

Very Fast TLP Pulse Curve Tracer

BARTH Model 4012 VFTLP+ Preliminary Specifications

Barth 4012 TLP Pulse Curve Tracer

The 4012 Very Fast TLP (VFTLP+) system was originally built with careful design of the time domain hardware to capture the fastest parts of the high speed waveforms so necessary in CDM design. Our carefully designed measurement hardware maintains accurate waveforms throughout the system for accurate measurements of the complete device. This 4012 short pulse tester was designed to provide a very fast pulse source and extremely fast response current and voltage sensors. In addition to the well-known I-V data used for analysis of electrical characteristics of ESD protection structures, the 4012 system now captures both voltage and current waveforms at the device under test (DUT).



Barth Software

Barth's newest software now includes: Voltage & current DUT waveform capture; Automatic calibration / compensation (and save / recall); Save / recall operator set-ups; Auto or manual axis scaling; Single or multi-point leakage testing (configurable); Adjustable measurement window; Dynamic resistance calculator; Compare & analyze multiple tests; Save / recall pulsing "profiles"; Multi pulsing capability (between data collection points); Scope auto-SPC (signal path compensation); and numerous other new features.

How It Works

To use the Pulse Curve Tracer, the operator enters the desired test parameters via keyboard, such as starting voltage, current and voltage limits, voltage step increments, pulse risetime, and pulse width. The test then proceeds automatically, controlled by Barth software developed with National Instruments LabView®. The operator can halt and resume the testing and can view the plotted test data points as the test proceeds. The operator can also view (during testing or afterward), voltage & current waveforms, single point or multi-point leakage evolution, test set-up parameters, or numerical data information. The active test and several previous tests' data points may be viewed simultaneously on the I/V plot. Hardcopy prints are immediately available on the provided printer. This includes both the active I/V plus leakage plot, and/or the "print window" print which will print all information in that "window".

System Components

- Tektronix Scope Model DPO 70604, 6 GHz Digitizing
- Barth Electronics Control Box/Pulse Generator
- Keithley Picoammeter/Voltage Source
- Main power switch/power distribution panel
- Test control computer (Dell Optiplex Minitower; Dell 19" flat panel; Windows XP; Keyboard; Mouse)
- High speed business class color printer
- LabView® runtime Control and Analysis Software
- One year warranty on the entire system

Accuracy

Special Barth wide bandwidth pulse current and voltage sensors provide a high standard of measurement capability for ESD test equipment. The complete system has been built with special attention paid to minimizing losses in the test circuitry and the coaxial cable connections. This results in low internal resistance at the device under test (DUT), for high accuracy measurements.

Barth 4012 VFTLP+ Preliminary Specifications

Output to DUT (program driven)

Pulse width: 1ns, 2ns, 5ns and 10ns (standard). Pulse width is software selectable.

Pulse voltage: 0-500v @ 50Ω load, 1,000v @ open circuit

Pulse current: 0-5 amps @ 50Ω load, 10 amps @ short circuit, Note: 20 amp option available

Pulse risetime: 100ps, 200ps, 400ps (built-in, software selectable)

Pulse rate: ≈ 10 test pulses per minute

Leakage voltage: 0 to 100v (0.1 v increments)

Leakage current sensitivity: 10-12 to 2.5×10^{-3} amps

Source impedance: 50Ω

Load Impedance: any load

Factory Selectable power: 100,120 vac @ 1.5amps; 220,240 vac @ .75amps, 50 to 60 Hz (USA default:120 vac; 60 Hz) The following are powered separately – oscilloscope, computer workstation, and Keithley SMU

Size: Control Box is 19"W x 20.5"D x 11"H, the total height with a Tektronix Model DPO70604 Oscilloscope is 21"

Weight: The total weight is approximately 168 lbs, plus shipping materials (Control Box – 57 lbs, Tektronix Model DPO 70604 Oscilloscope – 44 lbs, Dell Workstation – 43 lbs, HP Printer – 24 lbs.)

Options

- A Barth Model 40212 CC-Test Fixture for VFTLP+) is specifically designed with minimum parasitics for device testing; this option simulates real CDM events.
- A Barth Model 40312 BGA-Test Fixture (for VFTLP+) is also available.
- Other custom test fixtures are available by special request.

Data Storage

Data is automatically stored to hard disk in comma delimited format and can be recalled for viewing or transferring to disk. Data is automatically time/date stamped when saved.

Hardcopy Printout

Hardcopy printouts on a color printer listing data point values and showing plotted results using operator selected scaling are immediately available in a presentation ready format at the end of a test.

Screen Displays

Eight display screens all display the active test and up to 5 recalled tests (on the left half of the screen). The left side display shows the I/V curve and leakage evolution. The right side display can also show: V & I waveforms, single or multi-point leakage evolution, operator info, test parameters, numerical test-point data, or calibration values.