

ISL-4800™ High-Performance Tester for Imaging Devices

Imager test and characterization solution

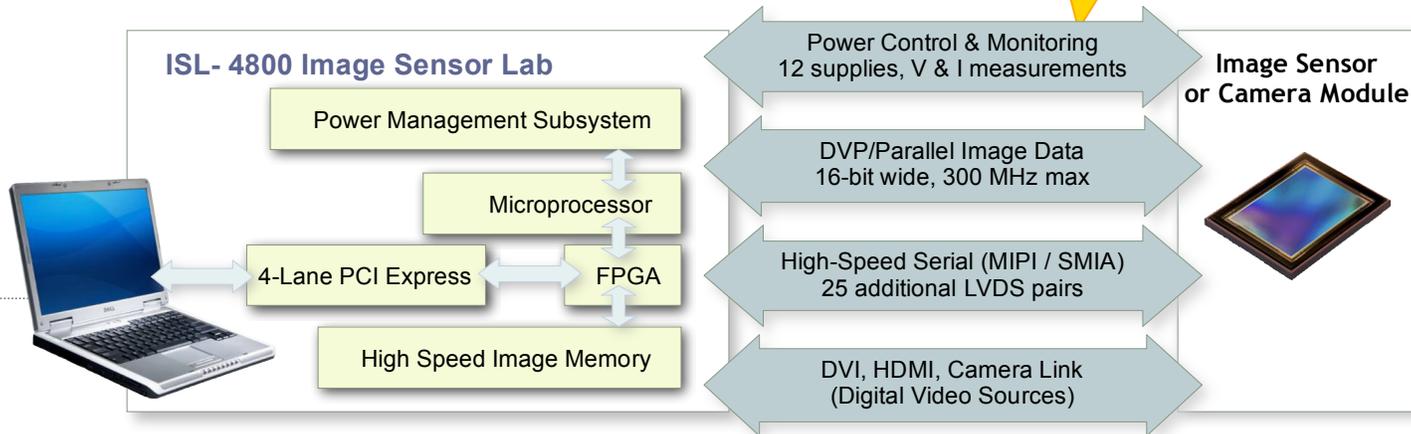
from your desktop to fully automated volume manufacturing

The Jova Solutions ISL-4800™ is the highest performance interface and test solution available for image sensors, digital cameras and video devices. This single piece of hardware supports nearly every sensor, camera, and video source interface standard in existence. A fully integrated, off-the-shelf, hardware/software tester package, ISL-4800 provides a full range of interfaces, controls, advanced image analysis test routines, evaluation and characterization capabilities in one easy-to-use, inexpensive, small-footprint solution.

NEW!



High-Speed Serial Support including MIPI® and SMIA!



KEY BENEFITS

HIGH PERFORMANCE

- Universal Sensor Support
 - Parallel to 250 MHz
 - 1,2,4-lane MIPI(CSI2) 960 Mbps per lane
 - SMIA(CCP2) up to 650 Mbps
- Supports digital video (DVP, DVI, HDMI, CameraLink)
- 12- and 24-bit ADC voltage and current measurement
- 4-lane PCIe host interface (10 Gbps) ultrafast imaging
- Low-noise power supplies
- Eliminates need for peripheral equipment
- Advanced evaluation and characterization routines

FOR HIGH VOLUME PRODUCTION, TEST AND DESIGN

- Rugged and Robust down to smallest details such as, built-in isolation relays and voltage level buffers
- Reduce test times and increase test coverage with built-in instrumentation
- Rapid deployment and field reprogrammable
- Integrated LED control
- Ability to integrate with a production wafer prober
- Automation software API (DLL, LabVIEW, TestStand)

HIGH-PERFORMANCE TEST SOLUTION FOR IMAGERS

The **ISL 4800** is an integrated, high performance, flexible, and expandable solution that supports current and future requirements with field upgradable FPGA code and flexible interface-board architecture.

Supported Device Interfaces – 16-bit parallel, DVP, high-speed serial LVDS, MIPI, SMIA, DVI, HDMI, and Camera Link. Simultaneously connect to both parallel and high-speed serial interfaces.

ADVANCED SENSOR CHARACTERIZATION & IMAGE QUALITY ANALYSIS

The ISL Advanced Analysis Library includes many of the most commonly used image quality evaluation and characterization tests such as: photo response uniformity, dead and defective pixel detection, Macbeth color accuracy, and SFR/MTF image sharpness measurements. A suite of SMIA standard characterization tests is also provided that includes: dynamic range, fixed pattern noise, temporal noise, column and row noise, dark signal, signal to noise ratio, sensitivity and many others. Image averaging using floating-point buffers provides additional accuracy.

The software supports a variety of image types including: Bayer, YCbCr (YUV), RGB, and Raw.

ISL-4800™ Specifications

ISL-4800 TEST HARDWARE

I2C/SPI Sensor Communications

- Adjustable I2C clock rate to 1MHz (including standard 100KHz and 400KHz)
- SPI communication up to 10MHz
- Create, save and execute custom I2C scripts

Built-In Sensor Power Supplies

- Four (4) 1.25V to 4.0V 100mA Power Supplies
- Two (2) 0.6 to 1.8V 600 mA Power Supplies
- Two (2) 1.2 – 3.4V 600 mA Power Supplies
- One (1) 0 – 10V 600 mA Utility Power Supply
- Two (2) 3.3V On/Off Power Supplies
- 12-bit and 24-bit voltage and current measurements

Programmable Master Clock

- Programmable between .001 MHz and 68 MHz
- Alternative FPGA-based Master Clock up to 800 MHz
- External Clock Input

Configurable Image Capture

- Parallel 8-bit to 16-bit image capture
- High-Speed Serial – 2-lane/4-lane MIPI®/SMIA
- Output formats: raw Bayer, YCbCr (YUV), RGB565, RGB555, RGB444, RAW
- ROI, Double buffered and video rate sequential image capture
- Video Capture – DVP, DVI, HDMI, Camera Link

Additional Digital I/O

- 24 additional high-speed LVDS pair inputs which can also be configured and single ended digital I/O.

Host Interface

- 4-Lane PCIe interface (10 Gbps)

Powerful Data Interpretation

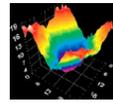
- Accommodates many data output formats/encodings
- 256 MByte on-board memory
- Configurable conversion/mapping of raw sensor data
- Supports CMOS image sensors from most manufacturers

MIPI and SMIA Standards

Supports multiple high-speed serial interfaces, including 1, 2, and 4-lane MIPI, SMIA, and generic LVDS-pair serial interfaces

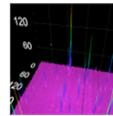
ADVANCED IMAGE QUALITY ANALYSIS

Photo Response Uniformity



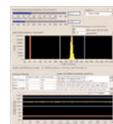
Measures response uniformity for each Bayer plane. Reports intensity, mean, standard deviation, % deviation by region, and maximum neighbor non-uniformity. Provides lens shading correction to improve noise measurements.

Dark Field Dead and Defective Pixels



Provides dark field defective pixel detection, including a configurable maximum pixel intensity threshold. A 3-D display provides improved noise floor visualization.

Light Field Dead and Defective Pixels



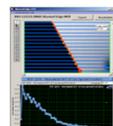
Provides light field dead and defective pixel detection – locations are reported. Reports row, column, and cluster defects.

Dust and Particle Detection



Detects and reports dust, dirt and other foreign materials. Size and intensity thresholds are adjustable.

SFR/MTF Resolution



The built-in ISO 12233-based analysis algorithm measures Spatial Frequency Response (SFR) and the Modulation Transfer Function (MTF): both measure image sharpness or focus.

Macbeth Color Accuracy



Supports Macbeth chart color accuracy measurements. Pattern matching is provided for flexible target positioning. Both RGB and HSI results are shown.

SMIA Characterization Tests



Complete library of analysis routines from the Standard Mobile Imaging Architecture (SMIA) standard.

The SMIA library uses floating point image averaging for improved accuracy.

Jova Solutions, based in San Francisco, has been developing hardware and software for the electronics manufacturing industry since 2000. Please contact us for additional information.