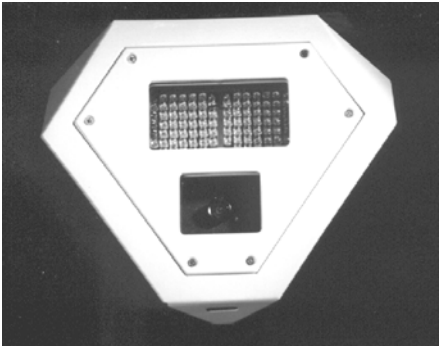
BOSCH

Precision Engineered Opto-Electronics™

INSTALLATION INSTRUCTIONS

EX36N

Day / Night Vision Camera



MAN-36N-04

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep this instruction.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with manufacturer instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet,

consult an electrician for replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the power where they exit from the apparatus.

11. Only use attachments/accessories specified by the manufacturer.

12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.

14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in a way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

IMPORTANT

For best results, please read this Instruction Booklet prior to installing the **EX36N** camera.

WARNING !

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

Made in Canada
12 Vdc, 10W(max)
24 Vac, 60 Hz, 10 W(max)

C SP US 189936

Certified to:
UL 50 / UL 2044 CSA C22.2 No. 0-M1991
CSA C22.2 No. 1-M94 CSA C22.2 No. 94.M91
CSA Type 4X / NEMA 4X CSA C22.2 No. 94-M91
NEC Class 2 Limited Power Circuit See Installation Instructions For Proper Connections

This Product Has Been Certified By CSA International To Include the Health Care Facility Requirements Of UL 2044.

CE

EU Directives covered by this declaration:
72/9/EC Low Voltage Directives
89/336/EEC Electromagnetic Compatibility Directive

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.

NOTE: This equipment has been tested and found to comply with the limits for a 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. As part of its' normal operation this device can generate radio frequency energy and if not installed and used in accordance with the installation manual may cause interference to radio communications. However, there is no guarantee that interference will not occur on a particular installation. If the device does cause interference to radio or television reception the user is encouraged to try to correct the interference by one or more of the following measures:

1) Fit Ferrite beads on all cable to and from the power supply box, within the box walls.

2) Route the composite cable between the camera and the power supply in steel conduit piping over the entire run of the cable up to and including connection to a deep conduit base fitted under the camera and a conduit fitting adaptor in the wall of the PSU box.

3) Contact BOSCH Service Center for further advice.

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DESCRIPTION

The ***EX36N Night Vision Camera*** has been designed with tilt on its faceplate to allow corner mounting and provide better view angle in small rooms. The housing and faceplate consist of tough materials to withstand damage in hostile environments such as prison cells and psychiatric wards.

The smooth compact housing allows for tight installations without exposed wiring or mounting screws, while separate windows for the camera lens and LEDs result in a perfect picture without light rebound.

A photocell circuit is used to provide automatic on/off infrared operation.

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

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 Service Center if a problem is noted, see the rear page of this booklet for contact numbers.

PARTS LIST (items supplied with unit)

- EX3x camera assembly
- Installation Instructions booklet
- Plastic bag containing one “security” Allen key for removal of faceplate mounting screws

ITEMS REQUIRED FOR INSTALLATION

(not supplied with unit)

- Mounting hardware
- Mounting tools

INITIAL PREPARATIONS

- Determine the operating voltage at the installation site.
- Determine the optimum location for the camera. *Section 3, Mounting-Camera Housing.*
- All cameras have been tested prior to shipment. After the wiring has been reconnected, it is advisable to check the camera's operation before installation.

GUIDELINES

The installation of the EX36N camera is explained in Sections 1 to 6 listed below. It is important that these steps are followed in sequence:

1. Faceplate Removal
2. Input Power Connections
3. Mounting - Camera Housing
4. Camera Directional Adjustment
5. LED Directional and Power Adjustments
6. Camera Re-Assembly

1. FACEPLATE REMOVAL

The faceplate must be removed prior to the installation process. This is necessary because the mounting holes need to be accessed. The lens may need to have its directional angle changed.

Refer to ***Figure 1-1*** on page 5.

Step 1.1 - Place the camera housing on a flat surface.

Step 1.2 - Use the supplied “security” Allen wrench to remove the six screws holding the faceplate into the housing.

Step 1.3 - Remove the square foam cushion attached to the camera lens.

Step 1.4 - Ensure the polycarbonate windows in the faceplate are not scratched.

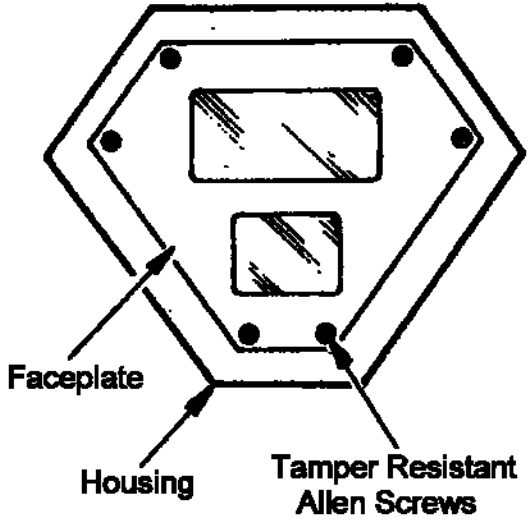
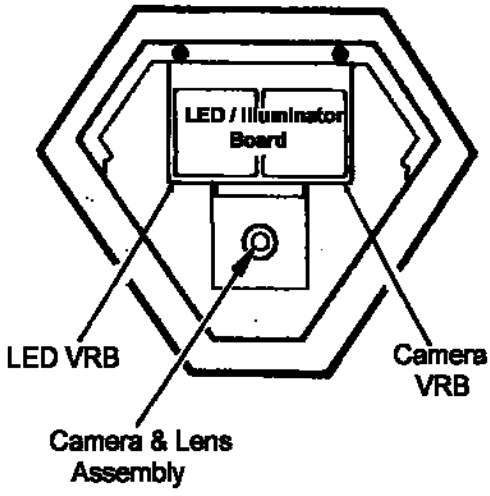


FIGURE 1 – 1
Faceplate Removal



This view shows the interior layout of the EX3xN camera assembly after the faceplate has been removed. Smaller details such as wiring and terminal blocks are omitted for clarity. Refer to the specific module sections for these details.

FIGURE 1 – 2
Layout of Modules

2. INPUT POWER CONNECTIONS

The camera unit is pre-connected with an electrically isolated power board for 24V ac or 12V dc operation with no wiring change or wiring polarity. See ***Figure 2-1*** and ***2-2*** for wiring details.

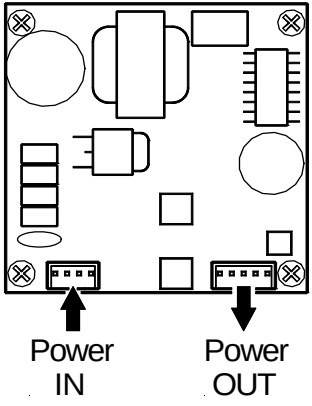


FIGURE 2 - 1
12VDC or 24VAC
Electrically Isolated Board, Camera VRB

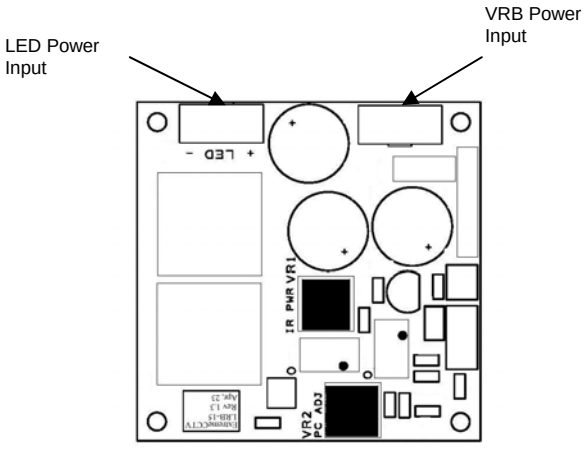


FIGURE 2 -2
Board Connections, LED VRB

3. MOUNTING - CAMERA HOUSING

Select a suitable location that is protected from accidental damage, tampering, and environmental conditions exceeding the camera's specifications.

Caution: The selected mounting location should not place the camera in a situation where its environmental specifications could be exceeded. *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 combined weight of the camera and mounting hardware under all

expected conditions of vibration and temperature.

- Secure all cabling.
- Installations on drywall must use #8 screws and #8 drywall nylon plugs or a superior connection.

The camera's mounting holes are located on the left and right side of the housing.
Refer to ***Figure 3-1*** on page 11.

Depending on the type of mounting surface (brick, wood, etc.), it may be necessary to pre-drill these holes for the mounting screws. It is recommended that these holes be marked using the housing as a drill template and then drilled separately. This way no burrs or debris will fall into the housing.

Ensure the power and video cables are not crimped or stressed after the camera has been mounted.

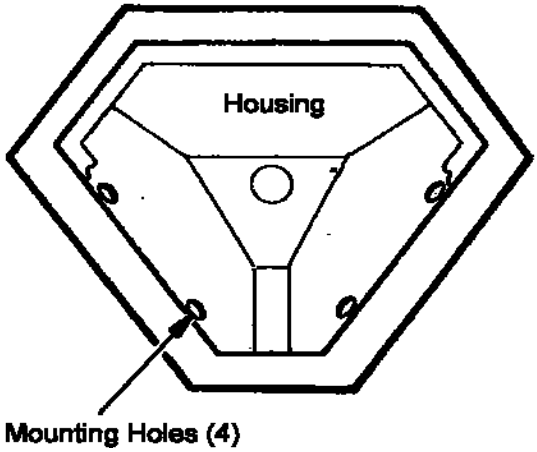


FIGURE 3 – 1
Mounting Holes – EX36 Camera Housing

4. CAMERA - DIRECTIONAL ADJUSTMENT

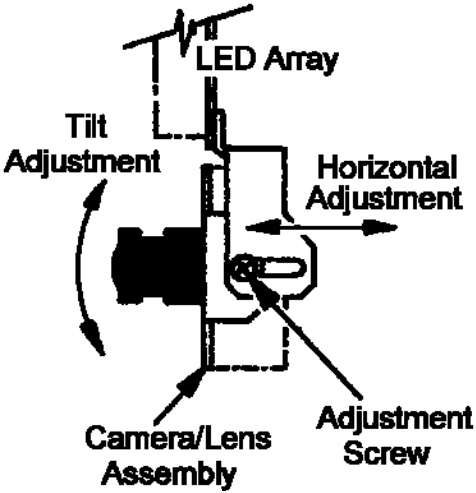
Both the camera and the LED array can be adjusted for optimum picture quality.

The camera lens can be tilted on its axis via two adjustment screws on the mounting bracket. It can also be moved closer or farther away from the viewing window.

Mount the Camera/LED Array Assembly into the housing. Connect the video and power wires. Check the picture for quality and directional alignment.

Remove the Camera/LED Array Assembly if an adjustment is required to the camera's viewing angle or picture quality.

Refer to ***Figure 4-1*** on page 13.



Loosen both adjustment screws for tilt or horizontal directional alignment. This action may require trial-and-error attempts to obtain perfect picture alignment.

FIGURE 4 – 1
Camera Directional Alignment

5. LED DIRECTIONAL AND POWER ADJUSTMENTS

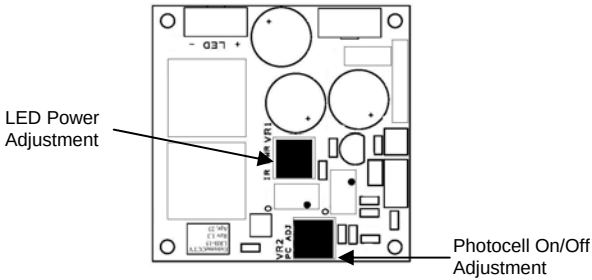
If the LEDs need to be adjusted for beam spread, the Camera/LED Array Assembly does not need to be removed from the housing. The adjustment can be done by hand.

The EX3xN can be powered while making adjustments, but make sure the power cable is not pinched or chafed during this procedure. Cover or adjust the photo-cell to turn the LEDs “ON” (850nm LEDs will have a slight red glow while 940nm LEDs are covert). Adjust the LED power if they are too bright.
Refer to ***Figure 5-1*** on page 15.

In some cases it may be necessary to bend the LEDs slightly for better beam spread. Do not use your fingers for this function. Use a flat wooden object and gently push the outside row of LEDs inwards or outwards. The camera should be “ON” while this adjustment is in progress.

LED ARRAY - POWER ADJUSTMENTS

If adjustment is needed, remove the rear cover for access to the LRB. The **EX36N** needs to be powered-up while making the LED power adjustments. Cover the photocell to turn the LEDs "ON" (850nm LEDs will have a slight red glow). For photocell "On/Off" light-level adjustment, rotate **VR2.** Clockwise is off and counter-clockwise is on.



LED Power and Photocell On/Off Adjustments

Adjust the LED power if they are too bright or too dim. For IR power adjustment, rotate **VR1.** Clockwise is high and counter-clockwise is low.

FIGURE 5 - 1
LED Array Power Adjustments

6. CAMERA RE-ASSEMBLY

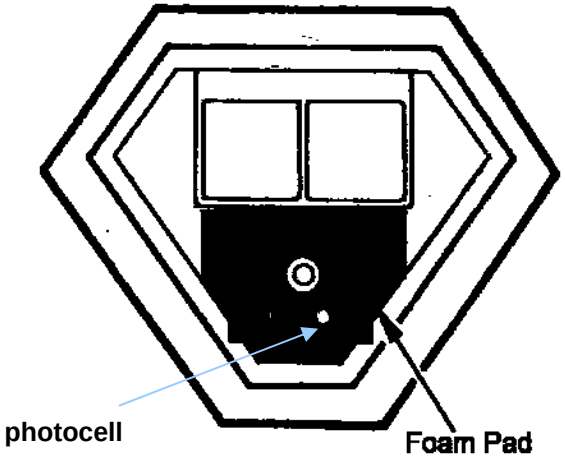
Make sure all wires are properly connected, all holes are sealed against moisture penetration, and all mounting screws are tight.

Step 6.1 - Slide the square foam pad over the camera's lens. Make sure the pad is as close to the faceplate viewing window as possible and the photocell is not covered by the foam pad. The foam pad is not symmetrical. Make sure the LEDs are not covered when installing the pad.

Step 6.2 - Re-attach the faceplate with the six tamper resistant screws. Tighten carefully but do not over-tighten.

Step 6.3 - Power-up the camera and check its operation.

Refer to ***Figure 6-1*** on page 17.



The foam pad is not symmetrical. Make sure the LED is not covered when installing the foam pad.

FIGURE 6 – 1
Camera Re - Assembly

7. 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...	The supply range is: *12 – 28V ac* OR *10.5 – 40V dc* for the camera section. Measure the voltage at the terminal block.
	2. Video Connections:	Determine if wiring polarity at "Video Connector" terminal block is correct. (V and GND)

No Video (cont'd.)	2. Video Connections: (cont'd.)	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 Service Center. See rear page of this manual for contact information.
Poor Picture Quality Snowy Image	Poor Video Signal Noisy Power Supply	Ensure video cable is correctly matched and terminated with 75 ohms at each end. Make sure video cables are similar types. 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.
Reversed video or faded image	Low voltage	Check voltage at input power cable. Must be >10.5V dc or >12Vac for camera section. Check video leads for reversed connections.

8. 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. - Measure input voltage >12VDC

PROBLEM	POSSIBLE SOLUTION
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.

9. GENERAL SPECIFICATIONS

CCD Sensor..... 1/3'' – IR Optimized

Video Signal Output..... 1 V p-p, 75 Ohm

LED Type.....High Perf. 850nm / 940nm

Operational Range..... -50°C to +50°C
(-58°F to 122°F)

Humidity Range .....Up to 85% (relative)

Power Supply..... 12V dc or 24V ac
(60Hz), 19W

Window ..... Polycarbonate (1/4" LEXAN)

Housing..... Steel, welded and
powder coated paint

Dimensions .....8.3" (211mm) W
6.0" (152mm) D
5.5" (140mm) H

Weight.....2.64 lbs. (1.2kg)

Subject To Change Without Notice.

Note:

Note:

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