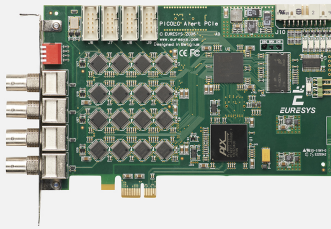




# Piccolo Alert PCIe

PCIe video capture card with four BNC connectors for up to 16 standard PAL/NTSC cameras



## At a Glance

- 4x BNC connectors on the bracket, expandable to 16 with three [1203] VEB modules (sold separately)
- PCIe x1 bus
- Sixteen shared video decoders, 100/120 images per second (200/240 fields per second)
- Real-time acquisition from 4 cameras, fast switching between up to 16 cameras
- Independently-programmable frame rate and acquisition parameters for each video input

## Benefits

### Video input configurations

- Four cameras can be connected using the BNC connectors on the bracket: Acquisition at 30 (NTSC) or 25 (PAL) frames per second per camera
- Sixteen cameras can be connected using the BNC connectors on the bracket and three [1203] VEBs: Acquisition at 7.5 (NTSC) or 6.25 (PAL) frames per second per camera

### Windows and Linux drivers available

### Machine Vision for the Electronic Manufacturing Industry

- High speed image acquisition for AOI, 3D SPI, 3D lead/ball inspection machines.
- Very high resolution line-scan image acquisition for Flat Panel Display inspection and solar cell inspection

### Machine Vision for the General Manufacturing Industries

- High frame rate image acquisition for inspection machines
- Line-scan image acquisition for surface inspection machines
- Line-scan image acquisition for textile inspection
- Low cost image acquisition from industrial analog cameras for inspection machines

### Machine Vision for the Printing Industry

- High speed line-scan image acquisition for printing inspection machines

### Life Sciences & Medical

- Standard and high-definition image acquisition for endoscopy applications

- Standard and high-definition image acquisition for dental applications
- Standard and high-definition image acquisition for video-guided surgery applications

### Microscopy

- High-definition image acquisition for offline inspection stations
- High-definition image acquisition for laboratory and measuring microscopes

### Video Acquisition and Recording

- High-frame-rate video acquisition for motion analysis and recording

### ITS (Intelligent Transportation System) & Traffic management

- Video acquisition from multiple cameras

## Specifications

### Mechanical

|            |  |
|------------|--|
| Format     | Standard profile, half length, 1-lane PCI Express card |
| Dimensions | L 167.65 mm x H 106.65 mm<br>L 6.6 in x H 4.38 in      |

### 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                        | Max. 9.5 W (2.9 A @ +3.3 V)              |

### Camera / video inputs

|  |   |
|--|---|
| Interface standard(s)                  | NTSC-M, PAL-B/G, RS-170, CCIR   |
| Connectors                             | <ul style="list-style-type: none"> <li>• VIDEO 1 to VIDEO 4: BNC female connectors on the bracket for composite video inputs</li> <li>• VEB LINK 0 to VEB LINK 3: 10-pin shrouded header connectors on the PCB for VEB modules</li> </ul> |
| Termination resistor                   | Selectable using switches on the bracket  |
| Native resolution                      | Square pixels, broadcast and custom resolutions   |
| Frame rate                             | <ul style="list-style-type: none"> <li>• Up to 25/30 images per second, 50/60 fields per second per input</li> <li>• Total 100/120 images per second with up to 16 cameras</li> </ul>   |
| Number of cameras                      | 16  |
| Number of cameras (at full frame rate) | 4   |

### Video delivery

|                                   |   |
|-----------------------------------|---|
| Raw video format(s)               | <ul style="list-style-type: none"> <li>• Packed RGB color formats: RGB15, RGB16, RGB24, RGB32</li> <li>• Planar RGB color formats: RGB24PL</li> <li>• Packed YUV color formats: YUV411, YUV422, YUV444</li> <li>• Planar YUV color formats: YUV411PL, YUV422PL, YUV444PL, YUV411PL, YUV422PL</li> <li>• Monochrome formats: Y8</li> </ul> |
| Deliverable video resolution (SD) | Frame, field, CIF, QCIF and custom image formats  |

## Area-scan camera control

|         |   |
|---------|---|
| Trigger | <ul style="list-style-type: none"><li>• Hardware trigger for up to four cameras</li><li>• With configurable noise removal filter and optional delay</li></ul> |
| Strobe  | <ul style="list-style-type: none"><li>• Hardware strobe signal for up to four cameras</li><li>• With programmable position and duration</li></ul>             |

## General Purpose Inputs and Outputs

|                           |  |
|---------------------------|--|
| Number of lines           | 9 I/O lines: <ul style="list-style-type: none"><li>• 4 contact closure inputs (IN)</li><li>• 5 solid-state relay outputs (OUT)</li></ul>   |
| Connectors                | I/O: 20-pin dual-row 0.1" shrouded header on the PCB   |
| Usage                     | General purpose IO   |
| Electrical specifications | <ul style="list-style-type: none"><li>• IN: Polarity-free inputs, compatible with TTL, 12V and 24V signals, opto-couplers, relays and switches</li><li>• OUT: Opto-isolated potential-free and polarity-free solid-state outputs, compatible with signals up to 30V, with 4 <math>\mu</math>s fall time, isolated up to 500V</li></ul> |
| Watchdog                  | Yes  |

## Software

|                          |   |
|--------------------------|---|
| Host PC Operating System | <ul style="list-style-type: none"><li>• Microsoft Windows 10, 8.1, 7 for x86 (32-bit) and x86-64 (64-bit) processor architectures</li><li>• Linux for x86 (32-bit) and x86-64 (64-bit) processor architectures</li></ul> Refer to release notes for details |
| APIs                     | <ul style="list-style-type: none"><li>• MultiCam 32- and 64-bit binary libraries (Windows and Linux), for ISO-compliant C/C++ compilers</li><li>• DirectShow 32- and 64-bit filters (Windows only), for Microsoft Visual C++ compilers</li></ul>            |

## 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 | <ul style="list-style-type: none"><li>• European Council EMC Directive 2004/108/EC</li><li>• United States FCC rule 47 CFR 15</li></ul>                             |
| EMC - Emission                  | <ul style="list-style-type: none"><li>• EN 55022:2010 Class B</li><li>• FCC 47 Part 15 Class B</li></ul>  |
| EMC - Immunity                  | <ul style="list-style-type: none"><li>• EN 55024:2010 Class B</li><li>• EN 61000-4-2</li><li>• EN 61000-4-3</li><li>• EN 61000-4-5</li><li>• EN 61000-4-6</li></ul> |
| KC Certification                | Korean Radio Waves Act, Article 58-2, Clause 3  |
| Flammability                    | PCB compliant with UL 94 V-0  |
| RoHS                            | European Union Directive 2015/863 (ROHS3)   |
| 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

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Product code - Description

- 1641 - Picolo Alert PCIe
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