



BOSCH

Precision Engineered Opto-Electronics™

INSTALLATION INSTRUCTIONS

EX72

Explosion Protected Camera





IMPORTANT

Please read this Instruction Booklet prior to installing the
EX70 and EX70N Explosion Protected Camera.



WARNING !

ATEX Approved or CSA Certified / UL Listed CLASS 2 power
adaptors must be used in order to comply with electrical safety
standards.

Only qualified personnel shall install any **Bosch Security Systems, Inc.** surveillance product. **Bosch Security Systems, Inc.** will not be responsible for injuries or damages resulting from the improper installation or use of any product sold by **Bosch Security Systems, Inc.**, their agents, distributors, or dealers



EU Directives covered by this declaration:

72/9/EC Low Voltage Directives

89/336/EEC Electromagnetic Compatibility Directive

94/9/EC Equipment or Protective System for use in

Potentially Explosive Atmospheres.

Class 2 circuits shall be supplied from a Class 2 transformer, or

- a) A Class 2 power supply or device or
- b) Where the voltage does not exceed 20 volts, a 5 ampere (maximum) mini circuit breaker or a 5 ampere non-interchangeable fuse.

Certifications / Compliance:

CSA-NRTL: MC 189936

Class: 2258 02
Process Control Equipment – For
Hazardous Locations
2258 82
Process Control Equipment – For
Hazardous Locations – Certified to US
Standards

Safety: Class I, Div 1, 2, Groups B,C,D
Class II, Div 1, 2, Groups E,F,G
Class III
T6 Temperature Code

Environmental: CSA / NEMA TYPE 4X

DEMKO: 07 ATEX 142765X



II2G Ex d IIc T6

ATEX Category 2 (Gas) equipment designed for installation in Zone 1. Protection by constructional safety using flame proof enclosure, suitable for Coal Disulphide environments with maximum equipment surface temperature of 85°C

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DESCRIPTION

The ***EX72 Explosion Protected Camera*** has been designed for surveillance applications in hazardous areas. The camera's ATEX-rated housing consists of a heavy-duty aluminum casting with a chemical resistant viewing window. The housing is also NEMA rated for watertight use.

The **EX72** contains either the FMZ300 "Compact Zoom Module" or the dual board Vari-Focal Auto-Iris lens camera. The FMZ300 module features Ex-View HAD performance with a total zoom of 216x as well as an infrared cut filter for true color and infrared performance.

A voltage regulator circuit allows for *12V dc* or *24V ac* operation, as well as a range in between. It also provides protection from voltage surge, transient spikes, and reverse voltage.

For additional information and specifications, please contact your Bosch Security Systems representative.

UNPACKING

Care should be taken when unpacking the shipped unit. Check the parts list and confirm all items have been located. Inspect the equipment thoroughly to ensure nothing was damaged in transit.

Contact Bosch Security Systems if a problem is noted. See the rear of the booklet for contact numbers.

PARTS LIST (items supplied with unit)

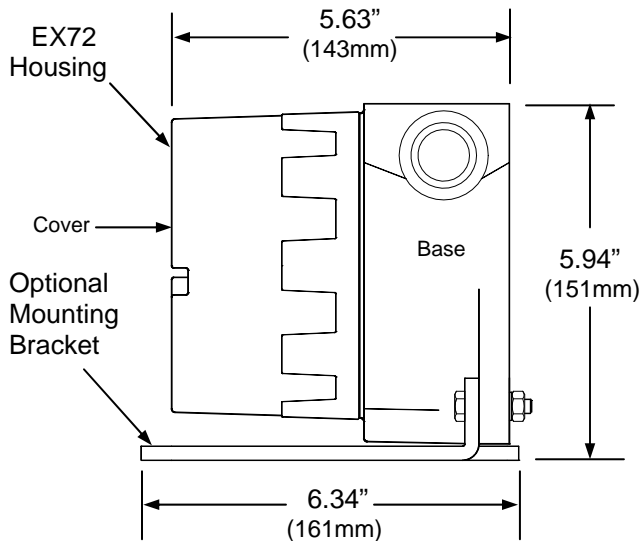
- ***EX72 Camera***
- M3 Allen key
- Installation Instructions booklet

ITEMS REQUIRED FOR INSTALLATION (not supplied with unit)

- mounting hardware & tools
- electrical splices and crimps
- small slotted screwdriver

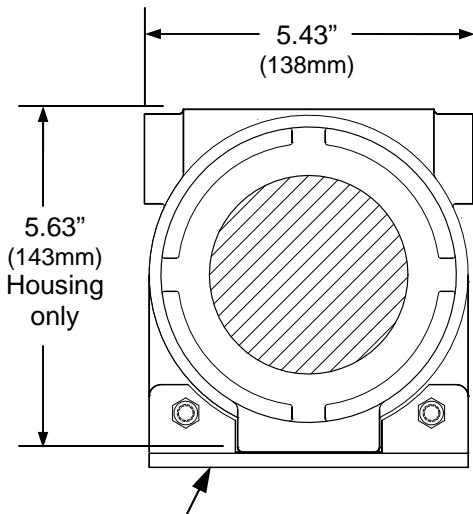
*Ensure zone conditions are observed and regional health & Safety regulations are applied.

**EX72 Camera:
MECHANICAL SPECIFICATIONS**



Side View

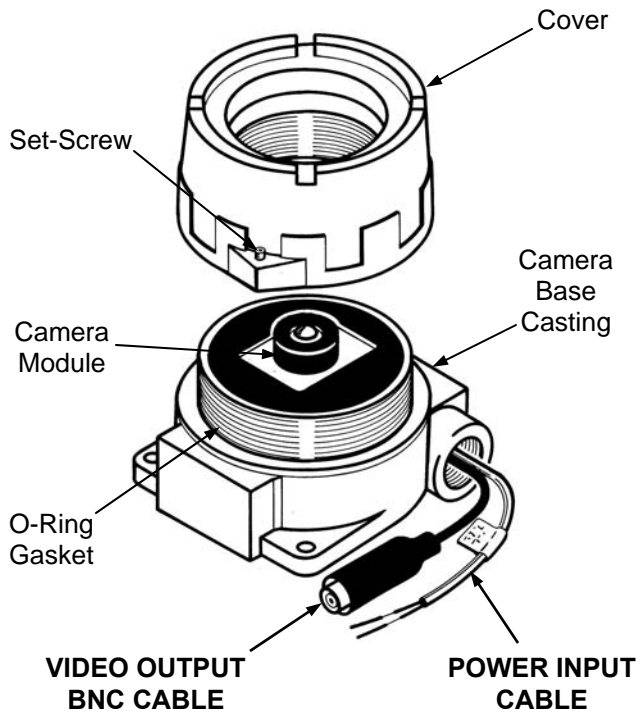
**EX72 Camera:
MECHANICAL SPECIFICATIONS**



Optional Mounting Bracket
and Hardware

Front View

**EX72 Camera:
INPUT / OUTPUT CABLES**



INITIAL PREPARATIONS

- The camera's voltage regulator board (VRB) accepts an input voltage of either 12V **dc** or 24V **ac**, and a range in-between, from a regulated power supply.
- The VRB automatically switches between **ac** or **dc** inputs, therefore no internal wiring changes are necessary to accommodate these input voltages.
- Determine the optimum location for the camera.
Section 1: Mounting-Camera Housing.
- All cameras have been tested prior to shipment.

GUIDELINES

The installation of the **EX72 Camera** is shown in Sections 1 and 4 listed below.

It is important that these steps are followed in sequence:

1. Mounting – Camera Housing
2. Voltage Input Connections
3. Camera Alignment
4. Camera Adjustments

1. MOUNTING - CAMERA HOUSING



Caution: *Install with the appropriate screws or drywall anchors to suit the mounting surface. Select a suitable location that is protected from accidental damage or tampering, and environmental conditions that could exceed the camera's general specifications.*

See page 32.



Caution: *Ensure the selected location is protected from falling objects, accidental contact with moving objects, and unintentional interference from personnel. Follow all applicable building codes.*



The following installation guidelines must be followed:

- Locate the camera such that it cannot be easily interfered with, either intentionally or accidentally.
- Select a mounting surface capable of supporting the combined weight of the camera and its mounting hardware under all expected conditions of vibration and temperature.
- Secure all cabling.

The cover of the **EX72** must be removed prior to mounting the camera housing. The set-screw in the cover must be loose prior to the cover's removal. Ensure the gasket is not displaced during this procedure. Re-attach the cover after the camera has been mounted.

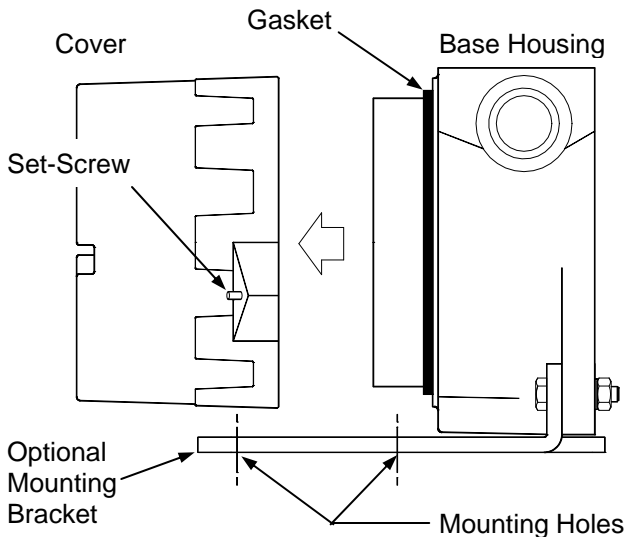


Figure 1 – 1
Cover Removal

Shown below is the **optional** mounting bracket and its designated mounting holes. The attached **EX72** camera is not shown for clarity purposes.

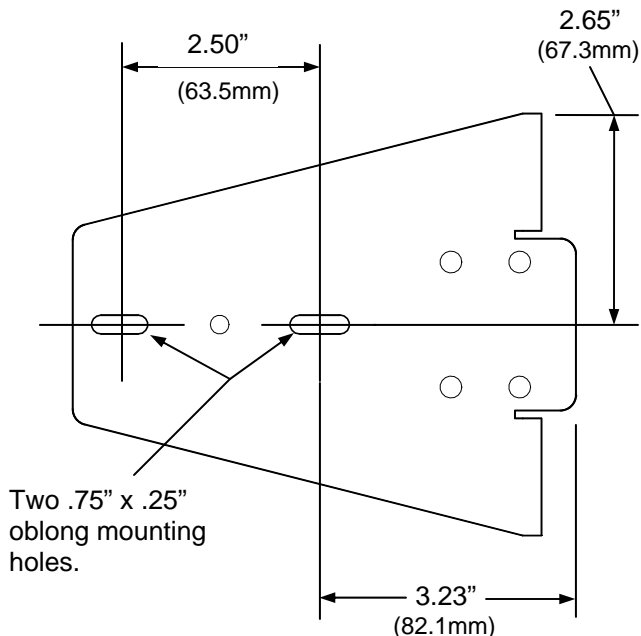
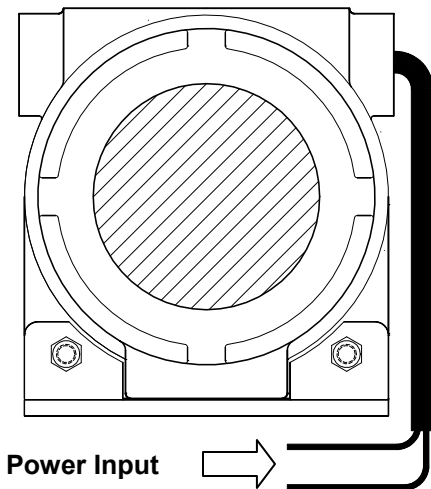


Figure 1 – 2
Optional Mounting Bracket--BRK-17-0001

2. VOLTAGE INPUT CONNECTIONS

Connect the input power (**ac** or **dc**) to the camera as shown below.



Note: The camera is an isolated unit. The input power wiring is not polarity dependent.

Figure 2 – 1
Power Input Wiring

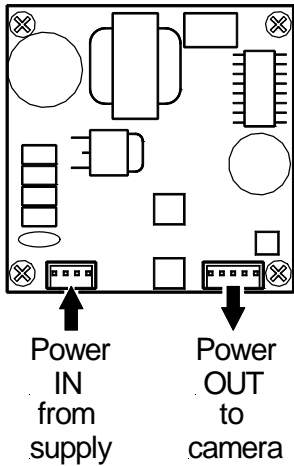


Figure 2 – 2
VRB Input / Output Wiring

3. CAMERA ALIGNMENT

The **EX72** camera, as supplied, is aligned so that the viewed image is shown in an upright position with the optional mounting bracket attached to the bottom of the housing.

(See **Figure 1 – 1** on page 9)

The “**TOP**” designation label on the camera module mounting plate indicates the correct upright viewing orientation for the camera lens.

If a particular situation requires the camera to be mounted to a surface other than the designated mounting plane, then the camera module must be removed and the camera’s mounting ring rotated into the new upright viewing position.

The “**TOP**” label must always point UP no matter to what angle the mounting bracket and camera housing is positioned.

Refer to **Figures 3 –1, 3 – 2, 3 – 3, 3 – 4,** and **3 - 5** for details.

Remove the three socket screws (A) with the supplied Allen key and carefully lift out the camera module.

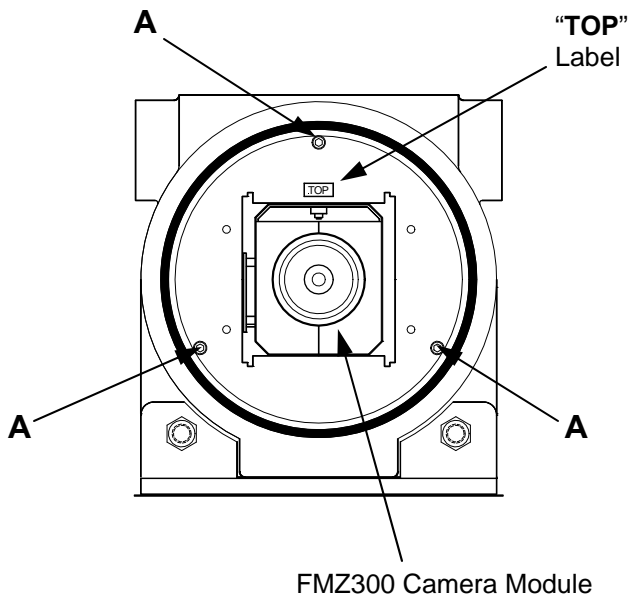
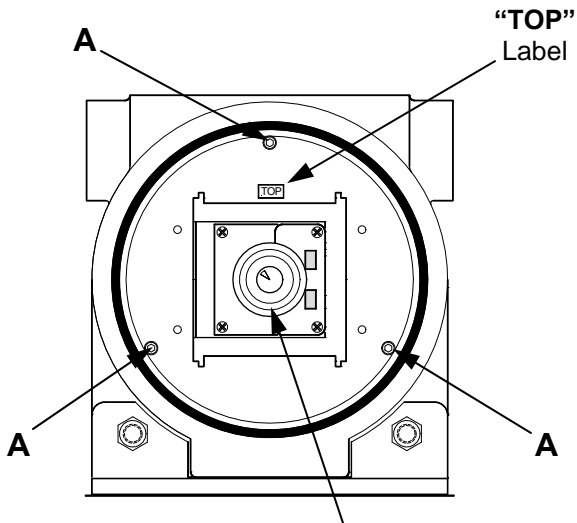


Figure 3 – 1
FMZ300 Camera, Module Removal

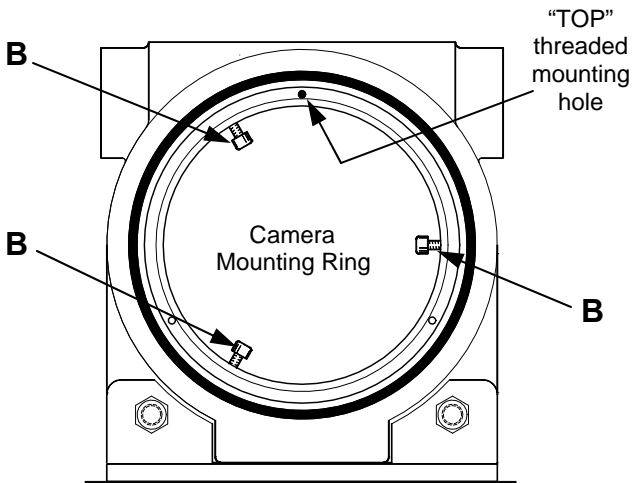
Remove the three socket screws (A) with the supplied Allen key and carefully lift out the camera module.



Dual Board Camera Module

Figure 3 – 2
Dual Board Auto Iris, Vari - Focal
Camera, Module Removal

Note the relationship between the “**TOP**” position and the threaded mounting hole in the camera’s mounting ring. This hole designates the **UP** position of the camera.



Set-screws (**B**) are used for the camera’s mounting ring rotational adjustment.

Figure 3 – 3
Camera Mounting Ring (as shipped)

If the camera housing has to be mounted in a different position, loosen the three set-screws (**B**) and rotate the camera mounting ring until the “TOP” threaded hole is perpendicular to the new mounting surface.

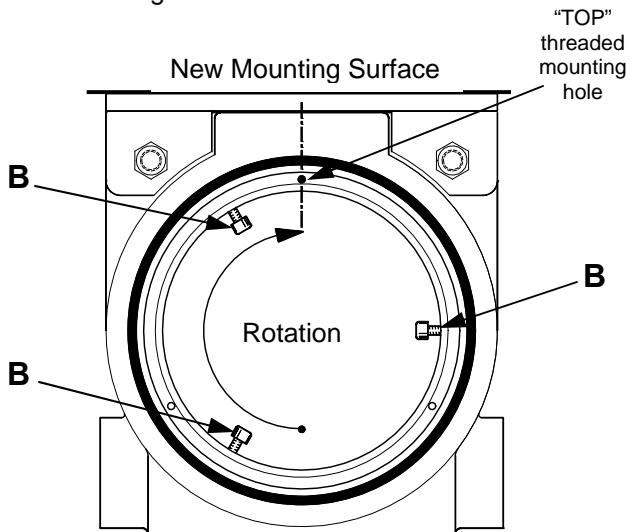


Figure 3 – 4
Camera Mounting Ring – Rotated

After the camera's mounting ring has been rotated into its new position, tighten the three set-screws with the supplied Allen key. Carefully place the camera module onto the mounting ring, ensuring that the "TOP" label lines up with the "TOP" mounting hole. Tighten the three camera plate set-screws, connect the video and power cables, and check the orientation of the image on a monitor.

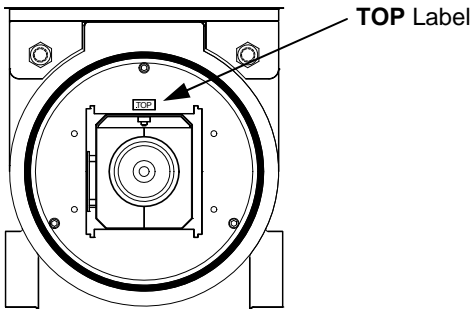


Figure 3 – 5
Camera Housing in Rotated Position
(FMZ300 Camera shown for reference)

4. CAMERA ADJUSTMENTS

4.1 Dual Board Camera: Vari Focal and Auto-Iris Control Adjustments

Step 4.1.1 - Loosen the lens set-screws for focus/zoom adjustments. See **Figure 4-1** on page 20.

Step 4.1.2 - The set screw for **N** $\longleftrightarrow \infty$ is used for image focus.

Step 4.1.3 - The set screw for **T** \longleftrightarrow **W** is used for telephoto or wide-angle settings.

Step 4.1.4 - Re-tighten the set screws after focus adjustments have been completed.

Step 4.1.5 - Locate the “Auto-Iris” adjustment controls as shown in **Figure 4-2** on page 21.

Step 4.1.6 - Adjust the “Auto-Iris” as per Tables **A** and **B** on page 22.

The dual board Vari Focal and Auto-Iris camera may be supplied with the EX72 unit. Use the guide below for focal adjustment.

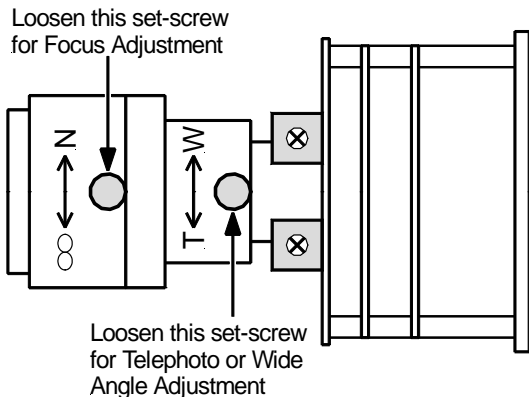


FIGURE 4 – 1
Lens Focus Adjustment

Front view of dual board Vari Focal and Auto-Iris camera.

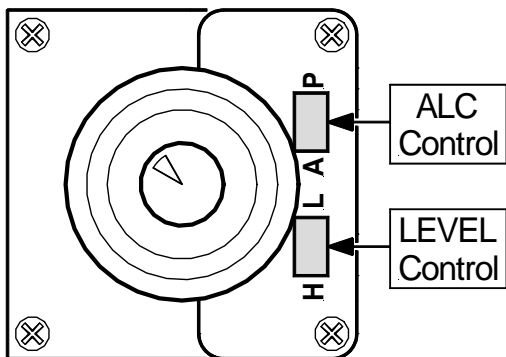


FIGURE 4 – 2
ALC and Level Controls for “Auto-Iris” Adjustment

See Tables **A** and **B** on page 22 for adjustment details.

Table A – ALC Adjustment

ALC Mode Select	ALC Adjustment
Metering to the “peak” light intensity of the image	Turn towards “P”
“Average” metering over the image	Turn towards “A”

Table B – Brightness Level Adjustment

Brightness	LEVEL Adjustment
For a brighter picture	Turn towards “H”
For a darker picture	Turn towards “L”

FMZ300 Camera: Zoom Adjustments

Step 4.2.1 Use **Figure 4 - 3** below in conjunction with Steps 4.2.2 to 4.2.6 on pages 24 to 26 for detailed instructions.

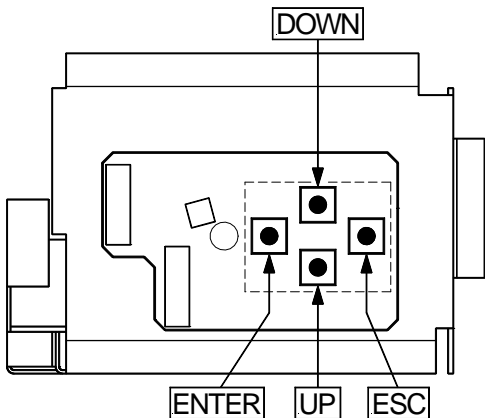


FIGURE 4 – 3
FMZ300 Zoom Adjustment “Use” Keys

Step 4.2.2 The following instructions will explain how to set the zoom. Refer to **Figure 4 - 2** for “use” keys.

USER OSD SETTING MENU & FUNCTIONS:

[UP]	UP & RIGHT MOVE KEY
[DOWN]	DOWN & LEFT MOVE KEY
[ENTER]	ENTER KEY
[ESC]	ESC KEY

Connect the camera to a monitor in order to display the Menu. Refer to the FMZ300 Operation Guide for additional information.

Press the **[ENTER]** key for 3 seconds to get into the **OSD** Menu.

Press the **[ESC]** key to leave the **OSD** Menu. Once the **[ESC]** key has been pressed, all set parameter data will be saved and the display will return back to the previous menu page. This will occur while setting the parameters and without pressing the **[ENTER]** key.

Step 4.2.3 Access the **Page 2 Menu** screen via the monitor.

The **Zoom** and **Digital Zoom** functions will be displayed.

SETUP MENU	[2/5]
WHITE BAL	ATW.
SYNC	OFF
ZOOM	
DIGITAL ZOOM	OFF
FOCUS	
AUTO FOCUS	OFF

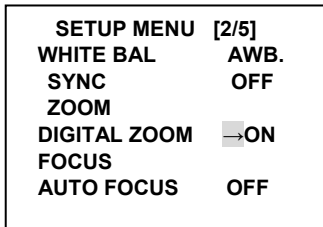
Step 4.2.4 Move the cursor to **ZOOM** and press the **[ENTER]** key to access the **ZOOM** Adjustment Menu.

SETUP MENU	[2/5]
WHITE BAL	AWB.
SYNC	OFF
→ZOOM	
DIGITAL ZOOM	OFF
FOCUS	
AUTO FOCUS	OFF

Step 4.2.5 Use the **[UP]** or **[DOWN]** keys to select **ZOOM, WIDE** to **TELE** (adjustable from 1 to 23).



Step 4.2.6 Move the cursor to **DIGITAL ZOOM** and press **[ENTER]** key to access the **DIGITAL ZOOM** Function Selection Menu.
Use the **[UP]** or **[DOWN]** keys to select **DIGITAL ZOOM, ON** or **OFF** (adjustable from 1 to 10).



4. TROUBLESHOOTING - CAMERA

<i>PROBLEM</i>	<i>POSSIBLE CAUSE</i>	<i>LIKELY SOLUTION</i>
No Video	<p>1. <u>Power Supply:</u> -Connections....</p> <p>-Voltage range...</p>	<p>Check the power connections at the power supply: Both ac and dc voltage inputs are on the same wires. Check for loose wires or poor connections.</p> <p>If connected to “dc”, the supply range is: <i>10.5 – 40V dc.</i> If connected to “ac”, the supply range is: <i>12 - 30V ac.</i> Measure the voltage at the input power connector.</p>

<p>No Video (cont'd.)</p>	<p>2. <u>Video Connections</u></p>	<p>Determine if wiring polarity at the video connector is correct.</p> <p>If still no video, connect the camera directly to the monitor. Check the video signal. If okay, the problem is with the interconnections. If still no video, contact Bosch Security Systems (see back cover for contact details).</p>
<p>Poor Picture Quality</p> <p>Snowy image</p>	<p>Poor video signal</p> <p>Noisy power supply</p>	<p>Ensure the video cable is correctly matched and terminated with 75 ohms at each end. Check if video cables are compatible.</p> <p>Check connections. Relocate or replace the power supply.</p>

Poor Picture Quality		
Horizontal scan lines, rolling up or down	Ground looping on video cable	Check the coax cable shield is not touching ground, e.g. at the couplings. A video isolator or isolation transformer may be required.
Negative, scrambled, or faded image	24V ac operation Low voltage	Line Lock adjustment required. Check the voltage at input power cable. Must be >10.5V dc or >12V ac. Check video leads for reversed connections.

NOTES

5. GENERAL SPECIFICATIONS

Power Consumption: 3.6W (max.) for both
V dc and V ac

Input Voltage: 10.5 - 40 dc,
12 – 30V ac,
electrically isolated

Enclosure (housing): Aluminum casting
(sealed to
IP66 / NEMA4X)

Viewing Window: Tempered Glass

Dimensions: **H:** 5.63" (143mm)
W: 5.43" (138mm)
L: 5.63" (143mm)

Weight: 2.8kg (6.2 lbs.)

Subject To Change Without Notice.

Americas

Bosch Security Systems, Inc.
850 Greenfield Road
Lancaster, Pennsylvania 17601
USA

Telephone+1 888-289-0096

Fax +1 585-223-9180

Email: security.sales@us.bosch.com

www.boschsecurity.us

Europe, Middle East, Africa:

Bosch Security Systems B.V.
P.O. Box 80002
5600 JB Eindhoven,
The Netherlands

Phone: + 31 40 2577 284

Fax: +31 40 2577 330

emea.securitysystems@bosch.com

www.boschsecurity.com

Asia-Pacific:

Bosch Security Systems Pte Ltd
38C Jalan Pemimpin
Singapore 577180

Phone: +65 6319 3450

Fax: +65 6319 3499

apr.securitysystems@bosch.com

www.boschsecurity.com

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