -90 to 90				30038	40038	Input=0,1,2 -9 to 9 Input=3 -9.0 to 9.0			
R/W	PB 2 (for TP action)	30020	40020	Input=0,1,2 2 to 20 Input=3 20 to 200				30040	40040	Input=0,1,2 2 to 20 Input=3 2.0 to 20.0			
R/W	CT2 (for TP action)	30021	40021	4 to 99 Sec				30042	40042	4 to 99 Sec			
R/W	C-PB (for Blower TP)	30022	40022	20 to 250				30044	40044	2.0 to 25.0			
R/W	C-ON (for Blower TP)	30023	40023	1 to 20 sec				30046	40046	1 to 20 sec			
R/W	C-OFF (for Blower TP)	30024	40024	5 to 200 sec				30048	40048	5 to 200 sec			
R/W	CTRL (Control Action)	30025	40025	0 = ONOFF action 1 = TP action 2 = PID action				30050	40050	0 = ONOFF action 1 = TP action 2 = PID action			
R/W	R1MD (Relay 1 Mode) (R1MD=0 To 8 Available)	30026	40026	0 = Off 1 = Heating 2 = Cooling 3 = High Alarm 4 = Low Alarm 5 = Outband Alarm 6 = Inband Alarm 7 = Absolute Low Alarm 8 = Absolute Outband Alarm 9 = Cool TP (Blower Cooling TP) 10 = End Alarm				30052	40052	0 = Off 1 = Heating 2 = Cooling 3 = High Alarm 4 = Low Alarm 5 = Outband Alarm 6 = Inband Alarm			
R/W	R2MD (Relay 2 Mode)	30027	40027					30054	40054	7 = Absolute Low Alarm 8 = Absolute Outband Alarm 9 = Cool TP (Blower Cooling TP) 10 = End Alarm			
NA	(NA)	(NA)		(NA)				(NA)		(NA)			
R/W	Tim1 (Time 1)	30029	40029	1 to 999				30058	40058	1 to 999			
R/W	Tim2 (Time 2)	30030	40030					30060	40060				
R/W	T1MD (Time1 Mode)	30031	40031	0 = Alarm Timer 1 = Off 2 = On delay Timer 3 = Soak Timer 4 = Soak Pass Timer 5 = Soak Remaining Timer				30062	40062	0 = Alarm Timer 1 = Off 2 = On delay Timer 3 = Soak Timer 4 = Soak Pass Timer 5 = Soak Remaining Timer			
R/W	T2MD (Time2 Mode)	30032	40032					30064	40064				
R/W	T1UT (Time1 Unit)	30033	40033	0 = Second 1 = Minute 2 = Hour				30066	40066	0 = Second 1 = Minute 2 = Hour			
R/W	T2UT (Time2 Unit)	30034	40034					30068	40068				
R/W	S2MD (Set2 Mode)	30035	40035	0 = Individual Setpoint 1 = Relative to Set1				30070	40070	0 = Individual Setpoint 1 = Relative to Set1			
NA	(NA)	(NA)		(NA)				(NA)		(NA)			
R/W	End	30037	40037	0 = No 1 = Save				30074	40074	0 = No 1 = Save			
R/W	ADDR (Device Address)	30038	40038	1 to 127				30076	40076	1 to 127			
R/W	BAUD (Baudrate)	30039	40039	0 = 2400 (bps) 1 = 4800 (bps) 2 = 9600 (bps) 3 = 19200 (bps) 4 = 38400 (bps)				30078	40078	0 = 2400 (bps) 1 = 4800 (bps) 2 = 9600 (bps) 3 = 19200 (bps) 4 = 38400 (bps)			
R/W	PRTY (Parity)	30040	40040	0 = None 1 = Even 2 = Odd				30080	40080	0 = None 1 = Even 2 = Odd			
R/W	DATA (Datatype)	30041	40041	0 = Sign Integer 1 = Float				30082	40082	0 = Sign Integer 1 = Float			
R/W	RDFC (Read Function Register)	30042	40042	0 = 0x03 1 = 0x04				30084	40084	0 = 0x03 1 = 0x04			
R/W	WRFC (Write Function Register)	30043	40043	0 = 0x10 1 = 0x06				30086	40086	0 = 0x10 1 = 0x06			
NA	(NA)	(NA)	(NA)	(NA)				(NA)	(NA)	(NA)			
NA	(NA)	(NA)	(NA)	(NA)				(NA)	(NA)	(NA)			
NA	(NA)	(NA)	(NA)	(NA)				(NA)	(NA)	(NA)			
NA	(NA)	(NA)	(NA)	(NA)				(NA)	(NA)	(NA)			
NA	(NA)	(NA)	(NA)	(NA)				(NA)	(NA)	(NA)			
NA	(NA)	(NA)	(NA)	(NA)				(NA)	(NA)	(NA)			
R	Sensor Status	30050	40050	0 - Normal 1 - Sensor Open/Break 2 - Sensor Reverse				30100	40100	0 - Normal 1 - Sensor Open/Break 2 - Sensor Reverse			
R/W	Tuning Status	30051	40051	0 - Tuning OFF 1 - Tuning ON				30102	40102	0 - Tuning OFF 1 - Tuning ON			
R	Time1 Running Value	30052	40052	Depend on selected time value				30104	40104	Depend on selected time value			
R	Time2 Running Value	30053	40053	Depend on selected time value				30106	40106	Depend on selected time value			
W	Reset all Timer	30054	40054	Enter 25 value to reset all time Enter 50 value to factory setting				30108	40108	Enter 25 value to reset all time Enter 50 value to factory setting			
R	Run/Stop	30055	40055	0 = STOP 1 = RUN				30110	40110	0 = STOP 1 = RUN			
R/W	Frame Delay (FMDL)	30056	40056	0 to 99				30112	40112	0 to 99			
R/W	Relay mode for isolation	30057	40057	0 = Normal 1 = Isolation mode (All relay oFF)				30114	40114	0 = Normal 1 = Isolation mode (All relay oFF)			
R/W	SOCK Memory	30058	40058	0 = NO 1 = YES				30116	40116	0 = NO 1 = YES			
R/W	Communication format	30059	40059	1 = ASCII 0 = RTU				30118	40118	1 = ASCII 0 = RTU			
R/W	Blind Count	30060	40060	1 = Master 0 = Slave				30120	40120	1 = Master 0 = Slave			
R/W	Data length	30061	40061	1 = 7 bit 0 = 8 bit				30122	40122	1 = 7 bit 0 = 8 bit			
R/W	Stop bit	30062	40062	0 = 1 bit 1 = 2 bit				30124	40124	0 = 1 bit 1 = 2 bit			

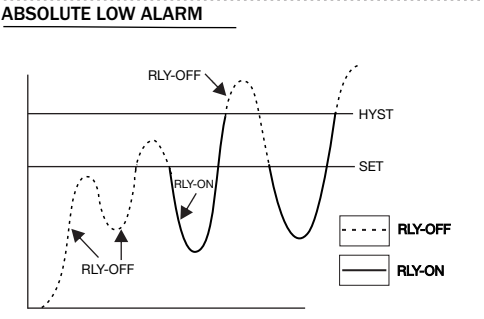
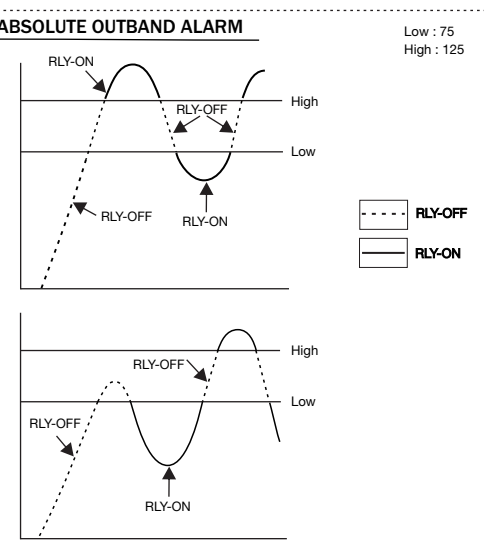
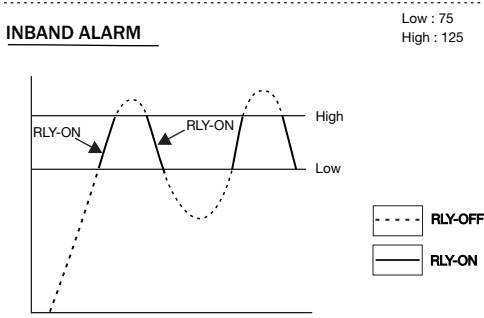
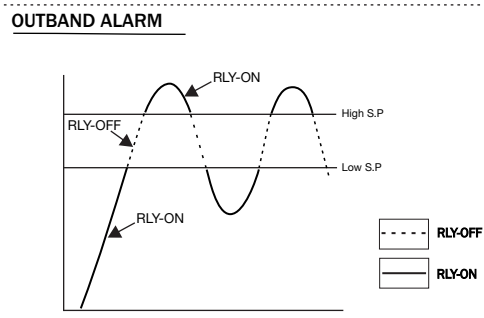
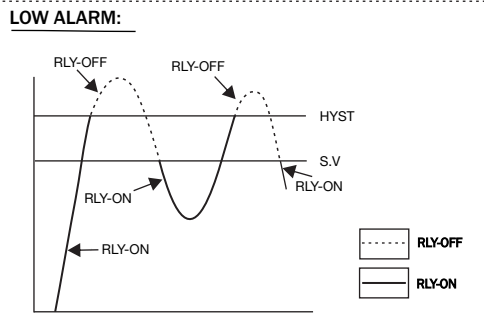
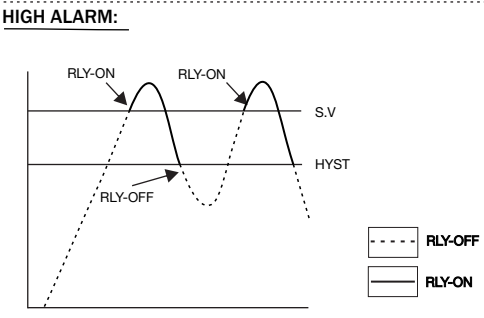
If Datatype is Sign integer,

- 1) Input Sensor is PT.1 then, Parameter = Parameter
10

(Where Parameter is Temperature, Set1, Set2,Hys1, Hys2, Offset, MR, SLL, SHL, PB2)

- 2) Fix DP Parameters, Parameter = Parameter
10
- (Where Parameter is PB (For PID action), C-PB (For Blower TP) and PID Control Output)

CONTROL FUNCTION



Note :-

- ➔ In RTU mode = only 8 bit is supported
- ➔ In ASCII mode = both 8 bit & 7 bit are supported
- ➔ Non Supported Formats :
7-N-1- Time Out
8-E-2- Write Error
8-0-2- Write Error