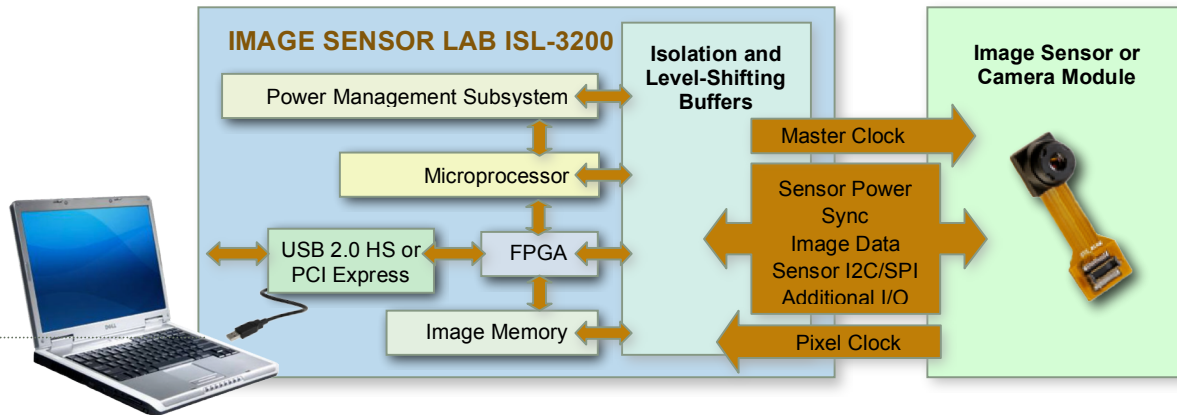


ISL-3200™ Cost Effective Test Solution

Image sensor test and characterization solution

from your desktop to fully automated volume manufacturing

Jova Solutions' ISL-3200™ is the most comprehensive and lowest cost solution available for testing image sensor devices and systems. A fully integrated, off-the-shelf, hardware/software tester package for image sensors and camera modules, ISL-3200 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

- Low cost – Under \$10,000
* base configuration at volume purchase discount
- 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

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
- Optional External PCIe for ultra-fast image transfer
- Rapid configuration through built-in Scripting Engine
- Automation Software API (DLL, LabVIEW, TestStand)

LOW-COST, INTEGRATED IMAGE SENSOR TEST SOLUTION

ISL3200 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.

Adaptor Board – CMOS, CCD image sensors, Analog sensors and high speed serial sensors such as MIPI or SMIA are attached to ISL3200 via an external interface board.

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.

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ISL-3200™ Specifications

ISL-3200 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
- External Clock Input

Configurable Image Capture

- 8-bit or 16-bit image capture
- Output formats: raw Bayer, YCbCr (YUV), RGB565, RGB555, RGB444, RAW
- ROI, Double buffered and video rate sequential image capture

Additional Digital I/O

- 48 total digital I/O (including sync and data lines) for reset, capture, strobe, etc.

Host Interface

- USB 2.0 HS Interface with 32 Mbytes Memory

Powerful Data Interpretation

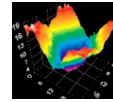
- Accommodates many data output formats/encodings
- Captures up to 16-bit wide data into a 16-megaword on-board memory buffer
- Configurable conversion/mapping of raw sensor data
- Supports CMOS image sensors from most manufacturers

OPTIONS

- ✓ External PCI Express Interface with 128 Mbytes Memory
- ✓ Built-in Volt Ohm Meter
 - Short/Open Test Capability
 - 12-bit and 24-bit Volt and Ohm Measurements
 - 2 X 80 Analog Switch Matrix

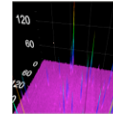
OPTIONAL ADVANCED SOFTWARE

Photo Response Uniformity



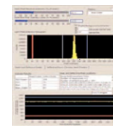
Measures response uniformity for each Bayer plane. Reports intensity, mean, standard deviation, % deviation by region, and maximum neighbor non-uniformity. Provides lens shading correction to improve noise measurements.

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



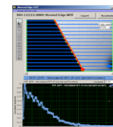
Provides light field dead and defective pixel detection – locations are reported. Reports row, column, and cluster defects.

Dust and Particle Detection

Row	Col	Intensity	Size	Shape
10	10	100	100	100
10	20	100	100	100
10	30	100	100	100
10	40	100	100	100
10	50	100	100	100
20	10	100	100	100
20	20	100	100	100
20	30	100	100	100
20	40	100	100	100
20	50	100	100	100
30	10	100	100	100
30	20	100	100	100
30	30	100	100	100
30	40	100	100	100
30	50	100	100	100
40	10	100	100	100
40	20	100	100	100
40	30	100	100	100
40	40	100	100	100
40	50	100	100	100
50	10	100	100	100
50	20	100	100	100
50	30	100	100	100
50	40	100	100	100
50	50	100	100	100

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.

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