



KBN & KBE Series Cameras

KBN | KBE



BOSCH

en Installation Manual

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1 Safety

1.1 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** - Unplug the unit from the outlet before cleaning. Follow any instructions provided with the unit. 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. **Ventilation** - Any openings in the unit enclosure are provided for ventilation to prevent overheating and ensure reliable operation. Do not block or cover these openings. Do not place the unit in an enclosure unless proper ventilation is provided, or the manufacturer's instructions have been adhered to.
4. **Water** - Do not use this unit near water, for example near a bathtub, washbowl, sink, laundry basket, in a damp or wet basement, near a swimming pool, in an outdoor installation, or in any area classified as a wet location. To reduce the risk of fire or electrical shock, do not expose this unit to rain or moisture.
5. **Object and liquid entry** - Never push objects of any kind into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electrical shock. Never spill liquid of any kind on the unit. Do not place objects filled with liquids, such as vases or cups, on the unit.
6. **Lightning** - For added protection during a lightning storm, or when leaving this unit unattended and unused for long periods, unplug the unit from the wall outlet and

disconnect the cable system. This will prevent damage to the unit from lightning and power line surges.

7. **Controls adjustment** - Adjust only those controls specified in the operating instructions. Improper adjustment of other controls may cause damage to the unit. Use of controls or adjustments, or performance of procedures other than those specified, may result in hazardous radiation exposure.
8. **Overloading** - Do not overload outlets and extension cords. This can cause fire or electrical shock.
9. **Power cord and plug protection** - Protect the plug and power cord from foot traffic, being pinched by items placed upon or against them at electrical outlets, and its exit from the unit. For units intended to operate with 230 VAC, 50 Hz, the input and output power cord must comply with the latest versions of *IEC Publication 227* or *IEC Publication 245*.
10. **Power disconnect** - Units with or without ON/OFF switches have power supplied to the unit whenever the power cord is inserted into the power source; however, the unit is operational only when the ON/OFF switch is in the ON position. The power cord is the main power disconnect device for switching off the voltage for all units.
11. **Power sources** - Operate the unit only from the type of power source indicated on the label. Before proceeding, be sure to disconnect the power from the cable to be installed into the unit.
 - For battery powered units, refer to the operating instructions.
 - For external power supplied units, use only the recommended or approved power supplies.
 - For limited power source units, this power source must comply with *EN60950*. Substitutions may damage the unit or cause fire or shock.
 - For 24 VAC units, voltage applied to the unit's power input should not exceed $\pm 10\%$, or 28 VAC. User-supplied wiring must comply with local electrical

- codes (Class 2 power levels). Do not ground the supply at the terminals or at the unit's power supply terminals.
- If unsure of the type of power supply to use, contact your dealer or local power company.
12. **Servicing** - Do not attempt to service this unit yourself. Opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
 13. **Damage requiring service** - Unplug the unit from the main AC power source and refer servicing to qualified service personnel when any damage to the equipment has occurred, such as:
 - the power supply cord or plug is damaged;
 - exposure to moisture, water, and/or inclement weather (rain, snow, etc.);
 - liquid has been spilled in or on the equipment;
 - an object has fallen into the unit;
 - unit has been dropped or the unit cabinet is damaged;
 - unit exhibits a distinct change in performance;
 - unit does not operate normally when the user correctly follows the operating instructions.
 14. **Replacement parts** - Be sure the service technician uses replacement parts specified by the manufacturer, or that have the same characteristics as the original parts. Unauthorized substitutions may cause fire, electrical shock, or other hazards.
 15. **Safety check** - Safety checks should be performed upon completion of service or repairs to the unit to ensure proper operating condition.
 16. **Installation** - Install in accordance with the manufacturer's instructions and in accordance with applicable local codes.
 17. **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.

1.2 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 serious bodily injury or death.

CAUTION!



Medium Risk:

Indicates a potentially hazardous situation.

If not avoided, this may result in minor or moderate injury.

Alerts the user to important instructions accompanying the unit.

CAUTION!



Low Risk:

Indicates a potentially hazardous situation.

If not avoided, this may result in property damage or risk of damage to the unit.

NOTICE!



This symbol indicates information or a company policy that relates directly or indirectly to the safety of personnel or protection of property.

1.3 Important Notices



Accessories - Do not place this unit on an unstable stand, tripod, bracket, or mount. The unit may fall, causing serious injury and/or serious damage to the unit. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer. When a cart is used, use caution and care when moving the cart/apparatus combination to avoid injury from tip-over. Quick stops, excessive force, or uneven surfaces may cause the cart/unit combination to overturn. Mount the unit per the manufacturer's instructions.

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. If it is needed to open the housing for servicing and/or other activities, use this all-pole switch as the main disconnect device for switching off the voltage to the unit.

Camera grounding - For mounting the camera in potentially damp environments, ensure to ground the system using the ground connection of the power supply connector (see section: Connecting external power supply).

Camera lens - An assembled camera lens in the outdoor housing must comply and be tested in accordance with *UL/IEC60950*. Any output or signal lines from the camera must be SELV or Limited Power Source. For safety reasons the environmental specification of the camera lens assembly must be within the environmental specification of -10 °C (14 °F) to 50 °C (122 °F).

Camera signal - Protect the cable with a primary protector if the camera signal is beyond 140 feet, in accordance with *NEC800 (CEC Section 60)*.



CAUTION!

Class I Laser Product

Invisible laser radiation when open. Avoid exposure to beam.

Coax grounding:

- Ground the cable system if connecting an outside cable system to the unit.
- Connect outdoor equipment to the unit's inputs only after this unit has had its grounding plug connected to a grounded outlet or its ground terminal is properly connected to a ground source.
- Disconnect the unit's input connectors from outdoor equipment before disconnecting the grounding plug or grounding terminal.
- Follow proper safety precautions such as grounding for any outdoor device connected to this unit.

U.S.A. models only - *Section 810* of the *National Electrical Code, ANSI/NFPA No.70*, provides information regarding proper grounding of the mount and supporting structure, grounding of the coax to a discharge unit, size of grounding conductors, location of discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

**NOTICE!**

This device is intended for use in public areas only. U.S. federal law strictly prohibits surreptitious recording of oral communications.



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.

Environmental statement - Bosch has a strong commitment towards the environment. This unit has been designed to respect the environment as much as possible.

Electrostatic-sensitive device - Use proper CMOS/MOS-FET handling precautions to avoid electrostatic discharge.

NOTE: Wear required grounded wrist straps and observe proper ESD safety precautions when handling the electrostatic-sensitive printed circuit boards.

Fuse rating - For security protection of the device, the branch circuit protection must be secured with a maximum fuse rating of 16A. This must be in accordance with *NEC800 (CEC Section 60)*.

Grounding and polarization - This unit may be equipped with a polarized alternating current line plug (a plug with one blade wider than the other blade). This safety feature allows the plug to fit into the power outlet in only one way. If unable to insert the plug fully into the outlet, contact a locally certified electrician to replace the obsolete outlet. Do not defeat the safety purpose of the polarized plug.

Alternately, this unit may be equipped with a 3-pole grounding plug (a plug with a third pin for earth grounding). This safety feature allows the plug to fit into a grounded power outlet only. If unable to insert the plug into the outlet, contact a locally certified electrician to replace the obsolete outlet. Do not defeat the safety purpose of the grounding plug.

Moving - Disconnect the power before moving the unit. Move the unit with care. Excessive force or shock may damage the unit and the hard disk drives.

Outdoor signals - The installation for outdoor signals, especially regarding clearance from power and lightning conductors and transient protection, must be in accordance with *NEC725* and *NEC800 (CEC Rule 16-224 and CEC Section 60)*.

Permanently connected equipment - Incorporate a readily accessible disconnect device in the building installation wiring.

Pluggable equipment - Install the socket outlet near the equipment so it is easily accessible.

PoE - Never supply power via the Ethernet connection (PoE) when power is already supplied via the power connector.

Power disconnect - Units have power supplied whenever the power cord is inserted into the power source. The power cord is the main power disconnect for all units.

Power lines - Do not locate the camera near overhead power lines, power circuits, or electrical lights, nor where it may contact such power lines, circuits, or lights.

SELV

All the input/output ports are Safety Extra Low Voltage (SELV) circuits. SELV circuits should only be connected to other SELV circuits.

Because the ISDN circuits are treated like telephone-network voltage, avoid connecting the SELV circuit to the Telephone Network Voltage (TNV) circuits.

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.



NOTICE!

This is a class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

FCC & ICES INFORMATION

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

This device complies with *part 15* of the *FCC Rules*. Operation is subject to the following conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules and ICES-003 of Industry Canada. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and radiates radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his expense.

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.

INFORMATIONS FCC ET ICES

(modèles utilisés aux États-Unis et au Canada uniquement)

Ce produit est conforme aux normes FCC partie 15. La mise en service est soumise aux deux conditions suivantes:

- cet appareil ne peut pas provoquer d'interférence nuisible et
- cet appareil doit pouvoir tolérer toutes les interférences auxquelles il est soumis, y compris les interférences qui pourraient influencer sur son bon fonctionnement.

AVERTISSEMENT: Suite à différents tests, cet appareil s'est révélé conforme aux exigences imposées aux appareils numériques de Classe A en vertu de la section 15 du règlement de la Commission fédérale des communications des États-Unis (FCC). Ces contraintes sont destinées à fournir une protection raisonnable contre les interférences nuisibles quand l'appareil est utilisé dans une installation commerciale. Cette appareil génère, utilise et émet de l'énergie de fréquence radio, et peut, en cas d'installation ou d'utilisation non conforme aux instructions, générer des interférences nuisibles aux communications radio. L'utilisation de ce produit dans une zone résidentielle peut provoquer des interférences nuisibles. Le cas échéant, l'utilisateur devra remédier à ces interférences à ses propres frais.

Au besoin, l'utilisateur consultera son revendeur ou un technicien qualifié en radio/télévision, qui procédera à une opération corrective. La brochure suivante, publiée par la Commission fédérale des communications (FCC), peut s'avérer utile : « How to Identify and Resolve Radio-TV Interference Problems » (Comment identifier et résoudre les problèmes d'interférences de radio et de télévision). Cette brochure est disponible auprès du U.S. Government Printing Office, Washington, DC 20402, États-Unis, sous la référence n° 004-000-00345-4.

AVERTISSEMENT: Ce produit est un appareil de Classe A. Son utilisation dans une zone résidentielle risque de provoquer des interférences. Le cas échéant, l'utilisateur devra prendre les mesures nécessaires pour y remédier.

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 UP'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.

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

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 UP'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.

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NOTICE!

This user guide 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 additional information, please contact the Bosch Security Systems location nearest you or visit our web site at www.boschsecuritysystems.com

1.4 Customer Support and Service

If this unit needs service, contact the nearest Bosch Security Systems Service Center for authorization to return and shipping instructions.

Service Centers

USA

Telephone: 800-366-2283 or 585-340-4162

Fax: 800-366-1329

Email: cctv.repair@us.bosch.com

Customer Service

Telephone: 888-289-0096

Fax: 585-223-9180

Email: security.sales@us.bosch.com

Technical Support

Telephone: 800-326-1450

Fax: 585-223-3508 or 717-735-6560

Email: technical.support@us.bosch.com

Repair Center

Telephone: 585-421-4220

Fax: 585-223-9180 or 717-735-6561

Email: security.repair@us.bosch.com

Canada

Telephone: 514-738-2434

Fax: 514-738-8480

Europe, Middle East & Asia Pacific Region

Telephone: 44 (0) 1495 274558

Fax: 44 (0) 1495 274280

Email: rmahelpdesk@solectron.com

More information

For additional information, please contact your Bosch Security Systems representative or visit our web site at www.boschsecurity.com.

2 Unpacking

This equipment should be unpacked and handled with care. If an item appears to have been damaged in shipment, notify the shipper immediately.

Verify that all the parts listed in the Parts List below are included. If any items are missing, notify your Bosch Security Systems Sales or Customer Service Representative.

The original packing carton is the safest container in which to transport the unit and must be used if returning the unit for service. Save it for possible future use.

This installation should be made by qualified service personnel and conform to the National Electrical Code and applicable local codes.

2.1 Parts List

| Quantity | Item |
|----------|--|
| 1 | Unit (verify package model number ordered) |
| 1 | Feed-through mount |
| 1 | Instruction booklet packet |
| 1 | Sunshield (with outdoor (KBE) models) |

Refer to *Section 7 Model Numbers, page 36*, for a detailed list of the Camera, Lens, Housing, and Feed-through Mount model numbers included with the various package model numbers.

3 **Description**

The KBE and KBN Series are complete camera packages that include a camera and lens pre-wired into a housing. A feed-through wall mount is also provided, as well as a sunshield on outdoor packages.

4 Planning

All Recommended operating voltage is 24 VAC, 60 Hz, with the following power consumptions:

- Analog cameras
 - KBx-435, KBx-455: 4W (excluding lens)
 - KBx-485, KBx-610: 4W
 - KBx-498, KBx-630: 350 mA (12 VDC); 250 mA (24 VAC); 70 mA (120-240 VAC)
- IP cameras
 - KBx-455xxx-21N/NV: 450 mA/550 mA (IVA) (12 VDC, 24 VAC); 200 mA/250 mA (IVA) (PoE 48 VDC)
 - KBx-498xxx-20N/NV: 550 mA/650 mA (IVA) (12 VDC, 24 VAC); 200 mA/250 mA (IVA) (PoE 48 VDC)

Power Connections

The external power cable is provided to allow for necessary stripping/preparation by the installer. The cable has three wires for the transmission of 24 VAC power.

| Color | Connection |
|-------|------------|
| Green | Ground |
| White | 24 VAC |
| Black | 24 VAC |

Bosch recommends that you connect the incoming 24 VAC power cables to the camera cable using wire connectors inside a junction box. For additional information, see the Installation Manuals included in the Instruction Booklet Packet.

4.1 Line Power and Video Signal Connection (KBN Models Only)

The following table summarizes the power and videoconnections for each model:

| Model | Video Data | Power |
|--|---|--|
| Analog cameras (KBN-xxxVxx-20) | External video coax cable with a female BNC connector | External power cable |
| IP cameras (KBN-455Vxx-21N/NV, KBN-498-Vxx-20N/NV) | External Category 5 UTP cable with a female RJ-45 connector | External power cable or Powerover-Ethernet (IEEE 802.3af) standard |

4.2 Wire Distance Guide

This table lists the maximum wire distances for 14, 16 and 18AWG wires connected to a 24 VAC camera.

| Model | 14 AWG (2.5 mm) | 16 AWG (1.5 mm) | 18 AWG (1.0 mm) |
|---|--------------------|--------------------|--------------------|
| Analog Cameras (KBN-xxxVxx-20) | 870 m (2854 ft) | 550 m (1804 ft) | 340 m (1115 ft) |
| IP Cameras (KBN-455Vxx-21N/NV, KBN-498-Vxx-20N/NV) | 430 m (1410 ft) | 270 m (885 ft) | 170 m (557 ft) |

5 Installation of KBN (Indoor) Cameras



WARNING!

This installation should be made by a qualified service person and conform to all local codes.

1. Prepare and secure the mount to the wall or mounting surface as described in the LTC 9215/00 Installation Manual included in the Instruction Booklet Packet.



NOTICE!

If you plan to route cables out the back of the mount, ensure that the placement of the mount allows space behind the mounting surface to route and connect wires.

2. Follow the steps in the subchapters below, depending on the model of camera that you are installing (analog or IP).

5.1 Connecting Analog Cameras

1. Connect the male BNC connector to the female BNC connector routed through either the back end or through the bottom hole of the mount.

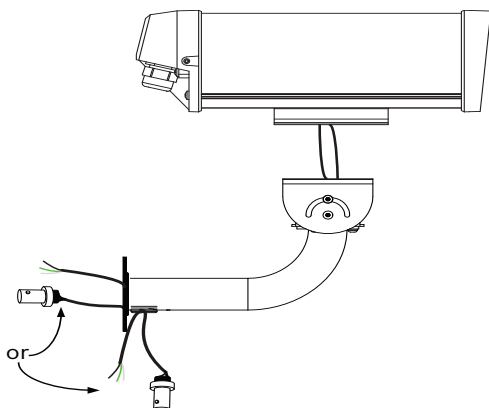


Figure 5.1 Cable Routing Options

2. Make the power connections as detailed in *Section Power Connections, page 19*.

3. Attach the housing to the mount using the two (2) 1/4-20 screws and washers provided in the hardware kit. For additional information, see the LTC 9215/00 Mount *Installation Manual* and LTC 9480/00 Series Housing *Installation Manual*.

5.2 Connecting IP Cameras

1. Determine if power is to be supplied via the Ethernet connection compliant with the Power-over-Ethernet (PoE) (IEEE 802.3af) standard or via the external 24 VAC power cable (factory-configured).

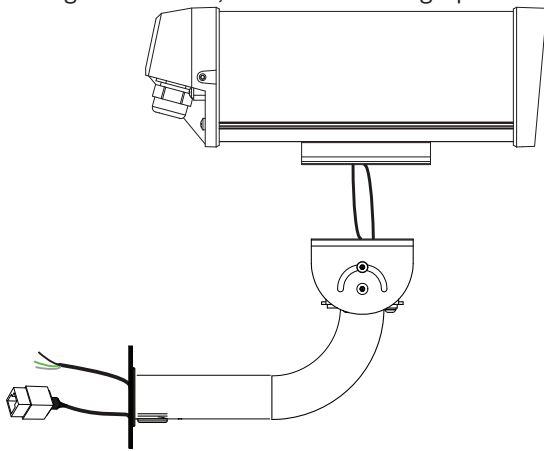


CAUTION!

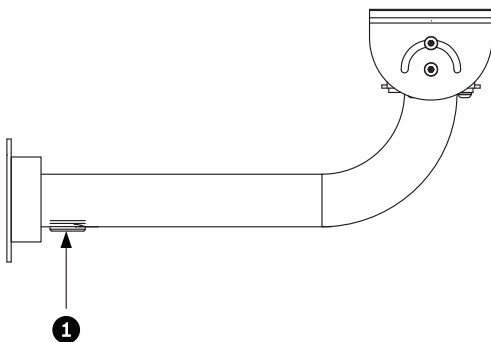
Never supply power via the Ethernet connection (PoE) when power is supplied via the power connector.

2. Follow the steps below depending on your power source (power cable or Ethernet cable):
 - For Ethernet connections, proceed to Step 3.
 - For power cable connections, refer to *Section Power Connections*, page 19, then skip to Step 4.

3. Determine if you will route the cables behind the mounting surface or through the opening (grommet) at the bottom of the mount.
 - If connecting the cables behind the mounting surface, route the UTP Video/Ethernet and the power cable through the mount, as shown in the graphic below..

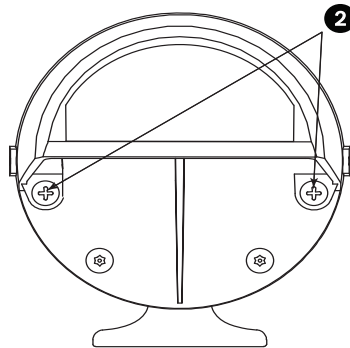


- If routing the cables through the opening (grommet) at the bottom of the mount, as shown in the graphic below (with the number 1 pointing to the opening), follow these substeps:

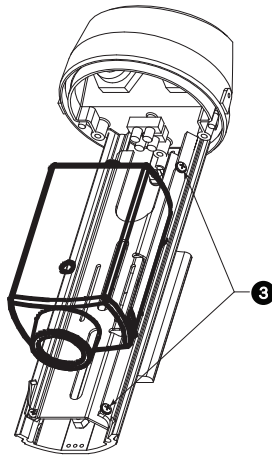


- a. Loosen the top two screws (item 2 below) on the rear of the housing. These screws are captive and will not

come out all the way. Do not remove the bottom two screws.

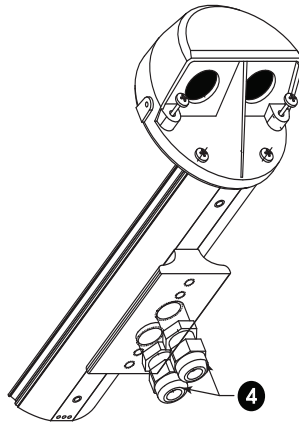


- b. Grasp the housing's front cap and pull forward. Do not squeeze the cover itself. This will make it difficult to slide off the cover.
- c. Remove the camera bracket by loosening the two screws (item 3 below) in the front and back of the bracket.



- d. Disconnect the UTP Video/Ethernet cable from the back of the camera. Cut off the RJ-45 connector from the end of the cable.
- e. Turn over the housing and loosen the NPT fitting from the foot of the housing that contains the UTP Video/

Ethernet (item 4 below). Pull the cable through the NPT fitting to remove.



- f. Insert the user-supplied shielded UTP Category 5 cable with RJ-45 connector through the grommet in the bottom of the mount.
- g. Route the Ethernet cable through the mount, then out through the flange at the top of the mount.
- h. Insert the Ethernet cable through the NPT fitting, then route into the housing.
- i. Attach the user-supplied RJ-45 connector to the back of the camera.
- j. If power is supplied via a PoE LAN switch, remove the separate AC power connections from the camera.
- k. Replace the camera bracket and slide the housing cover over the camera.
- l. Tighten the two captive screws at the back of the housing to secure the cover.
- m. Tighten the NPT fitting at the foot of the camera. Refer to the LTC 9215/00S Installation Manual for tightening tolerances.

**WARNING!**

If connecting to a PoE LAN switch, remove the separate AC power connections from the camera.

4. Attach the housing to the mount using the two (2) 1/4-20 screws and washers provided in the hardware kit. For additional information, see the LTC 9215/00 Mount *Installation Manual*.

5.3 Camera Lens Adjustment

The camera and lens come factory-configured and ready for operation. To adjust the camera lens to obtain the required view, you must access the camera inside the housing.

1. Loosen the top two screws (item 1 in the figure below) on the rear of the housing. These screws are captive and will not come out all the way. Do not remove the bottom two screws.

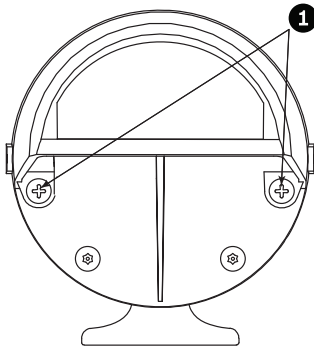


Figure 5.2 LTC 9480/00 Rear View

2. Grasp the housing's front cap and pull forward. Do not squeeze the cover itself. This will make it difficult to slide off the cover.
3. If using an analog camera, remove the coax cable from the Video BNC connector.
4. Connect a coax cable from the setup monitor to the Video terminal on the back of the camera.

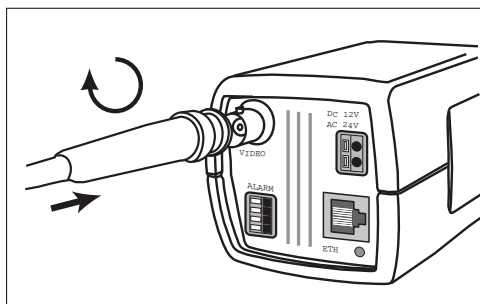


Figure 5.3 IP Camera Rear View

5. Adjust the lens to customize the view.
6. If custom camera setup is required, see the camera Installation Instructions included in the Instruction Booklet Packet.
7. Once the desired view is achieved, remove the coax cable from the Video terminal on the camera. Reconnect the original coax cable (if using an analog camera).
8. Slide the housing cover back over the camera and tighten the two captive screws on the back of the housing.

6 Installation of KBE (Outdoor) Cameras



WARNING!

This installation should be made by a qualified service person and conform to all local codes.

1. Prepare and secure the mount to the wall or mounting surface as described in the LTC 9215/00 Installation Manual included in the Instruction Booklet Packet.



NOTICE!

If you plan to route cables out the back of the mount, ensure that the placement of the mount allows space behind the mounting surface to route and connect wires.

2. Feed the cabling from the housing foot through the mount.
3. Attach the housing to the mount using the two (2) 1/4-20 screws and washers provided in the hardware kit. For additional information, see the LTC 9215/00 Mount Installation Manual and UHO-HBGS-10 Series Housing Installation Manual.
4. Follow the steps in the subsections below, depending on the model of camera that you are installing (analog, UTP, Fiber Optic, Network).

6.1 Making Connections for UTP Cameras

Follow the steps below to make connections for cameras with an unshielded twisted pair (UTP) transmitter added to the standard construction ("U" suffix cameras).

1. Make all appropriate power connections.
2. Pass the supplied orange string through the mounting foot of the camera housing and the furnished mount. See *Figure 6.2 on Page 31*. A fitting may be used in the mounting foot if desired.
3. Attach the end of the string to the unshielded twisted pair (UTP) video cable and pull it through the mount and the

unused hole in the mounting foot of the camera housing as shown in *Figure 6.3* on *Page 31*.

4. Connect the UTP video cable to the -VID+ pins on UTP transmitter. Observe polarity; the video connection is polarity-sensitive.



Figure 6.1 Connect the UTP Cable to the Transmitter

| Reference | Description |
|-----------|---|
| 1 | Negative (-) terminal for twisted pair video lead |
| 2 | Positive (+) terminal for twisted pair video lead |

5. Seal the hole in the mounting foot of the camera housing with RTV or an equivalent seal. If a fitting was used in the mounting foot, apply the seal around the UTP cable before tightening the fitting to prevent slippage.
6. Attach the housing to the mount in accordance with the KBE and KBN Series Instruction Manual.

Wiring Do's

1. Use point to point unshielded twisted pair wire, 24 AWG or thicker, stranded or solid, Category 2, 3, 4, or 5.
2. The video signal may coexist in the same wire bundle as other video, telephone, data, control signals, or low voltage power.
3. Measure the wire distance. Use only receivers designed for that distance.
4. Ensure that the pair of wires carrying the video signal is sent as a twisted pair, not a split pair.

Wiring Don'ts

1. DO NOT USE SHIELDED TWISTED PAIR WIRE, as this will severely degrade the distance performance. Short runs may be used with some signal degradation. Multi-pair wire with an overall shield is OK.
2. DO NOT USE UNTWISTED WIRE, as this will reduce the inherent immunity to interference.
3. DO NOT allow your installation to have bridge / taps, loading coils, talk-battery, or MOV type protectors. Bridge taps refer to a twisted pair connected to two twisted pairs (such as an extension phone). Bridge taps cause reflections as the signal propagates, resulting in ghosts in the image.
4. If the phone company is providing the cable runs between buildings, make sure it is dry copper (i.e. it should have none of the following: dial tone, 48 V, loading coils, bridge taps, switching, or long paths to the phone company's central office and back).
5. Due to near-end cross talk, DO NOT send a transmit and receive signal in the same wire bundle. Exceptions: Less than 1000 ft. (304.8 m), or Category 5 cable up to 609.6 m (2000 ft).
6. For safety, never put signals in the same conduit as high voltage wiring.

6.2 Making Connections for Fiber Optic Cameras

Follow the steps below to make connections for cameras with a fiber optic transmitter added to the standard construction ("F" suffix cameras).

1. Make all appropriate power connections.
2. Pass the supplied orange string through the mounting foot of the camera housing and the furnished mount. Note that a fitting is not used in the mounting foot when a terminated fiber optic cable is used.



Figure 6.2 Pass the String through the Mount

| Reference | Description |
|-----------|---------------|
| 1 | Orange string |

3. Attach the end of the string to the fiber optic video cable and pull it through the mount and the unused hole in the mounting foot of the camera housing.

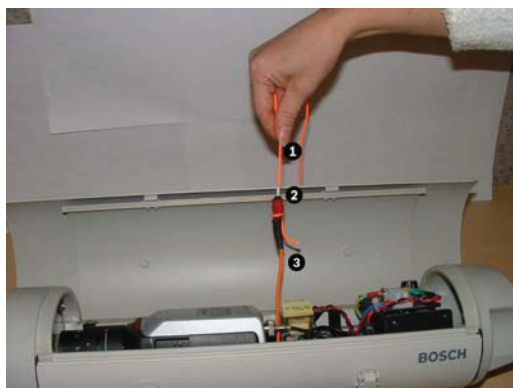


Figure 6.3 Pull the Fiber Optic Cable

| Reference | Description |
|-----------|--|
| 1 | Orange string |
| 2 | ST/RJ-45 connector |
| 3 | Fiber optic video cable/UTP/CAT5 cable |

4. Connect the fiber optic cable to the fiber optic video connector on the fiber optic transmitter.

**CAUTION!**

Ensure that the bend radius of the fiber optic cable is in accordance with the cable manufacturer's specifications when dressing the fiber optic cable.

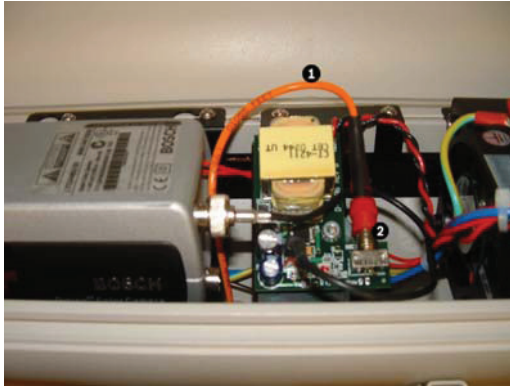


Figure 6.4 Connect the Fiber Optic Cable to the Transmitter

| Reference | Description |
|-----------|--|
| 1 | Fiber optic cable |
| 2 | Video connector on fiber optic transmitter |

5. If an unterminated fiber optic cable is being used, a fitting may be used in the mounting foot of the camera housing. The fiber optic cable should be terminated with an ST connector in accordance with the connector manufacturer's recommendations.
6. Seal the hole in the mounting foot of the camera housing with RTV or an equivalent seal. If a fitting was used in the mounting foot along with an unterminated fiber optic cable, apply the seal around the optical cable before tightening the fitting, to prevent slippage. A split rubber sleeve (not supplied) may be used for this purpose.

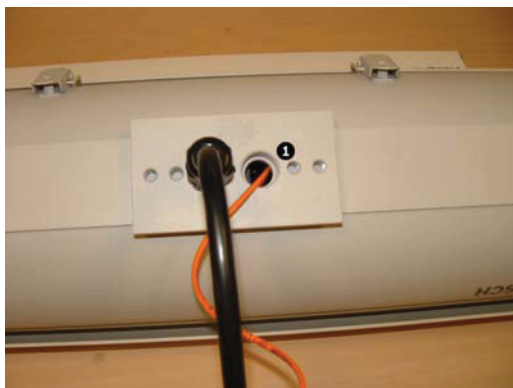


Figure 6.5 Seal the Hole in the Housing Foot

| Reference | Description |
|-----------|---------------|
| 1 | Seal with RTV |

7. Attach the housing to the mount in accordance with the KBE and KBN Series *Instruction Manual*.

6.3 Making Connections for Network Cameras

Follow the steps below to make connections for IP-based cameras ("N" suffix cameras).

1. Make all appropriate power connections.



CAUTION!

Never supply power via the Ethernet connection (PoE) when power is supplied via the power connector.

2. Connect the camera to a 10/100 Base-T network (*Figure 6.6*).
3. Use a shielded UTP Category 5 cable with RJ-45 connectors.

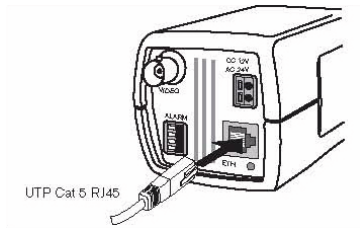


Figure 6.6 Network Connection

4. Supply power either via the 24 VAC power connection (factory-configured), or via the Ethernet cable compliant with the Power-over-Ethernet (IEEE 802.3af) standard.



WARNING!

If connecting to a PoE LAN switch, remove the separate AC power connections from the camera.

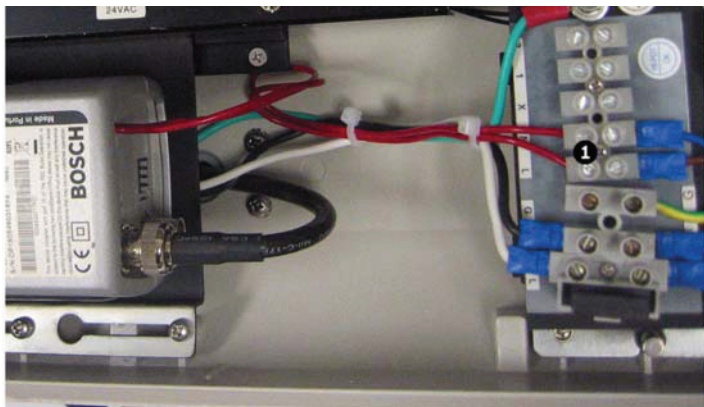


Figure 6.7 Power Wire Connection

| Reference | Description |
|-----------|----------------|
| 1 | Power terminal |

5. Pass the supplied orange string through the mounting foot of the camera housing and the furnished mount. See *Figure 6.2*. A fitting may be used in the mounting foot if desired.
6. Attach the end of the string to the Cat5/Cat6 cable and pull it through the mount and the unused hole in the mounting foot of the camera housing. See *Figure 6.3*.

7. Connect the Cat5 / Cat6 cable to the network connector on the back of the camera. See *Figure 6.4*.
8. If an unterminated Cat5/Cat6 cable is being used, a fitting may be used in the mounting foot of the camera housing. The network cable should be terminated with an RJ-45 connector in accordance with the connector manufacturer's recommendations.
9. Seal the hole in the mounting foot of the camera housing with RTV or an equivalent seal. See *Figure 6.5*. If a fitting was used in the mounting foot, apply the seal around the network cable before tightening the fitting, to prevent slippage. A split rubber sleeve (not supplied) may be used for this purpose.

6.4 Camera Lens Adjustment

The camera and lens come factory-configured and ready for operation. If custom setup is required, see the camera *Installation Instructions* included in the Instruction Booklet Packet.



Figure 6.8 Removing the Bracket

7 Model Numbers

| Model No. | Camera | Lens | Housing | Mount | Res. | Description |
|--|----------------|-----------------|-------------|------------------|------|-----------------------------------|
| COLOR 1/3 in. STANDARD RESOLUTION, 24 VAC, 60 Hz, NTSC | | | | | | |
| KBN-435V28-20 | LTC 0435/20 | LTC 3364/ 50 | LTC 9480/00 | LTC 9215/ 00S | 330 | Indoor, 2.8-10 mm Varifocal lens |
| KBE-435V28-20 | LTC 0435/20 | LTC 3364/ 50 | UHO-HBGS-10 | LTC 9215/00 | 330 | Outdoor, 2.8-10 mm Varifocal lens |
| KBN-435V55-20 | LTC 0435/20 | LTC 3374/ 50 | LTC 9480/00 | LTC 9215/ 00S | 330 | Indoor, 5-50 mm Varifocal lens |
| KBE-435V55-20 | LTC 0435/20 | LTC 3374/ 50 | UHO-HBGS-10 | LTC 9215/00 | 330 | Outdoor, 5-50 mm Varifocal lens |
| COLOR 1/3 in. HIGH RESOLUTION, 24 VAC, 60 Hz, NTSC | | | | | | |
| KBN-455V28-20 | LTC 0455/21 | LTC 3364/ 50 | LTC 9480/00 | LTC 9215/ 00S | 540 | Indoor, 2.8-10 mm Varifocal lens |
| KBE-455V28-20 | LTC 0455/21 | LTC 3364/ 50 | UHO-HBGS-10 | LTC 9215/00 | 540 | Outdoor, 2.8-10 mm Varifocal lens |
| KBN-455V55-20 | LTC 0455/21 | LTC 3374/ 50 | LTC 9480/00 | LTC 9215/ 00S | 540 | Indoor, 5-50 mm Varifocal lens |
| KBE-455V55-20 | LTC 0455/21 | LTC 3374/ 50 | UHO-HBGS-10 | LTC 9215/00 | 540 | Outdoor, 5-50 mm Varifocal lens |
| COLOR 1/3 in., HIGH RESOLUTION, HIGH SENSITIVITY, 24 VAC, 60 Hz, NTSC | | | | | | |
| KBN-485V28-20 | LTC 0485/21 | LTC 3364/ 50 | LTC 9480/00 | LTC 9215/ 00S | 540 | Indoor, 2.8-10 mm Varifocal lens |
| KBE-485V28-20 | LTC 0485/21 | LTC 3364/ 50 | UHO-HBGS-10 | LTC 9215/00 | 540 | Outdoor, 2.8-10 mm Varifocal lens |

| Model No. | Camera | Lens | Housing | Mount | Res. | Description |
|---|----------------|-----------------|-----------------|------------------|------|--|
| KBE-485V28-20F | LTC 0485/21 | LTC 3364/ 50 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 2.8-10 mm Varifocal lens, Fiber Optic |
| KBE-485V28-20U | LTC 0485/21 | LTC 3364/ 50 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 2.8-10 mm Varifocal lens, UTP |
| KBN-485V55-20 | LTC 0485/21 | LTC 3374/ 50 | LTC 9480/00 | LTC 9215/ 00S | 540 | Indoor, 5-50 mm Varifocal lens |
| KBE-485V55-20 | LTC 0485/21 | LTC 3374/ 50 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 5- 50 mm Varifocal lens |
| KBE-485V55-20F | LTC 0485/21 | LTC 3374/ 50 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 5- 50 mm Varifocal lens, Fiber Optic |
| KBE-485V55-20U | LTC 0485/21 | LTC 3374/ 50 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 5- 50 mm Varifocal lens, UTP |
| COLOR 1/2 in. HIGH RESOLUTION, HIGH SENSITIVITY, 24 VAC, 60 Hz, NTSC | | | | | | |
| KBE-610V75-20 | LTC 0610/21 | LTC 3274/ 41 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 7.5-75 mm Varifocal lens |
| KBE-610V75-20F | LTC 0610/21 | LTC 3274/ 41 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 7.5-75 mm Varifocal lens, Fiber Optic |
| KBE-610V75-20U | LTC 0610/21 | LTC 3274/ 41 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 7.5-75 mm Varifocal lens, UTP |
| KBE-610V41-20 | LTC 0610/21 | LTC 3764/ 20 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 4- 12 mm Varifocal, IR Corrected lens |

| Model No. | Camera | Lens | Housing | Mount | Res. | Description |
|---|----------------|-----------------|-----------------|-------------|------|--|
| KBE-610V41-20F | LTC 0610/21 | LTC 3764/ 20 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 4- 12 mm Varifocal, IR Corrected lens, Fiber Optic |
| KBE-610V41-20U | LTC 0610/21 | LTC 3764/ 20 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 4- 12 mm Varifocal, IR Corrected lens, UTP |
| DAY/NIGHT 1/3 in. HIGH RESOLUTION, 24 VAC, 60 Hz, NTSC | | | | | | |
| KBN-498V28-20 | LTC 0498/21 | LTC 3664/ 40 | LTC 9480-00 | LTC 9215/00 | 540 | Indoor, 2.8- 10 mm lens |
| KBE-498V28-20 | LTC 0498/21 | LTC 3664/ 40 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 2.8-10 mm lens |
| KBE-498V28-20F | LTC 0498/21 | LTC 3664/ 40 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 2.8-10 mm lens, Fiber Optic |
| KBE-498V28-20U | LTC 0498/21 | LTC 3664/ 40 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 2.8-10 mm lens, UTP |
| KBN-498V75-20 | LTC 0498/21 | LTC 3674/ 20 | LTC 9480-00 | LTC 9215/00 | 540 | Indoor, 7.5- 50 mm lens |
| KBE-498V75-20 | LTC 0498/21 | LTC 3674/ 20 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 7.5-50 mm lens |
| KBE-498V75-20F | LTC 0498/21 | LTC 3674/ 20 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 7.5-50 mm lens, Fiber Optic |
| KBE-498V75-20U | LTC 0498/21 | LTC 3674/ 20 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 7.5-50 mm lens, UTP |
| DAY/NIGHT 1/2 in. HIGH RESOLUTION, 24 VAC, 60 Hz, NTSC | | | | | | |
| KBE-630V14-20 | LTC 0630/21 | LTC 3774/ 30 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 10- 40 mm lens |
| KBE-630V14-20F | LTC 0630/21 | LTC 3774/ 30 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 10- 40 mm lens, Fiber Optic |
| KBE-630V14-20 | LTC 0630/21 | LTC 3774/ 30 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 10- 40 mm lens, UTP |

| Model No. | Camera | Lens | Housing | Mount | Res. | Description |
|---|-----------------|-----------------|-----------------|------------------|------|---|
| KBE-630V41-20 | LTC 0630/21 | LTC 3764/ 20 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 4- 12 mm lens |
| KBE-630V41-20F | LTC 0630/21 | LTC 3764/ 20 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 4- 12 mm lens, Fiber Optic |
| KBE-630V41-20U | LTC 0630/21 | LTC 3764/ 20 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 4- 12 mm lens, UTP |
| IP, COLOR 1/3 in. HIGH RESOLUTION, 24 VAC, 60 Hz, NTSC | | | | | | |
| KBN-455V28-21N | NBC- 455-21P | LTC 3364/ 50 | LTC 9480-00 | LTC 9215/ 00S | 540 | Indoor, 2.8- 10 mm Varifocal lens |
| KBN-455V28- 21NV | NBC- 455-22P | LTC 3364/ 50 | LTC 9480-00 | LTC 9215/ 00S | 540 | Indoor, 2.8- 10 mm Varifocal lens, IVA |
| KBN-455V55-21N | NBC- 455-21P | LTC 3374/ 50 | LTC 9480-00 | LTC 9215/ 00S | 540 | Indoor, 5-50 mm Varifocal lens |
| KBN-455V55- 21NV | NBC- 455-22P | LTC 3374/ 50 | LTC 9480-00 | LTC 9215/ 00S | 540 | Indoor, 5-50 mm Varifocal lens, IVA |
| KBE-455V28-21N | NBC- 455-21P | LTC 3364/ 50 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 2.8-10 mm Varifocal lens |
| KBE-455V28- 21NV | NBC- 455-22P | LTC 3364/ 50 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 2.8-10 mm Varifocal lens, IVA |
| KBE-455V55-21N | NBC- 455-21P | LTC 3374/ 50 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 5- 50 mm Varifocal lens |
| KBE-455V55- 21NV | NBC- 455-22P | LTC 3374/ 50 | UHO-HBGS- 10 | LTC 9215/00 | 540 | Outdoor, 5- 50 mm Varifocal lens, IVA |
| IP, DAY/NIGHT 1/3 in. HIGH RESOLUTION, 24 VAC, 60 Hz, NTSC | | | | | | |
| KBN-498V28-20N | NBN- 498-21P | LTC 3664/ 40 | LTC 9480-00 | LTC 9215/ 00S | 540 | Indoor, 2.8- 11 mm Varifocal, IR Corrected lens |

| Model No. | Camera | Lens | Housing | Mount | Res. | Description |
|-----------------|-------------|-------------|-------------|--------------|------|--|
| KBN-498V28-20NV | NBN-498-22P | LTC 3664/40 | LTC 9480-00 | LTC 9215/00S | 540 | Indoor, 2.8-11 mm Varifocal, IR Corrected lens, IVA |
| KBN-498V75-20N | NBN-498-21P | LTC 3674/20 | LTC 9480-00 | LTC 9215/00S | 540 | Indoor, 7.5-50 mm Varifocal, IR Corrected lens |
| KBN-498V75-20NV | NBN-498-22P | LTC 3674/20 | LTC 9480-00 | LTC 9215/00S | 540 | Indoor, 7.5-50 mm Varifocal, IR Corrected lens, IVA |
| KBE-498V28-20N | NBN-498-21P | LTC 3664/40 | UHO-HBGS-10 | LTC 9215/00 | 540 | Outdoor, 2.8-11 mm Varifocal, IR Corrected |
| KBE-498V28-20NV | NBN-498-22P | LTC 3664/40 | UHO-HBGS-10 | LTC 9215/00 | 540 | Outdoor, 2.8-11 mm Varifocal, IR Corrected, IVA |
| KBE-498V75-20N | NBN-498-21P | LTC 3674/20 | UHO-HBGS-10 | LTC 9215/00 | 540 | Outdoor, 7.5-50 mm Varifocal, IR Corrected lens |
| KBE-498V75-20NV | NBN-498-22P | LTC 3674/20 | UHO-HBGS-10 | LTC 9215/00 | 540 | Outdoor, 7.5-50 mm Varifocal, IR Corrected lens, IVA |

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