[illegible]

TRUE RMS INDUSTRIAL MULTIMETER

Overvoltage Category III


Overvoltage Category IV

Note - Examples include electricity meters and primary over-current protection equipment.

Input Protection Limits	
Function	Maximum Input
V DC or V AC	1000VDC/AC RMS
mA AC/DC	800mA 1000V fast acting fuse
A AC/DC	10A 1000V fast acting fuse (20A for 30 seconds max every 15 minutes)
Frequency, Resistance, Capacitance,	1000VDC/AC rms
Duty Cycle, Diode Test, Continuity	
Temperature	1000VDC/AC rms
Surge Protection: 8kV peak per IEC 61010	

- | HOLD Freezes the present reading in the display and allows the display to be saved. Also accesses AutoHold.
- | RANGES switches the Meter range mode to manual and then cycles through all ranges.
- | MAX/MIN Starts and stops MIN MAX recording
- | 50,000 Counts Large Colored Display
- | IP-67 Protection
- | Blue tooth PC Interface

General Specifications

Enclosure	Double molded, waterproof
Shock (Drop Test)	6.5 feet (2 meters)
Diode Test	Test current of 0.9mA maximum, open circuit voltage 3.2V DC typical
Continuity Check	Audible signal will sound if the resistance is less than 25Ω (approx.), test current $<0.35\text{mA}$
PEAK	Captures peaks $>1\text{ms}$
Temperature Sensor	Requires type K thermocouple
Input Impedance	$>10\text{M}\Omega$ VDC & $>9\text{M}\Omega$ VAC
AC Response	True RMS
AC True RMS	The term stands for "Root-Mean-Square" which represents the method of calculation of the voltage or current value. Average responding multimeters are calibrated to read correctly only on sine waves and they will read inaccurately on non-sine wave or distorted signals. True rms meters read accurately on either type of signal.
ACV Bandwidth	50Hz to 100000Hz
Crest Factor	<3 at full scale up to 500V, decreasing linearly to <1.5 at 1000V
Display	50,000 count backlit liquid crystal with bargraph
Overrange indication	"OL" is displayed
Auto Power Off	5-30minutes (approximately) with disable feature
Polarity	Automatic (no indication for positive); Minus (-) sign for negative
Measurement Rate	20 times per second
Low Battery Indication	"  +" is displayed if battery voltage drops below operating voltage
Fuses	Fuses are FF 0.8A/1000V+FF 10A/1000V
Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Operating Humidity	Max 80% up to 31°C (87°F) decreasing linearly to 50% at 40°C (104°F)
Storage Humidity	$<80\%$
Operating Altitude	7000ft. (2000meters) maximum.
Safety	This meter is intended for origin of installation use and protected, against the users, by double insulation per EN61010-1 and IEC61010-1 2nd Edition (2001) to Category IV 600V and Category III 1000V; Pollution Degree 2. The meter also meets UL 61010-1, 2nd Edition (2004), CAN/CSA C22.2 No. 61010-1 2nd Edition (2004), and UL 61010B -2-031, 1st Edition (2003)
Bluetooth specification	Version 2.0+EDR, Frequency range 2400 MHz ... 2483.5 MHz. (ISM-Band), Guard band 2 MHz $< F < 3.5$ MHz. Modulation method GFSK, 1 Mbps, 0.5 Gaussian; Receiving signal range -82 to -20 dBm; Transmission power Minimum: -18dBm to +4 dBm Diameter: 20.0mm; High 3.2mm; Typical Weight
Built-in lithium	3.0 grams (0.10 oz.); Designation: ANSI / NEDA-5004LC, IEC-CR2032; Normal Voltage: 3.0 Volts; Typical Capacity: 240 mAh; Storage 5 Year Chemical type: Lithium polymer, Standard: GB/T
Li-ion Battery	18287-2000; Normal Voltage: 7.4 Volts; Charge up Voltage: 8.4 Volts; Typical Capacity: 2400 mAh. Cycle life: 500 times

Electrical Specifications

Function	Range	Resolution	Accuracy
DC Voltage	50mV ^[1]	0.001mV	(0.05% + 20)
	500mV ^[1]	0.01mV	(0.025% + 5digits)
	5V	0.0001V	(0.025% + 5digits)
	50V	0.001V	(0.025% + 5digits)
	500V	0.01V	(0.05% + 5digits)
	1000V	0.1V	(0.1% + 5)

[1] When using the relative mode (REL Q) to compensate for offsets.

Function	Range	Resolution	Accuracy
AC Voltage			50 to 10000Hz
	50mV	0.001mV	50/60Hz (0.3% + 25) <1KHz (0.5% + 25) <5KHz (3% + 25)
	500mV	0.01mV	
	5V	0.0001V	
	50V	0.001V	
	500V	0.01V	
	1000V	0.1V	
	All AC voltage ranges are specified from 5% of range to 100% of range		

Function	Range	Resolution	Accuracy
(AC+DC)			0 to 1000Hz
	50mV	0.001mV	<1KHZ (1% + 25) <10KHZ (3.5% + 25)
	500mV	0.01mV	
	5V	0.0001V [1]	
	50V	0.001V	
	500V	0.01V	
	1000V	0.1V	

[1] Add 1% above 5k

Function	Range	Resolution	Accuracy
DC Current	500μA	0.01μA	0.1%+20
	5000μA	0.1μA	
	50mA	0.001mA	
	500mA	0.01mA	0.15%+20
	10A	0.001A	0.3%+20
	(20A: 30 sec max with reduced accuracy)		

Function	Range	Resolution	Accuracy
AC Current			50 to 10000Hz
	500μA	0.01μA	50/60Hz (0.6% + 25) <1KHz (1.5% + 25) <10KHz (3% + 25)
	5000μA	0.1μA	
	50mA	0.001mA	
	500mA	0.01mA	
	10A	0.001A	
	(20A: 30 sec max with reduced accuracy)		
	All AC current ranges are specified from 5% of range to 100% of range		

Function	Range	Resolution	Accuracy
(AC+DC)			0 to 1000Hz
	500μA	0.01μA	(1.0% + 25)
	5000μA	0.1μA	
	50mA	0.001mA	
	500mA	0.01mA	
	10A	0.001A	(1.5% + 40)

Function	Range	Resolution	Accuracy
AC Voltage (5000+Count)			5K-100K
	50mV	0.001mV	(5.0% + 40)
	500mV	0.01mV	
	5V	0.0001V	
	50V	0.001V	(6.0% + 40)

NOTE: Accuracy is stated at 18 to 28°C (65 to 83°F) and less than 75%RH. AC switch according to the calibration of sine wave. It generally increase ±(2% reading + 2% full scale) if non sine wave in the wave crest less than 3.0.

Function	Range	Resolution	Accuracy
Resistance	50Ω ^[1]	0.001Ω	0.5%+20
	500Ω ^[1]	0.01Ω	0.05%+10
	5kΩ	0.0001kΩ	0.05%+10
	50kΩ	0.001kΩ	
	500kΩ	0.01kΩ	0.1%+10
	5MΩ	0.0001MΩ	0.2%+20
	50MΩ	0.001MΩ	2%+20

[1] When using the relative mode (REL Q) to compensate for offsets.

Electrical Specifications

Function	Range	Resolution	Accuracy
Capacitance	5nF ^[1]	0.001nF	±(2% + 40)
	50nF ^[1]	0.01nF	
	500nF	0.1nF	
	5µF	0.001µF	±(2% + 40 digits)
	50µF	0.01µF	
	500µF	0.1µF	
	10mF	0.01mF	±(5% + 40 digits)

[1] with a film capacitor or better, using relative mode (REL) to zero residual.

Function	Range	Resolution	Accuracy
Frequency (electronic)	50Hz	0.001Hz	±(0.01% + 10)
	500Hz	0.01Hz	
	5kHz	0.0001kHz	
	50kHz	0.001kHz	
	500kHz	0.01kHz	
	5MHz	0.0001MHz	
	10MHz	0.001MHz	

	Sensitivity: 0.8V RMS min. @ 20% to 80% duty cycle and <100kHz; 5V RMS min @ 20% to 80% duty cycle and >100kHz.		
Frequency (electrical)	40.00-10kHz	0.01 - 0.001kHz	±(0.5% reading)
	Sensitivity: 1V RMS		

Function	Range	Resolution	Accuracy
Duty Cycle	0.1 to 99.90%	0.01%	±(1.2% reading + 2digits)
	Pulse width: 100µs - 100ms, Frequency: 5Hz to 150kHz		
4-20mA%	-25 to 125%	0.01%	±50 digits
	0mA=-25%, 4mA=0%, 20mA=100%, 24mA=125%		

Function	Range	Resolution	Accuracy
Temp (type-K)	-50 to 1000°C	0.1°C	±(1.0% reading + 2.5°C)
	-58 to 1832°F	0.1°F	±(1.0% reading + 4.5°F) (Probe accuracy not included)

Accessories

Carrying Case, Testing Leads, Temperature Probe, Battery, Instruction manual and Test Certificate.

