CONTROL COMMAND FOR VK-S454 SERIES

[REV. 1.8]

This manual applies following models:

<NTSC> VK-S454

<PAL> VK-S454E

CONTENTS

[Note] is difference of data between VK-S234 series and VK-S454 series.

PART
ONE

- EXTERNAL CONTROL

1. Communication protocol

Communication between the microcomputer of the camera and the PC is available by using the RS-232C protocol. The microcomputer receives each control command given by the PC and echoes it back to the PC.

2. Connect condition

Data length	8 bit
Stop bit	1 bit
Parity	even
Baudrate	4800 bps

3. Communication data format

All communication data consist of eight or ten ASCII characters (8 bytes or 10 bytes).
The format of the communication data is shown in Fig. 1.

a) Normal command

Communication data start with the character ":"(colon).

b) Special command

Communication data start with the character "/"(slash).

(a) 8 bytes format [Normal command]

1st byte 8th byte

:	CM	A3	A2	A1	A0	D1	D0

CM Command as follows
R :Read 1 byte data of micro-Com. RAM or EEPROM
W :Write 1 byte data of micro-Com. RAM or EEPROM

A3-A0 Address data of micro-Com. RAM or EEPROM (write in hex. 0000-FFFF)
D1-D0 Data of micro-Com. RAM or EEPROM (write in hex. 00-FF)

(b) 10 bytes format [Normal command]

1st byte 10th byte

:	CM	A3	A2	A1	A0	D3	D2	D1	D0

CM Command as follows
r :Read 2 bytes data of micro-Com. RAM or EEPROM
w :Write 2 bytes data of micro-Com. RAM or EEPROM

A3-A0 Address data of micro-Com. RAM or EEPROM (write in hex. 0000-FFFF)
D3-D0 Data of micro-Com. RAM or EEPROM (write in hex. 0000-FFFF)

(c) 8 bytes format [Special command]

1st byte 8th byte

/	CM	D5	D4	D3	D2	D1	D0

CM Command as follows
M : <Privacy mask> DEGREE WRITE command

D5-D0 Data of micro-Com. RAM or EEPROM (write in hex. 000000-FFFFFF)

Fig. 1 Communication data format

4. Control commands

a) Switch the auto focus / manual focus

:RFF0E00
:WFF0EX_1X_0
bit 3 of X_1X_0 : 0-Auto 1-Manual
or
:WFCBBA8 ;Change
:WFCBBFE ;Neutral

b) Move focus to FAR in manual focus mode

:WFCBBA9 ;Start
:WFCBBFE ;Stop

c) Move focus to NEAR in manual focus mode

:WFCBBAA ;Start
:WFCBBFE ;Stop

d) Move zoom to TELE

:WFCBB99 ;Start
:WFCBBFE ;Stop

e) Move zoom to WIDE

:WFCBB9B ;Start
:WFCBBFE ;Stop

f) Select the zoom speed of optical zoom

:RFDFC00
:WFDFCX_1X_0

Super HIGH SPEED (2.9 s) * ;
X_1X_0 : Set bit 3 of echo back data to “0”.
Set bit 2 of echo back data to “1”.

HIGH SPEED (4.2 s);
X_1X_0 : Set bit 3 of echo back data to “0”.
Set bit 2 of echo back data to “0”.

NORMAL SPEED (5.8 s);
X_1X_0 : Set bit 3 of echo back data to “1”.
Set bit 2 of echo back data to “0”.

[Note] * mark : for “Zoom Trace Preset Mode” only

g) Get the status of zoom position

:RFC9100

If echo back data is not “FF”, zoom position is calculated by following equation.

zoom position = 23 * 256 / (XX + 1)

XX; echo back data

If echo back data is “FF”, then following commands should be sent.

:rF7200000

Echo back data shows zoom position.
[Please refer to the attached Table.1.]

Table.1 Zoom position data table (reference value)

Zoom position	x1	x2	x3	x4	x5	x6	x7	x8
Echoback data	182A less	2F13 less	3AE2 less	427C Less	47F3 less	4C29 less	4F9B less	528F less
Zoom position	x9	x10	x11	x12	x13	x14	x15	x16
Echoback data	5512 less	5742 less	5948 less	5B18 less	5C9E less	5E0A less	5F3E less	6048 less
Zoom position	x17	x18	x19	x20	x21	x22	x23	
Echoback data	6136 less	61FA less	62A2 less	632E less	639E Less	63D6 less	63D6 more	

h) Switch the continuous digi. zoom ON/OFF

:RFCCB00

:WFCCBX_1X_0

X_1X_0=00 ; OFF X_1X_0=01 ; ON

i) Set the maximum mag. tuning value in continuous digi. zoom ON mode

:WFDF0X_1X_0

X_1X_0 (hex) = {256 - (256 / MM)} (dec)

MM; maximum mag.

[EX. mag.1; MM=1 -> X_1X_0=00

mag.2; MM=2 -> X_1X_0=80

mag.10; MM=10 -> X_1X_0=E7 [max]

j) Switch the instant digi. zoom ON/OFF

:RFF0F00
:WFF0FX_1X_0
bit 7 of X_1X_0 : 0-OFF 1-ON

k) Set the instant mag. tuning value in instant digi. zoom ON mode

:WFDE6X_1X_0
X_1X_0 (hex) = IM * 10(dec)
IM; instant mag.
(more than 1.0 and 0.1 step)
[EX. mag.1; IM=1.0 -> X_1X_0=0A
mag.2; IM=2.0 -> X_1X_0=14 ; max.]

l) Switch the auto / manual shutter speed

Please see the attached Program AE command sheet.

m) Set the shutter speed tuning value in manual shutter mode

Please see the attached Program AE command sheet.

n) Switch the auto / manual exposure

Please see the attached Program AE command sheet.

o) Set the brighter exposure tuning value in manual exposure mode

Please see the attached Program AE command sheet.

p) Set the darker exposure tuning value in manual exposure mode

Please see the attached Program AE command sheet.

q) Switch the auto gain control (AGC) ON/OFF

Please see the attached Program AE command sheet.

r) Set the fixed AGC level tuning value in AGC OFF mode

Please see the attached Program AE command sheet.

s) Switch the auto / manual white balance

:RFBFF00
:WFBFFX_1X_0
bit 3 of X_1X_0 : 0-Auto 1-Manual

t) Set the white balance (R gain) tuning value in manual white balance mode

:wFBBC$X_3X_2X_1X_0$
$X_3X_2X_1X_0$: tuning value
(min. H'0080, max. H'03FF)
data range: H'0080 - H'00FF
H'0180 - H'01FF
H'0280 - H'02FF
H'0380 - H'03FF

u) Set the white balance (B gain) tuning value in manual white balance mode

:wFBBE$X_3X_2X_1X_0$
$X_3X_2X_1X_0$: tuning value
(min. H'0080, max. H'03FF)
data range: H'0080 - H'00FF
H'0180 - H'01FF
H'0280 - H'02FF
H'0380 - H'03FF

v) Switch the Reverse ON/OFF

:RFF3000
:WFF30X_1X_0
X_1X_0=00 ; OFF X_1X_0=01 ; ON

w) Switch the instant fade(black) ON/OFF

:RFA2100
:WFA21X_1X_0
X_1X_0=00 ; OFF X_1X_0=01 ; ON

x) Switch the Image Freeze ON/OFF

:RFF3300
:WFF33X_1X_0
X_1X_0=00 ; OFF X_1X_0=01 ; ON

5. Others

[Note] * mark : It is available after power reset.

Default value in EEPROM area are subject to change without notice.

a) Get the camera type

[EEPROM area]

:RE1EDX_1X_0

:RE1EEX_1**X_0**

X_0 = Version Number

	Type data (X_1X_0 =)					
MODEL	VK-S454	VK-S454E				
TYPE	Hi-BAND	Hi-BAND				
FORMAT	NTSC	PAL				
EEPROM area "E1ED"	**B1**	**B1**				
EEPROM area "E1EE"	**0X_0**	**1X_0**				

b) Set the minimum focus length tuning value in zoom-wide

[EEPROM area]*

:WE139X_1X_0

(X_1X_0=00 ; 1cm (approx.) ; default

X_1X_0=F9 ; 10cm (approx.)

X_1X_0=F8 ; 30cm (approx.)

X_1X_0=F7 ; 1m (approx.) ; max.)

c) Set the auto iris control level tuning value in auto exposure mode

i) Iris offset (average) level (**WDR OFF**)

[RAM area]

:W**FD9E**X_1X_0 (X_1X_0=00 - FF ; 256 step)

[EEPROM area]*

:W**E09E**X_1X_0 (X_1X_0=00 - FF ; 256 step)

	default value (X_1X_0 =)					
MODEL	VK-S454	VK-S454E				
FORMAT	Hi-BAND	Hi-BAND				
MODE	NTSC	PAL				
EEPROM area "**E09E**"	**5B**	**54**				

ii) Iris offset (average) level (WDR ON)

[RAM area]
:W**FD90**X_1X_0 (X_1X_0=00 - FF ; 256 step)

[EEPROM area]*
:W**13CE**X_1X_0 (X_1X_0=00 - FF ; 256 step)

	default value (X_1X_0 =)					
MODEL	VK-S454	VK-S454E				
FORMAT	Hi-BAND	Hi-BAND				
MODE	NTSC	PAL				
EEPROM area "**13CE**"	**70**	**70**				

iii) Iris offset (peak) level (**WDR OFF**)

[RAM area]
:W**FD9F**X_1X_0 (X_1X_0=00 - 7F ; 128 step)

[EEPROM area]*
:W**E09F**X_1X_0 (X_1X_0=00 - 7F ; 128 step)

	default value (X_1X_0 =)					
MODEL	VK-S454	VK-S454E				
FORMAT	Hi-BAND	Hi-BAND				
MODE	NTSC	PAL				
EEPROM area "**E09F**"	**10**	**10**				

iv) Iris offset (peak) level (WDR ON)

[RAM area]
:W**FA26**X_1X_0 (X_1X_0=00 - 7F ; 128 step)

[EEPROM area]*
:W**13CF**X_1X_0 (X_1X_0=00 - 7F ; 128 step)

	default value (X_1X_0 =)					
MODEL	VK-S454	VK-S454E				
FORMAT	Hi-BAND	Hi-BAND				
MODE	NTSC	PAL				
EEPROM area "**13CF**"	**10**	**10**				

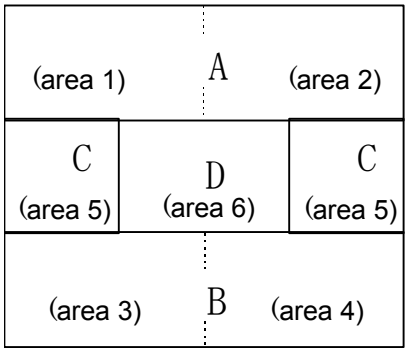
d) Get the luminance data for the 6 screen areas

[RAM area]

area 1	:RFAE0000000	; data length 3Byte
area 2	:RFAE3000000	; data length 3Byte
area 3	:RFAE6000000	; data length 3Byte
area 4	:RFAE9000000	; data length 3Byte
area 5	:RFAEC000000	; data length 3Byte
area 6	:RFAEF000000	; data length 3Byte

[Note] This is the average data per one field.

< screen areas >



< weighting areas >

A= area 1 + area 2
B= area 3 + area 4
C= area 5
D= area 6

< default weighting-ratio >

A:B:C:D = (K_a+1): (K_b+1): (K_c+1): (K_d+1)
= (**4**+1): (**6**+1): (9+1): (F+1)
= (**5**): (**7**): (10): (16)

e) Set the luminance weighting data tuning value

[RAM area]

:wFDA0$X_3X_2X_1X_0$
(X_3=X_2=X_1=X_0=0 - F ; 16 step)
(X_3 : K_a , X_2 : K_b , X_1 : K_c , X_0 : K_d)

[EEPROM area]*

:wE0A0$X_3X_2X_1X_0$
(X_3=X_2=X_1=X_0=0 - F ; 16 step)
(X_3 : K_a , X_2 : K_b , X_1 : K_c , X_0 : K_d)
[$X_3X_2X_1X_0$=**46**9F ; default]

f) Switch the back light compensation (BLC) ON/OFF **(WDR OFF ONLY)**

[RAM area]
:RFECE0
:WFECEX_1X_0
X_1X_0=00 ; OFF X_1X_0=02 ; ON

[note] BLC ON is WDR OFF mode only.

g) Set the BLC level tuning value in BLC ON mode **(WDR OFF ONLY)**

[RAM area]
:WFD8EX_1X_0 (X_1X_0=00 - FF ; 256 step)

[EEPROM area]*
:WE08EX_1X_0 (X_1X_0=00 - FF ; 256 step)

	default value (X_1X_0 =)					
MODEL	VK-S454	VK-S454E				
FORMAT	Hi-BAND	Hi-BAND				
MODE	NTSC	PAL				
EEPROM area "E08E"	**10**	**10**				

[note] BLC ON is WDR OFF mode only.

h) Set the burst ON/OFF

[EEPROM area]*
:W**1026**X_1X_0 (X_1X_0=00 - FF ; 256 step)
:W**1027**X_1X_0 (X_1X_0=00 - FF ; 256 step)
:W**1028**X_1X_0 (X_1X_0=00 - FF ; 256 step)
:W**1029**X_1X_0 (X_1X_0=00 - FF ; 256 step)

	default value (X_1X_0=)				
MODEL	VK-S454	VK-S454E			
FORMAT	Hi-BAND	Hi-BAND			NTSC / PAL
MODE	NTSC	PAL			
EEPROM area	burst ON				OFF
"1026"	**54**	**5A**			**80**
"1027"	**80**	**9C**			**80**
"1028"	**00**	**5A**			**80**
"1029"	**00**	**9C**			**80**

i) Set the chroma suppression level tuning value in AGC range

[RAM area]

AGC gain		-	AGC ON	:WFC10X_4Y_4
AGC gain	AGC ON	-	1/3 maximum AGC level	:WFC11X_3Y_3
AGC gain	1/3 maximum AGC level	-	2/3 maximum AGC level	:WFC12X_2Y_2
AGC gain	2/3 maximum AGC level	-	maximum AGC level	:WFC13X_1Y_1
AGC gain	Maximum AGC level	-		:WFC14X_0Y_0

($X_?X_?$=00 - FF ; 256 step)

darker (H'00) < center (H'7F) < brighter (H'FF)

[Note] maximum AGC level setting at page 19 - item m)
chroma suppression level tuning values at Fig. 1

[EEPROM area]*

AGC gain		-	AGC ON	:W1360X_4Y_4
AGC gain	AGC ON	-	1/3 maximum AGC level	:W1361X_3Y_3
AGC gain	1/3 maximum AGC level	-	2/3 maximum AGC level	:W1362X_2Y_2
AGC gain	2/3 maximum AGC level	-	Maximum AGC level	:W1363X_1Y_1
AGC gain	maximum AGC level	-		:W1364X_0Y_0

($X_?X_?$=00 - FF ; 256 step)

darker (H'00) < center (H'7F) < brighter (H'FF)

[Note] maximum AGC level setting at page 19 - item m)
chroma suppression level tuning values at Fig. 1

	default value ($X_?X_?$ =)					
MODEL	VK-S454	VK-S454E				
FORMAT	Hi-BAND	Hi-BAND				
MODE	NTSC	PAL				
EEPROM area						
"1360"	**7F**	**7F**				
"1361"	**8C**	**8C**				
"1362"	**7C**	**7C**				
"1363"	**6E**	**6E**				
"1364"	**32**	**32**				

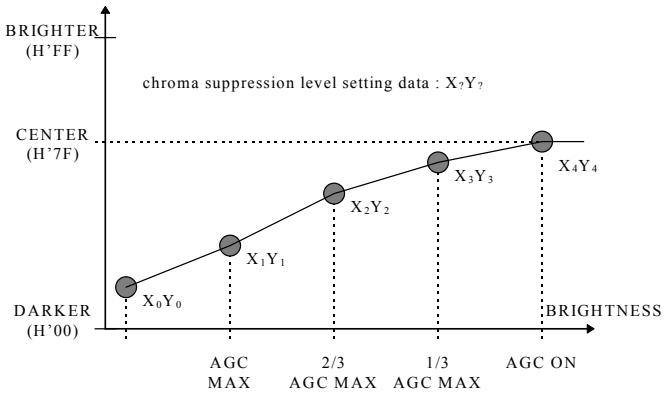


Fig. 1 Chroma suppression level

j) Select the manual aperture mode

[RAM area]
:RFBFF00
:WFBFFX_1X_0
X_1X_0 : Set bit 1 of echo back data to "1".
[bit 1 of X_1X_0 : 0-Auto 1-Manual]

k) Set the horizontal aperture level tuning value

:WFBF6X_1X_0 (X_1X_0=00 - 3F ; 64 step)

[EEPROM area]*

AGC gain		-	AGC ON	:W136AX_4Y_4
AGC gain	AGC ON	-	1/3 maximum AGC level	:W136BX_3Y_3
AGC gain	1/3 maximum AGC level	-	2/3 maximum AGC level	:W136CX_2Y_2
AGC gain	2/3 maximum AGC level	-	Maximum AGC level	:W136DX_1Y_1
AGC gain	Maximum AGC level	-		:W136EX_0Y_0

($X_?X_?$=00 - 3F ; 64 step)

[Note] maximum AGC level setting at page 19 - item m)
horizontal aperture level tuning values at Fig. 2

	default value ($X_?X_?$ =)					
MODEL	VK-S454	VK-S454E				
FORMAT	Hi-BAND	Hi-BAND				
MODE	NTSC	PAL				
EEPROM area						
"136A"	**32**	**32**				
"136B"	**2A**	**2A**				
"136C"	**14**	**14**				
"136D"	**08**	**08**				
"136E"	**06**	**06**				

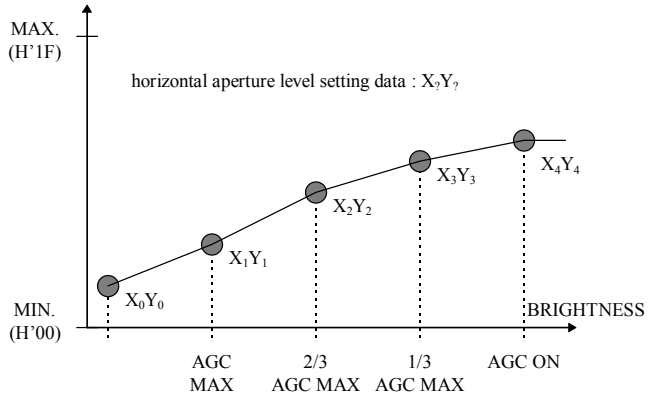


Fig. 2 horizontal aperture level

l) Set the vertical aperture level tuning value

:WFBF9X_1X_0 (X_1X_0=00 - 3F ; 64 step)

[EEPROM area]*

AGC gain		-	AGC ON	:W1374X_4Y_4
AGC gain	AGC ON	-	1/3 maximum AGC level	:W1375X_3Y_3
AGC gain	1/3 maximum AGC level	-	2/3 maximum AGC level	:W1376Y_2Y_2
AGC gain	2/3 maximum AGC level	-	Maximum AGC level	:W1377X_1Y_1
AGC gain	maximum AGC level	-		:W1378X_0Y_0

($X_?X_?$=00 - 3F ; 64 step)

[Note] maximum AGC level setting at page 19 - item m)
vertical aperture level tuning values at Fig. 3

	default value ($X_?X_?$ =)					
MODEL	VK-S454	VK-S454E				
FORMAT	Hi-BAND	Hi-BAND				
MODE	NTSC	PAL				
EEPROM area						
"1374"	**28**	**28**				
"1375"	**20**	**20**				
"1376"	**12**	**12**				
"1377"	**08**	**08**				
"1378"	**06**	**06**				

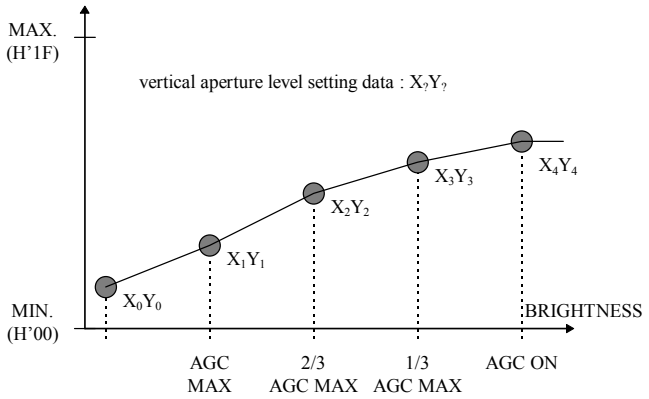


Fig. 3 vertical aperture level

m) Set the maximum AGC gain tuning value in AGC ON mode

[RAM area]
:wFD46$X_3X_2X_1X_0$
:WFA20Y_1Y_0
($X_3X_2X_1X_0$=0000 - 0500 ; 0.03125dB/step)
[Note] condition between $X_3X_2X_1X_0$ and Y_1Y_0
$Y_1Y_0 = X_3X_2X_1X_0 / 8$
[$X_3X_2X_1X_0$=0000, Y_1Y_0=00 ; 0dB ,
$X_3X_2X_1X_0$=0500, Y_1Y_0=A0; 40dB]

[EEPROM area]*
:wE046$X_3X_2X_1X_0$
:W116CY_1Y_0
($X_3X_2X_1X_0$=0000 - 0500 ; 0.03125dB/step)
[Note] condition between $X_3X_2X_1X_0$ and Y_1Y_0
$Y_1Y_0 = X_3X_2X_1X_0 / 8$
[$X_3X_2X_1X_0$=0000, Y_1Y_0=00 ; 0dB ,
$X_3X_2X_1X_0$=0500, Y_1Y_0=A0; 40dB]

	default value ($X_3X_2X_1X_0$ =)					
MODEL	VK-S454	VK-S454E				
FORMAT	Hi-BAND	Hi-BAND				
MODE	NTSC	PAL				
EEPROM area						
“E046”	**0380**	**03A0**				
“116C”	**70**	**74**				
maximum AGC Gain	**28 dB**	**29dB**				

n) Change Communication Baudrate

[EEPROM area]*
:WE05EX_1X_0
(X_1X_0=80 or 00
; 4800 bps , even Parity ; default
X_1X_0=B0 ; 9600 bps , even Parity
X_1X_0=C0 ; 4800 bps , non Parity
X_1X_0=F0 ; 9600 bps , non Parity)

o) Set RAM initialize

[RAM area]
:WFCAC00

6. Other useful commands

a) PRESET MODE

(MF, No-Trace, Zoom Speed ; **1.6sec**)

- Preset mode - Flow chart

See an annexed document “<TYPE-1> TRACE PRESET”
<TYPE-1> TRACE PRESET : **S454_pp1_Ver_1_3.doc**

b) ZOOM TRACE PRESET MODE

(MF, Trace, Zoom Speed ; **2.9sec**)

- Zoom trace preset mode - Flow chart

See an annexed document “<TYPE-2> TRACE PRESET”
<TYPE-2> TRACE PRESET : **S454_zt1_Ver_1_3.doc**

c) PRIVACY MASK

- PRIVACY MASK SPECIFICATION

See an annexed document “PRIVACY MASK’
PRIVACY MASK **S454_Pmask_Ver_1_5.doc**

PART
TWO

- PROGRAM AE CONTROL COMMAND
- IR REMOVE CONTROL COMMAND
- WIDE DYNAMIC RANGE COMMAND

1. Program AE mode

The following Control Commands are Program AE added to VK-S454.

? Program AE control	Program AE	[WDR ON/OFF]
	Program AER 1 [IR Remove - 1]	[WDR ON/OFF]
	Program AER 2 [IR Remove - 2]	[WDR ON/OFF]
	Program AE+ (DSS)	[WDR ON/OFF]
	Program AER+1 (DSS) [IR Remove - 1]	[WDR ON/OFF]
	Program AER+2*(DSS) [IR Remove - 2]	[WDR ON/OFF]
	Program AER+3 (DSS) [IR Remove - 3]	[WDR ON/OFF]
	Shutter priority	
	Exposure priority	
	AGC priority	

[Note] * mark is default mode.

VK-S454 Program AE control

2. Program AE mode

a) Function of program AE mode
[Please attached Table 1.]

Table. 1 Program AE mode table

Program AE mode / function	DSS	IR Remove	WDR
Program AE	X	O [Manual]	O [on/off]
Program AER1 [IR Remove – 1]	X	O [auto] : ***Hi sensitivity***	O [on/off]
Program AER2 [IR Remove – 2]	X	O [auto] : ***Mid sensitivity***	O [on/off]
Program AE+ (DSS)	O [auto]	O [Manual]	O [on/off]
Program AER+1 (DSS) [IR Remove – 1]	O [auto]	O [auto] : ***Hi sensitivity***	O [on/off]
Program AER+2 (DSS) [IR Remove – 2]	O [auto]	O [auto] : ***Mid sensitivity***	O [on/off]
Program AER+3 (DSS) [IR Remove – 3]	O [auto]	O [auto] : ***Lo sensitivity***	O [on/off]
Shutter priority	O [Manual]	O [Manual]	X
Exposure priority	X	O [Manual]	X
AGC priority	X	O [Manual]	X

b) Mode switch

:RFCC800
:WFCC8X_1X_0
[Please attached Table 2.]

Table. 2 Program AE mode data

Program AE mode	X_1X_0
Program AE	00
Program AER [IR Remove – 1]	10
Program AER [IR Remove – 2]	20
Program AE+ (DSS)	01
Program AER+ (DSS) [IR Remove – 1]	11
Program AER+ (DSS) [IR Remove – 2]	21
Program AER+ (DSS) [IR Remove – 3]	31
Shutter priority	07
Exposure priority	08
AGC priority	09

3. Digital Slow Shutter
   a) digital slow shutter status

:RFCC700
Echo back data is digital slow shutter status.
[Please attached Table 3.]

Table. 3 Digital slow shutter table

X_1X_0 (echo back data)	Shutter Speed (s)	
	NTSC	PAL
01	- 1/60	- 1/50
02	1/60 - 1/30	1/50 - 1/25
04	1/30 - 1/15	1/25 - 1/12
08	1/15 - 1/ 8	1/12 - 1/ 6
10 [default]	1/ 8 - 1/ 4	1/ 6 - 1/ 3
20	1/ 4 - 1/ 2	1/ 3 - 1/ 1.5

   b) Auto digital slow shutter limit

:R11E500
:W11E5X_1X_0
[Please attached Table 4.]

Table. 4 Digital slow shutter limit table

X_1X_0 (echo back data)	Shutter Speed (s)	
	NTSC	PAL
01	1/60	1/50
02	1/30	1/25
04	1/15	1/12
08	1/ 8	1/ 6
10 [default]	1/ 4	1/ 3
20	1/ 2	1/ 1.5

4. IR Remove

a) IR Remove status

:RFFE700
Echo back data is ir remove status.
[Please attached Table. 5.]

Table. 5 IR remove status table

X_1X_0 (echo back data)	
00	IR cut filter OFF
01	IR cut filter ON

b) Switch the IR ON / OFF manual control

:RFFE600
:WFFE6X_1X_0
[Please attached Table. 6.]

Table. 6 IR remove status table

X_1X_0 (echo back data)	
C0	IR cut filter OFF=>ON
80	IR cut filter ON =>OFFF

[Note] This mode is Program AE and Program AE+ and priority (shutter/exposure/agc) mode only.

c) Select the color (IR OFF only)

:R11E300
:W11E3X_1X_0
bit 1 of X_1X_0 : 0-B/W [default]
1-COLOR

5. Shutter priority

a) Mode switch

:RFCC800
:WFCC8X_1X_0
X_1X_0=07

b) Set the shutter speed tuning value

:RFCC900
:WFCC9X_1X_0
X_1X_0 ; tuning value
[Please refer to the attached Table.7.]

Table. 7 Shutter speed data table in shutter priority mode

X_1X_0 (setting data)	Shutter Speed (s)	
	NTSC	PAL
00	1/2	1/1.5
01	1/4	1/3
02	1/8	1/6
03	1/15	1/12
04	1/30	1/25
05	1/60	1/50
06	1/120	1/100
07	1/180	1/150
08	1/250	1/250
09	1/500	1/500
0A	1/1000	1/1000
0B	1/2000	1/2000
0C	1/4000	1/4000
0D	1/10000	1/10000
0E	**1/30000**	**1/30000**

6. Exposure priority
   a) Mode switch

:RFCC800
:WFCC8X_1X_0
X_1X_0=08

   b) Set the exposure tuning value

:RFCC900
:WFCC9X_1X_0
X_1X_0 ; tuning value
[Please refer to the attached Table.8.]

Table. 8 Exposure data table in exposure priority mode

F-value	X_1X_0 (setting data)
F1.6	00
F2.2	01
F3.2	02
F4.4	03
F6.4	04
F8.8	05
F12	06
F17	07
F24	08
F34	09

7. AGC priority

a) Mode switch

:RFCC800
:WFCC8X_1X_0
X_1X_0=09

b) Set the AGC tuning value

:RFCC900
:WFCC9X_1X_0
X_1X_0 ; tuning value
[Please refer to the attached Table.9.]

Table. 9 AGC data table in AGC priority mode

AGC gain	X_1X_0 (setting data)
0 [dB]	00
6 [dB]	01
12 [dB]	02
18 [dB]	03
24 [dB]	04
30 [dB]	05

8. WIDE DYNAMIC RANGE

a) Mode switch

:RFF3200
:WFF32X_1X_0
X_1X_0=00 ; OFF [default]
X_1X_0=01 ; ON

b) Switch the WDR Manual mode ON / OFF

:RFF3400
:WFF34X_1X_0
X_1X_0=00 ; auto [default]
X_1X_0=01 ; manual

c) Ratio level at WDR Manual mode

:RFF3500
:WFF34X_1X_0
(X_1X_0=00 - 80 ; 128 step)

d) Hi-Speed shutter speed at WDR Manual mode

:rFF360000
:wFF36$X_3X_2X_1X_0$
($X_3X_2X_1X_0$=0000 - 0544 ; 1349 step)

e) Iris level offset data at WDR Manual mode

:rFF380000
:wFF38$X_3X_2X_1X_0$
($X_3X_2X_1X_0$=0000 - 0400 ; 1025 step)

PART
THREE

- PRIVACY MASK

1. Privacy Mask

[Please attached Fig. 1]

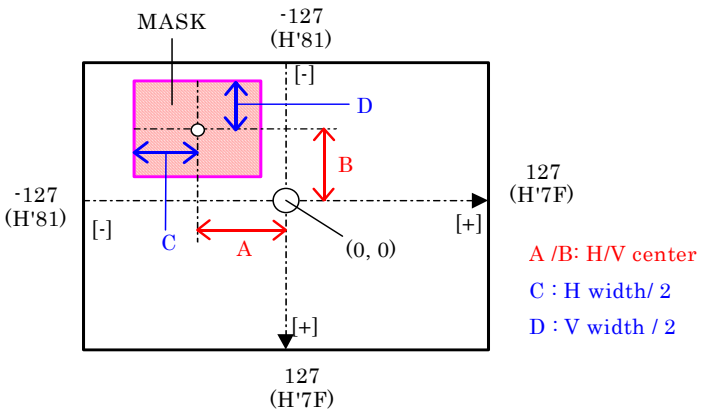


Fig. 1 VK-S454 Privacy Mask

a) Switch the Privacy Mask ON/OFF

:RF90000
:WF900X_1X_0
X_1X_0=00 ; OFF
X_1X_0=03 ; ON [default]

b) Privacy Mask shade setting

:RF90100
:WF901X_1X_0
(X_1X_0=00 - 0F ; 16 step)
H'00 ; Black
H'08 ; Gray [default]
H'0F ; White

c) Privacy Mask position setting

i) Mask1

[New data set] :WF90EX_1X_0
H'01 ; New data set
After the data was set, It will be returned to H'00.
H'00 ; Mask data modify
[H center] :WF904X_1X_0
(X_1X_0=81 (nega) - 00 (center) - 7F (plus))
[V center] :WF905X_1X_0
(X1X0=81 (nega) - 00 (center) - 7F (plus))
[H size] :WF906X_1X_0
(X1X0=00 - 7F ; 128 step)
[V size] :WF907X_1X_0
(X1X0=00 - 7F ; 128 step)

ii) Mask2

[New data set] :WF90FX_1X_0
H'01 ; New data set
After the data was set, It will be returned to H'00.
H'00 ; Mask data modify
[H center] :WF908X_1X_0
(X_1X_0=81 (nega) - 00 (center) - 7F (plus))
[V center] :WF909X_1X_0
(X_1X_0=81 (nega) - 00 (center) - 7F (plus))
[H size] :WF90AX_1X_0
(X_1X_0=00 - 7F ; 128 step)
[V size] :WF90BX_1X_0
(X_1X_0=00 - 7F ; 128 step)

d) Read the setting degree data of MASK1 / MASK2

:rF9140000
; Mask 1 H degree data
(data range ; H'00000 - H'1680)
:rF9160000
; Mask 1 V degree data
(data range ; H'00000 - H'1680)
:rF9180000
; Mask 2 H degree data
(data range ; H'00000 - H'1680)
:rF91A0000
; Mask 2 V degree data
(data range ; H'00000 - H'1680)

2. Degree data (Pan / Tilt)

a) Set the degree data

/MX$_2$X$_1$X$_0$Y$_2$Y$_1$Y$_0$ [special command]
X$_2$X$_1$X$_0$; PAN degree
Y$_2$Y$_1$Y$_0$; TILT degree
(X$_2$X$_1$X$_0$ / Y$_2$Y$_1$Y$_0$ 000 - B40 ; 0.125 degree/step)

3. Demo mode

a) Moving of mask

:RF90200
:WF902X$_1$X$_0$
X$_1$X$_0$=00 ; STOP [default]
X$_1$X$_0$=31 ; Mask UP
X$_1$X$_0$=32 ; Mask DOWN
X$_1$X$_0$=34 ; Mask LEFT
X$_1$X$_0$=35 ; Mask UP + LEFT
X$_1$X$_0$=36 ; Mask DOEN + LEFT
X$_1$X$_0$=38 ; Mask RIGHT
X$_1$X$_0$=39 ; Mask UP + RIGHT
X$_1$X$_0$=3A ; Mask DOWN + RIGHT

PART
FOUR

- CONTROL COMMAND TIMING

1. Timing table program AE command
   (Fig. 1)

[Nete]
AE_MODE command address is 0xFCC8
[A] : Send to AE_MODE chamge command

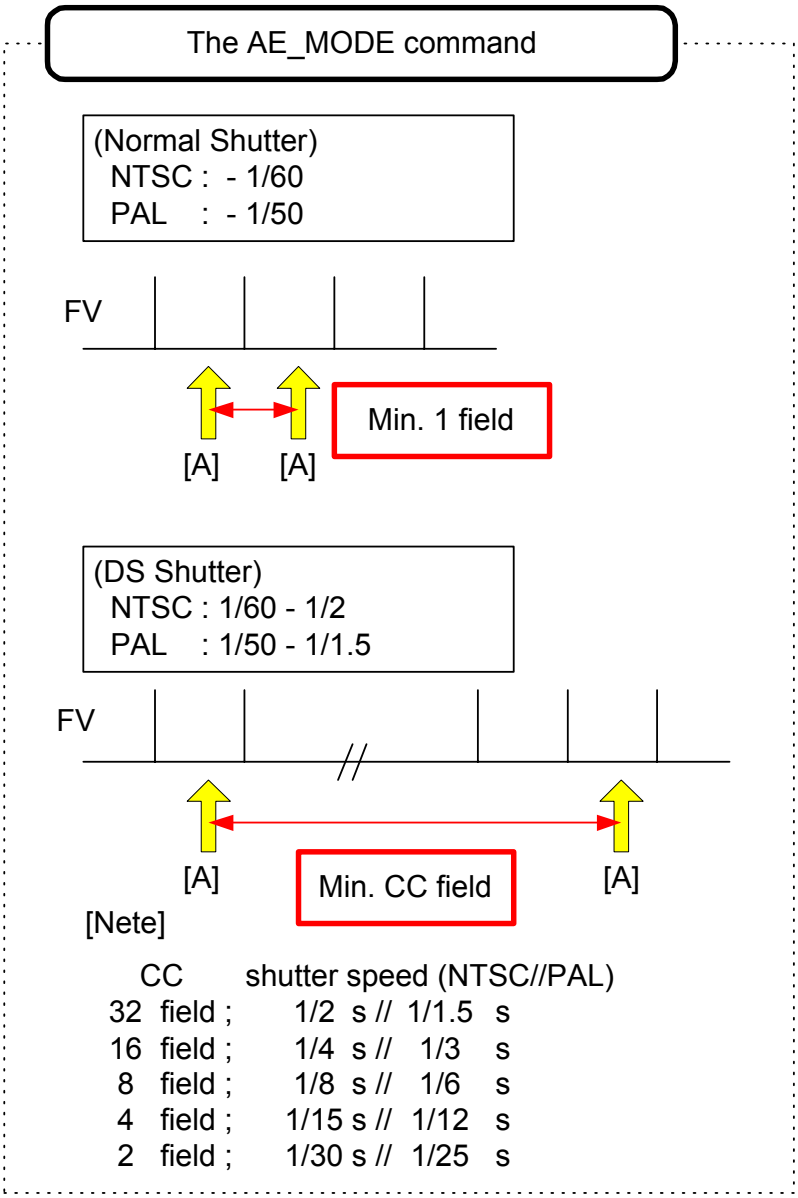


Fig. 1 AE_MODE Change Timing

2. Timing table after ZOOM commands (DSS mode only)
(Fig. 2)

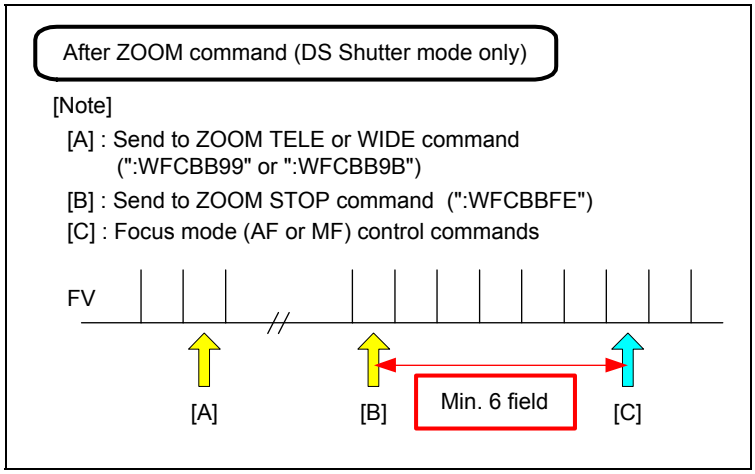


Fig. 2 After ZOOM commands timing

3. Timing table other commands
(Fig. 3)

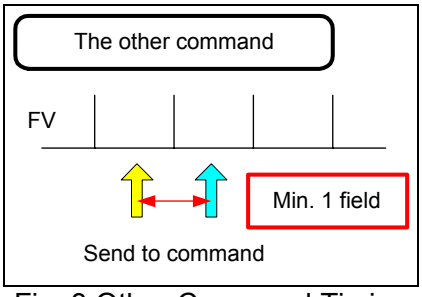


Fig. 3 Other Command Timing

PART
FIVE

- FOCUS MODE IN DSS

1. Focus mode in DSS
(Table 1)

Table 1

shutter speed		zoom	focus mode
NTSC/EIA	PAL/CCIR		
1/60 - 1/8	1/50 - 1/6	no	AF or MF
1/8 - 1/2	1/6 - 1/1.5	no	MF
1/60 - 1/2	1/50 - 1/1.5	yes[*1]	MF

[*1] The following fig.1 is zoom mode in DSS.

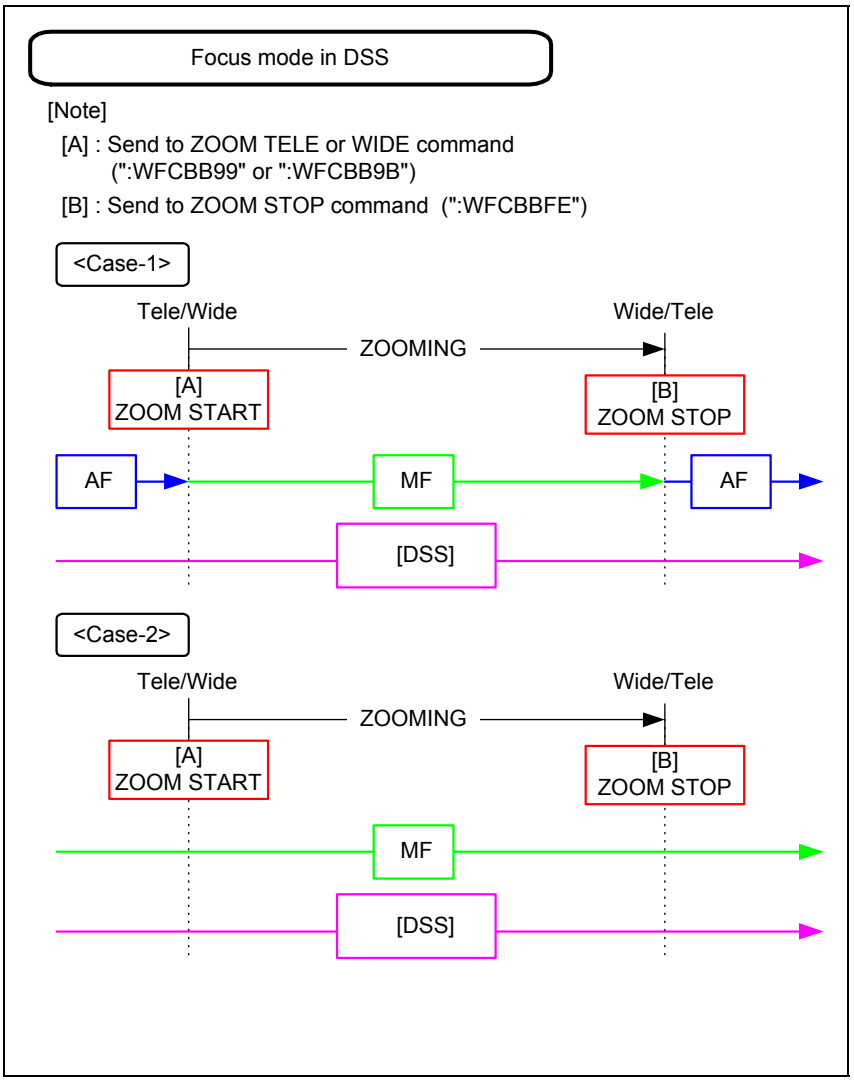


Fig. 1 Zoom mode in DSS

• APPENDIX

[REV. 1.0]
2000/12/11 * New Version (VK-S454)

[REV. 1.1]
2000/12/25 * Pre-Pro Sample Version
page - 11 : 4.x) ***<addition comment>***
Switch the Memory Freeze ON/OFF
page - 16 : 5.i) ***<data mistake>***
Set the chroma suppression level tuning value in AGC range
page - 18 : 5.l) ***<data mistake>***
Set the vertical aperture level tuning value
page - 20 : 6.c:d) ***<delete>***
page - 20 : 6.c) ***<addition>***
Privacy mask specifications
page - 30 : 1.b) ***<address mistake>***
Privacy Mask shade setting

[REV. 1.2]
2001/01/12
page - 30 : 1.a) ***<revision : default data>***
Switch the Privacy Mask ON/OFF
H'01 -> H'03

[REV. 1.3]
2001/01/15
page - 11 : 4.x) ***<revision : address>***
Switch the Memory Freeze ON/OFF

[REV. 1.4]
2001/01/31 * Mass-production Version **[VK-S454]**
page - 11 : 4.x) ***<delete of NOTE (comment)>***
Switch the Image Freeze ON/OFF
page - 11 : 4.w) ***<revision : address>***
Switch the instant fade(black) ON/OFF
page - 30 : 1.a) ***<mistake : data>***
Switch the Privacy Mask ON/OFF
page - 31 : 3.a) ***<revision : address>***
Moving of mask

[REV. 1.5]
2001/02/06 * **VK-S454E (PAL) Pilot Sample**
page - 5 ***<revision of NOTE (comment)>***
Change of reference model; VK-S354 => **VK-S234**

[REV. 1.6]

2001/02/20

page - 15 : 5.f) ***<revision : comment >***
Switch the back light compensation (BLC) ON/OFF

page - 15 : 5.g) ***<revision : comment >***
Set the BLC level tuning value in BLC ON mode

page - 12 : 5.c.i) **VK-S454 *<mistake : data>***
Iris offset (average) level (WDR OFF)
H'60 -> H'5B

page - 15 : 5.h) **VK-S454 *<mistake : data>***
Set the burst ON/OFF
Address :E198 H'50 -> H'54

2001/02/27 * **VK-S454E (PAL) Pre-Pro Sample**

page - 12 : 5.c.i) **VK-S454E *<revision : default data>***
Iris offset (average) level (WDR OFF)
H'60 -> H'54

page - 15 : 5.h) **VK-S454E *<revision : default data>***
Set the burst ON/OFF
Address :E198 H'5D -> H'54
:E199 H'99 -> H'9C
:E19A H'5D -> H'54
:E19B H'99 -> H'9C

[REV. 1.7]

2001/03/30 * Mass-production Version **[VK-S454E]**

[REV. 1.8]

2001/06/18

page - **Error! Bookmark not defined.** : 5.h) ***〈revision : address 〉***
Set the burst ON/OFF
・address

after change	before change
1026	E198
1027	E199
1028	E19A
1029	E19B

・BURST OFF data
H'00 -> H'80

page - **Error! Bookmark not defined.** : 3.a) ***〈addition comment 〉***
Moving of mask