



MEGGER® DCM2000P Clampmeter

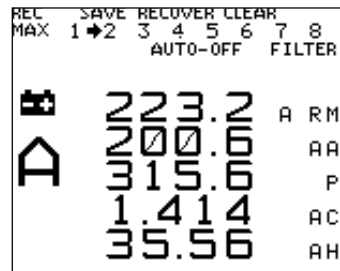
- W, VA, VAR, kWh and power factor measurement even on distorted waveforms
- AC/DC current up to 2000 Amps
- True RMS, peak, crest factor, total harmonic distortion, distortion factor, frequency measurement, and dc ripple
- 3 phase power capability
- Live harmonic analysis, bar graph display
- Simultaneous display of multiple parameters plus waveform and chart displays
- Internal logging of five parameters with 5000 readings
- Real-time logging or download to optional PowerLog software

Power Clampmeter

DESCRIPTION

The new Megger DCM2000P Power Clampmeter combines the functionality of power meter, oscilloscope, harmonics meter and data logger in one easy to use package. The design meets the requirements of BSEN 61010-1 600V Cat IV for supply side applications. A large backlit dot matrix LCD clearly displays waveforms, harmonics, chart trends and up to five parameters at a time. The DCM2000P can measure dc, ac, pulsed and mixed currents up to 2000 A, voltages up to 600 V, all power related parameters including energy consumption, frequency, crest factor, total harmonic distortion, distortion factor and ripple. It features auto ranging and auto-zeroing and has a built-in three-phase adapter for power measurements.

This battery-operated precision power meter can transmit both stored and live measurements to a PC running AVO PowerLog software for further analysis if required. The DCM2000P is ideally suited to measure mains power quality and applications in the development, installation, maintenance and repair of equipment and devices used in power electronics and power engineering. It simplifies the compensation of reactive power, even for complex waveforms with high harmonic distortion.

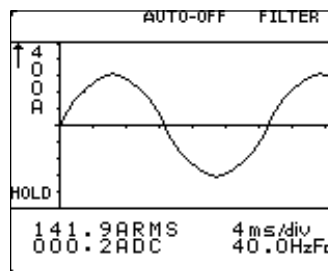


Multi-Parameter Simultaneous Display

Measurement Techniques

Voltages may be measured using the test leads supplied while current measurement is effected by simply clamping the jaws around the appropriate conductor.

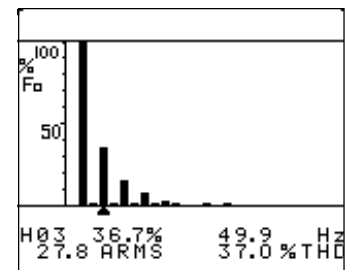
Where power measurements are to be made, both techniques above are performed simultaneously. The DCM2000P measures true power, apparent power, reactive power, and power factor.



Oscilloscope Display

Oscilloscope/Harmonics Function

Measured signals may be displayed graphically to indicate wave shape and distortion. Alternatively, by pressing a single key, the harmonic content of the signal, up to the 25th harmonic can be displayed.



Harmonics Display

Measurement Technology

The DCM 2000P utilizes a Hall effect sensor for accurate measurements. The magnetic circuit comprises the two jaws and a gap which provides a concentration of the magnetic flux at the Hall generator. The overall geometry of the jaws and the gap has been designed such that the measured value is not affected by an off-center position of the conductor.

The magnetic characteristics of the material used in the jaw tolerate overload currents up to 10,000 A without causing any disturbing residual magnetism. A highly linear electric/magnetic conversion is performed by the

magnetic circuit, and a subsequent, equally linear, magnetic/electric conversion by the Hall generator. A voltage is generated which is a true image of the measured current, no matter whether the current is dc, ac, pulsed, mixed or of a complex waveform. External magnetic fields have little or no effect on the accuracy of the DCM2000P.

Safety

For enhanced safety in hazardous environments such as incoming supplies for commercial premises the DCM2000P has been designed to be safe to use on supplies rated up to IEC 61010

Installation Category IV 600V or Category III 750V.

Data Logging

The DCM 2000P may be used to perform data logging to its internal non-volatile memory, or in real time to a serially connected PC running the optional AVO PowerLog software. In PC mode data is continually sent to the PC and is not stored in the instrument's memory. All the parameters shown on the display are logged. When internal logging is selected, up to 5000 readings may be stored, (2500 sets of two or 1000 sets of 5 parameters). The maximum logging period is determined by the memory capacity and the battery life (24 hours in this mode). A chart display screen is also available to show the variation of a single parameter during the logging period.

APPLICATIONS

The DCM2000P is the ideal on-site test tool for the diagnostics, maintenance and commissioning of modern power electronics equipment including motor drives, electric vehicles, power supplies and welding equipment. The measurement power of the DCM2000P also satisfies the needs of applications in the electricity supply industry, (ESI), automotive diagnostics and electrochemical plant.

The instrument can be used for measuring high-voltage currents and the ripple of power supplies. Typical applications also include the analysis of current distribution in multiple grid systems, the determination of peak demand in current networks and the measurement of the battery supply current in uninterruptible power supplies (UPS).

Due to the increasing use of non-linear loads such as computers, switch-mode power supplies, variable speed drives and energy-saving lamps, mains supplies are becoming more and more polluted by harmonics, which can cause malfunctions or even breakdowns to

certain devices. Three-phase mains with unbalanced loads as well as capacitive or inductive loads can also cause problems.

The DCM2000P is ideally suited to measuring mains power quality and applications in the development, installation, maintenance and repair of equipment and devices used in power electronics and power engineering. It simplifies the compensation of reactive power, even for complex waveforms with high harmonic distortion.

Specific Applications Sectors

- **Energy Management** - Determining power consumption and power factor measurements. Energy costs can be reduced through power factor correction and limiting peak demand. Peak demand can be identified through datalogging over a 24-hour period, other important power parameters can be monitored and displayed simultaneously.

- **Power Quality Consultancy** - Harmonics generated by modern power electronics equipment can result in overheating and circuit breakers tripping out. The DCM2000P is the ideal tool for identifying these problems and recording them. The optional PowerLog software allows further analysis and simplifies report writing with its comprehensive graphics and data export facilities.

- **Service, Installation and Maintenance** of electrical plant and equipment. The ease of use and comprehensive functionality make the DCM2000P the ideal trouble-shooting tool. Combining the features of clamp-on multimeter, power meter, scope, recorder and harmonics analyzer, the instrument replaces several tools in one easy to use package.

- **Power Electronics Development** - The DCM2000P provides the functionality required for initial test measurement and recording of key electrical parameters (UPS, welding equipment, lighting systems).

FEATURES AND BENEFITS

- True RMS guarantees accuracy of measurements.
- Backlit display aids viewing in low ambient lighting conditions.
- Multi-parameter display allows simultaneous measurement and logging of five parameters.
- Internal data logging of up to 5 parameters and PC connectivity allow analysis without the need for additional on-site equipment

- Smart Save feature allows the capture of both harmonics (up to 25th) and associated waveform at once, and access to individual harmonic values on a saved screen.

- Real-time chart mode permits traces be graphed in real time and monitors parameter during measurement.

- 5000-location memory can log multiple parameters without compromising storage capacity.

- Stores up to eight separate waveforms for later recall.

SPECIFICATIONS

Power

6x 1.5 V alkaline MN1500, IEC LR6 or equivalent

Communications

RS232 via special lead supplied with PowerLog

Standards and Approvals

Complies with the latest international directives concerning safety and electromagnetic compatibility

- European low voltage directive 73/23/EEC and 93/68/EEC

- European EMC Directive 89/336/EEC and 93/68/EEC

- Submitted for approval to UL 3111-1

Safety Standards

- IEC 1010-1-1992

- EN 61010-1 1992-09 safety requirements for electrical equipment for measurement, control, and laboratory use.

- Part 2-032: 1994-12 particular requirements for hand-held current clamps for electrical measurement and test.

- Part 2-031 1993-02 particular requirements for hand-held probe assemblies for electrical measurement and test.

- 600V Cat IV (750V Cat III) Pollution Degree 2.

Electromagnetic Compatibility

- RF Susceptibility

- Complies with BSEN50082-1-1992 3V/m residential, commercial and light industry

- RF Emission

- Complies with BSEN 50081-1-1992

- Residential, commercial and light industry

- FCC Part 15 Class B

Dimensions

2 H x 12 L x 3.75 D in.
(52 H x 300 L x 98 D mm)

Weight

1.8 lbs (820g)

OPTIONAL ACCESSORIES

PowerLog

The optional PowerLog interface and software package allows data logging directly to a PC and simple transmission of stored data for further analysis and archiving.

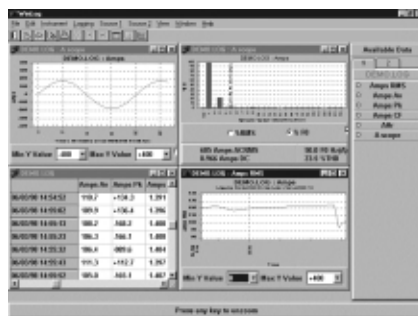
In addition to logging up to five parameters at a time, it is also possible to log waveforms and harmonics screens together with total harmonic distortion values. This ensures fast identification and quantification of intermittent harmonics problems.

The DCM2000P and PowerLog have been designed for ease of use with Quick Log functions and simple data download of saved screens and internally logged data. Data presentation is

in chart or table format for quick identification and analysis of trends. For report preparation, graphics and data can be easily exported into other applications.

PowerLog Key Features

When used with the DCM2000P, PowerLog exhibits the following key features:



PowerLog Chart Table and Harmonics Mode

- Easy to use Windows® format
- Data presentation in display mimic
- Table and chart modes
- Waveform and data download
- Harmonic analysis of waveforms
- Logging of up to five parameters

PowerLog System Requirements:

The minimum PC configuration to run PowerLog is as follows:

- 486-66MHz processor
 - 8 MB Ram
 - 5 MB hard disk free space
 - Microsoft® Windows 3.1x, 95 or NT
- PowerLog is supplied complete with serial communications lead.

ADDITIONAL SPECIFICATIONS

Feature	DCM2000P	Accuracy	Resolution
Jaw Capacity	60 mm ϕ		
Measurement modes	ac/dc, ac + dc		
TRMS	•		
A Ranges (autoranging)	40/400/2000 A	$\pm 1.5\%$ rdg. ± 5 dgts	0.01/0.1/1 A
V Ranges (autoranging)	4/40/400/750 V	$\pm 1\%$ rdg. ± 5 dgts	0.001/0.01/0.1/1 V
kW/kVA Ranges (autoranging)	4/40/400/1200 kW/kVA	$\pm 2.5\%$ rdg. ± 5 dgts	0.001/0.01/0.1/1 kW
kVAR Range (autoranging)	4/40/30/850 kVAR	$\pm 2.5\%$ rdg. ± 5 dgts	0.001/0.01/0.1/1 kW
kWH (autoranging)	4/40/400/4000/40,000 kWH	$\pm 0.5\%$ rdg. (40 to 70 Hz)	0.001/0.01/0.1/1/10 kWH
Frequency	10 Hz to 1 kHz	$\pm 3\%$ rdg. ± 5 dgts	0.1 Hz
Crest Factor	1 to 5	$\pm 3\%$ rdg. ± 5 dgts (CF 1-3) $\pm 5\%$ rdg. ± 5 dgts (CF 3-5)	0.01
Total Harmonic Distortion	1% to 600%	$\pm 3\%$ rdg. ± 5 dgts (1-99) $\pm 5\%$ rdg. ± 5 dgts (100-600)	0.1%
Distortion Factor	1% to 100%	$\pm 3\%$ rdg. ± 5 dgts	0.1%
Harmonics Bargraph	•		
Smart Save	•		
Ripple	•		
Peak, Average	•		
REC, Min, Max, Av.	•		
Memory	•		
Digital Output	8 screens		
Logging	•		
Chart Mode	Int/ext 5,000 rdgs.		
Oscilloscope Mode	•		
Multi-parameter Display	2/4/20/50 ms/div		
Backlight	Up to 5		
3-phase Capability	•		
PowerLog Compatibility	•		
Maximum Overload	•		
Safety BSEN 61010	10,000 A 600 V Cat IV, 750 V Cat. III		