AVO410
Digital Multimeter



- **6000 count backlit digital display**
- **True RMS reading on AC mode**
- **1000 V DC / 750 V AC ranges**
- **10 A AC / DC ranges**
- **Resistance, frequency and capacitance ranges**
- **CAT IV 600 V**

DESCRIPTION

The Megger AVO410 digital multimeter has been designed for the contracting electrician and has the additional features that also make the instrument suitable for wide range of applications and users.

The instrument offers AC and DC voltage and current measurements as well as resistance, frequency and capacitance ranges. True RMS readings on the AC functions are standard on the AVO410 and the instrument features a CATIV 600 V safety rating meaning the instrument is suitable for industrial applications.

The slim, compact case has a tough rubberised holster that provides that extra degree of protection from the extreme conditions found in industrial environments. The style of the case and positioning of the function switch and buttons means the unit sits comfortably in the palm for single handed use.

Continuous references to the user guide have been avoided by the AVO410 utilising simplified functions.

The display features a back light that allows measurements to be made in poorly lit areas.

The AVO410 test leads are supplied with silicon cable and have GS38 compliant shrouded tips on the prods.

Auto-ranging

When first selected, all functions are auto-ranging. A range button on the AVO410 allows multiple manual range selection on each function; a feature that is generally welcomed by many users.

Minimum / Maximum measurements

The instrument has a MIN MAX function that allows the user to switch between minimum and maximum measurements. The display does not have to be continually monitored to capture a momentary increase or fall in readings.

Data hold

This function allows a displayed result to be frozen on the display which avoids having to remember a measurement value. The hold function can be nested within the MIN MAX feature which stops the AVO410 continuously updating the minimum and maximum measurement values.

Voltage measurements

Both AC and DC voltage measurements up to 750 V and 1000 V respectively are possible with the AVO410, the AC reading being a true RMS value.

Current measurements

For current measurements up to 10 A, a separate fused terminal is provided to protect both user and instrument from excess current.

Continuity / diode testing

The continuity function features a buzzer and provides the user both optical and audio indication of identifying and confirming continuity between two points. This function also allows forward and reverse bias testing of diode and semiconductor junctions.

RS232

The RS232 featue has been disabled.

Resistance, capacitance and frequency

Resistance can measured directly on the ohms range from 0 to 60 MΩ with capacitance measurements from 0 to 6.000 mF. In addition, frequency measurements from 0 to 60 MHz are possible.

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SPECIFICATIONS

Display 6000 counts updates 1.5/sec.

Polarity Automatic, positive implied, negative indicated

Over-range indication "OL" or "-OL"

Battery indicator Displayed when the battery voltage drops below operating voltage

Auto power down Approx 10 minutes

Operating ambient Non-condensing ≤10 °C,
11 °C ~ 30 °C (≤80% R.H)
31 °C ~ 40 °C (≤75% R.H),
41 °C ~ 50 °C (≤45% R.H)

Storage temperature range and humidity
-20 °C to 60 °C,
0 to 80% R.H.
when battery removed from meter

Temperature co-efficient 0.15 x (Spec.Acc'y) / °C,
<18 °C or >28 °C

Safety The instrument complies with IEC61010 CAT IV 600 V

Power supply Standard 9 V battery PP3, NEDA 1604, IEC6F22, JIS006P

Battery life Alkaline 300 hours

Dimensions 76 mm x 158 mm x 38 mm without holster
82 mm x 164 mm x 44 mm with holster

Weight 522 g

ELECTRICAL SPECIFICATIONS

DC/AC volts

Range	DC accuracy	AC accuracy
600.0 mV	±(0.5% + 2 digits)	50 Hz/60 Hz sine wave only for 600.0 mV range, ±(0.9% +5 digits) 50 Hz ~ 500 Hz *
6.000	±(0.5% + 2 digits)	50 Hz/60 Hz sine wave only for 600.0 mV range, ±(0.9% +5 digits) 50 Hz ~ 500 Hz *
60.00 V	±(0.5% + 2 digits)	50 Hz/60 Hz sine wave only for 600.0 mV range, ±(0.9% +5 digits) 50 Hz ~ 500 Hz *
600 V	±(0.5% + 2 digits)	50 Hz/60 Hz sine wave only for 600.0 mV range, ±(0.9% +5 digits) 50 Hz ~ 500 Hz *
DC 1000 V AC 750 V	±(0.5% + 2 digits)	50 Hz/60 Hz sine wave only for 600.0 mV range, ±(0.9% +5 digits) 50 Hz ~ 500 Hz *

* The basic accuracy is specified for a sine wave below 4000 counts. Over 4000 counts, add 0.6% to the accuracy. For non-sine waves below 2000 counts, refer to the following for accuracy: ±1.5% addition error for C.F from 1.4 to 3

Protection 1000 V DC or AC

Input impedance 10 MΩ // less than 100 pF

Common mode rejection ratio / normal mode rejection ratio
(Common mode rejection ration/ normal mode rejection ratio)
VAC: CMRR >60 dB at DC, 50 Hz/60 Hz
VDC: CMRR >100 dB at DC, 50 Hz/60 Hz
NMRR: >50 dB at DC, 50 Hz/60 Hz

AC conversion type AC conversions are AC coupled
True RMS responding, calibrated to the sine wave input.

Crest factor C.F. = Peak/rms

DC/AC current

Range	DC accuracy	AC accuracy	Voltage burden
600.0 µA	± (1.0% + 2 digits)	N/A	<4 mV/µA
6000 µA	± (1.0% + 2 digits)	N/A	<4 mV/µA
6.000 A	± (1.0% + 2 digits)	±(1.5% +6 dgt) 50 Hz ~ 500 Hz *1	2 V max
10.00 A	± (1.0% + 2 digits)	±(1.5% +6 dgt) 50 Hz ~ 500 Hz *1	2 V max

Overload protection

A input 10 A (500 V) fast blow fuse

µA input 600 V rms

***1) AC conversion type**

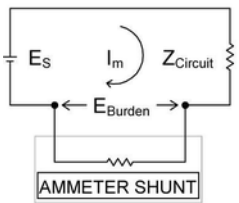
Conversion type and additional specification are the same as DC/AC voltage.

NOTE: The DCµA input terminal is protecte by 3.6 kΩ PTC (600 V rated) thermistors. The loading efect of these devices may cause measurment errors on low impedance circuits (<100 kΩ).

Note: When measuring current on the A current terminal the instrument has an internal impedance of 0.01 Ω at AC/DC A in series with circuit under test.

The loading effect may cause measurement errors on low impedance circuits.

For example: Measuring a 1 Ω impedance circuit will cause a -1 % measuring error. The error percentage of the loading effect of the meter can be expressed as the following:



$$100 \times \frac{-0.01\,\Omega}{Zcircuit + 0.01}\ \%$$

or

$$100 \times \frac{-E_{Burden}}{E_S}\ \%$$

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Note: The DCμA input terminal is protected by 3.6 kΩ PTC (600 V rated) thermistors.

The loading effect of these devices may cause measurement errors on low impedance circuits (<100 kΩ).

Resistance range

Range	Accuracy	Overload Protection
600.0 Ω *2	± (0.7% + 2 digits)	600 V rms
6.000 KΩ	± (0.7% + 2 digits)	600 V rms
60.00 KΩ	± (0.7% + 2 digits)	600 V rms
600.0 KΩ	± (0.7% + 2 digits)	600 V rms
6.000 MΩ	± (1.0% + 2 digits)	600 V rms
60.00 MΩ*1	± (1.5% + 2 digits)	600 V rms

Open circuit voltage -1.3 V approx.

*1<100 digit rolling

*2 <10 digit rolling

Diode check

Range	Resolution	Accuracy
Diode	10 mV	±1.5% + digits*

* For 0.4 V ~ 0.8 V

Max. test current 1.5 mA

Max. open circuit voltage 3 V

Overload protection 600 V rms

Continuity Built-in buzzer will sound when the resistance is less than 500 Ω approx. Response time is 100 ms approx.

Frequency measurement range

Range	**Sensitivity	Overload protection
6000 Hz	100 mV rms*	Frequency: 0.1% ± 1 digit
60.00 KHz	100 mV rms*	Frequency: 0.1% ± 1 digit
600.0 KHz	100 mV rms*	Frequency: 0.1% ± 1 digit
6.000 MHz	250 mV rms	Frequency: 0.1% ± 1 digit
60.0 MHz	1 V rms	Frequency: 0.1% ± 1 digit

Overload protection 600 V rms

* Less than 20 Hz, the sensitivity is 1.5 V rms

** Max. sensitivity <5 V ac rms

Accuracy

Range	Accuracy
6.000 nF	± (1.9%) +8 digits)
60.00 nF	± (1.9%) +8 digits)
600.0 nF	± (1.9%) +8 digits)
6.000 μF	± (1.9%) +8 digits)
60.00 μF	± (1.9%) +8 digits)
600.0 μF	± (1.9%) +8 digits)
6.00 mF*	± (1.9%) +8 digits)

Overload protection 600 V rms

* <100 digit of reading rolling

Auto power OFF (APO) If idle for more than 10 minutes

ORDERING INFORMATION

Description	Order Code
AVO410 digital multimeter CAT IV 600 V	1001-613
Included accessories	
Test leads and probes	
Optional accessories	
Pouch	2007-366

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OTHER TECHNICAL SALES OFFICES
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CERTIFICATION ISO
Registered to ISO 9001:2000 Cert. no. Q 09290

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