



# AutoDome 700 Series IP PTZ Camera

AutoDome 700 Series



**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!**

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!**

Indicates a potentially hazardous situation. If not avoided, this could result in serious bodily injury or death.

**CAUTION!**

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!**

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)*.

**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, CLASS A)*

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 (commercial applications)**

*(modèles utilisés aux États-Unis et au Canada uniquement, CLASSE A)*

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 UL'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.

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

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#### **Trademarks**

All hardware and software product names used in this document are likely to be registered trademarks and must be treated accordingly.



#### **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.

## 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](mailto:cctv.repair@us.bosch.com)

#### Customer Service

Telephone: 888-289-0096

Fax: 585-223-9180

Email: [security.sales@us.bosch.com](mailto: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](mailto: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](mailto:security.repair@us.bosch.com)

#### Canada

Telephone: 514-738-2434

Fax: 514-738-8480

#### Europe, Middle East & Asia Pacific Region

Please contact your local distributor or Bosch sales office. Use this link:

<http://www.boschsecurity.com/startpage/html/europe.htm>

#### Europe, Middle East & Asia Pacific Region

Please contact your local distributor or Bosch sales office. Use this link:

[http://www.boschsecurity.com/startpage/html/asia\\_pacific.htm](http://www.boschsecurity.com/startpage/html/asia_pacific.htm)

#### More Information

For more information please contact the nearest Bosch Security Systems location or visit [www.boschsecurity.com](http://www.boschsecurity.com)

## 2 Installing the Pendant Arm Wall, Corner, and Mast (Pole) Mounts

### 2.1 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. Refer to *Section 1.4 Customer Support and Service, page 11*, for contact information.

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.

#### 2.1.1 Parts List

The following table lists the optional parts you may need for attaching a Pendant to the Arm Wall, Corner, or Mast mount packages.

Mounting Options	Part Numbers
Pendant Arm (Only)	VG4-S-ARM
Pendant Arm with Mounting Plate (24 V VG5 models only, no power supply box)	VG4-A-ARMPATE
Power Supply Box with 120 VAC transformer or 230 VAC transformer	VG4-A-PSU1 VG4-A-PSU2
Pendant Arm with one of the following Power Supply Boxes:	
– Power Box without transformer (24 VAC)	VG4-A-PA0
– Power Box with 120 VAC transformer or with 230 VAC transformer	VG4-A-PA1 VG4-A-PA2
Trim Skirt for Power Supply Box (optional)	VG4-A-TSKIRT
Fiber Optic Ethernet Media Converter kit	VG4-SFPCKT
Corner Mount Kit	
– Corner Mount Plate	VG4-A-9542
Mast (Pole) Mount Kit	
– Mast Mount Plate	VG4-A-9541



## 2.1.2

### Description

Chapter 2 details how to install an AutoDome Pendant Arm to a wall, a corner, or to a mast (pole). Any variations to the installation procedures are noted.

Refer to *Section 3 Installing the Roof Parapet and Pipe Mounts* for a Roof (Parapet) or Pipe mount installation.

## 2.1.3

### Tools Required

- 5 mm Allen wrench (supplied)
- Small, straight-blade screwdriver - 2.5 mm (0.1 in.)
- No. 2 Phillips screwdriver
- Socket wrench and 9/16-in. socket
- Banding tool (Bosch P/N TC9311PM3T) - if installing a mast (pole) mount
- 3/4 in. (20-mm) NPS right angle conduit connector - if installing a mast (pole) mount with a VG4-ARMPLATE

## 2.2

### Pre-installation Checklist

1. Determine the location and distance for the Power Supply Box based on its voltage and current consumption.  
You may choose to route the main power supply through an intermediate VG4 power supply box (VG4-PSU1 or VG4-PSU2) before connecting the power to the pendant arm power supply box (VG4-PA0). Refer to *Section 5 Cable and Wire Standards, page 57*, for wiring information and distances.
2. Use only UL listed liquid tight strain reliefs for conduits to the Power Supply Box to ensure that water cannot enter the box. You must use water tight conduits and fittings to meet NEMA 4 standards.



#### WARNING!

Power and I/O cabling must be routed separately inside different permanently earthed metal conduits.

3. Route all rough wiring including: power, control, video coax, alarms I/O, relay I/O, and fiber optic cabling. Refer to *Section 5 Cable and Wire Standards, page 57*, for video and control protocol methods.



#### WARNING!

Install external interconnecting cables in accordance to NEC, ANSI/NFPA70 (for US application) and Canadian Electrical Code, Part I, CSA C22.1 (for CAN application) and in accordance to local country codes for all other countries.

Branch circuit protection incorporating a 20 A, 2-pole Listed Circuit Breaker or Branch Rated Fuses are required as part of the building installation. A readily accessible 2-pole disconnect device with a contact separation of at least 3 mm must be incorporated.

4. Choose the appropriate AutoDome model (indoor or outdoor) for the environment in which it will be used.
5. Purchase the appropriate mounting hardware to use, depending on the location of the AutoDome, either wall mount, corner mount, or mast (pole) mount.  
If your application contains a Power Supply Box, refer to *Section 2.3 Mount Power Supply Box, page 14*.  
If you are using the Mounting Plate with a 24 V VG5 AutoDome, refer to *Section 2.8 Installing the VG4-A-ARMPLATE, page 23*.

**CAUTION!**

Select a rigid mounting location to prevent excessive vibration to the AutoDome camera.

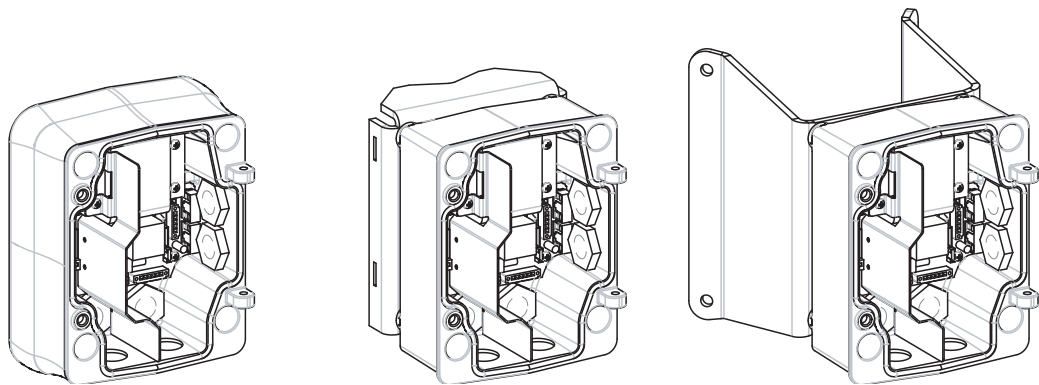
## 2.3

### Mount Power Supply Box

Before mounting the Power Supply Box decide if you should wire the box through the holes in the bottom or back of the box. If wiring the box through the back, move the two (2) seal plugs to the bottom through the holes before mounting.

**NOTICE!**

Use 3/4-inch (20-mm) NPS fittings for the holes on the bottom and back of the box. Use 1/2-inch (15-mm) NPS fittings for the side holes.



**Figure 2.1** Power Supply Wall, Mast (Pole), and Corner Mounts

1. Use the wall mount template supplied in the packaging box to locate the four (4) mounting holes for the Power Supply Box.
2. Drill four (4) holes for the mounting anchors. If installing outdoors, apply a weatherproof sealant around each hole at the mounting surface.

**WARNING!**

A stud diameter of 6.4 mm (1/4 inch) to 8 mm (5/16 inch) able to withstand a 120 kg (265 lb) pull-out force is recommended. The mounting material must be able to withstand this pull out force. For example, 19-mm (3/4-inch) minimum for plywood.

3. Place the Power Supply Box into the optional Trim Skirt.
4. Secure the Power Supply Box to the mounting surface.
  - For a Wall installation: Use four (4) corrosion-resistant, stainless steel studs (not supplied). Then proceed to Step 5 below.
  - For a Corner installation: Secure the Corner Plate to the wall corner using four (4) studs (not included). Then proceed to Step 5 below.
  - For a Mast or a pole installation: The metal straps included with the Mast mount accommodate a pole with a diameter of 100–380 mm (4–15 in.). You must use a banding tool (sold separately) for a mast or pole installation. Follow the instructions provided with the banding tool to securely mount the Mast Plate to the pole.  
Contact your Bosch Sales Representative to order Banding Tool P/N TC9311PM3T.
5. Secure the Power Supply Box to the Corner Plate or Mast Plate using the four (4) 3/8 x 1-3/4-inch bolts and split lock washers (supplied).
6. Attach 3/4-inch (20-mm) NPS watertight pipe fittings (not supplied) to the bottom or back holes of the Power Supply Box through which you will run the power, video, and control data wires.

## 2.4 Route Wires and Attach Connectors

Power wires must be routed to the left (front) side of the Power Supply Box through a separate conduit. All video, control, and alarm wires must be routed through a second conduit to the right side of the box.

If you plan to route the power through an intermediate power supply box, refer to *Section 2.5 Route Power through Intermediate Power Supply Box, page 18*.

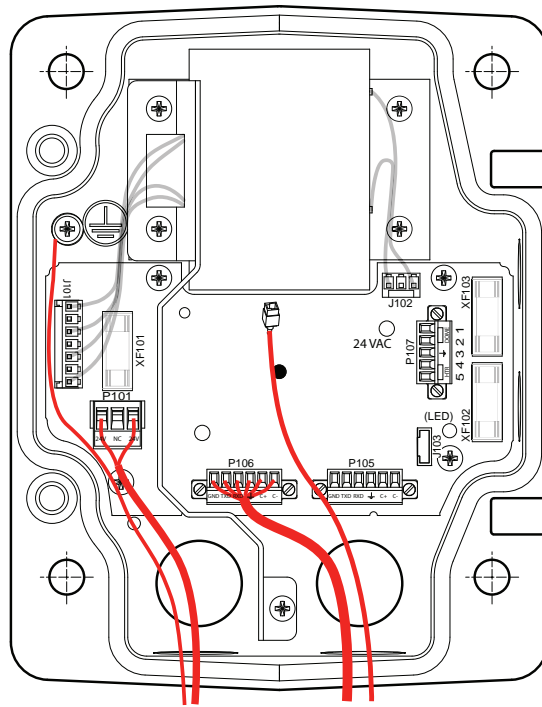


### WARNING!

External interconnecting cables are to be installed in accordance to NEC, ANSI/NFPA70 (for US application) and Canadian Electrical Code, Part I, CSA C22.1 (for CAN application) and in accordance to local country codes for all other countries.

Branch circuit protection incorporating a 20 A, 2-pole Listed Circuit Breaker or Branch Rated Fuses are required as part of the building installation. A readily accessible 2-pole disconnect device with a contact separation of at least 3 mm must be incorporated.

### 2.4.1 Make the Connections



**Figure 2.2** Pendant Arm Power Supply Box

1. Route all video, control, and alarm wires through the conduit fitting on the right side of the power box. Refer to *Section 5 Cable and Wire Standards, page 57*, for wire specifications and distances.
2. Route the high voltage 115/230 VAC lines through the conduit fitting on the left side of the box. The Power Supply Box with a transformer comes with a barrier that separates the high voltage side on the left, from the low voltage 24 VAC side on the right.
3. Cut and trim all wires with sufficient slack to reach their connector terminals in the box, but not so long as to be pinched by or to obstruct closing the Pendant Arm. Refer to *Figure 2.2, Page 15*, above, for the connector locations.
4. Attach the supplied 3-pin Power Plug to the incoming power wires. Refer to connector P101 in *Table 2.1, Page 18*, for wire connections.

5. Attach the supplied 6-pin Control Data I/O Plug to the incoming control wires. Refer to connector P106 in *Table 2.1, Page 18*, for wire connections. This step is not required with Fiber Optic models, since control passes through the fiber optic cable.
6. Attach an RJ45 plug to the incoming Ethernet cable. Refer to *Section 5 Cable and Wire Standards, page 57*, for the different methods of transmitting video and control protocols, and wire specifications.
7. If you are connecting alarm inputs and outputs, attach the supplied 4- and 6-pin Alarm Connectors with flying lead wires to the appropriate incoming alarm wires.

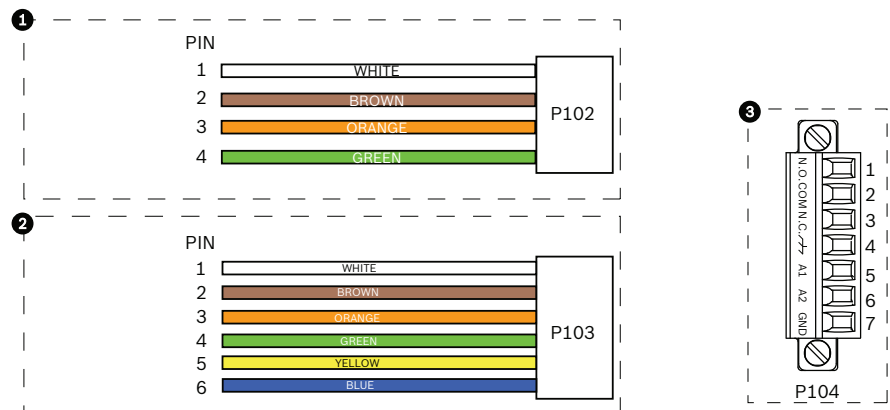


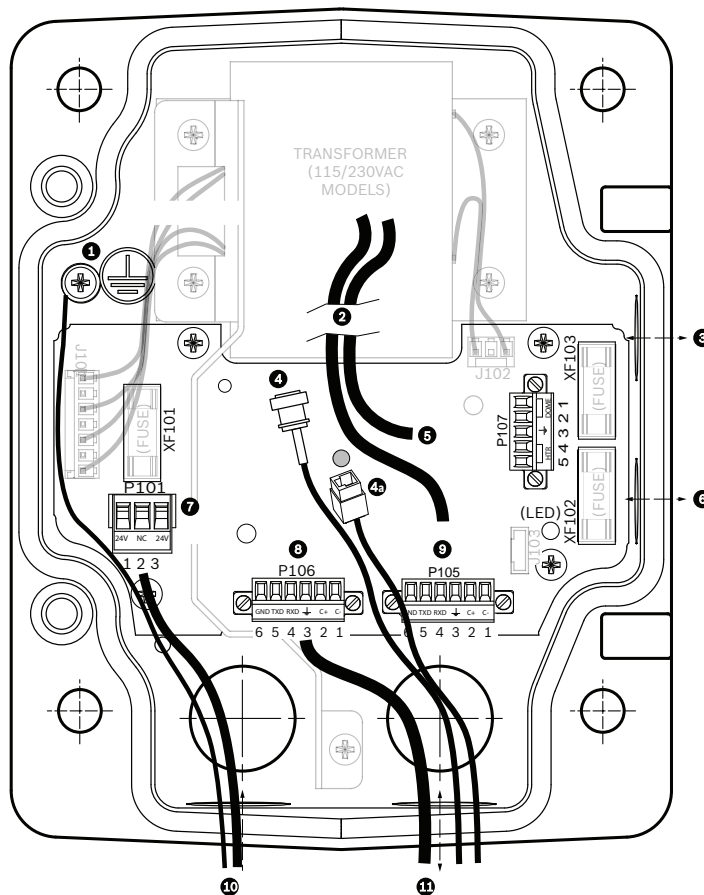
Figure 2.3 Alarm and relay connectors

1	4-pin Alarm Connector (P102)	2	6-pin Alarm In Connector (P103)	3	7-pin Relay Connector (P104)
Pin	Description	Pin	Description	Pin	Description
1	Alarm Out 1	1	Alarm In 3	1	Normally Open
2	Alarm Out 2	2	Alarm In 4	2	COM
3	Alarm Out 3*	3	Alarm In 5	3	Normally Closed
4	Alarm Ground	4	Alarm In 6	4	Earth Ground
		5	Alarm In 7	5	Analog Alarm 1
		6	Alarm Ground	6	Analog Alarm 2
				7	Ground

8. If you are connecting supervised alarms and relays, attach the supplied 7-pin Relay Connector to the appropriate incoming wires. Refer to *Figure 2.3, Page 16*, above, for the wire connections. Refer to *Section 6 Alarms and Relay Connections, page 60* for more details about wiring alarms and relays.

## 2.4.2 Power Supply Box Connections

The following figure is a detailed illustration of the Pendant Arm Power Supply Box, which includes the fuse specifications.



**Figure 2.4** Pendant arm power supply box

1	Ground Screw	6	In/Out; 1/2 in. (15 mm) NPS Fitting
2	From Harness	7	P101 Connector; Power In
3	In/Out; 1/2 in. (15 mm) NPS Fitting	8	P106 Connector; Control In/Out
4	Video	9	P105 Connector; Control to Dome
4a	UTP/ Ethernet (Ethernet for VG5 700 Series only)	10	Power In; 3/4 in. (20 mm) NPS Fitting
5	24 VAC to Dome	11	Control Data and Video In/Out; 3/4 in. (20 mm) NPS Fitting



### WARNING!

Fuse replacement by qualified service personnel only. Replace with same type fuse.

Fuse Specifications			
Volts	XF101 Mains	XF102 Camera	XF103 Heater
24 V	T 5.0 A	T 2.0 A	T 3.15 A
115 V	T 1.6 A	T 2.0 A	T 3.15 A
230 V	T 0.8A	T 2.0 A	T 3.15 A

The following table lists the Power Supply Box connectors:

No.	Connector	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
	Ground	Grounding Screw					
P101	115/230 VAC or 24 VAC Power In	Line	NC	Neutral			
P105 <sup>1</sup>	Control to Dome (Arm Harness)	C- (Biphase)	C+ (Biphase)	Earth Ground	RXD (+) (RS-232/485)	TXD (-) (RS-232/485)	Signal Ground
P106 <sup>1</sup>	Control In/Out	C- (Biphase)	C+ (Biphase)	Earth Ground	RXD (+) (RS-232/485)	TXD (-) (RS-232/485)	Signal Ground
P107	24 VAC Power (Arm Harness)	Dome 24 VAC	Dome 24 VAC	Earth Ground	Heater (24 VAC)	Heater (24 VAC)	

1. Applicable to VG5 600 and 100 Series AutoDomes only.

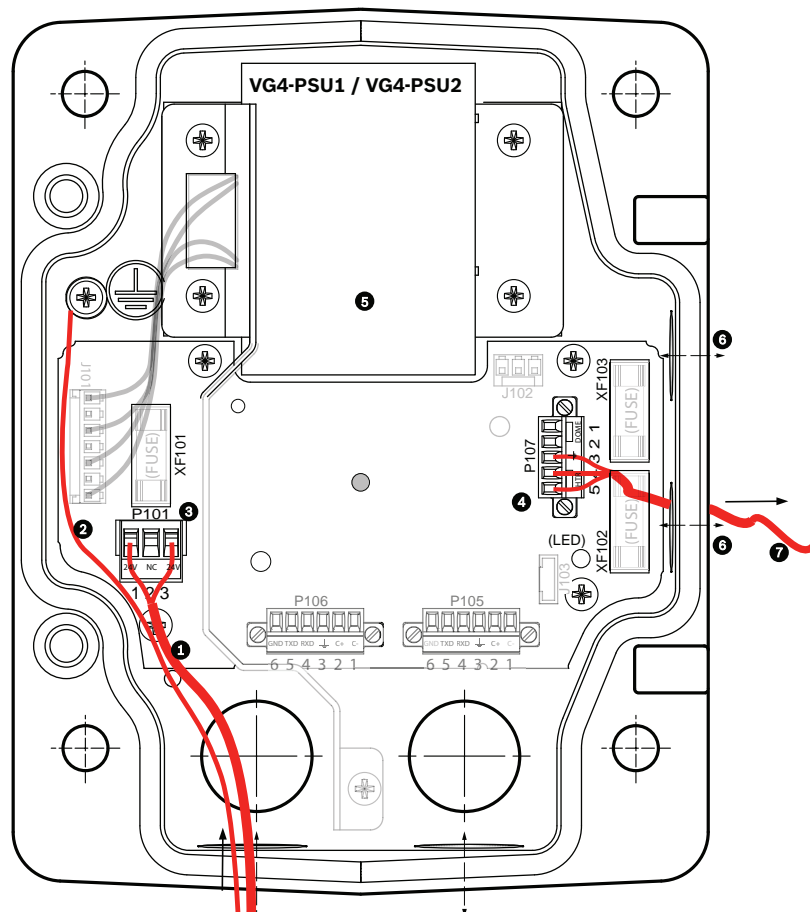
**Table 2.1** Power Supply Box Connections

## 2.5

### Route Power through Intermediate Power Supply Box

You may route the main power supply through a VG4-PSU1 (120 V transformer) or through a VG4-PSU2 (230 V transformer) Power Supply Box before connecting the power to a VG4-PA0 (24 V, no transformer) Power Supply Box. The main issue with this configuration is that the 5-pin power out connector from the VG4-PSU1 or VG4-PSU2 does not match to the 3-pin power input of the VG4-PA0 power supply. The illustration below depicts:

- A VG4-PSU1/VG4-PSU2 Power Supply Box.
- The main power supply connected to the P101 connector and to the grounding screw.
- The 24 VAC power out wire connected to the P107 heater power connectors.



**Figure 2.5** VG4-PSU1/VG4-PSU2 Power Supply Box

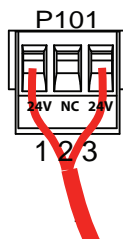
1	120/230 VAC Power In	5	Transformer
2	Ground Wire	6	In/Out Conduit (1/2 in. [15 mm] NPS Fitting)
3	P101 Connector	7	24 VAC Power Out to VG4-PA0
4	P107 Connector		

To properly wire the incoming high voltage and the outgoing low voltage lines, refer to this table:

No.	Connector	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
	Ground	Grounding Screw					
P101	115/230 VAC Power In	Line	NC	Neutral			
P107	24 VAC Power Out			Earth Ground	Heater (24 VAC)	Heater (24 VAC)	

**Table 2.2** VG4-PSU1/VG4-PSU2 Power Supply Box Connections

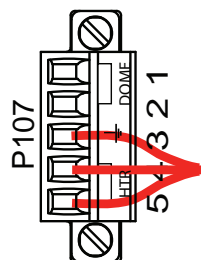
1. Route the high voltage 115/230 VAC lines through the conduit fitting on the left side of the box. The Power Supply Box with a transformer comes with a barrier that separates the high voltage side on the left, from the low voltage 24 VAC side on the right.
2. Cut and trim the high voltage 115/230 VAC power and ground wires with sufficient slack to reach their connector terminal in the box, but not so long as to be pinched by or to obstruct closing the cover door.
3. Attach the supplied 3-pin power plug to the incoming high voltage power wires in the box. Refer to connector P101 in *Table 2.2, Page 19* and to the image below for an illustration of these connections:



**Figure 2.6** Incoming 115/230 VAC power supply

4. Attach the ground wire to the grounding screw.
5. Connect three wires to the P107 Power Out connector to route the 24 VAC power supply to the VG4-PA0 Power Supply Box.
  - a. Connect the first wire to pin 5 (HN: Heater Neutral) connector.
  - b. Connect the second wire to pin 4 (HL: Heater Line) connector.
  - c. Connect the third wire to pin 3 (Earth Ground) connector.

Refer to connector P107 in *Table 2.2* and to the image below for an illustration of these connections:



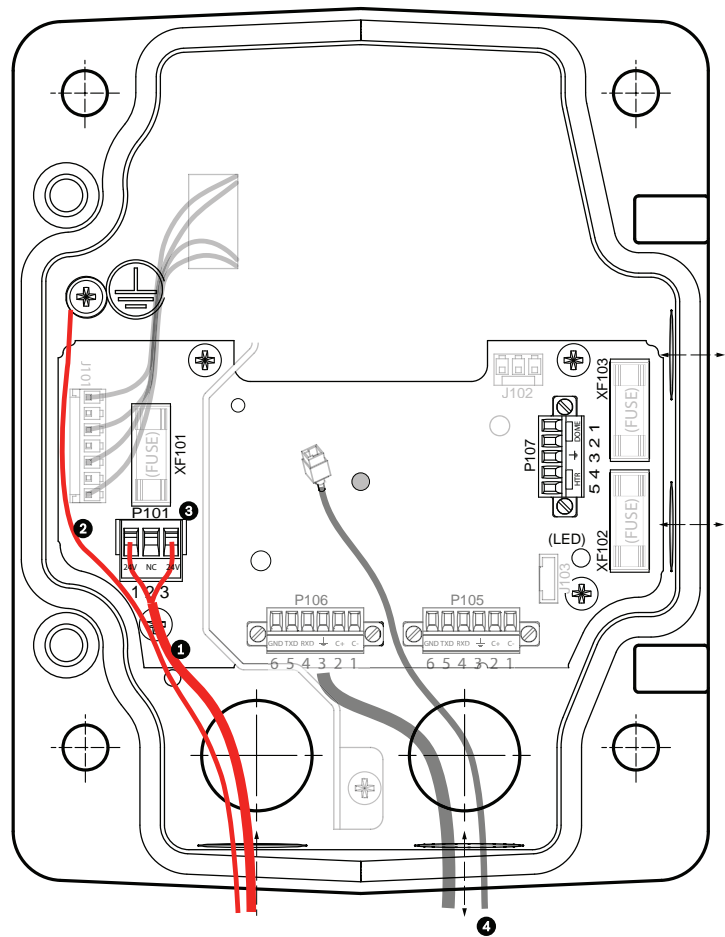
**Figure 2.7** Outgoing 24 VAC power supply



**WARNING!**

Ensure that you connect the outgoing power supply wires to the P107 heater connectors (HN and HL). The heater power (XF103) fuse can handle a higher amperage (3.15 A) than the camera power (XF102) fuse (2.0 A).

- 6. Route the 24 VAC outgoing power supply wires into the VG4-PA0 power supply box through the conduit fitting on the left side of the box.
- 7. Cut and trim the 24 VAC power and ground wires with sufficient slack to reach their connector terminal in the box, but not so long as to be pinched by or to obstruct closing the cover door.
- 8. Attach the supplied 3-pin power plug to the incoming 24 VAC power wires in the box, as illustrated below.



**Figure 2.8** VG4-PA0 Power Supply Box

1	Incoming 24 VAC Power Supply Wires (from VG4-PSU1/VG4-PSU2 power supply box)
2	Ground Wire
3	P101 Connector
4	Control Data and Video In/Out Wires

- 9. Follow the instructions in *Section 2.6 Attach Pendant Arm to Power Supply Box, page 21*, to continue the installation.

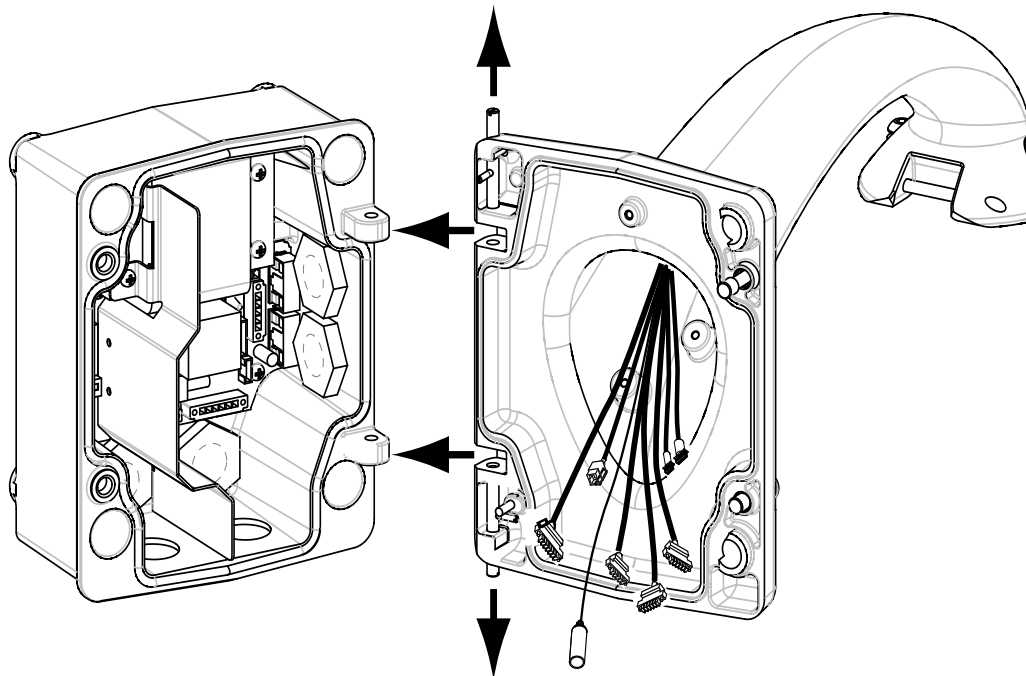


## 2.6

### Attach Pendant Arm to Power Supply Box

The bottom hinge pin of the Pendant Arm is provided with a Hinge Pin Stop to hold the hinge open while attaching the arm to the Power Supply Box.

1. Compress the bottom hinge pin by pushing the pin lever downward and rotating it behind the Hinge Pin Stop.



**Figure 2.9** Pendant Arm to Power Box Hinge Alignment

2. Open the top hinge by pushing its pin lever up and holding it.



#### NOTICE!

Both Hinge Pins must be fully compressed to open (unlock) the hinges of the Pendant Arm and before proceeding to the next step.

3. While continuing to hold the top hinge pin open and align the top and bottom hinges of the Pendant Arm to their mating points on the Power Supply Box. See *Figure 2.9*, above, for an illustration.
4. Once you have the hinges aligned, release the top hinge pin to engage its mating hinge on the power box. Then release the bottom hinge pin from the Hinge Pin Stop to lock the Pendant Arm to the Power Supply Box.



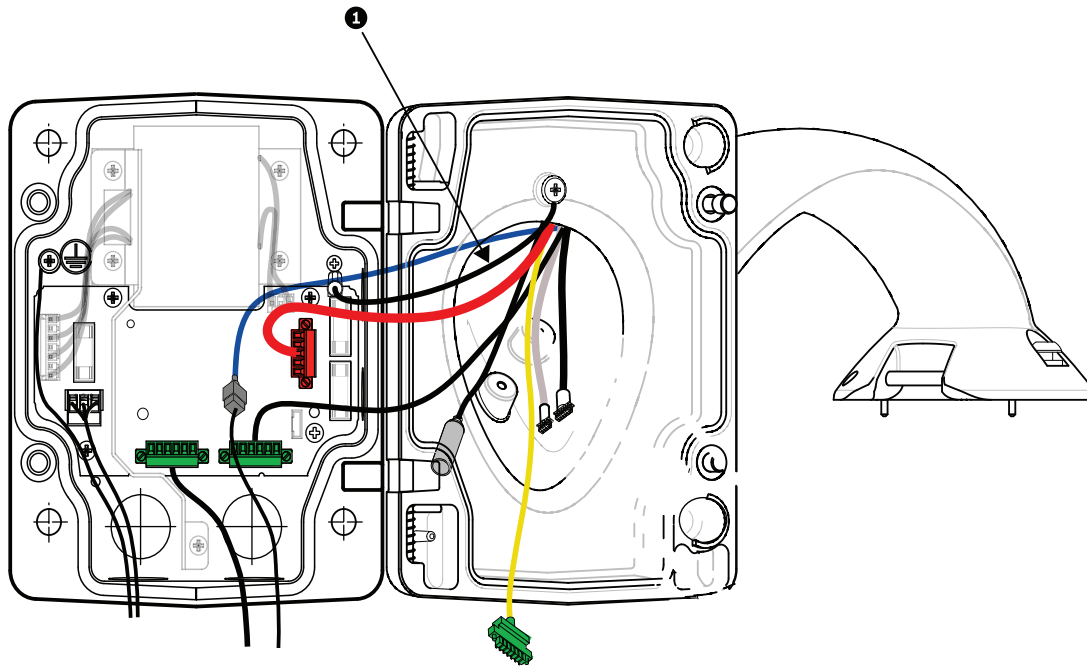
#### WARNING!

Serious injury or death can occur if the hinge pins of the Pendant Arm are not fully engaged (locked) to the Power Supply Box. Exercise caution before releasing the Pendant Arm.

## 2.7

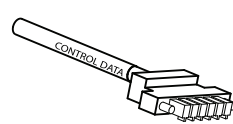
**Make Connections in Power Supply Box**

Refer to *Table 2.2, Page 19* to locate the various connectors in the power supply box and make the following connections detailed below.

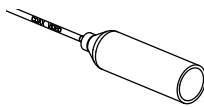


**Figure 2.10** Pendant Arm connections to Power Supply Box

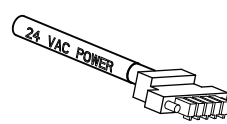
1. Attach the earth ground wire (item 1 in the illustration above) to the grounding screw on the left side of the power box.
2. Connect the 6-pin Control In/Out Plug, installed previously, to its mating connector P106 in the power box. If this product is a Fiber Optic model this step is not required, since all control data is sent through the fiber cable.
3. Connect the 6-pin Control to Dome Plug from the Pendant Connector Harness to its mating connector P105 in the power box. (For Fiber Optic model connect to the P106 connector.)



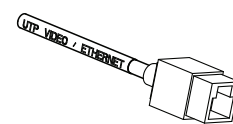
**Control Data**



**Coax Video**

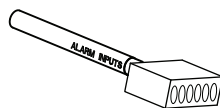


**24 VAC Power**



**UTP Video/Ethernet**

(Ethernet for VG5 700 Series only)



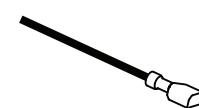
**Alarm Inputs**



**Alarm Outputs**



**Relays**



**Grounding Strap**



**WARNING!**

Do not connect the RJ45 connector unless using UTP video or Ethernet.

4. Connect the 5-pin, 24 VAC to Dome Plug from the Pendant Connector Harness to its corresponding color mating connector P107 on the right side of the box.
5. To connect alarm inputs and relay outputs, connect the 4-pin Alarms Out, the 6-pin Alarms In and the 7-pin Relay connectors from the Pendant Connector Harness to their mating connectors, installed previously, to the incoming alarm wires.
6. Connect the 3-pin Power In Plug, installed previously, to its mating connector P101 on the left side of the box.
7. Connect the incoming RJ45 video connector, installed previously, to its mating connector from the Pendant Connector Harness. Refer to *Section 5 Cable and Wire Standards*, page 57 for connections and specifications.
8. Attach the grounding strap of the Pendant Arm to the Power Supply Box. Refer to .
9. After making the harness connections to the Power Supply Box, rotate the Pendant Arm to close and seal the Power Supply Box and tighten the two (2) captive screws to 10-12 N-m (90-105 in.-lbs).
10. Refer to *Section 2.9 Attach Pendant to Arm and Tighten*, page 28, to continue the VG5 AutoDome Installation procedure.

**NOTICE!**

After all wiring is complete, close the cover door and tighten the two (2) captive screws on the cover door to 10-12 N-m (90-105 in.-lbs) to ensure the Power Supply Box is watertight.

## 2.8

### Installing the VG4-A-ARMPLATE

This section provides instructions to install a wall, corner, or mast mount with the VG4-A-ARMPLATE Mounting Plate instead of a Power Supply Box.

**CAUTION!**

You must route the main power supply through a 120/230 VAC transformer (VG4-PSU1 or VG4-PSU2 power supply box) before connecting the power to a 24 VAC AutoDome.

**WARNING!**

A stud diameter of 6.4 mm (1/4 inch) to 8 mm (5/16 inch) able to withstand a 120 kg (265 lb) pull-out force is recommended. The mounting material must be able to withstand this pull out force. For example, 19-mm (3/4-inch) minimum for plywood.

**1. For a Corner installation:**

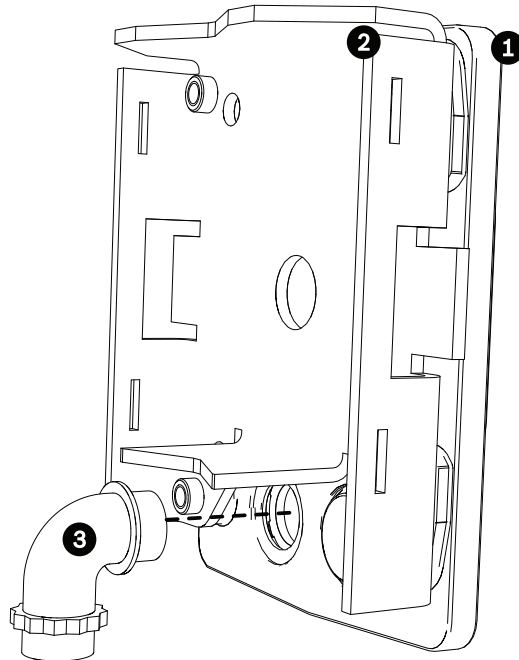
- a. Secure the Corner Plate to the wall corner using four (4) studs (not included).
- b. Secure the Mounting Plate to the Corner Plate using the four (4) 3/8 x 1-3/4-inch bolts and split lock washers (supplied).

**2. For a Mast or pole installation:**

The metal straps included with the Mast mount accommodate a pole with a diameter of 100–380 mm (4–15 in.). You must use a banding tool (sold separately) for a mast or pole installation. In addition, you must obtain a 3/4 in. (20-mm) right angle conduit connector through which you route the wires that connect to the pendent arm.

- a. Follow the instructions provided with the banding tool to securely mount the Mast Plate to the pole. Contact your Bosch Sales Representative to order Banding Tool P/N TC9311PM3T.
- b. Secure the Mounting Plate to the Mast Plate using the four (4) 3/8 x 1-3/4-inch bolts and split lock washers (supplied).
- c. Remove one of the rubber gaskets from the Mounting Plate.

- d. Once the Mounting Plate (item 1, below) is attached to the Mast Plate (item 2), connect the right angle conduit (item 3) to the Mounting Plate through the empty conduit hole as shown below:



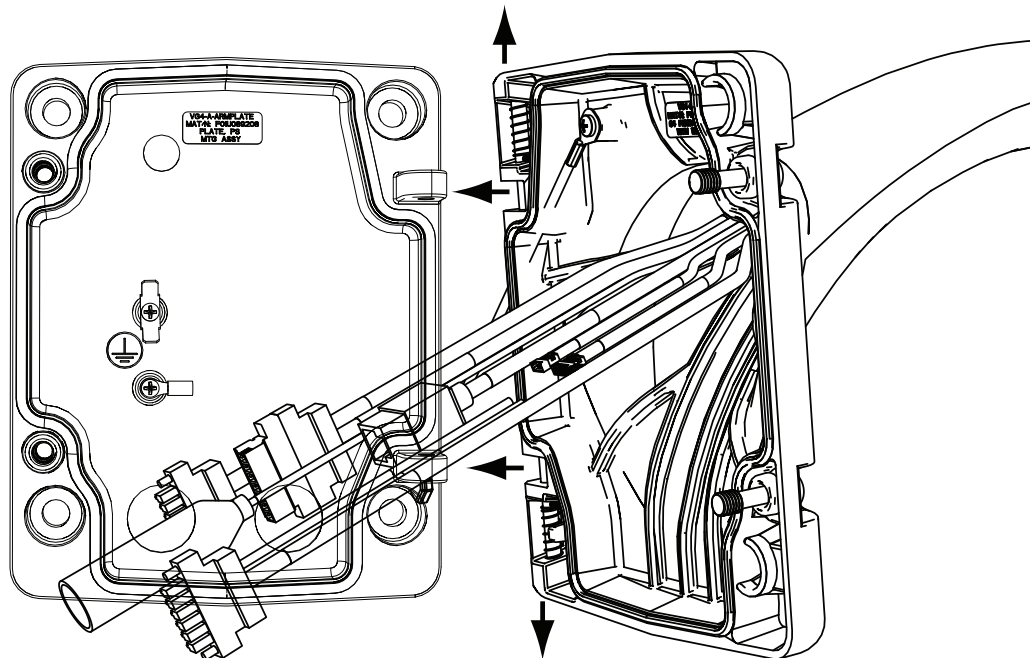
3. Ensure that the mounting plate is secure.

### 2.8.1

#### Attach the Pendant Arm to the Mounting Plate

The bottom hinge pin of the Pendant Arm is provided with a Hinge Pin Stop to hold the hinge open while attaching the arm to the Mounting Plate.

1. Compress the bottom hinge pin by pushing the pin lever downward and rotating it behind the Hinge Pin Stop.



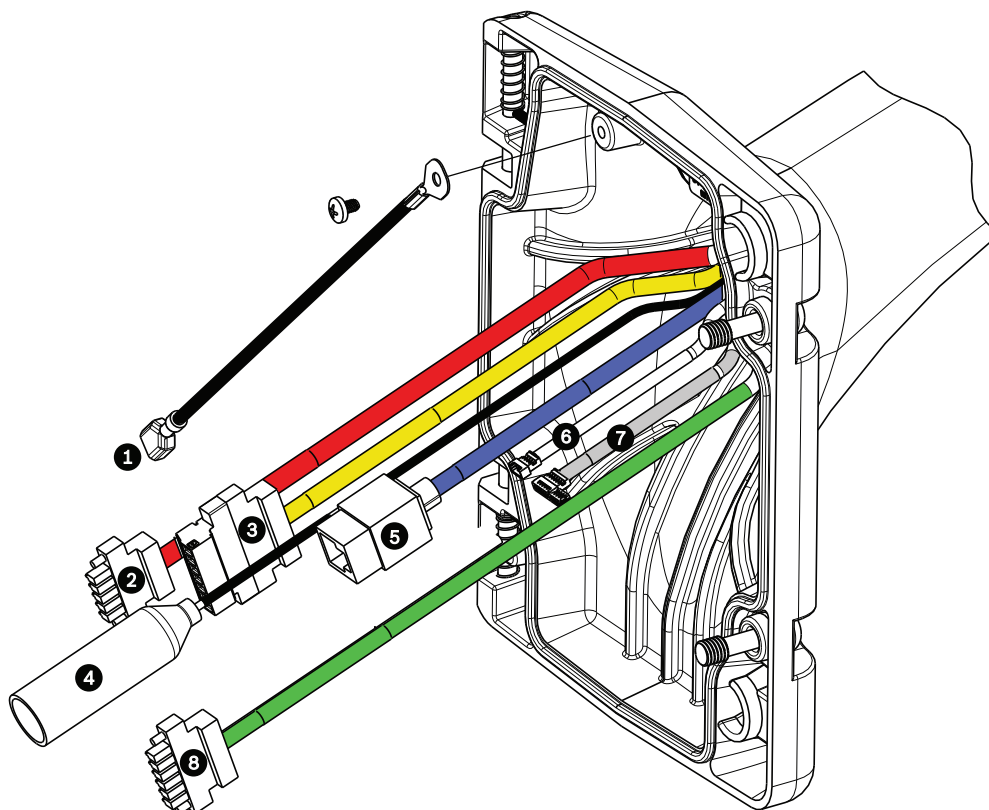
**Figure 2.11** Connect Pendant Arm to Mounting Plate

2. Open the top hinge by pushing its pin lever up and holding it.  
**Note:** Both Hinge Pins must be fully compressed to open (unlock) the hinges of the Pendant Arm and before proceeding to the next step.
3. While continuing to hold the top hinge pin open, align the top and bottom hinges of the Pendant Arm to their mating points on the Mounting Plate. Refer to *Figure 2.11*, above, for an illustration.
4. Once you have the hinges aligned, release the top hinge pin to engage its mating hinge on the Mounting Plate. Then release the bottom hinge pin from the Hinge Pin Stop to lock the Pendant Arm to the Mounting Plate.

## 2.8.2

### Route and Connect Wires to a Power Supply Box

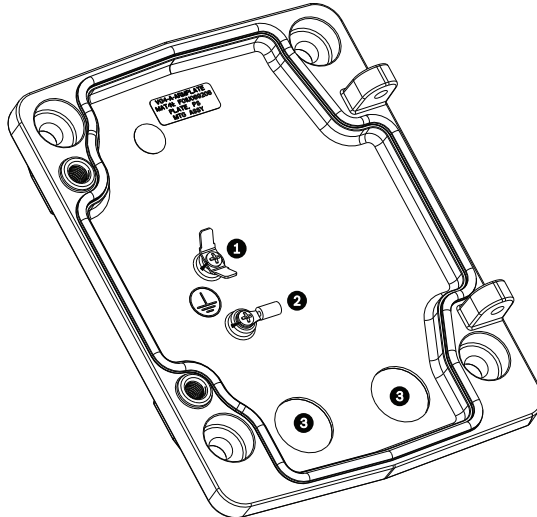
The illustration below depicts the power and control cables connected to the Pendant Arm:



**Figure 2.12** Pendant Arm Cables

	Cable		Cable
1	Grounding Strap (black)	5	UTP Video/Ethernet (blue) (Ethernet for VG5 700 Series only)
2	24 VAC Power (red)	6	Alarm Outputs (white)
3	Relay Contacts (yellow)	7	Alarm Inputs (gray)
4	Coax Video (black)	8	Serial Communications (green)

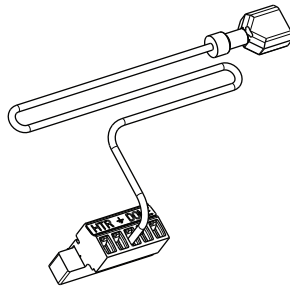
1. Route all incoming wires through one of the conduits at the bottom of the Mounting Plate. For a mast mount, route all wires through the right-angle conduit.
2. Attach the water-tight plug to the other conduit.
3. Attach the grounding spade terminal (item 1, below) to one of the spade terminals inside the Mounting Plate.



**Figure 2.13** Mounting Plate - Inside Detail

Ref.	Description
1	Grounding lug with two spade terminals
2	Earth ground lug with crimp ring terminal
3	Wire input conduit holes

4. Connect the incoming 24 VAC power wires to the 5-pin, 24 VAC Power In mating connector (supplied with the Mounting Plate kit) for the Dome and for the Heater.



5. Attach the grounding spade from the 5-pin mating connector (item 1, *Figure 2.13*) to the other spade terminal inside the mounting plate.
6. Attach the 5-pin Power In mating connector to the 24 VAC Power cable (cable 2) connected to the pendant.
7. Remove the mating connector from the Relay Contacts cable (cable 3).
8. Connect the incoming relay contact wires to the mating connector. Then, reattach the mating connector to the Relay Contacts cable.

9. Connect the incoming RJ45 video connector, installed previously, to the UTP Video/Ethernet cable (cable 5). Refer to *Section 5 Cable and Wire Standards, page 57*, for detailed wire and connection information.
10. Connect the outgoing alarm wires to the flying leads coming from the 4-pin Alarm Outputs cable (cable 6).
11. Connect the incoming alarms wires to the flying leads coming from the 6-pin Alarm Inputs cable (cable 7).
12. Attach the 6-pin serial communication mating connector to the Serial Communication (cable 8) cable.
13. Connect the Earth ground wire, if available, to the crimp ring terminal inside the Mounting Plate. Refer to *Figure 2.13* above.  
**Note:** The Earth ground is not provided with the VG4-A-ARMPLATE kit; it is a ground connection made at the installed location.
14. After making the harness connections to the Mounting Plate, rotate the Pendant Arm to close and tighten the two (2) captive screws to 10-12 N-m (90-105 in.-lbs).



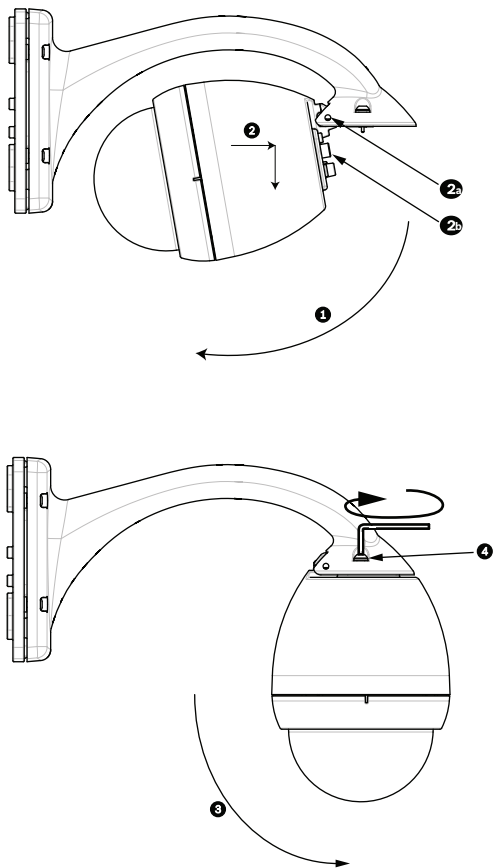
**NOTICE!** After all wiring is complete, close the cover door and tighten the two (2) captive screws on the cover door to 10-12 N-m (90-105 in.-lbs).

## 2.9 Attach Pendant to Arm and Tighten



**NOTICE!**  
Before attaching the AutoDome Pendant, visually inspect the dome and arm connectors for any blocked pin holes or bent pins.

1. Tilt the bottom of the dome toward the pendant arm base and place the mounting hook, located on top of the dome housing, over the recessed hinge pin of the arm.



**Figure 2.14** Attach Pendant to Arm

1	Tilt up.
2	Hook and drop.
2a	Recessed Hinge Pin
2b	Dome Connector
3	Rotate down to engage dome connector.
4	Tighten the two (2) mounting screws to a minimum torque of 10-12 N-m (90-105 in.-lbs).

2. Drop the dome housing down slightly to engage the dome housing hook on the Pendant Arm hinge pin, allowing the dome to rotate around the pin.



3. Rotate the dome housing down to a vertical position and gently push upward to engage the connector on top of the dome housing.

**CAUTION!**

If you feel any resistance when rotating the dome housing or when engaging the connector, stop immediately and start over.

4. Hold the Pendant housing in position while tightening the two (2) 5-mm Allen head mounting screws on top of the housing to **10-12 N-m (90-105 in.-lbs)**.

**CAUTION!**

You must tighten the two mounting screws to a minimum torque of 10-12 N-m (90-105 in.-lbs) to ensure a proper seal between the arm and the housing.

---

## 3 Installing the Roof Parapet and Pipe Mounts

### 3.1 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 product's Parts List below are included. If any items are missing, notify your Bosch Security Systems Sales or Customer Service Representative. Refer to *Section 1.4 Customer Support and Service, page 11*, for contact information.

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.

#### 3.1.1 Parts List

The following table lists the optional parts you may need for attaching a Pendant to the Roof Parapet and Pipe mount packages:

Mounting Options	Part Numbers
Parapet (Roof) Mount with one of the following Power Supply Boxes:	VG4-A-9230
– Power Supply Box with 120 VAC transformer or 230 VAC transformer	VG4-A-PSU1 VG4-A-PSU2
Optional Flat Roof Mount Adapter for VG4-A-9230 Mount (not included)	LTC 9230/01
Pipe Mount with one of the following Power Supply Boxes:	VG4-A-9543
– Power Supply Box with transformer 120 VAC or 230 VAC transformer	VG4-A-PSU1 VG4-A-PSU2
Fiber Optic Ethernet Media Converter kit	VG4-SFPCKT

#### 3.1.2 Description

Chapter 3 details how to install a VG5 AutoDome to a Roof Parapet or to a Pipe mount. Any differences to the installation between these two mounting systems are noted. Refer to *Section 2 Installing the Pendant Arm Wall, Corner, and Mast (Pole) Mounts* if you are installing a Pendant Arm to a Wall, Corner, or Mast (or pole).

The VG4-A-9230 Series are stationary mounts intended for rooftop parapet vertical walls. They are made of light weight aluminum with a corrosion-resistant finish and are used for all Bosch AutoDome Cameras up to a rated load of 29 kg (64 lb). These mounts can be fitted to the inside or outside of parapet walls and can swivel for ease of positioning and for servicing the AutoDome.

#### 3.1.3 Tools Required

- 5 mm Allen wrench (supplied)
- Small straight blade screwdrivers ~ 2.5 mm (0.1 in.) – 3.1 mm (1/8 in.)
- Medium straight blade screwdriver
- No. 1 and No. 2 Phillips screwdrivers
- Socket wrench and 9/16 in. socket
- Pipe Wrench
- Barrel connector (if installing a fiber optic model)

## 3.2 Pre-installation Check List

1. Determine the location and distance for the power supply box based on its voltage and current consumption. Refer to *Section 5 Cable and Wire Standards, page 57* for wiring information and distances.
2. Use only UL listed liquid tight strain reliefs for conduits to the Power Supply Box to ensure that water cannot enter the box. You must use water tight conduits and fittings to meet NEMA 4 standards.

**NOTICE!**

Power and I/O cabling must be routed separately inside different permanently earthed metal conduits.

- 
3. Install all rough wiring including: power, control, video coax, alarms I/O, relay I/O, and fiber optic cabling. Refer to *Section 5 Cable and Wire Standards, page 57* for video and control protocol methods.

**WARNING!**

External interconnecting cables are to be installed in accordance to NEC, ANSI/NFPA70 (for US application) and Canadian Electrical Code, Part I, CSA C22.1 (for CAN application) and in accordance to local country codes for all other countries.

Branch circuit protection incorporating a 20 A, 2-pole Listed Circuit Breaker or Branch Rated Fuses are required as part of the building installation. A readily accessible 2-pole disconnect device with a contact separation of at least 3 mm must be incorporated.

- 
4. Choose the appropriate VG5 AutoDome model (indoor or outdoor) for the environment in which it will be used.
  5. Purchase the appropriate mounting hardware to use, depending on the location of the AutoDome and the application.

**CAUTION!**

Select a rigid mounting location to prevent excessive vibration to the AutoDome camera.

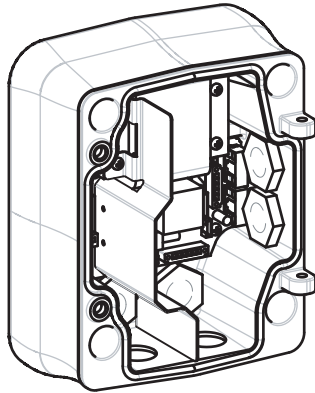
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### 3.3 Mount Power Supply Box

Before mounting the Power Supply Box decide if you will be wiring the box through the holes in the bottom or back of the box. If wiring the box through the back, move the two (2) seal plugs to the bottom holes before mounting.

**NOTICE!**

Use 3/4-inch NPS (20-mm) fittings for the holes on the bottom and back of the box. Use 1/2-inch NPS (15-mm) fittings for the side holes. Refer to *Section 3.1.1 Parts List, page 30*, for an illustration.



**Figure 3.1** Wall Mount Power Supply with Optional Trim Skirt

1. Use the wall mount template supplied in the packaging box to locate the four (4) mounting holes for the Power Supply Box.
2. Drill four (4) holes for the mounting anchors. If installing outdoors, apply a weatherproof sealant around each hole at the mounting surface.
3. Place the Power Supply Box into the optional Trim Skirt.
4. Secure the Power Supply Box to the wall using four (4) corrosion-resistant stainless steel studs (not included).

**NOTICE!**

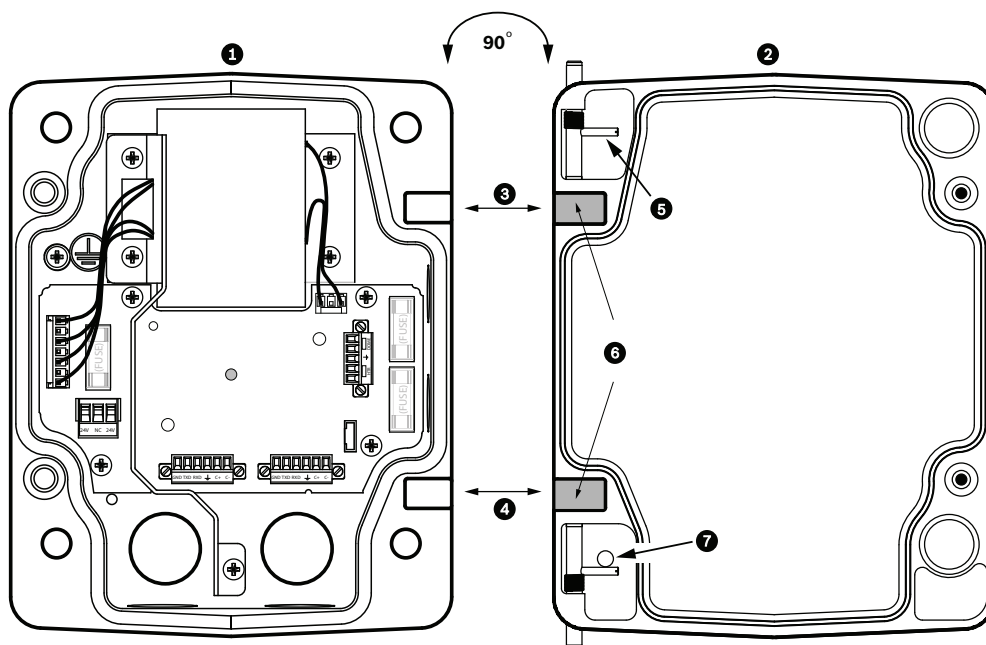
A stud diameter of 6.4 mm (1/4 in.) or 8 mm (5/16 in.), able to withstand a 120 kg (265 lb) pull-out force is recommended.

5. Attach the 3/4 in. (20 mm) watertight pipe fittings (not supplied) to the holes of the Power Supply Box through which you will run the power, video, and control data wires.

### 3.3.1

#### Attach Cover Door

1. Compress the bottom hinge pin by pushing the pin lever down and then rotate it behind the Hinge Pin Stop. The power box Cover Door provides a Hinge Pin Stop to hold the bottom hinge open while attaching the door.



**Figure 3.2** Align Cover Door Hinge to Power Box

1	Power Supply Box	5	Hold Hinge Pin Open
2	Cover Door	6	Open Position
3	Align Top Hinge	7	Hinge Pin Stop
4	Align Bottom Hinge		

2. Open the top hinge by pushing its pin lever outward and holding it open.  
**Note:** Both Hinge Pins must be fully compressed to open (unlock) the female hinges of the Cover Door before proceeding to the next step.
3. While holding the top hinge pin open, position the Cover Door to the Power Supply Box and align its hinges.
4. When the hinges are aligned, release the top hinge pin to engage its mating hinge on the power box. Then release the bottom hinge pin from the Hinge Pin Stop to complete attaching the Cover Door to the Power Supply Box.



#### NOTICE!

After all wiring is complete, close the cover door and tighten the two (2) captive screws on the cover door to 10-12 N-m (90-105 in.-lbs) to ensure the Power Supply Box is watertight.

## 3.4 Route Wires and Attach Connectors

Power wires must be routed to the left (front) side of the Power Supply Box through a separate conduit. All video, control, and alarm wires must be routed through a second conduit to the right side of the box. Refer to *Section 5 Cable and Wire Standards*, page 57 for methods of transmitting video and data, and for wire specifications.



### WARNING!

External interconnecting cables are to be installed in accordance to NEC, ANSI/NFPA70 (for US application) and Canadian Electrical Code, Part I, CSA C22.1 (for CAN application) and in accordance to local country codes for all other countries.

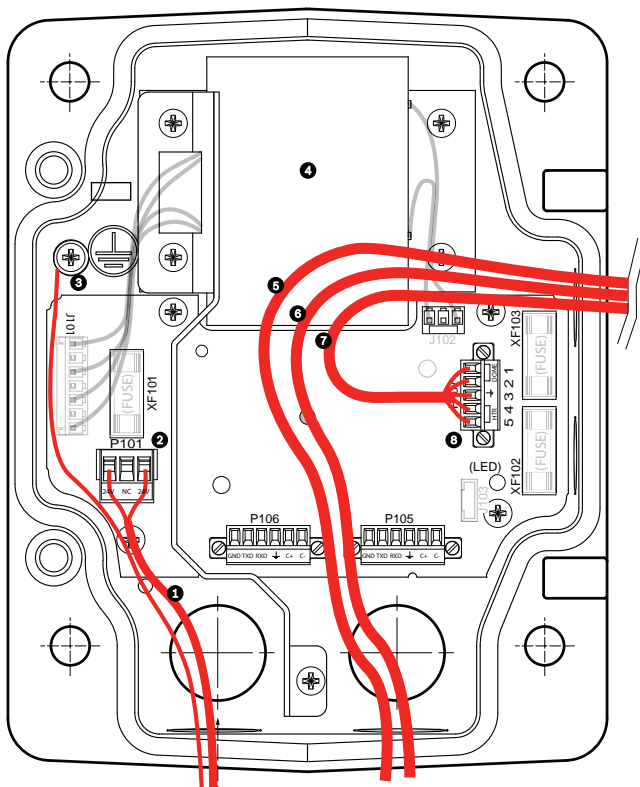
Branch circuit protection incorporating a 20 A, 2-pole Listed Circuit Breaker or Branch Rated Fuses are required as part of the building installation. A readily accessible 2-pole disconnect device with a contact separation of at least 3 mm must be incorporated.

### 3.4.1

#### Methods for Routing Wires

There are two possible methods to route the video, control, and alarm wires:

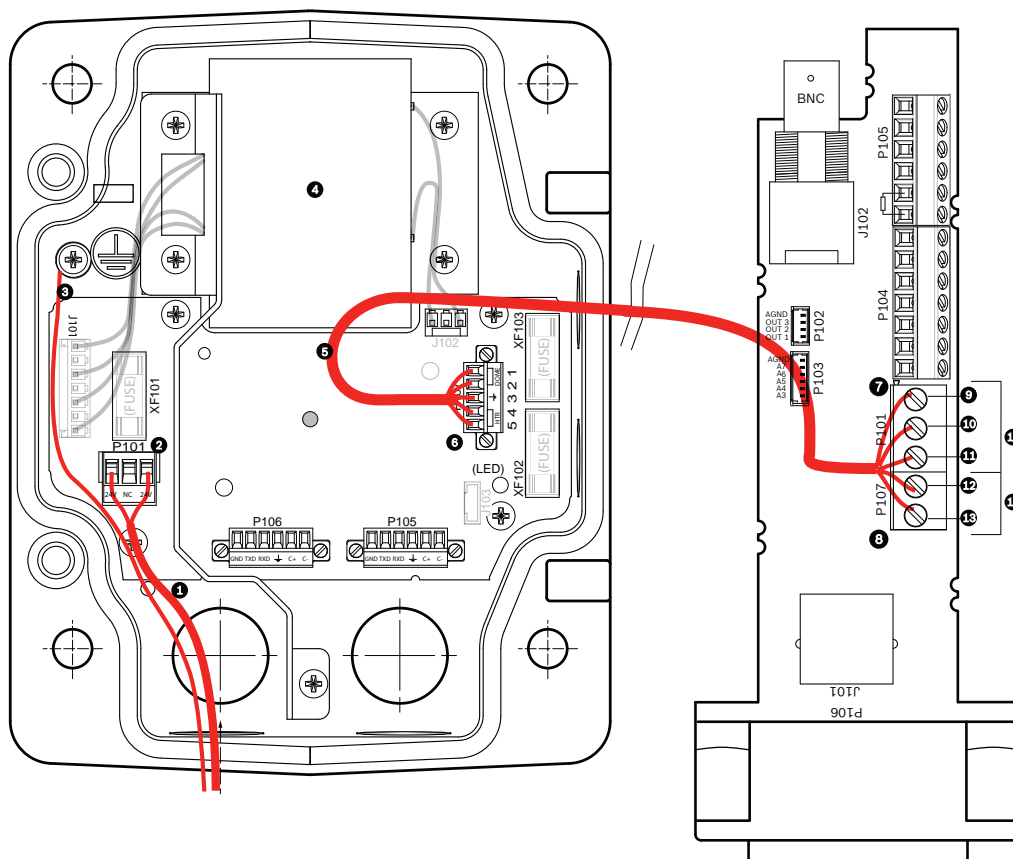
- One is to route the video, control, and alarm wires through the conduit fitting on the right (front) side of the Power Supply Box and out to the AutoDome Interface Board.



**Figure 3.3** VG4-A-PSU1 or VG4-A-PSU2 Power Supply Box

1	120 VAC/230 VAC Power In	5	Coax, UTP Video, or Ethernet Wire (Ethernet for VG5 700 Series only)
2	P101 Connector	6	Control Wire
3	Ground Connection	7	24 VAC Power Out
4	Transformer	8	P107 Connector

- The second method is to bypass the Power Supply Box and route the video, control, and alarm wires directly to the Interface Board. You connect only the power wires inside the Power Supply Box.



**Figure 3.4** VG4-A-PSU1 or VG4-A-PSU2 Power Supply Box Connected to Pipe Interface Board

	VG4-A-PSU1/VG4-A-PSU2		Pipe Interface Board
1	120 VAC/230 VAC Power In	7	P101 Connector
2	P101 Connector	8	P107 Connector
3	Ground Connection	9	24 VAC Power In (to AutoDome)
4	Transformer	10	Earth Ground
5	24 VAC Power Out	11	24 VAC Power In (to AutoDome)
6	P107 Connector	12	24 VAC Power In (to Heater)
		13	24 VAC Power In (to Heater)
		14	AutoDome Power
		15	Heater Power

### 3.4.2

#### Wiring the Power Supply Box

1. Route the high voltage 115/230 VAC lines through the conduit fitting on the left side of the box.

**NOTICE!**

The Power Supply Box with transformer comes with a barrier that separates the high voltage side on the left from the low voltage 24 VAC side on the right.

2. Cut and trim the high voltage 115/230 VAC power and ground wires with sufficient slack to reach their connector terminal in the box, but not so long as to be pinched by or to obstruct closing the Cover Door. Refer to *Section 3.1.1 Parts List, page 30*, for connector location.
3. Attach the supplied 3-pin Power Plug to the incoming high voltage power wires in the box. Refer to connector P101 in *Table 3.1, Page 38*.
4. Route the Ethernet cable out to where the AutoDome will be mounted. Refer to *Section 5 Cable and Wire Standards, page 57* for specifications.
5. Route the low power 24 VAC wires from the right side of the Power Supply Box out to where the AutoDome will be mounted. Attach the supplied 5-pin 24 VAC Dome plug to the wire ends inside the box. Refer to connector P107 in *Table 3.1, Page 38*.

**NOTICE!**

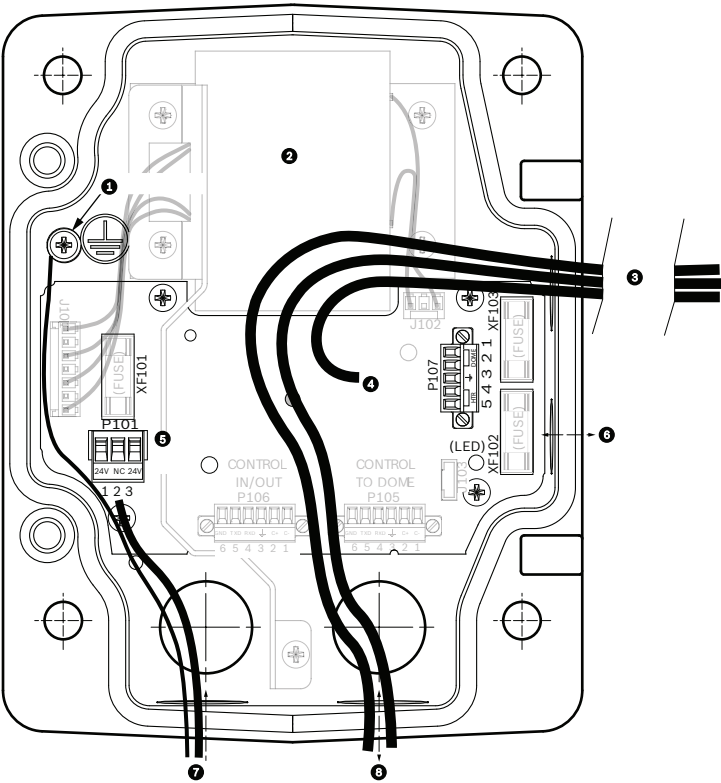
All video, control, and alarm wires either pass through the Power Supply Box or by-pass it and connect directly to the Pipe Interface Board.

---



3.4.3 Power Supply Box Connections

The following figure is a detailed illustration of the Roof or Pipe Mount Power Supply Box, which includes the fuse specifications.



1	Ground Screw	5	Power In
2	Transformer (115/230 VAC Modes)	6	In/Out; 1/2 in. (15 mm) NPS Fitting
3	In/Out to Dome	7	Power In; 3/4 in. (20 mm) NPS Fitting
4	24 VAC to Dome Interface Board	8	Control Data and Video In/Out; 3/4 in. (20 mm) NPS Fitting



**WARNING!**  
Fuse replacement by qualified service personnel only. Replace with same type fuse.

Fuse Specifications			
Volts	XF101 Mains	XF102 Camera	XF103 Heater
24 V	T 5.0 A	T 2.0 A	T 3.15 A
115 V	T 1.6 A	T 2.0 A	T 3.15 A
230 V	T 0.8A	T 2.0 A	T 3.15 A

The following table lists the Power Supply Box connectors:

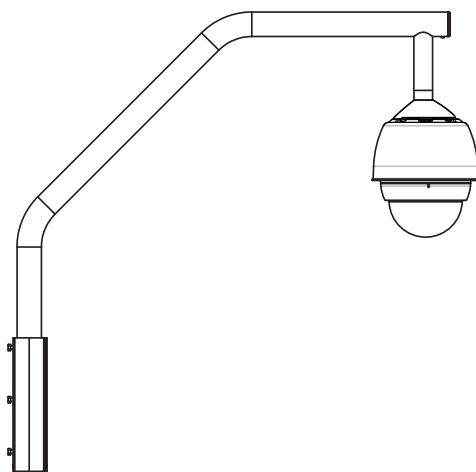
No.	Connector	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
	Ground	Grounding Screw					
P101	115/230 VAC or 24 VAC Power In	Line	NC	Neutral			
P105 <sup>1</sup>	Control to Dome (Fiber Optic Model)	C- (Biphase)	C+ (Biphase)	Earth Ground	RXD (+) (RS-232/485)	TXD (-) (RS-232/485)	Signal Ground
P106 <sup>1</sup>	Control In/Out (Optional)	C- (Biphase)	C+ (Biphase)	Earth Ground	RXD (+) (RS-232/485)	TXD (-) (RS-232/485)	Signal Ground
P107	24 VAC Power to Dome Plug	Dome 24 VAC	Dome 24 VAC	Earth Ground	Heater (24 VAC)	Heater (24 VAC)	
1. Applicable to VG5 600 and 100 Series AutoDomes only.							

**Table 3.1** Power Box Connections

## 3.5

### Installing the VG4-A-9230 Roof Parapet Mount

This section details the installation steps for the Roof Parapet Mount. If you are installing a pipe mount, refer to *Section 3.6 Installing the VG4-A-9543 Pipe Mount, page 41*, for instructions.



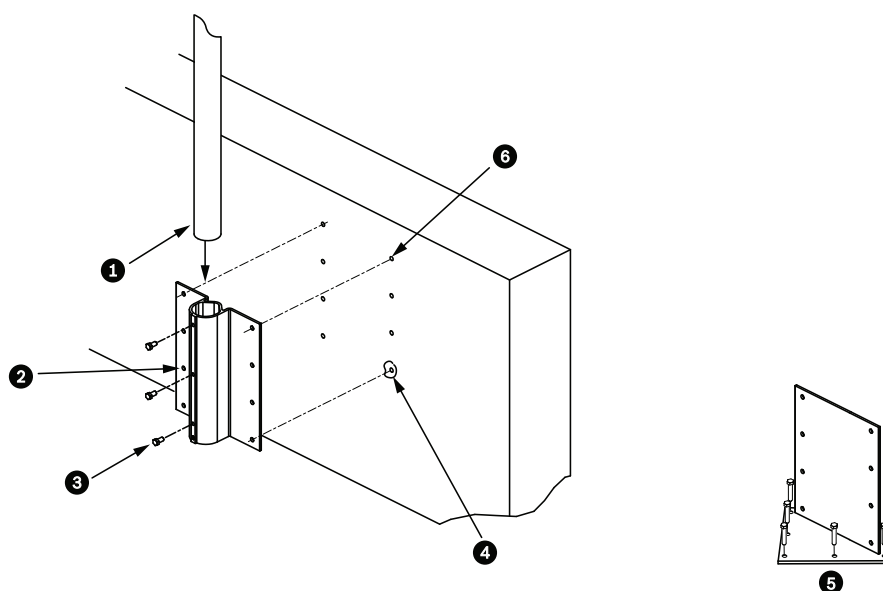
**Figure 3.5** VGA-A-9230 Parapet Roof Mount

1. Determine the wall location on the roof for the AutoDome and use the Parapet wall mount bracket as a template to mark the hole locations.



**NOTICE!** Allow enough room below the Parapet Mount Bracket to route the video, control and alarm wires up through the Parapet arm. In certain installations you may have to lift the Parapet arm for the AutoDome to clear the top of the wall when it is swung into position. Provide enough slack in the wires to rotate the pipe arm over the roof and back when camera maintenance is required.

2. Prepare the mounting surface for the type of fastener by drilling holes for the mounting anchors as required.



**Figure 3.6** Parapet Wall Mount Bracket and Roof Mount Plate

1	Pipearm	4	Apply sealant around each fastener hole
2	Parapet Wall Bracket	5	Roof Mount Plate
3	3/8-16 SS Hex Head Bolt (supplied)	6	Use a minimum of six (6) fasteners (not supplied). Eight (8) fastener holes shown.

#### NOTICE!

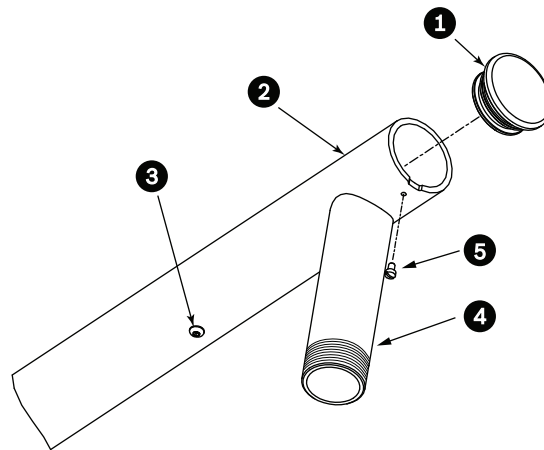
Fasteners are not supplied with the Roof Parapet Mount Kit since it depends on the material to which it is attached. The material must accommodate a minimum pull out strength of 275 kg (600 lbs). For example, 19 mm (3/4 inch) minimum for plywood. Fasteners can include bolts, studs, or lag bolts. All fasteners must be made of corrosion-resistant stainless steel, with a diameter of 10 mm (3/8 inch).

All bolts must fully extend through the mounting surface and be secured with a flat washer, lock washer and a nut. All studs must be anchored to concrete or welded to a steel backing plate. Anchor bolts can be used for blind structures where there is no access to the rear.



3. Apply a weatherproof sealant around each fastener hole at the mounting surface.
4. Attach the Parapet Wall Bracket using at least six (6) stainless steel fasteners, three (3) on each side (the bracket has eight (8) holes). Be careful not to over tighten the fasteners because it may strip the threads. If attaching the parapet mount to a flat roof, attach the optional LTC 9230/01 Roof Mount Plate to the roof and then attach the Parapet Wall Bracket to the Roof Mount Plate.
5. Insert the Parapet Pipe Arm into the mounting bracket until it bottoms in the bracket.

6. Remove the End Cap from the front of the arm and feed the video, control, and power wires up through the bottom of the pipe arm and out the front end.



**Figure 3.7** VG4-A-9230 Parapet Mount

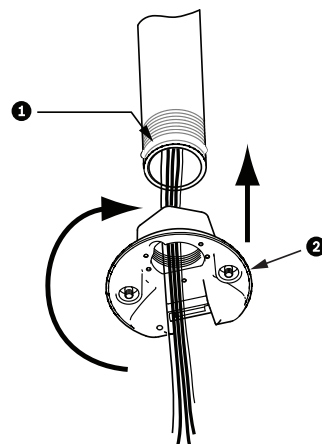
1	End Cap with O-ring
2	Parapet Pipe Arm
3	1/4-20 SS Cap Screw
4	Down Pipe
5	10-24 SS Pan Head Screw

7. Fold the video, control, and power wires back at the front end of the arm and route them down and out through the Down Pipe. Then replace the End Cap.
8. Wrap at least five layers of Teflon tape around the Down Pipe threads.
9. Apply the supplied thread sealant to the Down Pipe threads:
  - Make sure all surfaces are clean and dry.
  - Apply a bead of sealant completely around the leading threads of the male fitting.
  - Force the adhesive into the threads to thoroughly fill all voids.
10. Thread the Dome Cap onto the down pipe and tighten securely. See the illustration below.



**WARNING!**

You must thread the Dome Cap onto the Down Pipe until it is tight. Failure to do so can result in damage, serious injury, or death.



**Figure 3.8** Attach Dome Cap

1	Thread Sealant or tape
2	Dome Cap

11. Run a bead of RTV Silicon sealant around the down pipe/Dome Cap interface to seal any gaps between the down pipe and the Dome Cap.
12. Proceed to *Section 3.7 Wire the Pipe Interface Board, page 42.*

**NOTICE!**

Use a guy-wire to aid in stabilizing the Parapet Arm. Replace the 1/4 inch cap screw with a threaded 1/4-inch stainless steel eye bolt (not supplied). Loop the guy-wire through the eye bolt and attach both ends to anchor spots on the roof. Refer to *Figure 3.7, Page 40.*

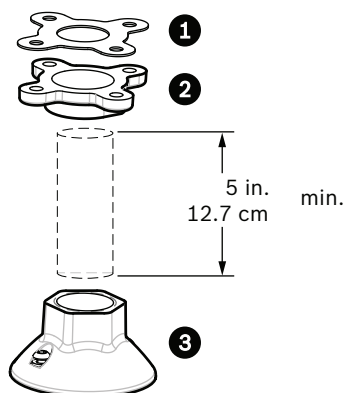
### 3.6

## Installing the VG4-A-9543 Pipe Mount

This section details the installation steps for the VG4-A-9543 Pipe Mount. If you are installing the Roof Parapet mount, refer to *Section 3.5 Installing the VG4-A-9230 Roof Parapet Mount*, for instructions.

**NOTICE!**

Customer must supply 1-1/2 inch (NPS) pipe threaded on both ends with a minimum length of 5 inches (12.7 cm).



**Figure 3.9** Pipe Mount

1	Gasket
2	Flange
3	Cap

1. Before installing the Top-Mounting Flange, ensure there is an adequate opening in the ceiling or mounting structure for the wires to pass through.
2. Secure the pipe Flange with supplied gasket to the ceiling or other supporting structure using four (4) 10-mm (3/8-inch) diameter fasteners.

**NOTICE!**

Each fastener must have a minimum pullout strength of 275 kg (600 lbs). The mounting material must be able to withstand this pull-out force. For example, 19-mm (3/4-inch) minimum for plywood.

3. Attach pipe (not supplied) to the Top-mounting Flange.

**WARNING!**

You must thread the pipe onto the Top-mounting Flange until it is tight. Failure to do so can result in damage, serious injury or death.

4. Route the power, video, control, and alarm wires through the Top-Mounting Flange and down the pipe.
5. Wrap at least five layers of Teflon tape around the threads.

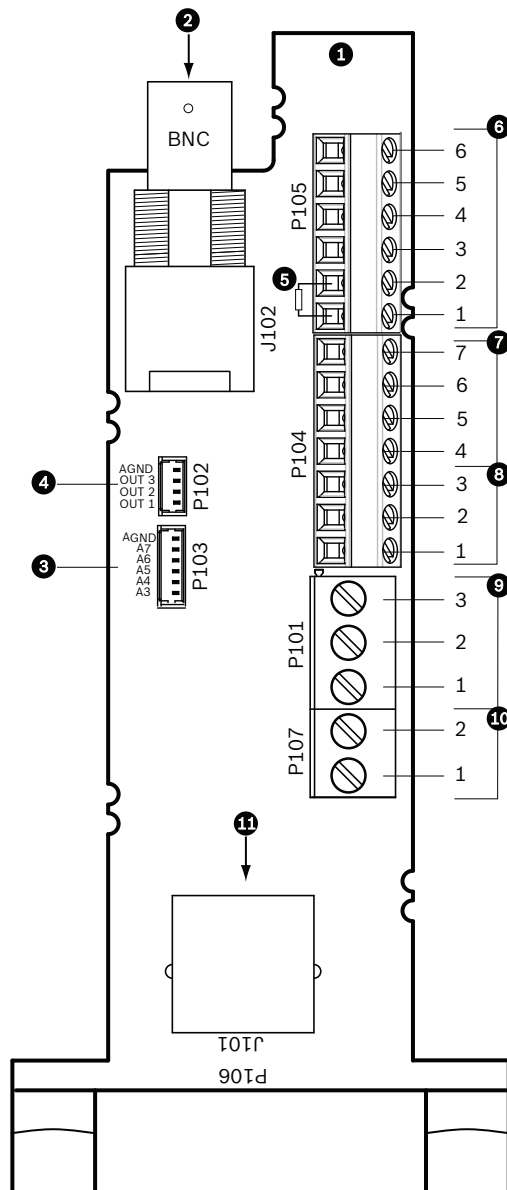
6. Apply the supplied thread sealant to the threads on the Pipe.
  - Make sure all surfaces are clean and dry.
  - Apply a bead of sealant completely around the leading threads of the male fitting.
  - Force the adhesive into the threads to thoroughly fill all voids.
7. Thread the Pipe Cap onto the down pipe and tighten securely to prevent leaks. Refer to *Figure 3.9, Page 41*.

**WARNING!**

You must thread the Dome Cap onto the pipe until it is tight. Failure to do so can result in damage or serious injury or death.

**3.7****Wire the Pipe Interface Board**

This section provides instructions for connecting wires and cables to the Pipe Interface Board, as illustrated below. Refer to *Section 5 Cable and Wire Standards, page 57* for cable and wiring recommendations and specifications.



**Figure 3.10** Pipe Interface Board Connections

Ref.	Description	Connector	Wire Gauge	Pin	Description
1	Pipe Interface Module				
2	Video Coax In	J102			
3	6-pin Connector Alarms In (3-7)	P103			
4	4-pin Connector Alarms Out (1-3)	P102			
5	100 $\Omega$ Resistor	P105			
6	Data In/Out	P105	AWG 26-16	1	Biphase (C-)
				2	Biphase (C+)
				3	Earth Ground
				4	RxD +
				5	TxD -
				6	Signal Ground
7	Alarms In (EOLR Supervised, 1-2)	P104	AWG 26-16	7	Ground
				6	Alarm 2
				5	Alarm 1
				4	Earth Ground
8	Relay Output	P104	AWG 26-16	3	Normally Closed
				2	Common
				1	Normally Open
9	Dome Power	P101	AWG 18-14	3	Dome 24 VAC
				2	Earth Ground
				1	Dome 24 VAC
10	Heater Power	P107	AWG 18-14	2	Heater 24 VAC
				1	Heater 24 VAC
11	RJ45 Ethernet or UTP Video (Ethernet for VG5 700 Series only)	J101			
12	To AutoDome				

### 3.7.1

#### Connecting Wires to the Pipe Interface Board

The Pipe Interface Board contains all of the connectors for control, data, image, and power wires. Follow the procedures below to make the proper connections.



#### **WARNING!**

Use a 24 VAC Class 2 power supply only.

1. Attach an RJ45 connector plug to the Ethernet cable and connect the plug to its mating connector J101 on the Pipe Interface Board.



#### **WARNING!**

Do not connect the RJ45 connector unless using UTP video or Ethernet. This connection causes video distortion.

2. Attach the control data in/out wires to their respective terminals on the P105 connector on the Pipe Interface Board. Refer to *Figure 3.10, Page 42*, for an illustration of these connections.
3. Connect the 24 VAC power wires to the P101 connector on the Pipe Interface Board. If this model has a heater, connect the 24 VAC heater power wires to connector P107.



#### **CAUTION!**

To protect the AutoDome from damage due to cold temperatures, ensure that you connect the 24 VAC heater power wires to the P101 connector.

4. To connect alarm inputs and outputs, attach the supplied 6-pin Alarms In and the 4-pin Alarms Out connector plugs with flying leads to the appropriate alarm wires. Then connect the plugs to their mating connectors P103 and P102 on the Pipe Interface Board.

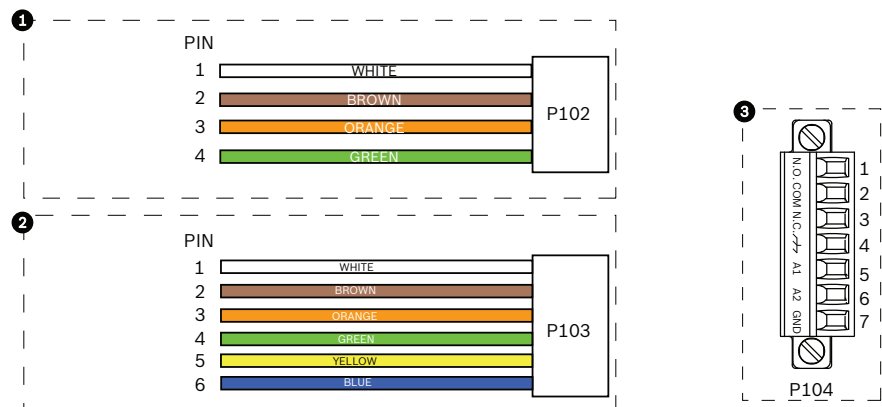


Figure 3.11 Alarm and Relay Connector Plugs

1	4-pin Alarm Connector (P102)	2	6-pin Alarm In Connector (P103)	3	7-pin Relay Connector (P104)
Pin	Description	Pin	Description	Pin	Description
1	Alarm Out 1	1	Alarm In 3	1	Alarm Out 4 Normally Open
2	Alarm Out 2	2	Alarm In 4	2	Alarm Out 4 COM
3	Alarm Out 3*	3	Alarm In 5	3	Alarm Out 4 Normally Closed
4	Alarm Ground	4	Alarm In 6	4	Earth Ground
		5	Alarm In 7	5	Analog Alarm 1
		6	Alarm Ground	6	Analog Alarm 2
				7	Ground

5. To connect supervised alarms and relays, attach the appropriate wires to their terminals on the P104 connector on the Pipe Interface Board (see *Figure 3.11*, above). In addition, refer to *Section 6 Alarms and Relay Connections*, page 60 for more details on wiring alarms and relays.

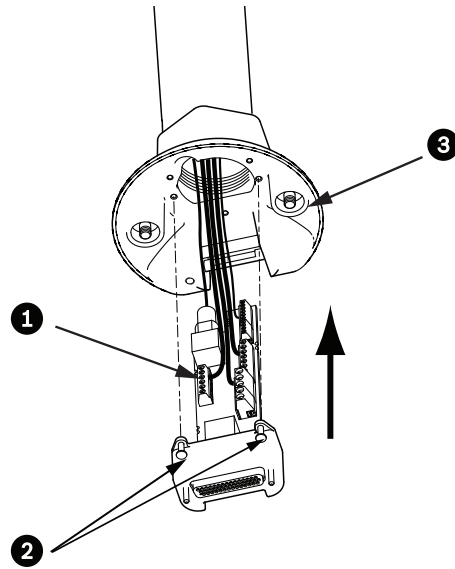
**Note:** There is a slot located at the top of the Interface Board to tie the wires to the circuit board with a cable tie.



6. Insert the Pipe Interface Board into the down pipe and fasten the three (3) retaining screws to secure the board to the Dome Cap.

**CAUTION!**

Be careful not to strip the threads when tightening the Pipe Interface Board retaining screws.



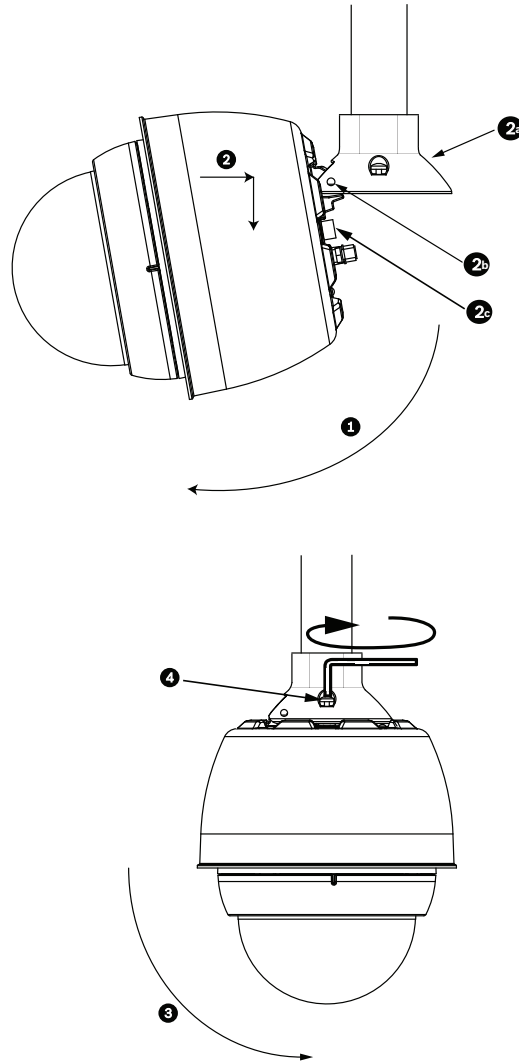
**Figure 3.12** Pipe Interface Board to Dome Cap Assembly

1	Interface Board
2	Retaining Screws (3)
3	Pendant Mounting Screws (2)

### 3.8

### Attach Pendant to Pipe and Tighten

1. Before attaching the Pendant, visually inspect the Pendant dome and the Interface Board connectors for any blocked pin holes and bent pins.
2. Tilt the Pendant enough to place its mounting hook on top of the its housing, over the recessed hinge pin of the Dome Cap.



**Figure 3.13** Pendant to Roof / Pipe Mount Attachment

1	Tilt Dome
2	Hook and drop
2a	Dome Cap
2b	Recessed Hinge Pin
2c	Dome Connector
3	Rotate down to engage dome connector
4	Tighten the two (2) mounting screws to a minimum torque of 10-12 N-m (90-105 in.-lbs)

3. Drop the Pendant down slightly to engage the dome hook and hinge pin of the Dome Cap, allowing the dome to rotate around the hinge pin.
4. Rotate the dome housing down to a vertical position and gently push upward to engage the connector on top of the dome housing.

**CAUTION!**

If you feel any resistance when rotating the dome housing or when engaging the connector, stop immediately and start over.

5. Hold the housing firmly in position and alternately tighten the two (2) 5-mm Allen head mounting screws from above to a torque value of 10-12 N-m (90-105 in.-lbs).

**CAUTION!**

You must tighten the two mounting screws to a minimum torque of 10-12 N-m (90-105 in.-lbs) to ensure a proper seal between the arm and the housing.

6. Rotate the arm to swing the AutoDome out from the roof and into position, if installing a Parapet Roof Mount.
7. Tighten the three (3) 10-mm (3/8-inch) stainless steel hex bolts on the bracket to lock the Parapet Arm in position. Refer to *Figure 3.13, Page 46*, for an illustration.

**CAUTION!**

Do not over tighten the bolts. The maximum torque is 34 N-m (25 ft-lb).

### 3.9

## Make Connections in the Power Supply Box

The following procedure references *Figure 3.6, Page 39* to locate the various connectors in the box and to make the proper connections.

1. Attach the earth ground wire to the grounding screw on the left side of the box.
2. Connect the 24 VAC to Dome plug, installed previously, to its mating connector P107 on the right side of the box.
3. Connect the 115/230 VAC, 3-pin Power-in plug, installed previously, to its mating connector P101 on the left side of the box.

## 4 Installing the In-Ceiling Mount

### 4.1 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 product's Parts List below are included. If any items are missing, notify your Bosch Security Systems Sales or Customer Service Representative. Refer to *Section 1.4 Customer Support and Service, page 11*, for contact information.

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.



#### NOTICE!

If your application of the VG5 Series AutoDome in-ceiling mount is required to meet the IP54 environmental rating you must obtain the optional **VGA-IP54K-IC** Gasket Kit and follow the directions included with the kit.

#### 4.1.1

#### Parts List

The following table lists the parts included with the In-ceiling mount packages.

In-ceiling Mount		
Quantity	Item	Part Number
1	Interface Box	VG4-S-BIM
1	Bracket Assembly Support Kit (separate purchase)	VJR-A3-SP

#### 4.1.2

#### Description

This chapter details how to install the AutoDome in an In-Ceiling Mount. The In-Ceiling AutoDome camera is suitable for use in environmental air spaces. Refer to *Section 2 Installing the Pendant Arm Wall, Corner, and Mast (Pole) Mounts*, or refer to *Section 3 Installing the Roof Parapet and Pipe Mounts* for these specific installations.

#### 4.1.3

#### Tools Required

- Straight slot screwdrivers ~ 2.5 mm (0.1 inch) – 3.1 mm (1/8 inch)
- No. 2 Phillips screwdriver
- Appropriate tool for cutting a hole in drywall or ceiling tile
- Pliers

### 4.2

#### Pre-installation Check List

1. Determine the location and distance for the power supply box based on its voltage and current consumption. Refer to *Section 5 Cable and Wire Standards, page 57* for specifications.
2. Install all rough wiring including: power, control, video, alarms I/O, relay I/O, and fiber optic cabling.

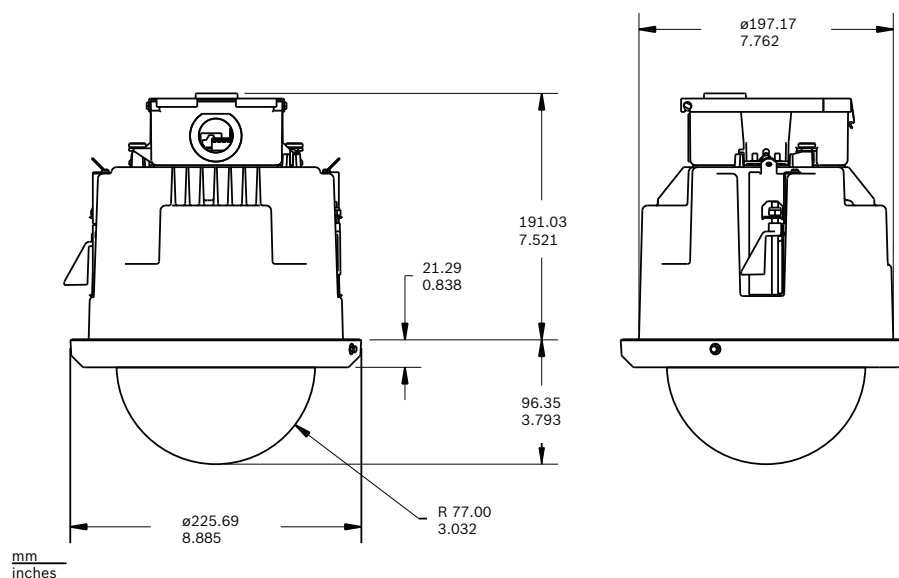


#### WARNING!

24 VAC Class 2 power supply only.

3. A minimum of 216-mm (8 1/2-inch) of air space above the ceiling is required to install the In-ceiling Mount.

## 4.3 Dimensions



**Figure 4.1** In-ceiling Dimensional Outline

## 4.4 Prepare Drywall Ceiling for Installation

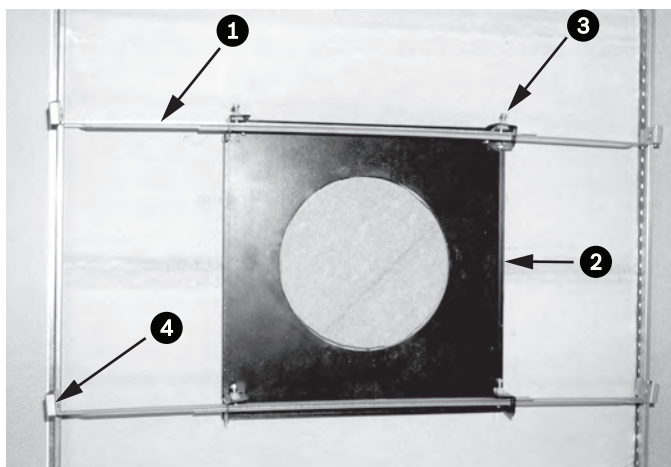
1. Choose the desired location to mount the dome.
2. Use the bracket Base Plate as a template to cut a 7.9 in. hole with a tolerance of  $\pm 1/8$  in. (200 mm  $\pm$  2.2 mm) hole in the ceiling with a drywall utility saw or Jig Saw. Proceed to *Section 4.6 Wire the Interface Box, page 51*, for further instructions.

## 4.5 Prepare Suspension Ceiling for Installation

You must use the appropriate In-ceiling Support Kit to install the AutoDome In-ceiling housing into a suspended or drop ceiling. This kit requires a separate purchase.

1. Choose the desired location to mount the dome, and remove an adjacent ceiling tile.
2. Loosen the four (4) securing screws, located in the corners of the Bracket Assembly, enough to hold the suspension bars but still allowing adjustment during installation.

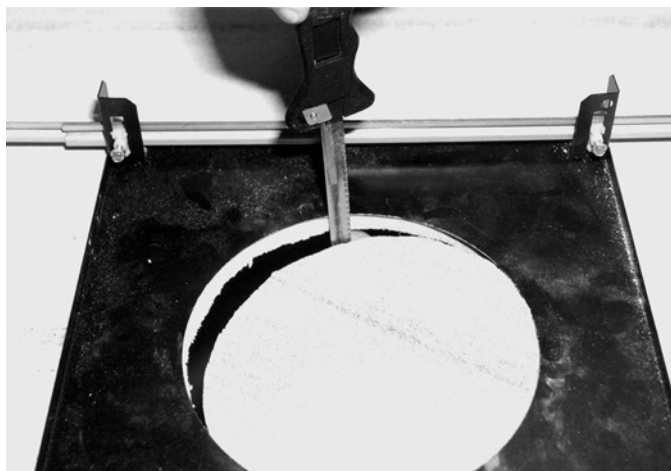
3. Place the Bracket Assembly over the ceiling tile, which is used to mount the In-Ceiling AutoDome. Then snap the Bar Clips of the bracket to the ceiling rails.



**Figure 4.2** Suspension Ceiling Bracket (Top View)

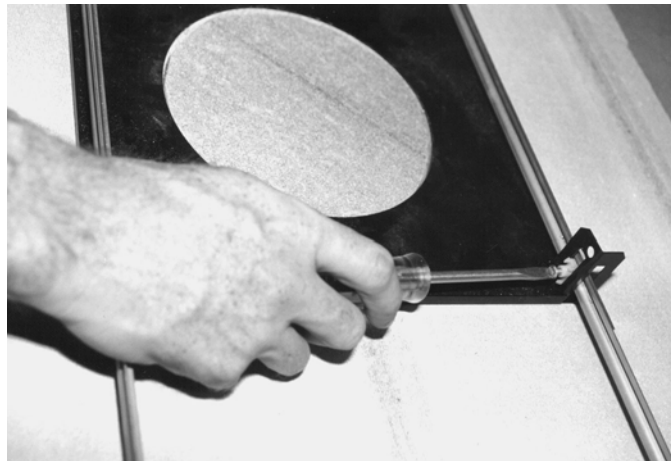
1	Suspension Bars	3	Securing Screw (4)
2	Base Plate	4	Bar Clips

4. Use the bracket Base Plate as a template or cut a 7.9 in. hole with a tolerance of  $\pm 1/8$  in. (200 mm  $\pm$  2.2 mm) hole in the center of the ceiling tile with a drywall utility saw or Jig Saw.



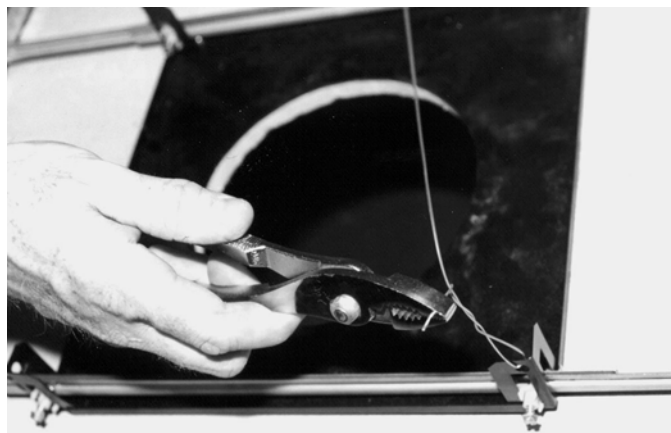
**Figure 4.3** Cut Hole in Ceiling Tile

5. Tighten the four (4) securing screws to the Bracket Assembly.



**Figure 4.4** Tighten Bracket Securing Screw

6. Secure the Bracket Assembly to an overhead securing point with a safety wire.



**Figure 4.5** Secure Bracket Assembly

## 4.6 Wire the Interface Box

The Interface Box can be wired through the top or side. Use the supplied rubber plug to seal the hole which will not be used to route wires.

### 4.6.1 Make the Connections

After routing all video, control, power, and alarm wires:

1. Attach a 3/4-inch NPS (20-mm) conduit fitting to the hole in which you bring in the wires. Be sure to thread the inside nut to the conduit fitting.
2. Route the video, control, power, and alarm wires through the conduit fitting and into the Interface Box.
3. Cut and trim the wires allowing for sufficient slack to their respective terminals in the box.



#### **NOTICE!**

If installing the dome to a drywall ceiling, allow enough wire to make the connections in the Interface Box below the ceiling. Refer to , for connector locations and *Table 4.1, Page 54*, for wire connections.

4. Connect the Ethernet cable to its matting connector J101 in the Interface Box. Refer to *Section 5 Cable and Wire Standards, page 57* for specifications.

5. Connect the 24 VAC power wires to the P101 connector in the Interface Box.
6. To connect alarm inputs and outputs, attach the supplied 6-pin Alarms In and the 4-pin Alarms Out connector plugs with flying leads to the appropriate alarm wires. Then connect the plugs to their mating connectors P103 and P102 in the Interface Box.

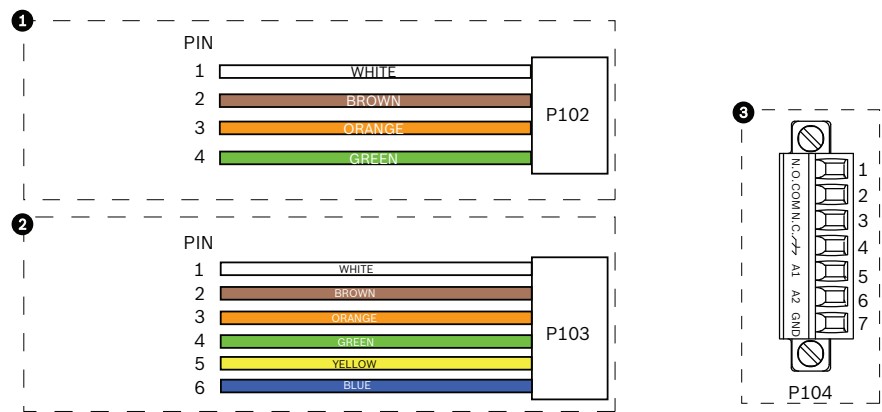


Figure 4.6 Alarm and Relay Connector Plugs

1	4-pin Alarm Connector (P102)	2*	6-pin Alarm In Connector (P103)	3	7-pin Relay Connector (P104)
Pin	Description	Pin	Description	Pin	Description
1	Alarm Out 1	1	Alarm In 3	1	Normally Open
2	Alarm Out 2	2	Alarm In 4	2	COM
3	Alarm Out 3	3	Alarm In 5	3	Normally Closed
4	Alarm Ground	4	Alarm In 6	4	Earth Ground
		5	Alarm In 7	5	Analog Alarm 1
		6	Alarm Ground	6	Analog Alarm 2
* Low Voltage TTL (3.3V) can also be used.				7	Ground

7. To connect supervised alarms and relays, attach the appropriate wires to their terminals on the P104 connector on the Pipe Interface Board. Refer to *Section 6 Alarms and Relay Connections*, page 60 for more details on wiring alarms.
8. Attach the lid to the Interface box:

a. Align the slots on the lid with the two posts at the rear of the Interface box.

b. Rotate the lid down.

c. Squeeze the ground clips, located at the front of the box, against the Interface box with your fingers before closing the lid to ensure that the lid does not catch on the ground clips.

d. Secure the lid to the Interface box by pushing the lid down until the clip on the lid catches against the box.





The following table summarizes the pin connectors and their function:

No.	Connector	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
P103	Alarms In	Alarm 3	Alarm 4	Alarm 5	Alarm 6	Alarm 7	AGND	
P102	Alarms Out	Alarm 1	Alarm 2	Alarm 3	GND			
P104	Analog Relay	Relay N.O.	Relay COM	Relay N.C.	Earth	Alarm 1	Alarm 2	Ground
P105	Data In/Out	C- (BiPhase)	C+ (BiPhase)	Earth Ground	RXD (+) (RS-232/485)	TXD (-) (RS-232/485)	Signal Ground	
P101	24 VAC	Line	Earth	Neutral				
J102	Video BNC	Connector Input						
J101	UTP/Ethernt (Ethernet for VG5 700 Series only)	Connector Input						

**Table 4.1** Interface Box Wire Terminals



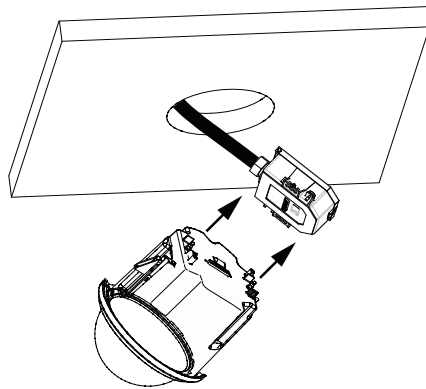
**WARNING!**

24 VAC Class 2 power supply only.

## 4.7

### Attach Housing to the Interface Box

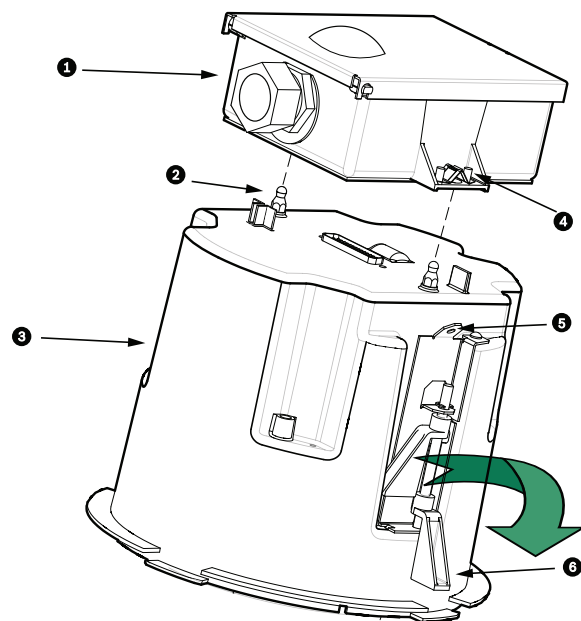
The In-Ceiling Housing is attached to the Interface Box and secured by two (2) thumbscrews.



**Figure 4.8** Attach Housing to Interface Box

1. Insert the In-ceiling housing through the hole in the ceiling to verify that the edge of the hole support the unit. Then remove the housing from the hole.
2. Align the ball studs of the In-Ceiling Housing to the Stud Retainers on Interface Box and attach.

3. Tighten the two (2) Thumbscrews to secure the Interface Box to the housing.



**Figure 4.9** In-Ceiling Housing and Interface Box

1	Interface Box	4	Thumb Screw
2	Ball Stud	5	Tether Point
3	In-ceiling Housing	6	Ceiling Clamp



**CAUTION!**

The In-ceiling dome is provided with tether points on each side of the housing. To prevent injury, attach a safety wire from a secure anchor point above the ceiling to a tether point on the dome housing, refer to *Figure 4.10, Page 56*, below for an illustration of this process.

## 4.8Secure Housing to Ceiling

- The In-ceiling Housing is secured to the ceiling by two (2) screw clamps.
1. Insert the In-ceiling Mount Assembly through the hole in the ceiling.
  2. Tighten both clamps using a #2 Phillips screwdriver, to secure the housing to the ceiling.

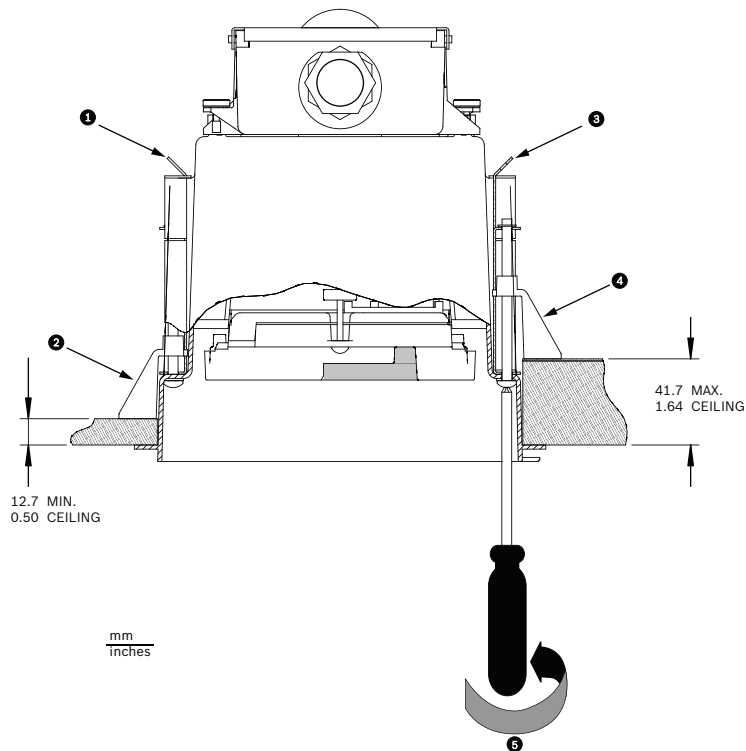


Figure 4.10 Secure Dome to Ceiling

1	Tether Point	4	Ceiling Clamp
2	Ceiling Clamp	5	Rotate Clockwise to Engage Clamp
3	Tether Point		



**CAUTION!**

Over torquing the Ceiling Clamps can damage the clamp or ceiling. Only tighten the clamp until it contacts the ceiling and you start to feel some resistance. If using a power screwdriver, set the torque level to the lowest setting.

## 5 Cable and Wire Standards



### CAUTION!

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



### CAUTION!

All wires for installation applications must be routed through a grounded conduit.

### 5.1 Power

<b>115/230 VAC</b>	
Copper Wire	To comply with local codes.

### 5.2 Wire Distance Guide for Pendant

<b>24 V to AutoDome</b>				
	<b>VA / Watts</b>	<b>14 AWG (2.5 mm)</b>	<b>16 AWG (1.5 mm)</b>	<b>18 AWG (1.0 mm)</b>
AutoDome 700, Indoor	35 / 19	99 m (325 ft)	62 m (205 ft)	39 m (129 ft)
AutoDome 700, Outdoor	60 / 55	58 m (190 ft)	36 m (119 ft)	23 m (75 ft)

**Table 5.1** Maximum Wire Distances from Power Supply to AutoDome Pendant

### 5.3 Video and Control Cables

#### 5.3.1 Using Ethernet to Transmit Video and Control



### CAUTION!

Ethernet connections must be made to non-exposed (indoor) networks only.

The AutoDome VG5 700 series connects to a 10 Base-T/100 Base-TX network either directly or via a switch. Both video and control are transmitted over a standard TCP/IP network using the built-in Web server.

Cable Type	CAT-5E or CAT 6 Ethernet
Maximum Distance	100 m (328 ft)
Bandwidth	10 Base-T/100 Base-TX
Terminal Connector	RJ45, Female



### WARNING!

Do not connect a coaxial cable while the RJ45 Ethernet cable is connected.

### 5.3.2

#### Using a Fiber Optic Ethernet Media Converter to Transmit Video and Control

The fiber optic media converter kit, available for AutoDome 700 Series cameras, is designed to transmit 10/100 Mbps Ethernet signals over fiber optic cable using 10/100 Mbps Small Form-factor Pluggable (SFP) modules. The SFP modules are available as multi-mode fiber (MMF) or single-mode fiber (SMF) models with a single SC connector or dual-fiber with an LC connector. Refer to the *VG4-SFPSCKT Fiber Optic Media Converter Installation Guide*.

Ethernet Media Converter	
Data Interface	Ethernet
Data Rate	10/100 Mbps IEEE 802.3 Compliant Full Duplex or Half Duplex Electrical Port Full Duplex Optical Port
Fiber Type, MMF	50/125 $\mu$ m MMF. For 50/125 $\mu$ m fiber, subtract 4 dB from the specified optical budget value. Must meet or exceed fiber standard ITU-T G.651.
Fiber Type, SMF	8–10/125 $\mu$ m SMF. Must meet or exceed fiber standard ITU-T G.652.
Maximum Distance	60 km (37.3 miles)
Requirement	Media converter receiver (CNFE2MC/IN) at controller end of system
Terminal Connection	Duplex LC or Single SC

### 5.4

#### Audio Cables

The VG5 700 Series AutoDome is capable of receiving line input audio signals and transmitting it over a network. The audio signal is transmitted one-way and in sync with the video signals.

##### Audio Line Input Specifications

Max. Input Voltage	5.5 Vpp
Impedance	9K $\Omega$
Sample Rate	8 K Hz, 16 Bit, mono
Shield	Bare copper braid: 95% coverage
Internal gain level adjustment is available	

##### Wire Specifications

Wire Type	Coax <sup>3</sup> (recommended)
Distance	10 m (33 ft)
Gage	22 AWG to Biphase connector (P105/P106)
Shield	Bare copper braid: 95% coverage
Center conductor	Stranded bare copper



#### NOTICE!

Separate the audio cables from the AC power lines to avoid noise.

Audio Connections

- 1. Remove the 100 Ω termination resistor from the Biphase terminals.
  - 2. Connect the audio line level source to the Biphase C+ input terminal.
  - 3. Connect the audio signal ground to the Biphase C- input terminal.
- The following figure illustrates the connections for audio over an IP network.

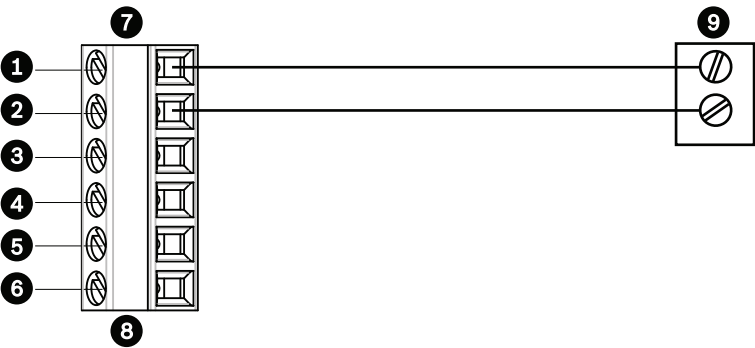


Figure 5.1 Connections for audio over an Ethernet network

1	C- (Biphase)	7	AutoDome Data In/Out
2	C+ (Biphase)	8	P105/P106 Connector
3	Earth Ground	9	Audio Out
4	RxD		
5	TxD		
6	Signal Ground		



**NOTICE!**  
Refer to the *VG5 700 Series AutoDome User Manual* for configuring and using audio over an IP Ethernet network.

## 6 Alarms and Relay Connections

### 6.1 Alarm Inputs

The AutoDome provides two alarm inputs. Each input can be activated by dry contact devices such as pressure pads, passive infrared detectors, door contacts, and similar devices. The table below summarizes the size and distance wires.

Wire Size		Maximum Distance	
AWG	mm	feet	meters
22	0.644	500	152.4
18	1.024	800	243.8

**Table 6.1** Alarm wire guide

You wire alarms either Normally Open (N.O.) or Normally Closed (N.C.), and must program the alarm inputs N.O. (the default) or N.C. through the Settings page (refer to the *VG5 700 Series User Manual*).

### 6.2 Connecting Alarms (inputs 1 or 2)

You can configure alarms 1 and 2 as non-supervised Normally Open (N.O.) or Normally Closed (N.C.) alarms.

#### 6.2.1 Connecting a Normally Open Alarm

1. Connect the alarm to the appropriate input (1 or 2) and ground at the AutoDome.



**Figure 6.1** N.O. - Normally Open Non-supervised Connections

1	Dry Contact	3	Dome Connector
2	Alarm Inputs 1 to 2	4	Ground

2. From the Alarm Connections page on the Settings Page (refer to the *VG5 700 Series User Manual*) the Alarm Input # to N.O. See the table below for contact and condition details.

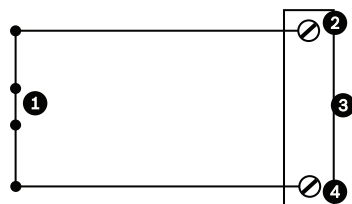
AutoDome Programmed N.O.	
Circuit	Alarm Indication
Open	Normal
Closed	Alarm



## 6.2.2

### Connecting a Normally Closed Alarm

1. Connect the alarm to the appropriate input (1 or 2) and ground at the AutoDome.



**Figure 6.2** N.C. Normally Closed Non-supervised Connections

1	Dry Contact	3	Dome Connector
2	Alarm Inputs 1 to 2	4	Ground

2. From the Alarm Connections page on the Settings Page (refer to the *VG5 700 Series User Manual*) the Alarm Input # to N.C. See the table below for contact and condition details.

AutoDome Programmed N.C.	
Circuit	Alarm Indication
Open	Alarm
Closed	Normal

## 6.3

### Configuring an Open Collector Output

The VG5 700 Series AutoDome incorporates one (1) open collector output.

This output must be connected to a positive voltage between 5 and 32 V to complete the circuit, with a maximum voltage rating of 32 VDC @ 150 ma.

1. Connect the appropriate stripped wire to the open connector (1, 2, or 3) of the transistor.
2. Connect the appropriate stripped wire to the ground (GND) connector.

## 7 Bubble Handling and Cleaning

The bubble is made of Acrylic or Polycarbonate, depending on the application. Polycarbonate bubbles provide high impact resistance, and it's optical clarity is comparable to glass or acrylic, although it's surface is much softer. All bubbles require special care when handling and cleaning to avoid scratches.

### 7.1 Handling

The bubble is packaged with a protective plastic sheet. It is recommended that the bubble remain stored this way until it is ready to install. Limit handling the bubble, as any scratches can quickly affect visibility.

### 7.2 Cleaning

If cleaning the bubble is required, use the following procedures and comply with all the warnings listed below.

#### 7.2.1 Cleaning the Bubble Interior

The extremely soft interior surface should not be cleaned by rubbing or dusting with a cloth. Use clean dry compressed air, preferably from a spray can, to remove any dust from the interior surface.

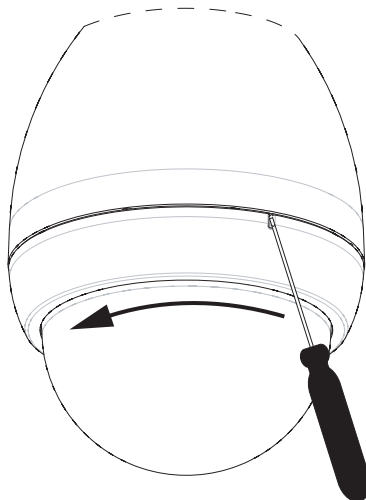


#### **WARNING!**

Do not use alcohol-based solutions to clean the bubble. This will cause the polycarbonate to cloud and over time cause stress aging, which makes the bubble brittle.

#### **To remove the bubble from a pendant housing:**

1. Using both hands, apply a firm counterclockwise (looking up at the dome) rotational force on the Pendant Bubble Assembly to set the bubble latch.
2. Insert a small (2 mm) straight blade screw driver into the release opening in the bubble trim-ring to release the lock, and then remove the screwdriver.

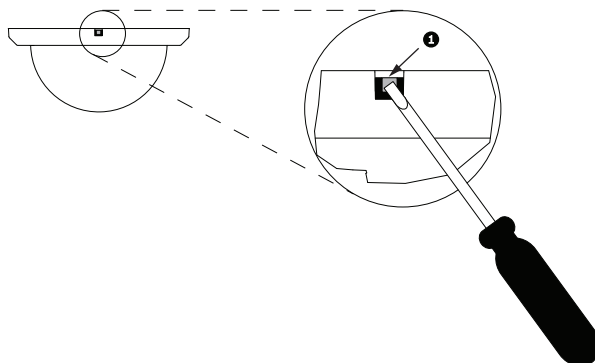


**Figure 7.1** Pendant Bubble Release Opening

3. Firmly rotate the bubble counterclockwise approximately 20 degrees until the bubble assembly releases from the Pendant Housing.

**To remove the bubble from an in-ceiling housing**

1. Loosen the lock screw (item 1 in the illustration below) in the trim ring using a P1 or smaller Phillips screwdriver until the bubble can rotate freely.
2. Then rotate the bubble counterclockwise approximately 1/4 turn until it releases from the In-Ceiling Housing. See the figure below for an illustration.



**Figure 7.2** Bubble Release Screw

**7.2.2****Cleaning the Bubble Exterior**

The exterior of the bubble is hard coated for extra protection. If cleaning becomes necessary, only use cleaning solutions and cloths suitable for cleaning safety glass lenses. Dry the bubble thoroughly with a dry nonabrasive cloth to prevent water spots. Never scrub the bubble with any abrasive material or cleaners.

**Do Not:**

- Do Not use abrasive or highly alkaline cleaners on the bubble.
- Do Not scrape the bubble with razor blades or other sharp instruments.
- Do Not use Benzene, Gasoline, Acetone, or Carbon Tetrachloride on the bubble.
- Do Not clean bubbles in the hot sun or on very hot days.

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