

## smartEDDY® 4.0 Laboratory Instruments



*Laboratory instrument.*

SE Systems' smartEDDY Laboratory Instruments are designed for use in research and quality assurance laboratories, or other environments suitable for a PC. There is no other eddy-current test instrument that can be used as easily to produce reports, make QA records and analyze material so completely as smartEDDY. No other instrument has the programming flexibility and can operate over as wide a test frequency range. And, smartEDDY delivers all this at a very reasonable price.

### Features

smartEDDY Laboratory Instruments are comprised of smartEDDY 4.0 instrument modules, smartEDDY Test and/or Measurement Software, sensor and an industrial rack mount PC. The instrument can be programmed to perform a wide range of eddy-current test functions.

The Test Software can be programmed to detect flaws, make complex "accept/reject" decisions and check if the test is working properly. Processed eddy-current data can be displayed vs. other eddy-current metrics or vs. time.

Measurement Software can be programmed to provide a numeric measure of material parameters such as hardness, case depth, conductivity, permeability, wall thickness, coating thickness, etc.

#### ► Broad Test-Frequency Range

The smartEDDY user can select any test frequency from 0 Hz to 25 MHz. Low frequencies provide deep penetration, i.e., a 1 Hz test can penetrate over 3 inches of aluminum; while high frequencies provide sensitivity to very small parts and flaws, i.e., a 25 MHz test can inspect fine wires and tubes only a few thousandths of an inch in diameter.

#### ► Communication with Windows Application Software

These Laboratory Instruments include a Microsoft Windows™ operating system. Professional reports, such as integral data displays, can be generated with the addition of applications software. Additionally, custom metrics of the response can be displayed in various forms while advanced statistical or other analyses can be performed using spreadsheet software. Data, set-ups, reports and analyzes can be stored on the local hard drive, floppy disks or CD drive. With a network card, the information can be transferred to a network.

#### ► Easy Test Programming

No dials or switches are used to set up the test. All tests are programmed from the keyboard. Critical hardware, data processing, display and decision parameters are selected from an on-screen menu.

The test set-up parameters can be stored internally and automatically loaded when the instrument is turned on. Any number of other test set-ups can be stored for future use.

#### ► Advanced Real-Time Data Processing

SmartEDDY performs advanced real-time data analysis to provide maximum flaw discrimination and accurate measurement of material parameters. This outperforms typical eddy-current instruments that simply produce and respond to raw voltages.

Test Software provides up to 8 measures of the response that can be programmed and viewed simultaneously. Measurement Software allows 2-D and 4-D vector analysis to be used to measure material parameters.

## smartEDDY Test Software

Laboratory smartEDDY instruments include various combinations of standard test software, advanced test software and measurement software.

### ► Standard 4.0 Test Software

**Standard test software includes:**

- 16 bit data
- Auto store to RAM
- 8 use-defined metrics
- High-pass digital filters (four-pole)
- Low-pass digital filters (four-pole)
- Real-time vector analysis
- Magnification to 100,000X
- Learn functions
- LAC (lift off amplitude correction)
- CPANS (continuous phase angle noise suppression)
- Data Replay
- Manual parameter store & retrieve
- Manual data store & retrieve
- Insert data to ASCII file
- Voltage plane display
- Cartesian/time display
- Split Screen display

### ► Advanced 4.0 Test Software

Advanced test software includes important enhancements to the standard software.

- Auto data store to disk
- Auto defect data store to disk
- Parametric analysis
- ASCII file generator
- Polar/time display
- Cartesian frequency scan display
- Advanced input control

### ► Measurement Software

Measurement software can be used to measure material properties quickly and accurately without destroying or even touching the part. Software has three major elements:

- Set-up
- Calibration
- Measurement

Numeric measurements are stored in an ASCII format and can be imported into spreadsheets for further analysis.

### ► Hardware Test Parameters

The user as part of a test set-up can program the hardware parameters below.

- Frequency (0 Hz to 25 MHz)
- Gain (1 to 16)
- Drive level (0 to 5 volts)
- Data rates (10 to 15,000 dp/s)
- Impedance or reflectance modes
- Independent channels, multi-frequency, absolute/differential

### ► Laboratory Instrument Models

Models include one and two channel/frequency instruments with standard and advanced test and measurement software.

#### SE 4.0-LTI

*Laboratory Test Instrument*

- Desktop PC with Windows
- Single channel instrument module
- Standard 4.0 test software

#### SE 4.0-LTP

*Laboratory Test Instrument Plus*

- Desktop PC with Windows
- Single channel instrument module
- Advanced 4.0 test software
- 2-D measurement software

#### SE 4.0-LFD

*Laboratory 4-D Test Instrument*

- Desktop PC with Windows
- Dual channel/frequency instrument module
- Standard 4.0 test software

#### SE 4.0-LFDP

*Laboratory 4-D Test Instrument Plus*

- Desktop PC with Windows
- Dual channel/frequency instrument module
- Advanced 4.0 test software
- 4-D measurement software

#### SE 4.0-LMI

*Measurement Instrument*

- Desktop PC with Windows
- Single channel instrument module
- 2-D measurement software

#### SE 4.0-LFDMI

*Four D Vector Measurement Instrument*

- Desktop PC with Windows
- Dual channel/frequency instrument module
- 4-D measurement software

### ► Laboratory Instrument Options

#### SE 4.0-LNE

- NEMA 12 Enclosure with keyboard drawer

#### SE 4.0-RIO

- I/O card with 8 digital inputs and 8 relay outputs. (3A @125V resistive load)

#### SE 4.0-SSIO

- I/O card with 8 digital inputs and 8 sinking outputs. ( $V_0 < 1V @ 25mA$ )

***Other options are available on request including an office suite of applications software and up to 32 channel/frequency instruments.***

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