PICOLO™ series

High-quality video capture boards

PCI EXPRESS™

PICOLO Alert PCIe™

NEW PICOLO Alert Compact PCIe™

PICOLO Diligent Plus™

PICOLO™ series

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™
PICOLO Diligent™ – PICOLO Diligent Plus™

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EURESYS™
Excellence in vision

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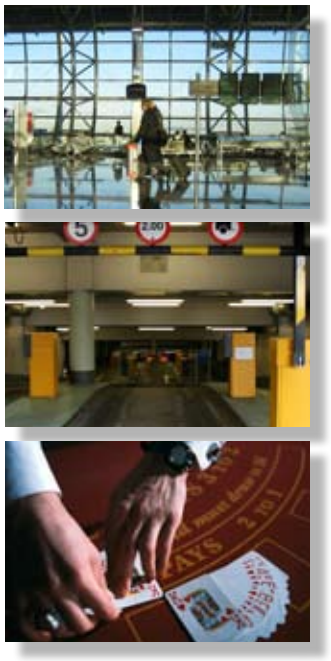
The PICOLO™ series Comparison Chart

	PICOLO	PICOLO Junior 4	PICOLO Pro 2	PICOLO Pro 3	PICOLO Tymo	PICOLO Tetra	PICOLO Alert PICOLO Alert PCIe	NEW PICOLO Alert Compact PICOLO Alert Compact PCIe	PICOLO Diligent	NEW PICOLO Diligent Plus
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	64-bit, 66 MHz PCI	PCI Express x1
Video resolution	Square - Broadcast QCIF => Free	Square - Broadcast QCIF => Free	Square - Broadcast QCIF => Free	Square - Broadcast QCIF => Free	Square - Broadcast QCIF => Free	Square - Broadcast QCIF => Free	Square - Broadcast QCIF => Free	Square - Broadcast QCIF => Free	Broadcast QCIF => Free	Broadcast QCIF => Free
Video acquisition rate *Fields per second*	Up to 50/60 fps	Up to 50/60 fps	Up to 50/60 fps	Up to 50/60 fps	Up to 200/240 fps	Up to 200/240 fps	Up to 200/240 fps constantly available	Up to 200/240 fps constantly available	Up to 200/240 fps constantly available	Up to 200/240 fps constantly available
Nr. of real time cameras per board	1	1	1	1	4	4	4	4	4	4
Max. cameras per board	3	4	4	4 + 12*	16	16	16	16	4	4
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 => FPGA digital switching	Real-time => FPGA digital switching	Real-time	Real-time
Euresys FPGA Technology	-	-	-	-	-	-	✔	✔	✔	✔
Hardware compression	-	-	-	-	-	-	-	-	MPEG-4 Codecs: MP4 - DX50	MPEG-4 Codecs: MP4 - DX50
Video input connector *On the bracket* *75-Ohm termination resistor* *Internally*	*BNC/S-Video/DB9* *Jumpers* -	*4 BNC* *Jumpers* -	*4 BNC* *Jumpers* -	*4 BNC* *Jumpers* *For 2 Modules Pro 3*	*HD44F* *Jumpers* *2 PH40M*	*4 BNC* *Piano-switches* *3 PH10M*	*4 BNC* *Piano-switches* *4 PH10M*	*HD44F* *Piano-switches* -	*4 BNC* *Piano-switches* *Internal headers*	*4 BNC* *Piano-switches* *Internal headers*
Video output	-	-	-	-	1 selected with cascade input	4	-	-	1 selected with cascade input	1 selected with cascade input
Size	121x70 mm 4,76x2,76 in	120x90 mm 4,72x3,54 in	121x85 mm 4,76x3,34 in	125x107 mm 4,92x4,21 in	Low profile Half lenght	Full height Half lenght	Full height Half lenght	Full height Half lenght	Full height Half lenght	Full Height Half lenght
Input Output Lines										
I/O connector(s) *On the bracket* *Internal*	DB9F -	- -	- PH16M	RJ45F PH10M *for MIO Link*	- PH20M	- PH16M, PH10M *for MIO Link*	- PH20M	- PH20M	- -	- PH20M
Max I/O lines *On-board input lines* *On-board output lines* *On-board bidirectional lines*	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* -	- - - -	9 professionals *4 contact-closure* *5 solid-state relay* -
Serial I/O port	-	-	-	1 RS485	-	-	-	-	-	-
Watchdog	-	-	-	✔	✔	✔	✔	✔	-	✔
Modules and Accessories										
MIO *I/O Module*	-	-	-	✔	-	✔	-	-	-	-
VEB *Video Expansion bracket*	-	-	-	-	-	3 for video in 1 for video out	3 for video in	-	1 for video out	1 for video out
Module Pro 3	-	-	-	✔	-	-	-	-	-	-
Spider cable *HD44M - 16 BNC connectors*	-	-	-	-	✔	-	-	✔	-	-

*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

Main Features



Acquisition

- ***Formats***
  - *Color (PAL, NTSC), monochrome (CCIR, EIA)*
  - *Square pixel* or broadcast resolution*
  - *Frame, field, CIF, QCIF and custom image formats*
- ***Full resolution images:***
  - *Square pixels*: up to 640 x 488 NTSC / EIA, 768 x 576 PAL / CCIR*
  - *Broadcast resolution: up to 720 x 488 NTSC / EIA, 720 x 576 PAL / CCIR*
- ***Image size***
  - *High-quality horizontal and vertical hardware scaler*
  - *Built-in arbitrary cropping to a rectangular Region Of Interest*
- ***Image adjustments** such as video contrast, brightness, color saturation and hue - NTSC only -*
- ***Real-time acquisition** from one to four cameras*
- ***Quick switching acquisition** between up to 16 video sources*
- ***Proprietary video-surveillance FPGA** - Picolo Alert and Diligent boards only -*
  - *Unrivalled level of video-acquisition speed and image quality*
  - *Controllable frame rate and acquisition parameters*
  - *Two destinations per camera for simultaneous capture and preview functions*

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*

Compression

- ***Picolo Diligent boards***
  - *Four MPEG-4 compression chips*

Software

- ***MultiCam drivers for Microsoft Windows® and Linux***
- ***Euresys dedicated DirectShow filters** - Picolo Alert and Diligent boards only -*

The Euresys Picolo 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.

* The Picolo Diligent board supports only broadcast resolutions
** For a complete list, consult the Picolo series product page on www.euresys.com.

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.

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 Alert™ and PICOLO Diligent™ boards

Generation of Euresys FPGA-Based Video Capture Boards 200/240 fps constantly available

Unrivalled level of video-acquisition speed and image quality

- **200/240 fps constantly available and non disruptive acquisition** This is not a peak value as the new Picolo boards provide a constant availability of 240 fps for NTSC cameras or 200 fps for PAL cameras with any camera configuration.
- **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 parit**y Thanks to the Euresys video-surveillance FPGA, the new Picolo boards process the acquired images on the fly eliminating all issues related to the parity management without requiring any processing power from the PC.

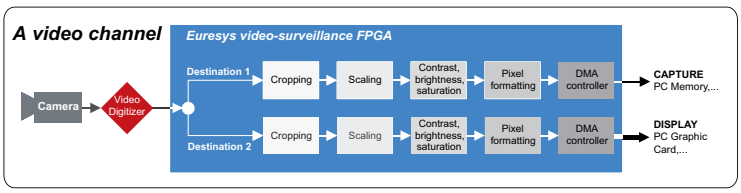
Controllable frame rate and acquisition parameters

An independently programmable frame rate 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 destinations per video input 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…



Dedicated DirectShow filters *see on page 8*

All the standard DirectShow features, such as property pages or time stamping, are supported.

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 Picolo Tymo acquires four real-time image sequences in parallel from composite or S-Video cameras.

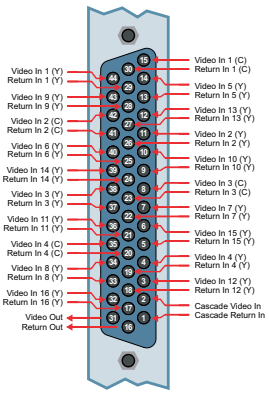
Single HD-44 video input connector

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 Picolo Tymo board in the system.



Camera connector
HD44F

Nine 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

Spider cable

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

PICOLO Alert™ boards

Ultra-fast multiple-channel video capture boards

16 video inputs *- 200 / 240 fps constantly available*
Proprietary video-surveillance FPGA *- Simultaneous capture and preview functions*
Form factors: ***Conventional PCI*** *64 / 32 bits, 66 / 33 MHz, 3V or 5V signaling*
PCI Express *Full-height, half-length, x1*

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.

Sixteen video inputs and 200 / 240 fps constantly available

As a unique feature, the Alert offers 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. With the dedicated Euresys video-surveillance FPGA, this high acquisition rate is always fully available independently of the camera synchronization type.

NTSC cameras	4-camera configuration		16-camera configuration	
	/board	/camera	/board	/camera
Cif/s or Field/s	240	60	240	15
Image/s	120	30	120	7.5

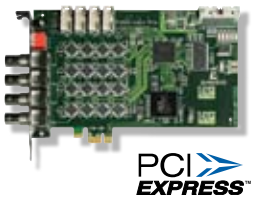
PAL cameras	4-camera configuration		16-camera configuration	
	/board	/camera	/board	/camera
Cif/s or Field/s	200	50	200	12.5
Image/s	100	25	100	6.25

Nine professional I/O lines and a configurable hardware watchdog

On an internal 20-pin header: **- Four contact-closure inputs**
- Five solid-state relay outputs

Same specifications as the Picolo Tymo I/O lines - see on page 5 -

PICOLO Alert™ and PICOLO Alert PCIe™



Video input connections

On the bracket:

- **4 BNC** on the board bracket

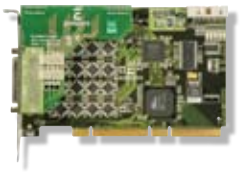
Internally via the four on-board headers

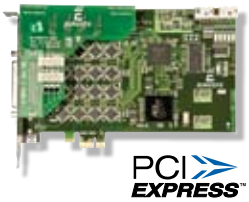
- 12 additional inputs are to be connected internally with Video Expansion Brackets for 4 cameras **-VEB-**
- All 16 video sources can be connected internally

PICOLO Alert Compact™ and 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.





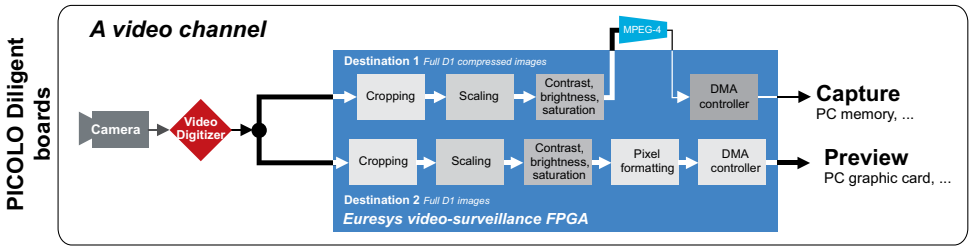
PICOLO Diligent™ boards

Full D1 video capture and MPEG-4 compression boards

***4 video inputs** - 200 / 240 fps constantly available*
***Proprietary video-surveillance FPGA** - Simultaneous capture and preview functions*
***Compression:** Real-time **MPEG-4** acquisition up to full D1 format*
***Image format:** broadcast resolution*
*One selected **video output** with cascading capability*
***Form factors:** **Conventional PCI** 64 / 32 bits, 66 / 33 MHz, 3V or 5V signaling*
***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.

Real-time full D1 preview and simultaneous full D1 compressed capture



Four MPEG-4 high-quality compression chips

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

Video inputs

The Picolo Diligent is equipped with four robust on boards BNC connectors. Alternatively, a four-video inputs header allows to connect the cameras internally the cameras.

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.

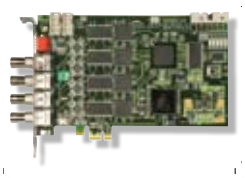
This cascade input allows to select a video source coming from other Picolo Diligent boards installed in the same system.

PICOLO Diligent Plus™

Nine professional I/O lines and a configurable hardware watchdog

On an internal 20-pin header:

- Four contact-closure inputs
- Five solid-state relay outputs
- Same specifications as the Picolo Tymo I/O lines - see on page 5 -



PCI EXPRESS™

Form Factors: PCI Express x1, full height, half length

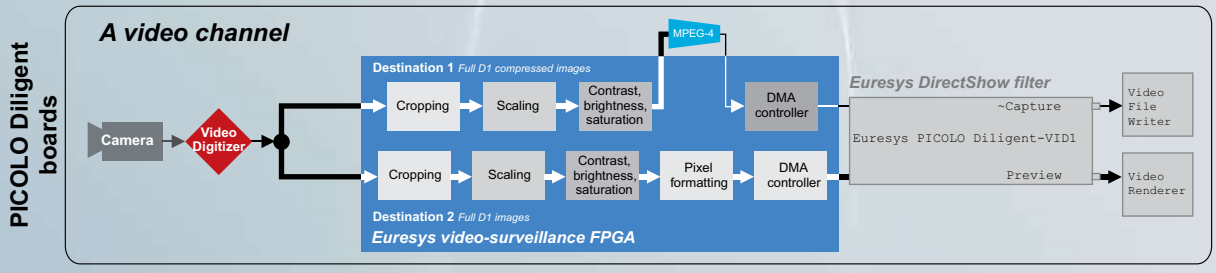
Software Support

Euresys DirectShow source filters

Euresys provides dedicated DirectShow source filters for rapid application development. All the standard DirectShow features, such as property pages or time stamping, are supported.

PICOLO Alert and Diligent boards, a natural match with the DirectShow API

Thanks to the Euresys FPGA technology, the design of the Picolo Diligent Plus boards naturally matches the DirectShow API. The **double destination per video channel feature** is implemented directly from the video acquisition on the board. DirectShow users naturally benefit from it. The Picolo Diligent Plus acquisition and compression board simultaneously provides four live full D1 video streams for display and four live full D1 compressed video streams for recording or broadcasting.



MultiCam™

***MultiCam for Microsoft Windows** 2000®, XP®, Server 2003® and Vista®*

***MultiCam for Suse Linux** Enterprise Server 10*

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

MultiCam™ IDEs

Using MultiCam with C++	Microsoft Visual C++ 2005 Microsoft Visual C++ .NET 2003 Microsoft Visual C++ 6.0	Borland C++ Builder 2006 Borland C++ Builder 6.0 gcc c++ 4.1.0-28.4
Using MultiCam with .NET	Microsoft Visual C# 2005 Microsoft Visual C# .NET 2003	
Using MultiCam with C	Microsoft Visual C++ 2005 Microsoft Visual C++ .NET 2003 Microsoft Visual C++ 6.0	Borland C++ Builder 2006 Borland C++ Builder 6.0 gcc 4.1.0-28.4
Using MultiCam with ActiveX	Microsoft Visual Basic 6.0	Borland Delphi 2006 Borland Delphi 6.0

The **MultiCam driver** enables the consistent control of several Euresys capture boards, using an arbitrary number of cameras, from **one or several software applications**. The MultiCam driver automatically manages cameras and capture boards to optimize the acquisition speed and the display refresh rate.

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	**Video & I/O Modules**	
1303	PICOLO Tetra	1201	Pro 3 Module
1305	PICOLO Alert	1203	VEB
1641	PICOLO Alert PCIe	1202	MIO

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