The Jova Solutions ISL-4800™ is the most comprehensive and lowest cost solution available for testing digital cameras and image sensor devices. A fully integrated, off-the-shelf, hardware/software tester package for image sensors and camera modules, 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.

**KEY BENEFITS**

**COST EFFECTIVE**
- Supports both Parallel and High-Speed Serial (I, 2 and 4-lane MIPI) Sensor Interfaces
- Field Reprogrammable
- Reconfigurable for widest applicability / most sensors
- Rapid deployment
- Accommodates many analysis routines
- Eliminates need for peripheral equipment
- Pre-written analysis and characterization routines

**LOW-COST, INTEGRATED IMAGE SENSOR TEST SOLUTION**

- The ISL 4800 is a powerful, affordable, flexible, and expandable solution that supports current and future requirements with field upgradable gate arrays (FPGA) and flexible interface-board architecture.
- **Interfaces Supported** – up to 16-bit wide bit-parallel, DVP, high-speed serial LVDS, MIPI, SMIA, DVI and HDMI. Simultaneously connect to both parallel and high-speed serial interfaces.

**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
- Accurate voltage and current measurement
- Low noise power supplies
- Integrated LED control
- Ability to integrate with a production wafer prober
- 4-Lane PCIe for ultra-fast image transfer
- Rapid configuration through built-in Scripting Engine
- Automation software API (DLL, LabVIEW, TestStand)

**ADVANCED SENSOR CHARACTERIZATION AND IMAGE ANALYSIS**

The Image Sensor Lab Advanced Analysis Library includes many of the most commonly used 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

Additional Digital I/O
- 25 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

OPTIONAL ADVANCED SOFTWARE

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.

OPTIONS
- Built-in Volt Ohm Meter
- Short/Open Test Capability
- 12-bit and 24-bit Volt and Ohm Measurements
- 2 X 80 Analog Switch Matrix