

Accuracy Linearity Performance



New M65 Dual display
High Accuracy TRMS Multimeter

M65 Dual display Trms Digital Multimeter with high accuracy is specially designed in our Research Laboratory and manufactured under stringent manufacturing processes for RnD and Process industries.

M65 comes with μ Amp. range and accuracy of 0.25%.

New M65 Dual display High Accuracy TRMS Multimeter

FEATURES:

- 6,000 Count LCD Dual display with white backlit.
- Auto ranging, Trms AC Voltage and Current measurement.
- Accuracy of 0.25%.
- Highly linear readings.
- Capacitance range upto 60mF.
- Resistance, Diode and Continuity measurement facility.
- Selectable Frequency & Duty Cycle measurement.
- 60 position analog bar graph for trend indication.
- SELECT, RANGE, HOLD/LIGHT, REL, Hz/DUTY, MAX/MIN functions incorporated.
- CE and IEC 61010-1 CAT III (1000V).
- IP 54 Ingress protection.
- Robust Casing.



ACCURACY

- Temp. Coefficient = (0.1% x Specified accuracy) per degree centigrade referred to 25°C.
- Accuracy is valid from 10% of range to 95% of the range.
- Accuracy is specified as \pm % of reading + digits and is valid at $25 \pm 3^\circ\text{C}$, $\leq 55\%$ RH humidity.
- It is recommended that calibration equipment used to verify the accuracy of the instrument should be 10 times more accurate.

Why True RMS ?

True RMS responding DMM's are used for giving accurate results for sinusoidal and non-sinusoidal wave forms. Average responding DMM's are accurate only for pure sinusoidal waveforms. The error in average responding DMM for non-sinusoidal waveforms is indicated in Fig -1.

	WAVEFORM	RMS VALUE OF WAVEFORM	TRUE RMS READING	AVERAGE DMM READING	ERROR FOR AVERAGE METER
SINE WAVE		7.07V	7.07V	7.07V	0%
SQUARE WAVE		10.00V	10.00V	11.11V	11.1%
TRIANGULAR WAVE		5.77V	5.77V	5.55V	3.8%

Fig-1

TECHNICAL SPECIFICATION

DC VOLTAGE

Range	Resolution	Max. Reading	Accuracy (rdg+digit)	Overload Protection
6V	1mV	6.000V	$\pm(0.25\%+3)$	1050V DC/AC rms
60V	10mV	60.00V	$\pm(0.25\%+3)$	
600V	100mV	600.0V	$\pm(0.25\%+3)$	
1000V	1V	1000V	$\pm(0.5\%+3)$	

Note:

1. Input Impedance 10M Ω approx.
2. 600mV Range will be displayed in manual ranging only (Unspecified accuracy).

DC CURRENT RANGE

Range	Resolution	Max. Reading	Accuracy (rdg+digit)	Overload Protection
600 μ A/ 6000 μ A	0.1 μ A/ 1 μ A	600.0 μ A/ 6000 μ A	$\pm(1.2\%+5)$	0.8A/250V DC/AC fuse protection
60mA/ 600mA	10 μ A/ 100 μ A	60.00mA/ 600.0mA	$\pm(1.5\%+5)$	
10A	10mA	10.00A	$\pm(1.5\%+8)$	20A/250V DC/AC fuse protection

RESISTANCE RANGE

Range	Resolution	Max. Reading	Accuracy (rdg+digit)	Overload Protection
600 Ω	0.1 Ω	600.0 Ω	$\pm(0.5\%+3)$	440V DC/AC rms
6K Ω	1 Ω	6.000K Ω	$\pm(0.5\%+3)$	
60K Ω	10 Ω	60.00K Ω	$\pm(0.5\%+3)$	
600K Ω	100 Ω	600.0K Ω	$\pm(0.5\%+3)$	
6M Ω	1K Ω	6.000M Ω	$\pm(1\%+5)$	
60M Ω	10K Ω	60.00M Ω	$\pm(3\%+10)$	

Note :

1. Open Circuit voltage on 600 Ω range is -3.3V DC approx.
2. Open Circuit voltage on 6k Ω -6M Ω ranges is -1.10V DC approx.
3. Open Circuit Voltage on 60M Ω range is -600mV approx.

DIODE TEST

Range	Resolution	Open Circuit Voltage	Test Current
6V	1mV	≤ 3.0 VDC approx.	≤ 2.0 mA approx.

FREQUENCY RANGES

Range	Resolution	Max. Reading	Accuracy (rdg+digit)	Overload Protection
60Hz	0.01Hz	60.00Hz	$\pm(0.5\%+3)$	440V DC/AC rms
600Hz	0.1Hz	600.0Hz	$\pm(0.5\%+3)$	
6KHz	1Hz	6.000KHz	$\pm(0.5\%+3)$	
60KHz	10Hz	60.00KHz	$\pm(0.5\%+3)$	
600KHz	100Hz	600.0KHz	$\pm(0.5\%+3)$	
6MHz	1KHz	6.000MHz	$\pm(0.5\%+3)$	
60MHz	10KHz	60.00MHz	$\pm(0.5\%+3)$	

Note:

1. Main display shows frequency & sub display shows Duty Cycle.
2. If input frequency is less than 6.0Hz, Display will show 0.00Hz.

AC VOLTAGE (50Hz-500Hz) Trms.

Range	Resolution	Max. Reading	Accuracy (rdg+digit)	Overload Protection
6V	1mV	6.000V	$\pm(1\%+5)$	1050V DC/AC rms
60V	10mV	60.00V	$\pm(1\%+5)$	
600V	100mV	600.0V	$\pm(1\%+5)$	
1000V	1V	1000V	$\pm(1.2\%+8)$	

Note :

1. Input impedance : 10 M Ω approx. shunted by 60pF approx.
2. 600mV Range will be displayed in manual ranging only (Unspecified accuracy).
3. Main display shows AC Voltage & sub display shows frequency applied.

AC CURRENT RANGE (50Hz-500Hz) Trms

Range	Resolution	Max. Reading	Accuracy (rdg+digit)	Overload Protection
600 μ A/ 6000 μ A	0.1 μ A/ 1 μ A	600.0 μ A/ 6000 μ A	$\pm(1.5\%+5)$	0.8A/250V DC/AC fuse protection
60mA/ 600mA	10 μ A/ 100 μ A	60.00mA/ 600.0mA	$\pm(1.8\%+5)$	
10A	10mA	10.00A	$\pm(2.0\%+8)$	20A/250V DC/AC fuse protection

Note:

Main display shows AC Current and sub display shows frequency applied.

CAPACITANCE RANGE

Range	Resolution	Max. Reading	Accuracy (rdg+digit)	Overload Protection
6nF	0.001nF	6.000nF	$\pm(5.0\%+10)$	440V DC/AC rms
60nF	0.01nF	60.00nF	$\pm(3.0\%+10)$	
600nF	0.1nF	600.0nF	$\pm(3.0\%+10)$	
6 μ F	1nF	6.000 μ F	$\pm(3.0\%+10)$	
60 μ F	10nF	60.00 μ F	$\pm(3.0\%+10)$	
600 μ F	100nF	600.0 μ F	$\pm(5.0\%+10)$	
6mF	1 μ F	6.000mF	$\pm(5.0\%+20)$	
60mF	10 μ F	60.00mF	$\pm(5.0\%+30)$	

Note :

1. Settling time on 6mF and 60mF range is 40 sec. approx.
2. Press REL button at 6nF & 60nF ranges so that the offset count can be subtracted from measurement. Now apply low value capacitance.

CONTINUITY TEST

Range	Resolution	
600.0 Ω	0.1 Ω	Meter Beeps at <60 Ω

Note:

Open Circuit Voltage on continuity range is -3.3VDC approx.

DUTY CYCLE MEASUREMENT

Range	Resolution	Accuracy (rdg+digit)	Overload Protection
1.0%-98.9%	0.1%	$\pm(0.5\%+30)$	440V DC/AC rms

Accuracy is specified at <20 VAC rms

Electromagnetic compatibility :

In RF Field, overall accuracy is equal to 10% of reading +30 digits




GENERAL SPECIFICATION:

- Display : 6,000 Count Dual LCD display with white backlit.
- Polarity : Automatic.
- Display Update rate : 2.8 times per second nominal.
- Sensing : Trms to DC Converter.
- Dimensions (WxHxD) : 94 x 205 x 36mm approx.
- Weight : 450g. approx.
- Dual Display : For AC Voltage with Frequency & Frequency with Duty cycle simultaneously.
- Additional functions : Select, Range, Hold, Rel, Light, Max./Min, Diode, Continuity & Duty cycle measurement.

Environmental:

- Operating Temperature : 0°C to 50°C
- Storage Temperature : - 20°C to 60°C
- Relative Humidity : 80% RH @ 5°C to 31° C, 50% RH @ 31°C to 40°C Non- condensing.

Power:

- Power Supply : 9V Battery Type 6F22 or equivalent
- Power Consumption : 8 mA typical.
- Low Battery Indication : '  ' < 6.5V approx.
- Auto Power OFF : After 15 Min., Ideal sleep mode consumption is 1.3mA approx. (Can be cancelled by pressing any push button except for Hold & SELECT before power on the meter).

Overload Protection:

- Fuse Protection for 'µA' & 'mA' input terminal : 0.8 A/250V fast blow type Ceramic fuse.
- Fuse Protection for 10A input terminal : 20A/ 250V fast blow type Ceramic fuse
- Ω/→/•/||) /→/ Hz/(%) : 440 V DC / AC rms

Safety:

CE Certifications

- Directives for CE : LVD:2006/95/EC., EMC: 2004/104/EC
- Certification
- Measurement Category : CAT III (1000V) Reinforced Insulation.
- Relevant Standard : EN 61010-1:2010,
- Specification (S) : EN61326-1:2006
- IP Rating : IP 54. (Dust & Water Protection)

Accessory

Standard Accessory:

- Pair of Test leads, User Manual, Battery installed,
- Fuses, Pair of small test leads, Carrying Bag.

Optional Accessory:

- Pair of Test leads.

NOTES

1. The Instrument is accompanied with Test & calibration sheet. 2. Test Facilities can be provided at the factory with the available test set-ups only. 3. The Company's policy is continuous improvement of its products. we therefore reserve the Right of any deviation from illustration or specifications without notice. 4. Stated accuracies are valid from 1/10th of range to FS. 5. Accuracy Specified for temperature range of 25°C ± 5°C & 55% RH ± 10%.



The Motwane Manufacturing Company Pvt. Ltd.



REGD. OFFICE & FACT.: Gyan Baug, Nashik Road, Nashik -422 101. Maharashtra, India. Tel.: 91-253-2463752 / 53. Fax :91-253-2463197 Toll Free: 1800 - 233 - 2222
Website: www.motwane.com E-mail: sales@motwane.com

MUMBAI:

223-224, 2nd Floor, Midas,
Sahar Plaza, Andheri Kurla Road,
J.B. Nagar, Andheri (E), Mumbai : 400059
Tel: 91-22-40155585/86/87
Fax: 91-22-40155588
E-mail : mumbai@motwane.com

DELHI :

2 D, 2nd Floor, Vandana Building,
11, Tolstoy Marg, Cannought Place,
New Delhi -110 001
Tel.: 91-11 - 41522 105,
Telefax : 91-11 - 41522106
E-mail : delhi@motwane.com

BANGALORE :

8/12, 3rd Floor, Honnam Complex,
South Cross Road, Basavanagudi,
Bangalore-560004.
Telefax : 91-80 - 26621186 / 26611323
E-mail : bangalore@motwane.com

KOLKATA :

10, Tarak Dutta Road, Eden Terrace,
Near Beck Bagan Mithai,
Kolkata 700019.
Telefax : 91-33 - 22832436
E-mail : kolkata@motwane.com