



Piccolo.net HD1 (DIN rail)

HEVC (H.265) 1080p60 IP video encoder



At a Glance

- High-quality HEVC (H.265) / AVC (H.264) encoder, up to 6 encoded streams
- Video streaming from one full HD (up to 1080p60/1080i60) HDMI or SDI source
- ONVIF Profile S
- Video encryption
- Hi-Fi AAC or uncompressed audio
- USB edge storage / USB GPS support
- Serial connection for PTZ cameras
- PoE+ Power over Ethernet
- Fanless aluminum housing

Benefits

Save 50% bit rate - Save 50% storage space

- HEVC (H.265) is two times more efficient than AVC (H.264), resulting in 50% bit rate savings and 50% storage space savings for the same image quality.
- HEVC (H.265) allows for doubling the image quality at the same bit rate when compared to AVC (H.264).

Piccolo.net HD1 Description

Piccolo.net HD1 connects high-definition wide area, long range or infrared SDI cameras to IP networks to record and stream video. It plays a key role in applications such as the monitoring of borders, coastline and critical infrastructure, or the police surveillance operations.

Stream video from one Full HD (1080p60 or 1080i60) source over an IP network

SD-/HD-/3G-SDI and HDMI 1.4 inputs

Optional encryption of the video using public/private keys

Why ONVIF?

ONVIF, Standards for IP Connectivity

ONVIF compliance for seamless VMS compatibility

- Exacq [exacqVision]
- Genetec [Omnicast and Security Centre]
- Milestone Systems [XProtect Corporate and Enterprise]

- AxxonSoft [Axxon Smart]

USB Edge Storage

Local storage of the video on an external USB drive

Support for an external USB GPS

Serial port to control PTZ cameras

Highest quality AAC audio compression

Easy-to-use local or remote device setup via web pages

Developed with the support of the DG06 Technology Development Department

Applications

Life Sciences & Medical

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

Video Monitoring, Surveillance & Security

- High-definition low latency video streaming over IP for remote control
- High-definition low latency video streaming over IP for critical infrastructure
- High-definition low latency video streaming over IP for factory surveillance
- High-definition low latency video streaming over IP in oil rigs
- High-definition low latency video streaming over IP in mines
- High-definition low latency video streaming over IP for surveillance in casinos
- High-definition low latency video streaming over IP for education and training
- High-definition low latency video streaming over IP for sport and events

Specifications

Mechanical

Housing	Aluminum housing
Mounting	DIN rail
Dimensions	L 105mm x H 63.9 mm x D 185mm
Weight	760 g, 1.68 lb

Camera / video inputs

Interface standard(s)	<ul style="list-style-type: none"> • SDI for SD and HD digital audio/video • HDMI for SD and HD digital audio/video
Connectors	<ul style="list-style-type: none"> • HDMI AUDIO/VIDEO IN: High Definition Multimedia Interface Type A receptacle • SDI AUDIO/VIDEO IN: BNC female connector
Formats and standards (HD)	<p>SDI interface:</p> <ul style="list-style-type: none"> • HD-SDI (SMPTE 292M): 720p and 1080i - YUV422 • 3G-SDI (SMPTE 424M): 1080p - YUV422 <p>HDMI interface:</p> <ul style="list-style-type: none"> • 720p, 1080i and 1080p - YUV422

Formats and standards (SD)	SDI interface: <ul style="list-style-type: none"> • SD-SDI (SMPTE 259M): 486i and 576i - YUV422 HDMI interface: <ul style="list-style-type: none"> • 480i and 576i - YUV422
Video inputs	<ul style="list-style-type: none"> • 1 SD-/HD-/3G-SDI (Single link @ 270 Mbps/1.485 Gbps/2.970 Gbps) • 1 HDMI 1.4 (Single link @ 165 MHz max)
Native resolution	<ul style="list-style-type: none"> • 480i: 720 x 480 • 486i: 720 x 486 • 576i: 720 x 576 • 720p: 1280 x 720 • 1080p/1080i: 1920 x 1080
Frame rate	SDI and HDMI interfaces: <ul style="list-style-type: none"> • 720p and 1080p: 23.98, 24, 25, 29.97, 30, 50, 59.94, 60 images per second • 1080i: 50, 59.94, 60 fields per second
Video presence indicators	Green LED
Number of cameras	1 SDI or 1 HDMI

Audio / Video Outputs

Connectors	<ul style="list-style-type: none"> • HDMI AUDIO/VIDEO OUT: High Definition Multimedia Interface Type A receptacle
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Audio inputs

Number of inputs	3 (1 analog, 2 embedded digital), Stereo
Type	<ul style="list-style-type: none"> • AUDIO IN: Two-channel line-level analog audio • SDI AUDIO/VIDEO IN: Two-channel embedded digital audio • HDMI AUDIO/VIDEO IN: Two-channel embedded digital audio
Sampling rate	Fixed, 48 kHz
Audio format	<ul style="list-style-type: none"> • One sample rate converter • Up to 3 encoded streams: <ul style="list-style-type: none"> – AAC-LC compression: ~140 kbps (Hi-Fi) – PCM G.711: 8 bits, 8 kHz (telephony) – Linear PCM: 16 bits, 44.1/48 kHz
Connectors	<ul style="list-style-type: none"> • AUDIO IN: TRS 3.5 mm jack socket connector • HDMI AUDIO/VIDEO IN: High Definition Multimedia Interface Type A receptacle • SDI AUDIO/VIDEO IN: BNC female connector

Audio outputs

Number of outputs	2 (1 analog, 1 embedded digital), Stereo
Type	<ul style="list-style-type: none"> • AUDIO OUT: Two-channel line-level analog audio • HDMI AUDIO/VIDEO OUT: Two-channel embedded digital audio

On-board processing

Image data stream processing	<p>Progressive-scan motion-compensated conversion:</p> <ul style="list-style-type: none">• Conversion of interlaced video signals to progressive scan <p>Overlay insertion:</p> <ul style="list-style-type: none">• Time stamp with frame number• Graphical logo• Custom text <p>Privacy masks:</p> <ul style="list-style-type: none">• 4 rectangular areas <p>Scaling:</p> <ul style="list-style-type: none">• Two independent scalers• Scaler 1 scales up or down with a max. output resolution of 1280 x 720• Scaler 2 scales down with a max. output resolution of 640 x 480
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On-board video codec

Video encoders	<ul style="list-style-type: none">• AVC (H.264) Baseline, Main or High profile• HEVC (H.265) Main profile• MJPEG
Number of streams	<p>Up to 9 streams:</p> <ul style="list-style-type: none">• Up to 3 HEVC (H.265) streams: 1 @ native resolution, 1 @ scaler 1 resolution, 1 @ scaler 2 resolution• Up to 3 AVC (H.264) streams: 1 @ native resolution, 1 @ scaler 1 resolution, 1 @ scaler 2 resolution• Up to 3 MJPEG streams: 1 @ native resolution, 1 @ scaler 1 resolution, 1 @ scaler 2 resolution <p>The cumulated HEVC (H.265) /AVC (H.264) encoding power is 160,000,000 pixels/second (1080p77)</p>
Video stream control	Frame rate, resolution, bit rate, encoding
Bitrate	CBR, VBR, FIXQP from 2kbit/s to 40 Mbit/s
Video streams resolution	<ul style="list-style-type: none">• 1920 x 1080, Full HD, native for 1080p sources• 1280 x 720, HD720, native for 720p sources• 960 x 540, qHD• 640 x 360, fits within a VGA display• 480 x 270• 320 x 180, fits within a QVGA display• 320 x 240
MJPEG encoding performance	62,208,000 pixels/sec (1080p30)

Streaming

Media transport protocol	RTP, RTCP
Media transport control protocol	RTSP for RTP streams, TCP for RTSP streams
RTP transport modalities	<ul style="list-style-type: none">• RTP over UDP Unicast and over UDP Multicast• RTP interleaved in RTSP over HTTP• RTP Transport Media Types• RTP Payload Format for H.264/H.265 Video• RTP Payload Format for MJPEG Video

Network

LAN interface	1 x Ethernet 10BASE-T/100BASE-TX/1000BASE-T, automatic speed negotiation
LAN connector	1 x RJ45 with link and activity LED indicators
Application layer protocols	DHCP, DNS, HTTP, HTTPS, NTP, RTCP, RTP, RTSP, TLS 1.2, SAP
Transport layer protocols	TCP, UDP
Internet layer protocols	IPv4, ICMP, IGMPv2
IP address allocation methods	DHCP, LLA, Static IP
Number of IP address/MAC address	1

User authentication and access policy

HTTP and RTSP authentication	Using the "HTTP Digest Authentication" mechanism
WS authentication	Using the WS-Security "Username Token" mechanism, with the "Password Digest" password type
Web pages	Through login/password dialog box
Access policy	ONVIF 2.3 default policy with four user levels: administrator, operator, user and anonymous

Encryption mechanisms

Web service	Messages encryption using TLS 1.2
HTTPS web pages	Access encryption using TLS 1.2

ONVIF or proprietary APIs

ONVIF Profile S 1.0	For interoperability with major Video Management Software
Proprietary web services	For advanced use
Maintenance client interface	To backup and restore configurations, to remotely reboot and upgrade the embedded firmware
Web pages	For easy installation, set up and testing

System integration

Alarm inputs	1 non-isolated polarity insensitive inputs for closing contacts or electronic sensor with CMOS digital outputs
Alarm inputs connectors	GPIO: 4-pin 3.81 mm pluggable terminal block socket & plug with screw, rising cage clamp, cable termination.
Relay outputs	1 potential-free normally open contact
Relay outputs connectors	GPIO: 4-pin 3.81 mm pluggable terminal block socket & plug with screw, rising cage clamp, cable termination.
COM	Two serial COM ports: <ul style="list-style-type: none">• RS-232 full-duplex interface• RS-422/485 full duplex interface• RS-422/485 half duplex interface
COM connector	COM: 8-pin 3.81 mm pluggable terminal block socket & plug with screw, rising cage clamp, cable termination.
Pan/Tilt/Zoom protocol	<ul style="list-style-type: none">• Pelco D• Sony VISCA
USB Ports	2 USB 2.0 ports <ul style="list-style-type: none">• type A (full size) receptacle connector• 2.5 W available output power (each)
USB GPS Receiver	1 device on any USB port

USB Storage	1 USB 2.0 storage device on any USB port <ul style="list-style-type: none"> • FAT32, EXT4 and exFAT file systems • AES-128 file encryption • OpenPGP keys support for passphrase generation
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Watchdog	Yes
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Electrical

Supply voltage	<ul style="list-style-type: none"> • POWER IN: 9 to 14 V DC, via external power supply block (not included) • LAN: as per POE/POE+ specification
Power connector	<ul style="list-style-type: none"> • POWER IN: 2-pin 3.81 mm pluggable terminal block socket & plug with screw, rising cage clamp, cable termination. • LAN: RJ45
Power consumption	10.5 W typical
Power status	"Power status" LED

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
Dissipated power	35.8 BTU/h, 10.5 W (measured at maximum operating ambient temperature with H.264/H.265 encoder at full workload)

Certifications

Electromagnetic - EMC standards	<ul style="list-style-type: none"> • European Council EMC Directive 2004/108/EC • United States FCC rule 47 CFR 15
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"> • 1669-DR - Picolo.net HD1 (DIN rail)
Optional accessories	<ul style="list-style-type: none"> • 1675 - 12V 40W Power Supply Block

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