

Bosch Video Management System

ONVIF Cameras: Tips & Tricks



BOSCH

en Technical Service Note

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1 Introduction

In the course of integrating different 3rd party camera manufacturers, we noted, that there are some pre-conditions to be taken into account in the camera configuration to enable smooth operation within Bosch VMS.

This Technical Service Note intends to save you time by sharing these learnings and vendor specific settings you need to configure.

2 System overview

If you plan to install and configure Bosch VMS, participate in a system training on Bosch VMS. Refer to the Release Notes of the current Bosch VMS version for supported versions of firmware and hardware and other important information.

See data sheets on Bosch workstations and servers for information on computers where Bosch VMS can be installed.

The Bosch VMS software modules can optionally be installed on one PC.

Important components

- Management Server (selectable in Setup): Stream management, alarm management, priority management, Management logbook, user management, device state management. Additional Enterprise System license: Managing Enterprise User Groups and Enterprise Accounts.
- Config Wizard: Easy and fast setup of a recording system.
- Configuration Client (selectable in Setup): System configuration and administration for Operator Client.
- Operator Client (selectable in Setup): Live monitoring, storage retrieval and playback, alarm and accessing multiple Management Server computers simultaneously.
- Video Recording Manager (selectable in Setup): Distributing storage capacities on iSCSI devices to the encoders, while handling load balancing between multiple iSCSI devices. Streaming playback video and audio data from iSCSI to Operator Clients.
- Mobile Video Service (selectable in Setup): Provides a transcoding service that transcodes the live and recorded video stream from a camera configured in Bosch VMS to the available network bandwidth. This service enables video clients like an iPhone or a Web client to receive transcoded streams, for example for unreliable network connections with limited bandwidth.
- Web Client: You can access live and playback videos via Web browser.
- Mobile App: You can use the Mobile App on iPhone or iPad to access live and playback video.
- Bosch Video Streaming Gateway (selectable in Setup): Provides the integration of 3rd party cameras and NVR-like recording, e.g. in low-bandwidth networks.
- Cameo SDK (selectable in Setup): The Cameo SDK is used to embed Bosch VMS live and playback Image panes to your external third-party application. The Image panes follow the Bosch VMS based user permissions.
The Cameo SDK provides a subset of the Bosch VMS Operator Client functionalities that enables you to create applications similar to the Operator Client.
- Client Enterprise SDK: The Client Enterprise SDK is meant to control and monitor the behaviour of Operator Client of an Enterprise System by external applications. The SDK allows to browse devices that are accessible by the running, connected Operator Client and to control some UI functionalities.
- Client SDK / Server SDK: The Server SDK is used to control and monitor the Management Server by scripts and external applications. You can use those interfaces with a valid administrator account.
The Client SDK is used to control and monitor the Operator Client by external applications and scripts (part of the related server configuration).

2.1 Hardware requirements

See the data sheet for Bosch VMS. Data sheets for platform PCs are also available.

2.2 **Software requirements**

See the data sheet for Bosch VMS.

Bosch VMS must not be installed on a computer where you want to install Bosch VMS Archive Player.

2.3 **License requirements**

See the data sheet for Bosch VMS for the available licenses.

3 Preparing an ONVIF camera

Perform the steps described in this section to prepare an ONVIF camera so that you can scan it and add it in Bosch VMS.

1. Connect the ONVIF IP camera according the vendor's installation manual, for example with sufficient Power over Ethernet supply.
If available, get an appropriate IP Installer Tool from the vendor's webpage and install it on the workstation used for configuration.
2. Use the IP Installer Tool to update firmware and IP settings.
Update the camera to the recommended or latest firmware. Check for the latest compatible firmware certified for Bosch VMS usage in the Bosch IPP portal. Download the firmware from the vendor's home page. Ensure that the firmware is compliant to ONVIF 1.02 or later.
3. To avoid issues due to an earlier configuration, reset the device to its factory defaults.
4. Use the IP Installer Tool to configure the following network settings of your ONVIF cameras:
 - Start the IP Installer Tool and search for the desired cameras in the network.
 - Ensure that IP, subnet and default gateway match your network.
 - Disable local loopback IP address if configured on the camera.
5. Use the IP Installer Tool to execute a soft reset.
6. Open the device configuration in your Web browser.
7. Synchronize time between camera and system.
If time is not synchronized, the connection between camera and system can be disconnected.
If the camera provides SNTP address field, enter your Management Server IP to ensure that the camera is synchronized.
8. Enable the ONVIF camera interface.
In some cameras (for example Axis) the ONVIF services are disabled by default. Please enable the ONVIF interface. For Axis enable ONVIF services in **System Option>Advanced>Plain Config**.
9. Configure an ONVIF user account with administration rights for communication with Bosch VMS.
Note: The ONVIF user is not necessarily identical with the standard user of the camera.
10. Configure camera events.
Enable the required camera events (input / relay / motion / tamper / video loss / signal too bright, noisy, dark) according to the installation manual of the device.
11. Configure other camera events.
You can enable other events for a maximum of 3 different event types per camera. Note them to be mapped later in the Configuration Client as ONVIF generic event.
12. Verify the camera video and event functionality using ONVIF Device Manager (ODM, available in the Internet).
Start ODM and wait for the camera shown in the list. Select the camera and the menu item events, log on using the created ONVIF user account.
13. Check the camera video functionality.
Open the webpage of the camera and ensure that a live stream is provided for the different profiles of the camera. Ensure that the network provides the right bandwidth for the selected quality and the connection is stable and video is fluent.
Note down all available profiles for later configuration in Configuration Client.
14. Check the camera event functionality.

Trigger all supported input events. Use the webpage for virtual and digital inputs or hot-wire alarm inputs according to the circuit diagram for digital inputs and outputs. Switch the status of the relay using ODM. Trigger motion and tamper events, for example by covering the camera lens, pointing a flashlight into the lens or disconnecting the iris control. Alternatively, you can enable or disable the motion, video analytics and tampering function of the camera using its webpage or change its sensitivity to remotely trigger an event in the camera.

All expected events get listed in ONVIF Device Manager.

Note down ONVIF source, data, and values for the later ONVIF event configuration in Configuration Client.

If any of the events does not provide a counter event, please make a note to be mapped in Bosch VMS as ONVIF generic event and not as regular ONVIF event.

After the final configuration of all ONVIF cameras in Bosch VMS, you can verify the correct event handling by comparing all events received by ODM with the events logged in the Bosch VMS Logbook.

15. Check the PTZ function.

Use ODM to check the correct operation of pan, tilt, zoom and the selection and setting of preset positions. Verify the manual control of iris and focus.

Note down the camera to be enabled later in Configuration Client as a PTZ camera.

16. Handle known restrictions of ONVIF clients such as Bosch VMS with the camera model.

Some cameras offer only a limited compatibility to ONVIF clients.

- If the camera does not support multicast streaming: Disable multicast via webpage of the camera.
- Change the subscription of ONVIF events due to camera limitations with the help of Bosch VMS OMF file.
No Pull Point subscription for events: Change in ONVIF client to Base Notification, for example in Bosch VMS OMF file tags `</Device> <Mapping> <Connection Subscription="BaseNotification"/><Conditions>...`
- Select camera SOAP Version, for example HTTP1.1 (default) or 1.2 by setting `SchemaSoapVersion="soap12"`
- Limit the number of requested ONVIF events from the camera to other than the default `MaxMessageLimit="10"`.
- Extend the Timeout of subscribed ONVIF events due to camera delays to a value other than the default `MaxMessageTimeout="20"`.
- If the camera cannot reset ONVIF events to normal status with an **OFF** message: Use generic ONVIF events in client.
- If the camera offers limited number of stream connections to clients: Set the ONVIF Operator Client live stream to use the recording stream for example offered by the Video Streaming Gateway.
- If the camera does not offer network discovery mechanism: Manually add the IP camera in the client
- If the camera fails the ONVIF authentication: Disable authentication in camera until new firmware is available
- If the camera offers mismatching event topics during configuration for example in ODM `TopicsSet`:

Change to actual topic namespace received during operation for example in the ODM or the `ONVIFlog.txt` file.

- If the camera polls alarm input events, which might cause messages at high frequency and load at the ONVIF client, change the default setting to **normally closed**.

17. Troubleshooting

If the camera does not operate like expected, remove all custom settings and configurations by returning the device to its factory default. You can set ONVIF cameras to factory default (except IP address and user accounts) using ODM. Some cameras have a reset button on the back of the device.

Unfortunately, camera operating systems can sometimes become corrupt, or errors in the configuration can cause a camera to become unavailable in the network. Resetting a camera takes it back to a fixed reference point where reconfiguration can begin. However once you reset it, the camera loses all settings and history which may be vital for further troubleshooting. It may be best to wait until after calling camera tech support before trying this step.

NOTE:

Most of the ONVIF configurations and verifications done here for example with the ODM may be done as well in Bosch VMS. The ODM is listed here only to have a second proof, if a camera cannot correctly be operated together with a client.

Notice!



Some manufacturers declare their ONVIF cameras to be ONVIF compliant, but they actually are not.

Some cameras have limited network connection capabilities. Only a limited number of parallel clients are possibly allowed.

Some cameras have limited CPU performance. Check at high image quality settings and stream bitrates the correct operation of the camera.

18. Default passwords after reset to factory default

When the camera has been reset to the factory default or the camera is new, use the following passwords to log on to the following camera models (subject to change without notice):

- ACTi: admin/123456 or Admin/123456
- American Dynamics: admin/admin or admin/9999
- Arecont Vision: none
- Avigilon: Previously admin/admin, changed to Administrator/<blank> in later firmware versions
- Axis: root/pass
- Basler: admin/admin
- Brickcom: admin/admin
- Canon: root/camera
- Cisco: No default password, requires password creation during first logon
- Dahua: admin/admin
- Digital Watchdog: admin/admin
- DRS: admin/1234
- DVTel: Admin/1234
- DynaColor: Admin/1234
- FLIR: admin/fliradmin
- FLIR (Dahua OEM): admin/admin
- Foscam: admin/<blank>
- GeoVision: admin/admin

- Grandstream: admin/admin
- Hikvision: Previously admin/12345, but firmware 5.3.0 and later requires password creation
- Honeywell: admin/1234
- Intellio: admin/admin
- IQinVision: root/system
- IPX-DDK: root/admin or root/Admin
- JVC: admin/jvc
- March Networks: admin/<blank>
- Robotix: admin/meinsm
- Northern: Previously admin/12345, but firmware 5.3.0 and up requires unique password creation
- Panasonic: Previously admin/12345, but firmware 2.40 requires username/password creation
- Pelco Sarix: admin/admin
- Pixord: admin/admin
- Samsung Electronics: root/root or admin/4321
- Samsung Techwin (old): admin/1111111
- Samsung (new): Previously admin/4321, but new firmwares require unique password creation
- Sanyo: admin/admin
- Scallop: admin/password
- Sentry360 (mini): admin/1234
- Sentry360 (pro): none
- Sony: admin/admin
- Speco: admin/1234
- Stardot: admin/admin
- Starvedia: admin/<blank>
- Trendnet: admin/admin
- Toshiba: root/ikwd
- VideoIQ: supervisor/supervisor
- Vivotek: root/<blank>
- Ubiquiti: ubnt/ubnt
- W-Box: admin/wbox123
- Wodsee: admin/<blank>

For configuring an ONVIF camera, please refer to the following chapter:

- *ONVIF Configuration page, page 11*

4 ONVIF Configuration page

Main window >  **Devices** > Expand  > Expand  > Expand  > Expand
 >  > **ONVIF Configuration** tab
 or

Main window >  **Devices** > Expand  >  > **ONVIF Configuration** tab
 You can select multiple ONVIF encoders and change settings on the **Video Encoder Profile** page. The changed settings are valid for all selected devices.
 This page is only available for ONVIF encoders.



Notice!

Limitations of ONVIF configuration
 Settings which you perform on these pages, are possibly not executed correctly because they are not supported by your camera. Supported ONVIF cameras were tested only with default settings.

4.1 Unit Access

Main window >  **Devices** > Expand  > Expand  > Expand  > Expand
 >  > **ONVIF Configuration** tab > **Main Settings** tab > **Unit Access** tab
 or

Main window >  **Devices** > Expand  >  > **ONVIF Configuration** tab > **Main Settings** tab > **Unit Access** tab

Manufacturer

Displays the manufacturer name of the selected encoder.

Model

Displays the model name of the selected encoder.

Note: If you want to export any event mappings into a ONVIF Mapping file select this model name as file name.

Hardware ID

Displays the hardware ID of the selected encoder.

Firmware version

Displays the firmware version of the selected encoder.

Note: Please ensure with the Bosch VMS compatibility list whether the firmware version is correct.

Serial number

Displays the serial number of the selected encoder.

MAC address

Displays the MAC address of the selected encoder.

ONVIF version

Displays the ONVIF version of the selected encoder.
For Bosch VMS, the ONVIF version 2.0 is required.

4.2**Date / Time**

Main window >  **Devices** > Expand  > Expand  > Expand  > Expand
 >  > **ONVIF Configuration** tab > **Main Settings** tab > **Date/Time** tab
or

Main window >  **Devices** > Expand  >  > **ONVIF Configuration** tab > **Main Settings** tab > **Date/Time** tab

Time zone

Select the time zone in which the system is located.

If there are multiple devices operating in your system or network, it is important to synchronize their internal clocks. For example, it is only possible to identify and correctly evaluate simultaneous recordings when all devices are operating on the same time.

1. Enter the current date. Since the device time is controlled by the internal clock, it is not necessary to enter the day of the week – it is added automatically.
2. Enter the current time or click **Sync to PC** to apply the system time from your computer to the device.

Note:

It is important that the date/time is correct for recording. An incorrect date/time setting could prevent correct recording.

4.3**User Management**

Main window >  **Devices** > Expand  > Expand  > Expand  > Expand
 >  > **ONVIF Configuration** tab > **Main Settings** tab > **User Management** tab
or

Main window >  **Devices** > Expand  >  > **ONVIF Configuration** tab > **Main Settings** tab > **User Management** tab

These user settings are used for 3rd party applications such as direct Web Client access to encoders.

Following user roles for the access of 3rd party applications are supported:

- **Anonymous:** This role has unlimited access only to those devices where no users from other roles (**User, Operator, Administrator**) are registered. On the devices with at least one above mentioned user, the anonymous user has the right only to view time settings.

- **Administrator** (not supported by Configuration Client): This role has access to all application sections and features, the rights to reboot the device, reset settings and update firmware as well as create other users with different access rights.

The first user created on the device must be **Administrator**.

For differences in Operator's and User's default access rights of the **Operator** role and the **User** role, see the following table.

ONVIF Configuration Section or Feature	Operator	User
Identification	VIEW	HIDDEN
Time Settings	VIEW	VIEW
Network Settings	VIEW	VIEW
Users	HIDDEN	HIDDEN
Relays Settings	CHANGE	VIEW
Live Video (including rtsp-link)	CHANGE	CHANGE
Video Streaming	CHANGE	VIEW
Profiles	CHANGE	VIEW

CHANGE - Change current and create new settings.

VIEW - Settings are not hidden, but it is not permitted to change and create them.

HIDDEN - Certain settings or even the whole sections are hidden.

Users

Lists the available users of the device.

Password

Type in a valid password.

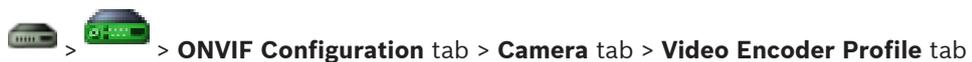
Confirm password

Confirm the typed in password.

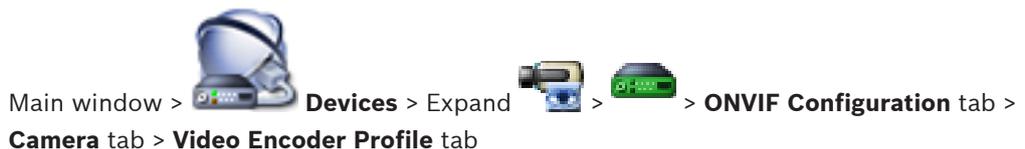
Role

Select the desired role for the selected user. Access rights are adapted accordingly.

4.4 Video Encoder Profile page



or



Profiles are rather complex and include a number of parameters that interact with one another, so it is generally best to use the pre-defined profiles. Only change a profile if completely familiar with all the configuration options.

Profiles

Click the desired name.

Notice!

The profiles configured here can be selected in Configuration Client.



In the main window, click **Cameras and Recording** and click



or .

The default setting '<Automatic>' can be changed to one of the listed and configured profiles

Note: Take care when using actively more than 1 profile of a single device that certain performance restrictions apply and possibly the camera automatically restricts the quality of a stream in overload situations.

Name

You can enter a new name for the profile here. The name is then displayed in the list of available profiles in the Active profile field.

Encoding

Select the desired codec.

- H.264 MP: This setting represents the H.264 Main Profile and offers the maximum configuration options for the H.264 code algorithm. This setting also enables the best image quality and the lowest band width.
- H.264 BP+: This profile setting represents the H.264 Baseline Profile plus, a function from the Main Profile toolset that supports interlace video.

Resolution

Select the desired resolution for the video image.

Quality

This parameter allows you to reduce the load on the channel by means of reducing the picture definition. The parameter is set with the help of the slider bar: The left most position corresponds to the highest picture definition, the right most - to the lowest load on the video channel.

Frame rate limit

Frame rate (frame per second) denotes how many frames per second are captured by the video camera connected to the device. This parameter is shown just for information. If an encoding interval is provided the resulting encoded frame rate is reduced by the given factor.

Bit rate limit

The less the bit rate is, the less the final video file size. But when the bit rate is considerably reduced, the program will have to use stronger compression algorithms, which also reduces video quality.

Select the maximum output bit rate in kbps. This maximum data rate is not exceeded under any circumstances. Depending on the video quality settings for the I- and P-frames, this fact can result in individual images being skipped.

The value entered here should be at least 10% greater than the typical target data bit rate.

Encoding interval

Encoding interval (number of frames) denotes at which rate the frames coming from the camera are encoded. For example, when encoding the interval comprises 25, it means that 1 frame from 25 captured per second is encoded and transmitted to the user. The maximum

value reduces the load on the channel but may cause skipping information from the frames that were not encoded. Reducing the encoding interval increases the frequency of picture update as well as the load on the channel.

GOP length

GOP length is possible to edit only in case the encoder is H.264. This parameter denotes the length of the picture group between the two key frames. The higher this value is, the less the load to the network is, but the video quality is affected.

An entry of 1 indicates that I-frames are continuously generated. An entry of 2 indicates that every second image is an I-frame, and 3 only every third frame, and so on. The frames in between are encoded as P-frames or B-frames.

Session timeout

The RTSP session timeout for the related video stream.

The session timeout is provided as a hint for keeping RTSP session by a device.

Multicast - IP address

Enter a valid multicast address to be operated in multicast mode (duplication of the data stream in the network).

With a 0.0.0.0 setting, the encoder for the stream operates in multi-unicast mode (copying of data stream in device). The camera supports multi-unicast connections for up to five simultaneously connected receivers.

Duplication of data places a heavy demand on the CPU and can lead to impairment of the image quality under certain circumstances.

Multicast - Port

Select the RTP multicast destination port. A device may support RTCP. In this case the port value shall be even to allow the corresponding RTCP stream to be mapped to the next higher (odd) destination port number as defined in the RTSP specification.

Multicast - TTL

A value can be entered to specify how long the multicast data packets are active on the network. If multicast is to be run via a router, the value must be greater than 1.



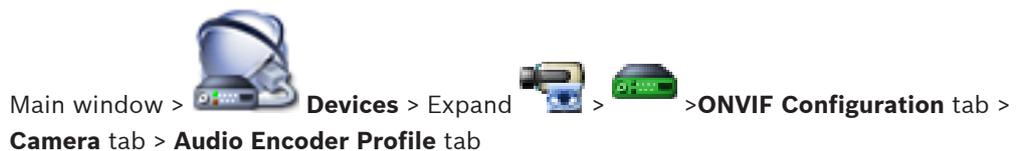
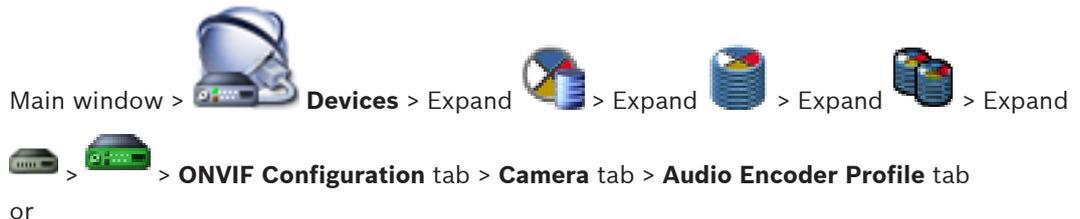
Notice!

Multicast operation is only possible with the UDP protocol. The TCP protocol does not support multicast connections.

If the device is operated behind a Firewall, select TCP (HTTP port) as the transfer protocol. For use in a local network, select UDP.

4.5

Audio Encoder Profile



Profiles are rather complex and include a number of parameters that interact with one another, so it is generally best to use the pre-defined profiles. Only change a profile if completely familiar with all the configuration options.

Encoding

Select the desired encoding for the audio source if available:

- **G.711 [ITU-T G.711]**
- **G.726 [ITU-T G.726]**
- **AAC [ISO 14493-3]**

Note: AAC is not supported by Bosch VMS. Please select another codec.

Bit rate

Select the desired bit rate, for example 64 kbps, for transmitting the audio signal.

Sample rate

Enter the output sample rate in kHz, for example 8 kbps.

Session timeout

The RTSP session timeout for the related audio stream.

The session timeout is provided as a hint for keeping RTSP session by a device.

4.6

Imaging General

Main window >  **Devices** > Expand  > Expand  > Expand  > Expand
 >  > **ONVIF Configuration** tab > **Camera** tab > **Imaging General** tab
 or

Main window >  **Devices** > Expand  >  > **ONVIF Configuration** tab > **Camera** tab > **Imaging General** tab

Brightness

Adjust the image brightness to your working environment.

Color saturation

Adjust the color saturation in the image to make the reproduction of colors on your monitor as realistic as possible.

Contrast

You can adapt the contrast of the video image to your working environment.

Sharpness

Adjust the sharpness in the image.

A low value makes the picture less sharp. Increasing sharpness brings out more detail. Extra sharpness can enhance the details of license plates, facial features and the edges of certain surfaces but can increase bandwidth requirements.

IR cut-off filter

Select the state of the IR cut-off filter.

The AUTO state lets the exposure algorithm handle when the IR cut-off filter is switched.

4.7 Backlight Compensation

Main window >  **Devices** > Expand  > Expand  > Expand  > Expand  >  > **ONVIF Configuration** tab > **Main Settings** tab > **Backlight compensation** tab
or

Main window >  **Devices** > Expand  >  >  > **ONVIF Configuration** tab > **Main Settings** tab > **Backlight compensation** tab

Depending on the device model you can configure here parameters for the backlight compensation.

Mode

Select **Off** to switch off backlight compensation.

Select **On** to capture details in high-contrast and extremely bright-dark conditions.

Level

Enter or select the desired value.

4.8 Exposure

Main window >  **Devices** > Expand  > Expand  > Expand  > Expand  >  > **ONVIF Configuration** tab > **Main Settings** tab > **Exposure** tab
or

Main window >  **Devices** > Expand  >  >  > **ONVIF Configuration** tab > **Main Settings** tab > **Exposure** tab

Depending on the device model you can configure here parameters for the exposure.

Mode

Select **Auto** to enable the exposure algorithm on the device. The values in the following fields are used by the algorithm:

- **Priority**
- **Window**
- **Min. exposure time**
- **Max. exposure time**
- **Min. gain**
- **Max. gain**
- **Min. iris**

Select **Manual** to disable the exposure algorithm on the device. The values in the following fields are used by the algorithm:

- **Exposure time**
- **Gain**
- **Iris**

Priority

Configure the exposure priority mode (low noise/frame rate).

Window

Define a rectangular exposure mask.

Min. exposure time

Configure the minimum exposure time period [μ s].

Max. exposure time

Configure the maximum exposure time period [μ s].

Min. gain

Configure the minimum sensor gain range [dB].

Max. gain

Configure the maximum sensor gain range [dB].

Min. iris

Configure the minimum attenuation of input light affected by the iris [dB]. 0dB maps to a fully opened iris.

Max. iris

Configure the maximum attenuation of input light affected by the iris [dB]. 0dB maps to a fully opened iris.

Exposure time

Configure the fixed exposure time [μ s].

Gain

Configure the fixed gain [dB].

Iris

Configure the fixed attenuation of input light affected by the iris [dB]. 0dB maps to a fully opened iris.

4.9**Focus**



 Main window >  **Devices** > Expand  > Expand  > Expand  > Expand

 >  > **ONVIF Configuration** tab > **Main Settings** tab > **Focus** tab

or



 Main window >  **Devices** > Expand  >  > **ONVIF Configuration** tab > **Main Settings** tab > **Focus** tab

Depending on the device model you can configure here parameters for the focus.

This page allows for moving the lens in an absolute, a relative or in a continuous way. Focus adjustments through this operation turn off the autofocus. A device with support for remote focus control usually supports control through this move operation. The focus position is represented with a certain numeric value. The state of the focus can be one of the following:

MOVING**OK****UNKNOWN**

Additionally error information can be displayed, for example a positioning error indicated by the hardware.

Mode

Select **Auto** to enable the lens to automatically focus at any time according to the objects in the scene. The values in the following fields are used by the algorithm:

- **Near limit**
- **Far limit**

Select **Manual** to adjust the focus manually. The values in the following fields are used by the algorithm:

- **Default speed**

Default speed

Configure the default speed for focus move operation (when the speed parameter not is present).

Far limit

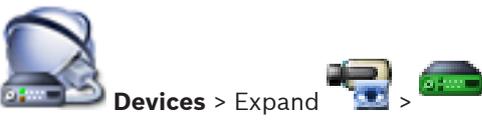
Configure the near limit for focus lens [m].

Far limit

Configure the far limit for focus lens [m].

4.10 Wide Dynamic Range


 Main window >  **Devices** > Expand  > Expand  > Expand  > Expand
 >  > **ONVIF Configuration** tab > **Main Settings** tab > **Wide Dynamic Range** tab
 or


 Main window >  **Devices** > Expand  >  > **ONVIF Configuration** tab > **Main Settings** tab > **Wide Dynamic Range** tab
 Depending on the device model you can configure here parameters for the wide dynamic range.

Mode

Enter or select the desired value.

Level

Enter or select the desired value.

4.11 White balance


 Main window >  **Devices** > Expand  > Expand  > Expand  > Expand
 >  > **ONVIF Configuration** tab > **Main Settings** tab > **White Balance** tab
 or


 Main window >  **Devices** > Expand  >  > **ONVIF Configuration** tab > **Main Settings** tab > **White Balance** tab
 Depending on the device model you can configure here parameters for the white balance.

Mode

Auto mode allows the camera to continually adjust for optimal color reproduction using an average reflectance method or in an environment with natural light sources.

In Manual mode the Red, Green, and Blue gain can be manually set to a desired position. It is only necessary to change the white point offset for special scene conditions:

- indoor light sources and for colored LED light illumination
- sodium vapor light sources (street lighting)
- for any dominant color in the image for example, the green of a football pitch or of a gaming table

R-gain

In Manual white balance mode, adjust the Red gain slider to offset the factory white point alignment (reducing Red, increases Cyan).

B-gain

In Manual white balance mode, adjust the Blue gain slider to offset the factory white point alignment (reducing Blue, increases Yellow).

4.12

Network Access



or



Here you can configure various network settings.

Ethernet IPv4

DHCP

If a DHCP server is employed in the network for the dynamic assignment of IP addresses, you can activate acceptance of IP addresses automatically assigned to the encoder.

Bosch VMS uses the IP address for the unique assignment of the encoder. The DHCP server must support the fixed assignment between IP address and MAC address, and must be appropriately set up so that, once an IP address is assigned, it is retained each time the computer is restarted.

Subnet mask

Type in the appropriate subnet mask for the set IP address.

If DHCP server is enabled, the subnet mask is automatically assigned.

Default gateway

If you want the module to establish a connection to a remote location in a different subnet, type in the IP address of the gateway here. Otherwise leave the field empty (0.0.0.0).

Ethernet IPv6

DHCP

Enter or select the desired value.

IP address

Displays the IPv6 address of the device, provided by the DHCP server.

Prefix length

Displays the prefix length of the device, provided by the DHCP server.

Default gateway

Displays the default gateway of the device, provided by the DHCP server.

Host name

Enter or select the desired value.

DNS

Using a DNS server, the device can resolve an address indicated as a name. Enter the IP address of the DNS server here.

NTP servers

Type in the IP address of the desired time server or let the DHCP server do this for you. The encoder can receive the time signal from a time server using various time server protocols, and then use it to set the internal clock. The module polls the time signal automatically once every minute. Enter the IP address of a time server here. This supports a high level of accuracy and is required for special applications.

HTTP ports

Select a different HTTP browser port if required. The default HTTP port is 80. If you want to allow only secure connections via HTTPS, you must deactivate the HTTP port.

Note: Not supported by Bosch VMS.

HTTPS ports

Note: Not supported by Bosch VMS.

If you want to grant access on the network via a secure connection, select an HTTPS port if necessary. The default HTTPS port is 443. Select the **Off** option to deactivate HTTPS ports; only unsecured connections will now be possible.

Default gateway

Enter or select the desired value.

RTSP ports

If necessary, select a different port for the exchange of the RTSP data. The standard RTSP port is 554. Select **Off** to deactivate the RTSP function.

Zero configuration address

Enable or disable the zero configuration discovery of the selected camera.

Zero configuration is an alternative method to DHCP and DNS for assigning IP addresses to cameras. It automatically creates a usable IP network address without configuration or special servers.

Note: In the ONVIF standard only the service discovery of zero configuration is used.

Alternatively without zero configuration the network must provide services, such as DHCP or DNS.

Otherwise configure the network settings of each IP camera manually.

ONVIF discovery mode

If enabled, the camera can be scanned in the network. This includes its capabilities.

If disabled, the camera does not send any discovery messages to avoid denial-of-service attacks.

We recommend disabling the discovery after adding the camera to the configuration.

Enter or select the desired value.

Enable DynDNS

Allows for enabling DynDNS.

A dynamic Domain Name Service (DNS) allows you to select the unit via the Internet using a host name, without having to know the current IP address of the unit. To do this, you must have an account with one of the dynamic DNS providers and you must register the required host name for the unit on that site.

Note:

For information about the service, registration process and available host names refer to the DynDNS provider on dyndns.org.

Type

Enter or select the desired value.

Name

Type in the name of your DynDNS user account.

TTL

Enter or select the desired value.

4.13

Scopes

Main window >  **Devices** > Expand  > Expand  > Expand  > Expand
 >  > **ONVIF Configuration** tab > **Network** tab > **Scopes** tab
 or

Main window >  **Devices** > Expand  >  > **ONVIF Configuration** tab > **Network** tab > **Scopes** tab

You can add or remove scopes to your ONVIF device with URIs having the following format:

```
onvif://www.onvif.org/<path>
```

The following example illustrates the usage of the scope value. This is just an example, and not at all an indication of what type of scope parameter to be part of an encoder configuration. In this example we assume that the encoder is configured with the following scopes:

```
onvif://www.onvif.org/location/country/china
onvif://www.onvif.org/location/city/beijing
onvif://www.onvif.org/location/building/headquarter
onvif://www.onvif.org/location/floor/R5
onvif://www.onvif.org/name/ARV-453
```

You can give the device a detailed location and device name to identify it within your list of devices.

The table shows the basic capabilities and other properties of the device, which are standardized:

Category	Defined values	Description
type	video_encoder	The device is a network video encoder device.
	Ptz	The device is a PTZ device.
	audio_encoder	The device provides audio encoder support.
	video_analytics	The device supports video analytics.
	Network_Video_Transmitter	The device is a network video transmitter.
	Network_Video_Decoder	The device is a network video decoder.
	Network_Video_Storage	The device is a network video storage device.
	Network_Video_Analytic	The device is a network video analytics device.
location	Any character string or path value.	Not supported by Bosch VMS.
hardware	Any character string or path value.	A string or path value describing the hardware of the device. A device shall include at least one hardware entry into its scope list.
name	Any character string or path value.	The searchable name of the device. This name is displayed in the Device and the Logical Tree.

The scope name, model, manufacturer determine how the device appears in the Device Tree and the ONVIF Encoder Identification and Main Settings.

4.14

Relays

Main window >  **Devices** > Expand >  > Expand >  > Expand >  > Expand >  >  > **ONVIF Configuration** tab > **Interfaces** tab > **Relay** tab

Main window >  **Devices** > Expand >  >  > **ONVIF Configuration** tab > **Interfaces** tab > **Relay** tab

The physical idle state of a relay output can be configured by setting the idle state to **open** or **closed** (inversion of the relay behavior).

The available digital outputs of the device are listed with their name, e.g.:

- **AlarmOut_0**
- **AlarmOut_1**

For any event mapping of relays within Bosch VMS use the names listed here.

Mode

The relay can work in two relay modes:

- **Bistable:** After setting the state, the relay remains in this state.
- **Monostable:** After setting the state, the relay returns to its idle state after the specified delay time.

Idle state

Select **Open** if you want the relay to operate as a normally open contact, or select **Closed** if the relay is to operate as a normally closed contact.

Delay time

Set the delay time . After this time period, the relay switches back to its idle state if configured in the **Monostable** mode.

If you like to test any configurations related to a relay status change, click **Activate** or **Deactivate** to switch the relay. You can check the configured camera relay events for correct functioning: Status display of the relay icon in Logical Tree, Events in Alarm List or Event Log.

Activate

Click to switch the relay to the configured idle state.

Deactivate

Click to switch the relay to the configured non-idle state.

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