

# ***Color Video Camera***

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## **Technical Manual**



**EVI-D80N/P/D90N/P**

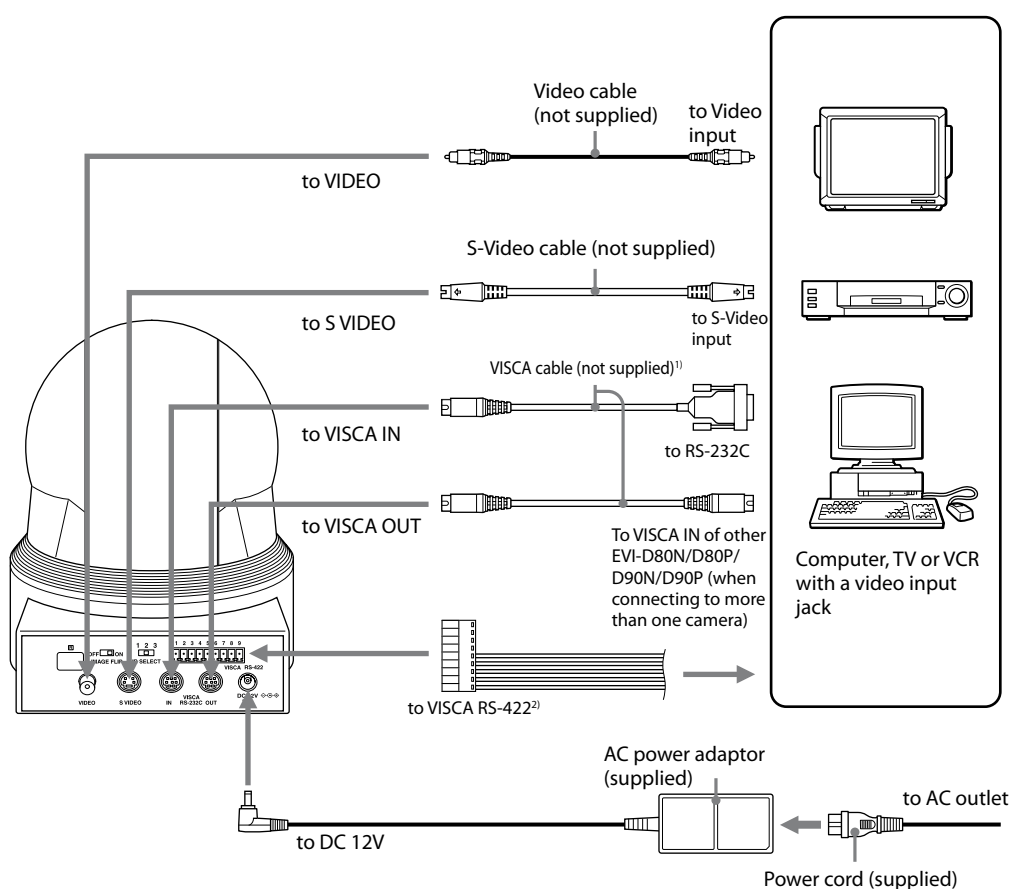
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# Features

- An EX-view HAD™ CCD features 380,000 (NTSC) or 440,000(PAL) effective picture elements and highsensitivity shooting. The minimum illumination required is 0.7 lx (1/60 sec. (NTSC), 1/50 sec. (PAL), ICR OFF). (EVI-D90N/D90P)
- A CCD features 380,000 (NTSC) or 440,000 (PAL) effective picture elements and high-sensitivity shooting. The minimum illumination required is 0.4 lx (1/60 sec. (NTSC), 1/50 sec. (PAL)). (EVI-D80N/D80P)
- The EVI-D90N/D90P are equipped with a bright zoom lens with 28× optical zoom and F1.35 aperture.
- The EVI-D80N/D80P are equipped with a bright zoom lens with 18× optical zoom.
- A newly-developed Processor provides high resolution images.
- By adopting its wide and dynamic range functions, you can see the optimised shooting image which incorporates bright and dark subjects at the same time. (EVI-D90N/D90P)
- 3D Low-noise images can be obtained even in low-light environments using the Noise Reduction function.
- Adopts the industry standard RS-232C interface of VISCA camera protocol in external communication. It is possible to operate from long distances by using both RS-232C and RS-422.
- You can install the camera on ceilings due to the functions of high-speed and wide range pan/tilt action and vertical image flip.
- You can use the infrared remote commander to set the camera and also to select panning, tilting and zooming from the setting menu.
- You can store up to 6 kinds of camera direction and camera status into the camera.

# Connection

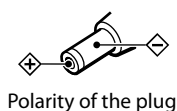


- 1) When the camera is connected to a computer with a VISCA cable (cross type, RS-232C), you can operate the camera with the computer. To obtain a cable, consult the dealer where you bought your camera.
- 2) For details on how to connect using VISCA RS-422, see page 26.

## Notes

- You cannot connect your Color Video Camera to a computer that is not equipped with either video input or an S-Video input connector. You might not be able to use your existing computer with your Color Video Camera unless you provide the computer with a video capture board and/or software. Consult your computer dealer or manufacturer for details.

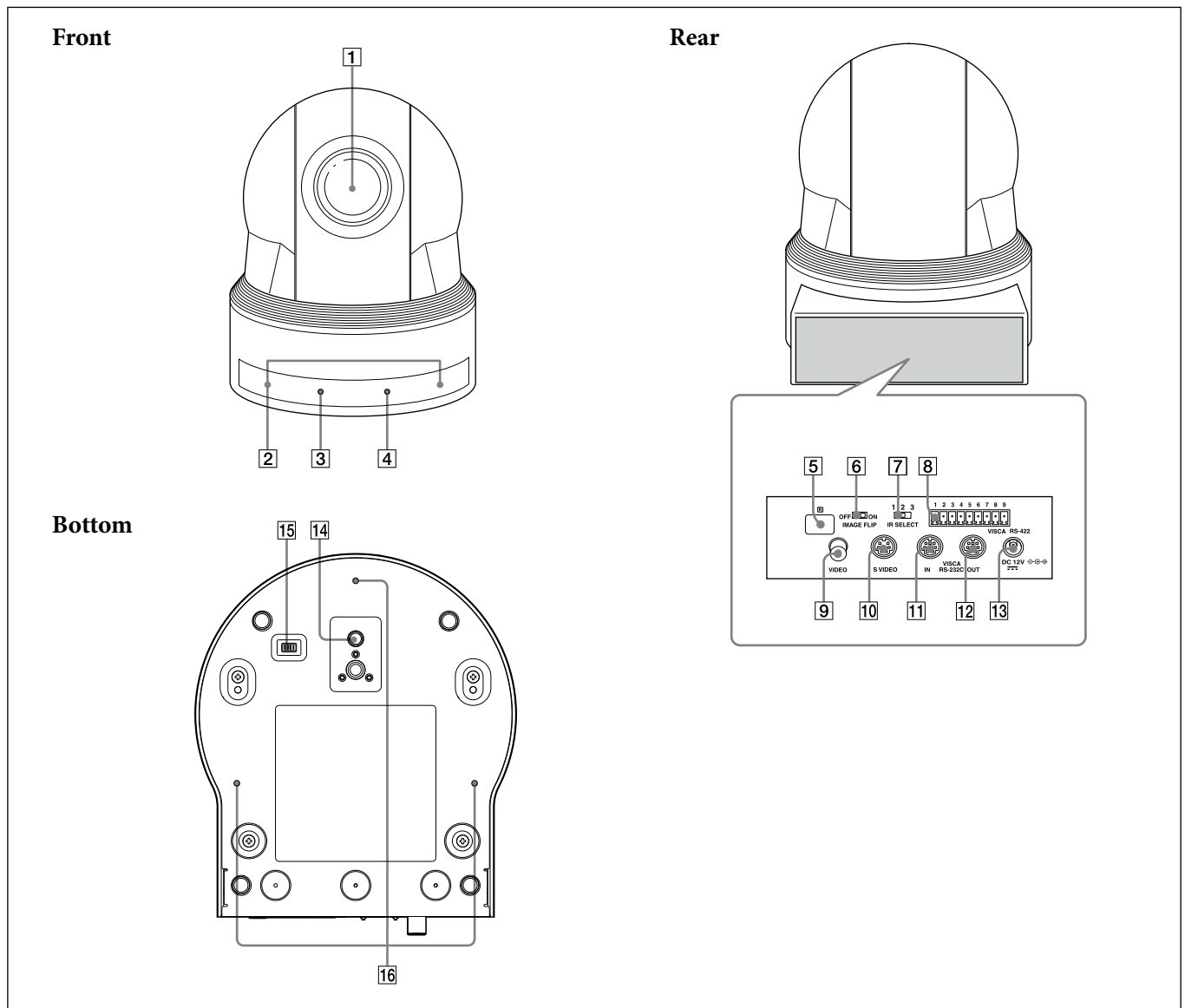
- Use only the AC power adaptor (JEITA type4) supplied with the unit. Do not use any other AC power adaptor.



- Do not make VISCA RS-232C and RS-422 connections at the same time, as this may cause malfunctions.

# Locations of Controls

## Main Unit



**1 Lens**

**2 Remote sensors**

**3 POWER lamp**

**4 STANDBY lamp**

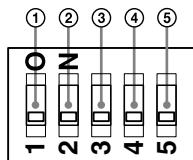
*For detailed information on LED status of the POWER lamp and STANDBY lamp, see "LED Status" on page 42.*

**5 Remote sensors**

(Continued)

**6 IMAGE FLIP switch**

Flips the image upside down. Normally set this to OFF when you use the camera. When the camera is attached to the ceiling, set this to ON. Before you set the IMAGE FLIP switch, turn off the unit (or set to standby mode) and then, turn the power on by connecting the power adaptor, by VISCA control or the remote commander. When you switch this, the preset setting is returned to the initial setting. It takes about 7 to 14 seconds for the image displayed to respond to the setting change.

**7 IR SELECT switch****8 VISCA RS-422 connector****9 VIDEO(output) connector****10 S VIDEO(output) connector****11 VISCA IN connector****12 VISCA OUT connector****13 DC 12V connector****14 Tripod screw hole****15 BOTTOM switches****① D70 mode switch**

Set to ON to use the VISCA command for EVI-D70/D70P.

**② IR OUT switch**

Set to ON to enable output of the receiver signals, which are transmitted from the infrared remote commander via the VISCA IN connector (page 25), or set it to OFF to disable the output.

**③ RS-232C/RS-422 select switch**

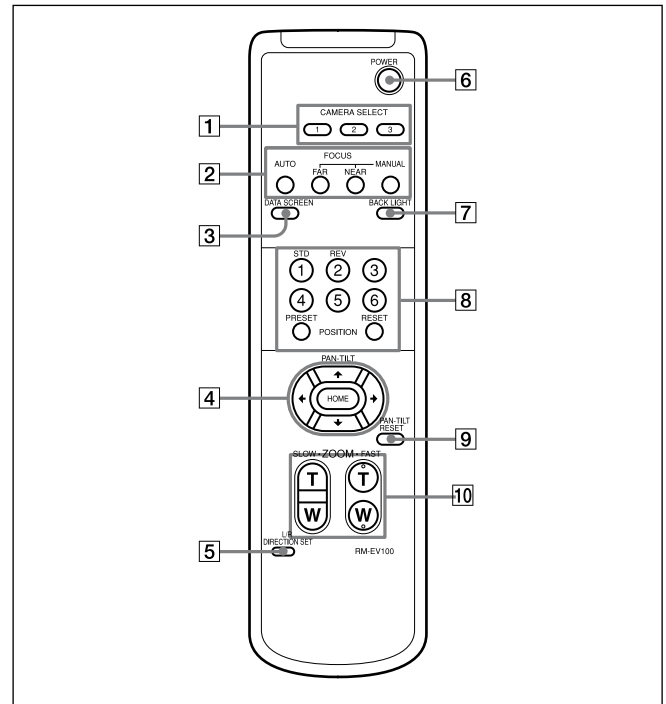
Set to ON to operate colour video camera using the VISCA command via the RS-422 interface. To change the mode, turn off the camera (not including standby mode) first, set the switch and then turn on the camera again. Mode switching is not possible while the camera is turned on.

**④ Baud rate select switch**

Set to ON for 38,400 bps or OFF for 9,600 bps. To change the mode, turn off the camera (not including standby mode) first, set the switch and then turn on the camera again. The mode cannot be switched while the camera is turned on.

**⑤ Switch 5 (Not used)**

Be sure to set this switch to OFF.

**16 Ceiling bracket mounting screw holes****Remote Commander****1 CAMERA SELECT buttons**

Press the button corresponding to the camera you want to operate with the Remote Commander.

The camera number can be set using the IR SELECT switch on the rear of the camera.

**Note**

If two or more cameras are adjacent and have the same camera number, they are operated simultaneously with the same Remote Commander. When you install the cameras close to each other, set different camera numbers.

For the camera number setting, see "Operating Multiple Cameras with the Remote Commander" described in the Operating Instructions supplied with the camera.

**2 FOCUS buttons**

Used for focus adjustment.

Press the AUTO button to adjust the focus automatically. To adjust the focus manually, press the MANUAL button, and adjust it with the FAR and NEAR buttons.

**3 DATA SCREEN button**

Press this button to display the main menu. Press it again to turn off the menu. If you press the button when a lower-level menu is selected, the display goes back to a higher-level menu.

**Note**

Pan/tilt operations are disabled when the menu is displayed.

**4 PAN-TILT buttons**

Press the arrow buttons to perform panning and tilting.  
 Press the HOME button to face the camera back to the front.  
 When the menu is displayed, use ▲ or ▼ to select the menu items and ◀ or ▶ to change the set values. The selected setting menu is displayed, by pressing the HOME button when the main menu is displayed.  
 The Pan/tilt speed will slow down when the camera is zoomed, in order to allow precise positioning.

**5 L/R DIRECTION SET button**

Hold down this button and press the REV button to change the direction of the camera movement opposite to that indicated by the arrow of the ◀/▶ buttons.  
 To reset the direction of the camera movement, press the STD button while holding down this button.

**6 POWER switch**

Press this button to turn on/off the camera when the camera is connected to an AC outlet.

**7 BACK LIGHT button**

Press this button to enable the backlight compensation.  
 Press it again to disable the backlight compensation.

**8 POSITION buttons**

Hold down the PRESET button and press button 1 to 6 to store the current camera direction, zooming, focus adjustment and backlight compensation in the memory of the pressed number button.  
 To erase the memory contents, hold down the RESET button and press button 1 to 6.

**Note**

These buttons do not function when the menu is displayed.

**9 PAN-TILT RESET button**

Press this button to reset the pan/tilt position.

**10 ZOOM buttons**

Use the SLOW button to zoom slowly, and the FAST button to zoom quickly.  
 Press the T (telephoto) side of the button to zoom in, and the W (wide angle) side to zoom out

# Basic Functions

## Overview of Functions

### Zoom

#### EVI-D80N/P:

The camera employs a 18× optical zoom lens combined with a digital zoom function; this camera allows you to zoom up to 216×.

- **Optical 18×, f = 4.1 mm to 73.8 mm (F 1.4 to F 3.0)**

The horizontal angle of view is approximately 48.0 degrees (wide end) to 2.8 degrees (tele end). Digital Zoom enlarges the center of the subject by expanding each image in both the vertical and horizontal directions. When 216× zoom is used, the number of effective picture elements in each direction reduces to 1/12 and the overall resolution deteriorates.

#### EVI-D90N/P:

The camera employs a 28× optical zoom lens combined with a digital zoom function; this camera allows you to zoom up to 336×.

- **Optical 28×, f = 3.5 mm to 98.0 mm (F 1.35 to F 3.7)**

The horizontal angle of view is approximately 55.8 degrees (wide end) to 2.1 degrees (tele end). Digital Zoom enlarges the center of the subject by expanding each image in both the vertical and horizontal directions. When 336× zoom is used, the number of effective picture elements in each direction reduces to 1/12 and the overall resolution deteriorates.

You can activate the zoom in the following two ways

- **By pressing the ZOOM buttons on the Remote Commander**
- **Using a VISCA Command**
  - Using Standard Mode**
  - Using Variable Mode**

There are eight levels of zoom speed.
  - Direct Mode**

Setting the zoom position enables quick movement to the designated position.

### Digital Zoom ON/OFF

*In these standard and variable Speed Modes, it is necessary to send Stop Command to stop the zoom operation.*

### Focus

Focus has the following modes, all of which can be set using VISCA Commands.

- **Auto Focus Mode**

The minimum focus distance is 10 mm at the optical wide end and 800 mm (EVI-D80N/P), 1500 mm (EVI-D90N/P) at the optical tele end, and is independent of the digital zoom. The Auto Focus (AF) function automatically adjusts the focus position to maximise the high frequency content of the picture in a center measurement area, taking into consideration the high luminance and strong contrast components.

#### - Normal AF Mode

This is the normal mode for AF operations.

#### - Interval AF Mode

The mode used for AF movements carried out at particular intervals. The time intervals for AF movements and for the timing of the stops can be set in one-second increments using the Set Time Command. The initial value for both is set to five seconds.

#### - Zoom Trigger Mode

When the zoom is changed with the ZOOM buttons on the Remote Commander, the pre-set value (initially set at 5 seconds) becomes that for AF Mode. Then, it stops.

AF sensitivity can be set to either Normal or LOW.

#### - Normal

Reaches the highest focus speed quickly. Use this when shooting a subject that moves frequently. Usually, this is the most appropriate mode.

#### - LOW

Improves the stability of the focus. When the lighting level is low, the AF function does not take effect, even though the brightness varies, contributing to a stable image.



- **Manual Focus Mode**

Manual Focus has both a Standard Speed Mode and a Variable Speed Mode. Standard Speed Mode focuses at a fixed rate of speed. Variable Speed Mode has eight speed levels that can be set using a VISCA Command.

*In these standard and variable Speed Modes, it is necessary to send Stop Command to stop the zoom operation.*

- **One Push Trigger Mode**

When a Trigger Command is sent, the lens moves to adjust the focus for the subject. The focus lens then holds that position until the next Trigger Command is input.

- **Infinity Mode**

The lens is forcibly moved to a position suitable for an unlimited distance.

- **Near Limit Mode**

Can be set in a range from 1000 ( $\infty$ ) to C000 (10 mm).

Default setting (EVI-D80N/P): 8000h (29 cm)

Default setting (EVI-D90N/P): 9000h (30 cm)

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## White Balance

White Balance has the following modes, all of which can be set using VISCA Commands.

- **Auto White Balance**

This mode computes the white balance value output using color information from the entire screen. It outputs the proper value using the color temperature radiating from a black subject based on a range of values from 3,000 to 7,500 K.

This mode is the default setting.

- **Indoor**

3,200 K Base Mode

- **Outdoor**

5,800 K Base Mode

- **One Push WB**

The One Push White Balance mode is a fixed white balance mode that may be automatically readjusted only at the request of the user (One Push Trigger), assuming that a white subject, in correct lighting conditions and occupying more than  $\frac{1}{2}$  of the image, is captured by the camera.

One Push White Balance data is lost when the power is turned off. If the power is turned off, reset the One Push White Balance.

- **Manual WB**

Manual control of R and B gain, 256 steps each

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## Automatic Exposure Mode

A variety of AE functions are available for optimal output of subjects in lighting conditions that range from low to high.

- **Full Auto**

Exposure is adjusted automatically by gain, iris and electronic shutter setting.

- **AE Gain Limit Setting**

The gain limit can be set at the Full Auto, Shutter Priority and Iris Priority in the AE mode. Use this setting when image signal-to-noise ratio is particularly important.

- **Shutter Priority <sup>1)</sup>**

Variable Shutter Speed, Auto Iris and Gain (1/1 to 1/10,000 sec., 16 high-speed shutter speeds plus 6 low-speed shutter speeds)

1) Flicker can be eliminated by setting shutter to

→ 1/100s for NTSC models used in countries with a 50 Hz power supply frequency

→ 1/120s for PAL models used in countries with a 60 Hz power supply frequency

- **Iris Priority**

Variable Iris (F1.4\* to Close, 18 steps), Auto Gain and Shutter speed

- **Manual**

Variable Shutter, Iris and Gain

- **Bright**

Variable Iris and Gain (Close to F1.4\*, 17 steps at 0 dB: F1.4\*, 15 steps from 0 to 28 dB)

\* For EVI-D80N/P this setting is F1.4, EVI-D90N/P is F1.35.

## AE – Shutter Priority

The shutter speed can be set freely by the user to a total of 22 steps – 16 high speeds and 6 low speeds.

When the slow shutter is set, the speed can be 1/30s, 1/15s, 1/8s, 1/4s, 1/2s, 1/1s. The picture output is read at a normal rate from the memory. The memory is updated at a low rate from the CCD. AF capability is low. In high speed mode, the shutter speed can be set up to 1/10,000s. The iris and gain are set automatically, according to the brightness of the subject.

| Data | NTSC (s) | PAL (s) |
|------|----------|---------|
| 15   | 1/10000  | 1/10000 |
| 14   | 1/6000   | 1/6000  |
| 13   | 1/4000   | 1/3500  |
| 12   | 1/3000   | 1/2500  |
| 11   | 1/2000   | 1/1750  |
| 10   | 1/1500   | 1/1250  |
| 0F   | 1/1000   | 1/1000  |
| 0E   | 1/725    | 1/600   |
| 0D   | 1/500    | 1/425   |
| 0C   | 1/350    | 1/300   |
| 0B   | 1/250    | 1/215   |
| 0A   | 1/180    | 1/150   |
| 09   | 1/125    | 1/120   |
| 08   | 1/100    | 1/100   |
| 07   | 1/90     | 1/75    |
| 06   | 1/60     | 1/50    |
| 05   | 1/30     | 1/25    |
| 04   | 1/15     | 1/12    |
| 03   | 1/8      | 1/6     |
| 02   | 1/4      | 1/3     |
| 01   | 1/2      | 1/2     |
| 00   | 1/1      | 1/1     |

### AE – Iris Priority

The iris can be set freely by the user to 18 steps between F1.6 and Close.

The gain and shutter speed are set automatically, according to the brightness of the subject.

| Data | Setting | value Data | Setting value |
|------|---------|------------|---------------|
| 11   | F1.4*   | 08         | F6.8          |
| 10   | F1.6    | 07         | F8            |
| 0F   | F2      | 06         | F9.6          |
| 0E   | F2.4    | 05         | F11           |
| 0D   | F2.8    | 04         | F14           |
| 0C   | F3.4    | 03         | F16           |
| 0B   | F4      | 02         | F19           |
| 0A   | F4.8    | 01         | F22           |
| 09   | F5.6    | 00         | CLOSE         |

\* For EVI-D80N/P this setting is F1.4, EVI-D90N/P is F1.35.

### AE – Manual

The shutter speed (22 steps), iris (18 steps) and gain (16 steps) can be set freely by the user.

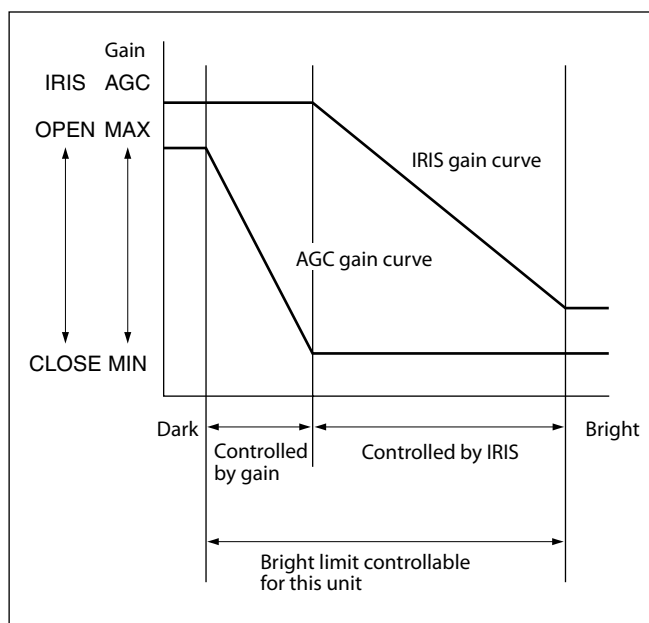
### AE – Bright

The bright control function adjusts both gain and iris using an internal algorithm, according to a brightness level freely set by the user. Exposure is controlled by gain when dark, and by iris when bright.

As both gain and iris are fixed, this mode is used when exposing at a fixed camera sensitivity. When switching from Full Auto or Shutter Priority Mode to Bright

Mode, the current status will be retained for a short period of time.

Only when the AE mode is set to “Full Auto” or “Shutter Priority,” can you switch it to “Bright.”



| Data | Iris  | Gain  | Data | Iris  | Gain |
|------|-------|-------|------|-------|------|
| 1F   | F1.4* | 28 dB | 0F   | F2    | 0 dB |
| 1E   | F1.4* | 26 dB | 0E   | F2.4  | 0 dB |
| 1D   | F1.4* | 24 dB | 0D   | F2.8  | 0 dB |
| 1C   | F1.4* | 22 dB | 0C   | F3.4  | 0 dB |
| 1B   | F1.4* | 20 dB | 0B   | F4    | 0 dB |
| 1A   | F1.4* | 18 dB | 0A   | F4.8  | 0 dB |
| 19   | F1.4* | 16 dB | 09   | F5.6  | 0 dB |
| 18   | F1.4* | 14 dB | 08   | F6.8  | 0 dB |
| 17   | F1.4* | 12 dB | 07   | F8    | 0 dB |
| 16   | F1.4* | 10 dB | 06   | F9.6  | 0 dB |
| 15   | F1.4* | 8 dB  | 05   | F11   | 0 dB |
| 14   | F1.4* | 6 dB  | 04   | F14   | 0 dB |
| 13   | F1.4* | 4 dB  | 03   | F16   | 0 dB |
| 12   | F1.4* | 2 dB  | 02   | F19   | 0 dB |
| 11   | F1.4* | 0 dB  | 01   | F22   | 0 dB |
| 10   | F1.6  | 0 dB  | 00   | CLOSE | 0 dB |

\* For EVI-D80N/P this setting is F1.4, EVI-D90N/P is F1.35.

When switching from the Shutter Priority mode to the Bright mode, the shutter speed set in the Shutter Priority mode is maintained.

## Exposure Compensation

Exposure compensation is a function which offsets the internal reference brightness level used in the AE mode by steps of 1.5 dB.

| Data | Step | Setting value |
|------|------|---------------|
| 0E   | +7   | +10.5 dB      |
| 0D   | +6   | +9 dB         |
| 0C   | +5   | +7.5 dB       |
| 0B   | +4   | +6 dB         |
| 0A   | +3   | +4.5 dB       |
| 09   | +2   | +3 dB         |
| 08   | +1   | +1.5 dB       |
| 07   | 0    | 0 dB          |
| 06   | -1   | -1.5 dB       |
| 05   | -2   | -3 dB         |
| 04   | -3   | -4.5 dB       |
| 03   | -4   | -6 dB         |
| 02   | -5   | -7.5 dB       |
| 01   | -6   | -9 dB         |
| 00   | -7   | -10.5 dB      |

## High Resolution Mode

A newly developed ISP function enables the filtering of signals. This allows the camera to provide images with a high resolution.

## Aperture Control

Aperture control is a function which adjusts the enhancement of the edges of objects in the picture. There are 16 levels of adjustment, starting from “no enhancement.” When shooting text, this control may help by making the text sharper.

## Back Light Compensation

When the background of the subject is too bright, or when the subject is too dark due to shooting in the AE mode, back light compensation will make the subject appear clearer.

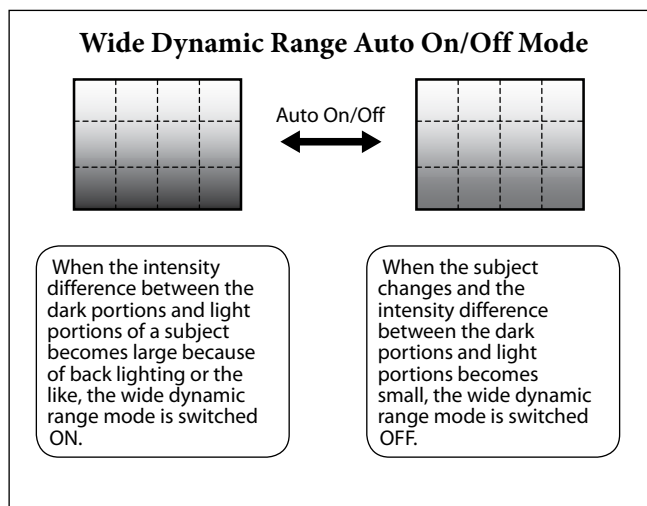
## Wide Dynamic Range Mode (WD) (EVI-D90N/P only)

The Wide Dynamic Range mode is a function for dividing an image into several blocks and correcting blocked-up shadows and blown-out highlights in accordance with the intensity difference. It enables you to obtain images in which portions ranging from dark to light can be recognized, even when capturing a subject with a large intensity difference that is backlit or includes extremely light portions.

A CCD for shooting a wide dynamic range is employed, and a newly developed image signal processor combines a long exposure signal (normal shutter) and a signal of the high intensity portions obtained by a short exposure (high-speed shutter) to achieve images with a wide dynamic range.

### Wide Dynamic Range Auto On/Off Mode

The wide dynamic range can be set to be automatically switched ON/OFF in accordance with the intensity difference obtained by dividing an image into several blocks and then averaging the intensity of each block.



The wide dynamic range mode includes the following operation modes.

- **WD Mode**

This mode corrects blocked-up shadows and blownout highlights in accordance with the intensity difference.

- **WD Auto ON/OFF Mode**

This mode switches WD ON/OFF automatically in accordance with the intensity difference of the subject. Configure the sensitivity for when WD is switched from OFF to ON with the detection sensitivity parameter.

- **Exposure Ratio Mode**

This mode fixes the shutter speed of a short exposure. Configure the shutter speed of a long exposure by setting the ratio with regards to a short exposure with the exposure ratio parameter. Blocked-up shadow correction is not performed in this mode.

- **Histogram Mode**

This mode uses a histogram to correct blocked-up shadows and blown-out highlights.

- **About WD Set Parameter**

**(Command: 8x 01 04 2D 0p 0q 0r 0s 0t 0u 00 00 FF)**

p: Screen display (0: Combined image, 1: Long/short division, 2: Long-time, 3: Short-time) Set the screen display to a WD combination image, long/short exposure division image, long exposure image, or short exposure image.

q: Detection sensitivity (0: Low, 1: Mid, 2: Hi) Select from three levels for detecting the intensity within the image for when switching Auto WD from OFF to ON.

r: Blocked-up shadow correction level can be set to one of four levels. (0:L 1:M 2:H 3:S)

s: Blown-out highlight correction level can be set to one of three levels. (0:L 1:M 2:H)

tu: Parameter to use in the exposure ratio mode. Specify the short exposure time by setting the magnification ratio ( $\times 1$  to  $\times 150$ ) with regards to a long exposure time.

#### Note

When the wide dynamic range mode is ON, solarization may be observed in the images of some subjects. This phenomenon is unique to wide dynamic range mode, and is not an indication of a camera malfunction.

## Noise Reduction

The NR (Noise Reduction) function removes noise (both random and non-random) to provide clearer images. By combining 2D filtering according to brightness and image color, and 3D filtering according to noise caused by motion and time difference, lower noise images can be obtained for the corresponding image brightness of a moving subject.

This function has six steps: levels 1 to 5, plus off.

Level 1 applies to subject motion mainly using 2D filter effects. With level 5, 2D and 3D filter effects are maximized, providing the lowest-noise images, although moving subjects may show trails.

At each level, two filters are set according to noise and image motion characteristics, so the available level selections depend on the situation. The default setting is level 3.

## Image Stabilizer (EVI-D90N/P only)

Switching ON the Image Stabilizer function reduces image blurring caused by, for example, vibration, which allows you to obtain images without much blurring. A correction effect of approximately 90% is possible for a vibration frequency of around 10 Hz. The Image Stabilizer function employs the digital zoom system, so the angle of view and resolution are changed, but the sensitivity is maintained.

## Hold Function of Image Stabilizer

With the Image Stabilizer function, suddenly stopping high-speed movement (pan, tilt, etc.) of the camera produces a blur sensor counteraction that may cause image movement. In such a case, you can use a command setting (hold) to maintain the correction of the Image Stabilizer function. In this case the image stabilizer is off, but there is no change in the angle of view.

## Slow shutter – Auto/Manual

When set to “Auto,” ensures that the slow shutter is set automatically when the brightness drops. Effective only when the AE mode is set to “Full Auto.” Set to “Slow Shutter Manual” at shipment.

### Note

The Slow Shutter Auto function is not available in WD mode

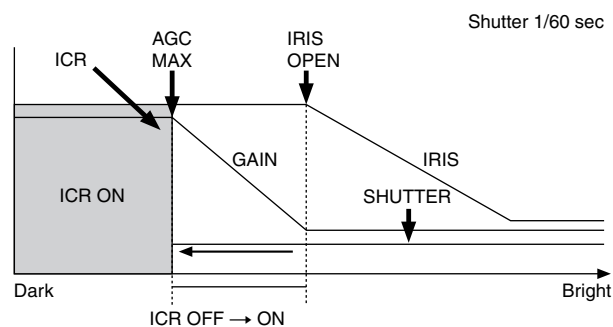
## ICR (IR Cut-Removable) Mode (EVI-D90N/P only)

An infrared (IR) Cut-Filter can be disengaged from the image path for increased sensitivity in low light environments. The ICR will automatically engage depending on the ambient light, allowing the camera to be effective in day/night environments. When the auto ICR mode is set to ON, the image becomes black and white.

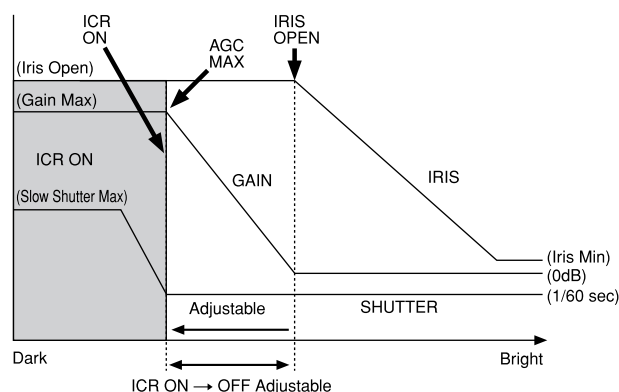
## Auto ICR Mode (EVI-D90N/P only)

Auto ICR Mode automatically switches the settings needed for attaching or removing the IR Cut Filter. With a set level of darkness, the IR Cut Filter is automatically disabled (ICR ON), and the infrared sensitivity is increased. With a set level of brightness, the IR Cut Filter is automatically enabled (ICR OFF). Also, on systems equipped with an IR light, the internal data of the camera is used to make the proper decisions to avoid malfunctions. Auto ICR Mode operates with the AE Full Auto setting.

### When Auto Slow Shutter is OFF (initial setting)



### When Auto Slow Shutter is ON



### Note

When in Auto\_ICR\_OFF state and WB data is added (default), a malfunction may occur when the subjects largely consisting of blue and green colors are taken.

## Camera ID

The ID can be set up to 65,536 (0000 to FFFF). As this will be memorized in the nonvolatile memory inside the camera, data will be saved regardless of whether it has been backed up.

## Effect

It consists of the following functions.

- **Neg. Art:** Negative/Positive Reversal
- **Black White:** Monochrome Image

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## Checking the Location of the Camera for Signals from the IR Remote Commander

The supplied Remote Commander may not work correctly near inverter lighting fixtures. Good IR detection can be verified to determine proper camera location.

While the camera is being initialized after the power is turned on by connecting the camera to an AC outlet using the AC power adaptor and AC power cord, or by using a VISCA command, the camera detects whether or not the camera is able to receive infrared signals from the Remote Commander. You can check the result of this operation via the IR\_ConditionInq command (see page 33).

When the installation location does not allow stable reception, try to install the camera farther away from the inverter lighting fixtures.

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## Others

### Power On/Off

Powers the camera on and off. When the power is off, the camera is able to accept only the lowest level of VISCA Commands and POWER of the Remote Commander; the display and other features are turned off.

### I/F clear

Clears the Command buffer of the camera. Clearing the buffer can also be carried out from the control application software when the power is on.

### Address set

VISCA is a protocol, which normally can support a daisy chain of up to seven attached devices. Therefore, whenever a camera is connected for the first time, be sure to use the address set to confirm the address.

## Memory (Position Preset)

Using the position preset function, 6 sets of camera shooting conditions can be stored and recalled. This function allows you to achieve the desired status instantly without adjusting the following items each time.

- **Pan/Tilt Position**
- **Zoom Position**
- **Digital Zoom On/Off**
- **Focus Auto/Manual**
- **Focus Position**
- **AE Mode**
- **Shutter control parameters**
- **Bright Control**
- **Iris control parameters**
- **Gain control parameters**
- **Exposure Compensation On/Off**
- **Exposure Level**
- **Backlight Compensation On/Off**
- **Slow Shutter Auto/Manual**
- **White Balance Mode**
- **R/B Gain**
- **Aperture**
- **ICR Shoot On/Off (EVI-D90N/P only)**
- **WD On/Off (EVI-D90N/P only)**

The settings are recalled when the power is turned on.

*For setting items, see the “Initial Settings, Position Preset” section on page 15.*

### Note

If the camera is placed on a desk, when you pan the camera to the right or left beyond 120° with the camera tilted downward by 20° (or tilted upward by 20° if it is installed on a ceiling), the camera base may be captured by the lens, depending on the zoom position of the lens.

# Initial Settings and Position Preset

The initial values are those set at the factory. Settings for items in Position presets 1 to 6 that will be retained even when the power to the camera is turned off are indicated by a “Yes,” those that will be lost are indicated by an “No.”

- When the power is turned on, the settings retained in POSITION 1 will be called up as the initial settings.
- When a CAM\_Memory Reset command is sent, or a

choice is made from POSITION 1 to 6 while the RESET button on the Remote Commander is being pressed, the settings selected will be used as the initial settings.

- Position preset 1 becomes VISCA command CAM\_Memory memory number 0. Position presets 2 through 6 become VISCA command CAM\_Memory memory numbers 1 through 5.

| Mode/Position                              | Initial settings              | Position preset 1 | Position presets 2 to 6 |
|--------------------------------------------|-------------------------------|-------------------|-------------------------|
| Pan/Tilt Position                          | Home position                 | ○                 | ○                       |
| Pan/Tilt Limit Position                    | movable-range maximum         | ○                 | ×                       |
| Zoom Position                              | Wide end                      | ○                 | ○                       |
| D-Zoom On/Off                              | on                            | ○                 | ○                       |
| Focus Position                             | —                             | ○                 | ○                       |
| Focus Auto/Manual                          | Auto                          | ○                 | ○                       |
| Near Limit Setting                         | 9000h (30 cm)                 | ○                 | ○                       |
| AF Sensitivity                             | Normal                        | ○                 | ○                       |
| AF Mode                                    | Normal                        | ○                 | ○                       |
| AF Run Time                                | 5 sec                         | ○                 | ○                       |
| AF Interval                                | 5 sec                         | ○                 | ○                       |
| WB Mode                                    | Auto                          | ○                 | ○                       |
| WB Data (Rgain, Bgain)                     | —                             | ○                 | ○                       |
| One Push WB Data                           | —                             | ○                 | ○                       |
| AE Mode                                    | Full Auto                     | ○                 | ○                       |
| WD On/Off/Auto                             | Off                           | ○                 | ○                       |
| Slow Shutter Mode                          | Manual                        | ○                 | ○                       |
| Shutter Position                           | 1/60sec (NTSC), 1/50sec (PAL) | ○                 | ○                       |
| Iris Position                              | —                             | ○                 | ○                       |
| Gain Position                              | —                             | ○                 | ○                       |
| Bright Position                            | —                             | ○                 | ○                       |
| Exposure Compensation On/Off               | Off                           | ○                 | ○                       |
| Exposure Compensation Amount               | ±0                            | ○                 | ○                       |
| BackLight On/Off                           | Off                           | ○                 | ○                       |
| Aperture Level                             | 6                             | ○                 | ○                       |
| High Resolution Mode On/Off                | Off                           | ○                 | ○                       |
| Picture Effect                             | Off                           | ○                 | ○                       |
| ICR On/Off <sup>1)</sup>                   | Off                           | ○                 | ○                       |
| Auto ICR On/Off <sup>1)</sup>              | Off                           | ○                 | ○                       |
| Auto ICR Threshold Level <sup>1)</sup>     | 0Ah                           | ○                 | ○                       |
| Image Stabilizer On/Off/Hold <sup>1)</sup> | Off                           | ○                 | ○                       |
| NR Level                                   | 3                             | ○                 | ○                       |
| AE Gain Limit                              | —                             | ○                 | ○                       |
| Camera ID                                  | 0000h                         | ○                 | ○                       |
| IR_Receive On/Off                          | On                            | ○                 | ×                       |
| IR_ReceiveReturn On/Off                    | Off                           | ○                 | ×                       |
| Display Information                        | On                            | ○                 | ×                       |

1) The setting is available on EVI-D90N/P only.

## Notes

- The number of times data can be written to the EEPROM (by executing Position Preset) is limited.
- If you want the camera status and Pan/Tilt positions in effect before the camera is turned off to be retained when the power is turned OFF, then turned ON again, have the camera memorize those positions in POSITION 1.
- It takes approximately 2 seconds longer to memorize or erase settings in POSITION 1 than it does to memorize or erase settings in any other channel.
- Camera ID data will be saved regardless of the position preset.
- If IMAGE FLIP or D70 mode has been switched, all of the Position Presets are reset to their initial values.

# Mode Condition

## Basic settings

| Command                               | Power Off <sup>1)</sup> | IFC <sup>2)</sup> | Initializing <sup>3)</sup> | Power On                   |                |
|---------------------------------------|-------------------------|-------------------|----------------------------|----------------------------|----------------|
|                                       |                         |                   |                            | During displaying the menu | Memory Command |
| Address Set                           | Yes                     | Yes               | Yes                        | Yes                        | Yes            |
| IF_Clear                              | Yes                     | Yes               | Yes                        | Yes                        | Yes            |
| CAM_Power On                          | Yes                     | No                | No                         | Yes                        | No             |
| CAM_Power Off                         | Yes                     | No                | No                         | Yes                        | No             |
| IR_Receive On/Off                     | No                      | No                | No                         | Yes <sup>4)</sup> 6)       | No             |
| IR_ReceiveReturn On/Off               | No                      | No                | No                         | Yes <sup>6)</sup>          | No             |
| CAM_Versionq                          | Yes                     | Yes               | Yes <sup>5)</sup>          | Yes                        | Yes            |
| CAM_PowerInq                          | Yes                     | Yes               | Yes                        | Yes                        | Yes            |
| BlockInquiry                          | No                      | No                | No                         | Yes <sup>6)</sup>          | No             |
| InquiryCommand (and similar commands) | No                      | No                | No                         | Yes <sup>6)</sup>          | No             |

1) DC power is being supplied, but the camera has been turned off by a VISCA command.

2) The period from the time IF\_Clear is sent, until the Reply Packet is returned.

3) The period from the time DC power is turned on or the camera is turned on via a VISCA command, and the camera subsequently finishes the pan/tilt reset operation and stops at the Home position, until the video signal is output. Or the period from the time the CAM Power ON command is sent, until Completion is returned.

4) The camera does not receive the operation sent from the Remote Commander.

5) Commands can be executed after the pan/tilt movement has been started. Before that, camera movement may be inconsistent.

6) When the menu display is updating, operation is not possible.



## Zoom/Focus

| Command                             | Mode | Power Off <sup>1)</sup> | Power On          |                            |             |              |       |                            | Memory Recall |
|-------------------------------------|------|-------------------------|-------------------|----------------------------|-------------|--------------|-------|----------------------------|---------------|
|                                     |      |                         | IFC <sup>2)</sup> | Initializing <sup>3)</sup> | Zoom Direct | Focus Direct | AF ON | During displaying the menu |               |
| CAM_Zoom Tele/Wide/Stop [VISCA]     |      | No                      | No                | No                         | No          | Yes          | Yes   | Yes <sup>4)</sup>          | No            |
| CAM_Zoom Tele/Wide/Stop [RC]        |      | No                      | No                | No                         | No          | Yes          | Yes   | Yes <sup>4)</sup>          | No            |
| CAM_Zoom Direct                     |      | No                      | No                | No                         | Yes         | Yes          | Yes   | Yes <sup>4)</sup>          | No            |
| D-Zoom Limit                        |      | No                      | No                | No                         | No          | Yes          | Yes   | Yes <sup>4)</sup>          | No            |
| CAM_Focus Far/Near/Stop [VISCA]     |      | No                      | No                | No                         | Yes         | No           | No    | Yes <sup>4)</sup>          | No            |
| CAM_Focus Far/Near/Stop [RC]        |      | No                      | No                | No                         | Yes         | No           | No    | Yes <sup>4)</sup>          | No            |
| CAM_Focus Direct                    |      | No                      | No                | No                         | Yes         | Yes          | No    | Yes <sup>4)</sup>          | No            |
| CAM_Focus Mode (Auto/Manual)        |      | No                      | No                | No                         | Yes         | No           | Yes   | Yes <sup>4)</sup>          | No            |
| CAM_Focus One Push Trigger          |      | No                      | No                | No                         | Yes         | No           | No    | Yes <sup>4)</sup>          | No            |
| CAM_Focus Infinity                  |      | No                      | No                | No                         | Yes         | No           | Yes   | Yes <sup>4)</sup>          | No            |
| CAM_Focus Near Limit                |      | No                      | No                | No                         | Yes         | No           | Yes   | Yes <sup>4)</sup>          | No            |
| AF Sensitivity Normal/Low           |      | No                      | No                | No                         | Yes         | Yes          | Yes   | Yes <sup>4)</sup>          | No            |
| AF Mode Norm/Interval/Zoom          |      | No                      | No                | No                         | Yes         | Yes          | Yes   | Yes <sup>4)</sup>          | No            |
| AF Activation Time/Interval Setting |      | No                      | No                | No                         | Yes         | Yes          | Yes   | Yes <sup>4)</sup>          | No            |

1) DC power is being supplied, but the camera has been turned off by a VISCA command.

2) The period from the time IF Clear is sent, until the Reply Packet is returned.

3) The period from the time DC power is turned on or the camera is turned on via a VISCA command, and the camera subsequently finishes the pan/tilt reset operation and stops at the Home position, until the video signal is output. Or the period from the time the CAM Power ON command is sent, until Completion is returned.

4) When the menu display is updating, operation is not possible.

## White Balance

| Mode                                        |                    | Power Off <sup>(1)</sup> | Power On                    |                    |        |         |                    |                    |                            | Memory Recall |
|---------------------------------------------|--------------------|--------------------------|-----------------------------|--------------------|--------|---------|--------------------|--------------------|----------------------------|---------------|
| Command                                     | IFC <sup>(2)</sup> |                          | Initializing <sup>(3)</sup> | White balance mode |        |         |                    |                    | During displaying the menu |               |
|                                             |                    |                          |                             | Auto               | Indoor | Outdoor | One Push           | Manual             |                            |               |
| CAM_WB Auto/Indoor/Outdoor/OnePhshWB/Manual | No                 | No                       | No                          | Yes                | Yes    | Yes     | Yes                | Yes <sup>(4)</sup> | No                         |               |
| CAM_WB One Push Trigger                     | No                 | No                       | No                          | No                 | No     | No      | Yes <sup>(5)</sup> | No                 | No                         |               |
| CAM_WB R(B) Gain Reset/Up/Down/Direct       | No                 | No                       | No                          | No                 | No     | No      | No                 | Yes <sup>(4)</sup> | No                         |               |

1) DC power is being supplied, but the camera has been turned off by a VISCA command.

2) The period from the time IF Clear is sent, until the Reply Packet is returned.

3) The period from the time DC power is turned on or the camera is turned on via a VISCA command, and the camera subsequently finishes the pan/tilt reset operation and stops at the Home position, until the video signal is output. Or the period from the time the CAM Power ON command is sent, until Completion is returned.

4) When the menu display is updating, operation is not possible.

5) Commands are ignored during a One Push AWB operation.

# Exposure

| Mode                                                           |                   | Power Off <sup>1)</sup> | Power Off                  |               |                   |             |          |            |        |                         |                            |                   |    |
|----------------------------------------------------------------|-------------------|-------------------------|----------------------------|---------------|-------------------|-------------|----------|------------|--------|-------------------------|----------------------------|-------------------|----|
| Command                                                        | IFC <sup>2)</sup> |                         | Initializing <sup>3)</sup> | Exposure mode |                   |             |          |            |        | Wide-D ON <sup>8)</sup> | During displaying the menu | Memory Recall     |    |
|                                                                |                   |                         |                            | Full Auto     | Bright            | Shutter Pri | Iris Pri | SPOT Light | Manual |                         |                            |                   |    |
| CAM_AE<br>Full Auto/Manual/Shutter Pri/<br>Iris Pri/Spot Light |                   | No                      | No                         | Yes           | Yes <sup>4)</sup> | Yes         | Yes      | Yes        | Yes    | Yes                     | Yes                        | Yes <sup>5)</sup> | No |
| CAM_AE Bright                                                  |                   | No                      | No                         | Yes           | Yes               | Yes         | No       | No         | No     | No                      | No                         | Yes <sup>5)</sup> | No |
| CAM_Slow Shutter Limit ON/OFF                                  |                   | No                      | No                         | Yes           | Yes               | Yes         | Yes      | Yes        | Yes    | Yes                     | Yes                        | Yes <sup>5)</sup> | No |
| CAM_Shutter Reset/Up/Down/Direct                               |                   | No                      | No                         | No            | No                | Yes         | No       | No         | No     | No                      | Yes                        | Yes <sup>5)</sup> | No |
| CAM_Iris Reset/Up/Down/Direct                                  |                   | No                      | No                         | No            | No                | No          | No       | Yes        | No     | No                      | Yes                        | Yes <sup>5)</sup> | No |
| CAM_Gain Reset/Up/Down/Direct                                  |                   | No                      | No                         | No            | No                | No          | No       | No         | No     | No                      | Yes                        | Yes <sup>5)</sup> | No |
| CAM_Bright Up/Down/Direct                                      |                   | No                      | No                         | No            | Yes               | No          | No       | No         | No     | No                      | No                         | Yes <sup>5)</sup> | No |
| CAM_ExComp On/Off                                              |                   | No                      | No                         | Yes           | Yes               | Yes         | Yes      | Yes        | Yes    | Yes                     | Yes                        | Yes <sup>5)</sup> | No |
| CAM_ExComp Reset/Up/Down/Direct <sup>6)</sup>                  |                   | No                      | No                         | Yes           | Yes               | Yes         | Yes      | Yes        | Yes    | Yes                     | Yes                        | Yes <sup>5)</sup> | No |
| CAM_Backlight On/Off                                           |                   | No                      | No                         | Yes           | No                | No          | No       | No         | Yes    | Yes                     | No                         | Yes <sup>5)</sup> | No |
| CAM_WD On/Off <sup>7)</sup>                                    |                   | No                      | No                         | Yes           | Yes               | Yes         | Yes      | Yes        | Yes    | Yes                     | Yes                        | Yes <sup>5)</sup> | No |

1) DC power is being supplied, but the camera has been turned off by a VISCA command.

2) The period from the time IF Clear is sent, until the Reply Packet is returned.

3) The period from the time DC power is turned on or the camera is turned on via a VISCA command, and the camera subsequently finishes the pan/tilt reset operation and stops at the Home position, until the video signal is output. Or the period from the time the CAM Power ON command is sent, until Completion is returned.

4) Yes: Only when the camera changes to BRIGHT mode from Full Auto or SHUTTER Pri mode.

5) When the menu display is updating, operation is not possible.

6) No: This is not allowed when EX-COMP is set to OFF.

7) The settings are available; however, command actions will be executed only after Wide-D is set to OFF.

8) This command is available on EVI-D90N/P only.

## Effect

| Command                           | Mode | Power Off <sup>1)</sup> | Power On          |                            |                            |               |
|-----------------------------------|------|-------------------------|-------------------|----------------------------|----------------------------|---------------|
|                                   |      |                         | IFC <sup>2)</sup> | Initializing <sup>3)</sup> | During displaying the menu | Memory Recall |
| CAM_Aperture Reset/Up/Down/Direct |      | No                      | No                | No                         | Yes <sup>4)</sup>          | No            |
| Display info. (ON/OFF)            |      | No                      | No                | No                         | Yes <sup>4)</sup>          | No            |
| CAM_PictureEffect OFF/Neg.Art/B&W |      | No                      | No                | No                         | Yes <sup>4)</sup>          | No            |
| CAM_ICR ON/OFF                    |      | No                      | No                | No                         | Yes <sup>4)</sup>          | No            |
| CAM_AutoICR ON/OFF/Threshold      |      | No                      | No                | No                         | Yes <sup>4)</sup>          | No            |
| CAM_HR ON/OFF                     |      | No                      | No                | No                         | Yes <sup>4)</sup>          | No            |
| CAM_NR                            |      | No                      | No                | No                         | Yes <sup>4)</sup>          | No            |

1) DC power is being supplied, but the camera has been turned off by a VISCA command.

2) The period from the time IF Clear is sent, until the Reply Packet is returned.

3) The period from the time DC power is turned on or the camera is turned on via a VISCA command, and the camera subsequently finishes the pan/tilt reset operation and stops at the Home position, until the video signal is output. Or the period from the time the CAM Power ON command is sent, until Completion is returned.

4) When the menu display is updating, operation is not possible.

# Pan/Tilt

| Mode                                                                       |                 | Power Off <sup>1)</sup> | Power On          |                                 |                  |                   |                                                                   |                   |                                   |                                   |                   |       |               |                                  |                             |                   |
|----------------------------------------------------------------------------|-----------------|-------------------------|-------------------|---------------------------------|------------------|-------------------|-------------------------------------------------------------------|-------------------|-----------------------------------|-----------------------------------|-------------------|-------|---------------|----------------------------------|-----------------------------|-------------------|
| Command                                                                    | Transmit device |                         | IFC <sup>2)</sup> | Initia-<br>lizing <sup>3)</sup> | Zoom<br>(Direct) | Focus<br>(Direct) | Pan/Tilt normal status                                            |                   |                                   |                                   |                   |       | Memory Recall | During<br>displaying the<br>menu | Position<br>detection error |                   |
|                                                                            |                 |                         |                   |                                 |                  |                   | Pan/tilt<br>movement<br>according to<br>the command <sup>4)</sup> |                   | Absolute<br>Position<br>execution | Relative<br>Position<br>execution | Home<br>execution |       |               |                                  |                             | Reset execution   |
|                                                                            |                 |                         |                   | Common                          | Common           | VISCA             | VISCA                                                             | VISCA             | VISCA                             | VISCA                             | RC                | VISCA | RC            | VISCA                            | RC                          |                   |
| Pan-tiltDrive Up/Down/Left/<br>Right/UpLeft/UpRight/<br>DownLeft/DownRight | VISCA           | No                      | No                | Yes                             | Yes              | Yes               | No                                                                | No                | No                                | No                                | No                | No    | No            | No                               | No                          | Yes <sup>8)</sup> |
|                                                                            | RC              | No                      | No                | Yes                             | Yes              | Yes               | No                                                                | No                | No                                | No                                | No                | No    | No            | No                               | No                          | Yes <sup>8)</sup> |
| Pan-tiltDrive Stop                                                         | VISCA           | No                      | No                | Yes                             | Yes              | Yes               | Yes                                                               | No                | No                                | No                                | No                | No    | No            | No                               | No                          | Yes               |
| Pan-tiltDrive AbsolutePosition                                             | VISCA           | No                      | No                | Yes                             | Yes              | No                | Yes                                                               | No                | No                                | No                                | No                | No    | No            | No                               | Yes <sup>5)</sup>           | No                |
| Pan-tiltDrive RelativePosition                                             | VISCA           | No                      | No                | Yes                             | Yes              | No                | No                                                                | No                | No                                | No                                | No                | No    | No            | No                               | Yes <sup>5)</sup>           | Yes               |
| Pan-tiltDrive Home                                                         | VISCA           | No                      | No                | Yes                             | Yes              | No                | No                                                                | No                | No                                | No                                | Yes               | No    | No            | No                               | No                          | No                |
|                                                                            | RC              | No                      | No                | Yes                             | Yes              | No                | No                                                                | No                | No                                | No                                | No                | No    | No            | No                               | No                          | No                |
| Pan-tiltDrive Reset                                                        | VISCA           | No                      | No                | Yes                             | Yes              | No                | No                                                                | No                | No                                | No                                | No                | No    | No            | No                               | Yes <sup>5)</sup>           | Yes               |
|                                                                            | RC              | No                      | No                | Yes                             | Yes              | No                | No                                                                | No                | No                                | No                                | No                | No    | No            | No                               | Yes <sup>5)</sup>           | Yes               |
| Pan-tiltLimitSet LimitSet                                                  | VISCA           | No                      | No                | Yes                             | Yes              | Yes               | No                                                                | No                | No                                | No                                | No                | No    | No            | No                               | Yes <sup>5)</sup>           | No                |
| Pan-tiltLimitSet LimitClear                                                | VISCA           | No                      | No                | Yes                             | Yes              | Yes               | No                                                                | No                | No                                | No                                | No                | No    | No            | No                               | Yes <sup>5)</sup>           | No                |
| Memory Set                                                                 | Common          | No                      | No                | No                              | No               | No                | No                                                                | No                | No                                | No                                | No                | No    | No            | No                               | No                          | No                |
| Memory Reset                                                               | Common          | No                      | No                | No                              | No               | No                | No                                                                | No                | No                                | No                                | No                | No    | No            | No                               | No                          | No                |
| Memory Recall                                                              | VISCA           | No                      | No                | No <sup>6)</sup>                | No <sup>7)</sup> | No                | No                                                                | No                | No                                | No                                | No                | No    | No            | Yes                              | No                          | No                |
|                                                                            | RC              | No                      | No                | No <sup>6)</sup>                | No <sup>7)</sup> | No                | No                                                                | No                | No                                | No                                | No                | No    | No            | Yes                              | No                          | No                |
| CAM_NR <sup>9)</sup>                                                       | VISCA           | No                      | No                | Yes                             | Yes              | No <sup>10)</sup> | No <sup>10)</sup>                                                 | No <sup>10)</sup> | No <sup>10)</sup>                 | No <sup>10)</sup>                 | No <sup>10)</sup> | Yes   | Yes           | No                               | Yes <sup>5)</sup>           | Yes               |

1) DC power is being supplied, but the camera has been turned off by a VISCA command.

2) The period from the time IF Clear is sent, until the Reply Packet is returned.

3) The period from the time DC power is turned on or the camera is turned on via a VISCA command, and the camera subsequently finishes the pan/tilt reset operation and stops at the Home position, until the video signal is output.

4) The pan/tilt operation works by Pan-tiltDrive Up/Down/Left/Right/UpLeft/UpRight/DownLeft/DownRight commands.

5) When the menu display is updating, operation is not possible.

6) Yes: while the camera operates in Tele/Wide zoom mode.

7) Yes: while the camera operates in Far/Near focus mode.

8) Yes: only for movements away from the direction where a position detection error has been recognized.

9) When CAM commands or other inquiry commands are received after the pan/tilt movement has been stopped, "Command not executable" may be returned for a maximum of 120 msec due to internal processing. In this case, please transmit the command again.

10) Yes: when pan/tilt moves at high speed.

# Command List

## VISCA<sup>1)</sup> RS-232C Commands

Use of RS-232C control software which has been developed based upon this command list may cause malfunction or damage to hardware and software. Sony Corporation is not liable for any such damage.

### Overview of VISCA

In VISCA, the device producing the commands, for example, a computer, is called the controller, while the device receiving the commands, such as an EVI-D80N/D80P/D90N/D90P, is called the peripheral device. The EVI-D80N/D80P/D90N/D90P serves as a peripheral device in VISCA. In VISCA, up to seven peripheral devices like the EVI-D80N/D80P/D90N/D90P can be connected to one controller using communication conforming to the RS-232C standard. The parameters of RS-232C are as follows.

- Communication speed: 9,600 bps/38,400 bps
- Data bits : 8
- Start bit : 1
- Stop bit : 1
- Non parity

Flow control using XON/XOFF and RTS/CTS, etc., is not supported.

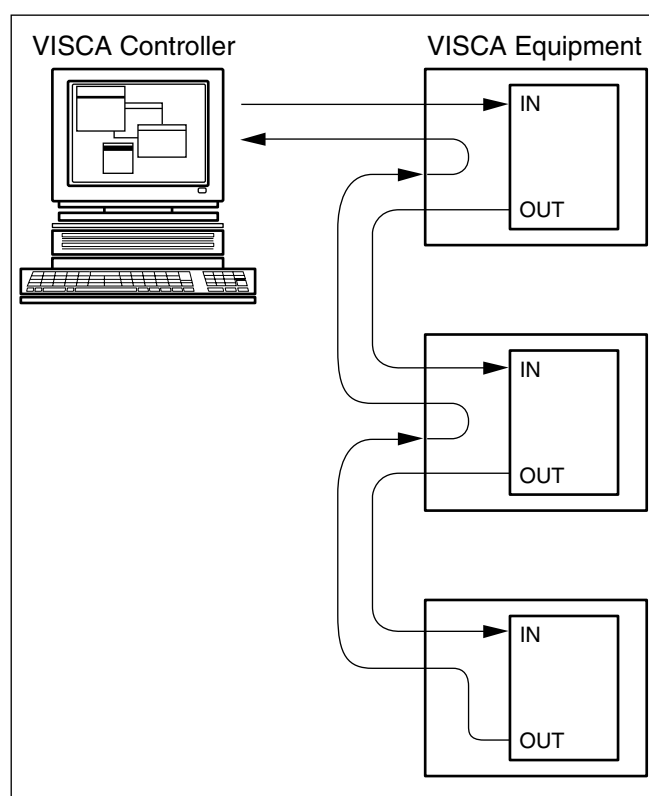
Peripheral devices are connected in a daisy chain. As shown in Fig. 1, the actual internal connection is a one-direction ring, so that messages return to the controller via the peripheral devices. The devices on the network are assigned addresses.

The address of the controller is fixed at 0. The addresses of the peripheral devices are 1, 2, 3 ... in order, starting from the one nearest the controller. The address of the peripheral device is set by sending address commands during the initialization of the network.

The VISCA devices each have a VISCA IN and VISCA OUT connector.

Set the DSR input (the DTR output of the controller) of VISCA IN to H when controlling VISCA equipment from the controller.

Fig. 1 VISCA network configuration



1) VISCA is a protocol which controls consumer camcorders developed by Sony. "VISCA" is a trademark of Sony Corporation.

# VISCA Communication Specifications

## VISCA packet structure

The basic unit of VISCA communication is called a packet (Fig. 2). The first byte of the packet is called the header and comprises the sender's and receiver's addresses. For example, the header of the packet sent to the EVI-D80N/D80P/D90N/D90P assigned address 1 from the controller (address 0) is hexadecimal 81H.

packet.

The packet sent to the EVI-D80N/D80P/D90N/D90P assigned address 2 is 82H. In the command list, as the header is 8X, input the address of the EVI-D80N/D80P/D90N/D90P at X. The header of the reply packet from the EVI-D80N/D80P/D90N/D90P assigned address 1 is 90H. The packet from the EVI-D80N/D80P/D90N/D90P assigned address 2 is A0H. Some of the commands for setting EVI-D80N/D80P/D90N/D90P units can be sent to all devices at one time (broadcast). In the case of broadcast, the header should be hexadecimal 88H.

When the terminator is FFH, it signifies the end of the

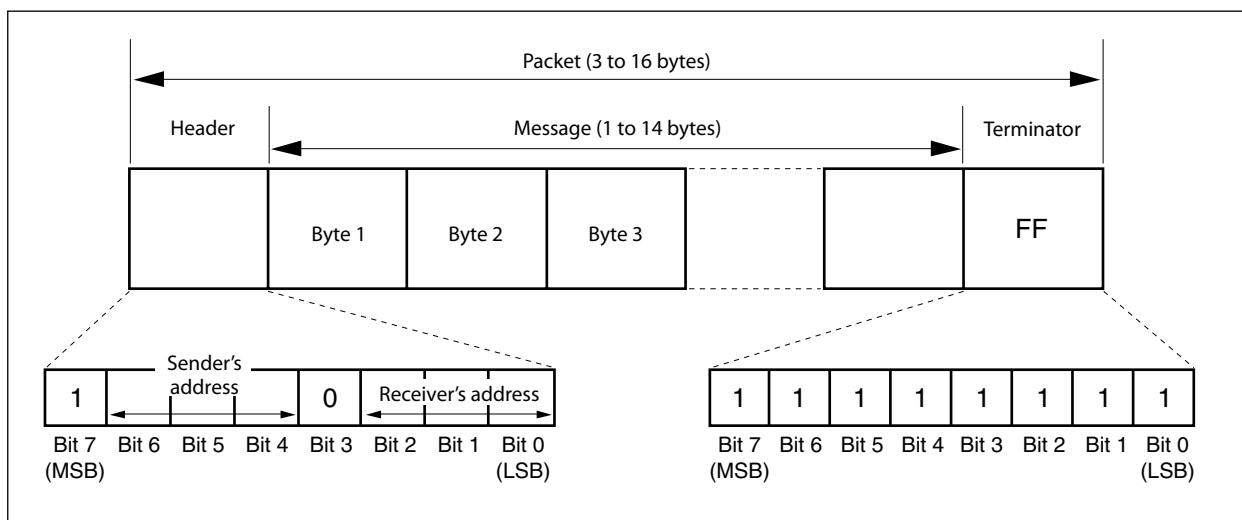


Fig. 2 Packet structure

### Note

Fig. 2 shows the packet structure, while Fig. 3 shows the actual waveform. Data flow will take place with the LSB first.

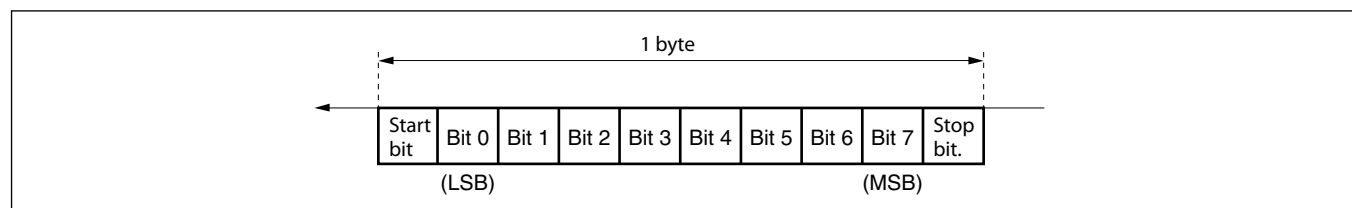
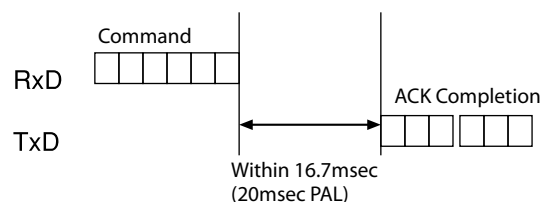


Fig. 3 Actual waveform for 1 byte.

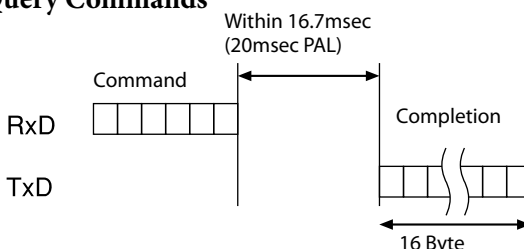
## Timing Chart

As VISCA Command processing can only be carried out one time in a Vertical cycle, it takes the maximum 1V cycle time for an ACK/Completion to be returned. If the Command ACK/Completion communication time can be cut shorter than the 1V cycle time, then every 1V cycle can receive a Command.

### General Commands



### Query Commands



## Command and inquiry

### ● Command

Sends operational commands to the EVI-D80N/D80P/D90N/D90P.

### ● Inquiry

Used for inquiring about the current state of the EVI-D80N/D80P/D90N/D90P.

|         | Command Packet  | Note                                                                    |
|---------|-----------------|-------------------------------------------------------------------------|
| Inquiry | 8X QQ RR ... FF | QQ <sup>1)</sup> = Command/Inquiry,<br>RR <sup>2)</sup> = category code |

<sup>1)</sup> QQ = 01 (Command), 09 (Inquiry)

<sup>2)</sup> RR = 00 (Interface), 04 (camera 1), 06 (Pan/Tilter)

X = 1 to 7: EVI-D80N/D80P/D90N/D90P address

## Responses for commands and inquiries

### ● ACK message

Returned by the EVI-D80N/D80P/D90N/D90P when it receives a command. No ACK message is returned for inquiries.

### ● Completion message

Returned by the EVI-D80N/D80P/D90N/D90P when execution of commands or inquiries is completed. In the case of inquiry commands, it will contain reply data for the inquiry after the 3rd byte of the packet. If the ACK message is omitted, the socket number will contain a 0.

|                        | Reply Packet | Note              |
|------------------------|--------------|-------------------|
| Ack                    | X0 4Y FF     | Y = socket number |
| Completion (commands)  | X0 5Y FF     | Y = socket number |
| Completion (Inquiries) | X0 5Y ... FF | Y = socket number |

X = 9 to F: EVI-D80N/D80P/D90N/D90P address + 8

### ● Error message

When a command or inquiry command could not be executed or failed, an error message is returned instead of the completion message.

| Error Packet | Description                |
|--------------|----------------------------|
| X0 6Y 02 FF  | Syntax Error               |
| X0 6Y 03 FF  | Command buffer full        |
| X0 6Y 04 FF  | Command canceled           |
| X0 6Y 05 FF  | No socket (to be canceled) |
| X0 6Y 41 FF  | Command not executable     |

X = 9 to F: EVI-D80N/D80P/D90N/D90P address + 8, Y = socket number

## Socket number

When command messages are sent to the EVI-D80N/D80P/D90N/D90P, it is normal to send the next command message after waiting for the completion message or error message to return.

However to deal with advanced uses, the EVI-D80N/D80P/D90N/D90P has two buffers (memories) for commands, so that up to two commands including the commands currently being executed can be received.

When the

EVI-D80N/D80P/D90N/D90P receives commands, it notifies the sender which command buffer was used using the socket number of the ACK message.

As the completion message or error message also has a socket number, it indicates which command has ended. Even when two command buffers are being used at any one time, an EVI-D80N/D80P/D90N/D90P management command and some inquiry messages can be executed.

The ACK message is not returned for these commands and inquiries, and only the completion message of socket number 0 is returned.

The following command use two sockets during execution of each command that is sent. The EVI-D80N/D80P/D90N/D90P cannot receive other requests during execution of these commands. In addition, these commands cannot be executed during operation of other commands.

- SYS\_Menu

## Command execution cancel

To cancel a command which has already been sent, send the Cancel command as the next command. To cancel one of any two commands which have been sent, use the cancel message.

|        | Cancel Packet | Note              |
|--------|---------------|-------------------|
| Cancel | 8X 2Y FF      | Y = socket number |

X = 1 to 7: EVI-D80N/D80P/D90N/D90P address, Y = socket number

The Command canceled error message will be returned for this command, but this is not a fault. It indicates that the command has been canceled.

## VISCA Device Setting Command

Before starting control of the EVI-D80N/D80P/D90N/D90P, be sure to send the Address command and the IF\_Clear command using the broadcast function.

---

### For VISCA network administration

#### ● Address Set

Sets an address of a peripheral device. Use when initializing the network, and receiving the following network change message.

|                                                 | Command     | Reply       |
|-------------------------------------------------|-------------|-------------|
| Address Set                                     | 88 30 01 FF | 88 30 0w FF |
| w = 2 to 7: EVI-D80N/D80P/D90N/D90P address + 8 |             |             |

#### ● Network Change

Sent from the peripheral device to the controller when a device is removed from or added to the network. The address must be re-set when this message is received.

|                                                 | Received Packet |
|-------------------------------------------------|-----------------|
| Network Change                                  | X0 38 FF        |
| X = 9 to F: EVI-D80N/D80P/D90N/D90P address + 8 |                 |

---

### VISCA interface command

#### ● IF\_Clear

Clears the command buffers in the EVI-D80N/D80P/D90N/D90P and cancels the command currently being executed.

|                                                | Command Packet | Reply Packet   | Note |
|------------------------------------------------|----------------|----------------|------|
| IF_Clear                                       | 8X 01 00 01FF  | Y0 50 FF       |      |
| IF_Clear (broadcast)                           | 88 01 00 01 FF | 88 01 00 01 FF |      |
| X = 1 to 7: EVI-D80N/D80P/D90N/D90P address    |                |                |      |
| Y = 9 to F: EVI-D80N/D80P/D90N/D90P address +8 |                |                |      |

---

### VISCA interface and inquiry

#### ● CAM\_VersionInq

Returns information on the VISCA interface.

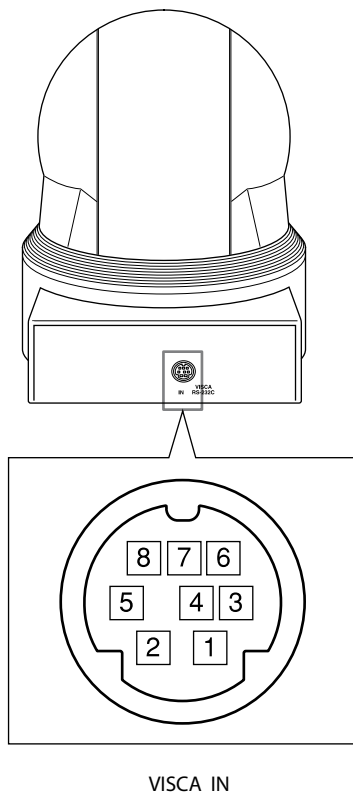
| Inquiry        | Inquiry Packet | Reply Packet                  | Description                                                                                                                                      |
|----------------|----------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| CAM_VersionInq | 8X 09 00 02 FF | Y0 50 GG GG HH HH JJ JJ KK FF | GGGG = Vender ID<br>(0001: Sony)<br>HHHH = Model ID<br>050C: EVI-D80N/P<br>050D: EVI-D90N/P<br>JJJJ = ROM revision<br>KK = Maximum socket # (02) |

X = 1 to 7: EVI-D80N/D80P/D90N/D90P address (For inquiry packet)  
X = 9 to F: EVI-D80N/D80P/D90N/D90P address +8 (For reply packet)



## Pin assignment

### VISCA IN connector (mini-DIN 8-pin, female)



| No | Pins     |
|----|----------|
| 1  | DTR IN*  |
| 2  | DSR IN*  |
| 3  | TXD IN   |
| 4  | GND      |
| 5  | RXD IN   |
| 6  | GND      |
| 7  | IR OUT** |
| 8  | Not used |

\* The "IN" in the function names for pins 1 and 2 ("DTR IN" and "DSR IN") are in reference to being within the VISCA IN connector. For details on signal direction, see the diagrams to the right.

\*\* You can change ON/OFF of IR OUT of pins 7 using the BOTTOM switch (see page 6).

- EVI-D80N/D80P/ D90N/D90P**

|             |   |        |
|-------------|---|--------|
| 1. DTR      | → | 2. RXD |
| 2. DSR      | → | 3. TXD |
| 3. TXD      | → | 4. DTR |
| 4. GND      | → | 5. GND |
| 5. RXD      | → | 6. DSR |
| 6. GND      | → | 7. RTS |
| 7. IR OUT   | → | 8. CTS |
| 8. Not used | → | 9. RI  |

Windows D-sub 9 pin
- EVI-D80N/D80P/ D90N/D90P**

|             |   |         |
|-------------|---|---------|
| 1. DTR      | → | 1. DTR  |
| 2. DSR      | → | 2. DSR  |
| 3. TXD      | → | 3. TXD  |
| 4. GND      | → | 4. GND  |
| 5. RXD      | → | 5. RXD  |
| 6. GND      | → | 6. GND  |
| 7. IR OUT   | → | 7. OPEN |
| 8. Not used | → | 8. OPEN |

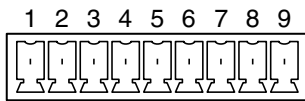
EVI Camera or Mini DIN 8 pin serial
- EVI-D80N/D80P/ D90N/D90P**

|             |   |         |
|-------------|---|---------|
| 1. DTR      | → | 1. FG   |
| 2. DSR      | → | 2. TXD  |
| 3. TXD      | → | 3. RXD  |
| 4. GND      | → | 4. RTS  |
| 5. RXD      | → | 5. CTS  |
| 6. GND      | → | 6. DSR  |
| 7. IR OUT   | → | 7. GND  |
| 8. Not used | → | 20. DTR |

Windows D-sub 25 pin

## Using the VISCA RS-422 connector pin assignments

### The VISCA RS-422 connector pin assignments



VISCA RS-422

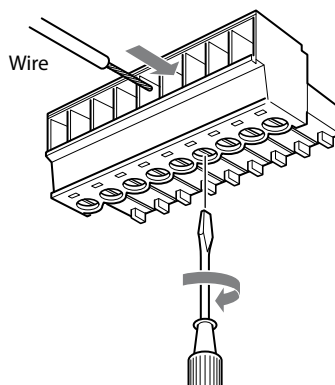
| Pin No. | Function |
|---------|----------|
| 1       | TXD IN+  |
| 2       | TXD IN-  |
| 3       | RXD IN+  |
| 4       | RXD IN-  |
| 5       | GND      |
| 6       | TXD OUT+ |
| 7       | TXD OUT- |
| 8       | RXD OUT+ |
| 9       | RXD OUT- |

#### Note

- In order to stabilize the voltage level of the signal, connect both ends to GND.
- Do not make a VISCA RS-232C connection when there is already an existing VISCA RS-422 connection.

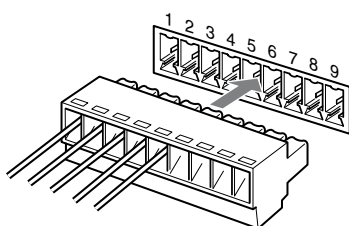
### Using the VISCA RS-422 connector plug

- 1 Insert a wire (AW G Nos. 28 to 18) into the desired wire opening on the supplied VISCA RS-422 connector plug, and tighten the screw for that wire using a flat-head screwdriver.



Flat-head screwdriver

- 2 Insert the VISCA RS-422 connector plug into the VISCA RS-422 connector on the rear of the camera.



## VISCA Command/ACK Protocol

| Command             | Command Message                | Reply Message                                                   | Comments                                                                                                                   |
|---------------------|--------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| General Command     | 81 01 04 38 02 FF<br>(Example) | 90 41 FF (ACK)+90 51 FF<br>(Completion)<br>90 42 FF    90 52 FF | Returns ACK when a command has been accepted, and Completion when a command has been executed.                             |
|                     | 81 01 04 38 FF<br>(Example)    | 90 60 02 FF (Syntax Error)                                      | Accepted a command which is not supported or a command lacking parameters.                                                 |
|                     | 81 01 04 38 02 FF<br>(Example) | 90 60 03 FF<br>(Command Buffer Full)                            | There are two commands currently being executed, and the command could not be accepted.                                    |
|                     | 81 01 04 08 02 FF<br>(Example) | 90 61 41 FF<br>(Command Not Executable)<br>90 62 41FF           | Could not execute the command in the current mode.                                                                         |
| Inquiry Command     | 81 09 04 38 FF<br>(Example)    | 90 50 02 FF (Completion)                                        | ACK is not returned for the inquiry command.                                                                               |
|                     | 81 09 05 38 FF<br>(Example)    | 90 60 02 FF (Syntax Error)                                      | Accepted an incompatible command.                                                                                          |
| Address Set         | 88 30 01 FF                    | 88 30 0w FF                                                     | w: Returned the device address to +1. (2 to 8)                                                                             |
| IF_Clear(Broadcast) | 88 01 00 01 FF                 | 88 01 00 01 FF                                                  | Returned the same command.                                                                                                 |
| IF_Clear (For x)    | 8x 01 00 01 FF                 | z0 50 FF (Completion)                                           | ACK is not returned for this command.                                                                                      |
| Command Cancel      | 8x 2y FF<br>(y:Socket No.)     | z0 6y 04 FF<br>(Command Canceled)                               | Returned when the command of the socket specified is canceled. Completion for the command canceled is not returned.        |
|                     |                                | z0 6y 05 FF (No Socket)                                         | Returned when the command of the specified socket has already been completed or when the socket number specified is wrong. |

z = Device address + 8

## VISCA Camera-Issued Messages

### ACK/Completion Messages

|            | Command Messages           | Comments                                     |
|------------|----------------------------|----------------------------------------------|
| ACK        | z0 4y FF<br>(y:Socket No.) | Returned when the command is accepted.       |
| Completion | z0 5y FF<br>(y:Socket No.) | Returned when the command has been executed. |

z = Device address + 8

### Error Messages

|                        | Command Messages                                                        | Comments                                                                                                                                                         |
|------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Syntax Error           | z0 60 02 FF                                                             | Returned when the command format is different or when a command with illegal command parameters is accepted.                                                     |
| Command Buffer Full    | z0 60 03 FF                                                             | Indicates that two sockets are already being used (executing two commands) and the command could not be accepted when received.                                  |
| Command Canceled       | z0 6y 04 FF<br>(y:Socket No.)                                           | Returned when a command which is being executed in a socket specified by the cancel command is canceled. The completion message for the command is not returned. |
| No Socket              | z0 6y 05 FF<br>(y:Socket No.)                                           | Returned when no command is executed in a socket specified by the cancel command, or when an invalid socket number is specified.                                 |
| Command Not Executable | z0 6y 41 FF<br>(y:Execution command<br>Socket No. Inquiry<br>command:0) | Returned when a command cannot be executed due to current conditions. For example, when commands controlling the focus manually are received during auto focus.  |

z = Device address + 8

### Network Change Message

|                | Command Message | Comments                                                                                                                                |
|----------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Network Change | z0 38 FF        | Issued when power is being routed to the camera, or when the VISCA device is connected to or disconnected from the VISCA OUT connector. |

z = Device address + 8

# EVI-D80N/D80P/D90N/D90P Commands

## EVI-D80N/D80P/D90N/D90P Command List (1/3)

| Command Set      | Command                           | Command Packet                         | Comments                                    |
|------------------|-----------------------------------|----------------------------------------|---------------------------------------------|
| AddressSet       | Broadcast                         | 88 30 01 FF                            | Address setting                             |
| IF_Clear         | Broadcast                         | 88 01 00 01 FF                         | I/F Clear                                   |
| CommandCancel    |                                   | 8x 2p FF                               | p: Socket No. (=1 or 2)                     |
| CAM_Power        | On                                | 8x 01 04 00 02 FF                      | Power ON/OFF                                |
|                  | Off                               | 8x 01 04 00 03 FF                      |                                             |
| CAM_Zoom         | Stop                              | 8x 01 04 07 00 FF                      | p=0 (Low) to 7 (High)                       |
|                  | Tele (Standard)                   | 8x 01 04 07 02 FF                      |                                             |
|                  | Wide (Standard)                   | 8x 01 04 07 03 FF                      |                                             |
|                  | Tele (Variable)                   | 8x 01 04 07 2p FF                      |                                             |
|                  | Wide (Variable)                   | 8x 01 04 07 3p FF                      |                                             |
|                  | Direct                            | 8x 01 04 47 0p 0q 0r 0s FF             | pqrs: Zoom Position                         |
| CAM_DZoom        | On                                | 8x 01 04 06 02 FF                      | Digital zoom ON/OFF                         |
|                  | Off                               | 8x 01 04 06 03 FF                      |                                             |
| CAM_Focus        | Stop                              | 8x 01 04 08 00 FF                      | p=0 (Low) to 7 (High)                       |
|                  | Far (Standard)                    | 8x 01 04 08 02 FF                      |                                             |
|                  | Near (Standard)                   | 8x 01 04 08 03 FF                      |                                             |
|                  | Far (Variable)                    | 8x 01 04 08 2p FF                      |                                             |
|                  | Near (Variable)                   | 8x 01 04 08 3p FF                      |                                             |
|                  | Direct                            | 8x 01 04 48 0p 0q 0r 0s FF             | pqrs: Focus Position                        |
|                  | Auto Focus                        | 8x 01 04 38 02 FF                      | AF ON/OFF                                   |
|                  | Manual Focus                      | 8x 01 04 38 03 FF                      |                                             |
|                  | Auto/Manual                       | 8x 01 04 38 10 FF                      |                                             |
|                  | One Push Trigger                  | 8x 01 04 18 01 FF                      | One Push AF Trigger                         |
|                  | Infinity                          | 8x 01 04 18 02 FF                      | Forced infinity                             |
|                  | Near Limit                        | 8x 01 04 28 0p 0q 0r 0s FF             | pqrs: Focus Near Limit Position             |
| AF Sensitivity   | Normal                            | 8x 01 04 58 02 FF                      | AF Sensitivity High/Low                     |
|                  | Low                               | 8x 01 04 58 03 FF                      |                                             |
| CAM_AFMode       | Normal AF                         | 8x 01 04 57 00 FF                      | AF Movement Mode                            |
|                  | Interval AF                       | 8x 01 04 57 01 FF                      |                                             |
|                  | Zoom Trigger AF                   | 8x 01 04 57 02 FF                      |                                             |
|                  | Active/Interval Time              | 8x 01 04 27 0p 0q 0r 0s FF             | pq: Movement Time, rs: Interval             |
| CAM_IRCorrection | Standard                          | 8x 01 04 11 00 FF                      | FOCUS IR compensation data switching        |
|                  | IR Light                          | 8x 01 04 11 01 FF                      |                                             |
| CAM_ZoomFocus    | Direct                            | 8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF | pqrs: Zoom Position<br>tuvw: Focus Position |
| CAM_WB           | Auto                              | 8x 01 04 35 00 FF                      | Normal Auto                                 |
|                  | Indoor                            | 8x 01 04 35 01 FF                      | Indoor mode                                 |
|                  | Outdoor                           | 8x 01 04 35 02 FF                      | Outdoor mode                                |
|                  | One Push WB                       | 8x 01 04 35 03 FF                      | One Push WB mode                            |
|                  | Manual                            | 8x 01 04 35 05 FF                      | Manual Control mode                         |
|                  | One Push Trigger <sup>1) 6)</sup> | 8x 01 04 10 05 FF                      | One Push WB Trigger                         |
| CAM_RGain        | Reset                             | 8x 01 04 03 00 FF                      | Manual Control of R Gain                    |
|                  | Up                                | 8x 01 04 03 02 FF                      |                                             |
|                  | Down                              | 8x 01 04 03 03 FF                      |                                             |
|                  | Direct                            | 8x 01 04 43 00 00 0p 0q FF             | pq: R Gain                                  |
| CAM_BGain        | Reset                             | 8x 01 04 04 00 FF                      | Manual Control of B Gain                    |
|                  | Up                                | 8x 01 04 04 02 FF                      |                                             |
|                  | Down                              | 8x 01 04 04 03 FF                      |                                             |
|                  | Direct                            | 8x 01 04 44 00 00 0p 0q FF             | pq: B Gain                                  |

## EVI-D80N/D80P/D90N/D90P Command List (2/3)

| Command Set          | Command              | Command Packet                         | Comments                                                                                                                                                                                                                                                                                            |
|----------------------|----------------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CAM_AE               | Full Auto            | 8x 01 04 39 00 FF                      | Automatic Exposure mode                                                                                                                                                                                                                                                                             |
|                      | Manual               | 8x 01 04 39 03 FF                      | Manual Control mode                                                                                                                                                                                                                                                                                 |
|                      | Shutter Priority     | 8x 01 04 39 0A FF                      | Shutter Priority Automatic Exposure mode                                                                                                                                                                                                                                                            |
|                      | Iris Priority        | 8x 01 04 39 0B FF                      | Iris Priority Automatic Exposure mode                                                                                                                                                                                                                                                               |
|                      | Bright <sup>2)</sup> | 8x 01 04 39 0D FF                      | Bright Mode (Manual control)                                                                                                                                                                                                                                                                        |
| CAM_SlowShutter      | Auto                 | 8x 01 04 5A 02 FF                      | Auto Slow Shutter ON/OFF                                                                                                                                                                                                                                                                            |
|                      | Manual               | 8x 01 04 5A 03 FF                      |                                                                                                                                                                                                                                                                                                     |
| CAM_Shutter          | Reset                | 8x 01 04 0A 00 FF                      | Shutter Setting                                                                                                                                                                                                                                                                                     |
|                      | Up                   | 8x 01 04 0A 02 FF                      |                                                                                                                                                                                                                                                                                                     |
|                      | Down                 | 8x 01 04 0A 03 FF                      |                                                                                                                                                                                                                                                                                                     |
|                      | Direct               | 8x 01 04 4A 00 00 0p 0q FF             | pq: Shutter Position                                                                                                                                                                                                                                                                                |
| CAM_Iris             | Reset                | 8x 01 04 0B 00 FF                      | Iris Setting                                                                                                                                                                                                                                                                                        |
|                      | Up                   | 8x 01 04 0B 02 FF                      |                                                                                                                                                                                                                                                                                                     |
|                      | Down                 | 8x 01 04 0B 03 FF                      |                                                                                                                                                                                                                                                                                                     |
|                      | Direct               | 8x 01 04 4B 00 00 0p 0q FF             | pq: Iris Position                                                                                                                                                                                                                                                                                   |
| CAM_Gain             | Reset                | 8x 01 04 0C 00 FF                      | Gain Setting                                                                                                                                                                                                                                                                                        |
|                      | Up                   | 8x 01 04 0C 02 FF                      |                                                                                                                                                                                                                                                                                                     |
|                      | Down                 | 8x 01 04 0C 03 FF                      |                                                                                                                                                                                                                                                                                                     |
|                      | Direct               | 8x 01 04 4C 00 00 0p 0q FF             | pq: Gain Position                                                                                                                                                                                                                                                                                   |
|                      | AE Gain Limit        | 8x 01 04 2C 0p FF                      | p: Gain Position (4-F)                                                                                                                                                                                                                                                                              |
| CAM_Bright           | Up                   | 8x 01 04 0D 02 FF                      | Bright Setting                                                                                                                                                                                                                                                                                      |
|                      | Down                 | 8x 01 04 0D 03 FF                      |                                                                                                                                                                                                                                                                                                     |
|                      | Direct               | 8x 01 04 4D 00 00 0p 0q FF             | pq: Bright Position                                                                                                                                                                                                                                                                                 |
| CAM_ExpComp          | On                   | 8x 01 04 3E 02 FF                      | Exposure Compensation ON/OFF                                                                                                                                                                                                                                                                        |
|                      | Off                  | 8x 01 04 3E 03 FF                      |                                                                                                                                                                                                                                                                                                     |
|                      | Reset                | 8x 01 04 0E 00 FF                      | Exposure Compensation Amount Setting                                                                                                                                                                                                                                                                |
|                      | Up                   | 8x 01 04 0E 02 FF                      |                                                                                                                                                                                                                                                                                                     |
|                      | Down                 | 8x 01 04 0E 03 FF                      |                                                                                                                                                                                                                                                                                                     |
|                      | Direct               | 8x 01 04 4E 00 00 0p 0q FF             | pq: ExpComp Position                                                                                                                                                                                                                                                                                |
| CAM_BackLight        | On                   | 8x 01 04 33 02 FF                      | Back Light Compensation ON/OFF                                                                                                                                                                                                                                                                      |
|                      | Off                  | 8x 01 04 33 03 FF                      |                                                                                                                                                                                                                                                                                                     |
| CAM_WD <sup>5)</sup> | On                   | 8x 01 04 3D 02 FF                      | Wide-D ON/OFF                                                                                                                                                                                                                                                                                       |
|                      | Off                  | 8x 01 04 3D 03 FF                      |                                                                                                                                                                                                                                                                                                     |
|                      | Auto On Off          | 8x 01 04 3D 00 FF                      | Wide dynamic ON/OFF auto switching                                                                                                                                                                                                                                                                  |
|                      | On (Ratio Fix)       | 8x 01 04 3D 01 FF                      | Wide dynamic ON (Fixed exposure ratio mode)                                                                                                                                                                                                                                                         |
|                      | On (Histogram)       | 8x 01 04 3D 04 FF                      | Wide dynamic ON (Histogram mode)                                                                                                                                                                                                                                                                    |
|                      | Refresh              | 8x 01 04 10 0D FF                      | Wide dynamic Refresh                                                                                                                                                                                                                                                                                |
|                      | Set Parameter        | 8x 01 04 2D 0p 0q 0r 0s 0t 0u 00 00 FF | p: Screen display<br>( 0: Combined image, 2: Long-time, 3: Short-time )<br>q: Detection sensitivity (0: L 1: M 2: H)<br>r: Blocked-up shadow correction level (0: L 1: M 2: H 3: S)<br>s: Blown-out highlight correction level (0: L 1: M 2: H)<br>tu: Exposure ratio of short exposure (x1 to x64) |
| CAM_Aperture         | Reset                | 8x 01 04 02 00 FF                      | Aperture Control                                                                                                                                                                                                                                                                                    |
|                      | Up                   | 8x 01 04 02 02 FF                      |                                                                                                                                                                                                                                                                                                     |
|                      | Down                 | 8x 01 04 02 03 FF                      |                                                                                                                                                                                                                                                                                                     |
|                      | Direct               | 8x 01 04 42 00 00 0p 0q FF             | pq: Aperture Gain                                                                                                                                                                                                                                                                                   |
| CAM_HR               | On                   | 8x 01 04 52 02 FF                      | High-Resolution Mode ON/OFF                                                                                                                                                                                                                                                                         |
|                      | Off                  | 8x 01 04 52 03 FF                      |                                                                                                                                                                                                                                                                                                     |
| CAM_NR               |                      | 8x 01 04 53 0p FF                      | p: NR Setting (0: OFF, level 1 to 5)                                                                                                                                                                                                                                                                |

## EVI-D80N/D80P/D90N/D90P Command List (3/3)

| Command Set               | Command                 | Command Packet                                  | Comments                                                                                                                                                                                                                                                                                                                                          |
|---------------------------|-------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CAM_PictureEffect         | Off                     | 8x 01 04 63 00 FF                               | Picture Effect Setting                                                                                                                                                                                                                                                                                                                            |
|                           | Neg.Art                 | 8x 01 04 63 02 FF                               |                                                                                                                                                                                                                                                                                                                                                   |
|                           | B&W                     | 8x 01 04 63 04 FF                               |                                                                                                                                                                                                                                                                                                                                                   |
| CAM_ICR <sup>5)</sup>     | On                      | 8x 01 04 01 02 FF                               | Infrared Mode ON/OFF                                                                                                                                                                                                                                                                                                                              |
|                           | Off                     | 8x 01 04 01 03 FF                               |                                                                                                                                                                                                                                                                                                                                                   |
| CAM_AutoICR <sup>5)</sup> | On                      | 8x 01 04 51 02 FF                               | Auto dark-field mode On/Off                                                                                                                                                                                                                                                                                                                       |
|                           | Off                     | 8x 01 04 51 03 FF                               |                                                                                                                                                                                                                                                                                                                                                   |
|                           | Threshold               | 8x 01 04 21 00 00 0p 0q FF                      | pq: ICR ON → OFF Threshold Level                                                                                                                                                                                                                                                                                                                  |
| CAM_Memory                | Reset <sup>3) 6)</sup>  | 8x 01 04 3F 00 0p FF                            | p: Memory Number (=0 to 5)                                                                                                                                                                                                                                                                                                                        |
|                           | Set <sup>3) 6)</sup>    | 8x 01 04 3F 01 0p FF                            | Corresponds to 1 to 6 on the Remote Commander.                                                                                                                                                                                                                                                                                                    |
|                           | Recall <sup>3) 4)</sup> | 8x 01 04 3F 02 0p FF                            |                                                                                                                                                                                                                                                                                                                                                   |
| CAM_IDWrite               |                         | 8x 01 04 22 0p 0q 0r 0s FF                      | pqrs: Camera ID (=0000 to FFFF)                                                                                                                                                                                                                                                                                                                   |
| SYS_Menu                  | Off                     | 8x 01 06 06 03 FF                               | Turns off the menu screen.                                                                                                                                                                                                                                                                                                                        |
| IR_Receive                | On                      | 8x 01 06 08 02 FF                               | IR(remote commander) receive ON/OFF                                                                                                                                                                                                                                                                                                               |
|                           | Off                     | 8x 01 06 08 03 FF                               |                                                                                                                                                                                                                                                                                                                                                   |
|                           | On/Off                  | 8x 01 06 08 10 FF                               |                                                                                                                                                                                                                                                                                                                                                   |
| IR_ReceiveReturn          | On                      | 8x 01 7D 01 03 00 00 FF                         | IR (remote commander) receive message via the VISCA communication ON/OFF                                                                                                                                                                                                                                                                          |
|                           | Off                     | 8x 01 7D 01 13 00 00 FF                         | For contents of messages, see page 33.                                                                                                                                                                                                                                                                                                            |
| Information Display       | On                      | 8x 01 7E 01 18 02 FF                            | ON/OFF of the Operation status display of One Push                                                                                                                                                                                                                                                                                                |
|                           | Off                     | 8x 01 7E 01 18 03 FF                            | Trigger of CAM_Memory and CAM_WB                                                                                                                                                                                                                                                                                                                  |
| Pan-tiltDrive             | Up <sup>3)</sup>        | 8x 01 06 01 VV WW 03 01 FF                      | VV: Pan speed 01 to 18<br>WW: Tilt Speed 01 to 17<br>YYYY: Pan Position E1E5 to 1E1B (center 0000)<br>ZZZZ: Tilt Position FC75 to 0FF0 (IMAGE FLIP: OFF) (center 0000)<br>Tilt Position F010 to 038B (IMAGE FLIP: ON) (center 0000)<br>See page 42                                                                                                |
|                           | Down <sup>3)</sup>      | 8x 01 06 01 VV WW 03 02 FF                      |                                                                                                                                                                                                                                                                                                                                                   |
|                           | Left <sup>3)</sup>      | 8x 01 06 01 VV WW 01 03 FF                      |                                                                                                                                                                                                                                                                                                                                                   |
|                           | Right <sup>3)</sup>     | 8x 01 06 01 VV WW 02 03 FF                      |                                                                                                                                                                                                                                                                                                                                                   |
|                           | UpLeft <sup>3)</sup>    | 8x 01 06 01 VV WW 01 01 FF                      |                                                                                                                                                                                                                                                                                                                                                   |
|                           | UpRight <sup>3)</sup>   | 8x 01 06 01 VV WW 02 01 FF                      |                                                                                                                                                                                                                                                                                                                                                   |
|                           | DownLeft <sup>3)</sup>  | 8x 01 06 01 VV WW 01 02 FF                      |                                                                                                                                                                                                                                                                                                                                                   |
|                           | DownRight <sup>3)</sup> | 8x 01 06 01 VV WW 02 02 FF                      |                                                                                                                                                                                                                                                                                                                                                   |
|                           | Stop <sup>3)</sup>      | 8x 01 06 01 VV WW 03 03 FF                      |                                                                                                                                                                                                                                                                                                                                                   |
|                           | AbsolutePosition        | 8x 01 06 02 VV WW<br>0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF |                                                                                                                                                                                                                                                                                                                                                   |
|                           | RelativePosition        | 8x 01 06 03 VV WW<br>0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF |                                                                                                                                                                                                                                                                                                                                                   |
|                           | Home                    | 8x 01 06 04 FF                                  |                                                                                                                                                                                                                                                                                                                                                   |
|                           | Reset                   | 8x 01 06 05 FF                                  |                                                                                                                                                                                                                                                                                                                                                   |
| Pan-tiltLimitSet          | LimitSet                | 8x 01 06 07 00 0W<br>0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF | W: 1 UpRight<br>YYYY: Pan Limit Position 0001 to 1E1B<br>ZZZZ: Tilt Limit Position 0001 to 0FF0 (IMAGE FLIP: OFF)<br>Tilt Limit Position 0001 to 038B (IMAGE FLIP: ON)<br>W: 0 DownLeft<br>YYYY: Pan Limit Position E1E5 to FFFF<br>ZZZZ: Tilt Limit Position FC75 to FFFF (IMAGE FLIP: OFF)<br>Tilt Limit Position F010 to FFFF (IMAGE FLIP: ON) |
|                           | LimitClear              | 8x 01 06 07 01 0W<br>07 0F 0F 0F 07 0F 0F 0F FF |                                                                                                                                                                                                                                                                                                                                                   |

- 1) After an ACK to a One Push White Balance Trigger is sent until the operation is completed, "Not Executable" is sent as a reply when any other commands are received.
- 2) Bright can be set only in Full Auto mode or Shutter Priority mode.
- 3) When the menu is displayed, this operation is ignored.
- 4) When other commands are received after a Completion notification for the Recall command is sent, "Command not executable" may be returned for a maximum of 240 msec due to internal processing. In this case, please transmit the command again.
- 5) The command is available on EVI-D90N/P only.
- 6) If Information Display is set to ON, the next command action may be delayed due to Operation status display internal processing after these commands are executed.

## EVI-D80N/D80P/D90N/D90P Inquiry Command List (1/2)

| Inquiry Command             | Command Packet | Inquiry Packet       | Comments                        |
|-----------------------------|----------------|----------------------|---------------------------------|
| CAM_PowerInq                | 8x 09 04 00 FF | y0 50 02 FF          | On                              |
|                             |                | y0 50 03 FF          | Off                             |
| CAM_ZoomPosInq              | 8x 09 04 47 FF | y0 50 0p 0q 0r 0s FF | pqrs: Zoom Position             |
| CAM_DZoomModeInq            | 8x 09 04 06 FF | y0 50 02 FF          | D-Zoom On                       |
|                             |                | y0 50 03 FF          | D-Zoom Off                      |
| CAM_FocusModeInq            | 8x 09 04 38 FF | y0 50 02 FF          | Auto Focus                      |
|                             |                | y0 50 03 FF          | Manual Focus                    |
| CAM_FocusPosInq             | 8x 09 04 48 FF | y0 50 0p 0q 0r 0s FF | pqrs: Focus Position            |
| CAM_FocusNearLimitInq       | 8x 09 04 28 FF | y0 50 0p 0q 0r 0s FF | pqrs: Focus Near Limit Position |
| CAM_AFSensitivityInq        | 8x 09 04 58 FF | y0 50 02 FF          | AF Sensitivity Normal           |
|                             |                | y0 50 03 FF          | AF Sensitivity Low              |
| CAM_AFModeInq               | 8x 09 04 57 FF | y0 50 00 FF          | Normal AF                       |
|                             |                | y0 50 01 FF          | Interval AF                     |
|                             |                | y0 50 02 FF          | Zoom Trigger AF                 |
| CAM_AFTimeSettingInq        | 8x 09 04 27 FF | y0 50 0p 0q 0r 0s FF | pq: Movement Time, rs: Interval |
| CAM_IRCorrectionInq         | 8x 09 04 11 FF | y0 50 00 FF          | Standard                        |
|                             |                | y0 50 01 FF          | IR Light                        |
| CAM_WBModeInq               | 8x 09 04 35 FF | y0 50 00 FF          | Auto                            |
|                             |                | y0 50 01 FF          | In Door                         |
|                             |                | y0 50 02 FF          | Out Door                        |
|                             |                | y0 50 03 FF          | One Push WB                     |
|                             |                | y0 50 05 FF          | Manual                          |
| CAM_RGainInq                | 8x 09 04 43 FF | y0 50 00 00 0p 0q FF | pq: R Gain                      |
| CAM_BGainInq                | 8x 09 04 44 FF | y0 50 00 00 0p 0q FF | pq: B Gain                      |
| CAM_AEModeInq               | 8x 09 04 39 FF | y0 50 00 FF          | Full Auto                       |
|                             |                | y0 50 03 FF          | Manual                          |
|                             |                | y0 50 0A FF          | Shutter Priority                |
|                             |                | y0 50 0B FF          | Iris Priority                   |
|                             |                | y0 50 0D FF          | Bright                          |
| CAM_SlowShutterModeInq      | 8x 09 04 5A FF | y0 50 02 FF          | Auto                            |
|                             |                | y0 50 03 FF          | Manual                          |
| CAM_ShutterPosInq           | 8x 09 04 4A FF | y0 50 00 00 0p 0q FF | pq: Shutter Position            |
| CAM_IrisPosInq              | 8x 09 04 4B FF | y0 50 00 00 0p 0q FF | pq: Iris Position               |
| CAM_GainPosInq              | 8x 09 04 4C FF | y0 50 00 00 0p 0q FF | pq: Gain Position               |
| CAM_AEGainLimitInq          | 8x 09 04 2C FF | y0 50 0p FF          | p: Gain Limit                   |
| CAM_BrightPosInq            | 8x 09 04 4D FF | y0 50 00 00 0p 0q FF | pq: Bright Position             |
| CAM_ExpCompModeInq          | 8x 09 04 3E FF | y0 50 02 FF          | On                              |
|                             |                | y0 50 03 FF          | Off                             |
| CAM_ExpCompPosInq           | 8x 09 04 4E FF | y0 50 00 00 0p 0q FF | pq: ExpComp Position            |
| CAM_BackLightModeInq        | 8x 09 04 33 FF | y0 50 02 FF          | On                              |
|                             |                | y0 50 03 FF          | Off                             |
| CAM_WDModeInq <sup>1)</sup> | 8x 09 04 3D FF | y0 50 02 FF          | On                              |
|                             |                | y0 50 03 FF          | Off                             |
|                             |                | y0 50 00 FF          | Auto On Off                     |
|                             |                | y0 50 01 FF          | On (Ratio Fix)                  |
|                             |                | y0 50 04 FF          | On (Histogram mode)             |



## EVI-D80N/D80P/D90N/D90P Inquiry Command List (2/2)

| Inquiry Command                       | Command Packet    | Inquiry Packet                      | Comments                                                                                                                                                                  |
|---------------------------------------|-------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CAM_WDParameterInq <sup>1)</sup>      | 8x 09 04 2D FF    | y0 50 0p 0q 0r 0s 0t 0u 00 00 FF    | p: Screen display<br>q: Detection sensitivity<br>r: Blocked-up shadow correction level<br>s: Blown-out highlight correction level<br>tu: Exposure ratio of short exposure |
| CAM_ApertureInq                       | 8x 09 04 42 FF    | y0 50 00 00 0p 0q FF                | pq: Aperture Gain                                                                                                                                                         |
| CAM_HRModeInq                         | 8x 09 04 52 FF    | y0 50 02 FF                         | On                                                                                                                                                                        |
|                                       |                   | y0 50 03 FF                         | Off                                                                                                                                                                       |
| CAM_NRIrq                             | 8x 09 04 53 FF    | y0 50 0p FF                         | p: NR level                                                                                                                                                               |
| CAM_PictureEffectModeInq              | 8x 09 04 63 FF    | y0 50 00 FF                         | Off                                                                                                                                                                       |
|                                       |                   | y0 50 02 FF                         | Neg.Art                                                                                                                                                                   |
|                                       |                   | y0 50 04 FF                         | B&W                                                                                                                                                                       |
| CAM_ICRModeInq <sup>1)</sup>          | 8x 09 04 01 FF    | y0 50 02 FF                         | On                                                                                                                                                                        |
|                                       |                   | y0 50 03 FF                         | Off                                                                                                                                                                       |
| CAM_AutoICRModeInq <sup>1)</sup>      | 8x 09 04 51 FF    | y0 50 02 FF                         | On                                                                                                                                                                        |
|                                       |                   | y0 50 03 FF                         | Off                                                                                                                                                                       |
| CAM_AutoICRThresholdInq <sup>1)</sup> | 8x 09 04 21 FF    | y0 50 00 00 0p 0q FF                | pq: ICR ON → OFF Threshold Level                                                                                                                                          |
| CAM_IDInq                             | 8x 09 04 22 FF    | y0 50 0p 0q 0r 0s FF                | pqrs: Camera ID                                                                                                                                                           |
| CAM_VersionInq                        | 8x 09 00 02 FF    | y0 50 00 01                         | mnpq: Model Code (D80:050C/D90:050D)                                                                                                                                      |
|                                       |                   | mn pq rs tu vw FF                   | rstu: ROM version<br>vw: Socket Number (=02)<br>See page 23.                                                                                                              |
| Information Display                   | 8x 09 7E 01 18 FF | y0 50 02 FF                         | On                                                                                                                                                                        |
|                                       |                   | y0 50 03 FF                         | Off                                                                                                                                                                       |
| IR_Receive                            | 8x 09 06 08 FF    | y0 50 02 FF                         | On                                                                                                                                                                        |
|                                       |                   | y0 50 03 FF                         | Off                                                                                                                                                                       |
| IR_ReceiveReturn                      |                   | y0 07 7D 01 04 00 FF                | Power ON/OFF                                                                                                                                                              |
|                                       |                   | y0 07 7D 01 04 07 FF                | Zoom tele/wide                                                                                                                                                            |
|                                       |                   | y0 07 7D 01 04 38 FF                | AF On/Off                                                                                                                                                                 |
|                                       |                   | y0 07 7D 01 04 33 FF                | CAM_Backlight                                                                                                                                                             |
|                                       |                   | y0 07 7D 01 04 3F FF                | CAM_Memory                                                                                                                                                                |
|                                       |                   | y0 07 7D 01 06 01 FF                | Pan_tiltDrive                                                                                                                                                             |
| IR_ConditionInq                       | 8x 09 06 34 FF    | y0 50 00 FF                         | Stable reception from the IR Remote Commander                                                                                                                             |
|                                       |                   | y0 50 01 FF                         | Unstable reception from the IR Remote Commander                                                                                                                           |
|                                       |                   | y0 50 02 FF                         | Impossible to detect the infrared signals from the Remote Commander because the camera is turned on by the Remote Commander.                                              |
| Pan-tiltMaxSpeedInq                   | 8x 09 06 11 FF    | y0 50 ww zz FF                      | ww = Pan Max Speed<br>xx = Tilt Max Speed                                                                                                                                 |
| Pan-tiltPosInq <sup>2)</sup>          | 8x 09 06 12 FF    | y0 50 0w 0w 0w 0w<br>0z 0z 0z 0z FF | www = Pan Position<br>zzzz = Tilt Position Speed<br>See page 42.                                                                                                          |
| Pan-tiltModeInq                       | 8x 09 06 10 FF    | y0 50 pq rs FF                      | pqrs: Pan-tilt Status<br>See page 42.                                                                                                                                     |

1) The command is available on EVI-D90N/P only.

2) If a Pan-tiltPosInq command is received after Pan-tiltDrive Reset, the pan/tilt position may be different for 1-2 addresses.

## EVI-D80N/D80P/D90N/D90P Block Inquiry Command List

### Lens Control System Inquiry Commands ..... Command Packet 8x 09 7E 7E 00 FF

| Byte | Bit | Comments                   |
|------|-----|----------------------------|
| 0    | 7   | Destination Address        |
|      | 6   |                            |
|      | 5   |                            |
|      | 4   |                            |
|      | 3   | Source Address             |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |
| 1    | 7   | 0 Completion Message (50h) |
|      | 6   | 1                          |
|      | 5   | 0                          |
|      | 4   | 1                          |
|      | 3   | 0                          |
|      | 2   | 0                          |
|      | 1   | 0                          |
|      | 0   | 0                          |
| 2    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | 0                          |
|      | 3   | Zoom Position (HH)         |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |
| 3    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | 0                          |
|      | 3   | Zoom Position (HL)         |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |
| 4    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | 0                          |
|      | 3   | Zoom Position (LH)         |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |
| 5    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | 0                          |
|      | 3   | Zoom Position (LL)         |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |

| Byte | Bit | Comments             |
|------|-----|----------------------|
| 6    | 7   | 0                    |
|      | 6   | 0                    |
|      | 5   | 0                    |
|      | 4   | 0                    |
|      | 3   | Focus Near Limit (H) |
|      | 2   |                      |
|      | 1   |                      |
|      | 0   |                      |
| 7    | 7   | 0                    |
|      | 6   | 0                    |
|      | 5   | 0                    |
|      | 4   | 0                    |
|      | 3   | Focus Near Limit (L) |
|      | 2   |                      |
|      | 1   |                      |
|      | 0   |                      |
| 8    | 7   | 0                    |
|      | 6   | 0                    |
|      | 5   | 0                    |
|      | 4   | 0                    |
|      | 3   | Focus Position (HH)  |
|      | 2   |                      |
|      | 1   |                      |
|      | 0   |                      |
| 9    | 7   | 0                    |
|      | 6   | 0                    |
|      | 5   | 0                    |
|      | 4   | 0                    |
|      | 3   | Focus Position (HL)  |
|      | 2   |                      |
|      | 1   |                      |
|      | 0   |                      |
| 10   | 7   | 0                    |
|      | 6   | 0                    |
|      | 5   | 0                    |
|      | 4   | 0                    |
|      | 3   | Focus Position (LH)  |
|      | 2   |                      |
|      | 1   |                      |
|      | 0   |                      |
| 11   | 7   | 0                    |
|      | 6   | 0                    |
|      | 5   | 0                    |
|      | 4   | 0                    |
|      | 3   | Focus Position (LL)  |
|      | 2   |                      |
|      | 1   |                      |
|      | 0   |                      |

| Byte | Bit | Comments                                        |
|------|-----|-------------------------------------------------|
| 12   | 7   | 0                                               |
|      | 6   | 0                                               |
|      | 5   | 0                                               |
|      | 4   | 0                                               |
|      | 3   | 0                                               |
|      | 2   | 0                                               |
|      | 1   | 0                                               |
|      | 0   | 0                                               |
| 13   | 7   | 0                                               |
|      | 6   | 0                                               |
|      | 5   | 0                                               |
|      | 4   | 0: Normal 1: Interval<br>2: Zoom Trigger        |
|      | 3   |                                                 |
|      | 2   | AF Sensitivity 0: Slow<br>1: Normal             |
|      | 1   |                                                 |
|      | 0   | Digital Zoom 1:On 0:Off                         |
| 14   | 7   | 0                                               |
|      | 6   | 0                                               |
|      | 5   | 0                                               |
|      | 4   | 0                                               |
|      | 3   | Low Contrast Detection 1: Yes<br>0: No          |
|      | 2   |                                                 |
|      | 1   | Camera Memory Recall<br>1: Executing 0: Stopped |
|      | 0   |                                                 |
| 15   | 7   | 1 Terminator (FFh)                              |
|      | 6   | 1                                               |
|      | 5   | 1                                               |
|      | 4   | 1                                               |
|      | 3   | 1                                               |
|      | 2   | 1                                               |
|      | 1   | 1                                               |
|      | 0   | 1                                               |

**Lens Control System Inquiry Commands ..... Command Packet 8x 09 7E 7E 01 FF**

| Byte | Bit | Comments                   |
|------|-----|----------------------------|
| 0    | 7   | Destination Address        |
|      | 6   |                            |
|      | 5   |                            |
|      | 4   |                            |
|      | 3   | Source Address             |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |
| 1    | 7   | 0 Completion Message (50h) |
|      | 6   | 1                          |
|      | 5   | 0                          |
|      | 4   | 1                          |
|      | 3   | 0                          |
|      | 2   | 0                          |
|      | 1   | 0                          |
|      | 0   | 0                          |
| 2    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | 0                          |
|      | 3   | R Gain (H)                 |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |
| 3    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | 0                          |
|      | 3   | R Gain (L)                 |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |
| 4    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | 0                          |
|      | 3   | B Gain (H)                 |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |
| 5    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | 0                          |
|      | 3   | B Gain (L)                 |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |

| Byte | Bit | Comments                           |
|------|-----|------------------------------------|
| 6    | 7   | 0                                  |
|      | 6   | 0                                  |
|      | 5   | 0                                  |
|      | 4   | 0                                  |
|      | 3   | WB Mode                            |
|      | 2   |                                    |
|      | 1   |                                    |
|      | 0   |                                    |
| 7    | 7   | 0                                  |
|      | 6   | 0                                  |
|      | 5   | 0                                  |
|      | 4   | 0                                  |
|      | 3   | Aperture Gain                      |
|      | 2   |                                    |
|      | 1   |                                    |
|      | 0   |                                    |
| 8    | 7   | 0                                  |
|      | 6   | 0                                  |
|      | 5   | 0                                  |
|      | 4   | Exposure Mode                      |
|      | 3   |                                    |
|      | 2   |                                    |
|      | 1   |                                    |
|      | 0   |                                    |
| 9    | 7   | 0                                  |
|      | 6   | 0                                  |
|      | 5   | High-Resolution 1: On 0: Off       |
|      | 4   | Wide-D (1: Other than Off, 0: Off) |
|      | 3   | 0                                  |
|      | 2   | Back Light 1:On 0:Off              |
|      | 1   | Exposure Comp. 1:On 0:Off          |
|      | 0   | Slow Shutter 1:Auto 0:Manual       |
| 10   | 7   | 0                                  |
|      | 6   | 0                                  |
|      | 5   | 0                                  |
|      | 4   | Shutter Position                   |
|      | 3   |                                    |
|      | 2   |                                    |
|      | 1   |                                    |
|      | 0   |                                    |
| 11   | 7   | 0                                  |
|      | 6   | 0                                  |
|      | 5   | 0                                  |
|      | 4   | Iris Position                      |
|      | 3   |                                    |
|      | 2   |                                    |
|      | 1   |                                    |
|      | 0   |                                    |

| Byte | Bit | Comments                |
|------|-----|-------------------------|
| 12   | 7   | 0                       |
|      | 6   | 0                       |
|      | 5   | 0                       |
|      | 4   | 0                       |
|      | 3   | Gain Position           |
|      | 2   |                         |
|      | 1   |                         |
|      | 0   |                         |
| 13   | 7   | 0                       |
|      | 6   | 0                       |
|      | 5   | 0                       |
|      | 4   | Bright Position         |
|      | 3   |                         |
|      | 2   |                         |
|      | 1   |                         |
|      | 0   |                         |
| 14   | 7   | 0                       |
|      | 6   | 0                       |
|      | 5   | 0                       |
|      | 4   | 0                       |
|      | 3   | Exposure Comp. Position |
|      | 2   |                         |
|      | 1   |                         |
|      | 0   |                         |
| 15   | 7   | 1 Terminator (FFh)      |
|      | 6   | 1                       |
|      | 5   | 1                       |
|      | 4   | 1                       |
|      | 3   | 1                       |
|      | 2   | 1                       |
|      | 1   | 1                       |
|      | 0   | 1                       |

**Other Inquiry Commands ..... Command Packet 8x 09 7E 7E 02 FF**

| Byte | Bit | Comments                   |
|------|-----|----------------------------|
| 0    | 7   | Destination Address        |
|      | 6   |                            |
|      | 5   |                            |
|      | 4   |                            |
|      | 3   | Source Address             |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |
| 1    | 7   | 0 Completion Message (50h) |
|      | 6   | 1                          |
|      | 5   | 0                          |
|      | 4   | 1                          |
|      | 3   | 0                          |
|      | 2   | 0                          |
|      | 1   | 0                          |
|      | 0   | 0                          |
| 2    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | 0                          |
|      | 3   | 0                          |
|      | 2   | Auto ICR 1: On 0: Off      |
|      | 1   | 0                          |
|      | 0   | Power 1: On 0: Off         |
| 3    | 7   | 0                          |
|      | 6   | Stabilizer (1: On, 0: Off) |
|      | 5   | 0                          |
|      | 4   | ICR 1: On 0: Off           |
|      | 3   | 0                          |
|      | 2   | 0                          |
|      | 1   | 0                          |
|      | 0   | 0                          |
| 4    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | Inconsistent               |
|      | 3   | Inconsistent               |
|      | 2   | Inconsistent               |
|      | 1   | 0                          |
|      | 0   | 0                          |
| 5    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | 0                          |
|      | 3   | Picture Effect Mode        |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |

| Byte | Bit | Comments       |
|------|-----|----------------|
| 6    | 7   | 0              |
|      | 6   | 0              |
|      | 5   | 0              |
|      | 4   | 0              |
|      | 3   | 0              |
|      | 2   | 0              |
|      | 1   | 0              |
|      | 0   | 0              |
| 7    | 7   | 0              |
|      | 6   | 0              |
|      | 5   | 0              |
|      | 4   | 0              |
|      | 3   | 0              |
|      | 2   | 0              |
|      | 1   | 0              |
|      | 0   | 0              |
| 8    | 7   | 0              |
|      | 6   | 0              |
|      | 5   | 0              |
|      | 4   | 0              |
|      | 3   | Camera ID (HH) |
|      | 2   |                |
|      | 1   |                |
|      | 0   |                |
| 9    | 7   | 0              |
|      | 6   | 0              |
|      | 5   | 0              |
|      | 4   | 0              |
|      | 3   | Camera ID (HL) |
|      | 2   |                |
|      | 1   |                |
|      | 0   |                |
| 10   | 7   | 0              |
|      | 6   | 0              |
|      | 5   | 0              |
|      | 4   | 0              |
|      | 3   | Camera ID (LH) |
|      | 2   |                |
|      | 1   |                |
|      | 0   |                |
| 11   | 7   | 0              |
|      | 6   | 0              |
|      | 5   | 0              |
|      | 4   | 0              |
|      | 3   | Camera ID (LL) |
|      | 2   |                |
|      | 1   |                |
|      | 0   |                |

| Byte | Bit | Comments                                  |
|------|-----|-------------------------------------------|
| 12   | 7   | 0                                         |
|      | 6   | 0                                         |
|      | 5   | Inconsistent                              |
|      | 4   | Memory 1: Provided 0: Not provided        |
|      | 3   | Inconsistent                              |
|      | 2   | ICR 1: Provided 0: Not provided           |
|      | 1   | Stabilizer (1: Provided, 0: Not provided) |
|      | 0   | System 1:PAL 0:NTSC                       |
| 13   | 7   | 0                                         |
|      | 6   | 0                                         |
|      | 5   | 0                                         |
|      | 4   | 0                                         |
|      | 3   | Inconsistent                              |
|      | 2   |                                           |
|      | 1   |                                           |
|      | 0   |                                           |
| 14   | 7   | 0                                         |
|      | 6   | 0                                         |
|      | 5   | Inconsistent                              |
|      | 4   |                                           |
|      | 3   |                                           |
|      | 2   |                                           |
|      | 1   |                                           |
|      | 0   |                                           |
| 15   | 7   | 1 Terminator (FFh)                        |
|      | 6   | 1                                         |
|      | 5   | 1                                         |
|      | 4   | 1                                         |
|      | 3   | 1                                         |
|      | 2   | 1                                         |
|      | 1   | 1                                         |
|      | 0   | 1                                         |

**Enlargement Function1 Query Command..... Command Packet 8x 09 7E 7E 03 FF**

| Byte | Bit | Comments                   |
|------|-----|----------------------------|
| 0    | 7   | Destination Address        |
|      | 6   |                            |
|      | 5   |                            |
|      | 4   |                            |
|      | 3   | Source Address             |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |
| 1    | 7   | 0 Completion Message (50h) |
|      | 6   | 1                          |
|      | 5   | 0                          |
|      | 4   | 1                          |
|      | 3   | 0                          |
|      | 2   | 0                          |
|      | 1   | 0                          |
|      | 0   | 0                          |
| 2    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | 0                          |
|      | 3   | 0                          |
|      | 2   | 0                          |
|      | 1   | 0                          |
|      | 0   | 0                          |
| 3    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | 0                          |
|      | 3   | 0                          |
|      | 2   | 0                          |
|      | 1   | 0                          |
|      | 0   | 0                          |
| 4    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | 0                          |
|      | 3   | AF Activation Time (H)     |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |
| 5    | 7   | 0                          |
|      | 6   | 0                          |
|      | 5   | 0                          |
|      | 4   | 0                          |
|      | 3   | AF Activation Time (L)     |
|      | 2   |                            |
|      | 1   |                            |
|      | 0   |                            |

| Byte | Bit | Comments             |
|------|-----|----------------------|
| 6    | 7   | 0                    |
|      | 6   | 0                    |
|      | 5   | 0                    |
|      | 4   | 0                    |
|      | 3   | AF Interval Time (H) |
|      | 2   |                      |
|      | 1   |                      |
|      | 0   |                      |
| 7    | 7   | 0                    |
|      | 6   | 0                    |
|      | 5   | 0                    |
|      | 4   | 0                    |
|      | 3   | AF Interval Time (L) |
|      | 2   |                      |
|      | 1   |                      |
|      | 0   |                      |
| 8    | 7   | 0                    |
|      | 6   | 0                    |
|      | 5   | 0                    |
|      | 4   | 0                    |
|      | 3   | 1                    |
|      | 2   | 0                    |
|      | 1   | 0                    |
|      | 0   | 0                    |
| 9    | 7   | 0                    |
|      | 6   | 0                    |
|      | 5   | 0                    |
|      | 4   | 0                    |
|      | 3   | 1                    |
|      | 2   | 0                    |
|      | 1   | 0                    |
|      | 0   | 0                    |
| 10   | 7   | 0                    |
|      | 6   | 0                    |
|      | 5   | 0                    |
|      | 4   | 0                    |
|      | 3   | 0                    |
|      | 2   | 0                    |
|      | 1   | 0                    |
|      | 0   | 0                    |

| Byte | Bit | Comments           |
|------|-----|--------------------|
| 11   | 7   | 0                  |
|      | 6   | 0                  |
|      | 5   | 0                  |
|      | 4   | 0                  |
|      | 3   | 0                  |
|      | 2   | 1                  |
|      | 1   | 1                  |
|      | 0   | 1                  |
| 12   | 7   | 0                  |
|      | 6   | 0                  |
|      | 5   | 0                  |
|      | 4   | 0                  |
|      | 3   | 0                  |
|      | 2   | 0                  |
|      | 1   | 0                  |
|      | 0   | 1                  |
| 13   | 7   | 0                  |
|      | 6   | 0                  |
|      | 5   | 0                  |
|      | 4   | 0                  |
|      | 3   | 0                  |
|      | 2   | NR Level           |
|      | 1   |                    |
|      | 0   |                    |
| 14   | 7   | 0                  |
|      | 6   | 0                  |
|      | 5   | 0                  |
|      | 4   | 0                  |
|      | 3   | AE Gain Limit      |
|      | 2   |                    |
|      | 1   |                    |
|      | 0   |                    |
| 15   | 7   | 1 Terminator (FFh) |
|      | 6   | 1                  |
|      | 5   | 1                  |
|      | 4   | 1                  |
|      | 3   | 1                  |
|      | 2   | 1                  |
|      | 1   | 1                  |
|      | 0   | 1                  |

**Enlargement Function2 Query Command..... Command Packet 8x 09 7E 7E 04 FF**

| Byte | Bit | Comments                                                                                          |
|------|-----|---------------------------------------------------------------------------------------------------|
| 0    | 7   | Destination Address                                                                               |
|      | 6   |                                                                                                   |
|      | 5   |                                                                                                   |
|      | 4   |                                                                                                   |
|      | 3   | Source Address                                                                                    |
|      | 2   |                                                                                                   |
|      | 1   |                                                                                                   |
|      | 0   |                                                                                                   |
| 1    | 7   | 0 Completion Message (50h)                                                                        |
|      | 6   | 1                                                                                                 |
|      | 5   | 0                                                                                                 |
|      | 4   | 1                                                                                                 |
|      | 3   | 0                                                                                                 |
|      | 2   | 0                                                                                                 |
|      | 1   | 0                                                                                                 |
|      | 0   | 0                                                                                                 |
| 2    | 7   | 0                                                                                                 |
|      | 6   | 0                                                                                                 |
|      | 5   | 0                                                                                                 |
|      | 4   | 0                                                                                                 |
|      | 3   | 0                                                                                                 |
|      | 2   | WideD mode (0: OFF, 1: ON,<br>1 2: Auto ON/OFF, 3: ON<br>0 (RatioFlx), 4: ON (Dver))              |
| 3    | 7   | 0                                                                                                 |
|      | 6   | 0                                                                                                 |
|      | 5   | 0                                                                                                 |
|      | 4   | 0                                                                                                 |
|      | 3   | WideD screen display<br>0: Combined image<br>1: Long/short division<br>2: Long-time 3: Short-time |
|      | 2   |                                                                                                   |
|      | 1   |                                                                                                   |
|      | 0   | WideD detection sensitivity<br>0: L 1: M 2: H                                                     |
| 4    | 7   | 0                                                                                                 |
|      | 6   | 0                                                                                                 |
|      | 5   | 0                                                                                                 |
|      | 4   | 0                                                                                                 |
|      | 3   | WideD blocked-up shadow<br>correction level 0: L 1: M 2: H 3: S                                   |
|      | 2   |                                                                                                   |
|      | 1   | WideD blown-out highlight<br>correction level 0: L 1: M 2: H                                      |
|      | 0   |                                                                                                   |
| 5    | 7   | 0                                                                                                 |
|      | 6   | 0                                                                                                 |
|      | 5   | 0                                                                                                 |
|      | 4   | 0                                                                                                 |
|      | 3   | WideD short exposure<br>Exposure ratio (H)                                                        |
|      | 2   |                                                                                                   |
|      | 1   |                                                                                                   |
|      | 0   |                                                                                                   |

| Byte | Bit | Comments                                   |
|------|-----|--------------------------------------------|
| 6    | 7   | 0                                          |
|      | 6   | 0                                          |
|      | 5   | 0                                          |
|      | 4   | 0                                          |
|      | 3   | WideD short exposure<br>Exposure ratio (L) |
|      | 2   |                                            |
|      | 1   |                                            |
|      | 0   |                                            |
| 7    | 7   | 0                                          |
|      | 6   | 0                                          |
|      | 5   | 0                                          |
|      | 4   | 0                                          |
|      | 3   | 0                                          |
|      | 2   | 0                                          |
|      | 1   | 0                                          |
|      | 0   | 0                                          |
| 8    | 7   | 0                                          |
|      | 6   | 0                                          |
|      | 5   | 0                                          |
|      | 4   | 0                                          |
|      | 3   | 0                                          |
|      | 2   | 0                                          |
|      | 1   | 0                                          |
|      | 0   | 0                                          |
| 9    | 7   | 0                                          |
|      | 6   | 0                                          |
|      | 5   | 0                                          |
|      | 4   | 0                                          |
|      | 3   | 0                                          |
|      | 2   | 0                                          |
|      | 1   | 0                                          |
|      | 0   | 0                                          |
| 10   | 7   | 0                                          |
|      | 6   | 0                                          |
|      | 5   | 0                                          |
|      | 4   | 0                                          |
|      | 3   | 0                                          |
|      | 2   | 0                                          |
|      | 1   | 0                                          |
|      | 0   | 0                                          |
| 11   | 7   | 0                                          |
|      | 6   | 0                                          |
|      | 5   | 0                                          |
|      | 4   | 0                                          |
|      | 3   | 0                                          |
|      | 2   | 0                                          |
|      | 1   | 0                                          |
|      | 0   | 0                                          |

| Byte | Bit | Comments           |
|------|-----|--------------------|
| 12   | 7   | 0                  |
|      | 6   | 0                  |
|      | 5   | 0                  |
|      | 4   | 0                  |
|      | 3   | 0                  |
|      | 2   | 0                  |
|      | 1   | 0                  |
|      | 0   | 0                  |
| 13   | 7   | 0                  |
|      | 6   | 0                  |
|      | 5   | 0                  |
|      | 4   | 0                  |
|      | 3   | 0                  |
|      | 2   | 0                  |
|      | 1   | 0                  |
|      | 0   | 0                  |
| 14   | 7   | 0                  |
|      | 6   | 0                  |
|      | 5   | 0                  |
|      | 4   | 0                  |
|      | 3   | 0                  |
|      | 2   | 0                  |
|      | 1   | 0                  |
|      | 0   | 0                  |
| 15   | 7   | 1 Terminator (FFh) |
|      | 6   | 1                  |
|      | 5   | 1                  |
|      | 4   | 1                  |
|      | 3   | 1                  |
|      | 2   | 1                  |
|      | 1   | 1                  |
|      | 0   | 1                  |

# VISCA Command Setting Values

## Exposure Control (1/2)

|               |    | NTSC (s)     | PAL (s) |
|---------------|----|--------------|---------|
| Shutter Speed | 15 | 1/10000      | 1/10000 |
|               | 14 | 1/6000       | 1/6000  |
|               | 13 | 1/4000       | 1/3500  |
|               | 12 | 1/3000       | 1/2500  |
|               | 11 | 1/2000       | 1/1750  |
|               | 10 | 1/1500       | 1/1250  |
|               | 0F | 1/1000       | 1/1000  |
|               | 0E | 1/725        | 1/600   |
|               | 0D | 1/500        | 1/425   |
|               | 0C | 1/350        | 1/300   |
|               | 0B | 1/250        | 1/215   |
|               | 0A | 1/180        | 1/150   |
|               | 09 | 1/125        | 1/120   |
|               | 08 | 1/100        | 1/100   |
|               | 07 | 1/90         | 1/75    |
|               | 06 | 1/60         | 1/50    |
|               | 05 | 1/30         | 1/25    |
|               | 04 | 1/15         | 1/12    |
|               | 03 | 1/8          | 1/6     |
|               | 02 | 1/4          | 1/3     |
|               | 01 | 1/2          | 1/2     |
|               | 00 | 1/1          | 1/1     |
| Iris          | 11 | F1.4 (F1.35) |         |
|               | 10 | F1.6         |         |
|               | 0F | F2           |         |
|               | 0E | F2.4         |         |
|               | 0D | F2.8         |         |
|               | 0C | F3.4         |         |
|               | 0B | F4           |         |
|               | 0A | F4.8         |         |
|               | 09 | F5.6         |         |
|               | 08 | F6.8         |         |
|               | 07 | F8           |         |
|               | 06 | F9.6         |         |
|               | 05 | F11          |         |
|               | 04 | F14          |         |
|               | 03 | F16          |         |
|               | 02 | F19          |         |
|               | 01 | F22          |         |
|               | 00 | CLOSE        |         |

\* Number in ( ) applies to EVI-D90N/P only.

|            |    |        |
|------------|----|--------|
| Gain       | 0F | +28 dB |
|            | 0E | +26 dB |
|            | 0D | +24 dB |
|            | 0C | +22 dB |
|            | 0B | +20 dB |
|            | 0A | +18 dB |
|            | 09 | +16 dB |
|            | 08 | +14 dB |
|            | 07 | +12 dB |
|            | 06 | +10 dB |
|            | 05 | +8 dB  |
|            | 04 | +6 dB  |
|            | 03 | +4 dB  |
|            | 02 | +2 dB  |
|            | 01 | 0 dB   |
|            | 00 | -3 dB  |
| Gain Limit | 0F | +28 dB |
|            | 0E | +26 dB |
|            | 0D | +24 dB |
|            | 0C | +22 dB |
|            | 0B | +20 dB |
|            | 0A | +18 dB |
|            | 09 | +16 dB |
|            | 08 | +14 dB |
|            | 07 | +12 dB |
|            | 06 | +10 dB |
|            | 05 | +8 dB  |
|            | 04 | +6 dB  |

## Exposure Control (2/2)

|                |    | IRIS         | GAIN     |
|----------------|----|--------------|----------|
| Bright         | 1F | F1.4 (F1.35) | +28 dB   |
|                | 1E | F1.4 (F1.35) | +26 dB   |
|                | 1D | F1.4 (F1.35) | +24 dB   |
|                | 1C | F1.4 (F1.35) | +22 dB   |
|                | 1B | F1.4 (F1.35) | +20 dB   |
|                | 1A | F1.4 (F1.35) | +18 dB   |
|                | 19 | F1.4 (F1.35) | +16 dB   |
|                | 18 | F1.4 (F1.35) | +14 dB   |
|                | 17 | F1.4 (F1.35) | +12 dB   |
|                | 16 | F1.4 (F1.35) | +10 dB   |
|                | 15 | F1.4 (F1.35) | +8 dB    |
|                | 14 | F1.4 (F1.35) | +6 dB    |
|                | 13 | F1.4 (F1.35) | +4 dB    |
|                | 12 | F1.4 (F1.35) | +2 dB    |
|                | 11 | F1.4 (F1.35) | 0 dB     |
|                | 10 | F1.6         | 0 dB     |
|                | 0F | F2           | 0 dB     |
|                | 0E | F2.4         | 0 dB     |
|                | 0D | F2.8         | 0 dB     |
|                | 0C | F3.4         | 0 dB     |
|                | 0B | F4           | 0 dB     |
|                | 0A | F4.8         | 0 dB     |
|                | 09 | F5.6         | 0 dB     |
|                | 08 | F6.8         | 0 dB     |
|                | 07 | F8           | 0 dB     |
|                | 06 | F9.6         | 0 dB     |
|                | 05 | F11          | 0 dB     |
|                | 04 | F14          | 0 dB     |
|                | 03 | F16          | 0 dB     |
|                | 02 | F19          | 0 dB     |
|                | 01 | F22          | 0 dB     |
|                | 00 | CLOSE        | 0 dB     |
| Exposure Comp. | 0E | +7           | +10.5 dB |
|                | 0D | +6           | +9 dB    |
|                | 0C | +5           | +7.5 dB  |
|                | 0B | +4           | +6 dB    |
|                | 0A | +3           | +4.5 dB  |
|                | 09 | +2           | +3 dB    |
|                | 08 | +1           | +1.5 dB  |
|                | 07 | 0            | 0 dB     |
|                | 06 | -1           | -1.5 dB  |
|                | 05 | -2           | -3 dB    |
|                | 04 | -3           | -4.5 dB  |
|                | 03 | -4           | -6 dB    |
|                | 02 | -5           | -7.5 dB  |
|                | 01 | -6           | -9 dB    |
|                | 00 | -7           | -10.5 dB |

\* Number in ( ) applies to EVI-D90N/P only.

Zoom Ratio and Zoom Position (for reference)  
(EVI-D80N/P)

| Zoom Ratio<br>×36 Lens | Optical Zoom<br>Positon Data |
|------------------------|------------------------------|
| ×1                     | 0000                         |
| ×2                     | 1804                         |
| ×3                     | 2296                         |
| ×4                     | 28F0                         |
| ×5                     | 2D58                         |
| ×6                     | 30AA                         |
| ×7                     | 3350                         |
| ×8                     | 357E                         |
| ×9                     | 3758                         |
| ×10                    | 38EF                         |
| ×11                    | 3A52                         |
| ×12                    | 3B84                         |
| ×13                    | 3C90                         |
| ×14                    | 3D7A                         |
| ×15                    | 3E42                         |
| ×16                    | 3EEE                         |
| ×17                    | 3F82                         |
| ×18                    | 4000                         |

Zoom Ratio and Zoom Position (for reference)  
(EVI-D90N/P)

| Zoom Ratio<br>×36 Lens | Optical Zoom<br>Positon Data |
|------------------------|------------------------------|
| ×1                     | 0000                         |
| ×2                     | 15CA                         |
| ×3                     | 1F65                         |
| ×4                     | 2527                         |
| ×5                     | 2921                         |
| ×6                     | 2C22                         |
| ×7                     | 2E88                         |
| ×8                     | 3088                         |
| ×9                     | 3242                         |
| ×10                    | 33C9                         |
| ×11                    | 3529                         |
| ×12                    | 366C                         |
| ×13                    | 3795                         |
| ×14                    | 38A8                         |
| ×15                    | 39A5                         |
| ×16                    | 3A8E                         |
| ×17                    | 3B61                         |
| ×18                    | 3C1E                         |
| ×19                    | 3CC7                         |
| ×20                    | 3D5C                         |
| ×21                    | 3DDE                         |
| ×22                    | 3E50                         |
| ×23                    | 3EB3                         |
| ×24                    | 3F09                         |
| ×25                    | 3F53                         |
| ×26                    | 3F94                         |
| ×27                    | 3FCD                         |
| ×28                    | 4000                         |



**X12-NTSC/PAL**

| Digital Zoom Ratio | Digital Zoom Position Data |
|--------------------|----------------------------|
| ×1                 | 4000                       |
| ×2                 | 6000                       |
| ×3                 | 6A80                       |
| ×4                 | 7000                       |
| ×5                 | 7300                       |
| ×6                 | 7540                       |
| ×7                 | 76C0                       |
| ×8                 | 7800                       |
| ×9                 | 78C0                       |
| ×10                | 7980                       |
| ×11                | 7A00                       |
| ×12                | 7AC0                       |

**Lens control (EVI-D80N/P)**

|                  |                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Zoom Position    | 0000 to 4000 to 7AC0<br>Wide end Optical Digital<br>Tele end Tele end                                                                                                                                                                                                                                                                                                               |
| Focus Position   | 1000 to C000*<br>Far end Near end<br>* Depending on the Focus Near Limit setting.                                                                                                                                                                                                                                                                                                   |
| Focus Near Limit | <div> 1000: Over Inf<br/> 2000: 8 m<br/> 3000: 3.5 m<br/> 4000: 2 m<br/> 5000: 1.4 m<br/> 6000: 1 m<br/> 7000: 80 cm<br/> 8000: 29 cm<br/> 9000: 10 cm<br/> A000: 4.7 cm<br/> B000: 2.3 cm<br/> C000: 1 cm </div> <div> As the distance on the left will differ due to temperature characteristics, etc., use as approximate values.<br/> * The lower 1 byte is fixed at 00. </div> |

**Lens control (EVI-D90N/P)**

|                  |                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Zoom Position    | 0000 to 4000 to 7AC0<br>Wide end Optical Digital<br>Tele end Tele end                                                                                                                                                                                                                                                                                                             |
| Focus Position   | 1000 to C000*<br>Far end Near end<br>* Depending on the Focus Near Limit setting.                                                                                                                                                                                                                                                                                                 |
| Focus Near Limit | <div> 1000: Over Inf<br/> 2000: 12 m<br/> 3000: 5.6 m<br/> 4000: 4 m<br/> 5000: 2.7 m<br/> 6000: 2 m<br/> 7000: 1.5 m<br/> 8000: 80 cm<br/> 9000: 30 cm<br/> A000: 19 cm<br/> B000: 9 cm<br/> C000: 1 cm </div> <div> As the distance on the left will differ due to temperature characteristics, etc., use as approximate values.<br/> * The lower 1 byte is fixed at 00. </div> |

**Others**

|                                     |          |
|-------------------------------------|----------|
| AF Active Time <sup>1)</sup>        | 00 to FF |
| AF Interval Time <sup>1)</sup>      | 00 to FF |
| R Gain                              | 00 to FF |
| B Gain                              | 00 to FF |
| Aperture Level                      | 00 to 0F |
| NR Level                            | 00 to 05 |
| AutoICR ON →<br>OFF Threshold Level | 00 to 1C |

<sup>1)</sup> Unit: One second

## Pan/Tilt Status Code List

| P    | Q    | R    | S    |                                         |
|------|------|------|------|-----------------------------------------|
| ---- | ---- | 0--- | ---1 | A Pan movement all the way to the left  |
| ---- | ---- | 0--- | --1- | A Pan movement all the way to the right |
| ---- | ---- | 0--- | -1-- | A Tilt movement all the way up          |
| ---- | ---- | 0--- | 1--- | A Tilt movement all the way down        |
| ---- | ---- | --00 | ---- | Pan movement is correct                 |
| ---- | ---- | --01 | ---- | Pan position cannot be detected         |
| ---- | --00 | 0--- | ---- | The Tilt movement is correct            |
| ---- | --01 | 0--- | ---- | The Tilt position cannot be detected    |
| ---- | 00-- | 0--- | ---- | No movement instructions                |
| ---- | 01-- | 0--- | ---- | In the midst of a Pan/Tilt              |
| ---- | 10-- | 0--- | ---- | Pan/Tilt completed                      |
| ---- | 11-- | 0--- | ---- | Pan/Tilt failed                         |
| --00 | ---- | 0--- | ---- | Not initialized                         |
| --01 | ---- | 0--- | ---- | Initializing                            |
| --10 | ---- | 0--- | ---- | Initialization completed                |
| --11 | ---- | 0--- | ---- | Initialization failed                   |

(- : optional)

## Pan/Tilt Position (for reference)

|      | Parameter (position)                                                                                                |
|------|---------------------------------------------------------------------------------------------------------------------|
| PAN  | E1E5 (-170 degree) to 1E1B (+170 degree)                                                                            |
| TILT | FC75 (-20 degree) to 0FF0 (+90 degree) (IMAGE FLIP: OFF)<br>F010 (-90 degree) to 038B (+20 degree) (IMAGE FLIP: ON) |

## LED Status

| Status               |                                                                    | POWER (Green)        | STANDBY (Orange) |
|----------------------|--------------------------------------------------------------------|----------------------|------------------|
| Main power ON        | Power On (including initializing period)                           | On                   | Off              |
|                      | When receiving infrared signals form Remote Commander              | Blinking             | Off              |
|                      | At position detection error                                        | On                   | Blinking         |
|                      | Standby status                                                     | Off                  | On               |
|                      | Power off by VISCA or the Remote Commander                         |                      |                  |
| Main power Off       |                                                                    | Off                  | Off              |
| Initialization error | Pan/tilt error                                                     | Blinking             | Blinking         |
|                      | Internal error(LSI, etc.)                                          | Blinking alternately |                  |
| BOTTOM switch        | Setting error<br>(Example: when the BOTTOM switch 5 is set to ON.) | On                   | On               |

# D70 Mode

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## Overview

The D70 mode allows you to control the EVI-D80N/D80P/D90N/D90P using VISCA commands for the EVI-D70/P. Most of the VISCA commands for the EVI-D80N/D80P/D90N/D90P correspond to one for the EVI-D70/P. However, some of the VISCA commands for the EVI-D80N/D80P/D90N/D90P are different from those for the EVI-D70/P in definitions of parameters.

When you send those commands to an EVI-D80N/D80P/D90N/D90P whose D70 mode is set to ON, the camera translates the parameters for the EVI-D70/P to those for the EVI-D80N/D80P/D90N/D90P and executes the command. The following parameters are subject to translation.

- Zoom position
- Pan-tilt speed
- Pan-tilt position

### Notes

- Even if you set the D70 mode to ON, the EVI-D80N/D80P/D90N/D90P may not emulate the EVI-D70/P perfectly. This is caused by differences in hardware between the two models.
- The functions that are provided with the EVI-D70/P but not with the EVI-D80N/D80P/D90N/D90P cannot be executed.

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## Switching the Mode

You can switch the D70 mode ON or OFF by switching the BOTTOM switch at the bottom of the EVI-D80N/D80P/D90N/D90P. To change the D70 mode setting, move the BOTTOM switch to ON or OFF while the camera's power is off or the camera is in standby mode. Then, turn the power on by connecting the camera to an AC outlet or by using the VISCA commands or the Remote Commander.

It takes about 7-16 seconds for the image to be displayed after Pan/Tilt initialization motion has stopped.

Do not turn off DC power until the image has been displayed.

The mode will not change if you change the switch setting of the BOTTOM switch after the power has been turned on.

After you change the mode, previously saved position preset data will be lost. (Zoom, Pan/Tilt positions, etc. will be reset to their initial settings.)

# Accepting or Sending Back Commands

## When accepting commands

| Type of command                                |                      | D70 mode on                                                                  | D70 mode off                    |
|------------------------------------------------|----------------------|------------------------------------------------------------------------------|---------------------------------|
| Common to both the D70 and D80N/D80P/D90N/D90P | Common parameters    | Accepts as is                                                                |                                 |
|                                                | Different parameters | Translates the D70's parameters to those of the D80N/D80P/D90N/D90P          | Accepts as is                   |
|                                                | CAM_Memory Reset     | Memorized data items are erased and camera settings return to initial values | Memorized data items are erased |
| Only for the D80N/D80P/D90N/D90P               |                      | Accepts as is                                                                |                                 |
| Only for the D70                               |                      | Refuses and sends back the SyntaxError message                               |                                 |

## When accepting inquiry commands

| Type of command                                |                      | D70 mode on                                                                      | D70 mode off                                    |
|------------------------------------------------|----------------------|----------------------------------------------------------------------------------|-------------------------------------------------|
| Common to both the D70 and D80N/D80P/D90N/D90P | Common parameters    | Sends back parameters common to both the D70 and D80N/D80P/D90N/D90P             |                                                 |
|                                                | Different parameters | Sends back the D70's parameters translated from those of the D80N/D80P/D90N/D90P | Sends back the D80N/D80P/D90N/D90P's parameters |
| Only for the D80N/D80P/D90N/D90P               |                      | Sends back the D80N/D80P/D90N/D90P's parameters                                  |                                                 |
| Only for the D70                               |                      | Refuses and sends back the SyntaxError message                                   |                                                 |

# Translating Parameters

## Zoom position

There is no change for EVI-D80N/D80P. EVI-D90N/D90P employ an 18× optical zoom lens but there are no translating parameters. The zoom ratio and corresponding position data are as shown in the table below (for reference).

| Zoom Ratio<br>× 18 Lens | Optical Zoom<br>Position Data |
|-------------------------|-------------------------------|
| × 1                     | 0000                          |
| × 2                     | 1606                          |
| × 3                     | 2151                          |
| × 4                     | 2860                          |
| × 5                     | 2CB5                          |
| × 6                     | 3060                          |
| × 7                     | 32D3                          |
| × 8                     | 3545                          |
| × 9                     | 3727                          |
| × 10                    | 38A9                          |
| × 11                    | 3A42                          |
| × 12                    | 3B4B                          |
| × 13                    | 3C85                          |
| × 14                    | 3D75                          |
| × 15                    | 3E4E                          |
| × 16                    | 3EF7                          |
| × 17                    | 3FA0                          |
| × 18                    | 4000                          |

## Pan/tilt speed

The actual speed that is defined by the parameters corresponds to that of the D70.

When the camera receives commands such as PantiltDrive Home, Reset, or CAM\_Memory Recall, that do not include speed indications, these operations are carried out at the same speed as they would be when the D70 mode is set to OFF.

| Parameters        | Speed (deg/sec) |               |   |     |
|-------------------|-----------------|---------------|---|-----|
|                   | D80N/<br>D80P   | D90N/<br>D90P |   | D70 |
| 01h               | 1.7             | 1.3           | ➡ | 1.7 |
| 02h               | 2.2             | 1.7           | ➡ | 2.2 |
| 03h               | 2.9             | 2.2           | ➡ | 2.9 |
| 04h               | 4.1             | 3.2           | ➡ | 4.1 |
| 05h               | 6.8             | 5.4           | ➡ | 6.8 |
| 06h               | 11              | 11            | ➡ | 11  |
| 07h               | 16              | 16            | ➡ | 16  |
| 08h               | 21              | 21            | ➡ | 21  |
| 09h               | 27              | 27            | ➡ | 27  |
| 0Ah               | 31              | 31            | ➡ | 31  |
| 0Bh               | 35              | 35            | ➡ | 35  |
| 0Ch               | 40              | 40            | ➡ | 40  |
| 0Dh               | 42              | 42            | ➡ | 47  |
| 0Eh               | 44              | 44            | ➡ | 49  |
| 0Fh               | 46              | 46            | ➡ | 54  |
| 10h               | 48              | 48            | ➡ | 56  |
| 11h               | 50              | 50            | ➡ | 62  |
| 12h               | 79              | 79            | ➡ | 64  |
| 13h               | 81              | 81            | ➡ | 69  |
| 14h               | 83              | 83            | ➡ | 72  |
| 15h               | 85              | 85            | ➡ | 79  |
| 16h               | 87              | 87            | ➡ | 84  |
| 17h               | 90              | 90            | ➡ | 90  |
| 18h <sup>1)</sup> | 100             | 100           | ➡ | 100 |

1) Max. pan speed is 18h; max. tilt speed is 17h.

## Pan/tilt position

### Pan position

| Cameras                 | Parameters                                   |
|-------------------------|----------------------------------------------|
| EVI-D70/P               | F725h (–170 degrees) to 08DBh (+170 degrees) |
| EVI-D80N/D80P/D90N/D90P | E1E5h (–170 degrees) to 1E1Bh (+170 degrees) |

### Tilt position

| Cameras                 | Parameters                                 |
|-------------------------|--------------------------------------------|
| EVI-D70/P               | FE70h (–30 degrees) to 04B0h (+90 degrees) |
| EVI-D80N/D80P/D90N/D90P | FC75h (–20 degrees) to 0FF0h (+90 degrees) |

### Translation of commands

| Accepting parameters | Translation                            |
|----------------------|----------------------------------------|
| Pan position         | Multiplies received parameters by 17/5 |
| Tilt position        | Multiplies received parameters by 17/5 |

| D70      |   | D80N/D80P/D90N/D90P |       |
|----------|---|---------------------|-------|
| Pan/Tilt |   | Pan                 | Tilt  |
| F725h    | ➡ | E1E5h               | –     |
| ...      |   | ...                 | –     |
| FEF5h    | ➡ | FC75h               | FC75h |
| ...      |   | ...                 | ...   |
| FFFDh    | ➡ | FFF6h               | FFF6h |
| FFFEh    | ➡ | FFFAh               | FFFAh |
| FFFFh    | ➡ | FFFDh               | FFFDh |
| 0000h    | ➡ | 0000h               | 0000h |
| 0001h    | ➡ | 0003h               | 0003h |
| 0002h    | ➡ | 0006h               | 0006h |
| 0003h    | ➡ | 000Ah               | 000Ah |
| 0004h    | ➡ | 000Dh               | 000Dh |
| 0005h    | ➡ | 0011h               | 0011h |
| 0006h    | ➡ | 0014h               | 0014h |
| 0007h    | ➡ | 0017h               | 0017h |
| 0008h    | ➡ | 001Bh               | 001Bh |
| 0009h    | ➡ | 001Eh               | 001Eh |
| 000Ah    | ➡ | 0022h               | 0022h |
| 000Bh    | ➡ | 0025h               | 0025h |
| ...      |   | ...                 | –     |
| 04B0h    | ➡ | 0FF0h               | 0FF0h |
| ...      |   | ...                 | –     |
| 08DBh    | ➡ | 1E1Bh               | –     |

### Translation when answering inquiry commands

The camera sends back values that are calculated by inverse conversion performed when the camera accepts commands.

#### Note

Repetitive use of the Absolute position command may increase the variance that is accumulated from translation.

### Example

When you execute the Relative position command 100 times, one step after another to turn the camera to the right side:

| Cameras                                      | Results                                 |
|----------------------------------------------|-----------------------------------------|
| EVI-D70/P                                    | Turns to the right side by 7.5 degrees. |
| EVI-D80N/D80P/D90N/D90P whose D70 mode is ON | Turns to the right side by 6.6 degrees. |

For Absolute Position commands, the permissible range for drive settings are the same as those for the EVI-D70/P.

Pan direction: –170 degrees to + 170 degrees.

Tilt direction: –20 degrees to + 90 degrees.

# Specifications

## System

|                         |                                                                                                                                                                                                                                                                                                                   |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Video signal            | EVI-D80N/EVI-D90N: NTSC<br>EVI-D80P/EVI-D90P: PAL                                                                                                                                                                                                                                                                 |
| Synchronization         | Internal synchronization                                                                                                                                                                                                                                                                                          |
| Image device            | EVI-D80N/EVI-D80P: 1/4 type<br>CCD<br>EVI-D90N/EVI-D90P: 1/4 type<br>EXview HAD CCD                                                                                                                                                                                                                               |
| Lens                    | EVI-D80N/EVI-D80P: 18×<br>(optical), 12× (digital)<br>f = 4.1 – 73.8 mm, F1.4 – F3.0<br>Horizontal angle: 2.8 (TELE end) to<br>48.0 degrees (WIDE end)<br>EVI-D90N/EVI-D90P: 28×<br>(optical), 12× (digital)<br>f = 3.5 – 98.0 mm, F1.35 – F3.7<br>Horizontal angle: 2.1 (TELE end)<br>to 55.8 degrees (WIDE end) |
| Minimum object distance | EVI-D80N/EVI-D80P: 10 mm<br>(0.4 inches) (WIDE end) to 800<br>mm (31.5 inches) (TELE end)<br>290 mm (11 27/64 inches)<br>(Default)<br>EVI-D90N/EVI-D90P: 10 mm<br>(0.4 inches) (WIDE end) to 1500<br>mm (59 1/16 inches) (TELE<br>end) 300 mm (11 13/16 inches)<br>(Default)                                      |
| Minimum illumination    | EVI-D80N/EVI-D80P: less or<br>equal to 0.4 lux (F1.4) with<br>50 IRE<br>EVI-D90N/EVI-D90P: less or<br>equal to 0.65 lux (F1.35) with<br>50 IRE                                                                                                                                                                    |
| Shutter speed           | 1 to 10,000 sec.                                                                                                                                                                                                                                                                                                  |
| Video S/N               | More or equal to 50 dB                                                                                                                                                                                                                                                                                            |
| Pan/tilt action         | Horizontal: ±170 degrees<br>Maximum panning speed:<br>100 degrees/sec.<br>Vertical: +90, -20degrees<br>Maximum tilting speed:<br>90 degrees/sec.                                                                                                                                                                  |

## Input/output connectors

|                       |                                                                                                                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Video output          | COMPOSITE (VBS VIDEO<br>OUT): RCA phono jack (1),<br>75 ohm unbalanced, 1Vpp (at<br>75-ohm termination)<br>Synchronization: negative<br>S VIDEO output (Y/C VIDEO<br>OUT): Mini DIN 4-pin type        |
| Control input/output  | VISCA IN: Mini DIN 8-pin type,<br>RS-232C<br>VISCA OUT: Mini DIN 8-pin type,<br>RS-232C<br>VISCA RS-422: 9-pin                                                                                        |
| Power connector       | JEITA type4 (DC 12V)                                                                                                                                                                                  |
| <b>General</b>        |                                                                                                                                                                                                       |
| Input voltage         | 12 V DC (10.8 to 13.2 V DC)                                                                                                                                                                           |
| Current consumption   | EVI-D80N/EVI-D80P: 0.5 A max.<br>(at 12 V DC)<br>EVI-D90N/EVI-D90P: 0.67 A<br>max. (at 12 V DC)                                                                                                       |
| Operating temperature | 0 °C to 40 °C (32 °F to 104 °F)                                                                                                                                                                       |
| Storage temperature   | -20 °C to +60 °C (-4 °F to 140 °F)                                                                                                                                                                    |
| Dimensions            | Video camera: 145 × 164 ×<br>164 mm (5 1/32 × 6 15/32 ×<br>6 15/32 inches) (w/h/d,<br>excluding protruding parts)<br>Remote Commander: 56 × 26 ×<br>210 mm (2 1/4 × 1 1/16 × 8 3/8<br>inches) (w/h/d) |
| Mass                  | Video camera:<br>EVI-D80N/EVI-D80P: 1440 g<br>(3 lb 2 3/4 oz)<br>EVI-D90N/EVI-D90P: 1460 g<br>(3 lb 3 1/2 oz)<br>Remote Commander: 110 g (3 7/8 oz)                                                   |
| Installation angle    | Less than ±15 degrees to the<br>horizontal surface                                                                                                                                                    |

**Supplied accessories**

AC power adaptor (MPA-AC1)  
(AC 100 V, 50/60 Hz) (1)

AC power cord (1)

Remote Commander (RM-EV100) (1)

Ceiling bracket (A) (1)

Ceiling bracket (B) (1)

Wire rope (1)

Screw M3 × 8 (8)

VISCA RS-422 connector plug (1)

Operating Instructions (1)

Design and specifications are subject to  
change without notice.

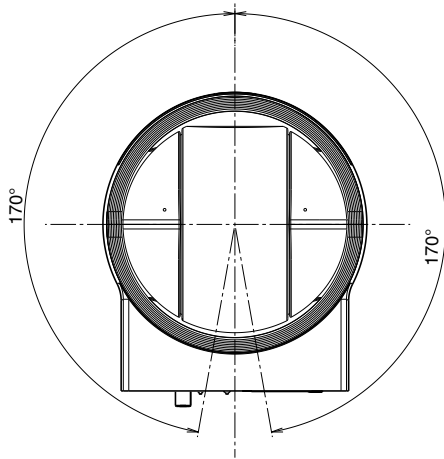
**Note**

Always verify that the unit is operating properly before use. SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF THE LOSS OF PRESENT OR PROSPECTIVE PROFITS DUE TO FAILURE OF THIS UNIT, EITHER DURING THE WARRANTY PERIOD OR AFTER EXPIRATION OF THE WARRANTY, OR FOR ANY OTHER REASON WHATSOEVER.

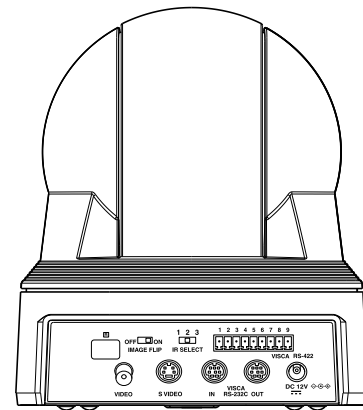


## Dimensions

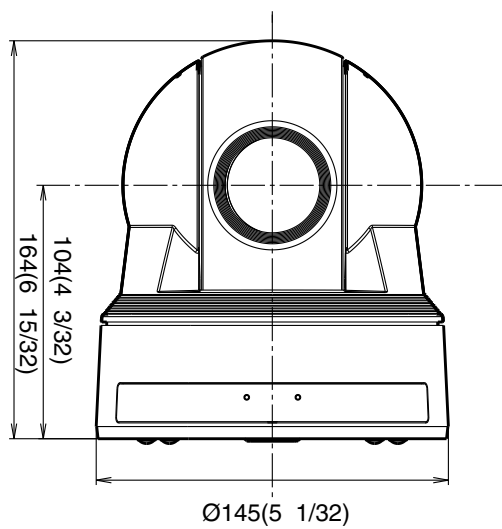
**Top**



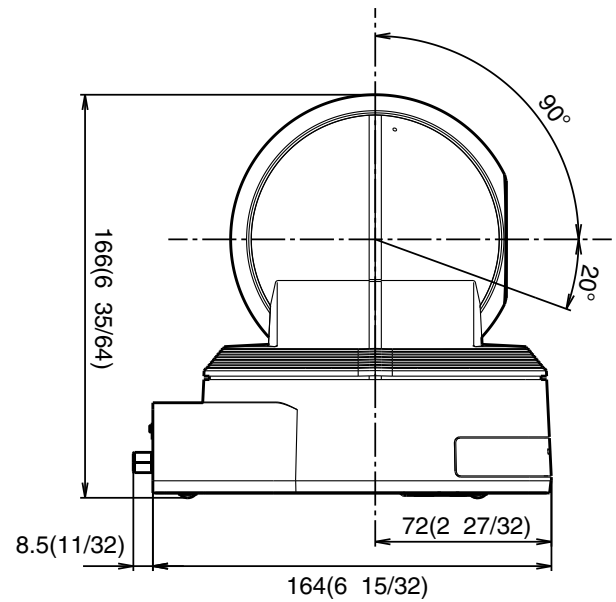
**Back**



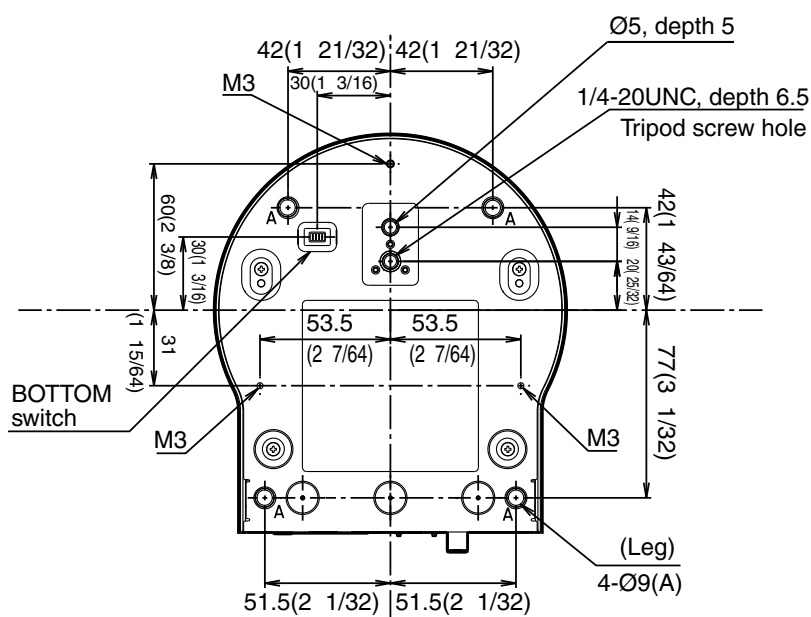
**Front**



**Side**



**Bottom**



Unit: mm (inches)

# Precautions

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## Software

Use of the demonstration software developed by Sony Corporation or use of the software with customer developed application software may damage hardware, the application program or the camera. Sony Corporation is not liable for any damages under these conditions.

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## Operation

Start the camera control software on your computer after you turn on the camera and the image is displayed.

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## Operation and storage locations

Do not shoot images that are extremely bright (e.g., light sources, the sun, etc.) for long periods of time. Do not use or store the camera in the following extreme conditions:

- Extremely hot or cold places (operating temperature 0 °C to 40 °C (32 °F to 104 °F))
- Close to generators of powerful electromagnetic radiation such as radio or TV transmitters
- Where it is subject to fluorescent light reflections
- Where it is subject to unstable (flickering, etc.) lighting conditions
- Where it is subject to strong vibration

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## Care of the unit

Remove dust or dirt on the surface of the lens with a blower (commercially available).

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## Other

Do not apply excessive voltage. (Use only the specified voltage.) Otherwise, you may get an electric shock or a fire may occur.

In case of abnormal operation, contact your authorized Sony dealer or the store where you purchased the product.