Canon

Network Camera

VB-H651V / VB-M641V / VB-M640V Installation Guide

Please be sure to read the "Safety Precautions" section for correct use. After reading this Installation Guide, keep it in a readily accessible location for future reference. This camera is for indoor use only.
* Some cameras are not available in certain countries or regions.

⚠ **WARNING** To reduce a risk of fire or electric shock, do not expose this product to rain or moisture.

⚠ **Caution** Request a professional installer for all installation work. Never try to install the camera yourself. Doing so may result in unforeseen accidents such as dropping the camera or electric shock.

Check Included Items

Camera, Screws (M4) x 3
Setup CD-ROM
Power Connector H651V M641V
Audio Interface Cable H651V M641V

Template
Warranty Card
Ceiling Plate

Installation Guide (This document)
Safety Wire, Screws (M3) x 1
Dedicated wrench

Symbols Indicating Camera Model

Camera specific functions will be listed using the symbols below.
H651V: VB-H651V   M641V: VB-M641V   M640V: VB-M640V

Accessories

The following accessories can be purchased separately as necessary. Some accessories are not available in certain countries or regions.

Recessed Mounting Kit SR640-S-VB

Dedicated accessory used to install the camera recessed into a ceiling.

Plenum Mounting Kit SR640-P-VB

Dedicated accessory used to install the camera recessed into a ceiling. The part projecting out within the ceiling can be covered.

Pendant Mounting Kit PC640-VB

Dedicated accessory used to install the camera to the end of pipe that extends from high ceilings, such as in big-box stores.

Dome Unit DU640-S-VB

Smoked dome cover.

Canon AC Adapter PA-V18 H651V M641V

Dedicated AC adapter for this camera.

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Symbols Indicating Safety Precautions

This Installation Guide uses the following symbols to indicate important information the user should know in order to use the product safely. Explanations are provided for each symbol so that users will understand the level of importance for each. Be sure to observe these items.

⚠ Warning	Failure to follow the instructions accompanied by this symbol may result in death or serious injury.
⚠ Caution	Failure to follow the instructions accompanied by this symbol may result in injury.
Caution	Failure to follow the instructions accompanied by this symbol may result in property damage.

Safety Precautions

Installation Precautions

⚠ **Warning**

Do not install in the following places:
• Places in direct sunlight, near heat-generating objects, or locations subject to high temperatures
• Places near fire sources or flammable solvents (alcohol, thinner, fuel, etc.)
• Humid or dusty places
• Places subject to oily smoke or steam
• Places subject to sea air
• Confined or enclosed places
Failure to do so may result in fire or electric shock.

Notes on Power Supply
• H651V M641V Only use the dedicated AC adapter (sold separately) for AC power.
• Do not set any heavy objects on the power cable (or the LAN cable for a PoE power supply).
• Do not pull, forcibly bend, scratch, or modify the power cable (or the LAN cable for a PoE power supply).
• H651V M641V Do not cover or wrap the AC adapter (sold separately) with cloth or blankets.
Failure to do so may result in fire or electric shock.

The contents of this guide are subject to change without any prior notice.

⚠ **Caution**

For installation or inspection of this camera, consult the dealer where you purchased the product.
• This installation should be made by a qualified service person and should conform to all local codes.
• When installing, make sure the surface is capable of withstanding the total weight of the camera and accessories, and sufficiently reinforce if necessary.
• Be sure to use installation screws designed for the type of surface the camera is to be installed.
• Periodically check the parts and screws for rust and loosening, in order to prevent injuries and equipment damage due to falling items.

• Do not install in unstable places, places subject to significant vibration or impact, or places subject to salt damage or corrosive gas.
• Be sure to attach the safety wire when installing the camera.
Failure to do so may result in the camera falling or other accidents.

• Do not touch the edges of metal parts with bare hands.
• Be careful not to get your fingers caught when installing.
Failure to do so may result in injuries.

Caution

• Do not move the lens unit by hand.
• Do not install on an unstable surface.
• To maximize shock resistant specifications, do not install on insufficiently strong surfaces or surfaces subject to significant vibration.
• After turning off the power, do not turn the power on again for at least five seconds.
• Take measures to remove static electricity before performing any procedures.
• If there is condensation, please wait to power on until the condensation dissipates.
Failure to do so may result in malfunctions.

• Take care not to damage wiring or piping.
Failure to do so may result in damage to the peripheral items.

ℹ **Important**

• We recommend the installation of a lightning arrester (a surge protection device) as a measure against failures caused by lightning strikes. Refer to our website for details.
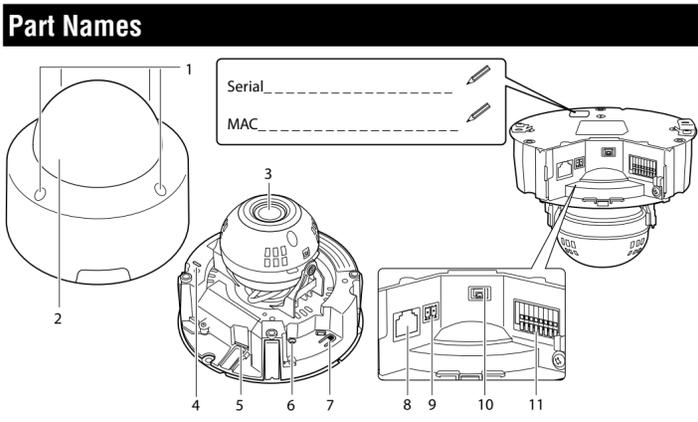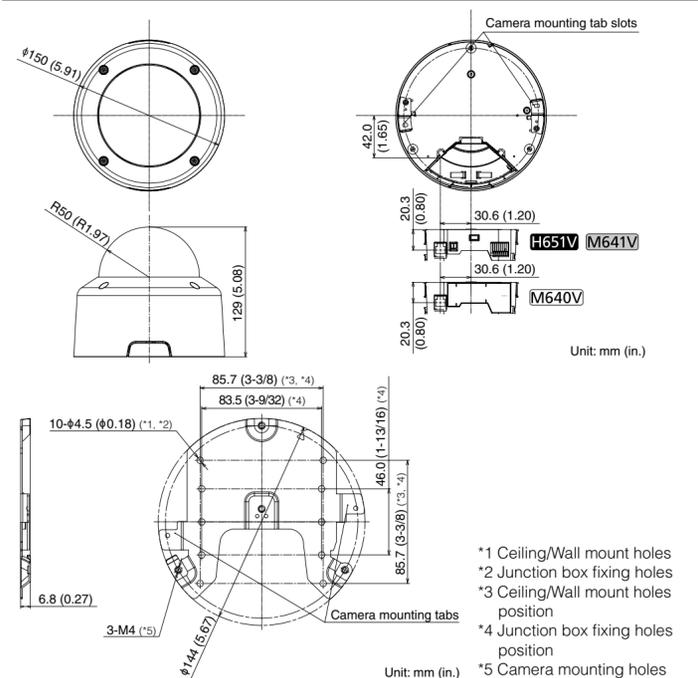
Precautions for Use

⚠ **Warning**

• If you discover defective conditions such as smoke, strange sounds, heat or strange odors, immediately stop using the camera and contact your nearest dealer.
Fire or electric shock may result from continued use of the product.

• If thunder starts, stop installation or inspection etc. and do not touch the camera or continue connecting the cable.
• Do not disassemble or modify the camera.
• Do not damage the connecting cable.
• Do not spray the camera with water, or otherwise make it wet.
• Do not insert foreign objects such as water or metal into the camera.
• Do not use flammable sprays near the camera.
• Do not leave LAN cables, external power supply, or the power connector for the AC adapter (sold separately) connected when the camera is not in use for long periods.
• Do not use flammable solvents such as alcohol, paint thinner or benzine when cleaning the camera.
Failure to do so may result in fire or electric shock.

External Dimensions

Unit: mm (in.)

*1 Ceiling/Wall mount holes
*2 Junction box fixing holes
*3 Ceiling/Wall mount holes position
*4 Junction box fixing holes position
*5 Camera mounting holes

Part Names

Serial_____
MAC_____

1. Dome case lock screw / 2. Dome case / 3. Lens unit / 4. LED (Blue)* /
5. Memory card slot / 6. Reboot switch / 7. Reset switch / 8. 100Base-TX LAN connector /
9. Power connection terminal H651V M641V / 10. Audio I/O terminal H651V M641V /
11. External device I/O terminals H651V M641V
* On: when powered on, during reboot / Off: during normal use

Specifications

Please refer to the installation procedures or the Appendix – Specifications for specifications not listed below.

Camera

Lens	2.4x optical zoom (4x digital zoom) lens (electric drive)
Viewing Angle	H651V
	For 16:9 aspect ratios
	Horizontal: 122.1° (W) – 50.1° (T)
	Vertical: 65.8° (W) – 28.2° (T)
	For 4:3 aspect ratios
	Horizontal: 89.2° (W) – 37.6° (T)
	Vertical: 65.8° (W) – 28.2° (T)
	M641V M640V
	For 16:9 aspect ratios
	Horizontal: 111.5° (W) – 46.2° (T)
	Vertical: 60.5° (W) – 25.9° (T)
	For 4:3 aspect ratios
	Horizontal: 111.5° (W) – 46.2° (T)
	Vertical: 81.7° (W) – 34.6° (T)
Min. Subject Illumination	H651V
	Day Mode (color):
	0.035 lux (F1.2, shutter speed 1/30 sec., when smart shade control is off, 50IRE)
	Night Mode (monochrome):
	0.002 lux (F1.2, shutter speed 1/30 sec., when smart shade control is off, 50IRE)
	When using the Dome Unit (Smoked) (sold separately)
	Day Mode (color):
	0.07 lux (F1.2, shutter speed 1/30 sec., when smart shade control is off, 50IRE)
	Night Mode (monochrome):
	0.004 lux (F1.2, shutter speed 1/30 sec., when smart shade control is off, 50IRE)
	M641V M640V
	Day Mode (color):
	0.02 lux (F1.2, shutter speed 1/30 sec., when smart shade control is off, 50IRE)
	Night Mode (monochrome):
	0.001 lux (F1.2, shutter speed 1/30 sec., when smart shade control is off, 50IRE)
	When using the Dome Unit (Smoked) (sold separately)
	Day Mode (color):
	0.04 lux (F1.2, shutter speed 1/30 sec., when smart shade control is off, 50IRE)
	Night Mode (monochrome):
	0.002 lux (F1.2, shutter speed 1/30 sec., when smart shade control is off, 50IRE)
Pan Angle Range	350° (±175°)
Tilt Angle Range	150° (±75°)
Rotation Angle Range	350° (±175°)

Interface

Network Terminal*	LAN x 1 (RJ45, 100Base-TX (auto/full-duplex/half-duplex))
	* Use a category 5 or better LAN cable, 100 m (328 ft.) or less in length.
Audio Input Terminal	H651V M641V Φ3.5 mm (Φ0.14 in.) mini-jack connector (monaural)
(Common for LINE IN & MIC IN)	LINE IN (connect to an amplifier microphone) or
	MIC IN (connect to a microphone w/o amplifier)
	Switch LINE IN/MIC IN in the Setting Page.
Audio Output Terminal	H651V M641V Φ3.5 mm (Φ0.14 in.) mini-jack connector (monaural)
(LINE OUT)	LINE OUT (connect to an amplifier speaker)
External Device I/O Terminal	H651V M641V Input x 2, Output x 2
Memory Card*	microSD Memory Card, microSDHC Memory Card, microSDXC Memory Card Compatible.
	* To insure reliability in the recording speed, it is recommended to use CLASS 10 rated products. Even when using CLASS 10 products, reliability cannot be guaranteed during heavy access loads (e.g., when recording and deleting data at the same time).

Others

|	
Operating Environment	H651V M641V Temperature:
	AC, DC, PoE: -10°C – +50°C (+14°F – +122°F)
	Humidity: 5% – 85% (without condensation)
	M640V Temperature:
	PoE: -10°C – +50°C (+14°F – +122°F)
	Humidity: 5% – 85% (without condensation)
Storage Environment	Temperature: -30°C – +60°C (-22°F – +140°F)
	Humidity: 5% – 90% (without condensation)
Installation Method	Ceiling mount/Surface mount
Power Supply	H651V M641V PoE: PoE power supply via LAN connector (IEEE802.3at Type1 compliant)
	AC Adapter: PA-V18 (100 – 240 V AC) (sold separately)
	External power source: 24 V AC/12 V DC
	M640V PoE: PoE power supply via LAN connector (IEEE802.3at Type1 compliant)

| Power Consumption	H651V	PoE: Max. approx. 8.4 W*
		AC Adapter PA-V18: Max. approx. 9.9 W (100 V AC)
		Max. approx. 9.8 W (240 V AC)
		DC: Max. approx. 8.7 W
		AC: Max. approx. 8.1 W
	M641V	PoE: Max. approx. 8.4 W*
		AC Adapter PA-V18: Max. approx. 9.8 W (100 V AC)
		Max. approx. 9.8 W (240 V AC)
		DC: Max. approx. 8.7 W
		AC: Max. approx. 8.1 W
	M640V	PoE: Max. approx. 8.4 W*
		* Class 0 power sourcing equipment (requests 15.4 W)
Weight	H651V M641V	Approx. 890 g (1.97 lb.)
	M640V	Approx. 880 g (1.95 lb.)
Impact Resistance	IK10 (20J)	

Before Installing the Camera

Set the IP address and other network information on the camera using the "Camera Management Tool" on the Setup CD-ROM.
For details on how to operate the "Camera Management Tool", please refer to the "Camera Management Tool User Manual".

Removing the dome case and the lens rotation prevention tape

Remove the dome case, then remove the tape preventing the lens from rotating which was attached for shipping.

Dedicated wrench   Dedicated wrench
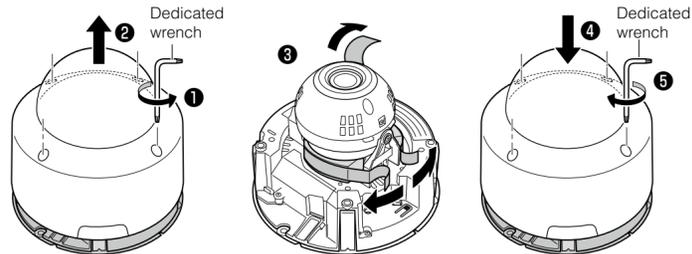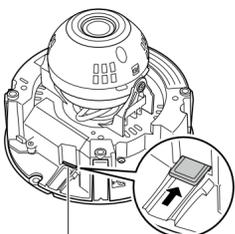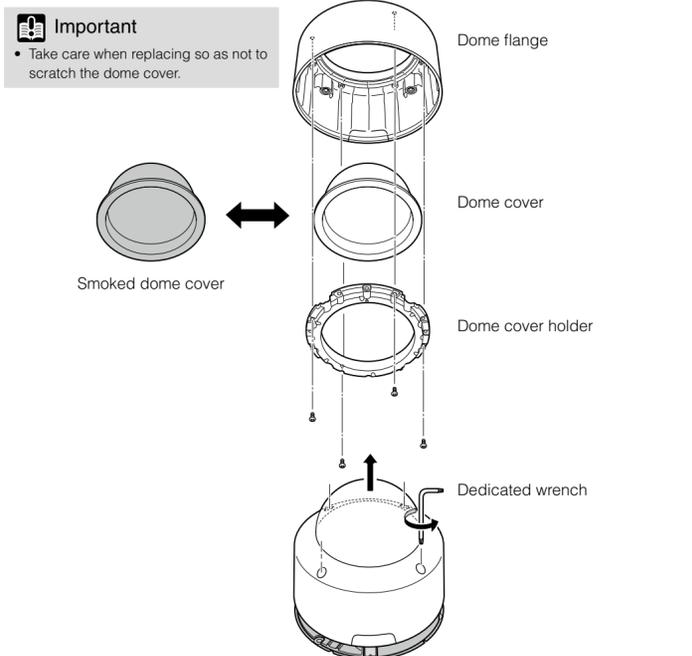
Using a Memory Card

Remove the dome case and place the memory card in the memory card slot.
To remove the memory card, push it in all the way until the card slightly pops out and remove.

Memory card slot

ℹ **Important**

• Insert a memory card before installing the camera.
• When using a memory card with the camera for the first time, it is recommended to format the card after inserting it into the camera (please refer to the "Operation Guide").
• Always unmount the memory card before removing it (please refer to the "Operation Guide").
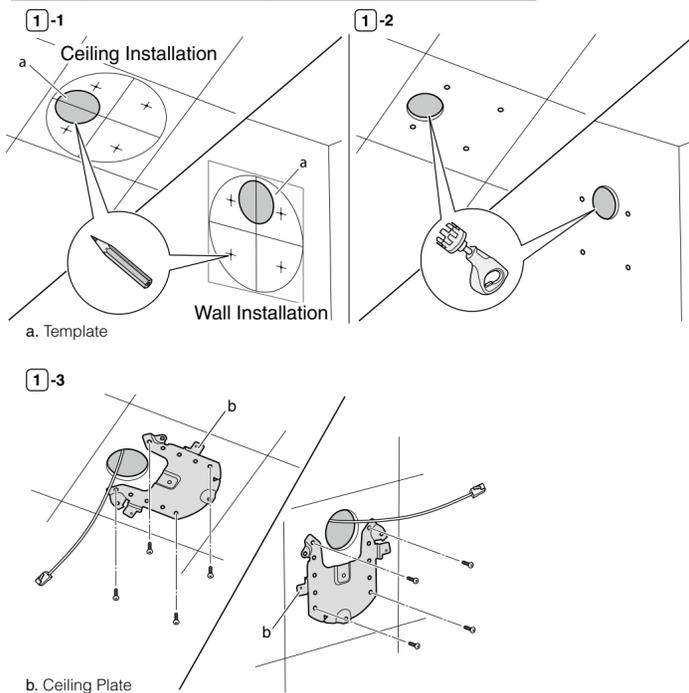
Using the Dome Unit (sold separately)

Remove the dome case from the camera, then remove the dome cover holder and dome flange, and replace with the smoked dome.

ℹ **Important**

• Take care when replacing so as not to scratch the dome cover.

Dome flange

Dome cover

Smoked dome cover

Dome cover holder

Dedicated wrench

Installing the Camera

1

Directly attached to ceilings/Directly attached to walls

1-1

Ceiling Installation

a

Wall Installation

a. Template

1-2

a

1-3

b

b

b. Ceiling Plate

If the cables cannot be stored above a ceiling

If the cables cannot be stored above a ceiling made of concrete, etc., break out a cutout section from the dome case using pliers and remove the tape and guide the cables.
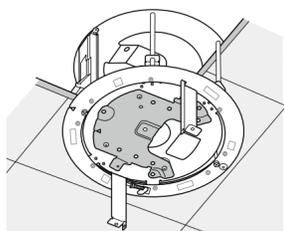
Cutout section
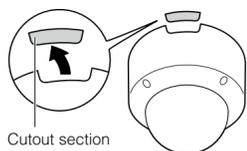
Attaching to a junction box

Attach the ceiling plate to the junction box after confirming the fixing holes locations with the external dimensions diagram.

Ceiling recessed mounting

Mount using Recessed Mounting Kit or Plenum Mounting Kit (each sold separately). For details please refer to the Installation Guide included with the kit.

Ceiling pendant mounting

Mount using the Pendant Mounting Kit (sold separately). For details please refer to the Installation Guide included with the kit.

1-1

Greater than 25 mm (1.0 in.)

Pass necessary cables for connecting the camera through the pipe.

1-2

❷

❸

❶

❶

M3*

❹

M4* × 4

* Included with Pendant Mounting Kit

2

Dedicated wrench

3

c

c. Safety wire

4

M3
Screws (included)

5

d

Using an external power supply

d. LAN cable

Note

H651V M641V Connect the cable after hooking around the tab, to prevent accidental removal.

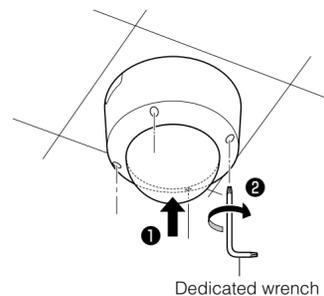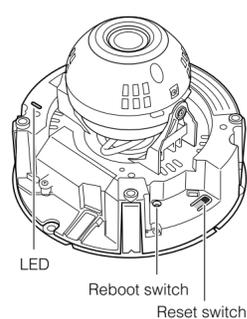**6**

❷

❶

7

M4 × 3
Screws (included)

8

❷

❶

❷
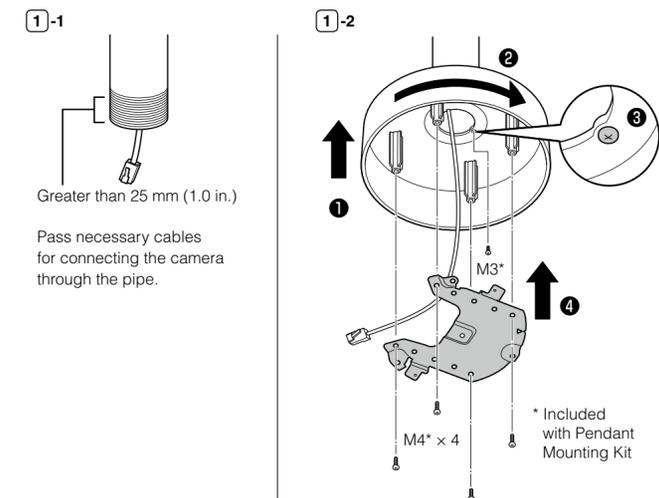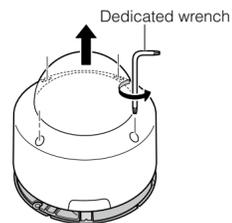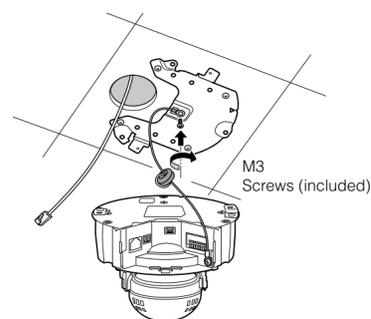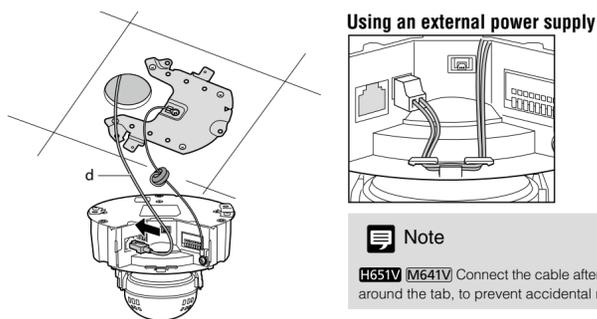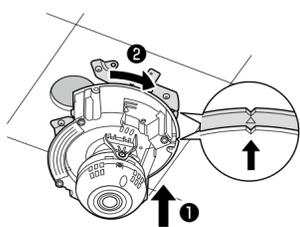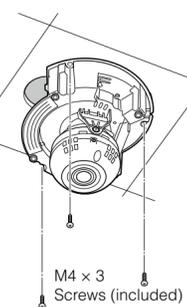
9

When the installation has finished, please adjust the camera angle as needed. For more information, please refer to the "Operation Guide".

Rebooting/Resetting the Camera

LED

Reboot switch

Reset switch

■ Rebooting

To reboot the camera by turning its power off and on, remove the dome case and press the reboot switch.

Note

Rebooting can be done in the Setting Page as well (please refer to the "Operation Guide").

■ Resetting

To reset the camera to its factory default settings, press the reset switch and reboot switch while checking the LED display in the following order.
1) Hold the reset switch down, and press the reboot switch with a pointed object.
2) After holding down the reset switch for at least three seconds, release the reboot switch.
3) After the LED starts to blink, release the reset switch. When the blinking has stopped, the unit has finished resetting.

Connecting the Camera

Power Connection

Power can be supplied to the camera in the three ways described below. Please be sure to read the user manual for the dedicated power supply before use.

Note

- Power supply should conform to all local codes.
- The power supply should also comply with IEC/UL60950-1(SELV/LPS) standards.

■ PoE (Power over Ethernet)

The camera supports PoE functions. Power can be supplied to the camera by using a LAN cable connected to a PoE HUB that conforms to the IEEE802.3at Type1 standard.
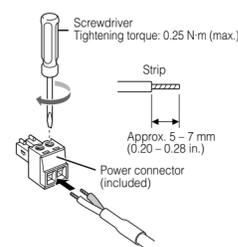
Important

- Check with your dealer for more information about PoE HUB and Midspan technology. Midspan (a LAN cable power supply device) is a device that, like a PoE HUB, supplies power to the camera via a LAN cable.
- Some PoE HUBs allow the limitation of power for each port, but applying limits may interfere with performance. If using this type of PoE HUB, do not limit the operating power.
- Some PoE HUBs have limits for the total power consumption for the ports, which can interfere with performance when multiple ports are in use. For more information, check the instruction guide for your PoE HUB.
- H651V M641V When the camera is connected to both a PoE HUB and an external power supply (12 V DC or 24 V AC), power from the power supply first connected is given priority. But when both power supplies are connected, according to the combination, problems such as failure of the network connection may occur. If a problem arises, disable one of the power supplies.

■ External Power Supply H651V M641V

12 V DC or 24 V AC input can be used.
Connect the power connector included in the package, as shown below.

12 V DC can be connected in a non-polar configuration.

Screwdriver
Tightening torque: 0.25 N·m (max.)

Strip

Approx. 5 – 7 mm (0.20 – 0.28 in.)

Power connector (included)

Important

- The power supply should be within the following voltage range.
- 24 V AC: Voltage fluctuation within ±10% of 24 V AC (50 Hz or 60 Hz ±0.5 Hz or less)
  Current supply capacity of at least 1.0 A per camera
- 12 V DC: Voltage fluctuation within ±10% of 12 V DC
  Current supply capacity of at least 1.5 A per camera
- When using a 12 V DC battery power supply, be sure to connect resistors of at least 0.5 – 1.0 Ω/20 W in series to the power line.
- For an external power supply, use a double-insulated device.

Recommended Power Cables [Reference]

Cable (AWG)	24	22	20	18	16
12 V DC maximum cable length m	5	9	14	23	32
(ft.)	(16.4)	(29.5)	(45.9)	(75.5)	(105.0)
24 V AC maximum cable length m	11	18	29	46	64
(ft.)	(36.1)	(59.1)	(95.1)	(150.9)	(210.0)

Use UL cable (UL-1015 or equivalent) for 12 V DC or 24 V AC wiring.

■ AC Adapter H651V M641V

Please use the dedicated AC adapter (sold separately).

External Device I/O Terminals H651V M641V

External device I/O terminals consist of two input and output systems each. Viewer can be used to check external device input status and control output to an external device please refer to the "Operation Guide".

■ External Device Input Terminals (IN1, IN2)

External device input terminals consist of two sets (IN1, IN2) of two terminals, with the negative terminals connected to the camera interior GND. Connecting cables to the positive and negative terminals and opening or closing the circuit notifies the Viewer.

Important

- When connecting sensors and switches, connect terminals that are electrically isolated from the respective power and GND.
- Do not push the external device I/O terminal button with too much force. Doing so may cause the button to remain pushed-in.

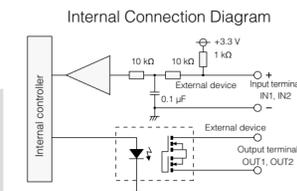### ■ External Device Output Terminals (OUT1, OUT2)

External device output terminals consist of two sets (OUT1, OUT2) of two terminals. The sets have no polarity. Controls from the Viewer can be used to open and close the circuit between the terminals. Using optical couplers, the output terminals are isolated from the camera's internal circuit.

The load connected to the output terminals should be within the following rating range.
Rating between output terminals:
　Maximum voltage 50 V DC
　Continuous load current at or below 100 mA
　On resistance: Max. 30 Ω

Note

Adaptive wiring for external device cables
Solid wire/Stranded wire AWG: No. 26 – 20
Cable strip should be approx. 11 mm (0.43 in.).

Internal Connection Diagram

+3.3 V

10 kΩ 10 kΩ 1 kΩ

External device Input terminal IN1, IN2

0.1 μF

Internal controller

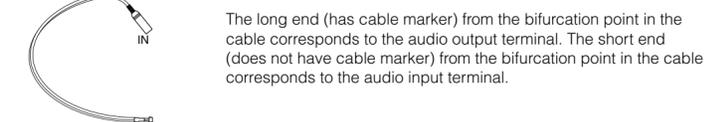External device Output terminal OUT1, OUT2

Audio Input/Output Terminals H651V M641V

Each audio input/output terminal has one input system and one output system.
Connecting the camera to an audio input/output device such as a microphone or a speaker with an amplifier allows you to send/receive audio through the Viewer.

Cable marker

OUT

IN

Use the included audio interface cable to connect audio input/output devices to the camera.
Use the φ3.5 mm (φ0.14 in.) monaural mini-jack connector to connect an audio input/output device with the audio interface cable.

The long end (has cable marker) from the bifurcation point in the cable corresponds to the audio output terminal. The short end (does not have cable marker) from the bifurcation point in the cable corresponds to the audio input terminal.

■ Audio Input Terminal Common LINE IN/MIC IN (monaural input)

Although the camera only has a single audio input system, it supports two types of microphone input: LINE IN and MIC IN. Before using the audio input, please confirm the [Audio Input] in the Setting Page (please refer to the "Operation Guide"). LINE IN is selected by default.
Input terminal: φ3.5 mm (φ0.14 in.) mini jack (monaural)
- Dynamic MIC IN
　Input impedance: 1.5 kΩ ±5%
　* Supported microphones: Output impedance: 400 – 600 Ω
- Condenser MIC IN
　Input impedance (microphone bias resistance): 2.2 kΩ ±5%
　Microphone power supply: plug-in power (voltage: 2.3 V)
　* Supported microphones: Condenser microphones with plug-in power support
- LINE IN
　Input level: Max. 1 Vp-p
　* Use a microphone with an amplifier.

■ Audio Output Terminal LINE OUT (monaural output)

Connect the camera to a speaker with an amplifier. Audio can be sent to the speaker from Viewer.
Output terminal: φ3.5 mm (φ0.14 in.) mini jack (monaural)
Output level: Max. 1 Vp-p
* Use a speaker with an amplifier.