AVO®415
TRMS Digital Multimeter with VFD Measurement

Megger

- **Safety rated CAT III 1000 V, CAT IV 600 V**
- **True RMS AC current and voltage**
- **High resolution 6000 count display**
- **Frequency up to 10 MHz**
- **Resistance, continuity and diode measurements**
- **Current measurement to 10 A**
- **Variable Frequency Drive (VFD) voltage measurement**
- **100 mF capacitance range**
- **Bright back-light display**
- **IP67 Dust-proof and waterproof rated**
- **Designed and tested to withstand a 2 m (6.6 ft) drop**

DESCRIPTION

The AVO415 multimeter is for professional electricians, technicians, service personnel and engineers that require high reliability, build quality and performance in a compact, tough design. Suitable for applications where more than the basic digital multimeter functions are needed.

The AVO415 is a True RMS digital multimeter with variable frequency drive VDF voltage measurement. With a 6000 count high resolution display, IP67 rating for wet and dusty environments, and a CAT III 1000 V, CAT IV 600 V safety rating, it is designed for use in the most demanding applications.

FEATURES

A built in Low Pass filter and VFD voltage measurements, allow fast diagnosis and speedy fault finding. The inclusion of a Type K thermocouple, the AVO415 can capture temperature measurements, without needing to carry a separate instrument.

The AVO415 provides Min/Max/REL readings and measures frequency, capacitance, resistance, and diode. It also comes with continuity function featuring buzzer to provide audio feedback. The Diode function allows forward/reverse bias testing of diode and semiconductor junctions. Fast auto ranging or manual range selection allows precision and speed on the job. Large backlit display provides ease of interpreting results in any location. The durable housing provides protection from 2 m drop and to meets environmental IP67 rating.

- Safety rated CAT III 1000 V, CAT IV 600 V
- True RMS AC current and voltage
- Measure frequency up to 100 MHz
- Resistance, continuity and diode measurements
- 100 mF capacitance range
- Bright backlit display
- High resolution 6000 counts LCD
- AC/DC current measurement to 10 A
- IP67 (dustproof and waterproof) rating
- Designed and tested to withstand a 2 m (6.6 ft) drop

APPLLICATION

Suitable for a wide range of applications when testing to determine voltage, current, frequency, diode, capacitance, resistance and, with the included Type K thermocouple, temperature measurement. The multimeter combines a range of features, precise measurements, and quality construction into a tool of exceptional value. Ideal for plant engineer / Industrial electricians working with

AVO®415
TRMS Digital Multimeter with VFD Measurement

Megger

VSD's or in harsh enlivenments like cement plants, food processing, chemical processing, steel factory and mining.

Specifications

Accuracy is specified for 1 year after calibration, at operating temperatures of 18 °C to 28 °C, with relative humidity at 0 % to 90 %. Accuracy specifications take the form of: ±([% of Reading] + [Counts])

Maximum voltage between any terminal and earth ground	1000 V
F1 Fuse Protection for A inputs	10 A, 1000 V, 30 kA
F2 Fuse Protection for mA input	800 mA, 1000 V, 30 kA
Battery Type	9 V Alkaline, NEDA 1604A/IEC 6LR61)
Display	6000 counts, backlit liquid crystal
Altitude	2000 m maximum.
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	50% at 40 °C (104 °F)
Size (H x W x D)	180 mm x 82 mm x 55 mm
Weight	397 g without battery 427 g with battery
Safety	IEC 61010-1: Pollution Degree 2 IEC 61010-2-033: CAT IV 600 V, CAT III 1000 V
EMC	IEC 61326-1: Portable Electromagnetic Environment, CISPR 11: Group 1, Class A, IEC 61326-2-2 Enclosure Double moulded, IP67 rating
Shock (drop test)	6.5 feet (2 meters)
Continuity check	Audible signal will sound if the resistance is less than 50 Ω (approx.), test current <0.35 mA
Diode test	Test current of 0.9 mA maximum, open circuit voltage 3.2 V DC typical
PEAK	Captures peaks > 1 ms
Temperature sensor	Requires type K thermocouple
Input impedance	> 10 MΩ V DC and >10 MΩ V AC
Crest factor	≤3 at full scale up to 500 V, decreasing linearly to ≤1.5 at 1000 V.
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	45 Hz to 1 kHz
Overrange indication	OL is displayed
Auto power OFF	15 minutes (approximately) with disable feature
Polarity	Automatic (no indication for positive); Minus (-) sign for negative
Low battery indication	" " Battery low warning.
Measurement Rate	2 times per second

AC voltage 45 Hz to 1 kHz

Range	Resolution	Accuracy ±(% of reading + digits)
60.00 mV	0.01 mV	±(0.9% + 9)
600.0 mV	0.1 mV	±(0.8% + 3)
6.000 V	0.001 V	
60.00 V	0.01 V	
600.0 V	0.1 V	
1000 V	1 V	±(0.8% + 8)

All AC voltage ranges are specified from 5% of range to 100% of range.

AC voltage bandwidth: 45 Hz to 1 kHz (Sine); 50/60 Hz (All wave).

VFD

50 to 700 V	0.1 V/1 V	±(0.4% + 3 digits)

DC voltage

Range	Resolution	Accuracy
60.00 mV	0.01 mV	±(0.9% + 9 digits)
600.0 mV	0.1 mV	
6.000 V	0.001 V	±(0.5% + 5 digits)
60.00 V	0.01 V	
600.0 V	0.1 V	±(0.6% + 6 digits)
1000 V	1 V	

AVO®415
TRMS Digital Multimeter with VFD Measurement

Megger

AC current 45 Hz to 1 kHz

Range	Resolution	Accuracy
600.0 µA	0.1 µA	±(1.5% + 3 digits)
6000 µA	1 µA	
60.00 mA	0.01 mA	
600.0 mA	0.1 mA	
6.000 A	0.001 A	±(2.0% + 3 digits)
10.00 A	0.01 A	

10 A: 30 sec max with reduced accuracy.

All AC current ranges are specified from 5% of range to 100% of range.

AC current bandwidth: 45 Hz to 1 kHz (Sine); 50/60 Hz (All wave).

Amps input burden voltage (typical): mA input ~3.8 mV/A, A input ~30 mV/A.

DC current

Range	Resolution	Accuracy
600.0 µA	0.1 µA	±(1.0% + 3 digits)
6000 µA	1 µA	
60.00 mA	0.01 mA	
600.0 mA	0.1 mA	
6.000 A	0.001 A	±(1.5% + 3 digits)
10.00 A	0.01 A	

Resistance

Range	Resolution	Accuracy
600.0 Ω	0.1 Ω	±(1.0% + 2 digits)
6.000 kΩ	0.001 kΩ	±(0.8% + 2 digits)
60.00 kΩ	0.01 kΩ	
600.0 kΩ	0.1 kΩ	
6.000 MΩ	0.001 MΩ	±(1.2% + 2 digits)
60.00 MΩ	0.01 MΩ	±(1.0% + 5 digits)

Capacitance

Range	Resolution	Accuracy
99.99 nF*	0.01 nF	±(5.0% + 20 digits)
999.9 nF	0.1 nF	±(4.0% + 5 digits)
9.999 µF	0.001 µF	
99.99 µF	0.01 µF	
999.9 µF	0.1 µF	
9.999 mF	0.001 mF	±10% reading
99.99 mF	0.01 mF	

*<99.99 nF not specified

Frequency (electronic)

Range	Resolution	Accuracy
9.999 Hz	0.001 Hz	±(0.1% + 4 digits)
99.99 Hz	0.01 Hz	
999.9 Hz	0.1 Hz	
9.999 kHz	0.001 kHz	
99.99 kHz	0.01 kHz	
999.9 kHz	0.1 kHz	
9.999 MHz	0.001 MHz	

Sensitivity: 0.8 V RMS min. at 20% to 80% duty cycle and <100 kHz: 5 Vrms min at 20% to 80% duty cycle and >100 kHz.

10.00 - 1 kHz	0.01 Hz	±0.5% reading

Sensitivity
AC mV Range (>100 mV), AC V Range (6% Range);
6000 µA / 600 mA / 10.00 A Range (6% Range);
600 µA / 60.00 mA / 6.000 A Range (> 60% Range)

Pulse width: 100 µs -100 ms:

Frequency: 5 Hz to 150 kHz

Duty cycle

Range	Resolution	Accuracy
0.1 to 99.90%	0.01%	± (1.2% reading + 2 digits)

Pulse width: 100 µs – 100 ms,
Frequency: 5 Hz to 150 kHz

Temperature (K Type thermocouple)

Range	Resolution	Accuracy
-40 to 1000 °C	1 °C	±(3.0% + 3 °C / 5 °F digits) (Probe accuracy not included)
-40 to 1832 °F	1 °F	

NOTE : Accuracy specifications consist of two elements:

- (%reading) - This is the accuracy of the measurement circuit
- (+digits) - This is the accuracy of the analogue to digital converter.

NOTE : Accuracy is stated at 18 to 28 °C (65 to 83 °F) and less than 75% RH.

AVO®415
TRMS Digital Multimeter with VFD Measurement

Safety

This instrument is intended for origin of installation use and are protected by double insulation per 61010-1:2010 +A1:2019 Safety requirements for electrical equipment for measurement, control, and laboratory use to Measurement connection: CAT III 1,000 V and CAT IV 600 V; Pollution Degree 2.

The instrument also meets EN (IEC) 61010-2-033:2021 +A11:2021, particular requirements for hand-held multimeters and other meters, 61010-031:2015, Safety requirements for hand-held probe assemblies for electrical measurement and test, EN 62479: 2010 Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz); and EN 50663: 2017 Generic standard for assessment of low power electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (10 MHz - 300 GHz).

ORDERING INFORMATION

Description	Part number
AVO415 Multimeter	1015-652
Included Accessories	
1 m 4 mm non-fused, right angle connector test leads* (x2)	
4 mm exposed metal Probes* (x2)	
Exposed tip probes for CAT II probing (x2)	
Red and black crocodile clips*	
K-type multimeter adapter	
K-type thermocouple lead	
Soft case	
4 mm cap plugs (x2)	
User guide	
1x 9 V, NEDA 1604S/IEC 6F22	

*Ratings: Double insulated, CAT III 1000 V, CAT IV 600 V, 10 A max

Megger®