GANZ G2
THERMAL

ZNT1-H Series
Installation Manual

Precaution

- 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**.

- **CAUTION**: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

Table of Contents

1. FEATURES

Camera

- 17 μm uncooled vanadium oxide micro-bolometer
- 320x240 / 640x480 resolutions
- 9, 18, 24, 37, 42,50 degrees' field of view (ZNT1-H)
- 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 / 2 Digital Outputs

Integration

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

Additional Features

- microSDHC card embedded (optional)
- RS-485 supported
- DC12V, AC24V, or PoE

VCA (Video Content Analysis)

- VCA Detect (Included as basic)

2. PACKAGE CONTENTS

Please unpack the package carefully and handle the equipment with care. The package contains:

Camera
(Below is the sunshield attached image)
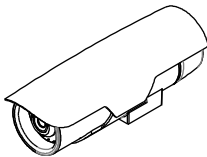
Sunshield

DC Power Jack Cable

Tamper Resistant Screws x 8
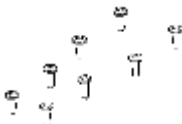
Base Mount

Terminal Blocks

Stem Bumpers x 2 and 1 Spare

Cable Gland & Electrical Nut & O-ring

Silica Gel Packet

Quick Start Guide

> **i**
> **Note**
>
> The contents above are subject to change without prior notice.

3. PART NAMES

① Sunshield

③ Analogue Video Output
④ RJ45 Socket
② NTSC / PAL Button
⑤ Reset Button

⑥ Terminal Connectors
for DI/DO
⑦ Terminal Connectors
for Audio In/Out
⑨ Terminal Connectors
for power adaptor
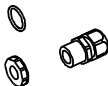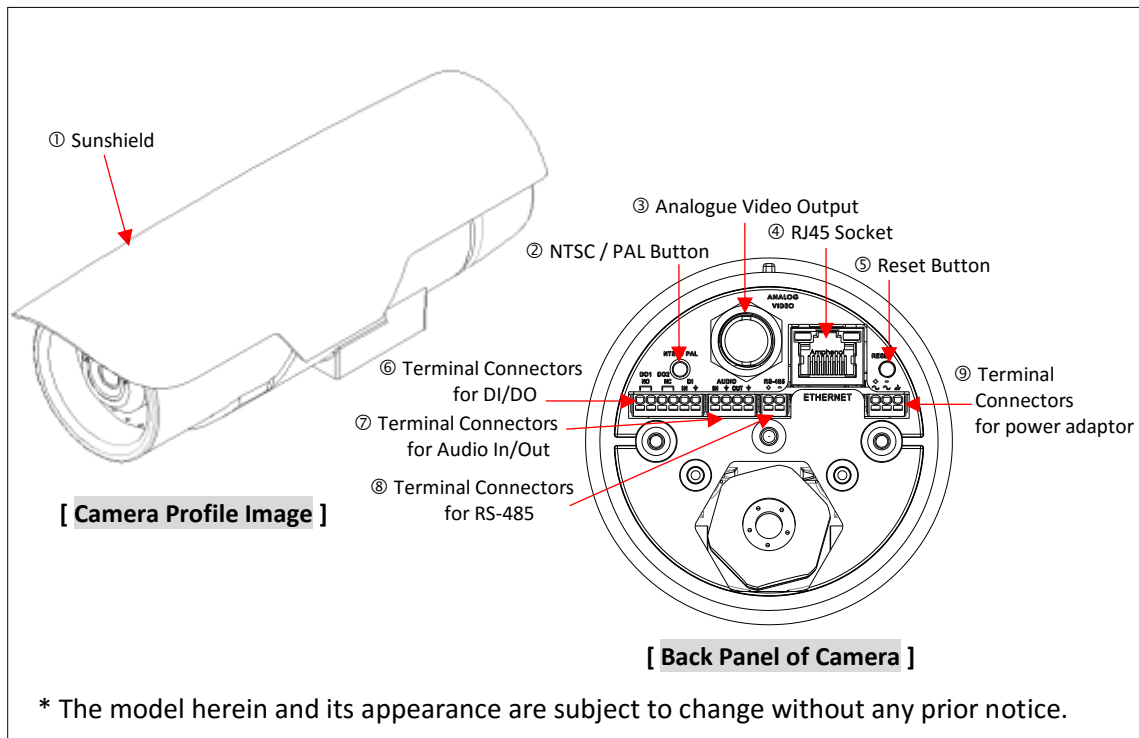⑧ Terminal Connectors
for RS-485

[Camera Profile Image]

[Back Panel of Camera]

* The model herein and its appearance are subject to change without any prior notice.

① Sunshield
It prevents the lens from getting the direct sunlight.

② NTSC / PAL Button
The button switches the video output mode between NTSC and PAL.
Pressing the button will maintain the current video output mode unless pressing once more to switch to the other mode.

③ Analogue Video Output
Connect a BNC output cable to see video via an analogue monitor.

④ RJ45 Socket
RJ45 LAN connector for 10/100 Base-T Ethernet (PoE supported).

⑤ Reset Button
Pressing this button reboots the camera or initializes the current settings of the camera to the factory default settings. Refer to **6.3. Reboot** and **6.4. Factory Default** for the pressing duration and more information.

⑥ Terminal Connectors for DI/DO
Connecting terminal blocks for digital input (sensor) and digital outputs (alarms)
Refer to **5. CONNECTIONS** for more information.

⑦ Terminal Connectors for Audio In/Out
Connecting terminal blocks for audio input (microphone) and audio output (speaker)
Refer to **5.CONNECTIONS** for more information.

⑧ Terminal Connector for RS-485
Connecting terminal blocks for RS-485
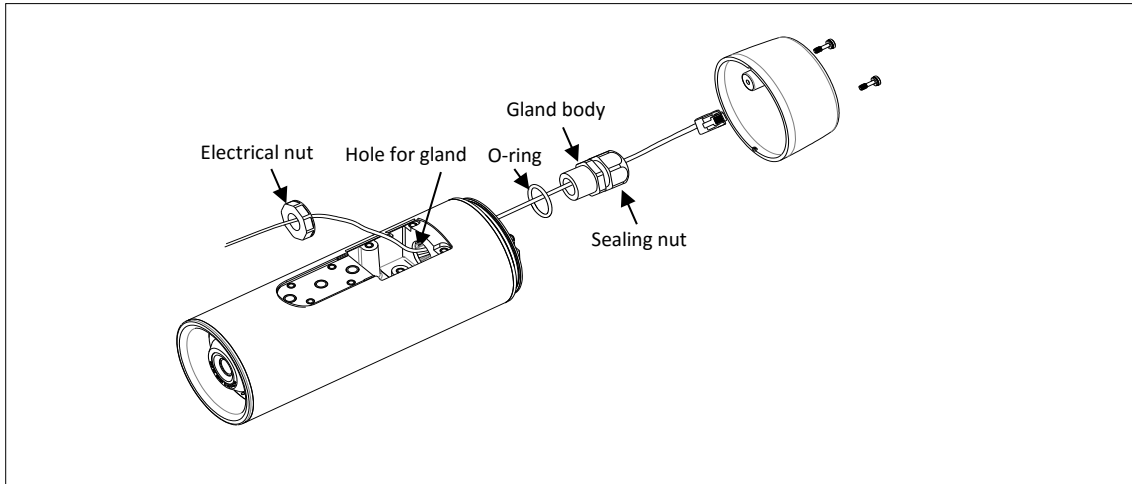Refer to **5.CONNECTIONS** for more information.

⑨ **Terminal Connector for Power Adaptor**
   Connect terminal blocks for power supply
   Refer to **5.CONNECTIONS** for more information.

4. INSTALLATION

4.1. Installing Cable Gland

1) Detach the back cover by twisting it counter-clockwise.

2) Disassemble the provided cable gland unit. There will be an electrical nut, a rubber sealing ring inserted inside the cable gland, a gland body, and a sealing nut.

3) Pass the electrical nut through the ends of the necessary cables.

4) Pass the cables through the holes both on the back and the bottom of the camera by referring to the image above.

5) Pass the provided O-ring and gland body through the ends of the cables that are on the backside of the camera.

6) Insert the cables into the rubber sealing ring at the point where about 4.5 inches (11.5 cm) of the cable ends remains to connect to the corresponding connectors on the back panel later.

7) Push the rubber sealing ring through the claw of the gland body.

8) Insert the sealing nut into the thread of the gland body, and tighten it by turning the nut on the thread. The rubber sealing ring will be tightened to fill the gap between the rubber sealing ring and the cables.

9) Push the gland unit through the hole on the back of the camera so that the other end of the thread on the gland unit will be inserted into the hole for gland near the bottom of the camera body.

10) Fix the gland unit to the hole by inserting the electrical nut and tightening it on the thread of the gland unit.

> **(i) Note**
> When you insert a video out cable together with other cables such as RJ45, DIDO, and audio cables, a thin type of the BNC cable is recommended as the standard BNC cable is too thick to be inserted together with the other cables into the rubber sealing ring.

> **⚠ Caution**
> Use the detachable cable with a separate BNC connector to pass the hole of the sealing nut. Otherwise, use the female type head of the BNC cable to pass the hole of the sealing nut.

4.2. Connecting Cable(s)
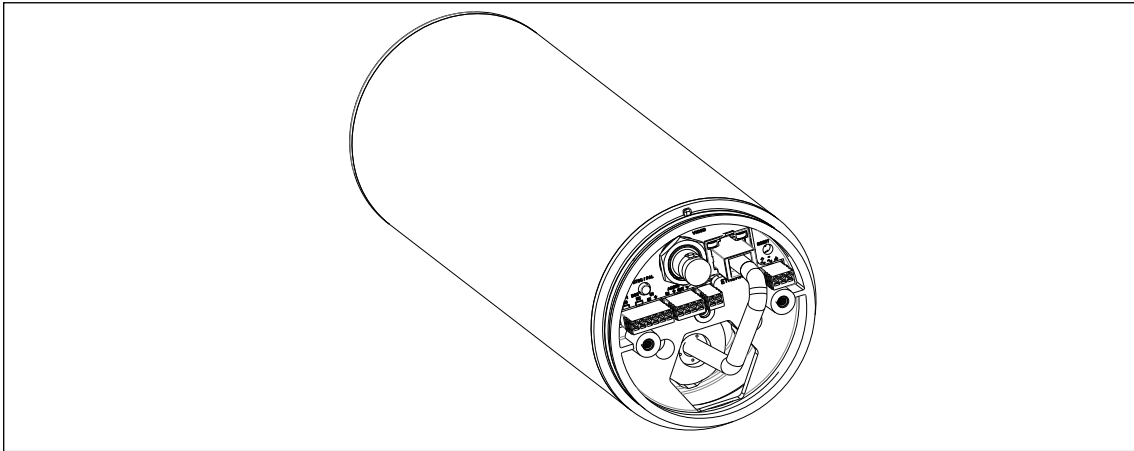
Connect the required cables to the corresponding connectors on the back panel of the camera body. Refer to **5. CONNECTIONS** for more information about each connector.

4.3. Installing Base Mount

[Base Mount Installation: Upside-Down View]
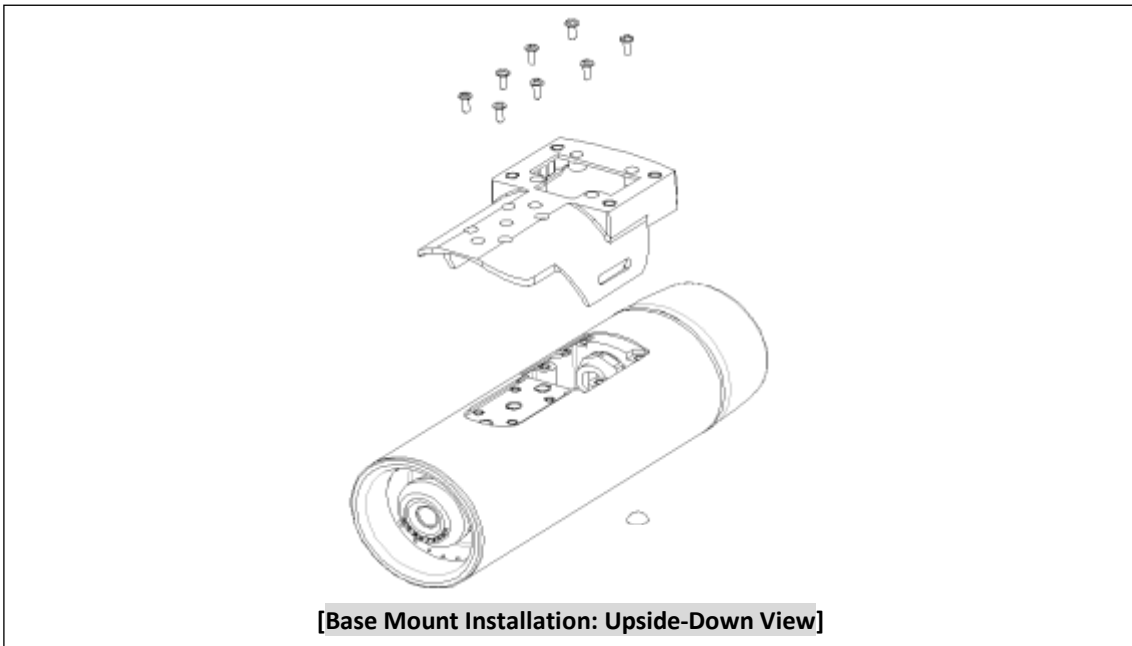
1) Insert the provided 8 tamper resistant screws to the corresponding screw holes on the base mount by referring to the image above.
2) Tighten them with a Phillips head #2 screwdriver to fix the base mount to the camera.

4.4. Closing the Back Cover
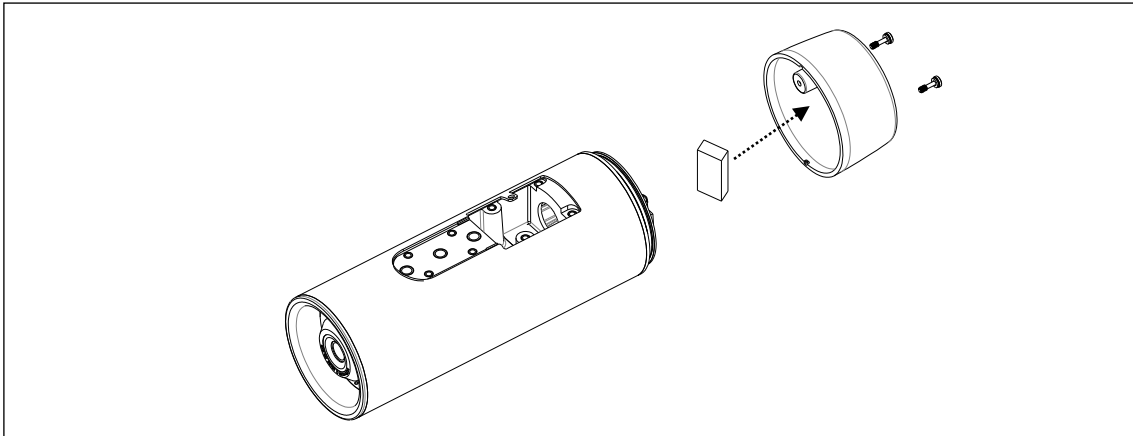
1) Insert the provided silica gel packet inside the back panel.
2) Close the back panel of the camera by twisting the back cover clockwise on the camera's back panel.
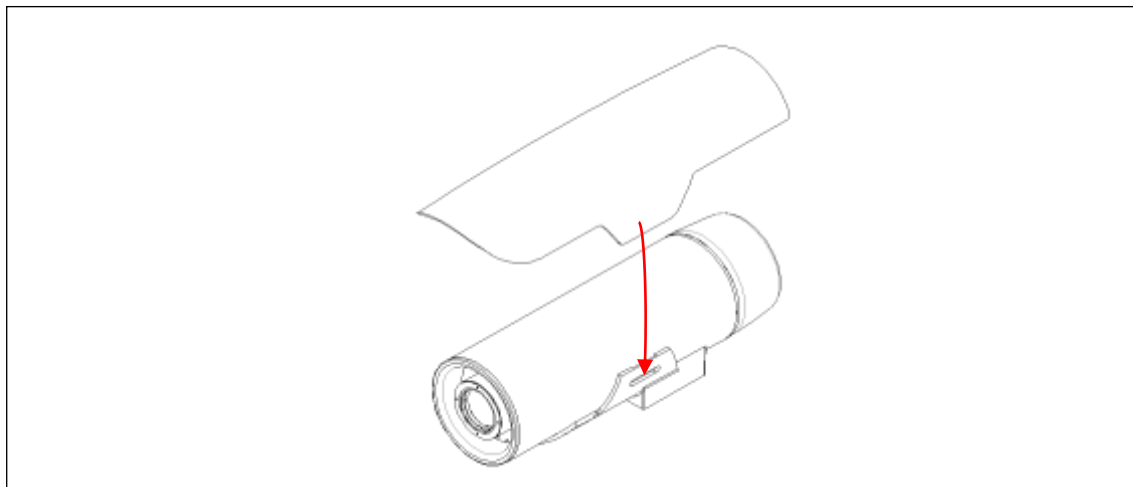**3)** Insert the two tamper resistant screws into the holes on the back cover, and tighten them with a Phillips #2 screwdriver to fix the back cover to the camera unit.

4.5. Installing the Sunshield

1) Insert the two provided stem bumpers to the holes at the bottom of the sunshield.
2) Place the sunshield on top of the camera body, and snap the sunshield to the base mount.

4.6. Adjusting Image Focus

The camera is pre-focused at factory to suit each FOV. However, in case you need to adjust the focus for optimal image quality at your installation site, you can manually set the focus by rotating the lens with hand.
The lens may be a little difficult to turn due to the O-ring behind the lens. Try to turn the lens counter-clockwise first to move the lens away from the base. Once the lens moves, start turning it in either direction for focusing by grabbing the barrel of the lens with one hand and grabbing the base unit with the other hand.

4.7. Installing with Bracket

The compatible accessories to mount this camera are as follows.

Model Names & Combinations

- WB-1W – Wall Mount Bracket

- JB-1W – Ceiling Mount Bracket

- PMA2 – Pole Mount Adaptor

- WB-1W + PMA2

Refer to the corresponding accessory model's installation guide for the instructions.

> **i** **Note**
>
> Some models, may or may not be required depending on the installation environment.

Model Names

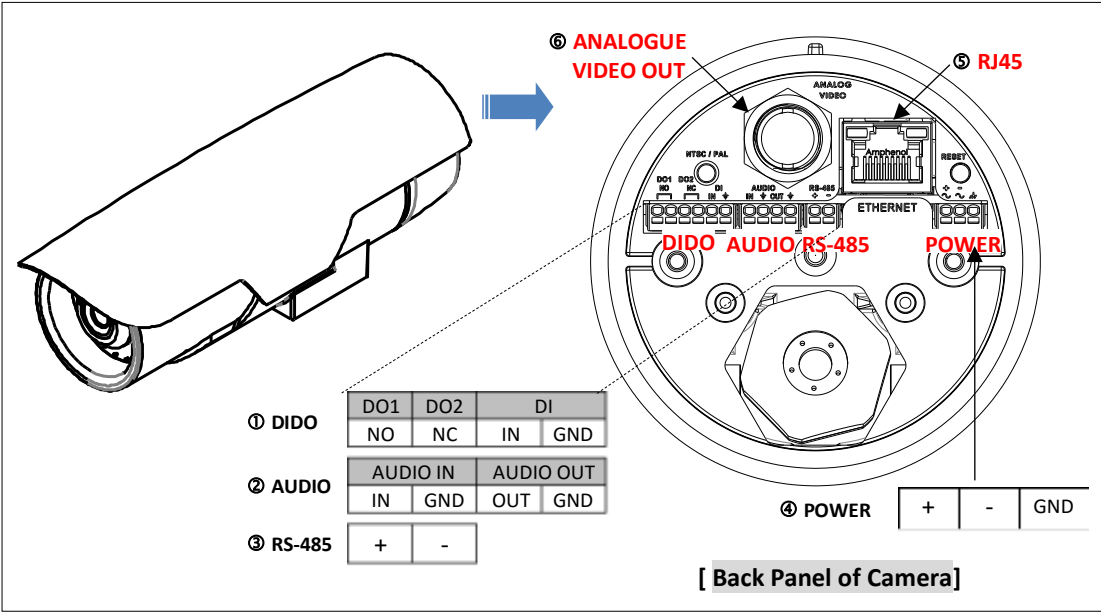| WB-1W	JB-1W	PMA2
Wall Mount Bracket	**Ceiling Mount Bracket**	**Pole Mount Adaptor**

5. CONNECTIONS

[**Back Panel of Camera**]

① **DIDO (Sensor/Alarm) Connection**

Two Alarms (DO1 | DO2)

The camera provides two digital outputs (alarms). The default status of each is respectively normally open (N.O) and normally closed (N.C) so that you can opt to use one accordingly.

Only the relay type is supported.

- **Digital Output 1**
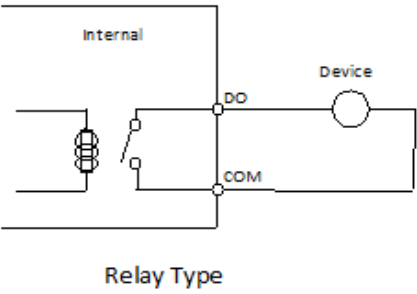 Relay Rating: Max 30VDC 1A
  Normally Open (N.O) at power off
- **Digital Output 2**
  Relay Rating: Max 30VDC 1A
  Normally Closed (N.C) at power off

⚠ **Caution**   Do not exceed the maximum relay rating.

Relay Type

One Sensor (DI)

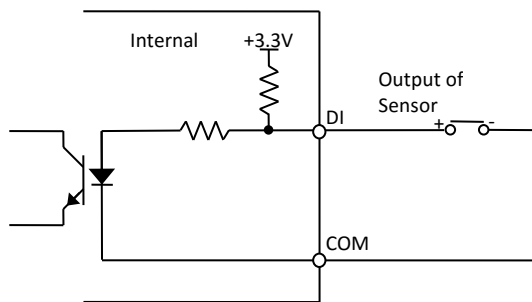The camera provides one digital input (sensor).
Sensor (DI) can be connected to either a voltage type sensor or a relay type sensor as the following figures. Settings can be done through the camera's webpage.

- **Input voltage range:** 0VDC minimum to 5VDC maximum, Max 50mA
  Relay Rating: Max 30VDC 1A

! Caution   Do not exceed the maximum input voltage or relay rate.
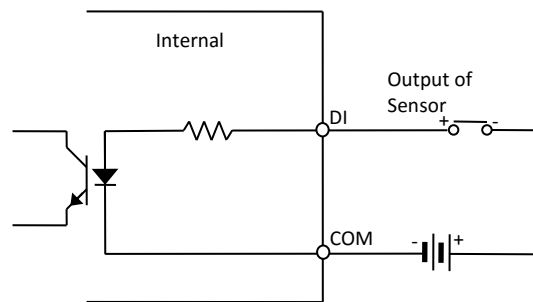
Relay Type   Voltage Type

② **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).

- **Microphone In:** Max 2Vp-p, 20KΩ (90dB)

- **Headphone Out:** 60mW, 16Ω (95dB)

③ **RS-485 Connection**

The RS-485 serial port consists of TRX+(RX+) and TRX-(RX-) like the following image.

④ **Power Connection**

The camera can be powered by either 12VDC, 24VAC, or PoE. If the camera is powered via PoE, you do not need to connect the power adaptor. For more information about PoE, refer to "**Appendix (C). Power over Ethernet**" for more information.
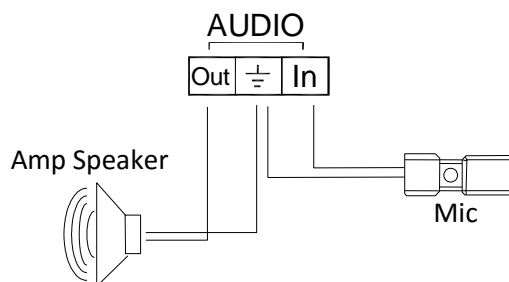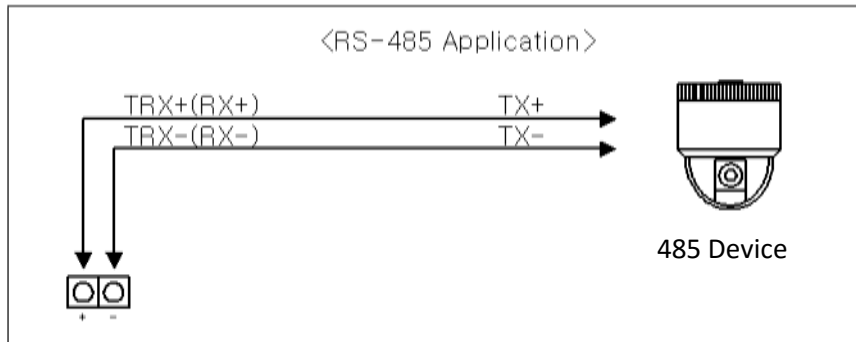
To operate your camera by using 12VDC, make sure the polarity is correct before connecting the power cable. Incorrect connection may cause damage to the device.
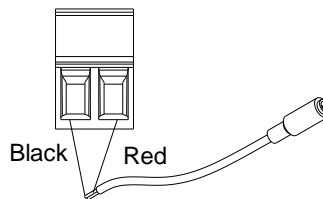
⑤ **RJ45 Connection**

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 (C). Power over Ethernet**" for more information.

⑥ **Analogue Video Output Connection**

Use a 75-ohm video coaxial cable to connect to a monitor's analog video input.

The factory default for analogue video output is NTSC. Press once to set the video to PAL, and press again to set the video to NTSC.

6. CONFIGURATION

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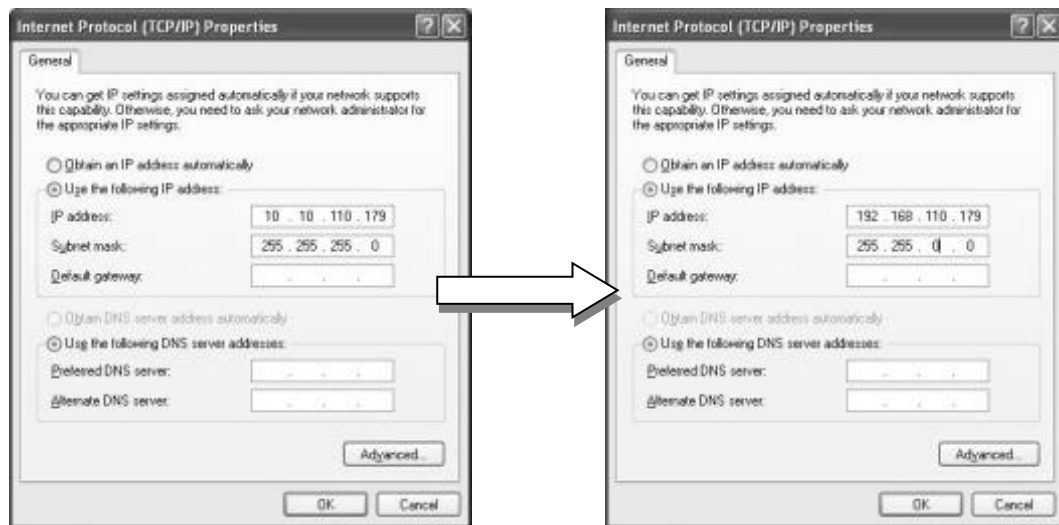
The default IP address of the device is 192.168.XXX.XXX. Users can identify the IP address of the device from converting the MAC address's hexadecimal numbers, which is attached to the device. Be sure that the device and PC are on a same network before running the installation.

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.)
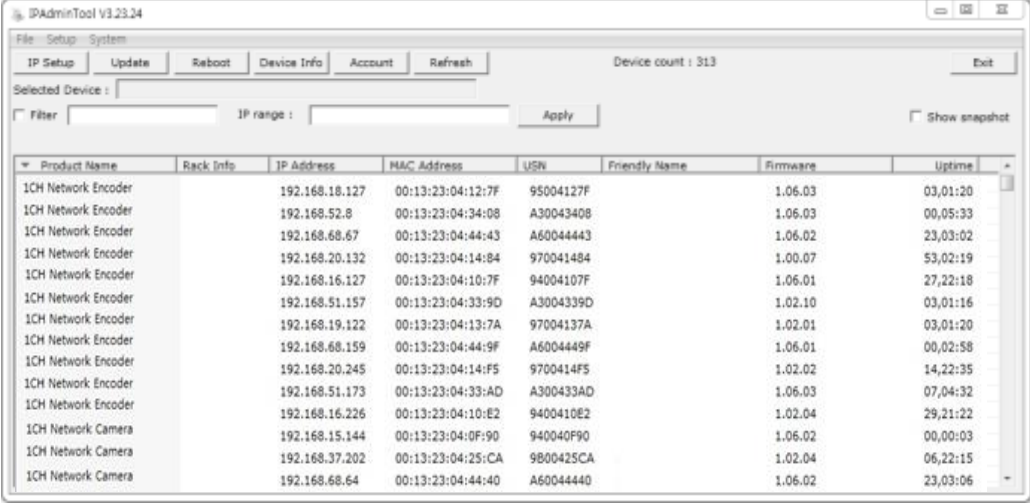
MAC address = 00-13-23-01-14-B1 → IP address = 192.168.20.177

Convert the last two sets of hexadecimal numbers to decimal numbers.
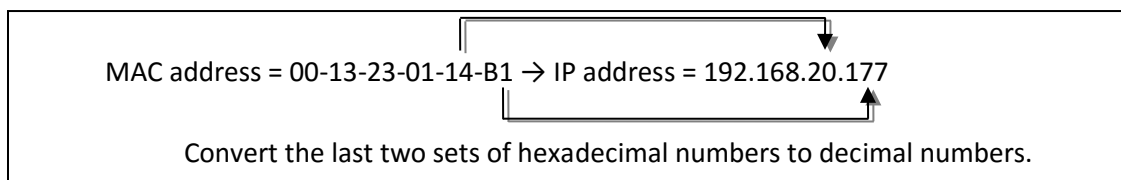
2. Start the Microsoft® Internet Explorer web browser and enter the address of the device.

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.

 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".

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.

> **i**
> **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 IPAdminTool

IPAdminTool automatically searches all activated network encoders and IP cameras and shows the product name, IP address, MAC address and 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.
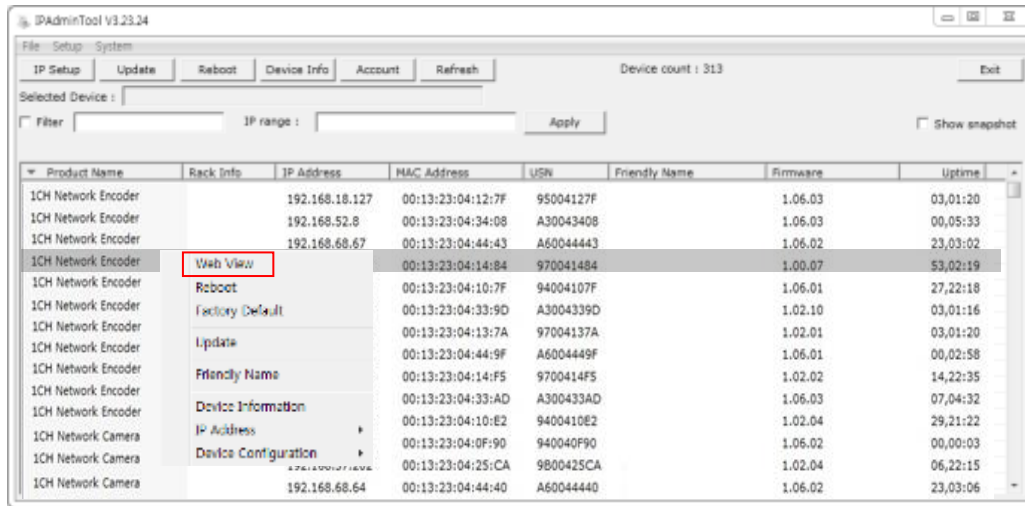
⚠ **Caution**	Whether directly accessing the streaming video by typing IP address on a web page or taking steps through IPAdminTool, the ActiveX is needed to be installed for the Microsoft® Internet Explorer to have the complete configuration privileges.

6.3. Reboot

On the Device

Perform the following procedure to reset your device.

1. Press the reset button for 2 seconds when the device is powered on.
2. Wait for the system to reboot.

⚠️ **Caution**   Do not press the reset button for more than 2 seconds. Otherwise, the camera may be switched to its factory default settings.

On the Webpage

Reboot the device via the camera's webpage:

1. Go to **Setup** > **Maintenance** > **Reboot**.
2. Click the Reboot button to reboot the device.
3. Wait for the device to complete booting.

Setup > Maintenance > **Reboot**

Reboot

Reboot

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.

On the Device

1. Press the reset button for 10 seconds by making sure that booting is complete on the device.
2. Wait for the system to reboot.

Then, all the parameters of the device will be initialized.

On the webpage

Reset the current settings to the factory default values via the camera's webpage:

1. Go to **Setup** > **Maintenance** > **Reset All Settings**.
2. Select the items that you want to preserve from the initialization among network settings, user account information, and time zone setting.
3. Click **Reset All Settings**.

Setup > Maintenance > **Reset All Settings**

Reset All Settings

Reset all configuration settings, but:
☑ Preserve network settings
☑ Preserve user account information
☑ Preserve timezone setting

Reset All Settings

ℹ️ **Note**   The factory default settings can be inferred with the following information:

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

Start Reboot

Reset All Settings

Reset All Settings

Upload Firmware Image

Choose a firmware image to upload: [   ] Browse START

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.

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

> **i**
> **Note**
>
> 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-HET14G/ZNT1-HBT14G: 320x240 ZNT1-HAT24G/ZNT1-HBT24G: 640x480
Detection Type	Uncooled Vanadium Oxide Microbolometer
Sensor pixel size	17um
Spectral Response	8-14 µm
Lens	ZNT1-HET14G/ZNT1-HBT14G: 9°, 24°, 42° ZNT1-HAT24G/ZNT1-HBT24G: 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-HET14G / ZNT1-HBT14G	320x240 (QVGA) 160x120 (QQVGA)
	ZNT1-HAT24G / ZNT1-HBT24G	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	

Audio	
Input/output	1/1 channel
Compression Format	G.711

Function	
Digital Input/output	1/2 channels
RS-485	Supported
Network	10/100 Base-T
Power over Ethernet (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, TLS, SRTP, RTMP
Storage	1 x microSDHC card embedded (optional)

Electrical Characteristics

Power Source	DC 12V (CLASS 2, LPS)/ AC 24V / PoE IEEE802.3af (Class 0)
Power Consumption	Max 10W@12VDC
Audio Input	MIC in, Max2Vp-p, 20KΩ (90dB)
Audio Output	Line out, 60mW, 16Ω (95dB)
D/I	Max 50mA@5VDC, TTL level 1.5V threshold
D/O 1 D/O 2	Max 1A@30VDC

Environment Condition

Operating Temperature	[DC12V/PoE] -40°C ~ 60°C (-40°F ~ 140°F)
Operating Humidity	Up to 85% RH

Mechanical Condition

Material	Poly-carbonate, Aluminum
Dimension	3.7" x 3.9" x11.5" (95 x 98 x 293 mm)
Weight (Approx.)	1.2kg (2.65lb)

APPENDIX (B): DETECTION RANGE

*The detection range is of the maximum values.

(Unit: meter)

ZNT1-HET14G / ZNT1-HBT14G					
Lens	Object	Identification	Recognition	VCA Event	Detection
9°	Person	220	285	340	1,450
	Vehicle	560	725	770	3,390
24°	Person	75	100	130	555
	Vehicle	205	265	300	1,375
42°	Person	45	60	70	330
	Vehicle	120	160	170	840

Person
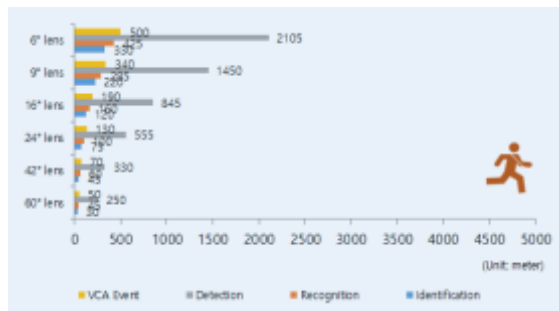
Vehicle
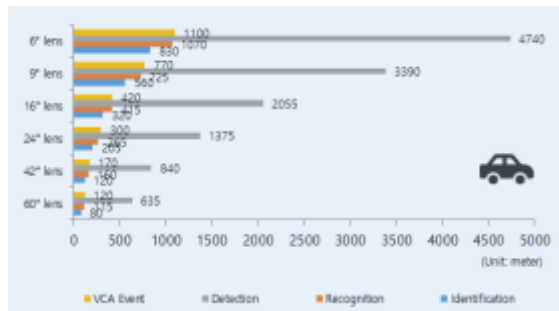
ZNT1-HAT24G / ZNT1-HBT24G					
Lens	Object	Identification	Recognition	VCA Event	Detection
18°	Person	220	285	340	1,450
	Vehicle	560	725	770	3,390
37°	Person	105	140	160	745
	Vehicle	280	365	360	1,825
50°	Person	60	100	110	550
	Vehicle	200	260	270	1,260

Person
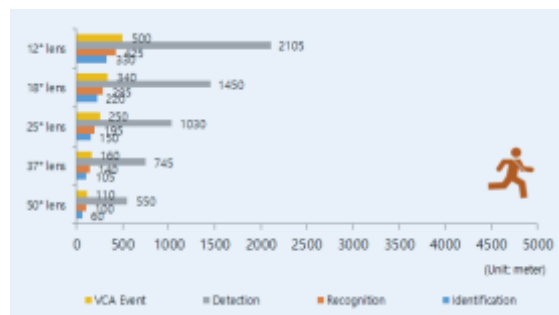
Vehicle
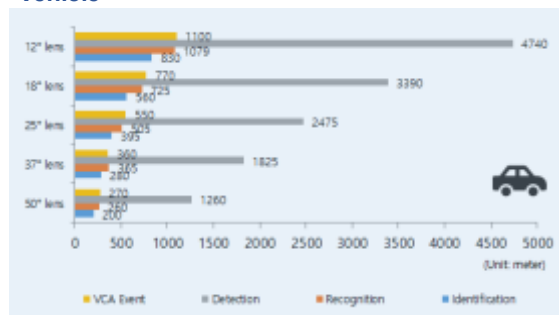
APPENDIX (C): POWER OVER ETHERNET

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 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

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

> **i Note**
>
> **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 as long as either one is connected to the device.

APPENDIX (D): DIMENSIONS
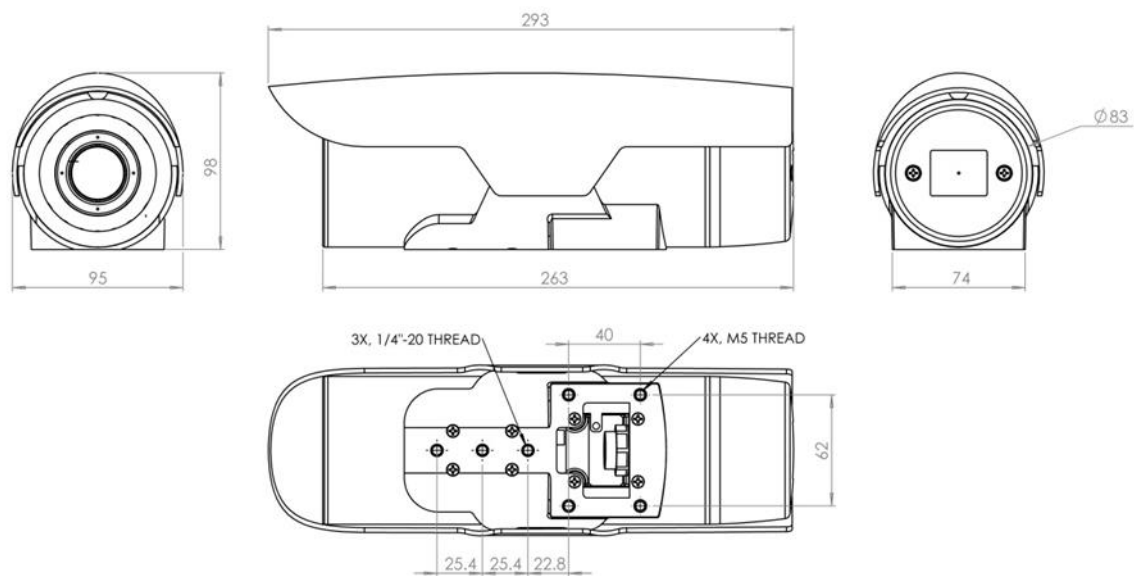

(Unit: mm)

APPENDIX (E): 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
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
05-2016-A	05/02/2016	First release version
08-2016-A	08/11/2016	Added **4.6. Adjusting Image Focus**
10-2016-A	10/13/2016	Added additional comments in **4.6. Adjusting Image Focus**
10-2016-A	10/19/2016	Modified **APPENDIX (B): DETECTION RANGE** Added more lenses