BOSCH

MIC IP fusion 9000i

en   Operation Manual

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1 Introduction

1.1   System requirements

Our recommendations are:
–   Computer with Dual core HyperThreading processor or better
–   Graphic card with performance that matches or is better than the resolution of the camera
–   Windows 10 or later
–   Network access
–   Google Chrome, Microsoft Edge, or Mozilla Firefox
    - or -
    Application software, for example, Video Security Client, Bosch Video Client or BVMS.

1.2   Establishing the connection

The unit must have a valid IP address and a compatible subnet mask to operate on your network. By default, DHCP is pre-set at the factory to **On** and so your DHCP server assigns an IP address. With no DHCP server the default address is 192.168.0.1
The Project Assistant app or Configuration Manager (version 7.50 or higher) can be used to find the IP address. Download the software from https://downloadstore.boschsecurity.com:
1.   Start the web browser.
2.   Enter the IP address of the device as the URL.
3.   During the initial installation, confirm any security questions that show.
If a RADIUS server is used for network access control (802.1x authentication), you must configure the device before the device can communicate with the network.
To configure the device, connect it directly to a computer using a network cable and then set the service-level password.

Note:
If you cannot connect, the unit may have reached its maximum number of connections. Depending on the device and network configuration, each unit can have up to 50 web browser connections, or up to 100 connections via Bosch Video Client or BVMS.

1.3   Password protection in camera

The device is password-protected. The first time that any user accesses the device, the device will prompt the user to set a password at the service level.
The camera requires a strong password. Follow the prompts in the dialog box, which specifies what is required. The system measures the strength of the password that you enter.
When you use Configuration Manager to access your device for the first time, you must set the initial password of the device in Configuration Manager. The Users section (General > Unit Access > Users) displays the message, "Before you can use this device you have to secure it with an initial password."
Note: After you set the initial password, a "lock" icon appears next to the device name in the **Devices** list in Configuration Manager.
You can also launch the device webpage directly. In the device webpage, an initial password page appears, displaying input fields and a password strength gauge.
Enter the user name ("**service**") and a password in the appropriate fields. Refer to the section **User Management** for more information.
After a service-level password is set for the device, the device displays a dialog box that prompts users to enter the user name ("**service**") and the service-level password every time that they access the device.
1.   Fill in the fields **User name** and **Password**.

2. Click **OK**. If the password is correct, the desired page appears.

2   System overview

When a connection is established, the **Live** page shows.

The page shows the live video from the camera.

The application bar near the top of the page, below the name of the product or of the product family, displays the following icons:

Icon	Description	Function
	Live	View the live video stream.
	Playback	Play back recorded sequences. This link is only visible if a storage medium has been configured for recording. (With VRM recording, this option is not active.)
	Configuration	Configure the device.
	Dashboard	See detailed system information.
	Links	Navigate to the Bosch download store.
	Logout	Log out of the device.
	Help on this page?	Get context-sensitive help for the page that you are seeing.

2.1   Live page

The **Live** page is used to display the live video stream and control the unit.

Below the live video is a field with the date and time. Below the date / time field is a row of icons related to the video feed.

Icon	Description	Function
	Full-screen video	See the selected stream in full-screen mode; press **Esc** on the keyboard to return to the normal viewing window.
	Save snapshots	Save individual images from the displayed live video stream in JPEG format on the computer's hard drive. The storage location depends on the configuration of the camera.
	Start recording	Save video sequences from the displayed live video stream on the computer's hard drive. The sequences are recorded at the resolution specified in the encoder configuration. The storage location depends on the configuration of the camera.

Icon	Description	Function
	Start Video Security App	Start the app and use It to view live images, to configure and to operate the device from any location.
	Show latest event	Open the Playback page to see the last recorded important events.

2.2 Playback

The **Playback** page is used for playing back recorded sequences.

2.3 Configuration

The **Configuration** page is used to configure the unit and the application interface.

Making Changes

Each configuration screen shows the current settings. You can change the settings by entering new values or by selecting a predefined value from a list field.

Not every page has a **Set** button. Changes to pages without a **Set** button are set immediately.

If a page does show a **Set** button, you must click the **Set** button for a change to take effect.

Notice!

Save each change with the associated **Set** button.

Clicking the **Set** button saves the settings only in the current field. Changes in any other fields are ignored.

Some changes only take effect after the unit is rebooted. In this case, the **Set** button changes to **Set and Reboot**.

1. Make the desired changes.
2. Click the **Set and Reboot** button. The camera reboots and the changed settings are activated.

All settings are backed up in camera memory so they are not lost even if the power fails. The exception is the time settings, which are lost after 1 hour without power if no central time server is selected.

2.4 Dashboard

The **Dashboard** page is used to display detailed information about the device.

The **Dashboard** is only visible in the application bar if the **Show 'Dashboard'** option is enabled by a service-level user in the **Configuration** -> **Web Interface** -> **Appearance** page.

3   General

3.1   Identification

Device name

Enter a unique, unambiguous name for the device (for example, the installation location of the device). This name should be easy to identify in a list of devices in your system. The device name is used for the remote identification of a unit, such as in the event of an alarm.

Do not use any special characters, for example **&**, in the name. Special characters are not supported by the system's internal management.

Device ID

Enter a unique identifier for the device. This ID is additional identification for the device.

Video name

Enter a name for the video (for example, HDR ON).

Video 1

Enter a name or description for the Video 1 stream (for example, "Visible image").

Video 2

Enter a name or description for the Video 2 stream (for example, "Thermal image").

Host name

Enter a host name.

Initiator extension

Add text to an initiator name to make identification easier in large iSCSI systems. This text is added to the initiator name, separated from it by a full stop. (You can see the initiator name in the System Overview page.)

3.2   User Management

The section **Authentication modes** provides information about the authentication modes set in the camera. A checkmark appears in the checkbox to the left of the mode if the mode is set. If the mode is not set, the phrase, "**No certificate installed**" appears to the right of the mode name.

Password

This field indicates if a password is set for the camera.

Certificate

A check mark in this check box indicates that at least one certificate is loaded onto the camera. If no certificates are loaded, then "No certificate installed" appears to the right of the text.

The Escrypt certificate is a root certificate for Bosch Security Systems that proves that the device meets the following criteria:

– It originates from a Bosch factory that is a secure environment.

– It has not been tampered with.

Escrypt is a Bosch company and Certificate Authority (CA).

Active directory server (ADFS)

A check mark in this check box indicates that the camera uses an active directory server. If the camera does not use ADFS, then "No certificate installed" appears to the right of the text.

Password management

A password prevents unauthorized access to the device. You can use different authorization levels to limit access.

Proper password protection is only guaranteed when all higher authorization levels are also protected with a password. Therefore, you must always start from the highest authorization level when assigning passwords.

You can define and change a password for each authorization level if you are logged into the "service" user account.

The device has three authorization levels: service, user, and live.

–   service is the highest authorization level. Entering the correct password gives access to all the functions and allows all configuration settings to be changed.

–   user is the middle authorization level. At this level you can operate the device, play back recordings, and also control camera, for example, but you cannot change the configuration.

–   live is the lowest authorization level. At this level you can only view the live video image and switch between the different live image displays.

A fourth user group, **VCA configuration**, has the privilege to configure VCA only.

Note: Configuration and use of this user group is available only in Configuration Manager (7.20 or later).

To edit a password

To edit a password, click the pencil icon to the right of the column **Type** for the appropriate **User name**.

To create a new user

To create a new user, click **Add**.

In the box **User**, fill in the fields. For Group, select the appropriate authorization level. For **Type**, select either **Password** (for a new password) or **Certificate** (for a certificate that the new user is authorized to use).

Note: Use a maximum of 19 characters. Do no use special characters.

Confirm password

In each case, enter the new password a second time to eliminate typing mistakes.

ⓘ   **Notice!**

A new password is only saved when you click the **Set** button. You should therefore click the **Set** button immediately after entering and confirming a password.

3.3   Date/Time

Date format

Select the required date format from the dropdown menu.

Device date/Device time

ⓘ   **Notice!**

Make sure that recording is stopped before synching to the PC.

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 units are operating on the same time.

1.   Enter the current date. Since the unit time is controlled by the internal clock, there is no need to enter the day of the week - it is added automatically.

2.   Enter the current time or click the **Sync to PC** button to copy your computer's system time to the camera.

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

Device time zone

Select the time zone in which the system is located.

Daylight saving time

The internal clock can switch automatically between normal and daylight saving time (DST). The unit already contains the data for DST switch-overs for many years in advance. If the date, time and zone have been set up correctly, a DST table is automatically created.

If you decide to create alternative daylight saving time dates by editing the table, note that values occur in linked pairs (DST start and end dates).

First, check the time zone setting. If it is not correct, select the appropriate time zone and click **Set**.

1.   Click **Details** to edit the DST table.
2.   Select the region or the city which is closest to the system's location from the list box below the table.
3.   Click **Generate** to fill the table with the preset values from the unit.
4.   Click one of the entries in the table to make changes. The entry is highlighted.
5.   Click **Delete** to remove the entry from the table.
6.   Choose other values from the list boxes under the table, to change the selected entry. Changes are immediate.
7.   If there are empty lines at the bottom of the table, for example after deletions, add new data by marking the row and selecting values from the list boxes.
8.   When finished, click **OK** to save and activate the table.

Time server address

The camera can receive the time signal from time server using various time server protocols, and then use it to set the internal clock. The unit polls the time signal automatically once every minute.

Enter the IP address of a time server here.

You can choose to have the DHCP server give a time server date by selecting the **Overwrite by DHCP** option.

Time server type

Select the protocol that is supported by the selected time server.

–   Select **Time protocol** if the server uses the protocol RFC 868.
–   The **SNTP protocol** supports a high level of accuracy and is required for special applications and subsequent function extensions.
–   Select **TLS protocol** if the server uses the RFC 5246 protocol.
–   Select **Off** to disable the time server.

Click **Set** to apply the changes.

4   Web Interface

4.1   Appearance

You can adapt the appearance of the web interface and change the website language to meet your requirements.

You can use GIF or JPEG images to replace the company and device logos. The image can be stored on a web server.

Make sure that a connection to the web server is always available to display the image. The image files are not stored on the device.

To use the original graphics, delete the entries in the **Company logo** and **Device logo** fields.

Website language

Select the language for the user interface.

The default language is English. After selecting a different language, click the **Set** button. The page refreshes automatically. The GUI now displays field names and options as well as OSD messages in the selected language.

Company logo

To replace the company's logo in the top-right part of the window, enter the path to a suitable image in this field. The image file must be stored on a web server.

Device logo

To replace the device name in the top-left part of the window, enter the path to a suitable image in this field. The image file must be stored on a web server.

> **(i)**   **Notice!**
> If you want to use the original image again, delete the entries in the fields **Company logo** and **Device logo**.

Show VCA metadata

When video content analysis (VCA) is activated, additional information is displayed in the live video stream. With the MOTION+ analysis type, for example, the sensor fields in which motion is recorded are marked with yellow rectangles.

Using Essential Video Analytics or Intelligent Video Analytics, the outlines of detected objects are displayed in following colors:

– Red: Objects that generate an alarm event under the current settings appear on the camera image inside a red outline.

– Orange: An object that has triggered one alarm event but does not generate another appears inside an orange outline (example: object has crossed a line). During forensic search, an object that triggers an alarm event has an orange outline from the beginning.

– Yellow: Objects that are detected as moving but do not generate an alarm event under the current settings appear inside a yellow outline.

If the metadata fusion feature is enabled (that is, VCA is enabled for both the visible and thermal image streams), events generated by both visible and thermal image streams will appear on both the visible and thermal images.

The following table identifies the metadata that appear.

Image being viewed	Imager that Detected Object	Resulting outlines
Visible	Visible imager	Solid box
	Thermal imager	Dotted box
Thermal	Visible imager	Dotted box

Image being viewed	Imager that Detected Object	Resulting outlines
	Thermal imager	Solid box

Show VCA trajectories

The trajectories (motion lines of objects) from the video content analysis are displayed in the live video image if a corresponding analysis type is activated. The trajectory is shown as a green line following the object base point.

If the metadata fusion feature is enabled (that is, VCA is enabled for both the visible and thermal image streams), trajectory lines will appear on both the visible and thermal image streams.

The following table identifies the trajectory lines that appear.

Image being viewed	Imager that Detected Object	Resulting trajectory lines
Visible	Visible imager	Solid green line
	Thermal imager	Dotted green line
Thermal	Visible imager	Dotted green line
	Thermal imager	Solid green line

Note: For details about how VCA objects appear on the **Live** page, refer to the section Understanding the Fusion Feature.

Show overlay icons

Select this check box to show overlay icons on the live video image.

Show VCA items

Shows alarm fields, lines and routes configured for the video analytics in the following colors:
–   Green: Fields, lines and routes used in a task are displayed in green. They can be edited but not deleted.
–   Red: Fields, lines and routes currently in alarm mode are displayed in red.

Show 'Dashboard'

Select this checkbox to enable the **Dashboard** in the application bar.

Secure cookies

Select this checkbox to secure the cookies sent through the camera.

> **Notice!**
> If cookies are secured, authentication forwarding to MPEG ActiveX and the Video Security App is prohibited.

Video player

Select the type of player to be used for live mode viewing.

Latency mode

Select the required latency mode:
–   **Low delay:** Default mode. Provides marginal buffering to display fluent video under normal network conditions.
–   **Smooth video:** Allows the buffer to automatically adjust to cover network jitter, inducing higher latency.
–   **No buffering**: Shows video as it is received by the decoder with minimum latency. Allows the video to jerk if there is network jitter.

Video buffer

The value shown is calculated from the **Latency mode** setting. It cannot be changed.

JPEG resolution

Select the size of the JPEG image on the **Live** page. Options are **Small**, **Medium**, **Large**, 720p, 1080p, and **Resource based**.

JPEG interval

You can specify the interval at which the individual images should be generated for the M-JPEG image on the **Live** page.

JPEG quality

You can specify the quality at which the JPEG images appear on the **Live** page.

4.2 'Live' functions

On this page you can adapt the functions on the **LIVE** page to your requirements. You can choose from a variety of different options for displaying information and controls.

1. Check the box for the items that are to be made available on the **LIVE** page. The selected items are indicated by a check mark.
2. Check whether the required functions are available on the **LIVE** page.

Transmit audio

You can only select this option if audio transmission is actually switched on (see Audio).The audio signals are sent in a separate data stream parallel to the video data, and so increase the network load. The audio data are encoded according to G.711 and require an additional bandwidth of approx. 80 kbps per connection in each direction.

Lease time (s)

The lease time in seconds determines the time beyond which a different user is authorized to control the camera after no further control signals are received from the current user. After this time interval, the camera is automatically enabled for another user.

Auto logout time [min]

Set a time frame (in minutes) for the automatic logout. Default value is 0 (no automatic logout).

Allow snapshots

Here you can specify whether the icon for saving individual images (snapshots) should be displayed below the live image. Individual images can only be saved if this icon is visible.

Allow local recording

Here you can specify whether the icon for saving (recording) video sequences on the local memory should be displayed below the live image. Video sequences can only be saved if this icon is visible.

I-frame only stream

Here you can specify whether the **Live** page displays a viewing tab for an I-frame only stream.

Show 'Pre-positions'

Here you can specify whether the section **Pre-positions** of the **Live** page displays a drop-down box with the list of scenes set in the section **Camera** > **Pre-positions and Tours** of the **Configuration** page.

Show 'AUX Control'

Here you can specify whether the **Live** page displays the section **Show 'AUX Control'**.
Here you can specify whether the **Live** page displays the section **Special Functions**.

Path for JPEG and video files

Enter the path for the storage location of individual images and video sequences saved from the **Live** page.

Video file format

Select a file format for the live page display. The MP4 format does not include metadata.

5   Camera

5.1   Installer Menu

Application variant

– If you are connecting to MIC-ALM-WAS-24, select "[camera name] - IO" to allow the
  camera to recognize additional inputs and outputs from this device and to allow control
  of an external washer unit.
– Otherwise, select "[camera name]."

Sensor mode

The sensor mode specifies the base resolution and frame rates for the image quality settings.
Fast moving scenes use more frame rates (50 fps or 60 fps) for better image quality than slow
moving scenes. Adjust this setting as necessary.

This higher resolution (HD 1080p) gives maximum detail in these scenes, but can result in
motion artifacts for fast-moving objects because of the lower frame rates.

Some types of light can show flickering in the image when the frame rate is not synchronized
with the mains power frequency. To avoid this, the sensor mode frame rate should be in line
with the power frequency:

– 50Hz: 25 or 50 fps
– 60Hz: 30 or 60 fps

> **Notice!**
>
> Changing the field **Sensor mode**
>
> A change to the parameter in the field **Sensor mode** requires approximately 10-20 seconds to
> complete. During this time, no changes can be made. The cameo image freezes.

Select **On** to output a mirror image of the camera picture.
Note: Privacy masks are not supported in mirror image mode.

Coding standard
Select the encoding mode:

– H.264
– H.265
– **H.265 (no B-frames)**

H.265 (no B-frames) is a restrictive mode for the encoder where it only supports I and P
frames. This decreases calculation power so that there can be a higher frame rate (for
example, 30 fps for a camera that might be restricted to 25 fps).

Merge metadata
Select this checkbox to merge the metadata from the two video streams.

Orientation
Reverses the image 180º (ideal when mounting upside down). Set the orientation to Normal
(default) or Inverted.

> **Caution!**
>
> The camera disables the Privacy Mask function if the orientation is set to Inverted.

System controller settings
Click the Default button to restore all camera settings to their original defaults.

Reboot device

Click the Reboot button to reboot the camera. There is a ten (10) second pause before the camera starts its homing phase. During the homing phase, the camera will complete finding the upper and lower tilt limits.

Reboot device

Click **Restore** to restore the factory defaults of the device.

Note: Clicking this button also clears the service-level password. Operators must reset the password before doing anything else.

Factory defaults

Click **Defaults** to restore the factory defaults for the camera. A confirmation screen appears. Allow several seconds for the camera to optimize the picture after a reset.

Click **Confirm** in each dialog box that opens to complete a factory reset of the device.

This action deletes all third-party apps and resets all settings to defaults (including network settings).

> **Caution!**
>
> Do not remove power to the unit during a factory default or a firmware update. Wait at least two minutes for the default process to complete. If the unit appears to be "frozen" after two minutes, then reboot the unit. Refer to Troubleshooting for more details.

5.1.1   Display Stamping

Various overlays or "stamps" in the video image provide important supplementary information. These overlays can be enabled individually and are arranged on the image in a clear manner. The drop-down menus below allow the configuration of the individual stamping options. The respective sample windows show a preview of the configured text and background styles. Click **Set** to apply the changes.

Global configuration

> **Notice!**
>
> These options can also be configured individually for all stamping regions.
>
> Any changes to the global configuration settings will be applied to all stamping regions!

Stamping size

Select the desired font size of the overlays on the OSD: **Normal** or **Large**.

Select **Custom** to enable the **Font size (%)** field.

Font size

Enter a number for a custom size (percentage) of the font, from 1 to 1000.

Text color

Select the color for the alarm message to be displayed in.

Background color

Select the background color for the alarm message to be displayed in.

If you have enabled the **Transparent background** option, the background color is not displayed in the OSD.

Transparent background

Check this box to make transparent the stamp background on the image.

Camera name stamping

This field sets the position of the camera name overlay. It can be displayed at the **Top**, at the **Bottom** or at a position of your choice that you can then specify using the **Custom** option. Or it can be set to **Off** for no overlay information.

1. Select the desired option from the list.
2. If you select the **Custom** option, additional fields are displayed where you can specify the exact position (**Position (XY)**).
3. In the **Position (XY)** fields, enter the values for the desired position.

Optionally, tick the **Underlay with full-width bar** box to place a full-width background-bar beneath the time stamp.

Logo

To place a logo on the image, select and upload an uncompressed .bmp file with a maximum size of 128x128 pixels and 256 colors to the camera. Its position on the image can then be selected.

Logo position

Select the position for the logo on the OSD: **To the left of the name**, **To the right of the name**, or **Logo only**.

Select **Off** (the default value) to disable logo positioning.

Time stamping

This field sets the position of the time overlay. It can be displayed at the **Top**, at the **Bottom** or at a position of your choice that you can then specify using the **Custom** option. Or it can be set to **Off** for no overlay information.

1. Select the desired option from the list.
2. If you select the **Custom** option, additional fields are displayed where you can specify the exact position (**Position (XY)**).
3. In the **Position (XY)** fields, enter the values for the desired position.

Display milliseconds

If necessary, you can also display milliseconds. This information can be useful for recorded video images; however, it does increase the processor's computing time. Select **Off** if you do not need to display milliseconds.

Alarm mode stamping

Select **On** to display a text message overlay in the image in the event of an alarm. It can be displayed at a position of your choice that you can then specify using the **Custom** option. Or it can be set to **Off** for no overlay information.

1. Select the desired option from the list.
2. If you select the **Custom** option, additional fields are displayed where you can specify the exact position (**Position (XY)**).
3. In the **Position (XY)** fields, enter the values for the desired position.

Alarm message

Enter the message to be displayed in the image in the event of an alarm. The maximum text length is 31 characters.

Title OSD

OSD titles can be displayed at a position of your choice.

Select **On** to display sector or pre-position title overlays continuously in the image.

Select **Momentary** to display sector or pre-position title overlays for a few seconds.

1. Select the desired option from the list.
2. Specify the exact position (**Position (XY)**).
3. In the **Position (XY)** fields, enter the values for the desired position.

Select **Off** to deactivate the display of overlay information.

Camera OSD

Select **On** to momentarily display camera response information, such as Digital Zoom, Iris open/close, and Focus near/far overlays in the image. Select **Off** to display no information.

1. Select the desired option from the list.
2. Specify the exact position (**Position (XY)**).
3. In the **Position (XY)** fields, enter the values for the desired position.

Live video indicator

Select **On** to display the **Live video indicator**, an icon that pulses on the OSD to show that the video stream is live.

Select **Off** to hide the **Live video indicator**.

Title region

Select **On** to set or to edit the position of the title region on the OSD.

The fields **Position (XY)** and **(0...255)** appear.

1. In the field **Position (XY)**, specify the exact position. (The default is 10.)
2. In the field **(0...255)**, enter the position range. (The default is 176).

Select **Off** to hide the region from view.

Telemetry region

Select **On** to set or to edit the position of the telemetry information (azimuth and elevation (pan/tilt position)) and the zoom factor on the OSD. Refer to the section "*PTZ Settings, page 32*" to set the pan and tilt limits.

The fields **Position (XY)** and **(0...255)** appear.

1. In the field **Position (XY)**, specify the exact position. (The default is 10.)
2. In the field **(0...255)**, enter the position range. (The default is 176).

Select **Off** to hide the region from view.

Feedback region

Select **On** to set or to edit the position of system feedback messages (including message for camera settings such as focus, iris, and zoom level) on the OSD. Refer to the section "Lens Settings" to configure these settings.

The fields **Position (XY)** and **(0...255)** appear.

1. In the field **Position (XY)**, specify the exact position. (The default is 10.)
2. In the field **(0...255)**, enter the position range. (The default is 176).

Select **Off** to hide the region from view.

Stream security

Video authentication

Select from the **Video authentication** drop-down box a method for verifying the integrity of the video.

If you select **Watermarking**, all images are marked with an icon. The icon indicates if the sequence (live or saved) has been manipulated.

If you want to add a digital signature to the transmitted video images to ensure their integrity, select one of the cryptographic algorithms for this signature.

Signature interval [s]

For certain **Video authentication** modes, enter the interval (in seconds) between insertions of the digital signature.

5.1.2   **Positioning**

The **Positioning** feature describes the location of the camera and the perspective in the camera's field of view.

Perspective information is essential to Video Analytics, as it enables the system to compensate for the illusory smallness of distant objects.

Only through use of perspective information is it possible to distinguish objects such as persons, bicycles, cars and trucks, and accurately compute their real size and speeds as they move through 3D space.

However, to calculate perspective information accurately, the camera must be directed at a single, flat horizontal plane. Multiple and inclined planes, hills, stairs can falsify perspective information and produce incorrect object information such as size and speed.

Mounting position

The mounting position describes the perspective information that is also often called calibration.

This parameter is important for Intelligent Tracking. If using Intelligent Tracking, select **Standard**.

Note: Intelligent Tracking is not available on MIC inteox models.

Standard

VCA Profile

The MIC camera provides the tilt angle and the focal length automatically to complete the global calibration for every potential field of view of the camera.

Height [m]

The height describes the vertical distance from the camera to the ground plane of the captured image. Typically the elevation of the mounted camera above the ground.

Enter the height in meters of the position of the camera.

Sketch

The **Sketch** functionality offers an additional, half-automatic calibration method. This calibration method allows you to describe the perspective in the camera's field of view by drawing vertical lines, ground lines, and ground angles in the camera image and entering the correct size and angle. Use the **Sketch** functionality if the result of the automatic calibration is not sufficient.

You can also combine this manual calibration with the values for roll angle, tilt angle, height and focal length calculated by the camera or entered manually.

Click to improve the automatic calibration. The **Sketch-based calibration** window is displayed.

VCA Profile

Select the appropriate profile.

Global

Select the **Global** check box to use the global, overall calibration for all AUTODOME and MIC cameras.

Alternatively, clear the **Global** check box to obtain a local calibration and overwrite the global calibration for the selected profile. To do this, select the VCA profile before.

(i)

Notice!

The **Sketch** functionality is only available for configured and assigned pre-positions.

For AUTODOME and MIC cameras, configure the pre-positions of the camera and assign the pre-positions to one of the available 16 VCA profiles before calibration with **Sketch**.

Applications are pre-positions of cameras directed towards different ground planes, an optimized calibration for inclined ground planes or large focal lengths. A local pre-position calibration does not change the global calibration.

It is also possible to calibrate pre-positions without entering a global calibration.

Calculate

Select the **Calculate** check box to obtain the roll angle, tilt angle, height and focal length from the sketched calibration elements - vertical lines, ground lines and angles - you have placed in the camera.

Clear the **Calculate** check box to enter a value manually or to refresh to the values provided by the camera itself.

Tilt angle [°] / Roll angle [°]

Enter the angle manually, or click the refresh icon to obtain values that are provided by any sensors that the camera may have. As an alternative, select the **Calculate** check box to get values based on the calibration elements that are marked on the image.

Height [m]

Enter the height manually, or click the refresh icon to obtain values that are provided by any sensors that the camera may have. As an alternative, select the **Calculate** check box to obtain values based on the calibration elements that are marked on the image.

Focal length

Enter the focal length manually, or click the refresh icon to obtain values that are provided by any sensors that the camera may have. As an alternative, select the **Calculate** check box to obtain values based on the calibration elements that are marked on the image.

Calibrating cameras using the Sketch-based calibration window

To determine non-automatically set values:

1. Enter the value for tilt angle, roll angle, height and focal length if the value is known, for example, by measuring the height of the camera above the ground, or reading the focal length from the lens.
2. For each value that is still unknown, select the **Calculate** check box, then place a calibration element on the camera image. Use these calibration elements to trace individual outlines of the displayed environment in the camera image and define the position and size of these lines and angles.
   – Click to place a vertical line across the image.
     A vertical line corresponds to a line that is perpendicular to the ground plane, such as a door frame, edge of a building or a lamp post.
   – Click to place a line across the ground in the image.
     A line on ground corresponds to a line that is on the ground plane, such as a road marking.
   – Click to place an angle on the ground in the image.
     The angle on ground represents an angle lying on the horizontal ground plane, such as the corner of a carpet or parking bay markings.
3. Adjust the calibration elements to the situation:
   – Enter the real size of a line or angle. To do this, select the line or angle, then enter the size in the corresponding box.
     Example: You have placed a line on ground across the lower side of an automobile. You know that the automobile is 4 m long. Enter 4 m as the length of the line.
   – Adjust the position or length of a line or angle. To do this, drag the line or angle or move the end points to the desired position in the camera image.
   – Remove a line or angle. To do this, select the line or angle, then click the trash can icon.
   Note:
   Blue lines indicate calibration elements added by you.

White lines represent the element as it should be positioned on the camera image based on the current calibration results or the determined calibration data.

Horizon

If the values correspond, areas on the camera image have a colored background.

blue: This area corresponds to the sky. The bottom line of the blue area represents the horizon. Objects that are detected in the blue area cannot be filtered correctly by size or speed.

If the camera is installed at a relatively low height in a building, for example, this display is not required, because the entire area covered by the camera is below the horizon.

> **Notice!**
> If the distance to the camera (geolocation) is not relevant, it is enough to determine height and focal length in relation to each other. This allows a simple calibration by marking 2-3 persons - each with a vertical line - and setting their size. 1,80 m (71 in.) for all is sufficient. Use at least one person in the front and one person in the background of the image for best results.

Coordinate system

The **Coordinate system** feature describes the position of the camera in a local **Cartesian** or the global **WGS 84** coordinate system. The camera and the objects tracked by the video analytics are displayed on a map.

Select the coordinate system and enter the appropriate values in the additional input fields that appear depending on the coordinate system selected.

Cartesian

The Cartesian coordinate system describes each point in the space by a combination of the position on three orthogonal axes X, Y and Z. A right-handed coordinate system is used, where X and Y span the ground plane and Z describes the elevation of the ground plane.

X [m]

The location of the camera on the ground on the X-axis.

Y [m]

The location of the camera on the ground on the Y-axis.

Z [m]

The elevation of the ground plane. To determine the elevation of the camera, add the **Z [m]** value and the **Height [m]** value of the camera.

Azimuth [°]

The orientation of the camera in a counter-clockwise angle starting with 0° in the east (WGS 84) or on the X-axis (**Cartesian**). If the camera is directed towards the north (WGS 84) or the Y-axis (Cartesian), the azimuth is 90°.

WGS 84

The WGS 84 coordinate system is a spherical coordinate system description of the world and used in many standards including GPS.

Latitude

Latitude is the north-south position of the camera in the spherical coordinate system WGS 84.

Longitude

Longitude is the east-west position of the camera in the spherical coordinate system WGS 84.

Ground level [m]

The elevation of the ground above sea level. To determine the elevation of the camera, add the **Ground level [m]** value and the **Height [m]** value of the camera.

Azimuth [°]

The orientation of the camera in a counter-clockwise angle starting with 0° in the east (WGS 84) or on the X-axis (**Cartesian**). If the camera is directed towards the north (WGS 84) or the Y-axis (Cartesian), the azimuth is 90°.

5.2   Scene Mode

A scene mode is a collection of image parameters that are set in the camera when that particular mode is selected (installer menu settings are excluded). Several pre-defined modes are available for typical scenarios. After a mode has been selected, additional changes can be made through the user interface.

Customize the mode, if necessary, for the specific requirements of the site by selecting different values for the fields below.

Current mode

Select the mode you wish to use from the drop-down menu.

– **Standard**

This mode is optimized for most standard scenes both indoor and outdoor.

– **Sensitivity boost**

This mode provides maximum sensitivity in low light scenes by using longer exposure times, resulting in bright images even in extreme low light.

– **Fast movement**

This mode is used for monitoring fast moving objects like cars in traffic scenes. Motion artifacts are minimized and the image is optimized for a sharp and detailed picture in color and monochrome.

– **Vibrant**

This mode provides a more vivid image with increased contrast, sharpness, and saturation.

– **Color Only (Traffic)**

In this mode, the camera does not switch to monochrome mode at low light levels. The mode is optimized to minimize motion artifacts and to capture the color of vehicles/pedestrians and traffic lights, even at night, for scenarios such as city surveillance and traffic monitoring.

– **Custom mode #1**

If necessary, select a custom mode.

– **Custom mode #2**

If necessary, select a second custom mode.

Mode ID

The name of the selected mode is displayed.

Copy mode to

Select the mode from the drop-down menu to which you wish to copy the active mode.

Note: To restore the default setting of all scene modes, you must click the SC setting.

Restore mode defaults

Click **Restore Mode Defaults** to restore the factory default modes. Confirm you decision.

5.2.1   Picture Settings

Color

White Balance

Adjusts the color settings to maintain the quality of the white areas of the image.

– **ATW**: allows the camera to continuously adjust color reproduction.
– **AWB Hold**: places the ATW on hold and saves the color settings.

- **Extended ATW** (default): allows the camera to constantly adjust for optimal color reproduction.
- **Manual**: Red and Blue gain can be manually set to a desired position.
- **Sodium Lamp Auto:** Automatically adjusts for sodium vapor light to restore objects to their original color.
- **Sodium Lamp:** Optimizes the sodium vapor light to restore objects to their original color.

Red Gain

The red gain adjustment offsets the factory white point alignment (reducing red introduces more cyan).

Blue Gain

The blue gain adjustment offsets the factory white point alignment (reducing blue introduces more yellow). It is only necessary to change the white point offset for special scene conditions.

Sodium red level

Adjust the level of red for sodium vapor lighting with the slider from 0 to 255.

Sodium blue level

Adjust the level of blue for sodium vapor lighting with the slider from 0 to 255.

Note: The fields **Sodium red level** and **Sodium blue level** appear only when the value in the field **White balance** is "Sodium lamp auto" or "Sodium lamp."

Saturation

Select the percentage of light or color in the video image. The range of options is from 60% to 200%; the default is 100%.

Color hue

Select the degree of color in the video image. The range of options is from -14° to 14°; the default is 0°.

Exposure and gain control

Gain control

Adjusts the automatic gain control (AGC).

- **AGC** (default): Automatically adjusts the gain to the lowest possible value needed to maintain a good picture.
- **Fixed**: no enhancement. This setting disables the Max. Gain Level option.

Fixed gain

Select the desired number for **Fixed gain** from the drop-down box.

Maximum gain level

Adjust the decibels of maximum gain with the slider. The range is 6 to 72.

AE-response speed

Select the speed of the response of auto exposure. Options are Super slow, Slow, Medium (default), Fast.

Shutter Mode

- **Fixed**: The shutter mode is fixed to a selectable shutter speed.
- **Automatic exposure**: increases camera sensitivity by increasing the integration time on the camera. This is accomplished by integrating the signal from a number of consecutive video frames to reduce signal noise.
  If you select this option, the camera disables **Shutter** automatically.

Shutter

Adjusts the electronic shutter speed (AES). Controls the time period for which light is gathered by the collecting device. The default setting is 1x (60 Hz: 1/30, 50 Hz: 1/25)

Maximum automatic exposure

Use this field to limit the integration time when Frame Integration is active. The range of options is from 1/4 to 1/30 (default).

Default shutter limit

The camera tries to hold this shutter value as long as sufficient ambient light is available in the scene.

The range of options is from **1/60** to 1/60000. The default value is **1/120** for all modes except **Motion** (default **1/500**).

Backlight compensation

The function will ignore small areas of high illumination directly into the camera. The function increases the brightness of the overall screen to make sure that subjects and the larger portion of the scene remain bright.

Select **Off** to stop **Backlight compensation**. (Default)

Select **On** to start **Backlight compensation**.

Note: You cannot use **High dynamic range** and **Backlight compensation** at the same time. (When **High dynamic range** is On, **Backlight compensation** is Off.)

※ **Backlight compensation** does not work in **Fixed shutter** mode.

Day/night

Night mode

Selects night mode (B/W) to enhance lighting in low light scenes. Select from the following options:

– **Monochrome**: Forces the camera to stay in Nigh Mode and transmit monochrome images.
– **Color**: The camera does not switch to Night Mode regardless of ambient light conditions.
– **Auto** (default): The camera switches out of Night Mode after the ambient light level reaches a pre-defined threshold.

Night mode threshold

Adjusts the level of light at which the camera automatically switches out of night mode (B/W) operation. Select a value between 10 and 55 (in increments of 5; default 40). The lower the value, the earlier the camera will switch to color mode.

Night mode priority

Select the option to which the camera should give priority while in night mode:

– Motion
– Color (default)

Night mode shutter

Controls the time period for which light is gathered by the collecting device while in night mode. Values are ¼, 1/8, 1/15, and 1/30; the default is 1/15.

5.2.2   Enhance

All settings on this page except for Intelligent Noise Reduction are scene-mode specific. This means that sharpness/noise suppression/HDR can be adjusted on each scene mode.

High dynamic range

The **High dynamic range** mode uses an electronic shutter to capture multiple images with different exposure times and to reproduce a high-contrast frame. The output frame combines the bright area captured by the high-speed shutter image and the dark area captured by the low-speed shutter image. The result is that you can view details in both the bright areas (highlights) and the dark areas (shadows) of a scene at the same time.

※ **High dynamic range** does not work in **Fixed shutter** mode.

Select **On** to start **High dynamic range**. (Default)

Select **Off** to stop **High dynamic range**.

– **Auto** - Stabilization activates automatically when the camera detects vibration greater than the set threshold.

Sharpness mode

Select the appropriate sharpness mode. Options are **Manual** and **Auto**.

Sharpness level

This field is active when **Sharpness mode** is set to **Manual**.

Adjust the level of sharpness of the video image (from 1 to 15) using the slider.

Gamma correction

This function lets you adjust the image contrast in the original scene, to make it lighter or darker. Contrast lets you get more detail in a dark area, or get video with more contrast.

Use the slider to adjust the Gamma correction value. The higher the number, the better the image contrast.

Fine edge mode

This function makes video sharper for scenes with related colors and not much contrast. Examples of scenes for which to use this function are scenes with a forest or a lawn.

Black line enhancement

This function increases the sharpness of objects in an image by adding a black line around the objects. This effect makes more of a distinction between one element and another in a scene. The default value is **Auto**.

Intelligent Defog

Select this to activate the automatic intelligent defog feature. This feature continuously adjusts image parameters to provide the best picture possible under foggy or misty conditions.

Intelligent Defog intensity

Select the amount of intensity for the defog feature.

Note: This field is active only when the option in Intelligent Defog is "**On**".

2D noise reduction level

This field operates in conjunction with the field **Noise reduction** to reduce the noise introduced by the brightness of the image. When **Noise reduction** is set to "On," then the **2D noise reduction level** field is active.

Select the appropriate level of noise reduction, from 1 to 5 (2 is the default).

3D noise reduction level

This field operates in conjunction with the field **Noise reduction** to reduce the noise introduced by movements in the scene. When **Noise reduction** is set to "On," then the **3D noise reduction level** field is active.

Select the appropriate level of noise reduction, from 1 to 5 (2 is the default).

5.2.3   Scene Mode Scheduler

The scene mode scheduler is used to determine which scene mode should be used during the day and which scene mode should be used during the night.

1.   Select the mode you wish to use during the day from **Marked range** drop-down box.
2.   Select the mode you wish to use during the night from **Unmarked range** drop-down box.
3.   Use the two slider buttons to set the **Time ranges**.

5.3   Encoder Statistics

Stream
Identifies the current stream (1, 2, or JPEG).

Zoom
Identifies the current zoom factor of the camera (1x, 2x, 4x, or 8x).

Averaging period
Select the appropriate averaging period as a means of stabilizing the long term bit rate.

5.4   Privacy Masks

Note: The sequence of fields in the GUI may not match the sequence of the fields in this section of the User Manual. In this section of the User Manual, fields appear in a more logical functional sequence, identifying the sequence to create a new privacy mask, and then to update a privacy mask.

Privacy Masks block specific areas of a scene from being seen in the camera's field of view. This can be useful when public spaces are in the coverage area or monitoring will be limited to a particular zone.

The areas covered are indicated by a colored pattern (**Black**, **White**, or **Gray**) in the video image. The activated masked areas are filled with the selected pattern in live view.

You can define a total of thirty-two (32) privacy masks in the camera.

A total of eight (8) masks can be in view at the same time.

Privacy mask
Select the number of the **Privacy mask**. A colored rectangle appears in the unlabeled video preview window above the **Set** button.

Use the mouse to define the area for each privacy mask.

Privacy Masks can have multiple corners (which are blue in the preview window) and can form any convex shape.

The default mask template has four corners. You can add or delete corners as needed:
–   To add a corner, double-click the side of the mask where you want to add the corner.
–   To delete a corner, double-click the corner to remove.
–   To amend the shape of a zone, place the cursor over the edge of the zone, hold down the mouse button and drag the edge of the zone to the required position.
–   To reposition a zone, place the cursor over the zone, hold down the mouse button and drag into position.

> **Notice!**
> Draw the mask at 50% optical zoom or less for improved masking performance.
> Draw the mask 10% larger than the object to ensure that the mask completely covers the object as the camera zooms in and out.

Pattern
Select the color of the mask as it will appear in live video:
Black, **Gray**, **White**, or **Custom Color**.
If you select the **Pattern** "**Auto**," the camera adjusts to the brightness or darkness of the background scene of the video. In other words, the color of the **Privacy mask** is the most prevalent of the three (**Black**, **White**, or **Gray**) in the background scene that the **Privacy mask** covers.
If you select the **Pattern** "**Mosaic**," the movements behind a Privacy Mask will stay visible.

Enabled
Select this check box to draw the mask for the corresponding **Privacy mask** zone.

Clear this check box to erase the mask for an individual **Privacy mask** zone.

Disable masks

Click the check box to hide all privacy masks.

Note: You can disable masks individually by deselecting the check box **Disable masks**.

Mask enlargement

Select this check box to enlarge all masks automatically while the camera is in motion.

Zoom threshold

Click this check box to select the current zoom position at which the mask will appear as the camera zooms in or be hidden as the camera zooms out.

5.5 Picture Settings Thermal

Contrast enhancement

By default, this option is **On**, which allows users to adjust the amount of contrast and sharpness enhancement (in the **Contrast enhancement level** field).

Select **Off** to deactivate contrast enhancement. The camera will provide less contrast and no sharpness enhancement.

Contrast enhancement level

Slide the bar to change the **Contrast enhancement** or enter a value from 0 to 7.

Note the following points:

–   The higher the Contrast enhancement level, the greater the contrast and sharpness enhancement.

–   High Contrast enhancement levels will increase contrast as well as enhance random video noise. Depending on the encoder settings, a higher bit rate or lower compressed image quality may result.

–   If the Contrast enhancement level is too high, areas of similar colors in the scene may appear to blend. Dark areas of the image might blend together, and light areas of the image might blend together.

–   If the Contrast enhancement level is too low, it may be difficult to distinguish between objects that have similar temperatures.

Image gain level

Select the level of image gain, which controls the gain/magnification applied to the thermal video. Values range from 0 to 255; the default is 128.

Note: Raising the Image gain level for a given scene with objects of two different temperatures will increase the gray scale or color difference between the two objects in the scene.

Image brightness level

Select the level of image brightness, which controls the brightness of the thermal video scene by adding a DC offset to the video signal. Values range from 0 to 255; the default is 128.

If the scene is too dark in **White hot** mode or too bright in **Black hot** mode, increase the Image brightness level. White hot images become brighter; black hot images become darker.

If the image is too bright (white hot) or too dark (black hot), decrease the Image brightness level.

Noise reduction

By default, this option is **On**.

Noise reduction On enables temporal noise reduction, which reduces random video noise in the picture by averaging pixels across time if the difference between them is below a threshold. Off disables temporal noise reduction.

Thermal mode

Select the color mode that produces the best image based on the scene from the thermal imager:

Color Mode	Description
White hot	(Default setting) Hot objects will appear brighter than cold objects.
Black hot	Cold objects will appear brighter than hot objects.
Red Light	Cooler parts of a scene will show red. Hot objects will appear yellow.
Arcus	Objects of different temperatures will appear as shades of purple, green and red.
Inferno	Cooler parts of a scene will show red. Hot objects will appear yellow and white.
SoftLight	This mode is similar to Inferno mode, but with an overall softer image.
Sunset	Cooler parts of a scene will show purple. Hot objects will appear yellow and white.
Memoriam	Cooler parts of a scene will show yellow. Hot objects will appear black and white.
Flamma Arcticus	Cooler parts of a scene will show flat white. Hot objects will appear red and black.
Ocean	Cooler parts of a scene will show blue. Hot objects will appear black and white.
Rain	The scene will show a mixture of very grainy colors depending on temperature.
Rainbow	The scene will show objects in a rainbow of colors depending on temperature.

Polarity

Select **Normal** or **Inverted** to invert the colors.

Polarity of **Normal** causes hot temperatures and cold temperature to act as described in **Thermal mode**.

Polarity of **Inverted** inverts the operation of the thermal mode. The color/gray scale normally for hot objects applies instead to cold objects. The color/gray scale normally for cold objects applies instead to hot objects.

5.6   Lens Settings

Focus

Autofocus

Continuously adjusts the lens automatically to the correct focus for the sharpest picture.

- **One Push** (default; commonly called "Spot Focus"): activates the Auto Focus feature after the camera stops moving. Once focused, Auto Focus is inactive until the camera is moved again.
- Auto Focus: Auto Focus is always active.
- Manual: Auto Focus is inactive.

Focus speed

Use the slider (from 1 to 8) to control how fast the Auto focus will readjust when the focus becomes blurred.

IR focus correction

Optimizes the focus for IR lighting. Options are: On, Off (default).

Day near limit [m]

Select the distance (in meters), from 0.1 to 20 m, for the minimum distance of the zoom focus during the day.

Night near limit [m]

Select the distance (in meters), from 0.1 to 20 m, for the minimum distance of the zoom focus during the night.

Auto iris

Automatically adjusts the lens to allow the correct illumination of the camera sensor. This type of lens is recommended for use where there are low light or changing light conditions.

– **Constant** (default): camera constantly adjusts to varying light conditions (default).

  If you select this option, the camera makes the following changes automatically:

  – **Gain Control**: switches to AGC.
  – **Shutter Speed**: switches to default.

– **Manual**: camera must be manually adjusted to compensate for varying light conditions.

Auto iris level

Increases or decreases brightness according to the amount of light. Type a value between 1 and 15.

Zoom

Maximum zoom speed

Controls the zoom speed.

Digital zoom

Digital zoom is a method of decreasing (narrowing) the apparent angle of view of a digital video image. It is accomplished electronically, without any adjustment of the camera's optics, and no optical resolution is gained in the process.

5.7   PTZ Settings

Auto pan speed

Continuously pans the camera at a speed between right and left limit settings. Type a value between 1 and 60 (expressed in degrees), inclusive. The default setting is 30.

Inactivity

Selects the time period the dome must be not controlled until the inactivity event will be executed.

– **Off** (default): camera remains on a current scene indefinitely.
– **Pre-position 1**: camera returns to **Pre-position 1**.
– **Previous AUX**: camera returns to the previous AUX activity.

Inactivity period

Determines the behavior of the camera when the control for the camera is inactive. Select a time period from the pull-down list (3 s - 24 h). The default setting is 2 minutes.

Number of sectors

Select the appropriate number of sectors (for example, 4, 6, 12, or 16).

Note: The number that you select in this field determines the number of sectors that appear in the **Sectors** page (below).

Auto pivot

The Auto pivot tilts the camera through the vertical position as the camera is rotated to maintain the correct orientation of the image. Set the Auto Pivot to On (default) to automatically rotate the camera 180º when following a subject traveling directly beneath the camera. To disable this feature, click Off.

Freeze frame

Select On to freeze the image while the camera moves to a predetermined scene position.

Azimuth

Select On to display azimuth/elevation readings.

Select Off to hide azimuth/elevation readings.

Maximum pan speed [%]

Select the maximum pan speed (in percent). Settings range from 1 to 100. The default is 100.

Note: If you would like to pan/tilt manually, or to use recording Tour A / Tour B, while using the "IVA while moving" feature, then you must set the value in this field to <6.

Maximum tilt speed [%]

Select the maximum tilt speed (in percent). Settings range from 1 to 100. The default is 100.

Note: If you would like to pan/tilt manually, or to use recording Tour A / Tour B, while using the "IVA while moving" feature, then you must set the value in this field to <6.

Tracking zoom-out limit [%]

This parameter defines the zoom ratio percentage to which the camera zooms out after Tracking idel time [s] stops tracking, or if Intelligent Tracking loses visibility of an object being tracked. This allows the camera to re-acquire the target in a new, wider FoV. Settings range from 0 to 100. The default is 50.

Note: Intelligent Tracking is not available on MIC inteox models.

Tracking idle time [s]

This parameter allows the camera to stop tracking motion of certain objects, such as a tree or a flag swaying in the wind, in a confined area after the specified number of seconds. Settings range from 5 to 120. The default is 30.

Auto pan left limit

Sets the left Auto Pan limit of the camera. Use the preview window to move the camera to the left pan limit and click the button. The camera will not move past this limit when in Auto Pan Between Limits mode (AUX 2 ON).

Auto pan right limit

Sets the right Auto Pan limit of the camera. Use the preview window to move the camera to the right pan limit and click the button. The camera will not move past this limit when in Auto Pan Between Limits mode (AUX 2 ON).

Tilt up limit

Sets the upper tilt limit of the camera. Use the preview window to move the camera to the tilt limit and click the button.

Tour A / Tour B

Starts and stops the recording of a recorded (guard) tour.

The camera can make up to two (2) recorded tours. A recorded tour saves all manual camera movements made during the recording, including its rate of pan, tilt and zoom speeds, and other lens setting changes. The tour does not capture camera video during the recording of the tour.

Note 1: You can save a total of 15 minutes of recorded actions between the two tours.

To record a tour:

1. Click the Start Recording button. The system prompts you to overwrite the existing tour.
2. Click Yes to overwrite the existing tour movements.
3. Click the View Control link, under the image cameo, to access the directional and zoom controls.
4. Use the View Control dialog box to make the necessary camera movements.
5. Click the Stop Recording button to save all actions.

Note: **Tour B** is now intended for use with the 'IVA while moving' functions.

Compass

The camera allows a user to display the compass heading of the camera in the lower-right corner of the image display. The camera displays the cardinal or intercardinal (N, NE, E, SE, S, SW, W, NW) heading in which the camera is pointing.

You must first calibrate the camera to North before the camera displays accurate compass headings. The camera uses this calibration, usually set to magnetic North, as the zero degree pan position and as the North compass heading. The camera then displays the compass heading based on the number of degrees from the North calibration point.

To set the North calibration point:

1. Determine the North compass heading, then move the camera to that position.
2. Select the radio button **On** for the parameter **Compass**.
3. Click the button next to **North point** to set the calibration point.

North point

– Click the **Set** button to overwrite the existing **North point**. A dialog box appears with the message, "Overwrite **North point**?" To confirm, click **OK**. To cancel, click **Cancel**.
– Click the **Clear** button to reset the **North point** to factory defaults. A dialog box appears with the message, "Reset **North point** to factory defaults?" To confirm, click **OK**. To cancel, click **Cancel**.

Alternative home position

Click **Set** to set the alternative home position for the camera.

Click **Clear** to clear the alternative home position.

5.8   Pre-positions and Tours

The camera can store up to 256 preset scenes. You can define the individual scenes that comprise a **Pre-position Tour**.

You define individual pre-position scenes, then use these scenes to define the **Pre-position Tour**. The tour starts from the lowest scene number in the tour and progresses sequentially to the highest scene number in the tour. The tour displays each scene for a specified dwell time before advancing to the next scene.

By default, all scenes are part of the **Pre-position Tour** unless removed.

To define a Pre-position Tour:

1. Create the individual pre-positions.
   By default, all scenes in the list **Pre-positions** are in the **Pre-position Tour**.
2. To remove a pre-position from the tour, select the pre-position in the list and uncheck the box **Include in standard tour (marked with *)**.
3. Select a dwell time from the drop-down list **Standard pre-position tour**.
4. To start the **Pre-position Tour**:
   Return to the **Live** page.
   Click **AUX Control**.
   Type **8** in the input box and click **AUX on**.
5. To stop the tour, type **8** and click **AUX off**.

To define a Custom tour

1.   Create the individual pre-positions.
2.   To add a pre-position into the custom tour, select the pre-position from the general list and click the triangle button to copy it to the custom tour list.
3.   Adjust the custom tour sequence by moving preposition up or down.
4.   Select a dwell time from the drop-down list **Custom tour** .
5.   To start the **Custom tour**:
     Return to the **Live** page.
     Select **Special Functions**.
     Click **AUX Control**.
     Type 7 in the input box and click **AUX on**.
6.   To stop the tour, type 7 and click **AUX off**.

Sequence settings

Include in standard tour (marked with *)
Select this checkbox to include the pre-position in the standard tour.

Upload
Click the button to upload the tour configuration to the camera.

Dwell times

Standard pre-position tour
Select the dwell time in seconds or minutes for the **Standard pre-position tour**.

Custom pre-position tour
Select the dwell time in seconds or minutes for the **Custom pre-position tour**.

5.9   Pre-position settings

Pre-position
Select the number of the pre-position for which to save specific settings.

Name
Change the name of the pre-position if needed. Click **Set** to save the new name.

Automatic exposure
Select the automatic exposure mode. Options are Full-screen or Defined

Full-screen (Default)
The camera computes the lighting condition of the entire scene. Then the camera determines the optimum level of iris, gain, and shutter speed.

Defined
Move and adjust the size of the green box to cover an interesting area.
The camera computes the lighting condition to the center spot of the specified area. Then the camera determines the optimum level of iris, gain, and shutter speed to get an image.
Note: the size shape of the specified area does not matter.

Day near limit [m]
Select the distance (in meters), from 0.1 to 20 m, for the minimum distance of the zoom focus during the day.

Night near limit [m]

Select the distance (in meters), from 0.1 to 20 m, for the minimum distance of the zoom focus during the night.

5.10   Pre-position mapping

Pre-position mapping allows you to map a function to a pre-position action. This feature works for Bosch protocols and for non-Bosch protocols.

Action

Select the appropriate action: Show or Set.

Pre-position

Enter the number of the pre-position to map.

Function

Select the appropriate function from the drop-down list.

Start auto pan	Gamma mode off
Start auto pan with limit	Gamma mode smart 1
Stop auto pan	Gamma mode smart 2
Start custom tour	Gamma mode smart 3
Stop custom tour	IR focus correction on
Start tour	IR focus correction off
Stop tour	OSD feedback on
Start playback A	OSD feedback off
Stop playback A	IR mode on
Start playback B	IR mode off
Stop playback B	IR mode auto
Compass on	Visible light on
Compass off	Visible light off
Azimuth on	Visible light inhibit on
Azimuth off	Visible light inhibit off
Stabilization auto	Auto tracker on
Stabilization on	Auto tracker off
Stabilization off	Privacy mask on
WDR auto	Privacy mask off
WDR on	Acknowledge alarms
WDR off	Wiper continuous
Night mode auto	Wiper intermittent
Night mode on	Wiper on shot
Night mode off	Wiper off

Gamma mode on	

5.11   Sectors

Sector

The camera's pan capability is divided into equal sectors (2, 4, 8, 16), as defined in **PTZ Settings** > **Number of sectors**, for a total of 360°.

To define a title for sectors:
1.   Place the cursor in the input box to the right of the sector number.
2.   Type a title for the sector, up to 20 characters long.
3.   To blank the sector, click the check box to the right of the sector title.

5.12   Miscellaneous

Fast address

This parameter allows the appropriate camera to be operated via the numerical address in the control system. Enter a number between 0000 and 9999, inclusive, to identify the camera.

Thermal FastAddress

Enter the number (between 0000 and 9999, inclusive) that corresponds to the numerical address of the thermal camera in the control system. The default value is 1.

5.13   Wiper/Washer

Wiper

Controls the wiper of the MIC cameras. Options are:
–   Off: Turns off the wiper.
–   On: Wiper wipes continuously until deactivated manually, or until it has been on for five minutes (after which the camera will stop the wiper automatically).
–   Intermittent: Wipes twice, then stops. Every 15 seconds, this cycle repeats until users select another option in this field.
–   One shot: Wipes five times, then turns off.

Wiper/washer

Click Start to start the wiper/washer. Click Stop to stop the wiper/washer.

5.14   Audio

Audio

You can set the gain of the audio signals to suit your specific requirements. The live video image is shown in the window to help you check the audio source. Your changes are effective immediately.

If you connect via Web browser, you must activate the audio transmission on the **'Live' functions** page. For other connections, the transmission depends on the audio settings of the respective system.

The audio signals are sent in a separate data stream parallel to the video data, and so increase the network load. The audio data is encoded according to the selected format and requires additional bandwidth. If you do not want any audio data to be transmitted, select **Off**.

Input volume

Set the input volume using the slide. Values range from 0 to 119.

Line Out

Set the line output gain using the slider. Values range from 0 to 115.

Recording format

Select a format for audio recording. The default value is **AAC 48 kbps**. You can select **AAC 80 kbps**, G.711 or L16 depending on the required audio quality or sampling rate.

AAC audio technology is licensed by Fraunhofer IIS.

(http://www.iis.fraunhofer.de/amm/)

5.15 Pixel Counter

The number of horizontal and vertical pixels covered by the highlighted area is displayed below the picture. With these values you can check whether the requirements for specific functions, for example, identification tasks, are fulfilled.

1. Click **Freeze** to freeze the camera image if the object that you want to measure is moving.
2. To reposition a zone, place the cursor over the zone, hold down the mouse button and drag into position.
3. To change the shape of a zone, place the cursor over the edge of the zone, hold down the mouse button and drag the edge of the zone to the required position.

5.16 Pelco AUX map

Pelco controller keyboards (that support Pelco protocols D and P) support 8 different auxiliaries (AUX On/OFF commands), but do not define what function each AUX should perform.

For MIC7000 cameras controlled by Pelco controller keyboards, users can remap a total of 8 common control commands to Pelco AUX commands. To accomplish this, a third-party serial protocol license is required.

Scene 99

Select Scan 360° or Auto pan.

Pelco AUX number

Select a Pelco AUX number field to map, and then select the appropriate command from the drop-down list.

AUX Command
Wash/wipe
Wiper one shot
Wiper continuous
Wiper intermittent
IR mode
BLC
AGC
Night mode
Night mode auto
Alarm output 1
Alarm output 2
Alarm output 3
Alarm output 4

AUX Command
White light
Intelligent defog
Intelligent tracking

Serial mode
Select Simplex or Full-duplex.

6 Alarm

6.1 Alarm Connections

You can select how the camera responds to an alarm. In the event of an alarm, the unit can automatically connect to a pre-defined IP address. You can enter up to ten IP addresses to which the camera will connect in sequence in the event of an alarm, until a connection is made.

Connect on alarm
Select **On** so that the camera automatically connects to a predefined IP address in the event of an alarm.
By setting **Follows input 1***, the unit maintains the connection that has been automatically established for as long as an alarm exists on alarm input 1.

ℹ️ **Notice!**
In the default setting, Stream 2 is transmitted for alarm connections. Consider this when assigning the profile (see Encoder Profile).

Auto-connect
Select the **On** option to automatically re-establish a connection to one of the previously specified IP addresses after each reboot, after a connection breakdown or after a network failure.

ℹ️ **Notice!**
In the default setting, Stream 2 is transmitted for automatic connections. Bear this fact in mind when assigning the profile (see Encoder Profile).

Number of destination IP address
Specify the numbers of the IP addresses to be contacted in the event of an alarm. The unit contacts the remote stations one after the other in the numbered sequence until a connection is made.

Destination IP address
For each number, enter the corresponding IP address for the desired remote station.

Destination password
If the remote station is password protected, enter the password here.
Only ten passwords can be defined here. Define a general password if more than ten connections are required. The unit connects to all remote stations protected by the same general password. To define a general password:
1.   Select 10 in the **Number of destination IP address** list box.
2.   Enter 0.0.0.0 in the **Destination IP address** field.
3.   Enter the password in the **Destination password** field.
4.   Set the user password of all the remote stations to be accessed using this password.
Setting destination 10 to the IP-address 0.0.0.0 overrides its function as the tenth address to try.

Video transmission
If the unit is operated behind a firewall, select **TCP (HTTP port)** as the transfer protocol. For use in a local network, select **UDP**.

Caution!

Please note that in some circumstances, a larger bandwidth must be available on the network for additional video images in the event of an alarm, in case Multicast operation is not possible. To enable Multicast operation, select the **UDP** option for the **Video transmission** parameter here and on Network Access.

Stream

Select the number of the stream from the drop-down list.

Remote port

Depending on the network configuration, select a browser port here. The ports for HTTPS connections will be available only if the **On** option is selected in the **SSL encryption** parameter.

Video output

If you know which unit is being used as the receiver, you can select the analog video output to which the signal should be switched. If the destination unit is unknown, it is advisable to select the **First available** option. In this case, the image is placed on the first free video output. This is an output on which there is no signal. The connected monitor only displays images when an alarm is triggered. If you select a particular video output and a split image is set for this output on the receiver, you can also select from **Decoder** the decoder in the receiver that is to be used to display the alarm image.

Notice!

Refer to the destination unit documentation concerning image display options and available video outputs.

Decoder

If a split image is set for the selected video output, select a decoder to display the alarm image. The decoder selected determines the position in the split image.

SSL encryption

SSL encryption protects data used for establishing a connection, such as the password. By selecting **On**, only encrypted ports are available for the **Remote port** parameter. SSL encryption must be activated and configured on both sides of a connection.
The appropriate certificates must also have been uploaded. (Certificates can be uploaded on the **Maintenance** page.)
Configure and activate encryption for media data (such as video, metadata or audio when available) on the **Encryption** page (encryption is only available if the appropriate license is installed).

Audio

Select On to activate audio alarms.

6.2   Video Content Analysis (VCA)

Note: This section of the manual provides an overview of the fields and the options for each field on the page **VCA**. This section is not a complete tutorial of setting up **VCA**. For more information, refer to the separate manual Video Content Analysis (VCA), available on the product page for Intelligent Video Analytics. Access the product page on the online product catalog from http://www.boschsecurity.com/corporate/product-catalog/index.html.
When you access the **VCA** menu, the left tab (Video 1) is selected. The Video 1 tab displays the **VCA** options for the visible camera.

To configure **VCA** options for the thermal camera, select the right tab (Video 2 /**Camera 2**).

VCA configuration

Select one of the profiles here to activate it or edit it.

You can rename the profile.

1. To rename the file, click the icon to the right of the list field and enter the new profile name in the field.
2. Click the icon again. The new profile name is saved.

Do not use any special characters, for example **&**, in the name. Special characters are not supported by the system's internal management.

If you select the option Silent VCA, then the system creates metadata to facilitate searches of recordings but no alarm is triggered. You cannot change any parameters for this configuration. If you want to turn off VCA, then select Off.

If necessary, click the button **Default** to return all settings to their default values. A dialog box appears with the message, "**Configuration of the video content analysis (VCA) will be reset to factory defaults. The changes will be lost. Click 'OK' to continue.**" Click **OK** to acknowledge the message, or click **Cancel**.

Scenario

Scenarios are applications with pre-defined settings that are adapted to specific use cases. All relevant settings, from tasks to metadata, are set automatically by the system.

The following scenarios are available:

–   Intrusion (one field)
–   Intrusion (two fields)
–   People counting
–   Traffic incidents
–   Traffic wrong way

Notice!

A camera calibration is required for all scenarios.

Using the scenarios will reset the VCA configuration to the scenario defaults.

All values (**Metadata Generation** and **Tasks**) can be edited after activating the scenario defaults.

Delete tasks that do not fit your use cases.

Analysis type

Select the appropriate option for Video Content Analysis: MOTION+, Intelligent Video Analytics, or Intelligent Video Analytics Flow.

Note: When you select another analysis type, a dialog box appears with the message, "**Changing the analysis type resets motion and tamper parameters.**" Click **OK** to acknowledge the message (and to switch analysis types), or click **Cancel**.

Alarm status

The alarm status is displayed here for information purposes. This means you can check the effects of your settings immediately.

Tamper detection

Detect tampering of cameras and video cables by means of various options. Run a series of tests at different times of the day and night to ensure that the video sensor is operating as intended.

Sensitivity and **Trigger delay [s]** can only be changed if **Reference check** is selected.

Reference check

Save a reference image that can be continuously compared with the current video image. If the current video image in the marked areas differs from the reference image, an alarm is triggered. This detects tampering that would otherwise not be detected, for example, if the camera is turned.

1. Click **Reference** to save the currently visible video image as a reference.
2. Click **Add mask** and select the areas in the reference image that are to be ignored. Click **Set** to apply.
3. Check the box **Reference check** to activate the on-going check. The stored reference image is displayed in black and white below the current video image.
4. Select the **Disappearing edges** or **Appearing edges** option to specify the reference check once again.

Trigger delay [s]

Set delayed alarm triggering here. The alarm is only triggered after a set time interval in seconds has elapsed and then only if the triggering condition still exists. If the original condition has been restored before this time interval elapses, the alarm is not triggered. This avoids false alarms triggered by short-term changes, for example, cleaning activities in the direct field of vision of the camera.

Global change

You can set how large the global change in the video image must be for an alarm to be triggered. This setting is independent of the sensor fields selected under **Select Area**. Set a high value if fewer sensor fields need to change to trigger an alarm. With a low value, it is necessary for changes to occur simultaneously in a large number of sensor fields to trigger an alarm.

This option allows you to detect, independently of motion alarms, manipulation of the orientation or location of a camera resulting from turning the camera mount bracket, for instance.

Global change

Activate this function if the global change, as set with the **Global change** slide control, should trigger an alarm.

6.3   Audio Alarm

The camera can create alarms on the basis of audio signals. You can configure signal strengths and frequency ranges in such a way that false alarms, for example due to machine noise or background noise, are avoided.

(i)   **Notice!**

First set up normal audio transmission before you configure the audio alarm here (see Audio).

Audio alarm

Select **On** if you want the device to generate audio alarms.

Do not use any special characters, for example **&**, in the name. Special characters are not supported by the system's internal management.

Signal Ranges

You can exclude particular signal ranges in order to avoid false alarms. For this reason the total signal is divided into 13 tonal ranges (mel scale). Check or uncheck the boxes below the graphic to include or exclude individual ranges.

Threshold

Set up the threshold on the basis of the signal visible in the graphic. You can set the threshold using the slide control or, alternately, you can move the white line directly in the graphic using the mouse.

Sensitivity

You can use this setting to adapt the sensitivity to the sound environment. You can effectively suppress individual signal peaks. A high value represents a high level of sensitivity.

6.4   Alarm E-Mail

As an alternative to automatic connecting, alarm states can also be documented by e-mail. In this way it is possible to notify a recipient who does not have a video receiver. In this case, the camera automatically sends an e-mail to a previously defined e-mail address.

Send alarm e-mail

Select **On** if you want the unit to automatically send an alarm e-mail in the event of an alarm.

Mail server IP address

Enter the IP address of a mail server that operates on the SMTP standard (Simple Mail Transfer Protocol). Outgoing e-mails are sent to the mail server via the address you entered. Otherwise leave the box blank (**0.0.0.0**).

SMTP port

Select the appropriate SMTP port.

SMTP user name

Enter a registered user name for the chosen mailserver here.

SMTP password

Enter the required password for the registered user name here.

Format

You can select the data format of the alarm message.
– **Standard (with JPEG)** E-mail with attached JPEG image file.
– **SMS** E-mail in SMS format to an e-mail-to-SMS gateway (for example to send an alarm by cellphone) without an image attachment.

⚠ **Caution!**

When a cellphone is used as the receiver, make sure to activate the e-mail or SMS function, depending on the format, so that these messages can be received.

You can obtain information on operating your cellphone from your cellphone provider.

Image size

Select the size of the JPEG images that are to be sent from the camera.
Options are:
– 256 x 144
– 512 x 288
– 768 x 432
– 1280 x 720
– 1536 x 864
– 1920 x 1080
– 2560 x 1440
– **Resource based**

Attach JPEG from camera

Click the checkbox to specify that JPEG images are sent from the camera. An enabled video input is indicated by a check mark.

VCA overlays

Select the **VCA overlays** check box, to place the outline of the object that triggered an alarm into the camera image sent as snapshot via e-mail.

Destination address

Enter the e-mail address for alarm e-mails here. The maximum address length is 49 characters.

Sender address

Enter a unique name for the e-mail sender, for example the location of the device. This will make it easier to identify the origin of the e-mail.

Note: The name must include at least two character groups separated by a blank (for example, Parking Garage) in order for the system to generate an email from that name, as in "From Parking Garage". Text with only one group of characters (for example, Lobby) will not generate an email.

Test e-mail

You can test the e-mail function by clicking the **Send Now** button. An alarm e-mail is immediately created and sent.

6.5   Alarm Inputs

Active

Configure the alarm triggers for the unit.

Select **N.C.** (Normally Closed) if the alarm is to be triggered by opening the contact.

Select **N.O.** (Normally Open) if the alarm is to be triggered by closing the contact.

Select **N.C.S.** (Normally Closed Supervised) if the alarm is to be triggered by opening the contact.

Select **N.O.S.** (Normally Open Supervised) if the alarm is to be triggered by closing the contact.

A supervised alarm transmits both the alarm condition and the tamper condition. Depending on how the alarm is configured, a short or a break in the alarm's circuit can trigger the tamper signal.

(NCS and NOS contacts are only present on some cameras)

Name

You can enter a name for each alarm input. If the **Live** functions are configured accordingly, this name is displayed below the icon for the alarm input. You can also use the name in the Forensic Search program function as a filter option for quick search in recordings. Enter a unique and clear name here.

> ⚠️ **Caution!**
> Do not use any special characters, for example **&**, in the name.
> Special characters are not supported by the system's internal management.

Note: This name appears in the **Digital I/O** section of the **Live** page.

Action

Select a type of action to be performed when an alarm input occurs:

– **None**

– **Monochrome**

 This switches the camera to the monochrome mode.

–   **Switch mode**
When this is selected, you can select the **Scene Mode** to be used for the active and inactive period of the alarm.

(only available on some cameras)

6.6   Alarm Outputs

Idle state
Select **Open** if you want the relay to operate as an NO contact, or select **Closed** if the relay is to operate as an NC contact.

Operating mode
Select an operating mode for the relay.
For example, if you want an alarm-activated lamp to stay on after the alarm ends, select **Bistable**. If you wish an alarm-activated siren to sound for ten seconds, for example, select **10 s**.

Output name
Enter a name for the alarm output.
This name appears on the **Live** page.
Note: This name appears in the **Digital I/O** section of the **Live** page.

Toggle
Click the button to test the relay / output connection.

6.7   Alarm Task Editor

Editing scripts on this page overwrites all settings and entries on the other alarm pages. This procedure cannot be reversed.
To edit this page, you should have programming knowledge and be familiar with the information in the Alarm Task Script Language document and the English language.

As an alternative to the alarm settings on the various alarm pages, enter the desired alarm functions in script form here. This will overwrite all settings and entries on the other alarm pages.

1.   Click **Examples** under the Alarm Task Editor field to see some script examples. A new window opens.
2.   Enter new scripts in the Alarm Task Editor field or change existing scripts in line with your requirements.
3.   When finished, click **Set** to transmit the scripts to the device. If the transfer was successful, the message **Script successfully parsed.** is displayed over the text field. If it was not successful, an error message is displayed with further information.

6.8   Alarm Rules

An alarm rule can define which input(s) activate which output(s). Basically, an alarm rule allows you to customize the camera to respond automatically to different alarm inputs.
To configure an alarm rule, specify one input from a physical connection, from a motion detection trigger, or from a connection to the camera's LIVE page. The physical input connection can be activated by dry contact devices such as pressure pads, door contacts, and similar devices.
Next, specify up to two (2) rule outputs, or the camera's response to the input. Outputs include a physical alarm output, an AUX command, or a preposition scene.
Select the appropriate option in the field **Input** (a physical alarm connection):

- – **Video analytics/MOTION+**: If you select this option, then an alarm will begin when IVA or motion detection is activated.
- – **Connection**: If you select this option, then an alarm will begin when an attempt is made to access the camera's IP address.
- – **Time**: If you select this option, then an input field appears to the right. In this field, enter the time for the activation of the alarm in hours and minutes. (The default value is 00:00.)
- – **Time range**: If you select this option, then two input fields appear to the right. In these fields, enter the time range for the activation of the alarm in hours and minutes. (The default values are 00:00 and 00:00.)

Select one of the following output commands for both Output 1 and Output 2 settings:
Note: Not all options are available for all cameras.

- – **None**: no defined command.
- – **Alarm output**: defines an alarm output.
- – **AUX on**: defines a standard or custom keyboard ON command.
- – **AUX off**: defines a standard or custom keyboard OFF command.
- – **Pre-position**: defines a pre-position from shot 1-256. (Note: This option is not available for the input **Time range**.)
- – **Monochrome**: triggers the camera to give the output in monochrome mode.

Click the checkbox **Enabled** to activate the alarm.

Click Set to save. The camera's system activates the alarm rules.

7   Network

7.1   Network Services

This page shows an overview of all available network services. Use the checkbox to activate or deactivate a network service. Click on the settings symbol next to the network service to go to the settings page for this network service.

7.2   Network Access

The settings on this page are used to integrate the camera into an existing network.

Automatic IPv4 assignment

If the network has a **DHCP** server for the dynamic assignment of IP addresses, select **On** to accept automatically the **DHCP**-assigned **IP address**.

For certain applications, the **DHCP** server must support the fixed assignment between **IP address** and **MAC address**, and must be set up appropriately so that, once an IP address is assigned, it is retained each time the system is rebooted.

Ethernet

The Ethernet options are defined in this section.

IP V4 address

IP address

Enter the desired IP address for the camera in this field. The IP address must be valid for the network.

Automatic address

If you have set up your network to use automatically assigned IP addresses, the assigned address is displayed here for information.

Subnet mask

Enter the appropriate subnet mask for the selected IP address here.

Gateway address

If you want the unit to establish a connection to a remote location in a different subnet, enter the IP address of the gateway here. Otherwise leave the box blank (**0.0.0.0**).

IP V6 address

IP address

Enter the desired IP address for the camera in this field. The IP address must be valid for the network. A typical IPv6 address may resemble the following example:

2001:db8: :52:1:1

Consult the network administrator for valid IPv6 address construction.

Automatic address

If you have set up your network to use automatically assigned IP addresses, the assigned address is displayed here for information.

Prefix length

A typical IPv6 node address consists of a prefix and an interface identifier (total 128 bits). The prefix is the part of the address where the bits have fixed values or are the bits that define a subnet.

Gateway address

If you want the unit to establish a connection to a remote location in a different subnet, enter the IP address of the gateway here. Otherwise leave the box blank (**0.0.0.0**).

DNS server address 1 / DNS server address 2

The camera is easier to access if the unit is listed on a DNS server. If you wish, for example, to establish an Internet connection to the camera, it is sufficient to enter the name given to the unit on the DNS server as a URL in the browser. Enter the IP address of the DNS server here. Servers are supported for secure and dynamic DNS.

Video transmission

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

Notice!

Multicast operation is only possible with the UDP protocol. The TCP protocol does not support multicast connections. The MTU value in UDP mode is 1,514 bytes.

HTTP browser port

Select a different HTTP browser port from the list if required. The default HTTP port is 80. If you want to allow only secure connections via HTTPS, you must deactivate the HTTP port. In this case, select **Off**.

HTTPS browser port

If you wish to allow browser access on the network via a secure connection, select an HTTPS browser port from the list if necessary. The default HTTPS port is 443. Select the **Off** option to deactivate HTTPS ports; only unsecured connections will now be possible.
The camera uses the TLS 1.0 encryption protocol. You may have to activate this protocol via your browser configuration. You must also activate the protocol for the Java applications (via the Java control panel in the Windows control panel).

Notice!

If you want to allow only secure connections with SSL encryption, you must select the **Off** option for each of the parameters **HTTP browser port**, **RCP+ port 1756** and **Telnet support**. This deactivates all unsecured connections. Connections will then only be possible via the HTTPS port.

You can activate and configure encryption of the media data (video and metadata) on the **Encryption** page (see Encryption).

Minimum TLS version

Select the version for minimum Transport Layer Security (TLS).

Allow HTTP basic authentication

Select **On** if you want to allow HTTP basic authentication. This is a less secure authentication option where passwords are transmitted in clear text. This option should only be used if the network and system are otherwise secured.

HSTS

Select this option to use the web security policy HTTP Strict Transport Security (HSTS) to provide secure connections.

RCP+ port 1756

To exchange connection data, you can activate the unsecured RCP+ port 1756. If you want connection data to be transmitted only when encrypted, select the **Off** option to deactivate the port.

Discovery port (0 = Off)

Enter the number of the port that you want to discover.

To deactivate the port, enter 0.

Options are:

– Auto
– 10 Mbps HD (half duplex)
– 10 Mbps FD (full duplex)
– 100 Mbps HD (half duplex)
– 100 Mbps FD (full duplex)

Network MSS (Byte)

You can set the maximum segment size for the IP packet's user data. This gives you the option to adjust the size of the data packets to the network environment and to optimize data transmission. Please comply with the MTU value of 1,514 bytes in UDP mode.

Network MTU [Byte]

Specify a maximum value in bytes for the package size (including IP header) to optimize data transmission.

7.3 Advanced

The settings on this page are used to implement advanced settings for the network.

802.1x

Authentication

If a RADIUS server is employed in the network for managing access rights, authentication must be activated here to allow communication with the unit. The RADIUS server must also contain the corresponding data.

To configure the unit, you must connect the camera directly to a computer using a network cable. This is because communication via the network is not enabled until the **Identity** and **Password** parameters have been set and successfully authenticated.

Identity

Enter the name that the RADIUS server is to use for identifying the camera.

Password

Enter the password that is stored in the RADIUS server.

Password [EAP-MD5]

Enter the password that is stored in the RADIUS server.

Certificates [EAP-TLS]

If any certificates are already uploaded at the client level or at the server level, they show here.

Click **Configure**.

Syslog

Server IP address

Enter the appropriate IP address of the server.

Server port (0 = Off)

Enter the number of the server port.

Protocol

Select the appropriate protocol: **UDP**, **TCP**, or **TLS**.

7.4   Network Management

7.4.1   Quality of Service

The priority of the different data channels can be set by defining the DiffServ Code Point (DSCP). Enter a number between 0 and 252 as a multiple of four. For alarm video you can set a higher priority than for regular video and you can define a Post Alarm Time over which this priority is maintained.

7.5   Multicast

The device can enable multiple receivers to receive the video signal simultaneously. The stream is either duplicated and then distributed to multiple receivers (Multi-unicast), or it is sent as a single stream to the network, where it is simultaneously distributed to multiple receivers in a defined group (**Multicast**).

Multicast operation requires a multicast-enabled network that uses **UDP** and the Internet Group Management protocol (**IGMP** V2). The network must support group IP addresses. Other group management protocols are not supported. The **TCP** protocol does not support multicast connections.

A special IP address from 225.0.0.0 to 239.255.255.255 (class D address) must be configured for multicast operation in a multicast-enabled network. The multicast address can be the same for multiple streams, however, it is necessary to use a different port in each case.

The settings must be made individually for each stream. Enter a dedicated multicast address and port for each stream.
The video channels can be individually selected for each stream.

Enable
Enable simultaneous data reception on receivers that need to activate the multicast function. To do this, check the box and enter the multicast address.

Multicast 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.

Port
Enter the port address for the stream here.

Streaming
Click the checkbox to activate multicast streaming mode. An activated stream is marked with a check. (Streaming is typically not required for standard multicast operation.)

Metadata
You can enable multicast metadata here. The configuration follows the same pattern as for video multicast, but without the streaming option.
Define a multicast address and define a port.

Audio

You can enable multicast audio for different encoders here. The configuration follows the same pattern as for video multicast, but without the streaming option.

Define a multicast address and define a port for the different encoders.

Multicast packet 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.

IGMP version

Set the multicast IGMP version to comply with the device.

Click **Set** to apply the changes.

Some changes only take effect after the unit is rebooted. In this case, the **Set** button changes to **Set and Reboot**.

7.6 IPv4 Filter

Use this setting to configure a filter that allows or blocks network traffic that matches a specified address or protocol.

IP Address 1 / 2

Enter the IPv4 address that you want to allow or block

Mask 1 / 2

Enter the subnet mask for the appropriate IPv4 address.

8   Service
8.1   Maintenance

Update server

The address of the update server appears in the address box.

1.   Click **Check** to make a connection to this server.
2.   Select the appropriate version for your camera to download the firmware from the server.

Firmware

The camera functions and parameters can be updated by uploading new firmware. To do this, the latest firmware package is transferred to the device via the network. The firmware is installed there automatically. Thus, a camera can be serviced and updated remotely without requiring a technician to make changes to the device on site. The latest firmware can be obtained from your customer service center or from the download area.

ⓘ	**Notice!** Potential loss of data Bosch recommends that you save all device configurations, including IVA and calibration, on your network before starting a firmware update.

ⓘ	**Notice!** Before starting a firmware update, make sure to select the correct upload file. Do not interrupt the firmware installation. Even changing to another page or closing the browser window leads to interruption. Uploading the wrong files or interrupting the upload can result in the device no longer being addressable, requiring it to be replaced.

⚠	**Caution!** Do not remove power to the unit during a factory default or a firmware update. Wait at least two minutes for the default process to complete. If the unit appears to be "frozen" after two minutes, then reboot the unit. Refer to Troubleshooting for more details.

Progress

The progress bar displays the progress of the firmware upload.

Note: Once the progress bar reaches 100%, a reset page may appear. If this page appears, allow the reset page to complete its action.

Upload history

Click **Show** to view the firmware upload history.

Configuration

Click **Browse...** to navigate to the required firmware file (*.fw).

Note: Ensure that the file to be loaded comes from the same unit type as the unit that you want to configure.

Click **Upload** to begin transferring the file to the unit. Click OK to the warning message to continue the firmware upload, or Cancel to stop the upload.

Click **Download** to save the camera settings to a file to upload to the same camera or to a similar camera in the future.

Maintenance log

You can download an internal maintenance log from the unit to send it to Customer Service for support purposes. Click **Download** and select a storage location for the file.

8.2   Licenses

This window is for the activation of additional functions by entering activation codes. An overview of installed licenses is shown. The installation code of the unit is also displayed here.

8.3   Certificates

Add a certificate/file to the file list
Click **Add**.
In the Add certificate window choose either:
–   **Upload certificate** to select a file that is already available:
   –   Click **Browse** to navigate to the required file.
   –   Click **Upload**.
–   **Generate signing request** for a signing authority to create a new certificate:
   –   Fill in all the required fields and click **Generate**.
–   **Generate certificate** to create a new self-signed certificate:
   –   Fill in all the required fields and click **Generate**.

Delete a certificate from the file list
Click the trashcan icon to the right of the certificate. The Delete file window appears. To confirm deletion, click OK. To cancel deletion, click Cancel.
Note: You can only delete certificates that you have added; you cannot delete the default certificate.

8.4   Logging

Current log level
Select the level of event for which to display log entries or to log.

Number of displayed entries
Select the number of entries to display.

Enable software sealing
Select this check box to enable software protection that prevents users from adjusting camera settings. This function also protects the camera from unauthorized access.

8.5   Diagnostics

Accesses the Built-in Self Test (BIST). The BIST displays status **Passed** or **Failed** on the most recent homing event, not a counter. For the other items, a counter is maintained.
Click the button **Start self-test** to show the number of times that the camera:
–   performed a homing event.
–   failed to home properly.
–   restarted.
–   lost video.

Logs
This section updates automatically with the history of the camera and maintains a log of all events such as those listed below. Click the REFRESH button to reload log data.

8.6   System Overview

This window is for information only and cannot be modified. Keep this information at hand when seeking technical support.
Select the text on this page with a mouse and copy it so that it can be pasted into an e-mail if required.

9 Operation via the browser

9.1 Live page

9.1.1 PTZ

When you use a browser to control the camera, the PTZ controls are HTML5 based.

Pan and tilt controls
– To tilt the camera up: Click and hold the up arrow.
– To tilt the camera down: Click and hold the down arrow.
– To pan the camera left: Click and hold the left arrow.
– To pan the camera right: Click and hold the right arrow.
– To pan and tilt the camera at the same time (variable pan/tilt): Click and drag the center area (that resembles a point stick or a trackball on a computer keyboard) around the PTZ control in the direction that you want to move the camera.

Notice!
If the camera will not pan in either direction, or pans in one direction only, refer to the "Error Codes" section of the manual.

Zoom
Click the **+** button to zoom in.
Click the **-** button to zoom out.
A "snap to area" or "snap to zoom" function allows you to select a different area of the video image to which to zoom the camera.
Hold the **Ctrl** key and use your mouse to draw a box/rectangle over the video to define the area to which to zoom. When you release the **Ctrl** key, the camera zooms to the defined position.

Iris

Click [icon] (**Iris close**) to close the iris.

Click [icon] (**Iris open**) to open the iris.
Note: When you close or open the iris, **ALC level** will be adjusted simultaneously.

Focus

Click [icon] to focus near.

Click [icon] to focus far.

9.1.2 Pre-positions

The camera displays **Pre-position 1** through **Pre-position 6**. Select the appropriate pre-position to view the video image for that pre-position/scene. In the lower left of the video image, the OSD displays the Camera number (title), the Pre-position number, and the Pre-position number stored.
Below the list of pre-positions/scenes is a drop-down list showing the stored pre-positions/scenes.

Select the appropriate pre-position (1 through 6). Click [icon] to store the pre-position.

Note: If the pre-position is already stored, a dialog box displays the message, "**Overwrite current pre-position?**" Click **OK** to overwrite, or click **Cancel** to cancel the operation.

Click [👁] to display the selected pre-position in the video image.

9.1.3 AUX Control

With the tab **AUX Control** you can enter pre-programmed keyboard control commands. These commands are composed of a command number plus the appropriate function key (**Show pre-position**, **Set pre-position**, **AUX on**, or **AUX off**). A valid combination either issues a command to the device or displays an on-screen menu.
(Refer to the "Keyboard Commands" section of the manual for a list of all AUX commands for your camera.)

Show pre-position

Click this button to display a pre-position.

Set pre-position

Click this button to set a pre-position.

AUX on

Click this button to activate an AUX command.

AUX off

Click this button to deactivate an AUX command.

9.1.4 Special Functions

Scan 360°

Click this button to start a continuous 360° pan. To stop the continuous pan, click a directional control in the View Control tab.

Autopan

Click this button to pan the camera between user-defined limits.

Tour A / Tour B

Click one of these buttons to start the continuous playback of a recorded (guard) tour. A recorded tour saves all manual camera movements made during the recording, including its rate of pan, tilt and zoom speeds, and other lens setting changes.
To stop a tour, click a directional control in the View Control tab.
Note: **Tour B** is now intended for use with the 'IVA while moving' functions.

Focus

Click this button to activate the Auto Focus One Push mode on the camera.
The OSD displays the message, "Auto Focus: ONE PUSH."

Custom tour

Click this button to view (in continuous playback) a custom tour that was previously configured.

9.1.5 Recording status

The hard drive icon [🖴] below the live camera image changes during an automatic recording. The icon lights up and displays a moving graphic to indicate a running recording. If no recording is taking place, a static icon is displayed.

9.1.6   Recording live video

Video sequences from the displayed live video stream can be saved locally on the computer's hard drive. The sequences are recorded at the resolution specified in the encoder configuration. The storage location depends on the configuration of the camera.

1. Click the recording icon to record video sequences.
    –   Saving begins immediately. The red dot on the icon indicates that a recording is in progress.
2. Click the recording icon again to stop recording.

9.1.7   Audio communication

Audio can be sent and received via the **Live** page if the unit and the computer support audio.
1. Press and hold the F12 key on the keyboard to send an audio signal to the unit.
2. Release the key to stop sending audio.

All connected users receive audio signals sent from the unit but only the user who first pressed the F12 key can send audio signals; others must wait for the first user to release the key.

9.1.8   Storage, CPU and network status

When you access the unit with a browser, the icons in the list that follows are at the top right corner of the window:

–   CPU load icon
–   Network load icon

The information from the icons can help with solving problems with the unit or with fine-tuning the unit.

Hover over the CPU load icon to see the CPU load. If the CPU load is too high, change the VCA settings.

Hover over the Network load icon to see the network load. If the network load is too high, change the encoder profile to reduce the bitrate.

9.1.9   **Status icons**

Various overlays in the video image provide important status information. The overlays provide the following information:

 Decoding error

The frame might show artifacts due to decoding errors.

 Alarm flag

Indicates that an alarm has occurred.

 Communication error

A communication error, such as a connection failure to the storage medium, a protocol violation or a timeout, is indicated by this icon.

 Gap

Indicates a gap in the recorded video.

 Watermark valid

The watermark set on the media item is valid. The color of the check mark changes according to the video authentication method that has been selected.

 Watermark invalid

Indicates that the watermark is not valid.

 Motion alarm

Indicates that a motion alarm has occurred.

 Storage discovery

Indicates that recorded video is being retrieved.

9.2   Playback

Click **[icon]** **Playback** in the application bar to view, search or export recordings. This link is only visible when a direct iSCSI or memory card is configured for recording (with Video Recording Manager (VRM) recording this option is not active).

On the left side of the screen, there are four groups:
–   **Connection**
–   **Search**
–   **Export**
–   **Track list**

9.2.1   Selecting the recording stream

On the left side of the browser, expand the **Connection** group if necessary.

To view a recording stream:

1.   Click the **Recording** drop-down arrow to see the options.
2.   Select recording stream 1 or 2.

9.2.2   Searching for recorded video

On the left side of the browser, expand the **Search** group if necessary.

1.   To limit the search to a particular time range, enter the date and times for the start and stop points.
2.   Select an option from the drop-down box to define a search parameter.
3.   Click **Search**.
4.   The results are shown.
5.   Click a result to play it back.
6.   Click **Back** to define a new search.

9.2.3   Exporting recorded video

On the left side of the browser, expand the **Export** group if necessary.

1.   Select a track in the track list or in the search results.
2.   The start and stop date and time are filled-in for the selected track. If required, change the times.
3.   In the **Time lapse** drop-down box, select the original or a condensed speed.
4.   In the **Location** drop-down box, select a target.
5.   Click **Export** to save the video track.

Note:

The target server address is set on the **Network** / **Accounts** page.

9.2.4   Track list

The **Track list** shows all the available recordings.

9.2.5   Controlling playback

The time bar below the video image allows quick orientation. The time interval associated with the sequence is displayed in the bar in gray. Arrows indicate the position of the image currently being played back within the sequence.

The time bar offers various options for navigation in and between sequences.

–   If required, click in the bar at the point in time at which the playback should begin.
–   Change the time interval displayed by clicking the plus or minus icons or use the mouse scroll wheel. The display can span a range from six months to one minute.

–   Click the alarm jump buttons to go from one alarm event to the next or to the previous one. Red bars indicate the points in time where alarms were triggered.

Controls

Control playback by means of the buttons below the video image.

The buttons have the following functions:

–   Start/Pause playback

–   Select the playback (forward or backward) speed using the speed regulator

–   Step forward or backward frame-by-frame when paused (small arrows)

9.3   Dashboard

The **Dashboard** page shows information on 4 topics:

–   **Device status**

–   **Recording status**

–   **Connection Status**

–   **Services**

You can also download a .JSON file with information about the device:

1.   At the bottom of the page, locate the **Export** button

2.   Click the **Export** button

3.   Select a location in your hard drive to store the file

10 Using your MIC Camera

10.1 Recommended Use of Your MIC Camera

Bosch recommends that you consider the following in order to optimize the life of your Bosch camera.

1. Guard Tours and Preset Tours

With your camera, you can cover a full 360° view using continuous Guard Tours or Preset Tours. Depending on the type of camera tour selected, your camera might be either in continuous motion (pan, tilt, or both) or moving between selected preset positions.

Continuous Guard Tours

Guard Tours are a very effective way of monitoring the entire scene; however, if not configured properly, continuous Guard Tours can reduce the service life of your camera considerably. Continuous Guard Tours should be used in applications where the tours are required to run for a fixed duration during the day (not more than twelve hours/day). Additionally, for best results, the continuous guard tour should be used in scenes with sufficient illumination levels (50 lux or better), should be at least 60 seconds in duration, and should have a smooth pan/tilt path (without erratic stops and starts), with the lens set at a wide angle (infinity focus). The tour should also include at least 10° of tilt movement.

Note: **Tour B** is now intended for use with the 'IVA while moving' functions.

Preset Tours

For scenarios that require the camera to be in continuous motion for most of the day, Bosch recommends that you set the camera in Preset Tour mode, moving between a desired set of presets. For best results, always ensure that each preset has a dwell time of at least 5 seconds.

2. Scene Illumination and Focus Settings

Your camera uses a high-sensitivity image sensor and a high-quality lens with a precise drive train control to maintain the best focus of the image. The Autofocus mechanism tries continuously to make the image details appear sharp. Under low light and low contrast scenarios, the Autofocus algorithm may not be able to find the correct focus points because of the lack of detail in the scene. In this case, it will keep driving the focus motor to find the best focus. If this state continues for long, the focus mechanism of your camera could be damaged beyond repair.

For best results, maintain the scene illumination (visible light and/or IR illumination) to a level that allows the camera to easily resolve the details in the scene. The illumination requirements are site-specific and should be verified during camera installation and configuration. For best camera performance, the scene should have at least 50 lux of illumination.

For scenes where sufficient lux level cannot be maintained, the camera should be used with One Push ("Spot Focus"), and you should avoid using continuous Guard Tours.

10.2   Using the Wiper/Washer (Bosch Protocol)

The "predefined position" for the wash/wipe function is preset 62. The installer must define preset 62 (preferably where the washer nozzle is located and can direct washer fluid towards the camera window) before using the wiper/washer function.

To activate the washer/wiper function, press ON-105-ENTER and confirm this sequence:
1.   The wiper moves to a predefined position.
2.   The washer turns on for five seconds. Simultaneously, the wiper turns on and wipes five times.
3.   The washer turns off. The wiper turns off.
4.   The camera returns to its previous PTZ position (and to inactive mode if applicable).

To activate the wiper manually (or if the corresponding alarm was activated or deactivated):
Press **ON-102-ENTER**.
Note: The wiper will turn off automatically after 5 minutes of use.

To activate intermittent wipe:
Press **ON-103-ENTER**. The wiper wipes twice, then returns to parked position, and then turns off 15 seconds later.

To activate the wiper to wipe five (5) times:
Press **ON-104-ENTER**. The wiper wipes five times, then returns to parked position and turns off.

Notice!
If the power fails while the wiper is activated, the wiper will return to parked position, after power is restored, before turning off. The wiper will not stop in front of the camera window.

10.3   Using the Wiper/Washer (Pelco Protocol)

To activate the washer/wiper in Pelco protocol, follow these steps:

1. From the **Configuration** page > Illumination/Wiper > Wiper/washer, click Start, and then exit the menu.

2. Position the camera so that the nozzle of the washer will spray the camera window.

3. Press 62 and then Preset. Press and hold "Preset" for 2 seconds until the text "Scene 62 Stored" appears on the OSD.

Note: If you already have a preset stored at that position, the system prompts you to overwrite the current scene.

4. Activate the wash/wiper function. Press 1 and then press AUX-ON on the keyboard. The camera moves to preset 62. The nozzle sprays cleaner onto the camera window, and then the wiper wipes the window. The camera then returns to where it was positioned previously, or it continues to perform the tour that it was performing when you activated the wash/wipe function.

Notice!
Depending on your camera settings, your monitor may display a freeze frame image of the wiper during or at the end of the wipe cycle. If you prefer not to see this freeze frame, you can turn off the Freeze Frame on Preposition in the PTZ Setup menu.

10.4   Uploading a User Logo

Customers have the option to upload custom logos that display on the web browser of the device.

All user logo images must comply with the following requirements:
–   The file format must be a bitmap (.bmp).
–   Height and width must not exceed 128 pixels.
–   Color depth must be 8 bit (256 color bitmap).

Upload the Logo File
1.   If necessary, open the browser. Click **Configuration**.
2.   Click **General**. Select **Display Stamping**.
3.   Select the field **Camera name stamping**. Select the position of the logo: Bottom, Top, or Custom.
      Note: If you select Custom, then additional fields (**Position (XY)**) appear where you can specify the exact position of the logo. In the fields **Position (XY)**, enter the values for the desired position (0 - 255).
4.   Click **Logo Browse** to open a file-search dialog. Select the image file (.bmp).
5.   Click **Upload** to transfer the file to the camera.
      The message "Upload successful" should appear.
      The new logo, if applicable, replaces the previous one.
6.   Select the field **Logo position**. Select the position of the logo on either side of the camera name: Left, Right, or Logo only. (The default value is Off.)
7.   Click Set to save.

Set Logo Transparency (Optional)
1.   Click the check box **Transparent background**.
2.   Click Set to save.
3.   Note that the color of the entire first line of the logo is the color that will be changed to transparent in the remainder of the logo. For example, if the first line is white, then all of the identical white colors of the logo image will become transparent.

Change the Camera Title
1.   Click **General**. Select **Identification**.
2.   Delete all of the text in the field **Camera name**.
3.   Rename the camera if desired.
4.   Click Set to save.

10.5   Two-line and Three-line Camera Titles

There are two options to display camera titles, but these should not be used together. Choose one of the following modes.
–   Mode 1: Azimuth/Elevation/Compass/Zoom Options
–   Mode 2: Camera Title combined with Compass

Mode 1: Azimuth/Elevation/Compass/Zoom Options
Select one of the following options:
–   Display Azimuth/Elevation and ZOOM value (Optical/Digital) at the bottom of the screen. Use the command AUX ON-95-ENTER.
–   Display Azimuth/Elevation/Compass at the bottom of the screen. Use the command AUX ON-96-ENTER.

Mode 2: Camera Title combined with Compass
Select one of the following options. Users can toggle between the two options.
–   Display two (2) lines of text at the top of the video. Use the command AUX ON-75-ENTER.

– Display three (3) lines of text at the top of the video. Use the command AUX ON-76-ENTER.

About Fonts for Camera Titles

– The default font style is white text with a clear background. The font size cannot be changed.
– Using the command AUX ON-77-ENTER, users can change the font color manually when the camera is in Day Mode. Toggle the text colors in the following sequence: White->Yellow->Violet->Red->Cyan->Green->Blue->White.
– Using the command AUX OFF-77-ENTER, users can set the color again to the default white.
– The font color changes automatically to white when the camera enters Night Mode.
– When the camera returns to Day Mode, the camera will use the selected font color automatically.

Available Character Set

Characters permitted:

– A-Z (upper case only)
– 0-9
– Miscellaneous characters such as - [SPACE]! " $ & ' , . / : ?

Characters not permitted:

– Lower case characters (a-z)
– Underscores (_)
– Save these settings so that, in case of a power failure, the system will recover and then restore the user values.

Two-line Camera Title

At the top of the video, there are two lines of text.

Line 1 displays the first 20 characters of the Camera Name/ID. Users can edit this text to enter a highway name, camera location, etc.

Line 2 displays the text, "LOOKING: X" or "LOOKING: XX" (without quotation marks), where "X" or "XX" is the compass direction. This line cannot be edited by the end user.

– LOOKING will always appear in English and will be at a fixed location on the OSD.
– The X or XX designates the compass direction that updates automatically as the camera pans. A identifies "North," "South," "East," or West." AA identifies "Northeast," "Northwest," "Southeast," or "Southwest."

Three-line Camera Title

Lines 1 and 2 display the first 20 characters of both lines of the Camera Name/ID. Users can edit both of these lines to enter a highway name, camera location, etc.

Line 3 displays the text, "LOOKING: X" or "LOOKING: XX" (without quotation marks), where "X" or "XX" is the compass direction. This line cannot be edited by the end user.

– LOOKING will always appear in English and will be at a fixed location on the OSD.
– The X or XX designates the compass direction that updates automatically as the camera pans. A identifies "North," "South," "East," or West." AA identifies "Northeast," "Northwest," "Southeast," or "Southwest."

10.6 Azimuth, Elevation, and Compass Directions

The camera can display the following data in the lower-right corner of the image display:
– **Azimuth** - The pan angle from zero to 359 degrees in one-degree increments. An azimuth of zero degrees corresponds to North.
– **Elevation** - The tilt position from zero (horizon) to -90 degrees (camera pointing straight down) in one-degree increments.
– **Compass** - The cardinal or intercardinal (N, NE, E, SE, S, SW, W, NW) heading in which the camera is pointing.

The camera allows users to display only the azimuth/elevation readings or only the compass reading, or both readings at the same time. The camera displays the azimuth/ elevation readings and the compass heading in a format such as "180 / -45 S," where:
– 180 is the Azimuth or the pan location in degrees.
– -45 is the Elevation or the tilt location in degrees.
– S is the compass direction (cardinal or intercardinal).

The camera uses the azimuth to determine the compass direction. The following table shows the azimuth range and its corresponding compass heading:

Azimuth Range	Compass Direction
21° to 65° NE (Northeast)	66° to 110° E (East)
111° to 155° SE (Southeast)	156° to 200° S (South)
201° to 245° SW (Southwest)	246° to 290° W (West)
291° to 335° NW (Northwest)	336° to 20° N (North)
21° to 65° NE (Northeast)	66° to 110° E (East)
111° to 155° SE (Southeast)	156° to 200° S (South)
201° to 245° SW (Southwest)	246° to 290° W (West)
291° to 335° NW (Northwest)	336° to 20° N (North)

The camera uses the Azimuth Zero point, usually set to magnetic North, as the zero degree pan position and as the North compass heading. The camera then displays the azimuth reading and the compass heading based on the number of degrees from the Azimuth Zero point.

Notice!
Bosch recommends that only the installer calibrate the Azimuth Zero point. A recalibration to the Azimuth Zero point may cause inaccurate compass headings.

Set the Azimuth Zero point:
1. Determine the North compass heading, then move the camera to that position.
2. Use the command AUX OFF-90-ENTER to turn off the command lock (if active).
3. Use the command AUX ON-94-ENTER to set the Azimuth Zero point.

Display/hide the azimuth/elevation reading:
– Use the command AUX ON-95-ENTER to display the azimuth/elevation reading.
– Use the command AUX OFF-95-ENTER to hide the azimuth/elevation reading.

Display/hide the compass heading:
– Use the command AUX ON-96-ENTER to display the compass heading.
– Use the command AUX OFF-96-ENTER to hide the compass heading.

11 Decommissioning

11.1 Transfer

The device should only be passed on together with this Installation manual.

11.2 Disposal

	Disposal - Your Bosch product was developed and manufactured with high-quality material and components that can be recycled and reused. This symbol means that electronic and electrical appliances, which have reached the end of their working life, must be collected and disposed of separately from household waste material. Separate collecting systems are usually in place for disused electronic and electrical products. Please dispose of these units at an environmentally compatible recycling facility, per European Directive 2012/19/EU.

12   Status Codes

For certain conditions, MIC cameras will display status codes on the video image. The table below identifies the status codes, their descriptions, and the recommended action to resolve the condition.

Most status codes appear on the OSD until you acknowledge them. The codes identified with asterisks (**) appear for approximately 10 seconds, then disappear automatically.

To clear the status code in the OSD, send the appropriate acknowledge command. If necessary, refer to the operation instructions in the Video Management System software for issuing acknowledge commands, or to the appropriate section in the User Manual for your MIC camera for details on issuing the "AUX OFF 65" command.

Status Code	Description	Recommended action (to be completed by a qualified Service Technician)
2	Capacity of external PoE device is insufficient to support operation of the camera's window defroster. **Note**: MIC IP fusion 9000i only.	An incorrect type of PoE (such as one based on IEEE 802.3af) with insufficient power output may be connected to the camera.*
3	Capacity of external PoE device is insufficient to support operation of the camera's internal heater.	An incorrect type of PoE+ or PoE++ (such as one based on IEEE 802.3af or IEEE 802.3at) with insufficient power output may be connected to the camera.*
4	Capacity of the external PoE device is insufficient to support operation of the camera's window defroster. **Note**: MIC IP fusion 9000i only.	An incorrect type of PoE+ or PoE++ (such as one based on IEEE 802.3af or IEEE 802.3at) with insufficient power output may be connected to the camera.*
5	When operating using redundant power sources, the camerais detecting insufficient voltage being provided by the external High PoE power source.	1. Verify that the High PoE power source (midspan or switch) can provide 95 W of output power. 2. Verify that the network cable is not longer than 100 m maximum. 3. If using the 95W High PoE Midspan (NPD-9501A), verify that both LEDs are green. If not, refer to the "Troubleshooting" section of the installation manual of the midspan.
6	When operating using redundant power sources, the camera is detecting insufficient voltage being provided by the external 24 VAC power source.	1. Verify that the 24 VAC power source can provide at least 4.0 A to the camera. 2. Verify that the wire gage of the power cable is sufficient for the distance between the power source and the camera and that the voltage getting to the user cable of the camera is between 21 VAC and 30 VAC.
7	Camera may be operating in an environment where ambient temperature is below the specification of the camera.	1. Verify that the ambient temperature is not below -40 °C (-40 °F).

Status Code	Description	Recommended action (to be completed by a qualified Service Technician)
		2. Review the diagnostic log of the camera (accessible from the **Service** menu) for errors related to the operation of the internal heaters. **Note**: Motorized zoom and focus functions of the visible camera lens will be disabled until the camera operates within the specified temperature range.
8	Camera may be operating in an environment where ambient temperature is above specification of the camera.	1. Verify that the ambient temperature is not above +65 °C (+149 °F). 2. Review the diagnostic log of the camera (accessible from the **Service** menu) for errors related to the operation of the internal fan. 3. Add the optional sunshield accessory to reduce internal heating caused by sun loading.
9	Camera has been subjected to high shock. Mechanical damage to the camera may exist.	1. Verify the integrity of the mechanical parts such as the arms and the pan body. 2. Verify the integrity/tightness of the external fasteners. Tighten where necessary. 3. If obvious damage is present, stop using the camera and contact the nearest Bosch Security Systems Service Center. 4. If no damage is evident, power the camera off and then on, and then evaluate operational performance. If the camera does not operate as expected, contact the nearest Bosch Security Systems Service Center.
10	Camera is detecting high humidity level inside housing. The integrity of the housing seal may be compromised.	1. Inspect the window for any cracks or obvious damage around the edge of the window. 2. Verify the integrity/tightness of the external fasteners. Tighten where necessary. 3. Verify the integrity of the mechanical seals around the tilt head, pan body, and arm joints. 4. If damage to the seals is obvious, contact the nearest Bosch Security Systems Service Center. 5. If no obvious damage is found, power the camera off and then on. If the status code reappears, contact the nearest Bosch Security Systems Service Center.

Status Code	Description	Recommended action (to be completed by a qualified Service Technician)
11	Wiper operation has been halted because of an obstruction.	1. Remove any obvious materials that are obstructing operation of the wiper. 2. If the obstruction is from ice buildup, review the diagnostic log of the camera (accessible from the **Service** menu) for errors related to operation of the internal heaters (and the window defrosters, for MIC IP fusion 9000i). If possible, tilt the camera so that the front faceplate is pointed straight up. (In this position, heat generated by the camera will help to melt ice buildup from its front faceplate area.) 3. If the obstruction is from extreme ice buildup, temporarily avoid operating the wiper until internal heaters, combined with a rise in ambient temperature, melt the ice buildup.
12	Left and Right Pan Limits have been set too close to each other.	Re-configure one camera stop limit or the other to increase the distance between limit stops to at least 10° apart.
13**	Autofocus has been turned off because of excessive focus activity.	1. If practical, increase lighting in the scene so that the focus function stops "hunting." 2. Use focus in manual mode or One-Push mode.
14**	Washer operation was attempted without washer pre-position being stored.	Configure the washer pre-position. If necessary, refer to the subchapter "Using the Wiper/Washer (Bosch AUX/Pre-position Commands)" in the User Manual for details on configuring washer functions.
15	Attempt was made to move to a pre-position that is mapped to an alternate function, so it is no longer associated with a location.	1. Select/configure a different pre-position number for the desired location. 2. Re-configure the pre-position assignment so that this number is no longer associated with an alternate function. Refer to the subchapter "**Pre-position mapping**" in the User Manual for details on re-mapping pre-positions.
16**	Motorized zoom function is programmed to operate at a high usage level in the Playback Tour. This high rate of usage could result in premature wear of the zoom motor.	Re-configure the camera to decrease the zoom activity to less than 30% during recording.

Status Code	Description	Recommended action (to be completed by a qualified Service Technician)
17	Motor operation has been halted due to an obstruction.	1. Remove any obvious materials that are obstructing operation of the camera pan/tilt function. 2. If the obstruction is from ice buildup, review the diagnostic log of the camera (accessible from the **Service** menu) for errors related to the operation of the internal heaters (and the window defrosters, for MIC IP fusion 9000i). If the log notes heater or defroster failure, contact the nearest Bosch Security Systems Service Center. 3. If operation is obstructed because of excessive ice buildup, temporarily avoid operating the pan/tilt functions of the camera until internal heaters, combined with a rise in ambient temperature, melt the ice buildup.
18**	When operating using redundant power sources, the camera has detected a loss of power from the external High PoE power source.	1. Verify the operating status of the external High PoE power source. 2. Verify the integrity of the electrical connections between the power source and the camera.
19**	When operating using redundant power sources, the camera has detected a loss of power from the external 24 VAC power source.	1. Verify the operating status of the external 24 VAC power source. 2. Verify the integrity of the electrical connections between the power source and the camera.
20	Camera is configured to use the "Hard Pan Limits" (HPL) feature, and it has been powered-up with pan position in the forbidden zone.	Temporarily remove one of the hard pan limits (as described in *PTZ Settings, page 32*), pan the camera out of the forbidden zone, and then restore the hard pan limit. Reboot the camera by powering the camera off and then on, or by clicking the button **Reboot** in the camera's web browser (**Configuration** > **Camera** > **Installer Menu** >**Reboot device**). **Note**: If pan movement is blocked only in one direction, but possible in the other direction (as when the camera is near the HPL), then no status code appears.

The Hard Pan Limits feature is for MIC cameras only.

Washer and wiper apply to MIC cameras only.

23	An internal error has occurred. (The optical video screen becomes blue for 1 or 2 seconds during the camera's recovery procedure.)	If this problem begins to occur on a regular basis: 1. Verify that the power source to the camera is not experiencing brown-out conditions. 2. Verify that the camera's earth ground connection is attached per earlier instructions. If these actions do not resolve this problem, contact the nearest Bosch Security Systems Service Center.

* **Note**: The MIC IP fusion 9000i camera requires a Bosch 95 W midspan (NPD-9501A) or a customer-tested/verified alternative.

Caution!

If you choose not to use a switch or midspan with the appropriate Power Sourcing Equipment (PSE) chip, then the camera will not recognize the PoE as compliant, and the camera firmware may disable some or all functionality.

13   AUX Commands

AUX	Function	Command	Description
1	On/Off	Auto Pan without limits (Continuous)	
2	On/Off	Auto Pan between limits	
7	On/Off	Run Custom Pre-Position Tour	
8	On/Off	Run Pre-Position Tour	
18	On/Off	AutoPivot Enable	
20	On/Off	Backlight Compensation (BLC)	
24	On/Off	Video Stabilization	
40	On/Off	Restore camera settings [to factory defaults]	
43	On/Off	Auto Gain Control (AGC)	
50	On/Off	Playback A, continuous	
51	On/Off	Playback A, single	
52	On/Off	Playback B, continuous	
53	On/Off	Playback B, single	
57	On/Off	Night mode IR Filter In/Out	
60	On/Off	On-Screen Display (OSD)	
61	On/Off	Preset & Sector Titles Camera Block Overlay VDSK not required	
65	Off	Alarm Acknowledge	Acknowledges alarm events/rules or deactivates physical outputs.
67	On/Off	IR Focus Correction	
78	On/Off	Intelligent Tracking	(Not available on MIC inteox models.)
80	On/Off	Digital Zoom lock	
86	On/Off	Sector Blanking	
87	On/Off	Privacy Masking	
88	On/Off	Proportional Speed	
94	On/-	Recalibrate Azimuth Compass	
95	On/Off	Azimuth/Elevation Display	
96	On/Off	Compass Points Display	
100	On/Off	Record Tour A	
101	On/Off	Record Tour B	
102	On/Off	Wiper On/Off (Continuous)	

AUX	Function	Command	Description
103	On/Off	Wiper On/Off (Intermittent)	
104	On/Off	Wiper On/Off (One shot)	
105	On/Off	Wash/Wipe On/Off	
121	On/Off	Left Hard Pan Limit	
122	On/Off	Right Hard Pan Limit	
123	On/Off	Clear Hard Pan Limits	
606	On/Off	Power Mode	
700	On/Off	Proportional speed control adjustment	Aux On, entered repeatedly, cycles through increasing speeds Super Slow, Slow, Medium, and Fast. Aux Off, decreases speeds through the same settings.
804	On/Off	Mask Calibration Procedure	
908		Increase Privacy Mask Size while moving	
1-256	Set/-	Pre-position Programming	
1-256	-/Shot	Pre-position Recall	

The following commands are specific to MIC IP fusion 9000i models.

AUX	Function	Command
454	On/--	Activate color mode **White hot**
454	--/Off	Activate color mode **Black hot**
455	On/--	Activate color mode **Flamma Arcticus**
455	--/Off	Activate color mode **Red light**
456	On/--	Activate color mode **SoftLight**
456	--/Off	Activate color mode **Memoriam**
457	On/--	Activate color mode **Rainbow**
457	--/Off	Activate color mode **Ocean**
458	On/--	Activate color mode **Sunset**
458	--/Off	Activate color mode **Rain**
459	On/--	Activate color mode **Arcus**
460	On/--	Activate color mode **Inferno**
467	On/--	Execute **Flat-field correction**

14 Support services and Bosch Academy

Support

Access our **support services** at www.boschsecurity.com/xc/en/support/.

Bosch Security and Safety Systems offers support in these areas:

– Apps & Tools
– Building Information Modeling
– Warranty
– Troubleshooting
– Repair & Exchange
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