PICOLO™ series

High-Quality Video Capture Cards

New
PICOLO PCIe™

PICOLO Tetra™

PICOLO Alert PCIe™

PICOLO™ series

PICOLO PCIe™ – PICOLO ™ – PICOLO Junior 4™ – PICOLO Pro 2 PCIe™ – PICOLO Pro 2™
PICOLO Tymo™ – PICOLO Tetra™ – PICOLO Alert™ – PICOLO Alert PCIe™
PICOLO Alert Compact™ – PICOLO Alert Compact PCIe™

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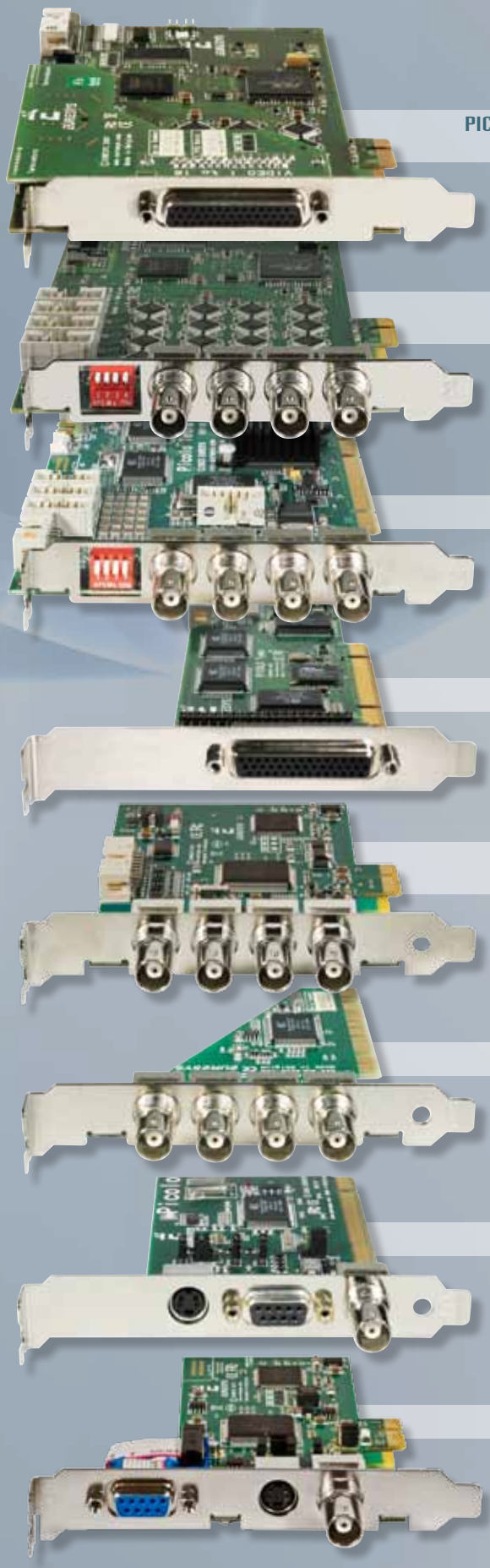
The PICOLO™ series



PICOLO Alert Compact PCIe™
PICOLO Alert Compact™

PICOLO Alert PCIe™
PICOLO Alert™

PICOLO Tetra™

PICOLO Tymo™

PICOLO Pro 2 PCIe™
PICOLO Pro 2™

PICOLO Junior 4™

PICOLO™

PICOLO PCIe™

The PICOLO™ series Comparison Chart

Video Capture Cards

	New ***PICOLO PCIe***	***PICOLO***	***PICOLO Junior 4***	***PICOLO Pro 2*** ***New*** ***PICOLO Pro 2 PCIe***	***PICOLO Tymo***	***PICOLO Tetra***	***PICOLO Alert*** ***PICOLO Alert PCIe***	***PICOLO Alert Compact*** ***PICOLO Alert Compact PCIe***
PCI interface(s)	PCI Express x1 standard- and low-profile brackets	32-bit, 33 MHz PCI	32-bit, 33 MHz PCI	32-bit, 33 MHz PCI or PCI Express x1	32-bit, 66 MHz PCI standard- and low-profile brackets	64-bit, 66 MHz PCI	64-bit, 66 MHz PCI or PCI Express x1	64-bit, 66 MHz PCI or PCI Express x1
Video signals	Interlaced composite PAL/NTSC S-Video interlaced	Interlaced composite PAL/NTSC S-Video interlaced	Interlaced composite PAL/NTSC	Interlaced composite PAL/NTSC	Interlaced composite PAL/NTSC S-Video interlaced	Interlaced composite PAL/NTSC	Interlaced composite PAL/NTSC	Interlaced composite PAL/NTSC
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 *fps= fields per second ips=images per second*	Up to 50/60 fps, up to 25/30 ips	Up to 50/60 fps, up to 25/30 ips	Up to 50/60 fps, up to 25/30 ips	Up to 50/60 fps, up to 25/30 ips	Up to 200/240 fps, up to 100/120 ips	Up to 200/240 fps, up to 100/120 ips	200/240 fps, 100/120 ips constantly available	200/240 fps, 100/120 ips constantly available
Nr. of real time cameras *per card*	1	1	1	1	4	4	4	4
Max. number of cameras *per card*	3	3	4	4	16	16	16	16
S-Video inputs	1	1	-	-	4	-	-	-
Video acquisition type	Real-time => Switching	Real-time => Switching	Real-time => Switching	Real-time => Quick switching	Real-time => Quick switching	Real-time => Quick switching	Real-time => Digital switching	Real-time => Digital switching
Two independent and simultaneous video output destinations per video input	-	-	-	-	-	-	Leading to 32 video output streams	Leading to 32 video output streams
Video input connector *On the bracket* *Internally* *75-Ohm termination resistor*	*BNC / S-Video / DB9 (standard profile only)* *10-pin header* *Internal jumpers*	*BNC / DB9 / S-Video* - *Internal jumpers*	*4 BNC* - *Internal jumpers*	*4 BNC* - *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	Low profile 115 x 65 mm Low profile 4,53 x 2,59 in	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	Low profile Half length	Full height Half length	Full height Half length	Full height Half length
Input Output Lines								
I/O connector(s) *On the bracket* *Internal*	DB9F *(standard profile only)* 10-pin header	DB9F -	- -	- PH16M	- PH20M	- PH16M	- PH20M	- PH20M
Max I/O lines *On-board input lines* *On-board output lines* *On-board bidirectional lines*	4 - - *4 TTL*	4 - - *4 TTL*	-	13 - - *13 TTL*	9 professionals *4 contact-closure* *5 solid-state relay* -	13 - - *13 TTL*	9 professionals *4 contact-closure* *5 solid-state relay* -	9 professionals *4 contact-closure* *5 solid-state relay* -
Watchdog	-	-	-	-	✔	✔	✔	✔
Modules and Accessories								
VEB *Video Expansion Bracket*	-	-	-	-	-	3 for video in 1 for video out	3 for video in	-
Spider cable *Connectors: HD44M - 16 BNC*	-	-	-	-	✔	-	-	✔
Drivers								
Drivers for Windows® *32-bit* *64-bit*	MultiCam and DirectShow filters MultiCam							
Drivers for Linux *32-bit and 64-bit*	MultiCam							

***In cascade configuration

Connectors legend: PH= pin header, FTSH= half-pitch pin header, HD= high density, M= male, F= female

Common Features

The Euresys Picolo cards are **top-quality video acquisition cards** 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 cards faithfully digitize the video signal provided, offering **perfect image fidelity** to make the most of the data provided by a camera.

Acquisition

- ***Video 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*
  - *Frame, field, CIF, QCIF and custom image formats*
  - *Horizontal and vertical hardware scaler*
  - *Arbitrary cropping to a rectangular Region Of Interest*
- ***Image adjustments*** *such as video contrast, brightness and color saturation - adjustable hue in NTSC only -*
- ***Wide range of cards with various possible number of cameras***
  - *Real-time acquisition from one to 4 cameras*
  - *Quick 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.*
- ***Direct capture*** of individual frames as well as video sequences to PC memory

Software

- ***MultiCam drivers:***
  - *Multicam for Windows 32-bit and 64-bit*
  - *Multicam for Linux 32-bit and 64-bit*
- ***DirectShow filters***

Synchronization and scaling

A fully digital technique is used to synchronize the digitizer operation on the incoming video signal. Before PCI transfer to the PC, the acquired images can be scaled to any format smaller than the original one, down to 1/12 (1/8 for the Picolo Alert). The downscaling process involves a sophisticated hardware device, performing an accurate interpolation in both the horizontal and vertical directions. The image buffer for a downscaled image is smaller in size, and its transfer needs less PCI bandwidth. Moreover, any part of the incoming image can be retained for further PCI transfer, allowing to define a region of interest.

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 cards 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 cards automatically recover the **scatter-gather** virtual memory mapping to present the data as a regular bitmap image in a user allocated memory buffer.

PICOLO PCIe™ – PICOLO™

Low-cost
Acquisition up to 50 / 60 fps
- Composite and S-Video video signals
- One camera among 3 connected cameras

Form factors: ***PCI Express x1*** *small PCB size delivered with low-profile and standard-profile brackets*
Conventional PCI *32 bit, 33 MHz, 5V signaling*

Picolo PCIe and Picolo are entry-level and cost-effective capture cards optimized for **single camera applications**. They support the acquisition and the **real-time** transfer of **full resolution color images** or sequences of images to the PC memory. These Picolo cards capture one or two **composite** interlaced video signals and one **S-Video interlaced video** signal. The square-pixel resolution (640 x 480 or 768 x 576) is achieved at full frame rate (25 or 30 frames/s). The PCI Express and the PCI versions of the card are fully interchangeable. Picolo and Picolo PCIe are the ideal capture cards for **cost-sensitive applications** in the fields of machine vision, access control and x-ray inspection.

Flexible Video Connections

Up to three cameras can be connected to a Picolo. Picolo PCIe and Picolo acquire images from any one of them. The following table shows the allowed multiple cameras configurations.

	S-Video	DB9 or 10-pin header	BNC
Configuration 1	1 S-Video	1 composite	1 composite
Configuration 2	-	2 composite	1 composite
Configuration 3	-	1 S-Video	1 composite

Possible Camera Configuration

	On-bracket connectors			Internal connectors
	S-Video	DB9	BNC	10-pin header
Picolo PCIe				
- Low-profile bracket mounting	v		v	v
- Standard-bracket mounting	v	v	v	
Picolo	v	v	v	

Available Connectors

Picolo is equipped with an S-Video, a DB9 and a BNC connector on the bracket. Picolo PCIe exposes different connectors depending on the bracket mounting. The standard-profile mounting also exposes an S-Video, a DB9, and a BNC connector on the bracket. A flat cable connects the DB9 connector on the bracket to an internal 10-pin header connector.

The low-profile mounting exposes an S-Video, and a BNC connector on the bracket. The signals of the DB9 are available internally through a 10-pin header.

TTL I/O Lines

Four TTL-compatible input / output lines are available from the on-bracket **DB9 connector** or the internal 10-pin header connector when available. One line can be configured as an external acquisition trigger.

PICOLO Junior 4™

Low-cost
Acquisition up to 50 / 60 fps
- One camera in real-time
- Switching between up to 4 cameras

Form factors: ***PCI*** *32 bits, 33 MHz, 5 V*

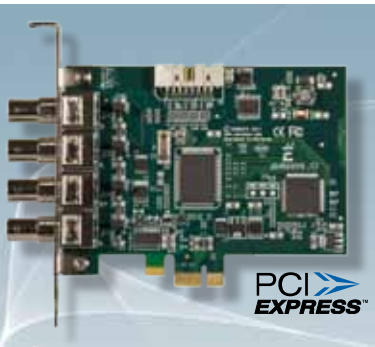
The Picolo Junior 4 is a **price-optimized** video capture card for **up to 4 cameras**. This card is ideal to be integrated into **entry-level video surveillance systems produced in large quantities**.

Video Image Formats

The Picolo Junior 4 capture card acquires color or monochrome video images from composite interlaced video signals. Acquisition of full frame (two fields) or single field images is selectable.

Video Connectors

Picolo Junior 4 is fitted with **four standard BNC connectors** for ruggedized camera connection.



PICOLO Pro 2 PCIe™
PICOLO Pro 2™

Acquisition up to 50 / 60 fps
- One camera in real-time
- Quick switching between up to 4 cameras with a superior frame rate
Form factors: ***PCI Express x1***
Conventional PCI *32 bit, 33 MHz, 5V signaling*

Picolo Pro 2 PCIe and Picolo Pro 2 are video capture cards designed for entry-level **video surveillance** applications. **Up to 4 composite video signals** are captured directly through **standard BNC inputs**. The **quick switching** capability offers an optimized frame rate for all acquisition conditions. **TTL I/O lines** are provided for easy system integration.

Quick Switching

The **multiple video inputs** of the Picolo Pro 2 cards are sequentially acquired using **a proprietary switching method**. The resulting switching latency for unsynchronized cameras is never more than **33 ms in NTSC** and **40 ms in PAL**. This leads to the following typical performances:

NTSC configuration	1 camera	2 cameras	3 cameras	4 cameras
Fields / Frames second (per camera)	60 / 30	12 / 9	8 / 6	6 / 4
Fields / Frames second (all cameras)	60 / 30	24 / 17	24 / 17	24 / 17
PAL configuration	**1 camera**	**2 cameras**	**3 cameras**	**4 cameras**
Fields / Frames second (per camera)	50 / 25	10 / 7	7 / 5	5 / 3
Fields / Frames second (all cameras)	50 / 25	20 / 14	20 / 14	20 / 14

Connections

Picolo Pro 2 PCIe and Picolo Pro 2 are featured with **four standard BNC connectors** for ruggedized camera connection. An internal **16-pin header connector** provides **13 general purpose input / output TTL lines**. They may be used for triggering image capture and interfacing to alarm system.

PICOLO Tetra™

Acquisition up to 200 / 240 fps
- 4 cameras in real-time
- Quick switching between up to 16 cameras with a superior frame rate
Expandable architecture:
- 3 VEBs (Video Expansion Bracket) for up to 16 camera inputs
- One VEB for 4 buffered video outputs
Form factors: ***PCI*** *64 bits, 66 MHz, 5 V*

Picolo Tetra is a **cost-effective** PCI capture card dedicated to demanding multiple cameras video surveillance applications. Picolo Tetra has a superior ability to manage streaming and switching. Thanks to its **four color video digitizers**, Picolo Tetra acquires **four real-time image sequences in parallel**. With the three video expansion brackets, this Picolo also manages efficiently **quick switching from up to sixteen cameras**.
TTL I/O lines are provided for system integration.

Streaming with Four Simultaneous Video Digitizers

Picolo Tetra is able **to simultaneously digitize four video signals** and to send the resulting digital data in real time into the PC memory through the PCI bus. The video streams issued from four cameras are displayed and/or recorded in parallel.

Quick Switching

Adding **three Video Expansion Brackets**, Picolo Tetra provides the **four digitizers** with sixteen inputs. This maximum configuration leads to a **16-camera system**. The four digitizers of the Picolo Tetra card **are switched** between these inputs at **a very high frame rate**.

NTSC configuration	4 cameras	8 cameras	12 cameras	16 cameras
Fields / Frames per second (per camera)	60 / 30	8.6 / 6.7	6 / 4.6	4.6 / 3.5
Fields / Frames per second (all cameras)	240 / 120	69 / 54	72 / 55	74 / 56

PAL configuration	4 cameras	8 cameras	12 cameras	16 cameras
Fields / Frames per second (per camera)	50 / 25	7.1 / 5.6	5 / 3.8	3.8 / 2.9
Fields / Frames per second (all cameras)	200 / 100	57 / 45	60 / 46	61 / 47

Expandable Architecture

VEB™ -Video Expansion Bracket- compatibility

Up to three VEB can be connected on the Picolo Tetra to increase the number of video inputs connected to the card. Four buffered video outputs are offered on an additional four-BNC module as an alternative to loop-through connecting the video sources. These video signals represent the image applied to each internal video color digitizer.

64-bit, 66 MHz PCI Bus

The Picolo Tetra bus capability is 64 bits at 66 MHz. This PCI bus supports a peak data transfer rate of **528 Mbytes/s**. Picolo Tetra is compatible with conventional PCI architectures, including **32 bits and 33 MHz**. Signaling voltage compliance is **3.3 V and 5 V** for maximum versatility.

Maximizing Performance

With a top performance 64-bit 66 MHz PCI bus, Picolo Tetra is able to **simultaneously acquire full size video images in real time**. System consideration may lead to functional trade-off. In order to reach the targeted performance, the user will consider downsizing images (SIF or CIF), operating in parallel with less than four digitizers or tailoring the bitmap image format. In particular, YCrCb 4:2:2 and RGB16 formats are highly recommended.

On-board TTL I/O Lines and a Configurable Hardware Watchdog

TTL I/O lines are provided for easy system integration. An internal **16-pin header connector** provides **13 general purpose input / output TTL lines** usable for triggering image capture and interfacing to alarm system. This connector is pin to pin compatible with the Picolo Pro 2 solution. A **hardware watchdog** is available on Picolo Tetra. Its purpose is to **monitor the software application** and to **restart the PC** after an anomalous inactivity time-out. This ensures a **reliable operation** of unattended systems.

Video Image Formats

Picolo Tetra supports the acquisition of **full resolution images** or **any smaller-size format**, such as **CIF**. Acquisition of **full frame** (two fields) or single field images is selectable. Individual fields or frames as well as video sequences are captured directly to the PC memory. Picolo Tetra ensures an **excellent fidelity** of the grabbed bitmap in respect of the original video signal.

Piano-switch

Picolo Tetra and the Video Extension Brackets are equipped with a piano-switch to conveniently enable or disable the 75 ohms termination resistors from outside the PC.

PICOLO Tymo™

Compact and cost-effective
Acquisition up to 200 / 240 fps
- A mix of composite or S-Video video signals
- 4 cameras in real-time
- Quick switching between up to 16 cameras with a superior frame rate
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 delivered with ***low-profile and standard-profile brackets***

Fitted with four color video digitizers, the Picolo 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

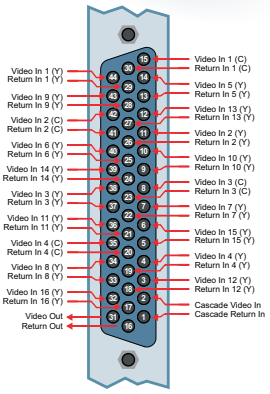
The choice of a single connector for multiple and various video inputs is cost-effective and allows customized and robust integrations.

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

Sixteen composite video inputs can be connected to the Picolo Tymo , among them **4 high-quality S-Video inputs can be connected** for real-time acquisition with full resolution. The mix of composite and S-Video cameras is possible as long as only one S-Video camera is connected to a single digitizer.

The Picolo Tymo features **one video output** to serve the 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 Picolo Tymo card 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, interface to alarm systems, …

Not sensitive to polarity

PICOLO Alert™ cards

Acquisition

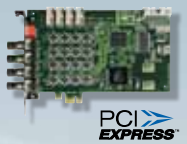
- *200/240 fps constantly available*
- *4 cameras in real-time*
- *Digital switching between up to 16 cameras with no delay*

Simultaneous capture and preview video output streams

- *Performed by a proprietary video-surveillance FPGA*
- *Leading to 32 video output streams*

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

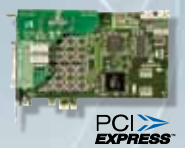
4 BNC on the card bracket

4 internal on-board headers

VEB -Video Expansion Bracket- compatible

- *12 additional inputs connected internally with 3 VEBs*
- *4 cameras connected on the card 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 card*

Equipped with the Euresys video-surveillance FPGA, the Picolo Alert cards are able to acquire images from up to sixteen independent cameras with a total digitizing power of 200 / 240 fps. 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 cards 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	
	/card	/camera	/card	/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 overflow 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 cards process the acquired images on the fly eliminating all issues related to the parity management without requiring any processing power from the PC.

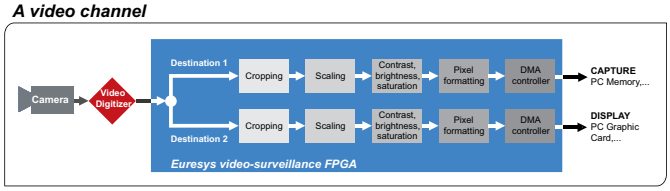
An independently programmable frame rate and acquisition parameters for each video input

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 independent and simultaneous destinations for each video channel leading to 32 video output streams.

Each camera independently delivers data to two different memory locations in the PC, including the graphic card, for simultaneous capture and preview functions. 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 -*

VEB™

Video Expansion Bracket (VEB) for PICOLO Tetra and PICOLO Alert
Video bracket used as input or output *(VEB LINK connector)*
4 BNC connectors and a block of four 75 Ω switches

A VEB (Video Expansion Bracket) adds four video connections to a Picolo Tetra or a Picolo Alert. The video inputs are selectable color or monochrome composite inputs, terminated with removable 75 Ω resistors. This module can be used as input or output, depending of the selected VEB LINK connector (video in or video out).

VEB as Additional Inputs

When the VEBs are used to add video inputs, up to 3 VEBs can be linked up with the same Picolo card.

VEB as Outputs

With the Picolo Tetra, a VEB can be used for video output of digitalized images.

Ordering Information

ORDER CODE	DESIGNATION
Video Capture Cards	
1685	PICOLO PCIe
1155	PICOLO
1401	PICOLO Junior 4
1687	PICOLO Pro 2 PCIe
1157	PICOLO Pro 2
1402	PICOLO Tymo
1303	PICOLO Tetra
1305	PICOLO Alert
1641	PICOLO Alert PCIe
6001	PICOLO Alert Compact
6003	PICOLO Alert Compact PCIe
Video & I/O Modules	
1203	VEB
Accessories	
3120	Spider Cable

Your distributor

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