



IPE4100/IPE4500

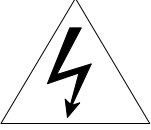

Installation Guide

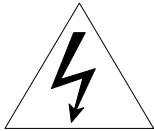
(IPE4500 is an Outdoor PTZ Camera, Adding an Outdoor Housing to Indoor PTZ IPE4100)

IMPORTANT!

The explanation and specification at this manual are mainly on the basis of IPE4100-2212-36 which uses Sony 36X Optical Zoom module.

INFORMATION TO USER

	CAUTION RISK OF ELECTRIC SHOCK, DO NOT OPEN	
<p>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SEERIVCE PERSONEL.</p>		



This symbol is intended to alert the user to the presence of un-insulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Table of Contents

1. FEATURES	6
2. PACKAGE CONTENTS	7
3. PART NAMES	8
4. INSTALLATION	11
4.1. Setting the Image Attribute	12
4.2. Operating the OSD Menu.....	12
5. CONNECTIONS	13
5.1. Connectors	13
6. CONFIGURATION	18
6.1. Set up network environment	18
6.2. View video on web page	18
6.2.1. View video using IPAdmin Tool	18
6.2.2. View video using IP address	20
6.3. Reset.....	20
6.4. Factory Default.....	20
APPENDIX (A): SPECIFICATIONS	21
Summary	21
Electrical Characteristics	23
Environment Condition	23
APPENDIX (B): DIMENSIONS	24
Dome	24
Outdoor Housing.....	25
APPENDIX (C): ACCESSORIES	26
Outdoor part	26
Assembling outdoor housing	27
APPENDIX (D): HEXADECIMAL-DECIMAL CONVERSION TABLE	29
REVISION HISTORY	30

1. FEATURES

Camera

- Indoor / Outdoor PTZ Dome IP Camera
- IP66 vandal proof (supported only with Outdoor Housing)
- Sony 1/4" Exview HAD CCD
- x36 Optical Zoom, x12 Digital Zoom
- True Day & Night (IR Cut Filter) +DSS

Streaming

- Dual streaming mode (such as different codec/resolution/bit rate and so on.)
- De-interlacing on DSP
- Burnt-in text supported
- Unicast/Multicast supported

Video/Audio

- Video compression: H.264/MPEG/MJPEG, 25/30FPS@D1(PAL/NTSC)
- Audio compression: G.711(μ Law, aLaw)/PCM
- Analog video out for external monitors
- Video Motion Detection supported
- Two-way mono audio supported

Network

- RTSP/ HTTP protocol supported
- 10/100 Base-T Ethernet

Additional Features

- RS-485 supported
- OSD supported
- SDK (Software Development Kit) provided
- 4ch DI / 2ch DO supported

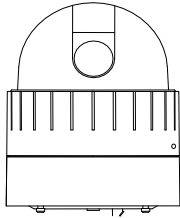
VCA (Video Content Analysis)

- Built-in Auto-Tracking license
- VCA Presence (Included as basic)
- VCA Surveillance (Optional)

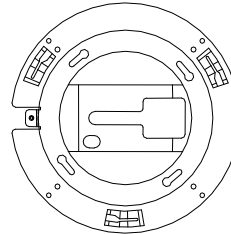
2. PACKAGE CONTENTS

Unpack carefully and handle the equipment with care. The packaging contains:

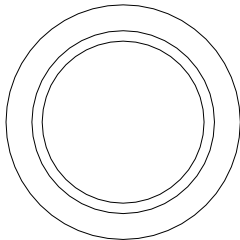
Camera



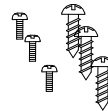
Ceiling Mount Bracket



Ceiling Cover



Screws



Wrench



**Terminal block
(2Pin, 3Pin, 5Pin, 6Pin)**

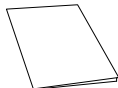
Safety Wire



Cable Ties

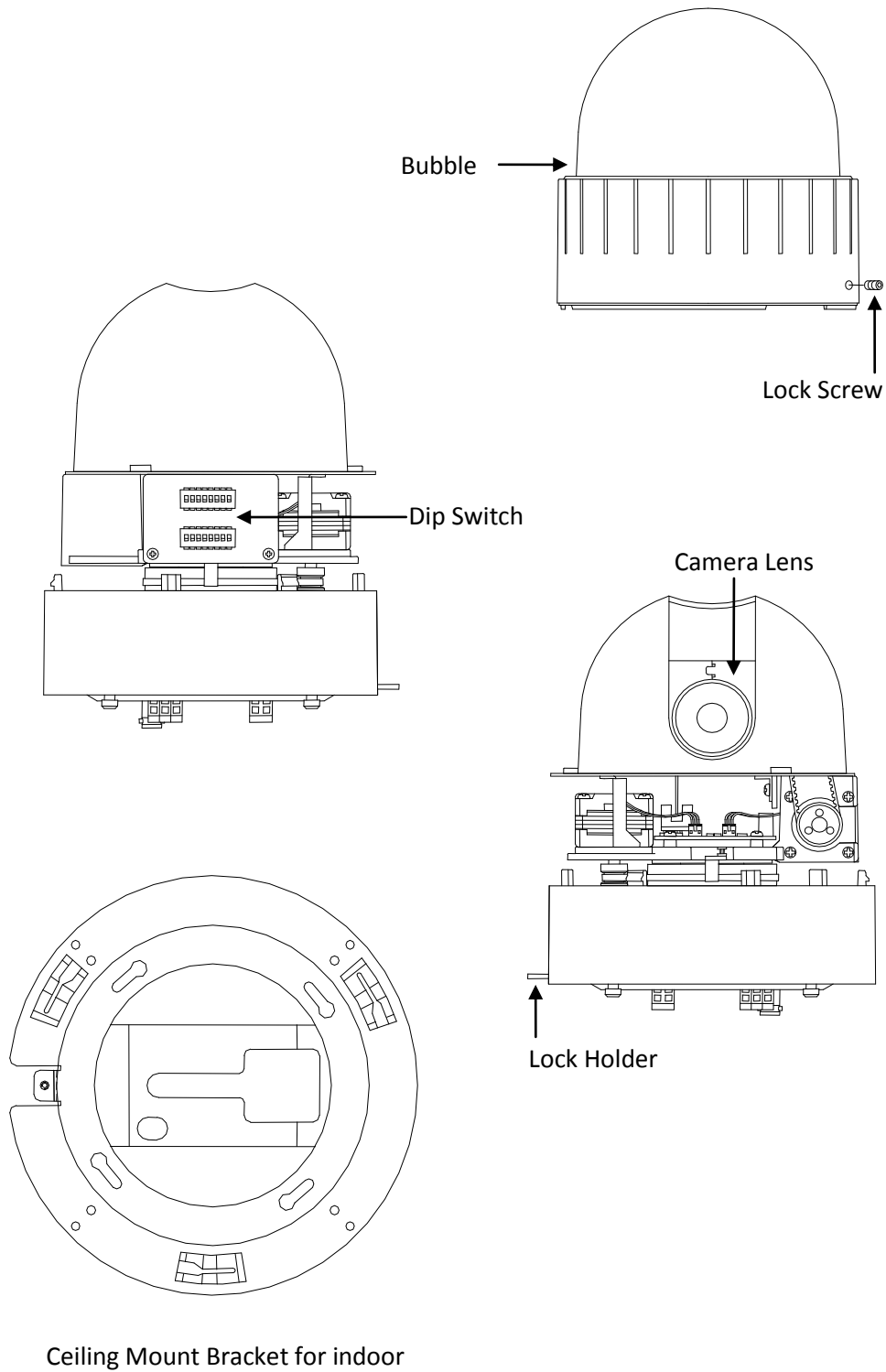


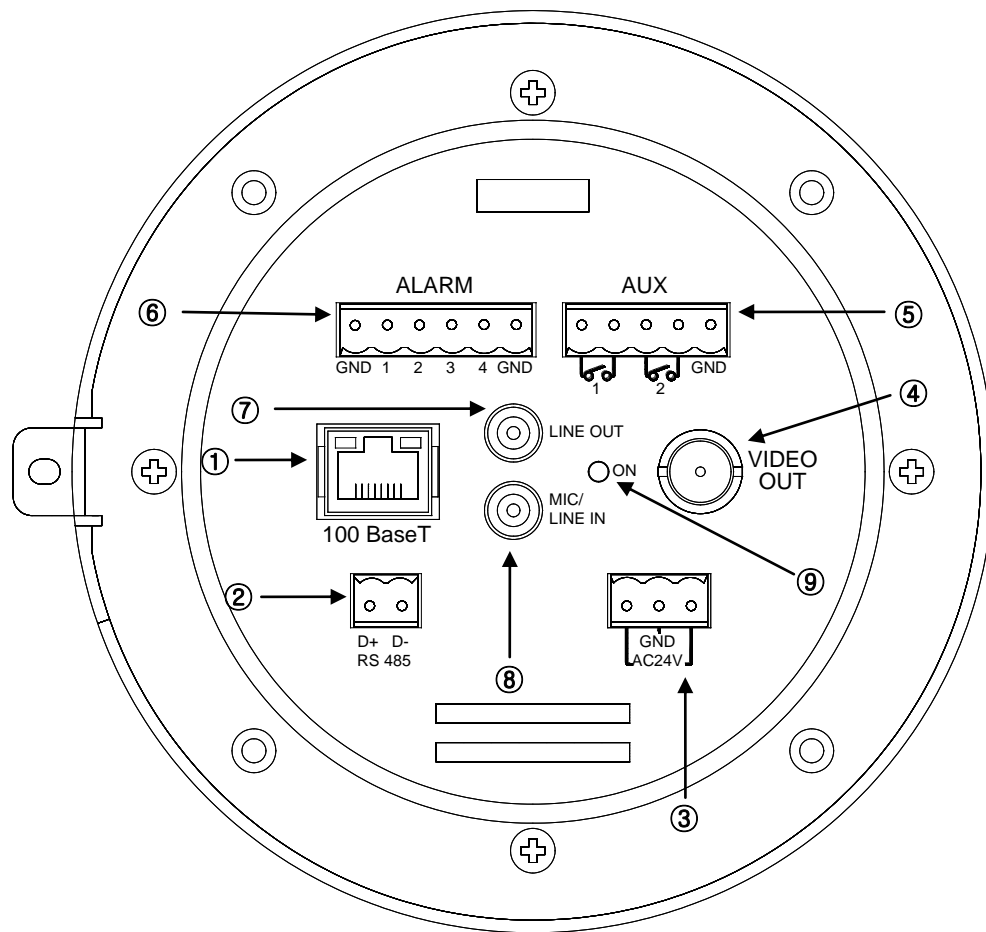
Quick Installation Guide



The above contents are subject to change without prior notice.

3. PART NAMES

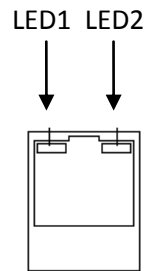




* Models herein and their appearance are subject to change without any prior notice.

① LAN Connector (Ethernet)

This is a RJ45 LAN connector for 10/100 Base-T Ethernet.



This LED lights up as orange and turns green when the encoder is powered on.

LED operation setting:

For the factory default setting, LED 2 blinks for the heartbeat and LED 1 turns on for video signal. To change its setting, refer to the section **4.5.11. LED Setting** of the *NVC Web Page User's Manual*.

② RS-485

The camera supports RS-485 Serial Communication Port.

③ 3 pin connector for power

The camera needs an AC24V for power supply. Refer to the section **"5.1.Connectors"** for more specific information.

④ External video

It is an analog video output port.

⑤ 5 pin connector for D/O

The camera provides 2 channel D/O. Refer to the section **"5.1.Connectors"** for more specific information.

⑥ 6 pin connector for D/I

The camera provides 4 channel D/I. Refer to the section **"5.1.Connectors"** for more specific information.

⑦ Audio Output

The camera has a mono audio output.

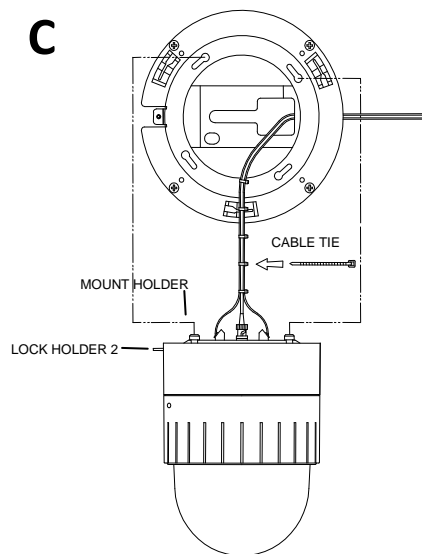
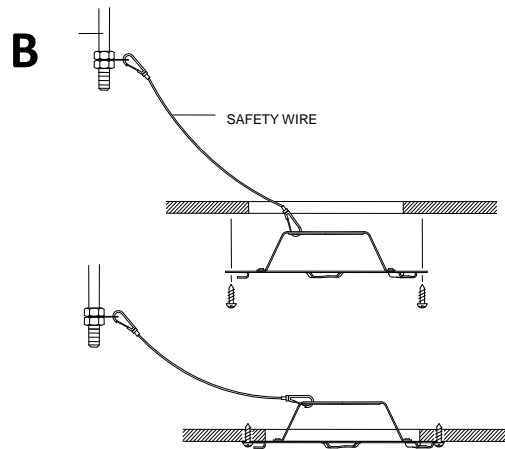
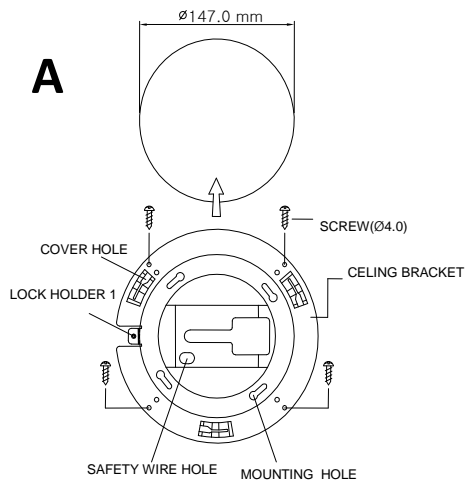
⑧ Audio Input

The camera has a mono audio input.

⑨ Reset

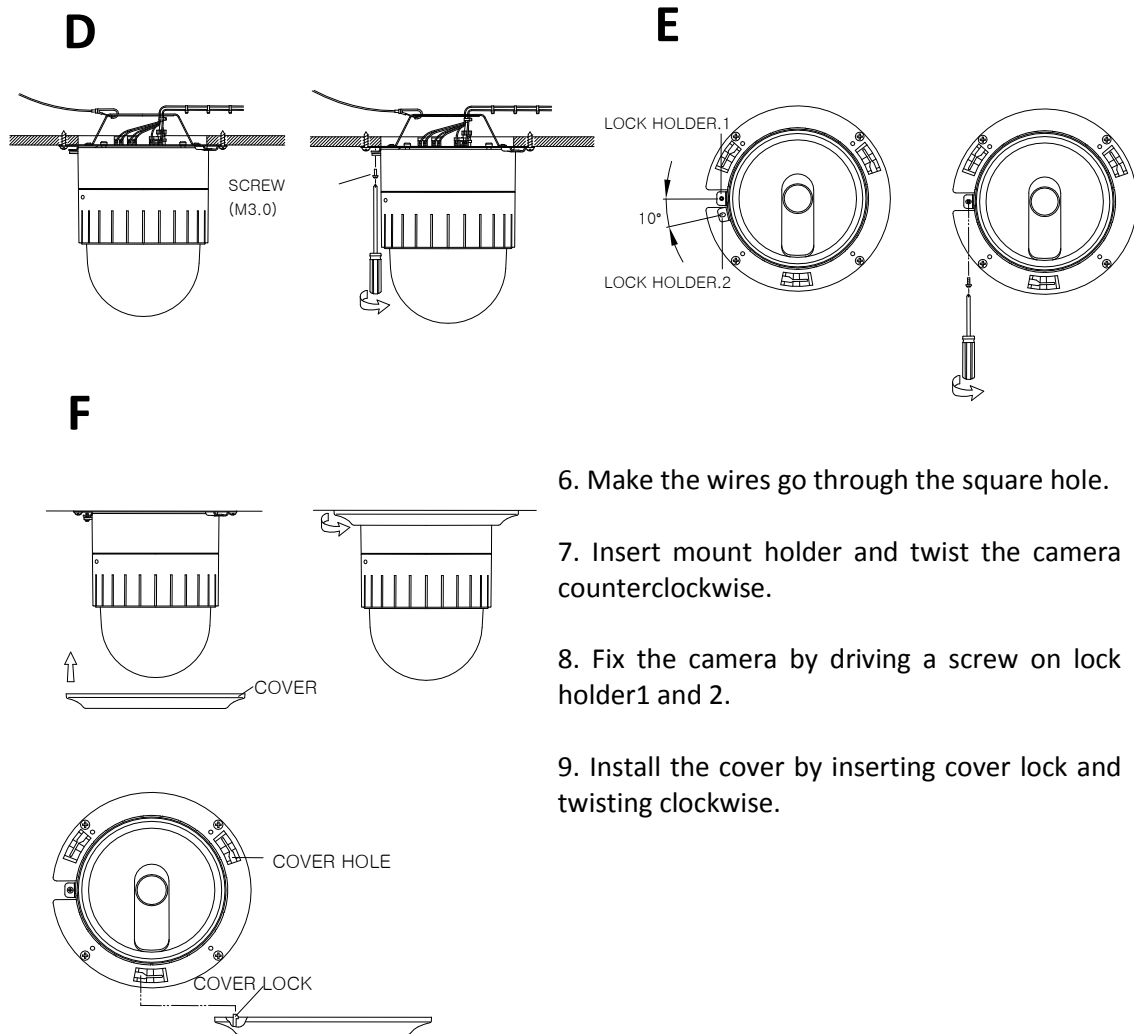
Reset switch is used for restarting or resetting the camera as Factory Default (FD). Refer to the section **"6.3. Reset"** for more specific information.

4. INSTALLATION



Before you install the camera, you should set the DIP switches to configure the camera ID, communication protocol. Please refer to the page 15. **DIP Switch**

1. Find the places which are strong enough to support the camera, about 2kg.
2. Make a hole, \varnothing 147mm, on the ceiling.
3. Hook the safety wire to suspension and the safety wire hold on the bracket.
4. Install the ceiling mount bracket by driving 4 screws, \varnothing 4mm tapping screws.
5. You can make wires simple by cable ties.



6. Make the wires go through the square hole.

7. Insert mount holder and twist the camera counterclockwise.

8. Fix the camera by driving a screw on lock holder1 and 2.

9. Install the cover by inserting cover lock and twisting clockwise.



Caution

The camera may fall off the ceiling even after the proper installation and mounting. To prevent any accident, make sure the ceiling is firm and stable enough to support the camera. If any reinforcement is needed, consult with your safety personnel and proceed with the installation.

4.1. Setting the Image Attribute

You can set the image attribute of camera through the webpage.

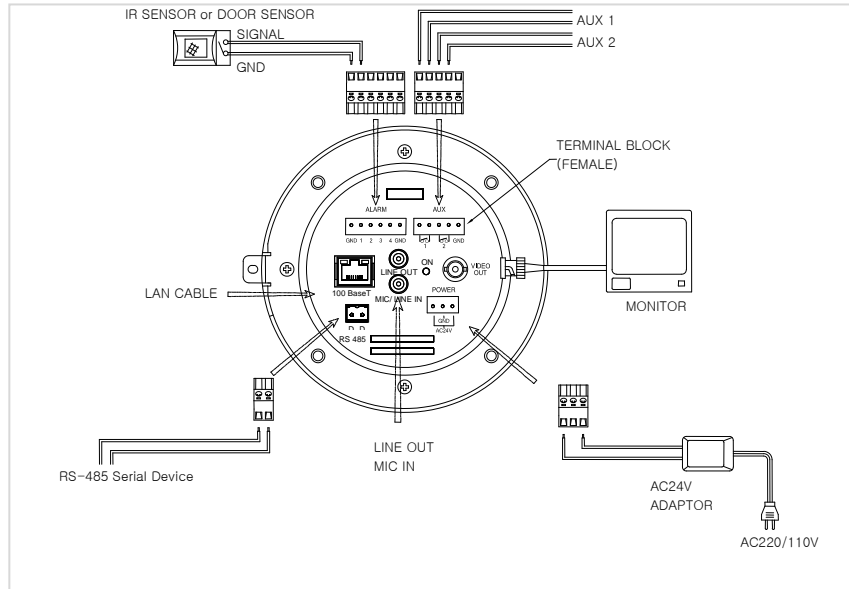
The menu of image attribute can be seen under **Setup > Video & Audio > Video-in > Attribute Setting**. Brightness, contrast, hue, saturation and sharpness can be adjusted.

4.2. Operating the OSD Menu

To operate the OSD of camera; refer to the "OSD Menu Control Manual" in the SDK.

5. CONNECTIONS

5.1. Connectors



Power Connection

Please, check the voltage and current capacity of rated power carefully. Rated power is indicated in the back of main unit.

Type	Rated Power	Input Voltage Range	Current Consumption
Indoor	AC 24V	18~32VAC	850mA
Outdoor	AC 24V	18~32VAC	1.5A

RS-485 Communication

For PTZ control, connect this line to keyboard and DVR. To control multiple cameras at the same time, RS-485 communication lines of them is connected in parallel.

Analog Video Connection

Connect with BNC coaxial cable.

Audio Input/Output Connection

Connect to the audio input device such as a Mic and the audio output device such as the amplifier speaker.



Do not connect the speaker without amplifier.

Sensor (DI) connection

The camera provides 4 channel D/I. It can be connected to a relay type sensor as the following figures.

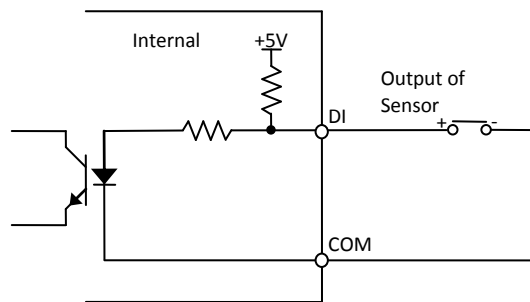
Input voltage range: 0VDC minimum to 5VDC maximum, Max 50mA

Input voltage threshold: 4.5V



Caution

Do not exceed the maximum relay rating.



Relay Type

Alarm (DO) connection

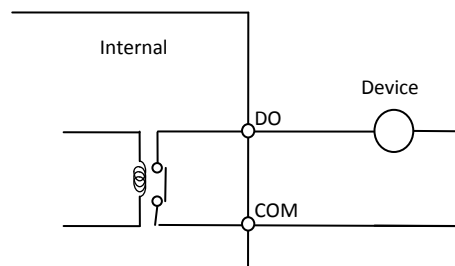
The camera provides 2 channel D/O.

Relay Rating: Max 24VAC 500mA or 12VDC 1A



Caution

Do not exceed the maximum relay rating.

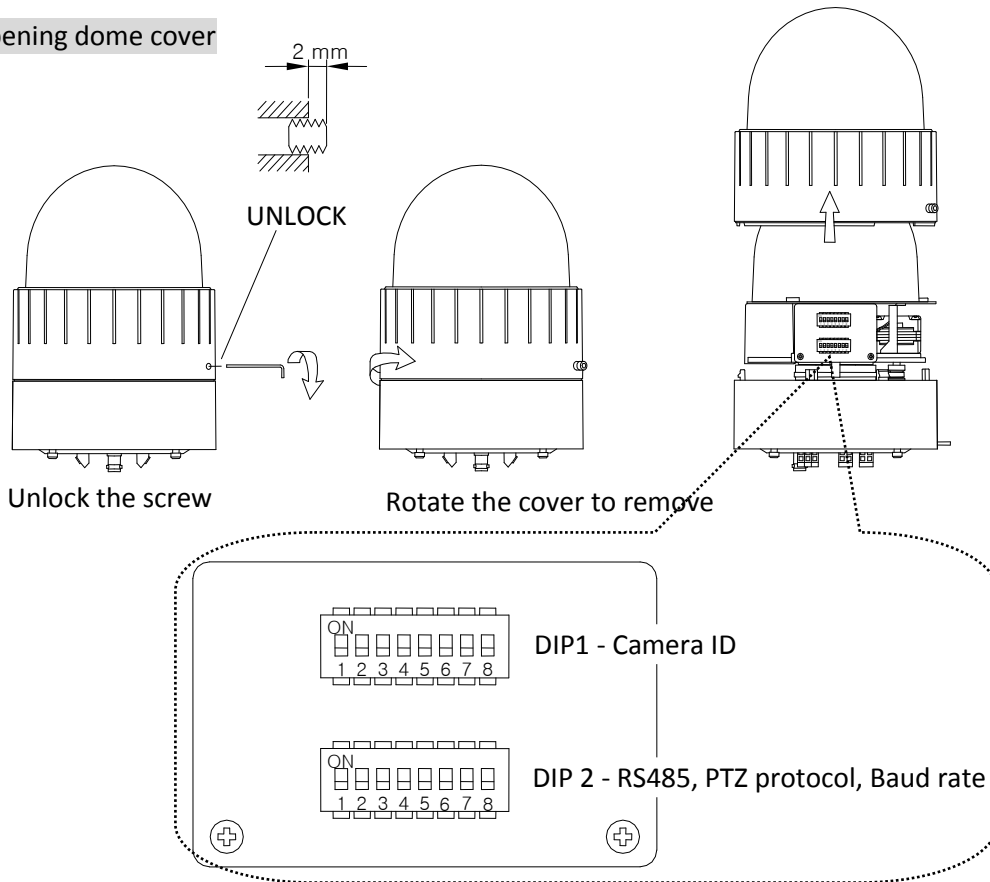


Relay Type

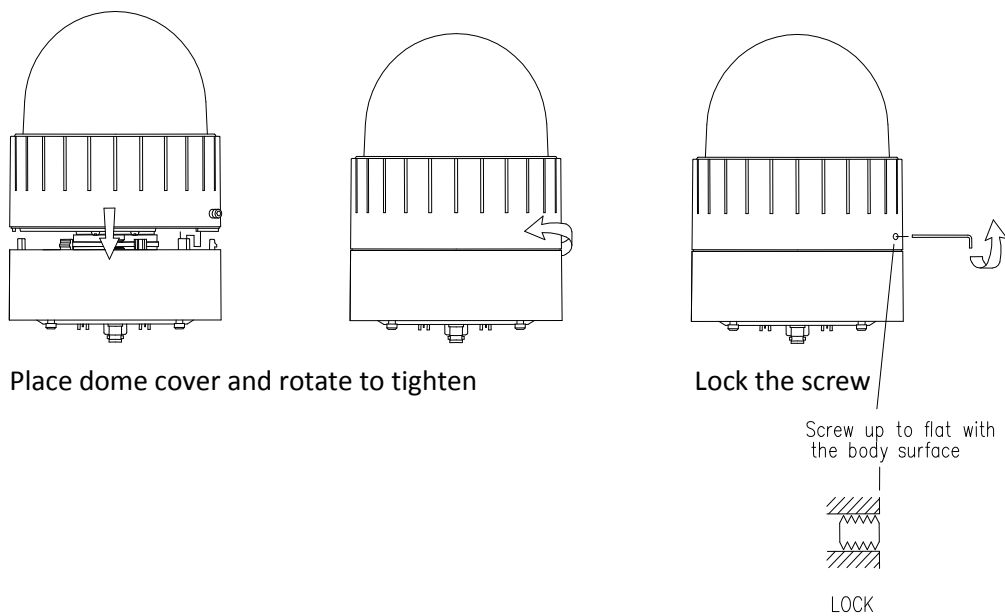
DIP Switch

Before you install the camera, you should set the DIP switches to configure the camera ID, communication protocol.

Opening dome cover



Placing dome cover



Camera ID Setup



ID number of camera is set using binary number. The example is shown bellow.

DIP1

Pin	1	2	3	4	5	6	7	8
ID Value	1	2	4	8	16	32	64	128
Default	on	off	off	off	off	off	off	off
ex) ID=10	off	on	off	on	off	off	off	off

The range of ID is 1~255. Do not use 0 as camera ID. Factory default of Camera ID is 1.

If you want to control a certain camera, you must match the camera ID with Cam ID setting of DVR or Controller.

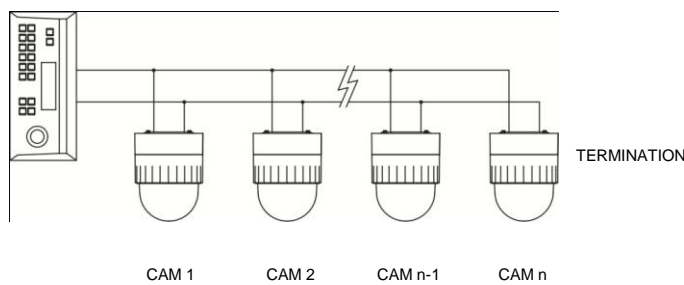
Communication Protocol Setup

Select the appropriate Protocol with DIP switch combination.

DIP2

Pin	1	2	3	4	5	6	7	8
ID Value	RS485 Termination	Not used	Protocol1	Protocol 2	Not used	Not used	Baud Rate 1	Baud Rate 2
Default	Off	Off	Off	Off	Off	Off	Off	On

Pin1 is used for RS485, 100W termination. Set ON DIP2-1st of only the last looped camera from the controller. Even in case of only one camera, set ON DIP2-1st of the camera.



Pin3	Pin4	Protocol
OFF	OFF	Pelco-D or Pelco-P
ON	ON	Not used
ON	OFF	Maxpro

Pin7	Pin8	BAUD RATE
OFF	OFF	Not Used
OFF	ON	2400bps (Pelco-D)
ON	OFF	4800bps (Pelco-P)
ON	ON	9600bps (Maxpro)

- If you want to control using DVR or P/T controller, their protocol must be identical to camera. Otherwise, you cannot control the camera.
- If you changed camera protocol by changing DIP S/W, the change will be effective after you reboot the camera.
- Factory default of protocol is "Pelco-D, 2400 bps, 8 bit, 1 stop bit, no parity."

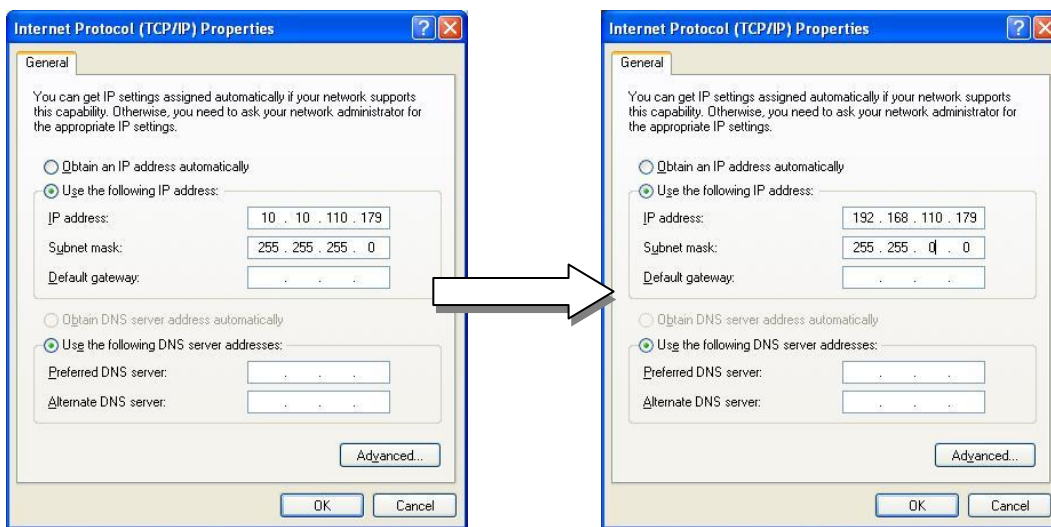
6. CONFIGURATION

6.1. Set up network environment

The default IP address of your IP device is 192.168.XXX.XXX. You can find the available IP address from the MAC address of your device. Please make sure the device and your PC are on the same network segment before running the installation. If the network segment between your PC and the device is different, change your PC's settings as below.

IP address : **192.168.xxx.xxx**

Subnet mask: **255.255.0.0**



6.2. View video on web page

View the live video on a web page using your IP device and its IP address. You can use the IPAdminTool or enter the IP address on the web page.

6.2.1. View video using IPAdmin Tool

IPAdminTool automatically searches all activated network encoders and IP cameras and shows the product name, IP address, MAC address and etc. IPAdminTool is provided with SDK at the following SDK path.

```
{SDK root}\BIN\TOOLS\AdminTool\
```


To use the IPAdminTool and view the live video on a web page:

1. Start IPAdminTool. Names and info of currently activated IP devices appear as a list.
2. Right-click on the desired device and select **Web view**.
3. Click **pop-up blocked** and install the ActiveX setup.exe by clicking the **Run** or **Save** button. You need to install the ActiveX for displaying the images.



4. Follow the instructions of the dialog boxes and complete the installation. Then the live video is displayed on the main page of the web browser.
5. If the live video is not displayed with the message said, *“This software requires the Microsoft XML Parser V6 or higher. Please download MSXML6 from the Microsoft website to continue. Error code: Can not create XMLDOMDocument.”*, please download and install the relevant MSXML.

**Note**

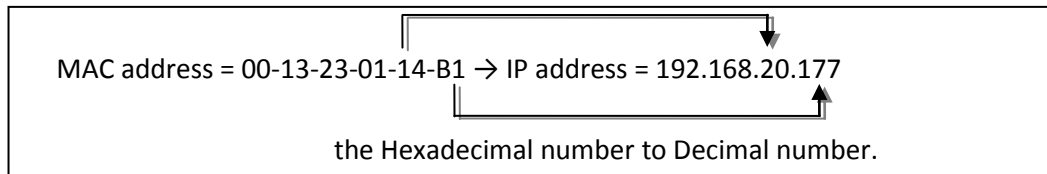
If the ActiveX **setup.exe** file fails to be installed successfully, close all of the Internet Explorer windows and go to **Program Files > AxInstall** folder on your computer. Then, run **Uninstall.exe** and try to perform the steps 1 to 4 above again.

6.2.2. View video using IP address

View the live video on a web page using your IP device and its IP address. To have the correct IP address ready and use it on a web page:

1. Convert a MAC address to an IP address or check the IP address on the IPAdminTool. Refer to *Appendix (D): Hexadecimal-Decimal Conversion Table*.

(The MAC address is attached on the side or bottom of the device.)



2. Open a web browser and enter the IP address of the device.
3. Click **pop-up blocked** and install the ActiveX setup.exe by clicking the **Run** or **Save** button. You need to install the ActiveX for displaying the images.
4. Follow the instructions of the dialog boxes and complete the installation. Then the live video is displayed on the main page of the web browser.

6.3. Reset

1. While the device is in use, press and hold the Reset button.
2. Release the Reset button after 3 seconds.
3. Wait for the system to reboot.

6.4. Factory Default

1. Disconnect the power supply from the device.
2. Connect the power to the device with the Reset button pressed and held.
3. Release the Reset button after 5 seconds.
4. Wait for the system to reboot.

The factory default settings can be inferred as follows:

IP address:	192.168.xx.yy
Network mask:	255.255.0.0
Gateway:	192.168.0.1
User ID:	root
Password:	pass

APPENDIX (A): SPECIFICATIONS

Summary

The explanation and specification at this manual are mainly on the basis of the specific camera model, which uses Sony 36X Optical Zoom module.

Camera Module			
Image Sensor	Sony 1/4" Exview HAD CCD	Samsung 1/4" Interline Transfer CCD	
Effective Pixels	NTSC 768(H) * 494(V) 380K / PAL 752(H) * 582(V) 440K		
TV System	NTSC / PAL		
Horizontal Resolution	550TV Lines	550TV Lines	
White Balance	Auto / Manual (Red, Blue Gain Adjustable)	ATW / AWC / OUTDOOR / MANUAL (1700 °K ~ 11,000°K)	
Scanning System	2:1 Interlace		
Sync System	Internal (12 VDC)		
Min. Illumination	1.4Lux (50IRE) , 0.01Lux (ICR On)	0.2Lux (50IRE) , 0.02Lux (ICR On)	
Lens (Optical)	36x Optical Zoom (F=1.6 ~ 4.5 , f=3.4 to 122.4mm)	27x Optical Zoom (F=1.6 ~ 2.8 , f=3.5 to 95mm)	37x Optical Zoom (F=1.6~F3.9, f=3.5~129.5 mm)
Lens (Digital)	12x (432x with optical)	16x (432x with optical)	16x (592x with optical)
Focus	Auto/ Manual / SemiAuto	Auto/ Manual / One push	
Iris	Auto / Manual	On/Off	
Day & Night	Auto / Day / Night(ICR)		
Digital Slow Shutter	On / Off		
Luminance S / N Ratio	More than 50 dB (AGC off)		
AGC	Normal / High / Off	Low / Medium / High / Off	
BLC	On / Off		
HCL	No	On / Off	
Flickerless	On / Off		
SSNR	Low / Middle / High / Off		
PAN / TILT			
Pan Rotation Angle	360° Quick Endless Rotation		
Pan Speed	Manual	0.5°~ 100 or 200°/sec (64step)	
	Preset	Max 300°/sec , Min 10°/sec	
Tilt Rotation Angle	-2°~ 90°		
Tilt Speed	Manual	0.5°~ 45°/sec (64step)	
	Preset	Max 250°/sec , Min 200°/sec	

System Accuracy	0.024°	
Dome		
Horizontal Angle of View (Approx.)	57.8° (Wide end) to 1.7° (Tele end)	
Preset	165 positions with 16 character labels / Independent preset characteristic setup	
Auto Scan	Programmable Auto Scan	
Group Tour	Max. 8 Programmable group tours (each one consisting of up to 60 preset steps with different steps)	
Pattern	8 Programmable Patterns (total 480 seconds)	
Sector	8 Selectable Sectors with 16 characters	
Privacy Zone	24	8
Auto Flip	On / OFF	
On Screen Display(analog)	Camera ID, Pan/Tilt angle, Flip, Zoom, etc	
Video		
Compression	H.264, MPEG-4, MJPEG Selectable per Stream	
Number of Streams	Dual stream, Configurable	
Resolution	D1, 4CIF, 2CIF, VGA, CIF, QVGA, QCIF	
Compression FPS	25/30 fps @ D1 (PAL/NTSC)	
De-interlacing	Supported (DSP)	
Motion Detection	Supported	
Burnt-in Text(digital)	Supported (DSP)	
Analog Video Output	1 Loop Out (BNC Connector)	
Audio		
Input/Output	1 / 1 ch	
Compression	PCM, G.711	
Function		
Network	10/100 Base-T	
DI / DO	4 / 2 CH	
RS-485	Supported	
SD Memory Card Slot	Supported (microSD type)	
Protocol	TCP/IP, UDP/IP, HTTP, RTSP, RTCP, RTP/UDP, RTP/TCP, SNTP, mDNS, UPnP, SMTP, SOCK, IGMP, DHCP, FTP, DDNS, SSL v2/v3, IEEE 802.1X, SSH, SNMP v2/v3	
Mechanical		
Motor Type	Stepping motor	
Micro Steps	1/8 Micro Step	

Material	(Dome) ABS
	(Outdoor Housing) Aluminum ,Poly Carbonate
Dimensions	Dome: 147φ * 190mm(H) (5.8" (D) * 7.5"(H)) Outdoor Housing: 149φ * 312mm(H)
Color	Cool gray
Weight (Approx)	Dome: 1.9 kg (5 lbs) Outdoor Housing: 5.7 kg

Electrical Characteristics

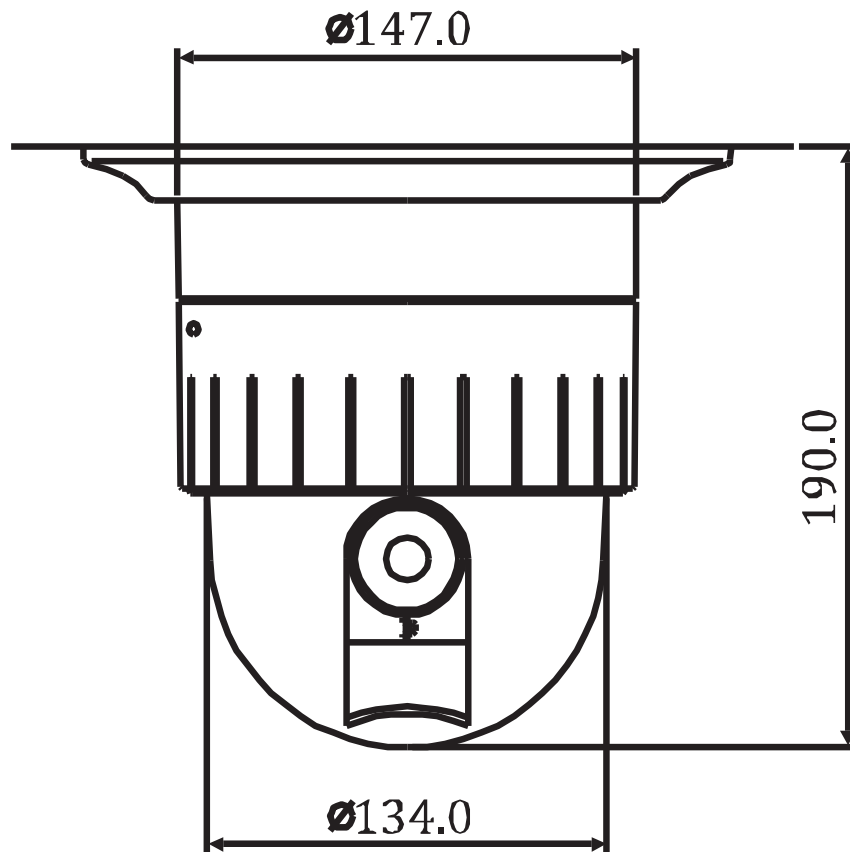
Power Source	Dome:18~32VAC 60/50Hz 850mA With Outdoor Housing: 18~32VAC 60/50Hz 1.5A
Power Consumption	Dome:18W Max With Outdoor Housing: 36W Max
Analog Video Output	1 Vp-p, 75Ω, Composite
Audio Input	Linein, 1.43Vp-p(Min 1.35Vp-p, max 1.49 Vp-p), 39 KΩ
Audio Output	Lineout, 46mW Power, 16 Ω
D/I	Max 50mA@5VDC, TTL level 4.5V threshold
D/O	Max 500mA@24VAC or 1A@12VDC On-state resistance: 50 Ω (max continuous)

Environment Condition

Fan / Heater	Supported via Outdoor Housing
Operating Temperature	-10 °C ~ 50 °C (14 °F ~ 122 °F) (Dome) -40 °C ~ 50 °C (-40 °F ~ 122 °F) (with Outdoor Housing)
Storage Temperature	-20 °C ~ 60 °C (-4°F ~ 140 °F)
Operating Humidity	Up to 85% RH (Non-condensing)
Certification	FCC/CE, IP66(with outdoor housing)

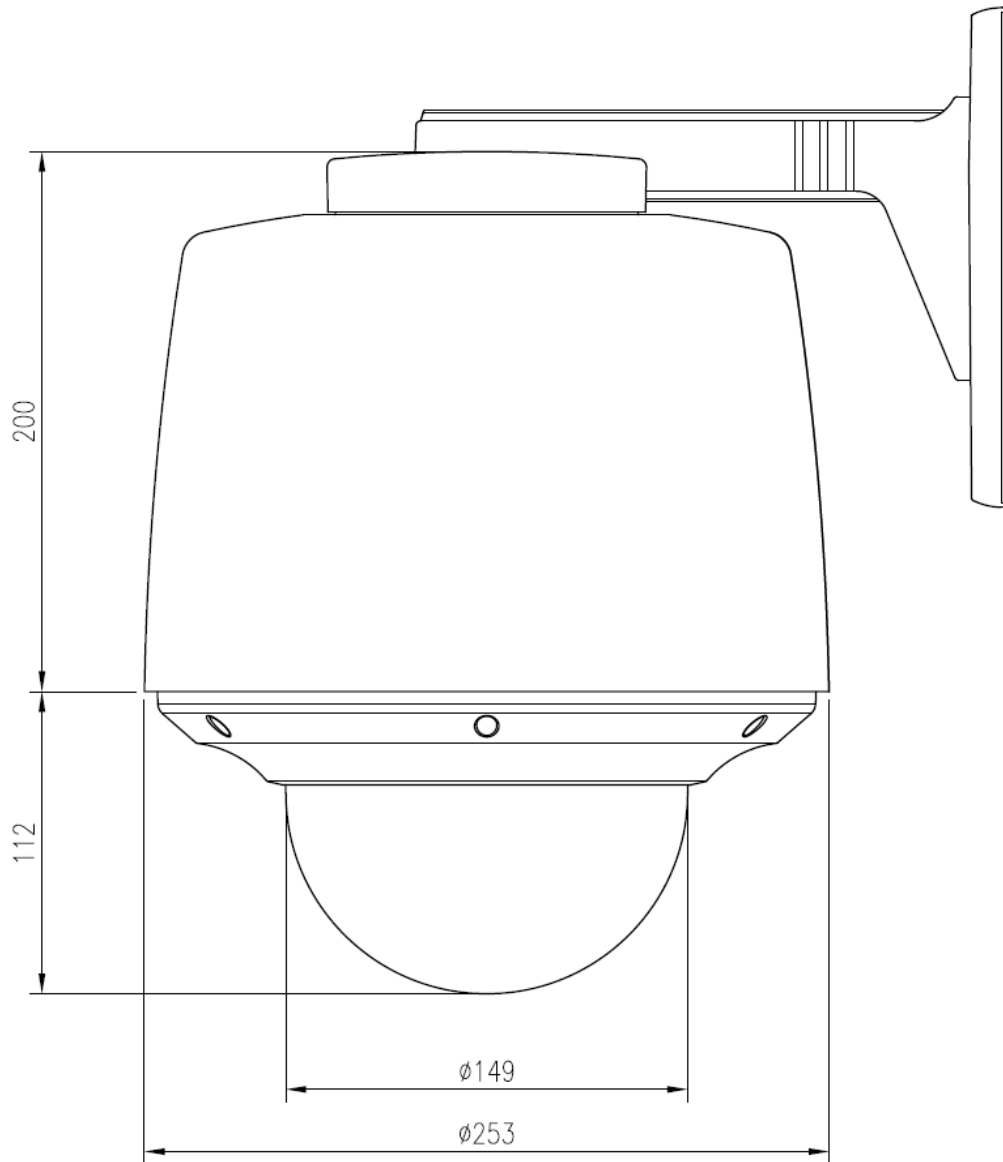
APPENDIX (B): DIMENSIONS

Dome



(Unit: mm)

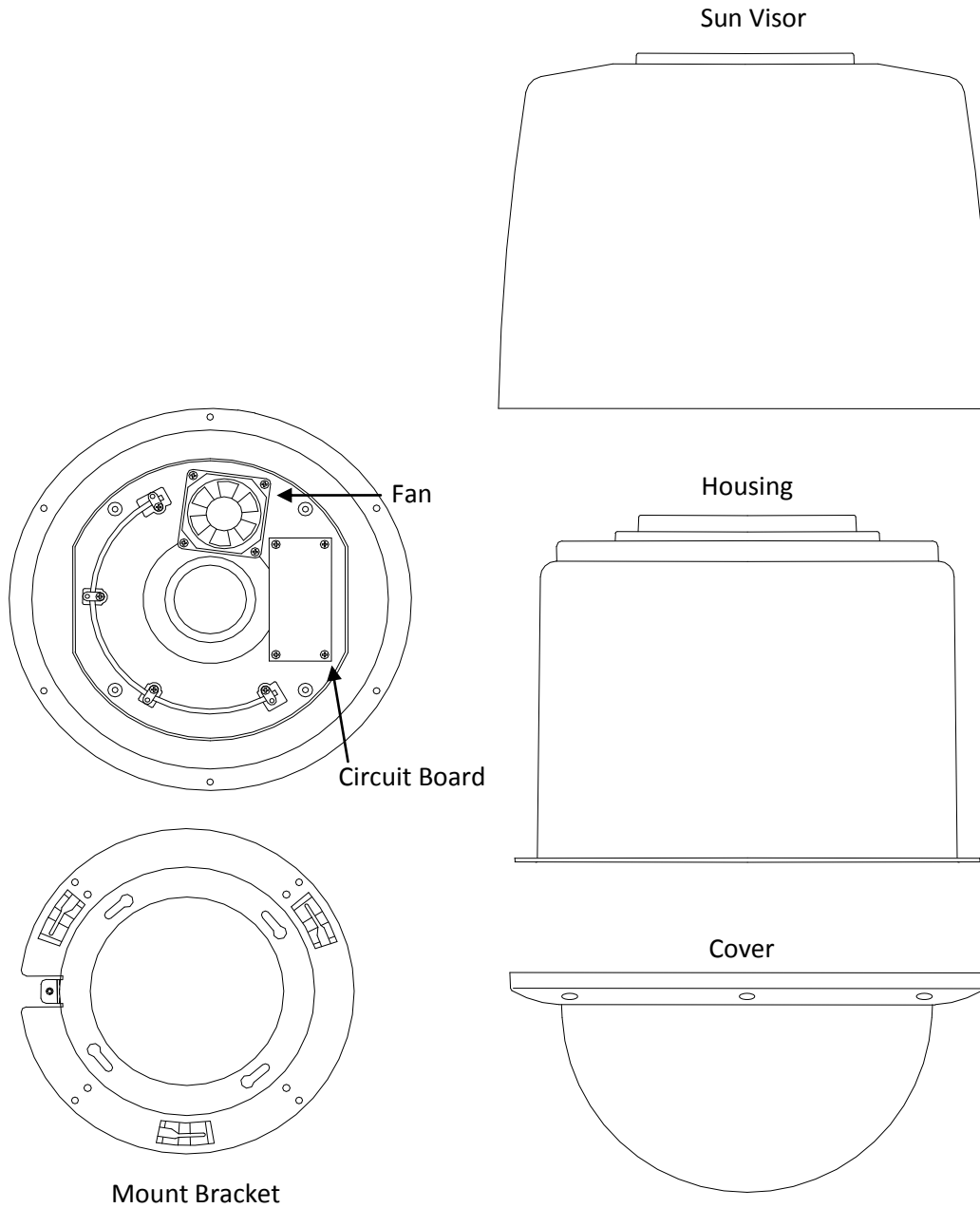
Outdoor Housing



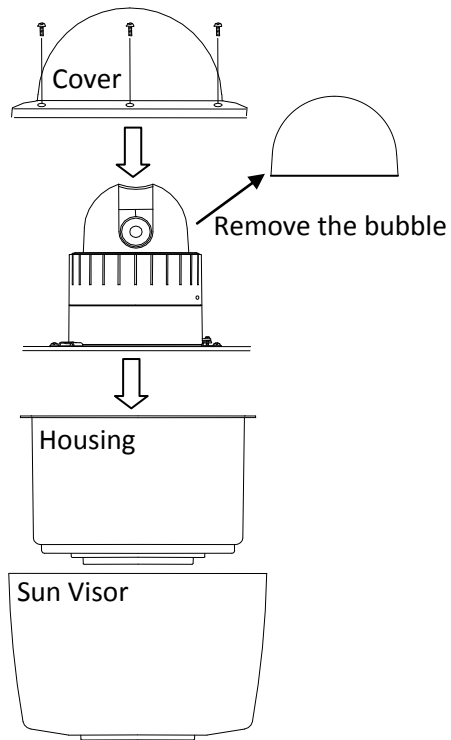
(Unit: mm)

APPENDIX (C): ACCESSORIES

Outdoor part



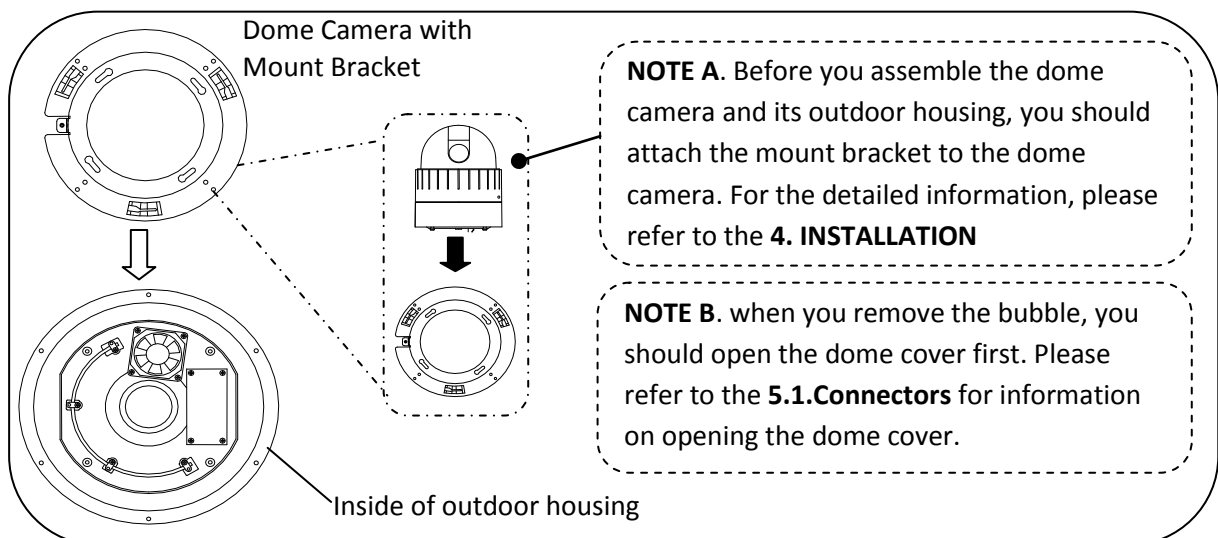
Assembling outdoor housing



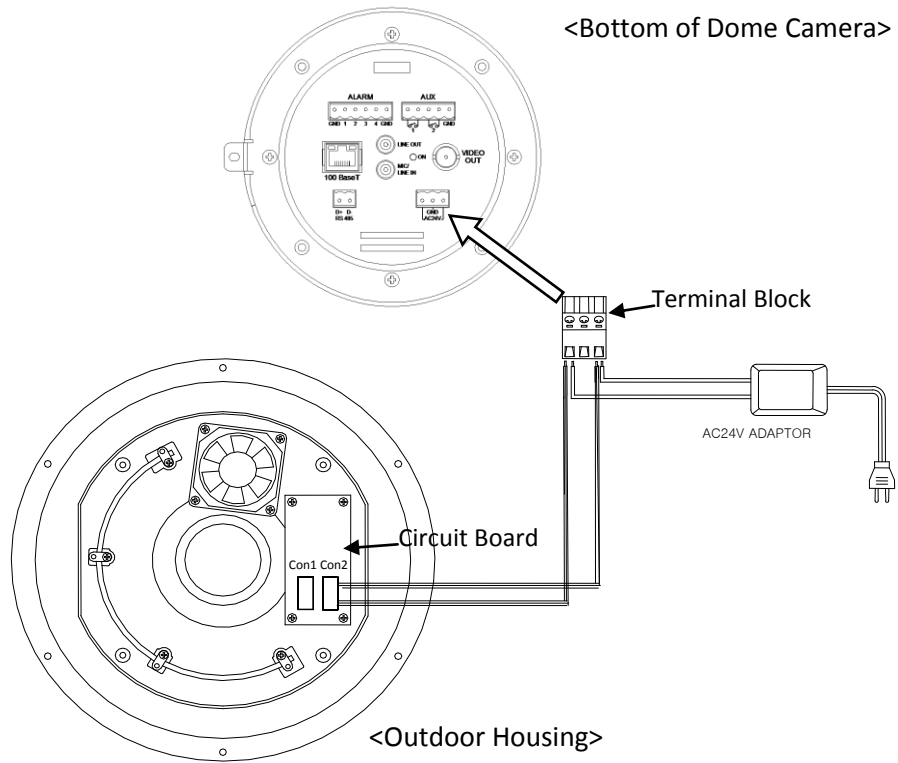
- 1) Attach the mount bracket to the dome camera. Find more explanation at **NOTE A** below.
- 2) Open the dome cover to remove the bubble. Find more explanation at **NOTE B** below.
- 3) Twist the bubble counterclockwise and remove it from the dome cover.
- 4) Put the dome cover on the dome camera.
- 5) Connect the LAN cable and power supply cable with the dome camera. Find more explanation at **NOTE C** below.
- 6) Place the dome camera into the outdoor housing.
- 7) Fasten the dome camera with screws. Make sure the dome camera and the housing fit each other into place.
- 8) Put the outdoor cover on the housing.
- 9) Fasten the cover with screws.



When assembling the dome and its outdoor housing, make sure they fit each other into place.



NOTE C. when you supply the electric power to the outdoor housing, you should connect the lines between outdoor housing and dome camera using terminal block. Please refer to the picture below.



There is a bimetal implemented in the outdoor housing for controlling the fan and heater. Refer to its specification below for more details.

Bimetal for	Fan	Heater
Activation	35°C-OFF / 45°C-ON	15°C-OFF / 5°C-ON
Part Number	R45	N10
Package	DIP Type	DIP Type
Maker	Korea Bitec	Korea Bitec

APPENDIX (D): HEXADECIMAL-DECIMAL CONVERSION TABLE

Refer to the following table when you convert the MAC address of your device to IP address.

Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec
00	0	25	37	4A	74	6F	111	94	148	B9	185	DE	222
01	1	26	38	4B	75	70	112	95	149	BA	186	DF	223
02	2	27	39	4C	76	71	113	96	150	BB	187	E0	224
03	3	28	40	4D	77	72	114	97	151	BC	188	E1	225
04	4	29	41	4E	78	73	115	98	152	BD	189	E2	226
05	5	2A	42	4F	79	74	116	99	153	BE	190	E3	227
06	6	2B	43	50	80	75	117	9A	154	BF	191	E4	228
07	7	2C	44	51	81	76	118	9B	155	C0	192	E5	229
08	8	2D	45	52	82	77	119	9C	156	C1	193	E6	230
09	9	2E	46	53	83	78	120	9D	157	C2	194	E7	231
0A	10	2F	47	54	84	79	121	9E	158	C3	195	E8	232
0B	11	30	48	55	85	7A	122	9F	159	C4	196	E9	233
0C	12	31	49	56	86	7B	123	A0	160	C5	197	EA	234
0D	13	32	50	57	87	7C	124	A1	161	C6	198	EB	235
0E	14	33	51	58	88	7D	125	A2	162	C7	199	EC	236
0F	15	34	52	59	89	7E	126	A3	163	C8	200	ED	237
10	16	35	53	5A	90	7F	127	A4	164	C9	201	EE	238
11	17	36	54	5B	91	80	128	A5	165	CA	202	EF	239
12	18	37	55	5C	92	81	129	A6	166	CB	203	F0	240
13	19	38	56	5D	93	82	130	A7	167	CC	204	F1	241
14	20	39	57	5E	94	83	131	A8	168	CD	205	F2	242
15	21	3A	58	5F	95	84	132	A9	169	CE	206	F3	243
16	22	3B	59	60	96	85	133	AA	170	CF	207	F4	244
17	23	3C	60	61	97	86	134	AB	171	D0	208	F5	245
18	24	3D	61	62	98	87	135	AC	172	D1	209	F6	246
19	25	3E	62	63	99	88	136	AD	173	D2	210	F7	247
1A	26	3F	63	64	100	89	137	AE	174	D3	211	F8	248
1B	27	40	64	65	101	8A	138	AF	175	D4	212	F9	249
1C	28	41	65	66	102	8B	139	B0	176	D5	213	FA	250
1D	29	42	66	67	103	8C	140	B1	177	D6	214	FB	251
1E	30	43	67	68	104	8D	141	B2	178	D7	215	FC	252
1F	31	44	68	69	105	8E	142	B3	179	D8	216	FD	253
20	32	45	69	6A	106	8F	143	B4	180	D9	217	FE	254
21	33	46	70	6B	107	90	144	B5	181	DA	218	FF	255
22	34	47	71	6C	108	91	145	B6	182	DB	219		
23	35	48	72	6D	109	92	146	B7	183	DC	220		
24	36	49	73	6E	110	93	147	B8	184	DD	221		

REVISION HISTORY

MAN#	DATE(M/D/Y)	Comments
01A.00	15/07/2009	Created.
01A.01	08/24/2009	Added the requirement of VCA : MSXML4.0
01A.02	09/25/2009	Added Operation the OSD menu Added Setting the Image Attribute
01A.03	09/29/2009	Changed the VCA specification
01A.04	10/15/2009	Added the Cross Reference
01A.05	11/16/2009	Added the assembling Outdoor housing
01A.06	11/19/2009	Removed DI voltage type
01A.07	12/09/2009	Added Specifications items
01A.08	12/24/2009	Changed the assembling Outdoor housing
01B.00	01/08/2010	Official SDK release version
01B.01	01/11/2010	Added the description of IPE4500.
01B.02	01/28/2010	Corrected Version number
01B.03	02/25/2010	Modified for end users.
01B.04	05/17/2010	Added information about a bimetal
02A.00	09/07/2010	FW v1.06.02 updated Removed VCA contents from the Specification section Added hexadecimal-decimal conversion table
03A.00	10/01/2010	FW v1.06.03 updated Changed ActiveX installation method for viewing web page Changed the default value for web server protocol from https to http
03A.01	1/11/2011	Added the horizontal angle of view
04A.00	1/25/2011	Added Auto-tracking as a standard feature
05A.00	2/16/2011	Added the new module specifications
06A.00	03/09/2011	Added LED indicator information Changed the MSXML error message Changed the operating temperature specification
06A.01	04/13/2011	Added Scanning System and Sync System specification for Samsung Module
06A.02	04/26/2011	Modified the incorrect lens specification of 37x module
06A.03	05/27/2011	Changed the IPE4500 dimension
06A.04	07/20/2011	Corrected DI voltage range specification