



- Measures power, voltage, current, phase angle etc.
- 320 x 240 pixel high-contrast display
- Tabular and histogram display of harmonics
- Wide range of national power connectors available
- Voltage and current waveform displays
- Parallel printer and RS232 and USB interfaces
- Continuous analysis with real-time graphical update
- PC control and documentation software supplied
- Compliance quality measurements to EN61000-3-2/-3
- Optional low-distortion 1kW AC power source (7171)

### DESCRIPTION

The 7170 is a fast, easy to use mains and harmonics analyser with a large and high resolution graphical display, capable of continuous real-time analysis. It is intended primarily as a dedicated harmonics and flicker analyser for compliance quality measurements, but it can also be used as a general purpose mains analyser.

The unit is available with range of power connectors to suit different national standards. A printer interface is included for record keeping and archiving, along with both RS-232 and USB interfaces for PC connectivity.

A Windows based software is supplied with the module which assists users in taking routine compliance measurements and archiving the results. It can communicate with the instrument through either an RS-232 or a USB connection.

### 7171 Low Distortion 1kW Power Source Module

To complement the 7170 a low distortion 1kW AC power source module (7171) can be fitted in the CalBench. The 7171 is an innovative, low cost, pure power source designed specifically for use with a harmonics analyser such as the 7170.

It permits compliance quality measurements to EN61000-3-2 in situations where the quality of the AC supply is poor or variable.



# 7170 Specifications

## TECHNICAL SPECIFICATIONS

### MAINS ANALYSER

Measurement Circuit: Single Phase with standard mains connector.  
Current Rating: 16A rms continuous, or national connector rating if lower.  
Voltage Ranges: 115V ( $\pm 200V$  pk) 230V ( $\pm 400V$  pk).  
Current Ranges:  $\pm 24mA$  pk to  $\pm 400A$  pk in fifteen 2:1 ranges.  
Frequency Range: 45 - 66 Hz.  
Shunt Resistance: 3mOhms.  
Sampling Rate: 300 points per cycle.  
Basic Accuracy:  $<0.2\% \pm 1mA$ , up to 16A.  
Measured Parameters: Vrms, Vpk, Arms, Apk, Crest factors, THD, W, VA, Power factor, Frequency, Inrush current.  
Monitor Outputs: Re-constructed Voltage and Current Signals.

### HARMONICS ANALYSER

Measurements: 1st harmonic to 40th harmonic.  
Measurement processing for both 1995 and 2000 Editions of EN61000-3-2. Continuous calculation, analysis and assessment of unfiltered, filtered, average, minimum and maximum current harmonic levels and limits. Continuous measurement and assessment of supply waveform and harmonics.  
Current Rating: 16A rms continuous, or national connector rating if lower.  
Voltage Ranges: 115V ( $\pm 200V$  pk) 230V ( $\pm 400V$  pk).  
Current Ranges:  $\pm 24mA$  pk to  $\pm 400A$  pk in fifteen 2:1 ranges.  
Frequency Range: 45 - 66 Hz.  
Shunt Resistance: 3mOhms.  
Transforms Window: Continuous 4, 10, 12 or 16 cycle Discrete Fourier Transforms.  
Basic Accuracy: Better than 5% of limit or 0.2% of selected range whichever is the greater.  
Display Modes: Display of load supply assessment for voltage, harmonics, crest limits and frequency against requirements of EN61000-3-2. Histogram or tabular display of supply voltage harmonics. Histogram display of current harmonics with limits, Min. hold, Max. hold & percentage of limit display options. Tabular display of current harmonics showing present values, limits, average values, average as percent of limit, maximum values, maximum as percent of limit and pass or fail assessment for each harmonic.  
Test Control: Untimed, manually timed or automatically timed tests; user-defined test time. Limits automatically determined from EN61000-3-2 for appropriate class; Class C and Class D limits can be automatically calculated from power measurements or from ratings declared by the user. Minimum and maximum power thresholds for limits can be changed by the user. Facility for declaring supply voltages other than 230V and deriving appropriate limits. Facility for inseting test limits.  
Report Printing: Direct printer connection for hard-copy report with user-entered narrative, supply voltage assessment and current harmonic analysis and assessment.

### VOLTAGE FLUCTUATIONS & FLICKER METER

Measurement: Voltage fluctuations dmax, dc, d(t) and flicker Pst and Plt to EN61000-3-3 and EN61000-4-5.  
Current Rating: 16A rms continuous, or national connector rating if lower.  
Voltage Ranges: 115V ( $\pm 200V$  pk) 230V ( $\pm 400V$  pk).  
Fluctuation Range: 25% max. (relative to nominal voltage)  
Flickermeter Range: Voltage change up to 20% (sinewave change) or 10% (low repetition rate rectangular change) relative to AGC level. Equivalent to 6400 pu on 8.8 Hz sinewave.  
Flickermeter AGC: Up to  $\pm 5\%$ .  
Flickermeter Accuracy: Better than 5% for Pst range 0.7 to 10.0.  
Frequency Range: 50 or 60 Hz (operates over 43 - 67 Hz).  
Report Printing: Tabular listing of voltage variations, Pst classifier and Pst in each Plt interval.

## 7171 SPECIFICATIONS

Input Voltage: Factory set to 230V, 115V or 100V; 50Hz or 60Hz. Installation Category II.  
Supply Tolerances: 230V setting : 198V - 253V, 115V setting: 99V - 127V,  
100V setting: 90V - 110V. 50Hz setting:  $\pm 0.5Hz$ , 60Hz setting:  $\pm 0.6Hz$   
Output Voltage: Tracks the amplitude of the fundamental of the input voltage. A variable voltage input may be used to adjust the output voltage to within the limits specified by EN61000-3-2.  
Output Distortion: Dependent on the purity of the input but will generally meet the requirements of EN61000-3-2.  
Output Current: Maximum continuous output current is 4.4A.  
Output Power: Maximum output power is input voltage x 4.4 VA  
Input Connection: IEC connector; front panel switch.  
Output Connection: U.K., Schuko, or other national outlet sockets. Load power switch can be set to DIRECT or CORRECTED for 'A-B' comparisons.  
Protection: Thermal trip automatically diverts load to a DIRECT connection in the event of thermal overload.

## GENERAL SPECIFICATIONS / ORDERING INFORMATION

Display: 320 x 240 pixel backlit LCD.  
Interfaces: Parallel Printer, RS-232, USB.  
Module Width: 400mm (800mm when ordered together), primary console fitting only  
Safety: Complies with EN61010-1  
EMC Compliance: Complies with EN61326-1

Ordering Information: **7170 Mains and Harmonics Analyser Module**  
**7171 Low Distortion 1kW Power Source Module**

Due to continuous development Time Electronics reserves the right to change specifications without prior notice.

Time Electronics Ltd, Unit 11 Sovereign Way, Botany Industrial Estate, Tonbridge, Kent, TN9 1RH. United Kingdom.

T: +44 (0) 1732 355993 F: +44 (0) 1732 770312 E: [mail@timeelectronics.co.uk](mailto:mail@timeelectronics.co.uk)

[www.timeelectronics.com](http://www.timeelectronics.com)

v1a 28/3/13