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# **Network Intelligent Speed Dome Installation Manual**

**Version 1.0.1**

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## Welcome

Thank you for purchasing our speed dome!

**Please read the following safeguards and warnings carefully before you install or use the product!**

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# Important Safeguards and Warnings

## Safety Measures

### 1. Qualified Engineer Needed

- The installation engineer or maintenance engineer shall have corresponding CCTV system installation certificate or maintenance qualification certificate.
- The installation engineer or maintenance engineer shall have qualification certificate for work at height.
- The installation engineer or maintenance engineer shall have the basic knowledge and operation technique for low-voltage cable layout and low-voltage electronic cable connection.
- Please read the installation manual carefully and keep it well for future reference,
- We are not liable for any problems caused by unauthorized modifications or attempted repair.

### 2. Lifting Appliance Requirement

- Please select the proper speed dome installation mode and use the lifting appliances at the safety environment.
- The lifting appliances shall have the enough capacity to reach the installation height.
- The lifting appliances shall have safe performance.

**The precaution measures include two types: Warning and Note.**

- **Warning:** It is to alert you there is an optional risk of death or series injury!
- **Note:** It is to alert you there is an optional risk of damage or property loss!

## Warning

1. All installation and operation here should conform to your local electrical safety codes. We assume no liability or responsibility for all the fires or electrical shock caused by improper handling or installation.
2. Do not connect several speed domes to one power adapter. It may result in overheat or fire if it exceeds the rated load.
3. Before you connect the cable, install or uninstall, or begin the daily maintenance work, please turn off the power and unplug the power cable.
4. Please make sure the product is secured firmly on the wall or the ceiling.
5. Please turn off the power and unplug the power cable, If there is any smoke, disgusting smell, or noise. Please contact your local retailer or customer service center for help.

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6. All the examination and repair work should be done by the qualified service engineers. We are not liable for any problems caused by unauthorized modifications or attempted repair.

## Note

### 1. Safety Transportation

- Heavy stress, violent vibration or water splash are not allowed during transportation, storage and installation.
- This series product must use split type package during the transportation.
- We are not liable for any damage or problem resulting from the integrated package during the transportation.

### 2. When device is malfunction

Shut down the device and disconnect the power cable immediately if there is smoke, abnormal smell or abnormal function. Please contact your local retailer ASAP.

### 3. Do not try to dismantle or modify the device

- There is risk of personal injury or device damage resulting from opening the shell.
- Please contact your local retailer if there is internal setup or maintenance requirement.
- We are not liable for any problems caused by unauthorized modifications or attempted repair.

### 4. Do not allow other object falling into the device

- Please make sure there is no metal or inflammable, explosive substance in the speed dome.
- The above mentioned objects in the device may result in fire, short-circuit or damage.
- Please shut down the device and disconnect the power cable if there is water or liquid falling into the camera. Please contact your local retailer ASAP.
- Please pay attention to the camera. Avoid the sea water or rain to erode the camera.

### 5. Handle carefully

Do not allow this series product fall down to the ground.  
Avoid heavy vibration.

### 6. Installation Environment Requirement

- This series speed dome should be installed in a cool, dry place away from direct sunlight, inflammable, explosive substances and etc.
- This series product shall be away from the strong electromagnetism radiant, please keep it away from wireless power, TV transmitter, transformer and etc.

### 7. Daily Maintenance

- Please use the soft cloth to clean dust on the shell, or you can use soft cloth with cleaning liquid to clean the shell and then use soft cloth to make it dry.

- 
- Do not use gasoline, dope thinner or other chemical material to clean the shell. It may result in shell transfiguration or paint flake.
  - Do not allow the plastic or rubber material to touch the shell for a long time. It may result in paint flake.
  - It is highly recommended to use the product with a lightning-proof device, which can realize better lightning-proof effect.

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# 1 Installation Preparation

## 1.1 Basic Requirement

- All installation and operation here should conform to your local electrical safety codes.
- Before installation, please open the package and check all the components are included. Please make sure the speed dome installation environment and installation mode can meet your requirement. If there is special requirement, please contact your local retailer for more information.
- We assume no liability or responsibility for all the fires or electrical shock caused by improper handling or installation.

**Note:**

It may lead to accidental damage for the non-original packing material during transportation, which will cause extra charges.

## 1.2 Check installation space and installation location intension

Please make sure the installation environment has enough space to install the speed dome and its corresponding bracket.

Please make sure the ceiling, wall and the bracket can support the speed dome and its corresponding installation component. It shall sustain the 8X weight of the speed dome.

## 1.3 Cable Preparation

Please select the min specification requirement of video cable and video coaxial cable according to the transmission distance.

### 1.3.1 The Min Specification Requirements of Cable

- 75 ohm impedance.
- Full cable with copper conductor
- 95% knitted copper shield
- Please refer to appendix 1 for more information about RS485 communication cable.

International Model	Max Distance (Ft/M)
RG59/U	750ft (229m)
RG6/U	1,000ft (305m)
RG11/U	1,500ft (457m)

**Note:**

The above can be applied to analog speed dome and network speed dome.

International Model	Max Distance (Ft/M)
SYV-75-3	720P (25fps/30fps): 1,640ft/500m
	720P (50fps/60fps): 984ft/300m
	1080P (25fps/30fps): 984ft/300m



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**Note:**

The above can be applied to HDCVI speed dome.

**1.3.2 Select Power Supply Cable According to Transmission Distance**

Refer to appendix 2 for AC 24V power supply device.

Refer to appendix 3 for DC 12V power supply device.

---

## 2 Setup before Installation

### 2.1 Check Accessories

Before the installation, please check the accessories one by one according to the packing list. Please make sure all the components listed are includes.

### 2.2 Open the Device

Please open the box and then take out the speed dome. See Figure 2-1.

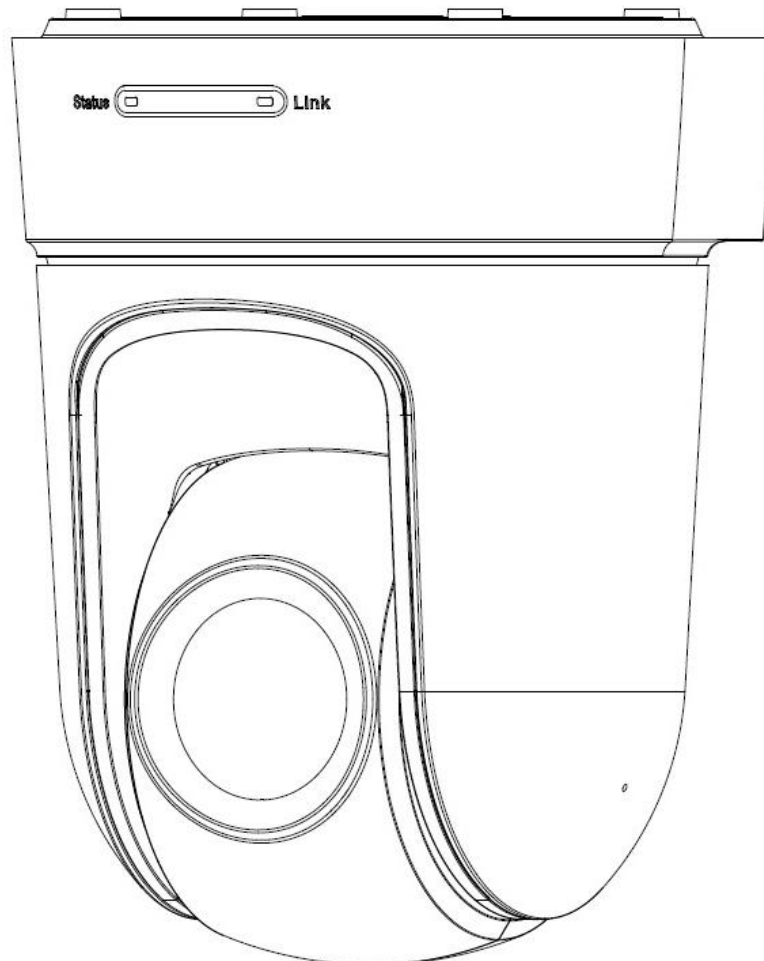


Figure 2-1

### 2.3 Component and Port Description

#### 2.3.1 Front Part of Intelligent Speed Dome

Please refer to Figure 2-2 for the front part of the intelligent speed dome.

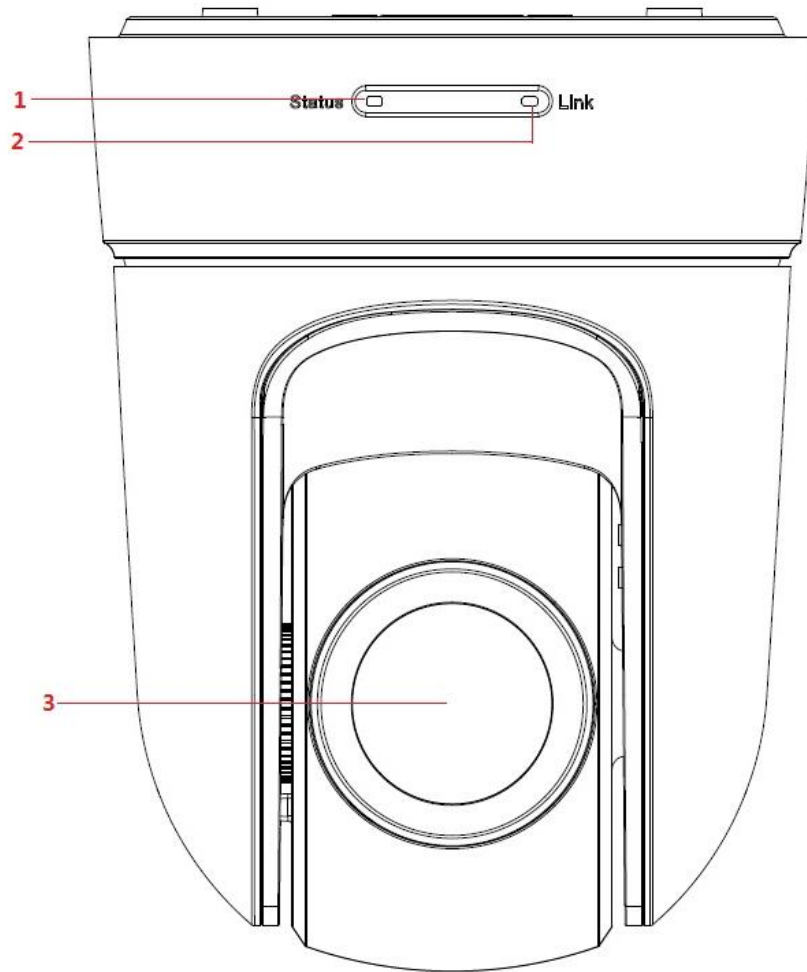


Figure 2-2

Please refer to sheet 2-1 for the function of each component.

SN	Function
1	Device status light: it can display red and blue. <ul style="list-style-type: none"> <li>● Red: power on.</li> <li>● Blue: it flashes once when receiving operation signal of the remote control.</li> </ul>
2	Network status light: it can display red or green. <ul style="list-style-type: none"> <li>● Red: connecting network.</li> <li>● Green: network is connected.</li> </ul>
3	Lens

Sheet 2-1

### 2.3.2 Rear Part of Intelligent Speed Dome

The rear part includes cover and port panel, which is shown in Figure 2-3.

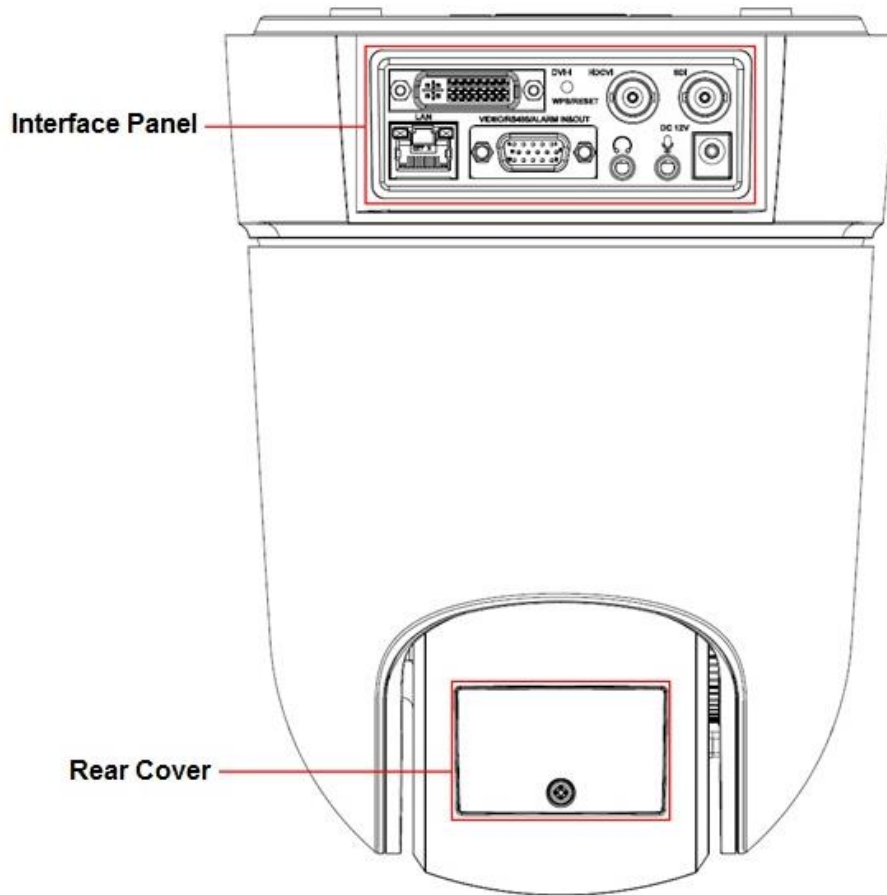


Figure 2-3

The rear ports of the intelligent speed dome is shown in Figure 2-4, please refer to sheet 2-2 for more details of each port.

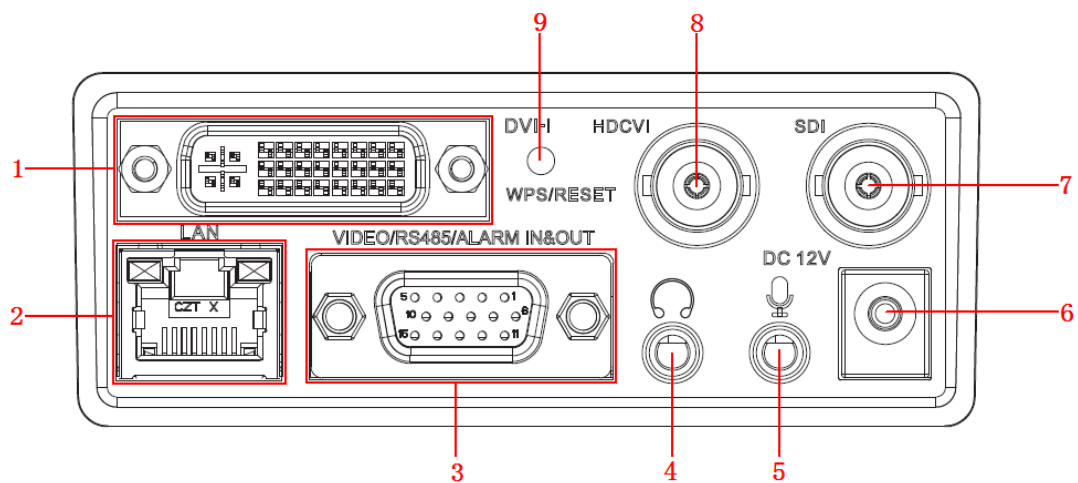


Figure 2-4

SN	Function
1	DVI-I port
2	LAN port
3	VIDEO/RS485/ALARM IN&OUT port
4	Audio output
5	Audio input
6	Power port
7	SDI port
8	HDCVI port
9	WPS/RESET button

Sheet 2-2

### 2.3.3 Top of Intelligent Speed Dome

The top of the speed dome is shown in Figure 2-5, please refer to sheet 2-3 for more details of each component.

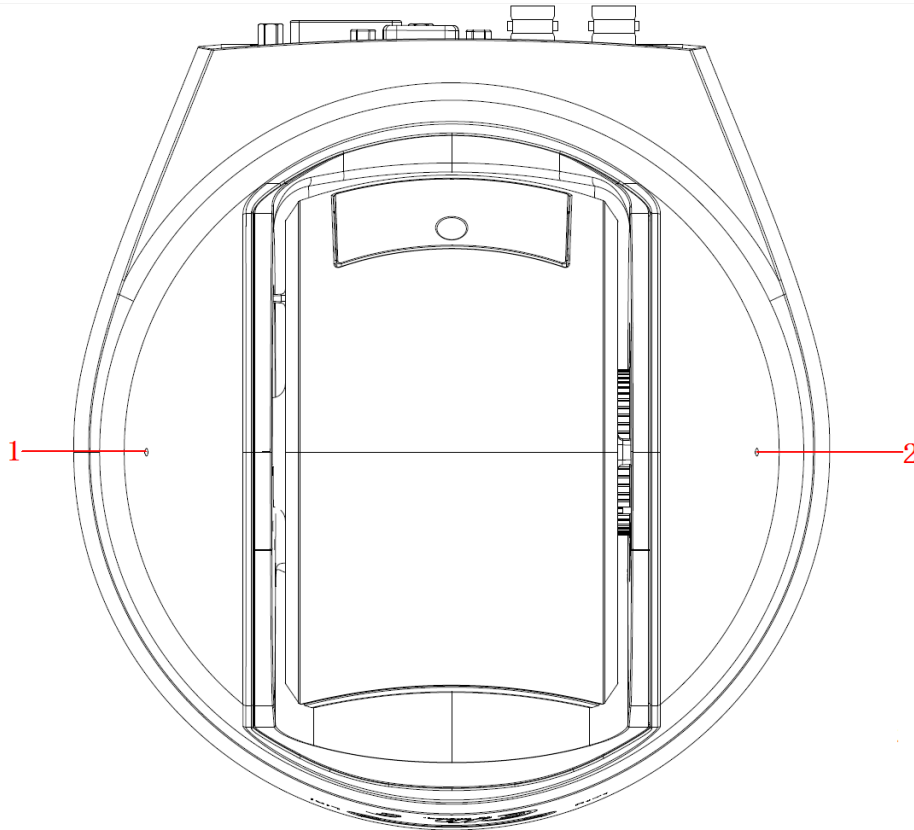


Figure 2-5

SN	Function
1	Mic-in 1
2	Mic-in 2

Sheet 2-3

### 2.3.4 Bottom of Intelligent Speed Dome

The bottom of the speed dome is shown in Figure 2-6, please refer to sheet 2-4 for more details about each component.

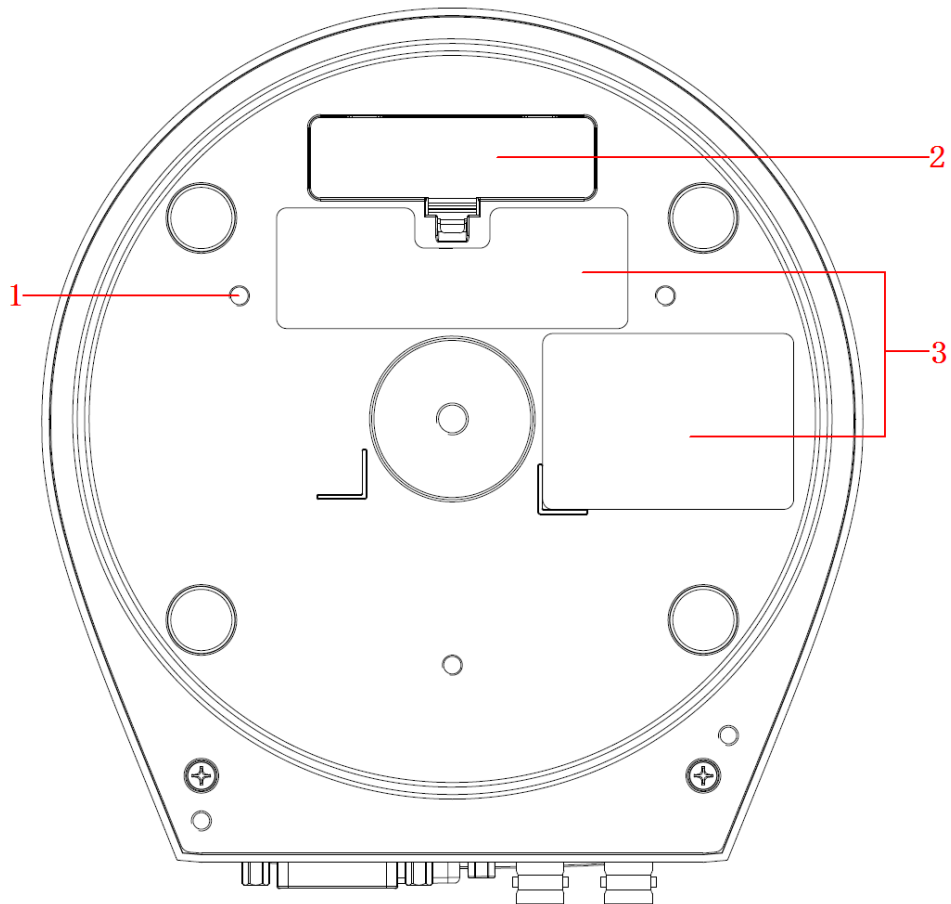


Figure 2-6

SN	Function
1	Installation hole
2	DIP switch cover
3	DIP switch instruction label

Sheet 2-4

## 2.4 DIP Switch Setup

You can see two DIP switches after opening the bottom cover of the intelligent speed dome. The left DIP switch is SW1 and the right DIP switch is SW2, which is shown in Figure 2-7.

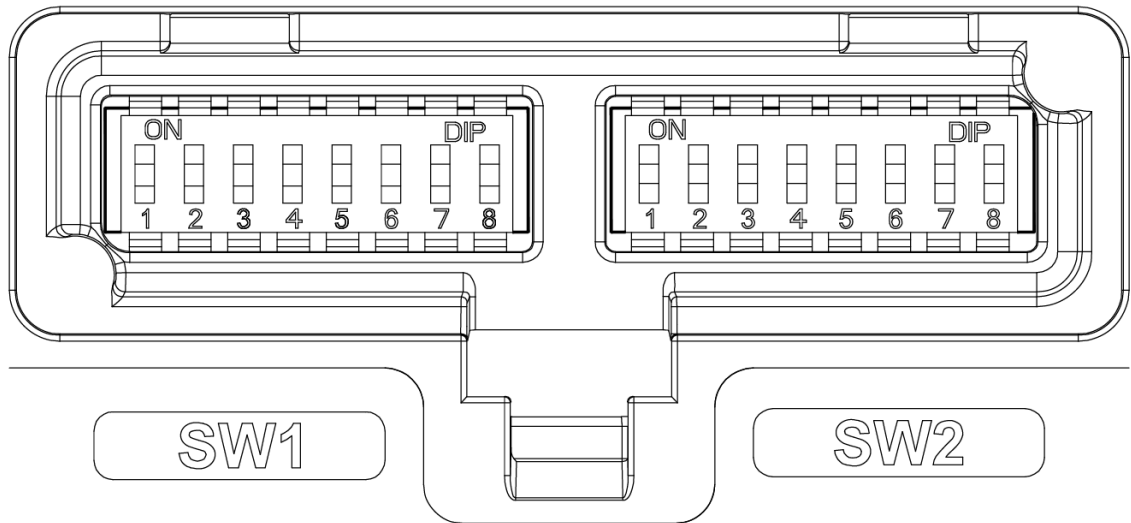


Figure 2-7

The DIP switch label clearly indicates the meaning of each DIP switch, which can set the speed dome address, terminal matched resistance, bit rate, CVBS and resolution, the label is shown in Figure 2-8.

SW1		SW2						
Switch1 Number	1	2	3	4	5	6	7	8
Address 0	off	off	off	off	off	off	off	off
Address 1	on	off	off	off	off	off	off	off
Address 255	on	on	on	on	on	on	on	on

Switch2 Number	1	5	6	7	8			
Termination Settings	1080P25	off	off	off	off			
Not Terminated	off	1080P30	on	off	off			
Terminated	on	1080P50	off	on	off			
	2	3	4	1080P60	on	on	off	off
1200 Baud	on	on		720P25	off	off	on	off
2400 Baud	off	on		720P30	on	off	on	off
4800 Baud	on	off		720P50	off	on	on	off
9600 Baud	off	off		720P60	on	on	on	off
CVBS off			off	1080i50	off	off	off	on
CVBS on			on	1080i60	on	off	off	on

Figure 2-8

### 2.4.1 Address Setup

The speed dome adopts DIP switch to set address, the encoding mode adopts binary encoding. It can set on the SW1 DIP switch board, 1~8 is valid bit, highest address bit is 255, please refer to sheet 2-5 for more details about the setting method of address number.

Address	1	2	3	4	5	6	7	8
1	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
.....	.....							
254	OFF	ON	ON	ON	ON	ON	ON	ON
255	ON	ON	ON	ON	ON	ON	ON	ON

Sheet 2-5

## 2.4.2 Terminal Matched Resistance Access Setup

The connection mode of device terminal 120Ω resistance, the 120Ω terminal resistance is already equipped on the power board.

On the SW2 DIP switch board, when the number 1 dial is off, it means the terminal resistance is not connected; when the dial is on, it means the terminal resistance is connected.

## 2.4.3 Bit Rate Setup

On the SW2 DIP switch board, number 2~3 are the setting bit of baud rate, please refer to sheet 2-6 for more details of setting methods.

2	3	Baud rate
OFF	OFF	9600bps
ON	OFF	4800bps
OFF	ON	2400bps
ON	ON	1200bps

Sheet 2-6

## 2.4.4 CVBS Setup

On the SW2 DIP switch board, when number 4 dial is OFF, it means CVBS is disabled; when dial is ON, it means CVBS is enabled.

### Note:

Other video signals will be interrupted to output after the signal is enabled.

## 2.4.5 Analog Video Output Resolution Setup

On the SW2 DIP switch board, numbers 5~8 are used to set video resolution, please refer to sheet 2-7 for more details about setting methods.

Resolution	5	6	7	8
1080P/25fps	OFF	OFF	OFF	OFF
1080P/30fps	ON	OFF	OFF	OFF
1080P/50fps	OFF	ON	OFF	OFF
1080P/60fps	ON	ON	OFF	OFF
720P/25fps	OFF	OFF	ON	OFF
720P/30fps	ON	OFF	ON	OFF
720P/50fps	OFF	ON	ON	OFF
720P/60fps	ON	ON	ON	OFF
1080I/50fps	OFF	OFF	OFF	ON
1080I/60fps	ON	OFF	OFF	ON

Sheet 2-7

The speed dome supports various video modes, please refer to sheet 2-8 for the resolution supported by each video mode.

Mode	1080P/ 25fps	1080P/ 30fps	1080P/ 50fps	1080P/ 60fps	720P/ 25fps	720P/ 30fps	720P/ 50fps	720P/ 60fps	1080I/ 50fps	1080I/ 60fps
HDMI	-	-	√	√	-	-	√	√	√	√
VGA	-	-	√	√	-	-	√	√	-	-
CVI	√	√	-	-	√	√	√	√	-	-
SDI	√	√	-	-	√	√	√	√	-	-

Sheet 2-8



## 2.5 WPS, Reset and Card Slot Location (Network Speed Dome)

Reset button (WPS/RESET button) is located on the rear port board of the speed dome, which is shown in Figure 2-9. The usage mode of the button is shown as follows:

- Press the button for a short time (5 seconds) to enable WPS function, which can be used to connect to WiFi with the wireless router which supports WPS function.
- Press the button for a long time (10 seconds) to reset the device.

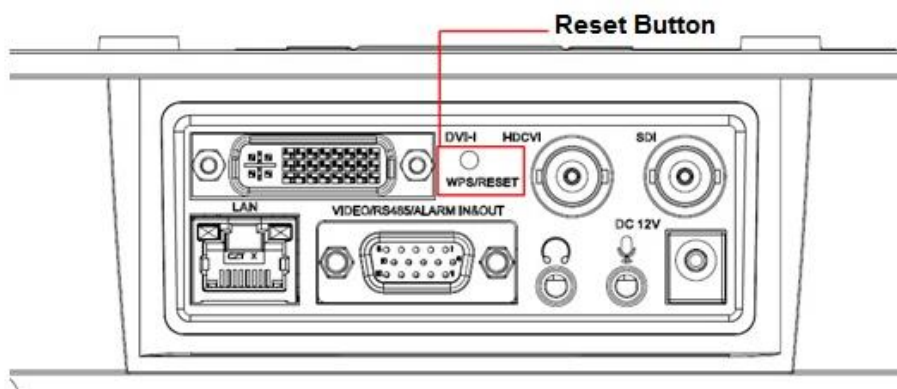


Figure 2-9

Use screwdriver to open the cover on the rear part of the speed dome, and then you can see the Micro SD card slot, which is shown in Figure 2-10.

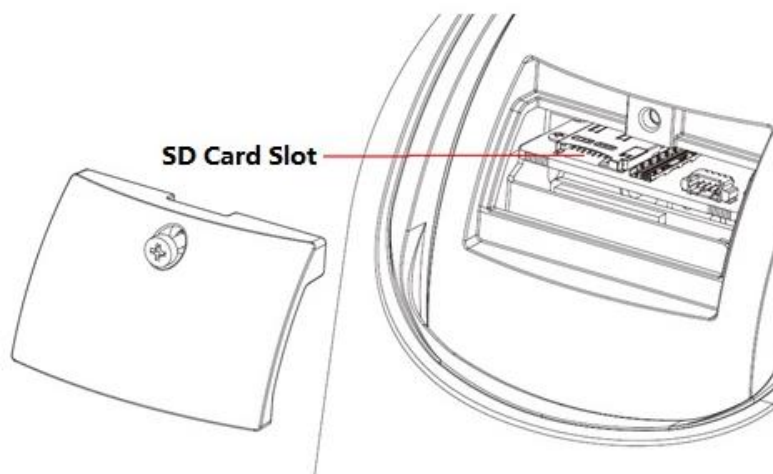


Figure 2-10

## 2.6 Cable Connection

Connect the corresponding power cable, video output cable, audio cable, RS485 control cable, alarm input/output port, network cable, high frequency cable, coaxial cable (according to requirements) of the composite cable of the intelligent speed dome. Twine the insulating tape on the cable connection to do proper waterproof work.

### Note

The video port is covered with the heat shrink tube of high shrinking ratio. After the video port is well connected, please heat the tube to make sure the video port is damp proof and water proof.



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### 3 Speed Dome Installation

There are four ways to install the intelligent speed dome, which are desktop installation, ceiling mount, wall mount and pendant installation.

#### 3.1 Desktop Installation

Place the intelligent speed dome on the flat desktop, make sure the inclination angle is less than  $15^{\circ}$  if it needs to be placed inclinedly. Please see Figure 3-1.

**Note:**

Please take some protection measures after the installation is completed, which is to avoid the camera falling. For example, you can fix the bottom of the speed dome.

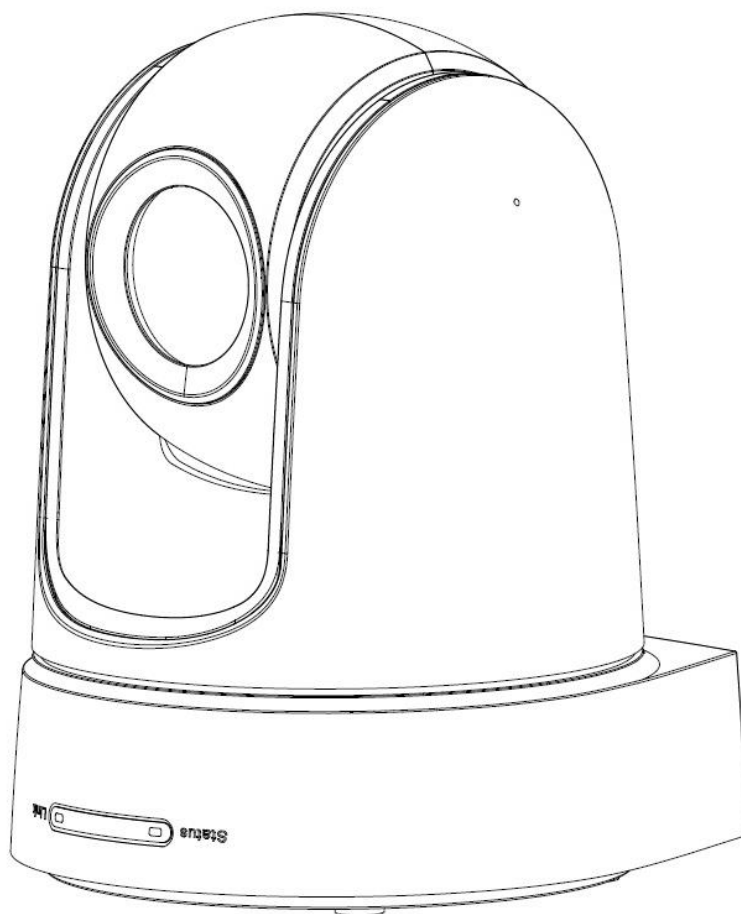


Figure 3-1

#### 3.2 Ceiling Installation

It needs to use an installation board for ceiling mount, which consists of upper bracket (with hook) and lower bracket (with spring screw). The exact installation steps are shown as follows:

**Step 1**

Dig three installation holes on the ceiling according to the size of the installation board. Insert expansion bolts into the installation holes and then twist three screws into the expansion bolts to fix the upper bracket on the ceiling, which is shown in Figure 3-2.

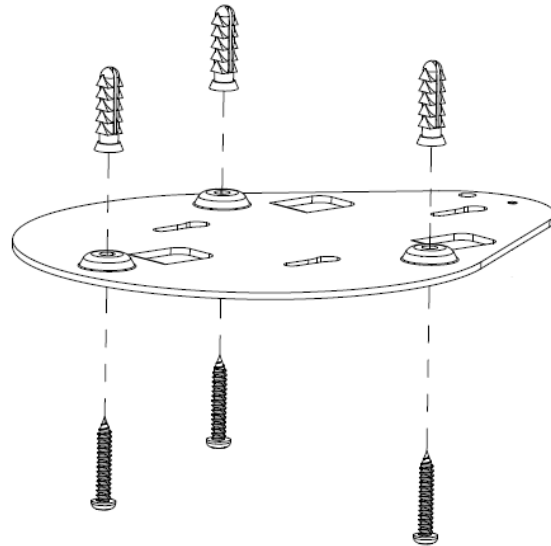


Figure 3-2

Step 2

Use the screws to fix the lower bracket on the bottom of the speed dome, which is shown in Figure 3-3.

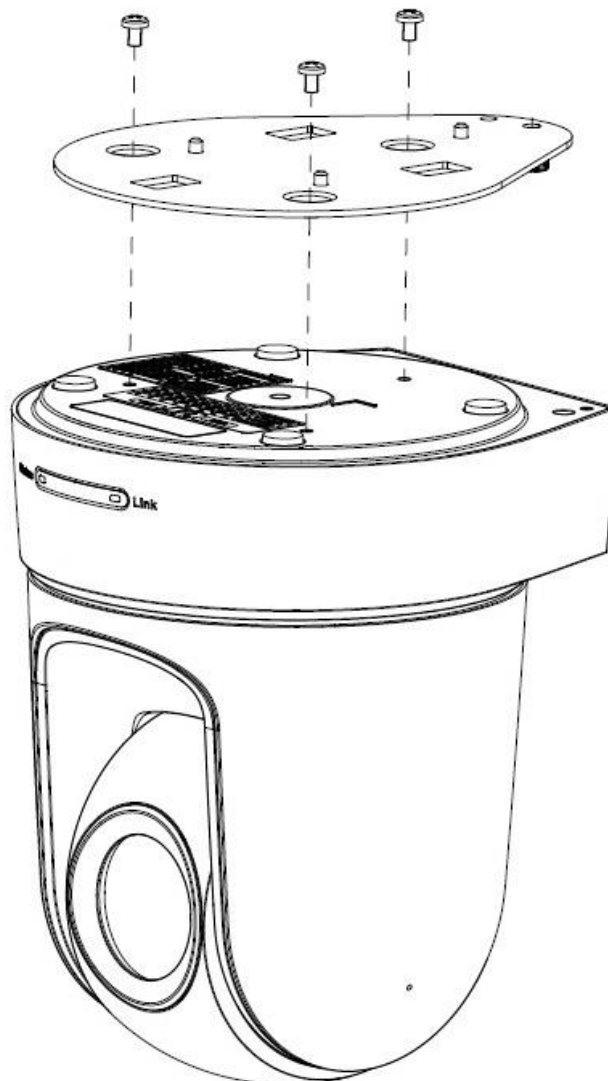


Figure 3-3

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#### Step 3

Align the hook of upper bracket with the square hole of the lower bracket, push the speed dome and make the two brackets align with each other, and then make the speed dome stuck and fixed firmly.

#### Step 4

Tighten the spring screws on the lower bracket.

### **3.3 Wall Mount**

Wall mount installation needs to use ceiling bracket and pendant adapter. The exact installation steps are shown as follows:

#### Step 1

Use expansion bolts and screws to fix the wall-mount bracket on the wall.

#### Step 2

Install the ceiling-mount upper bracket and lower bracket on the pendant adapter and speed dome respectively, and tighten the spring screws firmly, and then fix the speed dome (please refer to 3.2 for more details).

#### Step 3

Put the flange of pendant adapter into the installation hole of wall-mount bracket, twist the screws into the lateral installation holes of the bracket, and then fix the speed dome on the bracket.

Please refer to Figure 3-4 for the installation.

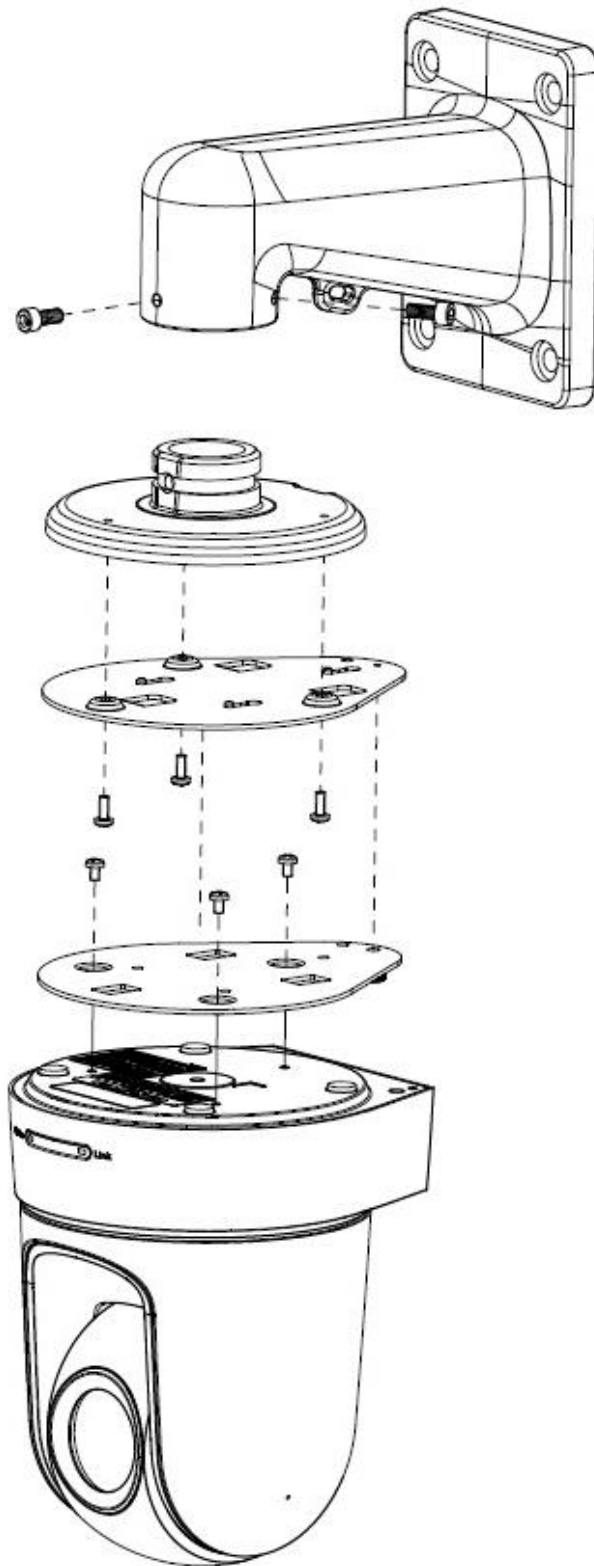


Figure 3-4

**Note:**

The wall-mount bracket shown in the figure is for reference only, users can select other models of bracket.

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### 3.4 Pendant

Pendant installation needs to use ceiling bracket and pendant adapter. The exact installation steps are shown as follows:

#### Step 1

Use expansion bolts and screws to fix the pendant bracket on the wall.

#### Step 2

Install the ceiling-mount upper bracket and lower bracket on the pendant adapter and speed dome respectively, and tighten the spring screws firmly, and then fix the speed dome (please refer to 3.2 for more details).

#### Step 3

Put the flange of pendant adapter into the installation hole of pendant bracket, twist the screws into the lateral installation holes of the bracket, and then fix the speed dome on the bracket. Please refer to Figure 3-5 for the installation.

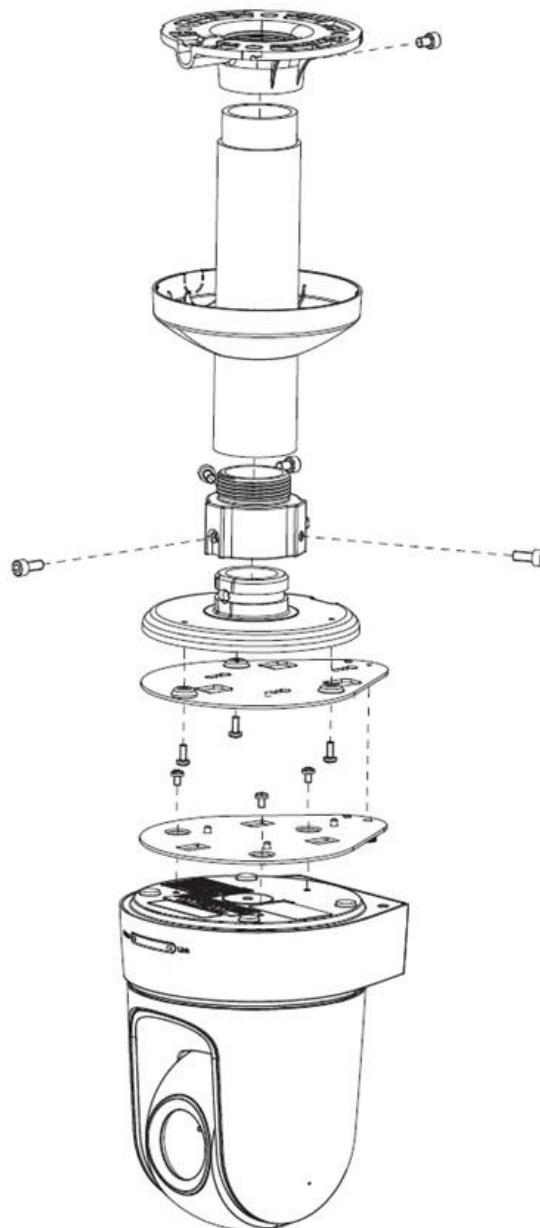


Figure 3-5

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## 4 APPENDIX I ABOUT RS485 BUS

### 4.1 RS485 Bus Main Feature

RS485 is semi duplex communication cable of impedance  $120\ \Omega$  . Its max load amount is 32 effective loads (including main control device and devices to be charged).

### 4.2 RS485 Bus Transmission Distance

When we take 0.56mm (24AWG) twisted-pair as communication cable, the max transmission distance (theoretically) are listed below (according to different baud rates).

Baud Rate	Max Distance
2400 BPS	1800M
4800 BPS	1200M
9600 BPS	800M

In the following situations, the max transmission distance shall become shorter accordingly:

- The communication cable is a little bit thin;
- The surrounding environment has strong electromagnetic interference;
- There are too much devices connected to the RS485 bus;

And vice versa, the max transmission distance shall become longer.

### 4.3 The Problem in Practical Use

In practical usage, we usually adopt star type connection. The terminal resistance shall connect to the furthest two devices (Such as device 1# and device 15# in Figure 4-1 ). But this connection way does not conform to RS485 Bus standard. When the distances between devices are too long, the signal reflection occurs and anti-jamming decreases, thus the signal reliability becomes very low. You can see speed dome is not under control or speed dome is running automatically and cannot stop.

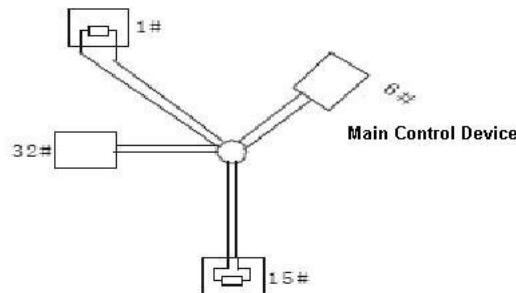


Figure 4-1

In this situation, we recommend RS485 distributor. This device can turn star type connection into the connection that conforms to RS485 bus industry standard, which can avoid the above mentioned problems and enhance communication reliability. See Figure 4-2.



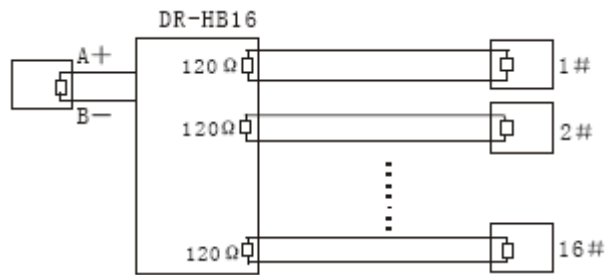


Figure 4-2

#### 4.4 RS485 Bus FAQ

Phenomenon	Possible Reasons	Solution
Speed dome can run self-diagnosis but I cannot control it.	<ul style="list-style-type: none"> <li>● Host address(baud rate) and speed dome address(baud rate) are not match;</li> <li>● Positive and negative end of RS485 Bus are misconnected;</li> <li>● Connection cable is loose;</li> <li>● RS485 Bus connection are cut off;</li> </ul>	<ul style="list-style-type: none"> <li>● Modify host or speed dome setup ;</li> <li>● Switch RS485 positive end and negative end;</li> <li>● Fix connection cable firmly;</li> <li>● Replace RS485 Bus.</li> </ul>
I can control the speed dome but is not smooth	<ul style="list-style-type: none"> <li>● RS485 Bus connection are not good;</li> <li>● One RS485 bus is off;</li> <li>● The distance between host and speed dome is too far;</li> <li>● Parallel connected too much speed domes.</li> </ul>	<ul style="list-style-type: none"> <li>● Connect RS 485 Bus again;</li> <li>● Replace RS485 Bus;</li> <li>● Add terminal matching resistance;</li> <li>● Add RS485 distributor.</li> </ul>

## 5 APPENDIX II THE RELATIONSHIP BETWEEN THE 24V AC CABLE DIAMETER AND THE TRANSMISSION DISTANCE

It is the recommended transmission distance when the cable diameter is fixed and the 24V AC power consumption is below 10%. For the AC device, the max permission voltage power consumption is 10%. For example, when a device of rated power 20W installed from the transformer 141 inches (42m), then the min cable diameter is 0.8000mm.

Feet (m) w	mm			
	0.8000	1.000	1.250	2.000
5	488.52 (148.90)	763.31 (232.66)	1192.67 (363.53)	3053.25 (930.63)
10	244.26 (74.45)	381.66 (116.33)	596.34 (181.76)	1526.62 (465.31)
15	162.84 (49.63)	254.44 (77.55)	397.56 (121.18)	1017.75 (310.21)
20	122.13 (37.23)	190.83 (58.16)	298.17 (90.88)	763.31 (232.66)
25	97.70 (29.78)	152.66 (46.53)	238.53 (72.71)	610.65 (186.13)
30	81.42 (24.82)	127.22 (38.78)	198.78 (60.59)	508.87 (155.10)
35	69.79 (21.27)	109.04 (33.24)	170.38 (51.93)	436.18 (132.95)
40	61.06 (18.61)	95.41 (29.08)	149.08 (45.44)	381.66 (116.33)
45	54.28 (16.54)	84.81 (25.85)	132.52 (40.39)	339.25 (103.40)
50	48.85 (14.89)	76.33 (23.27)	119.27 (36.35)	305.32 (93.06)
55	44.41 (13.54)	69.39 (21.15)	108.42 (33.05)	277.57 (84.60)
60	40.71 (12.41)	63.61 (19.39)	99.39 (30.29)	254.44 (77.55)
65	37.58 (11.45)	58.72 (17.90)	91.74 (27.96)	234.87 (71.59)
70	34.89 (10.64)	54.52 (16.62)	85.19 (25.97)	218.09 (66.47)
75	32.57 (9.93)	50.89 (15.51)	79.51 (24.24)	203.55 (62.04)
80	30.53 (9.31)	47.71 (14.54)	74.54 (22.72)	190.83 (58.16)
85	28.74 (8.76)	44.90 (13.69)	70.16 (21.38)	179.60 (54.74)
90	27.14 (8.27)	42.41 (12.93)	66.26 (20.20)	169.62 (51.70)
95	25.71 (7.84)	40.17 (12.25)	62.77 (19.13)	160.70 (48.98)
100	24.43 (7.45)	38.17 (11.63)	59.63 (18.18)	152.66 (46.53)

## 6 APPENDIX III THE RELATIONSHIP BETWEEN THE 12V DC CABLE DIAMETER AND THE TRANSMISSION DISTANCE

It is the recommended transmission distance when the cable diameter is fixed and the 12V DC power consumption is below 10%. For the DC device, the max permission voltage power consumption is 10%. The cables used in the following sheet are all copper wires. (the resistivity of copper is  $\rho = 0.0175\Omega * \text{mm}^2/\text{m}$ )

Feet (m) w	mm			
	0.8000	1.000	1.250	2.000
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)

mm				
Feet (m)	0.8000	1.000	1.250	2.000
w				
100	6.11 (1.86)	9.54 (2.91)	14.91 (4.54)	38.17 (11.63)

**Note**

- This manual is for reference only. Slight difference may be found in the user interface.
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