Digital Color Camera

VBC-255

BOSCH

en Installation and Operation manual

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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.

1.2 Important safety instructions

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

1. **Cleaning -** Generally, using a dry cloth for cleaning is sufficient but a moist, fluff-free cloth or leather shammy may also be used. Do not use liquid cleaners or aerosol cleaners.
2. **Heat Sources -** Do not install the unit near any heat sources such as radiators, heaters, stoves, or other equipment (including amplifiers) that produce heat.
3. **Water -** Never spill liquid of any kind on the unit.
4. **Lightning -** Take precautions to protect the unit from power and lightning surges.
5. **Controls adjustment -** Adjust only those controls specified in the operating instructions. Improper adjustment of other controls may cause damage to the unit.
6. **Power sources -** Operate the unit only from the type of power source indicated on the label.
7. **Servicing -** Unless qualified, do not attempt to service this unit yourself. Refer all servicing to qualified service personnel.
8. **Replacement parts -** Use only replacement parts specified by the manufacturer.
9. **Installation -** Install in accordance with the manufacturer's instructions and in accordance with applicable local codes.
10. **Attachments, changes or modifications -** Only use attachments/accessories specified by the manufacturer. Any change or modification of the equipment, not expressly approved by Bosch, could void the warranty or, in the case of an authorization agreement, authority to operate the equipment.

1.3 Important notices

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 2002/96/EC*

WARNING!

Power disconnect for high voltage versions: A unit has power supplied whenever the power cord is inserted into the power source. The power cord plug is the main power disconnect for the unit. For pluggable equipment, install the socket outlet near the equipment so it is easily accessible.

WARNING!

All-pole power switch: Incorporate an all-pole power switch, with a contact separation of at least 3 mm in each pole, into the electrical installation of the building.

1.4 FCC & ICES compliance

FCC & ICES Information

(U.S.A. and Canadian Models Only)

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.

1.5 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 Closed Circuit Television Equipment, UL 2044*. UL Certification does not cover the performance or reliability of the security or signaling aspects of this product.
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1.6 Bosch notices

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Note:

This manual has been compiled with great care and the information it contains has been thoroughly verified. The text was complete and correct at the time of printing. The ongoing development of the products may mean that the content of the user guide can change without notice. Bosch Security Systems accepts no liability for damage resulting directly or indirectly from faults, incompleteness or discrepancies between the user guide and the product described.

More information

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

2 Introduction

2.1 Features

The VBC-255 is a professional surveillance color camera that incorporates 10-bit digital signal processing. The camera is easy to install and ready to use, and offers good quality picture performance.

Features include:

- 1/3-inch format CCD imager
- Backlight compensation
- Lens autodetection
- Lens wizard for easy backfocus

2.2 Unpacking

Unpack carefully and handle the equipment with care.

The packaging contains:

- Digital color camera
- CCD protection cap (mounted on camera)
- Spare lens connector (male)
- These instructions

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

WARNING!

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

CAUTION!

The camera module is a sensitive device and must be handled carefully.

3 Connections

CAUTION!
Before proceeding, disconnect the power from the power supply cable. Ensure that the voltage of the unit matches the voltage and type of the power supply being used.

3.1 Power connection

3.1.1 Low voltage cameras

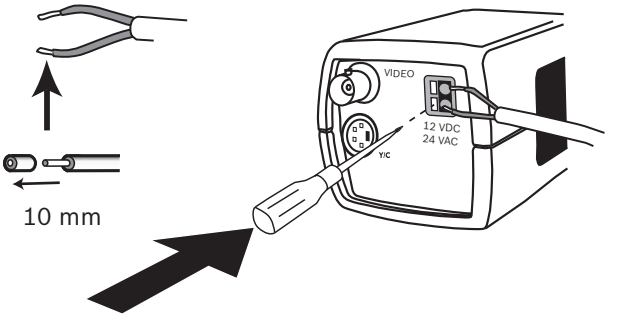


Figure 3.1 Low voltage power connection

Connect power from a 24 VAC or 12 VDC class 2 power supply as follows:

– Use AWG16 to 22 stranded wire; cut back 10 mm (0.4 in) of insulation.
– Push in the tabs and insert the wires.

Note
These connections are not polarity sensitive.

3.1.2 High voltage cameras

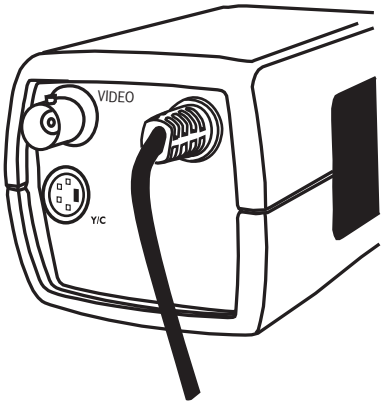


Figure 3.2 High voltage power connection

Connect the power cable of a high voltage camera to a 230 VAC power supply outlet.

3.2 Video connection

3.2.1 Composite video signal

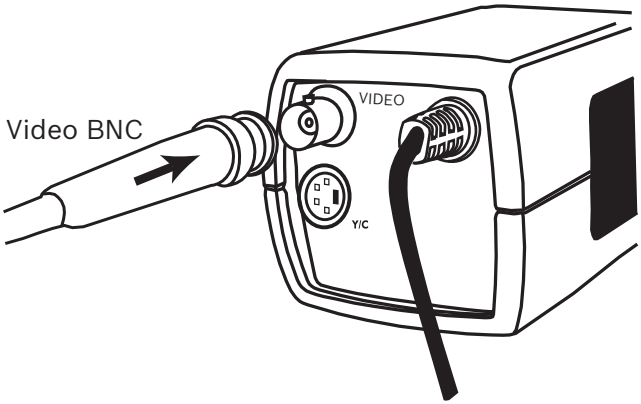


Figure 3.3 Composite BNC connector

For a composite video output signal, connect the video coax cable to the BNC connector of the camera.

3.2.2 Y/C output video signal

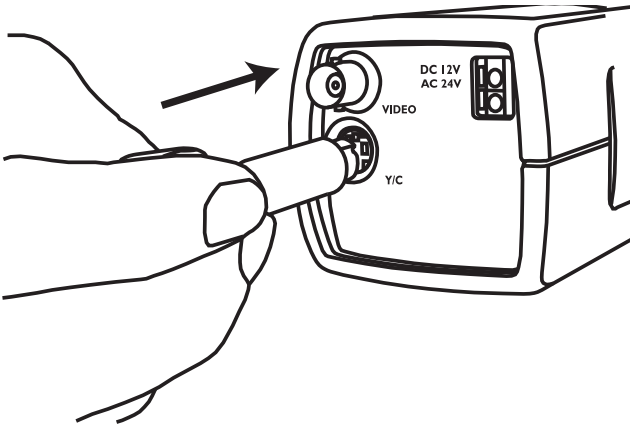


Figure 3.4 Y/C connector

For a Y/C video output signal, connect the Y/C video cable to the Y/C connector of the camera.

3.3 Lens mounting

The camera accepts C-mount and CS-mount lenses. DC-iris lenses are recommended for the best picture performance. The camera automatically detects the type of lens used and optimizes performance accordingly. A spare male lens connector is provided.

CAUTION!

To avoid damaging the CCD sensor when using a C-mount lens, turn the green back-focus ring counterclockwise until it stops before mounting the lens.

Lenses weighing more than 0.5 kg (1.1lbs) must be separately supported.

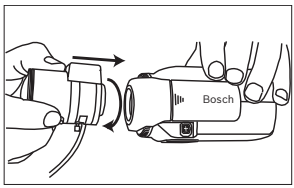


Figure 3.5 Mounting a lens

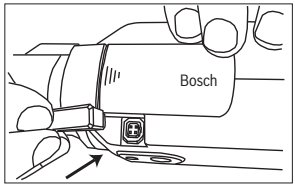
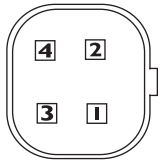


Figure 3.6 Lens connector

Pin	Video iris lens	DC iris lens
1	Supply (11.5V ±0.5, 50mA max.)	Damp -
2	Not used	Damp +
3	Video signal 1Vpp 1kOhm	Drive +
4	Ground	Drive -



Note

If a short circuit is detected on the lens connector, the on-screen display (OSD) failure message LENS SHORT CIRCUIT is shown. The lens circuit is automatically disabled to avoid internal damage. Remove the lens connector and check the pin connections.

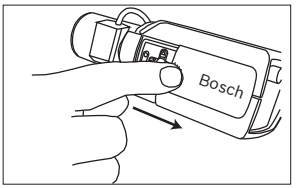
3.4 Back focus adjustment

To optimize picture sharpness in both bright and low-level lighting, adjust the back focus. Use the camera's unique Lens Wizard. This ensures that the object of interest always remains in focus, even when focusing at the maximum lens iris opening.

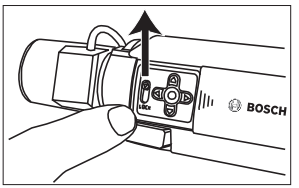
– When back focusing zoom lenses, ensure the object of interest remains in focus throughout the entire zoom range of the lens.

To adjust back focus:

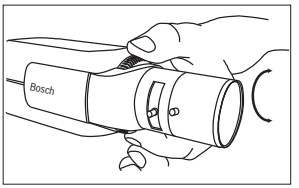
1. Open the slide door panel at the side of the camera.



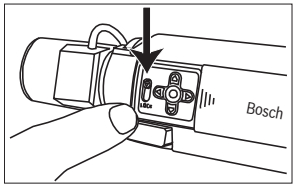
1. Unlock the back focus locking button.



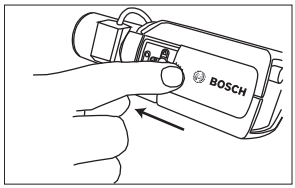
2. Press and hold the center key for more than 1.5 seconds until the **Install** menu appears.
3. Select **Wizard** and move cursor to the **Set Back Focus Now** item.
4. Turn the back focus adjustment as required.



5. Lock the back focus locking button.



6. Press and hold the center key for more than 1 second until all the menus disappear.
7. Close the side door panel.



Note:
To back focus a zoom lens, see the zoom lens installation guide.

3.5 Mounting the camera

The camera can be mounted either from the top or from the bottom (1/4" 20 UNC thread). The bottom mounting is isolated from ground to prevent ground loops.

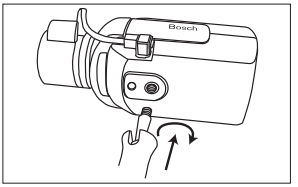


Figure 3.7 Mounting a camera

CAUTION!
Do not point the camera/lens into direct sunlight as this may damage the sensors.

4 Configuration

The camera normally provides an optimal picture without the need for further adjustments. However, advanced set-up options are available in a menu system for getting the best results under special circumstances.
The camera implements the changes immediately so that before and after settings are easily compared.

4.1 Menus

4.1.1 Top level menus

There are two upper level menus: a **Main** menu and an **Install** menu. The menus have functions that can be selected directly or submenus for more detailed set-up.

- To access the **Main** menu, press the menu/select button (center) for less than 1 second. The **Main** menu appears on the monitor. Select and set-up the picture enhancement functions. If not satisfied with the changes, recall the default values.
- The camera also has an **Install** menu in which the installation settings can be set. To access the **Install** menu, press the menu/select button (center) for longer than 1.5 seconds.

4.1.2 Menu navigation

Five keys, located behind the side door panel, are used for navigating through menu system.

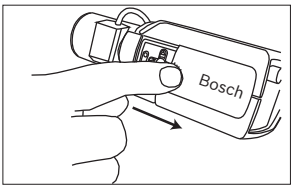


Figure 4.1 Side panel door

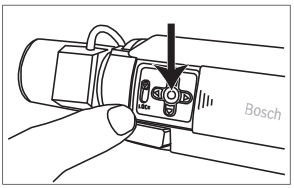


Figure 4.2 Menu/select key

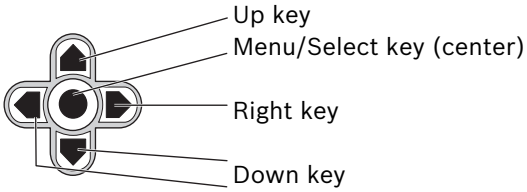


Figure 4.3 Navigation

- Use the up or down keys to scroll through a menu.
- Use the left or right keys to move through options or to set parameters.
- When in a menu, quickly double-press the menu/select key to restore the selected item to its factory default.
- To close all menus at once hold down the menu/select key until the menu display disappears or continually select the **Exit** item.

Some menus automatically close after about two minutes; other menus have to be closed manually.

4.2 Main menu structure

Item	Selection	Description
Level	-15 to +15	Video level control: A positive value is more useful for low-light conditions; a negative value is more useful for very bright conditions.
Shut/AGC	Submenu	Picture enhancement and performance
BLC	On, Off,	Set to **On** to enable Back Light Compensation (BLC). When **On**, the level is optimized at the center of the screen. Parts outside the center may be under- or over-exposed (this is normal).
Color*	ATW AWB hold Submenu	White balance and color rendition (not available in NightSense mode)
Sync	Internal Line lock	Internal - for free running camera operation. Line lock - to lock to the AC power supply
V-Phase	0 to 358°	Adjusts the vertical phase (only available if sync = line lock).
Exit		Exit the menu

***Note:**
If the camera is in NightSense mode, the color settings and color menu are not accessible. NightSense must be **Off** to make color adjustments.

4.2.1 Shutter/AGC submenu

Item	Selection	Description
Shutter	AES, FL	AES (auto-shutter) - the camera automatically sets the optimum shutter speed. FL - flickerless mode avoids interference from light sources (recommended for video-iris or DC-iris lenses only).
AGC	On, Off	On - the camera automatically sets the gain to the lowest possible value needed to maintain a good picture. Off - sets AGC off.
Autoblack	On, Off	Autoblack On automatically increases the visibility of details even when scene contrast is less than full-range due to mist, fog, etc.
NightSense	Auto, Forced, Off	Nightsense extends the low-lightperformance of the camera. AUTO mode, the camera automatically inches to monochrome in low-light conditions. Forced mode, the picture remains a high-sensitivity monochrome image.Some active noise or white spots may appear in the picture.
EXIT		Returns to main menu.

4.2.2 Color submenu

Item	Selection	Description
White balance	ATW, AWBhold	ATW - Auto tracking white balance allows the camera to constantly adjust for optimal color reproduction. AWBhold - Puts the ATW on hold and saves the color settings.
Red gain*	-5 to +5	Adjusts the Red gain to optimize the white point.
Blue gain*	-5 to +5	Adjusts the B gain to optimize the white point.
EXIT		Returns to main menu.

***Note:**
It is only necessary to change the white point offsets for special conditions.

4.3 Install menu structure

Item	Selection	Description
Version		Read-only firmware release number (for service purposes).
Lens type	Auto, Manual, DC-iris, Video	Auto: - the camera automatically selects the type of lens. Manual, DC-iris, Video modes: select the matching lens type to force the camera to the correct lens mode.
Speed	Fast	Selects the response time of DC-iris lenses. Some lenses require slow lens control to avoid overshoots.
Wizard	Submenu	Select to optimize the camera-lens combination backfocus point.
Coax Com	On, Off	Communications enabled or disabled.
Defaults	Submenu	Returns all settings for all modes to factory defaults
Exit		Exit the menu

4.3.1 Lens Wizard submenu

Item	Selection	Description
Set Backfocus now		Select to fully open the iris. Follow the instructions below for setting the backfocus for your particular lens type. After focusing the object of interest remains in focus under bright and low light conditions.
Set LVL		Only for video-iris lenses. Adjust the level control on the lens to center the level detector indicator (see below).
EXIT		Exit the menu

Adjustment procedure DC-iris Lens

1. Unlock the back focus locking button.
2. Access the **Lens Wizard** menu.
3. **Set Back Focus Now** is highlighted in the menu.
4. Turn the back focus adjustment as required.
5. Lock the back focus locking button.
6. Exit the menu.

Adjustment procedure Manual-iris Lens

1. Unlock the back focus locking button.
2. Adjust the lens to the maximum lens opening.
3. Turn the back focus adjustment as required.
4. Lock the back focus locking button.
5. Adjust lens opening to suit scene.

Adjustment procedure Video-iris Lens

1. Unlock the back focus locking button.
2. Access the **Lens Wizard** menu.
3. **Set Back Focus Now** is highlighted in the menu.
4. Turn the back focus adjustment as required.
5. Lock the back focus locking button.
6. Select **Set LVL** in the menu; the **Level** bar appears.
7. Point the camera at the scene it will be mostly viewing.
8. Adjust the level potentiometer located on the lens until the **Level** bar is in the central position.
9. Exit the menu.

5 Technical Data

5.1 Specifications

Type number	VBC255/11	VBC255/51
Rated supply voltage	+12 VDC 24 VAC (50 Hz)	230 VAC 50 Hz

All versions

Imager	1/3-inch Interline CCD
Resolution	540 TVL
Standard	PAL
Active pixels	752 x 582
Minimum illumination	<0.65 lux <0.26 lux with NightSense
SNR	> 50 dB
Video output	1 Vpp, 75 Ohm
Synchroniza-tion	Internal, Line Lock selectable
Shutter	AES (1/50 to 1/125000]) automatic, flickerless, Off selectable
AGC	AGC On (0-21 dB) or Off (0 dB) selectable
Back Light Compensation (BLC)	One area, center-weighted
White Balance	ATW, AWBhold (2500 to 9000K)
Lens mount	C and CScompatible
ALC lens	Video or DC iris auto detect
Power consumption	<4 W
Dimensions (H x W L)	58 x 66 x 122 mm (2.28 x 2.60 x 4.80 in) without lens
Weight	450 g (0.99 lb) without lens

Tripod mount	Two 1/4" 20 UNC - isolated (bottom) and non-isolated (top)
Operating temperature	-20 °C to +50 °C (-4 °F to +122 °F)
Controls	OSD with softkey operation

Bosch Security Systems

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