Quick User Guide

masibus UT-94

Universal Transmitter

SPECIFICATIONS

Input type	Range	Input type	Range
E	-200 to 1000°C	mV(-10-500)	-1999 to 9999
J	-200 to 1200°C	Pot(0-2000Ω)	
K	-200 to 1370°C	0-2 V	
T	-200 to 400°C	0.4-2 V	
B	450 to 1820°C	*0-20 mA	
R	0 to 1750°C	*4 – 20mA	
S	0 to 1750°C	0-5 V	
N	-200 to 1300 °C	1-5 V	
Pt 100	-199.9 to 850 °C	0-10 V	

*Use external 100ohms, 0.1% for current Input

Table 1.1

Inputs

Accuracy T/C- E, J, K, T, N, RTD & Linear T/C-B, R, S	 ± 0.1% of Full Span ± 1 count ± 0.25% of Full Span ± 1 count
Resolution	ADC: 17 bits,Display :0.1°C/1Count
Sampling Time	<75ms
CJC Error	±2.0 °C Max
Sensor Burnout current	0.5uA
RTD excitation current	1mA (Approx.)
Response time	< 200ms
NMRR	> 50 dB
CMRR	>120 dB
Input Impedance	>1MΩ for Voltage, 100Ω for Current
Max Voltage	20VDC

Display & Keys

PV Display	4-Digit, 7-Segment, 0.3" High, Red
Status Indication	Individual RED Led for Power, Relay & Communication Status
Keys	Enter/Scroll, Select/Shift, Escape/ACK/INC

Output Types

Retransmission Output

Output Signal **DC Current** **DC Voltage**	 4-20mA/ 0-20mA 0 to 10 V, 0 to 5V, 1 to 5V
Load resistance **For Current o/p** **For Voltage o/p**	 <750Ω >4KΩ

Output accuracy	±0.25% of FS

Relays Output

Relays	2 Nos.
Type	Single Change over (C, NO, NC)
Rating	2A @ 230VAC / 30VDC

Loop Power Supply

Supply Voltage	24VDC (±10%) @30mA

Communication Details

Communication	
Interface	RS485 (2 Wire)
Protocol	Modbus-RTU
Baud rate	4800,9600, 19200 bps

Physical

Dimension (H x W x D) mm	75 x 55 x 110
Front Bezel (H x W)mm	75 x 55
Weight Approx.	<250g
Enclosure Material	ABS
Enclosure Protection	IP 20
Terminal Cable Size	2.5mm^2

Environmental Conditions

TEMPCO Input to PV Display Display to RX	 < 100ppm/°C < 150ppm/°C
Humidity	20% to 95% RH (Non-Condensing)
Ambient temperature	0 to 55°C
Storage Temperature	0 to 80°C

Power Supply

Standard	85-265VAC/ 100-300VDC
Optional	18-36VDC
Power consumption	<10 VA

Isolation (Withstanding voltage)

- Between primary terminals* and secondary terminals**: At least 1500 V AC for 1 minute
- Between primary terminals* and grounding terminal: At least 1500 V AC for 1 minute
- Between grounding terminal and secondary terminals**: At least 1500 V AC for 1 minute
- Between secondary terminals**: At least 500 V AC for 1 minute

* Primary terminals indicate power terminals and relay output terminals.

** Secondary terminals indicate analog I/O signal and Communication O/P.

Insulation resistance: 2000MΩ or more at 500 V DC between power terminals and grounding terminal.

SAFETY/WARNING PRECAUSTIONS

To ensure that the device can be operated safely and all functions can be used, please read these instructions carefully.

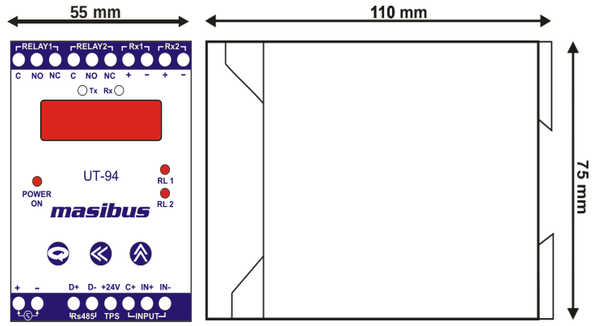
Installation and Start-up must be carried out by qualified personnel only.

The relevant county-specific regulations must also be observed.

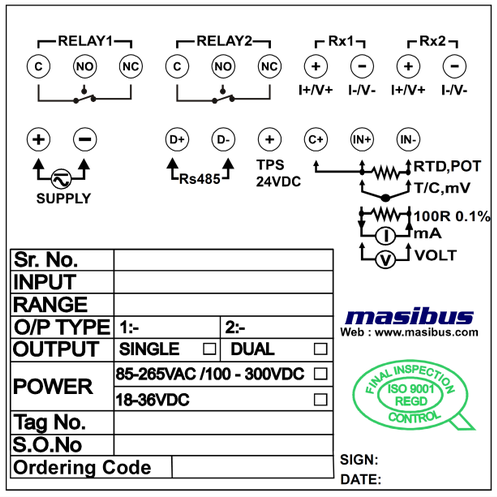
Before start-up it is particularly important to ensure:

- Terminal wiring: check that all cables are correctly connected according to the connection diagram
- All wiring must confirm to appropriate standards of good practice and local codes and regulations. Wiring must be suitable for voltage, current and temperature rating of the system.
- Unused control terminals should not be used as jumper points as they may be internally connected, which may cause damage to the unit.

DIMENSIONS DETAILS

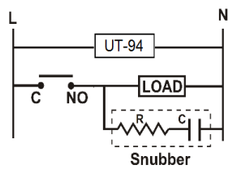
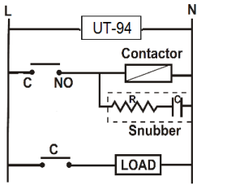


TERMINAL CONNECTION



Sr. No.		
INPUT		
RANGE		
O/P TYPE	1:-	2:-
OUTPUT	SINGLE ☐	DUAL ☐
POWER	85-265VAC /100 - 300VDC ☐	
	18-36VDC ☐	
Tag No.		
S.O.No		
Ordering Code		

LOAD CONNECTION

For load current less than 0.5A	For bigger loads, use interposing relay / contactor
	

Electrical precautions during use

Electrical noise generated by switching of inductive loads can create momentary disruption, erratic display, latch up, data loss or permanent damage to the instrument. Use of snubber circuits across loads as shown above, is recommended.

FRONT PANEL DESCRIPTION

Symbol	Function
	This key is used to start menu, scroll through the menu and save values.
	This key is used to select the menu options, for shifting the digit of the selected parameters and for ambient display in Run Mode for TC Input.
	This key is used to revert back to the parent menu from the sub menu levels and Increment the selected digit. This key is also used as Acknowledgement key for Alarm/trip type relay.
PV	4 digit 0.3 inch RED Display. Display process value. Display parameter name when user set parameter. Display error message when an error occurs.
RL1	ON when Relay-1 is energized & OFF otherwise.
RL2	ON when Relay-2 is energized & OFF otherwise.
Tx	ON when device is transmitting Data (RS-485).
Rx	ON when device is receiving Data (RS-485).

PARAMETER SETTING

Following parameters can view or change during run time.

- For Thermocouple input type, Press key to show ambient temperature
- Press key will ask to enter password, Change password using Key then press key, On entering correct password, unit will show parameters.
- Following parameters can be viewed using Key. Its value can be viewed using key and it can be changed using Keys.

Display	Name	Description	Default Value
PROG (PrOG)	Program Mode	-	-
ST-1 (St-1)	Set Point-1	Set point value for relay-1	0100
HY-1 (HY-1)	Hysteresis-1	Hysteresis Value for Relay-1. 0 to 100	0005
ST-2 (St-2)	Set Point-2	Set point value for relay-2	0200
HY-2 (HY-2)	Hysteresis-2	Hysteresis Value for Relay-2. 0 to 100	0005
CONF (Conf)	Configurat-ion Mode	-	-
INP (inP)	Input	Select i/p parameter tC E/tC J/tC K/ tC rtD/POT/ 0-5V/ 1-5V/ 0-20mA/ 4-20mA	-
IPTY (iPtY)	Input Type	Set PV input type tC E/tC J/tC K/ tC rtD/POT/ 0-5V/ 1-5V/ 0-20mA/ 4-20mA	0-5V

		t/tC b/tC r/ tC S/ tC n/Pt 100/ñu/Pot /0 .4-2u/0-20 /4-20/ 0-5u / 1-5ū / 0- 10	
ZERO (2Ero)	Zero	Can be set to any value within the Input Range & less the SPAN Value.	- 1999
SPAN (SPAn)	Span	Can be set to any value within the Input Range & greater the ZERO Value.	9999
DP (dP)	Decimal Point	Set position of Decimal Point on Display for Linear inputs 0000 to 0003	0000
UNIT (un it)	Engineering Units	Set Engineering unit for TC and RTD inputs dEG .C/dEG .F/dEG .P	dEG .C
***INLO** (inLo)	Input Low	Can be set to any value within the Input Range & less the SPAN Value.	0 (POT) - 10 (mV)
***INHI** (inh i)	Input High	Can be set to any value within the Input Range & greater the ZERO Value.	2000 (POT) -500 (mV)
OUT (out)	Output	Select o/p Parameter rtr/rELY/Coñ	
RTR (rtr)	Retransmi-ssion	Retransmission menu oPno/oPtY/oP 2/ oP 5/oPLo/oPH i/ oPSC/d ir	-
OPNO (oPno)	Output Channel No	Set o/p Channel 0001/0002	0001
OPTY (oPtY)	Output Type	Set Voltage/Current o/p 4-20/0-5ū/ 1-5ū/ 0- 10/ 0-20	0-5ū
OP Z (oP 2)	Output Zero for Scaling	% of Output for scaling (O/P Zero limit will be limited to this configured 0-30 % of O/P Span)	000 .0
OP S (oP 5)	Output Span for Scaling	% of output for scaling (O/P Span limit will be limited to this configured 70-100 % of O/P Span)	100 .0
OPLO (oPLo)	Output Low	% of Output (O/P Low limit will be limited to this configured 0-25 % of O/P Span)	000 .0
OPHI (oPH i)	Output High	% of output (O/P Hi limit will be limited to this configured 75-100 % of O/P Span)	100 .0
OPSC (oPSC)	Open Sensor	Set Rx state when i/p open condition uPSC/dnSC	uPSC
DIR (d ir)	Retransmis sion Direction	Set Direction For the Retransmission o/p d irt/rEūr	d irt
RELY (rELY)	Relay	Relay Parameter rLno/oPSE/LoGC/ C AL/LtCH	-
RLNO	Relay No.	Select Relay	0000

(rLno)		0001/0002	
OPSE (oPSE)	Open Sensor	Set Relay o/p state when i/p open condition uPSC/dnSC	uPSC
LOGC (LoGC)	Relay Control Logic	Set Relay Operation H i/Loū	H i
C AL (C AL)	Configurati on Alarm	Set Alarm Logic ALrñ/tr iP/oPEn	ALrñ
LTCH (LtCH)	Latch	Set Latch Status only if Alarm type relay is selected. YES/no	YES
COM (Coñ)	Communic-ation Menu	Select Communication Parameter Sr-no/bAud	-
SRNO (Srno)	Serial No	Unit ID for Communication 1 to 247	0001
BAUD (bAud)	Baud Rate	Set Baud Rate 4800/9600/ 19200	4800
ADV (Adū)	Advance Parameter	-	-
FILT (F iLt)	Digital Filter	Digital Filtering 000.0 – 060.0 Sec	000 .0
FSET (FSEt)	Factory Setting	Give Default password for factory settings	0000
PASS (PASS)	Password	Change Password -1999 to 9999	0000
SQRT (Sqrt)	Square root	Output will be come as per PV = SQRT[{ (input reading – config. IP Zero) / (config. IP Span – Config. IP Zero)} * Config. OP Span] + Config. OP Zero YES/no	no
TOUT (tout)	Time Out	Time Setting for Come back to RUN mode on no key operation 10-300 SEC	0060
CALI (CAL i)	Calibration Mode	-	-
****AMB** (Añb)	Ambient	Ambient Adjustment	-
INP (inP)		Select Input parameter 2Ero/SPAn	-
ZERO (2Ero)	Calibration Zero	Calibration Zero for PV Input	-
SPAN (SPAn)	Calibration Span	Calibration Span for PV Input	-
OUT (out)		Select output parameter OPno/2Ero/SPAn	-
OPNO (oPno)	Output No.	Select Output No. 0001/0002	1
ZERO (2Ero)	Calibration Zero	Calibration Zero for PV Input	-
SPAN (SPAn)	Calibration Span	Calibration Span for PV Input	-
VER (ūEr)	Version	-	9 .00

*Parameter is only shows if input type is mV or POT
**Parameter is only shows if input type is TC

Relay Logic

Without acknowledge key pressed

CONDITION	ALARM LATCH/TRIP	RELAY/LED	NORMAL	ABNORMAL	UP	DOWN	ACK IN ABNORMAL CONDITION	NORMAL	ACK IN NORMAL CONDITION
High	ALARM LED LATCH YES	LED	OFF	FLASH	FLASH	OFF	-	STEADY	OFF
		RELAY	OFF	ON	ON	OFF	-	OFF	OFF
	ALARM LED LATCH NO	LED	OFF	FLASH	FLASH	OFF	-	OFF	OFF
		RELAY	OFF	ON	ON	OFF	-	OFF	OFF
	TRIP	LED	OFF	FLASH	OFF	OFF	-	STEADY	OFF
		RELAY	OFF	ON	OFF	OFF	-	ON	OFF
LOW	ALARM LED LATCH YES	LED	OFF	FLASH	OFF	FLASH	-	STEADY	OFF
		RELAY	OFF	ON	OFF	ON	-	OFF	OFF
	ALARM LED LATCH NO	LED	OFF	FLASH	OFF	FLASH	-	OFF	OFF
		RELAY	OFF	ON	OFF	ON	-	OFF	OFF
	TRIP	LED	OFF	FLASH	OFF	OFF	-	STEADY	OFF
		RELAY	OFF	ON	OFF	OFF	-	ON	OFF

With acknowledge key pressed

CONDITION	ALARM LATCH/TRIP	RELAY/LED	NORMAL	ABNORMAL	UP	DOWN	ACK IN ABNORMAL CONDITION	NORMAL	ACK IN NORMAL CONDITION
High	ALARM LED LATCH YES	LED	OFF	FLASH	FLASH	OFF	STEADY	STEADY	OFF
		RELAY	OFF	ON	ON	OFF	OFF	OFF	OFF
	ALARM LED LATCH NO	LED	OFF	FLASH	FLASH	OFF	STEADY	OFF	OFF
		RELAY	OFF	ON	ON	OFF	OFF	OFF	OFF
	TRIP	LED	OFF	FLASH	OFF	OFF	STEADY	STEADY	OFF
		RELAY	OFF	ON	OFF	OFF	ON	ON	OFF
Low	ALARM LED LATCH YES	LED	OFF	FLASH	OFF	FLASH	STEADY	STEADY	OFF
		RELAY	OFF	ON	OFF	ON	OFF	OFF	OFF
	ALARM LED LATCH NO	LED	OFF	FLASH	OFF	FLASH	STEADY	OFF	OFF
		RELAY	OFF	ON	OFF	ON	OFF	OFF	OFF
	TRIP	LED	OFF	FLASH	OFF	OFF	STEADY	STEADY	OFF
		RELAY	OFF	ON	OFF	OFF	ON	ON	OFF

Note: If open type relay is selected then relay and LED will be ON when OPEN condition, while it will remain off if not in OPEN condition.

ORDERING CODE

Model	Input Type		APS		No of O/P		O/P type-1		O/P type-1		Relay O/P		Communica-tion	
UT-94	X		XX		X		X		X		X		X	
	1	E	U1	85-265VAC/ 100-300VDC	1	One	1	4-20mA	0	None	N	None	N	NONE
	2	J					2	0-20mA	1	4-20mA	Y	Yes	Y	RS485
	3	K	U2	18-36VDC	2	Two	3	1-5VDC	2	0-20mA				
	4	T					4	0-5VDC	3	1-5VDC				
	5	B					5	0-10VDC	4	0-5VDC				
	6	R					S	Special	5	0-10VDC				
	7	S							S	Special				
	8	N												
	9	Pt-100												
	C	4-20mA												
	D	0-20mA												
	E	1-5VDC												
	F	0-5VDC												
	G	0-10VDC												
	W	0.4-2VDC												
	X	-10-500mV												
	Y	0-2 VDC												
	Z	Pot (0-2000 ohms)												
	S	Special												

For operation manual please visit www.masibus.com
Specifications are subject to change without notice due to continuous improvements.

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