



# PICOLLO H.264™ series

*High-Quality Video Capture and H.264 Compression Cards*

**H.264**  
on-board compression



PCI  
**EXPRESS™**



**PICOLLO U4**  
**H.264™**

**PICOLLO V16**  
**H.264™**

**PICOLLO U4 H.264**  
**PCI-104™**

**PICOLLO H.264™ series**

PICOLLO U4 H.264™ - PICOLLO U8 H.264™ - PICOLLO U16 H.264™

PICOLLO V16 H.264™ - PICOLLO U4 H.264 PCI-104™ - PICOLLO U4 H.264 PCI-104 RH™

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**EURESYS™**  
*Excellence in vision*

# The PICOLO H.264™ series

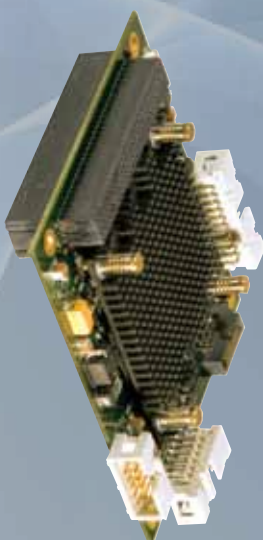


PICOLO U4 H.264™

PICOLO U8 H.264™

PICOLO U16 H.264™

PICOLO V16 H.264™



PICOLO U4 H.264 PCI-104™



PICOLO U4 H.264 PCI-104 RH™

# The PICOLO H.264™ series Comparison Chart

	NEW	PICOLO U4 H.264	PICOLO U8 H.264	PICOLO U16 H.264	PICOLO V16 H.264	NEW	PICOLO U4 H.264 PCI-104
PCI interface(s)		PCI Express x1	PCI Express x1	PCI Express x1	PCI Express x1		PCI-104
Video resolution		4 CIF, 2 CIF, CIF, QCIF	4 CIF, 2 CIF, CIF, QCIF	4 CIF, 2 CIF, CIF, QCIF	4 CIF, 2 CIF, CIF, QCIF		4 CIF, 2 CIF, CIF, QCIF
Video acquisition rate <i>fps= fields per second ips=images per second</i>		100/120 ips	200/240 ips	400/480 ips	400/480 ips		100/120 ips
Nr. of real time cameras		4	8	16	16		4
Max. number of cameras		4	8	16	16		4
Video acquisition type		Real-time	Real-time	Real-time	Real-time		Real-time
Hardware compression		H.264 (MPEG-4 Part 10); Baseline Profile (Level 3)	H.264 (MPEG-4 Part 10); Baseline Profile (Level 3)	H.264 (MPEG-4 Part 10); Baseline Profile (Level 3)	H.264 (MPEG-4 Part 10); Baseline Profile (Level 3)		H.264 (MPEG-4 Part 10); Baseline Profile (Level 3)
Simultaneous compressed and uncompressed video output streams per video input		✓	✓	✓	✓		✓
Output image formats		✓	✓	✓	✓		✓
Monochrome: Y8		✓	✓	✓	✓		✓
Color packed: RGB15, RGB16, RGB24, YUV422		✓	✓	✓	✓		✓
Color planar: YUV420PL		✓	✓	✓	✓		✓
Video input connector		HD44F Internal headers Internal slides-switches	HD44F Internal headers Internal slides-switches	HD44F Internal headers Internal slides-switches	HD44F Internal headers Internal slides-switches		PH14M Slides-switches
On the bracket internally		1 selected with cascade capability	1 selected with cascade capability	1 selected with cascade capability	1 selected with cascade capability		1 selected with cascade capability
75-Ohm termination resistor		Full height Half length	Full height Half length	Full height Half length	Full height Half length		PCI-104 compliant add-in module 96 x 90 mm (3.775 x 3.555 in)
Video output		Full height Half length	Full height Half length	Full height Half length	Full height Half length		
Size		Full height Half length	Full height Half length	Full height Half length	Full height Half length		
Audio							
Audio lines		4	8	16	16		4
Audio formats		✓	✓	✓	✓		✓
8 kHz G.711 μ-law/A-law, 8 kHz 16-bit LPCM		✓	✓	✓	✓		✓
16/22.05/44.1/48 kHz 16-bit LPCM		✓	✓	✓	✓		✓
Internal connector		FTSH34M	FTSH34M	FTSH34M	FTSH34M		PH10M
Input Output Lines							
I/O connector(s) <i>On the bracket Internal</i>		FTSH34M (watchdog: PH4M)	FTSH34M (watchdog: PH4M)	FTSH34M (watchdog: PH4M)	FTSH34M (watchdog: PH4M)		PH20M
Max I/O lines		8 professionals 4 contact-closure 4 solid-state relay	16 professionals 8 contact-closure 8 solid-state relay	32 professionals 16 contact-closure 16 solid-state relay	32 professionals 16 contact-closure 16 solid-state relay		8 professionals 4 contact-closure 4 solid-state relay
On-board input lines		✓	✓	✓	✓		✓
On-board output lines		✓	✓	✓	✓		✓
Watchdog		✓	✓	✓	✓		✓
Modules and Accessories							
Spider cable		-	-	✓	✓		-
Connectors: HD44M - 16 BNC							
Drivers							
Drivers for Windows® 32-bit and 64-bit		DirectShow	DirectShow	DirectShow	DirectShow		DirectShow
Drivers for Linux 32-bit and 64-bit		Virtual File System	Virtual File System	Virtual File System	Virtual File System		Virtual File System

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

## Common Features

The Euresys Picolo H.264 cards are **top-quality video acquisition and H.264 compression cards** compatible with standard PAL or NTSC cameras. They are dedicated to high-end applications in the fields of video-surveillance and mobile **video-surveillance**. The Picolo H.264 series also targets entry-level applications in the field of machine vision such as **quality control** and **production monitoring** including in extreme industrial environments. The Picolo H.264 series features **H.264 on-board compression**. This compression standard offers high image quality on top of low bit rate and low storage requirement. Each video input simultaneously delivers an H.264 compressed and uncompressed video stream. The compressed video stream may be recorded or transmitted while the uncompressed one is typically used for local display or video analytics. Both streams are independently configurable. The Picolo H.264 series features one audio input line for each video input.

### Acquisition



Overlay caption text



Privacy masking regions

- **Video standards:** color (PAL, NTSC), monochrome (CCIR, EIA)
- **Image size:**
  - 4 CIF: 704 x 480 NTSC / EIA, 704 x 576 PAL / CCIR
  - 2 CIF, CIF and QCIF
- **Wide range of cards for up to 16 real-time cameras**
- **Independently programmable frame rate and acquisition parameters for each video input**
  - **Contrast, brightness and saturation** controls available
  - **Video presence** and video standard detection
  - **Overlay caption text** up to 2 lines of maximum 47 characters displayed as small rectangles on 4 pre-defined positions (corners) or anywhere in the active area (custom)
  - **Privacy masking regions** up to 4 rectangular regions can be masked and colored in black
- **Precise hardware-controlled time stamping**
- **One selected video output with cascade capability**

### On-Board Compression

- **H.264 real-time compression on each video input**
  - H.264 (MPEG-4 Part 10) Baseline Profile (Level 3)
  - High image quality on top of low bit rate and low storage requirement

### Output Streams

- **Two independent and simultaneous output streams for each video channel\***
  - One uncompressed stream
    - ✓ For immediate display of the camera signal
    - ✓ For the application of real-time video analytics
  - One H.264 compressed streams
    - ✓ For high-quality recording on hard disks

\* Subject to PCI bus available bandwidth

### Audio

- **Up to 16 line-level audio inputs**
  - Audio-video synchronization supported by an accurate hardware time stamping of audio and video data

### Software

- **DirectShow Drivers for Windows® (32-bit and 64-bit)**  
Kernel streaming mini driver providing following filters: Board, Visual Source, Watchdog, Audio Source, Pass-Through Selector, Input Line, Output Line
- **Virtual File System Drivers for Linux (32-bit and 64-bit)** with XML-based parameterization

### Bus Mastering

All Euresys cards are **PCI bus mastering** agents that directly store the acquired images into the PC physical memory without CPU involvement. 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 U4 H.264™

NEW

**4 real-time PAL or NTSC video inputs**  
**H.264 on-board compression, 100/120 ips at full resolution (25/30 ips x 4)**  
**4 high-quality audio inputs**  
**8 professional I/O lines and watchdog capability**  
**One selected video output with cascade capability**  
**Form factor: PCI Express x1 full-height, half-length**

## PICOLO U8 H.264™

**8 real-time PAL or NTSC video inputs**  
**H.264 on-board compression, 200/240 ips at full resolution (25/30 ips x 8)**  
**8 high-quality audio inputs**  
**16 professional I/O lines and watchdog capability**  
**One selected video output with cascade capability**  
**Form factor: PCI Express x1 full-height, half-length**



## PICOLO U16 H.264™

**16 real-time PAL or NTSC video inputs**  
**H.264 on-board compression, 400/480 ips at full resolution (25/30 ips x 16)**  
**16 high-quality audio inputs**  
**32 professional I/O lines and watchdog capability**  
**One selected video output with cascade capability**  
**Form factor: PCI Express x1 full-height, half-length**



The Picolo U4 H.264, Picolo U8 H.264 and Picolo U16 H.264 are high-quality video capture cards featuring real-time H.264 on-board compression for 4, 8 or 16 video channels along with audio capability. These cards offer cost effective acquisition and compression delivering two output streams, a compressed and a formatted uncompressed, per video input. The possible settings of these two streams are independent.

### Real-Time Video Inputs with Independently Programmable Frame Rate and Acquisition Parameters for each Video Input

### H.264 On-Board Compression and Output Streams

**Two simultaneous and independently configurable output streams for each video channel leading to 8, 16 or 32 video output streams** - subject to PCI bus available bandwidth -.

#### - Compressed stream configurations

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

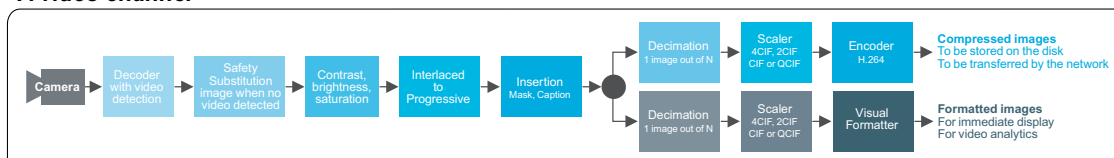
- ✓ Resolution settings: 4 CIF, 2 CIF, CIF, QCIF
- ✓ Configurable reduction of the **frame rate**
- ✓ Configurable **bit rate** control: CPQ, CBR, VBR

#### - Formatted uncompressed stream configurations

- ✓ Resolution settings: 4 CIF, 2 CIF, CIF, QCIF
- ✓ Configurable reduction of the **frame rate**
- ✓ Image **storage formats** available:

Monochrome: Y8  
 Color planar: YUV420PL

#### A video channel



## Audio Inputs

- Line-level audio signals
- Selectable sampling rate: 8 kHz, 16 kHz, 22.05 kHz, 44.1 kHz, 48 kHz
- Audio encoding:
  - ✓ Linear PCM 16-bit
  - ✓ G.711 64-kbps  $\mu$ -law/A-law
- 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



## Professional I/O Lines and Watchdog Capability

- 4, 8 or 16 contact closure inputs
- 4, 8 or 16 solid-state relay outputs
- Watchdog capability
- Internal I/O connectors
  - ✓ One or 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
  - ✓ **A Breakout Cable** equipped with HD44M and BNC connectors is available separately for an immediate evaluation of the card.
- 75-Ohm switchable termination resistors
- Internal pin header connectors
  - ✓ Video In: one 34-pin high-density header, 1.27 mm pitch
  - ✓ Video Cascade: one 6-pin header





## PICOLO V16 H.264™

**16 real-time PAL or NTSC video inputs**  
**H.264 on-board compression, 400/480 ips at full resolution (25/30 ips x 16)**  
**16 audio inputs**  
**32 professional I/O lines and watchdog capability**  
**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 card featuring real-time H.264 on-board compression for 16 video channels with audio capability. Each video input simultaneously delivers a formatted uncompressed and a compressed video stream. Both streams are independently and fully configurable offering a large choice of image formats, resolutions and frame rates.

### 16 Real-Time Video Inputs with Independently Programmable Frame Rate and Acquisition Parameters for each Video Input

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

### H.264 On-Board Compression and Output Streams

**Two simultaneous and independently configurable output streams for each video channel leading to 32 video output streams** - subject to PCI bus available bandwidth -.

#### - Compressed stream configurations

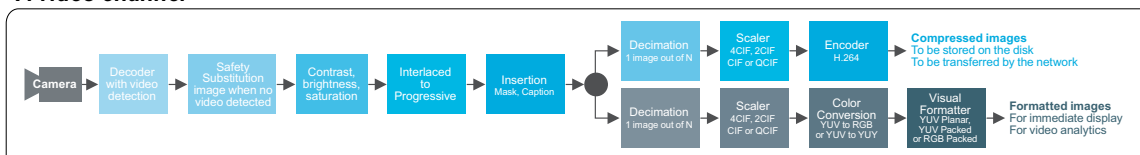
Full **resolution** and full frame rate possible up to 2.0 Mbps average per video channel

- ✓ Resolution settings: 4 CIF, 2 CIF, CIF, QCIF
- ✓ Configurable reduction of the **frame rate**
- ✓ Configurable **bit rate** control:
  - CPQ - constant picture quality -
  - CBR - constant bit rate -
  - VBR - variable bit rate -

#### - Formatted uncompressed stream configurations

- ✓ Resolution settings: 4 CIF, 2 CIF, CIF, QCIF
- ✓ Configurable reduction of the **frame rate**
- ✓ Image **storage formats** available:
  - Monochrome: Y8
  - Color packed: RGB15, RGB16, RGB24, RGB32, YUV422
  - Color planar: YUV420PL

#### A video channel



### 16 Audio Inputs

- Line-level audio signals
- Fixed sampling rate: 8 kHz
- Audio encoding:
  - ✓ Linear PCM 16-bit
  - ✓ G.711 64-kbps  $\mu$ -law/A-law
- 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



## 32 Professional I/O Lines and Watchdog Capability

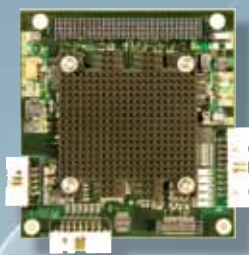
- 16 contact closure inputs
- 16 solid-state relay outputs
- Watchdog capability
- Internal I/O connectors
  - ✓ Two 34-pin high-density headers, 1.27 mm pitch
  - ✓ One 4-pin header "WATCHDOG" connector

## Video Connectors for Video In and Out

- One HD44 connector on the bracket
  - ✓ **A Spider Cable** equipped with an HD44M connector and 18 BNC is available separately for immediate evaluation of the card.
- 75-Ohm switchable termination resistors
- Internal pin header connectors
  - ✓ Video In: one 34-pin high-density header, 1.27 mm pitch
  - ✓ Video Output & Cascade: one 6-pin header







## PICOLO U4 H.264 PCI-104™ cards

- 4 real-time PAL or NTSC video inputs**
- H.264 on-board compression, 100/120 ips at full resolution (25/30 ips x 4)**
- 4 high-quality audio inputs**
- 8 professional I/O lines and watchdog capability**
- Ruggedized cards supporting EN50155, EN50155:2007 for Class 3 and EN61373 standards**
- One pass-through video output with cascade capability**
- Compact form factor: PCI-104 compliant**

### PICOLO U4 H.264 PCI-104™



### PICOLO U4 H.264 PCI-104 RH™



This card does not feature a heat sink.

#### Ruggedized cards for mobile video-surveillance applications.

The PicoLO U4 H.264 PCI-104 is a ruggedized video capture card featuring real-time H.264 on-board compression for 4 video channels along with high-quality audio capabilities. Thanks to a high resistance to extreme temperatures, shocks, vibrations and humidity, the PicoLO U4 H.264 PCI-104 is particularly well suited for embedded security systems for rail and road transportation, police vehicles equipment or any mobile or outdoor video-surveillance applications. The ruggedized characteristics of the card are also appropriate for video-surveillance systems installed in extreme industrial environments.

#### 4 Real-Time Video Inputs with Independently Programmable Frame Rate and Acquisition Parameters for each Video Input

**100/120 ips at full resolution (25/30 ips x 4)**

#### H.264 On-Board Compression and Output Streams

**Two simultaneous and independently configurable output streams for each video channel leading to a total of 8 video streams** - subject to PCI bus available bandwidth -.

##### - Compressed stream configurations

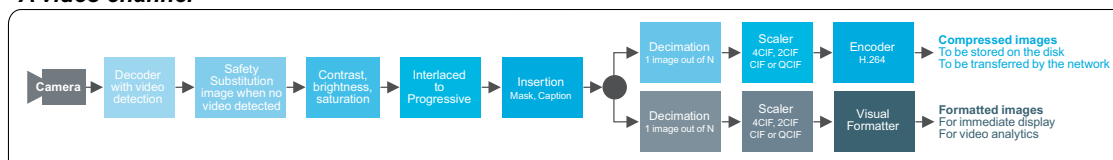
Full **resolution** and full frame rate possible up to 2.0 Mbps average per video channel

- ✓ Resolution settings: 4 CIF, 2 CIF, CIF, QCIF
- ✓ Configurable reduction of the **frame rate**
- ✓ Configurable **bit rate** control: CPQ, CBR, VBR

##### - Formatted uncompressed stream configurations

- ✓ Resolution settings: 4 CIF, 2 CIF, CIF, QCIF
- ✓ Configurable reduction of the **frame rate**
- ✓ Image **storage formats** available:  
Monochrome: Y8  
Color planar: YUV420PL

#### A video channel



#### 4 High-Quality Audio Inputs

- Line-level audio signals
- Selectable sampling rate: 8 kHz, 16 kHz, 22.05 kHz, 44.1 kHz, 48 kHz
- Audio encoding:
  - ✓ Linear PCM 16-bit
  - ✓ G.711 64-kbps  $\mu$ -law/A-law
- Audio-video synchronization supported by accurate **time stamping** of audio and video data
- Audio connector: one 10-pin right angled header, 2.54 mm pitch

## Ruggedized Card

The PicoLO U4 H.264 PCI-104 is designed and manufactured to support:

**Temperature range from -25°C to +85°C (-13°F to 185°F)** as specified by **EN50155 for Class T3** (minimum air flow  $\geq 1\text{m/s}$ ) electronic equipment used on rolling stock in railway applications.

- A temperature sensor measures the card temperature in the vicinity of the processor. The card temperature is reported to the application software through the API.
- A thermal protection safely turns off the processor and prevents irrecoverable card damage when the card temperature reaches the absolute limit (100°C – 212°F).

## Sustained vibration and shocks

The PicoLO U4 H.264 PCI-104 complies with the Category 1 Class B equipments as defined in **EN61373** and therefore can be mounted inside a case that is attached on the **vehicle frame**.

## High humidity levels

The card can operate in the relative humidity conditions specified by **EN50155:2007 for Class T3** (minimum air flow  $\geq 1\text{m/s}$ ) over the external temperature range of -25°C to +45°C (-13°F to 113°F):

- Relative humidity averaged over a year  $\leq 75\%$
- Relative humidity during 30 consecutive days  $\leq 90\%$
- Condensation may not cause damage or malfunction

## 8 Professional I/O Lines and Watchdog Capability

- 4 contact closure inputs
- 4 solid-state relay outputs
- Watchdog capability
- I/O connectors: 20-pin right-angled header, 2.54 mm pitch

## Video Connectors

- **Pin header video connector:** 14-pin right-angled header, 2.54 mm pitch
- Internal 75-Ohm switchable **termination** resistors

## Compact Form Factor: PCI-104 Compliant

- Stack-through 120-pin 2mm pitch connector
- 32-bit PCI bus
- "Module slot" selector DIP switch: up to 4 PCI devices are allowed in the stack
- +5V power supply
- Universal add-in module for 3V/5V I/O signaling busses
- Power dissipation: less than 7W
- Standard size: 96 x 90 mm (3.775 x 3.555 in)



# Ordering Information

## ORDER CODE DESIGNATION

### Video Capture and H.264 Compression Cards

1645	PICOLO U4 H.264	1644	PICOLO V16 H.264
1648	PICOLO U8 H.264	1646	PICOLO U4 H.264 PCI-104
1649	PICOLO U16 H.264	1647	PICOLO U4 H.264 PCI-104 RH

### Accessories

3120	Spider Cable
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