FLEXIDOME HD VR

NIN-733 / NIN-832 / NIN-932

BOSCH

en Installation Manual

Table of Contents

1 Safety

1.1 Safety precautions

DANGER!
High risk: This symbol indicates an imminently hazardous situation such as "Dangerous Voltage" inside the product.
If not avoided, this will result in an electrical shock, serious bodily injury, or death.

WARNING!
Medium risk: Indicates a potentially hazardous situation.
If not avoided, this could result in minor or moderate bodily injury.

CAUTION!
Low risk: Indicates a potentially hazardous situation.
If not avoided, this could result in property damage or risk of damage to the unit.

CAUTION!
The Low Voltage power supply unit must comply with EN/UL 60950. The power supply must be a SELV-LPS unit or a SELV - Class 2 unit (Safety Extra Low Voltage - Limited Power Source).

CAUTION!
The camera must be connected to earth.

1.2   Important safety instructions

Read, follow, and retain for future reference all of the following safety instructions. Follow all warnings on the unit and in the operating instructions before operating the unit.

1. Clean only with a dry cloth. Do not use liquid cleaners or aerosol cleaners.
2. Do not install unit near any heat sources such as radiators, heaters, stoves, or other equipment that produce heat. Avoid exposure to direct sunlight for long periods.
3. Never spill liquid of any kind on the unit.
4. Take precautions to protect the unit from power and lightning surges.
5. Adjust only those controls specified in the operating instructions.
6. Operate the unit only from the type of power source indicated on the label.
7. Unless qualified, do not attempt to service a damaged unit yourself. Refer all servicing to qualified service personnel.
8. Install in accordance with the manufacturer's instructions in accordance with applicable local codes. Use only attachments/accessories specified by the manufacturer. Equipment change or modification could void the user's guarantee or authorization agreement.
9. Connect the yellow/green earth wire of the camera to the system earth of the installation to ensure correct safety and EMC/RFI protection.

1.3   Connection in applications

Grounding

The yellow/green safety (power) ground wire from the camera must be connected to the system earth of the installation. U.S.A.: - section 810 of the National Electrical Code, ANSI/NFPA No.70, provides information regarding proper grounding.

12 VDC / 24 VAC power source: This unit is intended to operate with a limited power source. The unit is intended to operate at either 12 VDC or 24 VAC (if PoE is not available). User supplied wiring must be in compliance with electrical codes (Class 2 power levels).

PoE: Use only certified PoE devices. Power-over-Ethernet can be connected at the same time as a 12 VDC or 24 VAC power supply.

If auxiliary power (12 VDC or 24 VAC) and PoE are applied simultaneously, the camera selects auxiliary input and shuts off the PoE.

1.4   Type label

The type label is located on the side of the camera module.
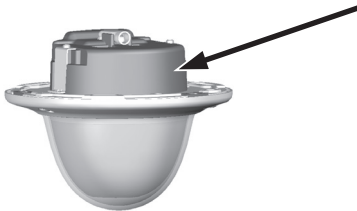
1.5   FCC & ICES compliance

FCC & ICES Information

This equipment has been tested and found to comply with the limits for a **Class B** digital device, pursuant to *part 15* of the *FCC Rules*. These limits are designed to provide reasonable protection against harmful interference in a **residential installation**. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

– reorient or relocate the receiving antenna;
– increase the separation between the equipment and receiver;
– connect the equipment into an outlet on a circuit different from that to which the receiver is connected;
– consult the dealer or an experienced radio/TV technician for help.

Intentional or unintentional modifications, not expressly approved by the party responsible for compliance, shall not be made. Any such modifications could void the user's authority to operate the equipment. If necessary, the user should consult the dealer or an experienced radio/television technician for corrective action.

The user may find the following booklet, prepared by the Federal Communications Commission, helpful: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

1.6   MicroSD cards

Bosch Security systems recommends that local storage on microSD card should only be used for alarm recording and Automatic Network Replenishment (ANR) applications. To minimize the risk of loss of digital information, we recommend multiple, redundant recording systems, and a procedure to back up all digital information.

1.7   UL certification

Disclaimer

Underwriter Laboratories Inc. ("UL") has not tested the performance or reliability of the security or signaling aspects of this product. UL has only tested fire, shock and/or casualty hazards as outlined in UL's *Standard(s) for Safety for Information Technology Equipment, UL 60950-1*. UL Certification does not cover the performance or reliability of the security or signaling aspects of this product.

UL MAKES NO REPRESENTATIONS, WARRANTIES, OR CERTIFICATIONS WHATSOEVER REGARDING THE PERFORMANCE OR RELIABILITY OF ANY SECURITY OR SIGNALING RELATED FUNCTIONS OF THIS PRODUCT.

	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*

1.8   Bosch notices

Video loss

Video loss is inherent to digital video recording; therefore, Bosch Security Systems cannot be held liable for any damage that results from missing video information. To minimize the risk of lost digital information, Bosch Security Systems recommends multiple, redundant recording systems, and a procedure to back up all analog and digital information.

Optical elements

Optical elements are sensitive and should be protected at all times. Do not allow objects to come into contact with glass surfaces and do not touch optical elements with your fingers.

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Note

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More information

For more information please contact the nearest Bosch Security Systems location or visit *www.boschsecurity.com*

1.9　　Copyrights

The firmware uses the fonts "Adobe-Helvetica-Bold-R-Normal--24-240-75-75-P-138-ISO10646-1" and "Adobe-Helvetica-Bold-R-Normal--12-120-75-75-P-70-ISO10646-1" under the following copyright:

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This software is based in part on the work of the Independent JPEG Group.

2   Introduction

2.1   Features

The FLEXIDOME HD Vandal-Resistant (VR) IP Day/Night camera
is a high-performance, surveillance color camera.
The analog video output of the camera can be used
simultaneously with an IP stream to allow operation in hybrid
mode. The IP video stream uses H.264 compression technology
to give clear images while reducing bandwidth and storage
requirements. It is also ONVIF compliant to improve
compatibility during system integration.
The camera operates as a network video server and transmits
video and control signals over data networks, such as Ethernet
LANs and the Internet. The camera is easy to install and ready
to use. Features include:

– Progressive scan CMOS HD sensor
– Aesthetic vandal-resistant enclosure
– True Day/Night performance with switchable IR filter
– High performance lenses for HD resolution and extra DoF
– Automatic motorized focus and zoom adjustment
– Multiple streams
– MicroSD card slot
– ONVIF conformant
– Two-way audio and audio alarm
– Alarm input and alarm output to external devices
– Intelligent dynamic noise reduction
– Enhanced video motion detection
– Video transmission over IP networks
– Multicast function
– Integrated Ethernet interface (10/100 Base-T)
– Power-over-Ethernet (PoE)
– Password protection
– Integrated Web server for live viewing and configuration via
  a browser
– Firmware update through flash memory
– Hybrid video outputs

3   System Information

3.1   Network video server

The camera incorporates a network video server. Its primary function is to encode video and control data for transmission over an IP network. With its H.264 encoding, it is ideally suited for IP communication and for remote access to digital video recorders and IP systems. The use of existing networks means that integration with CCTV systems or local networks can be achieved quickly and easily. Video images from a single camera can be simultaneously received on several receivers.

3.1.1   Progressive scan

The camera captures and processes progressively scanned images. When there is fast motion in a scene, progressively scanned images are generally sharper than interlaced images.

3.1.2   True Day/Night function

In night mode, the camera enhances low light viewing by switching the IR (infrared) filter out of the optical path and providing a monochrome image. The camera can switch from color to monochrome mode automatically by sensing the illumination level, manually via the alarm input, or remotely via a web browser.

3.1.3   Multiple streams

Multiple streams enable the camera to deliver several H.264 streams together with an M-JPEG stream. These streams facilitate bandwidth-efficient viewing and recording options as well as integration with third-party video management systems.

3.1.4   ONVIF (Open Network Video Interface Forum)

The camera complies to the ONVIF standard which means that it is easier to install and integrate into larger systems. The ONVIF standard is a global standard for the interface of network video products.

3.1.5 Audio

Two-way duplex audio is available in the unit for live voice communications or audio recording.

3.1.6 Alarm I/O

The alarm input can be used to control the functionality of the unit. An alarm output can control external devices.

3.1.7 Tamper detection and motion detection

The camera offers a wide range of configuration options for alarm signaling in the event of tampering with the camera. A Motion+ algorithm for detecting movement in the video image is included.

3.1.8 Video encoding

The camera uses the H.264 compression standards. Thanks to efficient encoding, the data rate remains low even with high image quality and can also be adapted to local conditions within wide limits.

3.1.9 Multicast

In suitably configured networks, the multicast function enables simultaneous, real time transmission to multiple receivers. The prerequisite for this is that the UDP and IGMP V2/V3 protocols are implemented on the network.

3.1.10 Power-over-Ethernet

Power for the camera can be supplied via a Power-over-Ethernet compliant network cable connection. With this configuration, only a single cable connection is required to view, power, and control the camera.

3.1.11 Encryption

The unit offers a variety of options for protection against unauthorized reading. Web browser connections can be protected using HTTPS. Protect the control channels via the SSL encryption protocol. With an additional license, the user data itself can be encrypted.

3.1.12 Recording

The camera can be used with an iSCSI server connected via the network to store long-term recordings, and with a local microSD card for shorter storage times and temporary recordings.

3.1.13 Configuration

The camera can be configured using a browser on the local network (Intranet) or from the Internet. Similarly, firmware updates and rapid loading of device configurations are also possible. Configuration settings can be stored as files on a computer and copied from one camera to another.

3.2   Operation with external systems

The camera can be used with a variety of Bosch systems:
−   Bosch Video Management System
−   Bosch Video Client
−   Bosch Recording Station

When connected to any of these systems, many of the camera configuration parameters are controlled by the system and not by the settings made via a web browser.

Bosch Video Management System

The Bosch Video Management System is a unique enterprise IP video surveillance solution that provides seamless management of digital video, audio, and data across any IP network. It is designed to work with Bosch CCTV products as part of a total video surveillance management system.

Bosch Video Client

The camera video server and the Bosch Video Client software combine to provide a high-performance system solution. The Bosch Video Client is a Windows application for viewing, operating, controlling, and administering CCTV installations (such as surveillance systems) at remote locations.

Bosch Recording Station

The camera is also designed for use with the Bosch Recording Station. The Bosch Recording Station can record up to 64 video and audio streams. The Bosch Recording Station supports various functions of the camera, such as controlling relays, remote control of peripheral devices, and remote configuration. It can use alarm inputs to trigger actions and, when motion detection **Motion+** is active, can record the relevant cells, making intelligent motion detection possible.

4 Planning

4.1 Unpacking

Unpack carefully and handle the equipment with care. The packaging contains:

– FLEXIDOME HD VR IP camera
– Torx screwdriver bit
– Camera mounting kit
– Mounting template
– RJ45 female-to-female network cable connector
– Optical disk
    – Manuals
    – Bosch Video Client
– Quick install instructions and safety instructions

If equipment has been damaged during shipment, repack it in the original packaging and notify the shipping agent or supplier.

4.2 System requirements

– Computer with Windows XP/Vista/7 operating system, network access, and Microsoft Internet Explorer web browser version 9.
    -or-
– Computer with network access and reception software, for example Bosch Video Client or Bosch Video Management System.
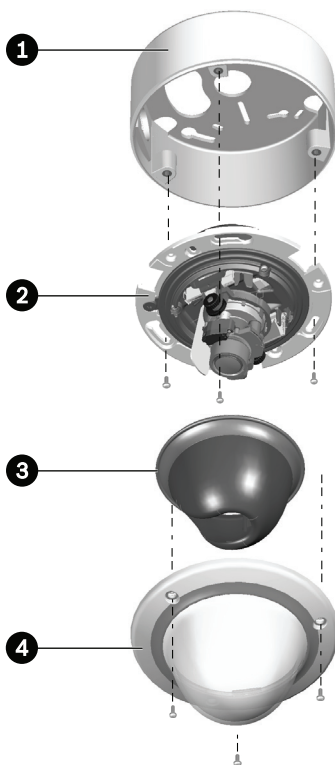
5   Installation

⚠️ **CAUTION!**
Installation should only be performed by qualified service personnel in accordance with the National Electrical Code or applicable local codes.

5.1   Parts

The camera/housing unit consists of the following parts:

1.   Surface Mount Box (some models only)
2.   Camera module and mounting base
3.   Inner liner
4.   Dome cover

5.2   Mounting the unit

5.2.1   Surface mounting
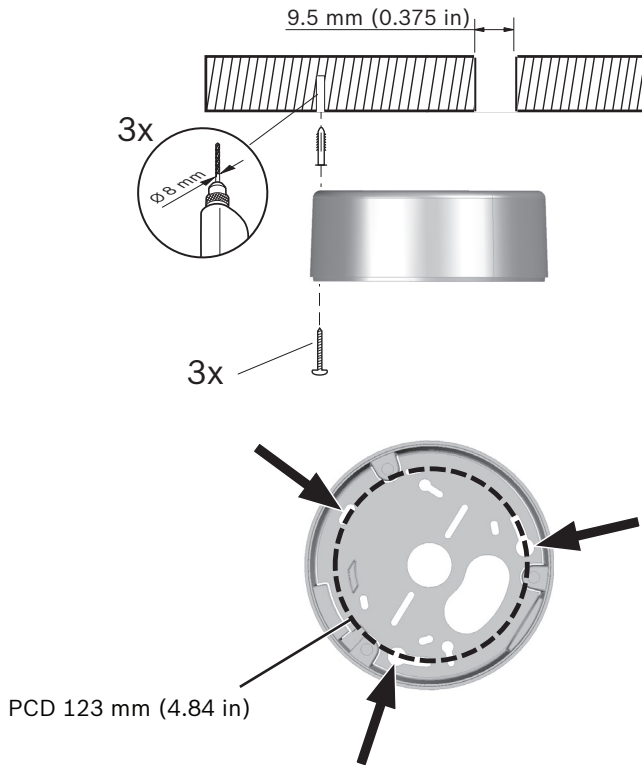
PCD 123 mm (4.84 in)

To mount the camera on the surface of a wall or ceiling:

1.   Use the surface mount box as a template to mark the holes indicated in the drawing. The PCD is 123 mm (4.84 in).
2.   Drill three holes with a diameter of 8 mm (0.3 in).
3.   Insert the supplied plugs into the holes.
4.   Attach the surface mount box securely using the three supplied screws.
5.   If you use the side connection of the SMB, remove the cap covering the side entrance, otherwise, leave the cap in place.

5.2.2   **Flush mount**
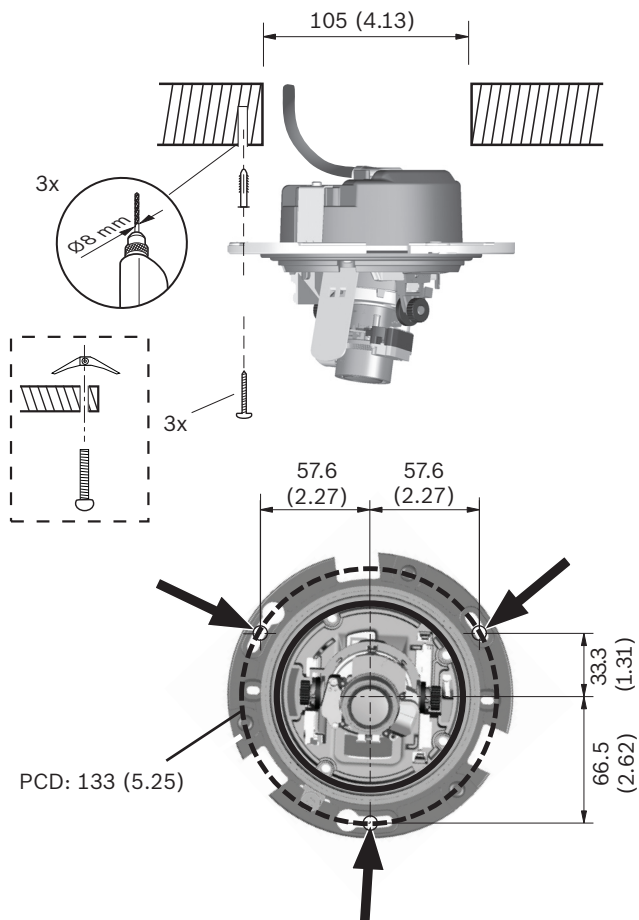
To flush mount the camera in a wall or ceiling:

1.   Use the mounting template to mark out the recess and to mark the holes indicated in the drawing. The PCD is 133 mm (5.25 in)
2.   Cut out the recess.
3.   Drill three holes with a diameter of 8 mm (0.3 in).
4.   Insert the supplied plugs into the holes.
5.   Partially insert two screws into the mounting holes.

6. Using one of the keyholes, hang the mounting base of the camera module on one screw temporarily; tilt the base slightly to gain access to the cable connections.
7. Make the connections as outlined in section 5.3 below.

5.3 Connections

CAUTION!
Isolate unused power wires individually to prevent short-circuits.

Check the type label on the the camera module for the correct power ratings.

5.3.1 Make the connections

Connection box
The unit has connection terminals on flying leads. In wet or outdoor installations make use of a field wiring box with NEMA Type 4X or IP66 protection level or better.

1. Make the connections inside a water tight compartment. Isolate unused power wires individually.
2. After connections are made ensure that the watertight compartment is tightly closed and cables and conduits are properly sealed to prevent ingress of water.

Cable tree

Use the following table to identify the wires in the cable tree:

Wire color	AWG	Signal
Red	26	+12 VDC / 24 VAC
Brown	26	GND DC / 24 VAC
Yellow / Green	24	Earth (⏚)
Black / Orange	28	Alarm Out A
White / Orange	28	Alarm Out B
White / Violet	28	Ground (Alarm In)
Orange / Violet	28	Alarm In 1
Violet	28	Alarm In 2
White	28	Audio In
(Shield)	28	Ground (Audio In)
Black	28	Audio Out
(Shield)	28	Ground (Audio Out)

For connections use wires of at least the same thickness.

Power connection

1. Use a class 2 power supply 24 VAC or +12 VDC.
2. Connect the power wires (red+ , brown-) to the power supply. (Isolate unused power wires individually.)
3. Connect the earth wire (yellow/green) from the camera to the system earth of the installation to ensure correct EMC/ RFI and safety protection.

Network (and PoE) connection

1. Use a shielded twisted pair (STP) Category 5e cable, maximum length 100 meters.
2. Use the RJ45 female-to-female network cable connector to connect the network cable of the system to the RJ45 connector of the camera (Auto MDIX compliant - automatically detects the cable connection type).

Power is supplied to the camera via the Ethernet cable, compliant with the Power-over-Ethernet standard.

CAUTION!
Use an isolation transformer to avoid ground loops.
Ground loops can cause bad picture performance.

Analog video output
Connect to the BNC connector to obtain an analog video signal.
This is a CVBS 1 Vpp PAL or NTSC signal (depending on the
selected camera base frequency).

Alarm Input
Use the alarm input to connect external alarm devices such as
door contacts or sensors. A zero potential make or break
contact can be used as the actuator (use a bounce-free contact
system).
–   Refer to the cable tree table to identify the wire colors for
    connecting the alarm input.
–   Configurable as active low or active high.

Alarm output
Use the alarm relay output for switching external devices such
as lamps or sirens.
–   Refer to the cable tree table to identify the wire colors for
    connecting the alarm output.
–   In the menu system, configure the relay output to operate
    as either normally open (NO) or normally closed (NC).

Audio in / Audio out
The unit has full-duplex mono audio. The two-way
communication can be used to connect a speaker or door

intercom system. The audio input signal is transmitted in sync. with the video signal.

Refer to the cable tree table to identify the wire colors for connecting the audio input and output.

Audio in: Line input level (not suitable for direct microphone signal).

Audio out: Line output level (not suitable for direct speaker connection).

Wiring: Shielded audio connection cable is advised.

5.4   Mount the camera

1. Route the cable tree from the camera around the rear of the camera module and secure all cables.
2. Attach the camera module securely using the three supplied screws.

5.5   Controls
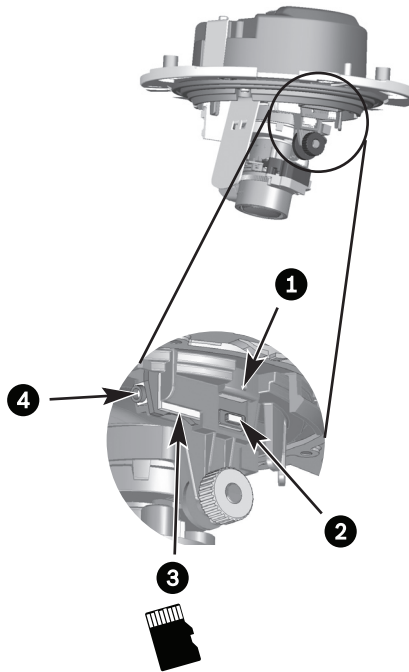
1.	Reset button	Restores the default IP address or restores a previous version of the firmware if uploading a new version fails. With the power on, use a small pointed object to press and hold the reset button for more than 10 seconds to restore the factory defaults.
2.	Menu button	Use this button to start the field-of-view installation wizard.
3.	MicroSD card slot	Insert a microSD card into the slot.
4.	Service video output	2.5 mm jack provides a CVBS signal (for installation purposes only)

5.6   Camera positioning and field-of-view

The camera module position can be adjusted along three axes and several zoom positions can be selected.

To help position the camera and set the field-of-view:
1.   Connect a monitor to the 2.5 mm jack using the optional monitor cable (S1460) which provides a CVBS signal (for installation purposes only).
2.   Apply power to the camera.
3.   After power-up, wait a little (about 20 seconds).
4.   Press the Menu button. This stops the IP video stream and enables the service video analog output.
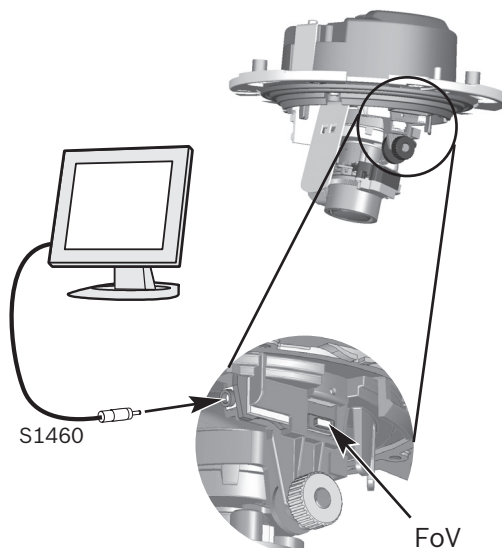
⚠ **CAUTION!**
Do not expose the sensors to direct sunlight.

5.6.1 Pan

For horizontal adjustment (pan):

1. Rotate the camera module (1) in the base. Do not rotate more than 180° in either direction.
2. Tighten the locking screw (2) with the supplied screwdriver bit.
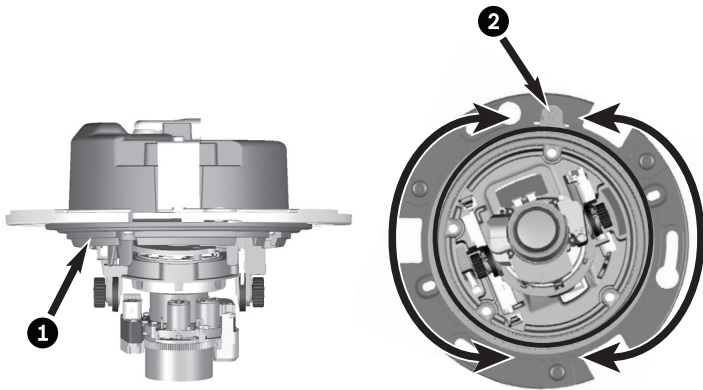
5.6.2 Tilt

For vertical adjustment (tilt):

1. Loosen the two thumbwheels (1).
2. Swing the camera module between the wings. Do not rotate more than 90°.
3. Tighten the two thumbwheels (1).

≤90°
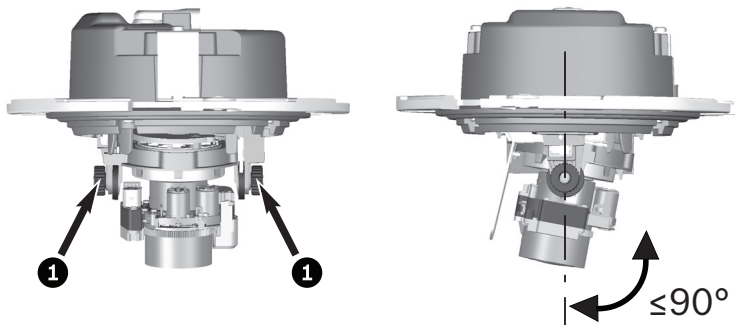
5.6.3   Twist

To obtain a horizontal horizon (for tilted ceilings or sidewall mounting), twist the camera module to align the picture shown on the monitor.
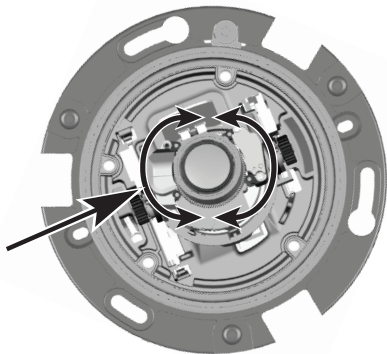
5.7 Using the install wizard

The **Menu** button on the control panel is used to access the camera install wizard. When there is a choice in the wizard, the options are selected by either a short press (less than 2 s) or a long press (more than 2 s) of the button.
The wizard handles the following functions:
– Lens identification
– Image orientation
– Zoom and focus adjustment conditions
– Auto focus
– Analog output

Run the wizard to select orientation and field-of-view (zoom).

Note:
The zoom and focus are adjusted again later (with the dome bubble in place) via the web browser. This optimizes picture sharpness in both bright and low-level lighting.

5.7.1 Adjustment procedure

If you have set up the camera and pressed the **Menu** button as described in *Section 5.6 Camera positioning and field-of-view, page 27* then you see the following on the monitor screen:

Lens type:	State:	Focus Indicator: 0
CONTINUE <press short>	180° ROTATE <press long>	Timeout: 300
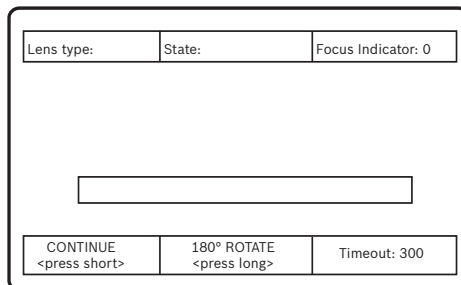
– The lens type is identified and shown on the screen.
– The iris is opened to its maximum value.

1. To rotate the image 180°, press and hold the **Menu** button until the image flips.
2. Briefly press the **Menu** button to set the start position for the automatic motorized focus adjustment.
    –   You will hear the motorized automatic back focus process running.
    –   The progress is shown on the monitor.
3. Briefly press the **Menu** button again and again to scroll through the preset zoom positions.
    –   The selection loops back to the beginning when you reach the last one.
4. When you reach the desired zoom position, use a long press of the **Menu** button to set the zoom position and to re-focus.
5. If the camera is not correctly focussed, press the **Menu** button for a longer time to restart the wizard.
    If the camera is correctly focussed, press the **Menu** button for a short time to change the analog output.
6. To change the analog output state, press the **Menu** button for a short time.
    –   Briefly press the **Menu** button again and again to select **NTSC on**, **PAL on** or **OFF** (default).
7. When the selection is made, use a long press of the **Menu** button to save the results.
    –   The zoom and focus position is stored.
    –   The iris is set to its original value.
    –   The video service output is disabled.
    –   The BNC video output is set to its selected state.

Note:
If the BNC video output is set to **On**, the second IP stream is disabled.

5.8   Closing the unit

When the camera position is set and all adjustments have been made, close the unit.

1. Disconnect the service cable from the video jack.
2. Place the inner liner in position aligning its fin with the bracket on the base.
3. Using the supplied screwdriver bit, secure the dome bubble to the camera base by tightening the three screws.

6   Camera configuration

The camera normally provides an optimal picture without the need for further adjustments. Configuration of the camera is carried out via the network using a web browser.

6.1   User modes

The camera has six user modes. These modes contain optimized settings for a variety of applications. Select the mode most suited to the camera's function via the web browser interface.

6.2   Day/Night switching

The camera is equipped with a motorized IR filter. The mechanical IR filter is taken out of the optical path in low-light applications.
The IR filter is controlled either:

– via an alarm input, or
– automatically, based on the observed light levels.

If **Auto** switching mode is selected, the camera automatically switches the filter depending on the observed light level. The switching level is programmable.

Note:
When the auto mode is selected and the switching level is set to -15, certain borderline scene lighting conditions can cause the camera to switch back and forth between day and night modes. Set a different switching level to avoid this.

7 Browser connection

A computer with Microsoft Internet Explorer can be used to receive live images from the camera, control the camera, and replay stored sequences. The camera is configured over the network using the browser.

The configuration options using the menu system of the camera itself are limited to setting up the lens and network.

Note:

The camera can also be configured using the supplied Bosch Video Client or the Bosch Video Management System.

7.1 Protected network

If a RADIUS server is used for network access control (802.1x authentication), the camera must be configured first. To configure the camera for a Radius network, connect it directly to a PC via a crossed network cable and configure the two parameters, **Identity** and **Password**. Only after these have been configured can communication with the camera via the network occur.

8   Troubleshooting

8.1   Function test

The camera offers a variety of configuration options. Therefore, check that it works properly after installation and configuration. This is the only way to ensure that the camera will function as intended in the event of an alarm.

Your check should include the following functions:

–   Can you connect to the camera remotely?
–   Does the camera transmit all the data required?
–   Does the camera respond as desired to alarm events?
–   Is it possible to control peripheral devices, if necessary?

8.2   Resolving problems

The following table is intended to help identify the causes of malfunctions and correct them where possible.

Malfunction	Possible causes	Solution
No image transmission to remote location.	Defective camera.	Connect a local monitor to the camera and check the camera function.
	Faulty cable connections.	Check all cables, plugs, contacts and connections.
	Incorrect encoder stream property set for connection to hardware decoder.	Select the H.264 MP SD option on the **Encoder Streams** configuration page.
No connection established, no image transmission.	The unit's configuration.	Check all configuration parameters.
	Faulty installation.	Check all cables, plugs, contacts and connections.
	Wrong IP address.	Check the IP addresses (terminal program).
	Faulty data transmission within the LAN.	Check the data transmission with ping.
	The maximum number of connections has been reached.	Wait until there is a free connection and call the transmitter again.

Malfunction	Possible causes	Solution
No audio transmission to remote station.	Hardware fault.	Check that all connected audio units are operating correctly.
	Faulty cable connections.	Check all cables, plugs, contacts and connections.
	Incorrect configuration.	Check audio parameters on the **Audio** configuration and **LIVEPAGE Functions** pages.
	The audio voice connection is already in use by another receiver.	Wait until the connection is free and then call the sender again.
The unit does not report an alarm.	Alarm source is not selected.	Select possible alarm sources on the Alarm sources configuration page.
	No alarm response specified.	Specify the desired alarm response on the Alarm connections configuration page; if necessary change the IP address.
The unit is not operational after a firmware upload.	Power failure during programming by firmware file.	Have the unit checked by Customer Service and replace if necessary.
	Incorrect firmware file.	Enter the IP address of the unit followed by **/ main.htm** in your Web browser and repeat the upload.

Malfunction	Possible causes	Solution
Placeholder with a red cross instead of the ActiveX components.	JVM not installed on your computer or not activated.	Install JVM on your computer.
Web browser contains empty fields.	Active proxy server in network.	Create a rule in the local computer's proxy settings to exclude local IP addresses.
The **POWER** LED is red.	Firmware upload failed.	Repeat firmware upload.

8.3 Customer service

If a fault cannot be resolved, please contact your supplier or system integrator, or go directly to Bosch Security Systems Customer Service.

The version numbers of the internal firmware can be viewed on a special page. Please note this information before contacting Customer Service.

1. In the address bar of your browser, after the unit IP address, enter: /version
   for example: 192.168.0.1/version
2. Write down the information or print out the page.

9   Maintenance

9.1   Testing the network connection

The ping command can be used to check the connection between two IP addresses. This allows testing whether a device is active in the network.

1.   Open the DOS command prompt.
2.   Type ping followed by the IP address of the device.

If the device is found, the response appears as " Reply from ... ", followed by the number of bytes sent and the transmission time in milliseconds. Otherwise, the device cannot be accessed via the network. This might be because:

–   The device is not properly connected to the network. Check the cable connections in this case.
–   The device is not correctly integrated into the network. Check the IP address, subnet mask, and gateway address.

9.2   Cleaning the bubble

The exterior of the bubble is hard coated for extra protection. If cleaning becomes necessary, only use cleaning solutions and cloths suitable for cleaning safety glass lenses. Dry the bubble thoroughly with a dry nonabrasive cloth to prevent water spots. Never scrub the bubble with any abrasive material or cleaners.

–   Do **not** use abrasive or highly alkaline cleaners on the bubble.
–   Do **not** scrape the bubble with razor blades or other sharp instruments.
–   Do **not** use Benzene, Gasoline, Acetone, or Carbon Tetrachloride on the bubble.
–   Do **not** clean bubbles in the hot sun or on very hot days

9.3 Repairs

CAUTION!

Never open the casing of the unit. The unit does not contain any user serviceable parts. Ensure that all maintenance or repair work is performed only by qualified personnel (electrical engineering or network technology specialists). In case of doubt, contact your dealer's technical service center.

9.3.1 Transfer and disposal

The camera should only be passed on together with this installation guide. The unit contains environmentally hazardous materials that must be disposed of according to law. Defective or superfluous devices and parts should be disposed of professionally or taken to your local collection point for hazardous materials.

10   Technical Data

10.1   Specifications

NIN-932

Imager	1/3-inch CMOS HD sensor
Image resolution	1920 × 1080 pixels
Rated supply voltage	24 VAC 50/60 Hz 12 VDC Power-over-Ethernet 48 VDC nominal
Current consumption	600 mA (12 VDC) 500 mA (24 VAC) 175 mA (PoE 48 VDC)
Minimum illumination Lens 3-9 mm, F1.2	0.25 lx Color, 30 IRE 0.08 lx Mono, 30 IRE
Minimum illumination Lens 10-23 mm, F1.6	0.45 lx Color, 30 IRE 0.15 lx Mono, 30 IRE
Day/Night	Color, Mono (IR contrast), Auto
Dynamic range	> 90 dB typical
Noise reduction	Intelligent Dynamic Noise Reduction (iDNR) with separate temporal and spatial adjustments
BLC	Off/Auto/IntelligentAE
White Balance	ATW, AWB hold and manual (2500 to 10000K) Indoor and Outdoor ATW
Shutter	Automatic Electronic Shutter (AES) Fixed (1/30 [1/25] to 1/150000) selectable Default shutter
Contrast enhancement	On/Off
Sharpness	Sharpness enhancement level selectable
Privacy Masking	Four independent areas, fully programmable
Video Analysis	Motion+, IVA

Lens type	3 to 9 mm or 10 to 23 mm varifocal SR (Super Resolution) Auto Varifocal (AVF) adjustment Automatic iris control
Controls	Via web browser or Configuration Manager
User modes	6 pre-defined customizable user modes
LAN interface	STP, Ethernet 10/100 Base-T, auto-sensing, half/full duplex, RJ45
Video encoding protocols	H.264 (ISO/IEC 14496-10), M-JPEG
Stream (max.)	1080p25/30
Group of pictures	IP, IBP, IBBP
Network protocols	IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP, IGMPV2/V3, ICMP, RTSP, FTP, Telnet, ARP, DHCP, SNTP,SNMP (V1, MIB-II), 802.1x, SMTP, iSCSI, UPnP (SSDP)
Encryption	TLS 1.0, SSL, AES (optional)
Analog video	BNC connector, CVBS (PAL/NTSC), 1 Vpp, 75 Ohm
Analog video (service only)	2.5 mm jack, CVBS (PAL/NTSC), 1 Vpp, 75 Ohm, non-protected
Alarm input	Non-isolated closing contact TTL logic, +5V nominal, +40 VDC max, (DC coupled with 22 kOhm pull-up to +3.3 VDC)
Relay output	Maximum voltage 30 VAC or +40 VDC Maximum 0.5 A continuous, 10 VA
Audio input	1 Vrms, impedance 12 kOhm
Audio output	1 Vrms, impedance 1.5 kOhm
Audio standards	AAC G.711, 8kHz sampling rate L16, 16kHz sampling rate
Audio signal-to-noise ratio	> 50 dB

Memory card slot	Supports SDHC and SDXC microSD cards
Weight	0.84 kg (1.85 lb)
Environment	IP 66, NEMA Type 4X
Impact protection	IK10
Operating temperature	-30 °C to +50 °C (-22 °F to +122 °F)

NIN-832

Imager	1/2.7-inch CMOS HD sensor
Image resolution	1920 × 1080 pixels
Rated supply voltage	24 VAC 50/60 Hz 12 VDC Power-over-Ethernet 48 VDC nominal
Current consumption	500 mA | 600 mA IVA (12 VDC) 450 mA | 500 mA IVA (24 VAC) 150 mA | 175 mA IVA (PoE 48 VDC)
Minimum illumination Lens 3-9 mm, F1.2	0.22 lx Color, 30 IRE 0.05 lx Mono, 30 IRE
Minimum illumination Lens 10-23 mm, F1.6	0.4 lx Color, 30 IRE 0.1 lx Mono, 30 IRE
Day/Night	Color, Mono (IR contrast), Auto
Dynamic range	Digital WDR: 76 dB
Noise reduction	Intelligent Dynamic Noise Reduction (iDNR) with separate temporal and spatial adjustments
BLC	Off/Auto
White Balance	ATW, AWB hold and manual (2500 to 10000K) Indoor and Outdoor ATW
Shutter	Automatic Electronic Shutter (AES) Fixed (1/30 [1/25] to 1/150000) selectable Default shutter
Contrast enhancement	On/Off
Sharpness	Sharpness enhancement level selectable

Privacy Masking	Four independent areas, fully programmable
Video Analysis	Motion+, IVA versions
Lens type	3 to 9 mm or 10 to 23 mm varifocal SR (Super Resolution) Auto Varifocal (AVF) adjustment Automatic iris control
Controls	Via web browser or Configuration Manager
User modes	6 pre-defined customizable user modes
LAN interface	STP, Ethernet 10/100 Base-T, auto-sensing, half/full duplex, RJ45
Video encoding protocols	H.264 (ISO/IEC 14496-10), M-JPEG
Stream (max.)	1080p25/30
Group of pictures	IP, IBP, IBBP
Network protocols	IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP, IGMPV2/V3, ICMP, RTSP, FTP, Telnet, ARP, DHCP, SNTP,SNMP (V1, MIB-II), 802.1x, SMTP, iSCSI, UPnP (SSDP)
Encryption	TLS 1.0, SSL, AES (optional)
Analog video	BNC connector, CVBS (PAL/NTSC), 1 Vpp, 75 Ohm
Analog video (service only)	2.5 mm jack, CVBS (PAL/NTSC), 1 Vpp, 75 Ohm, non-protected
Alarm input	Non-isolated closing contact TTL logic, +5V nominal, +40 VDC max, (DC coupled with 22 kOhm pull-up to +3.3 VDC)
Relay output	Maximum voltage 30 VAC or +40 VDC Maximum 0.5 A continuous, 10 VA
Audio input	1 Vrms, impedance 12 kOhm
Audio output	1 Vrms, impedance 1.5 kOhm
Audio standards	AAC G.711, 8kHz sampling rate L16, 16kHz sampling rate

| Audio signal-to-noise ratio	> 50 dB
Memory card slot	Supports SDHC and SDXC microSD cards
Weight	0.84 kg (1.85 lb)
Environment	IP 66, NEMA Type 4X
Impact protection	IK10
Operating temperature	-30 °C to +50 °C (-22 °F to +122 °F)

NIN-733

Imager	1/3-inch CMOS HD sensor
Image resolution	1280 × 720 pixels
Rated supply voltage	24 VAC 50/60 Hz 12 VDC Power-over-Ethernet 48 VDC nominal
Current consumption	500 mA | 600 mA IVA (12 VDC) 450 mA | 500 mA IVA (24 VAC) 150 mA | 175 mA IVA (PoE 48 VDC)
Minimum illumination Lens 3-9 mm, F1.2	0.017 lx Color, 30 IRE 0.0057 lx Mono, 30 IRE
Minimum illumination Lens 10-23 mm, F1.6	0.03 lx Color, 30 IRE 0.01 lx Mono, 30 IRE
Day/Night	Color, Mono (IR contrast), Auto
Dynamic range	84 dB
Noise reduction	Intelligent Dynamic Noise Reduction (iDNR) with separate temporal and spatial adjustments
BLC	Off, Auto, IntelligentAE (BLC)
White Balance	ATW, AWB hold and manual (2500 to 10000K) Indoor and Outdoor ATW
Shutter	Automatic Electronic Shutter (AES) Fixed (1/30 [1/25] to 1/150000) selectable Default shutter
Contrast enhancement	On/Off

Sharpness	Sharpness enhancement level selectable
Privacy Masking	Four independent areas, fully programmable
Video Analysis	Motion+, IVA versions
Lens type	3 to 9 mm or 10 to 23 mm varifocal SR (Super Resolution) Auto Varifocal (AVF) adjustment Automatic iris control
Controls	Via web browser or Configuration Manager
User modes	6 pre-defined customizable user modes
LAN interface	STP, Ethernet 10/100 Base-T, auto-sensing, half/full duplex, RJ45
Video encoding protocols	H.264 (ISO/IEC 14496-10), M-JPEG
Stream (max.)	720p60
Group of pictures	IP, IBP, IBBP
Network protocols	IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP, IGMPV2/V3, ICMP, RTSP, FTP, Telnet, ARP, DHCP, SNTP,SNMP (V1, MIB-II), 802.1x, SMTP, iSCSI, UPnP (SSDP)
Encryption	TLS 1.0, SSL, AES (optional)
Analog video	BNC connector, CVBS (PAL/NTSC), 1 Vpp, 75 Ohm
Analog video (service only)	2.5 mm jack, CVBS (PAL/NTSC), 1 Vpp, 75 Ohm, non-protected
Alarm input	Non-isolated closing contact TTL logic, +5V nominal, +40 VDC max, (DC coupled with 22 kOhm pull-up to +3.3 VDC)
Relay output	Maximum voltage 30 VAC or +40 VDC Maximum 0.5 A continuous, 10 VA
Audio input	1 Vrms, impedance 12 kOhm
Audio output	1 Vrms, impedance 1.5 kOhm

Audio standards	AAC
	G.711, 8kHz sampling rate
	L16, 16kHz sampling rate
Audio signal-to-noise ratio	> 50 dB
Memory card slot	Supports SDHC and SDXC microSD cards
Weight	0.84 kg (1.85 lb)
Environment	IP 66, NEMA Type 4X
Impact protection	IK10
Operating temperature	-30 °C to +50 °C (-22 °F to +122 °F)

10.1.1   Dimensions
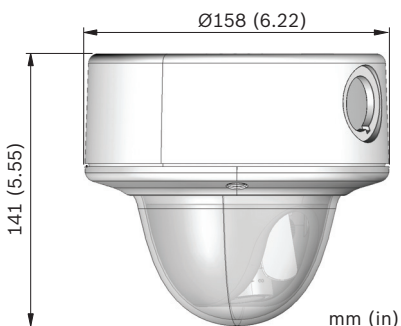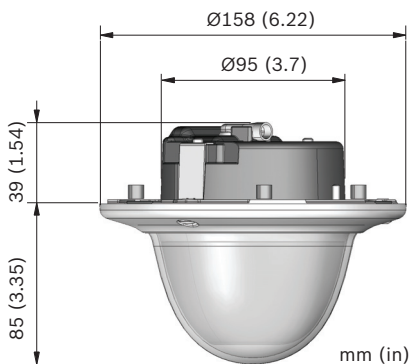
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