

# HARMONICS & FLICKER ANALYSER

AC2000

## Full IEC61000-3-2 and IEC61000-3-3 compliance test system

- ▼ Full compliance with IEC61000-3-2 standard when used with AC1000 power source
- ▼ Fully compliant IEC61000-3-3 flicker measurement
- ▼ Exceptionally simple and fast measurements.  
The AC2000 does all the thinking for you!



**Comprehensive** The AC2000 is not only a compliant harmonics analyser and flickermeter, it is also a powerful mains power meter and in-rush current meter, with a wide selection of display modes, including tabular, graphical and bargraph.

**Confidence** The AC2000 is a no-compromise compliance test instrument. All the subtleties of IEC61000-3-2 are built into the firmware, including automatic class A/D selection against the current waveform.

**Compliance** The AC2000 Flickermeter option measures  $P_{st}$  and  $P_{lf}$  in accordance with IEC61000-3-3.

**Convenience** The AC2000 is a completely self contained instrument. Just switch on and take the measurements. The display gives clear indication of the pass/fail states of the test.

European requirements for EMC compliance now include limits for any harmonics and flicker imposed on the mains supply by the product. Modern power supplies for many electronic products draw current from the supply in a very non-sinusoidal manner thus creating high harmonic levels which affect the efficiency and quality of the mains supply.

IEC61000-3-2 (harmonics) and IEC61000-3-3 (flicker) define the test methods and allowable limits. For harmonic measurements the standard also defines a pure (harmonic free) power source.

The AC2000 Harmonics & Flicker analyser fully complies with these measurement standards and enables test laboratory grade measurements to be made quickly and simply. For loads up to 1kW, the optional AC1000 power source provides the harmonic-free source to fully meet all the requirements of the harmonic standards.



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## Features

### High performance Power Analyser

Mains voltage (rms & peak) and harmonic content. Load power (kW, VA), Amps rms, Amps peak, crest factors, THD, phase angle, Power factor, waveshape & Frequency.

### Compliance-quality Harmonics Analyser

All harmonics up to 40th.  
Absolute and percent fundamental.  
Real time measurements.  
Classes A, B, C and D evaluation.  
Auto selection of class A/D based on current waveshape.  
Display of standard limit values and comparison of results with limits.  
Simple Pass/fail indication.  
User control of all test parameters.

### Inrush current up to 425A.

### Compliance quality Flickermeter

Display of PU (instantaneous perception),  $P_{st}$  and  $P_{it}$  values.  
Flicker severity evaluation according to EN60868-0.

### General

Self contained unit.  
Optional PC interface.  
Output for printer and PC.  
Separate load power and instrument power inputs.

### LCD display features:

All test control parameters.  
Power meter screen.  
Graphical voltage and current waveshape display.  
Harmonic presentation either bargraph, tabular, chart recorder or compliance.

## Compliance

For precise harmonics measurements to IEC61000-3-2 the mains supply must have very low harmonic content. This requirement is very seldom met by the 'normal' mains so a separate, clean supply is required for true compliance measurements. The Laplace AC1000 provides this mains supply for loads up to 1kW. The harmonic content of the AC1000 output is well within the requirements of the IEC standard when used with typical mains supplies.

## Flicker

Flicker measurements are required for products that rapidly switch loads on the mains supply thus causing fluctuations of the mains voltage. A typical example would be a heating system that used a 'burst fire' technique for power control. Such products need to be tested for compliance.

The Flicker option (AC2000/PC) includes software that is downloaded into the analyser via a PC. This produces a fully compliant Flickermeter for the assessment of flicker compliance.

## Specification

### Performance standards:

IEC61000-3-2	Harmonics analysis.
IEC61000-3-3	Flickermeter.
EN60868	Flicker evaluation.

### Mains analyser

Current rating	16A rms continuous, or national connector rating, whichever is lower
Voltage ranges	115V ( $\pm 200V$ pk), 230V ( $\pm 400V$ pk)
Current ranges	$\pm 24mA$ to $\pm 400A$ pk in fifteen ranges
Frequency	45 – 66Hz
Shunt resistance	3mohm
Sampling rate	300 samples per second
Basic accuracy	<0.2%
Monitor outputs	Re-constructed Voltage and Current signals

### Harmonics analyser

Measurements	Fundamental to 40th harmonic
Basic accuracy	Better than 5% of limit or 0.2% of selected range, whichever is the greater
Display modes	Numeric readout of parameters Graphical waveform display with accumulate and max. hold modes and class mask. Tabular and histogram harmonics display with absolute and percent limit scales

### Flickermeter (Option)

Measurements	$P_{st}$ and $P_{it}$ to EN60868 and IEC61000-3-3
Voltage ranges	115V ( $\pm 200V$ pk), 230V ( $\pm 400V$ pk)
Current ranges	$\pm 24mA$ to $\pm 400A$ pk in fifteen ranges
Frequency	45 – 66Hz
Shunt resistance	3mohm
Sampling rate	300 samples per second

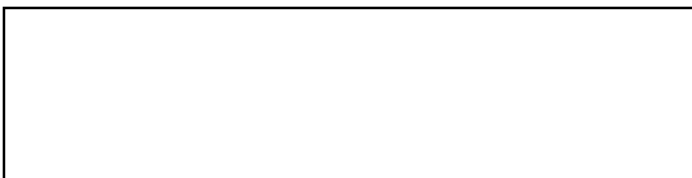
### General

Display	320 x 240 pixel backlit LCD
Interfaces	Parallel printer, RS-232, Optional IEEE488
Instrument supply	Separate from EUT supply 230V or 115V $\pm 14\%$ , 48 - 65Hz
Operating range	+5 to +40 °C, 20 - 80% RH
Storage range	-10 to +60 °C
Dimensions	305 x 148 x 220mm (W x H x D)
Weight	4.2kg
Safety	Complies with EN61010-1
EMC Compliance	Complies with EN61326-1

## Ordering Information

Order code:	Includes:
<b>AC1000</b>	Power cable, User manual
<b>AC2000</b>	Load and instrument power cables, User manual
<b>AC2000/PC</b>	Flickermeter software (disk), Serial interface cable

Available from:



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