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Orion/2 Speed domes

Integrated High Speed Dome Camera

Outdoor

Installation Guide

Preface

Information given in this manual was current when published. The company reserves the right to revise and improve its products. All specifications are subject to change without notice.

Notice

This manual provides installation information for the outdoor Integrated High Speed Dome Camera. To work with the Dome Cameras, any installer or technician must have the following minimum qualifications:

- A basic knowledge of CCTV systems and components
- A basic knowledge of electrical wiring and low-voltage electrical hookups
- Have read this manual completely

Copyright

Important Information

Before proceeding, please read and observe all instructions and warnings in this manual. Retain this manual with the original bill of sale for future reference and, if necessary, warranty service. When unpacking your unit, check for missing or damaged items. If any item is missing, or if damage is evident, DO NOT INSTALL OR OPERATE THIS PRODUCT. Contact your dealer for assistance.

Regulation

	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

	This symbol on the product or on its packaging indicates that this product shall not be treated as household waste in accordance with Directive 2002/96/EC. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By proper waste handling of this product you ensure that it has no negative consequences for the environment and human health, which could otherwise be caused if this product is thrown into the garbage bin. The recycling of materials will help to conserve natural resources. For more details information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

	Compliance is evidenced by written declaration from our suppliers, assuring that any potential trace contamination levels of restricted substances are below the maximum level set by EU Directive 2002/95/EC, or are exempted due to their application.

Warnings and Cautions

- **Handle the camera carefully**
  Do not abuse the camera. Avoid striking, shaking, etc. The camera could be damaged by improper handing or storage.

- **Installing electricity wiring carefully**
  Ask qualified personnel of electrical wiring for the installation. Please note that input electricity to the unit is at tolerance of AC 24V ± 10%.

  The camera is capable of surge protection; ensure AC power model unit grounded appropriately against damage of heavy current or electric shock.

- **Do not disassemble the camera**
  To prevent electric shock, do not remove screws or covers. There are no user serviceable parts inside. Ask a qualified service person for servicing.

- **Do not block cooling holes on the bracket**
  This camera has a cooling fan inside. Blocking the cooling holes leads to build up of heat the camera and may cause malfunction.

- **Do not operate the camera beyond the specified temperature, humidity or power source ratings**
  Use the camera under conditions where temperature is between -50°C ~ 50°C (-58°F ~ 122°F), and relative humidity is below 90%.

- **Do not use strong or abrasive detergents when cleaning the camera body**
  Use a dry cloth to clean the camera when it is dirty. In case the dirt is hard to remove, use a mild detergent and wipe the camera gently.

- **Never face the camera towards the sun**
  Do not aim the camera at bright objects. Whether the camera is in use or not, never aim it at the sun or other extremely bright objects. Otherwise, the camera may be smeared or damaged.

Table of Contents

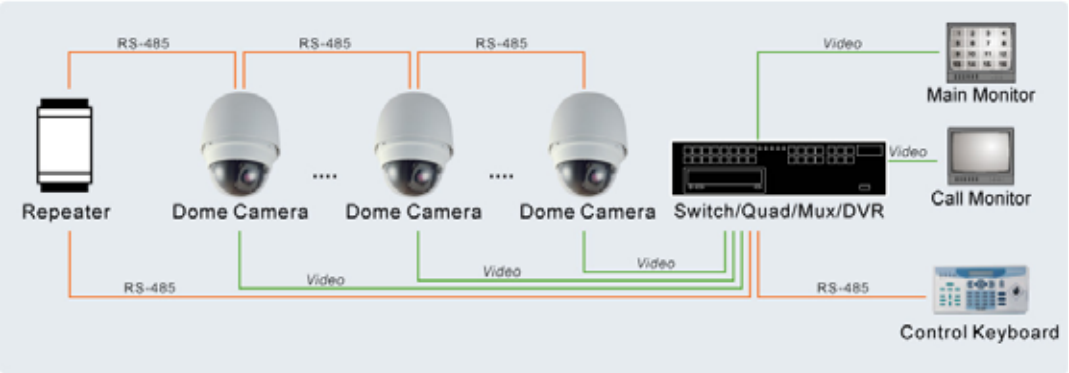
1. Introduction

With weather resistant feature, the Integrated High Speed Dome Camera is applicable to outdoor installation. The Dome Camera supports one cabling for easy installation, and can be integrated with various digital surveillance products, such as DVRs, Control Keyboards, and accessories for a total surveillance solution. In addition, large set of built-in protocols provide connectivity to other surveillance systems. The built-in protocols include ERNA, Pelco, VCL, Pelco Full Duplex, AD-422, etc., which allow the Integrated High Speed Dome Camera to be integrated with other suppliers' surveillance systems.

General Operation Requirements:

A minimum of one control device is required for operation, such as a control keyboard, a DVR or a PC. The Integrated High Speed Dome Camera contains a built-in receiver that decodes commands from a control device.

Connect Dome Cameras to other devices, as shown in the diagram below, to complete a video surveillance system.



NOTE: To extend the network distance up to 5 km and to protect the connected devices, it is highly recommended to use a BED108 close to the transmitter.. With BED108 it's also possible to do a Star configuration. BED108 has 1 input and 8 out put. Input is isolated from outputs.

2. Standard Package Content

Before proceeding, please check the box contains the items listed here. If any item is missing or has defects, DO NOT install or operate the product and contact your dealer for assistance.

Dome Camera Package

Camera Body

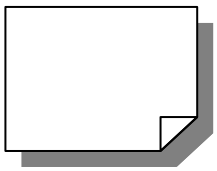
Data Cable for Power Supply, Video and Telemetry

Screws

Optical Cover

50-cm, 13-pin Alarm Cable

Waterproof Rubber



Quick Guide

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Lubricant

3. Camera Setups and Cable Connection

Before installing or connecting the Dome Camera, please refer to this section and complete preparations for Dome Camera setups and various switch settings.

3.1 Preparations for Dome Camera Setups

The following installation procedure is for the outdoor Dome Camera equipped with the sunshield housing. Please follow the steps below to complete Dome Camera's housing installation.

STEP 1

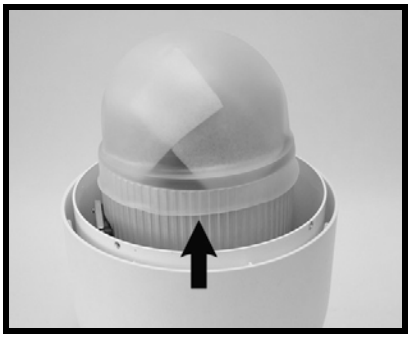
Unpack the Dome Camera's package and take out the Dome Camera unit.

STEP 2

Rotate the top holder and take it off from the camera body.

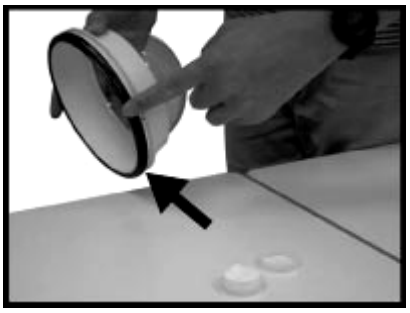
STEP 3

Remove the protective cover and PE sheet.



STEP 4

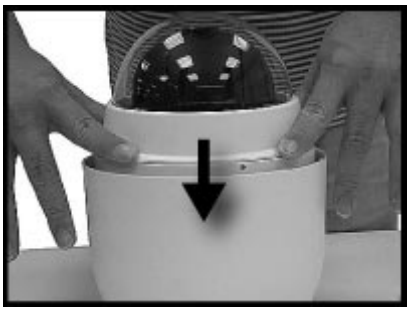
Attach the dome cover to the camera body. Before doing that, apply some lubricant on the cover's water-proof rubber to make the installation process smoother.



Note that the tiny protrusion on the cover must align with one of the four holes on the camera body.

STEP 5

Gently press down the dome cover with two hands on the side of it.



DO NOT press the cover, as shown in the figure; this might cause damage to the Dome Camera.

STEP 6

Screw the dome cover and body together.

STEP 7

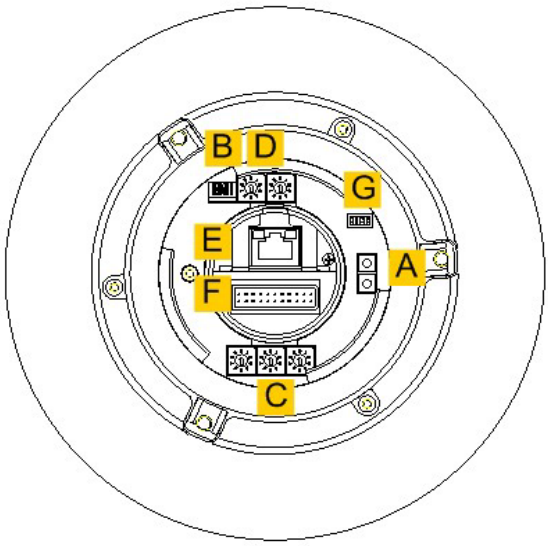
Set the switches located on the bottom of the Dome Camera. Refer to section 3.2 Dome Camera Setups for detailed information about various switch setting.

3.2 Dome Camera Setups

Before connecting the Dome Camera to other devices of CCTV system, please complete the Dome Camera's ID and communication switch settings. These switches are located on the bottom of the Dome Camera.

3.2.1 Switch Definition

Please refer to the following figure and table for switch location and definitions.

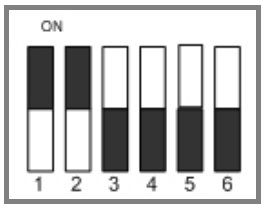


A	Reserved
B	Communication Switch
C	ID Switch
D	Camera Control Protocol Switch
E	Not used
F	22-Pin Connector
G	ISP Connector (for FW upgrade)

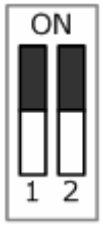
3.2.2 Communication Switch Setting

The table below shows the function of each switch within the Communication Switch for the analog and IP Dome Cameras.

Analog Dome Camera

Communication Switch		
	SW 1	RS-485 Setting
	SW 2	
	SW 3	Termination
	SW 4	Line Lock
	SW 5	System Initialization
	SW 6	Reserved

RS-485 is the interface that communicates the Dome Camera and its control device; for this reason, the RS-485 setup of the dome and the control device must be the same. The RS-485 default setting is half-duplex (see the diagram follows). Please do not change the default setting without qualified specialist or supplier's notice. As for the SW 3 and SW 4, they are used for termination and Line Lock adjustment respectively. The SW 5 is mainly used when users want to restore the camera to the factory default status; moreover, once firmware upgrade is carried out, users also need to reset the SW 5 afterward.

RS-485 Setting	
Half-duplex	Full-duplex
	

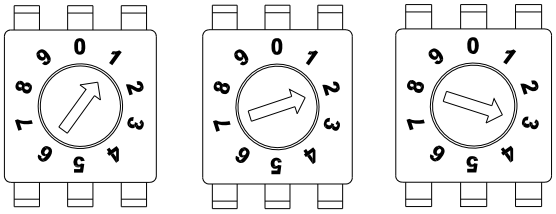
3.2.3 ID Setting

The way to set the analog and IP Dome Cameras' ID number is specified as follows.

Analog Dome Camera

Please change the analog Dome Camera's ID if there is more than one Dome Camera on the same installation site. Use the switch to change your speed Dome Camera's ID by turning the arrow to the desired number respectively. For instance, if the camera's ID is 123, the ID switch should be set as below.

NOTE: No two cameras should be given the same ID, or communication conflict may occur.



Centesimal Digit Decimal Digit Single Digit

NOTE: The number "0" should locate upwards as shown in above diagram for correct switch definition.

Camera Control Protocol Setting

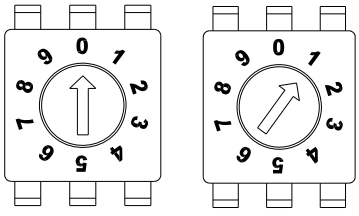
Define the protocol you are going to use basing on the devices of your surveillance system. Generally, use one protocol even the devices are provided from different manufacturers. Use the switch to set your camera control protocol and the baud rate. Refer to the table below and turn the arrow to choose a protocol for your Dome Camera.

Dome Camera

The table below shows various protocols with their matching switch numbers and baud rate.

00	VCL	9600
01	Pelco D	2400
02	Pelco P	4800
04	Chiper	9600
05	Philips	9600
06	**Ernitec***	**2400**
07	DSCP	9600
08	AD422	4800
09	DM P	9600
11	Pelco D	4800
12	Pelco D	9600
13	Pelco P	2400
14	Pelco P	9600
15	JVC	9600
16	GANZ	9600
26	Pelco Full Duplex	2400

Select protocol: Pelco D, with switch no. 01 and baud rate 2400, for instance, the protocol switch should be set as below.



Decimal Digit Single Digit

NOTE: The number “0” should locate upwards as shown in above diagram for correct switch definition.

3.3 Cable Definition and Requirements

For operation, the integrated Dome Camera requires the video cable to carry the video signals to the remote viewing site, power cable to power the Dome Camera and RS-485 data cable to carry commands from the control device.

3.3.1 Cable Requirements

For operation, the Integrated High Speed Dome Cameras require video and Data Cables as described below:

- The video cable sends video signals to a remote viewing site. Using a coaxial cable to send video signals is recommended.
- RS-485 cable carries commands from a control device to the Dome Cameras. A CAT 5, 24 gauge cable is recommended.
- The power cable provides AC 24V power supply to the Dome Camera.

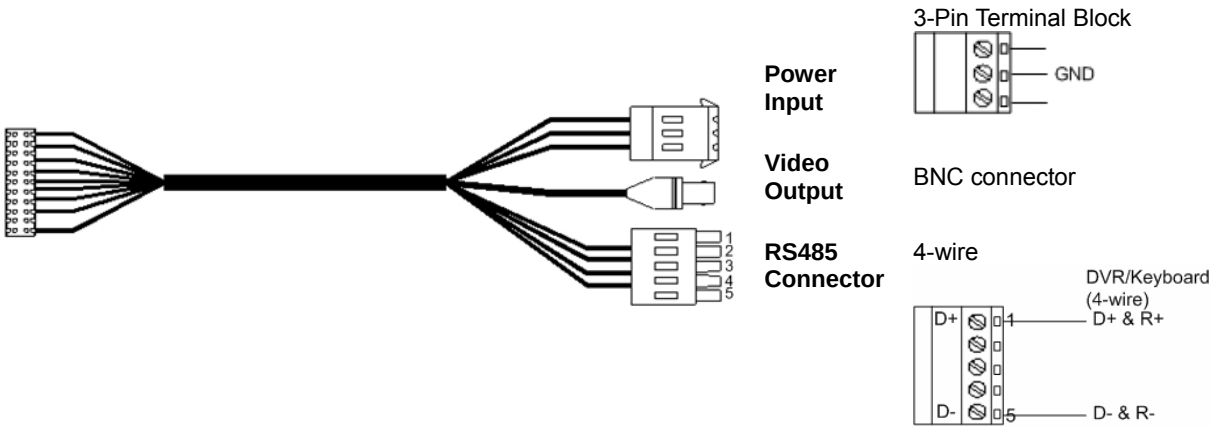
NOTE: Ensure power supply corresponds with the Dome Camera's power requirement, or product impairment will occur. If any mistake happens, please contact with a qualified maintenance engineer.

3.3.2 22-Pin Data Cable

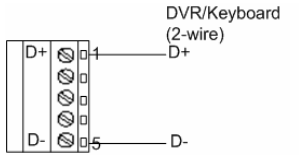
The analog and IP Dome Camera's Data Cables are illustrated respectively as shown below.

Analog Dome Camera

The analog Dome Camera's data cable is illustrated as follows.



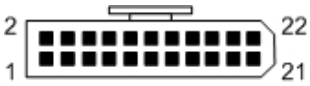
2-Wire



NOTE: Be careful not to pull the cables improperly during installation. Additionally, it is suggested to fasten the cables after cable connection is completed. Furthermore, when wiring the power cable, make sure the Ground wire inserted into the mid-pin of the terminal block.

3.3.3 22-Pin Connector Definition

With the 22-pin connector, installers can simply connect the power, video and RS-485 cables to the Dome Camera at once. Particularly, the alarm pins are serviceable for connecting alarm input and output devices, such as alarm sensors, sirens or flashing lights with the surveillance system. 22-pin connector definition will also be specified as follows.



Analog Dome Camera

The analog Dome Camera's 22-pin connector definition is listed as below.

Pin	Definition	Cable
1	AC 24-1/DC (+)	20AWG/18AWG
2	ALM NC	
3	AC 24-2/DC (-)	20AWG/18AWG
4	ALM NO	
5	FG	20AWG/18AWG
6	ALM COM	
7	T+	24AWG
8	R-	
9	T-	
10	R+	
11	ISOG	

Pin	Definition	Cable
12	ALM-1	
13	ALM-3	
14	ALM-2	
15	ALM-4	
16	ALM-5	
17	ALM-6	
18	ALM-7	
19	ALM-8	
20	ALM GND	
21	VGND	20AWG
22	Video	

NOTE: For alarm connection, please refer to section 3.3.5 Cable Wiring and Connection.

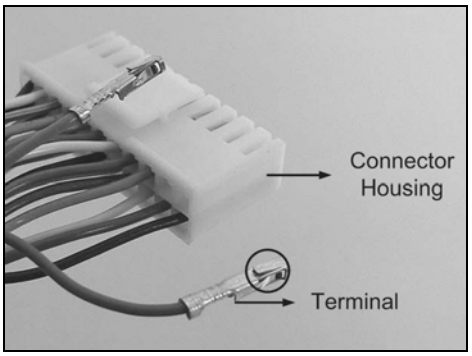
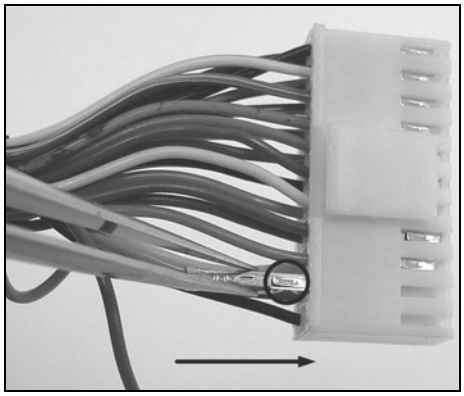
3.3.4 RS-485 Connector Definition

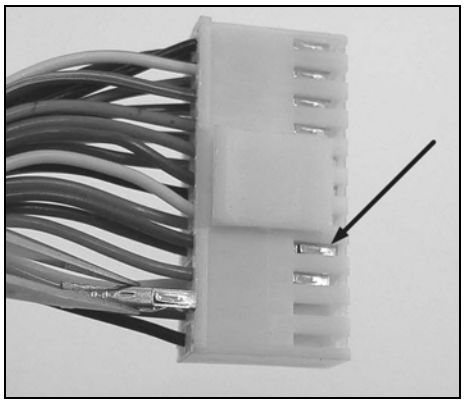
RS-485 is the interface that communicates the Dome Camera and its control device. Please connect the control keyboard to the Dome Camera through the terminal block. The recommended cables for RS-485 communication are **CAT 5** cables; maximum cable length for over 24-gauge wire is 4000 feet (1219 meters). If the total cable length exceeds 4000 feet, using a repeater to maintain the signals is recommended. Please refer to the figure and table below for pin defination and wiring.

Pin	Corresponding Pins (22-Pin Connector)	Definition
1	7,10	T+, R+ (D+)
2~4	Reserved	
5	8,9	T-, R- (D-)

3.3.5 Cable Wiring and Connection

Users may need to do cable wiring when: (1) Connecting self-provided cords to the connector housing instead of using the equipped Data Cable or (2) Connecting alarm input and output devices. The table follows will illustrate the way to wire cords into the connector housing.

	
Insert the terminal into the pin holes on the connector housing, with the hook outward, as indicated in the figure.	

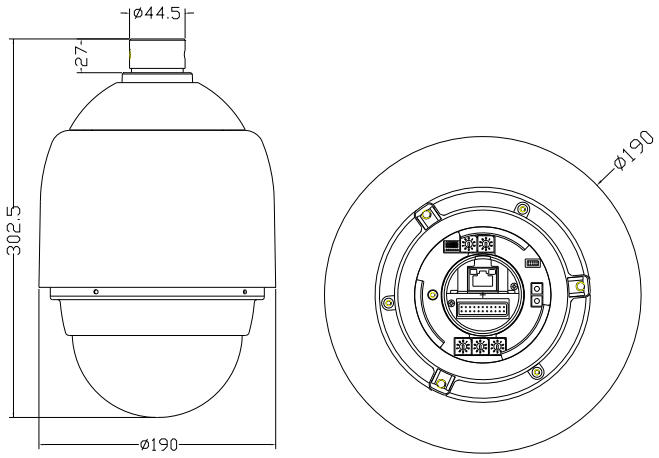
To unlock the terminal, press the hook, as indicated in the figure, with a proper tool and pull it out gently.	
Connect the 22-pin connector to the Dome Camera.	

4. Dome Installation

Basing on user's installation environments, the Dome Camera can be installed on ceiling, on wall or on pole. In the following section, various Dome Camera's installation accessories, installation methods and installation procedures will be described in detail. In addition, the next section will provide the Dome Camera's dimension for your reference before installation.

4.1 Dome Dimension

The Dome Camera's dimension is Ø172 x 302.5mm (6.7x11.9 Inches) and Ø190 x 302.5mm (7.5x11.9 Inches), with sunshield. The diagrams below show detailed dimension for the camera's different parts.



4.2 Optional Accessories

Dome Camera Accessories

Sunshield Height: 129.5 mm (5.05 inches); Diameter: 190 mm (7.48 inches); 0.15 kg (0.33 lbs)

Transparent/Vandal Proof/Smoke Cover

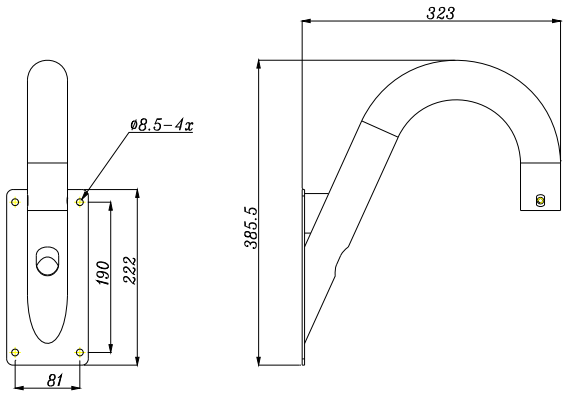
Security Screw Set (equipped with Vandal Proof Cover)

Power Adapter 77H07-A1030 (Input: 100~115VAC/Output: 24VAC 72VA) 77H07-A2030 (Input: 220~230VAC/Output: 24VAC 72VA)

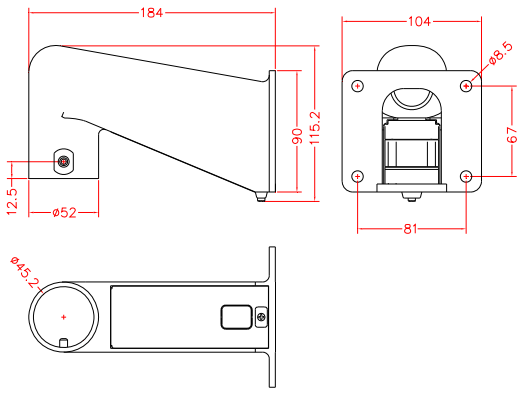
NOTE: When wiring, make sure the G/Y wire (Ground) inserted into the mid-pin of the terminal block.

Mounting Accessories

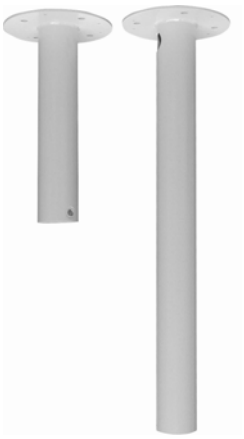
Gooseneck Tube
Iron, 298×385 mm (11.73×15.56 inches) ; 2.1 kg (4.6 lbs)
Supplied with rubber washer-8×1, pendant tube washer×1, spring washer-8×1 and M8*12 screw×1.

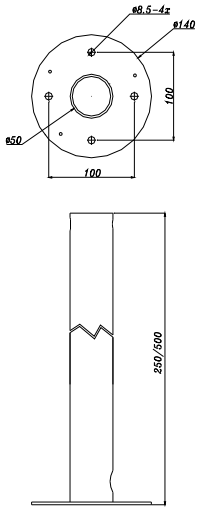


Mini Pendent Mount
184×104×115.2 mm (7.24×4.09×4.54 inches); 0.6 kg (1.2 lbs)
Supplied with rubber washer-8×1, pendant tube washer×1, spring washer-8×1 and M8*12 screw×1.

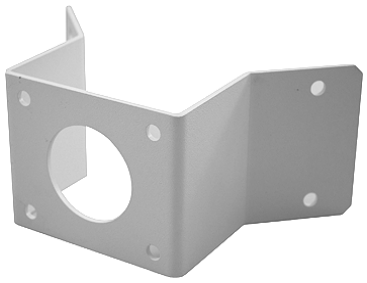


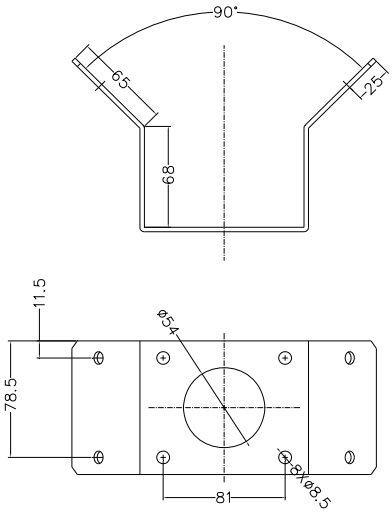
Straight Tube
Iron, Height: 250/500 mm (9.8/19.7 inches) ,Diameter: 50 mm (2 inches)
1 kg (2.2 lbs) / 1.8 kg (4 lbs), Supplied with rubber washer-8×1, pendant tube washer×1, spring washer-8×1 and M8*12 screw×1.



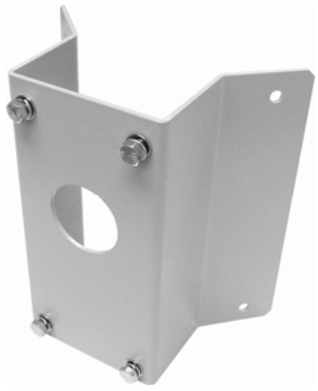


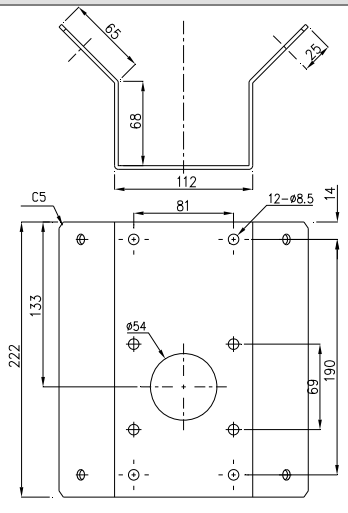
Corner Plate Mini
For mounting with Mini Pendent Mount.
270(L)×166(W)×95(D) mm (8.7×8×4.6 inches); Supplied with washer-8×4, spring washer×4, M8*16 screw×4, M8 nut×4.



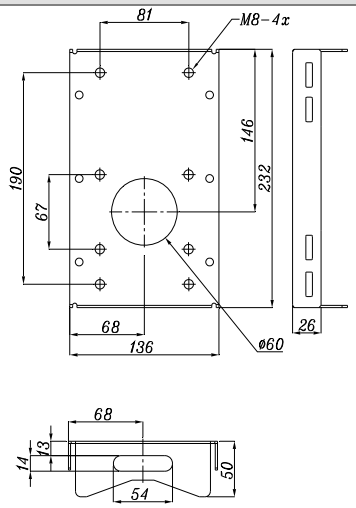


Corner Standard Mounting Plate
222(L)×204(W)×117(D) mm (8.7×8×4.6 inches); 2 kg (4.4 lbs); Supplied with washer-8×4, spring washer×4, M8*16 screw×4, M8 nut×4.

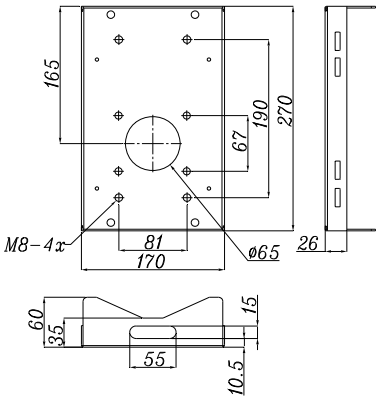




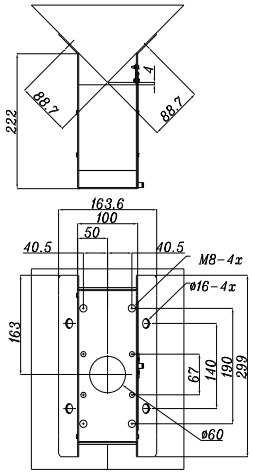
Pole Thin Direct Mounting
232(L)×136(W)×60(D) mm (9.1×5.4×2.4 inches); Diameter: 112~140 mm (4.4~5.5 inches); 0.7 kg (1.6 lbs). Supplied with stainless steel straps×4, M8*16 screw×4, washer×4.



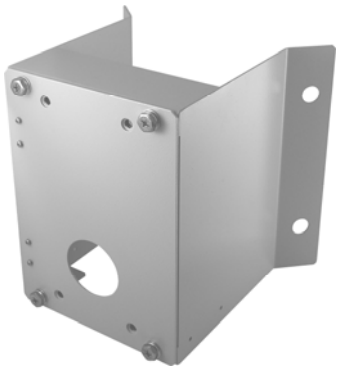
Pole Wide Direct Mounting
270(L)×170(W)×60(D) mm (10.6×6.7×2.4 inches); Diameter: 112~130 mm (4.4~5 inches); 1 kg (2.2 lbs). Supplied with stainless steel straps×4, M8*16 screw×4, washer×4, spring washer×4

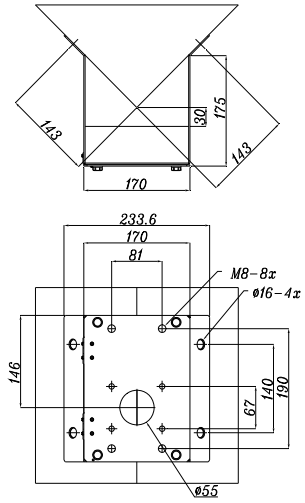


Corner Thin Box
300(L)×164(W)×222(D) mm (11.8×6.5×8.7 inches); 3 kg (6.7 lbs); Supplied with washer×4, M8*16 screw×4 and spring washer×4.
Power Box can be set inside the thin box.

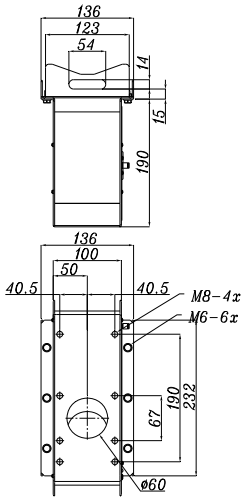


Corner Wide Box
232(L)×234(W)×210(D) mm (9.1×9.2×8.3 inches); 2.7 kg (6 lbs); Supplied with washer×4, M8*16 screw×4 and spring washer×4.
Power Box can be set inside the wide box.

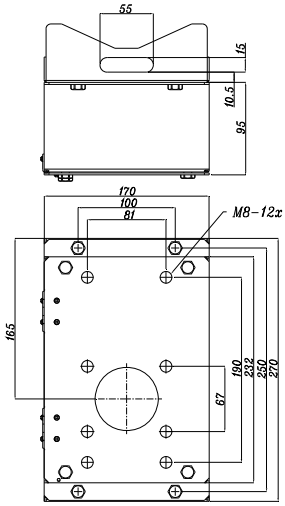




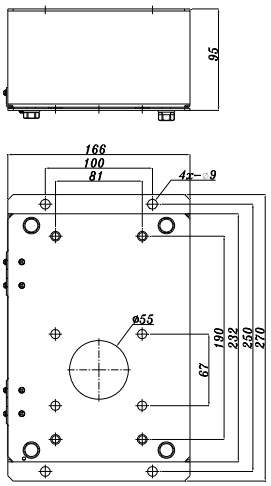
Pole Thin Box
291(L)×136(W)×242 (D) mm (11.5×5.4×9.5 inches); 3.1 kg (6.9 lbs); Supplied with M8*16 screw×4, washer×4, spring washer×4, stainless steel straps×4.
Power Box can be set inside the thin box.



Pole Wide Box
270(L)×166(W)×155(D) mm (10.6×6.5×6.1 inches); 3.2 kg (7.1 lbs); Supplied with M8*16 screw×4, washer×4, spring washer×4, stainless steel straps×4.
Power Box can be set inside the wide box.



Wall Box Mounting
270(L)×166(W)×95(D) (10.6×6.5×3.7 inches); 2.2 kg (4.84 lbs); Supplied with M8*16 screw×4, washer×4, spring washer×4
Power Box can be set inside the wall box.



Stainless Steel Straps
For fixing Pole Direct Mounting/ Pole Box on the pole.
Length: 700 mm (27.5 inches); Width: 0.63”; 0.02 kg (0.04 lbs)

Stainless Strap Cutter
For tension, cut and crimp stainless steel straps. 1.4 kg (3.1 lbs)
Suitable for straps width: 1/2”, 5/8”, 3/4”

Other Application Accessories

Coaxial Telemetry
Transmit video and RS-485 control signals via one BNC line.
Dimension: 100×90×28 mm (3.93×3.54×1.1 inches)

Front View

Rear View

All photos of the accessories are subject to change without notice.

4.3 Ceiling Mounting with Straight Tube

The straight tube is available in different length: 25 cm and 30 cm. The supplied item is in the Dome Camera's package.

Items Needed:

- Dome Camera
- Data Cable (supplied)
- Straight Tube and other equipped items (optional accessory)
- Waterproof Rubber (supplied)
- Screws and Screw Anchors for fixing the straight tube onto the ceiling (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

Follow the steps to mount the Dome Camera with the straight tube.

1) Ensure that the ceiling can support the weight of the Dome Camera and straight tube.

2) Make a cable entry hole on the ceiling.

3) Fix the Straight Tube to the ceiling with proper screws and screw anchors (not supplied).

4) Attach the waterproof rubber to the straight tube.

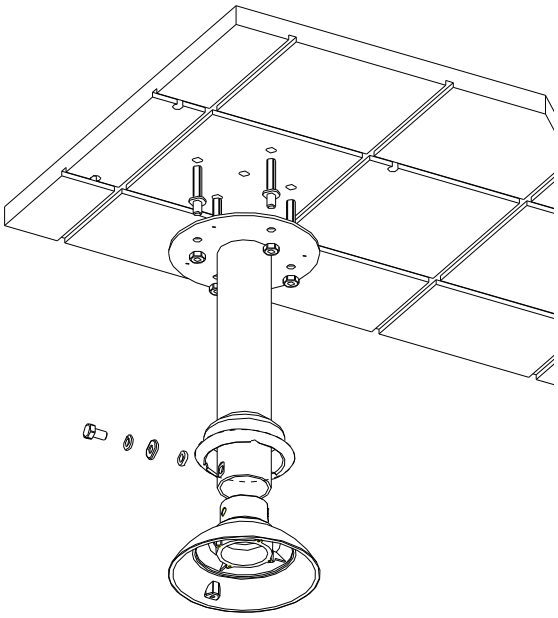
5) Thread the cables through the straight tube and the top holder.

NOTE : After threading the cables, please block the cable entry hole with the supplied sponge(s) to avoid insects entering the tube.

6) Fix the top holder to the straight tube with the supplied screws and washers. Then adjust the waterproof rubber to the junction of straight tube and top holder.

7) Connect the cables to the Dome Camera. Then attach the Dome Camera to the top holder and fix them with the supplied screw.

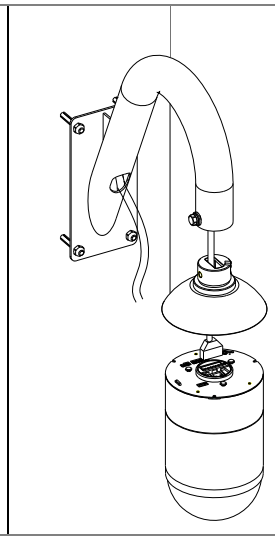
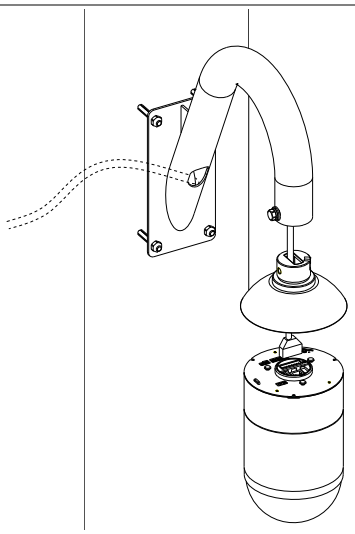
Ceiling Mount: Straight Tube + Waterproof Rubber



4.4 Wall Mount

4.4.1 Wall Mounting with Gooseneck Tube

The following figures show how cables run through the tube in different ways.

Cables exposed	Cables recessed
	

Items Needed:

- Dome Camera
- Data Cable (supplied)
- Gooseneck Tube and other equipped items (optional accessory)
- Waterproof Rubber (standard accessory)

- Screws and Screw Anchors for fixing the gooseneck tube onto the ceiling (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

Follow the steps to mount the Dome Camera with the gooseneck tube.

1) Make a cable entry hole on the wall to recess the cables. Otherwise, cables can be threaded through the cable entry hole on the tube.

2) Fix the Gooseneck Tube on the wall with proper screws and screw anchors (not supplied).

3) Attach the waterproof rubber to the gooseneck tube.

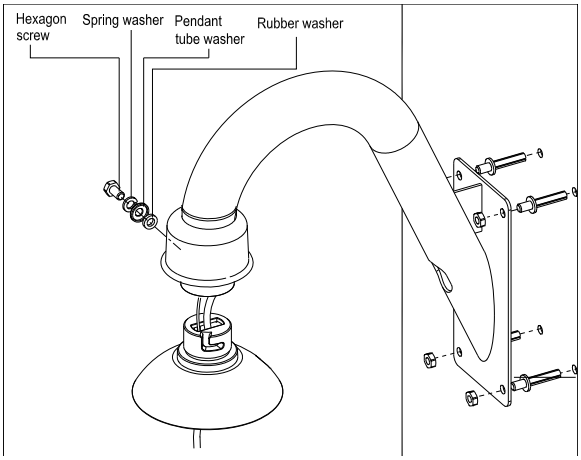
4) Thread the cables through the gooseneck tube and the top holder.

NOTE : After threading the cables, please block the cable entry hole with the supplied sponge(s) to avoid insects entering the tube.

5) Fix the top holder to the gooseneck tube with the supplied screws and washers. Then adjust the waterproof rubber to the junction of straight tube and top holder.

6) Connect the cables to the Dome Camera. Then attach the Dome Camera to the top holder and fix them with the supplied screw.

Wall Mount: Gooseneck Tube + Waterproof Rubber



4.4.2 Mini Pendant Mount

Items Needed:

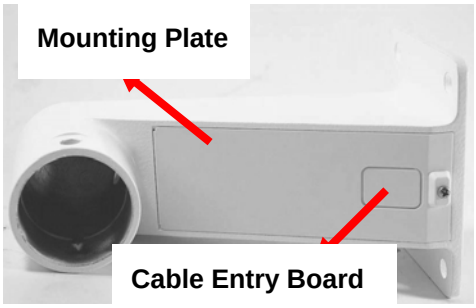
- Dome Camera
- Data Cable (supplied)
- Mini Pendant Mount and other equipped items (optional accessory)
- Waterproof Rubber (standard accessory)
- Screws and Screw Anchors for fixing the Mini Pendant Mount (not supplied)

Tools Needed:

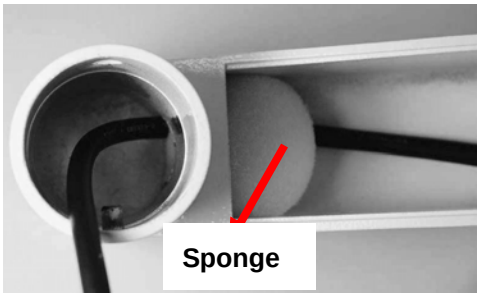
- Tool for drilling
- Tool for screwing

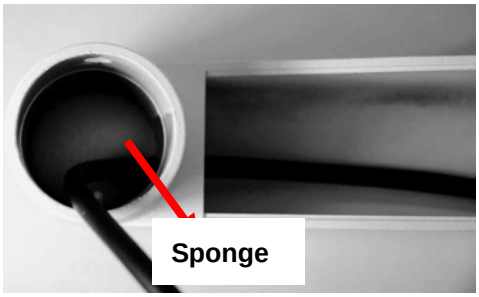
Follow the steps to mount the Dome Camera with the Mini Pendant Mount.

1) Make a cable entry hole on the wall to recess the cables. Otherwise, users could push up the cable entry board on the Mini Pendant Mount's mounting plate to place the cables, as shown in the photo below.



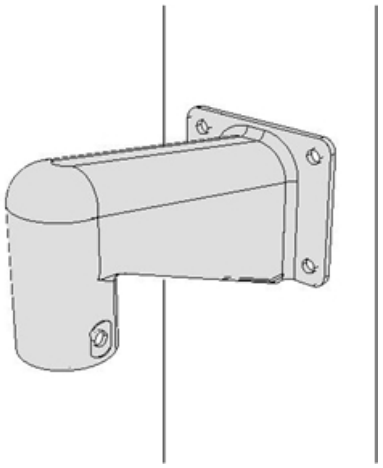
2) To avoid insects entering the pendant mount, you could block the cable entry hole with the supplied sponge in two ways. See the illustrations below.





3) Thread the cables through the Mini Pendant Mount and fix the pendant mount on the wall with proper screws and screw anchors (not supplied).

4) Attach the waterproof rubber to the Mini Pendant Mount.
5) Thread the cables through the top holder and fix it to the Mini Pendant Mount with the supplied screws and washers.
6) Connect the cables to the Dome Camera. Then attach the Dome Camera to the top holder and fix them with the supplied screw.



4.4.3 Wall Box Mounting

Items Needed:

- Dome Camera
- Data Cable (supplied)
- Gooseneck Tube and other equipped items (optional accessory)
- Wall Box (optional accessory)
- Waterproof Rubber (standard accessory)
- Screws and Screw Anchors for fixing the wall box onto the ceiling (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

Follow the steps to mount the Dome Camera with the gooseneck tube and wall box.

1) Fix the Wall Box on wall with proper screws and screw anchors (not supplied).

2) Fasten the gooseneck tube on the wall box with the supplied screws and washers.
3) Attach the waterproof rubber to the gooseneck tube.

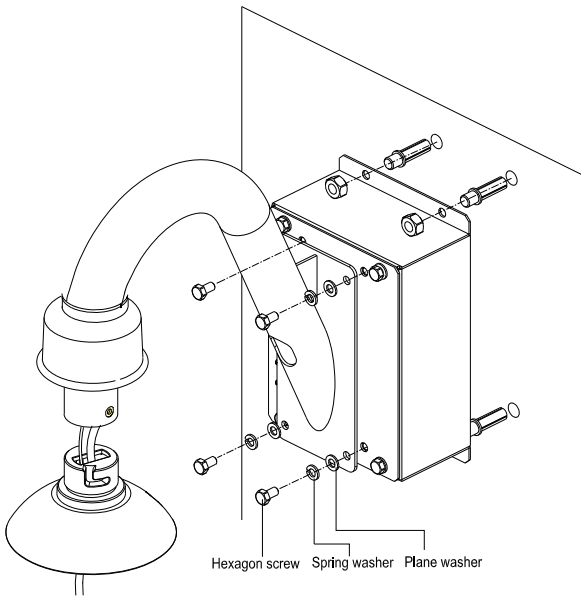
4) Thread the cables through the gooseneck tube and the top holder.

NOTE : After threading the cables, please block the cable entry hole with the supplied sponge(s) to avoid insects entering the tube.

5) Fix the top holder to the gooseneck tube with the supplied screws and washers. Then adjust the waterproof rubber to the junction of straight tube and top holder.

6) Connect the cables to the Dome Camera. Then attach the dome to the top holder and fix them with the supplied screw.

Wall Box Mount: Wall Box Mount + Gooseneck Tube + Waterproof Rubber



4.5 Corner Mount

4.5.1 Corner Standard/Mini Mounting Plate

With the corner standard/mini mounting plate and gooseneck tube/mini pendant mount, the Dome Camera can be mounted on corner wall.

Items Needed:

- Dome Camera
- Data Cable (supplied)
- Gooseneck Tube/Mini Pendant Mount and other equipped items (optional accessory)
- Corner Standard/Mini Mounting Plate (optional accessory)
- Waterproof Rubber (standard accessory)
- Screws and Screw Anchors for fixing the Corner Standard Mounting Plate (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

Follow the steps below to mount the Dome Camera with the corner standard/mini mounting plate and gooseneck tube/mini pendant mount.

1) Make a cable entry hole on the wall to recess the cables. Otherwise, cables can be threaded through the cable entry hole on the tube.

2) Fix the Corner Standard/Mini Mounting Plate on corner wall with proper screws and screw anchors (not supplied).

3) Attach the gooseneck tube/mini pendant mount to the fixed mounting plate with the supplied screws and washers.

4) Thread the cables through the gooseneck tube/mini pendant mount and the top holder.

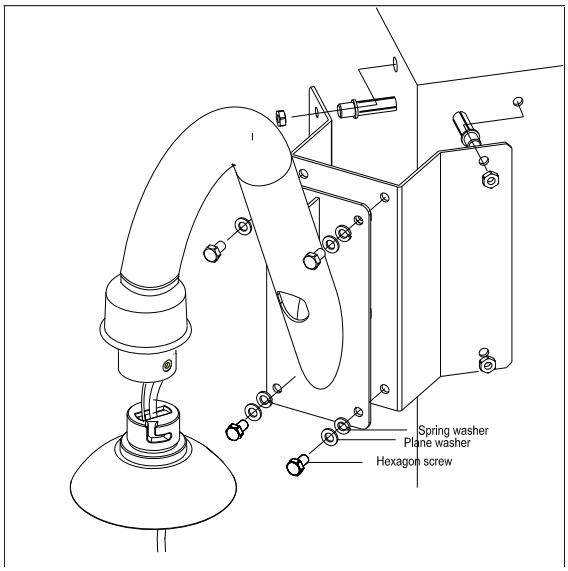
NOTE : After threading the cables, please block the cable entry hole with the supplied sponge(s) to avoid insects entering the tube.

5) Fix the top holder to the gooseneck tube/mini pendant mount with the supplied screws and washers. Then adjust the waterproof rubber to the junction of gooseneck tube/mini pendant mount and top holder.

6) Connect the cables to the Dome Camera. Then attach the Dome Camera

to the top holder and fix them with the supplied screw.

Corner Wall Mounting: Corner Standard/Mini Mounting Plate + Gooseneck Tube/Mini Pendant Mount + Waterproof Rubber



4.5.2 Corner Thin/Wide Box Mounting

The corner thin/wide box is designed to be installed with a gooseneck tube.

Items Needed:

- Dome Camera
- Data Cable (supplied)
- Gooseneck Tube and other equipped items (optional accessory)
- Corner Thin/Wide Box (optional accessory)
- Waterproof Rubber (standard accessory)
- Screws and Screw Anchors for fixing the Corner Thin/Wide Box (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

Follow the steps to mount the Dome Camera with the corner box and gooseneck tube.

1) Make a cable entry hole on the wall to recess the cables. Otherwise, cables can be threaded through the cable entry hole on the tube.

2) Fix the Corner Thin/Wide Box on corner wall with proper screws and screw anchors (not supplied).

3) Attach the gooseneck tube to the fixed corner box with the supplied screws and washers.

4) Attach the waterproof rubber to the gooseneck tube.

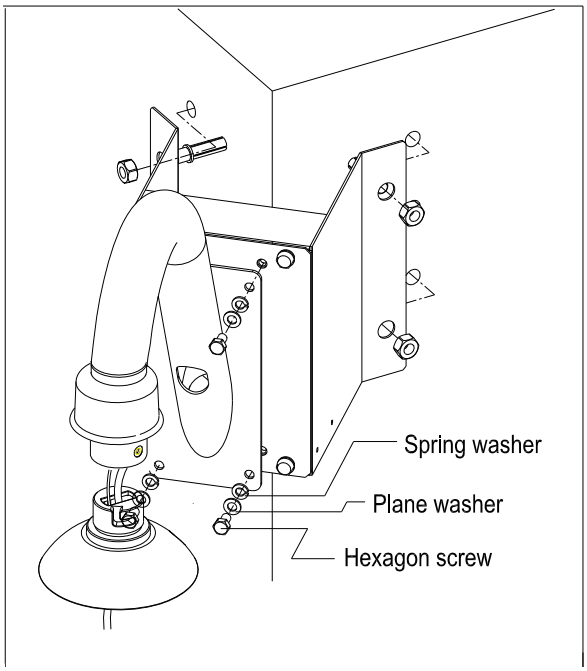
5) Thread the cables through the gooseneck tube and the top holder.

NOTE : After threading the cables, please block the cable entry hole with the supplied sponge(s) to avoid insects entering the tube.

6) Fix the top holder to the gooseneck tube with the supplied screws and washers. Then adjust the waterproof rubber to the junction of straight tube and top holder.

7) Connect the cables to the Dome Camera. Then attach the dome to the top holder and fix them with the supplied screw.

Corner Box Mounting: Corner Thin/Wide Box + Gooseneck Tube + Waterproof Rubber



4.6 Pole Mount

4.6.1 Pole Thin/Wide Direct Mounting

The Dome Camera can be installed on a pole with a thin/wide direct mounting accessory and a gooseneck.

Items Needed:

- Dome Camera
- Data Cable (supplied)
- Gooseneck Tube and other equipped items (optional accessory)
- Waterproof Rubber (standard accessory)
- Pole Thin/Wide Direct Mounting (optional accessory)
- Stainless Steel Straps (optional accessory)

Tools Needed:

- Stainless Strap Cutter
- Tool for screwing

Follow the steps below to mount the Dome Camera with the pole direct mounting and gooseneck.

1) Fasten the Pole Thin/Wide Direct Mounting on a pole with equipped

stainless straps.

2) Fix the gooseneck tube on the pole direct mounting with the supplied screws and washers.

3) Attach the waterproof rubber to the gooseneck tube.

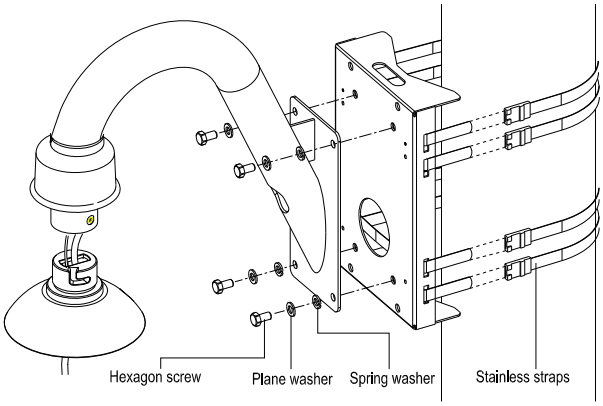
4) Thread the cables through the gooseneck tube and the top holder.

NOTE : After threading the cables, please block the cable entry hole with the supplied sponge(s) to avoid insects entering the tube.

5) Fix the top holder to the gooseneck tube with the supplied screws and washers. Then adjust the waterproof rubber to the junction of straight tube and top holder.

6) Connect the cables to the Dome Camera. Then attach the Dome Camera to the top holder and fix them with the supplied screw.

Pole Direct Mount: Pole Thin/Wide Direct Mounting +Gooseneck Tube + Waterproof Rubber



4.6.2 Pole Thin/Wide Box Mounting

Items Needed:

- Dome Camera
- Data Cable (supplied)
- Gooseneck Tube and other equipped items (optional accessory)
- Waterproof Rubber (standard accessory)
- Pole Thin/Wide Box(optional accessory)
- Stainless Steel Straps (optional accessory)

Tools Needed:

- Stainless Strap Cutter
- Tool for screwing

Follow the steps to mount the Dome Camera with the pole box and gooseneck tube.

1) Fasten the Pole Thin/Wide Box on a pole with equipped stainless straps.

2) Fix the gooseneck tube on the pole box with the supplied screws and washers.

3) Attach the waterproof rubber to the gooseneck tube.

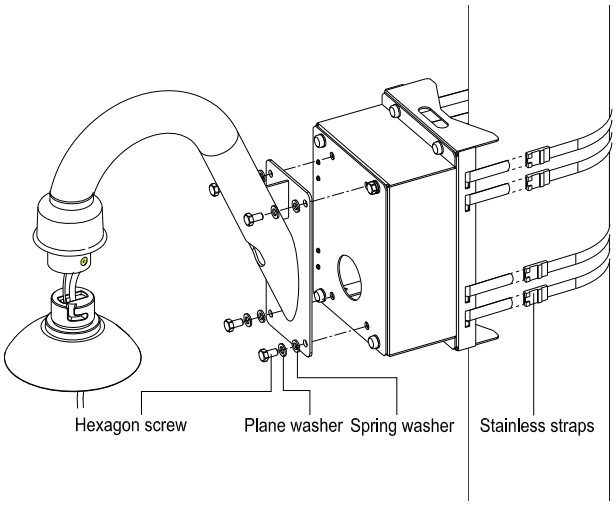
4) Thread the cables through the gooseneck tube and the top holder.

NOTE : After threading the cables, please block the cable entry hole with the supplied sponge(s) to avoid insects entering the tube.

5) Fix the top holder to the gooseneck tube with the supplied screws and washers. Then adjust the waterproof rubber to the junction of straight tube and top holder.

6) Connect the cables to the Dome Camera. Then attach the Dome Camera to the top holder and fix them with the supplied screw.

Pole Box Mount: Pole Thin/Wide Box + Gooseneck Tube + Waterproof Rubber



5. System Expansion

5.1 5.2 Data Formats Transforming

To integrate other surveillance devices with the Integrated High Speed Dome Cameras or to extend the distance of communications, users could employ three kinds of repeater/converter, as shown below. With the advanced circuit design, these repeaters/converters offer 1KVrms isolation voltage and surge protection capability. The exiting network can be protected by the repeaters/converters. Up to 10 devices are allowed to connect to one repeater/converter. For detailed information, please refer to the repeater/converter user's manual.

5.3 Signal Distribution

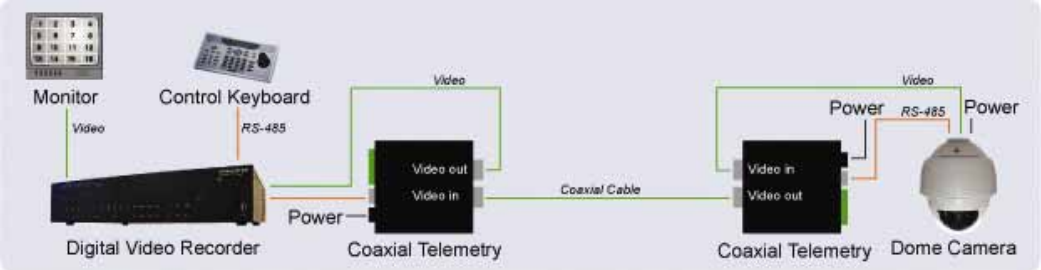
The RS-485 Signal Distribution Unit BED108 is designed to relay control codes to Speed Dome Cameras. It is capable of communicating with cameras up to 5.0 kilometers away. Additionally, the BED108 can be installed in either "star" or "daisy chain" configuration.
For more information se manual for BED108.

Star Configuration

Daisy Chain Configuration

5.4 Coaxial Telemetry

The Coaxial Telemetry is a low-cost solution to long distance connection between Dome Cameras and controlling devices (e.g. DVR and keyboard). It simplifies the work of wiring by transmitting video and RS-485 control signals via one BNC line, so that to bring users economical benefits. The following is the coaxial telemetry application diagram. For more information, please refer to the coaxial telemetry's quick installation guide.



6. System Integration

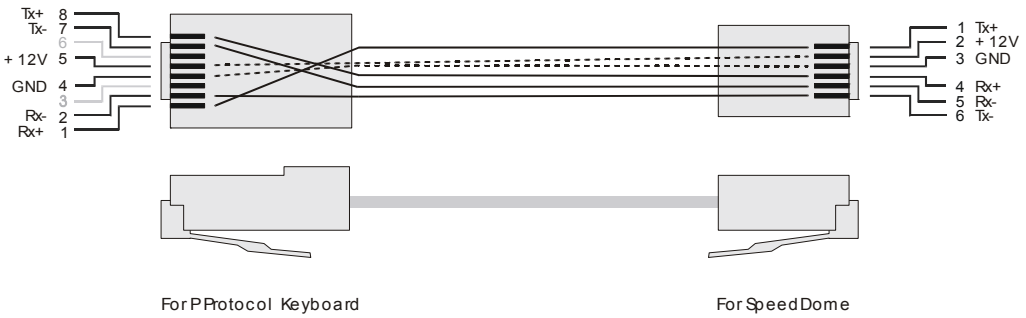
The Dome Camera is allowed to be integrated into other suppliers' surveillance systems with large set of built-in protocols. Refer to the following sections for more information.

6.1 Using Pelco Keyboard

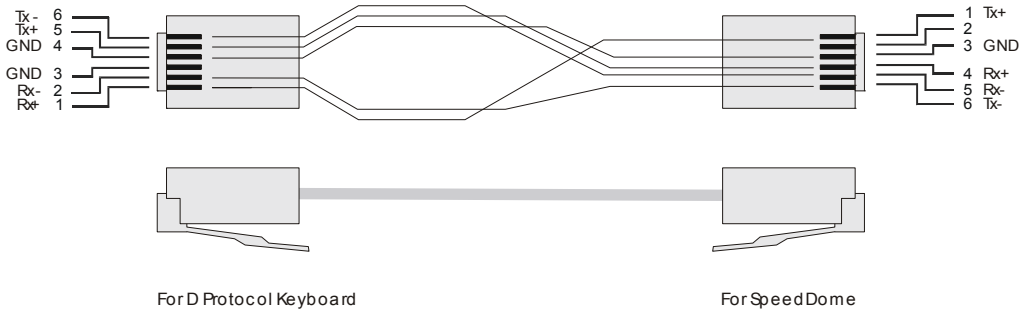
The Speed Dome Camera can be controlled through a Pelco keyboard which built in with D protocol and P protocol. Please follow the instruction to manipulate our speed dome by a keyboard with D and P protocols.

Function	Instruction
Set Preset	Number key + press and hold <Preset > button for three seonds.
Go Preset	Number key + <Preset> to command a Dome Camera to go to a specific preset position.
Display or hide an OSD menu	95 <Preset>
Move the cursor in OSD menu	Move the cursor up/down/right/left by pushing the joystick up/down/right/left respectively
<ENTER>	95 <Preset>
Reset the Dome Camera	7 8 <Preset>

Cable Definition (P Protocol Keyboard to PTZ Camera)



Cable Definition (D Protocol Keyboard to PTZ Camera)



6.2 Using Philips Allegiant Keyboard

The Dome Cameras can be integrated into Philips Allegiant systems through D77R3 repeaters. Please follow the instructions to control Dome Cameras through Philips Allegiant systems.

Symbol Definition

<shot>	Command Dome Cameras to go to specific preset position.
<set>	Set preset position.

Special Function

7 6 <set>	Exit OSD menu directly.
7 7 <set>	1. Display or hide OSD menu. 2. Virtual key to send an ENTER command when OSD is displayed.
7 8 <set>	Reset doma camera.
<Iris Open>	Send an ENTER command when OSD is displayed.

Control Dome Camera Using Allegiant Keyboard

- User can move the cursor left/right/up/down through pushing joystick left /right/up/down.

- Some differences for ENTER command.
  User cannot send ENTER command directly. User can send a ENTER command through " 7 7 <Set> ".

Appendix A: Technical Specification

Items		Orion 22x	Orion 23x	Orion 26x	Orion 35x
CAMERA					
CCD Sensor		1/4" CCD	1/4" CCD	1/4" EXview	1/4" CCD
Progressive Scan		-	Yes	-	Yes
Optical Zoom		22×	23x	26×	35x
Digital Zoom		1× ~12× variable			
Effective Pixels					
	PAL	440k			
Horizontal Resolution					
	PAL	480 TVL			540 TVL
Scanning System		NTSC / PAL			
Synchronization		Internal / Line Lock			
Video Output		1.0 Vp-p / 75 Ω, BNC			
S/N Ratio		> 50 dB (AGC Off)			
Minimum Illumination		1 lux	0.1 lux; 0.01 lux(B/W)	0.07 lux; 0.01 lux(B/W)	0.05 lux; 0.01 lux(B/W)
Focal Length		4~88 mm	3.6~82.8 mm	3.5~91 mm	3.4~119 mm
Focus Mode		Auto / Manual			
White Balance		Auto / Manual			
Iris Control		Auto / Manual			
Electronic Shutter	NTSC	1/60~1/30k sec.	1/2~1/30k sec.	1/1~1/10k sec.	1/2~1/30k sec.
	PAL	1/50~1/30k sec	1/1.5~1/30k sec	1/1~1/10k sec	1/1.5~1/30k sec
AGC control		Auto / Manual			
Back Light Compensation		On / Off			
OPERATION					
Built-in Protocol		Ernitec, Pelco D&P, VCL, Philips, AD-422, JVC, Kalatel, etc.			Pelco Full Duplex
Multi-Language OSD		English, Simplified Chinese, French, German, Italian, Japanese, Polish, Portuguese, Russian, Spanish			
Pan Travel		360° endless			
Tilt Travel		-10°~100°	-10°~190°		
Manual Speed		1°~90°/s			
resets		256			
Preset Accuracy	Pan	0.225°			
	Tilt	0.225°			
Preset Speed	Pan	5°~400°/s			
	Tilt	5°~400°/s			
Cruise		1			
Sequence		8			
Auto Pan		4			
Privacy Mask		-	8	24	8
Proportional Pan & Tilt		On/Off (Pan and tilt speed proportional to zoom ratio)			
Resume after Power loss		Yes			

Zone Title	16					
Home Function	Preset, Sequence, Auto pan, Cruise					
Auto Flip	Mechanical/Off		Digital/Mechanical/Off			
Electronic Image Stabilizer		-	-	-		On/Off
Digital Slow Shutter		-	On/Off	On/Off		On/Off
Motion Detection		On/Off	On/Off	-		On/Off
Wide Dynamic Range		-	-	On/Off		On/Off
Day/Night: IR Cut Filter		-	On/Off	On/Off		On/Off
Alarm Input	8					
Alarm Output	1					
Alarm Reaction	Preset, Sequence, Auto pan, Cruise					
GENERAL						
Environment	Indoor / Outdoor					
Controller Interface	RS-485					
Operating Temperature	-50°C~50°C (-58°F~122°F)					
Waterproof Standard	IP66 standard					
Dimension	⌀172 x 302.5mm (6.7 x 11.9 Inches) / ⌀190 x 302.5mm (7.5x 11.9 Inches), with sunshield					
Weight	5.8 kg (12.9 lbs)					
Power Source	AC 24V ± 10%					
Power Consumption	65 W (with Heater)					
Regulatory	CE, FCC, RoHS					