BOSCH

Precision Engineered Opto-Electronics™

INSTALLATION INSTRUCTIONS

EX70 / 70N

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

CE

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.

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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 Zone1. 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 ***EX70*** and ***EX70N Explosion Protected Cameras*** have been designed for surveillance applications in hazardous areas. Each 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 **EX70** has been engineered for surveillance reliability during daylight operation, while the **EX70N** offers total surveillance protection during day and night situations.

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

The **EX70** and **EX70N** cameras are available in several models designed to meet specific needs.

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)

- **EX70**/**EX70N** Camera
- Installation Instructions booklet

ITEMS REQUIRED FOR INSTALLATION

(not supplied with the shipped unit)

- Long shaft Philips screwdriver
- Regular Philips screwdriver
- Small slotted screwdriver
- Mounting hardware

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

INITIAL PREPARATIONS

- The camera 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.
- All cameras have been tested prior to shipment.

GUIDELINES

The installation of the **EX70**and **EX70N** is explained in Sections 1 to 5 listed below.
It is important that these steps are followed in sequence:

1. Cover Removal
2. Input Power Connections
3. Mounting - Camera Base
4. Camera / LED Array Adjustments
5. Camera Re-Assembly

1. COVER REMOVAL

The camera's cover must be removed prior to adjustment for LED brightness or setting the camera's lens angle. The set-screw located at the bottom of the cover casting is not tightened at the factory and protrudes by 1/8" (3mm) in order for the cover to be easily rotated.
Make sure the **O**-Ring gasket at the base of the threads is not damaged or dislodged during the cover's removal process.

Refer to ***Figure 1 – 1***.

Step 1.1 - Place the camera casting assembly on a flat surface.

Step 1.2 - Firmly hold the base with one hand and rotate the cover in a counter-clockwise direction with the other hand. Do not use a screwdriver or other metal device during this procedure.

Step 1.3 - Remove the cover and set it aside in a safe place.

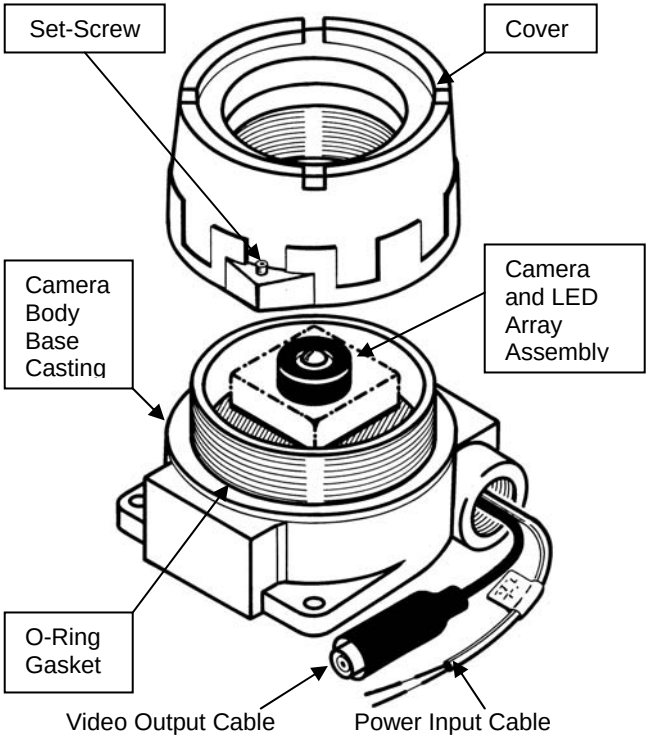

FIGURE 1 – 1
Cover Removal

2. INPUT POWER CONNECTIONS

Attention: External Video Cable Systems Must Be Properly Grounded In Accordance With The National Electrical Code, ANSI/NFPA 70.

The **EX70** and **EX70N** cameras are pre-connected with an electrically isolated power board (VRB) for 24V ac or 12V dc operation, with no change to the polarity of the wires. The VRB also connects to the camera and to the Line Lock Board (if available).
See ***Figures 2 – 1*** and ***2 – 2***.

NOTE:
For **DC input**, the input voltage range is 10.5V dc to 40V dc.
The recommended input current from the power supply should be approximately 1 Amp.
For **AC input**, the input voltage range is 12V ac to 28V ac.
The recommended input current from the power supply should be approximately 1 Amp.

Figure 2 – 1 shows the VRB used with the **EX70** camera.
Figure 2 – 2 shows the VRB used with the **EX70N** camera.

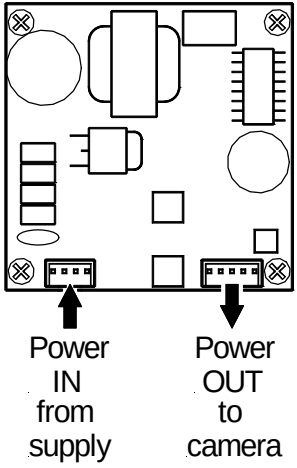

FIGURE 2 – 1
12VDC or 24VAC
Electrically Isolated Power Board

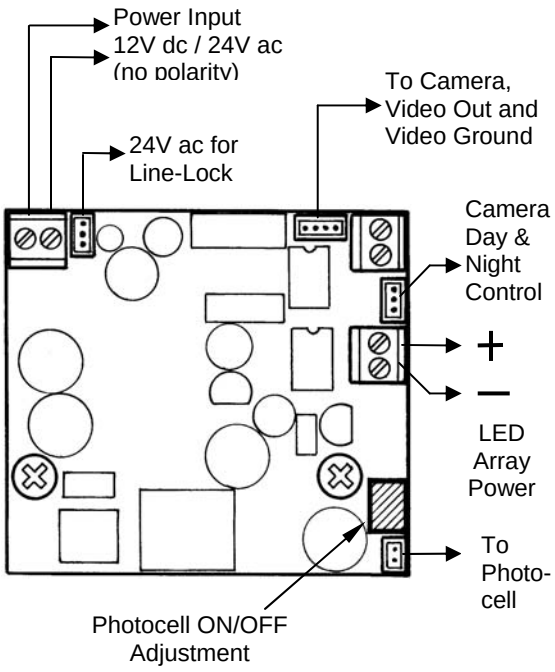

FIGURE 2 – 2
12V dc or 24V ac
Electrically Isolated Power Board

3. MOUNTING – CAMERA BASE

Caution: Install with the appropriate screws or drywall anchors to suit the mounting surface. Select a suitable location that is protected from accidental damage, tampering and environmental conditions which could exceed the camera's specifications.
See page 24.

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 weight of the camera under all expected conditions of vibration and temperature.
- **Secure** all cabling.

Installations on drywall must use two #12 screws and #12 drywall plugs or a superior mounting method.

3. MOUNTING – CAMERA BASE (cont'd.)

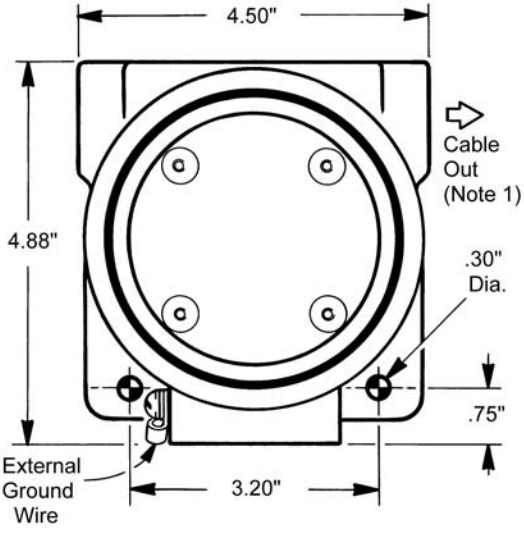

FIGURE 3 – 1
Mounting and Dimensional Details

Notes:

1. Cables can also be routed through the hole on the opposite side of the base.
2. Use the two .30" dia. holes for base mounting.

4. CAMERA / LED ADJUSTMENTS

For optimum picture quality, the **EX70** camera lens must be as close as possible to the inside face of the viewing window, without touching. However, the foam ring around the lens of the **EX70N** should be adjusted to seal against the inside face of the window, minimizing any side light interference, but without obstructing the field of view.

The lens clearance adjustment can be achieved via the two side screws on the camera bracket. The complete VRB/camera/LED Array chassis must be removed from the base housing for this adjustment. See ***Figure 4 – 1*** for details.

The lens viewing direction can be also slightly adjusted via the two side screws.
See ***Figure 4 – 2***.
For larger lens viewing angles adjustments it is recommended that the entire camera housing be tilted on a separate bracket.
The LEDs on the LED array board can be adjusted for brightness. See ***Figure 4 – 3***.

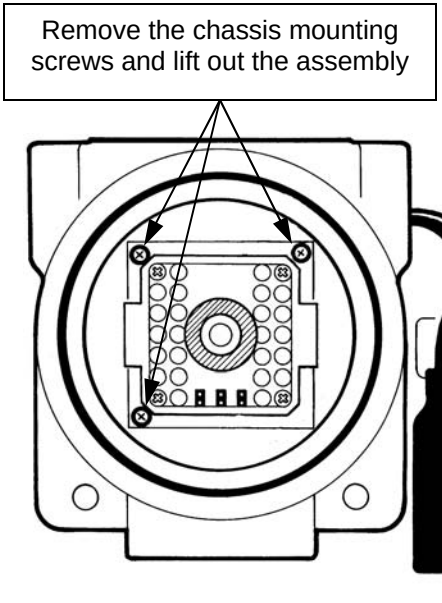

FIGURE 4 – 1
Camera Removal

This illustration shows the **EX70N** camera. The **EX70** is similar, but has no LED Array.
Note the relationship between the camera board alignment and the housing.

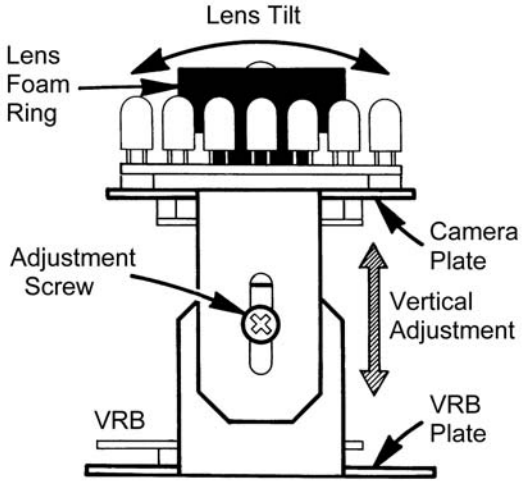

FIGURE 4 – 2
Camera Lens Adjustment

For optimum picture quality, the two adjustment screws, located on either side of the camera plate, allow the lens to be moved closer to the viewing window. The lens directional view can also be slightly adjusted during this procedure. Adjust the lens foam ring at this time.

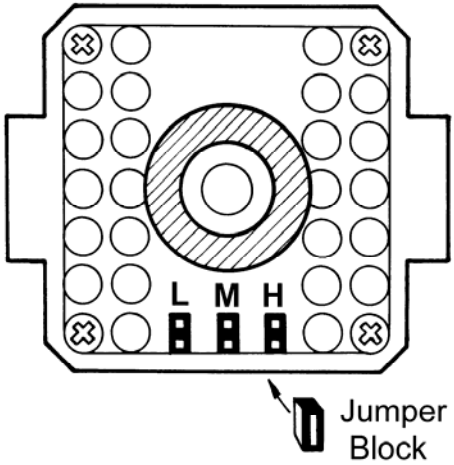

FIGURE 4 – 3
LED Array Brightness Adjustments

The brightness of the LEDs can be adjusted for High **(H**), Medium (**M**), or Low (**L**) intensity by connecting the jumper block as shown

5. CAMERA RE-ASSEMBLY

If changes were necessary due to voltage and installation requirements, make sure all power and video wires are correctly connected and tightened into their terminal blocks.

Step 5.1 - Connect a ¾" NPT gland or conduit to the open side of the base: Note: The gland and conduit is not supplied.

Step 5.2 - Push the external power/video cable into the housing and connect to the power and video of the circuit board.

Step 5.3 - Check that the large "**O**" ring gasket at bottom of the Camera Base threads is undamaged.

Step 5.4 - Make sure the "**Top**" edge of the VRB/Camera/LED Chassis is aligned correctly with the Base. Refer to ***Figure 5-1*** on page 17.

Step 5.5 - Mount this Chassis into the Base Housing, ensuring no cables are pinched or chafed.

Step 5.6 - Thread the Cover onto the Base, making sure the Lens and its Foam Ring are correctly positioned. Thread the ring on tight and then tighten the set-screw on the cover. Refer to ***Figure 1-1*** on page 5.

Step 5.6 - Seal the ¾" NPT entry with silicone to prevent moisture or water from entering.

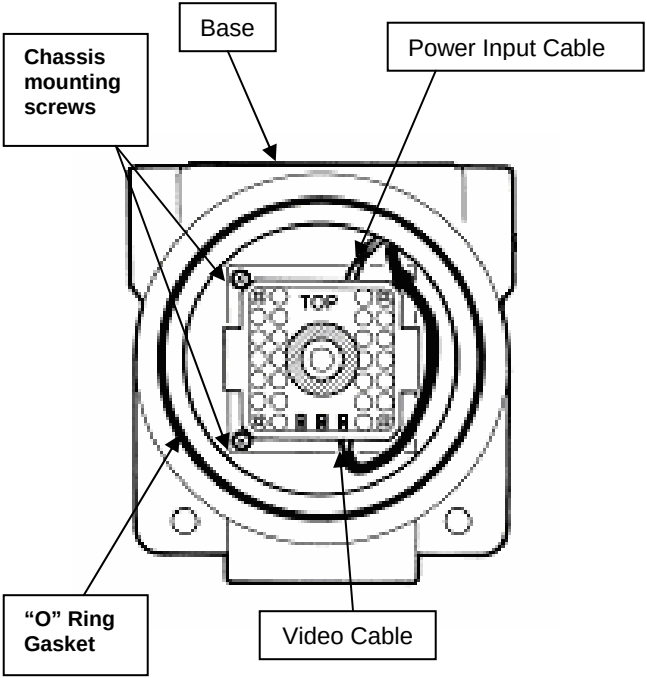

FIGURE 5 – 1
Camera Re-Assembly

Note:

6. TROUBLESHOOTING - CAMERA

PROBLEM	*POSSIBLE CAUSE*	*LIKELY SOLUTION*
No Video	1. Power Supply: -Connections….	Check input power connections at the terminal: ** AC input wires to " ac IN".* ** DC input wires to " dc IN".* ** Loose wires.*
	-Voltage Range...	If connected to " dc IN", the supply range is: *12 – 24V dc*. If connected to " ac IN", the supply range is: *13.5 – 28V ac* OR *13.5 – 30V dc*. Measure the voltage at the circuit board's Input Power Connector.

No Video (cont'd.)	2. Video Connections	Determine if wiring polarity at "Video Connector" terminal block is correct. Check BNC connector. 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).
Poor Picture Quality Snowy Image	Poor Video Signal	Ensure video cable is correctly matched and terminated with 75 ohms at each end. Make sure video cables are similar types.

Poor Picture Quality Snowy Image (cont'd.)	Noisy Power Supply	Check connections. Relocate or replace power supply.
Horizontal Scan Lines, Rolling Up or Down	Ground Looping on video cable	Check the coax cable shield is not touching ground, e.g. at couplings. An electrically isolated circuit board or isolation transformer may be required.
	24V ac operation	Line Lock adjustment required.
Negative, scrambled, or faded image	Low voltage	Check voltage at input power cable. Must be >11.6V dc.

7. TROUBLESHOOTING - LEDs

PROBLEM	POSSIBLE SOLUTION
Fuse Blows	- Check fuse rating. - Check for shorting between the enclosure and the input power.
Don't know if LEDS are "ON"	850nm LEDs will have a faint red glow when "ON". 940nm LEDs are covert. Aim the LEDs directly at an IR sensitive camera to see the lights or wait for the LEDs to warm up (two minutes).
LEDs are not "ON"	- Cover the photo sensor to activate power to the LEDs (up to 30 seconds delay for activation). - Adjust the photocell's variable resistor towards the "ON" position. - Adjust power to the LEDs.
LEDs are not turning "OFF" when sufficient ambient light is present	- Make sure the photo sensor is not covered or hidden behind any object. - Adjust the photocell's variable resistor towards the "OFF" position. The LEDS will stay "ON" or "OFF" if the adjustments are at full turn.

8. GENERAL SPECIFICATIONS

Power Consumption:	4.2W (max.) for both V dc and V ac
Input Voltage:	10.5 - 40 dc, 12 – 30V ac, isolated
Enclosure (housing):	Aluminum casting (sealed to IP66 / NEMA4X)
Viewing Window:	Tempered Glass
Dimensions:	**H:** 3.86” (98mm) **W**: 4.88” (124mm) **L**: 4.50” (115mm)
Weight:	1.36kg (3 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