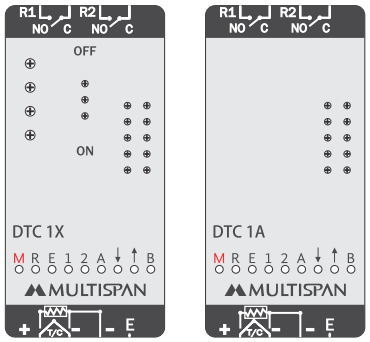
BLIND TEMPERATURE CONTROLLER
MULTISPAN DTC 1X & DTC 1A

CE



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	-99.9 to 400.0°C,
Resolution	J,K,PT-100 = 1°C PT.1 = 0.1°C	
Indication Accuracy	±1% of FSD ± 1°C (FSD:- Full Scale Deflection)	

DIMENSION:

Size	76 (H) x 27 (W) x 116 (D) mm

CONTROL ACTION:

Heating	1) PID control 2) TP control 3) ON-OFF control
Cooling	ON-OFF control

OUTPUT SPECIFICATION:

Relay Output	
Relay	2 Nos.
Relay Type	(NO-C)
Rating	5A, 230V AC / 28V DC

POWER SUPPLY:

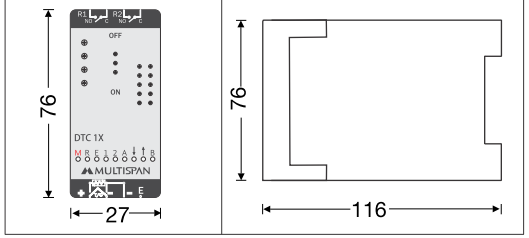
Supply Voltage	24V DC

ENVIRONMENT CONDITION:

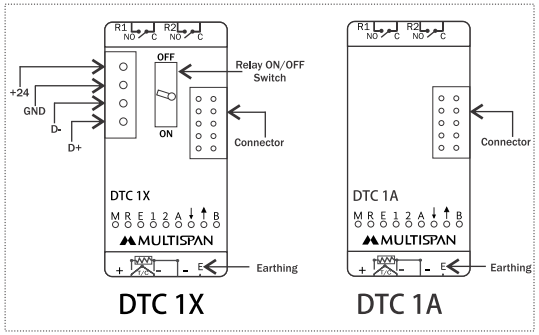
Operating Temp.	0°C to 55°C
Relative Humidity	UP to 95% RH (non-condensing)
Protection Level (As per request)	IP-65 (Front side) As per IS/IEC 60529 : 2001

MECHANICAL INSTALLATION

Front View (mm)	Side View(mm)



TERMINAL CONNECTION



STATUS LED DESCRIPTION

M ○ = Main LED:- It Will ON When power supply to the instrument

R ○ = In DTC-1X There is a switch to On/Off Relay Output. If switch is on then relay RUN LED Will turn ON and Relay will ON-OFF as per its Control Output. If Switch is OFF then it will make Relay Output OFF.

E ○ = Error LED Indication

1 ○ = Control Output of Relay 1

2 ○ = Control Output of Relay 2

A ○ = PID Auto Tune Indication

RX ○ = Receive of data Indication

TX ○ = Transmit of data Indication

B ○ = Sensor is Break Indication

POWER ON PATTERN

0 LED ON 1 LED ON

Time (Sec)	LED Status
1	● ● ● ● ● ● ● ● ●
2	

This LED Continue ON-OFF

All LED ON

Time (Sec)	LED Status (Input)
3	● ○ ○ ○ ○ ○ ○ ○ ○
4	

Explanation :
This 3 LED is the indication of which input is selected in the instrument.

0 0 0

Input	
0 0 0	J
0 0 1	K
0 1 0	PT - 100

Time (Sec)	LED Status (Address)
5	● ○ ○ ○ ○ ○ ● ● ○
6	

Explanation :
This LED will show Address value in binary format

Example :
If address is **6** than its binary code becomes **00000110.** so LED will on/off as per its binary code

Time (Sec)	LED Status (Read/write Func. ,datatype , parity, baudrate)
7	● ○ ○ ○ ○ ○ ○ ○
8	

Write function reg. | Read function reg. | Data type | Parity | Baudrate

Explaination

Write function reg.	
0	0 X 10
1	0 X 06

Read function reg.	
0	0 X 03
1	0 X 04

Data type	
0	Sign Integer
1	Float

Parity	
0 0	None
0 1	Even
1 0	Odd

Baudrate	
0 0 0	2400 bps
0 0 1	4800 bps
0 1 0	9600 bps
0 1 1	19200 bps
0 1 1	38400 bps

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.

MECHANICAL INSTALLATION GUIDELINES

1) To install the instrument on a DIN rail, raise the clamp at the back of the instrument and place it on the rail. Now release the clamp, so the instrument fits on the DIN rail.
2) Ensure proper fitting of the instrument by pulling it outwards.
3) To remove the instrument raise the clamp to release it from the DIN rail.
4) The equipment in its installed state must not come in close proximity to any heating source, caustic vapors, oil steam, or other unwanted process byproducts.
5) Do not connect anything to unused terminals.

INSTALLATION GUIDELINES

1) 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.
2) 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.
3) Use and store the instrument within the specified ambient temperature and humidity ranges as mentioned in this manual.

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) A better anti-noise effect can be expected by using standard power supply cable for the instrument.

MODBUS: DTC 1X & DTC 1A

Salve Address	1 to 127
Baudrate	2400,4800,9600,19200, 38400 bps
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

Sr.No	Access Type	Parameter	Register Data Type Integer	Float
1	R	Process Value	0	0
2	R	Relay 1 Status Selection: Value — On: 1; Off: 0	1	2
3	R	Sensor Status Selection: Value — Normal: 0; Sensor Open: 3; Sensor Reverse: 4	2	4
4	R	Relay 2 Status Selection: Value — On: 1; Off: 0	3	6
5	R/W	Auto Tune Selection: Value — No: 0; Yes: 1	4	8
6	R/W	Set1	5	10
7	R/W	PB (For PID)	6[Note]	12
8	R/W	IT (For PID)	7	14
9	R/W	DT (For PID)	8	16
10	R/W	Control Action Selection: Value — ONOFF action: 0; TP action: 1; PID action: 2; OFF: 3	9	18
11	R/W	R1MD (Relay 1 Mode) Selection: Value — Off: 0; Heating: 1; Cooling: 2; High Alarm: 3; Low Alarm: 4; Outband Alarm: 5; Inband Alarm: 6; Absolute Low Alarm: 7; Absolute Outband Alarm: 8	10	20
12	R/W	Offset	11	22

Sr.No	Access Type	Parameter	Register Data Type Integer	Float
13	R	PID Control Output	12[Note]	24
14	R/W	Set 2	13	26
15	R/W	Input Selection: Value — 0 - 10 V DC: 4; 0 - 20 mA DC: 5; 4 - 20 mA DC: 6	14	28
16	R/W	Set Low Limit	15	30
17	R/W	Set High Limit	16	32
18	R/W	R2MD (Relay 2 Mode) Selection: Value — Off: 0; Heating: 1; Cooling: 2; High Alarm: 3; Low Alarm: 4; Outband Alarm: 5; Inband Alarm: 6; Absolute Low Alarm: 7; Absolute Outband Alarm: 8; Cool TP (Blower Cooling TP): 9; END Alarm: 10	17	34
19	R/W	Hysteresis 1	18	36
20	R/W	Hysteresis 2	19	38
21	R/W	Cyclic Time For PID	20	40
22	R/W	Manual Reset	21	42
23	R/W	PB 2 (Proportional Band for TP)	22[Note]	44
24	R/W	CT 2 (Cyclic Time for TP)	23	46
25	R/W	C PB (Cooling Proportional Band)	24	48
26	R/W	C ON (Cooling On Time)	25	50
27	R/W	C OF (Cooling Off Time)	26	52
28	R/W	Time 1	27	54
29	R/W	Time 2	28	56
30	R/W	T1MD (Time 1 Mode) Selection: Value — Alarm Timer: 0; Off: 1; On delay Timer: 2; Soak Timer: 3; Soak Pass Timer: 4; Soak Remaining Timer: 5 ***You Can Change Time Of Selected Mode In Time 1 Parameter (Reg. no.-27)**	29	58
31	R/W	T2MD (Time 2 Mode) Selection: Value — Alarm Timer: 0; Off: 1; On delay Timer: 2; Soak Timer: 3; Soak Pass Timer: 4; Soak Remaining Timer: 5 ***You Can Change Time Of Selected Mode In Time 2 Parameter (Reg. no.-28)**	30	60

Sr.No	Access Type	Parameter	Register Data Type Integer	Float
32	R/W	Time 1 Unit Selection: Value — Second: 0; Minute: 1; Hour: 2	31	62
33	R/W	Time 2 Unit Selection: Value — Second: 0; Minute: 1; Hour: 2	32	64
34	R/W	Set Point 2 Mode Selection: Value — Induvidual: 0; Relative to Set 1: 1	33	66
35	R/W	End Save Selection: Value — NO: 0; Yes: 1	34	68
36	R	Time 1 Running value	35	70
37	R	Time 2 Running value	36	72
38	R/W	Reset All Timer	37	74
39	R/W	Address	38	76
40	R/W	Baudrate Selection: Value — B 2400: 0; B 4800: 1; B 9600: 2; B 19200: 3; B 38400: 4	39	78
41	R/W	Parity Selection: Value — None: 0; Even: 1; Odd: 2	40	80
42	R/W	Data Type Selection: Value — Sign Integer: 0; Float: 1	41	82
43	R/W	Read Function Reg. Selection: Value — 0X03: 0; 0X04: 1	42	84
44	R/W	Write Function Reg. Selection: Value — 0x10: 0; 0x06: 1	43	86
45	NA	Analog Output Value	44	88
46	NA	Set Point 3	45	90
47	NA	Hysteresis 3	46	92
48	NA	Relay 3 Mode	47	94
49	NA	Setpoint 3 mode	48	96
50	NA	Retransmission Low	49	98
51	NA	Retransmission High	50	100

Sr.No	Access Type	Parameter	Register Data Type Integer	Float
52	NA	Control Mode	51	102
53	NA	Low Percentage	52	104
54	NA	High Percentage	53	106
55	NA	Output Percentage	54	108

PARAMETER	RANGE SIGN INTEGER	RANGE FLOAT
*PB (For PID)	0 to 9999 (DP=1 FIX)	DP 0= 1 to 999 DP 1= 0.1 to 99.9 DP 2= 0.01 to 9.99 DP 3= 0.001 to 0.999
IT & DT (For PID)	0 to 9999	DP 0= 1 to 999 DP 1= 0.1 to 99.9 DP 2= 0.01 to 9.99 DP 3= 0.001 to 0.999
CT (For PID)	4 to 99 sec	4 to 99 sec
MR (For PID/TP)	-99 to 99	DP 0= -99 to 99 DP 1= -9.9 to 9.9 DP 2= -0.99 to 0.99 DP 3= -0.099 to 0.099
OFFSET	-999 to 999	DP 0= -999 to 999 DP 1= -99.9 to 99.9 DP 2= -9.99 to 9.99 DP 3= -0.999 to 0.999
Hysteresis 1,2 & 3	1 to 999	DP 0= 1 to 999 DP 1= 0.1 to 99.9 DP 2= 0.01 to 9.99 DP 3= 0.001 to 0.999
C-PB (For cooling PB)	20 TO 250	2.0 TO 25.0
C-ON (For cooling TP)	1 TO 20	1 TO 20
C-OFF (For cooling TP)	5 TO 200	5 TO 200
Time1 (Time 1)	1 TO 999	1 TO 999
Time2 (Time 2)	1 TO 999	1 TO 999

Data type = Sign Integer show value as per following		
Input	**Actual Value**	**DP Selection**
NOTE (N1 Mention in Serial No.)		
PB(For PID), PB(For Blower TP), PID Control O/P,	**Value/10**	Fix

Specifications are subject to change, since development is a continuous process. So for more updated operating information and Support, Please contact our Helpline: 9081078681/9081078683 or Email at service@multispanindia.com Ver:200601