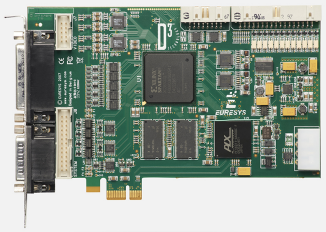
EURESYS™
Excellence in vision

# Domino Symphony PCIe

Frame grabber for four single-tap non-standard analog cameras



## At a Glance

- Four 10-bit 65 MHz A/D converters with four 8- or 10-bit LUTs
- PCIe x1 bus
- $D^3$ technology for extremely low synchronization jitter
- Support for mega-pixel progressive-scan and interlaced cameras, asynchronous reset and exposure control
- Trigger, strobe and general purpose I/O lines

## Benefits

**Enjoy digital quality from low-cost analog cameras thanks to our patented D³ technology**

- Extremely low noise, true 10-bit image acqusition
- Lowest jitter: 0.5 ns (or 0.008 pixels) even when using composite video signals, for the most precise measurements
- No need to use pixel clock

**Take advantage of the lowest-cost industrial cameras available on the market**

**Windows and Linux drivers available**

## Applications

**MACHINE VISION FOR THE GENERAL MANUFACTURING INDUSTRIES**

**Low cost image acquisition from industrial analog cameras for inspection machines**

Take advantage of the lowest-cost industrial cameras available on the market with the Domino and Picolo series cards.

## Specifications

### Mechanical

| | |
|---|---|
| Form Factor | PCI Express card |
| Format | Standard profile, half length, 1-lane PCI Express card |
| Dimensions | L 167.65 mm x H 111.15 mm<br>L 6.6 in x H 4.38 in |
| Weight | 135 g, 4.76 oz |

## Host bus

| | |
|---|---|
| Standard | PCI Express 1.0 |
| Link width | 1 lane |
| Link speed | 2.5 GT/s (PCIe 1.0) |
| DMA | 32-bit |
| Peak delivery bandwidth | 256 MB/s |
| Effective (sustained) delivery bandwidth | 180 MB/s (Host PC motherboard dependent) |
| Power consumption | Typ. 8.3 W (940 mA @ +3.3V, 430 mA @ +12V), excluding I/O power output |

## Camera / video inputs

| | |
|---|---|
| Interface standard(s) | Non-standard Analog |
| Connectors | • CAMERAS: high-density sub-D 44-pin male connector for video and camera control<br>• Internal video: 10-pin shrouded header video connector on the PCB |
| Termination resistor | Selectable by software |
| Number of cameras | Four single-tap cameras |
| Number of cameras (at full frame rate) | 4 |
| Line-scan cameras supported | No |
| A/D converter | Four, 10-bit, 65 MHz |
| Maximum camera line rate | 52.5 kHz |

## On-board processing

| | |
|---|---|
| On-board memory | 64 MB (32 MB for image data) |
| Input LUT (Lookup Table) | 4 x 8- or 10-bit LUT |

## General Purpose Inputs and Outputs

| | |
|---|---|
| Number of lines | 32 I/O lines:<br>• 4 contact inputs (Factory I/O: IN)<br>• 12 relay outputs (Factory I/O: OUT)<br>• 4 TTL inputs/outputs (System: IO)<br>• 4 differential inputs (System: TR)<br>• 4 opto-isolated outputs (System: ST)<br>• 4 full-duplex serial com ports (Camera COM: RX/TX) |
| Connectors | • EXTERNAL SYSTEM: 26-pin high-density male sub-D connector on the bracket<br>• INTERNAL SYSTEM: 26-pin dual-row 0.1" shrouded header on the PCB<br>• FACTORY I/O: 34-pin dual-row 0.1" shrouded header on the PCB<br>• CAMERA COM: 16-pin dual-row 0.1" shrouded header on the PCB<br>• Molex 4-pin connector on the PCB for powering cameras |
| Usage | • Camera and image acquisition trigger<br>• Light strobe trigger<br>• General purpose IO |
| Electrical specifications | • TR: Inputs compatible with TTL, LVTTL, differential LVDS, differential RS422, differential RS-485 signals, protected against electrostatic discharge, with choke for the rejection of common-mode noise<br>• ST: Opto-isolated outputs, compatible with signals up to 60V, with 3 µs fall time, isolated up to 500V<br>• IO: Inputs or outputs compatible with TTL signals, protected against electrostatic discharge, with high-frequency noise filter<br>• IN: Polarity-free inputs, compatible with TTL, 12V and 24V signals, opto-couplers, relays and switches<br>• OUT: Opto-isolated potential-free and polarity-free solid-state outputs, compatible with signals up to 30V, with 4 µs fall time, isolated up to 500V<br>• COM: RS232 asynchronous serial communication lines to control the cameras (exposed to the OS as standard COM ports) |

## Software

| | |
|---|---|
| Host PC Operating System | • Microsoft Windows 10, 8.1, 8, 7<br>• Microsoft Windows Server 2012 R2, 2012, 2008 R2<br>• Linux, from kernel version 2.6 to 4.10, compatible with a wide range of distributions<br>• 32- and 64-bit versions |
| APIs | • MultiCam 32- and 64-bit binary libraries (Windows and Linux), for ISO-compliant C/C++ compilers |

## Environmental conditions

| | |
|---|---|
| Operating ambient air temperature | 0 to +50 °C / +32 to +122 °F |
| Operating ambient air humidity | 10 to 90% RH non-condensing |
| Storage ambient air temperature | -20 to +70 °C / -4 to +158 °F |
| Storage ambient air humidity | 10 to 90% RH non-condensing |

## Certifications

| | |
|---|---|
| Electromagnetic - EMC standards | • European Council EMC Directive 2004/108/EC |
| EMC - Emission | • EN 55022:2010 Class B |
| EMC - Immunity | • EN 55024:2010 Class B |
| Flammability | PCB compliant with UL 94 V-0 |
| RoHS | European Union Directive 2011/65/EU (ROHS2) |
| REACH | European Union Regulation 1907/2006 |
| WEEE | Must be disposed of separately from normal household waste and must be recycled according to local regulations |

## Ordering Information

| | |
|---|---|
| Product code - Description | • 1601 - Domino Symphony PCIe |
| Optional accessories | 6011 - Symphony Spider Cable |

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