

## Digital Controller (Model 5002U)



Masibus leads the temperature controller market within the country with its wide range of manufacturing products. Model 5002U is Masibus' flagship product designed for versatile industrial applications and is the most popular product.

Model 5002U is a microprocessor based premium range of ON/OFF controller designed with high performance to price ratio. This model is the most stable & reliable amongst all the controllers available in the market today.

Model 5002U can be field programmed to accept inputs from wide range of thermocouples, RTDs current or voltage signals. The controller is truly universal. When thermocouple input is selected cold junction compensation is carried out automatically, whereas if RTD is selected, lead wire resistance cancellation is carried out. Masibus has developed and embedded in Model 5002U a unique one-shot, calibration algorithm which calibrates the input type in one-shot (avoiding iterative procedure) when ever input type is changed.

The programming, calibration and operation are by four keys with user friendly prompts. One LED display for PV & second display for SP make this model the first choice of OEMs & plant operators.

Provision for external data lock out is provided to avoid unauthorized access. 5002U is equipped with upto four set points with individual relays. Transmitter power supply, retransmission signal and serial communication on RS485 are additional useful options. The zero and span of the retransmission signal automatically aligns itself with the zero and span selected for the digital display.

This model is packaged in 96mm x 96mm x 200mm metallic enclosure and can also be packaged in weather proof IP 55 or flame proof enclosures in wall mounted options.

## Features

- *Premium On/Off controller for versatile operation*
- *High accuracy of 0.1% FS*
- *Unique one shot CAL algorithm*
- *Universal inputs- T/C, RTD, mA, V*
- *Upto 4 independent programmable relay output*
- *Full programming by front panel keys*
- *Options :*
  - *Transmitter power supply*
  - *Retransmission output (Isolated)*
  - *RS 485 Serial communication*
  - *Weather proof/ flame proof enclosure*

5002U

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Advanced Automation - Sure Solutions

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5002U

## TECHNICAL SPECIFICATIONS 5002U

<b>Measured Input Signal</b>	
Number of Inputs	1
Input Type, Measurement Range & accuracy	As per table 1
Sampling Period	300 ms
Burn out detection	Available
Input Resistance	TC /mV / V: 100 K ohms mA : 250Ω
Allowable lead-wire resistance	15Ω / wire or less
Allowable Input Voltage	TC / RTD: ±10V, DC voltage: ±20V
Common mode rejection ratio (CMRR)	> 120 dB (50 Hz)
Normal mode rejection ratio (NMRR)	> 40 dB (50 Hz)
CJC error	±2 °C (10 to 55°C)
Applicable standard	ITS-90 / IPTS -68
<b>Outputs</b>	
Transmitter power supply	24 VDC ± 5% @ 20 mA
Retransmission output	4 to 20 mA (< 2500)
Retransmission accuracy	± 0.25% of Span
Relay Output	2, 3, 4 (configurable for control/ alarm)
Alarm Types	Absolute / Deviation Alarm ON above / below setpoint
Relay contact rating	230 Vac @ 2Amp (NO, NC, Common)
<b>Display &amp; keyboard specification</b>	
Process Value display	4- digit 7- segment Red LED ( 0.56")
Set Value display	4- digit 7- segment Red LED ( 0.3")
Parameter display	Same PV display
Status Indicating lamp	Red LED's (for Alarm, Set point & Communication)
Keyboard	INC, DEC, SET, ENT (tactile keys)
<b>Physical</b>	
Case	General purpose
Case material	MS powder coated (ABS Plastic Bezel)
Case color	Dark Grey
Weight	Less than 2 Kg
Dimensions	96(W) X 96(H) X 200(D) (all in mm)
Panel Cut-out	92 mm X 92 mm
Wiring	Cable wire upto 2.5 mm <sup>2</sup>
Standard Accessories	2 mounting clamps
<b>Power supply/Isolation</b>	
Power supply	110/230 VAC(±10%) @ 50Hz
Power consumption	< 10 VA
Memory backup	EEPROM
Isolation	Between Input, output, power supply
Isolation resistance	Between power supply terminal and ground terminal, 500V DC, 50 M
<b>Environmental Specification</b>	
Ambient Temperature	0 to 55 °C
Ambient humidity	< 95 % RH ( Non-condensing)

## TECHNICAL SPECIFICATIONS 5002U

Effect of Ambient temperature	For T/C input, ± 0.01% of F.S./ °C For Voltage input, ± 0.01% of F.S./ °C For RTD input, ± 0.01% of F.S./ °C For analog output, ± 0.03% of F.S./ °C
Effect on power supply fluctuation (within rated voltage range)	For analog input, within ± 0.005 % of F.S./ 10V For analog output, ± 0.01% of F.S./ 10V
<b>Communication</b>	
Standard / Protocol	RS-485, Modbus RTU
Max. communication distance	< 1200 mts. (for 9600 bps)
Communication method	2 wire half duplex (slave mode)
Data frame	N, 8, 2
Communication rate	4800, 9600, 19200 bps programmable

TABLE 1

Input Type		Range	Measurement Accuracy
Thermocouples	E	-200 to 1000 °C	± (0.1% of FS ± 1 count)
	J	-200 to 1200 °C	± (0.1% of FS ± 1 count)
	K	-200 to 1372 °C	± (0.1% of FS ± 1 count)
	T	-200 to 400 °C	± (0.1% of FS ± 1 count)
	B	100 to 1820 °C	± (0.1% of FS ± 1 count)
	R	0 to 1768 °C	± (0.1% of FS ± 1 count)
	S	0 to 1768 °C	± (0.1% of FS ± 1 count)
RTD	N	-200 to 1300 °C	± (0.1% of FS ± 1 count)
	Pt-100	-199.9 to 850.0 °C	± (0.1% of FS ± 1 count)
Linear	0/4-20mA	-1999 to 9999	± (0.1% of FS ± 1 count)
	0/1-5V	-1999 to 9999	± (0.1% of FS ± 1 count)
Oxygen	0-1999mV	Oxygen probe	± (0.1% of FS ± 1 count)

## ORDERING CODE

Model 5002U									
Input Type	Relay		APS		Aux output		Mounting		
X	X		XX		X		XX		
1 E	S	One	A1	110VAC	N	None	P0	Panel	
2 J	D	Two	A2	230VAC	1	4-20 mA	W1	Wall-IP55	
3 K	T	Three*	A3	24VDC	2	TPS - 24VDC	FP	Wall-FLP	
4 T	F	Four <sup>▲</sup>			3	RS485			
5 B	N	None			4	TPS & 4-20mA			
6 R						Only with 2 rly			
7 S					5	TPS & RS485			
9 Pt-100, 3W						Only with 2 rly			
C	4-20mA								
D	0-20mA								
E	1-5VDC								
F	0-5VDC								
O	Oxygen Probe								
S	Special+								

X - Specify from table  
 \* - A3 option not available  
 ▲ - A3 & FP option not available  
 + - Consult factory