

**ZNT1-P Series
Installation Guide**

Precautions & Notes

- Please read this manual carefully before installing the unit.
- Never disassemble the camera. Unauthorized disassembly may cause equipment failure or damage to the unit.
- Please do not install the camera in a place exposed to direct sunlight.
- Do not operate the camera in environments beyond the specified temperature. Refer to **Environment Condition** on **APPENDIX (A): SPECIFICATIONS** in this manual.
- Before applying power to the camera, check the power source to ensure that it is within the specifications. Refer to **Electrical Characteristics** on **APPENDIX (A): SPECIFICATIONS**.

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1. FEATURES

Camera

- 17 μm uncooled vanadium oxide micro-bolometer
- 320x240 / 640x480 resolutions
- 9°, 24°, 42° field of view (ZNT1-PxT1)
18°, 37°, 50° field of view (ZNT1-PxT2)
- Weather Proof (IP66)

Video

- H.264 and MJPEG (Motion JPEG)
- Max 9 fps or 30 fps in all available resolutions depending on the camera model
- Text Overlay
- Video Motion Detection supported

Audio

- Two-way Audio Streaming
- Audio compression: G.711 μLaw

Network

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

Sensor/Alarm

- 1 Digital Input / 1 Digital Output

Integration

- Software Development Kit (SDK) available
- ONVIF Compliant (Profile S & Profile G)

Additional Features

- microSD/SDHC slot
- DC24V, AC24V, or PoE+

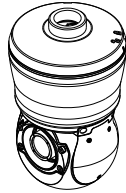
VCA (Video Contents Analytics)

- VCAdetect (Included as basic)

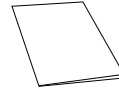
2. PACKAGE CONTENTS

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

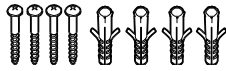
Camera



Quick Installation Guide



Screws (D4x35) and Plastic Anchors



Torx L-Wrench

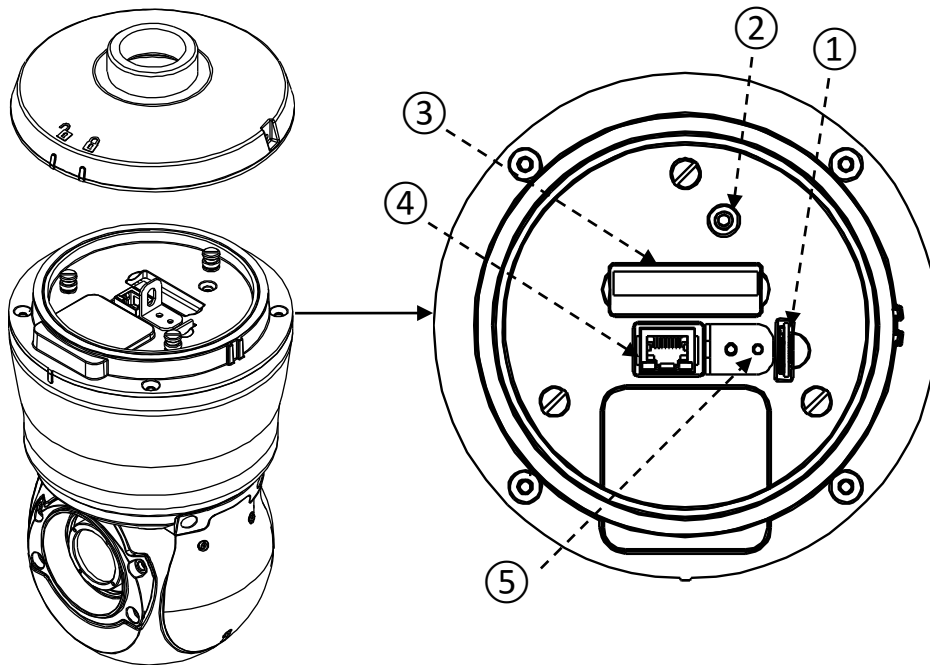


Set Screws



The contents above are subject to change without prior notice.

3. PART NAMES



① microSD/SDHC memory slot

It supports up to 32GB.

③ Terminal connectors

Interface connectors (power, alarm in, alarm out, audio, and video)

⑤ Safety wire cable hanger

The safety wire from the top cap is to be linked here.

② Reset button

Use the button to restart the device or to reset it to factory default. Refer to **6.3. Reboot** and **6.4. Factory Default** for more information.

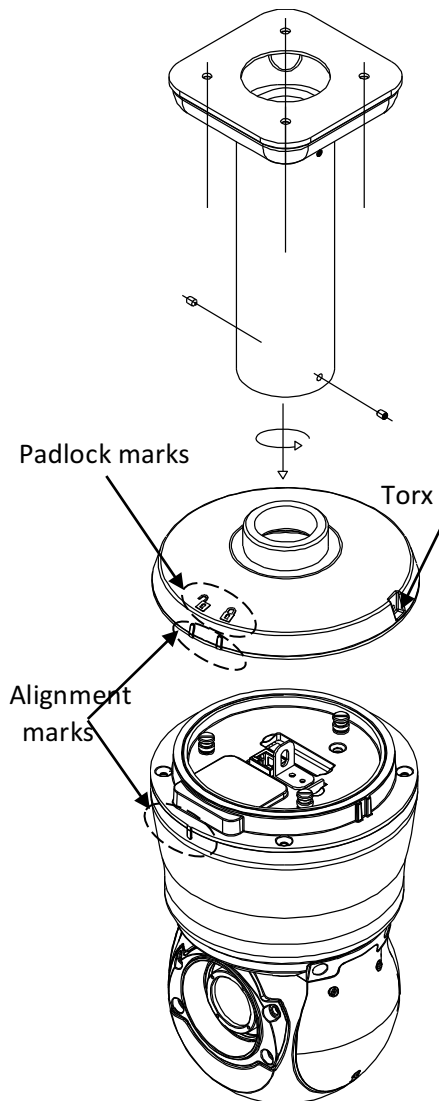
④ LAN connector

RJ45 LAN connector for 10/100 Base-T Ethernet. (PoE+ supported)

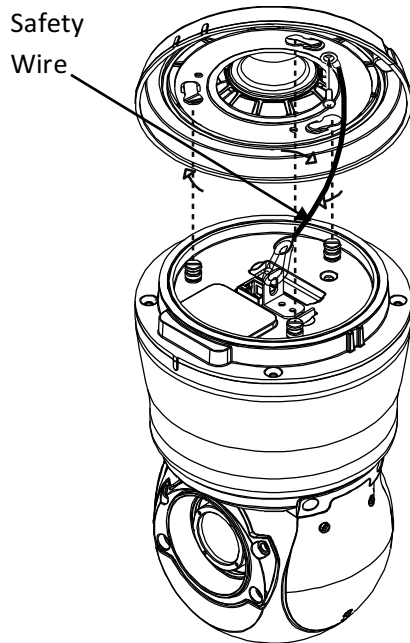
4. INSTALLATION

4.1. Installing the camera

Ceiling Mount



- 1) Install the ceiling mount to a ceiling that can bear the weights of the mount and the camera.
- 2) Drop all the necessary cables from the ceiling through the pipe of the ceiling mount.
- 3) To open the top cap of the camera to install the camera, loosen the torx screw on the top cap of the camera by using the torx L-wrench included in the package.
- 4) Open the top cap by twisting it clockwise and making the alignment marks both on the top cap and the camera body aligned to the opened padlock mark on the top cap.
- 5) Put the camera body aside.
- 6) Attach the top cap of the camera to the ceiling mount by inserting the neck of the top cap to the ceiling mount and rotating the top cap counter-clockwise until it cannot rotate anymore.
- 7) Insert the provided two set screws to each of the screw hole on the ceiling mount and tighten them to firmly attach the top cap of the camera.



8) Before attaching the camera's main body, make sure the safety by connecting the safety wire from the top cap to the safety wire holder on top of the camera's main body.

9) Connect all the necessary cables from the ceiling to the corresponding connectors on the main body by referring to **5. CONNECTIONS**.

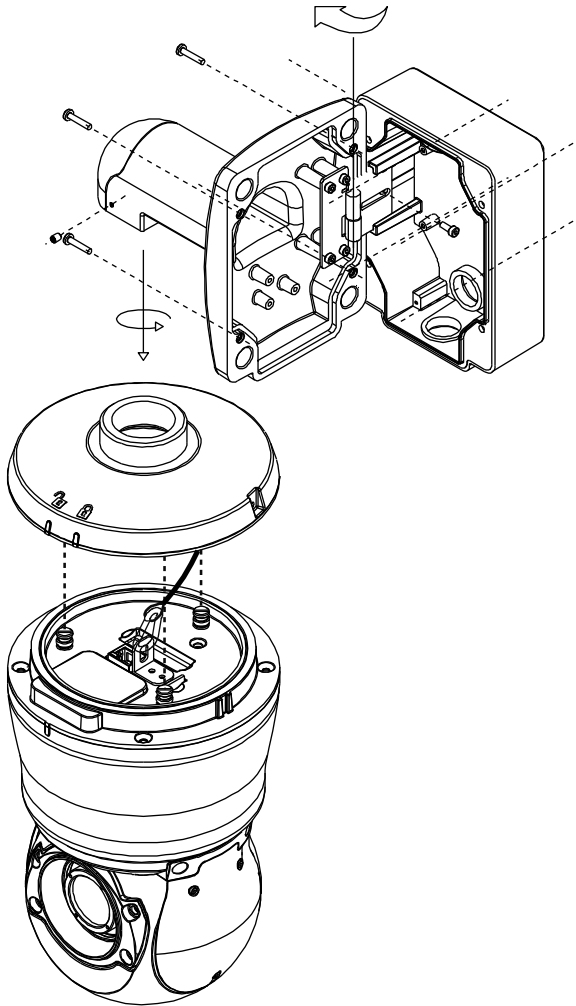
10) Insert the microSD/SDHC card into the card slot if necessary.

11) Close the top cap of the camera by twisting it counter-clockwise and making the alignment marks both on the top cap and the camera body aligned to the closed padlock mark on the top cap.

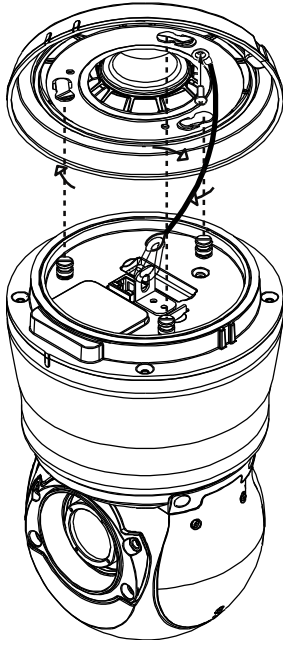


To prevent products from damage, place the camera on stable and non-vibrating surfaces. If the stability is in doubt, consult safety personnel for reinforcements, and then proceed with the installation.

Wall Mount



- 1)** Attach the wall mount with the junction box to the wall that can bear the weights of the wall mount and the camera.
- 2)** Drop all the necessary cables from the wall mount.
- 3)** To open the top cap of the camera to install the camera, loosen the torx screw on the top cap of the camera by using the torx L-wrench included in the package.
- 4)** Open the top cap by twisting it clockwise and making the alignment marks both on the top cap and the camera body aligned on the side of the opened padlock mark on the top cap.
- 5)** Put the camera body aside.
- 6)** Attach the top cap of the camera to the wall mount by inserting the neck of the top cap to the wall mount and rotating the top cap counter-clockwise until it cannot rotate anymore.
- 7)** Insert the provided two set screws to each of the screw hole on the wall mount, and tighten them to firmly attach the top cap of the camera.



8) Before attaching the camera's main body, make sure the safety by connecting the safety wire from the top cap to the safety wire holder on top of the camera's main body.

9) Connect all the necessary cables from the wall mount to the corresponding connectors on the main body by referring to **5. CONNECTIONS**.

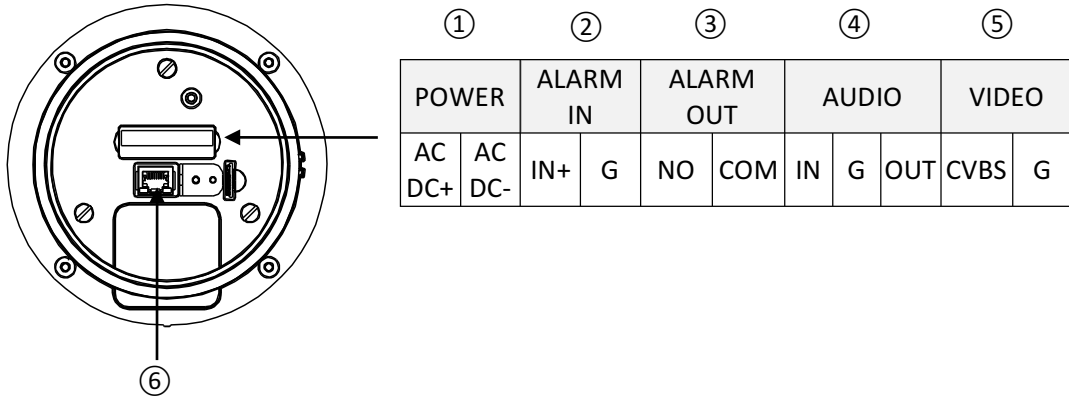
10) Insert the microSD/SDHC card into the card slot if necessary.

11) Close the top cap of the camera by twisting it counter-clockwise and making the alignment marks both on the top cap and the camera body aligned on the side of the closed padlock mark on the top cap.

4.2. Adjusting angle of the camera

The device is a 360° rotating camera and it is fully controlled by the web user interface. Refer to the provided webpage user's manual for more information.

5. CONNECTIONS



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

① Power connection

The camera can be powered from 24VAC, 24VDC or PoE+. If the camera needs to be powered via poE+, refer to **Appendix (B). Power over Ethernet** for more information.

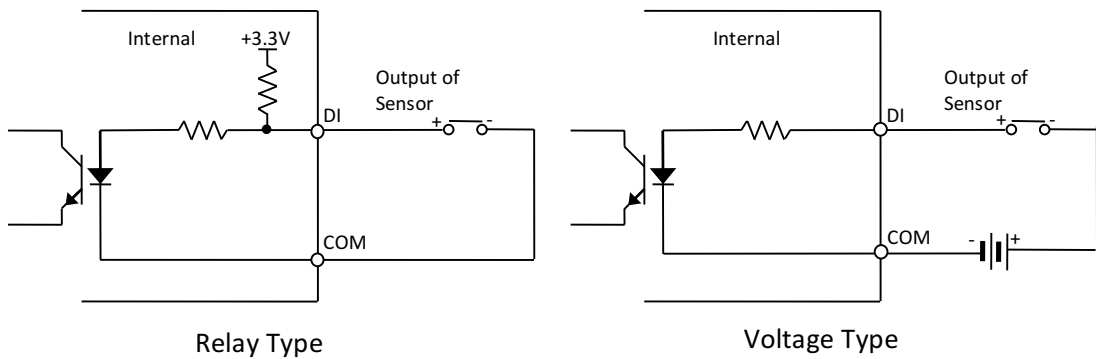
② Sensor (DI) connection

Sensor (DI) can be connected to either a voltage type sensor or a relay type sensor like the following figures. Settings can be done through the camera's webpage.

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



Do not exceed the maximum input voltage or relay rate.



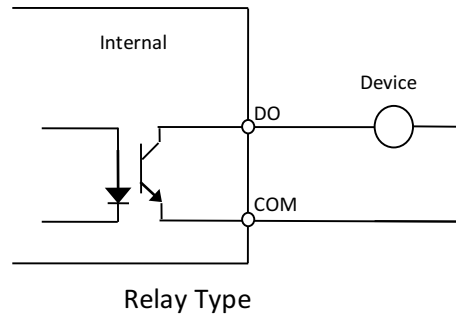
③ Alarm (DO) connection

Only the relay type is supported.

Relay Rating: Max 24VDC 50mA

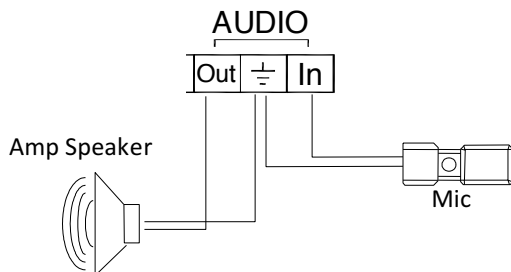


Do not exceed the maximum relay rating.



④ Audio connection

The camera provides a mono audio input and output. Due to low audio output power, an amplified speaker is recommended for enhanced sound (Refrain from connecting a headphone or an earphone directly to the camera).



⑤ Video connection

It provides an analog video transmission.

Name	Descriptions
CVBS	Composite Video Blanking Sync
COM	Common

⑥ LAN connection

This is a RJ45 LAN connector for 10/100 Base-T Ethernet. Use the Ethernet cable (RJ45) to connect the device to a hub or a router in the network. Refer to **Appendix (B). Power over Ethernet** for more information.

6. CONFIGURATION

6.1. Set up network environment

The default IP address of the device is 192.168.XXX.XXX. Users can identify the IP address of the device from converting the MAC address's hexadecimal numbers, which is attached to the device. Be sure that the device and PC are on a same area network before running the installation.

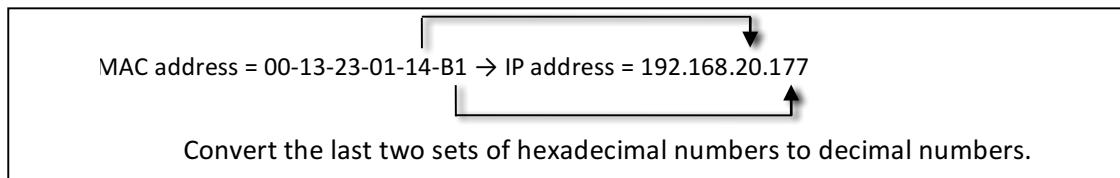
IP address : **192.168.xxx.xxx**

Subnet mask: **255.255.0.0**

6.1.1. Generic IP Environment

In case of generic private network environment where IP address 192.168.XXX.XXX are used, users may view the live streaming images on a web page using the device's default IP address:

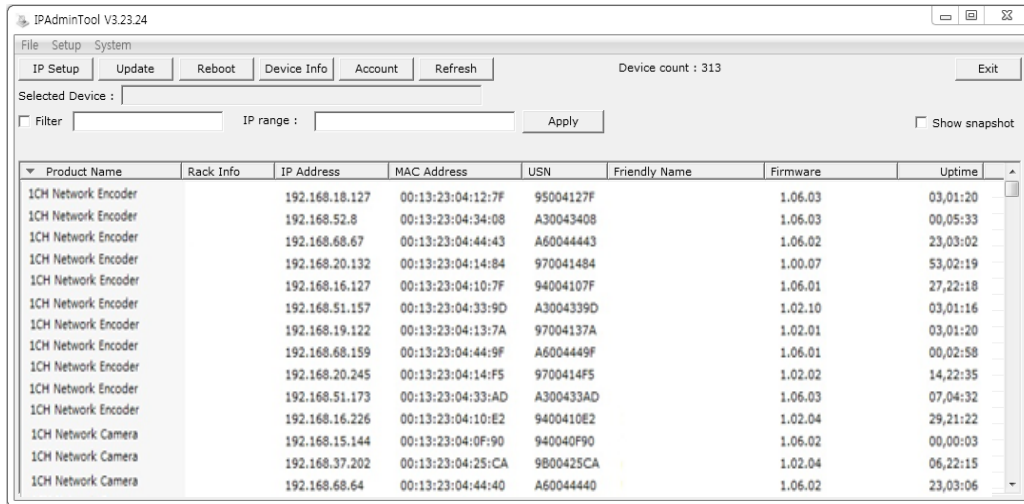
1. Convert the device's MAC address to the IP address. Refer to the Hexadecimal-Decimal Conversion Chart at the end of the manual.
(The MAC address of the device is attached on the side or bottom of the device.)



2. Start the Microsoft® Internet Explorer web browser and enter the address of the device.
3. Web streaming and device configurations are supported through ActiveX program. When the ActiveX installation window appears, authorize and install the ActiveX.

6.1.2. Custom IP Environment

IPAdminTool is a management tool, which automatically scans all of the network products for users to perform administrative tasks, which includes network configurations, firmware update, device reboot, and device organizations.

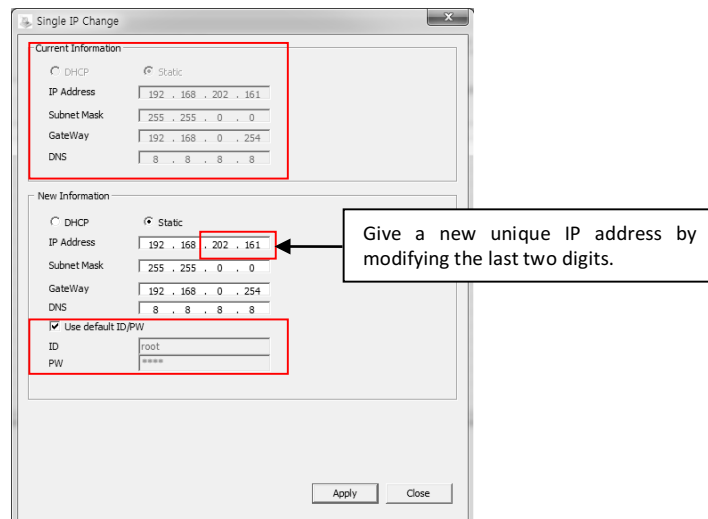


Product Name	Rack Info	IP Address	MAC Address	USN	Friendly Name	Firmware	Uptime
1CH Network Encoder		192.168.18.127	00:13:23:04:12:7F	95004127F		1.06.03	03,01:20
1CH Network Encoder		192.168.52.8	00:13:23:04:34:08	A30043408		1.06.03	00,05:33
1CH Network Encoder		192.168.68.67	00:13:23:04:44:43	A60044443		1.06.02	23,03:02
1CH Network Encoder		192.168.20.132	00:13:23:04:14:84	970041484		1.00.07	53,02:19
1CH Network Encoder		192.168.16.127	00:13:23:04:10:7F	94004107F		1.06.01	27,22:18
1CH Network Encoder		192.168.51.157	00:13:23:04:33:9D	A3004339D		1.02.10	03,01:16
1CH Network Encoder		192.168.19.122	00:13:23:04:13:7A	97004137A		1.02.01	03,01:20
1CH Network Encoder		192.168.68.159	00:13:23:04:44:9F	A6004449F		1.06.01	00,02:58
1CH Network Encoder		192.168.20.245	00:13:23:04:14:F5	9700414F5		1.02.02	14,22:35
1CH Network Encoder		192.168.51.173	00:13:23:04:33:AD	A300433AD		1.06.03	07,04:32
1CH Network Encoder		192.168.16.226	00:13:23:04:10:E2	9400410E2		1.02.04	29,21:22
1CH Network Camera		192.168.15.144	00:13:23:04:0F:90	940040F90		1.06.02	00,00:03
1CH Network Camera		192.168.37.202	00:13:23:04:25:CA	9B00425CA		1.02.04	06,22:15
1CH Network Camera		192.168.68.64	00:13:23:04:44:40	A60044440		1.06.02	23,03:06

To modify the device's default IP address for customized network area;

1. Find the device from the IPAdminTool's list and highlight the device's name.
2. Right-click the mouse and select **IP Address**; IP Setup window appears.

* There are two options that are for a single device or for multiple devices respectively. For one device, click "Single".



Single IP Change

Current Information

DHCP Static

IP Address: 192 . 168 . 202 . 161

Subnet Mask: 255 . 255 . 0 . 0

GateWay: 192 . 168 . 0 . 254

DNS: 8 . 8 . 8 . 8

New Information

DHCP Static

IP Address: 192 . 168 . 202 . 161

Subnet Mask: 255 . 255 . 0 . 0

GateWay: 192 . 168 . 0 . 254

DNS: 8 . 8 . 8 . 8

Use default ID/PW

ID: root

PW: ****

Apply Close

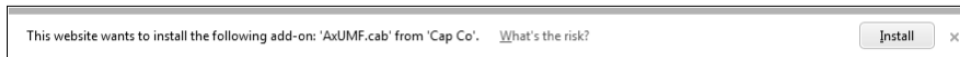
Give a new unique IP address by modifying the last two digits.

3. On the New Information table in the Single IP Change window, modify the last two digits of the device's IP address. Make sure to input the correct ID and PW of the device (default: root / pass).
4. Click **Apply** to complete the modification.

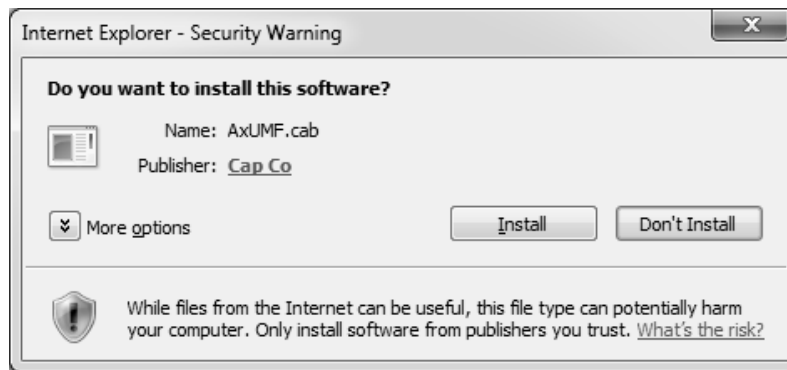
6.2. View video on web page

Type the proper IP address to view the live streaming images through a web browser. The default username and password is **root / pass**.

6.2.1. ActiveX Installation



1. When the browser asks to install the AxUMF software, click **Install** to proceed.



2. When Setup installation pop-up window appears, click **Install** to proceed with rest of installations.



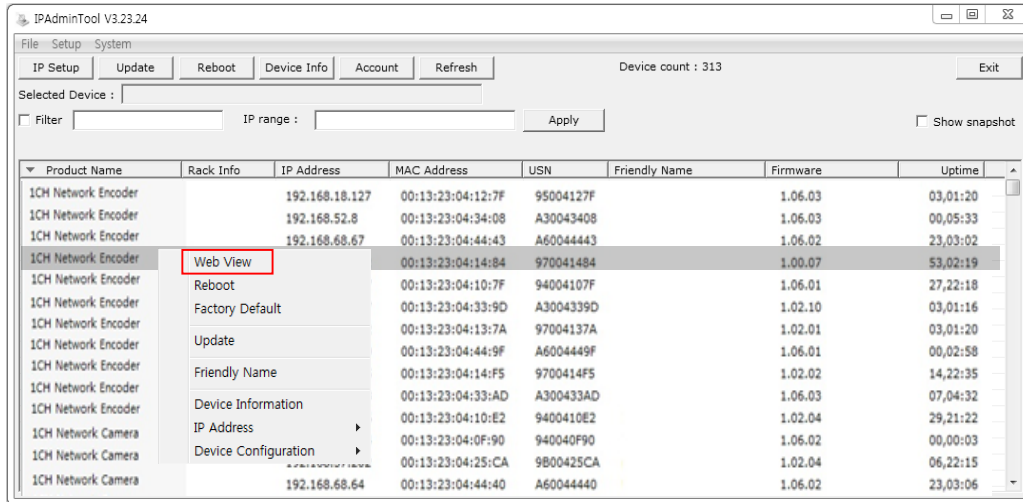
Note

Depending on system OS and Internet Explorer version, installation experience may differ from one another. Figures described above are from Windows 7, Internet Explorer 9 environment.

6.2.2. View video using IPAdmin Tool

IPAdminTool automatically searches all activated network encoders and IP cameras and shows the product name, IP address, MAC address, etc.

1. From the IPAdminTool's product list, select the device by highlighting it.
2. Right-click the mouse and select **Web view**.
Then, the system's default web browser opens the device's address.



Whether directly accessing the streaming video by typing IP address on a web page or taking steps through IPAdminTool, the ActiveX is needed to be installed for the Microsoft® Internet Explorer to have the complete configuration privileges.

6.3. Reboot

Perform the following procedures to reset your device:

1. Press the Reset button for 2 seconds while the device is in use.
2. Wait for the system to reboot.



Caution

Please do not hold the reset button for more than 2 seconds. Otherwise, the camera may be switched to its Factory Default settings.

6.4. Factory Default

Resetting the device back to the factory default will initialize all parameters including the IP address back to the factory defaults. To reset back to the factory default:

1. Press the reset button and hold it while the device is in use.
2. Release the button after 10 seconds.
3. Wait for the system to reboot.

The factory default settings can be inferred as follows:



Note

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

6.5. Safe Mode

What is Safe Mode?

There may be certain occasions that your camera repeatedly fails to boot. Then, your camera may enter safe mode to be recovered from the occasions.

What may have caused Safe Mode?

Here below are the main typical causes.

- * The power supply is continually unplugged certain times in the middle of system booting.
- * The firmware files required for system booting are damaged.
- * There are conflicts in the system settings.

How to recover your system from Safe Mode

Safe Mode

Your device has entered safe mode now. Device is usually forced to safe mode when device recognizes itself not operating normally over times.
In most cases, repeated unstable power connection during the boot is the main cause for safe mode.
If you have seen your device in safe mode for the first time, just follow the instructions below to reboot the device.

1. Click 'Start Reboot' on the current page.
2. Wait until the device completely reboots. (*It may take a few seconds to several minutes.)
3. Refresh the webpage to check if it appears normal.

If the device is not recovered after you have done the above instructions, it may indicate that settings in device may have been corrupted.
Then, try the instructions as follows to reset all settings.

1. Click 'Reset All Settings' on the current page.
2. Wait until the device resets all settings. (*It may take a few seconds to several minutes.)
3. Check if the webpage appears normal.

If the device is still in safe mode after you have done the above procedure, it may indicate that there may be a corruption on the firmware of the device.
In this case, the device cannot be booted normally.
Thus, perform the firmware update according to the instructions below.

1. Click 'Browse', and select the appropriate firmware file.
2. Click 'START' to restore the firmware to the device. (*You will see the relevant messages during the firmware update.)
3. Check if the webpage appears normal.

If you are still on this page even after the above procedure, your device may have encountered the worst situation. Certain part of the hardware on the device may have been broken. Thus, you should contact your local agency for further assistance.

Reboot

Reset All Settings

Upload Firmware Image

Choose a firmware image to upload:

The messages above will appear on the webpage when your device has been rebooted in safe mode. Then, you should follow the instructions on the webpage according to each step.



There is another method to update firmware, which is using IPAdminTool. Please refer to 'IPAdminTool User's Manual.pdf' for the detailed procedure.



If your device is still in safe mode after trying to update firmware, please contact your local agency to get further assistance.

APPENDIX (A): SPECIFICATIONS

Summary

Camera Module	
Array Size	ZNT1-PxT1: 320x240 ZNT1-PxT2: 640x480
Detection Type	Uncooled Vanadium Oxide Microbolometer
Sensor pixel size	17um
Spectral Response	8-14 μm
Lens	ZNT1-PxT1: 9°, 24°, 42° ZNT1-PxT2: 18°, 37°, 50°
Sensitivity	Less than 50mK
Scanning System	Progressive Scan
Video	
Compression Format	H.264 Baseline, Main, High profile(MPEG-4 Part 10/ AVC) MJPEG(Motion JPEG)
Number of Streams	Dual Stream, Configurable
Resolution	ZNT1-PxT1 640x480 (VGA, Scaled-up) 320x240 (QVGA) 160x120 (QQVGA)
	ZNT1-PxT2 640x480 (VGA) 320x240 (QVGA) 160x120 (QQVGA)
Frame Rate	Configurable up to 30 FPS or 9 FPS
Motion Detection	Built-in
Burnt-in Text (Digital)	Time stamp and text caption overlay
Analogue Output	NTSC/PAL
Pan / Tilt	
Pan/Tilt Range	Pan: 360° Endless Rotation Tilt: -10° ~ 90° Auto-flip
Manual Pan/Tilt Speed	Max 120° /sec
Preset Pan/Tilt Speed	Max 120° /sec
Control	255 preset points; 6 tours; Auto panning; Auto run
System Accuracy	PT accuracy: ±0.1° / PT resolution: 0.01°
Audio	
Input/output	1/1 channel
Compression Format	G.711 uLaw

Function	
Digital Input/output	1/1 channel
RS-485	-
Network	10/100 Base-T
Power over Ethernet Plus (PoE+)	Supported
Protocol	QoS Layer 3 DiffServ, TCP/IP, UDP/IP, HTTP, HTTPS, RTSP, RTCP, RTP/UDP, RTP/TCP, mDNS, UPnP™, SMTP, DHCP, DNS, DynDNS, NTP, SNMPv2c/v3(MIB-II), IGMP, ICMP, SSLv2/v3, TLSv1/1.2, SRTP, RTMP, IEEE802.1X
Storage	1 x microSD memory card slot (SD/SDHC up to 32GB supported) ※ card not included

Electrical Characteristics

Power Source	DC 24V, AC 24V, PoE+ (IEEE802.3at)
Power Consumption	24VAC @ 0.67A/16W, 24VDC @ 0.52A/12.5W
Audio Input	MIC in, Max 2 V _{p-p} , 20K Ω (90dB)
Audio Output	Lineout, 60mW, 16K Ω (95dB)
D/I	Max 50mA @ 5VDC, TTL level 1.5v threshold
D/O	Max 50mA @ 24VDC On-state resistance: 50 Ω (max continuous)

Environment Condition

Operating Temperature	Operating Range AC/DC24V: -40 °C ~ 50 °C (-40 °F ~ 122 °F) PoE+: 0 °C ~ 50 °C (32 °F ~ 122 °F)
Lowest Temperature for device's start-up	AC24V: 0°C (32°F) PoE: 0°C (32°F)
Operating Humidity	Up to 85% RH

*The internal heater will operate to boot the device, which approximately takes 1~3 minutes.

Mechanical Condition

Material	Aluminum, Anti-vandal bubble (Poly Carbonate)
Color	Ivory
Dimension	Ø150(W) x 240(H) mm (Ø 5.9" x 9.4")
Weight (Approx.)	TBD

APPENDIX (B): POWER OVER ETHERNET

The Power over Ethernet (PoE) is designed to extract power from a conventional twisted pair Category 5 Ethernet cable, conforming to the IEEE 802.3af Power-over-Ethernet (PoE) standard. IEEE 802.3af allows for two power options for Category 5 cables.

The IEEE **802.3af-2003** standard allows up to 15.4 W of power the device. However, 12.95W is the available power as some of the power gets lost in the cable. The updated IEEE **802.3at-2009 (PoE+)** standard allows up to 25.5 W (Max 34.2 W) of power the device.

PoE has advantages over conventional power in such places where AC powers cannot be reached or is expensive to wire.

Power Comparison

Property	802.3af	802.3at
Available Power	12.95 W	25.50 W
Max. Power by PSE	15.40 W	34.20 W
Max. Current	350 mA	600 mA
Supported Cable	Category 3 or higher	Category 5 or higher



For proper activation of PoE, the Category 5 cable must be shorter than 100m and conform the PoE standard.



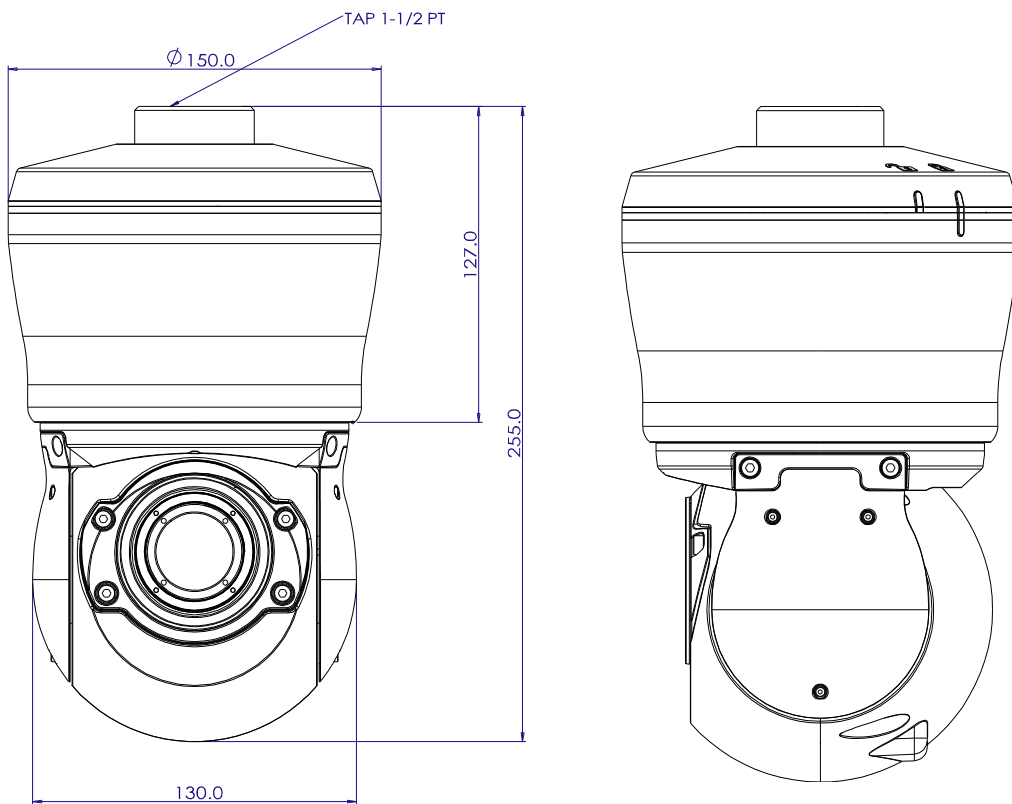
With non-Power Sourcing Equipment (non-PSE)

When it is connected with non PSE, the power adaptor should be connected.

With power adaptor

Connecting both PSE and power adaptor does not do any harm to the product. Disconnecting PSE or power adaptor from device does not reboot the device if either one is connected to the device.

APPENDIX (C): DIMENSIONS



(Unit: mm)

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	Hex	Dec
0	0	25	37	4A	74	6F	111	94	148	B9	185	DE	222		
1	1	26	38	4B	75	70	112	95	149	BA	186	DF	223		
2	2	27	39	4C	76	71	113	96	150	BB	187	E0	224		
3	3	28	40	4D	77	72	114	97	151	BC	188	E1	225		
4	4	29	41	4E	78	73	115	98	152	BD	189	E2	226		
5	5	2A	42	4F	79	74	116	99	153	BE	190	E3	227		
6	6	2B	43	50	80	75	117	9A	154	BF	191	E4	228		
7	7	2C	44	51	81	76	118	9B	155	C0	192	E5	229		
8	8	2D	45	52	82	77	119	9C	156	C1	193	E6	230		
9	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
08-2018-A	07/31/2018	First release version