

UFC - 45-B

Operator's Manual



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Introduction

UFC - 45-B

BEE make Model **UFC - 45-B** field Calibrator is specially designed for on site calibration and trouble shooting of process control instruments, such as indicators, Controllers, Isolators, Two wire transmitters etc. Instrument operates on two 9 V batteries and is immune to noise and pickups generated in plant. It incorporates mV/mA source and sink (measure) along with potential free RTD simulator .

Instrument is highly reliable and calibrated on high accuracy, certified multimeters. mV/mA outputs are protected against short circuit and over current respectively. 4.5 digit LCD display is used for mV/mA indications. Re5 terminals are provided for output terminations.

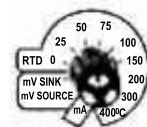
Front Panel

1) Power "ON" Switch : This switch connects the instrument with Battery when at "ON" Position.



2) Rotary Function selector switch :

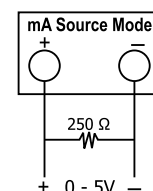
A) mA mode : At first position rotary switch selects the operation of the instrument as current source and sink. Separate terminal are provided for sourcing and sinking of current. Display will read the current value available at output terminals.



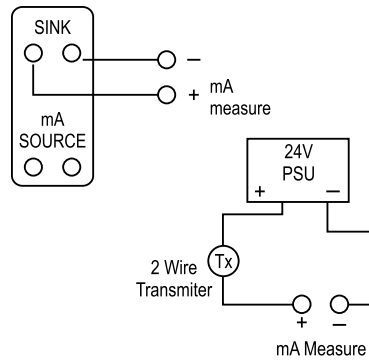
mA source mode : In this mode calibrator can be used as normal current source with driving capacity of 400 (ohms) of load at 25 mA when batteries are fully charged. All process control instruments having 4-20 mA input can be tested or calibrated in this mode. Note that when mA Source terminals are open display will show Zero reading.



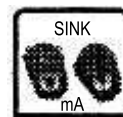
B) Conversion of current Source In 0-5V Voltage Source : Current source can be used as voltage source by putting 250 resistance between output terminals. Voltage can be varied from 0 to 5 volts.



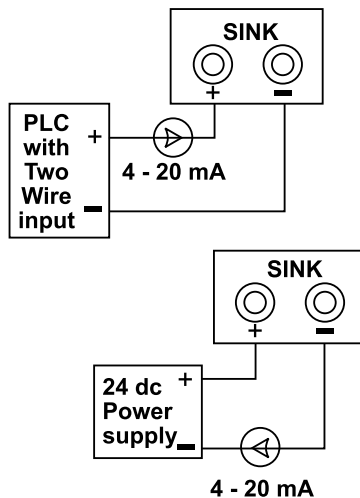
C) mA Measurement Mode : This facility is provided to measure the loop current. DC Current up to 25 mA can be measured.



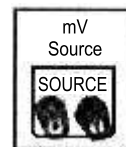
D) mA sink mode/mA Measurement Mode : In this mode calibrator can be used as a two wire transmitter.



Current can be varied with coarse and fine pots & indicated on display. Two wire TX. Mounted on field can be replaced by sink mode for testing. PLC's having two wire inputs can be calibrate with Sink mode.



E) mV Source Mode : Second position of the rotary switch selects the instrument to work as a millivolt source. Adjusted millivolts will be available at mV output terminals with indication on display. mV source can be used as T/C simulator to test and calibrate temperature indicators and controllers.

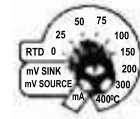


F) mV Sink Mode : Third Position of rotary switch selects the calibrator to work as mV meter. mV up to 200 mV can be applied to mV sink terminals and measured.

3) Fine and Coarse Potentiometers : Fine potentiometer is provided for fine adjustments. Coarse potentiometer is ten turn and provided for coarse adjustment. Both pots are common for mV and mA values. These multi turn pots are delicate and should be handled carefully.

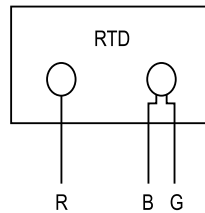


4) RTD Simulator : Instrument can be used as PT 100 RTD simulator same as decade box. Remaining positions of the rotary selector switch selects the discrete temperature values marked in dial. Resistance value of the PT 100 RTD proportional to the selected temperature will be available at the output terminals.



Note that the RTD simulator is potential free & no indication is provided for resistance values. Put the power on switch (OFF) when RTD simulator is in use. To simulate three wire input take one wire from one terminal and two wires from the other terminals.

Connection as RTD Simulator



5) Protections : mV source is protected against short circuit and mA source output is protected against over current. mV/mA sink modes are also protected, however, care must be taken not to exceed specified limits as there is a possibility of calibration change.

6) Battery Life : Instrument is powered with two numbers of 9V 100 mAh batteries. Instrument works for six hours continuously, when current source is operating at full scale (20 mA), if current source is open and mV source is operating. Instrument can work for more than 30 hours continuously. A LOBAT appears on display when batteries are discharged.

7) Battery Replacement : Discharged batteries can be replaced by opening the bottom side plate.

8) Model with rechargeable Batteries & Charger : Varta make 180MAH Nickel Metal hydride rechargeable batteries are used. Battery life is 1000 recharging cycles. Battery charger is supplied with this model. Batteries can be charged through a socket on bottom plate.

Functional Specifications

Parameter	Function	Range	Resolution	Accuracy	Load
DC mV	To source & sink (measure)	0-199.00 mV	0.01mV	$\pm 0.1\%$ of F.S.	4mA max (short cct current)
DC mA	To source	0-25.00 mA	0.01mA	$\pm 0.25\%$ of F.S.	400 ohms max
RTD/ Resistance	source only potential Free PT 100 RTD simulation	Nine discrete values selected by rotary s/w (0.25,50,75,100, 150, 200, 300, 400) °C	No indication on display	± 0.05 ohms upto 200 °C ± 0.1 ohms	1/4 watts Above 200°C

Technical Specification

UFC - 45-B

Model	UFC - 45-B
Power Supply	9V x 2 batteries. (100 mAh) or 9V + 2 rechargeable (180 MAH)
Display	4.5 digit Liquid Crystal Display with 0.5" character
Enclosure	Aluminium Channel and Sheet steel powder coated
Size	170 x 90 x 44 mm Hand held type
Weight	0.4 Kgs.

Cal ibration Chart

Temp °C	mVs (Ref Junction @ 0°C)				Pt 100 Resi ()
	J	K	R	S	
-100	-4.632	-3.553	-	-	60.25
-50	-2.431	-1.89	-0.226	-0.226	80.30
-25	-1.24	-0.97	-0.123	-0.127	90.19
0	0	0	0	0	100.0
10	0.507	0.397	0.054	0.055	103.9
20	1.01	0.8	0.11	0.11	107.79
25	1.27	1	0.14	0.14	109.73
30	1.53	1.2	0.17	0.17	111.67
50	2.58	2.02	0.33	0.3	119.4
75	3.92	3.058	0.466	0.467	128.99
100	5.26	4.1	0.65	0.65	138.5
150	8.01	6.14	1.04	1.03	157.31
200	10.78	8.14	1.47	1.44	175.84
300	16.33	12.21	2.4	2.32	212.02
400	21.85	16.4	3.41	3.26	247.04
500	27.39	20.64	4.47	4.23	280.90
600	33.1	24.9	5.58	5.24	313.6
800	45.5	33.28	7.95	7.35	
900	51.88	37.33	9.2	8.45	
1000		41.27	10.5	9.59	
1100		45.11	11.85	10.75	
1200		48.83	13.22	11.95	
1400			16.03	14.37	
1500			17.45	15.58	
1600			18.84	16.77	