

World's leader in **Ferroelectric Technology**

Premier II

Radiant Technologies, Inc.

The Precision Premier II, Radiant's most advanced tester, has the largest envelope in terms of frequency response, voltage range, and accuracy of any ferroelectric tester in the world.



Premier II Performance Summary:

The Precision Premier II tester is capable of executing a single pass hysteresis loop in 100 μ s with no interleaving of the data acquisition. The Premier II uses a 40MHz clock through a down counter resulting in an effective maximum clock rate of 10MHz. The capture rate for the 18bit ADCs in the system is 2MHz. The driver for the Premier II will be able to interlace multiple loops to generate an effective capture rate of 10MHz on hysteresis and a total loop period of 10 μ s. This hysteresis measurement will be compatible with the loops measured by all of the Precision testers made by Radiant. The Premier II will execute a PUND pulse measurement with pulse widths ranging from 1 μ s up to 1s on capacitors with areas ranging from 0.5 μ m² up to multiple square centimeters. The Premier II will run all of the other measurement tasks

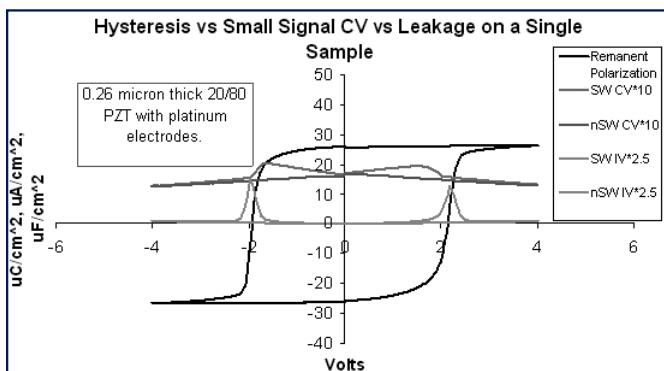
Premier II Specifications Include:

- ±10V output (100V and 200V optional)
- 16-bit Arbitrary Waveform Generator output
- 100 points in 100 μ s direct capture
- 100 points in 10 μ s using interlace feature
- 1000 points in 30 seconds
- Pulse Widths down to 1 μ s and up to 1s
- 2 COMM channels for controlling high voltage amplifiers.
- 2 external 18-bit, ±10V SENSOR voltage inputs.

now available in Vision including small signal CV, IV, leakage, remanent hysteresis, fatigue, imprint, retention, voltage breakdown, piezoelectric displacement, and others.

Vision Software Operating System:

Vision can construct complex programs with any number of tests to characterize all aspects of the sample in one execution while keeping track of the measurement results and the history of the sample being tested. Each Radiant tester is an extension of Vision and can execute any of the measurement tasks in the Vision Library. The type of tester determines the range of voltages, frequencies, and sample sizes that Vision may characterize with that tester. Only with a Radiant Precision tester can the researcher produce the plot below, executed in one hour on a Precision II. The data shows the relationship in a single sample between the remanent polarization state and the values of its small signal capacitance and leakage.



The Vision Task Library Includes:

Hysteresis, Leakage, Charge, Retain, Resist, Fatigue, C(V), PUND, Imprint and Leakage Current

Link multiple tasks to create a custom program

Networking features allow researcher to share data from anywhere in the world

Continuously variable pulse widths and hysteresis periods.

Hardware Specifications

Dimensions:

Width-17" x Depth-13" x Height-4"

Weight 20lbs

Tester Parameter	Premier II
Voltage Range (no external amp)	±200V
Voltage Range (w/external amp)	±10KV
Number of ADC Bits	18
Minimum Charge Resolution	0.8fC
Minimum Area Resolution (assuming 1 ADC bit = 1µC/cm ²)	0.08µ ² *
Maximum Charge Resolution	5.26mC
Maximum Area Resolution (assuming saturation polarization = 100µC/cm ²)	52.6cm ²
Max Charge Resolution w/HVI	526mC
Maximum Area Resolution (assuming saturation polarization = 100µC/cm ²)	>100cm ²
Max Hysteresis Frequency	100KHz
Min Hysteresis Frequency	0.03Hz
Minimum Pulse Width	1.0µs
Minimum Pulse Rise Time (5V)	400ns
Max Pulse Width	1s
Max Delay between Pulses	40ks
Internal Clock	25ns
Minimum Leakage Current (assuming maximum current integration period = 20 seconds)	2pA
Maximum Small Signal Cap Freq.	1MHz
Minimum Small Signal Cap Freq	1Hz
Output Rise Time Control	10 ⁵ scaling
Input Capacitance	~60fF
Electrometer Input	Yes

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*Minimum Area under actual test conditions will be higher