CI 1000
The Complete Answer for Controlled Impedance Testing

introbotix
Innovating High Frequency Test Solutions
The CI1000 Robotic Controlled Impedance Tester

The CI1000 from Introbotix is the perfect testing and reporting solution for boards, coupons, prototypes and 100% testing of batch jobs. The CI1000 is an easy to learn and operate system that includes computer guidance software, test results storage, test failure alerts with results reporting locally or over a network. The CI1000 is compliant with the following test standards:

- IPC TM-650 2.5.5.7 (IPC-2141)
- Intel (Rambus) PCB Test Methodology
- IEC 326-3 (IEC 61188) Controlled Impedance

**Run-Test capability** Run-Test capability is used for quick and simple runs. The tester delivers numerical impedance results.

**Run and Config capability** Run and Config capability enables a standard or custom test specification with guided steps or imported CAD/CAM file. Propagation Delay and TDR waveform data collection can be selected. Test coupons (pre-routed or in-panel), panels, or individual boards can all be accommodated.

**Differential Measurements** are provided by the simultaneous generation of coupled TDR pulses. This simple, very effective technique provides true differential measurement. The probe calibration procedure eliminates probe-induced errors.

**Measurement Automation** accuracy is ensured by taking up to eight (8) measurements per test point. Automatic fault detection eliminates false data production. Measurement automation ensures a very repeatable measurement process.

**Intranet Network Support** provides access to the test database, all reports and results and the WaveView viewer. CAD/CAM data can be downloaded to the CI1000™ to set up the computer guidance screen and set all test parameters. Report Writer and WaveView screens can be viewed and sent through your network.

**CI1000 Test Results** All test results are stored in a relational database for local or remote access. The test results can be correlated by: Time of tests, Test operator, Location of tests, Customer, In-process or final, Serial number, Test facility, Job or work order and TDR Waveform Viewer™

**CI1000 Test Suites** Single-ended and Differential Measurements for: Mean/Min/Max Impedance, Propagation Delay & Velocity, Effective Dielectric Constant (Er), Interconnect Loss (Equivalent Bandwidth -3db), and TDR Waveforms.
CI1000 Features

CI1000 Waveform Viewer™ (Waveform Capture)

TDR waveforms can be captured for each test point, viewed off-line, and sent electronically to your engineers or customers. The WaveView viewer allows easy selection of the impedance measurement zone and dynamically recalculates impedance for each selected zone. The viewer displays controlled impedance, propagation delay, and dielectric constant information for each trace. End and midpoint VIA affects are displayed and a dynamic cursor provides readouts of impedance along the entire trace. Printouts can be produced for documentation purposes.

CI1000 Test Results

All test results are stored in a relational database for local or remote access. The test results can be correlated by:

- Time of tests, Test operator, Location of tests, Customer, In-process or final, Serial number, Test facility, Job or work order
- TDR Waveform Viewer

CI1000 Test Suites

Single-ended and Differential Measurements for:

- Mean/Min/Max Impedance
-Propagation Delay & Velocity
-Effective Dielectric Constant (Er)
-Interconnect Loss (Equivalent Bandwidth -3db)
-TDR Waveforms
-Prompts operator (download CAD/CAM files, computer guidance, network access to results, and more)

HFT Report Writer

Reports can be generated locally or sent over the net. Extensive data sorting capability is provided to support process analysis. Hardcopy printouts and electronic outputs are available in the following formats:

- Word, Excel, Adobe Acrobat (.pdf), Rich Text Format (.rtf)

CI1000 Probe Tips

Introbotix patented probe tips are rugged and have extremely high-performance electrical characteristics. The 35 psec rise and 50 psec fall times give trace resolution as short as 1/2" and as long as 100 ft.
## CI1000 Specifications and Options

### Standard Configuration

<table>
<thead>
<tr>
<th>The CI1000 System Specifications:</th>
<th>Four axis (XYZtheta), floor mounted robotic table assembly with electronics cabinet. X and Y axis travel of 39.4&quot; by 29.5&quot; and Z-axis travel of 8.9&quot;. Accuracy: ±0.002&quot;.</th>
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<tbody>
<tr>
<td></td>
<td>Includes:</td>
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<td></td>
<td>• 1 Introbotix Probe Changer System, consisting of robot side assembly and probe stand and one probe side changer assembly</td>
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<td></td>
<td>• 1 Introbotix Single-ended Probe Assembly</td>
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<td></td>
<td>• 1 Flexible Board Holder</td>
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<td></td>
<td>• 1 Guarding with operator accessible areas</td>
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<td></td>
<td>• 1 Interface to Tektronix TDR Instrumentation</td>
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<td></td>
<td>• 1 Verification Station with 50ohm Airline</td>
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<td>• 1 Operator Station with ergonomic arm &amp; flat panel display</td>
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<td></td>
<td>• 1 PC controller: 1GB, 100GB H/D, USB2 Ports</td>
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<td>• 1 Camera and Monitor System (Simplify board teach)</td>
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<td>• 1 On-site installation and initial set-up (1 day)</td>
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<td></td>
<td>• 1 On-site training and operator manual review (2 days)</td>
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</tbody>
</table>

### Software Suite (1 license each):

- CI1000 System Software
- TDR Waveform Viewer™ Generator & Reader
- HFT Report Writer
- HFT CAM Importer

### Options:

- Tektronix TDR Digital Oscilloscope
- Tektronix Model #80E04 TDR Electrical Sampling Head Model
- Introbotix Single-ended Probes
- Introbotix Differential Probes
- NIST Standard Verification Station
- Extended warranty, 12 month (labor only)

### Specifications:

<table>
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<tr>
<th>System Rise/Fall Times:</th>
<th>35 picosecond rise time, 50 picosecond fall time</th>
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<tbody>
<tr>
<td>Shortest Measurable Trace Length:</td>
<td>0.5”</td>
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<tr>
<td>Impedance Accuracy:</td>
<td>&lt;0.1 ohms</td>
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<tr>
<td>Repeatability:</td>
<td>0.05 ohms (standard deviation)</td>
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</table>
| Propagation Delay Accuracy: | TDR Jitter: 1 psec ±5PPM of position  
 TDR Horizontal Accuracy: 1 psec ±1% of the interval |
| Probe Connections | Two (2), 3.5mm connectors (SMA compatible) |
| Temperature Operating | +10°C to +40°C  
 Temperature Storage | -22°C to +60°C |
| Relative Humidity Operating | 20% to 80% at or below 40°C  
 Relative Humidity Storage | 5% to 90% at or below 60°C |
| Power Requirements Line voltage Ranges: | 90-132 VAC, 180-250 VAC |
| Line Frequency: | 48-440 Hz |

The terms CI1000, ACCU-Prober™ and Waveform Viewer™ are trademarked and may not be used except with the permission of Introbotix. The CI1000 probe and CI1000 system are patented and the Waveform Viewer™ software, Guidance software and Report Writer software are copyrighted and may not be used except with the permission of Introbotix.