![euresys - Empowering Computer Vision]

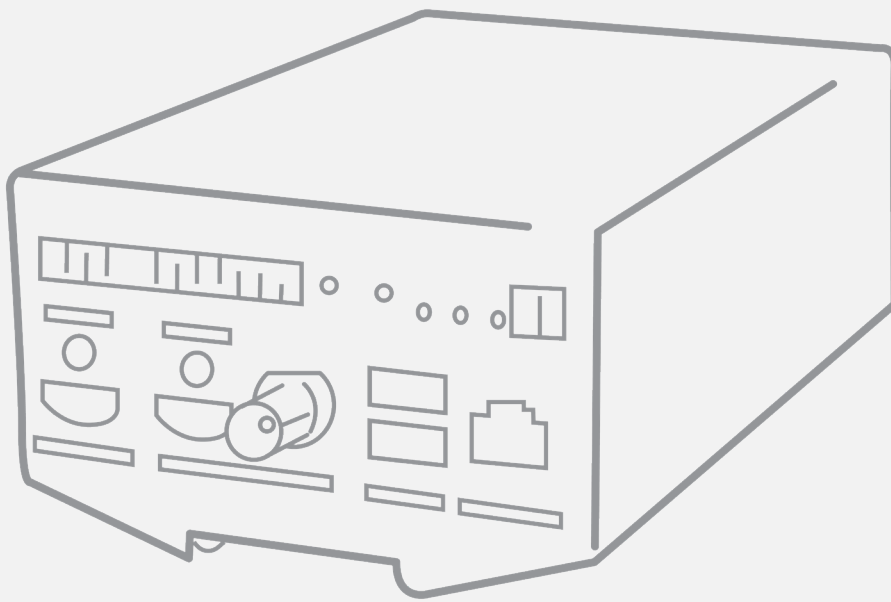# Picolo.net HD1

This documentation is provided with Picolo.net HD1 2.7.3 (doc build 3038).
www.euresys.com

Contents

1. Release Benefits

Starting with this release 2.7, Picolo.net HD1 offers:

- Support of X.509 web certificates

- Support of ONVIF Get Services call

- Support HTTP Digest authentication

- Auto-resume of the recording process

2. Release Specification

This section includes the specifications of the firmware version 2.7.

Supported Products

Product	Description
1669-DW Picolo.net HD1 (Desktop/Wall)	HEVC (H.265) 1080p60 IP video encoder
1669-DR Picolo.net HD1 (DIN rail)	HEVC (H.265) 1080p60 IP video encoder

Features

Global features

Feature	Availability and restrictions
ONVIF Profile S	Compliance to this ONVIF profile is partial. *The main missing feature is the support of events.*
ONVIF Profile T	Currently not supported.

Network features

Feature	Availability and restrictions
Internet protocol	IPv4 only
IP address allocation methods	DHCP, LLA, Static IP
Video transport protocols	RTP with RTSP, HTTP and HTTPS *(TLS 1.2, AES 128-bit encryption, RSA certificates)*

Video features

Feature	Availability and restrictions
Video sources	1 SDI or 1 HDMI video source (not simultaneously)
SDI resolutions and rates	1080p @ 23.98, 24, 25, 29.97, 30, 50, 59.94 and 60 frames per second 1080i @ 50, 59.94 and 60 fields per second 720p @ 50, 59.94 and 60 frames per second Standard resolution SDI sources (SD-SDI) are not supported

Feature	Availability and restrictions
HDMI resolutions and Rates	1080p @ 23.98, 24, 25, 29.97, 30, 50, 59.94 and 60 frames per second 1080i @ 50, 59.94 and 60 fields per second 720p @ 50, 59.94 and 60 frames per second
Video de-interlacing	Converts interlaced 1080i video streams (@1080i 50, 59.94 and 60 fields per second) to progressive 1080p video streams (@50, 59.94 and 60 frames per second respectively).
Video encoding	AVC (H.264) Baseline, Main or High profile HEVC (H.265) Baseline, Main or High profile with CBR and VBR bit rate controls MJPEG with CBR and VBR bit rate controls
AVC (H.264) encoded video streams	Up to 3: - one at native resolution with configurable bit rate and frame rate - one at scaled down resolution with configurable bit rate and frame rate - one at VGA resolution with configurable bit rate and frame rate
HEVC (H.265) encoded video streams	One at native resolution with configurable bit rate and frame rate *Scaled resolutions are currently not supported*
MJPEG encoded video streams	One at native resolution with configurable bit rate and frame rate *Scaled resolutions are currently not supported*
Video output	The HDMI video output delivers the full-resolution video stream picked up at the input of the video encoding engine. Privacy masks and time overlay are embedded in the video. GPS coordinates overlay is not.

Audio features

Feature	Availability and restrictions
Audio sources	1 SDI or 1 HDMI embedded 2-channel digital audio source *(analog audio source is not supported)*
Encoded audio streams	AAC (only @ 44.1 and 48 kHz sample rates) LPCM (only @ 48 kHz sample rate)
Audio output	Analog audio output is currently not supported No digital audio is embedded in the HDMI output signal

Other features

Feature	Availability and restrictions
Storage	On external device attached to the USB Data encryption with 128-bit AES Two file management policy options: linear and circular
Time	NTP (Network Time Protocol) RTC (Real Time Clock)
Watchdog	16 second time-out delay after boot completion; 2 minute delay during boot
WEB pages	The web pages display correctly with the following web browsers: • Google Chrome version 57.0.4 • Microsoft Edge version 40.15063.0.0 • Mozilla Firefox version 57

3. Important Notices

> ⊘ **WARNING** Important notifications to be read before installing and using the product.

New SSL Key Identity (2.6 <=> 2.7)

The firmwares 2.6 and 2.7 use different information to decide whether the SSL key needs to be re-generated. A new identity will be created for the HD1 when we upgrade/downgrade between these versions.

Open source licenses

The firmware for Picolo.net HD1 uses some open-source and free software. You can view the individual licensing/copying terms of those packages on the `http://<device IP address>/licenses.txt` page of your device.

Triggered recording configuration required

- If you upgrade from a firmware older than 2.6, the triggered recording requires an extension of the configuration schema.

- If you revert to a 2.5 or older firmware, the configuration is dropped but the other attributes of the extended recording configuration are preserved.

Removal of the support of the `pelcoSerialPort` configuration object

If you install a release 2.5 or higher firmware over an older one, you may have to re-configure the serial port to use the full-duplex `rs4xxSerialPort` configuration object to control PELCO-D PTZ nodes from your Picolo.net HD1.

Irreversible activation of the watchdog

Upgrading a 1.0.x with the firmware 1.1.x or 1.2.3 automatically activates the watchdog feature.

This operation cannot be reverted!

Trying to boot 1.0.x firmware on a device that has been setup for 1.1.x or 1.2.3 will lead to system instabilities.

Firmware upgrade limitations

- Do not install 1.x.x on 0.x.x-running devices
  - □ Firmware 1.x.x expects a bootloader that isn't compatible with 0.x.x firmwares.

If your device is still running any 0.x.x firmware, contact your Euresys representative for support.

- Do not install 2.1.x (or newer) directly on 1.4.x (or older)-running devices

  Due to an increase of the size of the firmware package (with the added support of extended character sets for OSD text), proceed as follows:

  a. Install either 1.5.x or 2.0.x firmware on your 1.4.x (or older)-running devices.

  b. Install your 2.1.x (or newer) firmware on your device now running 1.5.x or 2.0.x and ready to receive any new version.

Firmware downgrade limitations

- Do not downgrade from 2.x.x (or newer)-running devices down to 1.x.x.

  ☐ 2.x.x (or newer)-running devices support the user management. As 1.x.x-running devices do not recognize this feature, you would not be able to connect anymore on a downgraded device.

Please contact EURESYS S.A. support if you need to perform such a downgrade.

4. Release Details

4.1. New and Improved Features

X.509 certificates support

Customers may sign HD1 SSL key with their own certificate and enable authenticity features for encrypted communications.

HTTP Digest authentication

This offers an alternate way for secure authentication as the WSSE (available since 1.0) is deprecated in a number of programming environments.

ONVIF GetServices support

The firmware 2.7 improves the compatibility with 3rd-party ONVIF applications by adding support for `GetServices` calls used for the detection of device features and capabilities. Additionally, the Picolo.net HD1 proprietary services are now discoverable through `GetServices` as well.
To make this possible, the proprietary services now have each their own namespace.

Auto-resume of the recording process

When a USB disk is plugged, recording may now resume without requiring an additional SOAP call.

Memento in logs

In case of video pipeline crash recovered by the watchdog, the memento dump is collected and added to the system logs. A warning message at the top of the web interface notifies the user.
Since the device can store a single memento dump, get the system logs to free up space for future logs.

4.2. Solved Issues

This section describes the issues solved in version 2.7 of the firmware.

Media & system URIs handling with HTTPS enabled

Previous firmware versions could have returned a plain HTTP URI in response to ONVIF `GetStreamUri`, `GetSnapshotUri` or `GetSystemUris` calls, even when the caller used HTTPS to contact ONVIF services.
The firmware 2.7 will automatically provide an HTTPS URI in response to these calls when the request is made over an HTTPS connection, and a plain HTTP URI otherwise.

Race condition while launching multicast sessions on boot (since 2.7.1)

Trying to set up a multicast stream directly with the RTSP server before the ONVIF service notified that the device was ready could result in the session lacking its audio track.
The firmware 2.7 will reject request to set up multicast stream for a profile that contains multiple tracks if only a part of those tracks are ready to be streamed. A specific 404 incomplete multicast profile error message is returned to the RTSP client when this occurs.

Large number of video files on USB could prevent booting (since 2.7.3)

The time taken to list all files when encryption is enabled may exceed the time allowed to boot the device.
The firmware 2.7 ensures that listing of the existing files does not involve the cryptographic layer, even when encryption is enabled.

Quick video plug in / plug out disrupt video pipeline

Previous firmware versions could fail to properly process events when one would rapidly make the video signal fall and come back. Typical signs of such failure are mentions of dead stream in the system log, and (temporary or permanent) loss of the video signal in the video stream.
The firmware 2.7 features a new component responsible for monitoring video signal acquisition and loss, as well as configuring of the video pipeline.

5. Known Issues

This section describes the known issues in version 2.7 of the firmware.

Since release 1.0

Incomplete metadata track

- The current firmware has incomplete metadata track implementation and expected events might be missing or the track may stay silent over the whole session.

Since release 0.9

Unable to display HEVC (H.265) video in the Live Media panel

- The Live Media panel of the Media Profiles web page is unable to display HEVC (H.265) encoded video.

HTML5 Video Preview

- HTML5 Video Preview in web browsers may not be smooth.

Smoothness can be enhanced by manually pausing the stream for one second and then restarting it.

Inoperative AAC Audio Streaming with VLC 2.1

- AAC audio stream doesn't play back correctly with VLC 2.1.x.

Latest VLC 2.2.6 is recommended.

Workaround for VLC 2.1.x (2013-2014) is to use LPCM audio instead.