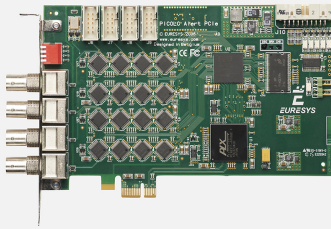


Piccolo Alert PCIe

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 General Manufacturing Industries

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

Life Sciences & Medical

- Standard and high-definition image acquisition for endoscopy applications
- Standard and high-definition image acquisition for dental applications

Microscopy

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

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

Video delivery

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

Area-scan camera control

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

General Purpose Inputs and Outputs

Number of lines	9 I/O lines: <ul style="list-style-type: none">• 4 contact closure inputs (IN)• 5 solid-state relay outputs (OUT)
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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"> • IN: Polarity-free inputs, compatible with TTL, 12V and 24V signals, opto-couplers, relays and switches • 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
Watchdog	Yes

Software

Host PC Operating System	<ul style="list-style-type: none"> • Microsoft Windows 10, 8.1, 7 for x86 (32-bit) and x86-64 (64-bit) processor architectures • Linux for x86 (32-bit) and x86-64 (64-bit) processor architectures <p>Refer to release notes for details</p>
APIs	<ul style="list-style-type: none"> • MultiCam 32- and 64-bit binary libraries (Windows and Linux), for ISO-compliant C/C++ compilers • DirectShow 32- and 64-bit filters (Windows only), for Microsoft Visual 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	<ul style="list-style-type: none"> • European Council EMC Directive 2004/108/EC • United States FCC rule 47 CFR 15
EMC - Emission	<ul style="list-style-type: none"> • EN 55022:2010 Class B • FCC 47 Part 15 Class B
EMC - Immunity	<ul style="list-style-type: none"> • EN 55024:2010 Class B • EN 61000-4-2 • EN 61000-4-3 • EN 61000-4-5 • EN 61000-4-6
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

Product code - Description	<ul style="list-style-type: none"> • 1641 - Picolo Alert PCIe
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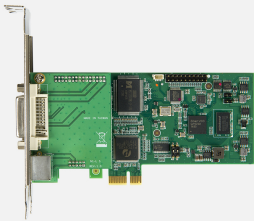
More at www.euresys.com





Piccolo HD 3G DVI

3G 60FPS HDMI / DVI high-definition 1080p video capture card



At a Glance

- Video and audio capture from DVI, Y/Pr/Pb, S-Video or CVBS video sources
- HD 1920x1080p50/60
- SD 525i60 and 625i50
- 16 general purpose IO lines
- PCIe (2.0) Gen2 x1 bus

Benefits

Compatible with a wide range of HD and SD video sources:

- DVI
- Y/Pb/Pr
- S-Video
- CVBS

Audio signal acquisition

- Stereo
- 16-bit linear PCM
- 32, 44.1, 48 kHz

Piccolo HD Studio

- Demonstration and evaluation program compatible with the Piccolo HD series of video capture cards
- Demonstrates the acquisition and live display of HD video, the use of non-destructive overlays, with an option to display a reticle cross or any graphics on the video
- Able to save images
- Available as an executable application and as source code

16 general purpose IO lines

Analog Y/Pb/Pr, audio and watchdog cables included

Windows drivers

DirectShow and C APIs

Applications

Machine Vision for the General Manufacturing Industries

- Low cost image acquisition from industrial analog cameras for 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

Specifications

Mechanical

Format	Low profile, half length, 1-lane PCI Express card with optional "Bypass module" on second slot bracket
Dimensions	L 135 mm x H 68 mm L 5.31 in x H 2.68 in
Weight	73 g, 2.57 oz, without "Bypass module" 108 g, 3.81 oz, with "Bypass module"

Host bus

Standard	PCI Express 2.0
Link width	1 lane
Link speed	5.0 GT/s (PCIe 2.0)
Peak delivery bandwidth	512 MB/s
Power consumption	Max. 4.1 W

Camera / video inputs

Interface standard(s)	<ul style="list-style-type: none">• DVI-D for HD digital video• DVI-A and Y/Pb/Pr for HD analog video• S-Video for SD analog Y/C video• CVBS for SD analog composite video
Connectors	<ul style="list-style-type: none">• DVI-I INPUT: DVI-I socket(female) connector on the bracket for digital and analog video inputs• YCbCr/AVS INPUTS: mini-DIN female connector on the bracket for one of the following cable:<ul style="list-style-type: none">– Y/Pb/Pr/L/R component cable– S-video/CVBS/L/R component cable• The Y/Pb/Pr/L/R component cable provides:<ul style="list-style-type: none">– Y/Pb/Pr: three RCA female connectors for analog HD component video inputs• The S-video/CVBS/L/R component cable provides:<ul style="list-style-type: none">– S-VIDEO: one 4-pin mini-DIN female connector for analog SD component video inputs– CVBS: one RCA female connector for analog SD composite video input
Formats and standards (HD)	Up to 1080p60 / 1080i60 / 720p60
Formats and standards (SD)	<ul style="list-style-type: none">• 525i60 (NTSC M, NTSC J, PAL M)• 625i50 (PAL B/D/G/H/I, PAL N)

Number of cameras 1

Video delivery

Raw video format(s)	YUY2, Packed YUV 4:2:2
Deliverable video resolution (HD)	<ul style="list-style-type: none">• 1080p or 1080i source : 1920 x 1080 down to 640 x 384• 720p source: 1280 x 720 down to 640 x 384
Deliverable video resolution (SD)	<ul style="list-style-type: none">• 525i60 source: 720 x 480• 625i50 source: 720 x 576

Audio / Video Outputs

Loop-through	All digital and analog, audio and video input signals are replicated on the connectors of the bypass module
Connectors	<ul style="list-style-type: none">• DVI-I OUTPUT: DVI-I socket(female) connector on the bypass module bracket for digital and analog video outputs• YCbCr/AVS OUTPUTS: mini-DIN female connector on the bypass module bracket for one of the following cables:<ul style="list-style-type: none">– Y/PB/Pr/L/R component cable– S-video/CVBS/L/R component• The Y/PB/Pr/L/R component cable provides:<ul style="list-style-type: none">– Y/Pb/Pr: 3 RCA female connectors for analog HD component video outputs• The S-video/CVBS/L/R component cable provides:<ul style="list-style-type: none">– S-VIDEO: 1 4-pin mini-DIN female connector for analog SD component video outputs– CVBS: 1 RCA female connector for analog SD composite video

Audio inputs

Number of inputs	1, Stereo
Type	<ul style="list-style-type: none">• L/R Audio: Two line-level analog audio inputs
Audio format	<ul style="list-style-type: none">• 16-bit Linear PCM• 32 kHz, 44.1 kHz or 48 kHz
Connectors	<ul style="list-style-type: none">• YCbCr/AVS INPUTS: mini-DIN female connector on the bracket for one of the following cable:<ul style="list-style-type: none">– Y/Pb/Pr/L/R component cable– S-video/CVBS/L/R component cable• The Y/Pb/Pr/L/R component cable provides:<ul style="list-style-type: none">– L/R : one twin RCA female connector for analog audio inputs• The S-video/CVBS/L/R component cable provides:<ul style="list-style-type: none">– L/R: two RCA female connectors for analog audio inputs

General Purpose Inputs and Outputs

Number of lines	16 I/O lines (IO)
Connectors	<ul style="list-style-type: none">• I/O: 20-pin dual-row 0.1" header on the PCB• WATCHDOG: 4-pin dual-row 0.1" header on the PCB
Usage	General purpose IO
Electrical specifications	IO: Quasi-bidirectional I/O lines, individually configurable as input or output

Host system requirements

Processor	<ul style="list-style-type: none">• Minimum: Core 2 Duo or better• Recommended: Intel 2nd/ 3rd Generation Core i3/i5/i7
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System memory	<ul style="list-style-type: none"> • Minimum: 2GB DDR3 • Recommended: 4GB DDR3 (dual channel) or better
Graphic card	<ul style="list-style-type: none"> • Minimum: Supports DirectX 9 or higher • Recommended: Intel HD2000/2500/3000/4000 or better

Software

Host PC Operating System	<ul style="list-style-type: none"> • Microsoft Windows 10, 8.1, 8, 7 for x86 (32-bit) and x86-64 (64-bit) processor architectures
APIs	<ul style="list-style-type: none"> • MultiCam 32- and 64-bit binary libraries for ISO-compliant C/C++ compilers • DirectShow filters for Microsoft Visual C++ compilers, for 32- and 64-bit applications • DirectShow .NET C#

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"> • European Council EMC Directive 2004/108/EC • United States FCC rule 47 CFR 15
EMC - Emission	<ul style="list-style-type: none"> • EN 55022:2010 Class B • FCC 47 Part 15 Class B
EMC - Immunity	<ul style="list-style-type: none"> • EN 55024:2010 Class B • EN 61000-4-2 • EN 61000-4-3 • EN 61000-4-4 • EN 61000-4-8
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

Product code - Description	<ul style="list-style-type: none"> • 1843-2 - Picolo HD 3G DVI
Included accessories	<ul style="list-style-type: none"> • 1844 - Picolo HD Y/Pb/Pr/L+R Analog A/V Cable • 1845 - Picolo HD S-Video/CVBS/L+R Analog A/V Cable • 1846 - Picolo HD Watchdog Cable
Optional accessories	<ul style="list-style-type: none"> • 1844 - Picolo HD Y/Pb/Pr/L+R Analog A/V Cable • 1845 - Picolo HD S-Video/CVBS/L+R Analog A/V Cable • 1846 - Picolo HD Watchdog Cable



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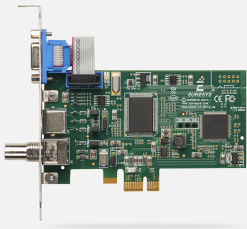
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More at www.euresys.com



Piccolo PCIe

PCIe video capture card with BNC and S-Video connectors for standard PAL/NTSC cameras



At a Glance

- BNC, DB9 and S-Video connectors
- PCIe x1 bus
- Acquisition of composite or separate video (S-Video) signals
- One video decoder, 25/30 images per second (50/60 fields per second)
- PCI and PCIe versions available

Benefits

Robust, reliable, dependable video capture card

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

Supports S-Video signals for the highest quality color images

Windows and Linux drivers available

Applications

Machine Vision for the General Manufacturing Industries

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

Life Sciences & Medical

- Standard and high-definition image acquisition for endoscopy applications
- Standard and high-definition image acquisition for dental applications

Microscopy

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

Specifications

Mechanical

Format	Low profile, half length, 1-lane PCI Express card
Dimensions	L 115.00 mm x H 64.40 mm

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
Power consumption	Max. 2.6 W (200 mA @ +3.3V, 160 mA @ +12V), excluding I/O power output

Camera / video inputs

Interface standard(s)	NTSC-M, PAL-B/G, RS-170, CCIR
Connectors	<ul style="list-style-type: none">• VIDEO 1: BNC female connector on the bracket for composite video input• S-VIDEO: 4-pin mini-DIN female connector on the bracket for components video input• DB9: 9-pin sub-D female connector on the bracket (not available with low-profile bracket)• Internal: 10-pin shrouded male header on the PCB
Termination resistor	Selectable using jumpers on the PCB
Native resolution	Square pixels, broadcast and custom resolutions
Frame rate	Up to 25/30 images per second, 50/60 fields per second
Number of cameras	3
Number of cameras (at full frame rate)	1

Video delivery

Raw video format(s)	Planar, packed, YUV and RGB color formats
Deliverable video resolution (SD)	Frame, field, CIF, QCIF and custom image formats

General Purpose Inputs and Outputs

Number of lines	4 I/O lines (IO)
Connectors	<ul style="list-style-type: none">• DB9: 9-pin female sub-D connector on the bracket (not available when the low-profile bracket is installed)• INTERNAL: 10-pin dual-row 0.1" shrouded header on the PCB
Usage	General purpose IO
Electrical specifications	IO: TTL-compatible I/O lines

Software

Host PC Operating System	<ul style="list-style-type: none">• Microsoft Windows 10, 8.1, 7 for x86 (32-bit) and x86-64 (64-bit) processor architectures• Linux for x86 (32-bit) and x86-64 (64-bit) processor architectures Refer to release notes for details
APIs	<ul style="list-style-type: none">• MultiCam 32- and 64-bit binary libraries (Windows and Linux), for ISO-compliant C/C++ compilers• DirectShow 32- and 64-bit filters (Windows only), for Microsoft Visual 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	<ul style="list-style-type: none">• European Council EMC Directive 2004/108/EC• United States FCC rule 47 CFR 15
EMC - Emission	<ul style="list-style-type: none">• EN 55022:2010 Class B• FCC 47 Part 15 Class B
EMC - Immunity	<ul style="list-style-type: none">• EN 55024:2010 Class B• EN 61000-4-2• EN 61000-4-3• EN 61000-4-4• EN 61000-4-5• EN 61000-4-6
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

Product code - Description	<ul style="list-style-type: none">• 1685 - Picolo PCIe
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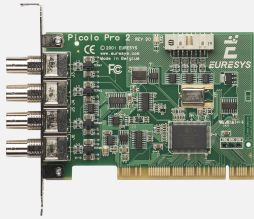
More at www.euresys.com





Piccolo Pro 2

PCI video capture card with four BNC connectors for standard PAL/NTSC cameras



At a Glance

- 4x BNC connectors on the bracket
- 32-bit 33 MHz PCI bus
- One video decoder, 25/30 images per second (50/60 fields per second)
- Fast switching between up to 4 cameras
- PCI and PCIe versions available

Benefits

Robust, reliable, dependable video capture card

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

Life Sciences & Medical

- Standard and high-definition image acquisition for endoscopy applications
- Standard and high-definition image acquisition for dental applications

Microscopy

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

Specifications

Mechanical

Format	Standard profile, half-length, 32-bit Conventional PCI card
Dimensions	L 119.91 mm x H 84.83 mm

Host bus

Standard	PCI 32-bit, 33 MHz
DMA	32-bit
Power consumption	Max. 1.7 W (240 mA @ +5V, 10 mA @ +12V, 30 mA @ -12V)

Camera / video inputs

Interface standard(s)	NTSC-M, PAL-B/G, RS-170, CCIR
Connectors	<ul style="list-style-type: none">• VIDEO 1 to VIDEO 4: BNC female connectors on the bracket for composite video inputs
Termination resistor	Selectable using jumpers on the PCB
Native resolution	Square pixels, broadcast and custom resolutions
Frame rate	Up to 25/30 images per second, 50/60 fields per second
Number of cameras	4
Number of cameras (at full frame rate)	1

Video delivery

Raw video format(s)	Planar, packed, YUV and RGB color formats
Deliverable video resolution (SD)	Frame, field, CIF, QCIF and custom image formats

General Purpose Inputs and Outputs

Number of lines	13 I/O lines (IO)
Connectors	DIGITAL I/O: 16-pin two-row 0.1" shrouded header on the PCB
Usage	General purpose IO
Electrical specifications	IO: TTL-compatible I/O lines

Software

Host PC Operating System	<ul style="list-style-type: none">• Microsoft Windows 10, 8.1, 7 for x86 (32-bit) and x86-64 (64-bit) processor architectures• Linux for x86 (32-bit) and x86-64 (64-bit) processor architectures Refer to release notes for details
APIs	<ul style="list-style-type: none">• MultiCam 32- and 64-bit binary libraries (Windows and Linux), for ISO-compliant C/C++ compilers• DirectShow 32- and 64-bit filters (Windows only), for Microsoft Visual 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	<ul style="list-style-type: none">• European Council EMC Directive 2004/108/EC• United States FCC rule 47 CFR 15
EMC - Emission	<ul style="list-style-type: none">• EN 55022:2010 Class B• FCC 47 Part 15 Class B
EMC - Immunity	<ul style="list-style-type: none">• EN 55024:2010 Class B• EN 61000-4-2• EN 61000-4-3• EN 61000-4-6

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

Product code - Description	• 1157 - Picolo Pro 2
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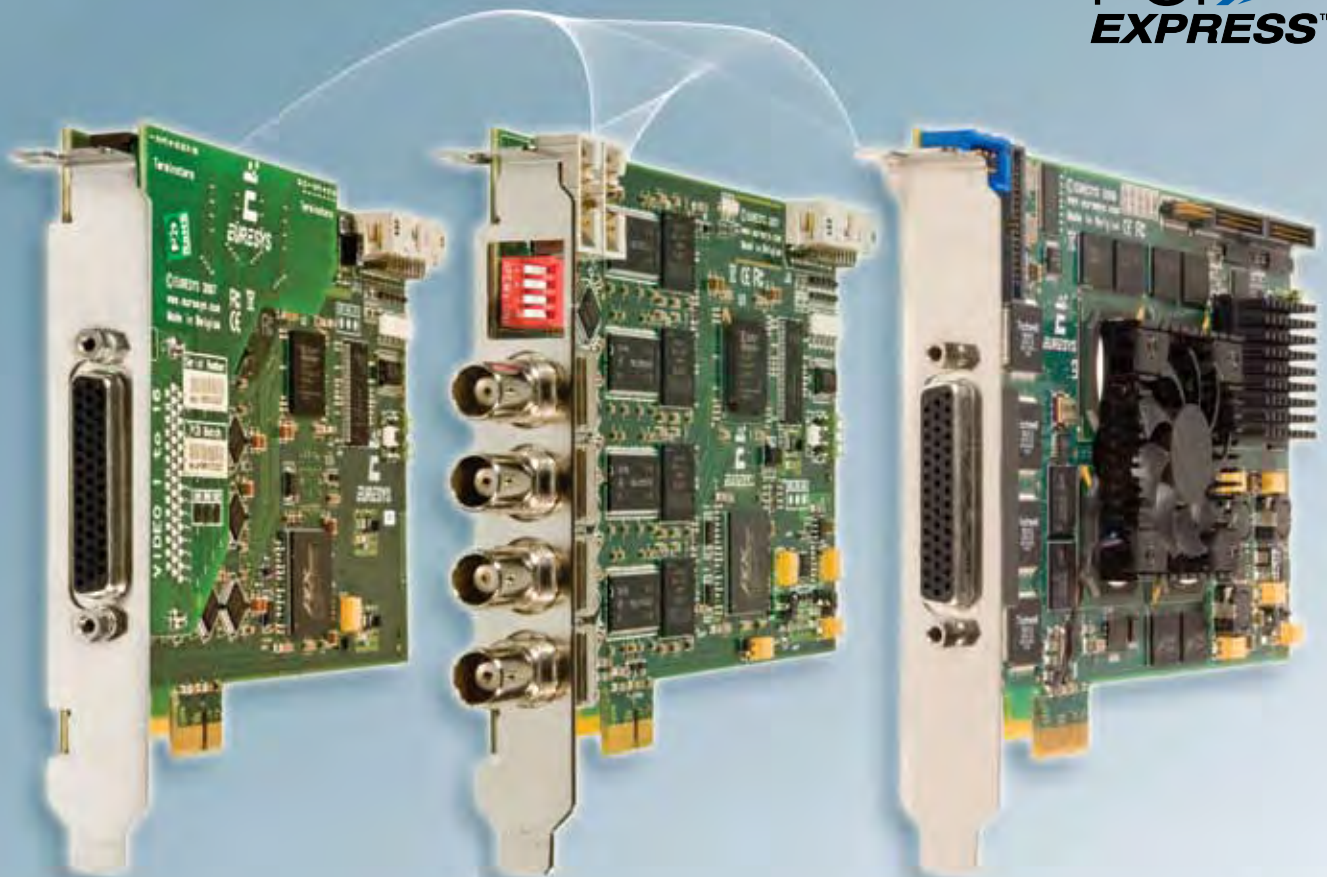
More at www.euresys.com





PICOLO™ series

High-quality video capture boards



**PICOLO Alert
Compact PCIe™**

**PICOLO
Diligent Plus™**
MPEG-4 on-board compression

**NEW
PICOLO
V16 H.264™**
H.264 on-board compression

PICOLO™ series

PICOLO™ – PICOLO Junior 4™ – PICOLO Pro 2™ – PICOLO Pro 3™ – PICOLO Tympo™ – PICOLO Tetra™
PICOLO Alert™ – PICOLO Alert PCIe™ – PICOLO Alert Compact™ – PICOLO Alert Compact PCIe™
PICOLO Diligent™ – PICOLO Diligent Plus™ – PICOLO V16 H.264™

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The PICOLO™ series Comparison Chart

Video acquisition boards

	PICOLO	PICOLO Junior 4	PICOLO Pro 2	PICOLO Pro 3	PICOLO Tymo	PICOLO Tetra	PICOLO Alert PICOLO Alert PCIe	PICOLO Alert Compact PICOLO Alert Compact PCIe
PCI interface(s)	32-bit, 33 MHz PCI	32-bit, 33 MHz PCI	32-bit, 33 MHz PCI	32-bit, 33 MHz PCI	32-bit, 66 MHz PCI	64-bit, 66 MHz PCI	64-bit, 66 MHz PCI or PCI Express x1	64-bit, 66 MHz PCI or PCI Express x1
Video resolution	Square - Broadcast QCIF => Full D1	Square - Broadcast QCIF => Full D1	Square - Broadcast QCIF => Full D1	Square - Broadcast QCIF => Full D1	Square - Broadcast QCIF => Full D1	Square - Broadcast QCIF => Full D1	Square - Broadcast QCIF => Full D1	Square - Broadcast QCIF => Full D1
Video acquisition rate <small>fps= fields per second ips=images per second</small>	Up to 50/60 fps, up to 25/60 ips	Up to 50/60 fps, up to 25/60 ips	Up to 50/60 fps, up to 25/60 ips	Up to 50/60 fps, up to 25/60 ips	Up to 200/240 fps, up to 100/120 ips	Up to 200/240 fps, up to 100/120 ips	200/240 fps, up to 100/120 ips constantly available	200/240 fps, up to 100/120 ips constantly available
Nr. of real time cameras <small>per board</small>	1	1	1	1	4	4	4	4
Max. cameras <small>per board</small>	3	4	4	4 + 12*	16	16	16	16
S-Video inputs	1	-	-	-	4	-	-	-
Video acquisition type	Real-time => Switching	Real-time => Switching	Real-time => Quick switching	Real-time => Quick switching	Real-time => Quick switching	Real-time => Quick switching	Real-time => Digital switching Two simultaneous streams per camera	Real-time => Digital switching Two simultaneous streams per camera
Hardware compression	-	-	-	-	-	-	-	-
Video input connector <small>On the bracket Internally 75-Ohm termination resistor</small>	BNC/S-Video/DB9 - Internal jumpers	4 BNC - Internal jumpers	4 BNC - Internal jumpers	4 BNC for 2 Modules Pro 3 Internal jumpers	HD44F 2 PH40M Internal jumpers	4 BNC 3 PH10M Piano-switches	4 BNC 4 PH10M Piano-switches	HD44F - Piano-switches
Video output	-	-	-	-	1 selected with cascade input	4	-	-
Size	121 x 70 mm 4,76 x 2,76 in	120 x 90 mm 4,72 x 3,54 in	121 x 85 mm 4,76 x 3,34 in	125 x 107 mm 4,92 x 4,21 in	Low profile Half lenght	Full height Half lenght	Full height Half lenght	Full height Half lenght
Input Output Lines								
I/O connector(s) <small>On the bracket Internal</small>	DB9F -	- -	- PH16M	RJ45F PH10M for MIO Link	- PH20M	- PH16M, PH10M for MIO Link	- PH20M	- PH20M
Max I/O lines <small>On-board input lines On-board output lines On-board bidirectional lines</small>	4 - 4 TTL	- - -	13 - 13 TTL	5 + 40** - 5 TTL	9 professionals 4 contact-closure 5 solid-state relay -	13 + 40** - 13 TTL	9 professionals 4 contact-closure 5 solid-state relay -	9 professionals 4 contact-closure 5 solid-state relay -
Serial I/O port	-	-	-	1 RS485	-	-	-	-
Watchdog	-	-	-	✓	✓	✓	✓	✓
Modules and Accessories								
MIO <small>I/O Module</small>	-	-	-	✓	-	✓	-	-
VEB <small>Video Expansion Bracket</small>	-	-	-	-	-	3 for video in 1 for video out	3 for video in	-
Module Pro 3	-	-	-	✓	-	-	-	-
Spider cable <small>Connectors: HD44M - 16 BNC</small>	-	-	-	-	✓	-	-	✓
Drivers								
MultiCam <small>for Windows® for Linux</small>	✓	✓	✓	✓	✓	✓	✓	✓
Euresys DirectShow filters	✓	✓	✓	✓	✓	✓	✓	✓
Programming languages	C, C++, .NET classes and ActiveX controls							



Video acquisition and compression boards

NEW

	PICOLO Diligent	PICOLO Diligent Plus	PICOLO V16 H.264
PCI interface(s)	64-bit, 66 MHz PCI	PCI Express x1	PCI Express x1
Video resolution	Broadcast QCIF => full D1	Broadcast QCIF => full D1	Broadcast (Raw image: 4CIF, CIF, QCIF) (Compressed image: 4CIF, CIF)
Video acquisition rate <small>fps= fields per second ips=images per second</small>	200/240 fps, 100/120 ips constantly available	200/240 fps, 100/120 ips constantly available	400/480 ips
Nr. of real time cameras <small>per board</small>	4	4	16
Max. cameras <small>per board</small>	4	4	16
S-Video inputs	-	-	-
Video acquisition type	Real-time, Simultaneous compressed and raw streams per camera	Real-time, Simultaneous compressed and raw streams per camera	Real-time, Simultaneous compressed and raw streams per camera
Hardware compression	MPEG-4 Part 2	MPEG-4 Part 2	H.264 (MPEG-4 Part 10): Base Profile (Level 3.1)
Video input connector <small>On the bracket Internally 75-Ohm termination resistor</small>	4 BNC Internal headers Piano-switches	4 BNC Internal headers Piano-switches	HD44F Internal headers Internal slides-switches
Video output	1 selected with cascade capability	1 selected with cascade capability	1 selected with cascade capability
Size	Full height Half lenght	Full height Half lenght	Full height Half lenght
<i>Audio</i>			
Line-level analog audio input	-	-	16
Internal connector	-	-	HH34M
<i>Input Output Lines</i>			
I/O connector(s) <small>On the bracket Internal</small>	- -	- PH20M	- HH34M, PH4M
Max I/O lines <small>On-board input lines On-board output lines On-board bidirectional lines</small>	-	<u>9 professionals</u> 4 contact-closure 5 solid-state relay	<u>32 professionals</u> 16 contact-closure 16 solid-state relay
Serial I/O port	-	-	-
Watchdog	-	✓	✓
<i>Modules and Accessories</i>			
MIO <small>I/O Module</small>	-	-	-
VEB <small>Video Expansion Bracket</small>	1 for video out	1 for video out	-
Module Pro 3	-	-	-
Spider cable <small>Connectors: HD44M - 16 BNC</small>	-	-	✓
<i>Drivers</i>			
MultiCam <small>for Windows® for Linux</small>	✓ ✓	✓ ✓	-
Euresys DirectShow filters	✓	✓	Picolo V16 H.264 DirectShow driver
Programming languages	C, C++, .NET classes and ActiveX controls		C++

*With 1 additional Module 12 Pro 3 or 3 additional Module Pro 3 **Up to 20 optically isolated Input lines and 20 relay output lines with 5 additional MIO modules

PICOLO™

PICOLO Junior 4™

PICOLO Pro 2™

PICOLO Pro 3™

PICOLO Tygo™

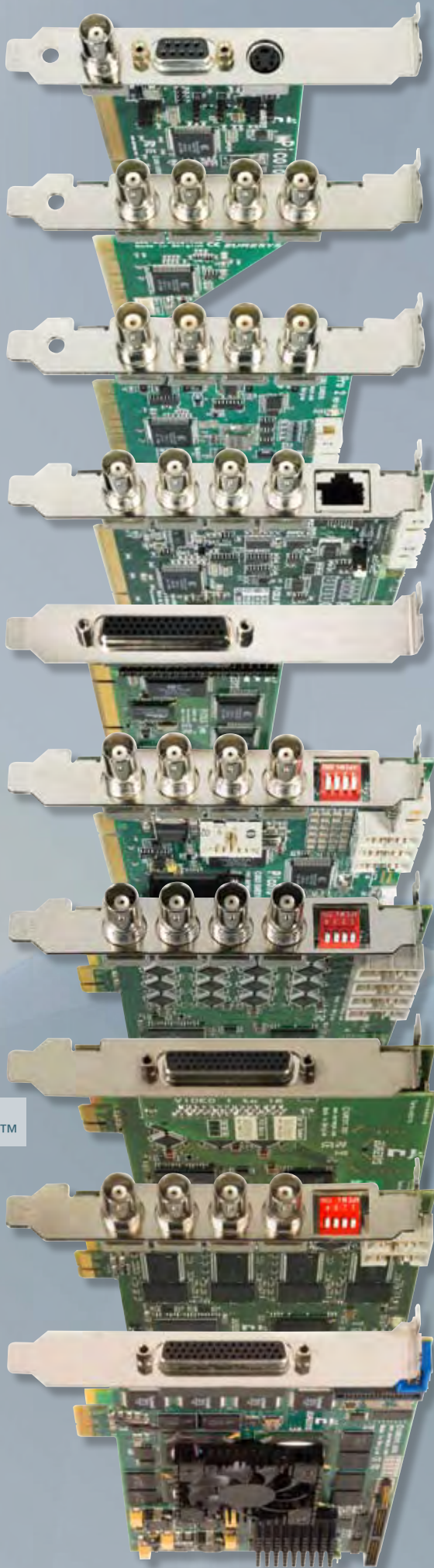
PICOLO Tetra™

PICOLO Alert™
PICOLO Alert PCIe™

PICOLO Alert Compact™
PICOLO Alert Compact PCIe™

PICOLO Diligent™
PICOLO Diligent Plus™

PICOLO V16 H.264™



The PICOLO™ series


EURESYS™
Excellence in Vision

Common Features

The Euresys Pico boards are **top-quality video acquisition boards** compatible with standard PAL or NTSC cameras. They are dedicated to high-end applications in the fields of video surveillance and security, or entry-level applications in the field of machine vision such as quality control and production monitoring. These boards faithfully digitize the video signal provided, offering **perfect image fidelity** to make the most of the data provided by a camera.

Acquisition

- **Standards** Color (PAL, NTSC), monochrome (CCIR, EIA)
- **Image size**
 - Broadcast resolution: up to 720 x 488 NTSC / EIA, 720 x 576 PAL / CCIR
 - Square pixels: up to 640 x 488 NTSC / EIA, 768 x 576 PAL / CCIR
The Pico Diligent and V16 H.264 boards support only broadcast resolutions
 - Frame, field, CIF, QCIF and custom image formats
In the broadcast resolution, the Pico V16 H.264 supports for the raw image: 4CIF, CIF, QCIF for the compressed image: 4CIF, CIF
 - Possible horizontal and vertical hardware scaler
 - Possible built-in arbitrary cropping to a rectangular Region Of Interest
- **Image adjustments such as video contrast, brightness, color saturation and hue** - NTSC only -
- **Wide range of boards with various possible number of camera**
 - Real-time acquisition from one to 16 cameras
 - Quick acquisition switching for up to 16 cameras



Storage

- **Image format storage:** Numerous color or monochrome formats are available including all popular color formats such as RGB, YUV, planar or packed.
For a complete list, consult the Pico series product page on www.euresys.com.
- **Direct capture** of individual frames as well as video sequences to PC memory

On-board Compression

- **Pico Diligent boards:** four MPEG-4 compression chips
- **Pico V16 H.264:** H.264 real-time compression on 16 video inputs

Synchronization

A fully digital technique is used to synchronize the digitizer operation on the incoming video signal. This ensures a **stable and robust operation** despite the varying video conditions. The Euresys video capture boards robustly support poor video signals issued by a low-end VCR. When using high-quality video surveillance cameras, the acquisition performance is exemplary, as demonstrated by a jitter figure in the nanosecond range.

Bitmap image formats

Before storing the acquired image into the destination memory buffer, a pixel format conversion takes place in real-time. Numerous color or monochrome formats are available such as packed RGB32, RGB24, RGB16, RGB15, YCrCb 4:2:2, YCrCb 4:1:1, Y8 or such as planar YCrCb 4:2:2, YCrCb 4:1:1, YCrCb 4:2:0, YCrCb 4:1:0, YCbCr 4:2:0, YCbCr 4:1:0.

Bus Mastering

All Euresys boards are **PCI bus mastering** agents that directly store the acquired images into the PC physical memory without CPU involvement. As a **unique feature**, the Euresys capture boards automatically recover the **scatter-gather** virtual memory mapping to present the data as a regular bitmap image in a user allocated memory buffer.



PICOLO Tymo™

Compact and cost-effective video capture board with 16 inputs

16 video inputs - up to 200 / 240 fps
One compact HD-44 video connector plus the corresponding internal header
Form factor: Conventional PCI 32-bit, 66 MHz, 3V or 5V signaling
Small PCB size with regular and low profile brackets



Fitted with four color video digitizers, the Pico Tymo acquires four real-time image sequences in parallel from composite or S-Video cameras.

Single HD-44 video input connector for 16 video inputs

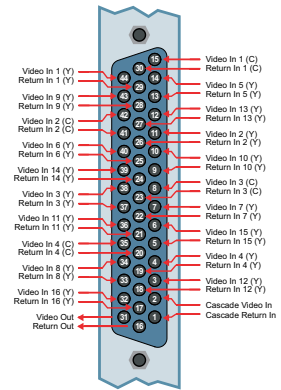
The choice of a single connector for multiple and various video inputs is cost-effective and allows customized and robust integrations.

Sixteen composite video inputs, 4 S-Video inputs among them

4 high-quality S-Video cameras can be connected for real-time acquisition with full resolution. A mix of composite and S-Video cameras can be connected as long as only one s-Video camera is connected to a single digitizer.

One video output to take advantage of standard video monitors often available in video surveillance systems.

One cascade video input to echo the signal available on any of the video inputs of any Pico Tymo board in the system.



Camera connector HD44F

9 professional I/O lines and a configurable hardware watchdog

On an internal 20-pin header:

4 professional input lines

- ✓ Contact-closure inputs that can be directly connected to:
 - Switches
 - Relays
 - Opto-coupled devices
 - 5V or TTL output
 - 12V or 24V output
- ✓ Providing a very high common-mode immunity

5 professional output lines

- ✓ Solid-state relay outputs that can be directly connected to:
 - Relays
 - Opto-coupled devices
 - TTL inputs with pull-up or pull-down resistor

Direct connection to various kinds of devices

Trigger, strobe, interface to alarm systems, ...

Not sensitive to polarity

A **Spider Cable** equipped with an HD44M connector and 18 BNC is available separately on request for a straightforward evaluation of the board.



Software MultiCam driver for Microsoft Windows 2000®, XP®, Server 2003® and Vista® for Suse Linux Enterprise Server 10

Euresys dedicated **DirectShow filters**

Programming languages C, C++, .NET classes and ActiveX controls



PICOLO Alert™ boards

Ultra-fast multiple-channel video capture boards

16 video inputs - 200 / 240 fps constantly available

Simultaneous capture and preview functions - Proprietary video-surveillance FPGA -

Form factors: Conventional PCI 64 bit, 66 MHz, 3V or 5V signaling
 PCI Express Full-height, half-length, x1



PICOLO Alert™ PICOLO Alert PCIe™

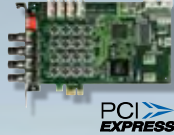
Video input connectors

4 BNC on the board bracket

4 internal on-board headers

VEB -Video Expansion Brackets- compatible

- 12 additional inputs connected internally with 3 VEB
- 4 cameras connected on the board BNC connectors

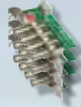


PICOLO Alert Compact™ PICOLO Alert Compact PCIe™

One compact HD-44 video connector

On the bracket:

- 16 video inputs
- Compatible with the PicoLO Tymo HD-44 connector
- A Spider Cable, equipped with an HD44M and BNC connectors, is available separately on request for a straightforward evaluation of the board.



Equipped with the Euresys video-surveillance FPGA, they are able to acquire images from up to sixteen independent cameras with a total digitizing power of 200 / 240 fps constantly available. The user is free to share this digitizing power between the sixteen channels, according to the requirements of the application.

16 video inputs

200 / 240 fps constantly available

This is not a peak value! As a unique feature, the Alert boards offer the ability to share a total digitizing power of 200 / 240 fields per second (100 / 120 ips) among the sixteen video channels without switching delay.

PAL / NTSC cameras	4-camera configuration		16-camera configuration	
	/board	/camera	/board	/camera
Cif/s or Field/s	200 / 240	50 / 60	200 / 240	12.5 / 15
Image/s	100 / 120	25 / 30	100 / 120	6.25 / 7.5

- Automatic removal of interlacing artefacts in field mode

- **A large frame store** for an automatic and smooth regulation of the frame rate in case of a system overuse of the PCI bus. This frame store also ensures a non disruptive image delivery to the PC memory regardless of PCI bus latencies.

- **Stable images regardless of video parity:** thanks to the Euresys video-surveillance FPGA, the PicoLO Alert boards process the acquired images on the fly eliminating all issues related to the parity management without requiring any processing power from the PC.

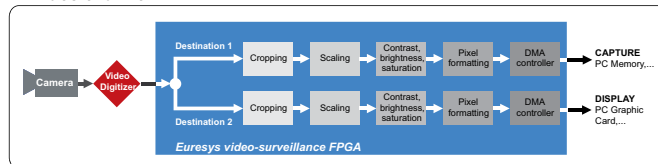
An independently programmable frame rate and acquisition parameters for each video input

The user is able to choose the applied frame rate according to the requirements of the application. A maximum of four real-time channels can run simultaneously. The image acquisition is fully configurable for image resolution, pixel size, cropping, scaling, contrast, brightness, saturation, storage format... The commonly used size formats are predefined: QCIF, CIF, Field and Frame, with square pixels or broadcast resolution.

Two simultaneous and independent video streams per camera for simultaneous capture and preview functions

Each camera independently delivers data to two different memory locations in the PC, including the graphic card. Both are fully configurable for acquisition rate, image resolution, cropping, scaling, contrast, brightness, saturation, storage format...

A video channel



9 professional I/O lines and a configurable hardware watchdog - identical to the PicoLO Tymo -

Software **MultiCam driver** for Microsoft Windows 2000®, XP®, Server 2003® and Vista®
 for Suse Linux Enterprise Server 10

Euresys dedicated **DirectShow filters**

Programming languages C, C++, .NET classes and ActiveX controls



PICOLO Diligent™ boards

Full D1 video capture and MPEG-4 compression boards

- 4 video inputs - 200 / 240 fps constantly available
- Simultaneous capture and preview functions - Proprietary video-surveillance FPGA -
- Compression: Real-time MPEG-4 acquisition in full D1 format
- Image format: broadcast resolution
- One selected video output with cascading capability



PICOLO Diligent™

Conventional PCI

64 / 32 bits, 66 / 33 MHz, 3V or 5V signaling -



PICOLO Diligent Plus™

9 professional I/O lines

- identical to the PicoLo Tymo -

Configurable hardware watchdog

PCI Express Full-height, half-length, x1



The PicoLo Diligent are 4-channel video capture and MPEG-4 compression boards. Equipped with the Euresys video-surveillance FPGA, the Diligent boards are able to acquire images from up to four independent cameras and simultaneously transfer the full D1 MPEG 4 streams and the full D1 uncompressed video images at 25 / 30 frames per sec from all four cameras.

4 real-time video inputs

MPEG-4 Part 2 on-board compression

The PicoLo Diligent boards are equipped with four MPEG-4 compression chips. The MPEG-4 output format complies with the Single Profile @ Level3 and is compatible with the Microsoft® codec MP4S and the DivX codec DX50.

- Enhanced motion adaptive de-interlacing functions
- Programmable Group Of Pictures structures and sizes
- Advanced MPEG bit-rate control (CBR/VBR) from 1Kbps to 6 Mbps

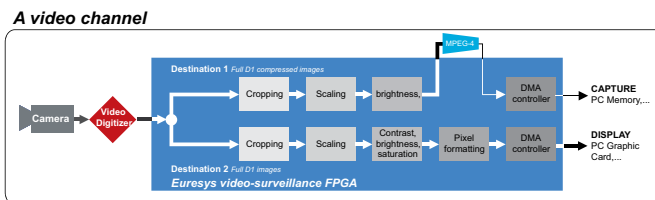
As the PicoLo Alert boards, the PicoLo Diligent features:

- Automatic removal of interlacing artefacts in field mode
- A large frame store
- Stable images regardless of video parity

An independently programmable frame rate and acquisition parameters for each video input

The user is able to choose the applied frame rate according to the requirements of the application. A maximum of four real-time channels can run simultaneously. The image acquisition is fully configurable for image resolution, pixel size, cropping, scaling, contrast, brightness, saturation, storage format... The commonly used size formats are predefined: QCIF, CIF, Field and Frame, with broadcast resolution.

Real-time full D1 preview and simultaneous full D1 compressed for recording or broadcasting



Video inputs connectors *On the bracket:* four robust BNC connectors
Internally: a four-video inputs header

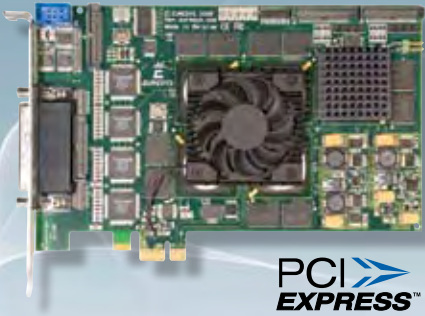
Video output A video output is available to display the different sources one at a time. The customer directs to an analog monitor one of the four video inputs or the fifth cascade input. This cascade input allows to select a video source coming from other PicoLo Diligent boards installed in the same system.

Software MultiCam driver for Microsoft Windows 2000®, XP®, Server 2003® and Vista®
 for Suse Linux Enterprise Server 10

Euresys dedicated **DirectShow filters**

Programming languages C, C++, .NET classes and ActiveX controls





PICOLO V16 H.264™

Capture and H.264 compression board for 16 video inputs with audio capability

- 16 video inputs PAL or NTSC
- H.264 on-board compression, 400/480 ips at full resolution (25/30 ips x 16)
- Precise time stamping
- One selected video output with cascade capability
- Form factor: PCI Express x1 full-height, half-length



The PicoLO V16 H.264 is an outstanding video capture board featuring real-time H.264 on board compression for 16 video channels with audio capability. Each video input delivers simultaneously a raw and compressed video stream. Both streams are independently configurable.

16 real-time video inputs

400/480 ips at full resolution (25/30 ips x 16)

An independently programmable frame rate and acquisition parameters for each of the 16 video inputs

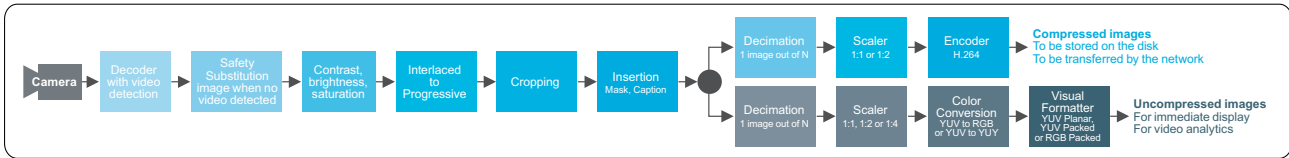
- Contrast, brightness and saturation controls available
- Video presence detection
- Overlay caption text and masking regions

H.264 on-board compression

- H.264 (MPEG-4 Part 10) Base Profile (Level 3.1)
- A compression standard offering high image quality on top of low bit rate and low storage requirement

Simultaneous and independent H.264 compressed and raw image transfer - subject to PC bus available bandwidth -

A video channel



Independently configurable functions on both streams

Compressed video stream configurations

Full resolution and full frame rate possible up to 2.0 Mbps per acquisition channel

- Resolution settings: 4CIF: 704 x 576 (PAL) or 704 x 480 (NTSC)
CIF: 352 x 288 (PAL) or 352 x 240 (NTSC)
- Configurable reduction of the **frame rate**
- Configurable **bit rate** control: CPQ - constant picture quality -
CBR - constant bit rate -
VBR - variable bit rate -

Raw video stream configurations

- **Cropping** control
- **Downscaling**: Resolution settings: 4CIF: 704 x 576 (PAL) or 704 x 480 (NTSC)
CIF: 352 x 288 (PAL) or 352 x 240 (NTSC)
QCIF: 176 x 144 (PAL) or 176 x 120 (NTSC)
- Configurable reduction of the **frame rate**
- Image **storage formats** available: Packed: RGB15, RGB16, RGB24, RGB32, YUV422, Y8
Planar: YUV422PL

16 audio inputs

- Line-level audio signals
- Selectable sampling quality: 8 kHz
- Audio encoding
 - ✓ PCM (G.711): μ -law /A-law selectable companding
 - ✓ Bit rate: 64 kbps
- Audio-video synchronization supported by accurate time stamping of audio and video data
- Internal Audio connector
 - ✓ One 34-pin high-density header, 1.27 mm pitch



PICOLO V16 H.264™

32 professional I/O lines and watchdog capability

- 16 contact closure inputs
- 16 solid-state relay outputs
- 1 watchdog capability
- Internal I/O connectors
 - ✓ Two 34-pin high-density headers, 1.27 mm pitch
 - ✓ One 4-pin header "WATCHDOG" connector

Video connectors for Video In and Out

- One HD44 connector on the bracket
- 75-Ohm switchable termination resistors
- Internal pin header connectors
 - ✓ 1 "VIDEO IN": 34-pin high-density header, 1.27 mm pitch
 - ✓ 1 "VIDEO OUTPUT & CASCADE": 6-pin header

Software **DirectShow filters** interfaces for Microsoft Windows XP®, XP Embedded®, Server 2003®, Vista® XP x64 Edition®, Server 2003 x64 Edition®, Vista 64®

Kernel streaming mini driver providing following filters:

- V16 H.264 Visual Source
- V16 H.264 Audio Encoder
- V16 H.264 Input Line
- V16 H.264 Output Line
- V16 H.264 Watchdog
- V16 H.264 Pass-Through Selector

Programming language C++

Ordering Information

ORDER CODE	DESIGNATION	ORDER CODE	DESIGNATION
Video Capture Boards			
1155	PICOLO	6001	PICOLO Alert Compact
1401	PICOLO Junior 4	6003	PICOLO Alert Compact PCIe
1157	PICOLO Pro 2	1307	PICOLO Diligent
1158	PICOLO Pro 3	6002	PICOLO Diligent Plus
1402	PICOLO Tymo	1644	PICOLO V16 H.264
1303	PICOLO Tetra	Video & I/O Modules	
1305	PICOLO Alert	1201	Pro 3 Module
1641	PICOLO Alert PCIe	1203	VEB
		1202	MIO

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