

Color Video Camera

Technical Manual



EVI-D70/D70P

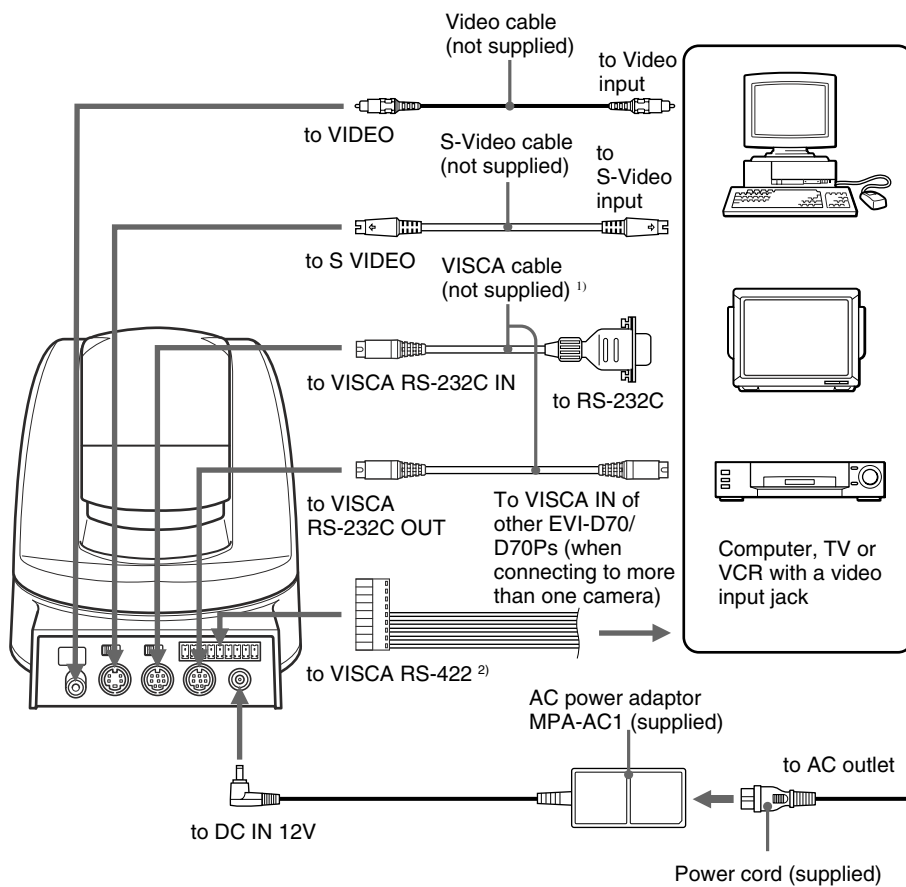
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Features

- An EXview HAD CCD provides 380,000 (EVI-D70)/410,000 (EVI-D70P) effective picture elements (pixels) enabling high-resolution imaging with this camera.
- The use of VISCA commands allows you to control the camera from a computer.
- High-speed, wide angle PAN and TILT functions and Image Flip (turning the displayed image upside down) allow the unit to be mounted on the ceiling, broadening the range of uses for this versatile camera.
- With the addition of external RS-232C communication, RS-422 and VISCA commands provide the ability to remotely control this camera from greater distances.
- The lens offers an 18x optical zoom feature.
- Use of a newly developed digital signal processor (DSP) improves the image quality of the digital zoom feature.
- An IR (infrared) cut filter can be physically removed. In addition, it can be switched on and off automatically, providing the optimum image quality for your subjects, whether they require high resolution or are poorly lit.
- Up to six combinations of camera position and settings can be retained in memory and called up when needed.
- A multi-function Remote Commander is also provided.

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 more detail on the VISCA RS-422 connection, see page 36.

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 (MPAAC1) supplied with the unit. Do not use any other AC power adaptor.

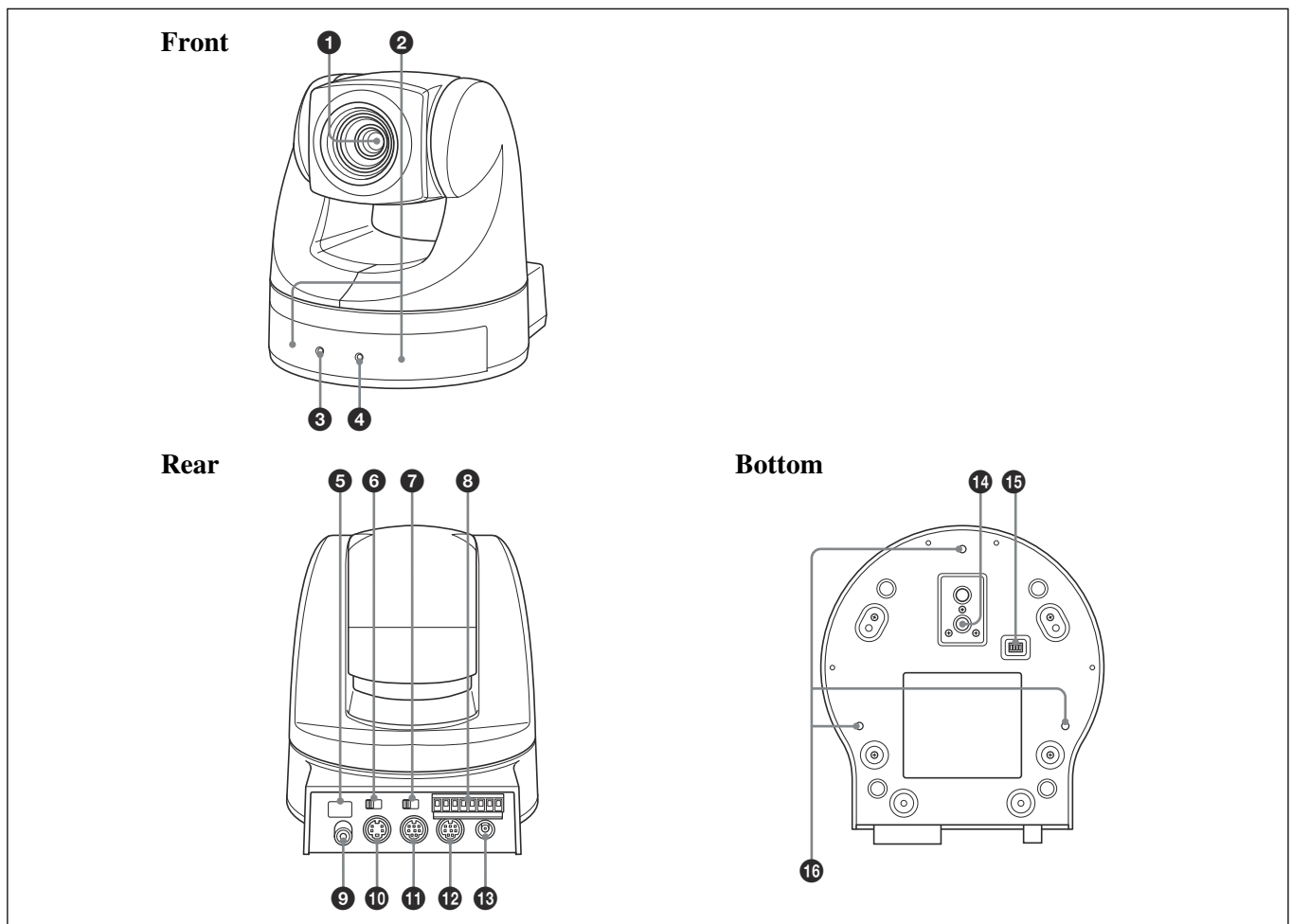


Polarity of the plug

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

Locations of Controls

Main Unit

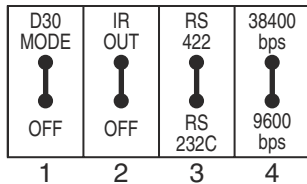


- 1 Lens**
A wide conversion lens can be attached.
- 2 Sensor for the Remote Commander**
- 3 POWER lamp**
- 4 STANDBY lamp**
- 5 Sensor for the Remote Commander**
- 6 IMAGE FLIP switch**
Flips the image upside down and executes Pan/Tilt movement according to the camera installation. Normally set this to OFF when you use the camera. When the camera is attached to the ceiling, set this to ON.
To change the mode, move the switch while the power

is off (including standby mode). Then turn on the power using DC power, VISCA command, or the Remote Commander.
After the mode has been changed, the pre-set setting saved by the Position Preset is returned to the initial setting.
It takes about 7 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.
When the power is on, you cannot flip the image using this switch.

(Continued)

- 7 IR SELECT switch
- 8 VISCA RS-422 connector
- 9 VIDEO (output) connector
- 10 S VIDEO (output) connector
- 11 VISCA RS-232C IN connector
- 12 VISCA RS-232C OUT connector
- 13 DC IN 12V connector
- 14 Tripod screw hole
- 15 BOTTOM switch



1 D30/D31 mode switch

Set this switch to ON to operate the Color Video Camera using the VISCA commands for the EVI-D30/D31. (See page 52.)

2 IR SELECT switch

Set this switch to ON to allow the camera output signals transmitted from the Remote Commander to the Color Video Camera via VISCA OUT jack. (See page 35.)

3 RS-232C/RS-422 SELECT switch

Set this switch to RS422 to operate the Color Video Camera using the VISCA commands via the RS-422 interface.

To switch modes, make sure that the power is turned off (excluding standby mode), move the BOTTOM switch, and then turn the DC power on.

The unit will not switch modes after the power is turned on.

4 BAUD RATE SELECT switch

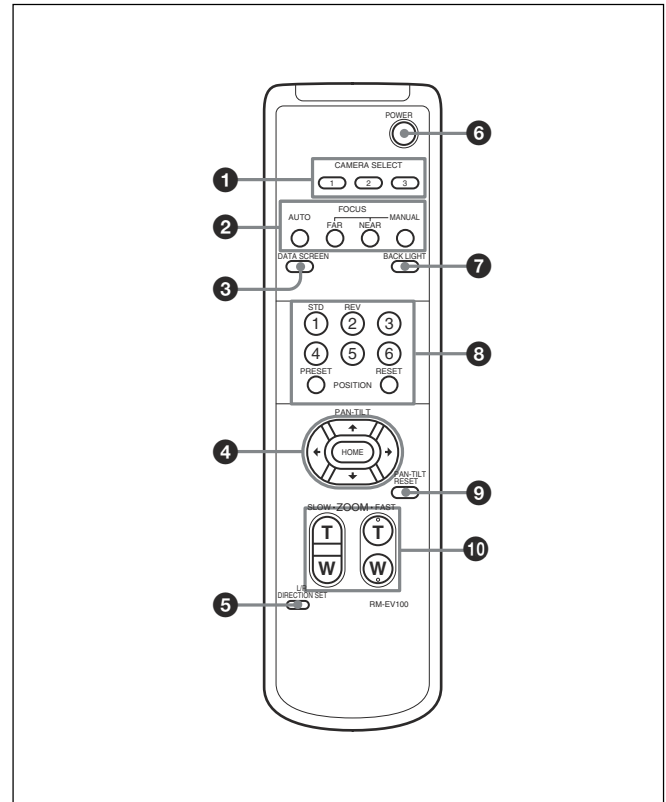
Set this switch to 38400 bps to operate the camera with the baud rate of 38400 bps.

To switch modes, make sure that the power is turned off (excluding standby mode), move the BOTTOM switch, and then turn the DC power on.

The unit will not switch modes after the power is turned on.

- 16 Ceiling bracket mounting screw holes

Remote Commander



1 CAMERA SELECT buttons

2 FOCUS buttons

AUTO button
FAR button
NEAR button
MANUAL button

3 DATA SCREEN button

When the DATA SCREEN button is pushed, the camera status is displayed when you are using the Zoom or Manual Focus functions.

DATA SCREEN can be set to ON or OFF, and memorized, only with POSITION 1.

When POSITION 1 is recalled, the memorized DATA SCREEN status is used.

4 PAN-TILT button

Arrow buttons
HOME button

5 L/R DIRECTION SET button

6 POWER switch

7 BACK LIGHT button

8 POSITION buttons

Numeric buttons (Button 1 also works as the STD button. Button 2 also works as the REV button.)

PRESET button

RESET button

9 PAN-TILT RESET button

10 ZOOM buttons

SLOW T button
SLOW W button
FAST T button
FAST W button

Basic Functions

Zoom

The camera employs an 18× optical zoom lens combined with a digital zoom function allowing you to zoom up to 216×.

Lens specifications: Optical 18×, $f = 4.1$ to 73.8 mm (F1.4 to F3.0)

The horizontal angle of view is approximately 48 degrees (wide end) to 2.7 degrees (tele end). Digital Zoom enlarges the center of the subject by expanding each image in both the vertical and horizontal directions. When 12× digital 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 TELE or WIDE 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 a "Stop Command" to stop the zoom operation.

- The Zoom Mode supports a Combined Mode and a Separate Mode.
 - Combined Mode**

This is the previously existing zoom method. After the optical zoom has reached its maximum level, the camera switches to Digital Zoom Mode.
 - Separate Mode**

In this mode, Optical Zoom and Digital Zoom can be operated separately. You can use digital zoom magnification at any time from within any level of optical magnification.

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 (extreme close-up settings with VISCA control) and 800 mm at the optical tele end (distance from the front end of the lens), and is independent of the digital zoom.

The AutoFocus (AF) function automatically adjusts the focus position to maximize 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 defined 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 TELE or the WIDE buttons, the pre-set value (initially set at 5 seconds) becomes that for AF Mode. Then, it returns to Manual Focus mode.

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.

To avoid AF error from continuous 24 hour AF mode usage, daily initialization of lens system using the CAM_Initialize command is recommended.

The CAM_Initialize command takes less than 3 seconds to initialize the focus and zoom.

- **Manual Focus Mode**

MF (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.

Will not stop by this command itself in Standard Speed Mode and Variable Speed Mode. To stop, a Stop command must be sent.

- **One Push Trigger Mode**

When a Trigger Command is received, the lens moves to adjust the focus for the subject. The focus lens then holds the same 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 (∞) to C000 (10 mm). The focus range is narrowed by excluding the unnecessary range.

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 3000 to 7500K. This mode is the default setting.

- **ATW**

Auto Tracing White balance (2000 to 10000 K)

- **Indoor**

3200 K Base Mode

- **Outdoor**

5800 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 submitted to 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

Automatic Exposure Mode

The variety of AE functions, which allow video signal to output the optimum image for subjects from low light conditions to bright light conditions, are available.

- **Full Auto**

Auto Iris and Gain, Fixed Shutter Speed (NTSC: $\frac{1}{60}$ s, PAL: $\frac{1}{50}$ s)

- **Shutter Priority**¹⁾

Variable Shutter Speed, Auto Iris and Gain ($\frac{1}{1}$ to $\frac{1}{10,000}$ s, 22 steps, std. shutter: 16 steps, slow shutter: 6 steps)

- **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 F1.6, 17 steps at 0 dB: F1.4, 15 steps from 0 to 28 dB)

1) Flicker can be eliminated by setting shutter to:

→ $\frac{1}{100}$ s for NTSC models used in countries with a 50 Hz power supply frequency.

→ $\frac{1}{120}$ s for PAL models used in countries with a 60 Hz power supply frequency.

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 1/30, 1/15, 1/8, or 1/4 s. 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 1/10,000 s. The iris and gain are set automatically, according to the brightness of the subject.

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

a) For AE-Manual only.

Note

When the shutter speed 1/1 s or 1/2 s is used, Auto Focus and White Balance may not function fully.

AE – Iris Priority

The iris can be set freely by the user to 18 steps between F1.4 and Close. The gain and shutter speed are set automatically according to the brightness of the subject.

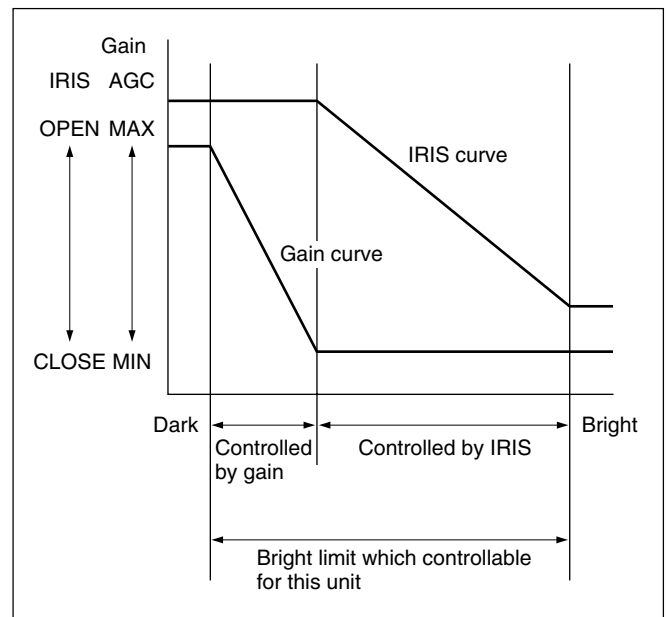
Data	Setting value	Data	Setting value
11	F1.4	08	F6.8
10	F1.6	07	F8.0
0F	F2.0	06	F9.6
0E	F2.4	05	F11
0D	F2.8	04	F14
0C	F3.4	03	F16
0B	F4.0	02	F19
0A	F4.8	01	F22
09	F5.6	00	CLOSE

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 the 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,” the user can switch it to “Bright.”



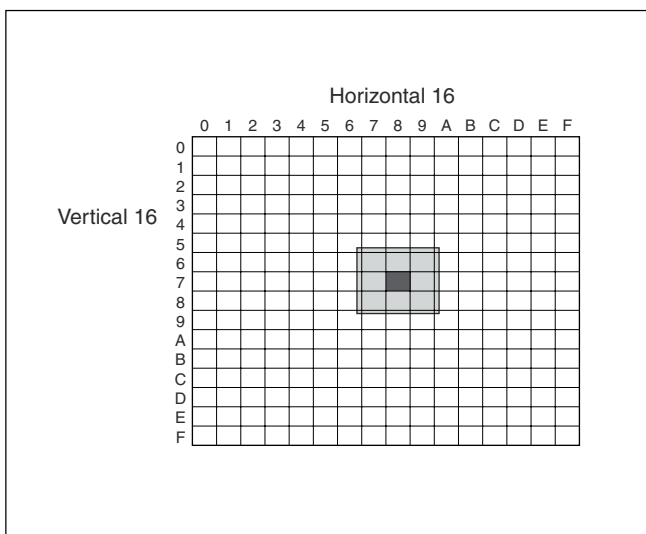
Data	Iris	Gain	Data	Iris	Gain
1F	F1.4	28 dB	0F	F2.0	0 dB
1E	F1.4	26 dB	0E	F2.4	0 dB
1D	F1.4	24 dB	0D	F2.8	0 dB
1C	F1.4	22 dB	0C	F3.4	0 dB
1B	F1.4	20 dB	0B	F4.0	0 dB
1A	F1.4	18 dB	0A	F4.8	0 dB
19	F1.4	16 dB	09	F5.6	0 dB
18	F1.4	14 dB	08	F6.8	0 dB
17	F1.4	12 dB	07	F8.0	0 dB
16	F1.4	10 dB	06	F9.6	0 dB
15	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

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

Spot Exposure Mode

In Full Auto AE, the level for the entire screen is computed and the optimum Auto Iris and Gain levels are determined. In Spot AE, a particular section of the subject can be designated, and then that portion of the image can be weighted and a value computed so that Iris and Gain can be optimized to obtain an image. For example, in an image with a lot of movement and with varying levels of brightness, portions without much change can be designated as such a “spot,” and changes to the screen can be minimized in that area. As shown in the diagram below, a range of 16 blocks vertically and 16 blocks horizontally can be designated.

In the case where the center is designated (shown in black), the level is computed along with a weighted value for the surrounding block (shaded), including the specified portions; and then the Gain and Iris are set. The value of the designated portions and the surrounding areas should be calculated as 90% and the rest should be set to 10%.



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

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.

Slow Shutter – Auto/Manual

When the Slow Shutter is set to “Auto,” this ensures that the slow shutter is engaged automatically when the brightness drops. This occurs only when the AE mode is set to “Full Auto.”

“Slow Shutter Manual” is the factory setting.

ICR (IR Cut-Removable) Mode

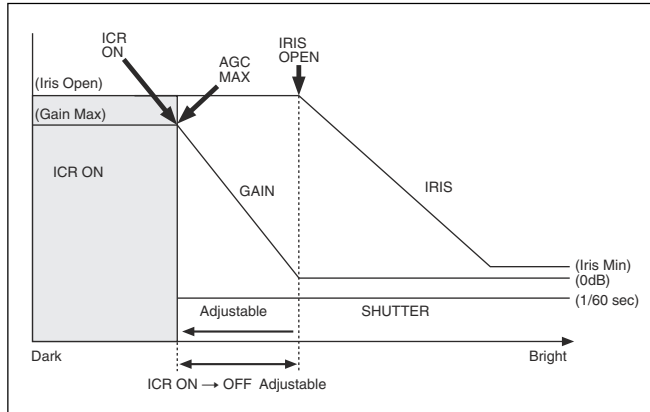
An infrared (IR) Cut-Filter can be disengaged from the image path for increased sensitivity in low light environments. The ICR will automatically engage depending on the ambient light, allowing the camera to be effective in day/night environments.

If you normally set the IR Cut-Filter to OFF, the image will be black and white (monochrome).

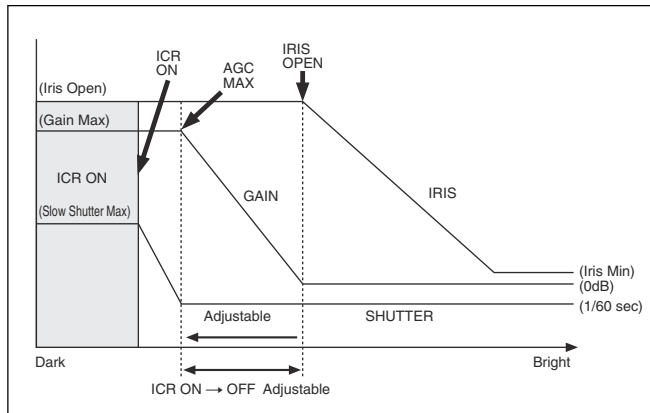
Auto ICR Mode

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.

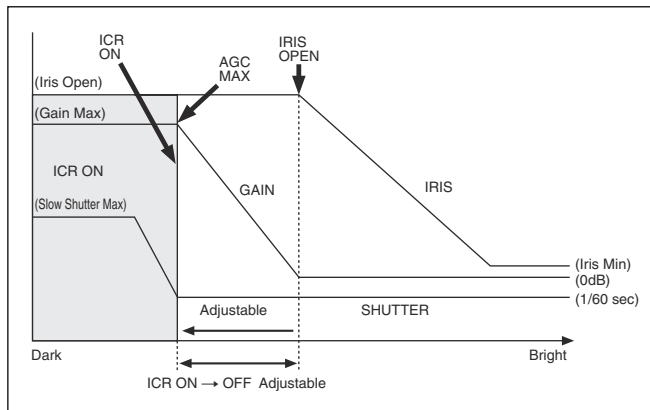
When Auto Slow Shutter is OFF (PRESLOW mode ON (default) or OFF)



When Auto Slow Shutter is ON (PRESLOW mode OFF)



When Auto Slow Shutter is ON (PRESLOW mode ON (default))



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. Auto ICR is available in AE-full-auto state only.

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 the "position preset."

Effect

It consists of the following functions.

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

Others

IMAGE FLIP

The image output by the camera is flipped upside down, and the direction of Pan/Tilt movements are reversed using the IMAGE FLIP switch on the back of the unit.

Mirror Image

This function reverses the video output from the camera horizontally.

Freeze

This function captures an image in the field memory of the camera so that this image can be output continuously.

Because communication inside the camera is based on V cycle, the captured image is always the one 3V to 4Vs after the sending of a Command. Thus, you can not specify a time period after sending EVEN, ODD or a Command.

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.

Mute

Blanks the screen and sends out a synchronizing signal.

Lens Initialization

Initializes the zoom and focus of the lens. Even when power is already on, it initializes the zoom and the focus.

AutoPowerOff

If an operation is not attempted via either a VISCA command or the remote controller during a pre-set time period (from 1 to 65,535 minutes), the power will automatically turn off (Standby). To disable this function, set the time period to 0 minutes.

NightPowerOff

When the Alarm function operates in DayNight mode, and the unit judges that it is night, if an operation is not attempted via either a VISCA command or the remote controller during a pre-set time period (from 1 to 65,535 minutes), the power will automatically turn off (Standby). To disable this function, set the time period to 0 minutes.

When the DayNight level is set correctly (the Day level > the Night level), the Alarm function can only be set when the unit is operated in DayNight mode.

For information on DayNight mode settings, see pages 13, 14, and 24.

AutoPowerOff and NightPowerOff can be used at the same time.

However, if the criteria for both are fulfilled at the same time, the shorter of the two time periods until shut down will be used to turn the power off (Standby).

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 even 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**

The settings are recalled when the power is turned on.

For setting items, see the “Initial Settings, Position Preset” section on page 25.

Alarm

For details, see page 13.

Title Display

The camera can be given a title containing up to 20 characters such as “ENTRANCE” or “LOBBY”. The position of the first character (horizontal, vertical) of the title, blinking state, and color can also be changed.

Vposition	00 to 0A	
Hposition	00 to 17	
Blink	00: Does not blink	
	01: Blinks	
Color	00	White
	01	Yellow
	02	Violet
	03	Red
	04	Cyan
	05	Green
	06	Blue

00	01	02	03	04	05	06	07
A	B	C	D	E	F	G	H
08	09	0a	0b	0c	0d	0e	0f
I	J	K	L	M	N	O	P
10	11	12	13	14	15	16	17
Q	R	S	T	U	V	W	X
18	19	1a	1b	1c	1d	1e	1f
Y	Z	&		?	!	1	2
20	21	22	23	24	25	26	27
3	4	5	6	7	8	9	0
28	29	2a	2b	2c	2d	2e	2f
À	È	Ì	Ò	Ù	Á	É	Í
30	31	32	33	34	35	36	37
Ó	Ú	Â	Ê	Ô	Æ	Œ	Ã
38	39	3a	3b	3c	3d	3e	3f
Õ	Ñ	Ç	ß	Ä	Ï	Ö	Ü
40	41	42	43	44	45	46	47
Å	\$	₣	¥	DM	£	¢	ı
48	49	4a	4b	4c	4d	4e	4f
ø	“	:	‘	.	,	/	-

Alarm Function

This function instructs the camera to detect movement within the monitoring area and then send an alarm signal automatically.

A High level signal is output when camera detects movement inside the monitoring area. A Low level signal is output when object stops moving.

However, when the mode is set to “DAY/NIGHT”, the High level signal is output for dark and the Low level signal is output for bright.

The Detect signal goes out through the serial command (VISCA) communication line.

Example

1. A door is motionless, so the Detect Level is Low.
2. At the moment when the door is opened by someone, the Detect Level goes to High.
3. The Detect Level is High while the shooting object is moving.
4. When the door is closed, Detect Level goes to Low again, or signals are output only once at the time of switching between High Level and Low Level.

ALARM Setting Command List

Command Set	Command	Command Packet	Comments
CAM_Alarm	On	8x 01 04 6B 02 FF	MD start
	Off	8x 01 04 6B 03 FF	MD stop
	Set Mode	8x 01 04 6C pp FF	Mode Setting *Select one from 13 modes
	Set Day Night Level	8x 01 04 6D 0p 0p 0p 0q 0q 0q FF	ppp: Day distinction AE level qqq: Night distinction AE level.

90 07 04 6B 01 FF	High signal output (Low → High edge)
90 07 04 6B 00 FF	Low signal output (High → Low edge)

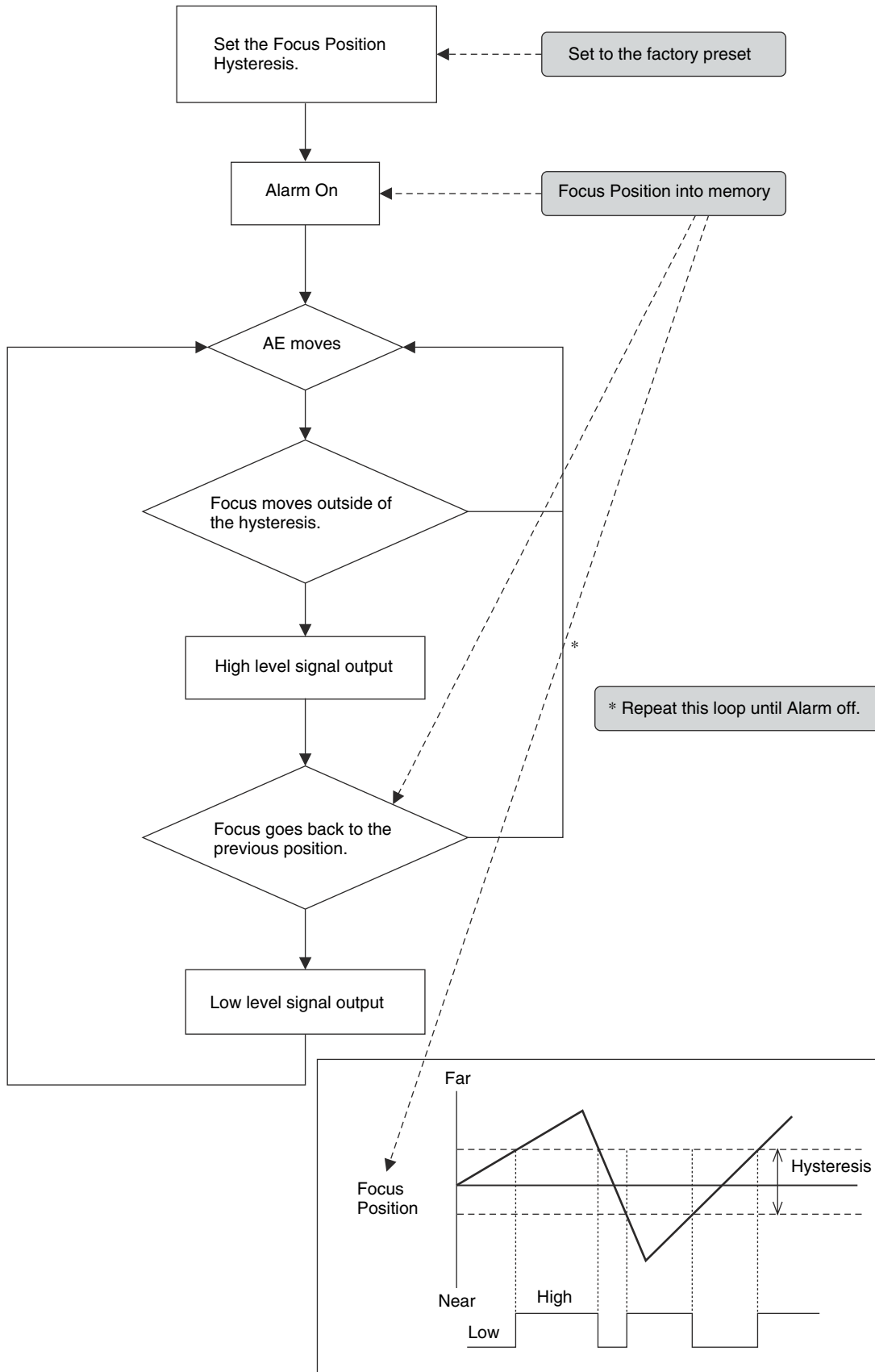
VISCA Mode Code (pp)	Details of Mode
00	Set the internal focus position. When focus movement is detected, the detect signal is High. When focus goes back to the previous position, the detect signal is Low.
01	Set a fixed period of time. When focus does not move during the time, the focus position is memorized as a rest position and the detect signal is Low. When focus moves, the detect signal is High. Afterwards when focus does not move for the fixed period of time, the focus position is memorized and the detect signal becomes Low.
02	Set the internal AE Level. When AE movement is detected, the detect signal is High. When AE Level goes back to the previous level, the detect signal is Low.
03	Set a fixed period of time. When AE Level does not change during this time, the AE value is memorized as a rest value and the detect signal is Low. When AE value changes, the detect signal is High. Afterwards when AE value does not change for the fixed period of time, the AE value is memorized and the detect signal becomes Low.
04	mode "00" and mode "02"
05	mode "00" and mode "03"
06	mode "01" and mode "02"
07	mode "01" and mode "03"
08	mode "00" or mode "02"
09	mode "00" or mode "03"
0A	mode "01" or mode "02"
0B	mode "01" or mode "03"
0C	Day-Night Mode

ALARM Inquiry Command List

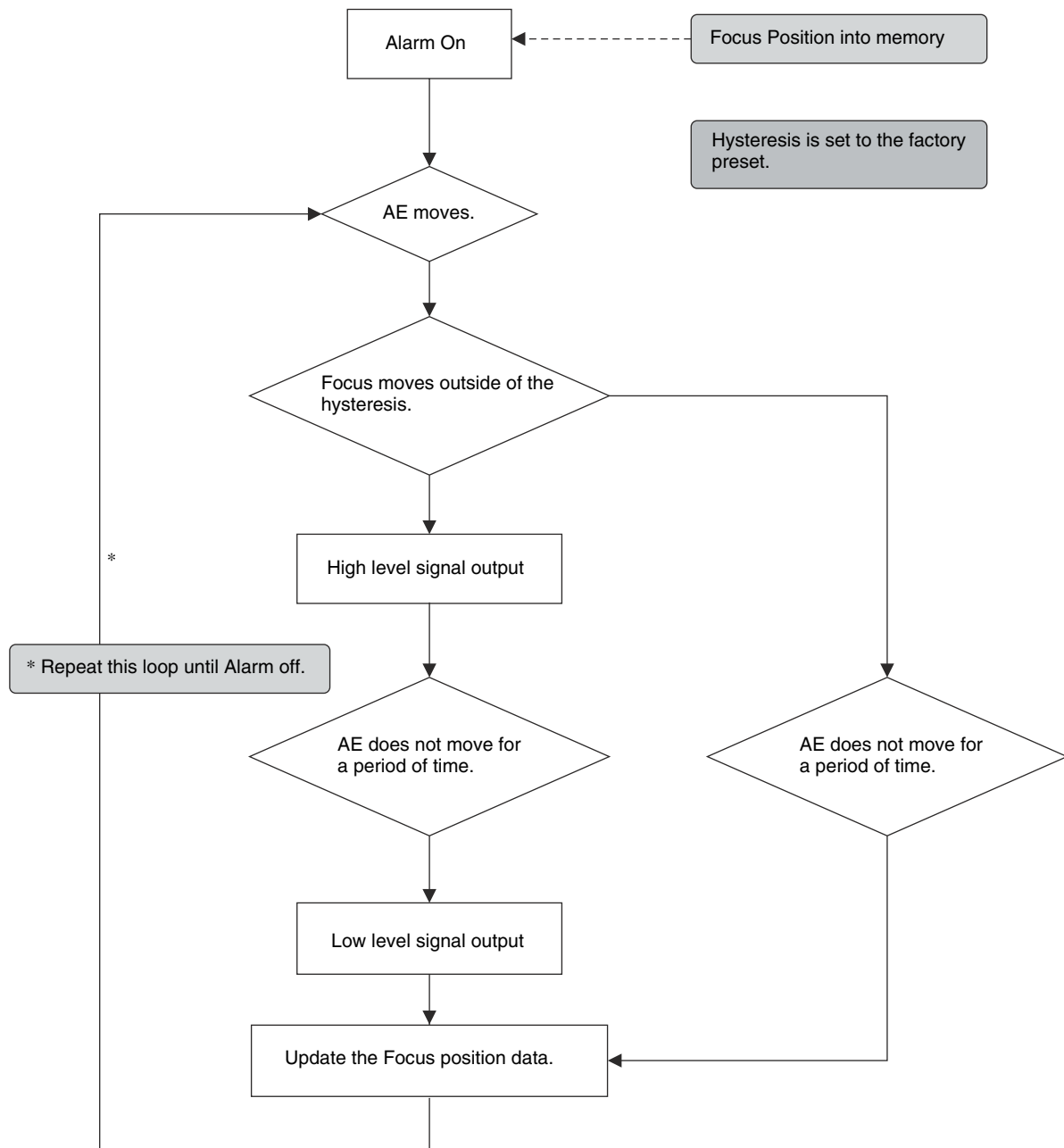
Inquiry Command	Command Packet	Inquiry Packet	Comments
CAM_Alarm Inq	8x 09 04 6B FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_Alarm Mode Inq	8x 09 04 6C FF	y0 50 pp FF	pp: Alarm Mode
CAM_AlarmDayNightLevel Inq	8x 09 04 6D FF	y0 50 0p 0p 0p 0q 0q 0q 0r 0r 0r FF	ppp: Day setting AE Level qqq: Night setting AE Level rrr: Now AE Level
CAM_AlarmDetLevelInq	8x 09 04 6E FF	y0 50 01 FF	Detect Level is High.
		y0 50 00 FF	Detect Level is Low.

Flowchart of 12 Modes Function

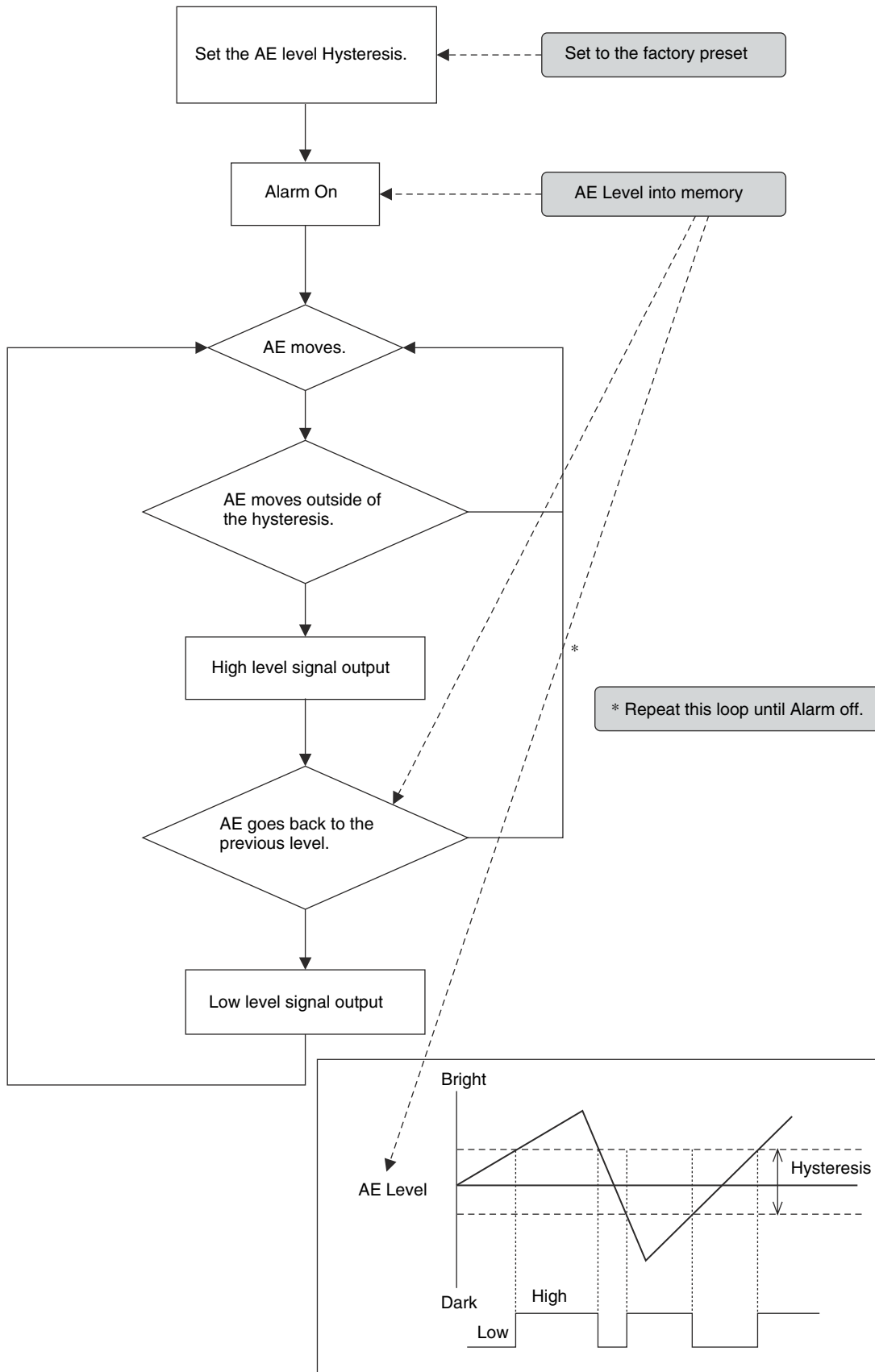
Mode "00"



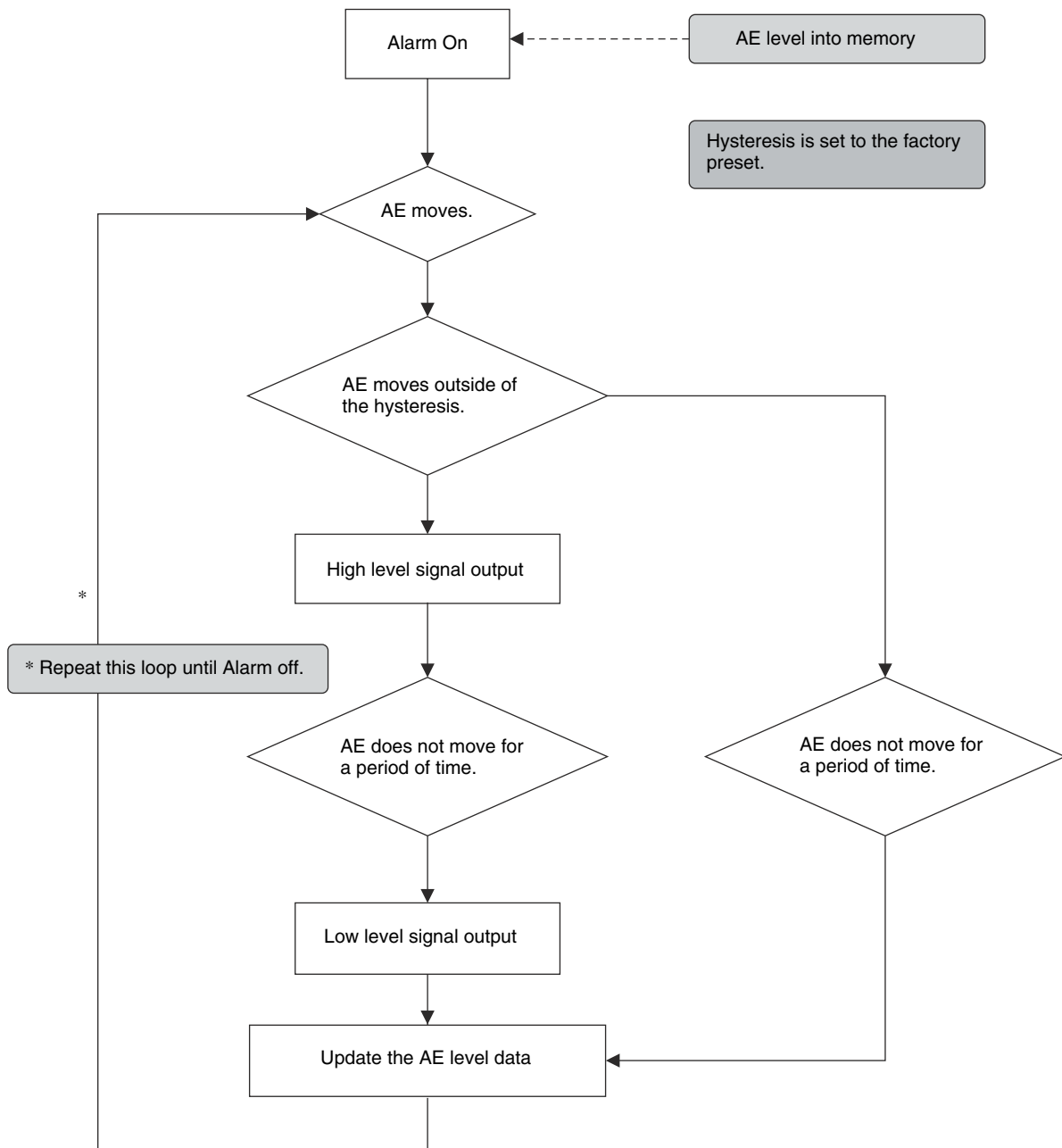
Mode "01"



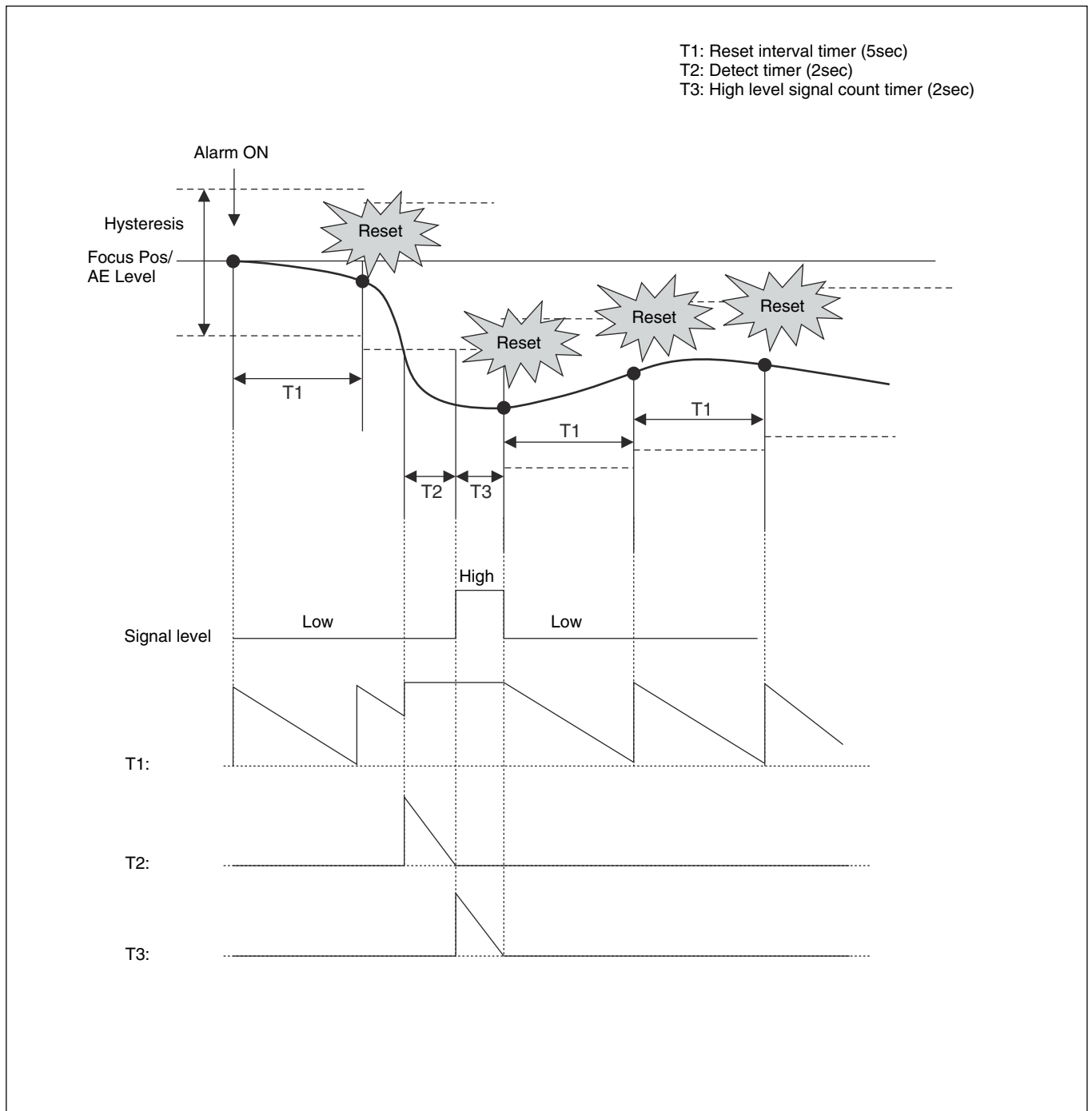
Mode "02"



Mode "03"

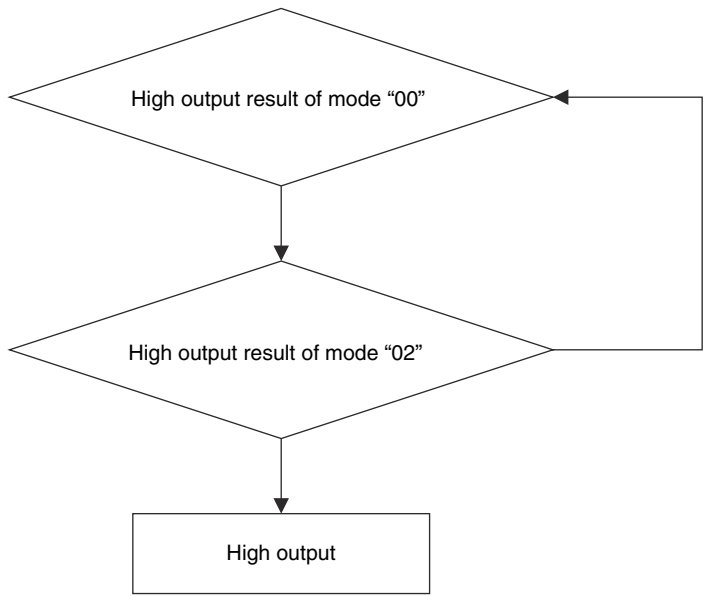


Details of Mode “01” to “03”



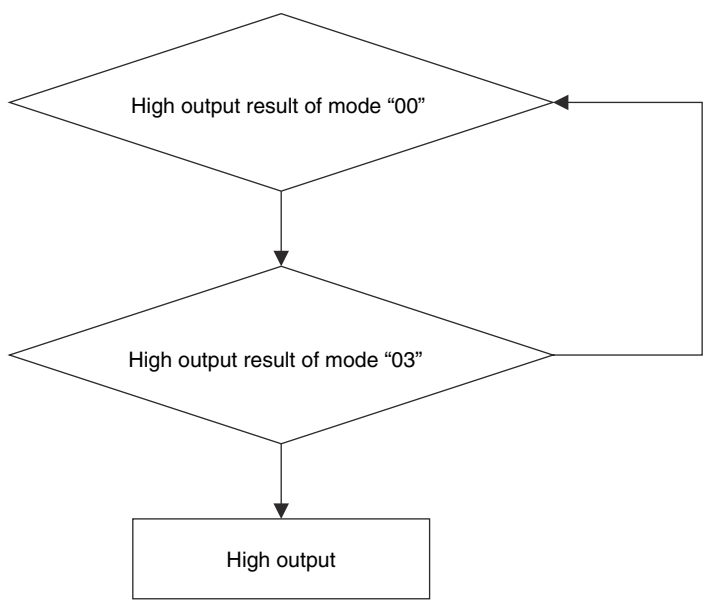
Mode "04"

The same flow for the low level signal



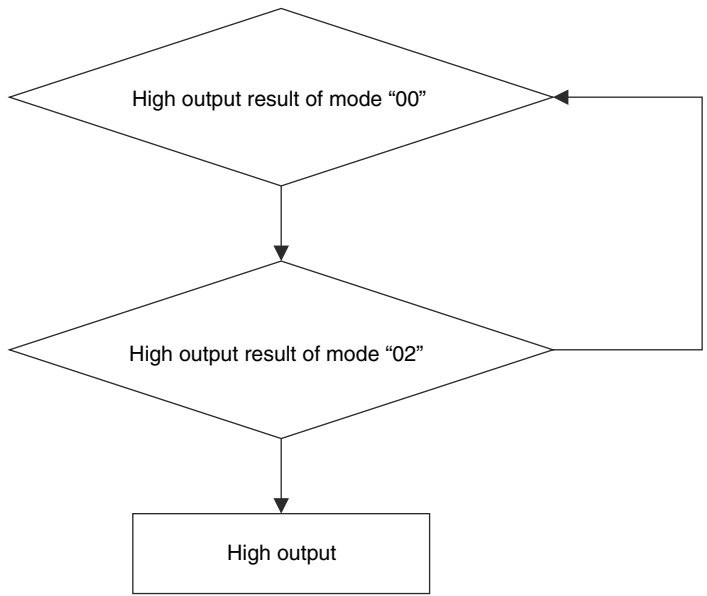
Mode "05"

The same flow for the low level signal



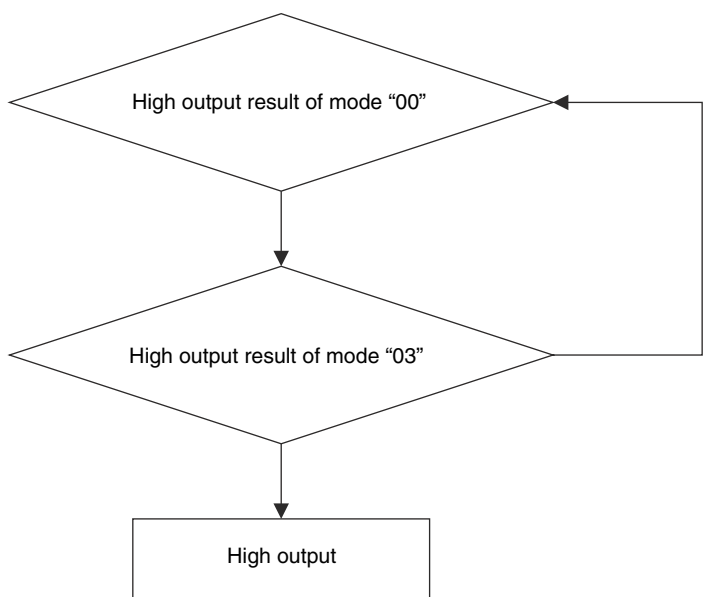
Mode "06"

The same flow for the low level signal

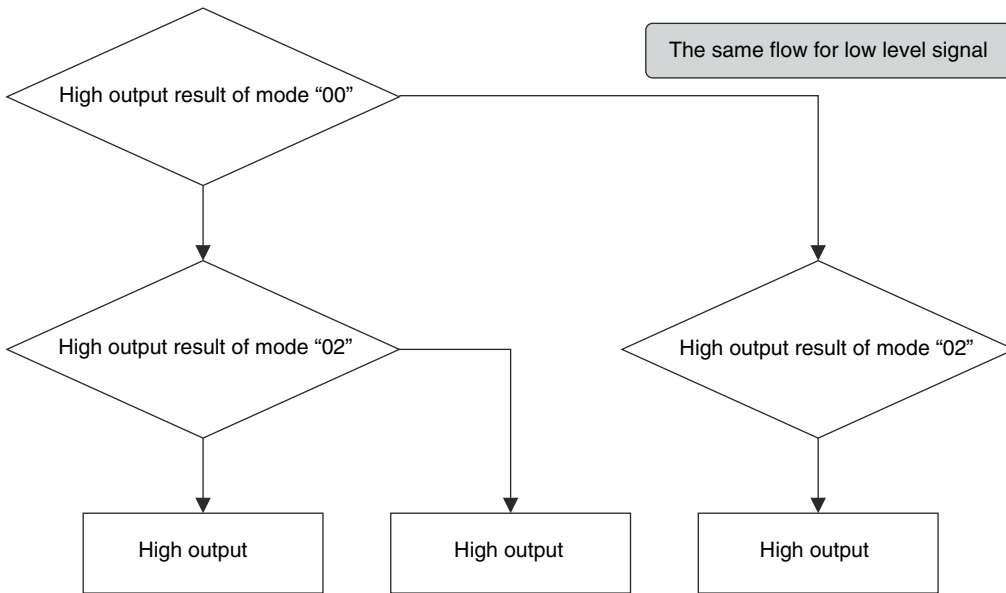


Mode "07"

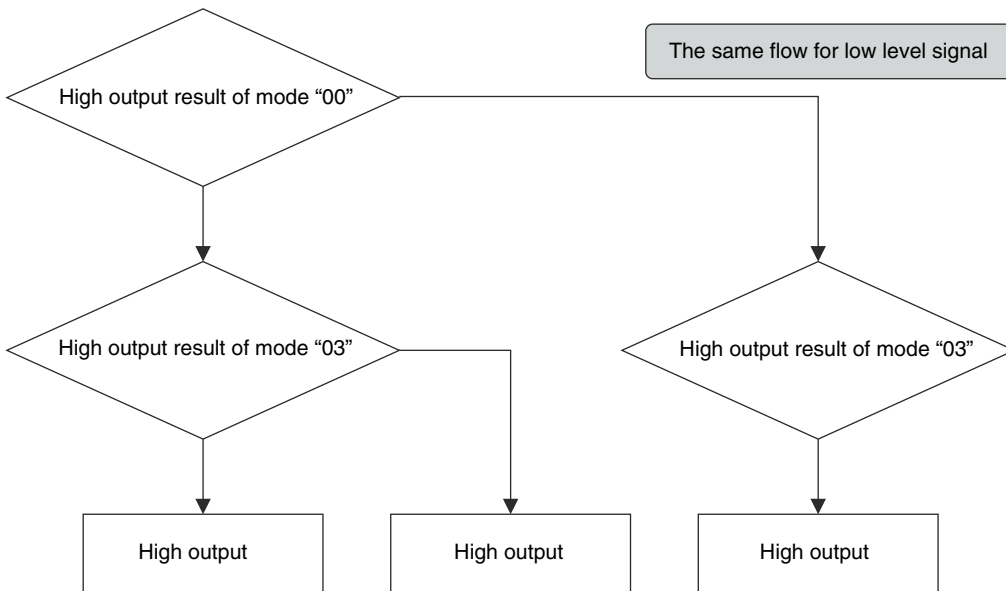
The same flow for the low level signal



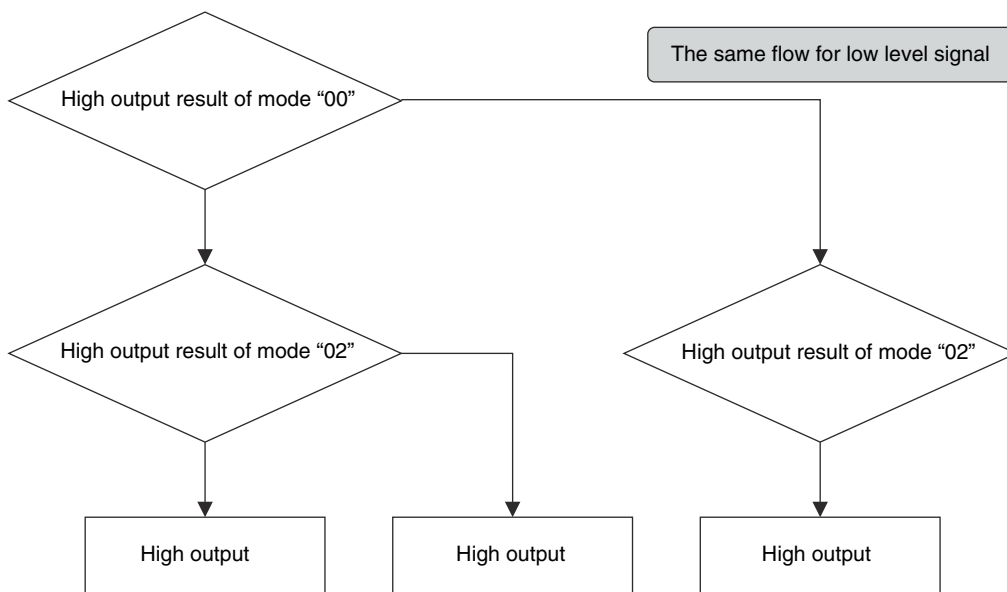
Mode "08"



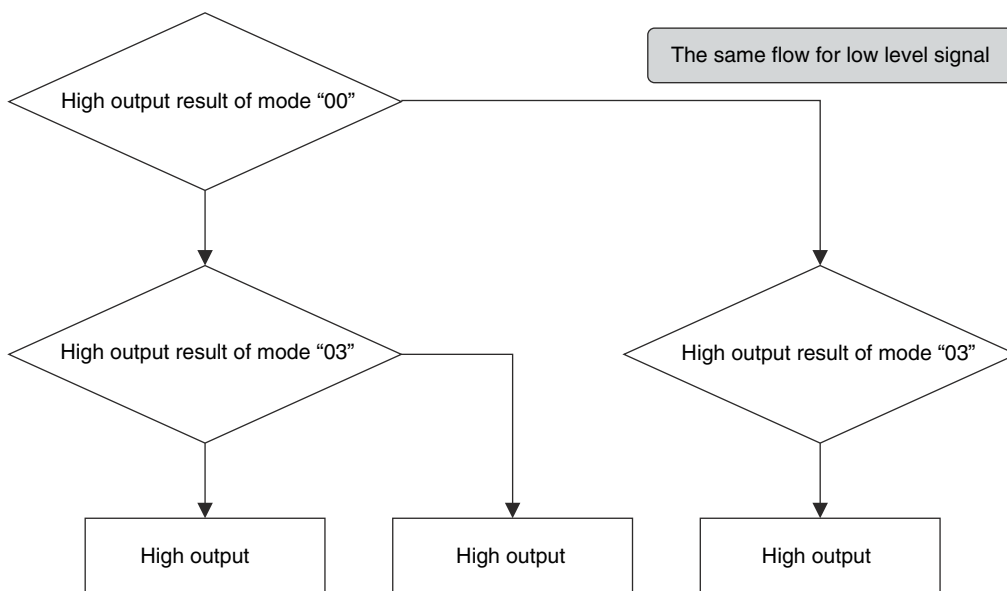
Mode "09"



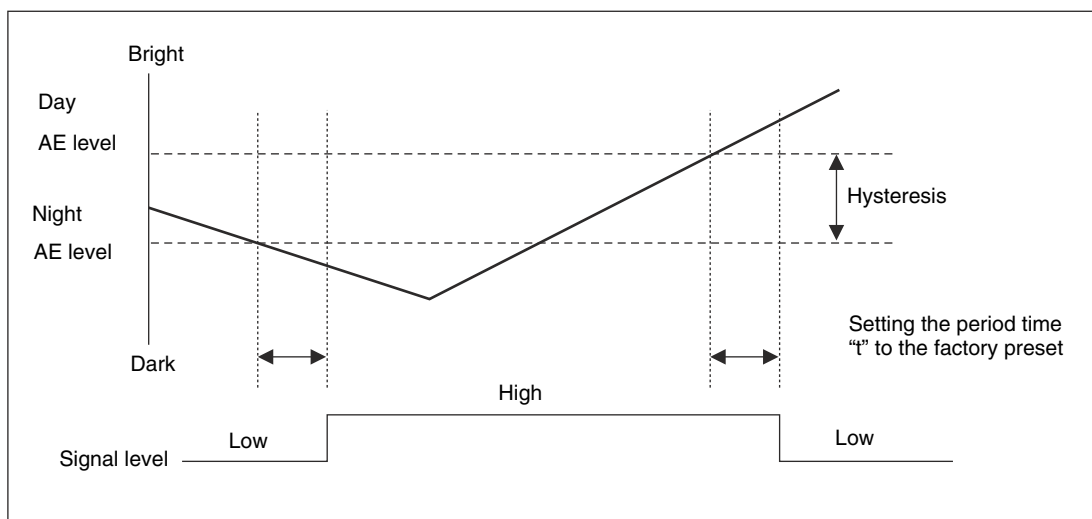
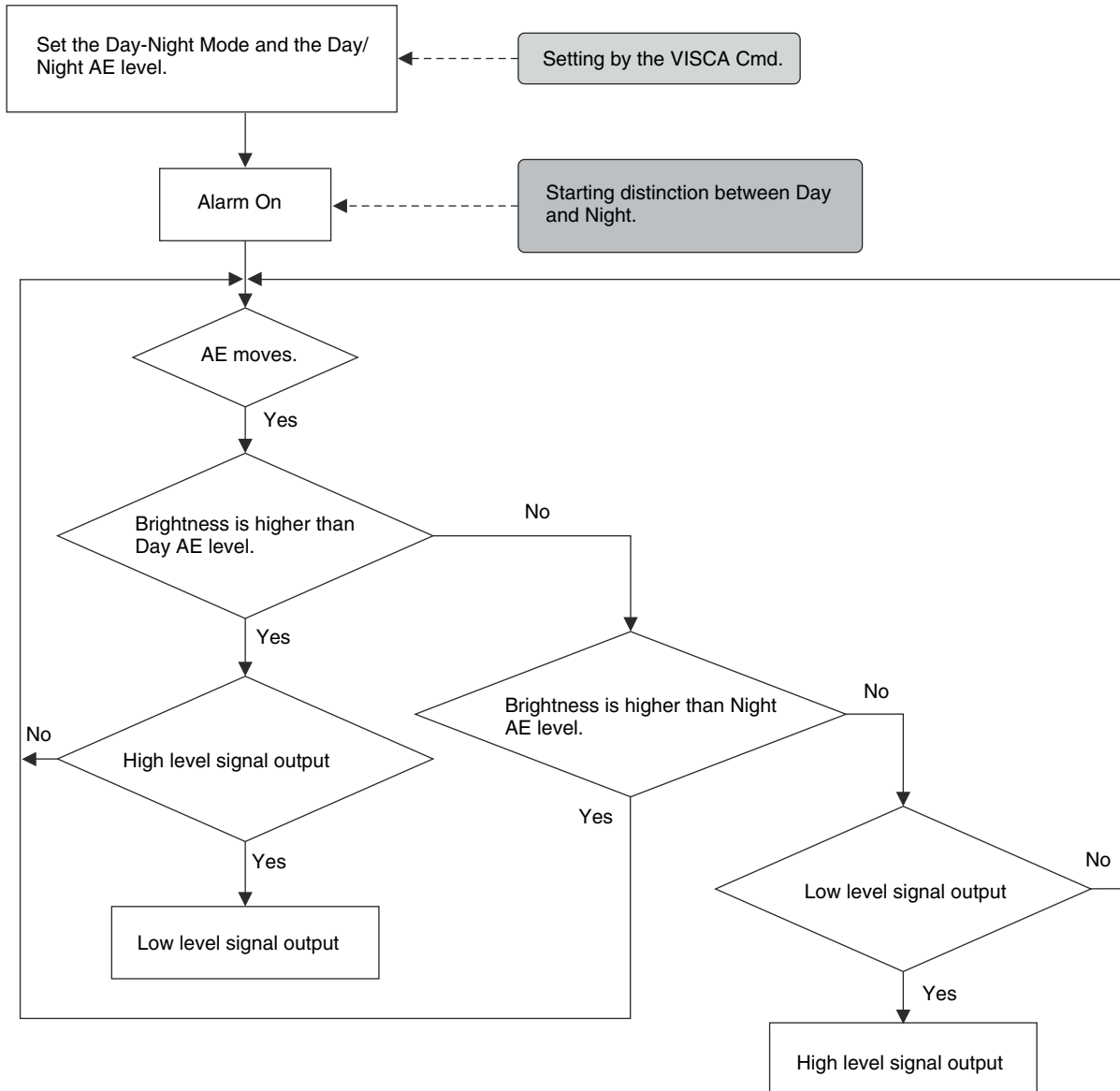
Mode "0A"



Mode "0B"



Day-Night Mode (Mode "0C")



Initial Settings, 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 “O,” those that will be lost are indicated by an “X.”

- 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 control 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 preset 2 to 6
Pan/Tilt Position	Home position	○	○
Pan/Tilt Limit Position	movable-range maximum	○	×
Zoom Position	Wide end	○	○
D-Zoom On/Off	On	○	○
D-Zoom Separate/Combine	Combine	○	×
D-Zoom Position	00h	○	○
Focus Position	—	○	○
Focus Auto/Manual	Auto	○	○
Near Limit Setting	8000h (29 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	○	○
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	○	○
Spot AE On/Off	Off	○	×
Spot AE Position Setting	X=8, Y=8	○	×
Aperture Level	5	○	○
IR_Receive On/Off	On	○	×
IR_ReceiveReturn On/Off	Off	○	×
Auto Power Off Timer	0	○	×
Night Power Off Timer	0	○	×
LR Reverse On/Off	Off	○	×
Freeze On/Off	Off	×	×
Picture Effect	Off	○	×
ICR On/Off	Off	○	○
Auto ICR On/Off	Off	○	×
Preset Memory	Same as the initial value setting	○	○
Display On/Off	Off	○	○
Mute On/Off	Off	×	×
Title Display On/Off	Off	○	×

(Continued)

Mode/Position	Initial settings	Position preset 1	Position preset 2 to 6
Title Setting	—	○	×
Alarm On/Off	Off	○	×
Alarm Mode	—	○	×
Alarm Detect Level	—	○	×

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 D30/D31 mode has been switched, all of the Position Presets are reset to their initial values.
- In D30/D31 mode, the functions of the EVI-D30/D31 are the functions that are memorized.

Mode Condition

Basic settings

Mode	Power Off	Initializing ¹⁾	IFC ²⁾	Power On	Freeze On	Memory Recall
Address Set	○	○	○	○	○	○
IF_Clear	○	○	○	○	○	○
Power On	○	×	×	○	○	○
Power Off	○	×	×	○	○	○
AutoPowerOff setting	×	×	×	○	○	○
NightPowerOff setting	×	×	×	○	○	○
IR_Receive On/Off	×	×	×	○	○	○
IR_ReceiveReturn_On/Off	×	×	×	○	○	○
CAM_DeviceTypeInq/VersionInq/IDInq	○	○	○	○	○	○
CAM_PowerInq	○	○	○	○	○	○
BlockInquiry	○	○	○	○	○	○
InquiryCommand (and similar commands)	×	○	○	○	○	○
ID Write	×	×	×	○	○	○

1.) Initializing: The period from the time DC power is turned on until the video signal is output. Or, the period from the time the CAM_PowerOn command is sent until Completion is returned.

2.) IFC: The period from the time IF_Clear is sent until the Reply Packet is returned.

Lens

Mode	Power Off	Initializing	Power On	Freeze On	Memory Recall	Zoom Direct	Focus Direct	ZmFo Direct	Focus Auto
Zoom Tele/Wide/Stop	x	x	○	x	x	x	○	x	○
Zoom Direct	x	x	○	x	x	○	○	x	○
Zoom Focus Direct	x	x	○	x	x	x	x	○	x
D-Zoom On/Off	x	x	○	x	x	x	○	x	○
D-Zoom Separate/Combine	x	x	○	x	x	x	○	x	○
D-Zoom Tele/Wide/Stop	x	x	○	x	x	○	○	○	○
D-Zoom ×1/Max	x	x	○	x	x	○	○	○	○
D-Zoom Direct	x	x	○	x	x	○	○	○	○
Focus Far/Near/Stop	x	x	○	x	x	○	x	x	x
Focus Direct	x	x	○	x	x	○	○	x	x
Focus Auto/Manual	x	x	○	x	x	○	x	x	○
One Push AF	x	x	○	x	x	○	x	x	x
Focus Infinity	x	x	○	x	x	○	x	x	○
Focus Near Limit	x	x	○	x	x	○	x	x	○
AF Sensitivity Normal/Low	x	x	○	x	x	○	○	○	○
AF Mode Norm/Interval/Zoom	x	x	○	x	x	○	○	○	○
AF Activation Time/Interval Setting	x	x	○	x	x	○	○	○	○
Lens Initialization	x	x	○	○	x	x	x	x	○

White Balance

Mode	Power Off	Initializing	Power On	Freeze On	Memory Recall	WB AUTO	Indoor	Outdoor	OnePush	ATW	Manual
WB Mode Switchover	x	x	○	x	x	○	○	○	○	○	○
One Push WB	x	x	○	x	x	x	x	x	○	x	x
RGain Setting	x	x	○	x	x	x	x	x	x	x	○
BGain Setting	x	x	○	x	x	x	x	x	x	x	○

Exposure

Mode	Power Off	Initializing	Power On	Freeze On	Memory Recall	AE Full Auto	AE Manual	ShutterPriority	Iris Priority	Bright
AE Full Auto	x	x	o	x	x	o	o	o	o	o
AE Manual	x	x	o	x	x	o	o	o	o	o
Shutter Priority	x	x	o	x	x	o	o	o	o	o
Iris Priority	x	x	o	x	x	o	o	o	o	o
Bright	x	x	o	x	x	o	x	o	x	o
Shutter Setting	x	x	o	x	x	x	o	o	x	x
Iris Setting	x	x	o	x	x	x	o	x	o	x
Gain Setting	x	x	o	x	x	x	o	x	x	x
Bright Setting	x	x	o	x	x	x	x	x	x	o
Slow Shutter Auto/Manual	x	x	o	x	x	o	o	o	o	o
Exposure Compensation On/Off	x	x	o	x	x	o	o	o	o	o
Exposure Compensation Setting	x	x	o	x	x	o	o	o	o	o
BackLight On/Off	x	x	o	x	x	o	x	x	x	x
SpotAE On/Off	x	x	o	x	x	o	o	o	o	o
SpotAE Setting	x	x	o	x	x	o	o	o	o	o

Effect settings, ICR

Mode	Power Off	Initializing	Power On	Freeze On	Memory Recall
Aperture Setting	x	x	o	x	x
LR_Reverse On/Off	x	x	o	x	x
Freeze On/Off	x	x	o	o	x
Picture Effect Setting	x	x	o	x	x
ICR On/Off	x	x	o	x	x
Auto ICR On/Off	x	x	o	x	x
Display On/Off	x	x	o	o	o
Mute On/Off	x	x	o	o	o
Title Setting	x	x	o	o	o

Pan/Tilt, Memory Function

Command	Mode		Power OFF	Initializing	IFC	Freeze On	Zoom	Focus (manual) adjustment	Pan/Tilt movement						Memory Recall execution	During Memory Reset	During Memory Set	Position detection error
	Transmit device								Up/Down/Left/Right/Up/Left/DownLeft/DownRight	Up/Down/Left/Right/Up/Right/DownLeft/DownRight	Absolute Position	Relative Position	Home	Reset				
Pan-tiltDrive Up/Down/Left/Right/Up/Left/UpRight/DownLeft/DownRight	VISCA		X	X	X	O	Common	Common	VISCA	VISCA	VISCA	RC	VISCA	VISCA	RC	X	X	O ⁵⁾
	RC		X	X	X	O			VISCA	VISCA	VISCA	RC	VISCA	VISCA	RC	X	X	O ⁵⁾
Pan-tiltDrive Stop	VISCA		X	X	X	O			VISCA	VISCA	VISCA	RC	VISCA	VISCA	RC	X	X	O
Pan-tiltDrive AbsolutePosition	VISCA		X	X	X	O			VISCA	VISCA	VISCA	RC	VISCA	VISCA	RC	X	X	X
Pan-tiltDrive RelativePosition	VISCA		X	X	X	O			VISCA	VISCA	VISCA	RC	VISCA	VISCA	RC	X	X	O
Pan-tiltDrive Home	VISCA		X	X	X	O			VISCA	VISCA	VISCA	RC	VISCA	VISCA	RC	X	X	X
	RC		X	X	X	O			VISCA	VISCA	VISCA	RC	VISCA	VISCA	RC	X	X	X
Pan-tiltDrive Reset	VISCA		X	X	X	O			VISCA	VISCA	VISCA	RC	VISCA	VISCA	RC	X	X	O
	RC		X	X	X	O			VISCA	VISCA	VISCA	RC	VISCA	VISCA	RC	X	X	O
Pan-tiltDrive LimitSet	VISCA		X	X	X	O			VISCA	VISCA	VISCA	RC	VISCA	VISCA	RC	X	X	X
Pan-tiltDrive LimitClear	VISCA		X	X	X	O			VISCA	VISCA	VISCA	RC	VISCA	VISCA	RC	X	X	X
Memory Set	Common		X	X	X	O ³⁾			Common	Common	Common	RC	Common	Common	RC	X	X	X
Memory Reset	Common		X	X	X	O			Common	Common	Common	RC	Common	Common	RC	X	X	X
Memory Recall	VISCA		X	X	X	O ⁴⁾		X ²⁾	VISCA	VISCA	VISCA	RC	VISCA	VISCA	RC	X	X	X
	RC		X	X	X	O ⁴⁾		X ²⁾	VISCA	VISCA	VISCA	RC	VISCA	VISCA	RC	X	X	X

1): O while the camera operates in the Tele/Wide zoom mode
 2): O while the camera operates in the Far/Near focus mode
 3): Freeze is set as off, and the setting is Memory Set.
 4): Freeze is set as off, and the setting is Memory Recall.
 5): O only for movements away from the direction where a position detection error has been recognized.

Command List

VISCA¹⁾ RS-232C/RS-422 Commands

Use of RS-232C/RS-422 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 side outputting commands, for example, a computer, is called the controller, while the side receiving the commands, such as an EVI-D70/P, is called the peripheral device. The EVI-D70/P serves as a peripheral device in VISCA. In VISCA, up to seven peripheral devices like the EVI-D70/P can be connected to one controller using communication conforming to the RS-232C/RS-422 standard. The parameters of RS-232C/422 are as follows.

- Communication speed: 9600 bps/38400 bps
- Data bits : 8
- Start bit : 1
- Stop bit : 1
- Non parity

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

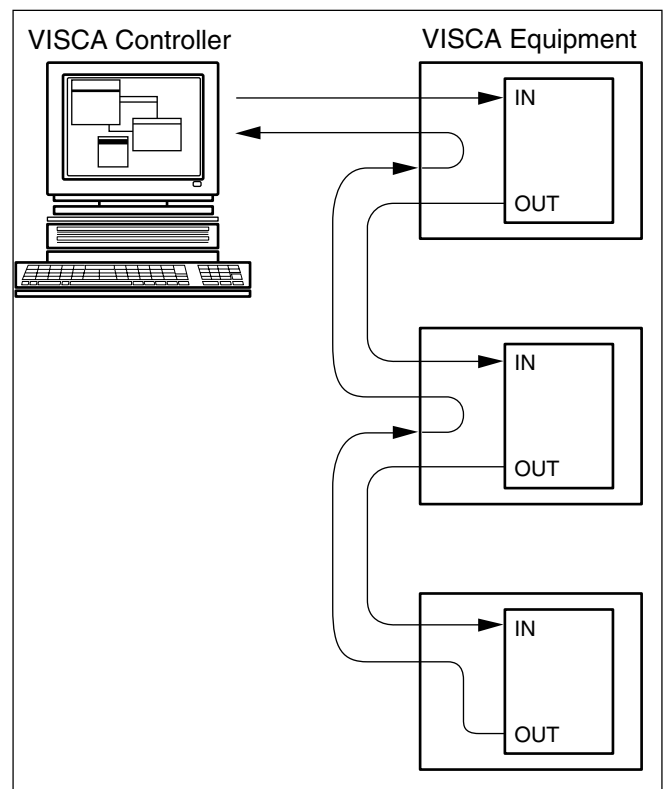
Peripheral devices are connected in a daisy chain. As shown in Fig. 1, the actual internal connection is a one-direction ring, so that messages return to the controller via the peripheral devices. The devices on the network are assigned addresses.

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 DTR input (the S 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-D70/P assigned address 1 from the controller (address 0) is hexadecimal 81H. The packet

sent to the EVI-D70/P assigned address 2 is 82H. In the command list, as the header is 8X, input the address of the EVI-D70/P at X. The header of the reply packet from the EVI-D70/P assigned address 1 is 90H. The packet from the EVI-D70/P assigned address 2 is A0H.

Some of the commands for setting EVI-D70/P 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 packet.

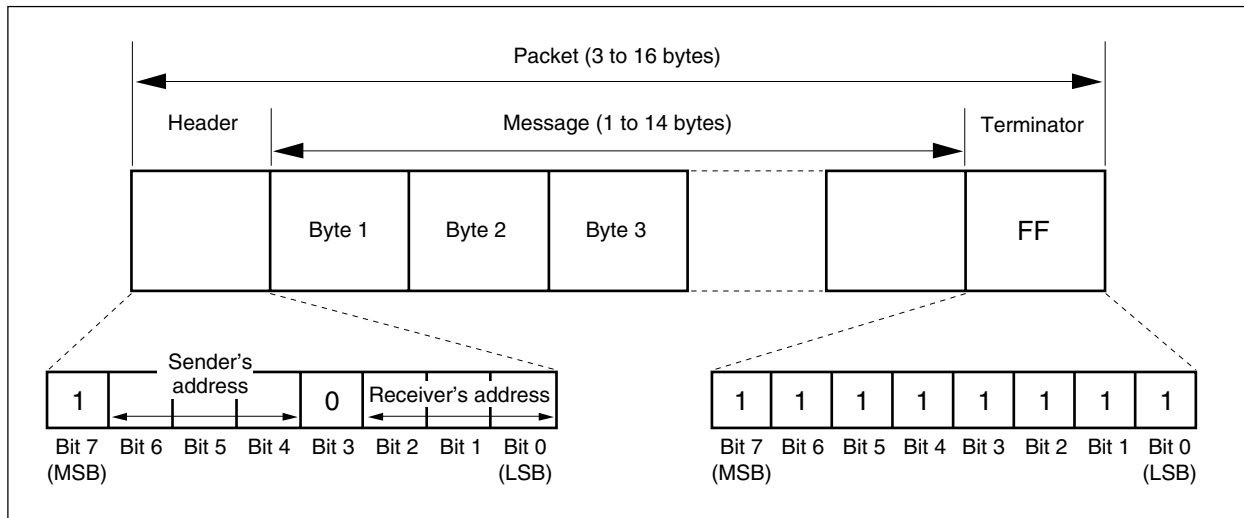


Fig. 2 Packet structure

Note

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

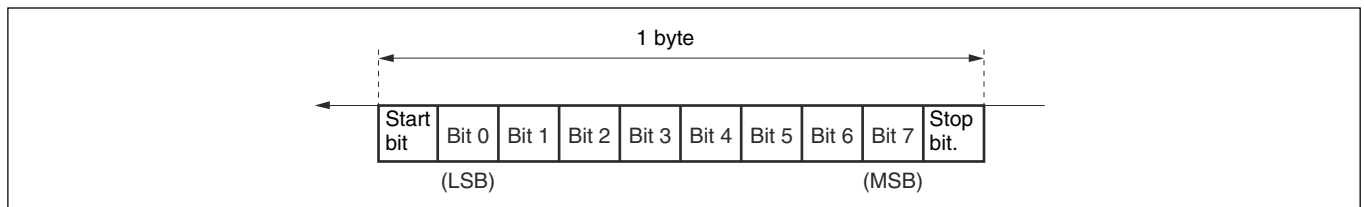
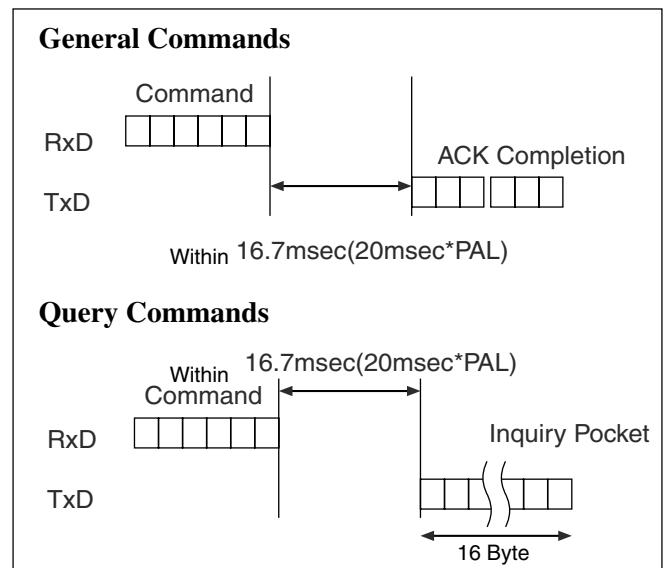


Fig. 3 Actual waveform for 1 byte.

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.

From this point, if 2 or more commands in a row are to be sent, wait for the first command (for normal commands, an ACK or an error message, for query commands, an Inquiry Packet) to be carried out before sending the next one.



Command and inquiry

● Command

Sends operational commands to the EVI-D70/P.

● Inquiry

Used for inquiring about the current state of the EVI-D70/P.

	Command Packet	Note
Inquiry	8X QQ RR ... FF	QQ ¹⁾ = Command/Inquiry, RR ²⁾ = category code

¹⁾ QQ = 01 (Command), 09 (Inquiry)

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

X = 1 to 7: EVI-D70/P address

Responses for commands and inquiries

● ACK message

Returned by the EVI-D70/P when it receives a command. No ACK message is returned for inquiries.

● Completion message

Returned by the EVI-D70/P 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-D70/P 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 01 FF	Message length error (>14 bytes)
X0 6Y 02 FF	Syntax Error
X0 6Y 03 FF	Command buffer full
X0 6Y 04 FF	Command cancelled
X0 6Y 05 FF	No socket (to be cancelled)
X0 6Y 41 FF	Command not executable

X = 9 to F: EVI-D70/P address + 8, Y = socket number

Socket number

When command messages are sent to the EVI-D70/P, 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-D70/P has two buffers (memories) for commands, so that up to two commands including the commands currently being executed can be received. When the EVI-D70/P 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-D70/P 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.

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-D70/P 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-D70/P, be sure to send the Address command and the IF_Clear command using the broadcast function.

For VISCA network administration

● Address

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

● 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.

	Packet	Note
Address	88 30 01 FF	Always broadcasted.
Network Change	X0 38 FF	
X = 9 to F: EVI-D70/P address + 8		

VISCA interface command

● IF_Clear

Clears the command buffers in the EVI-D70/P and cancels the command currently being executed.

	Command Packet	Reply Packet	Note
IF_Clear	8X 01 00 01FF	X0 50 FF	
IF_Clear (broadcast)	88 01 00 01 FF	88 01 00 01 FF	
X = 1 to 7: EVI-D70/P address (For inquiry packet)			
X = 9 to F: EVI-D70/P address +8 (For reply packet)			

VISCA interface and inquiry

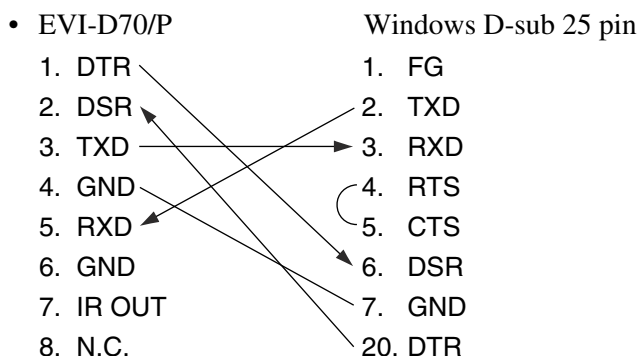
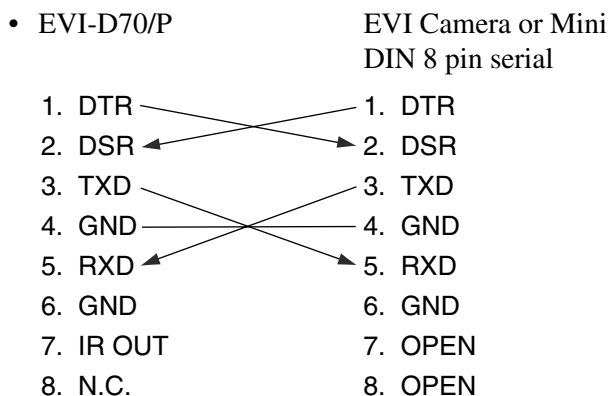
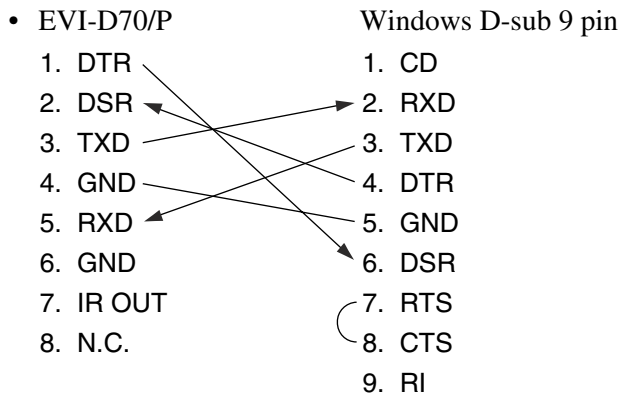
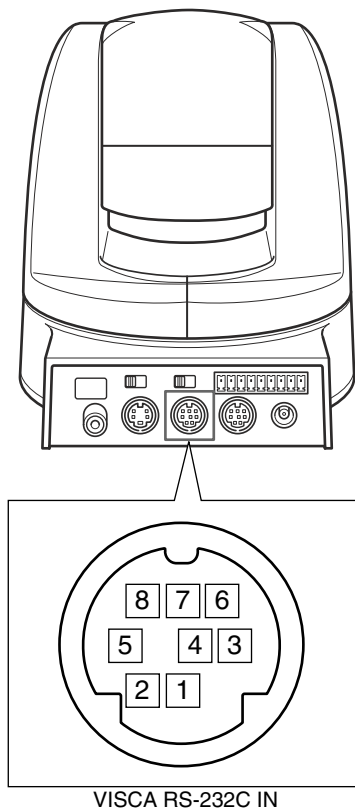
● CAM_VersionInq

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 (0020: Sony) HHHH = Model ID 040E: EVI-D70/P 0402: EVI-D30/D31 (When the D30/D31 mode is set to ON) JJJJ = ROM revision KK = Maximum socket # (02)

X = 1 to 7: EVI-D70/P address (For inquiry packet)
X = 9 to F: EVI-D70/P address +8 (For reply packet)

Pin assignment

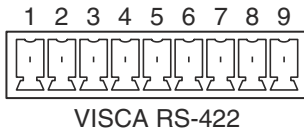


No	Pins	Signals
1	DTR	DataTransmission Ready (OUTPUT)
2	DSR	Data Set Ready (INPUT)
3	TXD	Transmit Data (OUTPUT)
4	GND	Ground
5	RXD	Receive Data (INPUT)
6	GND	Ground
7	IR OUT	IR Commander Signal (OUTPUT)
8	N.C.	No Connection

IR OUT outputs the signals of the Remote Commander at 0 to 5 V when the IR OUT switch is set to ON.

Using the VISCA RS-422 connector pin assignments

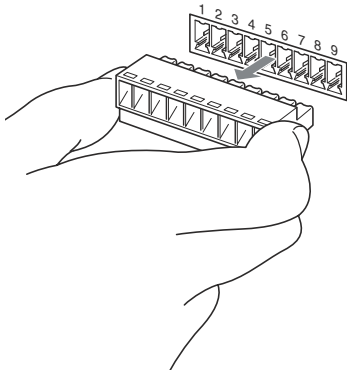
The VISCA RS-422 connector pin assignments



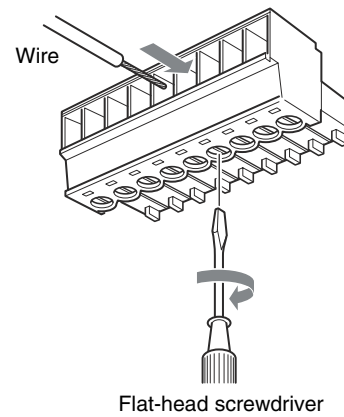
Pin No.	Function
1	TXD IN+
2	TXD IN-
3	RXD IN+
4	RXD IN-
5	GND
6	TXD OUT+
7	TXD OUT-
8	RXD OUT+
9	RXD OUT-

Using the VISCA RS-422 connector plug

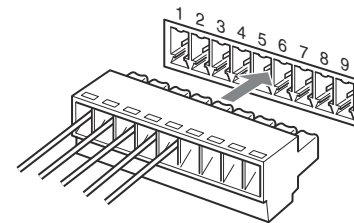
- 1 Grasp both ends of the VISCA RS-422 connector plug and pull it away from the rear panel of the camera, as shown in the illustration.



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



- 3 Insert the VISCA RS-422 connector plug into the VISCA RS-422 connector on the back of the camera.



Notes

- 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.

VISCA Command/ACK Protocol

Command	Command Message	Reply Message	Comments
General Command	81 01 04 38 02 FF (Example)	90 41 FF (ACK)+90 51 FF (Completion) 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 (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 (Example)	90 60 03 FF (Command Buffer Full)	There are two commands currently being executed, and the command could not be accepted.
	81 01 04 08 02 FF (Example)	90 61 41 FF (Command Not Executable) 90 62 41 FF	Could not execute the command in the current mode.
Inquiry Command	81 09 04 38 FF (Example)	90 50 02 FF (Completion)	ACK is not returned for the inquiry command.
	81 09 05 38 FF (Example)	90 60 02 FF (Syntax Error)	Accepted an incompatible command.
Address Set	88 30 01 FF	88 30 02 FF	Returned the device address to +1.
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	z0 6y 04 FF (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.

VISCA Camera-Issued Messages

ACK/Completion Messages

	Command Messages	Comments
ACK	z0 4y FF (y:Socket No.)	Returned when the command is accepted.
Completion	z0 5y FF (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 (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 (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 (y:Socket No.)	Returned when a command cannot be executed due to current conditions. For example, when commands controlling the focus manually are received during auto focus.

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 RS-232C/RS-422 OUT connector used for communication.

EVI-D70/P Commands

EVI-D70/P Command List (1/4)

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.(=1or2)
CAM_Power	On	8x 01 04 00 02 FF	Power ON/OFF
	Off	8x 01 04 00 03 FF	
CAM_AutoPowerOff	Direct	8x 01 04 40 0p 0q 0r 0s FF	Auto Power Off pqrs: Power Off Timer 0000 (Timer Off) to FFFF (65535min) Initial value: 0000 The power automatically turns off if the camera does not receive any VISCA commands or any signals from the Remote Commander for the duration you set in the timer.
CAM_NightPoweroff	Direct	8x 01 04 41 0p 0q 0r 0s FF	Pqrs: Power Off Timer 0000~FFFF (Units: Min.) A setting of 0 (zero min.) is equivalent to OFF, and the smallest value that can be set is 1 min. When the Day/Night function is in effect and the Night setting has been made, if an operation is not attempted via either a VISCA command or the remote controller, the unit will continue to operate for the time set in the timer, and will then shut off automatically.
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	
CAM_DZoom	On	8x 01 04 06 02 FF	Digital zoom ON/OFF
	Off	8x 01 04 06 03 FF	
	Combine Mode	8x 01 04 36 00 FF	Optical/Digital Zoom Combined
	Separate Mode	8x 01 04 36 01 FF	Optical/Digital Zoom Separate
	Stop	8x 01 04 06 00 FF	
	Tele(Variable)	8x 01 04 06 2p FF	p=0 (Low) to 7 (High)
	Wide(Variable)	8x 01 04 06 3p FF	
	x1/Max	8x 01 04 06 10 FF	x1/MAX Magnification Switchover
	Direct	8x 01 04 46 00 00 0p 0q FF	pq: D-Zoom Position
CAM_Focus	Stop	8x 01 04 08 00 FF	
	Far(Standard)	8x 01 04 08 02 FF	
	Near(Standard)	8x 01 04 08 03 FF	
	Far(Variable)	8x 01 04 08 2p FF	p=0 (Low) to 7 (High)
	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

EVI-D70/P Command List (2/4)

Command Set	Command	Command Packet	Comments
AF Sensitivity	Normal	8x 01 04 58 02 FF	AF Sensitivity Normal/Low
	Low	8x 01 04 58 03 FF	
CAM_AFMMode	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_ZoomFocus	Direct	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	pqrs: Zoom Position tuvw: Focus Position
CAM_Initialize	Lens	8x 01 04 19 01 FF	Lens Initialization Start
	Comp Scan	8x 01 04 19 02 FF	Correction of CCD pixel blemishes
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
	ATW	8x 01 04 35 04 FF	Auto Tracing White Balance
	Manual	8x 01 04 35 05 FF	Manual Control mode
	One Push Trigger	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
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	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
CAM_Bright	Reset	8x 01 04 0D 00 FF	Bright Setting
	Up	8x 01 04 0D 02 FF	
	Down	8x 01 04 0D 03 FF	
	Direct	8x 01 04 4D 00 00 0p 0q FF	pq: Bright Position

EVI-D70/P Command List (3/4)

Command Set	Command	Command Packet	Comments
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	
CAM_Backlight	On	8x 01 04 33 02 FF	Back Light Compensation ON/OFF
	Off	8x 01 04 33 03 FF	
CAM_SpotAE	On	8x 01 04 59 02 FF	Spot Automatic Exposure Setting
	Off	8x 01 04 59 03 FF	
	Position	8x 01 04 29 0p 0q 0r 0s FF	pq: X (0 to F), rs: Y (0 to F)
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_LR_Reverse	On	8x 01 04 61 02 FF	Mirror Image ON/OFF
	Off	8x 01 04 61 03 FF	
CAM_Freeze	On	8x 01 04 62 02 FF	Still Image ON/OFF
	Off	8x 01 04 62 03 FF	
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	On	8x 01 04 01 02 FF	Infrared Mode ON/OFF
	Off	8x 01 04 01 03 FF	
CAM_AutoICR	On	8x 01 04 51 02 FF	Auto Infrared Mode ON/OFF
	Off	8x 01 04 51 03 FF	
CAM_Memory	Reset	8x 01 04 3F 00 0p FF	p: Memory Number (=0 to 5) Corresponds to 1 to 6 on the Remote Commander.
	Set	8x 01 04 3F 01 0p FF	
	Recall	8x 01 04 3F 02 0p FF	
CAM_Display	On	8x 01 04 15 02 FF (8x 01 06 06 02 FF)	Display ON/OFF
	Off	8x 01 04 15 03 FF (8x 01 06 06 03 FF)	
	On/Off	8x 01 04 15 10 FF (8x 01 06 06 10 FF)	
CAM_Title	Title Set1	8x 01 04 73 00 mm nn pp qq 00 00 00 00 00 FF	mm: Vposition, nn: Hposition pp: Color, qq: Blink
	Title Set2	8x 01 04 73 01 mm nn pp qq rr ss tt uu vv ww FF	mnpqrstuvw: Setting of Display Characters (1st to 10th Character)
	Title Set3	8x 01 04 73 02 mm nn pp qq rr ss tt uu vv ww FF	mnpqrstuvw: Setting of Display Characters (11th to 20th Character)
	Title Clear	8x 01 04 74 00 FF	Title Setting Clear
	On	8x 01 04 74 02 FF	Title Display ON/OFF
	Off	8x 01 04 74 03 FF	
CAM_Mute	On	8x 01 04 75 02 FF	Mute ON/OFF
	Off	8x 01 04 75 03 FF	
	On/Off	8x 01 04 75 10 FF	

EVI-D70/P Command List (4/4)

Command Set	Command	Command Packet	Comments
CAM_KeyLock	Off	8x 01 04 17 00 FF	Camera Control Enable/Disable
	On	8x 01 04 17 02 FF	
CAM_IDWrite		8x 01 04 22 0p 0q 0r 0s FF	pqrs: Camera ID (=0000 to FFFF)
CAM_Alarm	On	8x 01 04 6B 02 FF	Alarm ON/OFF
	Off	8x 01 04 6B 03 FF	
	SetMode	8x 01 04 6C pp FF	PP: Mode Settings 00 Focus Move Detection (The rest position is fixed.) 01 Focus Move Detection (The rest position is reset.) 02 AE Move Detection (The rest value is fixed.) 01 AE Move Detection (The rest value is reset.)
	SetDayNightLevel	8x 01 04 6D 0p 0p 0p 0q 0q FF	ppp: Day distinction AE level qqq: Night distinction AE level.
	Alarm (Reply)	y0 07 04 6B 01 FF	Detect Level "Low" → "High"
		y0 07 04 6B 00 FF	Detect Level "High" → "Low"
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 ON/OFF
	Off	8x 01 7D 01 13 00 00 FF	
Pan-tiltDrive	Up	8x 01 06 01 VV WW 03 01 FF	VV: Pan speed 01 to 18
	Down	8x 01 06 01 VV WW 03 02 FF	WW: Tilt Speed 01 to 17
	Left	8x 01 06 01 VV WW 01 03 FF	YYYY: Pan Position F725 to 08DB (center 0000)
	Right	8x 01 06 01 VV WW 02 03 FF	ZZZZ: Tilt Position FE70 to 04B0 (Image Flip: OFF)
	UpLeft	8x 01 06 01 VV WW 01 01 FF	(center 0000)
	UpRight	8x 01 06 01 VV WW 02 01 FF	Tilt Position FB50 to 0190 (Image Flip: ON) (center 0000)
	DownLeft	8x 01 06 01 VV WW 01 02 FF	See page 51.
	DownRight	8x 01 06 01 VV WW 02 02 FF	
	Stop	8x 01 06 01 VV WW 03 03 FF	
	AbsolutePosition	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	RelativePosition	8x 01 06 03 VV WW 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 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	W: 1 UpRight YYYY: Pan Limit Position 0001~08DB
	LimitClear	8x 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF	ZZZZ: Tilt Limit Position 0001~04B0 (Image Flip: OFF) Tilt Limit Position 0001~0190 (Image Flip: ON) W: 0 DownLeft YYYY: Pan Limit Position F725~FFFF ZZZZ: Tilt Limit Position FE70~FFFF (Image Flip: OFF) Tilt Limit Position FB50~FFFF (Image Flip: ON)

EVI-D70/P 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_AutoPowerOffInq	8x 09 04 40 FF	y0 50 0p 0q 0r 0s FF	pqrs: PowerOff Timer
CAM_NightPowerOff Inq	8x 09 04 41 FF	y0 50 0p 0q 0r 0s FF	pqrs: NightPowerOff Timer
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_DZoomC/SModeInq	8x 09 04 36 FF	y0 50 00 FF	Combine Mode
		y0 50 01 FF	Separate Mode
CAM_DZoomPosInq	8x 09 04 46 FF	y0 50 00 00 0p 0q FF	pq: D-Zoom Position
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_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 04 FF	ATW
		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_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_SpotAEModeInq	8x 09 04 59 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_SpotAEPosInq	8x 09 04 29 FF	y0 50 0p 0q 0r 0s FF	pq: X position, rs: Y position
CAM_ApertureInq	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	pq: Aperture Gain

EVI-D70/P Inquiry Command List (2/2)

Inquiry Command	Command Packet	Inquiry Packet	Comments
CAM_LR_ReverseModeInq	8x 09 04 61 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_FreezeModeInq	8x 09 04 62 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
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	8x 09 04 01 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_AutoICRModeInq	8x 09 04 51 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_MemoryInq	8x 09 04 3F FF	y0 50 pp FF	pp: Last Recall Memory No.
CAM_DisplayModeInq	8x 09 04 15 FF (8x 09 06 06 FF)	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_TitleDisplayModeInq	8x 09 04 74 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_MuteModeInq	8x 09 04 75 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_KeyLockInq	8x 09 04 17 FF	y0 50 00 FF	Off
		y0 50 02 FF	On
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 mn pq rs tu vw FF	mnpq: Model Code (04xx) rstu: ROM version vw: Socket Number (=02) See page 34.
CAM_AlarmInq	8x 09 04 6B FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_AlarmModeInq	8x 09 04 6C FF	y0 50 pp FF	pp: Alarm Mode
CAM_AlarmDayNightLevelInq	8x 09 04 6D FF	y0 50 0p 0p 0p 0q 0q 0q 0r 0r 0r FF	ppp: Day setting AE Level qqq: Night setting AE Level rrr: Now AE Level
CAM_PictureFlipModeInq	8x 09 04 66 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_AlarmDetectLevelInq	8x 09 04 6E FF	y0 50 01 FF	Detect Level "High"
		y0 50 00 FF	Detect Level "Low"
Pan-tiltModeInq	8x 09 06 10 FF	y0 50 pq rs FF	pqrs: Pan/Tilter Status See page 51.
Pan-tiltMaxSpeedInq	8x 09 06 11 FF	y0 50 ww zz FF	ww = Pan Max Speed zz = Tilt Max Speed
Pan-tiltPosInq	8x 09 06 12 FF	y0 50 0w 0w 0w 0w 0z 0z 0z 0z FF	wwww = Pan Position zzzz = Tilt Position See page 51.
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

EVI-D70/P Block Inquiry Command List

Lens control system inquiry commands Command Packet 8x 09 7E 7E 00 FF

Byte	Bit	Comments	Byte	Bit	Comments	Byte	Bit	Comments		
0	7	Destination Address	6	7	0	12	7	0		
	6			0	6		0			
	5			0	5		0			
	4			0	4		0			
	3	Source Address		3	Focus Near Limit (H)		3	0		
	2			2			0			
	1			1			0			
	0			0			0			
1	7	0 Completion Message (50h)	7	7	0		13	7	0	
	6	1		6	0			6	0	
	5	0		5	0			5	DZoomMode 1: Separate 0: Combine	
	4	1		4	0			4	0: Normal 0: Interval 1: Zoom 3 0: 1: 0: Trigger	
	3	0		3	Focus Near Limit (L)	2		AF Sensitivity 1: Normal 0: Slow		
	2	0		2		0		1	Digital Zoom 1:On 0:Off	
	1	0		1		0		0	Focus Mode 1:Auto 0:Manual	
	0	0		0		0		7	0	
2	7	0	8	7	0	14		6	0	
	6	0		6	0			5	0	
	5	0		5	0			4	0	
	4	0		4	Focus Position (HH)			3	Low Contrast Detection 1: Yes 0: No	
	3	Zoom Position (HH)		2			2	2		Camera Memory Recall 1: Executing 0: Stopped
	2			1			1	1		Focus Command 1: Executing 0: Stopped
	1			0			0	0		Zoom Command 1: Executing 0: Stopped
	0			0	0		0	7	1 Terminator (FFh)	
3	7	0	9	7	0		15	6	1	
	6	0		6	0			5	1	
	5	0		5	0			4	1	
	4	0		4	0			3	1	
	3	Zoom Position (HL)		3	Focus Position (HL)	2		1		
	2			2		2		1		
	1			1		1		1		
	0			0		0		0		
4	7	0	10	7	0	11		7	0	
	6	0		6	0			6	0	
	5	0		5	0			5	0	
	4	0		4	0			4	0	
	3	Zoom Position (LH)		3	Focus Position (LH)		3	Zoom Position (LL)		
	2			2			2		2	
	1			1			1		1	
	0			0			0		0	
5	7	0	11	7	0		11	7	0	
	6	0		6	0			6	0	
	5	0		5	0			5	0	
	4	0		4	0			4	0	
	3	Zoom Position (LL)		3	Focus Position (LL)	3		Zoom Position (LL)		
	2			2		2			2	
	1			1		1			1	
	0			0		0			0	

Camera control system inquiry commands .. Command Packet 8x 09 7E 7E 01 FF

Byte	Bit	Comments	Byte	Bit	Comments	Byte	Bit	Comments		
0	7	Destination Address	6	7	0	12	7	0		
	6			0	6		0			
	5			0	5		0			
	4			0	4		0			
	3	Source Address		3	0		3	Gain Position		
	2			WB Mode	2		Aperture Gain		2	Bright Position
	1				1				1	
	0				0				0	
7	0 Completion Message (50h)	7	0		7			0		
1	6	1	7	6	0		13	6	0	
	5	0		5	0			5	0	
	4	1		4	0			4	Bright Position	
	3	0		3	Exposure Mode	3		Exposure Comp. Position		
	2	0		2		2				
	1	0		1		1				
	0	0		0		0				
	2	7		0	8	7		0	14	7
6		0	6	0		6		0		
5		0	5	0		5		0		
4		0	4	Exposure Mode		4		0		
3		R Gain (H)	3			Spot AE 1: On 0: Off		3		Exposure Comp. Position
2			2				2			
1			1				1			
0			0	0						
3	7	0	9	7	0	15	7	1 Terminator (FFh)		
	6	0		6	0		6	1		
	5	0		5	0		5	1		
	4	0		4	0		4	1		
	3	R Gain (L)		3	Back Light 1:On 0:Off		3	1		
	2			2	Exposure Comp. 1:On 0:Off		2	1		
	1			1	Slow Shutter 1:Auto 0:Manual		1	1		
	0			0	0		1			
4	7	0	10	7	0		11	7	0	
	6	0		6	0			6	0	
	5	0		5	0			5	0	
	4	0		4	Shutter Position			4	Iris Position	
	3	B Gain (H)		3		Iris Position		3		Iris Position
	2			2				2		
	1			1				1		
	0			0	0					
5	7	0	11	7	0	11		7	0	
	6	0		6	0			6	0	
	5	0		5	0			5	0	
	4	0		4	Iris Position			4	Iris Position	
	3	B Gain (L)		3			Iris Position	3		Iris Position
	2			2				2		
	1			1				1		
	0			0	0					

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	0
	5	0
	4	ICR 1: On 0: Off
	3	Freeze 1:On 0:Off
	2	LR Reverse 1:On 0:Off
	1	0
	0	0
4	7	0
	6	0
	5	0
	4	Mute 1: On 0: Off
	3	Title Display 1: On 0: Off
	2	Display 1: On 0: Off
	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	0
	4	1
	3	0
	2	1
	1	0
	0	System 1:PAL 0:NTSC
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

Enlargement Function 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	Digital Zoom Position (H)
	2	
	1	
	0	
3	7	0
	6	0
	5	0
	4	0
	3	Digital Zoom Position (L)
	2	
	1	
	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	SpotAE Position (X)
	2	
	1	
	0	
9	7	0
	6	0
	5	0
	4	0
	3	SpotAE Position (Y)
	2	
	1	
	0	
10	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	Alarm (1: On, 0: Off)
	0	Image flip (1: On, 0: Off)
11	7	0
	6	0
	5	0
	4	0
	3	0
	2	0
	1	1
	0	1

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

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
	00	-3 dB

Exposure Control (2/2)

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

Zoom Ratio and Zoom Position
(for reference)

Zoom Ratio ×18 Lens	Optical Zoom 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

When using Combine Mode
(CAM_ZoomPos Inq)

Digital Zoom Ratio	Digital Zoom Position Data
×1	4000
×2	6000
×3	6A80
×4	7000
×5	7340
×6	7540
×7	76C0
×8	7800
×9	7900
×10	7980
×11	7A40
×12	7AC0

When using Digital Zoom Separate Mode (CAM_DZoomPos Inq)

Magnification	Position Data
×1	00
×2	80
×3	AA
×4	C0
×5	CC
×6	D5
×7	DB
×8	E0
×9	E3
×10	E6
×11	E8
×12	EB

Lens Control

Zoom Position	0000 to 4000 to 7AC0 Wide end Optical Tele end Digital Tele end													
Focus Position	1000 to C000 Far end Near end													
Focus Near Limit	<table border="0"> <tr> <td>1000: Over Inf</td> <td rowspan="13">As the distance on the left will differ due to temperature characteristics, etc., use as approximate values. * The lower 1 byte is fixed at 00.</td> </tr> <tr><td>2000: 8.0 m</td></tr> <tr><td>3000: 3.5 m</td></tr> <tr><td>4000: 2.0 m</td></tr> <tr><td>5000: 1.4 m</td></tr> <tr><td>6000: 1 m</td></tr> <tr><td>7000: 80 cm</td></tr> <tr><td>8000: 29 cm</td></tr> <tr><td>9000: 10 cm</td></tr> <tr><td>A000: 4.7 cm</td></tr> <tr><td>B000: 2.3 cm</td></tr> <tr><td>C000: 1.0 cm</td></tr> </table>	1000: Over Inf	As the distance on the left will differ due to temperature characteristics, etc., use as approximate values. * The lower 1 byte is fixed at 00.	2000: 8.0 m	3000: 3.5 m	4000: 2.0 m	5000: 1.4 m	6000: 1 m	7000: 80 cm	8000: 29 cm	9000: 10 cm	A000: 4.7 cm	B000: 2.3 cm	C000: 1.0 cm
1000: Over Inf	As the distance on the left will differ due to temperature characteristics, etc., use as approximate values. * The lower 1 byte is fixed at 00.													
2000: 8.0 m														
3000: 3.5 m														
4000: 2.0 m														
5000: 1.4 m														
6000: 1 m														
7000: 80 cm														
8000: 29 cm														
9000: 10 cm														
A000: 4.7 cm														
B000: 2.3 cm														
C000: 1.0 cm														

Pan/Tilt Position (Reference values)

		Pan Position Data	Tilt Position Data (Image Flip: OFF)	Tilt Position Data (Image Flip: ON)
Angle	+170°	08DB	-	-
	+150°	07DB	-	-
	+90°	04B0	04B0	-
	+30°	0190	0190	0190
	+10°	0085	0085	0085
	+0.075°	0001	0001	0001
	0°	0000	0000	0000
	-0.075°	FFFF	FFFF	FFFF
	-10°	FF7B	FF7B	FF7B
	-30°	FE70	FE70	FE70
	-90°	FB50	-	FB50
	-150°	F830	-	-
	-170°	F725	-	-

A + indicates a pan to the right and a tilt upward on the monitor screen.
A - indicates a pan to the left and a tilt downward on the monitor screen.

Others

R,B gain	00~FF
Aperture	00~0F

Title Setting

Vposition	00 to 0A	
Hposition	00 to 17	
Blink	00: Does not blink	
	01: Blinks	
Color	00	White
	01	Yellow
	02	Violet
	03	Red
	04	Cyan
	05	Green
	06	Blue

Pan/Tilt Status Code List

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

(- : optional)

D30/D31 Mode

Overview

The D30/D31 mode allows you to control the EVI-D70/P using VISCA commands for the EVI-D30/D31. Most of the VISCA commands for the EVI-D70/P correspond to one for the EVI-D30/D31. However, some of the VISCA commands for the EVI-D70/P are different from those for the EVI-D30/D31 in definitions of parameters.

When you send those commands to an EVI-D70/P whose D30/D31 mode is set to ON, the camera translates the parameters for the EVI-D30/D31 to those for the EVI-D70/P and executes the command. The following parameters are subject to translation.

- Zoom speed
- Zoom position
- Focus position
- Shutter speed
- Pan-tilt speed
- Pan-tilt position
- Iris
- Gain

Notes

- Even if you set the D30/D31 mode to ON, the EVI-D70/P may not emulate the EVI-D30/D31 perfectly. This is caused by differences in hardware between the two models.
- The functions that are provided with the EVI-D30/D31 but not with the EVI-D70/P cannot be executed.

Switching the Mode

You can switch the D30/D31 mode ON or OFF by switching the BOTTOM switch at the bottom of the EVI-D70/P. To change the D30/D31 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 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		D30/D31 mode on	D30/D31 mode off
Common to both the D30/D31 and D70/P	Common parameters	Accepts as is	
	Different parameters	Translates the D30/D31's parameters to those of the D70/P	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 D70/P		Refuses and sends back the NotExecutable message	Accepts as is
Only for the D30/D31		Refuses and sends back the NotExecutable message	Refuses and sends back the SyntaxError message

When accepting inquiry commands

Type of command		D30/D31 mode on	D30/D31 mode off
Common to both the D30/D31 and D70/P	Common parameters	Sends back parameters common to both the D30/D31 and D70/P	
	Different parameters	Sends back the D30/D31's parameters translated from those of the D70/P	Sends back the D70/P's parameters
Only for the D70/P		Refuses and sends back the NotExecutable message	Sends back the D70/P's parameters
Only for the D30/D31		Refuses and sends back the NotExecutable message	Refuses and sends back the SyntaxError message

Translating Parameters

Zoom speed

Cameras	Parameters
EVI-D30/D31	02h (Min. speed) to 07h (Max. speed)
EVI-D70/P	00h (Min. speed) to 07h (Max. speed)

Translation of commands

Accepted parameters	Translation
00h, 01h	Translates to 02h
Values greater than 02h	Accepts as is

Zoom position

Cameras	Parameters
EVI-D30/D31	0000h (WIDE) to 03FFh (TELE)
EVI-D70/P	0000h (WIDE) to 7AC0h (TELE, digital 12x)

Translation of commands

Accepted parameters	Translation
0000h to 03FFh	Translates within a range of 08D0h to 5700h

The EVI-D70/P translates the parameters to let the camera obtain the same zoom position that is defined by the D30/D31's parameter.

(The values given below are calculated values.)



The D70/P parameters that correspond to the Wide and the Tele end of the D30/D31 are approximately 0000h and 3B4Bh. However, at the Wide end, the horizontal viewing angles are 48.8° for the D30/D31, and 48.0° for the D70/P.

Received parameters (0000h ~ 03FFh) will be converted within a range of 0000h to 3B4Bh. For D30/D31 mode, the setting will normally be Digital Zoom OFF

However, for CAM Zoom Tele/Wide commands and operations from the remote control, movement within the over all limits of the D70/P Zoom (0000h ~ 7AC0/77C0h) is possible.

Translation when answering inquiry commands

Parameters	Translation
0000h to 4000h	Translates within a range of 0000h to 03FFh

The D70/P's parameters are translated to those of the D30/D31.

However, even if the zoom position value is less than 08D0h (closer to the wide side), the camera sends back 0000h to the controller. On the other hand, even if that value is greater than 3B4Bh (closer to the telephoto side), the camera sends back 03FFh.

Focus position

Cameras	Parameters
EVI-D30/D31	1000h (FAR) to 9FFFh (NEAR, 1 cm)
EVI-D70/P	1000h (FAR) to C000h (NEAR, 10 cm)

Translation of commands

Accepted parameters	Translation
Values less than 8400h	Accepts as is
Values greater than 8400h	Translates to 8400h

Because the range of the D70/P is narrower than that of the D30/D31, emulation is not carried out to match the actual focus position (focal point) to that of the D30/D31.

The EVI-D70/P operational range of (1000h (FAR) ~ C000h (NEAR, 1cm)) is emulated within the operational range of the EVI-D30/D31 (1000h (FAR) ~ 9FFFh (NEAR, 1cm)).

(Reference: $Y = \{(0xC000 - 0x1000)/(0x9FFF - 0x1000)\} * (X - 0x1000) + 0x1000$)

Translation when answering inquiry commands

Parameters	Translation
1000h to 8400h	Sends back parameters as is

The D70/P returns D70/P parameters as-is. Reverse conversion is emulated as above.

(Reference: $X = \{(0x9FFF - 0x1000)/(0xC000 - 0x1000)\} * (Y - 0x1000) + 0x1000$)

Shutter speed

Translation of commands

The EVI-D70/P translates the D30/D31's parameters to D70/P parameters in accordance with the table below.

NTSC

EVI-D30			EVI-D70	
Parameters	Shutter speed		Parameters	Shutter speed
0000h	(1/60)	➔	0006h	(1/60)
0001h	(1/60)	➔	0006h	(1/60)
0002h	(1/75)	➔	0006h	(1/60)
0003h	(1/90)	➔	0007h	(1/90)
0004h	(1/100)	➔	0008h	(1/100)
0005h	(1/125)	➔	0009h	(1/125)
0006h	(1/150)	➔	0009h	(1/125)
0007h	(1/180)	➔	000Ah	(1/180)
0008h	(1/215)	➔	000Ah	(1/180)
0009h	(1/250)	➔	000Bh	(1/250)
000Ah	(1/300)	➔	000Bh	(1/250)
000Bh	(1/350)	➔	000Ch	(1/350)
000Ch	(1/425)	➔	000Ch	(1/350)
000Dh	(1/500)	➔	000Dh	(1/500)
000Eh	(1/600)	➔	000Dh	(1/500)
000Fh	(1/725)	➔	000Eh	(1/725)
0010h	(1/850)	➔	000Eh	(1/725)
0011h	(1/1000)	➔	000Fh	(1/1000)
0012h	(1/1250)	➔	000Fh	(1/1000)
0013h	(1/1500)	➔	0010h	(1/1500)
0014h	(1/1750)	➔	0010h	(1/1500)
0015h	(1/2000)	➔	0011h	(1/2000)
0016h	(1/2500)	➔	0011h	(1/2000)
0017h	(1/3000)	➔	0012h	(1/3000)
0018h	(1/3500)	➔	0012h	(1/3000)
0019h	(1/4000)	➔	0013h	(1/4000)
001Ah	(1/6000)	➔	0014h	(1/6000)
001Bh	(1/10000)	➔	0015h	(1/10000)

PAL

EVI-D31			EVI-D70P	
Parameters	Shutter speed		Parameters	Shutter speed
0000h	(1/50)	➔	0006h	(1/50)
0001h	(1/60)	➔	0006h	(1/50)
0002h	(1/75)	➔	0007h	(1/75)
0003h	(1/90)	➔	0008h	(1/100)
0004h	(1/100)	➔	0008h	(1/100)
0005h	(1/120)	➔	0009h	(1/120)
0006h	(1/150)	➔	000Ah	(1/150)
0007h	(1/180)	➔	000Ah	(1/150)
0008h	(1/215)	➔	000Bh	(1/215)
0009h	(1/250)	➔	000Bh	(1/215)
000Ah	(1/300)	➔	000Ch	(1/300)
000Bh	(1/350)	➔	000Ch	(1/300)
000Ch	(1/425)	➔	000Dh	(1/425)
000Dh	(1/500)	➔	000Dh	(1/425)
000Eh	(1/600)	➔	000Eh	(1/600)
000Fh	(1/725)	➔	000Eh	(1/600)
0010h	(1/850)	➔	000Fh	(1/1000)
0011h	(1/1000)	➔	000Fh	(1/1000)
0012h	(1/1250)	➔	0010h	(1/1250)
0013h	(1/1500)	➔	0010h	(1/1250)
0014h	(1/1750)	➔	0011h	(1/1750)
0015h	(1/2000)	➔	0011h	(1/1750)
0016h	(1/2500)	➔	0012h	(1/2500)
0017h	(1/3000)	➔	0012h	(1/2500)
0018h	(1/3500)	➔	0013h	(1/3500)
0019h	(1/4000)	➔	0013h	(1/3500)
001Ah	(1/6000)	➔	0014h	(1/6000)
001Bh	(1/10000)	➔	0015h	(1/10000)

Translation when answering inquiry commands

The EVI-D70/P translates its parameters to the D30/D31's parameters and sends them back. However, during the period from the instant the camera accepts the CAM_Shutter Direct command to the instant the camera accepts another CAM_Shutter or CAM_AE command, it sends back the current D30/D31 parameters.

Gain conversion

- Parameter conversion when a command is received
D30/D31 parameters are converted to D70/P parameters according to the table below.

EVI-D30/D31			EVI-D70/P	
Parameters	Gain (dB)		Parameters	Gain (dB)
0000h	-3	➔	0000h	-3
0001h	0	➔	0001h	0
0002h	3	➔	0003h	4
0003h	6	➔	0004h	6
0004h	9	➔	0006h	10
0005h	12	➔	0007h	12
0006h	15	➔	0009h	16
0007h	18	➔	000Ah	18

- Parameter conversion when query commands are received
D70/P parameters are converted to D30/D31 parameters and sent back.

Iris conversion

- Parameter conversion when a command is received
D30/D31 parameters are converted to D70/P parameters according to the table below.

EVI-D30/D31			EVI-D70/P	
Parameters	Iris		Parameters	Iris
0000h	CLOSE	➔	0000h	CLOSE
0001h	F28	➔	0001h	F22
0002h	F22	➔	0001h	F22
0003h	F19	➔	0002h	F19
0004h	F16	➔	0003h	F16
0005h	F14	➔	0004h	F14
0006h	F11	➔	0005h	F11
0007h	F9.6	➔	0006h	F9.6
0008h	F8	➔	0007h	F8
0009h	F6.8	➔	0008h	F6.8
000Ah	F5.6	➔	0009h	F5.6
000Bh	F4.8	➔	000Ah	F4.8
000Ch	F4	➔	000Bh	F4
000Dh	F3.4	➔	000Ch	F3.4
000Eh	F2.8	➔	000Dh	F2.8
000Fh	F2.4	➔	000Eh	F2.4
0010h	F2	➔	000Fh	F2
0011h	F1.8	➔	0010h	F1.6

- Parameter conversion when query commands are received
D70/P parameters are converted to D30/D31 parameters and sent back.

Pan/tilt speed

The actual speed that is defined by the parameters corresponds to that of the EVI-D30/D31.

When the camera receives commands such as Pan-tiltDrive 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 D30/D31 mode is set to OFF.

Pan

Parameters	Speed (deg/sec)		
	D70/P		D30/D31
01h	1.7	➔	3.3
02h	4.3	➔	6.7
03h	7.4	➔	10
04h	9.8	➔	13.3
05h	13.2	➔	16.7
06h	18.0	➔	20
07h	21.8	➔	23.3
08h	25.0	➔	26.7
09h	28.8	➔	30
0Ah	31.5	➔	33.3
0Bh	34.5	➔	36.7
0Ch	39.3	➔	40
0Dh	47.0	➔	43.3
0Eh	49.0	➔	46.7
0Fh	54.1	➔	50
10h	56.6	➔	53.3
11h	61.8	➔	56.7
12h	64.7	➔	60
13h	69.3	➔	63.3
14h	72.2	➔	66.7
15h	79.5	➔	70
16h	84.0	➔	73.3
17h	90.9	➔	76.7
18h	100.0	➔	80

Tilt

Parameters	Speed (deg/sec)		
	D70/P		D30/D31
01h	1.7	➔	2.5
02h	4.3	➔	5
03h	7.4	➔	7.5
04h	9.8	➔	10
05h	13.2	➔	12.5
06h	18.0	➔	15
07h	21.8	➔	17.5
08h	25.0	➔	20
09h	28.8	➔	22.5
0Ah	31.5	➔	25
0Bh	34.5	➔	27.5
0Ch	39.3	➔	30
0Dh	47.0	➔	32.5
0Eh	49.0	➔	35
0Fh	54.1	➔	37.5
10h	56.6	➔	40
11h	61.8	➔	42.5
12h	64.7	➔	45
13h	69.3	➔	47.5
14h	72.2	➔	50

Pan/tilt position

Pan position

Cameras	Parameters
EVI-D30/D31	FC90h (–100 degrees) to 0370h (+100 degrees)
EVI-D70/P	FACBh (–100 degrees) to 0535h (+100 degrees)

Tilt position

Cameras	Parameters
EVI-D30/D31	FED4h (–25 degrees) to 012Ch (+25 degrees)
EVI-D70/P	FEB3h (–25 degrees) to 014Dh (+25 degrees)

Translation of commands

Accepting parameters	Translation
Pan position	Multiplies received parameters by 50/33
Tilt position	Multiplies received parameters by 50/45

D30		D70	
Pan/Tilt		Pan	Tilt
FC90h	➔	FACBh	–
...		...	–
FED4h	➔	FE3Ah	FEB3h
...	
FFFDh	➔	FFFCCh	FFFDh
FFFEh	➔	FFFDh	FFFEh
FFFFh	➔	FFFFh	FFFFh
0000h	➔	0000h	0000h
0001h	➔	0001h	0001h
0002h	➔	0003h	0002h
0003h	➔	0004h	0003h
0004h	➔	0006h	0004h
0005h	➔	0007h	0005h
0006h	➔	0009h	0006h
0007h	➔	000Ah	0007h
0008h	➔	000Ch	0008h
0009h	➔	000Dh	000Ah
000Ah	➔	000Fh	000Bh
000Bh	➔	0010h	000Ch
...	
012Ch	➔	01C6h	014Dh
...		...	–
0370h	➔	0535h	–

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 88 times, one step after another to turn the camera to the right side:

Cameras	Results
EVI-D30/D31	Turns to the right side by 10 degrees.
EVI-D70/P whose D30/D31 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-D30/D31.

Pan direction: –100 degrees to + 100 degrees.

Tilt direction: –25 degrees to + 25 degrees.

Specifications

System

Video signal	EVI-D70: NTSC Color, JEITA standards EVI-D70P: PAL Color, CCIR standards
Picture element	1/4 inch color CCD (Total picture elements: EVI-D70: Approx. 410,000 EVI-D70P: Approx. 470,000) (Effective picture elements: EVI-D70: Approx. 380,000 EVI-D70P: Approx. 440,000)
Lens	18× (Optical), 12× (Digital) f=4.1 to 73.8 mm, F1.4 to F3.0 Horizontal angle: 2.7 degrees to 48.0 degrees
Minimum object distance	(WIDE end, extreme close-up settings with VISCA control) : 10 mm (¹³ / ₃₂ inch)
Minimum illumination	1 lx (F1.4)/with 50 IRE
Shutter speed	EVI-D70: 1/1 to 1/10,000 s (VISCA control) EVI-D70P: 1/1 to 1/10,000 s (VISCA control)
Horizontal resolution	NTSC : 470 TV (WIDE end) PAL : 460 TV (WIDE end)
Video S/N	50 dB
Pan/tilt action	Horizontal: ±170 degrees Maximum speed: 100 degrees/s*, Vertical: +90 degrees, -30° degrees Maximum speed: 90 degrees/s* (0.075 degree increments)

Input/output terminals

Video output	RCA phone jack (1), 1Vpp, 75 ohm unbalanced Synchronization: negative
S video output	4 pin mini DIN (1)

Input/output control terminals

	VISCA RS-232C: 8 pin mini DIN (input: 1, output: 1) VISCA RS-422: 9 pin
Control signal format	9600 bps/38400 bps Data: 8 bit Stop bit: 1
Power terminal	JEITA type4

General

Input voltage	DC 12 V (DC 10.8 to 13 V)
Current consumption	1.0 A (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: 132 × 144 × 144 mm (5 ¹ / ₅ × 5 ² / ₃ × 5 ² / ₃ in.) (w/h/d) Remote Commander: 56 × 26 × 210 mm (2 ¹ / ₄ × 1 ¹ / ₁₆ × 8 ³ / ₈ in.) (w/h/d) (excluding protruding parts)
Mass	Video camera: 950 g (2 lb 2 oz.) Remote Commander: 190 g (3.8 oz.)
Installation angle	±15 degrees to a horizontal surface

Supplied accessories

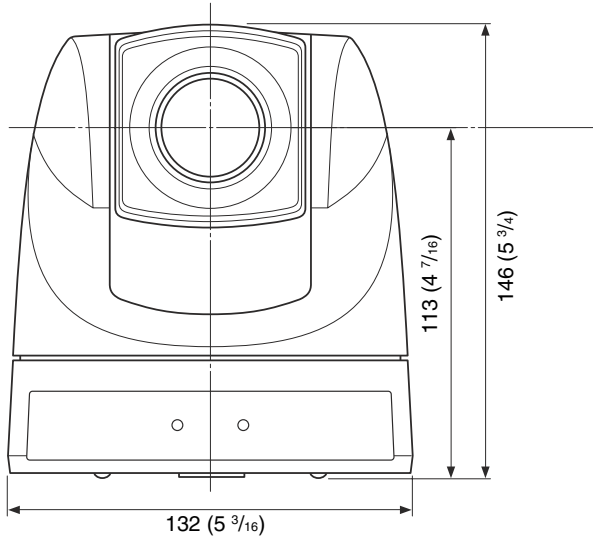
AC power adaptor (1)
AC Power cord (1)
Remote Commander (1)
Ceiling bracket (A) (1)
Ceiling bracket (B) (1)
Wire rope (1)
Screw ⊕M3 × 6 (6)
Operating Instructions (1)

Design and specifications are subject to change without notice.

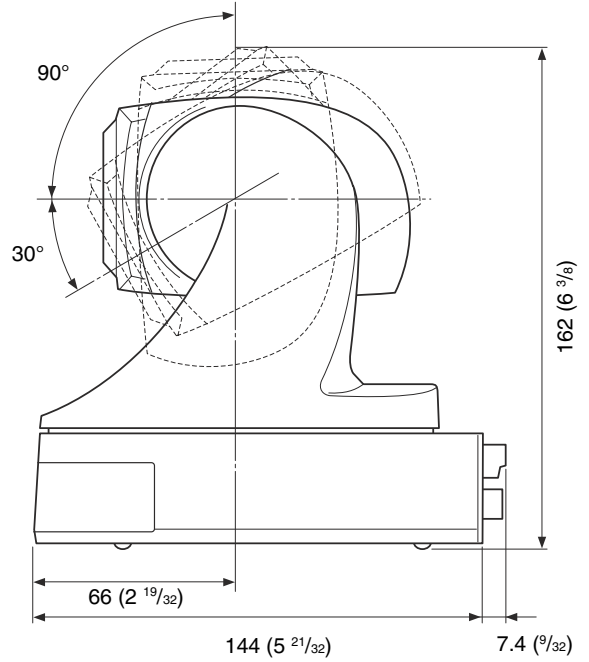
* Maximum speed settings with VISCA control.

Dimensions

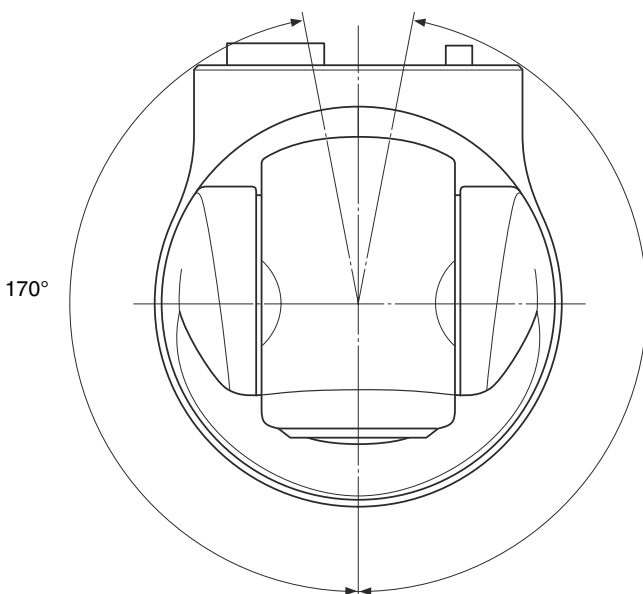
Front



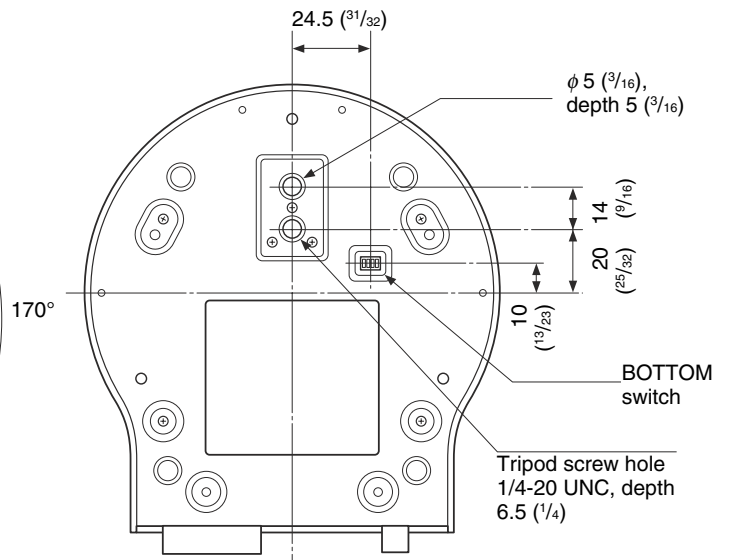
Right side



Top



Bottom



Unit: mm (inches)

Precautions

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.

Operation

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

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

Care of the unit

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

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.