Coaxial-LAN Converter with PoE function BY-HPE11KT
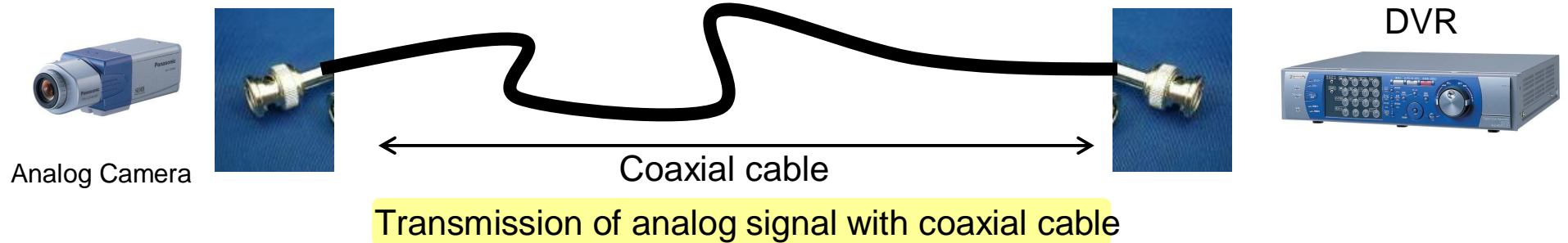
Mar. 2011
Panasonic System Networks Co.,Ltd.
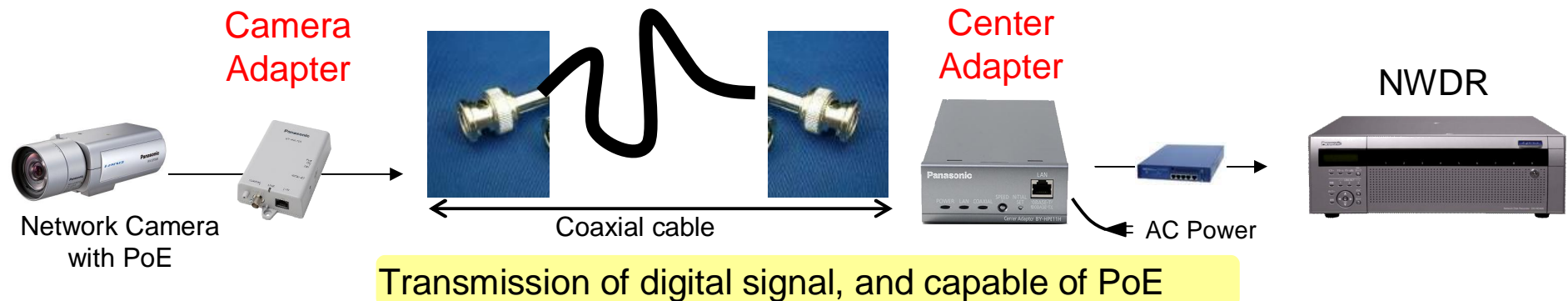
Key Feature

Currently

Analog Camera

Coaxial cable

DVR

Transmission of analog signal with coaxial cable

New System Structure

Camera Adapter

Network Camera with PoE

Coaxial cable

Center Adapter

AC Power

NWDR

Transmission of digital signal, and capable of PoE

Key Features

PoE (Power over Ethernet) ready: Compliant with PoE standards

Use over long distances: Up to 500m*1 for PoE connections, and 2 km for non-PoE connections.

High-speed transmission: Capable of transmission speeds of 35 Mbps or over for TCP, and 45 Mbps or over for UDP connections. *2

No setup required: Connections can be established by simply connecting

*1 When connected to a Panasonic network camera. For other NW cameras (IEEE802.3af (Alternative B, class0)) the distance is 300 m.
*2 Measured using Linux® FTP.

Outline

●From analog to digital
  The BY-HPE11KT is a coaxial - LAN converter capable of implementing long distance, high speed digital data transmission on existing coaxial cabling with low setup costs.
With the built-in PoE function, the BY-HPE11KT is able to supply power to Panasonic network cameras, which eliminates the need for installing power outlets for the cameras.

Product

A set of camera adapter and center adapter

Camera Adapter

•Connect to NW camera
•Ceiling and wall
  deployment capable

Center Adapter

•Connect to NWDR

BY-HPE11KT

A set of camera adapter and center adapter
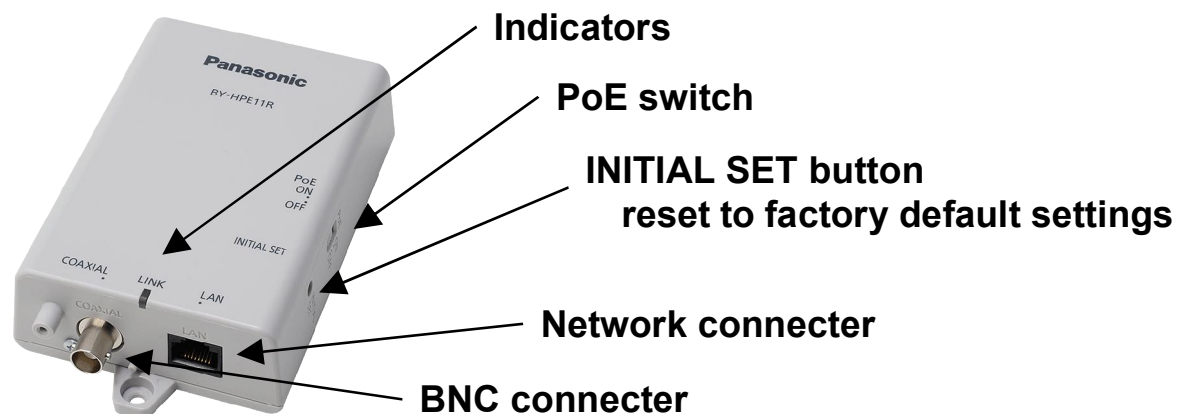
Feb/2011 (A model)
Feb/2011 (CE model)

BY-HCA10

Rack Mount Connecting Fitting
4 center adapter adjusted to 1U rack

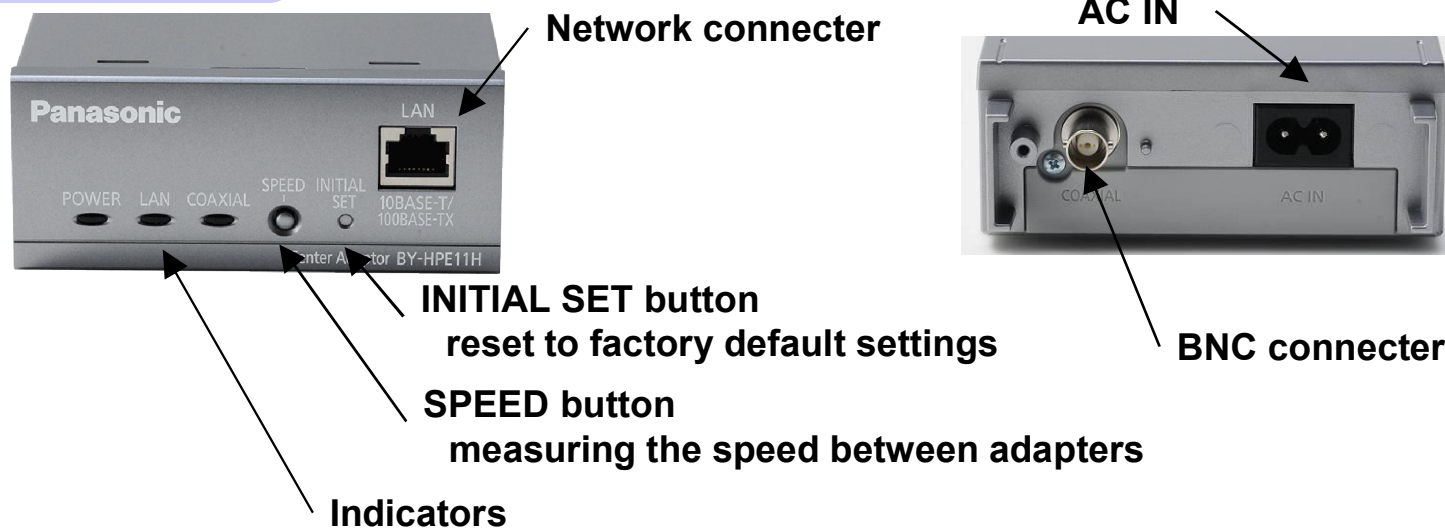Feb/2011 (A model)
Feb/2011 (CE model)

Camera adapter BY-HPE11R

Indicators

PoE switch

INITIAL SET button
reset to factory default settings

Network connecter

BNC connecter

Center adapter BY-HPE11H

Network connecter

AC IN

INITIAL SET button
reset to factory default settings

BNC connecter

SPEED button
measuring the speed between adapters

Indicators

Camera adaptor

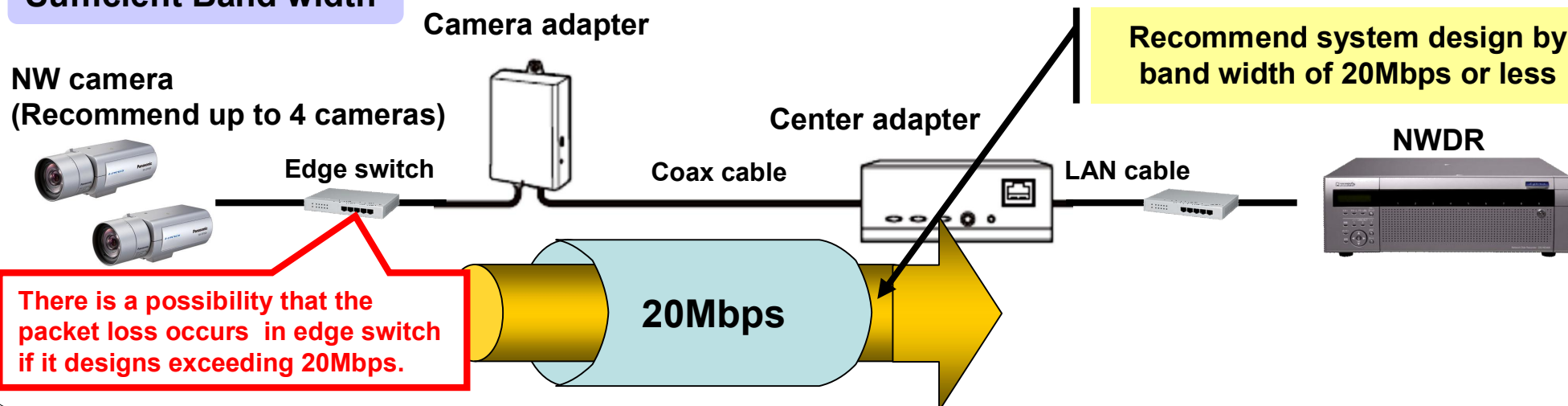| Indicator	Light Status	Meaning
LINK	Green (lit)	The camera adaptor is connected to the center adaptor.
	Orange (lit)	The camera adaptor is activating.
	Red (lit)	The camera adaptor is malfunctioning. Contact an authorized service center.
	Off	The center adaptor is not connected to the power outlet, or the coaxial cable is not connected.

Center adaptor

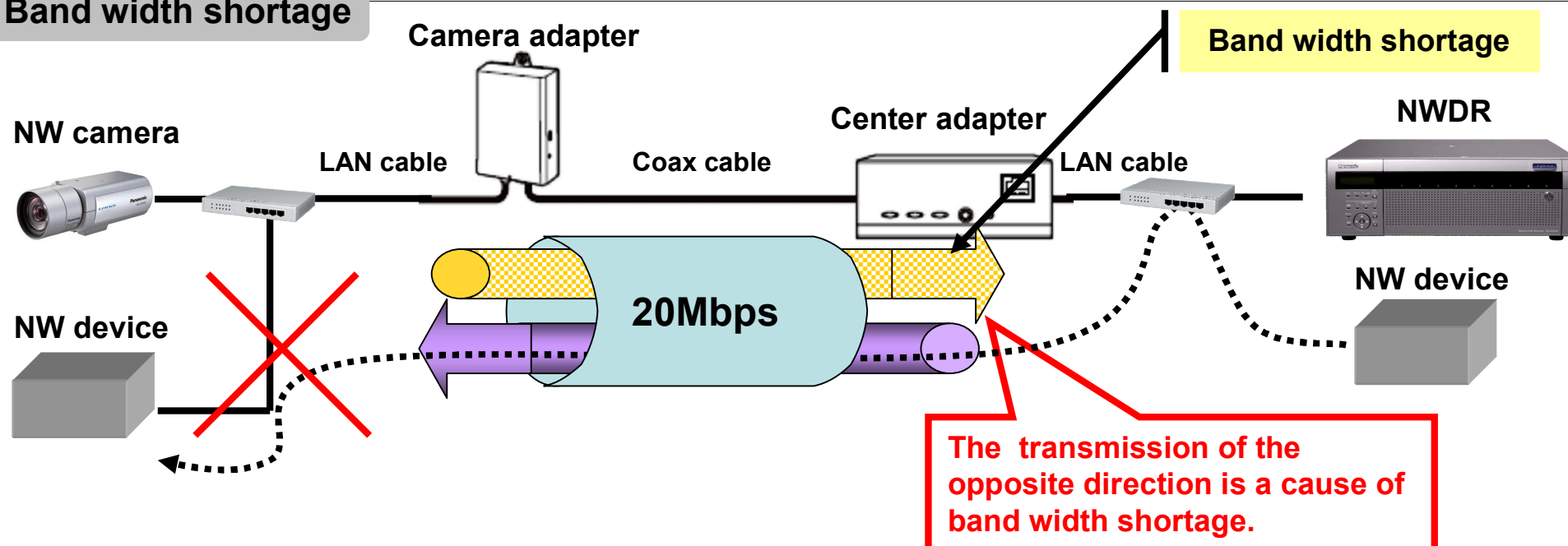| Indicator	Light Status	Meaning
POWER	Green (lit)	The center adaptor is active.
	Green (flashing)	The center adaptor may be connected to a device other than the camera adaptor with the coaxial cable. Check the connection with the camera adaptor.
	Off	The center adaptor is not connected to the power outlet.
LAN	Green (lit)	A network device is connected.
	Green (flashing)	Sending/receiving data from a network device.
	Orange (lit)	A network device is not connected, or the connected network device is not connected to the power outlet.
	Off	The center adaptor is not connected to the power outlet.
COAXIAL	Green (lit)	The camera adaptor is connected to the center adaptor.
	Red (lit)	The center adaptor is malfunctioning. Contact an authorized service center.
	Off	The center adaptor is not receiving power, or the coaxial cable or camera adaptor is not connected.

Sufficient Band width

**NW camera
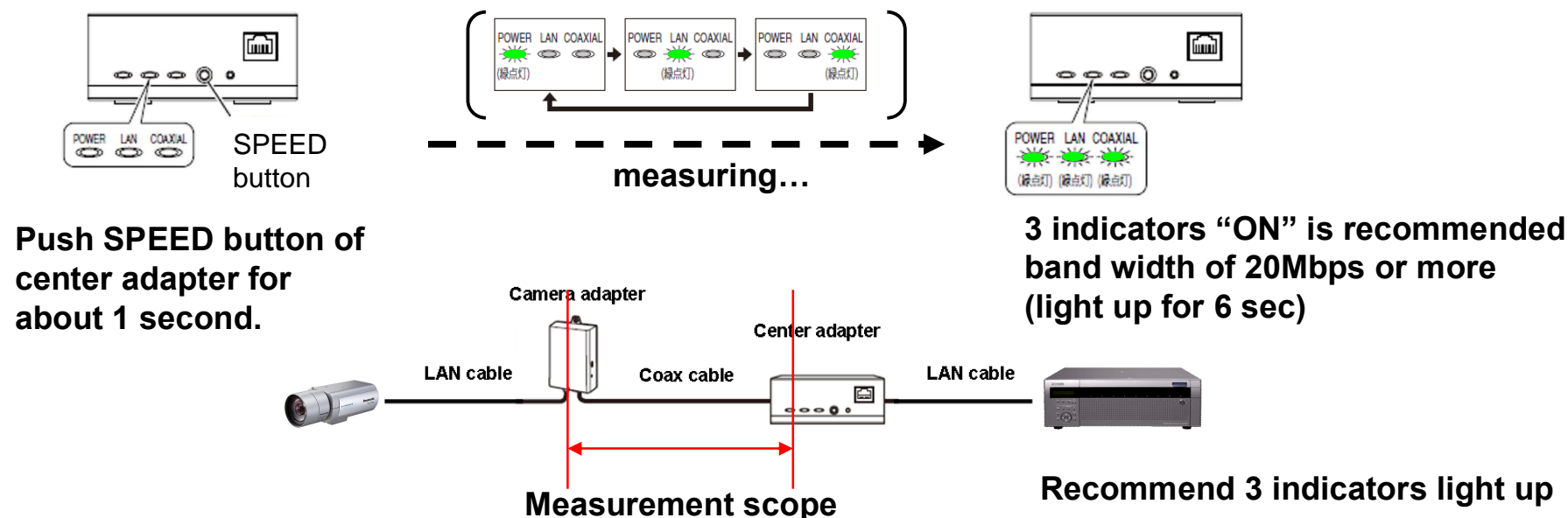(Recommend up to 4 cameras)**

Camera adapter

Center adapter

Recommend system design by band width of 20Mbps or less

NWDR

Edge switch

Coax cable

LAN cable

20Mbps

There is a possibility that the packet loss occurs in edge switch if it designs exceeding 20Mbps.

Band width shortage

Camera adapter

Center adapter

Band width shortage

NWDR

NW camera

LAN cable

Coax cable

LAN cable

NW device

NW device

20Mbps

The transmission of the opposite direction is a cause of band width shortage.

Measuring the speed between adaptors

SPEED button

measuring…

Push SPEED button of center adapter for about 1 second.

3 indicators "ON" is recommended band width of 20Mbps or more (light up for 6 sec)

Camera adapter

Center adapter

LAN cable   Coax cable   LAN cable

Measurement scope

Recommend 3 indicators light up

The transmission speed is not available enough when light up-indicators are less than 3.

The system design of NW camera is recommended to be designed by band width within 20Mbps.
 (within four cameras)

This measurement is approximate though this measurement shows band width 20Mbps by lighting three indicators.

Indicators	0	1	2	3
Speed（Mbps）	unmeasurable level	10Mbps or less	10~20Mbps	20Mbps or more

Coaxial cable

RG-6/U cable (Recommended)
max. 500 m with PoE (1,640 ft.)
max. 2000 m without PoE (6,561 ft.)

RG-59/U cable
max. 200 m with PoE (656 ft.)
max. 1200 m without PoE (3,937 ft.)

Please take care the conditions of the resistance value of cables as follows.
RG-59/U：Less than 30Ω/1000 ft.
RG-6/U ：Less than 12Ω/1000 ft
Because there are various resistance values in the category of RG-59/U or RG-6/U cable.

Insulation resistance of coaxial cable

1MΩ or more in DC500V.
 - Because the maximum voltage **DC 60V is applied to the coaxial cable.**

LAN cable with PoE NW camera

Please use 100Ω balanced cable with ISO/IEC11801-2002 (IEEE802.3af Annex 33B)
 - There is a possibility of being unstable operation for the voltage descent, if the resistance of
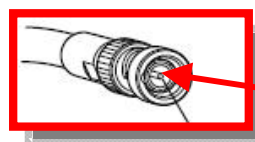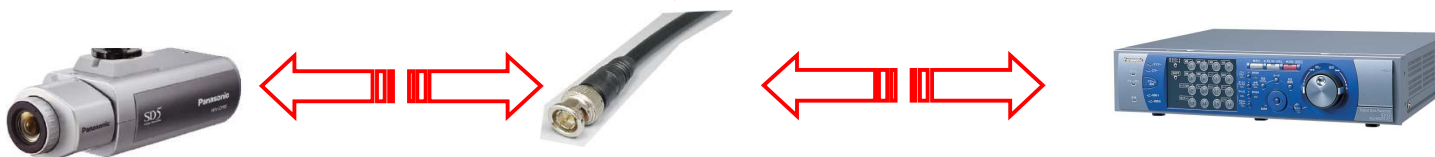   LAN cable between the camera adaptor and the network camera is large.
   *Be especially careful when the flat cable is used.

Attention at connecting
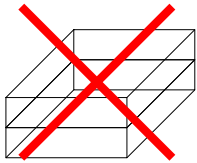
● **The maximum voltage of DC 60V is impressed to the coaxial cable. So do not touch the center pin of coax cable**

● **Please confirm that other equipments are not connected with the coaxial cable, when you connect the coaxial cable with coax-LAN converter.**

It causes other equipment to break down when this converter is connected with the coaxial cable with which other equipment (CCTV camera etc.) are connected.

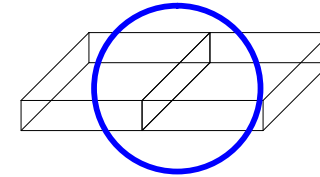**The coaxial cable is disconnected from devices before this coax-LAN converter connected.**
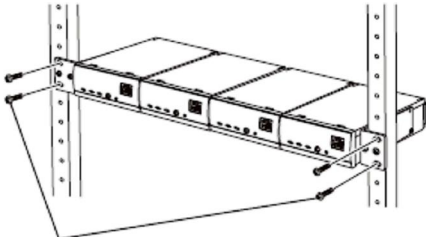
Do not touch the center pin.

Camera adapter installation

This converter isn't deployed at the top and bottom repeatedly.
It causes the communication interference.
It is deployed right and left when setting in the same place.

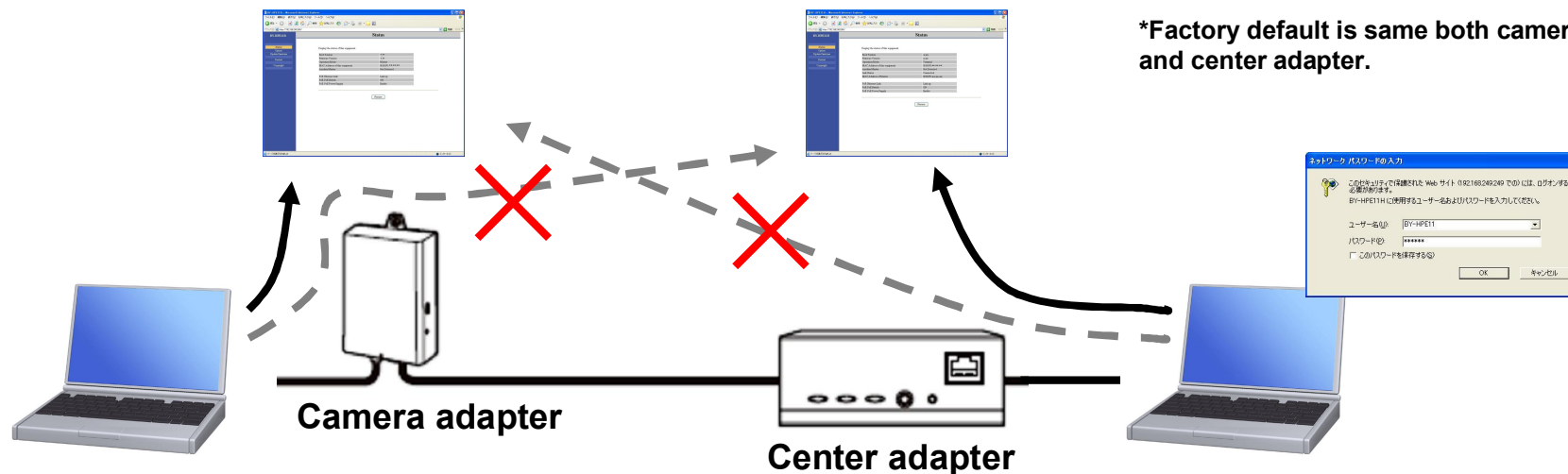## Center adapter installation (When rack mounted)

- When this machine is deployed in the rack, we recommend the installation of the fan so that the temperature in the rack become 30 deg C or less, .
- The temperature in the rack must not become 45 deg C or more.
- It is necessary to keep space 1U(44mm) or more in the top and bottom of this machine when you install it in the rack.

Appendix

Accessing setting window and firmware version up can not be available to the adapter via coax cable

IP address	192.168.249.249
Subnet mask	255.255.255.0
Port	80
User name	BY-HPE11(Fixed)
Password	999999 (Default)

*Factory default is same both camera adapter and center adapter.

Camera adapter

Center adapter

This PC can show setting window of camera adapter.

This PC can show setting window of center adapter.

It is not necessary to change the default network configuration of coax-LAN converter.
- The same IP device in the same subnet should not exist.
- Different IP address is necessary to maintain for each Coax-LAN converter via network by PC.

Coax-LAN converter can be mutually communicated without the influence of the overlap of IP address.
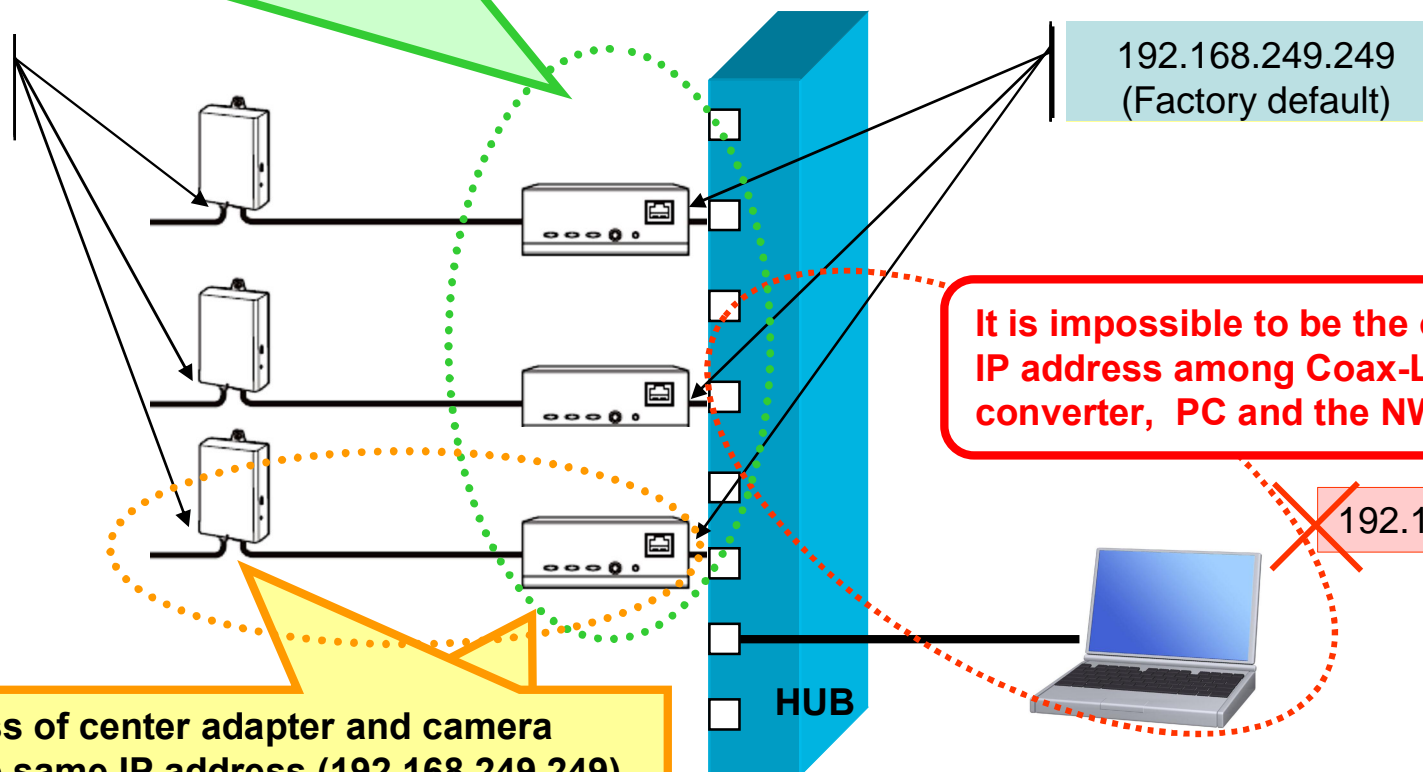Different IP address is necessary to maintain for each Coax-LAN converter via network by PC.

192.168.249.249
(Factory default)

192.168.249.249
(Factory default)

It is impossible to be the overlap of IP address among Coax-LAN converter, PC and the NW devices

192.168.249.249

If IP address of center adapter and camera adapter are same IP address (192.168.249.249), it can transmit between adapters.
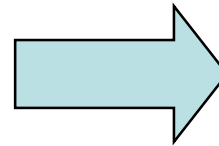
HUB

Use with PoE SW off at the following conditions.

**PoE switch
in Camera adapter BY-HPE11R**

PoE switch

・**NW camera which is not PoE available**
・**NW camera which is PoE available, but power supplied by AC adapter.**

PoE switch is OFF

If PoE switch remains "ON"

When the loop resistance of coax cable is high and the power supply of camera adapter is not enough, camera of the PoE priority setting had received the electric power with the AC adaptor ……

1. PoE power supplied by camera adaptor
2. PoE is stopped to the camera because of an insufficient power supply
3. The camera stops received from power supply of PoE, camera starts to receive from AC adaptor
4. When PoE of camera adapter stops, electricity shortage of camera adaptor is avoided.
5. The camera adaptor starts PoE power supplied to the camera.

Repeated
2. ~ 5.

Specifications

Center Adaptor

Items	Specifications
Operating Environment	Temperature: 0 °C (32 °F) to 50 °C (122 °F)
	Humidity: 20 %–85 % (no condensation)
Interfaces	10Base-T/100Base-TX x 1
	AUTO MDI/MDI-X AC inlet
	BNC connector
Dimensions (W x H x D)	About 105 mm x 44 mm x 210 mm
	(4 1/8 inches x 1 3/4 inches x 8 1/4 inches) (main body only)
Mass (Weight)	About 570 g (1.26 lb)
Power Supply	AC 100–240 V 50/60 Hz
Power Consumption	Maximum about 28 W (including the power consumption of the camera adaptor)
Coaxial Cable Power Supply Capability	Maximum 22 W

Camera Adaptor

Items	Specifications
Operating Environment	Temperature: -10 °C (14 °F) to 50 °C (122 °F)
	Humidity: 20 %–90 % (no condensation)
Interfaces	10Base-T/100Base-TX x 1
	AUTO MDI/MDI-X (PoE compatible)
	BNC connector
Dimensions (W x H x D)	About 80 mm x 115 mm x 35 mm
	(3 1/8 inches x 4 1/2 inches x 1 3/8 inches) (main unit only)
Mass (Weight)	About 165 g (0.36 lb)
Power Supply	Original power system (DC 55 V from the center adaptor via the coaxial cable)
Power Consumption	Included in the center adaptor's power consumption
PoE Power Supply Capability	Maximum 15.4 W

Coaxial Interface

Items	Specifications
Standard	Panasonic original system
Frequency Range	2 MHz–28 MHz
Data Transfer Mode	Wavelet OFDM
Access Method	CSMA/CA
Error Correction	Reed-Solomon Code + Convolutional Code (Viterbi decoding)

LAN Interface

Items	Specifications
Standard	IEEE802.3/IEEE802.3u (10Base-T/100Base-TX)
MDI/MDI-X	Cross/Straight cable automatic recognition
Transmission Rate	10 Mbps/100 Mbps (Auto-Sensing)
Number of Ports	1 (RJ-45 connector)
Protocol	TCP/IP/UDP
Access Method	CSMA/CD

Connection Specifications

Items	Specifications
Number of adaptors that can be communicated with	1 camera adaptor can be connected via coaxial cable for each center adaptor
Connectable Devices	Center adaptor: devices equipped with 10Base-T/100Base-TX interfaces
	Camera adaptor: Panasonic network cameras
Number of devices that can be connected	A maximum of 256 center adaptors or camera adaptors can be connected in 1 segment

Maintenance Screen Specifications

Items	Specifications
Compatible Operating Systems	Microsoft® Windows® XP, Windows Vista®, Windows® 7
Web Browser	Internet Explorer® 6.0, 7.0, 8.0 or later

Performance Specifications

Items	Specifications
Transmission Speed[1] (UDP)	45 Mbps or higher (when using an RG-6/U coaxial cable at distances under 2 km [6,561 feet 8 inches])
Transmission Speed[1] (TCP[2])	35 Mbps or higher (when using an RG-6/U coaxial cable at distances under 2 km [6,561 feet 8 inches])
Maximum Transmission Distance	Without PoE function: 2 km (6,561 feet 8 inches)
	With PoE function: 500 m (1,640 feet 5 inches) (when using a Panasonic network camera) / 300 m (984 feet 3 inches) (when using a Class0 standard network camera)

[1] This value is for transmissions between the center adaptor and camera adaptor.
 The transmission speed when using an RG-6/U coaxial cable may very depending on factors such as the coaxial cable condition and network environment. The values shown here measured in environments not affected by cable or network environment conditions.
[2] Measured using Linux® FTP.

Maximum Transmission Distance / PoE Power Supply (when using RG-6/U coaxial cable) Specifications

Maximum Transmission Distance	300 m (984 feet 3 inches)	500 m (1,640 feet 5 inches)	1,000 m (3,280 feet 10 inches)	1,500 m (4,921 feet 3 inches)	2,000 m (6,561 feet 8 inches)
Power Supplied by PoE	15.4 W[1]	12.0 W[2]	Cannot supply power with PoE[3]		

[1] When connecting an IEEE802.3af (Alternative B, class0) network camera to the camera adaptor.
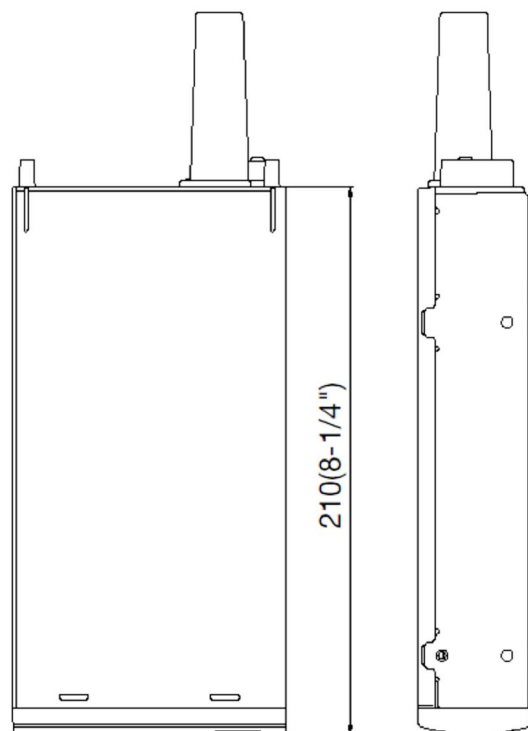[2] When connecting a Panasonic network camera to the camera adaptor.
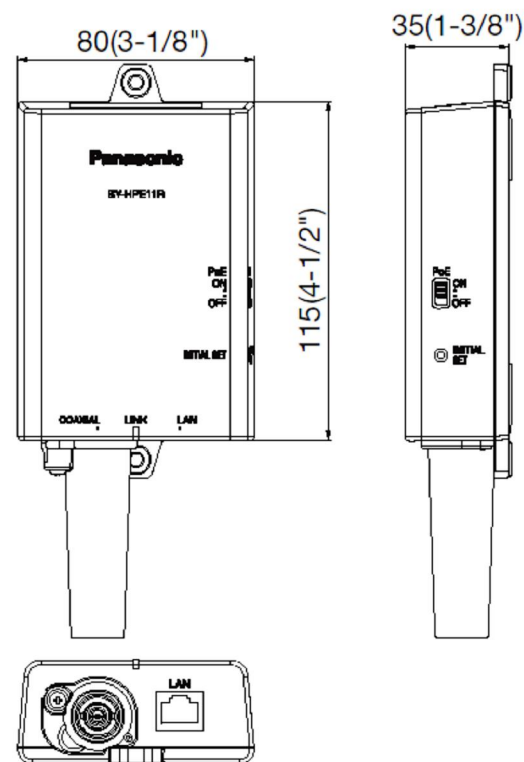[3] Turn the PoE switch [OFF] in this situation.

Center Adaptor

210(8-1/4")

105(4-1/8")

44 (1-3/4")

Panasonic

POWER LAN COAXIAL SPEED INITIAL SET

LAN 10BASE-T/100BASE-TX

Center Adaptor BY-HPE11H

Camera Adaptor

80(3-1/8")

35(1-3/8")

115(4-1/2")

Panasonic

BY-HPE11R

PoE ON OFF

INITIAL SET

COAXIAL LINK LAN

Unit: mm (inches)

Thank you