

# Network Speed Dome

## Installation Manual

**V1.0.1**

# Cybersecurity Recommendations

## **Mandatory actions to be taken towards cybersecurity**

### **1. Change Passwords and Use Strong Passwords**

The number one reason systems get “hacked” is due to having weak or default passwords. It is recommended to change default passwords immediately and choose a strong password whenever possible. A strong password should be made up of at least 8 characters and a combination of special characters, numbers, and upper and lower case letters.

### **2. Update Firmware**

As is standard procedure in the tech-industry, we recommend keeping NVR, DVR, and IP camera firmware up-to-date to ensure the system is current with the latest security patches and fixes.

## **“Nice to have” recommendations to improve your network security**

### **1. Change Passwords Regularly**

Regularly change the credentials to your devices to help ensure that only authorized users are able to access the system.

### **2. Change Default HTTP and TCP Ports:**

- Change default HTTP and TCP ports for systems. These are the two ports used to communicate and to view video feeds remotely.
- These ports can be changed to any set of numbers between 1025-65535. Avoiding the default ports reduces the risk of outsiders being able to guess which ports you are using.

### **3. Enable HTTPS/SSL:**

Set up an SSL Certificate to enable HTTPS. This will encrypt all communication between your devices and recorder.

### **4. Enable IP Filter:**

Enabling your IP filter will prevent everyone, except those with specified IP addresses, from accessing the system.

### **5. Change ONVIF Password:**

On older IP Camera firmware, the ONVIF password does not change when you change the system’s credentials. You will need to either update the camera’s firmware to the latest revision or manually change the ONVIF password.

### **6. Forward Only Ports You Need:**

- Only forward the HTTP and TCP ports that you need to use. Do not forward a huge range of numbers to the device. Do not DMZ the device's IP address.
- You do not need to forward any ports for individual cameras if they are all connected to a recorder on site; just the NVR is needed.

### **7. Disable Auto-Login on SmartPSS:**

Those using SmartPSS to view their system and on a computer that is used by multiple people should disable auto-login. This adds a layer of security to prevent users without the appropriate credentials from accessing the system.

### **8. Use a Different Username and Password for SmartPSS:**

In the event that your social media, bank, email, etc. account is compromised, you would not want someone collecting those passwords and trying them out on your video surveillance system. Using a

different username and password for your security system will make it more difficult for someone to guess their way into your system.

#### **9. Limit Features of Guest Accounts:**

If your system is set up for multiple users, ensure that each user only has rights to features and functions they need to use to perform their job.

#### **10. UPnP:**

- UPnP will automatically try to forward ports in your router or modem. Normally this would be a good thing. However, if your system automatically forwards the ports and you leave the credentials defaulted, you may end up with unwanted visitors.
- If you manually forwarded the HTTP and TCP ports in your router/modem, this feature should be turned off regardless. Disabling UPnP is recommended when the function is not used in real applications.

#### **11. SNMP:**

Disable SNMP if you are not using it. If you are using SNMP, you should do so only temporarily, for tracing and testing purposes only.

#### **12. Multicast:**

Multicast is used to share video streams between two recorders. Currently there are no known issues involving Multicast, but if you are not using this feature, deactivation can enhance your network security.

#### **13. Check the Log:**

If you suspect that someone has gained unauthorized access to your system, you can check the system log. The system log will show you which IP addresses were used to login to your system and what was accessed.

#### **14. Physically Lock Down the Device:**

Ideally, you want to prevent any unauthorized physical access to your system. The best way to achieve this is to install the recorder in a lockbox, locking server rack, or in a room that is behind a lock and key.

#### **15. Connect IP Cameras to the PoE Ports on the Back of an NVR:**

Cameras connected to the PoE ports on the back of an NVR are isolated from the outside world and cannot be accessed directly.

#### **16. Isolate NVR and IP Camera Network**






The network your NVR and IP camera resides on should not be the same network as your public computer network. This will prevent any visitors or unwanted guests from getting access to the same network the security system needs in order to function properly.

## General

This Installation Manual (hereinafter referred to be "the Manual") introduces installation preparation and speed dome installation.

## Safety Instructions

The following categorized signal words with defined meaning might appear in the Manual.

Signal Words	Meaning
 <b>DANGER</b>	Indicates a high potential hazard which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
 <b>CAUTION</b>	Indicates a potential risk which, if not avoided, could result in property damage, data loss, lower performance, or unpredictable result.
 <b>TIPS</b>	Provides methods to help you solve a problem or save you time.
 <b>NOTE</b>	Provides additional information as the emphasis and supplement to the text.

## Revision History

No.	Version	Revision Content	Release Time
1	V1.0.0	First Release.	June 20, 2017
2	V1.0.1	Installation Position Requirement Added.	June 22, 2018

## Privacy Protection Notice

As the device user or data controller, you might collect personal data of others' such as face, fingerprints, car plate number, Email address, phone number, GPS and so on. You need to be in compliance with the local privacy protection laws and regulations to protect the legitimate rights and interests of other people by implementing measures include but not limited to: providing clear and visible identification to inform data subject the existence of surveillance area and providing related contact.

## About the Manual

- The Manual is for reference only. If there is inconsistency between the Manual and the actual product, the actual product shall prevail.
- We are not liable for any loss caused by the operations that do not comply with the Manual.
- The Manual would be updated according to the latest laws and regulations of related regions. For detailed information, see the paper manual, CD-ROM, QR code or our official website. If there is inconsistency between paper manual and the electronic version, the electronic version shall prevail.
- All the designs and software are subject to change without prior written notice. The product updates might cause some differences between the actual product and the Manual. Please contact the customer service for the latest program and supplementary documentation.
- There still might be deviation in technical data, functions and operations description, or errors in print. If there is any doubt or dispute, please refer to our final explanation.
- Upgrade the reader software or try other mainstream reader software if the Manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks and the company names in the Manual are the properties of their respective owners.
- Please visit our website, contact the supplier or customer service if there is any problem occurred when using the device.
- If there is any uncertainty or controversy, please refer to our final explanation.

# Important Safeguards and Warnings

The Manual helps you to use our product properly. Read the Manual carefully before installing and using the product, and we highly recommend you to keep it well for future reference.



- Avoid heavy stress, violent vibration, and water splash during transportation, storage, and installation.
- Complete package is necessary during the transportation. We will assume no responsibility for any damage or problem caused by the incomplete package during the transportation.
- Avoid the product falling down or heavy vibration.
- Buckle the safety hook before installing the product if it is included.
- Keep the product away from devices that might produce strong electromagnetism radiant, including wireless power, TV transmitter, transformer, and loudspeaker.
- Keep the product away from smoke, vapor, dust, and heat. Do not install the speed dome near the heating furnace, spotlight, and other heat source.
- Do not disassemble the product. A failure to follow this instruction might result in personal injury or device damage. Contact your local retailer or customer service center for internal setup or maintenance requirement.
- Make sure there is no metal or inflammable in the product. A failure to follow this instruction might result in fire, short-circuit, or other damage.
- Turn off the power and disconnect the power cord immediately if there is water or liquid falling into the product. And contact your local retailer or customer service center.
- Avoid the sea water or rain eroding the camera.
- Avoid the lens aiming at intense light source, including sunlight and incandescent light.
- Clean the enclosure with the soft cloth or soft cloth with proper cleaning liquid, and then dry it with soft cloth. Do not use gasoline, dope thinner, or other chemicals to clean the enclosure. A failure to follow this instruction might result in enclosure transfiguration or paint flake.
- Read all the Manuals included before you use chemical cloth.
- Avoid long time touch between the plastic or rubber material and the enclosure. A failure to follow this instruction might result in paint flake.
- It is highly recommended to use the product with a lightning-proof device for better lightning-proof effect.

## Qualified Engineer Needed

The installation engineer or maintenance engineer shall have corresponding CCTV system installation certificate or maintenance qualification certificate, including qualification certificate for work at height.

- The installation engineer or maintenance engineer shall have the basic knowledge and installation technique for CCTV system.

- The installation engineer or maintenance engineer shall have the basic knowledge and operation technique for low-voltage cable wiring and low-voltage electronic cable connection.
- The installation engineer or maintenance engineer shall be able to read and understand the Manual.

## Lifting Appliance Requirements

- Select the lifting appliances applicable for the speed dome installation environment and installation method.
- The lifting appliances shall have the enough capacity to reach the installation height.
- The lifting appliances shall have high security performance.



### **WARNING**

- All installation and operation here should conform to your local electrical safety regulations. We will assume no responsibility for all the fires or electrical shock caused by improper handling or installation.
- The power supply shall meet the SELV requirement. Use the power supply that conforms to Limited Power Source, according to IEC60950-1.
- Use the power adapter recommended by manufacturer.
- For the product that supports laser, do not aim the laser directly to eyes. And keep a proper distance from the flammable to avoid fire.
- Do not connect several speed domes to one power adapter. A failure to follow this instruction might result in overheat or fire if it exceeds the rated load.
- Make sure the power is off when you connect the cables, install or uninstall the speed dome.
- Turn off the power and disconnect the power cord immediately if there is any smoke, disgusting smell, or noise from the speed dome. And contact your local retailer or customer service center.
- Contact your local retailer or customer service center if the product is abnormal. Do not disassemble or repair the product by yourself. We will assume no responsibility for any problems caused by unauthorized modifications or repair.
- We will assume no responsibility for any problems caused by incorrect installation or use.
- We will assume no responsibility for any problems caused by overuse of the certain component.

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# 1

# Installation Preparation

## 1.1 Basic Requirements

- All installation and operation should conform to your local electrical safety regulations, fire protection regulations, and relevant regulations.
- Make sure the application scenarios conform to the installation requirements. Contact your local retailer or customer service center if there is any problem.
- Use the product according to the operating environment.
- Keep the original packing material well, you might need it to pack the speed dome and send it back for repair.

## 1.2 Installation Check

- Make sure the installation environment has enough space to install the speed dome and its mounting accessories.
- Make sure the ceiling and wall can sustain eight times the weight of the speed dome and its mounting accessories.
- Make sure the wall is thick enough to install expansion bolts (The expansion bolts should be purchased separately).

## 1.3 Cable Preparation

### 1.3.1 Minimum Specification Requirements for Cables

- 75 ohm
- Full copper-cored cables
- 95% knitted copper shield

### 1.3.2 Power Cord Selection

See Appendix 2 for 12V DC power supply.

# 2 Speed Dome Installation

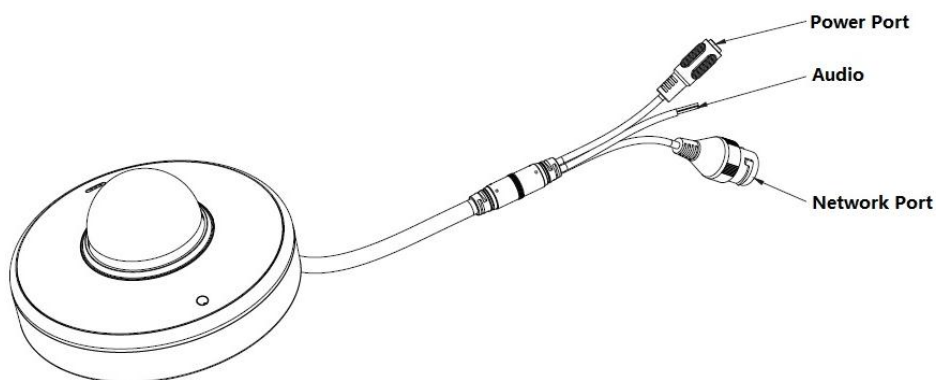
## 2.1 Checking Accessories

Before installation, check the accessories according to the packing list, and make sure all the components listed are included.

## 2.2 Opening the Package

Open the package, and take out the speed dome. See Figure 2-1.

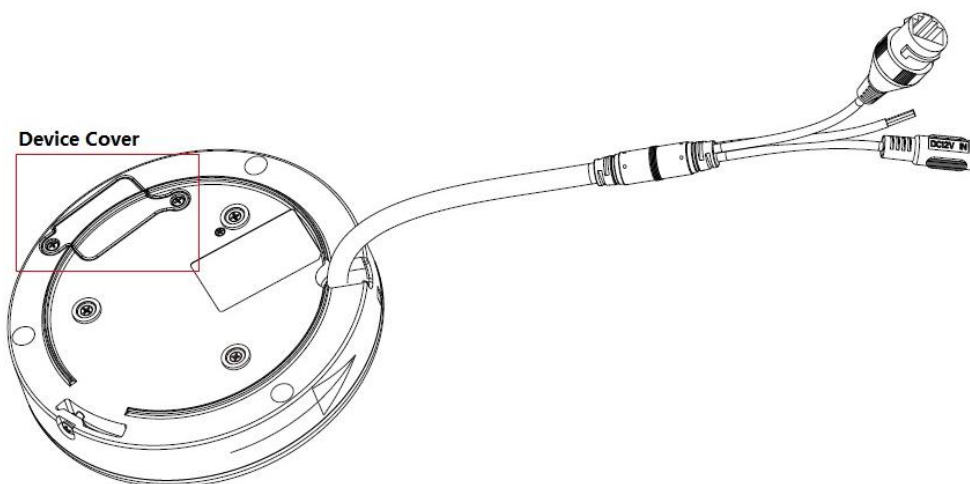
Figure 2-1 Network speed dome



## 2.3 Reset Button and Memory Card Slot

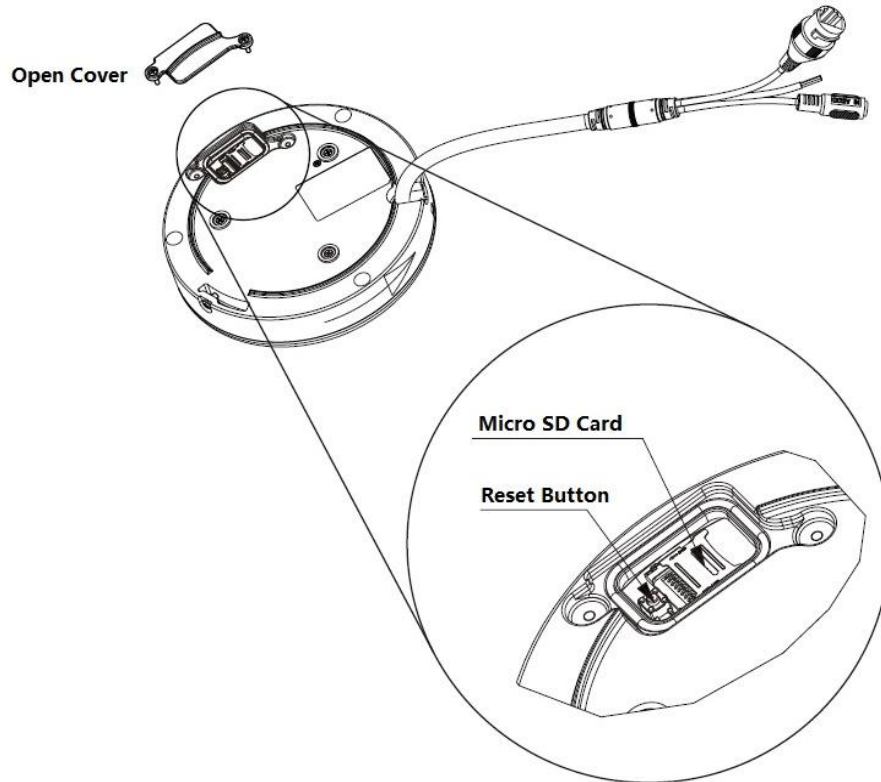
Turn over the speed dome, and then you can see the cover located on the bottom of the speed dome. See Figure 2-2.

Figure 2-2 Cover



Open the cover with a screwdriver, and then you can see the reset button and the memory card slot. See Figure 2-3.

Figure 2-3 Reset button



## 2.3.1 Reset Button

Reset button is for resetting the network system.

Open the cover, press and hold the reset button for over 10 seconds, and then all the settings will be restored back to factory default.

## 2.3.2 Micro SD Card

Micro SD card is for data storage.

To install the Micro SD card, do the following:



- Pay attention to the pulling and inserting direction of Micro SD card slot.
- Make sure the Micro SD card is in the status of non-read/write when removing the Micro SD card. Otherwise it may cause data loss and SD card damage.

**Step 1** Press down the Micro SD card slot slightly, and then open it towards the OPEN direction.

The card slot will become loose.

**Step 2** Insert the Micro SD card. Be aware that the card metal surface is corresponding to the golden finger of the card slot.

**Step 3** Press the slot slightly and pull it according to the direction of CLOSE.

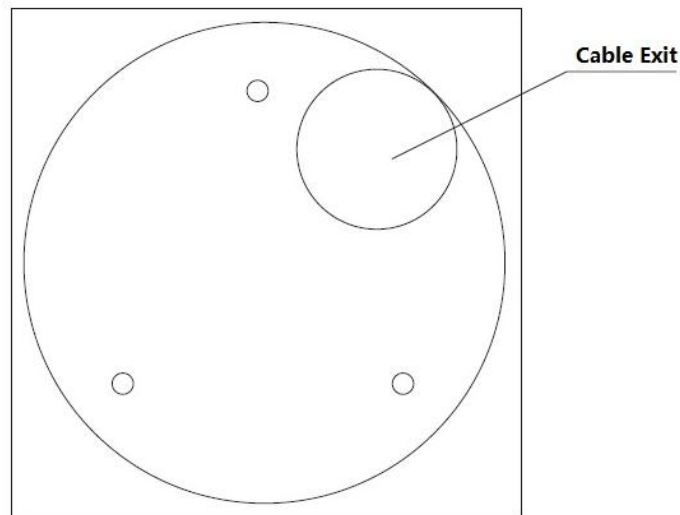
# 3

## Ceiling Mounting

### 3.1 Installation Component

Adopt installation position map for ceiling mounting. See Figure 3-1.

Figure 3-1 Installation position map



### 3.2 Speed Dome Installation

#### 3.2.1 Installation Conditions

Ceiling mounting is applicable to hard ceiling structure in both indoor and outdoor environments.

Make sure:

- The ceiling shall be thick enough to install expansion bolts.
- The ceiling shall sustain eight times the weight of the speed dome and its mounting accessories.

#### 3.2.2 Installation Steps

Step 1 Confirm the installation location on the ceiling, and then stick the installation position map on the ceiling. See Figure 3-2.



Make sure the cable outlet is located in the range which needs no monitoring, and there is no object might obstruct the view within the range of 50 cm from installation position. Otherwise, it will affect image effect and monitoring range. See Figure 3-3 for installation position requirement.

Figure 3-2 Sticking the installation position map

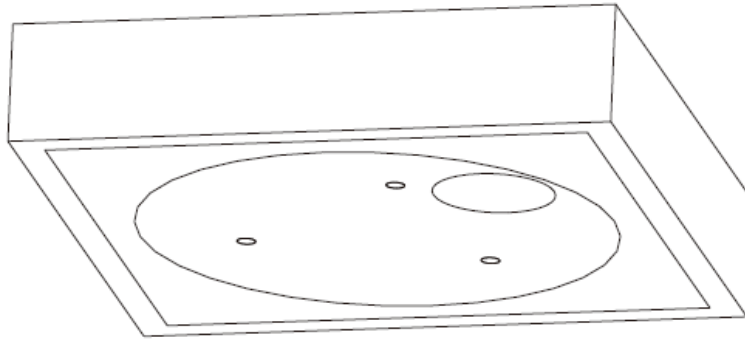
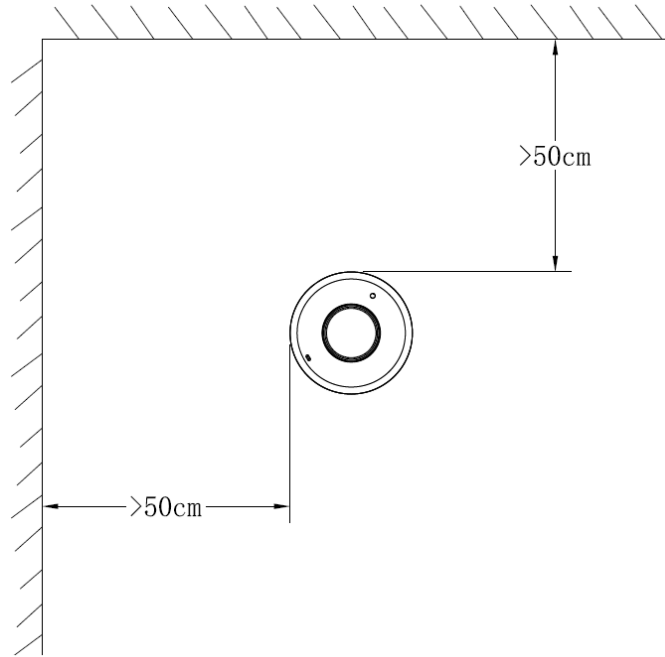
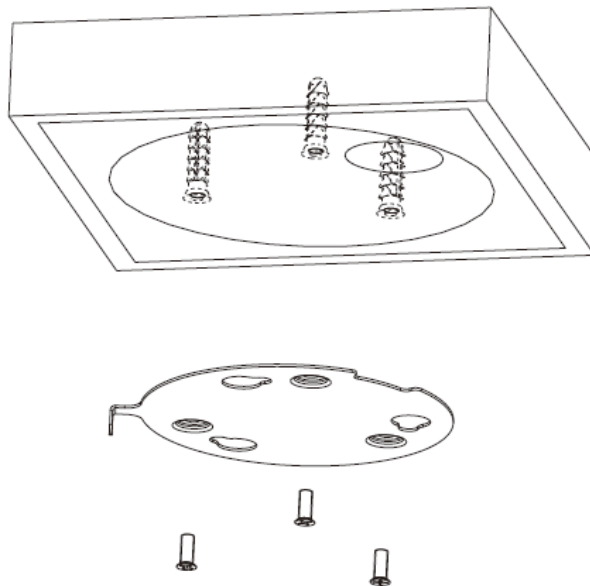


Figure 3-3 Installation position requirement.



Step 2 Knock the expansion bolts into the mounting holes and fix the mounting plate on the ceiling with the screws. See Figure 3-4.

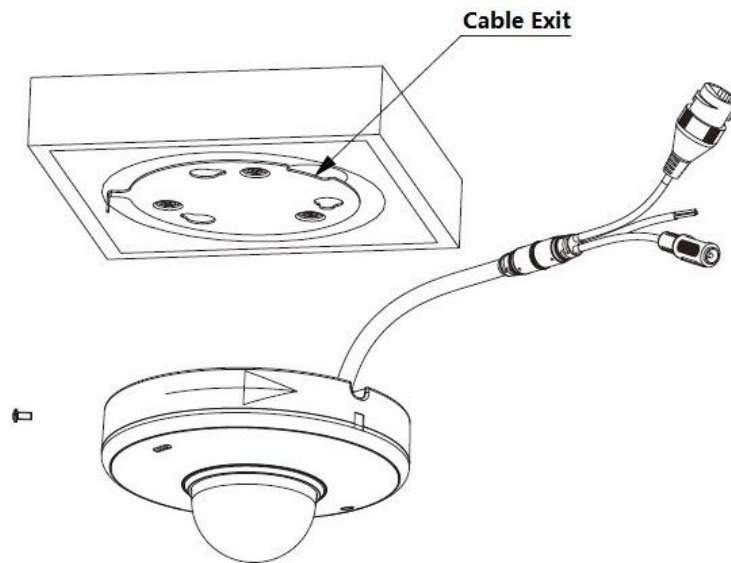
Figure 3-4 Fixing the mounting plate



**Step 3** Pull the cables through the hole, and place the speed dome pedestal closely to the mounting plate.

**Step 4** Rotate the speed dome pedestal to the arrow shown on the speed dome edge, and then hang the speed dome on the mounting plate. See Figure 3-5.

Figure 3-5 Rotating the speed dome pedestal



**Step 5** Insert the screws into the holes on the side of mounting plate to secure the speed dome on the mounting plate. See Figure 3-6.

And speed dome is installed. See Figure 3-7.

Figure 3-6 Securing the speed dome on the mounting plate

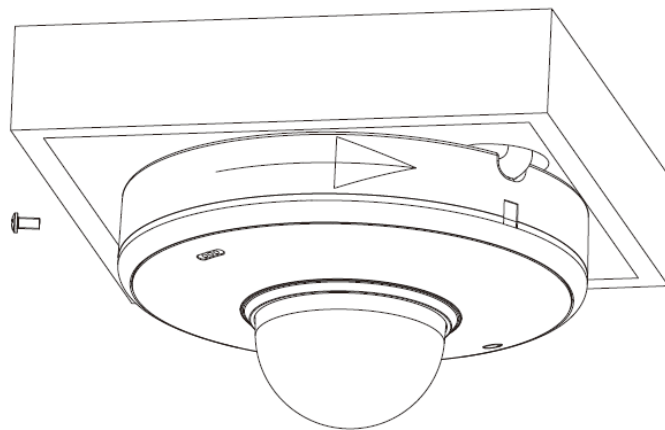
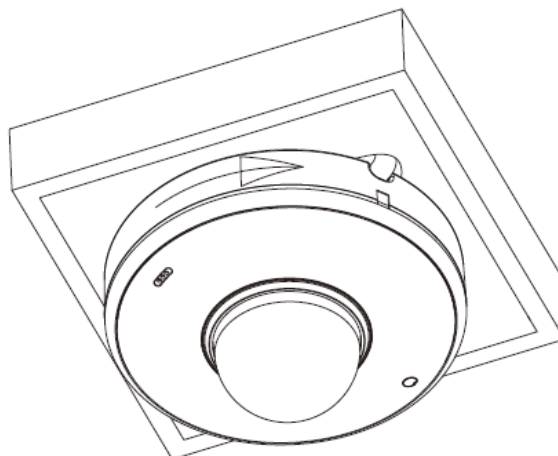


Figure 3-7 Speed dome installed



# 4

## Wall Mounting

### 4.1 Installation Component

Adopt wall-mounted bracket and ceiling bracket for wall mounting. See Figure 4-1 for wall-mounted bracket, and see Figure 4-2 for ceiling bracket.

Figure 4-1 Wall-mounted bracket

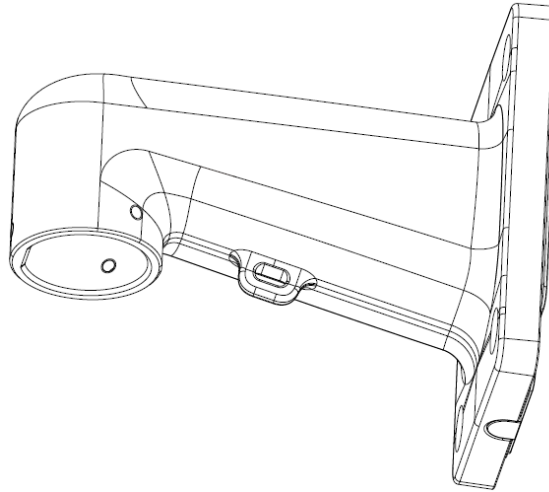
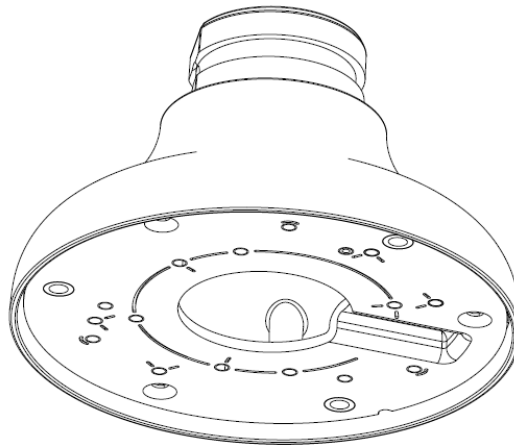


Figure 4-2 Ceiling bracket



### 4.2 Speed Dome Installation

#### 4.2.1 Installation Conditions

Wall mounting is applicable to hard wall structure in both indoor and outdoor environments.

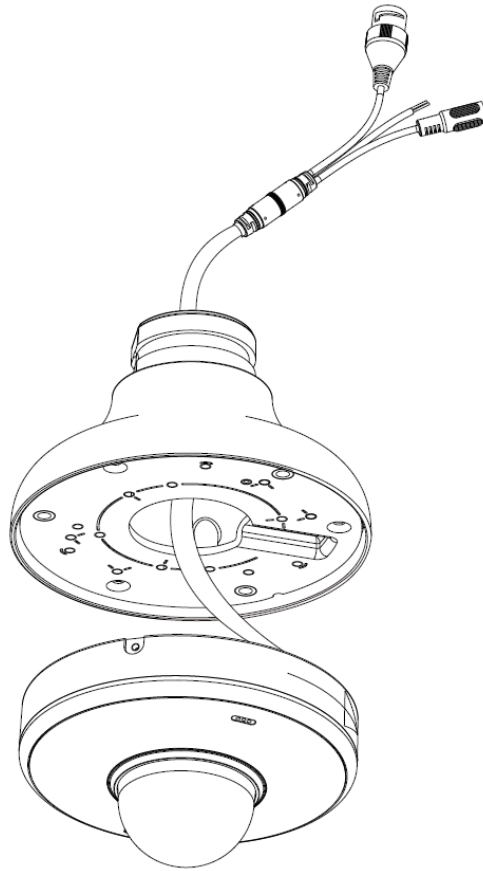
Make sure:

- The wall shall be thick enough to install expansion bolts.
- The wall shall sustain eight times the weight of the speed dome, bracket, and other mounting accessories.

## 4.2.2 Installation Steps

Step 1 Pull the speed dome cables through the ceiling mounting plate. See Figure 4-3.

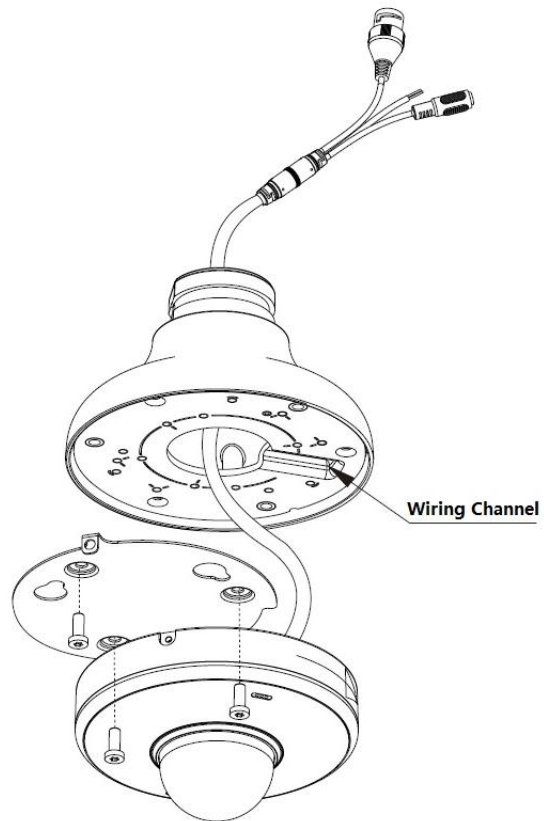
Figure 4-3 Pulling the speed dome cables



Step 2 Place the speed dome cables closely into the wiring channel, and then install the mounting plate of speed dome on the ceiling mounting plate with the screws. See Figure 4-4.

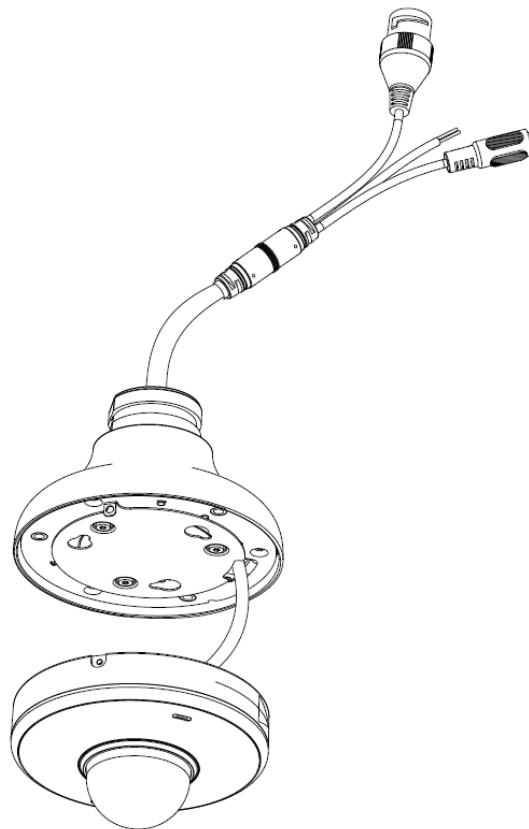


Figure 4-4 Installing the mounting plate



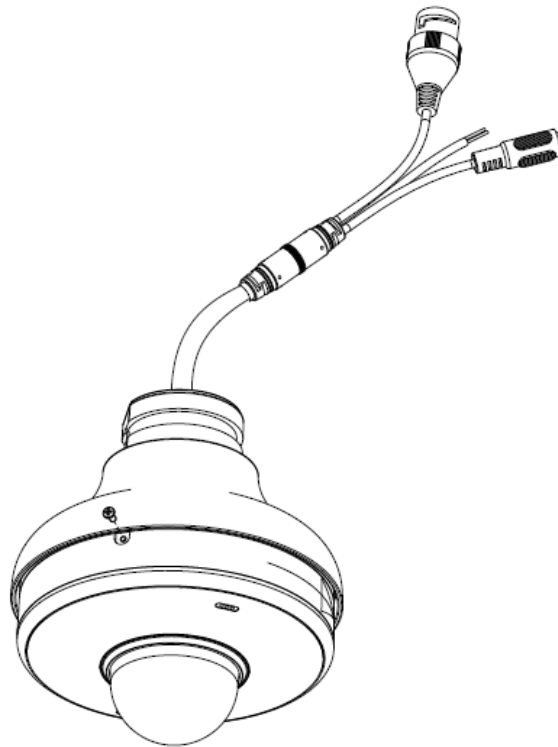
Step 3 Rotate the speed dome clockwise after the device pedestal is closely clung to the mounting plate, and then hang the speed dome on the mounting plate. See Figure 4-5.

Figure 4-5 Hanging the speed dome



**Step 4** Insert the screws into the holes on the side of mounting plate to secure the speed dome on the mounting plate. See Figure 4-6.

Figure 4-6 Securing the speed dome on the mounting plate



**Step 5** Pull the speed dome cables and ceiling mounting plate flange through the wall-mounted bracket, and then secure the mounting plate and speed dome on the wall-mounted bracket with the screws. See Figure 4-7.



Make sure the cable outlet is located in the range which needs no monitoring, and there is no object might obstruct the view within the range of 50 cm from installation position. Otherwise, it will affect image effect and monitoring range. See Figure 4-8 for installation position requirement.

Figure 4-7 Securing the speed dome on the wall-mounted bracket

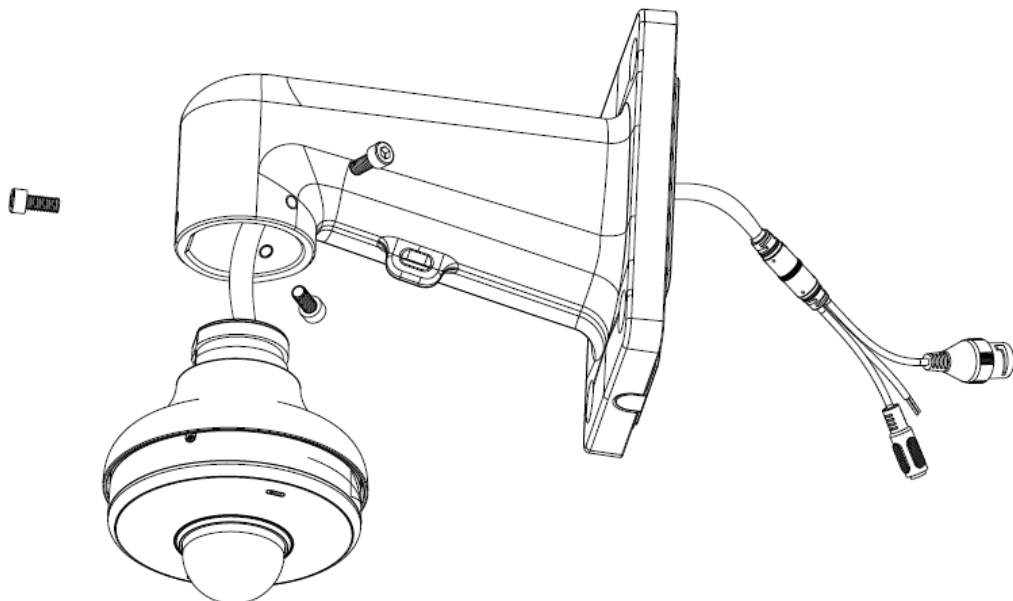
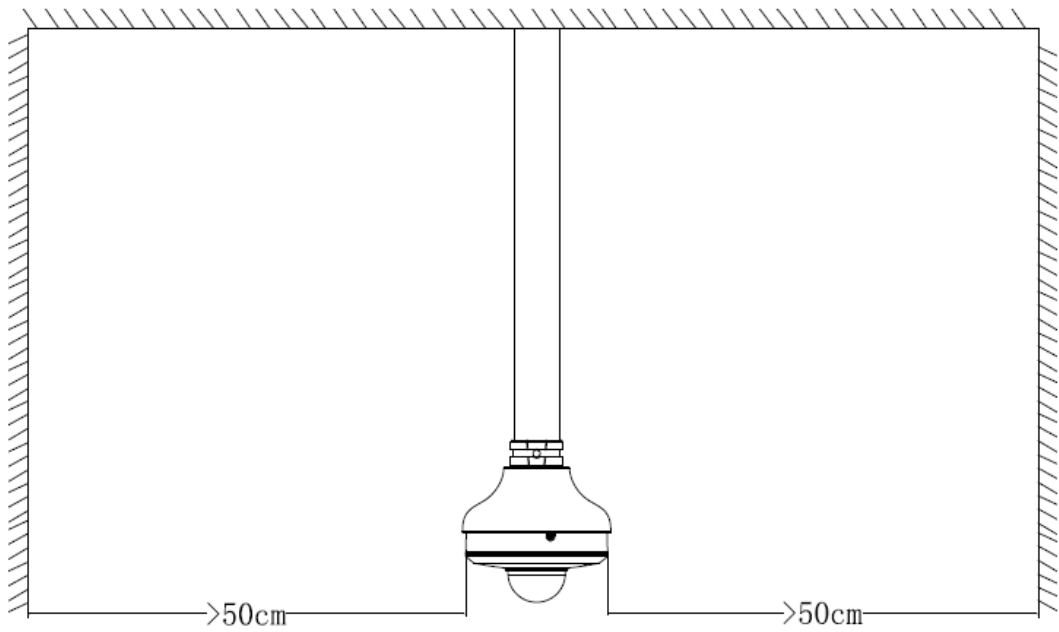
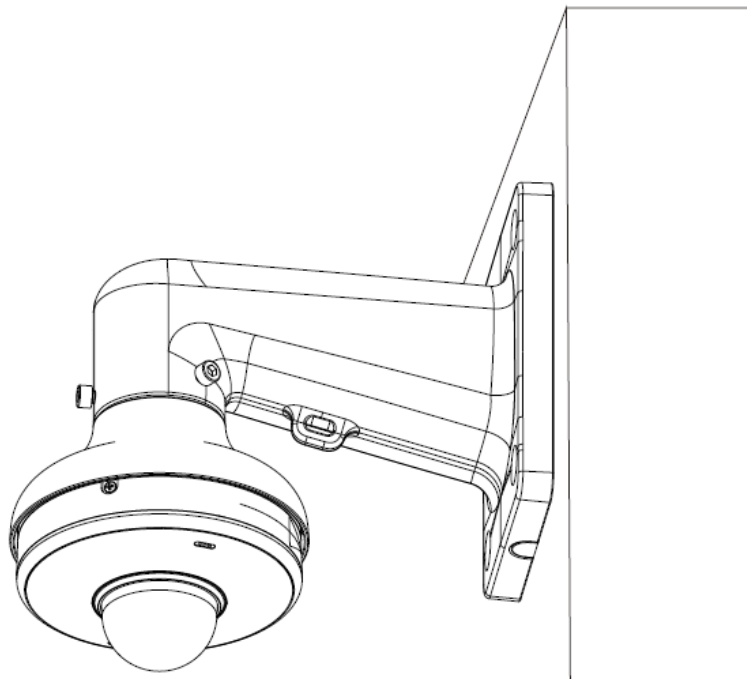


Figure 4-8 Installation position requirement



**Step 6** Connect the corresponding cables of the speed dome to the wall cables, and then secure the wall-mounted bracket on the wall. And speed dome is installed. See Figure 4-9.

Figure 4-9 Speed dome installed



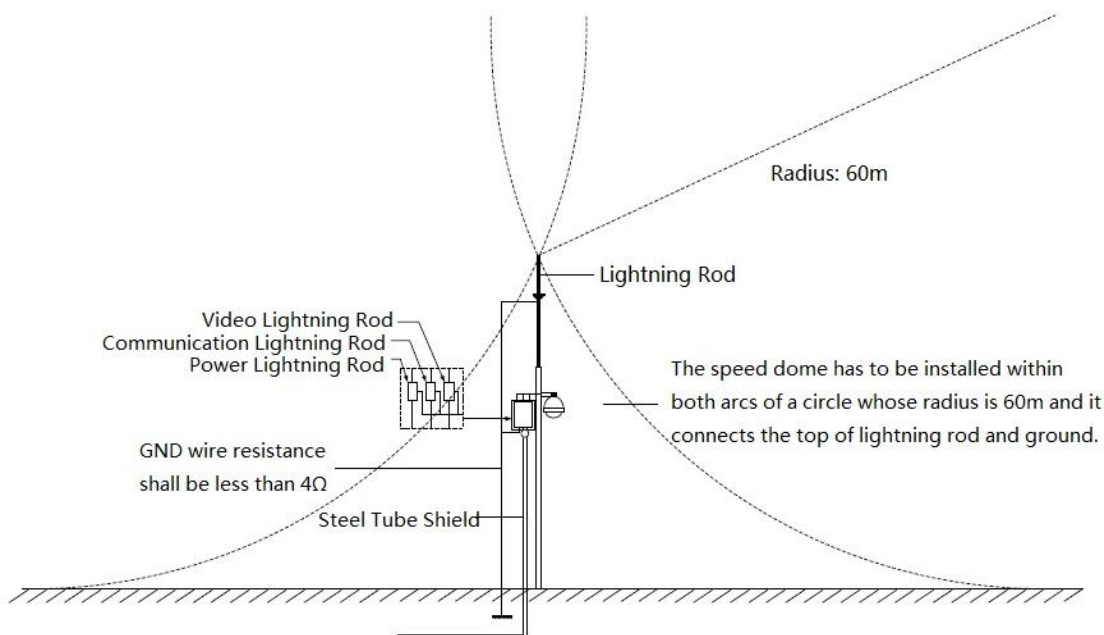
## Appendix 1.1 Outdoors

This series of speed domes adopt TVS lightning protection technology. It can effectively prevent damages from various pulse signals below 6000V, such as sudden lightning. Take necessary safeguard measures when installing the speed dome in the outdoor environment according to your local electrical safety regulations.

- The distance between the signal transmission cable and high-voltage device (or high-voltage cable) shall be at least 50 meters.
- Outdoor cable layout shall go under the penthouse if possible.
- For vast land, please use sealing steel tube under the land to implement cable layout and connects one point to the earth. Open floor cable layout is forbidden.
- In area of strong thunderstorm hit or near high sensitive voltage (such as near high-voltage transformer substation), you need to install additional high-power thunder protection device or lightning rod.
- The thunder protection and earth of the outdoor device and cable shall be considered in the building whole thunder protection and conform to your local national or industry standard.
- System shall adopt equal-potential wiring. The earth device shall meet anti-jamming and at the same time conforms to your local electrical safety code. The earth device shall not short circuit to N (neutral) line of high voltage power grid or mixed with other wires. When connect the system to the earth alone, the earth resistance shall not be more than  $4\ \Omega$  and earth cable cross-sectional area shall be no less than  $25\ \text{mm}^2$ .

See Appendix figure 1-1 for outdoor installation.

Appendix figure 1-1 Outdoor installation

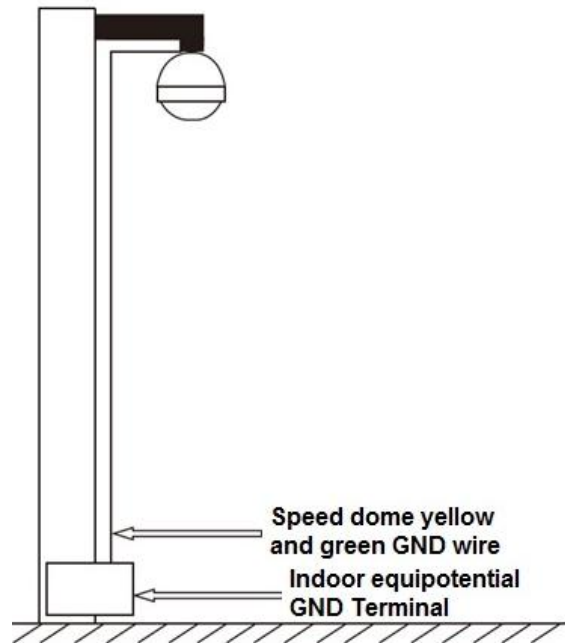


## Appendix 1.2 Indoors

The yellow and green GND wire or GND screw of the speed dome should be reliably connected by several strands of copper wire with no less than 25mm<sup>2</sup> and indoor equipotential GND terminal.

See Appendix figure 1-2 for indoor installation.

Appendix figure 1-2 Indoor installation



## Appendix 2 12V DC Cable Diameter and Transmission Distance

It is the recommended transmission distance for the fixed-sized cable with attrition rate lower than 10% of 12V DC. The Max. attrition rate of voltage allowed for DC power supply is 10%. The cables in the following table are all copper cables with electrical resistivity  $\rho = 0.0175\Omega \cdot \text{mm}^2/\text{m}$ .

Transmission Power Consumption (W)	Cable Diameter (mm)			
	0.8000	1.000	1.250	2.000
	Transmission Distance Feet (m)			
5	122.13 (37.23)	190.83 (58.16)	298.17 (90.88)	763.31 (232.66)
10	61.06 (18.61)	95.41 (29.08)	149.08 (45.44)	381.66 (116.33)
15	40.71 (12.41)	63.61 (19.39)	99.39 (30.29)	254.44 (77.55)
20	30.53 (9.31)	47.71 (14.54)	74.54 (22.72)	190.83 (58.16)
25	24.43 (7.45)	38.17 (11.63)	59.63 (18.18)	152.66 (46.53)
30	20.35 (6.20)	31.80 (9.69)	49.69 (15.15)	127.22 (38.78)
35	17.45 (5.32)	27.26 (8.31)	42.60 (12.98)	109.04 (33.24)
40	15.27 (4.65)	23.85 (7.27)	37.27 (11.36)	95.41 (29.08)
45	13.57 (4.14)	21.20 (6.46)	33.13 (10.10)	84.81 (28.85)
50	12.21 (3.72)	19.08 (5.82)	29.82 (9.09)	76.33 (23.27)
55	11.10 (3.38)	17.35 (5.29)	27.11 (8.26)	69.39 (21.15)
60	10.18 (3.10)	15.90 (4.85)	24.85 (7.57)	63.61 (19.39)
65	9.39 (2.86)	14.68 (4.47)	22.94 (6.99)	58.72 (17.90)
70	8.72 (2.66)	13.63 (4.15)	21.30 (6.49)	54.52 (16.62)
75	8.14 (2.48)	12.72 (3.88)	19.88 (6.06)	50.89 (15.51)
80	7.63 (2.33)	11.93 (3.64)	18.64 (5.68)	47.71 (14.54)
85	7.18 (2.19)	11.23 (3.42)	17.54 (5.35)	44.90 (13.69)
90	6.78 (2.07)	10.60 (3.23)	16.56 (5.05)	42.41 (12.93)
95	6.43 (1.96)	10.04 (3.06)	15.69 (4.78)	40.17 (12.25)
100	6.11 (1.86)	9.54 (2.91)	14.91 (4.54)	38.17 (11.63)

## Appendix 3 Wire Gauge Reference Sheet

Metric bare wire diameter (mm)	AWG	SWG	Bare wire cross section (mm <sup>2</sup> )
0.050	43	47	0.00196
0.060	42	46	0.00283
0.070	41	45	0.00385
0.080	40	44	0.00503
0.090	39	43	0.00636
0.100	38	42	0.00785
0.110	37	41	0.00950
0.130	36	39	0.01327
0.140	35	/	0.01539
0.160	34	37	0.02011
0.180	33	/	0.02545
0.200	32	35	0.03142
0.230	31	/	0.04115
0.250	30	33	0.04909
0.290	29	31	0.06605
0.330	28	30	0.08553
0.350	27	29	0.09621
0.400	26	28	0.1257
0.450	25	/	0.1602
0.560	24	24	0.2463
0.600	23	23	0.2827
0.710	22	22	0.3958
0.750	21	/	0.4417
0.800	20	21	0.5027
0.900	19	20	0.6362
1.000	18	19	0.7854
1.250	16	18	1.2266
1.500	15	/	1.7663
2.000	12	14	3.1420
2.500	/	/	4.9080
3.000	/	/	7.0683