Network Camera
User Manual

Copyright
© 2019 Hanwha Techwin Co., Ltd. All rights reserved.

Trademark
Each of trademarks herein is registered. The name of this product and other trademarks mentioned in this manual are the registered trademark of their respective company.

Restriction
Copyright of this document is reserved. Under no circumstances, this document shall be reproduced, distributed or changed, partially or wholly, without formal authorization.

Disclaimer
Hanwha Techwin makes the best to verify the integrity and correctness of the contents in this document, but no formal guarantee shall be provided. Use of this document and the subsequent results shall be entirely on the user's own responsibility. Hanwha Techwin reserves the right to change the contents of this document without prior notice.

 designers and specifications are subject to change without prior notice.

* Design and specifications are subject to change without prior notice.

The initial administrator ID is "admin" and the password should be set when logging in for the first time.

Please change your password every three months to safely protect personal information and to prevent the damage of the information theft.

Please, take note that it's a user's responsibility for the security and any other problems caused by mismanaging a password.
IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean the contaminated area on the product surface with a soft, dry cloth or a damp cloth. (Do not use a detergent or cosmetic products that contain alcohol, solvents or surfactants or oil constituents as they may deform or cause damage to the product.)
7. Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Unplug this apparatus during lighting storms or when unused for long periods of time.
11. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT INSERT ANY METALLIC OBJECT THROUGH THE VENTILATION GRILLS OR OTHER OPENINGS ON THE EQUIPMENT.

Apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.

To prevent injury, this apparatus must be securely attached to the Wall/ceiling in accordance with the installation instructions.

CAUTION

RISK OF ELECTRIC SHOCK. DO NOT OPEN

No User Serviceable Parts Inside. Refer servicing to qualified service personnel.

EXPLANATION OF GRAPHICAL SYMBOLS

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

22. If you install/disassemble the product in a manner that has not been recommended, the production functions/performance may not be guaranteed. Install the product by referring to “Installation & connection” in the user manual.

23. Installing or using the product in water can cause serious damage to the product.
Class I construction
An apparatus with CLASS I construction shall be connected to a MAINS socket outlet with a protective earthing connection.

Battery
Batteries (battery pack or batteries installed) shall not be exposed to excessive heat such as sunshine, fire or the like.

Disconnection Device
Disconnect the main plug from the apparatus, if it’s defected. And please call a repair man in your location.

When used outside of the U.S., it may be used HAR code with fittings of an approved agency is employed.

CAUTION
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

ATTENTION
IL Y A RISQUE D’EXPLOSION SI LA BATTERIE EST REMPLACÉE PAR UNE BATTERIE DE TYPE INCORRECT.
METTRE AU REBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS.

These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

Please read the following recommended safety precautions carefully.
- Do not place this apparatus on an uneven surface.
- Do not install on a surface where it is exposed to direct sunlight, near heating equipment or heavy cold area.
- Do not place this apparatus near conductive material.
- Do not attempt to service this apparatus yourself.
- Do not place a glass of water on the product.
- Do not install near any magnetic sources.
- Do not block any ventilation openings.
- Do not place heavy items on the product.
- Please wear protective gloves when installing/removing the camera.
- The high temperature of the product surface may cause a burn.
- Do not adjust or move the lens directly with your hands. Doing so could damage the lens or degrade its performance.
- The life expectancy of driving the lens motor is 200 rotations.
- To move the location of your camera, privacy masking needs to be reset.

Please use the input power with just one camera and other devices must not be connected.

The ITE is to be connected only to PoE networks without routing to the outside plant.

The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802.3bt shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL60950-1.

Unit is intended for installation in a Network Environment 0 as defined in IEC TR 62102. As such, associated Ethernet wiring shall be limited to inside the building.

WARNING
To Prevent damage which may caused by IR LED, don’t stare at operating lamp.

For below models only.
PNM-9084RQZ/PNM-9085RQZ

<table>
<thead>
<tr>
<th>Risk Group 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARNING IR emitted from this product.</td>
</tr>
<tr>
<td>Do not stare at operating lamp.</td>
</tr>
<tr>
<td>Product tested against IEC 62471</td>
</tr>
</tbody>
</table>

User’s Manual is a guidance book for how to use the products.
The meaning of the symbols are shown below.
- Reference : In case of providing information for helping of product’s usages
- Notice : If there’s any possibility to occur any damages for the goods and human caused by not following the instruction

※ Please read this manual for the safety before using of goods and keep it in the safe place.
<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERVIEW</td>
<td>3</td>
</tr>
<tr>
<td>Important Safety Instructions</td>
<td>3</td>
</tr>
<tr>
<td>Product Features</td>
<td>3</td>
</tr>
<tr>
<td>Recommended PC Specifications</td>
<td>3</td>
</tr>
<tr>
<td>Recommended Micro SD/SDHC/SDXC Memory Card Specifications</td>
<td>3</td>
</tr>
<tr>
<td>What’s Included</td>
<td>3</td>
</tr>
<tr>
<td>Optional Accessories for Installation</td>
<td>3</td>
</tr>
<tr>
<td>At a Glance</td>
<td>3</td>
</tr>
<tr>
<td>INSTALLATION &amp; CONNECTION</td>
<td>10</td>
</tr>
<tr>
<td>Installation</td>
<td>10</td>
</tr>
<tr>
<td>Connecting with other Device</td>
<td>10</td>
</tr>
<tr>
<td>NETWORK CONNECTION AND SETUP</td>
<td>19</td>
</tr>
<tr>
<td>Connecting the Camera Directly to Local Area Networking</td>
<td>19</td>
</tr>
<tr>
<td>Connecting the Camera Directly to a DHCP Based DSL/Cable Modem</td>
<td>19</td>
</tr>
<tr>
<td>Using Device Manager</td>
<td>19</td>
</tr>
<tr>
<td>Automatically searching camera</td>
<td>20</td>
</tr>
<tr>
<td>Configuring IP address</td>
<td>20</td>
</tr>
<tr>
<td>Manually registering camera</td>
<td>21</td>
</tr>
<tr>
<td>Automatically configuring IP</td>
<td>21</td>
</tr>
<tr>
<td>Port Range Forward (Port Mapping) Setup</td>
<td>22</td>
</tr>
<tr>
<td>Connecting to the Camera from a Shared Local PC</td>
<td>23</td>
</tr>
<tr>
<td>Connecting to the Camera from a Remote PC via the Internet</td>
<td>23</td>
</tr>
<tr>
<td>WEB VIEWER</td>
<td>24</td>
</tr>
<tr>
<td>Connecting to the Camera</td>
<td>24</td>
</tr>
<tr>
<td>Password setting</td>
<td>25</td>
</tr>
<tr>
<td>Login</td>
<td>25</td>
</tr>
<tr>
<td>Camera Web Viewer Setup</td>
<td>25</td>
</tr>
<tr>
<td>APPENDIX</td>
<td>26</td>
</tr>
<tr>
<td>Specification</td>
<td>26</td>
</tr>
<tr>
<td>Product Overview</td>
<td>28</td>
</tr>
<tr>
<td>Troubleshooting</td>
<td>30</td>
</tr>
<tr>
<td>Open Source Announcement</td>
<td>30</td>
</tr>
</tbody>
</table>
PRODUCT FEATURES

• 4-way Camera
  Each of the four camera lenses monitors a different direction.

• Dustproof/Waterproof
  The dust-resistant/water-resistant design protects the product from rain and dust when installed outdoors.
  (IP66)

• IR mode
  If the IR indicator turns on, the product switches to the IR mode for preventing an object from being too bright,
  which helps you identify the object in near distance.

• Supports 5M resolution videos (PNM-9085RQZ)

• Multi-Streaming
  This network camera can display videos in different resolutions and qualities simultaneously using different
  CODECs.

• Web Browser-based Monitoring
  Using the Internet web browser to display the image in a local network environment.

• Alarm
  When an event occurs, related images are sent to the user’s registered e-mail and FTP server, stored on the micro
  SD memory card, or signaled to the alarm output terminal.

• Tampering Detection
  Detects tempering attempts on video monitoring.

• Defocus detection function
  Detects the defocus phenomenon of the camera lens.

• Motion Detection
  Detects motion from the camera’s video input.

• Fog detection
  Detects fog that is heavier than the detection level.

• Face Detection
  Detects faces in the specified area from the camera’s video input.

• IVA (Intelligent Video Analysis) function
  Detects a motion or situation that meets the configured event rules.

• ONVIF Compliance
  This product supports ONVIF Profile S/T.
  For more information, refer to www.onvif.org.

RECOMMENDED PC SPECIFICATIONS

• CPU : Intel(R) Core(TM) i7 3.4 GHz or higher
• RAM : 8G or higher
• Supported OS : Windows 7, 8.1, 10, Mac OS X 10.13
• Recommended browser : Google Chrome
• Supported browsers : MS Explore11, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari(Mac OS X only)
• VGA : PCIe 256MB GDDR3 video graphics card or higher

Please see the appendix for detailed information on verified OS and browsers. Some functions may be restricted even in supported browsers.

RECOMMENDED MICRO SD/SDHC/SDXC MEMORY CARD SPECIFICATIONS

• Recommended capacity : 16GB – 256GB (MLC type)
• Recommended Manufacturers : SanDisk, Transcend
• Product Type : High endurance
• The compatibility varies depending on the card manufacturers and types.
• It is recommended to use a memory card of 16GB or more that conforms to the UHS-3 class (MLC type) specification.
**WHAT’S INCLUDED**

Please check if your camera and accessories are all included in the product package. (As for each sales country, accessories are not the same.)

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Item Name</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Quick Guide (Optional)</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Template</td>
<td></td>
<td>1</td>
<td>Product installation guide</td>
</tr>
<tr>
<td>Power Terminal Block</td>
<td></td>
<td>1</td>
<td>Plugged in the power plug</td>
</tr>
<tr>
<td>Power Cable</td>
<td></td>
<td>1</td>
<td>Used to plug into the power port</td>
</tr>
<tr>
<td>Machine Screws</td>
<td></td>
<td>4</td>
<td>Screws used for mounting your camera on the hanging mount, GangBox, etc.</td>
</tr>
<tr>
<td>Cap Installer</td>
<td></td>
<td>1</td>
<td>Used to connect the RJ45 cable.</td>
</tr>
<tr>
<td>Drill bit</td>
<td></td>
<td>1</td>
<td>Used for dome cover disassembly, assembly and camera installation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Item Name</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable bush</td>
<td></td>
<td>1</td>
<td>Spare bushes for Lan cables or alarm &amp; audio cables.</td>
</tr>
<tr>
<td>HPoE injector</td>
<td></td>
<td>1</td>
<td>Connects power supply and network</td>
</tr>
<tr>
<td>Audio/Alarm cable</td>
<td></td>
<td>1</td>
<td>Used to connect with the audio and alarm port</td>
</tr>
</tbody>
</table>
OPTIONAL ACCESSORIES FOR INSTALLATION

You can purchase appropriate optional accessories available.

<table>
<thead>
<tr>
<th>Product type</th>
<th>Wall mount</th>
<th>Hanging mount</th>
<th>Ceiling mount</th>
<th>Corner mount</th>
<th>Pole mount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Name</td>
<td>SBP-390WMW2</td>
<td>SBP-317HMW</td>
<td>SBP-300CMW</td>
<td>SBP-300KMW</td>
<td>SBP-300PMW</td>
</tr>
</tbody>
</table>

AT A GLANCE

Appearance

- **Dome cover**: Case cover used to protect the lens and the main unit.
- **Camera body**: Body part where the camera lens and connection terminals are included.
- **Mount plate**: Plate that fixes the camera when mounting it to the ceiling or attaching it to a separately sold mount.
## Components

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lens 4 camera lenses show different directions.</td>
</tr>
<tr>
<td>2</td>
<td>Illumination Sensor Detects incoming light to control the IR LED.</td>
</tr>
<tr>
<td>3</td>
<td>Micro SD Memory Card Compartment Compartment for the Micro SD memory card.</td>
</tr>
<tr>
<td>4</td>
<td>IR LED These infrared LED’s are controlled by the illumination sensor.</td>
</tr>
<tr>
<td>5</td>
<td>Reset Button The button restores all camera settings to the factory default. Press and hold for about 5 seconds to reboot the system.</td>
</tr>
<tr>
<td>6</td>
<td>HPoE Connection port This terminal connects power and network via HPoE injector or connects to network via ethernet cable.</td>
</tr>
<tr>
<td>7</td>
<td>Cables Color - CH 1: Red CH 2: Green CH 3: Blue CH 4: Black</td>
</tr>
<tr>
<td>8</td>
<td>Audio and alarm cable port ARM-IN Used to connect the alarm input sensor or external day/night sensor. ARM-OUT Used to connect the alarm output signal. GND These are common ports to connect alarm input/output signals. MIC Used to connect to a microphone. SPEAKER Used to connect to speakers.</td>
</tr>
<tr>
<td>9</td>
<td>Power Port Port for power terminal block.</td>
</tr>
</tbody>
</table>
This camera is waterproof and in compliance with the IP66 spec, but the jack connected to the external cable is not. You are recommended to install this product below the edge of eaves to prevent the cable from being externally exposed.

**Precautions before installation**

Ensure you read out the following instructions before installing the camera:

- Select an installation site that can hold at least 5 times the camera’s weight.
- Stuck-in or peeled-off cables can cause damage to the product or a fire.
- For safety purposes, keep anyone else away from the installation site.
  And put aside personal belongings from the site, just in case.
- If the product is installed with excessive force, it may cause damage to the camera due to malfunction.
  Forcing assembly using non-compliant tools may damage the product.

**Disassembling**

1. Remove the dome cover by loosening the fastening bolt of the dome cover. This can be done by turning it counterclockwise using the drill bit provided.

2. Loosen the fastening screw on the camera body.

3. Remove the camera body and mounting plate by pulling the plate spring, as shown in the figure.

- Do not adjust or move the lens directly with your hands. Doing so could damage the lens or degrade its performance.
Inserting a Micro SD Memory Card
1. Remove the dome cover of the camera.
2. Insert a Micro SD card in the arrow direction shown in the figure.

- Disconnect the power cable from the camera before inserting the Micro SD memory card.
- Do not forcefully insert it in the reverse direction. It might damage your Micro SD memory card and your product.
- When it rains or the humidity is high, insertion or ejection of a Micro SD card is not recommended.
- Disassembly of the product cover should be finished within 5 minutes, or there will be the risk of internal dew condensation.
- If your camera’s IR LED blocks the Micro SD slot, access the web viewer and move the lens not to block the slot.

Removing a Micro SD Memory Card
Gently press down on the exposed end of the memory card as shown in the diagram to eject the memory card from the slot.

- You should save an SD card for each channel.
- Please note that if you firmly push and release the Micro SD memory card when it is ejected, it may pop out.
- Before removing the Micro SD memory card, in <Setup> - <Event> - <Storage>, set the device to <Off> and press the [Apply] button and turn the camera off.
- If you turn off the camera or remove the Micro SD memory card that contains data from the product, the data may be lost or damaged.
Installation (mount plate)

[Directly installing on ceiling]

1-1. Attach the installation template on the desired surface and drill holes for screws and cables.

1-2. Fix the mount plate using appropriate screws.

1-3. Pull out necessary cables among Power / LAN / audio & alarm cables through the hole in the mount plate.

[Installing using pipe]

2-1. Attach the installation template and drill holes for screws and cables.

2-2. Separate the pipe cover of the mount plate by pressing its sides.

2-3. Place the pipe on the mount plate.

2-4. Fix the mount plate using appropriate screws.

2-5. Pull out necessary cables among Power / LAN / audio & alarm cables through the pipe.
[Attaching to the unbundled adapter]
Choose and purchase a necessary one of the following options (unbundled) that is suitable to the installation site or for your convenience.

3-1. Install the hanging mount to the wall mount adapter.
   ▪ Wall mount adapters and hanging mounts are sold separately.

3-2. Connect the mounting plate and the hanging mount.

Installation (camera body and dome cover)

1. Connect the safety cable.

2. Mount the camera body to the mount plate.
   ▪ Mount it to fit the hinges as shown in the image.

3. Open the cable cover on the camera body.
4. Connect the terminals inside the camera with the necessary cables, and then close the cable cover.
5. Push the leaf spring until it clicks into place as shown in the figure.

6. Using the fastening screws on the camera body, fix the camera body to the mount plate.

7. Assemble the dome cover.
   - Align the arrows when assembling the dome cover.
   - To ensure there are no issues with waterproofing, tighten the fastening bolts tightly using the drill bit.

---

Connecting waterproof power cable and LAN cable

1. Use an appropriate cable bush for the LAN cable to be connected.
   - Basic camera: Use the cable with a diameter of Ø5–6.5.
   - Components provided: Use the cable with a diameter of Ø7–8.5.

[Method 1. Installing LAN/power cables]

1. Pull off the extruded parts of the bush to be used as shown in the figure.

2. Pass the LAN cable through the big hole in the bush.
3. Remove the sheath with a cable cutter, and align the cables.
4. Connect the LAN cable with a LAN connector, and insert it into the LAN tool.

5. Connect the finished cable to the HPoE port.

6. Route the power cable through the small hole of the bush and connect it to the provided terminal block.
[Method 2. Installing the LAN cable (using HPoE injector)]

1. Pull off the extruded part of the 1-hole bush provided.
2. Use the cap installer to pass through the LAN cable.
3. Mount the bush to the camera body.
4. Connect the LAN cable to the HPoE port.

Installing audio & alarm cables

1. Mount the bush of the provided audio & alarm cables to the camera body.
2. Connect the audio & alarm cable to the ALARM/AUDIO terminal.

Outdoor installation

When you install it outside of the building, please waterproof it with waterproof butyl rubber tape (can be purchased in stores) so that water does not leak from the gap of the cable connected to the outside.

1. Connect the Power, I/O, AUDIO, and LAN cables.
2. Wrap the black cable jacket (Area A) and the cable connection area with waterproof (butyl rubber) tape so that more than half of the butyl rubber tape is overlapped.

- If the cable jacket is not waterproofed properly, then it can directly cause leakage. Make sure to protect the cable with a dense layer of taping.
- Waterproof butyl tape is made of butyl rubber that can be stretched to twice its normal length.
CONNECTING WITH OTHER DEVICE

Powering and networking
Connect the HPoE device with the HPoE terminal of the camera.

- Connect and use a HPoE-enabled router.
- Use a HPoE device that complies with the IEEE802.3at(PSE TYPE 3 or 4) standard.
- If you connect using an HPoE-enabled router, you don’t need a separate power supply cable to power it on.

Network Cable Specification

<table>
<thead>
<tr>
<th>Item</th>
<th>Contents</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connector</strong></td>
<td>RJ45 (10/100/1000BASE-T)</td>
<td></td>
</tr>
<tr>
<td><strong>Ethernet</strong></td>
<td>10/100/1000BASE-T</td>
<td>To operate with 1000BASE-T, a cable of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Category 6 or higher should be used for</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the Giga hub.</td>
</tr>
<tr>
<td><strong>Cable</strong></td>
<td>Category 6</td>
<td></td>
</tr>
<tr>
<td><strong>Max Distance</strong></td>
<td>100M</td>
<td>DC Resistance ≤ 0.188 Ω/m</td>
</tr>
<tr>
<td><strong>HPoE</strong></td>
<td>HPoE</td>
<td></td>
</tr>
</tbody>
</table>

Power Supply
Use the screwdriver to connect each line (+, -) of the power cable to the corresponding power port of the camera.

- Adapter with DC 12V 4A higher is recommended.
- We recommend using HPoE injectors for powering the unit.
- Do not use DC power and HPoE injector at the same time.
- Be careful not to reverse the polarity when you connect the power cable.
- If you want to connect an external device, you must turn off the external device before proceeding.

Power Cable Specification
DC 12V input:

<table>
<thead>
<tr>
<th>Item</th>
<th>Wire Type (AWG)</th>
<th>#14</th>
<th>#16</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cable Length (Max.)</strong></td>
<td>14m</td>
<td></td>
<td>9m</td>
</tr>
</tbody>
</table>

Ethernet Connection
Connect the Ethernet cable to the local network or to the Internet.
Connecting to Audio Input/Output

1. Connect the AUDIO IN port of the camera with the microphone or LINE OUT port of the amplifier that the microphone is connected to.
2. Connect the AUDIO OUT port of the camera with the speaker or LINE IN port of the amplifier that the speaker is connected to.
3. Check the specifications for audio input.

• Audio Codec
  - Audio In : G.711 PCM (Bit Rate: 64kbps / Sampling Frequency: 8kHz), G.726 ADPCM (Bit Rate: 16Kbps, 24Kbps, 32Kbps, 40Kbps / Sampling Frequency: 8kHz), AAC (Bit Rate: 48Kbps / Sampling Frequency: 16kHz)
  - Audio Out : G.711 PCM (Bit Rate: 64kbps / Sampling Frequency: 8kHz)

• Full duplex Audio
  • Audio in : Selectable (microphone/Line-in), Supported voltage: 2.5VDC (4mA), Input impedance: 2K Ohm
  • Audio out : Line-out (3.5mm mono jack), Maximum output: 1Vrms
  • Line out impedance : 600Ω

In the case you access the web viewer and select an external microphone as the audio input sources in <Video & Audio> - <Audio setup>, the following specifications are recommended:
  - Frequency range: 40-16,000 Hz
  - Impedance: 1,500 Ω
  - Sensitivity: -40±3 dB (7.1-14.1 mV)
Connecting to the I/O port box

Connect the Alarm I/O cable to the corresponding port of the port box.

- **ALARM-IN**: Used to connect the alarm input sensor or external day/night sensor.
- **ALARM-OUT**: Used to connect the alarm output signal.
- **GND**: Common port for alarm in/output signal.

⚠️ If devices (e.g., flashing light and siren) that exceed the voltage and current specifications are connected by using the open collector method, it may cause malfunction. Refer to the “Alarm Out Wiring Diagram” when connecting devices that exceed the voltage and current specifications.

To connect the external sensor

Connect one strand of each signal line (2-strand) of the sensors to the [ALARM IN] port, and connect the other strand to the [GND] port.

![Alarm In Wiring Diagram](image)

To connect the alarm out

If devices (e.g., flashing light and siren) that exceed the voltage and current specifications are connected by using the open collector method, it may cause malfunction. Refer to the alarm out connection diagram below when connecting devices that exceed the voltage and current specifications.

⚠️ N.C. (Normal Close) method is not supported.

![Alarm Out Wiring Diagram](image)
You can set up the network settings according to your network configurations.

**CONNECTING THE CAMERA DIRECTLY TO LOCAL AREA NETWORKING**

Connecting to the camera from a local PC in the LAN

1. Launch an Internet browser on the local PC.
2. Enter the IP address of the camera in the address bar of the browser.

<Local Network>

- A remote PC in an external Internet out of the LAN network may not be able to connect to the camera installed in the intranet if the port-forwarding is not properly set or a firewall is set. In this case, to resolve the problem, contact your network administrator.
- By factory default, the IP address will be assigned from the DHCP server automatically. If there is no DHCP server available, the IP address will be set to 192.168.1.100. To change the IP address, use the Device Manager. For further details on Device Manager use, refer to "Using Device Manager". (Page 20)

**CONNECTING THE CAMERA DIRECTLY TO A DHCP BASED DSL/CABLE MODEM**

1. Connect the user PC directly with the network camera.
2. Run the Device Manager and change the IP address of the camera so that you can use the web browser on your desktop to connect to the Internet.
3. Use the Internet browser to connect to the web viewer.
6. Move to [Basic] – [IP & Port], and set the IP type to [DHCP].
7. Connect the camera, which was removed from your PC, directly to the modem.
8. Restart the camera.

- For information on how to set DDNS, refer to the online help of Web Viewer.
- For information on how to set the IP format, refer to the online help of Web Viewer.
network connection and setup

USING DEVICE MANAGER

- Device manager program can be downloaded from <Technical Guides>-<Online Tool> menu at Hanwha Techwin website (http://www.hanwha-security.com).
- More instructions of Device Manager can be found at <Help> menu of the main page.

AUTOMATICALLY SEARCHING CAMERA

If a camera is connected to the same network of the PC where device manager is installed, you can find network camera by using search function.

1. Click <Search> at the main page of device manager.
2. Check the camera from the list.
   - Check MAC address at the sticker attached to the camera.

CONFIGURING IP ADDRESS

If you want to change camera network setting, <Login OK> sign must be displayed at <Status>. Click <Authentication> at the main page to log in.

Configuring Static IP

Manually insert and configure IP address & port information.

1. Click the camera from the list that you want to change the IP setting.
2. Click <IP Assign> at the main page of device manager.
3. Select <Assign the following IP address>.
   - IP information of the camera will be displayed as previously set.
4. Fill in IP & Port related categories.

If not using a Broadband Router

For setting <IP Address>, <Subnet Mask>, and <Gateway>, contact your network administrator.
- HTTP Port: Used to access the camera using the Internet browser, default to 80.
- RTSP Port: A port that controls real-time streaming. The initial value is 554.

If using a Broadband Router

- IP Address: Enter an address falling in the IP range provided by the Broadband Router.
  - ex) 192.168.1.2~254, 192.168.0.2~254, 192.168.XXX.2~254
- Subnet Mask: The <Subnet Mask> of the Broadband Router will be the <Subnet Mask> of the camera.
- Gateway: The <Local IP Address> of the Broadband Router will be the <Gateway> of the camera.

   - The settings may differ depending on the connected Broadband Router model.
   - For more information, refer to the user manual of the applicable router.
   - For more information about port forwarding of the broadband router, refer to “Port Range Forward (Port Mapping) Setup”. (Page 22)

If the Broadband Router has more than one camera connected

Configure the IP related settings and the Port related settings distinctly with each other.

<table>
<thead>
<tr>
<th>Category</th>
<th>Camera #1</th>
<th>Camera #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP related settings</td>
<td>192.168.1.100</td>
<td>192.168.1.101</td>
</tr>
<tr>
<td></td>
<td>255.255.255.0</td>
<td>255.255.255.0</td>
</tr>
<tr>
<td></td>
<td>192.168.1.1</td>
<td>192.168.1.1</td>
</tr>
<tr>
<td>Port related settings</td>
<td>HTTP Port: 8080</td>
<td>HTTP Port: 8081</td>
</tr>
<tr>
<td></td>
<td>RTSP Port: 554</td>
<td>RTSP Port: 555</td>
</tr>
</tbody>
</table>

   - If the <HTTP Port> is set other than 80, you must provide the <Port> number in the address bar of the Internet browser before you can access the camera.

5. Click [Apply] Button.
6. If the success message is displayed, click [OK].
Configuring Dynamic IP

Receive IP address from DHCP

- Example of the Dynamic IP environment
  - If a Broadband Router, with cameras connected, is assigned an IP address by the DHCP server
  - If connecting the camera directly to modem using the DHCP protocols
  - If IPs are assigned by the internal DHCP server via the LAN

1. Click the camera from the list that you want to change the IP setting.
2. Click <IP Assign> at the main page of device manager.
3. Select <Obtain an IP address automatically (DHCP)>.
4. Click [Apply] button.
5. If the success message is displayed, click [OK].

MANUALLY REGISTERING CAMERA

If the camera cannot be found using search function, the camera can be registered remotely by manually inserting IP information, if the camera is connected to external network.

1. Click <Add Devices> - <Manually Add Device> at the main page of device manager.
2. Insert the range of IP address that you search.
3. Select the <Model Name> of the camera that you register, and insert HTTP port, ID, and password.
4. Click [Register] button.
5. Check if camera is registered.
   - Check MAC address at the sticker attached to the camera.

AUTOMATICALLY CONFIGURING IP

1. Click the camera from the list that you want to automatically configure the IP.
2. Click < > at the main page of device manager.
   - Equipment Setting menu appears.
3. At the menu, click <Auto IP Configure>.
4. Click [Close] button.
PORT RANGE FORWARD (PORT MAPPING) SETUP

If you have installed a Broadband Router with a camera connected, you must set the port range forwarding on the Broadband Router so that a remote PC can access the camera in it.

Manual Port Range Forwarding

1. From the Setup menu of the Broadband Router, select <Applications & Gaming> - <Port Range Forward>. For setting the port range forward for a third-party Broadband Router, refer to the user guide of that Broadband Router.

2. Select <TCP> and <UDP Port> for each connected camera to the Broadband Router. The number of each port to be configured to the IP router should be set according to the port number designated in <Setup> - <Basic> - <IP & Port> on the camera web viewer.

3. When done, click [Save Settings]. Your settings will be saved.

Setting up Port Range Forward for several network cameras

- You can set a rule of Port Forwarding on the Broadband Router device through its configuration web page.
- A user can change each port using the camera setting screen.

When Camera1 and Camera2 are connected to a router:

<table>
<thead>
<tr>
<th>Start</th>
<th>End</th>
<th>Protocol</th>
<th>IP Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>3000</td>
<td>3000</td>
<td>TCP/UDP</td>
<td>192.168.1.100</td>
</tr>
<tr>
<td>3001</td>
<td>3001</td>
<td>TCP/UDP</td>
<td>192.168.1.101</td>
</tr>
<tr>
<td>8080</td>
<td>8080</td>
<td>TCP/UDP</td>
<td>192.168.1.100</td>
</tr>
<tr>
<td>8081</td>
<td>8081</td>
<td>TCP/UDP</td>
<td>192.168.1.101</td>
</tr>
</tbody>
</table>

- Port forwarding setting is an example of setting CISCO IP router.
- The settings may differ depending on the connected Broadband Router model. For more information, refer to the user manual of the applicable router.

- Port forwarding can be done without additional router setup if the router supports the UPnP (Universal Plug and Play) function. After connecting the network camera, select the checkbox from the menu <Quick connect> in <Wisenet DDNS> in "Settings -> Network -> DDNS".
CONNECTING TO THE CAMERA FROM A SHARED LOCAL PC

1. Run device manager.
   It will scan for connected cameras and display them as a list.
2. Double-click a camera to access.
   The Internet browser starts and connects to the camera.

   Access to the camera can also be gained by typing the camera’s IP address in the address bar of the Internet browser.

CONNECTING TO THE CAMERA FROM A REMOTE PC VIA THE INTERNET

On a remote computer that is not in the Broadband Router’s network cluster is not allowed, users can access cameras within a Broadband Router’s network by using the camera’s DDNS URL.

1. Before you can access a camera in the Broadband Router network, you should have set the port range forward for the Broadband Router.
2. From the remote PC, launch the Internet browser and type the DDNS URL address of the camera, or the IP address of the Broadband Router in the address bar.
   ex) http://ddns.hanwha-security.com/ID

   To use Wisenet DDNS, sign up at the Wisenet DDNS homepage (http://ddns.hanwha-security.com) and register the product at [My DDNS] > [Register Product].
CONNECTION TO THE CAMERA

Normally, you would
1. Launch the Internet browser.
2. Type the IP address of the camera in the address bar.
   ex) IP address (IPv4) : 192.168.1.100 → http://192.168.1.100
   - the Login dialog should appear.

If the HTTP port is other than 80
1. Launch the Internet browser.
2. Type the IP address and HTTP port number of the camera in the address bar.
   ex) IP address : 192.168.1.100:HTTP Port number(8080)

Using URL
1. Launch the Internet browser.
2. Type the DDNS URL of the camera in the address bar.
   ex) URL address : http://ddns.hanwha-security.com/ID
   - the Login dialog should appear.

To check the DDNS address
If the camera is connected directly to a DHCP-based cable modem or DSL modem, the IP address will change each time it tries to connect to the ISP (the company you subscribed to).
If this is the case, you will not be informed of the IP address changed by DDNS.

Once you register a dynamic IP-based device with the DDNS server, you can easily check the changed IP when you try to access the device.
To register your device to the <DDNS> server, visit http://ddns.hanwha-security.com and register your device first, and then set the Web Viewer’s <Network> - <DDNS> to <Wisenet DDNS>, as well as providing <Product ID> that had been used for DDNS registration.

Connecting via UPnP
1. Run the client or operating system in support of the UPnP protocol.
2. Click the camera name for search.
   In the Windows operating system, click the camera name searched from the network menu.
   - The login window is displayed.
**PASSWORD SETTING**

When you access the product for the first time, you must register the login password.

- For a new password with 8 to 9 digits, you must use at least 3 of the following: uppercase/lowercase letters, numbers and special characters. For a password with 10 to 15 digits, you must use at least 2 types of those mentioned.
  - Special characters that are allowed: ~`!@#$%^*()_-+=|{}[].?/
- For higher security, you are not recommended to repeat the same characters or consecutive keyboard inputs for your passwords.
- If you lost your password, you can press the [RESET] button to initialize the product. So, don’t lose your password by using a memo pad or memorizing it.

**LOGIN**

Whenever you access the camera, the login window appears. Enter the User ID and password to access the camera.

1. Enter “admin” in the <User name> input box. The administrator ID, “admin”, is fixed and can not be changed.
2. Enter the password in the <Password> input field.
3. Click [OK].

- When you access the camera web viewer, pay special attention to the security by checking whether the image data is encrypted.
- If you check the “Remember my credentials” option when your input is done, in future you will be logged in automatically without being prompted to enter the login information.
- You will experience the best video quality if the screen size is 100%. Reducing the ratio may cut the image on the borders.

**CAMERA WEB VIEWER SETUP**

1. Click the [Setup ( )] icon.
2. The Settings window appears.
3. You can configure settings for the camera’s basic information, video, audio, network, event, analysis, and system over the network.
4. Click <Help ( )>: view detailed descriptions of each function.
## SPECIFICATION

<table>
<thead>
<tr>
<th>Items</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Imaging Device</strong></td>
<td>PNM-9084RQZ: 1/2.8” 2MP CMOS: each CH</td>
</tr>
<tr>
<td></td>
<td>PNM-9085RQZ: 1/1.8” 5MP CMOS: each CH</td>
</tr>
<tr>
<td><strong>Effective Pixels</strong></td>
<td>1945(H) x 1097(V): each CH</td>
</tr>
<tr>
<td></td>
<td>2616(H)x1976(V): each CH</td>
</tr>
<tr>
<td><strong>Min. Illumination</strong></td>
<td>Color: 0.05 lux (F1.6, 30 IRE)</td>
</tr>
<tr>
<td></td>
<td>BW: 0 Lux (IR LED on)</td>
</tr>
<tr>
<td></td>
<td>Color: 0.11 lux (F1.6, 30 IRE)</td>
</tr>
<tr>
<td></td>
<td>BW: 0 Lux (IR LED on)</td>
</tr>
<tr>
<td><strong>Focal Length</strong></td>
<td>3.2~10mm (3.1x) motorized varifocal</td>
</tr>
<tr>
<td></td>
<td>4.13~9.4 mm(2.3x) motorized varifocal</td>
</tr>
<tr>
<td><strong>Max. Aperture Ratio</strong></td>
<td>H: F1.6 (Wide) – F2.9 (Tele)</td>
</tr>
<tr>
<td></td>
<td>F1.92 (Wide) – F2.67 (Tele)</td>
</tr>
<tr>
<td><strong>Angular Field of View</strong></td>
<td>H: 109.0° (Wide) – 33.2° (Tele)</td>
</tr>
<tr>
<td></td>
<td>V: 57.4° (Wide) – 18.7° (Tele)</td>
</tr>
<tr>
<td></td>
<td>D: 132.0° (Wide) – 36.0° (Tele)</td>
</tr>
<tr>
<td><strong>Min. Object Distance</strong></td>
<td>0.5 m (1.64 ft)</td>
</tr>
<tr>
<td></td>
<td>1.2 m (3.94 ft)</td>
</tr>
<tr>
<td><strong>Lens Type</strong></td>
<td>DC Auto Iris</td>
</tr>
<tr>
<td><strong>Pan / Tilt / Rotate</strong></td>
<td>Remote adjustment (Max. 200cycles)</td>
</tr>
<tr>
<td></td>
<td>Pan : 0<del>360°, Tilt : 30</del>90°, Rotate : 0~90°</td>
</tr>
<tr>
<td><strong>Operational</strong></td>
<td>Remote adjustment (Max. 200cycles)</td>
</tr>
<tr>
<td></td>
<td>Pan : 0<del>360°, Tilt : 35</del>90°, Rotate : 0~90°</td>
</tr>
<tr>
<td><strong>IR Viewable Length</strong></td>
<td>Max. 30 m</td>
</tr>
<tr>
<td><strong>Camera Title</strong></td>
<td>Displayed up to 85 characters</td>
</tr>
<tr>
<td><strong>Day &amp; Night</strong></td>
<td>Auto(ICR)</td>
</tr>
<tr>
<td><strong>Backlight Compensation</strong></td>
<td>BLC, HLC, WDR, SSDR</td>
</tr>
<tr>
<td><strong>Wide Dynamic Range</strong></td>
<td>120dB</td>
</tr>
<tr>
<td><strong>Digital Noise Reduction</strong></td>
<td>SSNRIST</td>
</tr>
<tr>
<td><strong>Digital Image Stabilization</strong></td>
<td>Support</td>
</tr>
<tr>
<td><strong>Defog</strong></td>
<td>Support</td>
</tr>
<tr>
<td><strong>Motion Detection</strong></td>
<td>8ea, 8point polygonal zones</td>
</tr>
<tr>
<td><strong>Privacy Masking</strong></td>
<td>32ea, polygonal zones</td>
</tr>
<tr>
<td></td>
<td>- Color: Gray, Green, Red, Blue, Black, White</td>
</tr>
<tr>
<td></td>
<td>- Mosaic</td>
</tr>
<tr>
<td><strong>Gain Control</strong></td>
<td>Low / Middle / High</td>
</tr>
<tr>
<td><strong>White Balance</strong></td>
<td>ATW / AWC / Manual / Indoor / Outdoor</td>
</tr>
<tr>
<td><strong>LDC</strong></td>
<td>Support</td>
</tr>
<tr>
<td><strong>Electronic Shutter Speed</strong></td>
<td>Minimum / Maximum / Anti-flicker (2~1/12,000sec)</td>
</tr>
<tr>
<td><strong>Video Rotation</strong></td>
<td>Flip, Mirror, Halfway view(90°/270°)</td>
</tr>
<tr>
<td><strong>Analytics</strong></td>
<td>Defocus detection, Directional detection, Fog detection, Face detection, Motion detection, Appear/Disappear, Enter/Exit, Loitering, Tampering, Virtual line, Audio detection</td>
</tr>
<tr>
<td><strong>Alarm I/O</strong></td>
<td>Input 1ea / Output 1ea</td>
</tr>
<tr>
<td><strong>Alarm Triggers</strong></td>
<td>Analytics, Network disconnect, Alarm input</td>
</tr>
<tr>
<td><strong>Alarm events</strong></td>
<td>- File upload via FTP and e-mail</td>
</tr>
<tr>
<td></td>
<td>- Notification via e-mail</td>
</tr>
<tr>
<td></td>
<td>- SD/SDHC/SDXC recording at event triggers</td>
</tr>
<tr>
<td></td>
<td>- Alarm output</td>
</tr>
<tr>
<td></td>
<td>- Handover</td>
</tr>
<tr>
<td><strong>Audio In</strong></td>
<td>Selectable(mic in/line in)</td>
</tr>
<tr>
<td></td>
<td>Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm</td>
</tr>
<tr>
<td><strong>Audio Out</strong></td>
<td>Line out, Max.output level: 1Vrms</td>
</tr>
<tr>
<td><strong>Ethernet</strong></td>
<td>RJ-45 (10/100/1000BASE-T)</td>
</tr>
<tr>
<td><strong>Video Compression Format</strong></td>
<td>H.265/H.264: Main/Baseline/High, MJPEG</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td>1920x1080, 1280x1024, 1280x960, 1280x720, 720x576, 720x480, 640x480, 640x360, 320x240</td>
</tr>
<tr>
<td></td>
<td>2560x1920, 2560x1440, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 720x576, 720x480, 640x480, 640x360, 320x240</td>
</tr>
<tr>
<td><strong>Max. Framerate</strong></td>
<td>H.265/H.264: Max. 60 fps/50 fps (60 Hz/50 Hz)</td>
</tr>
<tr>
<td></td>
<td>MJPEG: Max. 30 fps/25 fps (60 Hz/50 Hz)</td>
</tr>
<tr>
<td><strong>Smart Codec</strong></td>
<td>Manual(Sea area), WiseStream II</td>
</tr>
<tr>
<td>Items</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Network</strong></td>
<td></td>
</tr>
<tr>
<td>Bitrate Control</td>
<td>H.264/H.265 : CBR or VBR</td>
</tr>
<tr>
<td></td>
<td>Motion JPEG : VBR</td>
</tr>
<tr>
<td>Streaming</td>
<td>Unicast(20 users) / Multicast</td>
</tr>
<tr>
<td></td>
<td>Multiple streaming(Upto to 10 profiles)</td>
</tr>
<tr>
<td>Audio Compression</td>
<td>G.711 u-law / G.726 Selectable</td>
</tr>
<tr>
<td></td>
<td>G.726(ADPCM) 8KHz, G.711 8KHz</td>
</tr>
<tr>
<td></td>
<td>G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps</td>
</tr>
<tr>
<td></td>
<td>AAC-LC: 48Kbps at 16KHz</td>
</tr>
<tr>
<td>Protocol</td>
<td>IPv4, IPv6, TCP/IP, UDP/IP, RTP/UDP, RTCP/TCP, NTP, HTTP, HTTPS, SSL/TLS,</td>
</tr>
<tr>
<td></td>
<td>DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DONS, CoS,</td>
</tr>
<tr>
<td></td>
<td>PIM-SM, UPnP, Bonjour, LLDP</td>
</tr>
<tr>
<td>Security</td>
<td>HTTPS(SSL) Login Authentication</td>
</tr>
<tr>
<td></td>
<td>Digest Login Authentication</td>
</tr>
<tr>
<td></td>
<td>IP Address Filtering</td>
</tr>
<tr>
<td></td>
<td>User access Log</td>
</tr>
<tr>
<td></td>
<td>802.1x Authentication(EAP-TLS, EAP-LEAP)</td>
</tr>
<tr>
<td>Edge Storage</td>
<td>Micro SD/SDHC/SDXC 4slot 256GB (Each CH)</td>
</tr>
<tr>
<td>Application Programming Interface</td>
<td>ONVIF Profile S/T</td>
</tr>
<tr>
<td></td>
<td>SUNAPI(HTTP API)</td>
</tr>
<tr>
<td>Web Viewer</td>
<td>Supported OS: Windows 7, 8.1, 10, Mac OS X 10.13</td>
</tr>
<tr>
<td></td>
<td>Recommended Browser: Google Chrome</td>
</tr>
</tbody>
</table>
|                       | Supported Browser: MS Explorer11, MS Edge, Mozilla Firefox(Windows 64bit only),
|                       | Apple Safari(Mac OS X only)                                                |
| Memory                | 5 GB RAM, 1280 MB Flash                                                    |

<table>
<thead>
<tr>
<th>Items</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental</strong></td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°C ~ +55°C (-40°F ~ +131°F) / Less than 90% RH</td>
</tr>
<tr>
<td>Humidity</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-50°C ~ +60°C (-58°F ~ +140°F) / Less than 90% RH</td>
</tr>
<tr>
<td>Humidity</td>
<td></td>
</tr>
<tr>
<td>Certification</td>
<td>IP66, IK10, NEMA4X</td>
</tr>
<tr>
<td><strong>Electrical</strong></td>
<td></td>
</tr>
<tr>
<td>Input Voltage</td>
<td>IP66, IK10, NEMA4X</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>PoE: Max. 42 W, Typical 30 W</td>
</tr>
<tr>
<td></td>
<td>12VDC: Max. 38 W, Typical 28.2 W</td>
</tr>
<tr>
<td></td>
<td>PoE: Max. 45 W, Typical 33.7 W</td>
</tr>
<tr>
<td></td>
<td>12VDC: Max. 42 W, Typical 32 W</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td></td>
</tr>
<tr>
<td>Color / Material</td>
<td>White / Aluminum</td>
</tr>
<tr>
<td>RAL Code</td>
<td>RAL9003</td>
</tr>
<tr>
<td>Product dimensions / weight</td>
<td>Ø 315 x 145.9 mm (12.40” x 5.74”) / 5.2 kg (11.5 lb)</td>
</tr>
</tbody>
</table>
PRODUCT OVERVIEW

PNM-9084RQZ/PNM-9085RQZ

Unit : mm [inch]

145.9 [5.74"]

Ø 315 [12.40"]
# TROUBLESHOOTING

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>SOLUTION</th>
</tr>
</thead>
</table>
| **No video is displayed when accessing the plug-in free webviewer on Safari via HTTPS.** | - On the authentication popup window prompted when initially accessing https, click "View Authentication Certificate" and select the "Always trust when connecting to the designated webviewer IP" check box.  
- If the webviewer continues failing to display a video after you select "Next" on the message window below, press the command key + Q to exit the Safari browser, access again and follow the procedures stated above. |
| **I can’t access the camera from a web browser.** | - Check to make sure that the camera’s Network settings are appropriate.  
- Check to make sure that all network cables have been connected properly.  
- If connected using DHCP, verify that the camera is able to acquire dynamic IP addresses without any problem.  
- If the camera is connected to a Broadband Router, verify that port forwarding is properly configured. |
| **Viewer got disconnected during monitoring.** | - Connected Viewers become disconnected upon any change to camera or network configurations.  
- Check all network connections. |
| **The camera connected to the network is not detected in the Device Manager program.** | - Turn off the firewall settings on your PC and then search the camera again. |

## PROBLEM SOLUTION

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Images overlap.</td>
<td>- Check whether two or more cameras are set to a single multicast address instead of different addresses. If a single address is used for multiple cameras, the images may overlap.</td>
</tr>
</tbody>
</table>
| No image appears. | - If the transmission method is set to multicast, check whether there is a router that supports multicast in the LAN the camera is connected to.  
- Check whether the lens module is operating normally. |
| <Motion detection> of <Analytics> is set to <Enable>, but no notification e-mail reaches me even when an analysis event had occurred. | - Verify the settings in the following sequence:  
  A. Check <Data & Time> settings.  
  B. The <Motion detection> should be set to <Enable>.  
  C. Check if the <E-mail> option of <Event setup> menu is checked to use. |
| Cannot record into the Micro SD memory card. | - Check if the memory card is defective. |
| Micro SD memory card is inserted but the camera does not operate properly. | - Check if the memory card is inserted in the proper direction. Operation of memory card that is formatted by other devices is not guaranteed with this camera unit  
- Format the memory card again in <Setup> → <Event> → <Storage> menu. |
| No video is displayed when accessing the plug-in free webviewer on Safari via HTTPS. | - On the authentication popup window prompted when initially accessing https, click "View Authentication Certificate" and select the "Always trust when connecting to the designated webviewer IP" check box.  
- If the webviewer continues failing to display a video after you select "Next" on the message window below, press the command key + Q to exit the Safari browser, access again and follow the procedures stated above. |
| No image appears. | - If the transmission method is set to multicast, check whether there is a router that supports multicast in the LAN the camera is connected to.  
- Check whether the lens module is operating normally. |
| <Motion detection> of <Analytics> is set to <Enable>, but no notification e-mail reaches me even when an analysis event had occurred. | - Verify the settings in the following sequence:  
  A. Check <Data & Time> settings.  
  B. The <Motion detection> should be set to <Enable>.  
  C. Check if the <E-mail> option of <Event setup> menu is checked to use. |
| Cannot record into the Micro SD memory card. | - Check if the memory card is defective. |
| Micro SD memory card is inserted but the camera does not operate properly. | - Check if the memory card is inserted in the proper direction. Operation of memory card that is formatted by other devices is not guaranteed with this camera unit  
- Format the memory card again in <Setup> → <Event> → <Storage> menu. |
## OPEN SOURCE ANNOUNCEMENT

### GPL/LGPL software license

The software included in this product contains copyrighted software that is licensed under the GPL/LGPL. You may obtain the complete Corresponding Source code from us for a period of three years after our last shipment of this product by sending email to help@roaringpenguin.com.

If you want to obtain the complete Corresponding Source code in the physical medium such as CD-ROM, the cost of physically performing source distribution might be charged.

### GPL SW

<table>
<thead>
<tr>
<th>Component Name</th>
<th>License</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Kernel</td>
<td>GPL 2.0</td>
<td><a href="http://www.busybox.net/downloads/patches/">http://www.busybox.net/downloads/patches/</a></td>
</tr>
<tr>
<td>Busybox</td>
<td>GPL 2.0</td>
<td><a href="http://ftp.netfilter.org/pub/iptables/">http://ftp.netfilter.org/pub/iptables/</a></td>
</tr>
<tr>
<td>iproute2-4.3.0</td>
<td>GPL 2.0</td>
<td><a href="http://ftp.netfilter.org/pub/iptables/">http://ftp.netfilter.org/pub/iptables/</a></td>
</tr>
<tr>
<td>iptables-1.4.21</td>
<td>GPL 2.0</td>
<td><a href="http://ftp.netfilter.org/pub/iptables/">http://ftp.netfilter.org/pub/iptables/</a></td>
</tr>
<tr>
<td>ehttool-4.2</td>
<td>GPL 2.0</td>
<td>ftp://ftp.infradead.org/pub/mtd-utils/</td>
</tr>
<tr>
<td>mtd-1.5.2</td>
<td>GPL 2.0</td>
<td><a href="http://ftp.infradead.org/pub/mtd-utils/">http://ftp.infradead.org/pub/mtd-utils/</a></td>
</tr>
<tr>
<td>mii-dag-0.11</td>
<td>GPL 2.0</td>
<td><a href="http://www.roaringpenguin.com/pppoe/">http://www.roaringpenguin.com/pppoe/</a></td>
</tr>
<tr>
<td>rp-pppoe-3.11</td>
<td>GPL 2.0</td>
<td><a href="http://www.roaringpenguin.com/pppoe/">http://www.roaringpenguin.com/pppoe/</a></td>
</tr>
<tr>
<td>wpa_supplicant-2.5</td>
<td>GPL 2.0</td>
<td><a href="http://www.roaringpenguin.com/pppoe/">http://www.roaringpenguin.com/pppoe/</a></td>
</tr>
<tr>
<td>bash-4.2.30</td>
<td>GPL 2.0</td>
<td><a href="http://www.busybox.net/downloads/patches/">http://www.busybox.net/downloads/patches/</a></td>
</tr>
<tr>
<td>zerocnf</td>
<td>GPL 2.0</td>
<td><a href="http://www.busybox.net/downloads/patches/">http://www.busybox.net/downloads/patches/</a></td>
</tr>
</tbody>
</table>

### LGPL SW

<table>
<thead>
<tr>
<th>Component Name</th>
<th>License</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>glibc</td>
<td>LGPL 2.0</td>
<td><a href="http://www.webdav.org/neon/">http://www.webdav.org/neon/</a></td>
</tr>
<tr>
<td>Inutils</td>
<td>LGPL 2.0</td>
<td><a href="http://www.webdav.org/neon/">http://www.webdav.org/neon/</a></td>
</tr>
<tr>
<td>neon-0.29.6</td>
<td>LGPL 2.0</td>
<td><a href="http://www.webdav.org/neon/">http://www.webdav.org/neon/</a></td>
</tr>
</tbody>
</table>

### LGPL SW

<table>
<thead>
<tr>
<th>Component Name</th>
<th>License</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>glibc</td>
<td>LGPL 2.0</td>
<td><a href="http://www.webdav.org/neon/">http://www.webdav.org/neon/</a></td>
</tr>
<tr>
<td>Inutils</td>
<td>LGPL 2.0</td>
<td><a href="http://www.webdav.org/neon/">http://www.webdav.org/neon/</a></td>
</tr>
<tr>
<td>neon-0.29.6</td>
<td>LGPL 2.0</td>
<td><a href="http://www.webdav.org/neon/">http://www.webdav.org/neon/</a></td>
</tr>
</tbody>
</table>

## GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc. 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

### Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software-- to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation’s software and to any other program whose authors commit to using it. Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead. You can apply it to your programs, too. When we speak of free software, we are referring to freedom, not price. So our licenses refer to copyright rather than to price. We call copyright "free" if it meets three conditions: it is writeable, you may copy and distribute source code just as you receive it, you may change and improve it, and you may pass it on to recipients in these ways.

You can apply these permissions in all situations. The Act of running the Program is not restricted, but the output from the Program(ies) is covered only if its contents constitute a work based on the Program (in independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works.)

### TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

#### B. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License.

The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation includes but is not limited to translation into another language.)

You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modified works, whether verbatim or with modifications and/or translated into another language.

You may copy and distribute in object code or executable form under the terms of Sections 1 and 2 above provided that you also meet all of these conditions:

1. You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
2. You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.
3. You may not impose any restriction on the modified version that is otherwise beyond what is permitted by this License including to ensure ultimate Operability of the modified version.
4. You may distribute the modified version at a price.
5. You must cause the corresponding source code to be freely available for all its modified versions under the same terms, and must fathom the corresponding source code with any redistributed modified executables.

### CONCLUSION

The GNU General Public License is a free, copyleft license designed for free software and applied to most of the Free Software Foundation’s software projects. It can be used for both free and noncommercial nonfree projects.

**Open Source License**

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA.
components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program— to make it free software for all its users. We, the Free Software Foundation, GNU General Public License for most of our software; it applies also to any other work released this way by its authors.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software for fear of patent suits. In many countries worldwide, the specific laws are currently being negotiated. We believe that the GNU General Public License Address these problems. It is designed to make software free for all its users.

The GNU General Public License is a free, copyleft license for software and other kinds of works. The licenses for most software and other practical works are designed to be broad, taking account of the need for efficient cooperation among present and future developers, users, and distributors. Interactive mode:

You are welcome to redistribute it under certain conditions; type 'show c' for details.

These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you accept its terms.

If you distribute or modify the Program in whole or in part, this License gives you no right to call it “GNU General Public License”, “GNU GPL”, “GPL”, “Free Software Foundation” or any similar name.

This License is a copyleft version of the GNU General Public License that applies to any interactive user interface that displays copyrighted material; it was designed to make an interactive user interface such an interface.

If you distribute or modify the Program in whole or in part,

You may make a reference to the copyright statement from the library without permission, provided that you indicate the location where the original statement is found.

In addition to the GNU Lesser General Public License, there are also the GNU Library General Public License (LGPL), which also provides a copyleft protection for free software libraries, and the GPL itself, which is a copyleft license for whole programs.

You may also add a copyright statement and/or license notice to the program as a whole, or to files or portions of it.

You may apply it to your programs, too. When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program— to make it free software for all its users.

The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns. Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and “any later version”, you have the option of following the terms and conditions of either that earlier version of this License or (if earlier) such other Published version of the License as the Free Software Foundation may publish. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

You may add a copyright statement and/or license notice to the program as a whole, or to files or portions of it.

You may make a reference to the copyright statement from the library without permission, provided that you indicate the location where the original statement is found.

The results work is called a "modified version" of the earlier work or a "work based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

"Propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy.

"Propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample ; alter the names:

You may also add a copyright statement and/or license notice to the program as a whole, or to files or portions of it.

You may make a reference to the copyright statement from the library without permission, provided that you indicate the location where the original statement is found.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

"Proponents" mean entities working in the public domain, in your work, or by other means.

You must also make all relevant source files available to the general public, either for free redistribution as part of the modified work or for free downloading from a transparent open source repository, under terms no more restrictive than this License. This means that the source code must be made available in a form that allows responsible parties to modify and re-distribute the source publicly.

These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you accept its terms.

You are welcome to redistribute it under certain conditions; type 'show c' for details.

You may also add a copyright statement and/or license notice to the program as a whole, or to files or portions of it.

You may make a reference to the copyright statement from the library without permission, provided that you indicate the location where the original statement is found.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample ; alter the names:

You may also add a copyright statement and/or license notice to the program as a whole, or to files or portions of it.

You may make a reference to the copyright statement from the library without permission, provided that you indicate the location where the original statement is found.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample ; alter the names:

You may also add a copyright statement and/or license notice to the program as a whole, or to files or portions of it.

You may make a reference to the copyright statement from the library without permission, provided that you indicate the location where the original statement is found.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample ; alter the names:

You may also add a copyright statement and/or license notice to the program as a whole, or to files or portions of it.

You may make a reference to the copyright statement from the library without permission, provided that you indicate the location where the original statement is found.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample ; alter the names:

You may also add a copyright statement and/or license notice to the program as a whole, or to files or portions of it.

You may make a reference to the copyright statement from the library without permission, provided that you indicate the location where the original statement is found.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample ; alter the names:

You may also add a copyright statement and/or license notice to the program as a whole, or to files or portions of it.

You may make a reference to the copyright statement from the library without permission, provided that you indicate the location where the original statement is found.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample ; alter the names:

You may also add a copyright statement and/or license notice to the program as a whole, or to files or portions of it.

You may make a reference to the copyright statement from the library without permission, provided that you indicate the location where the original statement is found.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample ; alter the names:
2. Basic Permissions. All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified work, and the work with any changes made under it (which is the combined work, the modification, and the unmodified work) and to make, use, modify, run, copy, distribute, and propagate the modified work in any way you choose. You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or to provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright; thereby making sure that others may use the work for the same purposes to which you convey it. Conveying the work means any means of making the work or any derivative work accessible to a third party for the purpose of use (or collection of a patent royalty). Under this License, convey means to deliver the work or a modified version; convey the object code means to transfer the work, or access to and use the work as a value in something else. Any other conveyance of rights of ownership or extension of rights of ownership provided by law is in addition to, and not in lieu of, patent rights granted under this License. You may make, run and propagate covered works that you do not convey, without conditions so long as conditions imposed by law, if any, your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or to provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright; thereby making sure that others may use the work for the same purposes to which you convey it. Conveying the work means any means of making the work or any derivative work accessible to a third party for the purpose of use (or collection of a patent royalty). Under this License, convey means to deliver the work or a modified version; convey the object code means to transfer the work, or access to and use the work as a value in something else. Any other conveyance of rights of ownership or extension of rights of ownership provided by law is in addition to, and not in lieu of, patent rights granted under this License. You may make, run and propagate covered works that you do not convey, without conditions so long as conditions imposed by law, if any, your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or to provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright; thereby making sure that others may use the work for the same purposes to which you convey it. Conveying the work means any means of making the work or any derivative work accessible to a third party for the purpose of use (or collection of a patent royalty). Under this License, convey means to deliver the work or a modified version; convey the object code means to transfer the work, or access to and use the work as a value in something else. Any other conveyance of rights of ownership or extension of rights of ownership provided by law is in addition to, and not in lieu of, patent rights granted under this License.

3. Protecting Users' Legal Rights From Anti-Circumvention Law. No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WPO copyright treaty adopted on December 20, 1996, and as a consequence thereof taking available means. The work as such is not prohibited by this License to you if you received it exclusively under the conditions of this License, and if you make no additional modifications to its content. The license does not grant you the right to exercise other legal rights, by virtue of any relevant right of the work that you possess or control. You must accomplish the conveyance in a way that does not affect your own use of the work and the ability of other recipients to exercise their legal rights. Convey means to transfer the work or a modified version to a recipient having the access to use the work and these rights with respect to the work in corresponding versions; or to convey the work (or any version) accompanied by the Corresponding Source. You may convey a covered work under these terms, provided that you also make the Corresponding Source of the work available under this License; any recipient of the work may then make conveying the work or its modifications so that every recipient will have access to the Corresponding Source for the work.

4. Conveying Modified Source Versions. You may convey a work based on the Program, or the modifications to that work, if you make the modifications in a way such that their purpose is to modulate the operation of the work and produces an effect that is inconsistent with the purpose of this License. Any other conveyance of rights of ownership or extension of rights of ownership provided by law is in addition to, and not in lieu of, patent rights granted under this License. Conveying the work means any means of making the work or any derivative work accessible to a third party for the purpose of use (or collection of a patent royalty). Under this License, convey means to deliver the work or a modified version; convey the object code means to transfer the work, or access to and use the work as a value in something else. Any other conveyance of rights of ownership or extension of rights of ownership provided by law is in addition to, and not in lieu of, patent rights granted under this License. Conveying the work means any means of making the work or any derivative work accessible to a third party for the purpose of use (or collection of a patent royalty). Under this License, convey means to deliver the work or a modified version; convey the object code means to transfer the work, or access to and use the work as a value in something else. Any other conveyance of rights of ownership or extension of rights of ownership provided by law is in addition to, and not in lieu of, patent rights granted under this License. Conveying the work means any means of making the work or any derivative work accessible to a third party for the purpose of use (or collection of a patent royalty). Under this License, convey means to deliver the work or a modified version; convey the object code means to transfer the work, or access to and use the work as a value in something else. Any other conveyance of rights of ownership or extension of rights of ownership provided by law is in addition to, and not in lieu of, patent rights granted under this License. Conveying the work means any means of making the work or any derivative work accessible to a third party for the purpose of use (or collection of a patent royalty). Under this License, convey means to deliver the work or a modified version; convey the object code means to transfer the work, or access to and use the work as a value in something else. Any other conveyance of rights of ownership or extension of rights of ownership provided by law is in addition to, and not in lieu of, patent rights granted under this License.
patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify, or convey a copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it. A patent license is "discriminatory" if it does not include within the scope of its coverage, the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under the covered work by the covered work itself or by related material. The recipients of a Discriminatory Patent License from you, if any, must乘用车he terms of this License for all of the material covered by such a license. If you convey a covered work under this License, and later someone receives the same material from you or your successor in title, you are in material violation of this License if the recipient does not receive the patent license along with you.

e) in connection with copies of the covered work conveyed by you (or copied from those copies), or

f) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 29 March 2007. Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.


If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying of this Program, then you must also do so for the covered work hereunder, regardless of the obligating party.

13. Revised Versions of this License.

The Free Software Foundation may publish revised versions of the GNU General Public License, corresponding to the changes in the GNU General Public License, to accommodate new circumstances and/or technologies. You always have the option of rejecting such changes by continuing to use Version 2 of the License.

14. Revised Versions of this License.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR CONVEY THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

BSO License

Some software components of this product incorporate source code covered under the BSD license as follows. See below for the actual license texts. Actually both licenses are BSD-style Open Source licenses. In case of any license issues related to OpenSSL, please contact openssl-core@openssl.org.

Component Name License URL

openssl 1.0.2e OpenSSL Combined License http://www.openssl.org/source

Copyright (c) 1998-2011 The OpenSSL Project. All rights reserved.
Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:
1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the above copyright notice, this list of conditions and the following disclaimer.
4. The name "OpenSSL Toolkit" and "OpenSSL Project" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact openssl-core@openssl.org.
5. Products derived from this software may not be called "OpenSSL" nor may "OpenSSL" appear in their names without prior written permission of the OpenSSL Project.

6. Redistributions of any form whatsoever must retain the following acknowledgment: "This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org).

This SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OpenSSL PROJECT OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

BSD license

Some software components of this product incorporate source code covered under the BSG license as follows. See below for the actual license texts. Actually both licenses are BSD-style Open Source licenses. In case of any license issues related to OpenSSL, please contact openssl-core@openssl.org.

Component Name License URL

net-snmp-5.7.3 BSD http://www.net-snmp.org/about/license.html
core-8.38 BSD
libcap-1.7.4 BSD 2.0 http://www.linux.org/pub/linux/libs/security/libcap/libcap2
lighttpd-1.4.35 BSD 2.0 http://www.opensource.org/licenses/bsd-license.html
MiniUPnP Project Client BSD 2.0
pppd-2.4.7 BSD 2.0 http://www.opensourse.org/licenses/bsd-3-Clause

The license and distribution terms for any publicly available version or derivative of this code cannot be changed, i.e. this code cannot simply be copied and put under another distribution license (including the GNU General Public License).

BSD license

Some software components of this product incorporate source code covered under the BSD license as follows.

Component Name License URL

http://www.net-snmp.org/about/license.html
http://www.linux.org/pub/linux/libs/security/libcap/libcap2
http://www.opensource.org/licenses/bsd-license.html
http://www.opensourse.org/licenses/bsd-3-Clause

lighttpd is a secure, fast, compliant, and very flexible webserver that has been optimized for high-performance environments. It has a very low memory footprint compared to other web servers and takes care of cpuload. Its advanced features (fastCGI, CGI, Auth, Output Compression, URI Rewriting and many more) make lighttpd the perfect webserver for every server that suffers load problems. Simple Network Management Protocol (SNMP) is an Internet standard protocol for managing devices on IP networks. It is used mostly in network management systems to monitor the devices attached to the network for conditions that need administrative attention. Net-SNMP is a suite of applications used to implement SNMP v1, SNMP v2c and SNMP v3 using both IPv4 and IPv6. For more additional information, send email to help@cvv.com@wama.com.

Copyright © 2004, Karesius, Inc.

All rights reserved.
Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:
- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- Neither the name of the "incremental" nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com). This work can be redistributed and/or modified under any of the conditions present in the "OpenSSL Toolkit (http://www.openssl.org)" copyright notice, including without limitation, the right to do any of the following:

1. Incorporate the cryptographic software into another work as a library and link with it.
2. Reorganize or modify it, or create a derivative work, and distribute it publicly without restriction, provided that you ensure that any work that you distribute satisfies the requirements of this license.
3. Use it under the conditions of the General Public License to create a new work that is distributed to the public under the terms of the General Public License.

The cryptographic software is provided "as is", without warranty of any kind, express or implied, including but not limited to the warranties of merchantability, fitness for a particular purpose, freedom from infringement, and incidental and consequential damages. The maintainer of the cryptographic software is not responsible for any outcome of using the software, and any use is at your own risk.

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com) which is licensed under the OpenSSL Toolkit (http://www.openssl.org) license.

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

The implementation was written so as to conform with Netscapes SSL.

This library is free for commercial and non-commercial use as long as the following conditions are adhered to. The following applies to all code found in this library, but it's the responsibility of just the SSL, TLS, and zlib code. The SSL documentation included with this distribution is covered by the same copyright terms except that the holder is the Netscape Communications Corporation.

Copyright 1995-1999 Eric Young (eay@cryptsoft.com) All rights reserved.
This package is an SSL implementation written by Eric Young (eay@cryptsoft.com).

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com) the word "cryptographic" can be left out of the courses from the library being used as cryptographically related -.

If you include any Windows specific code (or a derivative thereof) from the apps directory (application code) you must include an acknowledgement: "This product includes software developed by Eric Young (eay@cryptsoft.com)."

This SOFTWARE IS PROVIDED BY ERIC YOUNG "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The license and distribution terms for any publicly available version or derivative of this code cannot be changed, i.e. this code cannot simply be copied and put under another distribution license (including the GNU General Public License).
above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.  y.
Neither the name of Sparta, Inc nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Part 6: Cisco/BUPT/NIC copyright notice (BSD)
Copyright (c) 2004, Cisco, Inc and Information Network Center of Beijing University of Posts and Telecommunications.
All rights reserved.
Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met: y Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer; y Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution; y Neither the name of Cisco, Inc, Beijing University of Posts and Telecommunications, nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Part 7: Fabasoft R&D Software GmbH & Co KG copyright Notice (BSD)
Copyright (c) Fabasoft R&D Software GmbH & Co KG, 2003
osslabs@fabasoft.com
Author: Bernhard Ponz
Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met: y Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer; y Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution; y The name of Fabasoft R&D Software GmbH & Co KG or any of its subsidiaries, brand or product names may not be used to endorse or promote products derived from this software without specific prior written permission.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Part 8: Apple Inc. copyright notice (BSD)
Copyright (c) 2007 Apple Inc.
All rights reserved.
Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:
1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of Apple Inc. (“Apple”) nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Mozilla Public License

Since we, as Hanwha Techwin, used the Mozilla Firefox component without modifying the source code according to the Mozilla Public License 1.1, we are not obliged to provide the source code of the corresponding component.

• Version 1.1

1. Definitions.

1.0.1. “Commercial Use” means distribution or otherwise making the Covered Code available to a third party.
1.1. “Contributor” means each entity that creates or contributes to the creation of Modifications.
1.2. “Contributor Version” means the combination of the Original Code, prior Modifications used by a Contributor, and the Modifications made by that particular Contributor.
1.3. “Covered Code” means the Original Code or Modifications or the combination of the Original Code and Modifications, in each case including portions thereof.
1.4. “Electronic Distribution Mechanism” means a mechanism generally accepted in the software development community for the electronic transfer of data.
1.5. “Expat License” means Covered Code in any form other than Source Code.
1.6. “Initial Developer” means the individual or entity identified as the Initial Developer in the Source Code notice required by Exhibit A.
1.7. “Large Work” means a work which combines Covered Code or portions thereof with code not governed by the terms of this License.
1.8. “License” means this document.
1.8.1. “Licensable” means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently acquired, any and all of the rights conveyed herein.
1.9. “Modifications” means any addition to or deletion from the substance or structure of either the Original Code or any previous Modifications. When Covered Code is released as a series of files, a Modification is:
   A. Any addition to or deletion from the contents of a file containing Original Code or previous Modifications.
   B. Any new file that contains any part of the Original Code or previous Modifications.
1.10. “Original Code” means Source Code of computer software code which is described in the Source Code notice required by Exhibit A as Original Code, and which, at the time of its release under this License is not already Covered Code governed by this License.
1.10.1. “Patent Claims” means any patent claim(s), now owned or hereafter acquired, including without limitation, method, process, and apparatus claims, in any patent Licensable by grantor.  

The MIT License

Some software components of this product incorporate source code covered under the MIT license as follows

MIT License 2.0

- Acewadsl, betterman, jquery-u, libbim, libbim2, MassDial, libwebm, libwebm-Opener, Samples Pack, Wide Studio, xorg-server, dropbear-2012.55, nounge-5.7

Copyright (c) 2011, The Dopi Foundation
Copyright 2010, AUTHORS.txt (http://jqueryui.com/about)
Dual licensed under the MIT or GPL Version 2 licenses.

- http://jqueryui/license
- http://docs.jquery.com/UI/Window
Copyright Daniel Vallard
Copyright Igor Zlatovic <igor@zlatovic.com>
Copyright Aleksey Sarin
Copyright Gary Pennington <Gary.Pennington@nku.edu>
Copyright Alfred Miekisch <alfred@miekisch.do>
Copyright Bjorn Reese <bjorn.reese@systeismic.de>
Copyright Joel W. Reed
Copyright William Black <wblack@mmm.com.hk>
Copyright (c) 2007-2010 The Khronos Group Inc.
Copyright Atish Kumar Patra
Copyright (c) 2006 Free Software Foundation, Inc.
Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
1.11. “Source Code” means the preferred form of the Covered Code for making modifications to it, including all modules it contains, plus any associated interface definition files, scripts used to control compilation and installation of an Executable, or source code differential comparisons against either the Original Code or another well-known, available version of Covered Code of the contributor's choice. The Source Code can be in a compressed or archival form, provided the appropriate decompression or de-archiving software is widely available for no charge.

1.12. "You" (or "Your") means an individual or a legal entity exercising rights under, and to the extent of, all of the terms of this License. You include a Participant and an Initial Developer.

3.6. or any Contributor. You must make it absolutely clear than any such warranty, support, indemnity or liability obligation is offered by You alone, and You hereby agree to indemnify the Initial Developer and every Contributor for any liability incurred by the Initial Developer or such Contributor as a result of Your actions.

3.7. Larger Works. You may create a Larger Work by combining Covered Code with other code not governed by the terms of this License provided the conditions of this License under which the Covered Code is licensed permit that use.

4. Inability to Comply Due to Statute or Regulation. If it is impossible for You to comply with any of the terms of this License due to statute or judicial order, or if You are otherwise legally prohibited from doing so, You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be included with all distributions of the Source Code. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed to place the recipient in a position to verify it.

5. Application of this License.

This License applies to code to which the Initial Developer has attached the notice in Exhibit A and to related Covered Code.

6. Versions of the License.

6.1. New Versions. Netscape Communications Corporation ("Netscape") may publish revised and/or new versions of the License from time to time. Each version will be given a distinguishing version number.

8.4. Participant under Sections 2.1(b) and 2.2(b) are revoked effective as of the date You first made, used, sold, distributed, or had made, Modifications made by that Participant.

9. LIMITATION OF LIABILITY.

In the event of termination under Sections 8.1 or 8.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You under this License shall terminate upon expiration of that license or the survival of a valid notice of termination under this License, whichever is earlier.

11. MISCELLANEOUS.

11.1. Modification of Software.

If You create Covered Code, You shall include a copyright notice for Your Contributor Version in all Your Contributor Versions. You may not remove or modify any other notices or documents from the Source Code version remains available even if the Electronic Distribution Mechanism is maintained by a third party.

3.3. Description of Modifications. You must cause all Covered Code to which You contribute to contain a file documenting the changes You made to create that Covered Code.

3.4. Source Code Availability.

All Covered Code must be available under this License on or after the Original Code is made available.

3.5. Required Notices.

If it is not possible to put such notice in a particular Source Code file due to its structure, then You must include a notice in such a location (such as a directory index) where a user would be likely to look for such a notice. If You create one or more Modification(s) to the Original Code or Source Code License with a different name or a new license, You may add your name as a Contributor to the notice described in Exhibit A. You must also duplicate this notice in any documentation for such Modification(s) You distribute which is derived from the Source Code made available under this License, but which is not an Executable.

3.8. Notice and użytkownikowie of this License at the top of that particular file, or in a location (such as a Readme file) where a recipient would be likely to look for such notice.

3.9. Indemnity for Infringement. Subject to this Section 3.9, this License shall be construed to grant to the holder of each Modification right to the extent necessary to make the Modifications available under the terms of this License.

3.10. Effect of New Versions. Once Covered Code has been published under a particular version of this License, You may always continue to use the terms of that version for Your Version and all subsequent versions of Covered Code made available by You under this License. However, no one other than Netscape has the right to modify the terms applicable to Covered Code created under this License.

3.11. Disclaimers.

9.2. To the extent permitted by law, the Initial Developer and/or its contributors disclaim all warranties of any kind (express, implied, or statutory), including, without limitation, the warranty of non-infringement of third-party rights, the warranty of fitness for a particular purpose, the warranty of merchantability, and the warranty of freedom from defects in the documentation.

10. LIMITATION OF LIABILITY.

10.4. In no event will the initial developer, any other contributor, or any distributor of covered code be liable to any person for any direct, indirect, incidental, special, exemplary, or consequential damages of any kind, including lost profits, lost revenue, or lost savings, arising out of or in connection with the use or inability to use Covered code, even if such initial developer, other contributor, or distributor has been advised of the possibility of such damages.

11.1. This License applies to any open source software project concerning subject matter herein. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. This License shall be governed by California law (except to the extent applicable law, if any, prohibits the application of California law). If any provision of this License is held to be unenforceable in any jurisdiction, the remainder of the License shall remain in full force and effect.


4. DISCLAIMER OF WARRANTY.

Covered Code is provided under this LICENSE ON AN "AS IS" BASIS, WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, WARRANTIES THAT THE COVERED CODE IS FREE OF DEFECTS, MERCHANDABLE, FIT FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE COVERED CODE IS WITH YOU. SHOULD ANY COVERED CODE PROVE DEFECTIVE IN ANY RESPECT, YOU (AND NOT THE INITIAL DEVELOPER OR ANY OTHER CONTRIBUTOR) ASSUME THE COST OF ANY NECESSARY SERVICING, REPAIR OR CORRECTION. THIS DISCLAIMER OF WARRANTY CONSTITUTES AN ESSENTIAL PART OF THIS LICENSE. NO USE OF ANY COVERED CODE IS AUTHORIZED UNDER EXCEPT UNDER THE DISCLAIMER.
provides that the language of a contract shall be construed against the drafter shall not apply to this License.

12. RESPONSIBILITY FOR CLAIMS.

As between Initial Developer and the Contributors, each party is responsible for claims and damages arising, directly or indirectly, out of its utilization of rights under this License and you agree to work with Initial Developer and Contributors to distribute such responsibility on an equitable basis. Nothing herein is intended or shall be deemed to constitute any admission of liability.

13. MULTIPLE-LICENSED CODE.

Initial Developer may designate portions of the Covered Code as "Multiple-Licensed". Multiple-Licensed means that the Initial Developer permits you to utilize portions of the Covered Code under the terms of the MPL and the alternative license, if any, specified by the Initial Developer in the file described in Exhibit A.

14. EXHIBIT A - Mozilla Public License.

The contents of this file are subject to the Mozilla Public License Version 1.1 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at http://www.mozilla.org/MPL.

This software is copyright (C) 1998, Netscape Communications Corporation. All Rights Reserved.

This software is provided "AS IS" and without warranty, expressed or implied, as to the use of the software or the ability of the software to function with other software. The entire risk as to the quality and performance of the software is with you. Should the software prove defective or impose any other liability on you, you assume the entire cost of all necessary servicing, repair or correction.

You may use this software for whatever you want. You don't have to pay us.

In legalese:

1. This License Agreement sets forth copyrights and the terms and conditions of use applicable to the source code of T-Kernel distributed by T-Engine Forum and any derivative work created therefrom.

2. "T-Kernel" means a real-time operating system controlled and distributed by T-Engine Forum on behalf of the copyright holder thereof.

3. "Source Code" means a source program, including related comments and documentation, for the T-Kernel and the Ported Source Code defined in Article 2.8 which is registered with T-Engine Forum.

4. "T-Engine Hardware" means hardware which is manufactured in accordance with the T-Engine Hardware specifications issued by T-Engine Forum, and registered with T-Engine Forum.

5. "Ported Source Code" means a source program produced from the Source Code by modifying only its Hardware-dependent Part and/or Compiler-dependent Part to enable it to be operated on the T-Engine Hardware or the Similar Hardware to T-Engine Hardware. The Ported Source Code which is registered with T-Engine Forum shall be included in the Source Code.

6. "Binary Code" means any hardware (including software which emulates hardware) other than that defined in Article 2.8 above, on which the T-Kernel can be operated.

7. "Similar Hardware to T-Engine Hardware" means any hardware (including software which emulates hardware) other than that defined in Article 2.8 above, on which the T-Kernel can be operated.

8. "Ported Source Code" means a source program produced from the Source Code by modifying only its Hardware-dependent Part and/or Compiler-dependent Part to enable it to be operated on the T-Engine Hardware or the Similar Hardware to T-Engine Hardware. The Ported Source Code which is registered with T-Engine Forum shall be included in the Source Code.

9. "Binary Code" means any executable code form which is created by compiling programs, which include all or part of the Source Code or the Modified Source Code.

10. "T-Engine Hardware" means the hardware which is manufactured in accordance with the T-Engine Hardware specifications issued by T-Engine Forum, and registered with T-Engine Forum.


12. "T-Engine Hardware" means the hardware which is manufactured in accordance with the T-Engine Hardware specifications issued by T-Engine Forum, and registered with T-Engine Forum.

13. "Binary Code" means any executable code form which is created by compiling programs, which include all or part of the Source Code or the Modified Source Code.

14. "T-Engine Hardware" means the hardware which is manufactured in accordance with the T-Engine Hardware specifications issued by T-Engine Forum, and registered with T-Engine Forum.

15. "Binary Code" means any executable code form which is created by compiling programs, which include all or part of the Source Code or the Modified Source Code.

The contents of this file are subject to the Mozilla Public License Version 1.1.

The Original Developer is Netscape Communications Corporation.

Contributor(s): ______________________________________.

Alternatively, the contents of this file may be used under the terms of the Mozilla Public License, Version 1.1 ("License"); just at the discretion of the User, either the original license or, at the User's option, any later version.

This License is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the IMPLIED WARRANTY OF MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

8. "Ported Source Code" means a source program produced from the Source Code by modifying only its Hardware-dependent Part and/or Compiler-dependent Part to enable it to be operated on the T-Engine Hardware or the Similar Hardware to T-Engine Hardware. The Ported Source Code which is registered with T-Engine Forum shall be included in the Source Code.

9. "Binary Code" means an executable code form which is created by compiling programs, which include all or part of the Source Code or the Modified Source Code.

10. "T-Engine Hardware" means the hardware which is manufactured in accordance with the T-Engine Hardware specifications issued by T-Engine Forum, and registered with T-Engine Forum.


12. "T-Engine Hardware" means the hardware which is manufactured in accordance with the T-Engine Hardware specifications issued by T-Engine Forum, and registered with T-Engine Forum.

13. "Binary Code" means any executable code form which is created by compiling programs, which include all or part of the Source Code or the Modified Source Code.

14. "T-Engine Hardware" means the hardware which is manufactured in accordance with the T-Engine Hardware specifications issued by T-Engine Forum, and registered with T-Engine Forum.

15. "Binary Code" means any executable code form which is created by compiling programs, which include all or part of the Source Code or the Modified Source Code.

The contents of this file are subject to the Mozilla Public License Version 1.1.

The Original Developer is Netscape Communications Corporation.

Contributor(s): ______________________________________.

Alternatively, the contents of this file may be used under the terms of the Mozilla Public License, Version 1.1 ("License"); just at the discretion of the User, either the original license or, at the User's option, any later version.

This License is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the IMPLIED WARRANTY OF MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

8. "Ported Source Code" means a source program produced from the Source Code by modifying only its Hardware-dependent Part and/or Compiler-dependent Part to enable it to be operated on the T-Engine Hardware or the Similar Hardware to T-Engine Hardware. The Ported Source Code which is registered with T-Engine Forum shall be included in the Source Code.

9. "Binary Code" means an executable code form which is created by compiling programs, which include all or part of the Source Code or the Modified Source Code.

10. "T-Engine Hardware" means the hardware which is manufactured in accordance with the T-Engine Hardware specifications issued by T-Engine Forum, and registered with T-Engine Forum.


12. "T-Engine Hardware" means the hardware which is manufactured in accordance with the T-Engine Hardware specifications issued by T-Engine Forum, and registered with T-Engine Forum.

13. "Binary Code" means any executable code form which is created by compiling programs, which include all or part of the Source Code or the Modified Source Code.

14. "T-Engine Hardware" means the hardware which is manufactured in accordance with the T-Engine Hardware specifications issued by T-Engine Forum, and registered with T-Engine Forum.

15. "Binary Code" means any executable code form which is created by compiling programs, which include all or part of the Source Code or the Modified Source Code.
“Patch for Modification” means a difference, program, system, or the like in order to create the Modified Source Code from the Source Code or the Binary Code thereof.

“Vicarious Execution of Patch Processing” means vicarious execution service to create the Modified Source Code applying the Patch for Modification to the Source Code or the Binary Code thereof.

“Source Code User” means a person who uses the Source Code.

“Distribution” means any of the following acts:
1. to transmit a work to a large number of specific persons through the Internet communication, broadcasting, and the like;
2. to transmit a work to the general public through the Internet communication, broadcasting, and the like automatically in response to a request from the public; and
3. to distribute a copy of a work to the general public or a large number of specific persons.

Article 3. Copyright
1. The copyrights of the Source Code shall be owned by Ken Sakamura.

Article 4. License of Source Code
1. As provided for in this Article, T-Engine Forum shall provide, and grant a license to use, the Source Code free of charge to any person who has taken the necessary procedure for registration as prescribed by T-Engine Forum and agreed to the T-License.
3. In accordance with the license granted under Article 4.1 above, the Source Code User may perform the following acts:
1. to copy and/or modify the Source Code provided by T-Engine Forum hereunder for its own research, development and the like;
2. to run the Source Code provided by T-Engine Forum hereunder for its own research, development and the like;
3. to run the Source Code modified in accordance with the provision of Article 4.3 (1) above for its own research, development and the like;
4. to distribute the Binary Code created from the Source Code provided by T-Engine Forum hereunder or from the Source Code modified in accordance with the provision of Article 4.3 (1) above;
5. in accordance with the license granted under Article 4.1 above, the System Developer may perform the following acts:
1. to perform any and all acts set forth in the Article 4.3 above.
2. to develop and manufacture the Embedded Product containing the Binary Code, and, whether with or without payment, provide the End User with the same and make the Binary Code available to the End User on the Embedded Product.
3. The Source Code User and the System Developer shall be obligated to give a notice that the Source Code is used, in such a way as separately specified by T-Engine Forum, when they use the Source Code or the Binary Code, or make the Binary Code available for the End User on the Embedded Product.

Article 5. Distribution of Modified Source Code
1. Any of A- members of T-Engine Forum may become the Distributor of Modification by obtaining the approval of T-Engine Forum through the registration procedure as prescribed by the Forum provided that only the department of the A- member which has taken the registration procedure may distribute the Modified Source Code in such a way as provided for in this Article as long as it holds the A-membership.
2. The Distributor of Modification may create the Modified Source Code based on the Source Code provided by T-Engine Forum and the Patents for Modification to be applied to create such Modified Source Code from the Source Code.
3. The Distributor of Modification shall, prior to the distribution, inform T-Engine Forum of and register a name and description of the Modified Source Code in such a way as specified by T-Engine Forum.
4. The Distributor of Modification shall determine the name of the Modified Source Code subject to the rules separately established by T-Engine Forum and publish an appropriate notice as required by the rules on the Patch for Modification and the Modified Source Code.
5. The Distributor of Modification may distribute the Modified Source Code to a third party, whether with or without payment, provided that the Distributor of Modification shall take the necessary measures to prohibit the third party from making the re-Distribution of the Modified Source Code.
6. Developer with the Patch for Modification. Provided, however, that the Distributor of Modification shall be obligated to confirm that the System Developer is the Source Code User duly licensed under Article 4.1.
7. The Distributor of Modification may perform the Vicarious Execution of Patch Processing for the System Developer.
8. The System Developer shall not distribute the Modified Source Code in further modified form to any third party as a stand-alone software product.
9. The System Developer may, under the same obligation as imposed in Article 4.5, make the Embedded Product available for the End User through use of the Patch for Modification distributed by the Distributor of Modification or the Derivative Works obtained through the Vicarious Execution of Patch Processing.

Article 6. Distribution and Registration of the Ported Source Code
1. The Source Code User and the System Developer may, whether with or without charge, distribute to any third party only the following parts of the Ported Source Code on the T-Engine Hardware or the Similar Hardware to T-Engine Hardware:
1. The Hardware-dependent Part and/or Compiler-dependent Part; provided that the Source Code User and the System Developer shall inform T-Engine Forum of, and T-Engine Forum may publish, a method for distributing said Part(s) to third parties.
2. The Header File; provided that the Header File shall be distributed together with the Binary Code of the Ported Source Code.
3. Any member of T-Engine Forum may request T-Engine Forum to register and distribute, as an original source code for T-Kernel, the Ported Source Code on the T-Engine Hardware or the Similar Hardware to T-Engine Hardware.
4. Any member of T-Engine Forum who requests the distribution mentioned in the preceding paragraph shall accord to the following conditions:
1. The member shall confirm that the object hardware is the T-Engine Hardware or the Similar Hardware to T-Engine Hardware.
2. The member shall provide T-Engine Forum with a complete set of operational environment for the object hardware and T-Kernel free of charge when requesting the distribution.
3. The member shall submit test results of the Ported Source Code to T-Engine Forum when requesting the distribution.
4. In the event that T-Engine Forum accepts the request mentioned in Article 6.2, T-Engine Forum shall register and distribute the Ported Source Code as the Source Code for T-Kernel. Provided, however, that the Ported Source Code may be treated in the same way as the Modified Source Code until the time of registration hereunder.
5. The provision set forth in Article 3 shall apply to the Ported Source Code registered in accordance with this Article.

Article 7. Use for Other Purpose
1. Any use of the Source Code, the Modified Source Code or the Ported Source Code other than those stipulated in Articles 4, 5 and 6 shall be subject to the prior approval of T-Engine Forum.

Article 8. Limited Warranty
1. T-Engine Forum and the copyright holder of the Source Code warrant that the Source Code does not infringe third party's copyrights. Provided, however, that T-Engine Forum and the copyright holder of the Source Code make no warranty as to the Hardware-dependent Part and/or Compiler-dependent Part set forth in Article 6.2 in the Ported Source Code by any third party.
3. Neither T-Engine Forum nor the copyright holder of the Source Code warrants that the Source Code does not infringe any third party's industrial property rights. In no event shall T-Engine Forum and the copyright holder of the Source Code be liable for any dispute which may arise between the Source Code User and a third party in connection with the third party's industrial property rights.

Article 9. Indemnity
1. Neither T-Engine Forum nor the copyright holder of the Source Code shall be liable for any damages (including, but not limited to, damages resulting from loss of profit, business interruption, loss of business information or any other pecuniary damage) arising out of use or impossibility of use of the Source Code, or any derived works or any other requisite construction.
2. T-Engine Forum and the copyright holder of the Source Code warrant that the Source Code does not infringe third party's copyrights. Provided, however, that the Ported Source Code may be treated in the same way as the Modified Source Code until the time of registration hereunder.
3. Any legal dispute which may arise in relation to any breach of this License Agreement shall be subject to the exclusive jurisdiction of the Tokyo District Court.

Article 10. Breach of Agreement
1. In case that T-Engine Forum considers that this License Agreement is breached or that the popularization of T-Kernel is obstructed, T-Engine Forum shall take necessary procedure for registration as prescribed by the Forum provided that only the department of the A- member which has taken the registration procedure may distribute the Modified Source Code in such a way as provided for in this Article as long as it holds the A-membership.
2. The Distributor of Modification may distribute the Modified Source Code to a third party, whether with or without payment, provided that the Distributor of Modification shall take the necessary measures to prohibit the third party from making the re-Distribution of the Modified Source Code.
3. Developer with the Patch for Modification. Provided, however, that the Distributor of Modification shall be obligated to confirm that the System Developer is the Source Code User duly licensed under Article 4.1.
4. The Distributor of Modification may perform the Vicarious Execution of Patch Processing for the System Developer.
5. The System Developer shall not distribute the Modified Source Code in further modified form to any third party as a stand-alone software product.
6. The System Developer may, under the same obligation as imposed in Article 4.5, make the Embedded Product available for the End User through use of the Patch for Modification distributed by the Distributor of Modification or the Derivative Works obtained through the Vicarious Execution of Patch Processing.

Apache License 2.0

<table>
<thead>
<tr>
<th>Component</th>
<th>License</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>mDNSResponder_bonjour</td>
<td>Apache License 2.0</td>
<td><a href="http://www.apache.org/licenses/LICENSE-2.0">http://www.apache.org/licenses/LICENSE-2.0</a></td>
</tr>
</tbody>
</table>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.
   a) "License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.
   b) "Licensed Software" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

The Apache Software License is a permissive Free Software license. It is designed to make it easier for developers to use the software in their own projects, while still allowing others to contribute to the project through the open-source community. The license includes terms that allow for the modification and distribution of the software, including derivate works. It is important to note that the license does not grant any warranty, either implied or expressed, regarding the software. This is typical of Free Software licenses, which do not provide legal guarantees about the software's functionality. Instead, the license relies on the community to ensure the software works as intended. The Apache License 2.0 is a widely used license in the open-source community, especially for projects related to the Apache project and its ecosystem.
PHP 3.01 License

The PHP License, version 3.01 Copyright (c) 1999 - 2010 The PHP Group. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, is permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. The name "PHP" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact group@php.net.
4. Products derived from this software may not be called "PHP", nor may "PHP" appear in their name, without prior written permission from group@php.net.
5. The PHP Group may publish revised and/or new versions of the license from time to time. Each version will be given a distinguishing version number. Once covered code has been published under a particular version of the license, you may always continue to use it under the terms of that version. You may also choose to use such covered code under the terms of any subsequent version of the license published by the PHP Group. No one other than the PHP Group has the right to modify the terms applicable to covered code created under this License.
6. Redistributions of any form whatsoever must retain the following acknowledgment: "This product includes PHP software, freely available from <http://www.php.net/software/>'..

THIS SOFTWARE IS PROVIDED BY THE PHP DEVELOPMENT TEAM "AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE PHP DEVELOPMENT TEAM OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This software consists of voluntary contributions made by many individuals on behalf of the PHP Group. The PHP Group can be contacted via Email at group@php.net.

For more information on the PHP Group and the PHP project, please see <http://www.php.net/>. PHP includes the Zend Engine, freely available at <http://www.zend.com>.

zlib / libpng License

This software is provided "as-is", without any express or implied warranty. In no event will the authors be held liable for any damages arising from the use of this software.

<table>
<thead>
<tr>
<th>Component Name</th>
<th>License</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>zlib-1.2.8</td>
<td>zlib / libpng</td>
<td><a href="http://zlib.net/">http://zlib.net/</a></td>
</tr>
</tbody>
</table>

Copyright (C) 1995-2010 Jean-loup Gailly and Mark Adler.

Permission is granted to anyone to use this software for any purpose, including commercial applications, and to alter it and redistribute it freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must not claim that you wrote the original software. If you use this software in a product, an acknowledgment in the product documentation would be appreciated but is not required.
2. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.
3. This notice may not be removed or altered from any source distribution.

Jean-loup Gailly Mark Adler
jloup@gzip.org master@alumni.caltech.edu

The data format used by the zlib library is described by RFCs (Request for Comments) 1950 to 1952 in the files http://www.ietf.org/rfc/rfc1950.txt (zlib format), RFC1951.txt ( deflate format) and RFC1952.txt (gzip format).

Hamwha Techwin cares for the environment at all product manufacturing stages, and is taking measures to provide customers with more environmentally friendly products. The Eco mark represents Hamwha Techwin’s devotion to creating environmentally friendly products, and indicates that the product satisfies the EU RoHS Directive.

Correct Disposal of This Product (Waste Electrical & Electronic Equipment)

(Applicable in the European Union and other European countries with separate collection systems)

This marking on the product, accessories or literature indicates that the product and its electronic accessories (e.g. charger, headset, USB cable) should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.

Correct disposal of batteries in this product

(Applicable in the European Union and other European countries with separate battery return systems.)

This marking on the battery, manual or packaging indicates that the batteries in this product should not be disposed of with other household waste at the end of their working life. Where marked, the chemical symbols Hg, Cd or Pb indicate that the battery contains mercury, cadmium or lead above the reference levels in EC Directive 2006/66. If batteries are not properly disposed of, these substances can cause harm to human health or the environment.

To protect natural resources and to promote material reuse, please separate batteries from other types of waste and recycle them through your local, free battery return system.