



4ch Network Encoder

VN-E4

INSTRUCTIONS

This manual describes the detailed usage of VN-E4.
For basic usage of VN-E4, refer to the "START-UP GUIDE".
Refer Readme file the CD-ROM for updated information.

These are general **IMPORTANT SAFEGUARDS** and certain items may not apply to all appliances.

IMPORTANT SAFEGUARDS

1. Read all of these instructions.
2. Save these instructions for later use.
3. All warnings on the product and in the operating instructions should be adhered to.
4. Unplug this appliance system from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
5. Do not use attachments not recommended by the appliance manufacturer as they may cause hazards.
6. Do not use this appliance near water – for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.
7. Do not place this appliance on an unstable cart, stand, or table. The appliance may fall, causing serious injury to a child or adult, and serious damage to the appliance.
Use only with a cart or stand recommended by the manufacturer, or sold with the appliance.
Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.
An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
8. Slots and openings in the cabinet and the back or bottom are provided for ventilation, and to insure reliable operation of the appliance and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the appliance on a bed, sofa, rug, or other similar surface. This appliance should never be placed near or over a radiator or heat register. This appliance should not be placed in a built-in installation such as a bookcase unless proper ventilation is provided.
9. This appliance should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company. For appliance designed to operate from battery power, refer to the operating instructions.
10. For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.
11. Do not allow anything to rest on the power cord. Do not locate this appliance where the cord will be abused by persons walking on it.
12. Follow all warnings and instructions marked on the appliance.
13. Do not overload wall outlets and extension cords as this can result in fire or electric shock.
14. Never push objects of any kind into this appliance through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the appliance.
15. Do not attempt to service this appliance yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
16. Unplug this appliance from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - a. When the power cord or plug is damaged or frayed.
 - b. If liquid has been spilled into the appliance.
 - c. If the appliance has been exposed to rain or water.
 - d. If the appliance does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the appliance to normal operation.
 - e. If the appliance has been dropped or the cabinet has been damaged.
 - f. When the appliance exhibits a distinct change in performance – this indicates a need for service.
17. When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
18. Upon completion of any service or repairs to this appliance, ask the service technician to perform routine safety checks to determine that the appliance is in safe operating condition.

PORTABLE CART WARNING
(Symbol provided by RETAC)

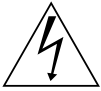


S3125A

SAFETY PRECAUTIONS (For USA)

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated "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 appliance.

NOTE:
The rating plate (serial number plate) is on the bottom.

NOTE:
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAUTION
Changes or modifications not approved by JVC could void user's authority to operate the equipment.

WARNING:
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
CAUTION:
This unit should be used with attached AC Adaptor.
To prevent electric shocks and fire hazards, do NOT use any other power source.

SAFETY PRECAUTIONS (For Europe)

IMPORTANT:
Connection to the mains supply in the United Kingdom. DO NOT cut off the mains plug from this equipment.
If the plug fitted is not suitable for the power points in your home or the cable is too short to reach a power point, then obtain a proper safety approved extension lead/adaptor or consult your dealer.
In the unlikely event of the plug fuse failing be sure to replace the fuse only with an identical approved type, as originally fitted, and to replace the fuse cover. If the fuse fails again consult your nearest JVC dealer.
If nonetheless the mains plug is cut off remove the fuse and dispose of the plug immediately, to avoid a possible shock hazard by inadvertent connection to the mains supply.
If this product is not supplied fitted with a mains plug then follow the instructions given below:
DO NOT make any connection to the Larger Terminal coded E or Green.
The wires in the mains lead are coloured in accordance with the following code:

Blue to N (Neutral) or Black

Brown to L (Live) or Red

If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured Black.
Brown wire to terminal coded L (Live) or coloured Red.
If in doubt — consult a competent electrician.

WARNING:
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION
To prevent electric shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified service personnel.

WARNING
This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measure.

Caution for AC Mains Lead

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.

This product is equipped with 2 types of AC cable. One is for continental Europe, etc. and the other one is only for U.K. Appropriate mains cable must be used in each local area, since the other type of mains cable is not suitable.

FOR CONTINENTAL EUROPE, ETC.	FOR U.K. ONLY
<p>Not to be used in the U.K.</p>	<p>If the plug supplied is not suitable for your socket outlet, please use an appropriate one.</p>

Information for Users on Disposal of Old Equipment

[European Union]

This symbol indicates that the electrical and electronic equipment should not be disposed as general household waste at its end-of-life. Instead, the product should be handed over to the applicable collection point for the recycling of electrical and electronic equipment for proper treatment, recovery and recycling in accordance with your national legislation.

By disposing of this product correctly, you will help to conserve natural resources and will help prevent potential negative effects on the environment and human health which could otherwise be caused by inappropriate waste handling of this product. For more information about collection point and recycling of this product, please contact your local municipal office, your household waste disposal service or the shop where you purchased the product.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

(Business users)

If you wish to dispose of this product, please visit our web page www.jvc-europe.com to obtain information about the take-back of the product.

[Other Countries outside the European Union]

If you wish to dispose of this product, please do so in accordance with applicable national legislation or other rules in your country for the treatment of old electrical and electronic equipment.




ATTENTION:
This symbol is only valid in the European Union.

Introduction

How to view this manual

■ Symbols used

- | | |
|---|--|
| Note | Items concerning the operations of this product are described. |
| Memo | References concerning the usage, restrictions, etc. of this product are described. |
|  | Reference pages and reference items are indicated. |

■ About the contents of this manual

- All rights reserved by JVC. Unauthorized duplication or reprinting of this manual, in whole or in part, is strictly prohibited.
- Windows is a registered trademark of Microsoft Corporation in the U.S.
- All other product names used in this manual are trademarks or registered trademarks of their respective companies. Please note that marks such as ™, ®, ©, etc. have been omitted in this manual.
- Illustrated designs, specifications and other contents of this manual are subject to change without prior notice.

Copyrights in this manual

- With the exception of the user being the copyright holder or when permission has been granted concerning duplication, etc. by the copyright holder, permission is required in principle for the duplication, modification, transmission, etc. of copyrighted video/audio.
Unauthorized duplication, modification, transmission, etc. of copyrighted material may constitute a copyright infringement and the user may be liable to compensate for any damages. When using copyrighted video/audio, be sure to check thoroughly the license agreement, etc. of the copyrighted material. When there are rights or right holders of the duplicating subject, usage or processing permission may be required. Be sure check thoroughly the licensing conditions, etc.
- Open source software is partially used for this unit. For information concerning the software, click “Open Source Software” in the “5-14 Miscellaneous Page” of page 41.

Features

✔ **Distribution of 4-channel images to the network**

VN-E4 compresses 4-channel video input images in the JPEG format. For VN-E4U, each channel may be distributed at a maximum rate of 30 fps. The maximum rate for 4 channels is 120 fps in total. For VN-E4E, each channel may be distributed at a maximum rate of 25 fps. The maximum rate for 4 channels is 100 fps in total. Either VGA or QVGA may be selected as the frame size. It is also possible to simultaneously distribute a video input in both types of frame sizes.

Clients may be able to acquire these JPEG via TCP. Up to 10 JPEG or audio streams may be sent via TCP. For example, when acquiring 4 JPEG and 1 audio stream via TCP using the built-in viewer, a maximum of 2 built-in viewers may be connected to each VN-E4.

Multicast transmission of JPEG is also possible with VN-E4. Multicast transmission of up to 10 streams is possible.

✔ **Audio distribution to the network**

VN-E4 compresses 1-channel audio input in the μ -law format. Clients may acquire μ -law via TCP. Multicast transmission of μ -law is also possible with VN-E4.

VN-E4 comes with a built-in echo canceller. Use this during bi-directional audio transmission.

✔ **Reception and output of audio signals from the network**

VN-E4 enables output of μ -law received from the network as audio signals.

✔ **Built-in Viewer**

VN-E4 comes with a built-in ActiveX viewer. Monitoring of VN-E4 images and audio using the PC is possible by installing this built-in viewer on the PC.

✔ **Motion detect and alarm input**

VN-E4 is equipped with motion detect function that can detect motion in each video input. It also comes with a 4-channel alarm input. It is possible to invoke actions such as notification to clients, alarm output, sending of mails and JPEG file transfer during detection of motion or alarm input. Actions may also be invoked using a combination of 2 conditions.

✔ **Controlling external devices connected to the serial port**

VN-E4 comes with 2 serial ports. It is possible to control external devices connected to the serial ports from the clients.

✔ **Controlling external devices**

The built-in viewer of VN-E4 may be used to control JVC cameras and cameras that support the Pelco-D protocol.

✔ **Restrictions on Clients**

VN-E4 can permit or deny access from clients based on registered IP addresses.

CONTENT

Introduction	How to view this manual	4
	Copyrights in this manual	4
	Features	5
	CONTENT	6
	Cautionary Notes	7
	Name and Function of Parts	8
Preparation	1. System Setup Examples	10
	1-1 Remote monitoring using the built-in viewer	10
	1-2 Systems that combine other manufacturer's devices	12
	2. Requirements for network using VN-E4	14
	2-1 Network Bandwidth	14
	2-2 Network Delay	15
	2-3 Network Jitter	15
	2-4 Packet Loss	15
	2-5 Use of Multicast	15
	3. IP Address Setting	16
	3-1 VN-E4 with Factory Default Settings	16
	3-2 VN-E4 for which IP address is known	16
	3-3 When IP address of VN-E4 is unknown	16
	4. Connection / Installation	17
	4-1 AC Adaptor	17
	4-2 Network	17
4-3 [COM1,2] Serial Port Terminals	18	
4-4 Alarm Input	18	
4-5 Alarm Output	18	
4-6 AV Devices	19	
4-7 Attaching Rack Mount Brackets	19	
4-8 Connection with PC	19	
Settings	5. Setting Using Internet Explorer	20
	5-1 JPEG View Page (Top Page)	21
	5-2 Input Page	23
	5-3 Encoding Page	24
	5-4 Alarm Page	25
	5-5 Alarm Environment Page	26
	5-6 Serial Page	29
	5-7 Basic Page	30
	5-8 Details Page	31
	5-9 Streaming Page	32
	5-10 Access Restrictions Page	33
	5-11 Time Page	34
	5-12 Password Page	35
	5-13 Maintenance Page	36
	5-14 Miscellaneous Page	41
	5-15 Operation Page	42
5-16 Settings Page	43	
Operation	6. Using the VN-E4 Built-in Viewer	46
	6-1 Screen Configuration of Built-in Viewer	46
	6-2 Built-in Viewer Settings	48
	6-3 GUI for External Device Control	50
Others	7. Troubleshooting	53
	8. Specifications	54

Cautionary Notes

About GPL

Part of the software that is supplied with this product are free software with the GNU General Public License (henceforth referred to as GPL). Please refer to the web page contained in this product for details on GPL free software.

Exclusion of Liability

Our company shall not be liable for compensation of contents in the event of recording or playback failure resulting from defects of this unit or the computer software.

Storage/usage location

- Do not use or store the unit in the following locations. Malfunction may occur as a result.
 - Location outside the allowed operating temperature range (0 °C to 40 °C) where the temperature may become extremely hot or cold.
 - Location outside the allowed operating humidity range (20 % to 80 %) where the humidity is high.
 - Location with strong magnetic force such as from a transformer, motor, etc.
 - Location with presence of electric waves such as from a transceiver, mobile phone, etc.
 - Location that is dusty or sandy.
 - Location with strong vibrations.
 - Location with condensation.
 - Location where radiation, x-ray or corrosive gas is generated.

Handling

- To prevent the internal temperature from rising, do not stack units when using.
- Do not place the unit on its side.
- Handle the unit with caution and do not apply excessive force.
- Wipe the unit with a soft cloth.

The surface may fog or even melt when wiped with benzene or paint thinner. For stubborn dirt, use neutral detergent diluted in water and then dry wipe.
- To completely cut off the power, disconnect the power cable from the wall outlet or remove the power cord from the AC adaptor.

Installation

- Be sure to ground the unit.
- Place the unit near a wall outlet.
- Always use the specified (included) power cord and AC adaptor.
- Use of a cord other than that specified or a cord that has been damaged may result in fire or electrical shock.
- Do not use power cord or AC adaptor other than with this unit.
- Do not place heavy objects such as a monitoring television on top of the unit. Malfunction may occur as a result.

About the echo canceller

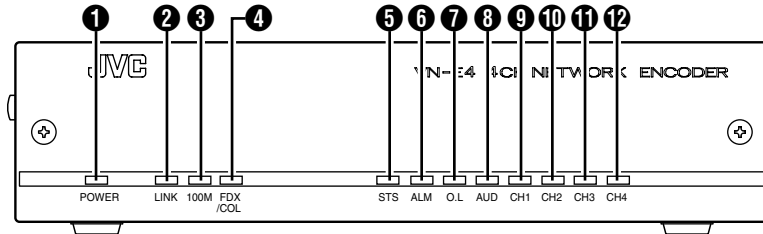
- The echo canceller of the unit is provided for the prevention of howling. However, repeated echoing of sound other than from a VN-E4 may not be suppressed sufficiently.
- When using a speaker and a microphone at the same time, place them apart, change the direction of the microphone or take caution so that the playback sound from the speaker is not picked up by the microphone.
- When using a camcorder with audio AGC (Auto Gain Control), the echo canceller may not work properly. Please turn off the AGC.
- If the AGC feature cannot be turned off, use a separate microphone amplifier with no AGC.
- When not using the unit for a long time, turn the power of the unit off for conserving energy.
- About electrical interference

When using the unit near a television, radio receiver or transceiver, screen images may become disturbed or noise may be heard. In this case, try the following:

 - Place the unit away from radios and televisions or change the direction of the unit.
 - If an indoor antenna is used, change the direction or the location of the antenna.
 - Use a wall outlet other than the one used for radios, televisions, etc.
 - Install a commercially-available noise filter between the wall output and power plug.

Name and Function of Parts

[FRONT]



1 [POWER] Lamp

Lights up when the power of VN-E4 is turned on.

2 [LINK] Lamp

Lights up when VN-E4 is connected to the network.

3 [100M] Lamp

Lights up when VN-E4 is connected to the network via 100Base. The light will not be illuminated in the case of 10Base.

4 [FDX/COL] Lamp

Lights up when VN-E4 is connected to the network via full duplex. The light will not be illuminated in the case of half duplex. The light will appear blinking when collision occurs.

5 [STS] Lamp (Status Lamp)

Lights up when VN-E4 is started up properly. The light will appear blinking when troubles occur during startup and the error details will be displayed in [CH1–CH4].

CH1	CH2	CH3	CH4	Error Details
Light OFF	Light OFF	Light OFF	Light ON	A device with the same IP address as VN-E4 is detected. The lamps will not change until the power of VN-E4 is turned off.
Light OFF	Light OFF	Light ON	Light OFF	There is no video signal input to VN-E4. The normal display will be restored upon input of video signals.

6 [ALM] Lamp (Alarm Lamp)

Displays alarm input to VN-E4. Lights up when there are changes in the alarm input or when motion is detected. The light will turn off automatically after 5 seconds.

7 [O.L.] Lamp (Overload Lamp)

Displays the processing load of VN-E4. This light is turned off when this unit is functioning properly. This light is turned on when the processing load of VN-E4 is too heavy.

8 [AUD] Lamp (Audio Lamp)

Displays the audio transmission status of VN-E4. Lights up during transmission of audio data to the network. Turns off when there is no transmission.

9 [CH1] Lamp (Video 1 Channel Lamp)

Displays the image transmission status of VN-E4. Lights up during transmission of video input at [CH1] to the network. Turns off when there is no transmission.

10 [CH2] Lamp (Video 2 Channel Lamp)

Displays the image transmission status of VN-E4. Lights up during transmission of video input at [CH2] to the network. Turns off when there is no transmission.

11 [CH3] Lamp (Video 3 Channel Lamp)

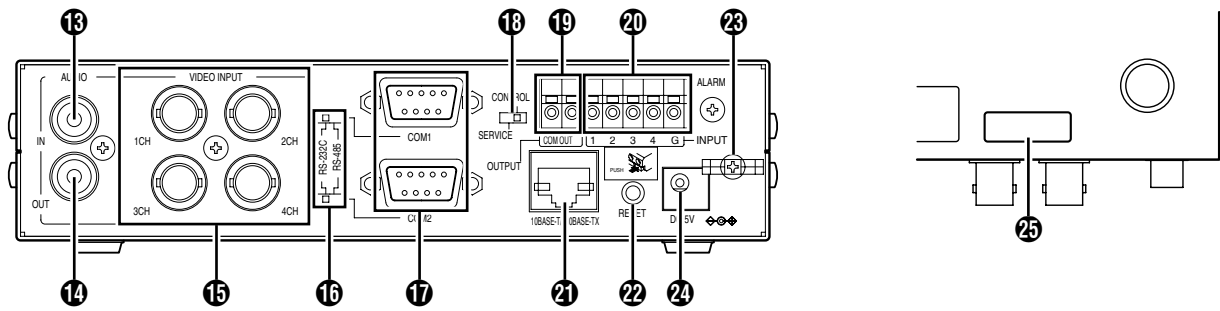
Displays the image transmission status of VN-E4. Lights up during transmission of video input at [CH3] to the network. Turns off when there is no transmission.

12 [CH4] Lamp (Video 4 Channel Lamp)

Displays the image transmission status of VN-E4. Lights up during transmission of video input at [CH4] to the network. Turns off when there is no transmission.

[BACK]

[BOTTOM]



13 [AUDIO IN] terminal (RCA pin)

For input of audio signals.

14 [AUDIO OUT] terminal (RCA pin)

For output of audio signals.

15 [VIDEO INPUT 1CH to 4CH] terminal (BNC)

For input of video signals.

16 [RS-232C/RS-485] COM1, 2 Protocol Selection Switch

For switching between RS-232C and RS-485 of COM1 and COM2. Factory setting is RS-232C.

17 [COM1, COM2] terminal (D-sub 9P)

Serial port for controlling external devices.

18 [CONTROL/SERVICE] switch

Switch for switching COM1 to servicing. Select CONTROL for normal use. Select SERVICE during maintenance. Factory setting is CONTROL.

19 [ALARM OUTPUT] terminal

The COM and OUT terminals form the make contact. Alarm output changes to break upon turning off the power of VN-E4, and alarm output is restored to the previous state upon turning on the power again.

20 [ALARM INPUT] terminal

Input terminal for no-voltage make contact or break contact. This consists of 4 input and 1 ground terminals.

21 [10 BASE-T/100 BASE-TX] LAN terminal

For connecting the network cable.

22 [RESET] button

Button for resetting VN-E4. Power will be reset upon pressing this button and releasing it within 5 seconds. If this button is pressed for 5 seconds or longer, LEDs from STS to CH4 will start to blink and all settings will be restored to their factory defaults.

23 Wire Clamp

For securing the cable of the AC adaptor.

24 [DC 5V] Power Terminal

For connecting the AC adaptor supplied. VN-E4 does not come with a power switch. It will start up automatically upon supply of power using the AC adaptor.

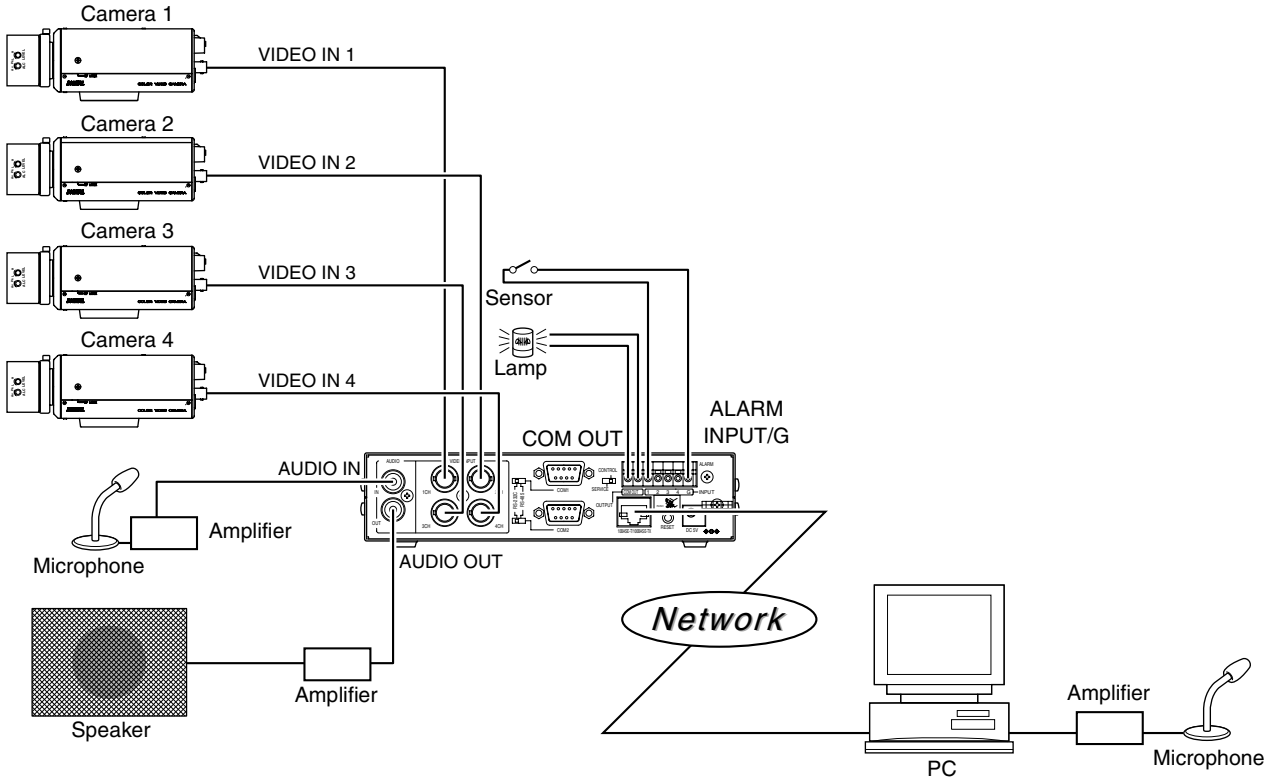
25 The MAC address of VN-E4 is displayed on the label in hexadecimal numbers.

Preparation

1. System Setup Examples

1-1 Remote monitoring using the built-in viewer

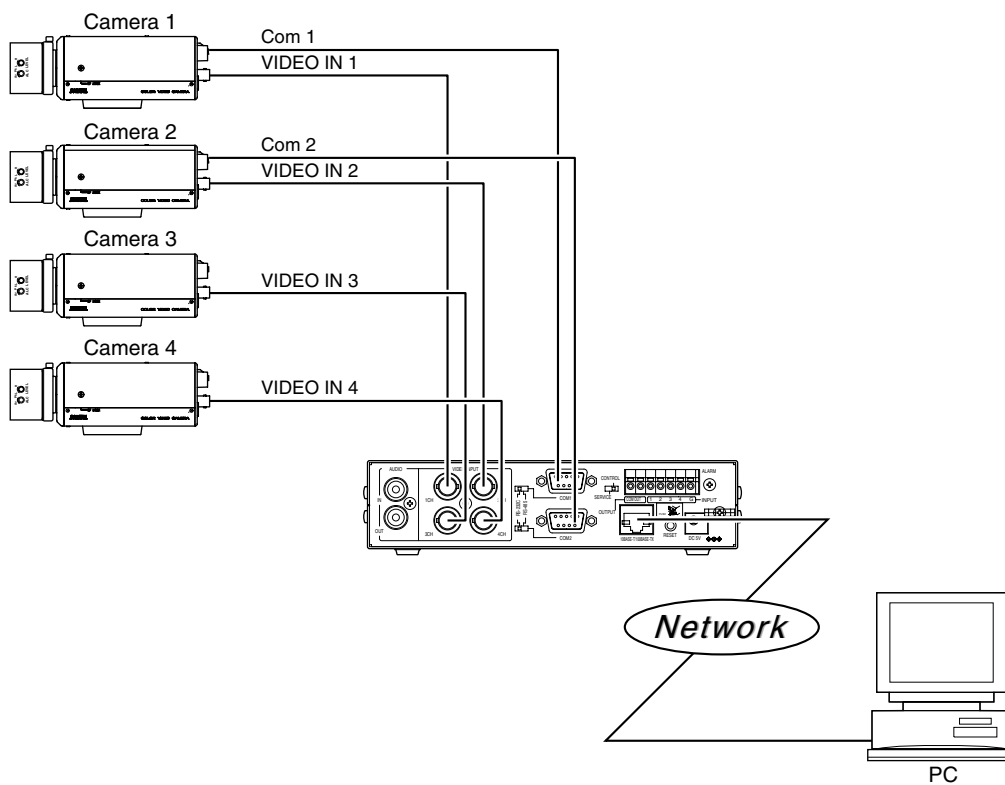
The built-in viewer of VN-E4 can be used to enable remote monitoring via the PC.



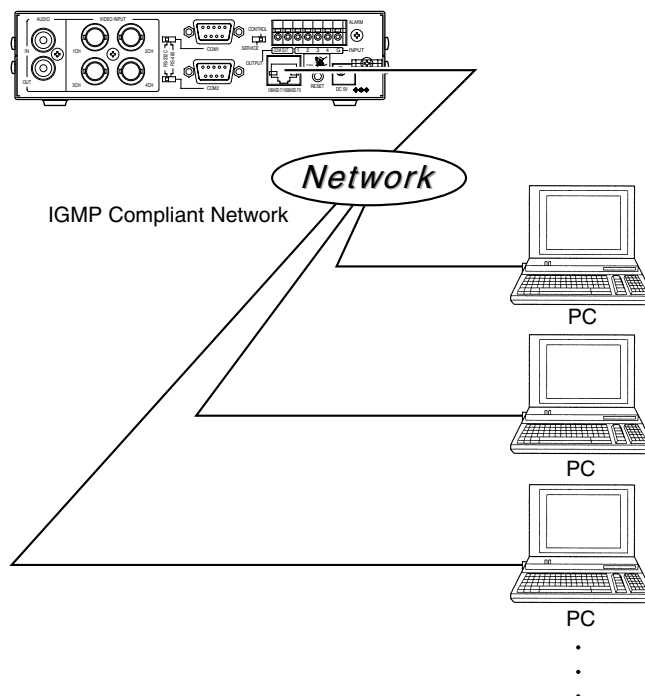
In addition to monitoring images of the 4 channels, bi-directional audio conversation is also possible. When there is alarm input and detected motion, these will be displayed on the viewer. A warning light may be connected to the alarm output terminal, which may be illuminated upon alarm input. Images that are currently displayed may be captured in the PC's hard disk.

Preparation (continued)

- Remote control of JVC cameras
Remote control of the following JVC cameras is possible using the viewer.
TK-C655E TK-C676E TK-C1480BE/C1460BE

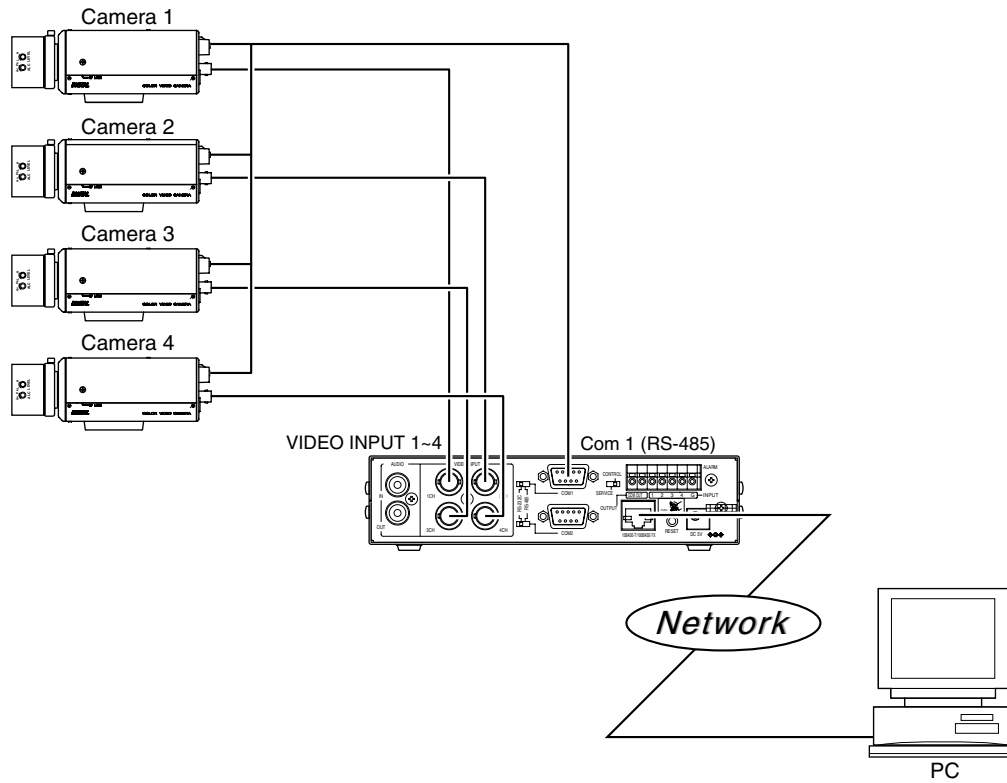


- Multi-point monitoring via multicast
Monitoring of multiple points is possible via multicast.



1-2 Systems that combine other manufacturer's devices

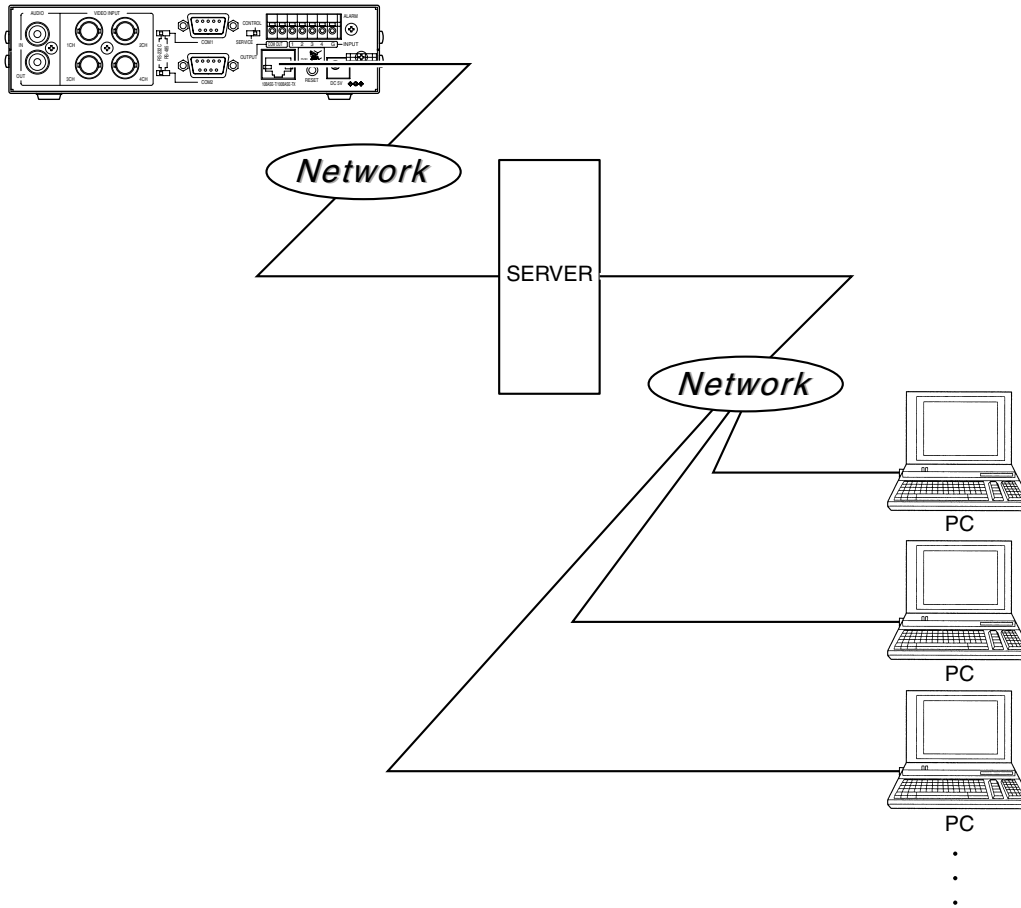
- Remote control of cameras that support Pelco-D protocol
Remote control of cameras that support the Pelco-D protocol is possible using the built-in viewer.



Preparation (continued)

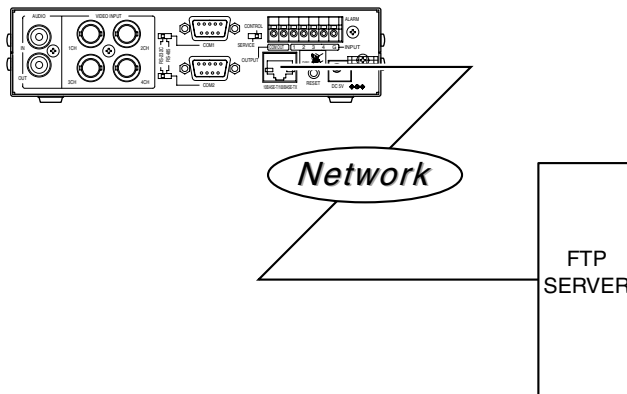
- Mass distribution via redistribution server

Images of VN-E4 may be recorded in the redistribution server and distributed to a large number of clients.



- Recording images at the FTP server

FTP can be set such that JPEG files are transferred from VN-E4 to FTP server when alarm occurs. Images before and after the alarm input time (pre/post images) may be recorded at the FTP server.



- Control via customized application software

The following uses are also possible by developing a customized application software that supports the API of VN-E4.
Monitoring via the PC while at the same time recording images/audio to the HDD.

Recording by increasing the frame size/frame rate during alarm occurrence.

Recording the type and time of alarm occurrence at the PC.

Remote control of some external devices using the pass-through feature of VN-E4.

2. Requirements for network using VN-E4

2-1 Network Bandwidth

Ensure that there is sufficient network bandwidth for the data volume to be transmitted by VN-E4. Data volume to be transmitted by VN-E4 varies with the number of image or audio distributions.

- Data volume of images
VN-E4 enables creation of up to 8 different types of images.

	Input CH	Frame Size
No. 1	CH1	VGA
No. 2	CH1	QVGA
No. 3	CH2	VGA
No. 4	CH2	QVGA
No. 5	CH3	VGA
No. 6	CH3	QVGA
No. 7	CH4	VGA
No. 8	CH4	QVGA

VN-E4 allows distribution of each image to multiple destinations. Data of image to be transmitted by VN-E4 is therefore the aggregate total of all these data.

Data volume of No. 1 × no. of distributions + data volume of No. 2 × no. of distributions +...+ data volume of No. 8 × no. of distributions

The number of distributions shall be the total number of stream transmissions via TCP (number of clients) and multicast.

(Example)

Data volume will be calculated according to the formula below when 3 streams of No. 1 are sent.

JPEG file size per frame × frame rate × 3

If the JPEG file size per frame is 30 KB and frame rate is 30 fps, then data volume will be as follows.

$30 \text{ KB} \times 30 \text{ fps} \times 3 = 2700 \text{ KB/sec} = \text{Approx. } 21 \text{ Mbps}$

The JPEG file size per frame varies with the parameter set as well as input video signals. The following table may be used as a reference.

Picture Quality Control Method		VGA File Size	QVGA File Size
VFS (Variable File Size)	1 (High)	80 KB	27 KB
	2	60 KB	20 KB
	3	40 KB	13 KB
	4 (Medium)	30 KB	10 KB
	5	25 KB	8 KB
	6	20 KB	7 KB
	7 (Low)	15 KB	5 KB
AFS (Average File Size) CFS (Constant File Size)		Selection may be made from the range between 10 to 100 KB	Selection may be made from the range between 3 to 33 KB
		Selection may be made from the range between 10 to 100 KB	Selection may be made from the range between 3 to 33 KB

- Audio data volume
Audio data transmitted by VN-E4 is at 64 kbps per stream. Audio data volume may be calculated using the following formula.
 $64 \text{ kbps} \times \text{no. of streams}$
The number of streams is the total number of streams sent via TCP (number of clients), streams sent via multicast, and stream received by VN-E4.
(Example)
When VN-E4 sends out 2 audio streams and receives 1 audio stream, data volume will be as follows.
 $64 \text{ kbps} \times 3 = 192 \text{ kbps}$

NOTE:

When there is insufficient network bandwidth, the number of JPEG frames (frame rate) that may be acquired by the client will decrease.

In addition, delay time will be prolonged and interruptions will also occur in the audio data.

2-2 Network Delay

When the client acquires JPEG or audio via TCP, VN-E4 will be send out data while checking the ACK from the client at the same time. For networks with considerable delay, data cannot be sent out until ACK is received, and therefore the frame rate will drop. To operate VN-E4 and its built-in viewer using the factory settings, the frame rate will drop below 120 fps if the round trip time exceeds 4 msec. Enlarging the window scale of the PC on which the built-in viewer is running may extend the round trip time for which frame rate deteriorates to 20 msec. Refer to the section on "7. Troubleshooting" in "Others" for details on the window scale. Drop of frame rate by network delay can be eliminated by using multicast.

2-3 Network Jitter

When there is considerable network jitter, delay time may be prolonged, frame rate may drop and audio sound may be interrupted.

There are 3 types of buffer that may be chosen for the built-in viewer, namely 0.3, 0.6 and 1.0 second. Influences of jitter may be reduced by setting to a larger value. In this case, however, delay time will be prolonged.

2-4 Packet Loss

When acquiring images/audio from VN-E4 via TCP, packet loss may be recovered by resending from TCP. When there is considerable delay during resending, however, image frame rate may drop and audio sound may be interrupted.

When packet loss occurs during multicast sending from VN-E4, image frame rate may drop and audio sound maybe interrupted.

2-5 Use of Multicast

Make use of a network that supports IGMP if multicast is to be used. When a network that does not support IGMP or multicast routing is used, multicast data that is sent out from VN-E4 may not reach the recipient and playback may fail.

3. IP Address Setting

3-1 VN-E4 with Factory Default Settings

Refer to START-UP GUIDE on procedures for setting the IP address when VN-E4 is in the factory default settings.

3-2 VN-E4 for which IP address is known

When the IP address of VN-E4 is known, it can be changed by accessing the built-in web page of VN-E4 via the PC's Internet Explorer. See "5. Setting Using Internet Explorer".

3-3 When IP address of VN-E4 is unknown

When IP address of VN-E4 is unknown, there are 3 methods to know IP address.

a) **Use the search tool**

The search tool in attached CD-ROM is available to know IP address of VN-E4. Refer readme file of the tool for detailed information.

b) **Initialize VN-E4**

Pushing [RESET] button on rear panel over 5 seconds initializes VN-E4 to factory default setting.

c) **Capture packets on network**

Perform following procedures to find out the IP address of VN-E4.

1. Configuration for looking up IP address

Set up a PC with the network monitor software installed on it. The network monitor software will capture and look up incoming packets at the PC. An example of free network monitor software that may be obtained from the Internet is Ethereal.

Connect VN-E4, the switching hub and PC using a straight LAN cable of Category 5 and above. (Do not connect the DHCP server to the switching hub.)

2. Capturing packets sent by VN-E4

Launch the network monitor software on the PC and start capturing.

Supply power to VN-E4 using the AC adaptor. Depending on the settings, the amount of time required for VN-E4 to start up may vary from about 1 to 2 minutes. VN-E4 will start packet transmission during this interval, and capturing will end in about 2 minutes.

3. Looking up captured packets

- If ARP request is sent first by VN-E4

If the following ARP request is sent first by VN-E4, then the destination IP address of this packet will be the IP address of VN-E4. (In this case, the subnet mask of VN-E4 is unknown.)

Packet type: ARP request

Source IP address: 100.100.254.169

This ARP request packet is used to check whether there are devices that possess a duplicate IP address with VN-E4. In this case, "DHCP" and "PPPoE" of VN-E4 are set to "Off".

- If the DHCP Discover packet is sent first by VN-E4

The DHCP client function of VN-E4 is set to ON. In a LAN environment without a DHCP server, the DHCP will time out in about 2 minutes after the power is turned on, and VN-E4 will be started up using the following IP address.

IP address 192.168.0.2

Subnet mask 255.255.255.0

Default gateway 192.168.0.254

- If the following broadcast packet is sent first by VN-E4

Destination MAC address 0xFFFFFFFFFFFF

Ethernet Type 0x8863

The "PPPoE" of VN-E4 is set to "On". In a LAN environment without a PPPoE server, it will time out in about 2 minutes after the power is turned on, and VN-E4 will be started up using the following IP address.

IP address 192.168.0.2

Subnet mask 255.255.255.0

Default gateway 192.168.0.254

4. IP address setting on PC

The subnet mask of VN-E4 is unknown when methods 1. to 3. are used to look up the IP address, and there is a possibility that this may be 255.255.255.254.

Set the IP address of the PC such that it is in the same segment with VN-E4.

(Example 1) When the IP address of VN-E4 is 10.1.2.2

By setting the PC's IP address to 10.1.2.3 and the subnet mask to 255.255.255.0, they will be in the same segment and communication will be enabled even if the subnet mask of VN-E4 is 255.255.255.254.

(Example 2) When the IP address of VN-E4 is 10.1.2.3

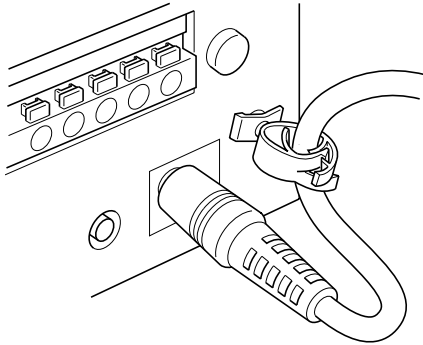
By setting the PC's IP address to 10.1.2.2 and the subnet mask to 255.255.255.0, they will be in the same segment and communication will be enabled even if the subnet mask of VN-E4 is 255.255.255.254.

Whether communication is enabled may be determined by sending a Ping from the PC to the IP address of VN-E4.

For procedures on changing settings of VN-E4 via Internet Explorer on the PC, refer to "5. Setting Using Internet Explorer".

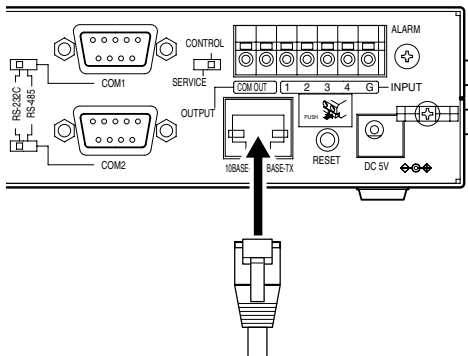
4. Connection / Installation

4-1 AC Adaptor



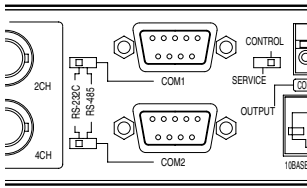
Connect the AC adaptor cable to the power terminal of VN-E4, followed by securing the cable using the wire clamp. Plug the power cable into the AC adaptor, followed by the power cable plug to the power source.

4-2 Network



Connect VN-E4 to the switching hub using a straight LAN cable of Category 5 and above.

4-3 [COM1,2] Serial Port Terminals

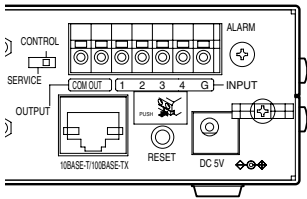


Connect the device (camera, etc.) to be controlled to the serial port. Use the switch to switch between RS-232C and RS-485.

● Pin Layout

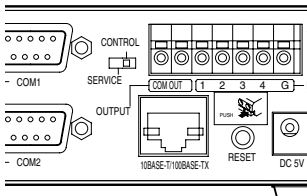
Pin No.	When RS-232C is selected		When RS-485 is selected	
	Name	Function	Name	Function
1	(NC)	(Not in use)	RX+	+ Receiving End
2	RXD	Receive data	RX –	– Receiving End
3	TXD	Send data	TX –	– Sending End
4	(NC)	(Not in use)	TX+	+ Sending End
5	GND	Grounding	GND	Grounding
6	(NC)	(Not in use)	(NC)	(Not in use)
7	(NC)	(Not in use)	(NC)	(Not in use)
8	(NC)	(Not in use)	(NC)	(Not in use)
9	(NC)	(Not in use)	(NC)	(Not in use)

4-4 Alarm Input



For connecting the sensor. This consists of 4 input and 1 ground terminals. Either Make or Break is selected depending on the setting, and sensors of the no-voltage A contact output (normally open), no-voltage B contact output (normally closed) or no-voltage C contact output type may be used.

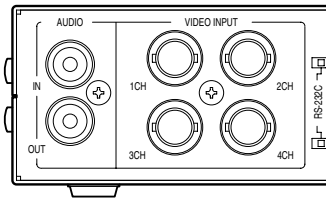
4-5 Alarm Output



The [OUT] and [COM] terminals form the make contact. Connect the device that is to be turned on during an alarm. Alarm output changes to break when the power of VN-E4 is turned off. Upon starting up VN-E4, the alarm output is restored to the previous state. (pg. 54, "8. Specifications")

Preparation (continued)

4-6 AV Devices



Connect up to 4 cameras to the 4 video input terminals at the rear panel of VN-E4. Output signals of each camera need not be synchronized.

Connect a microphone to the audio input terminal at the rear panel of VN-E4 via amplifier.

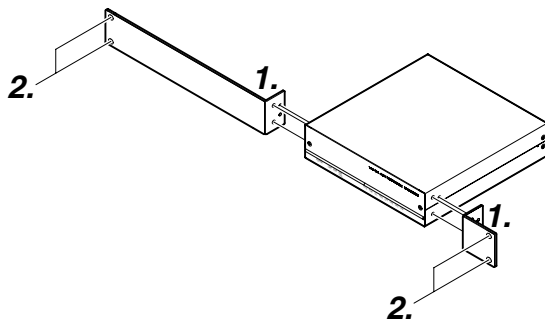
Connect a speaker to the audio output terminal at the rear panel of VN-E4 via amplifier.

4-7 Attaching Rack Mount Brackets

The rack mount brackets (optional) can be used to install the unit to a rack. Request installation to the dealer of purchase.

* For details concerning the rack mount brackets, please consult the person in charge of professional equipment at your nearest JVC-authorized service agent.

In case of 1 unit. (VN-BK10 rack mount bracket)



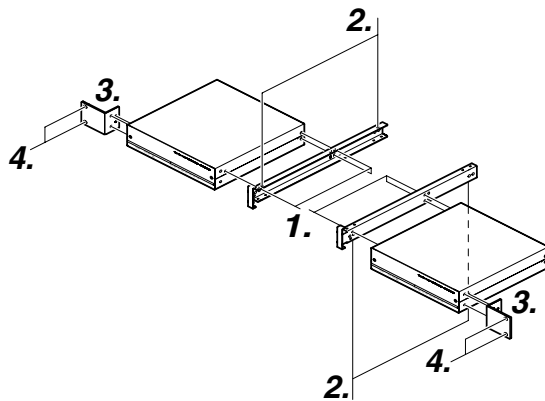
1. Mount the side bracket on both left and right

(Remove 1 screw from each end of VN-E4. Fasten each end using 1 M3 screw and 2 M4 screws that are supplied with the rack mount bracket.)

2. Fasten to the rack using the M5 screws supplied with the rack mount bracket

(2 M5 screws at each end)

In case of 2 units. (VN-BK11 rack mount bracket)



1. Mount the joint bracket to the connecting face of the unit

(Remove 3 screws from VN-E4. Connect with 3 M3 screws that are supplied with the rack mount bracket.)

2. Fasten the 4 locations (top and bottom) using the M3 screws supplied with the rack mount bracket

(For joining the left and right units)

3. Mount the side bracket on both left and right

(Remove 1 screw from each end of VN-E4. Fasten each end using 1 M3 screw and 2 M4 screws that are supplied with the rack mount bracket.)

4. Fasten to the rack using the M5 screws supplied with the rack mount bracket

(2 M5 screws at each end)

4-8 Connection with PC

Connect the PC to the switching hub using a straight LAN cable.

To operate the built-in viewer of VN-E4, set up the PC as follows.

[Recommended PC Specifications for Viewing]

OS	: Windows XP Pro (SP2) or Windows XP Home (SP2)
CPU	: For receiving at 30 fps: 1.5 GHz For receiving at 120 fps: 3.4 GHz
Memory	: 1 GB
Hard disk	: Free disk space of 20 MB and above
Video card	: 1024 × 768 pixels or higher, True Color (24 or 32 bits)
Sound card	: Sound Blaster (PCI)
Web browser	: Internet Explorer V6.0

5. Setting Using Internet Explorer

1. Setting Up of PC for Setting

Setting of VN-E4 may be performed using Internet Explorer. Refer to “START-UP GUIDE” on the PC specification requirements, and setting of PC’s IP address as well as Internet Explorer.

2. Enter user name and password

User name and password entry will be required at the beginning. There are 3 access authorization levels to VN-E4. Factory settings of the unit are as follows.

User Name	Default Password	Description
admin	vn-e4	All operations and changes are allowed.
operator	vn-e4	Change of settings other than those related the network are allowed.
user	vn-e4	Viewing of input images and change of language on setting pages are allowed.

NOTES:

A security warning window will appear during access. Press the “OK” button to proceed.

If you do not want this warning window to be displayed, change the Internet Explorer settings as follows.

Open “Tools” - “Internet Options” - “Security”, select “Trusted sited” icon, that you might registered VN-E4 URL according to START-UP GUIDE. Press “Custom Level” button to select “Enable” in the “Display mixed content” item under “Miscellaneous”.

3. The JPEG View page (top page) will be displayed



This top page will be displayed upon access via “admin”, “operator” or “user”. The video input image at the point when this page is opened will be displayed as a still image.

Available links and buttons are depends on user name, i.e. “admin”, “operator” or “user”.

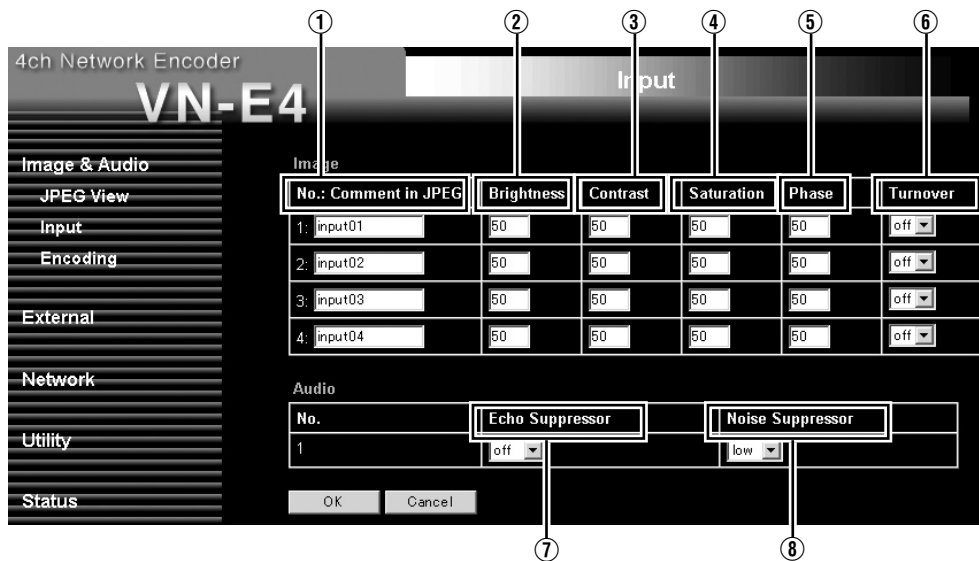
Settings (continued)



①	Switching Language	Click "Japanese / English" at upper right to switch the display language of the web page.
②	Reload Button	<p>Press this button to refresh the JPEG image displayed.</p> <p>Clicking "JPEG View" or re-entering the Internet Explorer address will only display the page that is temporarily stored in the Internet Explorer, and JPEG images may not be refreshed in this case. To refresh JPEG images using the above operations, change the Internet Explorer settings as follows.</p> <p>Open "Tools" - "Internet Options", and click the "Settings" button under Temporary Internet Files. Select "Every visit to the page".</p>
③	Viewer... Button	<p>This is displayed upon access to the "JPEG View" page via "admin" or "operator". Click this button, and click "OK" button on displayed security alarm window to launch the built-in viewer. Do not click this button again leaving the security alarm window. The motion detect setting window on the "Alarm Environment" page and the built-in viewer cannot be launched at the same time.</p> <p>When this button is pressed for the first time on the operating PC, the built-in viewer will be installed on the PC. Refer to "START-UP GUIDE" on procedures to install the built-in viewer on the PC. Refer to "START-UP GUIDE" on basic operations of the built-in viewer. Refer to "6. Using the VN-E4 Built-in Viewer" on further details on the uses of the built-in viewer.</p>

5-2 Input Page

This page is for setting the video and audio input parameters.

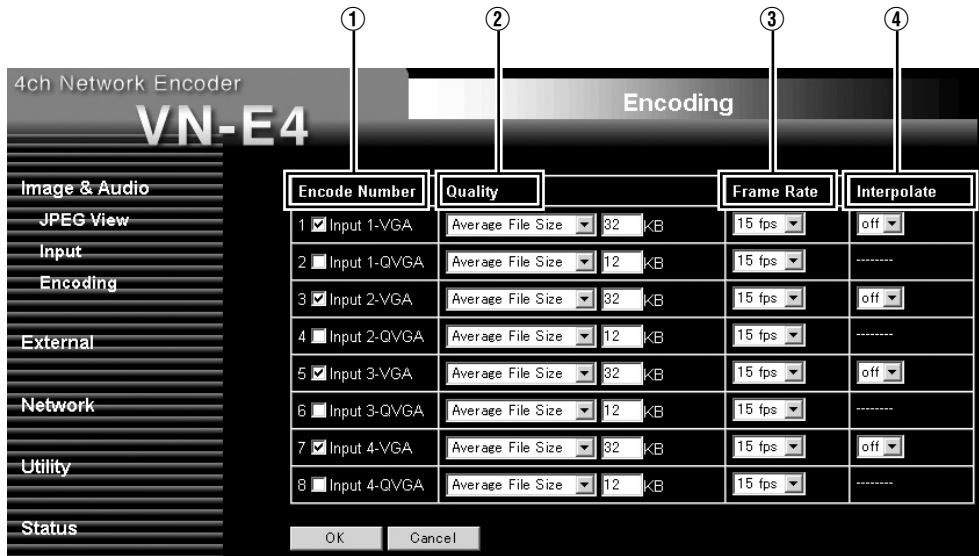


This page can be used upon access via “admin” or “operator”. Press the “OK” button to enable the new settings upon changing. If the “OK” button is pressed upon entering an invalid value, a warning message will appear and entry will be denied. Press the “Cancel” button to restore the invalid entry to the current value.

①	Camera Name	Texts entered here is stored in the JPEG comment segment. Refer to “API GUIDE” on file format of VN-E4 JPEG.
②	Brightness	For adjusting brightness. Setting range is between 0 and 100.
③	Contrast	For adjusting contrast. Setting range is between 0 and 100.
④	Saturation	For adjusting color saturation. Setting range is between 0 and 100.
⑤	Phase	For adjusting hue. Setting range is between 0 and 100.
⑥	Turnover	For flipping the image upside down. NOTE: The Flag specified here is stored in the JPEG comment segment. Switching this parameter does not invert image data itself in JPEG. Refer to “API GUIDE” on file format of VN-E4 JPEG.
⑦	Echo Suppressor	For reducing audio echo. Use this when bi-directional audio is used.
⑧	Noise Suppressor	For reducing the noise in audio data that is input to VN-E4. Audio output from VN-E4 will not be affected. Enhancing the setting may increase the effectiveness of removing noises, but it also comes with a trade-off of deterioration in sound quality.

5-3 Encoding Page

This page is for setting JPEG encoding parameters.



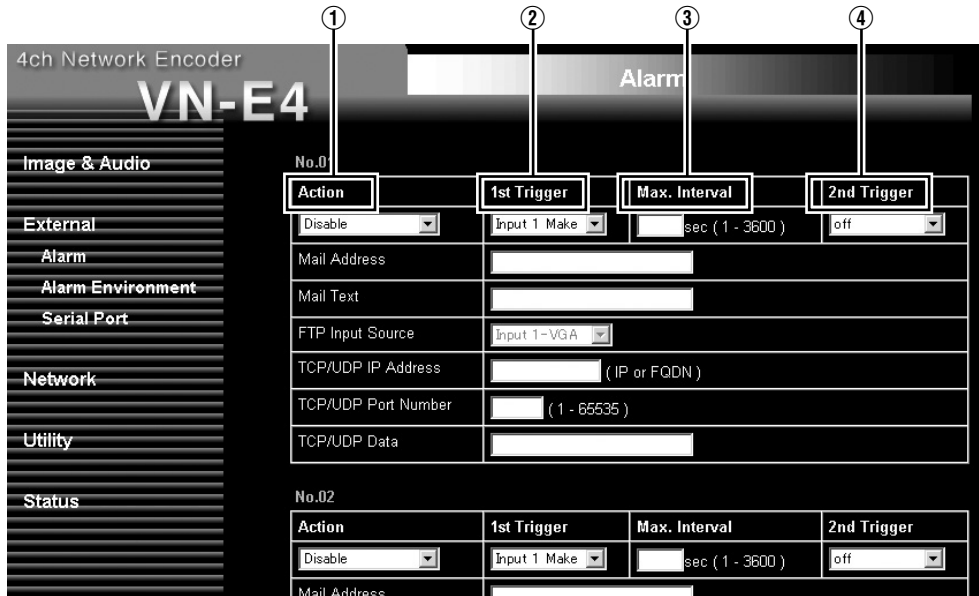
This page can be used upon access via “admin” or “operator”. Press the “OK” button to enable the new settings upon changing. If the “OK” button is pressed upon entering an invalid value, a warning message will appear and entry will be denied. Press the “Cancel” button to restore the invalid entry to the current value.

①	Encode Number	Up to 8 types of encoding are possible using different combinations of the input channel and frame size. Turn on the check box for items to be used. Deselect unnecessary items to enable effective allocation of the processing capacity of VN-E4.									
②	Quality	<p>For specifying the rate control mode and target file size.</p> <p>When “1-high-” to “7-high-” is selected, the quantization table of JPEG encoding is fixed and the file size will increase/decrease according to the input signals. Default value of each option is displayed in the target file size. Be careful when recording JPEG data to a recorder with limited recording capacity, as file sizes may increase or decrease, so the maximum recording time may be changed (When “Average File Size” or “Constant File Size” is selected, input of target file size will be enabled.)</p> <p>When “Average File Size” is selected, encoding is performed such that average file size of multiple JPEG images becomes the target file size.</p> <p>When “Constant File Size” is selected, encoding is performed such that each JPEG file size becomes the target file size. When “Constant File Size” is selected, the processing load of VN-E4 is heavy and the maximum frame rate becomes a quarter of the maximum frame rate in other rate control modes</p>									
③	Frame Rate	<p>For specifying the number of frames to encode per second. VN-E4 is limited in its processing capacity and the specified frame rate may not be realized depending on the settings of “Encode Number” and “Quality”.</p> <p>In particular, when “Constant File Size” is selected or when the target file size is set to a large value, the upper limit of “Frame Rate” will be lowered.</p> <p>An example of settings for which 120 fps (VN-E4U) or 100 fps (VN-E4E) can be realized is as follows.</p> <p>Encoding : 4 VGA set to ON Quality : “Average File Size” selected and set to “24KB” Frame Rate : “30”(VN-E4U), “25”(VN-E4E)</p> <p>The unit will function as follows if the frame rate is altered when data distribution is in progress.</p> <table border="1" data-bbox="448 1720 1481 1944"> <thead> <tr> <th></th> <th>When frame rate is increased</th> <th>When frame rate is decreased</th> </tr> </thead> <tbody> <tr> <td>Distribution via TCP</td> <td>Frame rate of the distribution remains unchanged.</td> <td>Frame rate of the distribution decreases accordingly with the new settings.</td> </tr> <tr> <td>Distribution via Multicast</td> <td>Frame rate of the distribution increases accordingly with the new settings.</td> <td>Frame rate of the distribution decreases accordingly with the new settings.</td> </tr> </tbody> </table>		When frame rate is increased	When frame rate is decreased	Distribution via TCP	Frame rate of the distribution remains unchanged.	Frame rate of the distribution decreases accordingly with the new settings.	Distribution via Multicast	Frame rate of the distribution increases accordingly with the new settings.	Frame rate of the distribution decreases accordingly with the new settings.
	When frame rate is increased	When frame rate is decreased									
Distribution via TCP	Frame rate of the distribution remains unchanged.	Frame rate of the distribution decreases accordingly with the new settings.									
Distribution via Multicast	Frame rate of the distribution increases accordingly with the new settings.	Frame rate of the distribution decreases accordingly with the new settings.									
④	Interpolate	When “Interpolate” is off, video frame with 480 horizontal lines is encoded to JPEG. When “Interpolate” is on, video field with 240 horizontal lines is interpolated to 480 horizontal lines, and encoded to JPEG. To get high resolution, “Off” is recommended. To avoid jaggy image caused by fast moving objects, “On” is recommended.									

5-4 Alarm Page

This page is for setting actions when there is an alarm. Up to 10 actions may be set.

This page can be used upon access via “admin” or “operator”. Press the “OK” button to enable the new settings upon changing. If the “OK” button is pressed upon entering an invalid value, a warning message will appear and entry will be denied. Press the “Cancel” button to restore the invalid entry to the current value.



①	Action	<p>For specifying the type of action.</p> <p>Disable : Do not invoke action.</p> <p>Mail : Specify the mail address of the destination. An action number will be added to the mail subject, as shown in the following example. Alarm from VN-E4: No. 1 To attach a message to the mail, enter the message in “Mail Comment”. Refer to “5-5 Alarm Environment Page” for mail environment settings.</p> <p>FTP : FTP the JPEG as specified in “Input Source”. Refer to “5-5 Alarm Environment Page” for FTP environment settings. FTP can be set on only 1 action out of the 10 actions.</p> <p>TCP : Send message entered in the “TCP/UDP Comment” field to the destinations specified in “IP Address” and “Port Number” via “TCP”.</p> <p>UDP : Send message entered in the “TCP/UDP Comment” field to the destinations specified in “IP Address” and “Port Number” via “UDP”.</p> <p>Pin Output Make : Change alarm output to Make. Refer to “5-5 Alarm Environment Page” on parameter settings for alarm output.</p> <p>Pin Output Break: Change alarm output to Break. Refer to “5-5 Alarm Environment Page” on parameter settings for alarm output.</p>
②	1st Trigger	<p>For specifying the first trigger to invoke the action. Either alarm input (make), alarm input (break) or motion detect can be selected. Refer to “5-5 Alarm Environment Page” on parameter settings for alarm input. When the second trigger is turned off, the action will be invoked by only the first trigger. In addition, when motion detection is selected as the first trigger, “Max. Interval” and “2nd Trigger” will not be available for selection, and only the first trigger will function.</p>
③	Max. Interval	<p>Valid only when the second trigger is specified. For specifying the maximum interval between the first and second triggers. Action will be invoked when second trigger occurs after first trigger within the maximum interval.</p>
④	2nd Trigger	<p>For specifying the second trigger to invoke the action. Either alarm input (make) or alarm input (break) can be selected. Unlike the first trigger, motion detect is not available as a choice. Refer to “5-5 Alarm Environment Page” on parameter settings for alarm input.</p>

5-5 Alarm Environment Page

This page is for setting alarm-related environments.

4ch Network Encoder
VN-E4

Alarm Environment

Mail ①

SMTP

SMTP Server: 0.0.0.0 (IP or FQDN)

Port Number: 25 (1 - 65535)

POP before SMTP: off

POP

POP Server: 0.0.0.0 (IP or FQDN)

Port Number: 110 (1 - 65535)

Username: []

Password: []

FTP ②

FTP Server: 0.0.0.0 (IP or FQDN)

Directory: []

Username: []

Password: []

Frame Rate: 1 fps

Before Trigger: 5 sec (0 - 60)

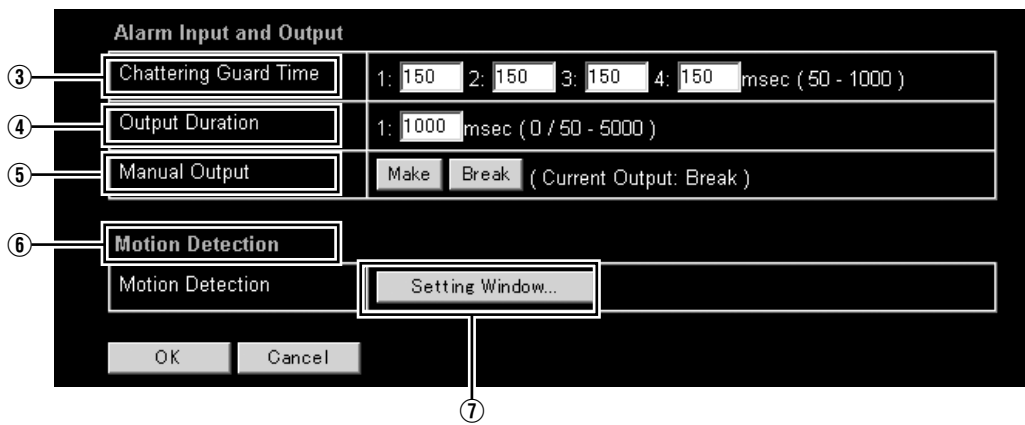
After Trigger: 5 sec (0 - 60)

This page can be used upon access via “admin” or “operator”.

Press the “OK” button to enable the new settings upon changing. If the “OK” button is pressed upon entering an invalid value, a warning message will appear and entry will be denied. Press the “Cancel” button to restore the invalid entry to the current value.

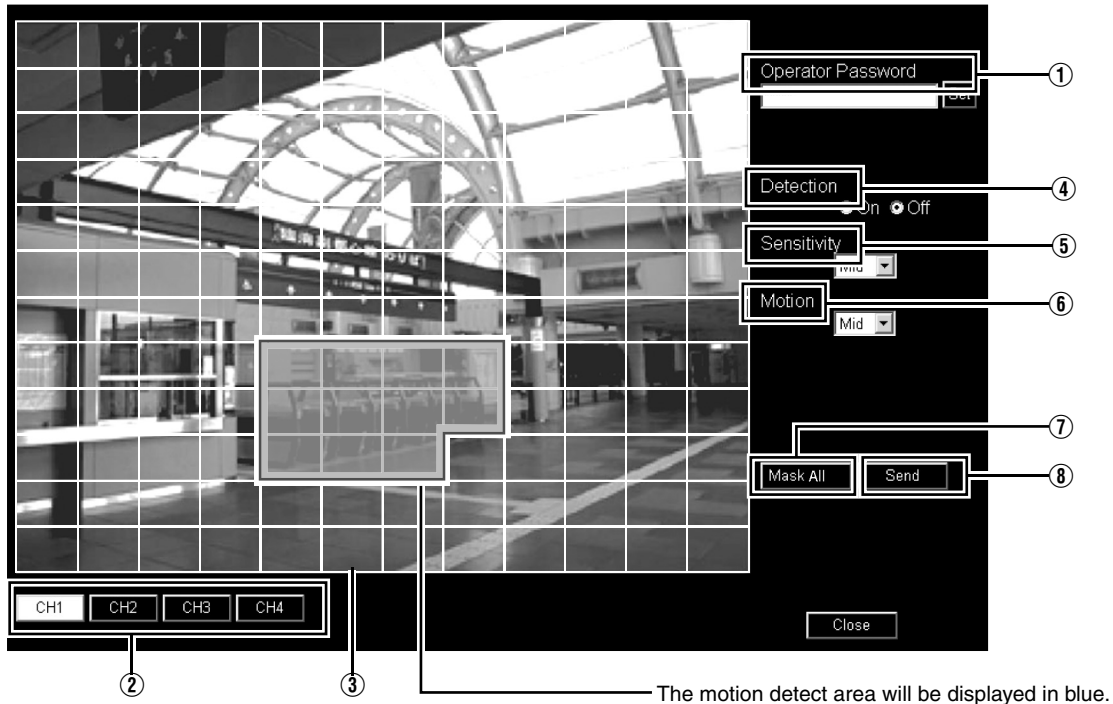
① Mail	For setting the mail environment when “Mail” is specified as an action of the “Alarm” page. “SMTP” and “POP” can be used.
② FTP	<p>For setting the FTP environment when “FTP” is specified as an action of the “Alarm” page. When “Directory” is left blank, FTP transfer will be performed to the home directory of the FTP server. To enable FTP transfer to a directory below the home directory, set the directory name in “Directory”. Delimit the directory using “/”.</p> <p>Example) subdir1/subdir2</p> <p>Destination directory of FTP transfer will be dependent on the FTP server if / is added at the beginning.</p> <p>“Frame Rate” will be constrained by the frame rate as set on the “Encoding” page. The actual frame rate used for transmission will be the upper limit on the “Encoding” page even if a value that is larger than the frame rate in the “Encoding” page is specified. The upper limits of “Before Trigger” and “After Trigger” are determined by settings on the “Encoding” page. In addition, “Frame Rate” is in a trade-off relationship with “Before Trigger” and “After Trigger”. In the case of a combination such that the input value cannot be realized, adjustments will be automatically made on the item that is not specified.</p> <p>The name of the file to be transmitted via FTP is made up of the action number, year, month, day, hour, minute, second, number and trigger flag.</p> <p>Example: 01-20050711152904-001-0.jpg</p> <p>The first 2 digits indicate the action number. Next 14 digits after first hyphen indicate the year, month, day, hour, minute and second. The 3 digits after the second hyphen is the number of the series of JPEG files to be sent via that FTP. The first file is numbered 000. The last digit denotes the trigger flag. 0 is assigned to JPEG files before and after a trigger and 1 for the file when trigger is invoked.</p>

Settings (continued)



①	Chattering Guard Time	Setting when alarm input is specified as a trigger of the “Alarm” page. The minimum event interval can be specified for each alarm input.
②	Output Duration	For setting the output time when alarm output is specified as an action of the “Alarm” page.
③	Manual Output	For operating alarm output manually. The current output status will be displayed on the right. If “Output Duration” is zero, “Make” button sets alarm output to be Make, and “Break” button sets alarm output to be Break. If “Output Duration” is not zero, “Make” button sets alarm output to be Make, and to be Break after the Output Duration. “Break” button sets alarm output to be Break, and to be Make after the Output Duration.
④	Motion Detection	The window for setting the motion detect feature is displayed. For motion detect settings, there is no need to press the “OK” button on the “Alarm Environment” page. Additionally, the motion detect setting window and built-in-viewer cannot be used at the same time.
⑤	Motion Detect Setting Window	The window for setting motion detect will be opened upon clicking “Setting Window...” on the “Alarm Environment” page. When the “operator” password is set in the motion detect setting window, current settings are displayed in the window.

Settings (continued)



①	Operator Password	The “operator” password is required to display current settings, or change current settings. Enter the “operator” password and press the “Set” button. The password is set to “vn-e4” in the factory settings. This can be changed on the “Password” page.
②	CH1–CH4 Button	Select a channel for setting.
③	Display Screen	For setting whether to mask each block upon dividing the screen into 12 x 12 blocks. In factory settings, all blocks are masked. The block turns blue when it is clicked, and it means unmasked. It returns to the normal state upon clicking it again, and it means masked. Press the “Send” button to validate current changes.
④	Detection	For setting motion detect to ON/OFF. To enable the setting, press the “Mask All” or “Send” button.
⑤	Sensitivity	For setting the sensitivity of motion detect. To enable the setting, press the “Mask All” or “Send” button.
⑥	Motion	For selecting the motion speed of the object for which motion is to be detected. To detect fast motion, select “Fast”. To detect slow motion, select “Slow”. To enable the setting, press the “Mask All” or “Send” button.
⑦	Mask All Button	Masks all blocks and enables the current “Detection”, “Sensitivity” and “Motion” settings.
⑧	Send Button	For enabling the current “Mask”, “Detection”, “Sensitivity” and “Motion” settings.

NOTE:

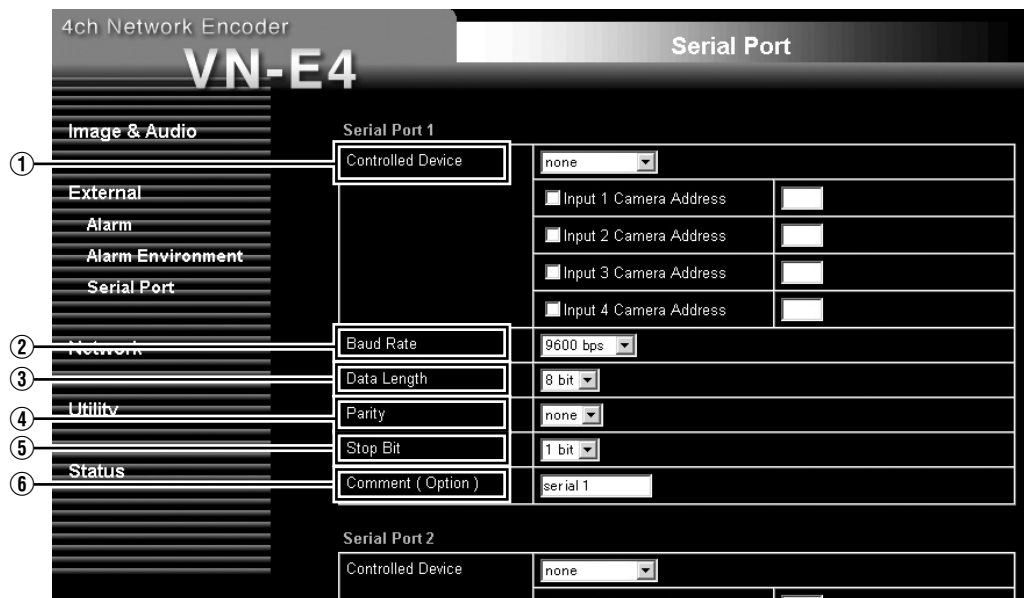
The area display serves as a reference. Ensure to perform operation check. Ensure that multiple blocks are used to set the size of the object for motion detect.

CAUTIONS:

When a camera is connected, flicker of fluorescent lights may cause malfunction during motion detect. Changes in brightness due to auto iris or lighting may be detected as motion. The motion detect feature is not intended to prevent theft or fire. This feature may not function properly depending on conditions of the object and settings. Our company shall not be liable for any accident or damage that occurs.

5-6 Serial Page

This page is for setting the 2 serial ports.



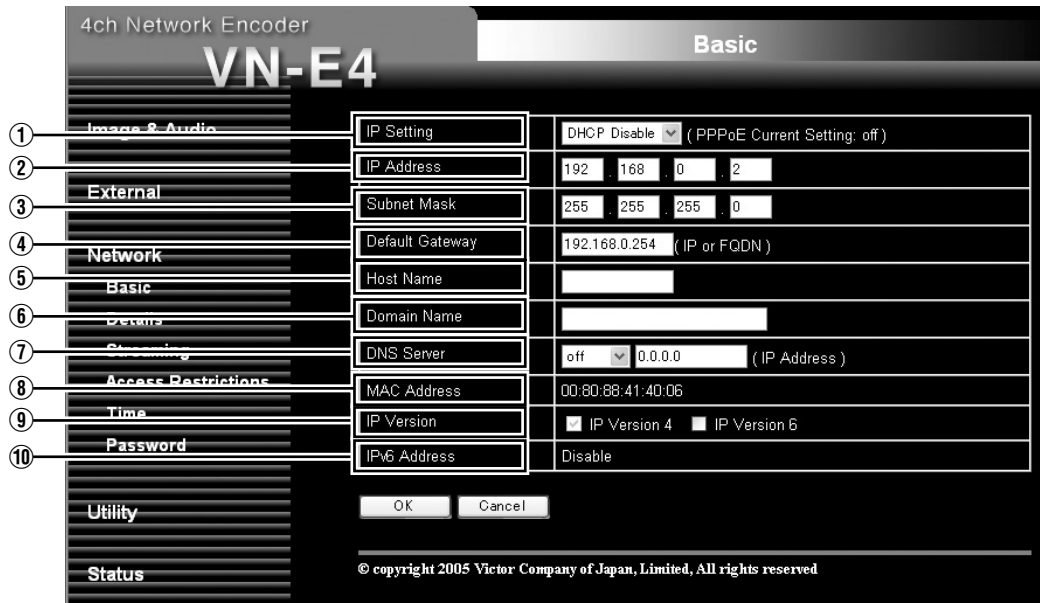
This page can be used upon access via “admin” or “operator”.

Press the “OK” button to enable the new settings upon changing. If the “OK” button is pressed upon entering an invalid value, a warning message will appear and entry will be denied. Press the “Cancel” button to restore the invalid entry to the current value.

①	Controlled Device	Select a device accordingly when an external device is to be controlled using the built-in viewer. The “Baud Rate”, “Data Length”, “Parity” and “Stop Bit” settings will be automatically adjusted according to the default values of the selected device. When “Pelco-D” is selected for “Controlled Device”, “Camera Address” may be specified individually for the 4 input channels.
②	Baud Rate	For setting the baud rate of the serial port.
③	Data Length	For setting the data length of the serial port.
④	Parity	For setting the parity bit of the serial port.
⑤	Stop Bit	For setting the stop bit of the serial port.
⑥	Comment	For writing memo. Comments will only appear when this page is displayed, and functions of the serial port will not be affected.

5-7 Basic Page

This page is for performing basic setting related to the network.



This page can be used upon access via “admin”. Press the “OK” button to enable the new settings upon changing. If the “OK” button is pressed upon entering an invalid value, a warning message will appear and entry will be denied. Press the “Cancel” button to restore the invalid entry to the current value. When settings of the “Basic” page is changed, all services that are currently running will end immediately. For example, when changes are made to the “Basic” page during JPEG or audio distribution, distribution will be discontinued and TCP will be disconnected.

①	IP Setting	For setting the DHCP client function. Ensure to connect VN-E4 to a network environment with a DHCP server when enabling the DHCP settings. When a DHCP server is not present, VN-E4 will start up using 192.168.0.2/24 about 2 minutes after the launch. Refer to “3. IP Address Setting” for the IP address.
②	IP Address	For setting the IP address of VN-E4.
③	Subnet mask	For setting the subnet mask of VN-E4.
④	Default Gateway	For setting IPv4 default gateway of VN-E4. Default gateway of IPv6 can not be set. Set as 0.0.0.0 when a default gateway is not set. Default gateway setting is required for multicast transmission. If default gateway does not exist, set a dummy IP address as default gateway for sending multicast.
⑤	Host Name	For setting the host name of VN-E4.
⑥	Domain Name	For setting the domain name.
⑦	DNS Server	For setting whether to use the DNS/DDNS server as well as the corresponding server address.
⑧	MAC Address	The MAC address of VN-E4 is displayed in a hexadecimal number.
⑨	IP Version	For setting IPv6 to ON/OFF. (IPv4 is ON at all times.) When IPv6 is set to ON in a network that supports IPv6, the address will be displayed in the “IPv6 Address” field. When the network does not support IPv6, the “IPv6 Address” field is displayed as “Disable”. Changing this item restores “MTU” on the “Details” page to the default value of “1420”. VN-E4 will reboot when this item is changed. Operation will be enabled after about 1 minute.
⑩	IPv6 Address	Displays the IPv6 address.

5-8 Details Page

This page is for performing detailed network setting.

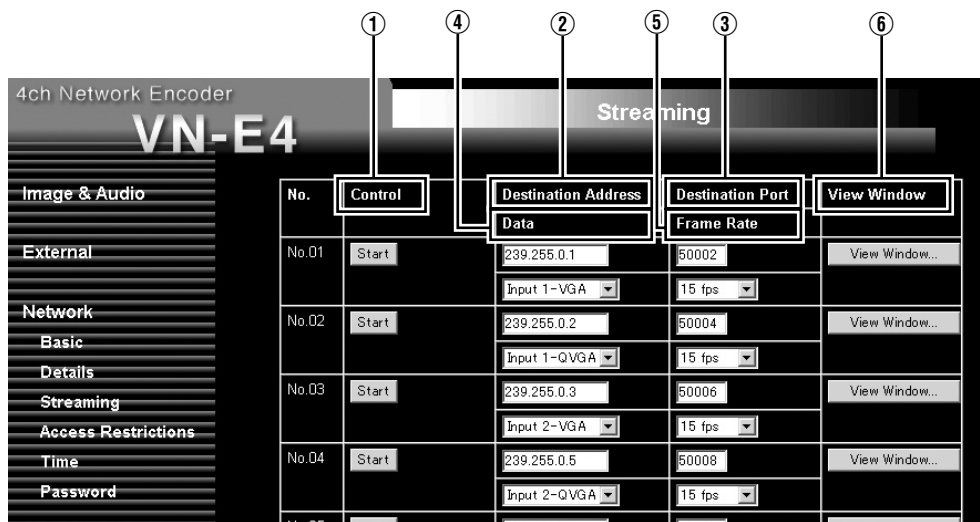
This page can be used upon access via “admin”.

Press the “OK” button to enable the new settings upon changing. If the “OK” button is pressed upon entering an invalid value, a warning message will appear and entry will be denied. Press the “Cancel” button to restore the invalid entry to the current value.

①	Image DSCP	For setting the DSCP value of IP packets in which JPEG is stored. DSCP values are used in networks that support QoS.
②	Audio DSCP	For setting the DSCP value of IP packets in which audio is stored. DSCP values are used in networks that support QoS.
③	MTU	For setting the maximum packet size for storing JPEG. The range of set value is between 512 to 1500 for IPv4 and 1280 to 1500 for IPv6. VN-E4 will reboot when this item is changed. Operation will be enabled after about 1 minute.
④	Negotiation	For setting the negotiation of the network. In addition, if this is set to “10Half”, “10Full”, “100Half”, or “100Full”, connect VN-E4 to network switch with same setting. If connected switch is set to autonegotiation, negotiation failure can occur. In such case, set autonegotiation to VN-E4. VN-E4 will reboot when this item is changed. Operation will be enabled after about 1 minute.
⑤	PPPoE	For setting PPPoE. VN-E4 will reboot when this item is changed. Operation will be enabled after about 1 minute. In addition, the DHCP client function on the “Basic” page will be automatically disabled if “PPPoE” is set to “On”.

5-9 Streaming Page

This page is for setting manual multicast transmission. Transmission is allowed up to 10 streams.



This page can be used upon access via “admin” or “operator”.

①	Control	For starting or stopping streaming. Parameters that are set on the “Streaming” page will be saved when transmission is started upon pressing the “Start” button.
②	Destination Address	For specifying the destination address. Specify the multicast address. In addition, set all 10 streams to different multicast addresses.
③	Destination Port	For specifying the destination port number. It is recommended that different port numbers be specified for all 10 streams. Multiple multicast streams cannot be received on 1 PC when there are duplicate port numbers.
④	Data	For specifying the data to be sent.
⑤	Frame Rate	For specifying the frame rate when sending JPEG data. The actual frame rate is limited by the frame rate set on the “Encoding” page.
⑥	View Window	Current image of selected “Data” can be shown.

5-10 Access Restrictions Page

This page is for setting client restrictions. This feature is invalid for web browser access.

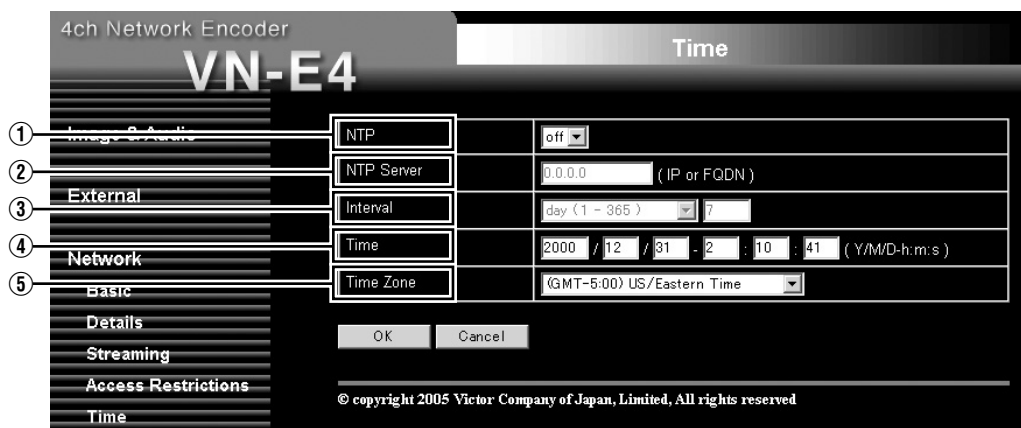
This page can be used upon access via “admin”.

Press the “OK” button to enable the new settings upon changing. If the “OK” button is pressed upon entering an invalid value, a warning message will appear and entry will be denied. Press the “Cancel” button to restore the invalid entry to the current value.

①	<p>Client Address</p>	<p>Restrictions may be imposed on clients accessing VN-E4 using the IP address.</p> <ul style="list-style-type: none"> ● Access by the IP address specified in the “IP Address” field will be denied when “Access Restriction” is set to “deny”. Additionally, VN-E4 will not send JPEG/audio data to the specified IP address. ● Only access by the IP address specified in the “IP Address” field will be allowed when “Access Restriction” is set to “allow”. Additionally, VN-E4 can send JPEG/audio data to the specified IP address, but VN-E4 does not send JPEG/audio data to IP address not specified in this page. <p>Note that when “allow” is selected and all IP address fields are left blank, access by all IP addresses will be denied.</p> <ul style="list-style-type: none"> ● To specify an IP address range, set a combination of network address and subnet mask in the “IP Address” field. <p>For example, if the target range is between 10.0.0.0 and 10.0.0.255, enter as 10.0.0.0/24.</p> <ul style="list-style-type: none"> ● When a multicast address is specified in the “IP Address” field and “deny” is selected, VN-E4 will deny transmission to this multicast address. ● When a multicast address is specified in the “IP Address” field and “allow” is selected, VN-E4 will only allow transmission to this multicast address and deny transmission to multicast addresses that are not stated in the “IP Address” field.
②	<p>Source Address of Audio Sender</p>	<p>Restrictions may be imposed on clients by using the IP address when a client sends out audio data to VN-E4.</p> <ul style="list-style-type: none"> ● Access by the IP address specified in the “IP Address” field will be denied when “Access Restriction” is set to “deny”. ● Only access by the IP address specified in the “IP Address” field will be allowed when “Access Restriction” is set to “allow”. Multicast address cannot be specified in the “IP Address” field.

5-11 Time Page

This page is for setting time.



This page can be used upon access via admin.

Press the "OK" button to enable the new settings upon changing. If the "OK" button is pressed upon entering an invalid value, a warning message will appear and entry will be denied. Press the "Cancel" button to restore the invalid entry to the current value.

①	NTP	For setting the NTP client function. Access to acquire time from the specified NTP server at regular intervals is possible when this is turned on. In addition, time will be recorded in the JPEG headers distributed by VN-E4. Discontinuity in JPEG header's time may occur immediately before and after acquiring time from the NTP server.
②	NTP Server	For setting the IP address of the NTP server.
③	Interval	For setting the time interval for access to the NTP server.
④	Time	Displays the time on the clock of VN-E4. Clock time may be altered by entering a value and pressing the "OK" button. However, second value cannot be specified. Time is recorded in JPEG headers distributed by VN-E4 and therefore discontinuity in JPEG header's time may occur immediately before and after changing the time.
⑤	Time Zone	For setting the time zone. VN-E4 will reboot when this item is changed. Operation will be enabled after about 1 minute.

5-12 Password Page

This page is for setting the password.

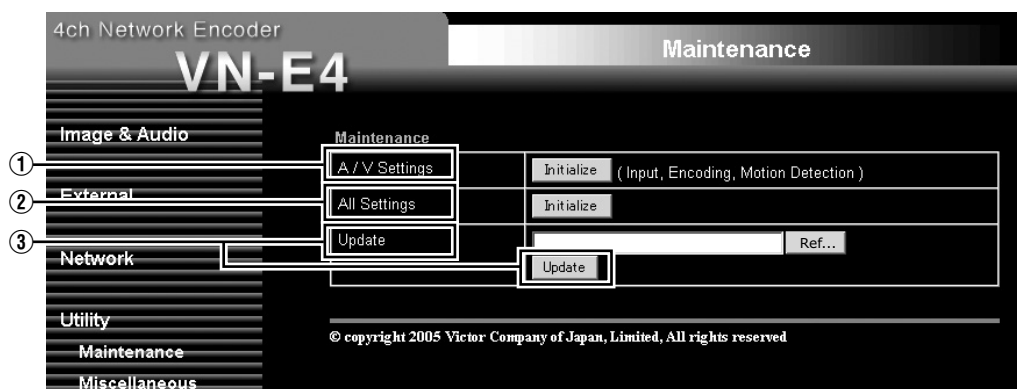
This page can be used upon access via “admin”.
Press the “OK” button to enable the new settings upon changing.

①	Username	Select a user name.
②	Current Password	Enter the current password.
③	New Password	Enter a new password. Passwords shall be at least 4 characters and not more than 8 characters. VN-E4 is case sensitive.
④	New Password Again	Enter again to confirm the new password.

Do not forget passwords. If you want to initialize all settings including passwords, push reset button on rear panel over 5 seconds.

5-13 Maintenance Page

This page is for maintenance purposes.



This page can be used upon access via “admin”.

①	A/V Settings	Restores setting items in the “Input” page, “Encoding” page and “Motion Detection” to their default values. JPEG or audio transmissions that are in progress will continue if these are possible with the factory settings.
②	All Settings	Restores all setting items to their default values and reboots the unit. Passwords will also be initialized. However, the built-in clock of VN-E4 will not be affected. JPEG transmission and all other services that are running is terminated. (pg. 37, “Initial Values of Each Page”)
③	Update	For updating the firmware of VN-E4. Copy the new firmware file to the PC on which Internet Explorer is used, and specify this file using the “Ref...” button. Press the “Update” button to start updating. Update may take several minutes. Update progress status is indicated on the lamp at the front panel of VN-E4.

Progress Status	STS	CH1	CH2	CH3	CH4
Uploading file	Light ON	Blinking	Light OFF	Light OFF	Light OFF
Start FLASH writing	Light ON	Light ON	Blinking	Light OFF	Light OFF
FLASH writing 1/3 completed	Light ON	Light ON	Light ON	Blinking	Light OFF
FLASH writing 2/3 completed	Light ON	Light ON	Light ON	Light ON	Blinking
Rebooting	Light OFF	Light OFF	Light OFF	Light OFF	Light OFF
Startup completed	Light ON	Light OFF	Light OFF	Light OFF	Light OFF

A message will be displayed on the Internet Explorer when update is successfully completed. Network settings will be saved upon updating the firmware, but all other settings will be initialized.

Settings (continued)

Initial Values of Each Page

Factory Settings of Input Page

Item	Factory Settings
Camera Name	Input 01 – 04
Brightness	50
Contrast	50
Saturation	50
Phase	50
Turnover	Off
Echo Suppressor	Off
Noise Suppressor	Off

Factory Settings of Encoding Page

Item	Factory Settings
Encoding	VGA: ON QVGA: OFF
Quality	VGA: Average File Size 32KB QVGA: Average File Size 12KB
Frame Rate	15 fps (VN-E4U) 12.5 fps (VN-E4E)
Interpolate	Off

Factory Settings of Alarm Page

Item	Factory Settings
Action	Disable
1st Trigger	Input 1 Make
Max. Interval	Blank
2nd Trigger	Off
Mail Address	Blank
Mail Comment	Blank
Attached File	none
Input Source	Input 1 – VGA
IP Address	Blank
Port Number	Blank
TCP/UDP Comment	Blank

Settings (continued)

Factory Settings of Alarm Environment Page

Item	Factory Settings
SMTP Server	0.0.0.0
Port Number	25
POP before SMTP	Off
POP Server	0.0.0.0
Port Number	110
Username	Blank
Password	Blank
FTP Server	0.0.0.0
Directory	Blank
Username	Blank
Password	Blank
Frame Rate	1 fps
Before Trigger	5 sec
After Trigger	5 sec
Chattering Guard Time	150 msec
Output Duration	1000 msec
Manual Output	Break

Factory Settings of Motion Detection

Item	Factory Settings
Mask	Clear
Operator Password	Blank
Detection	Off
Sensitivity	Mid
Motion	Mid

Factory Settings of Serial Page

Item	Factory Settings
Controlled Device	none
Input 1 – 4	Off
Address	Blank
Baud Rate	9600
Data Length	8 bit
Parity	none
Stop Bit	1 bit
Comment	serial 1, serial 2

Settings (continued)

Factory Settings of Basic Page

Item	Factory Settings
IP Setting	DHCP Enable
IP Address	192.168.0.2
Subnet mask	255.255.255.0
Default Gateway	192.168.0.254
Host Name	Blank
Domain Name	Blank
DNS Server	Off 0.0.0.0
IP Version	IP Version 4: ON, IP Version 6: OFF
IPv6 Address	Disable

Factory Settings of Details Page

Item	Factory Settings
Image DSCP	AF1/DP3 56
Audio DSCP	AF1/DP3 56
MTU	1420
Negotiation	Auto
PPPoE	Off
Username	Blank
Password	Blank

Factory Settings of Streaming Page

Item	Factory Settings
Control	Start button is ready.
Destination Address	No. 01 239.255.0.1 No. 02 239.255.0.2 No. 03 239.255.0.3 No. 04 239.255.0.5 No. 05 239.255.0.6 No. 06 239.255.0.10 No. 07 239.255.0.11 No. 08 239.255.0.25 No. 09 239.255.0.65 No. 10 239.255.0.67
Destination Port	No. 01 5002 No. 02 5004 No. 03 5006 No. 04 5008 No. 05 5010 No. 06 5012 No. 07 5014 No. 08 5016 No. 09 5018 No. 10 5020
Data	No. 01 Input 1-VGA No. 02 Input 1-QVGA No. 03 Input 2-VGA No. 04 Input 2-QVGA No. 05 Input 3-VGA No. 06 Input 3-QVGA No. 07 Input 4-VGA No. 08 Input 4-QVGA No. 09 Audio No. 10 Audio
Frame Rate	15 fps (VN-E4U) 12.5 fps (VN-E4E)

Settings (continued)

Factory Settings of Access Restrictions Page

Item	Factory Settings
Access Restriction	deny
IP Address	Blank

Factory Settings of Time Page

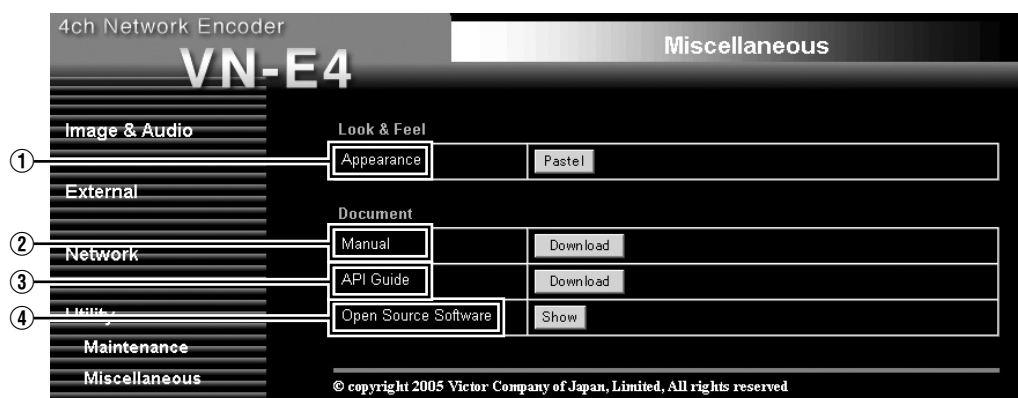
Item	Factory Settings
NTP	Off
NTP Server	0.0.0.0
Interval	day, 7
Time Zone	(GMT-5:00) US/Eastern Time (VN-E4U) (GMT) UTC (VN-E4E)

Factory Settings of Password Page

Item	Factory Settings
Username	"admin"
Current Password	Displayed as blank field. Default password is, "admin" : vn-e4 "operator" : vn-e4 "user" : vn-e4

5-14 Miscellaneous Page

This page is for setting the appearance and acquiring documents.

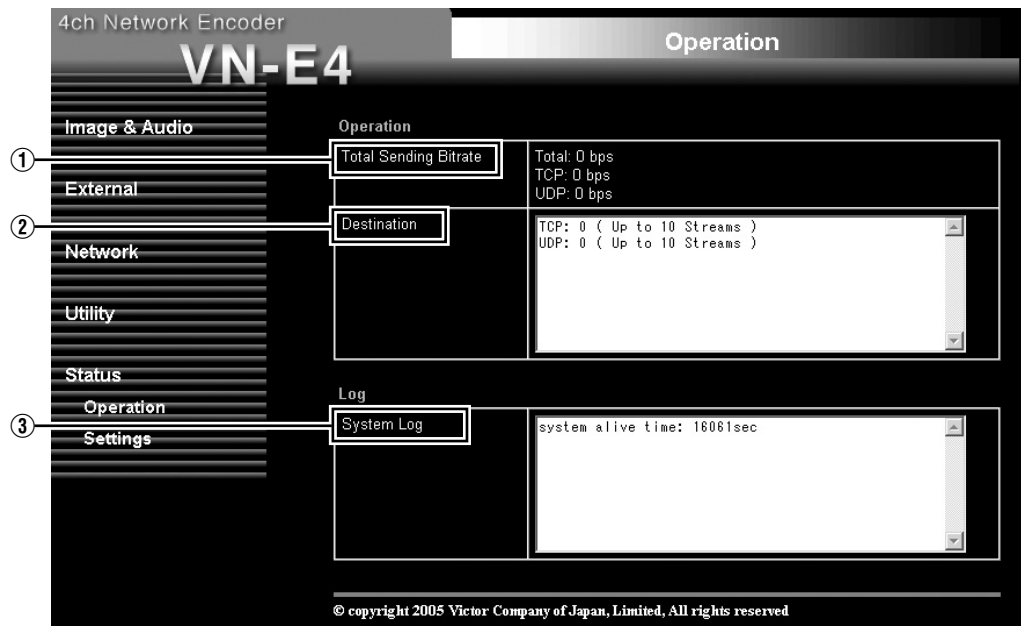


This page can be used upon access via “admin”, “operator” and “user”.

①	Appearance	For changing the web page appearance.
②	Manual	Press the “Download” button to download the “INSTRUCTIONS” in PDF format.
③	API Guide	Press the “Download” button to download the “API GUIDE” in PDF format.
④	Open Source Software	Press the “Show” button to display the open source information used at VN-E4.

5-15 Operation Page

This page displays the operating status of VN-E4.



This page can be used upon access via “admin” or “operator”.

①	Total Sending Bitrate	Displays the total bit rate sent by VN-E4, as well as the bit rates of “TCP” and “UDP”.
②	Destination	Displays the destination that VN-E4 is sending data to.
③	System Log	Displays the following information. Time lapse (seconds) after startup, alarm log information, list of clients that is keeping TCP connection for alarm, clients that are currently sending audio data to VN-E4, and pass-through clients

5-16 Settings Page

This page displays the version information and settings of VN-E4.

4ch Network Encoder
Settings

VN-E4

Image & Audio

External

Network

Utility

Status

Operation

Settings

Revision

Firmware	0.3.0p U
DSP	0.52

Image: (Image & Audio - Input)

No.:	Comment in JPEG	Brightness	Contrast	Saturation	Phase	Turnover
1:	input01	50	50	50	50	off
2:	input02	50	50	50	50	off
3:	input03	50	50	50	50	off
4:	input04	50	50	50	50	off

Audio: (Image & Audio - Input)

No.	Echo Suppressor	Noise Suppressor
1	off	low

Encoding: (Image & Audio - Encoding)

Encode Number	Quality	Frame Rate	Interpolate
-on- Input 1-VGA	Average File Size (32 KB)	15 fps	off
-off- Input 1-QVGA	Average File Size (12 KB)	15 fps	-----
-on- Input 2-VGA	Average File Size (32 KB)	15 fps	off
-off- Input 2-QVGA	Average File Size (12 KB)	15 fps	-----
-on- Input 3-VGA	Average File Size (32 KB)	15 fps	off
-off- Input 3-QVGA	Average File Size (12 KB)	15 fps	-----
-on- Input 4-VGA	Average File Size (32 KB)	15 fps	off
-off- Input 4-QVGA	Average File Size (12 KB)	15 fps	-----

Alarm Setting: (External - Alarm)		
No.	Trigger / Action	
01	Trigger	-----
	Action	-----
02	Trigger	-----
	Action	-----
03	Trigger	-----
	Action	-----
04	Trigger	-----
	Action	-----
05	Trigger	-----
	Action	-----
06	Trigger	-----
	Action	-----
07	Trigger	-----
	Action	-----
08	Trigger	-----
	Action	-----
09	Trigger	-----
	Action	-----
10	Trigger	-----
	Action	-----

Settings (continued)

Alarm / Serial Port: (External - Alarm Environment / Serial Port)	
Mail	SMTP (SMTP Server: 0.0.0.0) SMTP (Port Number: 25) SMTP (POP before SMTP: off) POP (POP Server: 0.0.0.0) POP (Port Number: 110) POP (Username:)
FTP	FTP Server: 0.0.0.0 Directory: Username: Frame Rate: 1 fps Before Trigger: 5 sec After Trigger: 5 sec
Alarm Input and Output	Chattering Guard Time < 150 msec (Input 1) > Chattering Guard Time < 150 msec (Input 2) > Chattering Guard Time < 150 msec (Input 3) > Chattering Guard Time < 150 msec (Input 4) > Output Duration: 1000 msec
Serial Port 1	Controlled Device: none Baud Rate: 9600 bps Data Length: 8 bit Parity: none Stop Bit: 1 bit Comment (Option): serial 1
Serial Port 2	Controlled Device: none Baud Rate: 9600 bps Data Length: 8 bit Parity: none Stop Bit: 1 bit Comment (Option): serial 2

Basic: (Network - Basic)		
IPv4	IP Address	136.198.34.109
	Subnet Mask	255.255.255.0
	Default Gateway	136.198.34.62
Host Name / Domain Name...	Host Name: Domain Name: DNS / DDNS: off , 0.0.0.0	
MAC	00:80:88:41:40:0C	
IPv6	Disable	

Manual Sending: (Network - Streaming)			
No.	Status	Destination Address	Destination Port
		Data	Frame Rate
No.01	-----	239.255.0.1	50002
		Input 1-VGA	15 fps
No.02	-----	239.255.0.2	50004
		Input 1-QVGA	15 fps
No.03	-----	239.255.0.3	50006
		Input 2-VGA	15 fps
No.04	-----	239.255.0.5	50008
		Input 2-QVGA	15 fps
No.05	-----	239.255.0.6	50010
		Input 3-VGA	15 fps
No.06	-----	239.255.0.10	50012
		Input 3-QVGA	15 fps
No.07	-----	239.255.0.11	50014
		Input 4-VGA	15 fps
No.08	-----	239.255.0.25	50016
		Input 4-QVGA	15 fps
No.09	-----	239.255.0.65	50018
		Audio	15 fps
No.10	-----	239.255.0.67	50020
		Audio	15 fps

Settings (continued)

Service / Parameter: (Network - Details)	
DSCP / MTU / Negotiation...	Image DSCP: AF1/DP3 (56) Audio DSCP: AF1/DP3 (56) MTU: 1420 Negotiation: Auto
PPPoE	PPPoE: off Username:

Client Address: (Network - Access Restrictions)	
Access Restriction	deny
IP Address	

Source Address of Audio Sender: (Network - Access Restrictions)	
Access Restriction	deny
IP Address	

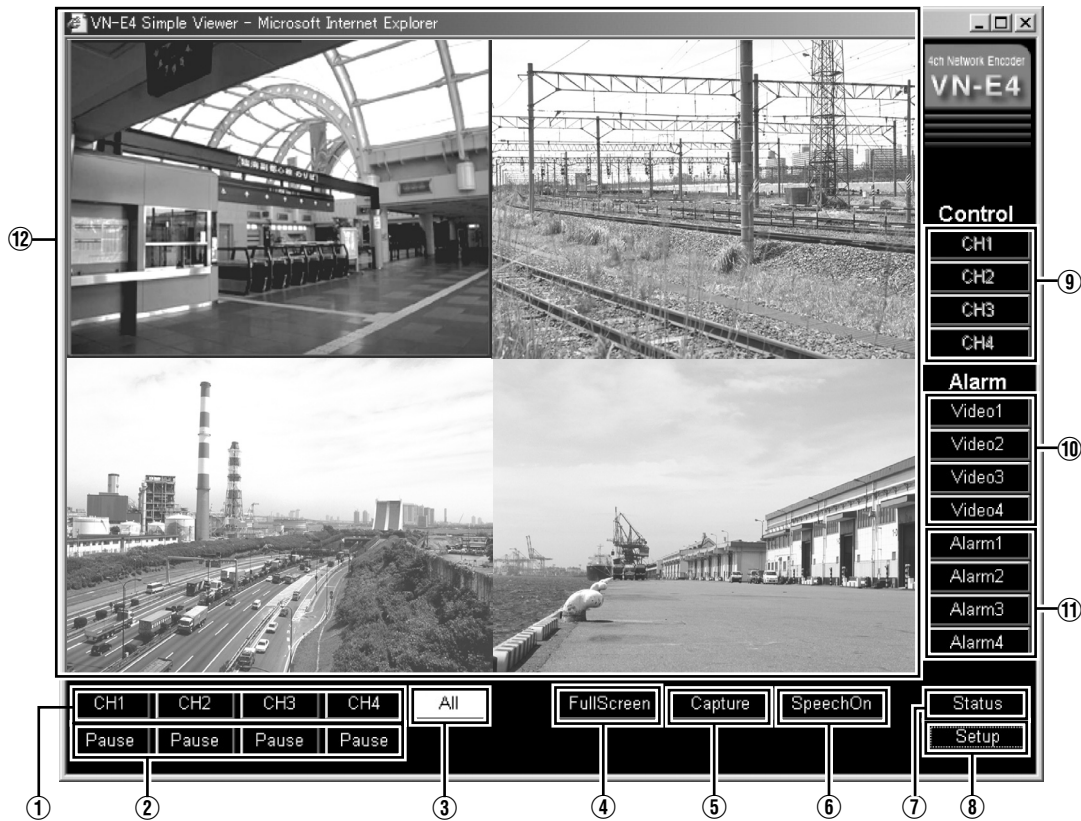
Time: (Network - Time)	
NTP	NTP: off NTP Server: 0.0.0.0 Interval: 7day
Time / Time Zone	Time: 2000 / 12 / 31 - 2 : 13 : 29 (Y/M/D-h:m:s) Time Zone: (GMT-5:00) US/Eastern Time

This page can be used upon access via “admin” or “operator”.

6. Using the VN-E4 Built-in Viewer

Refer to the startup guide on procedures to install the built-in viewer on the PC.

6-1 Screen Configuration of Built-in Viewer



①	CH1–CH4 Button	For selecting the image to display. In addition, selection of a channel is not possible if the checkbox for this channel is deselected in the setting window of the built-in viewer.
②	Pause Button	Pauses/Resumes playback of images on each CH.
③	All Button	4-screen display of the images of CH1–CH4.
④	Full Screen Button	Full-screen display of the currently displayed image on the PC monitor. For example, image of CH1 will be displayed in full screen if the image of CH1 is currently being displayed. In the case of a 4-screen display, the 4-screen display will be displayed in full screen. To cancel the “Full Screen” mode, press “Esc” key on the PC keyboard. Do not push “Esc” key just after pushing Full Screen button, because Internet Explorer can not work correctly by such operation. If the IP address of VN-E4 is not registered as a trusted site in the Internet Explorer settings, a title bar and status bar may be displayed at the top and bottom of the full-screen display. A minimize, restore to previous size and close button are located on the right of the title bar. However, these buttons function differently when in the full-screen mode. Pressing the minimize button returns the screen display automatically to the full-screen mode. The restore to previous size button is disabled. Pressing the close button restores the full-screen display of the viewer to the standard display.
⑤	Capture Button	For capturing the currently displayed image on the PC. Images captured will be stored as a JPEG file in the “E4_JPEG” directory that is created under “My Documents” of the PC. The file name is made up of year/month/day/hour/minute/second, millisecond and the input channel. The time denoted by the file name is based on the time at the PC and not the internal clock of VN-E4. 1 frame will be captured in the JPEG file when image of 1 CH is displayed. 4 frames will be captured in 4 JPEG files in the case of a 4-screen display.
⑥	Speech On Button	Audio input to the PC will be sent to VN-E4 and output from the audio output terminal of VN-E4. Clicking this button when sending is in progress stops the audio transmission. The “operator” password of VN-E4 will be required in order to use this feature. Register the “operator” password of VN-E4 on the setting page that appears upon pressing the “Setup” button. When the audio output of VN-E4 is used by another client, audio transmission will fail and a warning message will be displayed.

Operation (continued)

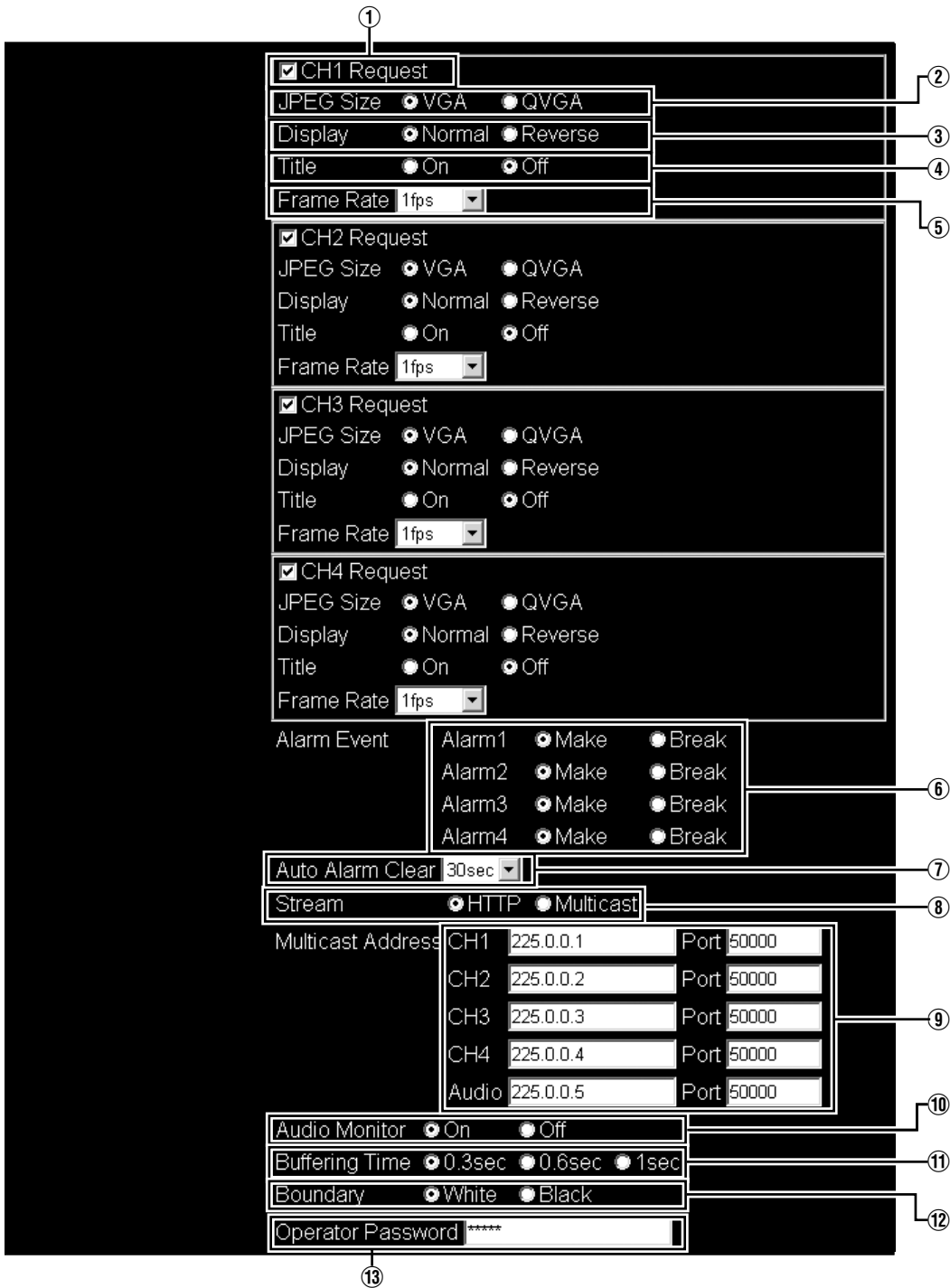
⑦	Status Button	<p>For displaying the status information on the web setting page of VN-E4.</p> <p>This can be used to check the operating status of VN-E4. Additionally, when the frame rate of the built-in viewer is set to “1 fps” or higher, the built-in viewer will specify a frame rate for the VN-E4 unit, and this frame rate will be displayed in the status information. When the frame rate of the built-in viewer is set to lower than “1 fps”, the viewer will acquire 1 JPEG at a time according to the time interval specified by the viewer. Upon acquisition by the built-in viewer, “framerate=0” will be displayed in the status information. “framerate=0” means only 1 JPEG frame has been acquired.</p> <p>Refer to “5. Setting Using Internet Explorer” for details on the status information.</p>
⑧	Setup Button	<p>For displaying the setting window of the built-in viewer.</p> <p>NOTE: The settings on this screen are not settings of the VN-E4 unit but settings of the PC on which the built-in viewer is running.</p>
⑨	Control CH1–CH4 Button	<p>For displaying the GUI for controlling devices that are connected to each CH. This will be disabled if no device is selected in the “Serial Port” page on the VN-E4 unit. Only 1 GUI can be displayed at one time. The “operator” password of VN-E4 will be required in order to use this feature. Register the “operator” password of VN-E4 on the setting page that appears upon pressing the “Setup” button.</p>
⑩	Alarm Video1–4 Button	<p>Lights up when motion is detected in each video input of VN-E4. The light will remain on until “Auto Alarm Clear” is activated. The light can be turned off by clicking the lit button.</p>
⑪	Alarm1–4 Button	<p>Lights up when signals are input to the alarm input of VN-E4. The light will remain on until “Auto Alarm Clear” is activated. The light can be turned off by clicking the lit button.</p>
⑫	Image Display Area	<p>Area that displays the images. When 1 CH is selected, the original frame size will be displayed in its actual size in the case of VGA and enlarged twice (vertically and horizontally) in the case of QVGA. In the case of 4-screen displays, the original frame size will be displayed in half of its actual size (vertically and horizontally) in the case of VGA and in its actual size in the case of QVGA. CH1 will be displayed on the top left, CH2 on the top right, CH3 on the bottom left and CH4 on the bottom right.</p> <p>CH that are set to OFF at the VN-E4 unit or built-in viewer will not be displayed.</p> <p>The viewer will only acquire the currently displayed image from the VN-E4 unit.</p> <p>For example, images of the 4 channels are acquired from VN-E4 during a 4-screen display. When the display switches to CH1, however, only image of CH1 is acquired from VN-E4 and those for CH2–CH4 are not acquired.</p> <p>Image for which motion is detected will be outlined in red. The red outline will disappear when motion is longer detected.</p>

6-2 Built-in Viewer Settings

The setting window of the built-in viewer will be displayed upon clicking the “Setup” button.

NOTE:

The settings on this screen are not settings of the VN-E4 unit but settings of the PC on which the built-in viewer is running. To validate changes, press the “OK” button, close the viewer, and restart the viewer.



Operation (continued)

①	“CH1 Request” Checkbox	The viewer will acquire image of the corresponding CH from VN-E4 according to boxes that are checked. When the checkbox for a channel is deselected, the viewer will not acquire image of this channel from VN-E4 and the CH button will be disabled. Additionally, no image will be displayed even if the checkbox is selected if the corresponding CH and JPEG size on the “Encoding” of the VN-E4 unit are set to off.
②	JPEG Size Selection Button	Select either VGA (640 x 480) or QVGA (320 x 240) as the video frame size. No image will be displayed even when the size is selected on this screen if this size is set to off on the “Encoding” page of the VN-E4 unit. NOTE: Selecting a large frame size will increase the processing load of the PC on which the viewer is running. Set to a value such that the load of the PC on which the viewer is running does not exceed 80 %.
③	Display Selection Button	Select “Reverse” to rotate the image display by 180°.
④	Title Selection Button	Select “On” to display the camera name and time in JPEG file. Camera name can be changed on the “Input” page of the VN-E4 unit.
⑤	Frame Rate Selection List	For selecting the acquisition frame rate of the viewer. The frame rate set at the VN-E4 unit will be the upper limit to which the viewer can acquire. For example, when VN-E4 is set to “15 fps”, transmission will only be possible at 15 fps even when the client requests for 30 fps. Alternatively, when VN-E4 is set to “15 fps” and 10 fps is requested by the client, data will be sent at 7.5 fps to enable transmission at even intervals. In the case of a 1-to-1 connection between VN-E4 and the viewer, it is recommended that the frame rate of the viewer and VN-E4 be set to the same value. To play back multiple viewers at different frame rates, set the frame rate accordingly at the individual viewer. NOTES: <ul style="list-style-type: none"> ● When the frame rate set is smaller than that at the VN-E4 unit, this will be reflected in the frame rate during transmission from VN-E4 when acquisition is performed via HTTP. ● When acquisition is performed via multicast, data volume will not decrease even when a frame rate that is smaller than that at the VN-E4 unit is set, and the built-in viewer will play back images while skipping frames. ● Selecting a large frame rate will increase the processing load of the PC on which the viewer is running. Set to a value such that the load of the PC on which the viewer is running does not exceed 80 %.
⑥	Alarm Event Selection Button	When “Make” is selected, the “Alarm” button will light up when Make occurs in the alarm input of VN-E4. When “Break” is selected, the “Alarm” button will light up when Break occurs in the alarm input of VN-E4.
⑦	Auto Alarm Clear	For selecting the time interval to turn off the light automatically after “Alarm” button is illuminated.
⑧	Stream Selection Button	For selecting the protocol when the viewer acquires data from VN-E4. When HTTP is selected, packet loss can be recovered by HTTP though number of clients is limited. Maximum number of HTTP streams is 10. When “Multicast” is selected, multiple viewers can monitor VN-E4 though packet loss causes noise or skip of data. Additionally, start multicast sending on the “Streaming” of the VN-E4 unit when playing back via “Multicast”. When the viewer is launched with “Multicast” specified, a Windows firewall warning may be displayed. When this occurs, proceed upon selecting “Unblock”. If “Block” is selected, the Windows firewall will block the multicast streams and playback of “Multicast” at the viewer will fail.
⑨	Multicast Address, Port	For specifying the multicast address and port number for 4 channel JPEG and audio. This is enabled only when “Multicast” is selected in the “Stream” selection. Specify the same value as the parameter that is set on the “Streaming” page of VN-E4.
⑩	Audio Monitor Selection Button	Select “On” to enable audio monitoring of VN-E4 using the viewer. The viewer will not acquire audio from VN-E4 when “Off” is selected.
⑪	Buffering Time Selection Button	For selecting the buffer volume of the viewer. To shorten the delay time, select a small buffer. To ensure stable playback on a network with unstable bandwidth and jitter, select a large buffer.
⑫	Boundary	For selecting boundary lines on the screen.
⑬	Operator Password	For registering the “operator” password of VN-E4. Upon registering the password, features of the “Speech On” and “Control CH1–CH4” buttons will be available for use.
⑭	OK Button	For saving the changed settings. To enable the new settings, exit and restart the viewer.
⑮	Cancel Button	For canceling the changed settings and closing the setting screen.

NOTE:

Cookie used by the built-in viewer

The built-in viewer stores set values in file called cookie. Directory containing cookie can be known using the following method. Go to the following in the Tools menu of Internet Explorer.

“Tools” - “Internet Options” - “Temporary Internet files” on “Settings” Button - “View Files” Button

A list of files will be displayed. Click “Name” to sort the files. The file with the name of “e4-cgi” is the cookie of the built-in viewer. Upon deleting this file, the built-in viewer will be restored to its factory settings.

6-3 GUI for External Device Control

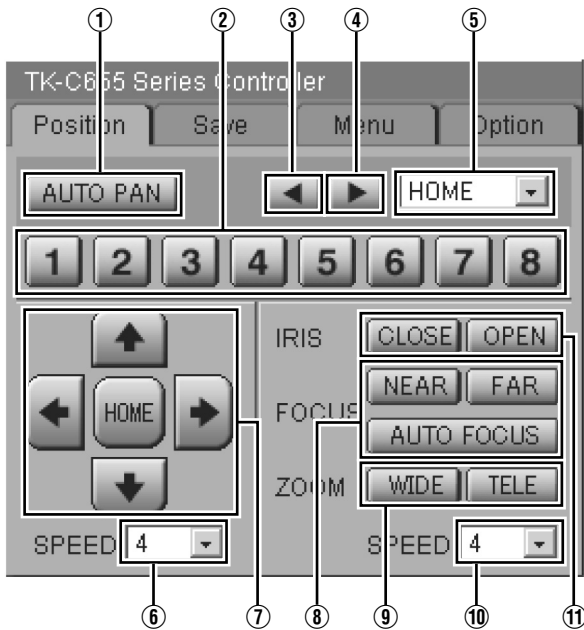
When a device is selected on the “Serial Port” page of VN-E4, the control GUI will be displayed upon pressing the “Control CH1–CH4” button.

TK-C655 Series Controller

TK-S576 Series Controller controls the following models.

- TK-C655E
- TK-C676E

< Position tab >

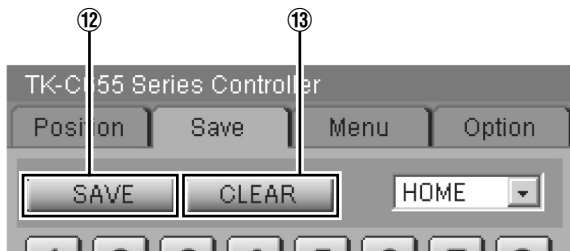


- ① **[AUTO PAN]**
The camera starts to pan itself automatically by click.
- ② **[Position Memory]**
Clicking on one of the buttons points the camera to the previously registered position. Click on the Save tab for registering positions. Up to 8 positions can be registered in the memory.
- ③ **[Position Shift button (rewind)]**
Used to rewind the number of registered position per click, and the camera position is adjusted as the position. (The position number unregistered any position is skipped.)
The display of the Position Selecting box does not change if the position is changed by this button.
- ④ **[Position Shift button (forward)]**
Used to set the number of registered position forward per click, and the camera position is adjusted as the position. (The position number unregistered any position is skipped.)
The display of the Position Selecting box does not change if the position is changed by this button.
- ⑤ **[Position Selecting Box]**
Select one position to make the camera to point to the previously registered position. (From POS1 to POS99, or HOME)

- ⑥ **[SPEED] (For PAN/TILT Adjustment)**
Set the speed of the panning/tilting.
(1 is the slowest setting, and 8 is the fastest setting.)
- ⑦ **[PAN/TILT Adjustment buttons]**
Arrow buttons are provided to control the pan/tilt position of the camera.
The camera position is returned to the home position by [HOME] button.
- ⑧ **[FOCUS]**
Adjust the focusing.
NEAR: Focus on the near subjects.
FAR: Focus on the far subjects.
AUTO FOCUS: Adjust the focusing automatically.
- ⑨ **[ZOOM]**
Adjust the zoom ratio.
WIDE: Wide angle.
TELE: Tele angle.
- ⑩ **[SPEED] (For ZOOM and FOCUS)**
Set the speed of FOCUS and ZOOM.
(1 is the slowest setting, and 4 is the fastest setting.)
- ⑪ **[IRIS]**
Adjust the camera iris.
CLOSE: Close the iris.
OPEN: Open the iris.

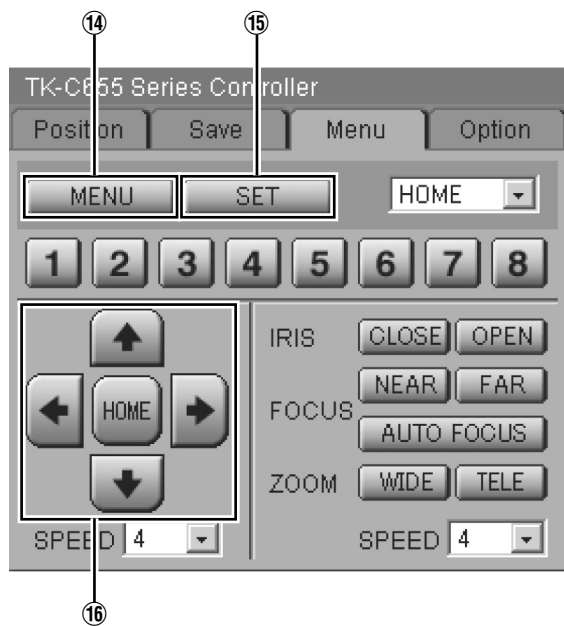
Operation (continued)

< Save tab >



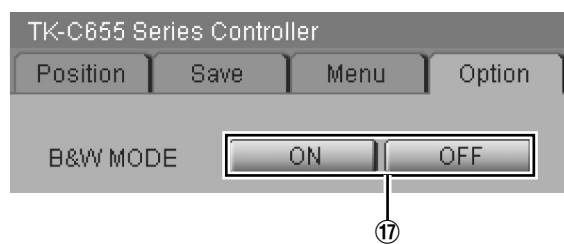
- ⑫ **[SAVE]**
Click [SAVE] to register the desired position.
- ⑬ **[CLEAR]**
Click [Clear] to clear the registered position.

< Menu tab >



- ⑭ **[MENU]**
Opens the Setup menu.
Use to close the Setup menu or to return to the main menu from the sub menu.
- ⑮ **[SET]**
Use to display the sub menu or to approve the settings.
- ⑯ **[PAN/TILT Adjustment buttons]**
Use to move the cursor and to set the menu.

< Option tab >



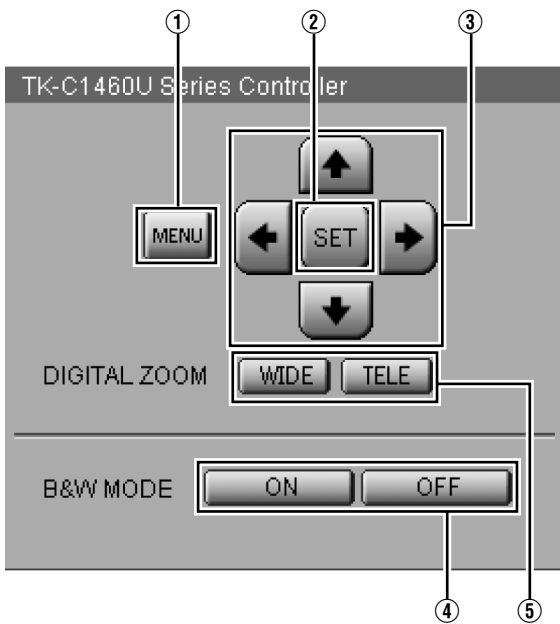
- ⑰ **[B&W MODE]**
ON : Enable black and white display mode.
OFF: Disable black and white display mode.

Operation (continued)

TK-C1460 Series Controller

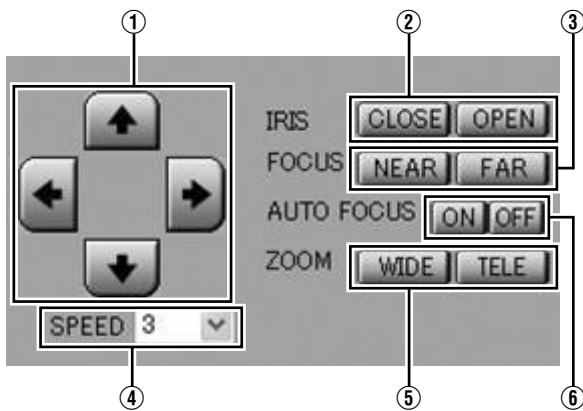
TK-C1460B Series Controller controls the following models.

- TK-C1460B
- TK-C1480B



- ① **[MENU]**
Opens Setup menu by click.
Use to close the Setup menu or to return to the main menu from the sub menu.
- ② **[SET]**
Use to display the sub menu or to approve the settings.
- ③ **[Arrow buttons (UP/DOWN/RIGHT/LEFT)]**
Use to move the cursor on the setup menu.
- ④ **[B&W MODE]**
ON : Enable black and white display mode.
OFF: Disable black and white display mode.
- ⑤ **[DIGITAL ZOOM]**
Adjust the digital zoom ratio.
WIDE: Wide angle
TELE: Tele angle
Use to set the items on the menu.

Pelco-D Controller



- ① **[PAN/TILT Adjustment buttons]**
Arrow buttons are provided to control the pan/tilt position of the camera.
- ② **[IRIS]**
For changing the camera aperture.
- ③ **[FOCUS]**
For changing the camera focus.
- ④ **[SPEED]**
For selecting the pan/tilt speed.
- ⑤ **[ZOOM]**
For zooming the camera.
- ⑥ **[AUTO FOCUS]**
For setting the auto camera focus to ON/OFF.

7. Troubleshooting

Symptom	Causes and Countermeasures															
The [STS] lamp does not light up but blinks when power is turned on.	The STS lamp will light up if VN-E4 is started up successfully. The light will appear blinking when troubles occur during startup and the error details will be displayed in CH1–CH4.															
	<table border="1"> <thead> <tr> <th>CH1</th> <th>CH2</th> <th>CH3</th> <th>CH4</th> <th>Error Description</th> </tr> </thead> <tbody> <tr> <td>Light OFF</td> <td>Light OFF</td> <td>Light OFF</td> <td>Light ON</td> <td>A device with the same IP address as VN-E4 is detected.</td> </tr> <tr> <td>Light OFF</td> <td>Light OFF</td> <td>Light ON</td> <td>Light OFF</td> <td>There is no video signal input to VN-E4.</td> </tr> </tbody> </table>	CH1	CH2	CH3	CH4	Error Description	Light OFF	Light OFF	Light OFF	Light ON	A device with the same IP address as VN-E4 is detected.	Light OFF	Light OFF	Light ON	Light OFF	There is no video signal input to VN-E4.
	CH1	CH2	CH3	CH4	Error Description											
Light OFF	Light OFF	Light OFF	Light ON	A device with the same IP address as VN-E4 is detected.												
Light OFF	Light OFF	Light ON	Light OFF	There is no video signal input to VN-E4.												
IP address of VN-E4 is unknown	See “3. IP Address Setting”.															
The web page of VN-E4 cannot be displayed	Refer to “START-UP GUIDE” to check the Internet Explorer settings.															
The built-in viewer cannot be installed	Refer to “START-UP GUIDE” to check the Internet Explorer settings. Installation of the built-in viewer may fail when an anti-virus software is installed on the PC. Install the built-in viewer on a PC that does not have such anti-virus software installed.															
An anti-virus software warning message appears upon starting up the built-in viewer	A warning message may appear when an anti-virus software is installed on the PC. To prevent the warning message from appearing, install the built-in viewer on a PC that does not have such anti-virus software installed.															
Authentication by Verisign appears upon installing the built-in viewer.	Verisign’s electronic signature is stored in the built-in viewer. For PCs that are connected to WEB, the authenticity of the viewer can be verified by Verisign authentication server.															
TCP image/audio cannot be played back	Check the total bit rate and number of distributions on the “Operation” page of VN-E4. Maximum bitrate from VN-E4 is 40 Mbps. New requests for distribution will be denied upon exceeding 40 Mbps. VN-E4 allows TCP transmission of up to 10 streams of JPEG or audio data. For example, when acquiring 4 JPEG and 1 audio streams via TCP using the built-in viewer, a maximum of 2 built-in viewers may be connected to one VN-E4. Make use of multicast for monitoring by multiple viewers. VN-E4 allows multicast transmission of up to 10 streams.															
Multicast image/audio cannot be played back	Start multicast transmission manually from the “Streaming” page of VN-E4. In the case of multicast reception at the built-in viewer, check that the multicast address and port number of the built-in viewer settings coincide with those on the “Streaming” page of VN-E4. Make use of a network that supports IGMP for multicast transmission.															
The frame rate of JPEG is low	Check the settings on the “Encoding” page of the VN-E4 unit. Check the built-in viewer settings as well when a built-in viewer is in use. Frame rate will be constrained when the network bandwidth is narrow. Frame rate will be constrained when there is prolonged network delay or when the data volume sent from VN-E4 is high. When this occurs, enlarge the window scale of the PC on which the viewer is running. The window scale can be altered by changing the Windows registry. Refer to Windows manual on procedures to change the Windows registry.															
Noise is heard in the audio	Narrow network bandwidth or considerable jitter may cause failure of smooth transmission. This can be remedied by reducing the transmission volume. Transmission volume can be lowered by reducing the number of channels, frame rate and frame size of JPEG data to acquire. Audio output from the PC will pass through Windows’ sample rate conversion function. For some PCs, sample rate conversion may not be performed properly and interruptions may occur in the audio sound. To resolve this problem, perform the following procedures to change the Windows settings. Go to “Control Panel” - “Sounds and Audio Devices” - “Audio” Tab - “Advanced” - “Performance” Tab, and change “Sample rate conversion quality” from “Best” to “Good”. For some PCs, sound quality may deteriorate when the Windows OS plays back audio files such as beep sounds with “Sample rate conversion quality” set to “Good”. Sound Blaster is recommended for use with this product.															
A white zone appears in the built-in viewer.	For some PCs, a part of the Internet Explorer graphics may not appear and is left white when the following IE setting is performed. “Right-click on Desktop” - “Properties” - “Settings” - “Advanced” - “General” - “DPI setting”, and selecting “Large size” or “Custom size” When this occurs, graphics will be properly restored by selecting “Normal size” instead of “Large size” and “Custom size”.															

8. Specifications

[Input/Output]

Video input	: VN-E4U: NTSC composite video BNC 75 Ω 1 Vp-p (75 Ω) analog composite (x4) VN-E4E: PAL composite video BNC 75 Ω 1 Vp-p (75 Ω) analog composite (x4)
Audio input	: Analog audio RCA x 1 2 Vrms input impedance 10 kΩ and above
Audio output	: Analog audio RCA x 1 2 Vrms output impedance 600 Ω and below
Network I/F	: RJ-45 x 1 100BASE-TX/10BASE-T/FULL/HALF Auto Negotiation supported
Control terminals	: RS-232C/RS-485 switchable SERVICE/CONTROL switchable D-sub9Pin (male) x 1 RS-232C/RS-485 switchable D-sub9Pin (male) x 1
Input/Output terminals	: Push terminal, 7-pin Alarm input x 4, GND x 1 No-voltage make contact or break contact input
Alarm output	: OUT x 1, COM x 1 Allowable applied voltage DC 12 V Allowable inflow current 50 mA and below

[Protocols]

HTTP and RTP

[Compression Format]

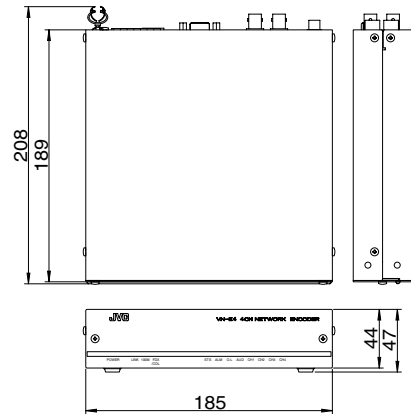
Video image	: JPEG Frame size: VGA (640 x 480), QVGA (320 x 240) Frame rate: Maximum 30 fps x 4 channels
Audio	: μ-law (64 kbps) AD/DA 16 bits, Fs = 8 kHz, mono

[General]

Mass	: 1.1 kg
Power/Rated consumption current:	AC adaptor AC 100 V to 240 V (20 W) VN-E4 DC 5 V 3.0 A and below
Ambient temperature	: 0°C to 40°C
Humidity	: 20% to 80% RH (without condensation)

Accessories	: VN-E4U: AC adaptor 1 Power cord 1 CD-ROM 1 Warranty card 1 Service Information Card..... 1 START-UP GUIDE 1
	: VN-E4E: AC adaptor 1 Power cord 2 CD-ROM 1 START-UP GUIDE 1

Dimension [Unit: mm]



※The specifications and appearance of this unit or related products may be modified for improvement without prior notice.

JVC