Integrated High Speed Dome Camera

Outdoor

Installation Guide

Version 3.6

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. 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
- A basic knowledge of network system setting
- Have read this manual completely

Copyright

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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

CE	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 DC12V/AC24V ± 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 -45°C ~ 50°C (-49°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.

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1. Introduction

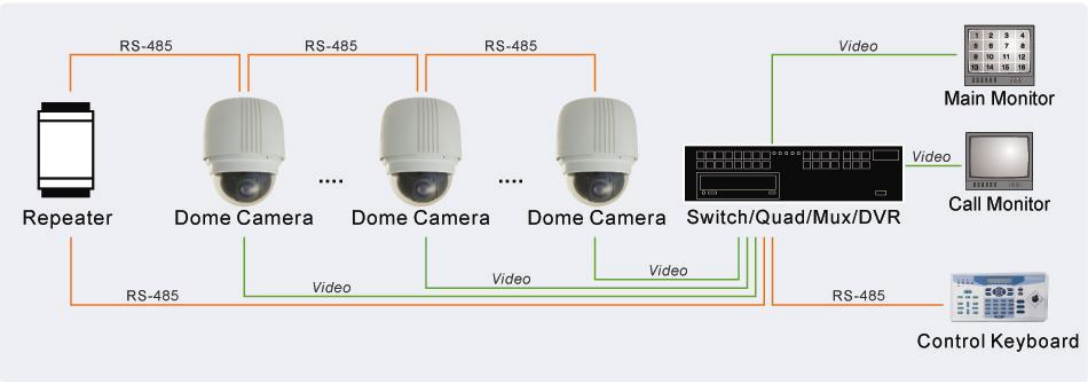
With weather resistant feature, the Integrated High Speed Dome Camera is applicable to outdoor installation. The dome camera supports one cabling for easy installation, and can be integrated with various digital surveillance products, such as DVRs, Control Keyboards, and accessories for a total surveillance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

System Configuration

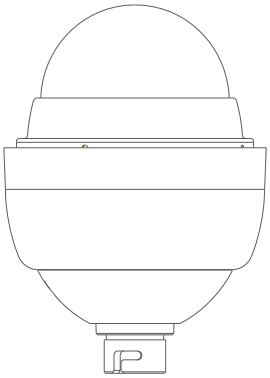


NOTE: To extend the network distance up to 1.2 km (4000 feet) and to protect the connected devices, it is highly recommended to place a repeater at the mid-point. However, a repeater may be needed in the network distance less than 1.2 km if the used cables are not the CAT 5, 24-gauge cables; also see 3.3.4 RS-485 Connector Definition. Refer to the repeater's manual for detailed information.

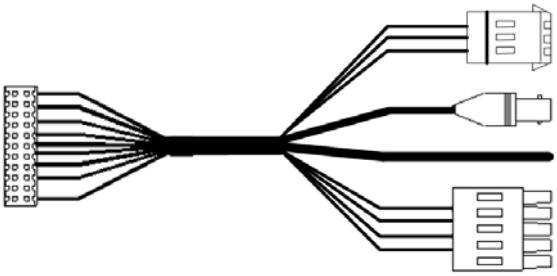
2. Standard Package Contents

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.

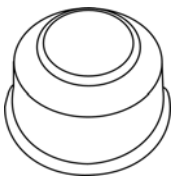
Analog Model



Dome Camera with Outdoor Mount Kit

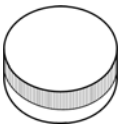


Data Cable for Power Supply, Video, Alarm and RS-485 (AC 24V)



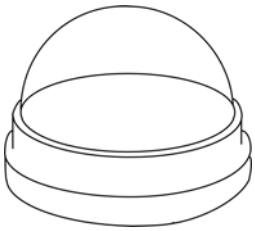
Waterproof Rubber

M3 Standard Screw (x1)
M3 Security Screw (x1)
M5 Standard Screw (x1)
M5 Security Screw (x1)

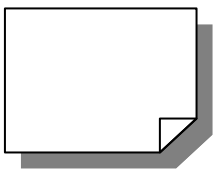


Lubricant

Security Torx



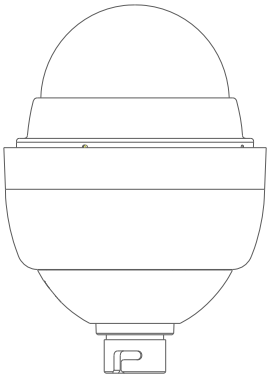
Optical Cover



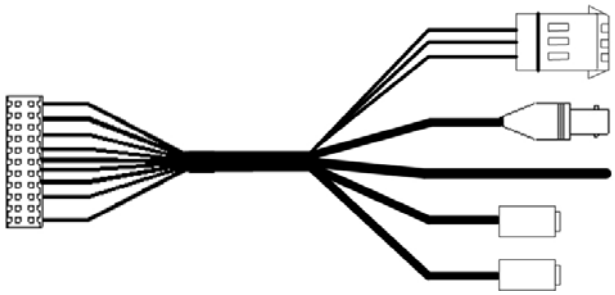
Quick Guide

CD: Operation Manuals

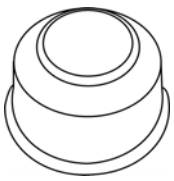
Network Model



Dome Camera with Outdoor Mount Kit

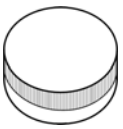


Data Cable for Power Supply, Video, Audio and Alarm (AC 24V)



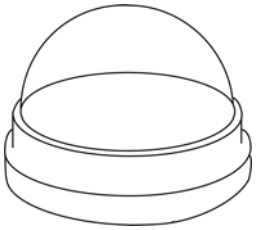
Waterproof Rubber

M3 Standard Screw (x1)
M3 Security Screw (x1)
M5 Standard Screw (x1)
M5 Security Screw (x1)

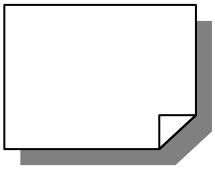


Lubricant

Security Torx



Optical Cover



Quick Guide

CD: Operation Manuals

3. Camera Setups and Cable Connections

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

3.1 Preparations for Dome Camera Setups

The following installation procedure is for the outdoor dome equipped with the sunshield housing. Please follow the steps below to complete dome housing installation.

STEP 1

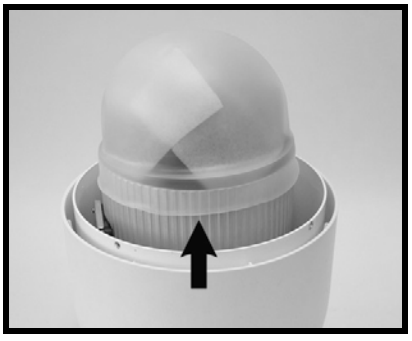
Unpack the Dome Camera's package and take out the Dome Camera unit.

STEP 2

Rotate the Outdoor Mount Kit, and take it off from the camera body.

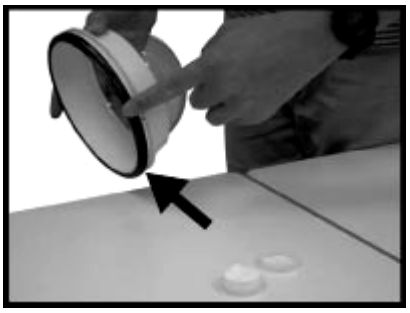
STEP 3

Remove the protective cover and PE sheet.



STEP 4

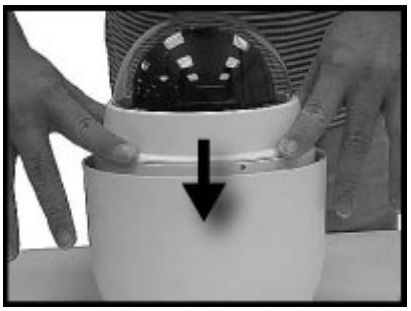
Attach the dome cover to the camera body. Before doing that, apply some lubricant on the cover's water-proof rubber to make the installation process smoother.



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

STEP 5

Gently pressure the dome cover downward with two hands on the side of it.



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

STEP 6

Screw the dome cover and camera body together.

STEP 7

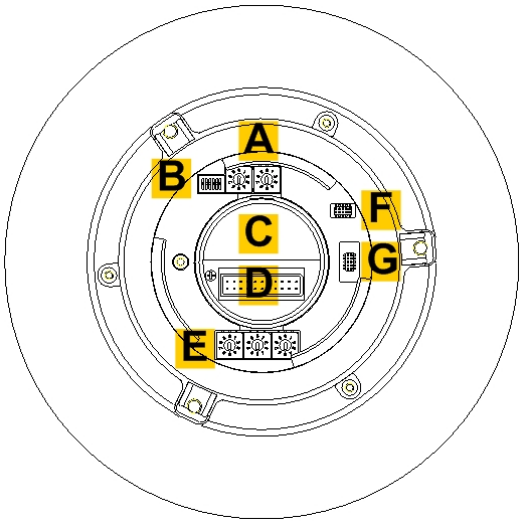
Set the switches located on the bottom of the dome body. Refer to section 3.2 Dome Camera Setups for detailed information about various switch setting.

3.2 Dome Camera Setups

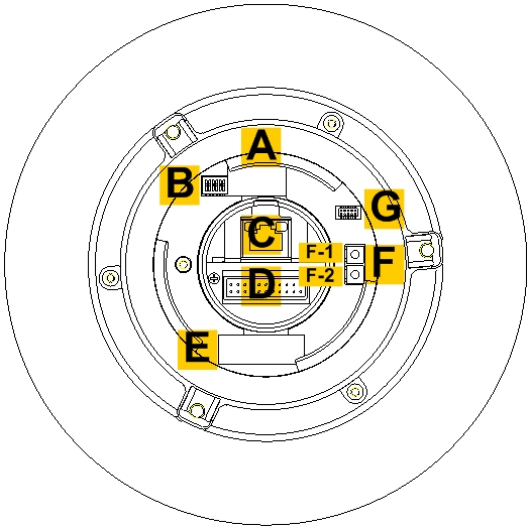
Before connecting the Dome Camera to other devices of CCTV system, please complete the Dome Camera's ID and communication switch settings. These switches are located on the bottom of the Dome Camera.

3.2.1 Switch/Connector Definition

Please refer to the diagrams and tables accompanied with for use of each switch/connector.



Analog Model



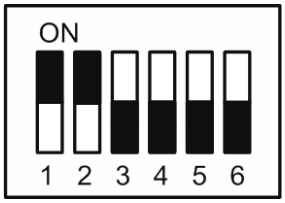
Network Model

A	Camera Control Protocol Switch
B	Communication Switch
C	None
D	22-Pin Connector
E	ID Switch
F	Reserved
G	ISP Connector (for FW upgrade)

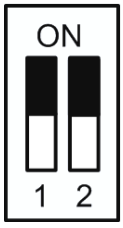
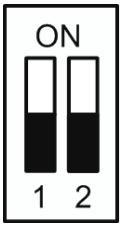
A	None	
B	Communication Switch (Reserved)	
C	RJ-45 Connector	
D	22-Pin Connector	
E	None	
F	F-1	Reboot Button
	F-2	Factory Reset Button
G	ISP Connector (for FW upgrade)	

NOTE: DO NOT change the network Speed Dome Camera's Communication Switch factory default settings.

3.2.2 Communication Switch Setting

Communication Switch		
	SW 1	RS-485 Setting
	SW 2	
	SW 3	Termination
	SW 4	Line Lock
	SW 5	Factory Default Reset
	SW 6	Reserved

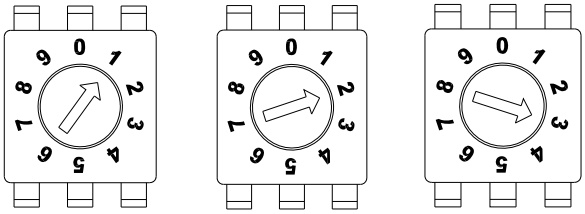
RS-485 is the interface that communicates the dome camera and its control device; for this reason, the RS-485 setup of the dome and the control device must be the same. The RS-485 default setting is half-duplex (see the diagram follows). Please do not change the default setting without qualified specialist 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

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 Dome 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.

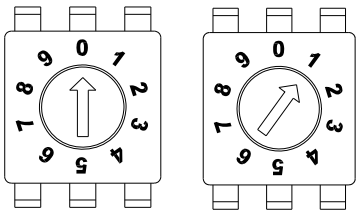
3.2.4 Camera Control Protocol Setting

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.

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

Switch No.	Protocol	Baud Rate
00	VCL	9600
01	Pelco D	2400
02	Pelco P	4800
04	Chiper	9600
05	Philips	9600
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
21	Kalatel-485	9600
22	Kalatel-422	4800

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



Decimal Digit Single Digit

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

3.3 Cables and Connections

The Dome Camera is supplied with one integrated 22-pin Data Cable for connecting with the power, video, and RS-485/audio input & audio output cables. Please read the following sections thoroughly before making connections.

3.3.1 Cable Requirements

For operation, the Integrated High Speed Dome Cameras require video, RS-485 and power 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.
- Power supply: DC 12V/AC 24V output voltage

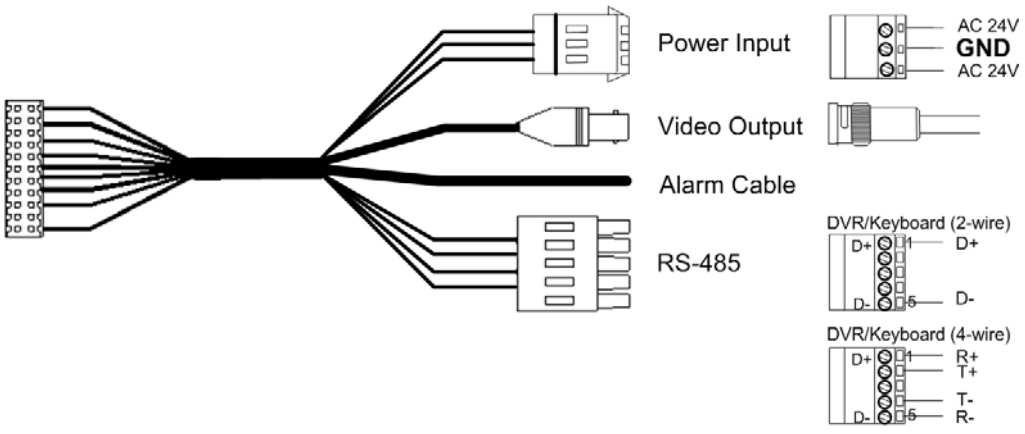
NOTE: Ensure power supply meets the Dome Camera's power requirement, or product impairment will occur. If any mistake happens, please contact with a qualified maintenance engineer.

3.3.2 22-Pin Data Cable

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

Analog Model

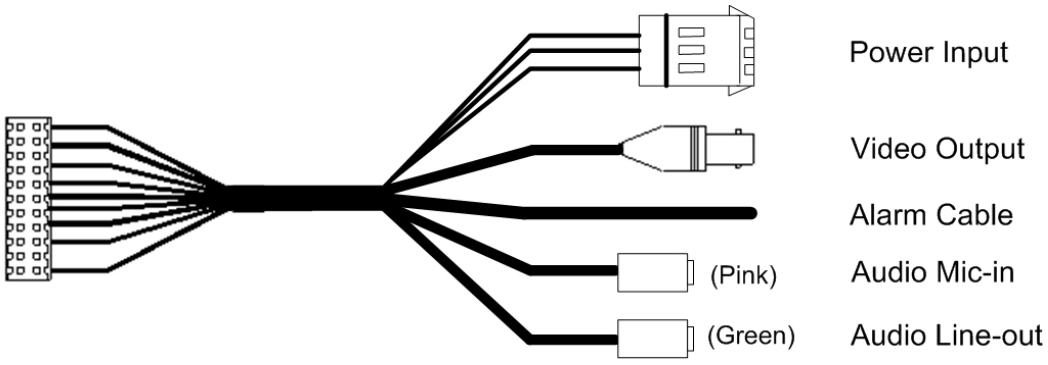
The analog Dome Camera's Data Cable is illustrated as follows.



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 AC 24V power cable, make sure the **Ground** wire is inserted into the mid-pin of the terminal block.

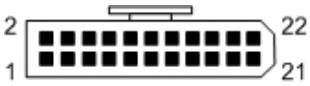
Network Model

The network Speed Dome Camera's Data Cable is illustrated as follows.



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. The analog and network Speed Dome Cameras' 22-pin connector definition will also be specified as follows.



Analog Model

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

Pin	Definition	Cable
1	AC 24-1/DC (+)	20AWG
2	ALM NC	
3	AC 24-2/DC (−)	20AWG
4	ALM NO	
5	FG	20AWG
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	24AWG
22	Video	

Network Model

The network Speed Dome Camera's 22-pin connector definition is listed as follows:

Pin	Definition	Cable
1	AC 24-1/DC (+)	20AWG
2	ALM NC	
3	AC 24-2/DC (−)	20AWG
4	ALM NO	
5	FG	20AWG
6	ALM COM	
7	Audio in	24AWG
8	Audio out	
9	Audio GND	
10	Audio GND	
11	ISOG	

Pin	Definition	Cable
12	ALM-1	
13	ALM-3	
14	ALM-2	
15	ALM-4	
16	Reserved	
17	Reserved	
18	Reserved	
19	Reserved	
20	ALM GND	
21	VGND	24AWG
22	Video	

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

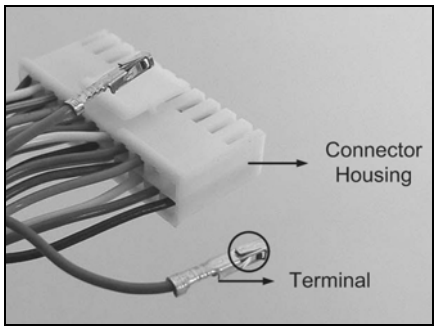
3.3.4 RS-485 Connector Definition

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.

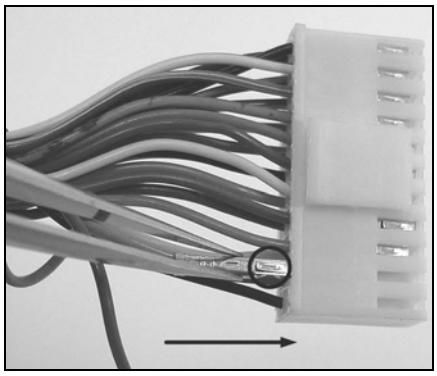
Pin	Corresponding Pins (22-Pin Connector)	Definition
1	7,10	T+, R+ (D+)
2~4	Reserved	
5	8,9	T-, R- (D-)

3.3.5 Cable Wiring and Connection

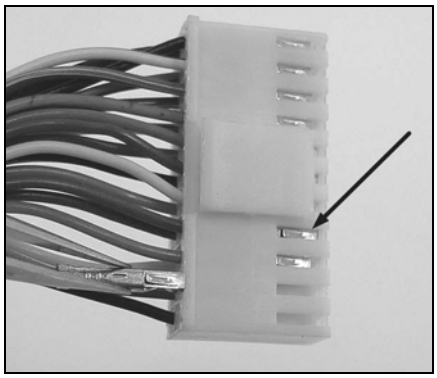
Users may need to conduct cable wiring when: (1) Connecting self-provided cords to the connector housing instead of using the equipped data cable or (2) Connecting alarm input and output devices. The table follows will illustrate the way to wire cords into the connector housing.



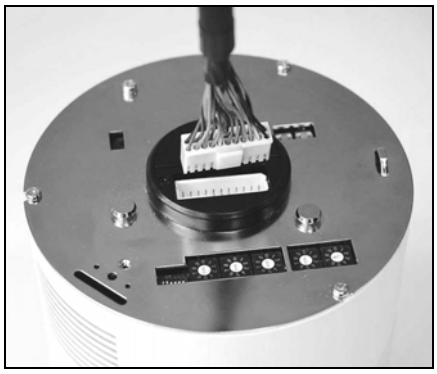
Insert the terminal into the pin holes on the connector housing, with the hook outward, as indicated in the figure.



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.



3.3.6 Ethernet Cable Connection

Connect one end of the CAT5 Ethernet cable to the RJ-45 connector of the network Speed Dome Camera, and the other end of the cable to the network switch or PC.

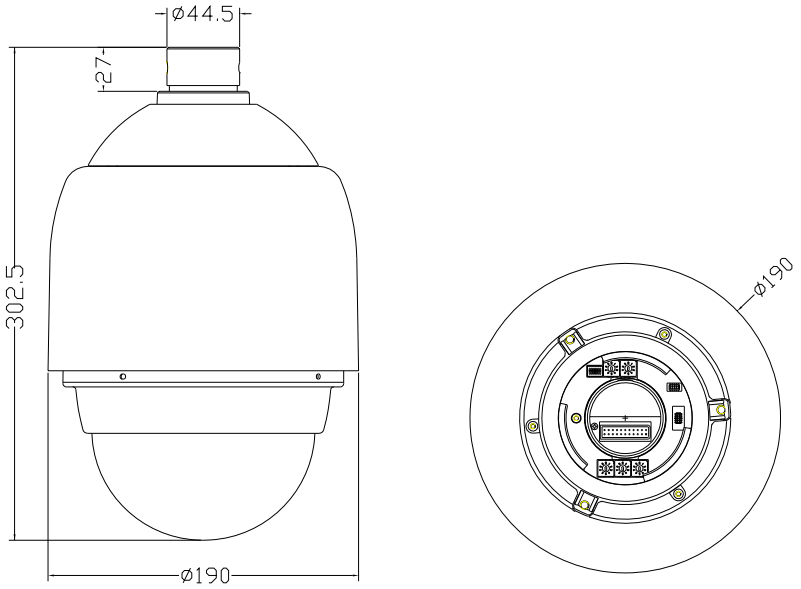
NOTE: In some cases, you may need use an Ethernet crossover cable when connecting the network Speed Dome Camera directly to the PC.

4. Dome Camera 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 dimensions for your reference before installation.

4.1 Dome Dimensions

The Dome Camera's dimensions are ø172 x 302.5 mm (6.7x11.9 Inches) and ø190 x 302.5 mm (7.5x11.9 Inches), with sunshield. The diagrams below show detailed dimensions 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
Diameter: 147 mm (5.8 inches)

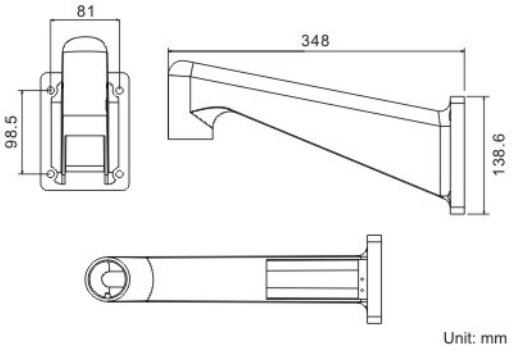
Security Screw Set (equipped with Vandal Proof Cover)

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

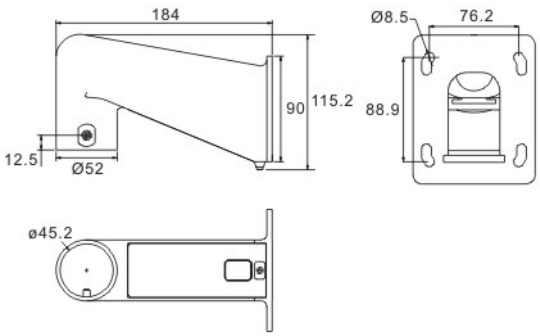
NOTE: When wiring, make sure the G/Y wire (Ground) inserted into the mid-pin of the terminal block.

Mounting Accessories

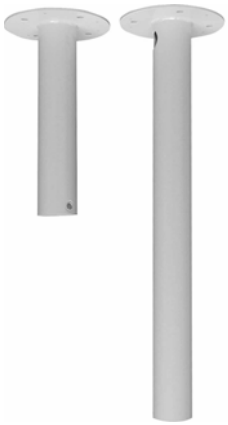
Standard Pendent Mount
White; 348×104×138.6 mm (13.7×4.1×5.5 inches); 1.5 kg (3.3 lbs); Diameter: 45 mm (1.8 inches). Supplied with M8x12 screw x1, spring washer-8 x1, pendent tube washer x1, rubber washer-8 x1 and sponge x2.

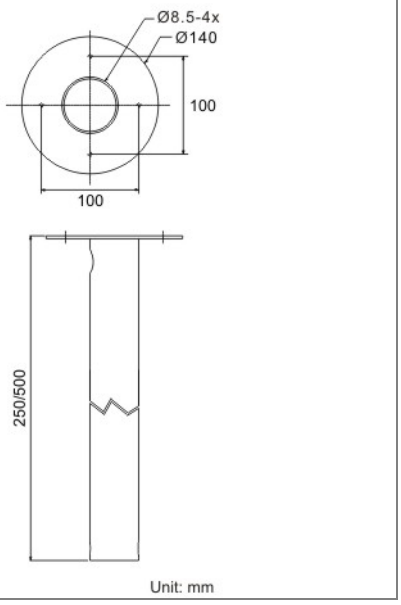


Compact Pendent Mount
184×104×115.2 mm (7.24×4.09×4.54 inches); 0.6 kg (1.2 lbs)
Supplied with rubber washer-8 x1, pendent tube washer x1, spring washer-8 x1 and M8x12 screw x1.

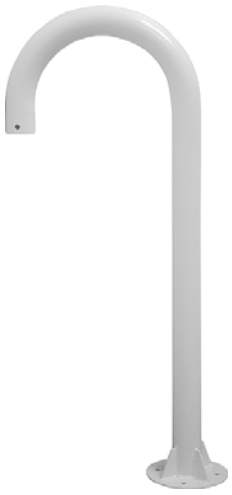


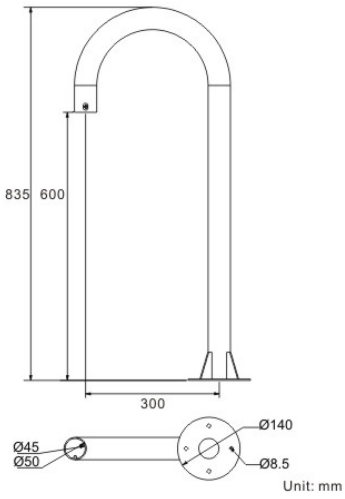
Straight Tube
Iron, Height: 250/500 mm (9.8/19.7 inches), Diameter: 50 mm (2 inches)
1 kg (2.2 lbs) / 1.8 kg (4 lbs), Supplied with M8x12 screw x1, spring washer-8 x1, pendent tube washer x1, rubber washer-8 x1 and waterproof rubber x1.



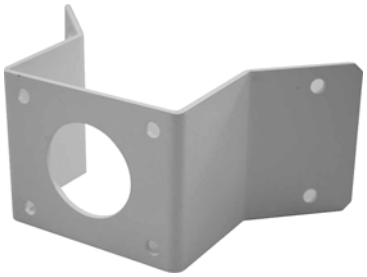


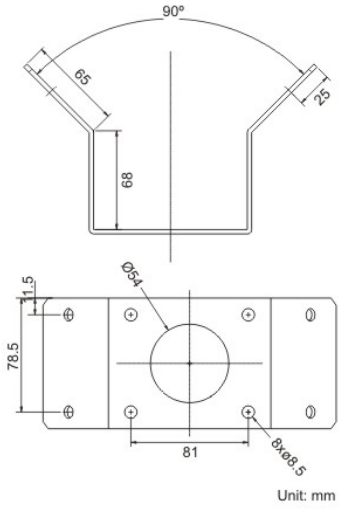
Swan Tube
For mounting with Swan Tube.
White; Iron, Dimension: 835 x 300 mm (32.9×11.8 inches); Diameter: 45 mm (1.8 inches); Weight: 3.8 kg (8.4 lbs); Supplied with pendent tube washer x1, rubber washer-8 x1, waterproof rubber x1, spring washer-8 x1 and M8x12 screw x1.



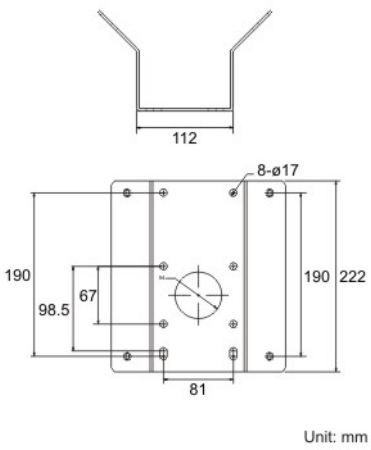


Corner Plate Mini
For mounting with Compact Pendent Mount.
270(L)×166(W)×95(D) mm (8.7×8×4.6 inches); Supplied with washer-8 x4, spring washer x4, M8x16 screw x4, M8 nut x4.

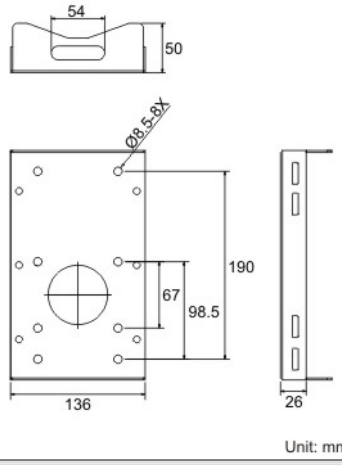




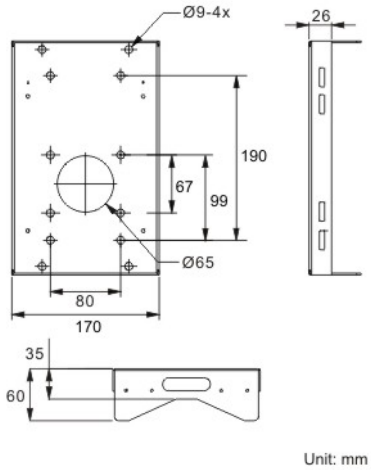
Corner Standard Mounting Plate
222(L)×204(W)×117(D) mm (8.7×8×4.6 inches); 2 kg (4.4 lbs); Supplied with washer-8 x4, spring washer-8 x4, M8x16 screw x4, and M8 nut x4.



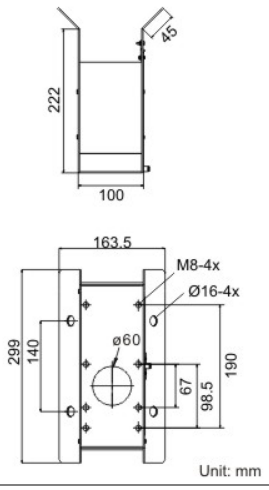
Pole Thin Direct Mounting
232(L)×136(W)×60(D) mm (9.1×5.4×2.4 inches); Diameter: 112~140 mm (4.4~5.5 inches); 0.7 kg (1.6 lbs). Supplied with stainless steel straps x4, M8x16 screw x4, washer x4 and spring washer-8 x4.



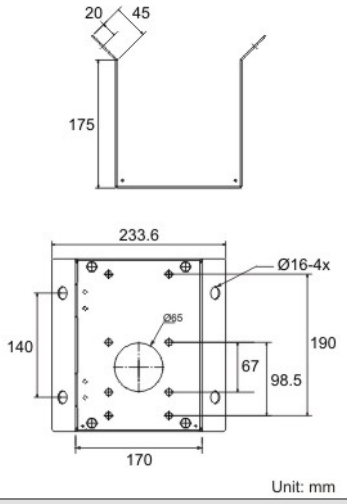
Pole Wide Direct Mounting
270(L)×170(W)×60(D) mm (10.6×6.7×2.4 inches); Diameter: 112~130 mm (4.4~5 inches); 1 kg (2.2 lbs). Supplied with M8x16 screw x4, washer x4, stainless steel straps x4 and spring washer-8 x4.



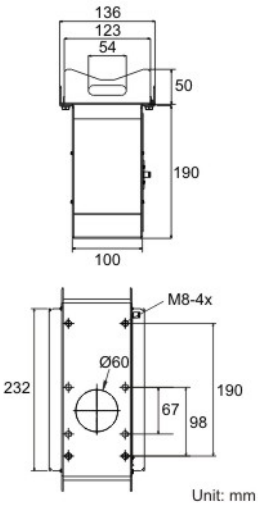
Corner Thin Box Mounting
300(L)×164(W)×222(D) mm (11.8×6.5×8.7 inches); 3 kg (6.7 lbs); Supplied with M8x16 screw x4, washer-8 x4, and spring washer-8 x4.
Power Box can be set inside the thin box.



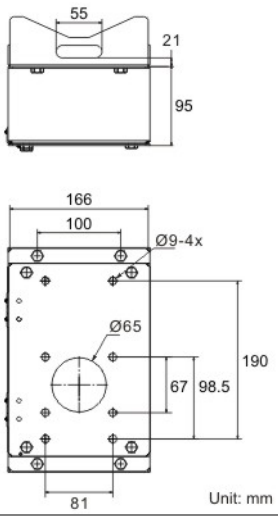
Corner Wide Box Mounting
232(L)×234(W)×210(D) mm (9.1×9.2×8.3 inches); 2.7 kg (6 lbs); Supplied with M8x16 screw x4, washer-8 x4, and spring washer-8 x4.
Power Box can be set inside the wide box.



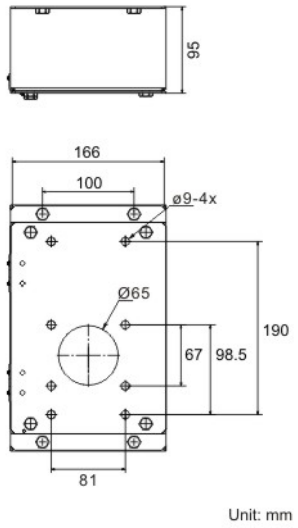
Pole Thin Box Mounting
291(L)×136(W)×242 (D) mm (11.5×5.4×9.5 inches); 3.1 kg (6.9 lbs); Supplied with M8x16 screw x4, washer-8 x4, spring washer x4 and stainless steel straps x4.
Power Box can be set inside the thin box.



Pole Wide Box Mounting
270(L)×166(W)×155(D) mm (10.6×6.5×6.1 inches); 3.2 kg (7.1 lbs); Supplied with M8x16 screw x4, washer-8 x4, spring washer-8 x4 and stainless steel straps x4.
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 M8x16 screw x4, washer-8 x4 and spring washer-8 x4.
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

Repeater/Converter

D77R1: RS-485/RS-232 Converter
D77R2: RS-232 between RS-485/RS-442
D77R3: Bi-phase to RS-485/RS-422

D77R1

D77R2

D77R3

Power Box

186.5×147 mm (7.3×5.8 inches); 2.6 kg (5.8 lbs)
P1030 (Input: 110~115VAC/Output: 24VAC 72VA)
P2030 (Input: 220~230VAC/Output: 24VAC 72VA)

Signal Distribution Unit

Relay control codes to speed dome cameras.
Dimension: 432×44×90 mm (17×17.32×35.43 inches)

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.

Package Contents:

- M8x12 Screw x1
- Spring Washer-8 x1
- Pendant Tube Washer x1
- Rubber Washer-8 x1
- Waterproof Rubber x1

Items Needed:

- Dome Camera
- Outdoor Mount Kit (supplied)
- Data Cable (supplied)
- Ethernet Cable (network Dome Camera)
- Straight Tube and equipped items (optional accessory)
- Waterproof Rubber (supplied)
- M5 Standard/Security Screw (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.
4) Attach the Waterproof Rubber to the Straight Tube.
5) Run the cable(s) through the Straight Tube with the Data Cable's 22-pin cable coming out of the outlet.

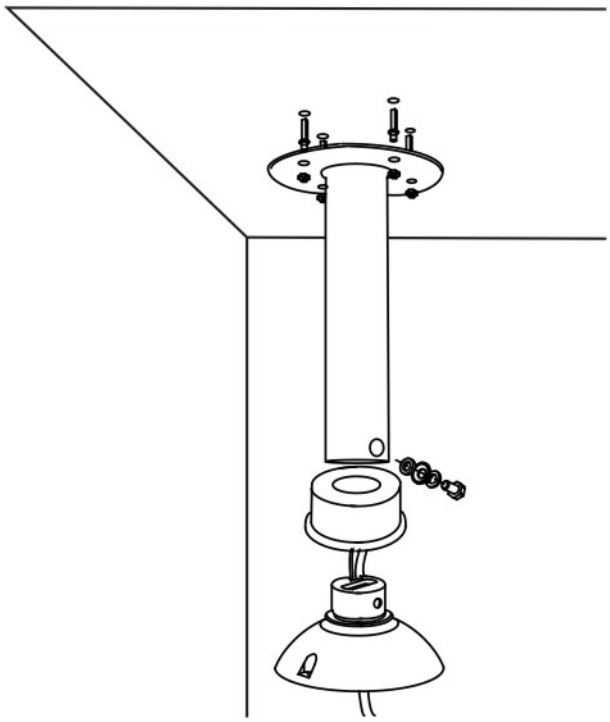
NOTE : After running the cable(s) through the Straight Tube, please block the Tube's outlet with the supplied sponge to avoid insects entering the tube.

6) Thread the cable(s) through the Outdoor Mount Kit and join the Outdoor Mount Kit to the Straight Tube with the supplied screws and washers. Then adjust the Waterproof Rubber to the joint.

7) Connect the cable(s) to the Dome Camera.

8) Join the Dome Camera to the Outdoor Mount Kit with the supplied M5 screw and washers.

Ceiling Mount: Straight Tube + Outdoor Mount Kit



4.4 Wall Mount

4.4.1 Swan Tube

Package Contents:

- M8x12 Screw x1
- Spring Washer-8 x1
- Pendent Tube Washer x1
- Rubber Washer-8 x1
- Waterproof Rubber x1

Items Needed:

- Dome Camera
- Swan Tube and other equipped items (optional accessory)
- Waterproof Rubber (standard accessory)
- Screws and Screw Anchors for fixing the Swan Tube on the floor (not supplied).

Tools Needed:

- Tool for drilling
- Tool for screwing

Follow the steps to mount the dome with the Swan Tube.

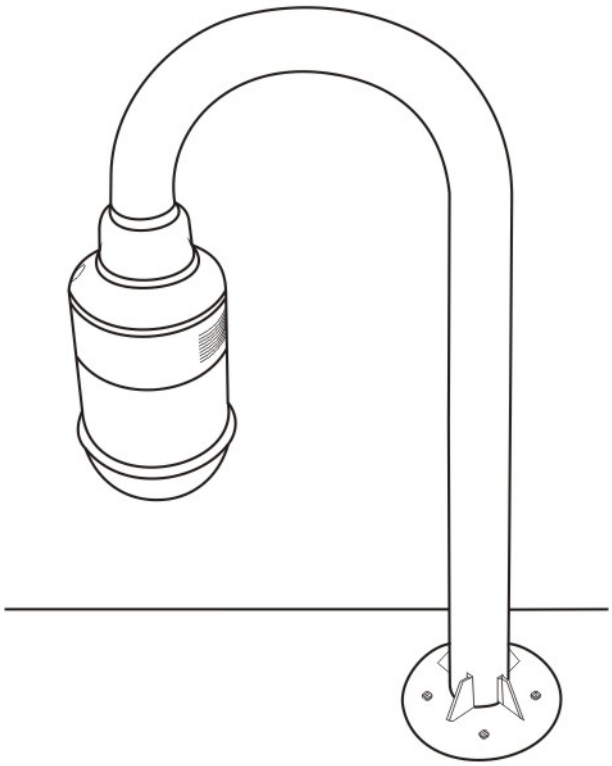
1) Fix the Swan Tube on the floor with proper screws and screw anchors (not supplied).

2) Thread the cables through the Swan Tube and the Indoor Mounting Kit.

3) Fix the Indoor Mounting Kit to the Swan Tube with the supplied screws and washers. Then adjust the waterproof rubber to the junction of Swan Tube and Indoor Mounting Kit.

4) Connect the cables to the dome camera. Then attach the dome to the Indoor Mounting Kit and fix them with the supplied screw.

Wall Mount: Swan Tube + Indoor Mounting Kit



4.4.2 Compact Pendent Mount

Package Contents:

- Rubber Washer-8 x1
- Pendant Tube Washer x1
- Spring Washer-8 x1
- M8x12 Screw x1

Items Needed:

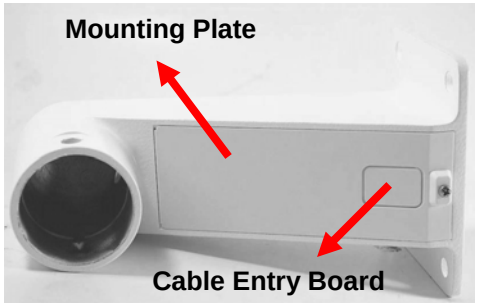
- Dome Camera
- Outdoor Mount Kit (supplied)
- Data Cable (supplied)
- Ethernet Cable (network Dome Camera)
- Compact Pendent Mount and equipped items (optional accessory)
- Waterproof Rubber (supplied)
- M5 Standard/Security Screw (supplied)
- Screws and Screw Anchors for fixing the Compact Pendent Mount (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

Follow the steps below to mount the Dome Camera with the Compact Pendent 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 Compact Pendent Mount's Mounting Plate to place the cables, as shown in the photo below.

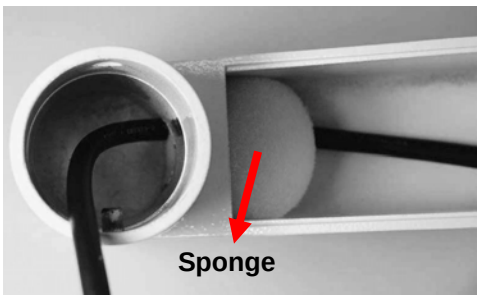


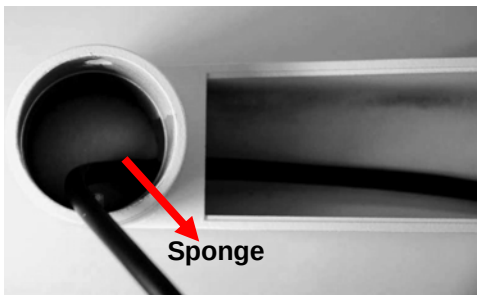
2) Fix the Compact Pendent Mount on the wall with proper screws and screw anchors.

3) Attach the Waterproof Rubber to the Compact Pendent Mount.

4) Run the cable(s) through the Compact Pendent Mount with the Data Cable's 22-pin cable coming out of the outlet.

NOTE: Please block the cable entry hole with the supplied sponge to avoid insects entering the Pendent Mount. The sponge can be placed in two ways as shown in the illustrations below.

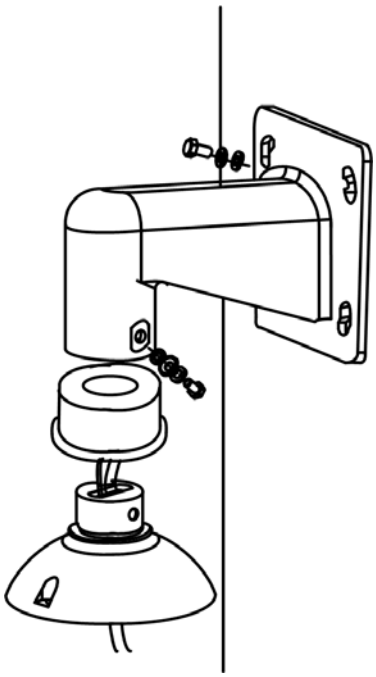




5) Thread the cable(s) through the Outdoor Mount Kit and join the Outdoor Mount Kit to the Compact Pendent Mount with the supplied screws and washers. Then adjust the Waterproof Rubber to the joint.

6) Connect the cable(s) to the Dome Camera.
7) Join the Dome Camera to the Outdoor Mount Kit with the supplied M5 screw and washers.

Wall Mounting: Compact Pendent Mount + Outdoor Mount Kit



4.4.3 Standard Pendent Mount

Package Contents:

- M8x12 Screw x1
- Spring Washer-8 x1
- Pendant Tube Washer x1
- Rubber Washer-8 x1
- Sponge x2

Items Needed:

- Dome Camera
- Outdoor Mount Kit (supplied)
- Data Cable (supplied)
- Ethernet Cable (network Dome Camera)
- Standard Pendent Mount and equipped items (optional accessory)
- Waterproof Rubber (supplied)
- M5 Standard/Security Screw (supplied)
- Screws and Screw Anchors for fixing the Standard Pendent Mount onto the ceiling (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

Follow the steps below to mount the Dome Camera with the Standard Pendent 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 Standard Pendent Mount's mounting plate to place the cables (see the illustration in section 4.4.2 Compact Pendent Mount > Step 1).

2) Fix the Standard Pendent Mount on the wall with proper screws and screw anchors.

3) Attach the Waterproof Rubber to the Standard Pendent Mount.

4) Run the cable(s) through the Standard Pendent Mount with the Data Cable's 22-pin cable coming out of the outlet.

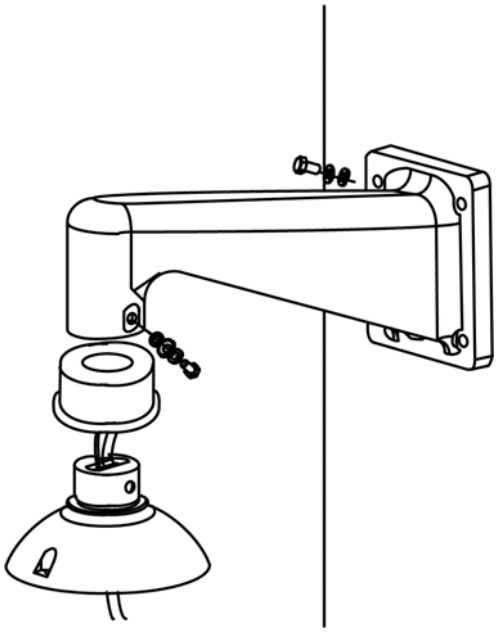
NOTE: Please block the cable entry hole with the supplied sponge to avoid insects entering the Pendent Mount. See the illustrations in section 4.4.2 Compact Pendent Mount > Step 4.

5) Thread the cable(s) through the Outdoor Mount Kit and join the Outdoor Mount Kit to the Standard Pendent Mount with the supplied screws and washers. Then adjust the Waterproof Rubber to the joint.

6) Connect the cable(s) to the Dome Camera.

7) Join the Dome Camera to the Outdoor Mount Kit with the supplied M5 screw and washers.

Wall Mounting: Standard Pendent Mount + Outdoor Mount Kit



4.4.4 Wall Box Mounting

Package Contents:

- M8x16 Screw x4
- Washer-8 x4
- Spring Washer-8 x4

Items Needed:

- Dome Camera
- Outdoor Mount Kit (supplied)
- Data Cable (supplied)
- Ethernet Cable (network Dome Camera)
- Standard/ Compact Pendent Mount and equipped items (optional accessory)
- Wall Box Mounting (optional accessory)
- Waterproof Rubber (supplied)
- M5 Standard/Security Screw (supplied)
- Screws and Screw Anchors for fixing the Wall Box Mounting onto the ceiling (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

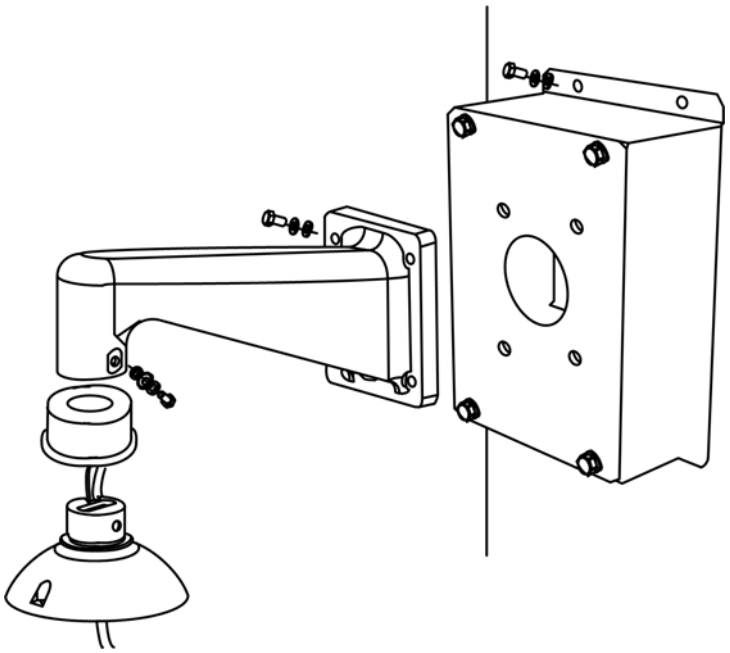
Follow the steps to mount the Dome Camera with the Standard/ Compact Pendent Mount and Wall Box Mounting.

1) Make a cable entry hole on the wall to recess the cable(s).
2) Fix the Wall Box Mounting on the wall with proper screws and screw anchors. Then run the cable(s) through the hole on the Wall Box Mounting with the Data Cable's 22-pin cable coming out.
3) Fasten the Standard/ Compact Pendent Mount onto the Wall Box Mounting with the supplied screws and washers. Then thread the cable(s) through the Standard/ Compact Pendent Mount with the cable(s) coming out of the Pendent Mount's outlet.

NOTE: Please block the cable entry hole with the supplied sponge to avoid insects entering the Pendent Mount. See the illustrations in section 4.4.2 Compact Pendent Mount > Step 4.

4) Attach the Waterproof Rubber to the Standard/ Compact Pendent Mount.
5) Thread the cable(s) through the Outdoor Mount Kit and join the Outdoor Mount Kit to the Standard/ Compact Pendent Mount with the supplied screws and washers. Then adjust the Waterproof Rubber to the joint.
6) Connect the cable(s) to the Dome Camera.
7) Join the Dome Camera to the Outdoor Mount Kit with the supplied screw and washers.

Wall Box Mounting: Wall Box Mounting + Standard/ Compact Pendent Mount + Outdoor Mount Kit



4.5 Corner Mount

4.5.1 Corner Standard Mounting Plate/Corner Plate Mini

Package Contents:

- Washer-8 x4
- Spring Washer-8 ×4
- M8x16 Screw x4
- M8 Nut x4

Items Needed:

- Dome Camera
- Outdoor Mount Kit (supplied)
- Data Cable (supplied)
- Ethernet Cable (network Dome Camera)
- Standard/ Compact Pendent Mount and equipped items (optional accessory)
- Corner Standard Mounting Plate/Corner Plate Mini (herein collectively called “Corner Mounting Plate”; optional accessory)
- Waterproof Rubber (supplied)
- M5 Standard/Security Screw (supplied)
- Screws and Screw Anchors for fixing the Corner Mounting Plate (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

Follow the steps below to mount the Dome Camera with the Corner mounting Plate and Standard/ Compact Pendent Mount.

1) Make a cable entry hole on the wall to recess the cable(s).

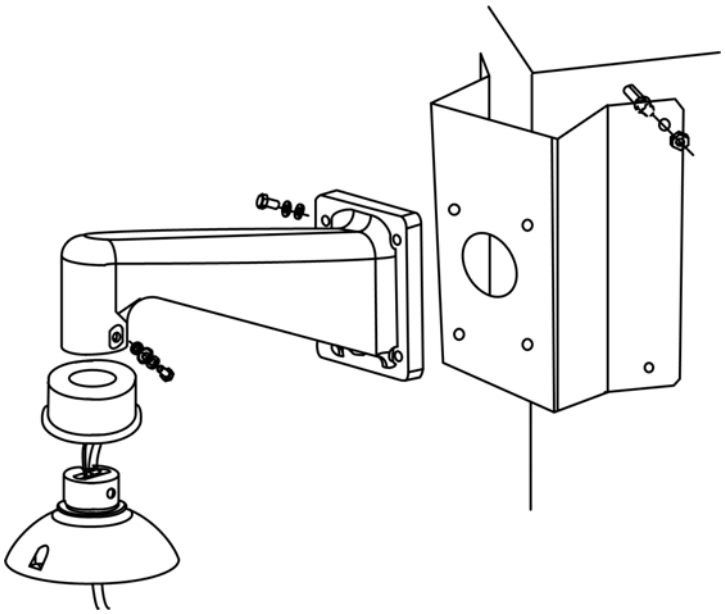
2) Fix the Corner Mounting Plate on the corner of the wall with proper screws and screw anchors. Then run the cable(s) through the hole on the Corner Mounting Plate with the Data Cable’s 22-pin cable coming out.

3) Fasten the Standard/ Compact Pendent Mount onto the Corner Mounting Plate with the supplied screws and washers. Then thread the cable(s) through the Standard/ Compact Pendent Mount with the cable(s) coming out of the Pendent Mount’s outlet.

NOTE: Please block the cable entry hole with the supplied sponge to avoid insects entering the Pendent Mount. See the illustrations in section 4.4.2 Compact Pendent Mount > Step 4.

4) Attach the Waterproof Rubber to the Standard/ Compact Pendent Mount.
5) Thread the cable(s) through the Outdoor Mount Kit and join the Outdoor Mount Kit to the Standard/ Compact Pendent Mount with the supplied screws and washers. Then adjust the Waterproof Rubber to the joint.
6) Connect the cable(s) to the Dome Camera.
7) Join the Dome Camera to the Outdoor Mount Kit with the supplied M5 screw and washers.

Corner Wall Mounting: Corner Standard/Mini Mounting Plate + Standard/ Compact Pendent Mount + Outdoor Mount Kit



4.5.2 Corner Thin/Wide Box Mounting

Package Contents:

- M8x16 Screw x4
- Washer-8 x4
- Spring Washer-8 x4

Items Needed:

- Dome Camera
- Outdoor Mount Kit (supplied)
- Data Cable (supplied)
- Ethernet Cable (network Dome Camera)
- Standard/ Compact Pendent Mount and equipped items (optional accessory)
- Corner Thin/Wide Box (optional accessory)
- Waterproof Rubber (supplied)
- M5 Standard/Security Screw (supplied)
- Screws and Screw Anchors for fixing the Corner Thin/Wide Box (not supplied)

Tools Needed:

- Tool for drilling
- Tool for screwing

Follow the steps below to mount the Dome Camera with the Corner Thin/Wide Box and Standard/ Compact Pendent Mount.

1) Make a cable entry hole on the wall to recess the cable(s).

2) Fix the Corner Thin/Wide Box on the corner of the wall with proper screws and screw anchors. Then run the cable(s) through the hole on the Corner Mounting Plate with the Data Cable's 22-pin cable coming out.

3) Fasten the Standard/ Compact Pendent Mount onto the Corner Thin/Wide Box with the supplied screws and washers. Then thread the cable(s) through the Standard/ Compact Pendent Mount with the cable(s) coming out of the Pendent Mount's outlet.

NOTE: Please block the cable entry hole with the supplied sponge to avoid insects entering the Pendent Mount. See the illustrations in section 4.4.2 Compact Pendent Mount > Step 4.

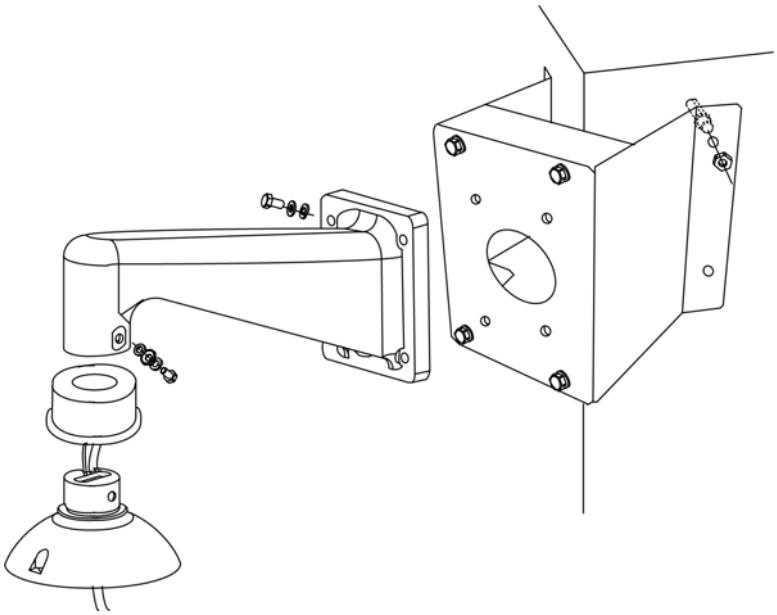
4) Attach the Waterproof Rubber to the Standard/ Compact Pendent Mount.

5) Thread the cable(s) through the Outdoor Mount Kit and join the Outdoor Mount Kit to the Standard/ Compact Pendent Mount with the supplied screws and washers. Then adjust the Waterproof Rubber to the joint.

6) Connect the cable(s) to the Dome Camera.

7) Join the Dome Camera to the Outdoor Mount Kit with the supplied M5 screw and washers.

Corner Box Mounting: Corner Thin/Wide Box + Standard/ Compact Pendent Mount + Outdoor Mount Kit



4.6 Pole Mount

4.6.1 Pole Thin/Wide Direct Mounting

Package Contents:

- Stainless Steel Straps x4
- M8x16 Screw x4
- Washer x4
- Spring Washer-8 x4

Items Needed:

- Dome Camera
- Outdoor Mount Kit (supplied)
- Data Cable (supplied)
- Ethernet Cable (network Dome Camera)
- Standard/ Compact Pendent Mount and equipped items (optional accessory)
- Pole Thin/Wide Direct Mounting (optional accessory)
- Waterproof Rubber (supplied)
- M5 Standard/Security Screw (supplied)
- Stainless Steel Straps for fixing the Pole Thin/Wide Direct Mounting (optional accessory)

Tools Needed:

- Stainless Strap Cutter
- Tool for screwing

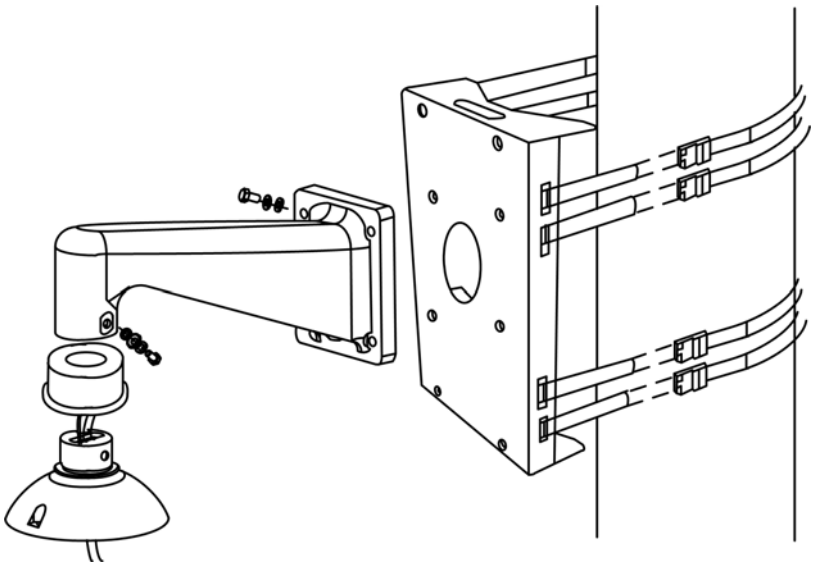
Follow the steps below to mount the Dome Camera with the Pole Thin/Wide Direct Mounting and Standard/ Compact Pendent Mount.

1) Fasten the Pole Thin/Wide Direct Mounting on a pole with equipped stainless straps.
2) Run the cable(s) through the hole on the Pole Thin/Wide Direct Mounting with the Data Cable's 22-pin cable coming out.
3) Fasten the Standard/ Compact Pendent Mount onto the Pole Thin/Wide Direct Mounting with the supplied screws and washers. Then thread the cable(s) through the Standard/ Compact Pendent Mount with the cable(s) coming out of the Pendent Mount's outlet.

NOTE: Please block the cable entry hole with the supplied sponge to avoid insects entering the Pendent Mount. See the illustrations in section 4.4.2 Compact Pendent Mount > Step 4.

4) Attach the Waterproof Rubber to the Standard/ Compact Pendent Mount.
5) Thread the cable(s) through the Outdoor Mount Kit and join the Outdoor Mount Kit to the Standard/ Compact Pendent Mount with the supplied screws and washers. Then adjust the Waterproof Rubber to the joint.
6) Connect the cable(s) to the Dome Camera.
7) Join the Dome Camera to the Outdoor Mount Kit with the supplied M5 screw and washers.

Pole Direct Mounting: Pole Thin/Wide Direct Mounting + Standard/ Compact Pendent Mount + Outdoor Mount Kit



4.6.2 Pole Thin/Wide Box Mounting

Package Contents:

- M8x16 Screw x4
- Washer-8 x4
- Spring Washer x4,
- Stainless Steel Straps x4

Items Needed:

- Dome Camera
- Outdoor Mount Kit (supplied)
- Data Cable (supplied)
- Ethernet Cable (network Dome Camera)
- Standard/ Compact Pendent Mount and equipped items (optional accessory)
- Pole Thin/Wide Box Mounting (optional accessory)
- Waterproof Rubber (supplied)
- M5 Standard/Security Screw (supplied)
- Stainless Steel Straps for fixing the Pole Thin/Wide Box Mounting (optional accessory)

Tools Needed:

- Stainless Strap Cutter
- Tool for screwing

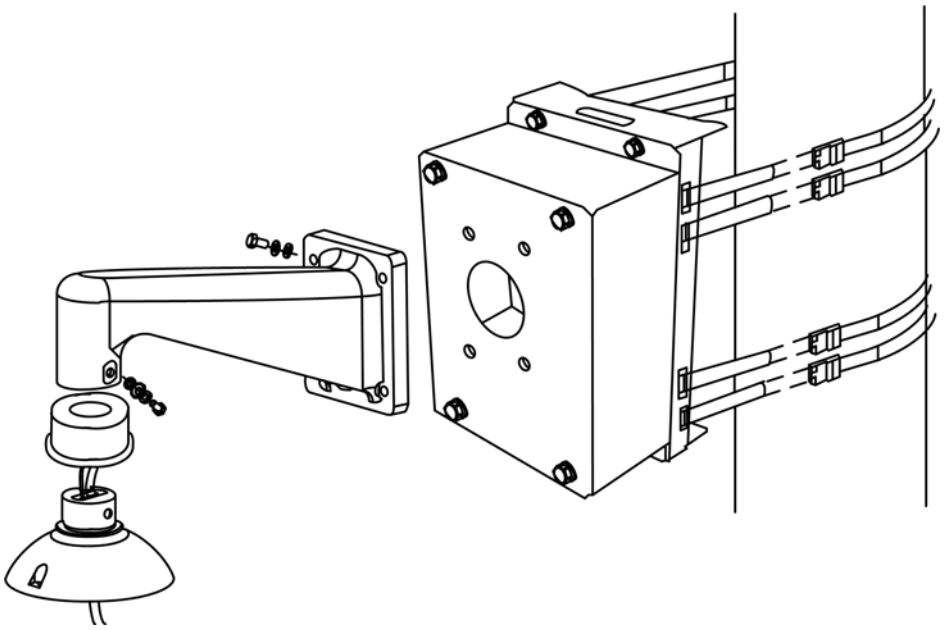
Follow the steps below to mount the Dome Camera with the Pole Thin/Wide Box and Standard/ Compact Pendent Mount.

1) Fasten the Pole Thin/Wide Box on a pole with equipped stainless straps.
2) Run the cable(s) through the hole on the Pole Thin/Wide Box Mounting with the Data Cable's 22-pin cable coming out.
3) Fasten the Standard/ Compact Pendent Mount onto the Pole Thin/Wide Box Mounting with the supplied screws and washers. Then thread the cable(s) through the Standard/ Compact Pendent Mount with the cable(s) coming out of the Pendent Mount's outlet.

NOTE: Please block the cable entry hole with the supplied sponge to avoid insects entering the Pendent Mount. See the illustrations in section 4.4.2 Compact Pendent Mount > Step 4.

4) Attach the Waterproof Rubber to the Standard/ Compact Pendent Mount.
5) Thread the cable(s) through the Outdoor Mount Kit and join the Outdoor Mount Kit to the Standard/ Compact Pendent Mount with the supplied screws and washers. Then adjust the Waterproof Rubber to the joint.
6) Connect the cable(s) to the Dome Camera.
7) Join the Dome Camera to the Outdoor Mount Kit with the supplied M5 screw and washers.

Pole Box Mounting: Pole Thin/Wide Box + Standard/ Compact Pendent Mount + Outdoor Mount Kit

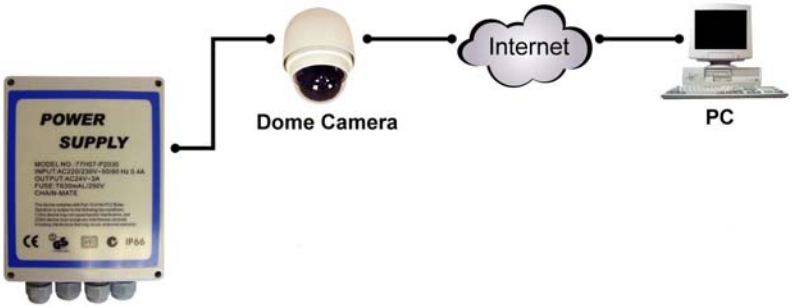


5. System Expansion

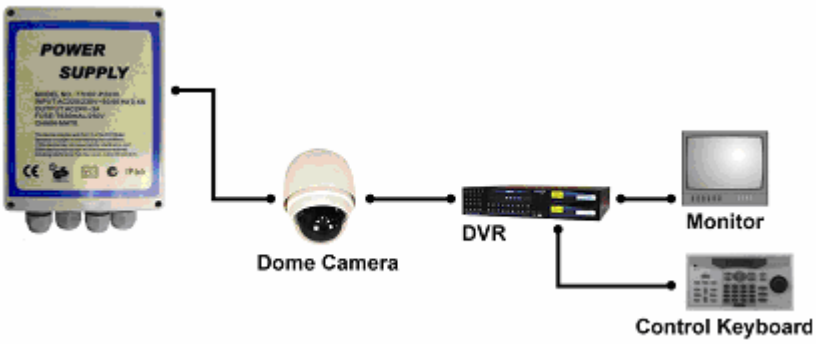
5.1 Connecting with Power Box

A power box contains a 24V AC adapter, two terminal blocks (for communication and power) and one alarm board. With an IP66 case, the Power Box is ideal for outdoor installation environment. Two models are available: 100~115V AC power input (P1030) and 220~230V AC (P2030). Additionally, users can either connect one dome camera to one power box and to Internet or to other control devices (DVR, Control Keyboard and monitors), as shown in the diagrams below. For more detailed information, please refer to the power box user's manual.

Connecting the Dome to the Power Box and Internet

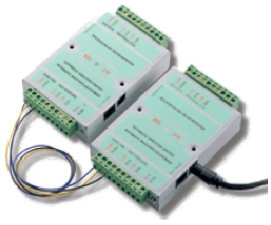


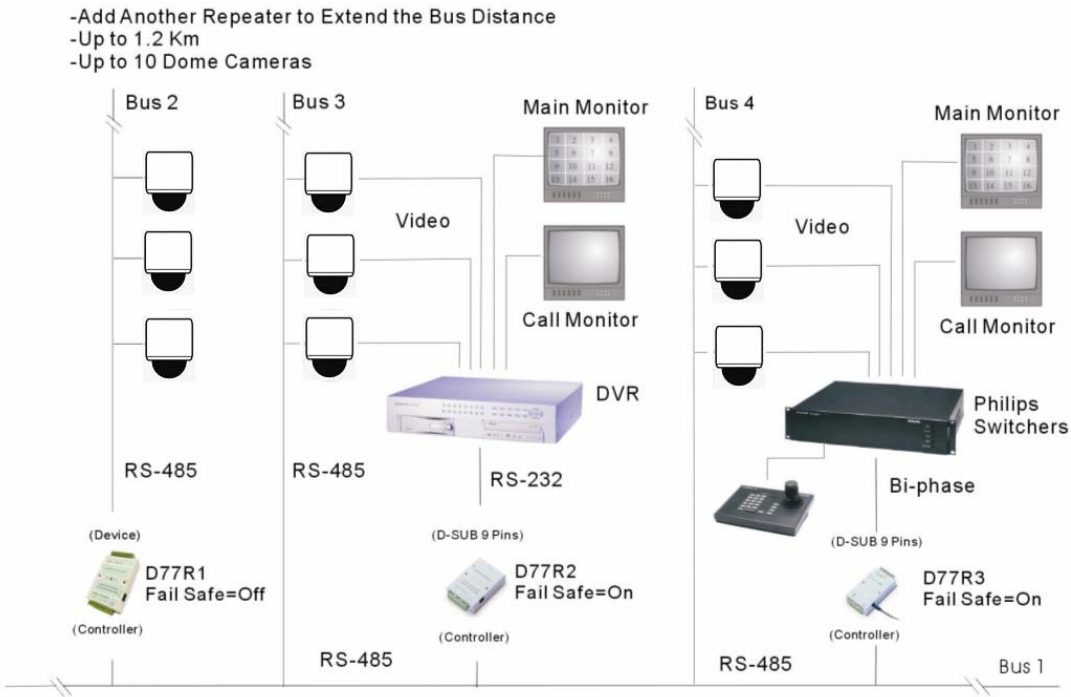
Connecting the Dome to the Power Box and Various Control Devices



5.2 Data Formats Transforming

To integrate other surveillance devices with the 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.

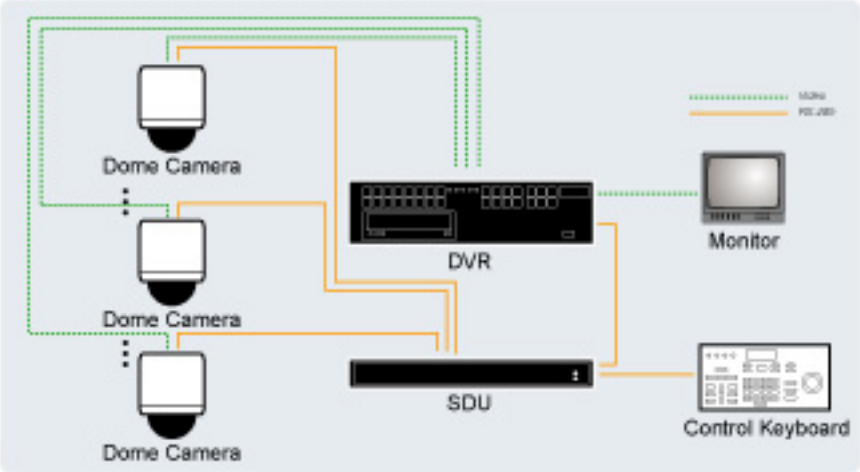
		
D77R1 RS-485/RS-422 Repeater	**D77R2** RS-232 between RS-485/RS-422	**D77R3** Bi-Phase to RS-485/RS-422



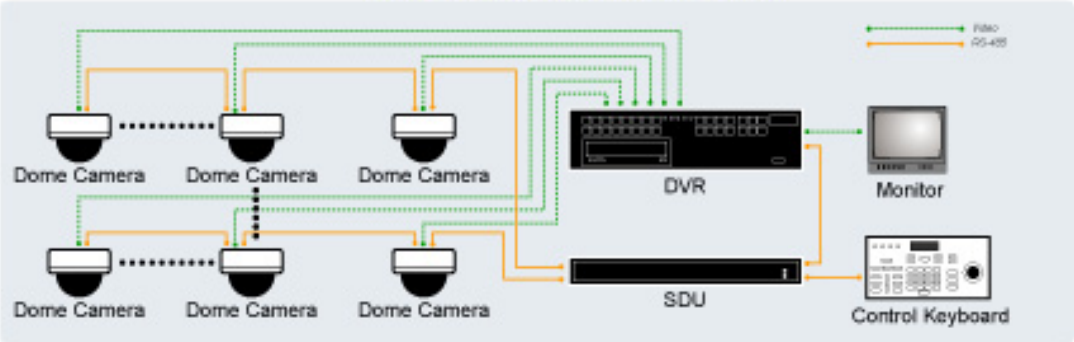
5.3 Signal Distribution

The RS-485 Signal Distribution Unit (SDU) is designed to relay control codes to speed dome cameras. It is capable of communicating with cameras up to 1.0 kilometers away. Additionally, the SDU can be installed in either “star” or “daisy chain” configuration with up to 160 cameras (see the diagrams below). Its versatile installation configuration makes an easy integration into expanding surveillance systems. For more information, please refer to the SDU user’s manual.

Star Configuration



Daisy Chain Configuration



6. System Integration

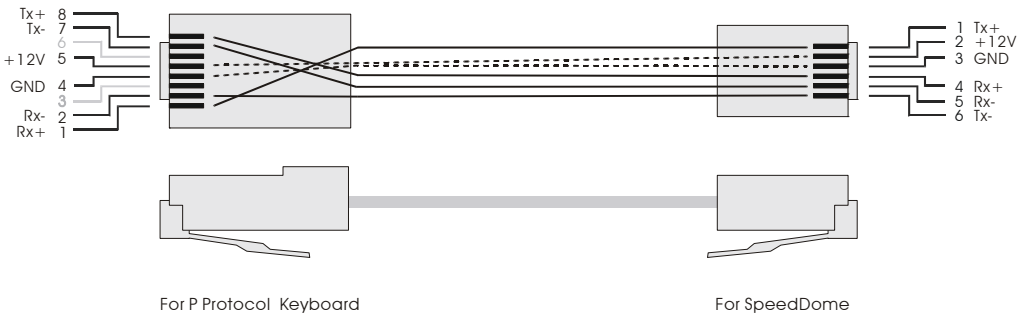
The dome camera is allowed to be integrated into other suppliers' surveillance systems with large set of built-in protocols. Refer to the following sections for more information.

6.1 Using Pelco Keyboard

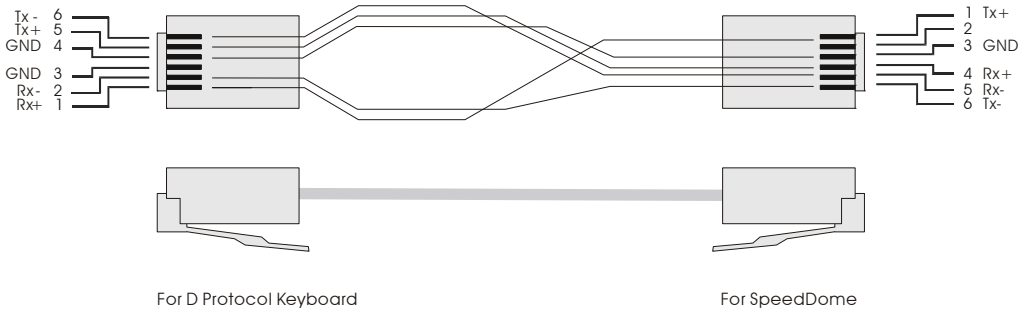
The speed dome camera can be controlled through a Pelco keyboard which built in with D protocol and P protocol. Please follow the instruction to manipulate our speed dome by a keyboard with D and P protocols.

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	7 7 <Preset>
Move the cursor in OSD menu	Move the cursor up/down/right/left by pushing the joystick up/down/right/left respectively
<ENTER>	7 7 <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		G Model	M Model	V Model	P Model	T Model
CAMERA						
CCD Sensor		1/4" EXview	1/4" CCD	1/4" EXview	1/4" CCD	1/4" EXview
Progressive Scan		-	Yes	-	Yes	-
Optical Zoom		18×	23x	26×	35x	36x
Digital Zoom		1× ~ 12× variable				
Effective Pixels	NTSC	380k				
	PAL	440k				
Horizontal Resolution		530 TVL	540 TVL	530 TVL	540 TVL	530 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		0.07 lux; 0.01 lux (B/W)	0.1 lux; 0.01 lux (B/W)	0.09 lux; 0.01 lux (B/W)	0.1 lux; 0.01 lux (B/W)	0.1 lux; 0.01 lux (B/W)
Focal Length		4.1~73.8 mm	3.6~82.8 mm	3.5~91 mm	3.4~119 mm	3.4~122.4 mm
Focus Mode		Auto / Manual				
White Balance		Auto / Manual				
Iris Control		Auto / Manual				
Electronic Shutter	NTSC	1/1~1/10k sec.	1/2~1/30k sec.	1/1~1/10k sec.	1/1~1/30k sec.	1/1~1/10k sec.
	PAL	1/1~1/10k sec.	1/1.5~1/30k sec.	1/1~1/10k sec.	1/1~1/30k sec.	1/1~1/10k sec.
AGC control		Auto / Manual				
Back Light Compensation		On / Off				
OPERATION						
Built-in Protocol		DynaColor, Pelco D&P, VCL, Philips, AD-422, JVC, Kalatel, etc				
Multi-Language OSD		English, French, German, Italian, Japanese, Polish, Portuguese, Russian, Spanish, Turkish, Simplified Chinese, Traditional Chinese				
Pan Travel		360° endless				
Tilt Travel		-10° ~ 190°				
Manual Speed		0.5° ~ 90°/s				
Presets		256				
Preset Accuracy		0.225°				
Preset Speed		5° ~ 400°/s				
Sequence		8				
Auto Pan		4				

Items	G Model	M Model	V Model	P Model	T Model
Cruise	8				
Privacy Mask	24	8	24	8	24
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	Digital / Mechanical / Off				
Digital Slow Shutter	On / Off	On / Off	On / Off	On / Off	On / Off
Electronic Image Stabilizer	-	-	-	On / Off	-
Motion Detection	On / Off	On / Off	On / Off	On / Off	On / Off
Wide Dynamic Range	On / Off	On / Off	On / Off	On / Off	On / Off
Day/Night: IR Cut Filter	On / Off	On / Off	On / Off	On / Off	On / Off
Image Inverse	On / Off	On / Off	On / Off	On / Off	On / Off
Image Freeze	On / Off	On / Off	On / Off	On / Off	On / Off
Digital Noise Reduction	-	-	-	On / Off	-
Alarm Input	8				
Alarm Output	1				
Alarm Reaction	Preset, Sequence, Auto pan, Cruise				
GENERAL					
Environment	Outdoor				
Controller Interface	RS-485				
Operating Temperature	-45°C ~ 50°C (-49°F ~ 122°F)				
Waterproof Standard	IP66 standard				
Dimension	Ø172 x 302.5 mm (6.7 x 11.9 Inches) / Ø190 x 302.5 mm (7.5x 11.9 Inches), with sunshield				
Weight	2.6 kg (5.7 lbs)				
Power Source	AC 24V ± 10%				
Power Consumption	65 W (with Heater)				
Regulatory	CE, FCC, RoHS				

Items		S3 Model	S4 Model	S5 Model	S6 Model
CAMERA					
CCD Sensor		Sony CCD			
Optical Zoom		30×		36×	
Digital Zoom		1~12x variable			
Effective Pixels	NTSC	380k	480k	380k	480k
	PAL	440k	570k	440k	570k
Horizontal Resolution		540 TVL	650 TVL	540 TVL	650 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		0.1 lux; 0.01 lux (B/W)		0.1 lux; 0.01 lux (B/W)	
Focal Length		3.4 ~ 102 mm		3.4 ~ 122.4 mm	
Focus Mode		Auto / Manual			
White Balance		Auto / Manual			
Iris Control		Auto / Manual			
Electronic Shutter		1/1~1/10k sec.			
AGC control		Auto / Manual			
Back Light Compensation		On / Off			
OPERATION					
Built-in Protocol		DynaColor, Pelco D&P, VCL, Philips, AD-422, JVC, Kalatel, etc.			
Multi-Language OSD		English, French, German, Italian, Japanese, Polish, Portuguese, Russian, Spanish, Turkish, Simplified Chinese, Traditional Chinese			
Pan Travel		360° endless			
Tilt Travel		-10° ~ 190°			
Manual Speed		0.5° ~ 90°/s			
Presets		256			
Preset Accuracy		0.225°			
Preset Speed		5° ~ 400°/s			
Sequence		8			
Auto Pan		4			
Cruise		8			
Privacy Mask		16			
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			

Items		S3 Model	S4 Model	S5 Model	S6 Model
Auto Flip		Mechanical / Digital / Off			
Digital Slow Shutter		On / Off			
Motion Detection		On / Off			
Wide Dynamic Range		On / Off			
Day/Night: IR Cut Filter		Auto / Manual			
Image Freeze		On / Off			
Image Inverse		On / Off			
Noise Reduction	**2D**	On / Off			
	3D	On / Off			
Alarm Input		8			
Alarm Output		1			
Alarm Reaction		Preset, Sequence, Auto pan, Cruise			
GENERAL					
Environment		Outdoor			
Controller Interface		RS-485			
Operating Temperature		-45°C ~ 50°C (-49°F ~ 122°F)			
Waterproof Standard		IP66 standard			
Dimension		Ø172 x 302.5 mm (6.7 x 11.9 Inches)/ Ø190 x 302.5 mm (7.5 x 11.9 Inches), with sunshield			
Weight		2.6 kg (5.7 lbs)			
Power Source		AC 24V ± 10%			
Power Consumption		65 W (with Heater)			
Regulatory		CE, FCC, RoHS, IP66			

**All Specifications are subject to change without notice.