

**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

### APPLICATION

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 environments 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:  $\pm$ ([% 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  $\Omega$  (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 M $\Omega$  V DC and >10 M $\Omega$  V AC

**Crest factor**  $\leq$ 3 at full scale up to 500 V,  
decreasing linearly to

$\leq$ 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 $\pm$ (% of reading + digits)
60.00 mV	0.01 mV	$\pm$ (0.9% + 9)
600.0 mV	0.1 mV	
6.000 V	0.001 V	$\pm$ (0.8% + 3)
60.00 V	0.01 V	
600.0 V	0.1 V	
1000 V	1 V	$\pm$ (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	$\pm$ (0.4% + 3 digits)
-------------	-----------	-------------------------

**DC voltage**

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

### 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
<b>Included Accessories</b>	
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	

#### SALES OFFICE

Megger Limited  
Archcliffe Road Dover  
CT17 9EN England  
T. +44 (0) 1304 502101  
E. UKsales@megger.com

#### AVO415\_DS\_en\_V02

www.megger.com  
ISO 9001  
The word 'Megger' is a registered trademark

**Megger**®

# Diensten van EURO-INDEX

EURO-INDEX is fabrikant, importeur en distributeur van diverse A-merken op het gebied van test- en meetinstrumenten. Daarnaast leveren wij een groot aantal diensten om het gebruik van deze instrumenten in uw bedrijfsvoering te optimaliseren. Dit omvat uiteraard onderhoud, reparatie en kalibratie van de instrumenten, maar ook kennisdeling via de EURO-INDEX Academy en verhuur van instrumenten.

## Geautoriseerd Service Centrum

EURO-INDEX b.v. is van alle vertegenwoordigde merken een Geautoriseerd Service Centrum. Dit betekent dat uw instrumenten worden behandeld door technici die zijn opgeleid door de fabrikant en beschikken over de juiste gereedschappen en software. Er worden uitsluitend originele onderdelen toegepast en de garantie van uw instrument, evenals de certificering (ATEX, EN50379, etc.) blijven intact.

## Kalibratielaboratorium

Ons moderne service- en kalibratielaboratorium beschikt over een RvA accreditatie naar NEN-EN-ISO/IEC 17025. Deze accreditatie geldt voor grootheden, zoals gespecificeerd in de scope bij accreditatienummer K105.



Kijk voor een overzicht van al onze diensten op [euro-index.nl/diensten](http://euro-index.nl/diensten)



## Mobiele Service

Naast de vaste kalibratielaboratoria in Capelle aan den IJssel en Zaventem beschikken wij ook over laboratoria op wielen met de naam "Mobiele Service". Dit biedt vertrouwde service en kwaliteit, bij u voor de deur!

## KWS®

KWS® is een uniek servicesysteem voor uw meetinstrumenten met periodiek onderhoud en kalibratie tegen vaste, lage kosten. Uw kalibratiecertificaten zijn digitaal beschikbaar via Mijn KWS (gratis webportaal en app).

## Verhuur van meetinstrumenten

- Uitgebreid assortiment
- Nauwkeurigheid aantoonbaar door actueel kalibratiecertificaat
- Deskundig advies
- Complete levering inclusief accessoires

## EURO-INDEX Academy

- Trainingen (individueel en klassikaal)
- Cursussen en workshops
- Demonstratie- en instructievideo's
- Whitepapers



Servicebalie



Onderhoud, reparatie en kalibratie



Cursussen en workshops



Mobiele Service

Wijzigingen voorbehouden EURO-INDEX® NL 24005



NEderland  
Rivium 2e straat 12  
2909 LG Capelle a/d IJssel  
T: 010 - 2 888 000  
F: 010 - 2 888 010  
[verkoop@euro-index.nl](mailto:verkoop@euro-index.nl)  
[www.euro-index.nl](http://www.euro-index.nl)



BELGIË  
Leuvensesteenweg 607  
1930 Zaventem  
T: +32 - (0)2 - 757 92 44  
F: +32 - (0)2 - 757 92 64  
[info@euro-index.be](mailto:info@euro-index.be)  
[www.euro-index.be](http://www.euro-index.be)