

## PRODUCT OVERVIEW

The Elgar European Standards Tester (EST) is a complete solution for harmonics and flicker emissions compliance testing. The system is controlled through a Windows® 95/98 or NT User Interface which has been designed for ease of use, the highest data analyzing integrity and powerful test report generation. Data analysis displays include power analysis measurement and unique graphs that assist in troubleshooting your equipment.

## INTEGRATED EST SYSTEM

The EST system incorporates Elgar's powerful SmartWave AC Power Source (SWAE) and the PA 1000 Analyzer with proprietary applications software to deliver the most accurate harmonic and flicker compliance testing analysis and reporting. It also can be used as a stand alone power analyzer.

## FEATURES AND BENEFITS

- SmartWave SWAE AC Power Source with low impedance, 1750 VA, 3700 VA (16A at 230 VAC out) or 5250 VA single phase output power
- DSP based PA 1000 Analyzer for harmonics and flicker analysis and power measurements
- User interface software with comprehensive diagnostics, displays, and report generator ready to operate with other applications in any Windows® 95/98 or NT environment
- Optional Discrete Reference Impedance

The Elgar European Standard Tester (EST) was designed for quick set-up, flexibility and strict compliance to the standards. Incorporating these features into the EST offers users many advantages including:

- **Wizard Set-Up Screens:** Guide the user through the set-up process using a standard Wizard format



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- **On-line Context Sensitive Help:** Quickly helps the user configure any test with little or no test experience, using such tools as an on-line manual, tool-tips and a "what is this?" button
- **Flexible User Interface:** Displays test data in graphical and tabular forms
- **Unique Analysis Displays:** Helps the user efficiently troubleshoot the equipment under test
- **Reporting with Tables and Charts:** Prints standard short and long form reports
- **Data Integrity:** Constant self-test and self-monitoring ensures "no gaps or overlaps" as required in EN 61000-3-2 Annex B.4.2, paragraph A.
- **Compliant AC Source:** The output of the SWAE is monitored to ensure it meets the AC source requirements.
- **Immunity Testing:** The SWAE generates waveforms required by EN 61000-4-13,-4-14,-4-28, 4-17, and pre-compliance only for 4-11

Elgar has designed the European Standards Tester (EST) for maximum versatility and ease of use. The systems are completely integrated for quick start-up and short operator learning curves. User friendly features like automatic class A/D

test selection eliminate confusion and speed testing. All of these systems and their components are backed by Elgar's 35 year commitment to supplying optimum AC test power solutions.

## THE EUROPEAN STANDARDS TESTER (EST) IS IDEAL FOR:

**Testing Services** requiring simple operation with high throughput test capability for certifying product compliance to European standards

**Manufacturers** requiring programmable AC power test equipment for certifying compliance to European standards

**Development Laboratories** requiring versatile programmable AC power test equipment for harmonic and flicker measurement as well as custom waveform generation

**System Integrators** who are required to prove compliance for complete systems



**PA 1000**

Unique among analyzer systems, the EST Series PA 1000 performs all measurements and real-time digital signal processing. The PC is only used to display the User Interface which provides control of the equipment. Other key features of the analyzer are:

- Sampling rate of 175,000 samples/s
- 18 bit A-to-D converters
- 24 bit/80 MIPS real-time DSP
- Optional Discrete Reference Impedance
- No range switching required to measure the full 16 amp range
- Continuous AC power source monitoring
- Front or rear panel EUT power connections
- Flickermeter complies with EN 868 and EN 61000-4-15
- 1 year calibration interval

The PA 1000 offers full compliance with on-board, self contained, computation. The PA 1000 digital signal processor performs all computations including filtering, weighing, FFT's and DFT's.

**SET-UP**

Simple start-up windows provide easy test set-up fields and EST system control. Each test configuration can be rerun from the test template screen and is stored as part of a test log history file. Class selection includes A, B, C and D and an auto A/D feature that enables the analyzer to classify the equipment during the test. All data is exportable to spreadsheet applications.

**HARMONICS (EN 61000-3-2)**

The harmonics graphs and tables are updated continuously during the test. The harmonic bar chart displays the harmonic content of the EUT as well as displaying the limit for each harmonic specified by the standard. Absolute and relative harmonic measurements can be displayed simultaneously. Worst case measurements are stored throughout the test and displayed with pass/fail designation.

The PA 1000 meets the exact requirements of the EN 61000-3-2, as described in Annex B.4.2.

**Annex B.4.2 Additional requirements for all other cases, including fluctuating harmonics**

*a) There shall be no gap, and no overlapping between successive measuring windows for rectangular ("uniform") windows.*

**FLICKER (EN 61000-3-3)**

Pt plot displays the distribution of instantaneous flicker values. An innovative dt distribution graph assists the user in troubleshooting the equipment under test. This plot displays the distribution of voltage deviations.

**IMMUNITY TESTING**

The EST's AC source generates waveforms compliant with the following immunity test standards:

- EN 61000-4-11 Voltage Dips, Short Interruptions and Voltage Variations (Pre-Compliance)
- EN 61000-4-13 Harmonics, Interharmonics including Mains Signaling at AC Powerport – Immunity Test
- EN 61000-4-14 Voltage Fluctuation – Immunity Test
- EN 61000-4-17 Ripple on DC Input Power Port – Immunity Test
- EN 61000-4-28 Variation of the Power Frequency - Immunity Test

The EST's User Interface includes test routines for each of these immunity tests. The tests can be executed following a simple wizard format. All test parameters can be changed. During all immunity tests three charts are plotted continually (plot points updated every 1.5 seconds, user adjustable) for frequency, VRMS and IRMS.

The short form report contains pass/fail, calibration data and test configuration (the minimum information typically required by regulatory agencies).

Sampling data is provided for harmonics and flicker, worst case values, and other data that is useful for troubleshooting and maintaining historical records for equipment designers.

**IMMUNITY TEST REPORTS**

Reports are also generated for the immunity tests. After each test sequence is run a note pad screen is automatically generated. This note pad stores the operator's comments and observations for each sequence. These notes are automatically logged in the test report in the test and sequence order. Reports also contain all test configuration data fields.

Reports and all test data may be downloaded for spreadsheet applications for maximum user versatility.

*Note: For more information on the SWAE see page 15.*

Ordering Information		
Model	Output Power Rating	AC Input
EST 1750-1	1750 VA <sup>1</sup>	187-264 VRMS (L-L), 3 wire
EST 1750-2	1750 VA <sup>1</sup>	342-457 VRMS (L-L), 4 wire
EST 1750-3*	1750 VA <sup>1</sup>	187-264 VRMS (L-L), 3 wire
EST 1750-4*	1750 VA <sup>1</sup>	342-457 VRMS (L-L), 4 wire
		230 V L-N, Single Phase, 3 wire
EST 3700-1	3700 VA <sup>2</sup>	187-264 VRMS (L-L), 3 wire
EST 3700-2	3700 VA <sup>2</sup>	342-457 VRMS (L-L), 4 wire
EST 3700-3*	3700 VA <sup>2</sup>	187-264 VRMS (L-L), 3 wire
EST 3700-4*	3700 VA <sup>2</sup>	342-457 VRMS (L-L), 4 wire
		230 V L-N, Single Phase, 3 wire
EST 5250-1	5250 VA <sup>3</sup>	187-264 VRMS (L-L), 3 wire
EST 5250-2	5250 VA <sup>3</sup>	342-457 VRMS (L-L), 4 wire
EST 5250-3*	5250 VA <sup>3</sup>	187-264 VRMS (L-L), 3 wire
EST 5250-4*	5250 VA <sup>3</sup>	342-457 VRMS (L-L), 4 wire
		230 V L-N, Single Phase, 3 wire

\* Power factor corrected <sup>1</sup> 1495 VA at 230V output <sup>2</sup> 3680 VA at 230V output <sup>3</sup> 4485 VA at 230V output  
Any model can be ordered with the optional discrete reference impedance in addition to the standard synthesized impedance.