

System 7700 Automated Imaging Test Station

Features:

- Designed for Image Sensor Test
- Turnkey System
- Ultra Low Noise Architecture
- Fully Programmable using PI-DATS or Custom Software
- Easily Configured for New DUT
- Expandable for New Requirements
- Real-Time Imaging and Correction
- Supports Radiometric Parameter Calculation
- Templated or Custom Analysis
- Rapid graphical test plan generation

Applications:

- IR FPA, CCD, and CMOS Imaging
- R&D Characterization
- Production Testing
- Design Verification and Optimization

Introduction:

The System 7700 represents Pulse Instruments' fourth generation of imaging test stations. With Pulse Instruments' outstanding flexibility and low-noise performance, the System 7700 can be the centerpiece of your flagship electro-optics

characterization lab and the workhorse of your production test floor. Smaller configurations can be used for benchtop and transportable applications.

Pulse Instruments has more than three decades of experience working collaboratively with customers who lead the imaging industry, resulting in solutions that meet the technology's unique needs. We make the build-vs-buy equation simple, because we have already engineered the most challenging aspects of the sensor test station.

Performance:

Careful system and component design ensures that you are measuring your device, not the system. Separation of analog and digital instrumentation and of analog and digital power domains prevent noise contamination between system components. System power conditioning provides immunity from external noise sources.

Flexible, high speed pattern generation with clock toggle rates up to 140 MHz and A/D conversion up to 50 MHz per channel support your fastest devices. Deep pattern looping, DC-coupled A/D, and clock rise-times as slow as 40 μ s support kHz readout rates for low-background astronomy and satellite applications.

Modularity and Flexibility:

A highly scalable card-and-mainframe approach allow Pulse Instruments to configure a system to balance your testing requirements and your budget.

Smaller systems can be configured to run a specific part or family of related parts, or a larger configuration can be created to run a vast array of IR, CCD, and CMOS imagers on the same system.

The system is modular and upgradable at any time, so today's investment is preserved when your needs grow in the future.

Virtually every operating parameter of system is controllable in software, so changing the DUT typically requires only swapping out an interface board and loading a new test plan file.

Software Flexibility:

The System 7700 is supplied with a complete suite of software to suit your test requirements and automation/workflow preferences:



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1. PI-DATS Automated Test System Software provides turnkey test automation and system diagnostics as well as data reduction and real-time image correction. Support for external DLL calls and generic GPIB hardware enhance system flexibility.
2. Support for selected optical components from SBIR, EOI, CI Systems, and others provide complete radiometric test capability.
3. PI-DATS will also run on an external PC, enabling offline test plan generation and editing.
4. PI-PAT software enables rapid, graphical timing pattern generation, and PI-PLOT provides imaging capability.
5. Fully-documented Win32 DLLs allow control of Pulse Instruments hardware from custom software developed in a variety of development environments and languages. A fully-documented binary data format enables data export to many external analysis packages.

The embedded CPU runs a standard version of Windows 7 with a full complement of standard network and peripheral ports. This makes it easy to integrate the System 7700 into your corporate IT network for distributed data analysis, test plan version control, data archiving, backup, and maintenance.

Pulse Instruments Hardware

- **Pattern Generator**—PI-2005 Pattern Generators with up to 64 pattern channels, up to 8 Mbits of memory/channel, and clock rates up to 225 MHz. Several output voltage options are available, as is a programmable delay feature. External clock, start, and stop inputs provide additional flexibility for system timing. Graphical serial command generation in hex, decimal, binary, or variable.

- **Clock Drivers**—Clock drivers from our CompactPCI and 4000 Series, with 32 channels or more. Choose the CompactPCI series for lower-voltage FPA/ROICs and CMOS imagers toggling up to 140 MHz, or the 4000 Series for CCDs requiring clock swings up to 25 V_{pp}.
- **DC Bias**—DC Bias Supplies from our CompactPCI and 4000 Series with 32 channels or more. Choose the CompactPCI series for lower-voltage FPA/ROICs and CMOS imagers requiring ±8 V, or the 4000 Series for CCDs requiring bias voltages up to +36 V.
- **Mainframe**—Pulse Instruments 11000 Series CompactPCI mainframes house the system controller, various PI instrument cards, and selected 3rd-party CompactPCI/PXI instrument cards. The PI-4002B mainframe houses the CCD clock driver and DC bias cards with power supplied by the PI-4003A. The two series can be mixed and matched as desired.
- **Sense**—Clock Drivers and DC Bias Cards provide voltage-sense and current-sense outputs for measurement on an external DVM.
- **Data Acquisition**—PI-3105 data acquisition system, up to 32 dedicated A/D channels with up to 4 GB of RAM. Three speed/resolution options are available (14-bit/10 MHz, 14-bit/50 MHz, and 16-bit/10 MHz). The digital components will acquire 16-bit LVDS data at up to 80 MHz per channel.
- **System 7700 Equipment Racks**—Single-switch power for multiple rack systems, isolation transformer, AC line filter, and utility AC panel. Separate analog and digital racks can be used to isolate sensitive components for maximum noise immunity.

Third-Party Hardware Drivers in PI-DATS

- **DVM**—Several popular Keithley, Fluke and HP DVMs.
- **Oscilloscope**—Several popular Tektronix oscilloscopes.
- **High Voltage DC Supply**—Selected Agilent DC bias supplies for voltages up to 100 V.
- **Function Generator**—Several HP function generators.
- **Blackbody**—Selected blackbody models for radiometric testing.
- **Generic**—PI-DATS' user-definable module enables integration of GPIB-compatible instruments, 3rd-party DLLs and Automation servers.
- **Custom**—Custom modules can be developed for a fee.

Development Environments/Languages:

Customers have successfully developed automated test applications for PI systems using C/C++, LabVIEW/TestStand, MATLAB, IDL, HTBasic, VisualBasic/VBA, and others. Integration with SBIR's IRWindows and Electro-Optical's EO-FPATest.

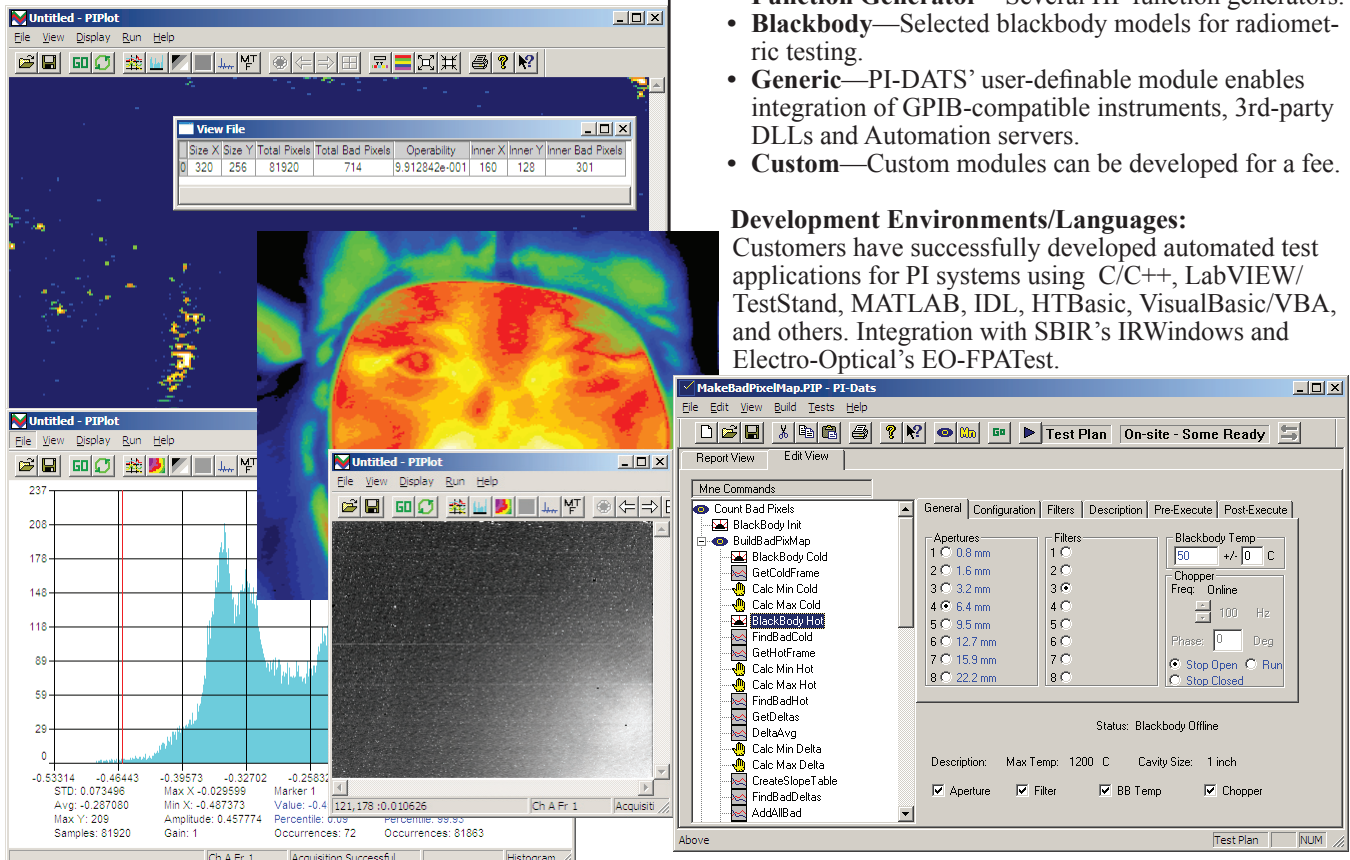


Fig. 1: PI-DATS analysis GUI with NETd plot, Bad Pixel Cluster Map, Operability Report, False Color, and Histogram