datavideo

SE-900 RS-422/232 Remote Control Protocol

VER: 0.3
Release date: 2012/04/30

V0.2. 111102   Added T-bar command.

V0.3. 120402   Corrected some errors in the examples.

1. Physical layer

1.1 Control I/O format: RS-422 or RS-232C   (Selected by the jumper on the remote card)

1.2 SE900 remote RS-422 pin definition: DSUB-9F: (Pin2=TX_P, Pin7=TX_N),

(Pin3=RX_P, Pin8=RX_N),

(Pin1, 5, 9=GND),

1.3 SE900 remote RS-232 pin definition: DSUB-9F: (Pin2=TX, Pin3=RX, Pin5=GND),

1.4 The connect of SE900 to SE900 CONTROLLER pin definition: DSUB-9F:

*** Note: link SE900 CONTROLLER only. ***   (Pin2=TX_P, Pin7=TX_N),

(Pin3=RX_P, Pin8=RX_N),

(Pin1, 6= + 12VDC/1A output)

(Pin5, 9=GND)

1.5 Communication baud rate: **115200** BPS

1.6 Data format: 8 bits serial, LSB first, 1 start bit, 1 stop bit, none parity

2. Data link layer

2.1 Frame format

1st	2nd	3rd	4th	5th	6th	7th	,,,	Last-2	Last-1	Last
Header	**ID**	**Length**	Data0	Data1	Data2	Data3	,,,	**Chksum_L**	**Chksum_H**	**End**

1) Header

The Code consisting of one byte is for frame synchronization.

The frame header send from the master machine is termed the command header.

The command header byte is fixed as follow.

1st: F0h (base 16)

The frame header send from the slave machine is termed the *return header*.

The *return header* byte is fixed as follow.

1st: FCh (base 16)

2) ID number

The equipment ID number is composed of 8 bits

The ID of SE900 main board: **5Ah** (base 16)

The ID of SE900's EXT SLOT_ 1: **10h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 2: **11h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 3: **12h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 4: **13h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 5: **14h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 6: **15h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 7: **16h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 8: **17h** (base 16)   (input board)

The ID of SE900's EXT SLOT_ 9: **18h** (base 16)   (CHROMA KEY board)
The ID of SE900's EXT SLOT_ 10: **19h** (base 16)   (EXTERNAL GENLOCK board)
The ID of SE900's EXT SLOT_ 11: **1Ah** (base 16)   (PREVIEW board)
The ID of SE900's EXT SLOT_ 12: **1Bh** (base 16)   (CG board)
The ID of SE900's EXT SLOT_ 13: **1Ch** (base 16)   (SDI_OUT board)
The ID of SE900's EXT SLOT_ 14: **1Dh** (base 16)   (AV & DV output board)
The ID of SE900's EXT SLOT_ 15: **1Eh** (base 16)   (N.C.)

The ID of SE900's AUDIO_DELAY_BD: **1Fh** (base 16)

3) Length

The length is the sum of bytes from the header to the end.

It is composed of 8 bits and the length must less than **128**.

Note: **06h (base 16) < Length < = 80h(base 16)**

4) Data

Data block used by application layer.

Refer to Section 3 ~ .

5) Checksum

The 8 bits checksum is obtain from header to the last data,

and then convert to two numeric ASCII code.

Checksum=header+ID+legth+data0+data1+…+last_data

chksum_L=30h + (low nibble of checksum)

chksum_H=30h + (high nibble of checksum shift to right 4bits)

6) End

The end byte is fixed to **FFh** (base 16).

3.   Application layer

The application layer designates the command structure and contents.

3.1 Command data format

4th	5th	6th	7th	8th	9th	10th	11th	…
Command Group	**Control Mode**	Operated #1	Operated #2	Operated #3	Operated #4	Operated #5	Operated #6	…

1) The command group

05h = SE900 main board control. => The following command is for main board.

08h = SE900 CARD control.   => The following command is for extension card.

2) The Control Mode

(for main board group only, in the other command group please set to **01h**)

00h = **ASK** status mode.

01h = **NORMAL** key mode.

02h = **T-BAR** mode.

3) The operated refer to the section 4~.

3.2 Return data format

4th	5th	6th	7th	8th	9th	10th	11th	…
Command Group	**Control Mode**	parameter #1	parameter #2	parameter #3	parameter #4	parameter #5	parameter #6	…

1) **The Command Group**

05h = SE900 main board control.

07h = SE900 main board message. => The following parameters are ASCII strings for controller to display.

08h = SE900 CARD control.

2) **The Control Mode**

Same as the 3.1 command data format's control mode.

3) The parameters refer to the following description.

4. Operated

4.1 The command group = 05h (SE900 Main board control)

4.1.1 The control mode = 00h (ASK status mode): Ask the SE900 main set's status.

1st	2nd	3rd	4th	5th	6th	7th	8th
F0h	5Ah	08h	*05h*	*00h*	37h	35h	FFh
Header	ID	length	group	ASK mode	cksm_L	cksm_H	end

4.1.2 The return data stream from SE900 (ASK status mode)

1st	2nd	3rd	4th	5th	6th	7th	8th	9th
FCh	5Ah	13h length	*05h*	*00h*	Parameter #1	Parameter #2	Parameter #3	Parameter #4

10th ~ 15th	16th	17th	18th	19th
Parameter #5~10	Parameter #11	cksm_L	cksm_H	FFh

4.1.2.1 *parameter-1 = busy flags*

bit0=busy in transition

bit1=busy in T-bar

bit2=busy in effect

bit3=NTSC (0) or PAL (1)

bit4=main source will be frozen

bit5=sub source will be frozen

bit6=fade to black function is active

bit7=0

4.1.2.2 *parameter-2 = speed & effect level*

bit0~3= Speed No.

bit4~6= CHROMAKEY No. or Effect level

bit7=0;

4.1.2.3 *parameter-3 = current transition*

0=cut,	1= fade (dissolve)
2=wipe_left_to_right,	3=wipe_right_to_left,
4=wipe_bottom_to_top,	5=wipe_top_to_bottom,
6=wipe_center_to_top/bottom,	7=wipe_top/bottom_to_center
8=wipe_center_to_left/right,	9=wipe_left/right_to_center
10=wipe_left/top_to_right/bottom,	11=wipe_right/bottom_to_left_top
12=wipe_left/bottom_to_right/top,	13=wipe_right/top_to_left/bottom
14=wipe_center_to_4coner,	15=wipe_4corner_to_center

bit7=0;

4.1.2.4 *parameter-4*= **current effect**

      bit0~4=Current special effect

          0 = no special, 1 = CHROMAKEY, 2= PIP,

          3= Mosaic, 4= Paint, 5= Strobe, 6= black & white.

      bit7=0

4.1.2.5 *parameter-5*= **current MAIN-SOURCE   or CHROMAKEY source**(refer to 4.1.2.7)

      1~8=> Main source=CH1~CH8

        9 => Main source=background color

      bit7=0

4.1.2.6 *parameter-6*= **current SUB-SOURCE   or CHROMAKEY source** (refer to 4.1.2.7)

      1~8=> Sub source=CH1~CH8

        9=> Sub source=background color

      bit7=0

4.1.2.7 *parameter-7*= **PIP & CHROMAKEY flag**

      bit0=PIP enable

      If (CK_SYNC ON) then

        {bit2, 3=0, 0 => main source is normal PGM video source;

        bit2, 3=1, 0 => main source is CK No. (1~4)

        bit2, 3=0, 1 => main source is CK BG

        bit2, 3=1, 1 => main source is CK BG}

      Else (CK_SYNC OFF)

        {bit2, 3=0, 0 => main source is normal PGM video source;

        bit2, 3=1, 0 => main source is CK FG

        bit2, 3=0, 1 => main source is CK BG

        bit2, 3=1, 1 => main source is CK BG}

      :::

      If (CK_SYNC ON) then

        {bit4, 5=0, 0 => sub source is normal PST video source;

        bit4, 5=1, 0 => sub source is CK No. (1~4)

        bit4, 5=0, 1 => sub source is CK BG

        bit4, 5=1, 1=> sub source is CK BG}

      Else (CK_SYNC OFF)

        {bit4, 5=0, 0 => sub source is normal PST video source;

        bit4, 5=1, 0 => sub source is CK FG

        bit4, 5=0, 1 => sub source is CK BG

        bit4, 5=1, 1 => sub source is CK BG}

      bit6=CHROMAKEY on/off, 1=on

4.1.2.8 *parameter-8* = **some special effect's status**

      bit0 = POS_CNTL on

      bit1 = CK_SYNC on

      bit2 = CG on

bit3 = LOGO on

bit4 = BDR on.   (border on)

bit5 = GPI_IN on

bit6 = GPI_OUT on

bit7 = 0

4.1.2.9 *parameter-9* = **BG color & GPI_OUT action status**

bit0~3 =Background color

0=Black, 1=Blue, 2=Red, 3=Magenta, 4=Green, 5=Cyan,

6=Yellow, 7=White, 0Eh=Lines, 0Fh=Color bar

bit4=GPI_OUT is acting

bit7=0

4.1.2.10 *parameter-10* = **border style & border color**

bit0~3=border color

0=Black, 1=Blue, 2=Red, 3=Magenta, 4=Green, 5=Cyan,

6=Yellow, 7=White, 0Eh=Lines, 0Fh=Color bar

bit4~6=border style

0=border off, 1=narrow border, 1=middle border, 2=wide border

bit7=0

4.1.2.11 *parameter-11* = **current preset effect key No**.

bit0~3 = current preset effect key No.

bit 7=0

4.2 The control mode = 01h (NORMAL key mode)

Control the SE900 main board's function.

4.2.1 The control data stream

1st	2nd	3rd	4th	5th	6th	7th	8th
F0h	5Ah ID	0fh	05h group	01h Normal key mode	***Key Command code***	***00h***	***00h***

9th	10th	11th	12th	13th	14th	15th
JS_POS _X0	JS_POS _X1	JS_POS _Y0	JS_POS _Y1	cksm_L	cksm_H	FFh

JS_POS_X0's bit5=Joy-stick enable

JS_POS_X0'b0~b4= the low 5 bits of Joy-stick's X position

JS_POS_X1'b0~b4= the high 5 bits of Joy-stick's X position

JS_POS_Y0'b0~b4= the low 5 bits of Joy-stick's Y position

JS_POS_Y1'b0~b4= the high 5 bits of Joy-stick's Y position

Bit7=0

4.2.2 The return data stream from SE900

The SE900 return the SE900's status same as 4.1.2 normally.

(Note: key command code from 1 to 86)

4.2.3 The Key Command Code

1 =	**KEY_SUB_1,**	2 =	**KEY_SUB_2**
3 =	**KEY_SUB_3,**	4 =	**KEY_SUB_4**
5 =	**KEY_SUB_5,**	6 =	**KEY_SUB_6**
7 =	**KEY_SUB_7,**	8 =	**KEY_SUB_8**
9 =	**KEY_SUB_BK,**	10 =	**KEY_SUB_CK**
11 =	**KEY_SUB_FZ,**	12 =	**KEY_SUB_PVW**

13 =	**KEY_MAIN_1,**	14 =	**KEY_MAIN_2**
15 =	**KEY_MAIN_3,**	16 =	**KEY_MAIN_4**
17 =	**KEY_MAIN_5,**	18 =	**KEY_MAIN_6**
19 =	**KEY_MAIN_7,**	20 =	**KEY_MAIN_8**
21 =	**KEY_MAIN_BK,**	22 =	**KEY_MAIN_CK**
23 =	**KEY_MAIN_FZ,**	24 =	**KEY_MAIN_FTB**

25 =	**KEY_F1,**	26 =	**KEY_F2**
27 =	**KEY_F3,**	28 =	**KEY_F4**
29 =	**KEY_F5,**	30 =	**KEY_F06~10**

31 =	KEY_SPEED_1,	32 =	KEY_SPEED_2
33 =	KEY_SPEED_3,	34 =	KEY_SPEED_4
35 =	KEY_SPEED_5,	36 =	KEY_SPEED_6
37 =	KEY_GPI_TAKE,	38 =	KEY_CUT
39 =	KEY_TAKE,		
40 =	KEY_BDR,	41 =	KEY_BDR_COLOR
42 =	KEY_BG,	43 =	KEY_STROB
44 =	KEY_B/W,	45 =	KEY_LOGO
46 =	KEY_CK,	47 =	KEY_CK_SYNC
48 =	KEY_CG,	49 =	KEY_PIP
50 =	KEY_MOSAIC,	51 =	KEY_PAINT
52 =	KEY_RGB,	53 =	KEY_POS_CNTL
54 =	KEY_C_TO_4CNR,	55 =	KEY_4CNR_TO_C (C=center, CNR=corner)
56 =	KEY_FADE,	57 =	KEY_SPD (SPD=speed)
58 =	KEY_L/T_TO_R/B,	59 =	KEY_R/B_TO_L/T (L=left, R=right, T=top, B=bottom)
60 =	KEY_L/B_TO_R/T,	61 =	KEY_R/T_TO_L/B
62 =	KEY_C_TO_T/B,	63 =	KEY_T/B_TO_C
64 =	KEY_C_TO_L/R,	65 =	KEY_L/R_TO_C,
66 =	KEY_L_TO_R,	67 =	KEY_R_TO_L
68 =	KEY_B_TO_T,	69 =	KEY_T_TO_B
80 =	KEY_UP,	81 =	KEY_DOWN
82 =	KEY_SETTING,	83 =	KEY_RESET
84 =	KEY_ENTER,	85 =	KEY_ESC
86 =	KEY_ADJUST		

4.2.4 Example

Example#1: **Switch main source to CH5**

F0h,5Ah,0Fh,05h,__01h,11h__,00h,00h,00h,00h,00h,00h,30h,37h,FFh

KEY_MAIN_5

Example#2: **Do auto take**

F0h,5Ah,0Fh,05h,__01h,27h__,00h,00h,00h,00h,00h,00h,36h,38h,FFh

KEY_TAKE

*4.2.5 **T-bar command***

1st	2nd	3rd	4th	5th	6th	7th	8th
F0h	**5Ah ID**	**0fh**	**05h group**	**02h T-BAR mode**	***T-BAR enable***	***T-bar value-L***	***T-bar value-H***

9th	10th	11th	12th	13th	14th	15th
JS_POS _X0	JS_POS _X1	JS_POS _Y0	JS_POS _Y1	cksm_L	cksm_H	FFh

T-bar value-L'b0~b4= the low 4 bits of T-bar's value

T-bar value-H'b0~b4= the high 4 bits of T-bar's value

(T-bar value => from 00h to ffh)

Example#1: **T-Bar enable and moving**
> *F0h,5Ah,0Fh,05h,**02h,<u>01h</u>,0Lh,0Hh**,00h,00h,00h,00h,3xh,3yh,FFh*

Example#2: **T-Bar disable**
> *F0h,5Ah,0Fh,05h,**02h,<u>00h</u>,0Lh,0Hh**,00h,00h,00h,00h,3xh,3yh,FFh*

4.3 The Main Board Extension Command Code

* Control the SE900 main board's function.

* The control mode = 01h (NORMAL key mode)

4.3.1 The control data stream

1st	2nd	3rd	4th	5th	6th	7th	8th
F0h	5Ah ID	xxh length	05h group	01h Normal key	*Extension Command*	*Parameter #1*	*Parameter #2*

9th,,,	Last-2	Last-1	Last
Parameter #,,,	cksm_L	cksm_H	FFh

4.3.2 The Main Board Extension Command Code

- 110 = EXT_GET_CHROMAKEY_SOURCE
- 111 = EXT_SET_ CHROMAKEY_SOURCE
- 112 = EXT_GET_ CHROMAKEY_NO
- 113 = EXT_SET_ CHROMAKEY_NO

- 117 = EXT_ASK_MAINBLARD_VERSION_CMD
- 118 = EXT_GET_CURRENT_USER_CMD
- 119 = EXT_RECALL_USER_PARAMETER_CMD
- 120 = EXT_STORE_USER_PARAMETER_CMD
- 121 = EXT_RESET_ALL_CMD
- 122 = EXT_STORE_PRESET_EFFECT_KEY_CMD

- 123 = EXT_LOGO_POSITION_CMD
- 124 = EXT_ASK_LOGO_STATUS
- 125 = EXT_LOGO_SOURCE_BW_CMD
- 126 = EXT_LOGO_LUMAKEY_LEVEL_CMD
- 127 = EXT_LOGO_TRANSPARENCY_CMD
- 128 = EXT_LOGO_COPY_FILE_CMD
- 129 = EXT_LOGO_1_2_ON_OFF_CMD,
- 136 = EXT_LOGO_WINDOW_CMD

- 130 = EXT_ASK_MB_CG_STATUS_CMD
- 131 = EXT_MB_CG_MODE_CMD
- 132 = EXT_MB_CG_SOURCE_BW_CMD
- 133 = EXT_MB_CG_LUMAKEY_LEVEL
- 134 = EXT_MB_CG_TRANSPARENCY_CMD
- 135 = EXT_MB_CG_WINDOW_CMD

137 =   EXT_ASK_GPI_STATUS_CMD

138 =   EXT_GPI_ONOFF_CMD

139 =   EXT_GPI_OUT_MODE_CMD

140 =   EXT_GPI_OUT_DELAY_CMD

141 =   EXT_TRANSITION_SPEED_CMD,

4.4.1 The Main Board Extension Command For CHROMAKEY

****

Command code => **110(6Eh) = EXT_GET_CHROMAKEY_SOURCE**

   Parameter #1 => NC

--- Answer ---

   Parameter #1 => CK No.: 30h~33h

   Parameter #2 => CK_FG: 30h~38h (CH1~CH8, BG)

   Parameter #3 => CK_BG: 30h~38h (CH1~CH8, BG)

****

Command code => **111(6Fh) = EXT_SET_ CHROMAKEY _SOURCE**

   Parameter #1 => CK No.: 30h~33h

   Parameter #2 => CK_FG: 30h~38h (CH1~CH8, BG)

   Parameter #3 => CK_BG: 30h~38h (CH1~CH8, BG)

--- Answer ---

   Parameter #1 => CK No.: 30h~33h

   Parameter #2 => CK_FG: 30h~38h (CH1~CH8, BG)

   Parameter #3 => CK_BG: 30h~38h (CH1~CH8, BG)

****

Command code => **112(70h) = EXT_GET_ CHROMAKEY _NO**

   Parameter #1 => NC

--- Answer ---

   Parameter #1 => CK No.: 30h~33h

   Parameter #2 => CK_FG: 30h~38h (CH1~CH8, BG)

   Parameter #3 => CK_BG: 30h~38h (CH1~CH8, BG)

****

Command code => **113(71h) = EXT_SET_ CHROMAKEY _NO**

   Parameter #1 => CK No.: 30h~33h

--- Answer ---

   Parameter #1 => CK No.: 30h~33h

   Parameter #2 => CK_FG: 30h~38h (CH1~CH8, BG)

   Parameter #3 => CK_BG: 30h~38h (CH1~CH8, BG)

Example: Set the source of CHROMAKEY No.1 to **"FG=CH1,BG=CH5".**

   The Control Data Stream= *F0h,**5Ah,0Ch**,05h,01h,**6Fh,30h,30h,34h**,3Fh,35h,FFh*

   F0h, ID(5Ah) , Length(0Ch), 05h, 01h, Command code(6Fh), para#1(30h), para#2(30h),

   para#3(34h),checksum_L(3Fh), checksum_M(35h), FFh

   Checksum=F0h+5Ah+0Ch+05h+01h+6Fh+30h+30h+34h=5Fh

   The Answer from SE900 = *F0h,**5Ah,0Ch**,05h,01h,**6Fh,30h,30h,34h**,3bh,36h,FFh*

4.4.2 The Extension Main Board Command for Memory

```
******************************************************
```
Command code => **117(75h) = EXT_ASK_MAINBOARD_VERSION_CMD**

  Parameter #1 = > NC

--- Answer ---

  Parameter #1~5   => C1 version ASCII code

  Parameter #6~10   => F1 version ASCII code

  Parameter #11~15 = > F2 version ASCII code
```
******************************************************
```
Command code => **118(76h) = EXT_GET_CURRENT_USER_CMD**

  Parameter #1 = > NC

--- Answer ---

  Parameter #1 = > Current User No.: 31h~33h (3 users)
```
******************************************************
```
Command code => **119(77h) = EXT_RECALL_USER_PARAMETER_CMD**

  Parameter #1 = > User No.: 31h~33h (3 users),

--- Answer ---

  Parameter #1 = > User No.: 31h~33h (3 users)
```
******************************************************
```
Command code => **120(78h) = EXT_STORE_USER_PARAMETER_CMD**

  Parameter #1 = > User No.: 31h~33h (3 users)

--- Answer ---

  Parameter #1 = > User No.: 31h~33h (3 users)
```
******************************************************
```
Command code => **121(79h) = EXT_RESET_ALL_CMD**

  Parameter #1 = > NC

--- Answer ---

  Parameter #1 = > Current User No.: 31h~33h
```
******************************************************
```
Command code => **122(7Ah) = EXT_STORE_PRESET_EFFECT_KEY_CMD**

  Parameter #1 = > Preset effect key No.: 30h~39h (F1~F10)

--- Answer ---

  Parameter #1 = > Preset effect key No.: 30h~39h

Example: Store the parameter to User#3.

  The Control Data Stream= *F0h,5Ah,09h,05h,01h,78h,31h,3dh,FFh*

      F0h, ID(5Ah) , Length(09h), 05h, 01h, Command code(78h),checksum_L(31h), checksum_M(3dh),

      FFh

      Checksum=F0h+5Ah+09h+05h+01h+78h=d1h

  The Answer from SE900 = *FCh,5Ah,09h,05h,01h,78h,31h,31h,FFh*

4.4.3 The Extension Main Board Command For LOGO

****

Command code => **123(7Bh) = EXT_LOGO_POSITION_CMD**

   Parameter #1 => Get/Set: 30h=get, 31h=set

   Parameter #2 => LOGO No.: 30h=logo#1, 31h=logo#2

   When (para#1=31h)

       Parameter #3 => logo's X position: 1~147

       Parameter #4 => logo's Y position: 1~97(NTSC),1~119(PAL)

--- Answer ---

   Parameter #1 => Get/Set: 30h=get, 31h=set

   Parameter #2 => LOGO No.: 30h=logo#1, 31h=logo#2

   Parameter #3 => logo's X position: 1~147

   Parameter #4 => logo's Y position: 1~97(NTSC),1~119(PAL)

****

Command code => **124(7Ch) = EXT_ASK_LOGO_STATUS_CMD**

   Parameter #1 => NC

  --- Answer ---

   Parameter #1 => Logo source: 30h=off, 31h~38h=CH1~8, 39h=BG,3ah=internal

   Parameter #2/3 => Logo's Key level MAX: (3xh, 3yh): xyh=the MAX luminance value

   Parameter #4/5 => Logo's Key level MIN: (3xh, 3yh): xyh=the MIN luminance value

   Parameter #6 => Logo's Transparency: 0~100

   Parameter #7 => Logo#1's X position: 1~147

   Parameter #8 => Logo#1's Y position: 1~97(NTSC), 1~119(PAL)

   Parameter #9 => Logo#2's X position: 1~147

   Parameter #10 => Logo#2's Y position: 1~97(NTSC), 1~119(PAL)

   Parameter #11 => (b0:NC); (b1=0=logo#1 off, 1=on); (b2=0=logo#2 off, 1=on)

   Parameter #12/13 => Transparent point: (3xh, 3yh): xyh= the point's luminance

   Parameter #14/15/16 => Window's X LEFT: (3xh, 3yh, 3zh): xyzh=the X left position

   Parameter #17/18/19 => Window's X RIGHT: (3xh, 3yh, 3zh): xyzh=the X right position

   Parameter #20/21/22 => Window's Y TOP: (3xh, 3yh, 3zh): xyzh=the Y top position

   Parameter #23/24/25 => Window's Y BOTTOM: (3xh, 3yh, 3zh): xyzh=the Y bottom position

   Parameter #26 => 3xh: (b0=1=keep black, 0=off); (b1=1=keep white, 0=off)

```
****************************************************
```
Command code => **125(7Dh) = EXT_LOGO_SOURCE_BW_CMD**

   Parameter #1 = > Get/Set: 30h=get, 31h=set

   When (para#1=31h)

      Parameter #2 = > Logo source: 30h~3Ah: 30h=off, 31h~38h=CH1~8, 39h=BG, 3ah=internal

      Parameter #3 = > 3xh: (b0=1=keep black, 0=off); (b1=1=keep white, 0=off)

 --- Answer ---

   Parameter #1 = > Get/Set: 30h=get, 31h=set

   Parameter #2 = > Logo source: 30h~3Ah: 30h=off, 31h~38h=CH1~8, 39h=BG, 3ah=internal

   Parameter #3 = > 3xh: (b0=1=keep black, 0=off); (b1=1=keep white, 0=off)
```
****************************************************
```
Command code => **126(7Eh) = EXT_LOGO_LUMAKEY_LEVEL_CMD**

   Parameter #1 = > Get/Set: 30h=get, 31h=set

   When (para#1=31h)

      Parameter #2/3 = > Logo's Key level MAX: (3xh, 3yh): xyh=the MAX luminance value

      Parameter #4/5 = > Logo's Key level MIN: (3xh, 3yh): xyh=the MIN luminance value

      Parameter #6/7 = > Transparent point: (3xh, 3yh): xyh= the point's luminance

 --- Answer ---

   Parameter #1 = > Get/Set: 30h=get, 31h=set

   Parameter #2/3 = > Logo's Key level MAX: (3xh, 3yh): xyh=the MAX luminance value

   Parameter #4/5 = > Logo's Key level MIN: (3xh, 3yh): xyh=the MIN luminance value

   Parameter #6/7 = > Transparent point: (3xh, 3yh): xyh= the point's luminance
```
****************************************************
```
Command code => **127(7Fh) = EXT_LOGO_TRANSPARENCY_CMD**

   Parameter #1 = > Get/Set: 30h=get, 31h=set

   When (para#1=31h)

      Parameter #2 = > Logo's Transparency: 0~100

 --- Answer ---

   Parameter #1 = > Get/Set: 30h=get, 31h=set

   Parameter #2 = > Logo's Transparency: 0~100
```
****************************************************
```
Command code => **128(80h) = EXT_LOGO_COPY_FILE_CMD**

   Parameter #1 = > 31h

   Parameter #2 = > Logo No.: 30h=Logo_1, 31h=Logo_2

 --- Answer ---

   Parameter #1 = > 30h=Copy OK, 31h= Not good

   Parameter #2 = > Logo No.: 30h=Logo_1, 31h=Logo_2

****

Command code => **129(81h) = EXT_LOGO_1_2_ON_OFF_CMD**

   Parameter #1 = > Get/Set: 30h=get, 31h=set

   When (para#1=31h)

       Parameter #2 = > (b0: NC); (b1=0=logo#1 off, 1=on); (b2=0=logo#2 off, 1=on)

 --- Answer ---

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  Parameter #2 = > (b0: NC); (b1=0=logo#1 off, 1=on); (b2=0=logo#2 off, 1=on)

****

Command code => **136(88h) = EXT_LOGO_WINDOW_CMD**

   Parameter #1 = > Get/Set: 30h=get, 31h=set

   Parameter #2 = > X/Y: 30h= set X, 31h= set Y

   When (para#2=30h)

       Parameter #3/4/5 => Window's X LEFT: (3xh, 3yh, 3zh): xyzh=the X left position

       Parameter #6/7/8 => Window's X RIGHT: (3xh, 3yh, 3zh): xyzh=the X right position

   When (para#2=31h)

       Parameter #3/4/5 => Window's Y TOP: (3xh, 3yh, 3zh): xyzh=the Y top position

       Parameter #6/7/8 => Window's Y BOTTOM: (3xh, 3yh, 3zh): xyzh=the Y bottom position

--- Answer ---

   Parameter #1 = > Get/Set: 30h=get, 31h=set

   Parameter #2 = > X/Y: 30h= set X, 31h= set Y

   When (para#2=30h)

       Parameter #3/4/5 => Window's X LEFT: (3xh, 3yh, 3zh): xyzh=the X left position

       Parameter #6/7/8 => Window's X RIGHT: (3xh, 3yh, 3zh): xyzh=the X right position

   When (para#2=31h)

       Parameter #3/4/5 => Window's Y TOP: (3xh, 3yh, 3zh): xyzh=the Y top position

       Parameter #6/7/8 => Window's Y BOTTOM: (3xh, 3yh, 3zh): xyzh=the Y bottom position

Example: Set LOGO#1 position to (20,18).

   The Control Data Stream= *F0h,**5Ah,0dh**,05h,01h,7Bh,31h,30h,14h,12h,3Fh,35h,FFh*

        F0h, ID(5Ah) , Length(0dh), 05h, 01h, Command code(7Bh),para#1(31h),para#2(30h),para#3(14h)

        Para#4(12h),checksum_L(3xh), checksum_M(3yh), FFh

        Checksum=F0h+5Ah+0dh+05h+01h+7Bh+31h+30h+14h+12h=5Fh

   The Answer from SE900 = *FCh,**5Ah,0dh**,05h,01h,7Bh,31h,30h,14h,12h,3bh,36h,FFh*

4.4.4 The Extension Main Board Command For CG

****

Command code => **130(82h) = EXT_ASK_CG_STATUS_CMD**

  Parameter #1 = > NC

  --- Answer ---

  Parameter #1 = > CG Mode: 30h=external, 31h=internal

  Parameter #2 = > NC

  Parameter #3/4 = > CG LUMAKEY level MAX: (3xh, 3yh): xyh=the MAX luminance value

  Parameter #5/6 = > CG LUMAKEY level MIN: (3xh, 3yh): xyh=the MIN luminance value

  Parameter #7   = > CG Transparency: 0~100

  Parameter #8/9 = > CG Transparent point: (3xh, 3yh): xyh= the point's luminance

  Parameter #10/11/12 => Window's X LEFT: (3xh, 3yh, 3zh): xyzh=the X left position

  Parameter #13/14/15 => Window's X RIGHT: (3xh, 3yh, 3zh): xyzh=the X right position

  Parameter #16/17/18 => Window's Y TOP: (3xh, 3yh, 3zh): xyzh=the Y top position

  Parameter #19/20/21 => Window's Y BOTTOM: (3xh, 3yh, 3zh): xyzh=the Y bottom position

  Parameter #22 = > 3xh: (b0=1=keep black, 0=off); (b1=1=keep white, 0=off)

****

Command code => **131(83h) = EXT_CG_MODE_CMD**

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  When (para#1=31h)

       Parameter #2 = > CG Mode: 30h=external, 31h=internal

  --- Answer ---

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  Parameter #2 = > CG Mode: 30h=external, 31h=internal

****

Command code => **132(84h) = EXT_CG_SOURCE_BW_CMD**

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  When (para#1=31h)

       Parameter #2 = > 30h: (spare)

       Parameter #3 = > 3xh: (b0=1=keep black, 0=off); (b1=1=keep white, 0=off)

  --- Answer ---

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  Parameter #2 = > NC

  Parameter #3 = > 3xh: (b0=1=keep black, 0=off); (b1=1=keep white, 0=off)

```
****************************************************
```

Command code => 133(85h) = **EXT_CG_LUMAKEY_LEVEL_CMD**

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  When (para#1=31h)

      Parameter #2/3 = > CG LUMAKEY level MAX: (3xh, 3yh): xyh=the MAX luminance value

      Parameter #4/5 = > CG LUMAKEY level MIN: (3xh, 3yh): xyh=the MIN luminance value

      Parameter #6/7 = > CG Transparent point: (3xh, 3yh): xyh= the point's luminance

 --- Answer ---

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  Parameter #2/3 = > CG LUMAKEY level MAX: (3xh, 3yh): xyh=the MAX luminance value

  Parameter #4/5 = > CG LUMAKEY level MIN: (3xh, 3yh): xyh=the MIN luminance value

  Parameter #6/7 = > CG Transparent point: (3xh, 3yh): xyh= the point's luminance

```
****************************************************
```

Command code => 134(86h) = **EXT_CG_TRANSPARENCY_CMD**

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  When (para#1=31h)

      Parameter #2 = > CG Transparency: 0~100

 --- Answer ---

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  Parameter #2 = > CG Transparency: 0~100

```
****************************************************
```

Command code => 135(87h) = **EXT_CG_WINDOW_CMD**

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  Parameter #2 = > X/Y: 30h= set X, 31h= set Y

  When (para#2=30h)

      Parameter #3/4/5 => Window's X LEFT: (3xh, 3yh, 3zh): xyzh=the X left position

      Parameter #6/7/8 => Window's X RIGHT: (3xh, 3yh, 3zh): xyzh=the X right position

   When (para#2=31h)

      Parameter #3/4/5 => Window's Y TOP: (3xh, 3yh, 3zh): xyzh=the Y top position

      Parameter #6/7/8 => Window's Y BOTTOM: (3xh, 3yh, 3zh): xyzh=the Y bottom position

--- Answer ---

   Parameter #1 = > Get/Set: 30h=get, 31h=set

  Parameter #2 = > X/Y: 30h= set X, 31h= set Y

  When (para#2=30h)

      Parameter #3/4/5 => Window's X LEFT: (3xh, 3yh, 3zh): xyzh=the X left position

      Parameter #6/7/8 => Window's X RIGHT: (3xh, 3yh, 3zh): xyzh=the X right position

   When (para#2=31h)

      Parameter #3/4/5 => Window's Y TOP: (3xh, 3yh, 3zh): xyzh=the Y top position

      Parameter #6/7/8 => Window's Y BOTTOM: (3xh, 3yh, 3zh): xyzh=the Y bottom position

Example: Set the CG mode to internal LUMAKEY mode.

 The control data stream: *F0h,**5Ah,0Bh**,05h,01h,**83h,31h,31h,**38h,33h,FFh*

   F0h, ID(5Ah) , Length(0Bh), 05h, 01h, Command code(83h),para#1(31h),para#2(31h)

   ,checksum_L(38h), checksum_M(33h), FFh

   Checksum=F0h+5Ah+0Bh+05h+01h+7Bh+31h+31h=38h

 The Answer from SE900 = *FCh,**5Ah,0Bh**,05h,01h,**83h,31h,31h,**34h,34h,FFh*

4.4.5 The Extension Main Board Command For GPI

****

Command code => **137(89h) = EXT_ASK_GPI_STATUS_CMD**

  Parameter #1 = > NC

 --- Answer ---

  Parameter #1 = > GPI on/off flag: 3xh: (b0=1=GPI IN on, 0=off); (b1=1=GPI OUT on, 0=off)

  Parameter #2 = > GPI_TAKE mode & GPI port mode: 3xh: (b0, b3: NC);

(b1=0=GPI port = GPI IN only, 1= GPI IN & OUT)

(b2=0= GPI_TAKE trigger GPI IN, 1=GPI_TAKE trigger GPI OUT)

  Parameter #3 = > GPI OUT trigger source: 3xh: 30h=GPI OUT trigger by GPI_TAKE key,

31h~38h=trigger by MAIN-SOURCE key 1~8

  Parameter #4 = > GPI OUT delay time: 0~99(63h) frame: (switch main source after delay time.)

  Parameter #5 = > GPI OUT signal's width: 0~9 frame

****

Command code => **138(8Ah) = EXT_GPI_ONOFF_CMD**

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  When (para#1=31h)

      Parameter #2 = > GPI on/off flag: 3xh: (b0=1=GPI IN on, 0=off); (b1=1=GPI OUT on, 0=off)

 --- Answer ---

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  Parameter #2 = > GPI on/off flag: 3xh: (b0=1=GPI IN on, 0=off); (b1=1=GPI OUT on, 0=off)

****

Command code => **139(8Bh) = EXT_GPI_OUT_MODE_CMD**

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  When (para#1=31h)

      Parameter #2 = > GPI_TAKE mode & GPI port mode: 3xh: (b0, b3: NC);

(b1=0=GPI port = GPI IN only, 1= GPI IN & OUT)

(b2=0= GPI_TAKE trigger GPI IN, 1=GPI_TAKE trigger GPI OUT)

      Parameter #3 = > GPI OUT trigger source: 3xh: 30h=GPI OUT trigger by GPI_TAKE key,

31h~38h=trigger by MAIN-SOURCE key 1~8

 --- Answer ---

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  Parameter #2 = > GPI_TAKE mode & GPI port mode: 3xh: (b0, b3: NC);

(b1=0=GPI port = GPI IN only, 1= GPI IN & OUT)

(b2=0= GPI_TAKE trigger GPI IN, 1=GPI_TAKE trigger GPI OUT)

  Parameter #3 = > GPI OUT trigger source: 3xh: 30h=GPI OUT trigger by GPI_TAKE key,

31h~38h=trigger by MAIN-SOURCE key 1~8

```
*******************************************************
```

Command code => **140(8Ch) = GPI_OUT_DELAY_CMD**

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  When (para#1=31h)

    Parameter #2 = > GPI OUT delay time: 0~99(63h) frame: (switch main source after delay time.)

    Parameter #3 = > GPI OUT signal's width: 0~9 frame

--- Answer ---

  Parameter #1 = > Get/Set: 30h=get, 31h=set

  Parameter #2 = > GPI OUT delay time: 0~99(63h) frame: (switch main source after delay time.)

  Parameter #3 = > GPI OUT signal's width: 0~9 frame

Example: Set the GPI_PORT =GPI IN & OUT, GPI_TAKE=GPI_IN trigger, GPI OUT trigger source=CH8

   The control data stream: *F0h,**5Ah,0Ch**,05h,01h,**8Bh,31h,31h,38h,**31h,38h,FFh*

     F0h, ID(5Ah) , Length(0Ch), 05h, 01h, Command code(8Bh),para#1(31h),para#2(31h), para#3(38h)

     ,checksum_L(31h), checksum_M(38h), FFh

     Checksum=F0h+5Ah+0Ch+05h+01h+8Bh+31h+31h+38h=81h

   The Answer from SE900   = *FCh,**5Ah,0Ch**,05h,01h,**8Bh,31h,31h,**3dh,38h,FFh*

4.4.6 The Extension Main Board Command For Speed key Setting

****

Command code => **141(8Dh) = EXT_TRANSITION_SPEED_CMD**

   Parameter #1 = > Get/Set: 30h=get, 31h=set   (or 00h=get/01h=set)

   Parameter #2 = > 30h=reset to default, 31h=+1 frame, 32h= -1 frame, 33h=set by parameter#4

   Parameter #3 = > Speed key No.: 31h~36h: Speed#1~Speed#6

   When (para#1=31h and papa#2=33h)

          Parameter #4 = > Transition duration: 1~90(5Ah) frames

 --- Answer ---

   Parameter #1 = > Get/Set: 30h=get, 31h=set   (or 00h=get/01h=set)

   Parameter #2 = > 30h=reset to default, 31h=+1 frame, 32h= -1 frame, 33h=set by parameter#4

   Parameter #3 = > Speed key No.: 31h~36h: Speed#1~Speed#6

   Parameter #4 = > Transition duration: 1~90(5Ah) frames

Example: Set the speed#2 to 10 frames.

     The control data stream: *F0h,**5Ah,0Dh**,05h,01h,**8Dh,01h,33h,32h,0Ah,***3ah,35h,FFh*

          F0h, ID(5Ah) , Length(0Dh), 05h, 01h, Command code(8Dh),para#1(01h),para#2(33h), para#3(32h)

          , para#4(0Ah),checksum_L(3ah), checksum_M(35h), FFh

          Checksum=F0h+5Ah+0Dh+05h+01h+8Dh+01h+33h+32h+0Ah=5ah

   The Answer from SE900   = *FCh,**5Ah,0Dh**,05h,01h,**8Dh,01h,33h,32h,0Ah,***36h,36h,FFh*

5.0 The Control Command for Extension Card

*Control the SE900 main board's function.

5.1.1 The control data stream

1st	2nd	3rd	4th	5th	6th	7th
F0h	1xh **CH ID**	xxh length	05h command group	***Command code***	***Parameter #1***	***Parameter #2***

8th,,,	Last-2	Last-1	Last
Parameter #,,,	cksm_L	cksm_H	FFh

5.1.2   CH ID (channel ID)

The ID of SE900's EXT SLOT_ 1: **10h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 2: **11h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 3: **12h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 4: **13h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 5: **14h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 6: **15h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 7: **16h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 8: **17h** (base 16)   (input board)
The ID of SE900's EXT SLOT_ 9: **18h** (base 16)   (CHROMA KEY board)
The ID of SE900's EXT SLOT_ 10: **19h** (base 16)   (EXTERNAL GENLOCK board)
The ID of SE900's EXT SLOT_ 11: **1Ah** (base 16)   (PREVIEW board)
The ID of SE900's EXT SLOT_ 12: **1Bh** (base 16)   (CG board)
The ID of SE900's EXT SLOT_ 13: **1Ch** (base 16)   (SDI_OUT board)
The ID of SE900's EXT SLOT_ 14: **1Dh** (base 16)   (AV & DV output board)
The ID of SE900's EXT SLOT_ 15: **1Eh** (base 16)   (N.C.)
The ID of SE900's AUDIO_DELAY_BD: **1Fh** (base 16)

5.1.3   The command group= 08h   (SE900 CARD control.)

5.2.1 CHROMAKEY Board Command

// --
// Chromakey parameter data types
// hex: 30~3fh => 0~fh
// hex4: [3wh 3xh 3yh 3zh] => w x . y z
// hex6: [3uh 3vh 3wh 3xh 3yh 3zh] => u v / w x / y z
// int: signed   integer -100~100   = [80h-100 ~ 80h+100]
// uint: unsigned integer   0~200   = [80h-100 ~ 80h+100]
// int3:   signed   integer -2048~2047 = [3Xh 3Yh 3Zh] => XYZh

```
*****************************************************
```
Command code => **70h = CKCMD_GET_VERSION**

   Parameter #1 = > NC

 --- Answer ---

   Parameter #1 ~#4= > CPU firmware version: [30h,31h,32h,33h]=V01.23

   Parameter #5 ~#9= > CPU firmware date: [30h,36h,30h,37h,31h,32h] = 2006/07/12

   Parameter #10 ~#13= >FPGA firmware Version: [30h,31h,33h,35h] = V01.35
```
*****************************************************
```
Command code => **72h = CKCMD_GET_OUTPUT_MODE**

   Parameter #1 = > NC

 --- Answer ---

   Parameter #1 = > CK output mode: 30h=FG, 31h=BG, 32h=COMP, 33h=MATTE
```
*****************************************************
```
Command code => **73h = CKCMD_SET_OUTPUT_MODE**

   Parameter #1 = > CK output mode: 30h=FG, 31h=BG, 32h=COMP, 33h=MATTE

 --- Answer ---

   Parameter #1 = > CK output mode: 30h=FG, 31h=BG, 32h=COMP, 33h=MATTE
```
*****************************************************
```
Command code => **74h = CKCMD_GET_CAMERA**

   Parameter #1 = > NC

 --- Answer ---

   Parameter #1 = > current camera source: 31h~34h=CAM1~4
```
*****************************************************
```
Command code => **75h = CKCMD_SET_CAMERA**

   Parameter #1 = > Current camera source: 31h~34h=CAM1~4

 --- Answer ---

   Parameter #1 = > Current camera source: 31h~34h=CAM1~4

                  Note: All chromakey parameters will be switched synchronously

                      with CAM1~4 switching when next frame, UI should be updated

```
*******************************************************
```
*Command code => **76h = CKCMD_GET_KEY_MODE***

   Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

 --- Answer ---

   Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   Parameter #2 = > Key mode: 30h=GREEN key, 31h=BLUE key, 32h=LUMA key
```
*******************************************************
```
*Command code => **77h = CKCMD_SET_KEY_MODE***

   Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   Parameter #2 = > Key mode: 30h=GREEN key, 31h=BLUE key, 32h=LUMA key

 --- Answer ---

   Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   Parameter #2 = > Key mode: 30h=GREEN key, 31h=BLUE key, 32h=LUMA key
```
*******************************************************
```
*Command code => **78h = CKCMD_GET_CK_BACK_COLOR***

   Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

--- Answer ---

   Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   Parameter #2 = > Hue Offset: (-60~60), default=0(80h)
```
*******************************************************
```
*Command code => **79h = CKCMD_SET_ CK_BACK_COLOR***

   Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   Parameter #2 = > Hue Offset: (-60~60), default=0(80h)

 --- Answer ---

   Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   Parameter #2 = > Hue Offset: (-60~60), default=0(80h)
```
*******************************************************
```
*Command code => **7ah = CKCMD_GET_CK_PARAMETER***

   Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

--- Answer ---

   Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   Parameter #2 = > Level: (0~100), default=40 [80h+28h]

   Parameter #3 = > Density: (0~64), default=32 [80h+32]

   Parameter #4 = > Spill: (-32~64), default=16 [80h+16]

```
**************************************************
```
Command code => **7bh = CKCMD_SET_ CK_PAMAMETER**

  Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

  Parameter #2 = > Level: (0~100), default=40 [80h+28h]

  Parameter #3 = > Density: (0~64), default=32 [80h+32]

  Parameter #4 = > Spill: (-32~64), default=16 [80h+16]

 --- Answer ---

  Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

  Parameter #2 = > Level: (0~100), default=40 [80h+28h]

  Parameter #3 = > Density: (0~64), default=32 [80h+32]

  Parameter #4 = > Spill: (-32~64), default=16 [80h+16]
```
**************************************************
```
Command code => **7Ch = CKCMD_GET_CK_DARK_BRIGHT**

  Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

--- Answer ---

  Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

  Parameter #2 = > Dark Level: (0~64), default=16 [80h+16]

  Parameter #3 = > Bright Level: (0~64), default=16 [80h+16]

  Parameter #4 = > Dark Density: (0~64), default=16 [80h+16]
```
**************************************************
```
Command code => **7Dh = CKCMD_SET_ CK_ DARK_BRIGHT**

  Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

  Parameter #2 = > Dark Level: (0~64), default=16 [80h+16]

  Parameter #3 = > Bright Level: (0~64), default=16 [80h+16]

  Parameter #4 = > Dark Density: (0~64), default=16 [80h+16]

 --- Answer ---

  Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

  Parameter #2 = > Dark Level: (0~64), default=16 [80h+16]

  Parameter #3 = > Bright Level: (0~64), default=16 [80h+16]

  Parameter #4 = > Dark Density: (0~64), default=16 [80h+16]
```
**************************************************
```
Command code => **7Eh = CKCMD_GET_CK_SPILL_ BRIGHTNESS**

  Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

--- Answer ---

  Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

  Parameter #2 = > spill brightness: (0~100), default=33 [80h+33]

```
**************************************************

*Command code => 7Fh = CKCMD_SET_ CK_SPILL_ BRIGHTNESS*

   *Parameter #1 = >* Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   *Parameter #2 = >* spill brightness: (0~100), default=33 [80h+33]

   *Parameter #3 = >* spill brightness: (0~100), default=33 [80h+33]

   *Parameter #4 = >* spill brightness: (0~100), default=33 [80h+33]

 --- Answer ---

   *Parameter #1 = >* Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   *Parameter #2 = >* spill brightness:   (0~64), default=16 [80h+16]


**************************************************

*Command code => 80h = CKCMD_GET_LUMAKEY_ PAMAMETER*

   *Parameter #1 = >* Camera No.: 30h=current, 31h~34h=CAM1~CAM4

--- Answer ---

   *Parameter #1 = >* Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   *Parameter #2 = >* Dark Level: (0~100), default=10 [80h+10]

   *Parameter #3 = >* Dark Grad: (0~100), default=10 [80h+10]

   *Parameter #4 = >* Bright Level: (0~100), default=0 [80h]

   *Parameter #5 = >* Bright Grad: (0~100), default=0 [80h]



**************************************************

*Command code => 81h = CKCMD_SET_ LUMAKEY_ PAMAMETER*

   *Parameter #1 = >* Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   *Parameter #2 = >* Dark Level: (0~100), default=10 [80h+10]

   *Parameter #3 = >* Dark Grad: (0~100), default=10 [80h+10]

   *Parameter #4 = >* Bright Level: (0~100), default=0 [80h]

   *Parameter #5 = >* Bright Grad: (0~100), default=0 [80h]

 --- Answer ---

   *Parameter #1 = >* Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   *Parameter #2 = >* Dark Level: (0~100), default=10 [80h+10]

   *Parameter #3 = >* Dark Grad: (0~100), default=10 [80h+10]

   *Parameter #4 = >* Bright Level: (0~100), default=0 [80h]

   *Parameter #5 = >* Bright Grad: (0~100), default=0 [80h]


**************************************************

*Command code => 82h = CKCMD_GET_EDGE_SHRINK*

   *Parameter #1 = >* Camera No.: 30h=current, 31h~34h=CAM1~CAM4

--- Answer ---

   *Parameter #1 = >* Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   *Parameter #2 = >* Shrink Left: (0~6), default=0 [30h]

   *Parameter #3 = >* Shrink Right: (0~6), default=0 [30h]
```

```
*****************************************************

Command code => 83h = CKCMD_SET_EDGE_SHRINK
    Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4
    Parameter #2 = > Shrink Left: (0~6), default=0 [30h]
    Parameter #3 = > Shrink Right: (0~6), default=0 [30h]
  --- Answer ---
    Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4
    Parameter #2 = > Shrink Left: (0~6), default=0 [30h]
    Parameter #3 = > Shrink Right: (0~6), default=0 [30h]
*****************************************************

Command code => 84h = CKCMD_GET_FG_COLOR_PROC
    Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4
--- Answer ---
    Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4
    Parameter #2 = > On/Off: default=off =30h, 31h=on
    Parameter #3 = > Brightness: (-100~100), default=0=[80h]
    Parameter #4 = > Contrast: (-100~100), default=0=[80h]
    Parameter #5 = > Saturation: (-100~100), default=0=[80h]


*****************************************************

Command code => 85h = CKCMD_SET_ FG_COLOR_PROC
    Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4
    Parameter #2 = > On/Off: default=off =30h, 31h=on
    Parameter #3 = > Brightness: (-100~100), default=0=[80h]
    Parameter #4 = > Contrast: (-100~100), default=0=[80h]
    Parameter #5 = > Saturation: (-100~100), default=0=[80h]
  --- Answer ---
    Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4
    Parameter #2 = > On/Off: default=off =30h, 31h=on
    Parameter #3 = > Brightness: (-100~100), default=0=[80h]
    Parameter #4 = > Contrast: (-100~100), default=0=[80h]
    Parameter #5 = > Saturation: (-100~100), default=0=[80h]


*****************************************************

Command code => 86h = CKCMD_GET_WINDOW_POSITION
    Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4
--- Answer ---
    Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4
    Parameter #2~4 = > X Left: (0~720), default=0= [30h, 30h, 30h
    Parameter #5~7 = > X Right: (0~720), default=720= [32h, 3Dh, 30h]
    Parameter #8~10 = > Y Top: (0~576), default=0= [30h, 30h, 30h]
    Parameter #11~13 = > Y Bottom: (0~576), default=486(NTSC)= [31h, 3Eh, 36h],576(PAL)=[32h, 34h, 30h]
```

30

```
*******************************************************
```
Command code => **87h = CKCMD_SET_WINDOW_POSITION**

   Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   Parameter #2~4 = > X Left: (0~720), default=0= [30h, 30h, 30h

   Parameter #5~7 = > X Right: (0~720), default=720= [32h, 3Dh, 30h]

   Parameter #8~10 = > Y Top: (0~576), default=0= [30h, 30h, 30h]

   Parameter #11~13 = > Y Bottom: (0~576), default=486(NTSC)= [31h, 3Eh, 36h],576(PAL)=[32h, 34h, 30h

 --- Answer ---

   Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

   Parameter #2~4 = > X Left: (0~720), default=0= [30h, 30h, 30h

   Parameter #5~7 = > X Right: (0~720), default=720= [32h, 3Dh, 30h]

   Parameter #8~10 = > Y Top: (0~576), default=0= [30h, 30h, 30h]

   Parameter #11~13 = > Y Bottom: (0~576), default=486(NTSC)= [31h, 3Eh, 36h],576(PAL)=[32h, 34h, 30h

```
*******************************************************
```
Command code => **90h = CKCMD_RECALL_PARAMETER_CMD**

   Parameter #1 = > User No.: (31h~33h), 30h= factory default

 --- Answer ---

   Parameter #1 = > User No.: (31h~33h), 30h= factory default

// **Note:** After recall, host should use the CKCMD_GET_ALL_PARAMETER command to get all parameters
      of CAM1~4.

```
*******************************************************
```
Command code => **91h = CKCMD_STORE_PARAMETER_CMD**

                   (Store the current parameter to user_x)

   Parameter #1 = > User No.: (31h~33h), 30h=power on value

 --- Answer ---

   Parameter #1 = > User No.: (31h~33h), 30h=power on value

```
*******************************************************
```
Command code => **93h = CKCMD_RESET_PARAMETER_CMD**

  (A) *No Parameter* => Reset All to default

  (B) *Parameter #1* = > CAM No.: (31h~33h),   reset the single CAM to default

 --- Answer ---

   No *Parameter*

// Note: Reset all parameters to factory default, without changing Output/Camera/Key Mode.

```
*******************************************************
```

*Command code => **92h = CKCMD_GET_ALL_PARAMETER***

    Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

--- Answer ---

    Parameter #1 = > Camera No.: 30h=current, 31h~34h=CAM1~CAM4

    Parameter #2 = > CK Output mode: 30h=FG, 31h=BG, 32h=Comp [def], 33h=Matte

    Parameter #3 = > Current Camera: (31h~34h),(CAM1~4 the same)

    Parameter #4 = > Key mode: 30h=GREEN key, 31h=BLUE key, 32h=LUMA key

    Parameter #5 = > Back color Hue Offset: (-60~60), default=0(80h)

    Parameter #6 = > CK Level: (0~100), default=40 [80h+28h]

    Parameter #7 = > CK Density: (0~64), default=32 [80h+32]

    Parameter #8 = > CK Spill: (-32~64), default=16 [80h+16]

    Parameter #9 = > CK Dark Level: (0~64), default=16 [80h+16]

    Parameter #10 = > CK Bright Level: (0~64), default=16 [80h+16]

    Parameter #11 = > CK Dark Density: (0~64), default=16 [80h+16]

    Parameter #12 = > Replace Color R :(0~100), default=33=[80h+33]

    Parameter #13 = > Replace Color G :(0~100), default=33=[80h+33]

    Parameter #14 = > Replace Color B :(0~100), default=33=[80h+33]

    Parameter #15 = > LUMAKEY Dark Level: (0~100), default=10 [80h+10]

    Parameter #16 = > LUMAKEY Dark Grad: (0~100), default=10 [80h+10]

    Parameter #17 = > LUMAKEY Bright Level: (0~100), default=0 [80h]

    Parameter #18 = > LUMAKEY Bright Grad: (0~100), default=0 [80h]

    Parameter #19 = > Edge Shrink Left: (0~6), default=0 [30h]

    Parameter #20 = > Edge Shrink Right: (0~6), default=0 [30h]

    Parameter #21 = > FG Color Processor On/Off: default=off =30h,31h=on

    Parameter #22 = > FG Color Processor Brightness: (-100~100), default=0=[80h]

    Parameter #23 = > FG Color Processor Contrast: (-100~100), default=0=[80h]

    Parameter #24 = > FG Color Processor Saturation: (-100~100), default=0=[80h]

    Parameter #25, #26, #27 = > Window X Left: (0~720), default=0= [30h, 30h, 30h]

    Parameter #28, #29, #30 = > Window X Right: (0~720), default=720= [32h, 3Dh, 30h]

    Parameter #31, #32, #33 = > Window Y Top: (0~576), default=0= [30h, 30h, 30h]

    Parameter #34, #35, #36 = > Window Y Bottom: (0~576)

    Parameter #37 = > Window border: default=off=30h

Example: Set the CHROMAKEY parameter level=48, density=36, spill=18

    The control data stream= *F0h, **18h, 0Ch**, 08h, **7Bh, 30h, B0h, A4h, 92h**, 3Dh, 3Ah, FFh*

        F0h,ID(18h),length(0Ch),08h,01h,command code(7Bh),Current Camera(30h),level(B0h),density(A4),

         spill(92h), CHECKSUM_L(3Dh), CHECKSUM_M(3Ah), FFh

    checksum= F0h+18h+0Ch+08h+7Bh+30h+B0h+A4h+92h=ADh

    The answer from SE900's CHROMAKEY card: *FCh, **18h, 0Ch**, 08h, **7Bh, 30h, B0h, A4h, 92h**, 39h, 3Bh,*

                                            FFh

5.2.2 CG Board Command

```
*******************************************************
```

Command code => **61h = ASK_CARD_TYPE_CMD**

   *Parameter #1 = >*NC

--- Answer ---

   *Parameter #1 =>*36h=CG Board,

```
*******************************************************
```

Command code => **63h = ASK_WORK_STATUS_CMD**

   Parameter #1 = > NC

--- Answer ---

   Parameter #1 = > Card Type: 36h: CG board

   Parameter #2 = > on/off: 31h=on, 30h=off

   Parameter #3 = > SDI IN Vertical Offset: (0~127)

   Parameter #4 = > SDI OUT Aspect ratio flag: 30h=4:3, 31h=16:9, 38h=off

   Parameter #5 = > NC

   Parameter #6 = > NC

   Parameter #7 = > NC

   Parameter #8 = > NC

```
*******************************************************
```

Command code => **90h = SET_ CG_SDI_IN_V_OFFSET_CMD**

   Parameter #1 = > 30h=get, 31h=set.

   Parameter #2 = > Vertical offset value.   (0~64)

--- Answer ---

   Parameter #1 = > 30h=get, 31h=set.

   Parameter #2 = > Vertical offset value.   (0~64)

```
*******************************************************
```

Command code => **98h = SET_ASPECT_RATIO_FLAG_CMD**

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   When (para#1=30h)

      Parameter #2 = > Aspect Ratio Flag: 30h= 4:3, 31h =16:9, 38h=off

--- Answer ---

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   Parameter #2 = > Aspect Ratio Flag: 30h= 4:3, 31h =16:9, 38h=off

```
*******************************************************
```

Command code => **99h = ASK_ASPECT_RATIO_FLAG_CMD**

   Parameter #1 = > NC

--- Answer ----

   Parameter #1 = > NC

   Parameter #2 = > Aspect Ratio Flag: 30h= 4:3, 31h =16:9, 38h=off

****

Command code => **A0h = CARD_RESET_PARA_CMD**

  Parameter #1 = > 30h=reset current parameter, 31h=reset all user

--- Answer ---

  Parameter #1 = > 30h=reset current parameter, 31h=reset all user

****

Command code => **A2h = CARD_STORE_RECALL_CMD**

  Parameter #1 = > 30h=store, 31h=recall

  Parameter #2 = > User No.: 31h~33h (3 users)

--- Answer ---

  Parameter #1 = > 30h=store, 31h=recall

  Parameter #2 = > User No.: 31h~33h (3 users)

5.2.3 Analog Video In Board & DV In Board Commands

****

Command code => **61h = ASK_CARD_TYPE_CMD**

   *Parameter #1 = >*NC

 --- Answer ---

   Parameter #1 =>30h=Analog IN, 31h=DV IN, 32h=SDI IN, 33h=DVI/VGA IN, 34h=Chroma Key BD,

             35h=Preview BD, 36h=CG BD, 37h=GenLock BD, 38h=Analog & DV OUT,

             39h=SDI OUT, 3Eh=Remote BD, 3Fh=Audio Delay BD, 40h=Tally BD

****

Command code => **63h = ASK_WORK_STATUS_CMD**

   Parameter #1 = > NC

 --- Answer ---

   Parameter #1 = > Card Type: 30h~40h. (Ref. to command 61h)

   Parameter #2 = > status _flag: (b0=0=off, 1=on); (b1=0=NTSC, 1=PAL); (b4=0=0IRE, 1=7.5IRE);

                      (b5=0=AGC off, 1=AGC on)

   Parameter #3 = > Input type: 30h=CV in, 31h=YC in, 32h=YUV in, 35h=DV in,

                      36h=SDI in, 37h=DSUB VGA in, 38h=DVI in

   Parameter #4 = > Brightness: -99~+99, default=0(80h)

   Parameter #5 = > Contrast: -99~+99, default=0(80h)

   Parameter #6 = > Saturation: -99~+99, default=0(80h)

   Parameter #7 = > NC

   Parameter #8 = > RGB Correction's U offset: -99~+99, default=0(80h)

   Parameter #9 = > RGB Correction's V offset: -99~+99, default=0(80h)

****

Command code => **64h = SET_NTSC_PAL_CMD**

   Parameter #1 = > video system: 30h=NTSC, 31h=PAL

 --- Answer ---

   Parameter #1 => video system: 30h=NTSC, 31h=PAL

****

Command code => **65h = ASK_NTSC_PAL_CMD**

   Parameter #1 = > NC

 --- Answer ---

   Parameter #1 => video system: 30h=NTSC, 31h=PAL

****

Command code => **66h = SET_INPUT_TYPE_CMD**

   Parameter #1 =>Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   When (para#1=30h)

        *Parameter #2 = >*Input type: 30h=CV in, 31h=YC in, 32h=YUV in

   --- Answer ---

   *Parameter #1 = >*Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   *Parameter #2 = >*Input type: 30h=CV in, 31h=YC in, 32h=YUV in,

****

Command code => **67h = ASK_INPUT_TYPE_CMD**

   Parameter #1 = >NC

--- Answer ---

   Parameter #1 = > NC

   Parameter #2 = >Input type: 30h=CV in, 31h=YC in, 32h=YUV in

****

Command code => **6Ah = SET_BRIGHTNESS_CMD**

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   When (para#1=30h)

       Parameter #2 = >brightness value: -99~+99, default=0(80h);1=81h, -1=7fh

--- Answer ---

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   Parameter #2 = >brightness value: -99~+99, default=0(80h)

****

Command code => **6Bh = ASK_BRIGHTNESS_CMD**

   Parameter #1 = > NC

--- Answer ----

   Parameter #1 = > NC

   Parameter #2 = >brightness value: -99~+99, default=0(80h)

****

Command code => **6Ch = SET_CONTRAST_CMD**

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   When (para#1=30h)

       Parameter #2 = > Contrast value: -99~+99, default=0(80h)

--- Answer ---

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   Parameter #2 = > Contrast value: -99~+99, default=0(80h)

****

Command code => **6Dh = ASK_ CONTRAST_CMD**

   Parameter #1 = > NC

--- Answer ---

   Parameter #1 = > NC

   Parameter #2 = > Contrast value: -99~+99, default=0(80h)

```
*****************************************************
  Command code => 6Eh = SET_ SATURATION _CMD
    Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease
    When (para#1=30h)
         Parameter #2 = > Saturation: -99~+99, default=0(80h)
  --- Answer ---
    Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease
    Parameter #2 = > Saturation value: -99~+99, default=0(80h)
*****************************************************
  Command code => 6Fh = ASK_ SATURATION _CMD
    Parameter #1 = > NC
  --- Answer ---
    Parameter #1 = > NC
    Parameter #2 = > Saturation value: -99~+99, default=0(80h)
*****************************************************
  Command code => 72h = SET_AGC_ON_CMD
    Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=toggle
    When (para#1=30h)
         Parameter #2 = > AGC on/off: 30h=off, 31h=on
  --- Answer ---
    Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=toggle
    Parameter #2 = > AGC on/off: 30h=off, 31h=on
*****************************************************
  Command code => 73h = ASK_AGC_ON_CMD
    Parameter #1 = > NC
  --- Answer ---
    Parameter #1 = > NC
    Parameter #2 = > AGC on/off: 30h=off, 31h=on
*****************************************************
  Command code => 74h = SET_IN_IRE_CMD      (NTSC only)
    Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=toggle
    When (para#1=30h)
       Parameter #2 = > 7.5IRE on/off: 30h=off, 31h=on
  --- Answer ---
    Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=toggle
    Parameter #2 = > 7.5IRE on/off: 30h=off, 31h=on
*****************************************************
  Command code => 75h = ASK_IN_IRE_CMD      (NTSC only)
    Parameter #1 = > NC
  --- Answer ---
    Parameter #1 = > NC
    Parameter #2 = > 7.5IRE on/off: 30h=off, 31h=on
```

****

Command code => **78h = SET_UV_OFFSET_CMD**

   Parameter #1 = > RGB correction's U offset value: -99~+99, default=0(80h)

   Parameter #2 = > RGB correction's V offset value: -99~+99, default=0(80h)

 --- Answer ---

   Parameter #1 = > RGB correction's U offset value: -99~+99, default=0(80h)

   Parameter #2 = > RGB correction's V offset value: -99~+99, default=0(80h)

****

Command code => **79h = ASK_UV_OFFSET_CMD**

   Parameter #1 = > NC

 --- Answer ---

   Parameter #1 = > RGB correction's U offset value: -99~+99, default=0(80h)

   Parameter #2 = > RGB correction's V offset value: -99~+99, default=0(80h)

****

Command code => **A0h = CARD_RESET_PARA_CMD**

   Parameter #1 = > 30h=reset current parameter, 31h=reset all user

 --- Answer ---

   Parameter #1 = > 30h=reset current parameter, 31h=reset all user

****

Command code => **A2h = CARD_STORE_RECALL_CMD**

   Parameter #1 = > 30h=store, 31h=recall

   Parameter #2 = > User No.: 31h~33h (3 users)

 --- Answer ---

   Parameter #1 = > 30h=store, 31h=recall

   Parameter #2 = > User No.: 31h~33h (3 users)

Example: Set the CH1's color saturation to "+ 23".

  The Control Data Stream= *F0h,***10h,0Ah***,08h,***6Eh,30h,97h***,37h,34h,FFh*

        F0h, ID(10h) , Length(0Ah), 08h, Command code(6Eh), para#1(30h), para#2(97h),

        checksum_L(39h), checksum_M(34h), FFh

        Checksum=F0h+10h+0Ah+08h+6Eh+30h+97h=47h

  The Answer from SE900's CH1= *FCh,* ***10h, 0ah****, 08h,***6Eh, 30h, 97h****, 33h, 35h, FFh*

5.2.4 SDI IN Board Command

```
*********************************************************
```

Command code => **61h = ASK_CARD_TYPE_CMD**

   Parameter #1 => NC

--- Answer ---

   Parameter #1 => 32h=SDI IN

```
*********************************************************
```

Command code => **63h = ASK_WORK_STATUS_CMD**

   Parameter #1 => NC

--- Answer ---

   Parameter #1 => Card Type: 32h: SDI IN

   Parameter #2 => Status _flag: (b0=0=off, 1=on); (b1=0=NTSC, 1=PAL).

   Parameter #3 => Input type: 36h = SDI in

   Parameter #4 => Brightness: -99~+99, default=0(80h)

   Parameter #5 => Contrast: -99~+99, default=0(80h)

   Parameter #6 => Saturation: -99~+99, default=0(80h)

   Parameter #7 => NC

   Parameter #8 => RGB Correction's U offset: -99~+99, default=0(80h)

   Parameter #9 => RGB Correction's V offset: -99~+99, default=0(80h)

   Parameter #10 => SDI in vertical offset value

   Parameter #11 => b0~b3=audio channel, b4=NC,

                 b5=0=enable to decode SDI audio, 1=disable to decode SDI audio

```
*********************************************************
```

Command code => **67h = ASK_INPUT_TYPE_CMD**

   Parameter #1 => NC

--- Answer ---

   Parameter #1 => NC

   Parameter #2 => Input type: 36h=SDI in

```
*********************************************************
```

Command code => **6Ah = SET_BRIGHTNESS_CMD**

   Parameter #1 => Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   When (para#1=30h)

       Parameter #2 => Brightness value: -99~+99, default=0(80h)

--- Answer ---

   Parameter #1 => Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   Parameter #2 => Brightness value: -99~+99, default=0(80h)

```
*********************************************************
```

Command code => **6Bh = ASK_BRIGHTNESS_CMD**

   Parameter #1 => NC

--- Answer ----

   Parameter #1 => NC

   Parameter #2 => Brightness value: -99~+99, default=0(80h)

```
*******************************************************
```
Command code => **6Ch = SET_CONTRAST_CMD**

  Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

  When (para#1=30h)

     Parameter #2 = > Contrast value: -99~+99, default=0(80h)

 --- Answer ---

  Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

  Parameter #2 = > Contrast value: -99~+99, default=0(80h)
```
*******************************************************
```
Command code => **6Dh = ASK_ CONTRAST_CMD**

  Parameter #1 = > NC

 --- Answer ---

  Parameter #1 = > NC

  Parameter #2 = > Contrast value: -99~+99, default=0(80h)
```
*******************************************************
```
Command code => **6Eh = SET_ SATURATION _CMD**

  Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

  When (para#1=30h)

     Parameter #2 = > Saturation value: -99~+99, default=0(80h)

 --- Answer ---

  Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

  Parameter #2 = > Saturation value: -99~+99, default=0(80h)
```
*******************************************************
```
Command code => **6Fh = ASK_ SATURATION _CMD**

  Parameter #1 = > NC

 --- Answer ---

  Parameter #1 = > NC

  Parameter #2 = > Saturation value: -99~+99, default=0(80h)
```
*******************************************************
```
Command code => **78h = SET_UV_OFFSET_CMD**

  Parameter #1 = > RGB correction's U offset value: -99~+99, default=0(80h)

  Parameter #2 = > RGB correction's V offset value: -99~+99, default=0(80h)

 --- Answer ---

  Parameter #1 = > RGB correction's U offset value: -99~+99, default=0(80h)

  Parameter #2 = > RGB correction's V offset value: -99~+99, default=0(80h)
```
*******************************************************
```
Command code => **79h = ASK_UV_OFFSET_CMD**

  Parameter #1 = > NC

 --- Answer ---

  Parameter #1 = > RGB correction's U offset value: -99~+99, default=0(80h)

  Parameter #2 = > RGB correction's V offset value: -99~+99, default=0(80h)

```
****************************************************
```
Command code => **90h = SDI_IN_V_OFFSET_CMD**

   Parameter #1 = > 30h=get, 31h=set.

   Parameter #2 = > Vertical offset value.   (0~64)

--- Answer ---

  Parameter #1 = > 30h=get, 31h=set.

   Parameter #2 = > Vertical offset value.   (0~64)
```
****************************************************
```
Command code => **92h = SDI_AUDIO_CHANNEL_CMD**

   Parameter #1 = > 30h=get, 31h=set.

   Parameter #2 = > b0~b3=audio channel, b4=NC,

                b5=0=enable to decode SDI audio, 1=disable to decode SDI audio

                b6=0, b7=0.

--- Answer ---

   Parameter #1 = > 30h=get, 31h=set.

   Parameter #2 = > b0~b3=audio channel, b4=NC,

                b5=0=enable to decode SDI audio, 1=disable to decode SDI audio

                b6=0, b7=0.
```
****************************************************
```
Command code => **A0h = CARD_RESET_PARA_CMD**

   Parameter #1 = > 30h=reset current parameter, 31h=reset all user

--- Answer ---

   Parameter #1 = > 30h=reset current parameter, 31h=reset all user
```
****************************************************
```
Command code => **A2h = CARD_STORE_RECALL_CMD**

   Parameter #1 = > 30h=store, 31h=recall

   Parameter #2 = > User No.: 31h~33h, (3 users)

--- Answer ---

   Parameter #1 = > 30h=store, 31h=recall

   Parameter #2 = > User No.: 31h~33h, (3 users)

Example: Set the CH2 SDI IN's audio channel to 1 & enable to decode audio.

   The Control Data Stream= F0h,**11h,0Ah**,08h,**92h,31h,00h**,36h,3dh,FFh

          F0h, ID(11h) , Length(0Ah), 08h, Command code(92h), para#1(31h)(set), para#2(00h)(audio ch=1,

          enable decode), checksum_L(36h), checksum_M(3dh), FFh

          Checksum=F0h+11h+0Bh+08h+92h+31h+00h=d6h

   The Answer from SE900's CH2= FCh, **11h, 0Ah**, 08h,92**h, 31h, 00h**, 32h, 3Eh, FFh

5.2.5 DVI/VGA IN Board Command

****

Command code => **61h = ASK_CARD_TYPE_CMD**

   Parameter #1 = >NC

 --- Answer ---

   Parameter #1 =>33h=DVI/VGA in board

****

Command code => **63h = ASK_WORK_STATUS_CMD**

   Parameter #1 = > NC

 --- Answer ---

   Parameter #1 = > Card Type: 33h: DVI/VGA in board (Ref. to command 61h)

   Parameter #2 = > Status flag: (b0=0=off, 1=on); (b1=0=NTSC, 1=PAL).

   Parameter #3 = > Input type: 37h=DSUB VGA in, 38h=DVI in

   Parameter #4 = > Brightness: -99~+99, default=0(80h)

   Parameter #5 = > Contrast: -99~+99, default=0(80h)

   Parameter #6 = > Saturation: -99~+99, default=0(80h)

   Parameter #7 = > NC

   Parameter #8 = > RGB Correction's U offset: -99~+99, default=0(80h)

   Parameter #9 = > RGB Correction's V offset: -99~+99, default=0(80h)

   Parameter #10 = > NC

   Parameter #11 = > DVI/VGA Size: 0 =95%, 1 =90%

   Parameter #12 = > DVI/VGA in Mode: 0=800*600, 1=1024*768, 2=1280*1024

****

Command code => **66h = SET_INPUT_TYPE_CMD**

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=increase, 32h= decrease

   When (para#1=30h)

        Parameter #2 => Input type: 37h=DSUB VGA, 38h=DVI

 --- Answer ---

   Parameter #1 = > NC

   Parameter #2 => Input type: 37h=DSUB VGA, 38h=DVI

****

Command code => **67h = ASK_INPUT_TYPE_CMD**

   Parameter #1 = >30h=NC

 --- Answer ---

   Parameter #1 = > NC

   Parameter #2 => Input type: 37h=DSUB VGA, 38h=DVI

```
*****************************************************
```
Command code => **6Ah = SET_BRIGHTNESS_CMD**

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   When (para#1=30h)

      Parameter #2 = > Brightness value: -99~+99, default=0(80h)

 --- Answer ---

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   Parameter #2 = > Brightness value: -99~+99, default=0(80h)
```
*****************************************************
```
Command code => **6Bh = ASK_BRIGHTNESS_CMD**

   Parameter #1 = > NC

 --- Answer ----

   Parameter #1 = > NC

   Parameter #2 = > Brightness value: -99~+99, default=0(80h)
```
*****************************************************
```
Command code => **6Ch = SET_CONTRAST_CMD**

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   When (para#1=30h)

      Parameter #2 = > Contrast value: -99~+99, default=0(80h)

 --- Answer ---

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   Parameter #2 = > Contrast value: -99~+99, default=0(80h)
```
*****************************************************
```
Command code => **6Dh = ASK_ CONTRAST_CMD**

   Parameter #1 = > NC

 --- Answer ---

   Parameter #1 = > NC

   Parameter #2 = > Contrast value: -99~+99 (2's C) , default=0(80h)
```
*****************************************************
```
Command code => **6Eh = SET_ SATURATION _CMD**

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   When (para#1=30h)

   Parameter #2 = > Saturation value: -99~+99, default=0(80h)

 --- Answer ---

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   Parameter #2 = > Saturation value: -99~+99, default=0(80h)
```
*****************************************************
```
Command code => **6Fh = ASK_ SATURATION _CMD**

   Parameter #1 = > NC

 --- Answer ---

   Parameter #1 = > NC

   Parameter #2 = > Saturation value: -99~+99, default=0(80h)

```
*****************************************************
  Command code => 78h = SET_UV_OFFSET_CMD
    Parameter #1 = > RGB correction's U offset value: -99~+99, default=0(80h)
    Parameter #2 = > RGB correction's V offset value: -99~+99, default=0(80h)
  --- Answer ---
    Parameter #1 = > RGB correction's U offset value: -99~+99, default=0(80h)
    Parameter #2 = > RGB correction's V offset value: -99~+99, default=0(80h)
*****************************************************
  Command code => 79h = ASK_UV_OFFSET_CMD
    Parameter #1 = > NC
  --- Answer ---
    Parameter #1 = > RGB correction's U offset value: -99~+99, default=0(80h)
    Parameter #2 = > RGB correction's V offset value: -99~+99, default=0(80h)
*****************************************************
  Command code => 92h = SET_VGA_SIZE_CMD
    Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease
    When (para#1=30h)
         Parameter #2 = > VGA/DVI display size: 30h=95%, 31h=90%
  --- Answer ---
    Parameter #1 = > St method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease
    Parameter #2 = > VGA/DVI display size: 30h=95%, 31h=90%
*****************************************************
  Command code => 94h = SET_VGA_IN_MODE_CMD
    Parameter #1 = > set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease
    When (para#1=30h)
         Parameter #2 = > VGA/DVI in resolution: 30h=800*600, 31h=1024*768, 32h=1280*1024
  --- Answer ---
    Parameter #1 = > set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease
    Parameter #2 = > VGA/DVI in resolution: 30h=800*600, 31h=1024*768, 32h=1280*1024


*****************************************************
  Command code => A0h = CARD_RESET_PARA_CMD
    Parameter #1 = > 30h=reset current parameter, 31h=reset all user
  --- Answer ---
    Parameter #1 = > 30h=reset current parameter, 31h=reset all user
*****************************************************
  Command code => A2h = CARD_STORE_RECALL_CMD
    Parameter #1 = > 30h=store, 31h=recall
    Parameter #2 = > User No.: 31h~33h (3 users)
  --- Answer ---
    Parameter #1 = > 30h=store, 31h=recall
    Parameter #2 = > User No.: 31h~33h (3 users)
```

Example#1: Set the CH5 DVI/VGA IN's input mode to 1024*768 .

The Control Data Stream= F0h, **14h, 0Ah**, 08h, **94h, 30h, 31h,** 3bh, 30h, FFh

        F0h, ID(14h) , Length(0Ah), 08h, Command code(94h), para#1(30h), para#2(31h)(1024*768 mode),

        checksum_L(3bh), checksum_M(30h), FFh

        Checksum=F0h+14h+0Ah+08h+94h+30h+31h=0bh

The Answer from SE900's CH5= FCh, **14h, 0Ah**, 08h,94**h, 30h, 31h**, 37h, 31h, FFh

Example#2: Set the CH5 DVI/VGA IN's input type to DVI .

The Control Data Stream= F0h, **14h, 0Ah**, 08h, **66h, 30h, 38h,** 34h, 3Eh, FFh

        F0h, ID(14h) , Length(0Ah), 08h, Command code(66h), para#1(30h), para#2(38h)(DVI type),

        checksum_L(34h), checksum_M(3Eh), FFh

        Checksum=F0h+14h+0Ah+08h+66h+30h+38h=e4h

The Answer from SE900's CH5= FCh, **14h, 0Ah**, 08h, 66**h, 30h, 38h**, 30h, 3Fh, FFh

5.2.6 Analog Video output & DV output Board Command

****

Command code => **61h = ASK_CARD_TYPE_CMD**

   *Parameter #1 = >*NC

--- Answer ---

   *Parameter #1 =>*38h=Analog & DV OUT,

****

Command code => **63h = ASK_WORK_STATUS_CMD**

   Parameter #1 = > NC

--- Answer ---

   Parameter #1 = > Card Type: 30h~40h. (Ref. to command 61h)

   Parameter #2 = > Status flag: (b0=0=off, 1=on); (b1=0=NTSC, 1=PAL);

   *Parameter #3 = >*Output mode: normal=30h

   Parameter #4 = > 7.5IRE: 30h=off, 31h=on

   Parameter #5 = > Analog Color Bar: 30h=off (normal)

   Parameter #6 = > DV Output Mode: **30h~33h, default=31h**

   Parameter #7 = > Aspect Ratio: 30h=4:3, 31h=16:9   (Analog output only)

****

Command code => **92h = SET_OUT_7IRE5_CMD   (NTSC only)**

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   When (para#1=30h)

        Parameter #2 = > 7.5 IRE on/off: 30h= off, 31h =on

--- Answer ---

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   Parameter #2 = > 7.5 IRE on/off: 30h= off, 31h =on

****

Command code => **93h = ASK_OUT_7IRE5_CMD**

   Parameter #1 = > NC

--- Answer ----

   Parameter #1 = > NC

   Parameter #2 = > 7.5 IRE on/off: 30h= off, 31h =on

```
**************************************************
```

Command code => **98h = SET_ASPECT_RATIO_FLAG_CMD**

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   When (para#1=30h)

      Parameter #2 = > Aspect Ratio Flag: 30h= 4:3, 31h =16:9

--- Answer ---

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   Parameter #2 = > Aspect Ratio Flag: 30h= 4:3, 31h =16:9

```
**************************************************
```

Command code => **99h = ASK_ASPECT_RATIO_FLAG_CMD**

   Parameter #1 = > NC

--- Answer ----

   Parameter #1 = > NC

   Parameter #2 = > Aspect Ratio Flag: 30h= 4:3, 31h =16:9

```
**************************************************
```

Command code => **9Ah = SET_DV_OUT_MODE_CMD**

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   When (para#1=30h)

      Parameter #2 = > DV output mode: 30h~33h, default=31h

--- Answer ---

   Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

   Parameter #2 = > DV output mode: 30h~33h

```
**************************************************
```

Command code => **9Bh= ASK_DV_OUT_MODE_CMD**

   Parameter #1 = > NC

--- Answer ----

   Parameter #1 = > NC

   Parameter #2 = > DV output mode: 30h~33h

```
**************************************************
```

Command code => **A0h = CARD_RESET_PARA_CMD**

   Parameter #1 = > 30h=reset current parameter, 31h=reset all user

--- Answer ---

   Parameter #1 = > 30h=reset current parameter, 31h=reset all user

```
**************************************************
```

Command code => **A2h = CARD_STORE_RECALL_CMD**

   Parameter #1 = > 30h=store, 31h=recall

   Parameter #2 = > User No.: 31h~33h (3 users)

--- Answer ---

   Parameter #1 = > 30h=store, 31h=recall

   Parameter #2 = > User No.: 31h~33h (3 users)

Example: Set the NTSC 7.5 IRE on

The control data stream: *F0h, **1Dh, 0Ah**, 08h, **92h, 30h, 31h,** 32h, 31h, FFh*

F0h, ID(1Dh), length(0Ah), 08h, Command code(92h), para#1(30h), para2(31h),

CHECKSUM_L(32h), CHECKSUM_M(31h), FFh

Checksum=F0h+1Dh+0Ah+08h+92h+30h+31h=12h

The answer from SE900's Vout card: *FCh, **1Dh, 0Ah,** 08h, **92h, 30h, 31h,** 3Eh, 31h, FFh*

5.2.7 SDI OUT Board Command

****

Command code => **61h = ASK_CARD_TYPE_CMD**

  *Parameter #1 = >*NC

--- Answer ---

  *Parameter #1 =>*39h=SDI OUT,

****

Command code => **63h = ASK_WORK_STATUS_CMD**

  Parameter #1 = > NC

--- Answer ---

  Parameter #1 = > Card Type: 30h~40h. (Ref. to command 61h)

  Parameter #2 = > Status flag: (b0=0=NTSC, 1=PAL);

  Parameter #3 = > Black burst port mode: 30h=black burst output, 31h= CV output

  Parameter #4 = > 7.5IRE mode of black burst port: 30h=off, 31h=on

  Parameter #5 = > Aspect Ratio Flag: 30h=4:3, 31h=16:9, 38h=off

****

Command code => **92h = SET_BLACK_BURST_IRE_CMD (NTSC only)**

  Parameter #1 = > 7.5 IRE on/off: 30h=off, 31h =on

--- Answer ---

  Parameter #1 = > 7.5 IRE on/off: 30h=off, 31h =on

****

Command code => **93h = ASK_ BLACK_BURST_IRE_CMD**

  Parameter #1 = > NC

  --- Answer ----

  Parameter #1 = > 7.5 IRE on/off: 30h=off, 31h =on

****

Command code => **98h = SET_ASPECT_RATIO_FLAG_CMD**

  Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

  When (para#1=30h)

      Parameter #2 = > Aspect Ratio Flag: 30h= 4:3, 31h =16:9, 38h=off

--- Answer ---

  Parameter #1 = > Set method: 30h=set by parameter #2 directly, 31h=Increase, 32h=Decrease

  Parameter #2 = > Aspect Ratio Flag: 30h= 4:3, 31h =16:9, 38h=off

****

Command code => **99h = ASK_ASPECT_RATIO_FLAG_CMD**

  Parameter #1 = > NC

--- Answer ----

  Parameter #1 = > NC

  Parameter #2 = > Aspect Ratio Flag: 30h= 4:3, 31h =16:9, 38h=off

```
********************************************************
```
Command code => **9Ch = SET_BLACK_BURST_MODE_CMD**
   Parameter #1 = > 30h= Black burst output, 31h=CV output
--- Answer ---
   Parameter #1 = > 30h= Black burst output, 31h=CV output
```
********************************************************
```
Command code => **9Dh = ASK_ BLACK_BURST_MODE_CMD**
   Parameter #1 = > NC
 --- Answer ----
   Parameter #1 = > 30h= Black burst output, 31h=CV output
```
********************************************************
```
Command code => **A0h = CARD_RESET_PARA_CMD**
   Parameter #1 = > 30h=reset current parameter, 31h=reset all user
 --- Answer ---
   Parameter #1 = > 30h=reset current parameter, 31h=reset all user
```
********************************************************
```
Command code => **A2h = CARD_STORE_RECALL_CMD**
   Parameter #1 = > 30h=store, 31h=recall
   Parameter #2 = > User No:: 31h~33h (3 users)
 --- Answer ---
   Parameter #1 = > 30h=store, 31h=recall
   Parameter #2 = > User No.: 31h~33h (3 users)

Example: **Set the SDI OUT aspect ratio flag to 16:9**
   The control data stream: *F0h, 1Ch, 0Ah, 08h, 98h, 30h, 31h, 37h, 31h, FFh*
      F0h, ID(1Ch), length(0Ah), 08h, 01h, Command code(98h), para#1(30h), para2(31h),
      CHECKSUM_L(37h), CHECKSUM_M(31h), FFh
   Checksum=F0h+1Ch+0Ah+08h+98h+30h+31h=17h
   The answer from SE900's VOUT card: *FCh, 1Ch, 0Ah, 08h, 92h, 30h, 31h, 33h, 32h, FFh*

5.2.8 PREVIEW Board Command

****

Command code => **61h = ASK_CARD_TYPE_CMD**

   *Parameter #1 = >*NC

--- Answer ---

   *Parameter #1 =>*35h=Preview board,

****

Command code => **63h = ASK_WORK_STATUS_CMD**

   Parameter #1 = > NC

--- Answer ---

   Parameter #1 = > Card Type: 35h: preview board

   Parameter #2 = > Status Flag: (b1=0=NTSC, 1=PAL); (b2: output mode: 0=YUV, 1=CV);

                                 (b3: screen mode: 0=PST at bottom, 1=PST at top)

   Parameter #3 = > Noise Filter mode: 30h~33h; 30h=bypass, 31h=low, 32h=middle, 33h=high

   Parameter #4 = > Screen Size: 30h=100%, 31h=90%, 32h=80%

   Parameter #5 = > Border brightness: (1~100): 0h~64h

   Parameter #6 = > NC

****

Command code => **64h = SET_NTSC_PAL_CMD**

   Parameter #1 = > 30h=NTSC, 31h=PAL

  --- Answer ---

   Parameter #1 = > 30h=NTSC, 31h=PAL

****

Command code => **65h = ASK_NTSC_PAL_CMD**

   Parameter #1 = > NC

  --- Answer ----

   Parameter #1 = > 30h=NTSC, 31h=PAL

****

Command code => **68h = SET_CH_NAME_CMD**

   Parameter #1 = > Channel No.: 31h~38h

   Parameter #2 = > Name ON/OFF: 30h=off, 31h= on

   Parameter #3~8= > The Name's ASCII code: EXP:[CAM2   ]=[43h,41h,4Dh,32h,20h,20h]

   Parameter #9= > 00h

  --- Answer ---

   Parameter #1 = > Channel No.: 31h~38h

   Parameter #2 = > Name ON/OFF: 30h=off, 31h= on

   Parameter #3~8= > The Name's ASCII code: EXP:[CAM2   ]=[43h,41h,4Dh,32h,20h,20h]

   Parameter #9= > NC

```
**********************************************************
```
Command code => **69h = ASK_CH_NAME_CMD**

   Parameter #1 = > Channel No.: 31h~38h

   --- Answer ----

   Parameter #1 = > Channel No.: 31h~38h

   Parameter #2 = > Name ON/OFF: 30h=off, 31h= on

   Parameter #3~8 = > The Name's ASCII code: EXP:[CAM2   ]=[43h,41h,4Dh,32h,20h,20h]

   Parameter #9 = > NC
```
**********************************************************
```
Command code => **6ah = SET_SCREEN_MODE_CMD**

   Parameter #1 = > Screen mode: 30h=PST at bottom, 31h=PST at top

   Parameter #2 = > Screen size: 30h=100%, 31h=90%, 32h=80%

   --- Answer ---

   Parameter #1 = > Screen mode: 30h=PST at bottom, 31h=PST at top

   Parameter #2 = > Screen size: 30h=100%, 31h=90%, 32h=80%
```
**********************************************************
```
Command code => **6bh = ASK_SCREEN_MODE_CMD**

   Parameter #1 = > NC

   --- Answer ----

   Parameter #1 = > Screen mode: 30h=PST at bottom, 31h=PST at top

   Parameter #2 = > Screen size: 30h=100%, 31h=90%, 32h=80%
```
**********************************************************
```
Command code => **6Ch = SET_OUTPUT_MODE_CMD**

   Parameter #1 = > 30h=YUV output, 31h=CV output

   --- Answer ---

   Parameter #1 = > 30h=YUV output, 31h=CV output
```
**********************************************************
```
Command code => **6Dh = ASK_OUTPUT_MODE_CMD**

   Parameter #1 = > NC

   --- Answer ----

   Parameter #1 = > 30h=YUV output, 31h=CV output
```
**********************************************************
```
Command code => **6Ch = SET_NOISE_FILTER_CMD**

   Parameter #1 = > 30h=bypass, 31h=Low, 32h= Middle, 33h= High

   --- Answer ---

   Parameter #1 = > 30h=bypass, 31h=Low, 32h= Middle, 33h= High
```
**********************************************************
```
Command code => **6Dh = ASK_ NOISE_FILTER _CMD**

   Parameter #1 = > NC

   --- Answer ----

   Parameter #1 = > 30h=bypass, 31h=Low, 32h= Middle, 33h= High

```
*******************************************************
```

Command code => **70h = SET_BORDER_BRIGHT_CMD**

Parameter #1 = > Border Brightness: (1~100): 0h~64h

--- Answer ---

Parameter #1 = > Border Brightness: (1~100): 0h~64h

```
*******************************************************
```

Command code => **72h = ASK_ALL_NAME_CMD**

Parameter #1 = > NC

--- Answer ----

Parameter #1 = > NC

Parameter #2= > CH1's name on/off: 30h=off, 31h=on

Parameter #3~8= > The Name of CH1: EXP:[CAM1   ]=[43h,41h,4Dh,31h,20h,20h]

Parameter #9= > 00h

Parameter #10= > CH2's name on/off: 30h=off, 31h=on

Parameter #11~16= > The Name of CH2: EXP:[CAM2   ]=[43h,41h,4Dh,32h,20h,20h]

Parameter #17= > 00h

Parameter #18= > CH3's name on/off: 30h=off, 31h=on

Parameter #19~24= > The Name of CH3: EXP:[CAM3   ]=[43h,41h,4Dh,33h,20h,20h]

Parameter #25= > 00h

Parameter #26= > CH4's name on/off: 30h=off, 31h=on

Parameter #27~32= > The Name of CH4: EXP:[CAM4   ]=[43h,41h,4Dh,34h,20h,20h]

Parameter #33= > 00h

Parameter #34= > CH5's name on/off: 30h=off, 31h=on

Parameter #35~40= > The Name of CH5: EXP:[CAM5   ]=[43h,41h,4Dh,35h,20h,20h]

Parameter #41= > 00h

Parameter #42= > CH6's name on/off: 30h=off, 31h=on

Parameter #43~48= > The Name of CH6: EXP:[CAM6   ]=[43h,41h,4Dh,36h,20h,20h]

Parameter #49= > 00h

Parameter #50= > CH7's name on/off: 30h=off, 31h=on

Parameter #51~56= > The Name of CH7: EXP:[CAM7   ]=[43h,41h,4Dh,37h,20h,20h]

Parameter #57= > 00h

Parameter #58= > CH8's name on/off: 30h=off, 31h=on

Parameter #59~64= > The Name of CH8: EXP:[CAM8   ]=[43h,41h,4Dh,38h,20h,20h]

Parameter #65= > 00h

```
*******************************************************
```

Command code => **A0h = CARD_RESET_PARA_CMD**

   Parameter #1 = > 30h=reset current parameter, 31h=reset all user

--- Answer ---

   Parameter #1 = > 30h=reset current parameter, 31h=reset all user

```
*******************************************************
```

Command code => **A2h = CARD_STORE_RECALL_CMD**

   Parameter #1 = > 30h=store, 31h=recall

   Parameter #2 = > User No.: 31h~33h (3 users)

--- Answer ---

   Parameter #1 = > 30h=store, 31h=recall

   Parameter #2 = > User No.: 31h~33h (3 users)

Example: Set the CH6's name to "BKG-2".

   The control data stream: *F0h,**1Ah,10h**,08h,**68h,36h,31h,42h,4Bh,47h,2Dh,32h**,00h,34h,32h,FFh*

      F0h,ID(1AH),length(10h),08h,command code(68h),CH No.(36h),on/off(31h),B(42h),K(4Bh),

      G(47h),-(2Dh),2(32h),00h,CHECKSUM_L(34h),CHECKSUM_M(32h),FFh

   Checksum= F0h+1Ah+10h+08h+68h+36h+31h+42h+4Bh+47h+2Dh+32h+00h=24h

   The Answer from SE900's preview board:

                *FCh,**1Ah,10h**,08h,**68h,36h,31h,42h,4Bh,47h,2Dh,32h,**00h,30h,33h,FFh*

5.2.9 Audio Delay Board Command

****

Command code => **61h = ASK_CARD_TYPE_CMD**

   Parameter #1 = > NC

--- Answer ---

   Parameter #1 => 3fh: Audio Delay Board

****

Command code => **63h = ASK_WORK_STATUS_CMD**

   Parameter #1 = > NC

--- Answer ---

   Parameter #1 = > Card Type: 3fh: audio delay board

   Parameter #2 = > Status _Flag: (b1=0=NTSC, 1=PAL); (b2: Tone on/off, 1=on); (b3: delay on/off, 1=on)

                                 (b4=time unit, 0=10mSEC, 1=1/2frame)

   Parameter #3 = > Tone Frequency mode: 30h=mute, 31h=1KHz,

   Parameter #4/5 = > Tone level: (3Xh, 3Yh): tone level=XYh+8 dBU

   Parameter #6 = > Delay Time: if time unit=10ms, delay time=(para#6) * 5 mSEC

                              Else if time unit=1/2frame, delay time=(para#6)/2 frame

   Parameter #7/8 = > Audio out Attenuation: (3Xh, 3Yh): Attenuation= XYh dB

   Parameter #9/10 = > DV audio out Attenuation: (3Xh, 3Yh): Attenuation= XYh dB

   Parameter #11/12 = > Output Unity Adjustment: (3Xh, 3Yh): Adjustment value= (XYh *0.5) dB

****

Command code => **64h = SET_NTSC_PAL_CMD**

   Parameter #1 = > 30h=NTSC, 31h=PAL

  --- Answer ---

   Parameter #1 = > 30h=NTSC, 31h=PAL

****

Command code => **65h = ASK_NTSC_PAL_CMD**

   Parameter #1 = > NC

  --- Answer ----

   Parameter #1 = > 30h=NTSC, 31h=PAL

****

Command code => **70h = SET_TONE_OUT_MODE_CMD**

   Parameter #1 = > 30h= set tone out on/off, 31h=set tone frequency, 32h=set tone level,

                 33h=set tone level by parameter#2/3 directly

   When (para#1=30h: set tone out on/off)

       Parameter #2 = > 30h=off, 31h=on

   When (para#1=31h: set tone frequency)

       Parameter #2 = > 30h=mute, 31h=1KHz

   When (para#1=32h: set tone level)

       Parameter #2 = > 30h=reset to 4dBu, 31h= + 1 dB, 32h= -1dB

   When (para#1=33h: set tone level by parameter#2/3 directly)

       Parameter #2/3= > Tone level: (3Xh,3Yh): tone level= XYh+8 dBU .The range=(-42~+18)

--- Answer ---

Parameter #1 = > tone out on/off: 30h=off, 31h=on

Parameter #2 = > tone frequency: 30h=mute, 31h=1KHz

Parameter #3/4= > Tone level: (3Xh, 3Yh): tone level= XYh+8 dBU

****

Command code => **71h = ASK_TONE_OUT_MODE_CMD**

Parameter #1 = > NC

--- Answer ----

Parameter #1 = > tone out on/off: 30h=off, 31h=on

Parameter #2 = > tone frequency: 30h=mute, 31h=1KHz

Parameter #3/4= > Tone level: (3Xh, 3Yh): tone level= XYh+8 dBU

****

Command code => **72h = SET_DELAY_MODE_CMD**

Parameter #1 = > 30h= set delay on/off, 31h=set time unit , 32h=set delay time,
                 33h=set delay time by parameter#2 directly

When (para#1=30h : set delay out on/off)

　　*Parameter #2 = >*30h=off, 31h=on

When (para#1=31h: set time unit)

　　Parameter #2 = > 30h=10mSEC, 31h=1/2 frame

When (para#1=32h: set delay time)

　　Parameter #2 = > 30h=reset to 0, 31h= + 1 unit, 32h= -1 unit

When (para#1=33h: set delay time by parameter#2 directly)

　　Parameter #2= > XYh =delay time (unit). Note: The MAX value is 140

--- Answer ---

Parameter #1 = > delay on/off: 30h=off, 31h=on

Parameter #2 = > time unit: 30h=10mSEC, 31h=1/2frame

Parameter #3 = > delay time: XYh =delay time (unit). Note: The MAX value is 140

　　　　　　　　　　if time unit=10ms, delay time=(XYh) * 5 mSEC

　　　　　　　　　else if time unit=1/2frame, delay time=(XYh)/2 frame

****

Command code => **73h = ASK_DELAY_MODE_CMD**

Parameter #1 = > NC

--- Answer ---

Parameter #1 = > delay on/off: 30h=off, 31h=on

Parameter #2 = > time unit: 30h=10mSEC, 31h=1/2frame

Parameter #3 = > delay time: XYh =delay time (unit). Note: The MAX value is 140

```
***************************************************
  Command code => 74h = SET_AUDIO_OUT_ATTENUATION_CMD
     Parameter #1 = > 30h= reset to 0, 31h= +1dB, 32h=-1dB, 33h=set by parameter#2/3 directly
     When (para#1=33h: set by parameter#2/3 directly)
            Parameter #2/3= > (3Xh, 3Yh): XYh =attenuation (-60~0) (dB)
   --- Answer ---
     Parameter #1/2 = > (3Xh, 3Yh): XYh =attenuation (-60~0)
***************************************************
  Command code => 75h = ASK_AUDIO_OUT_ATTENUATION_CMD
     Parameter #1 = > NC
   --- Answer ---
     Parameter #1/2 = > (3Xh, 3Yh): XYh =attenuation (-60~0)
***************************************************
  Command code => 78h = SET_OUTPUT_UNITY_ADJ_CMD
     Parameter #1 = > 30h= reset to 0, 31h= +0.5dB, 32h=-0.5dB, 33h=set by parameter#2/3 directly
     When (para#1=33h: set by parameter#2/3 directly)
            Parameter #2/3= > (3Xh, 3Yh): XYh =the adjustment value (-3~+3)
   --- Answer ---
     Parameter #1/2 = > (3Xh, 3Yh): XYh =a the adjustment value (-3~+3) = -1.5dB to +1.5dB
***************************************************
  Command code => 79h = ASK_ OUTPUT_UNITY_ADJ_CMD
     Parameter #1 = > NC
   --- Answer ---
     Parameter #1/2 = > (3Xh, 3Yh): XYh =a the adjustment value (-3~+3) = -1.5dB to +1.5dB
***************************************************
  Command code => 7ch = SET_DV_OUT_ ATTENUATION _CMD
     Parameter #1 = > 30h= reset to 0, 31h= +1dB, 32h=-1dB, 33h=set by parameter#2/3 directly
     When (para#1=33h: set by parameter#2/3 directly)
            Parameter #2/3= > (3Xh, 3Yh): XYh =attenuation (-18~0) (dB)
   --- Answer ---
     Parameter #1/2 = > (3Xh, 3Yh): XYh =attenuation (-18~0)
***************************************************
  Command code => 7dh = ASK_DV_ OUT_ ATTENUATION _CMD
     Parameter #1 = > NC
   --- Answer ---
     Parameter #1/2 = > (3Xh, 3Yh): XYh =attenuation (-18~0)
***************************************************
  Command code => 7fh = ASK_AUDIO_IN_LEVEL _CMD
     Parameter #1 = > NC
   --- Answer ---
     Parameter #1/2 /3/4= > (3Wh, 3Xh,3Yh,3Zh): WXYZh=16 bits L-CH audio level
     Parameter #5/6 /7/8= > (3Wh, 3Xh,3Yh,3Zh): WXYZh=16 bits R-CH audio level
```

****

Command code => **A0h = CARD_RESET_PARA_CMD**

　　Parameter #1 = > 30h=reset current parameter, 31h=reset all user

　--- Answer ---

　　Parameter #1 = > 30h=reset current parameter, 31h=reset all user

****

Command code => **A2h = CARD_STORE_RECALL_CMD**

　　Parameter #1 = > 30h=store, 31h=recall

　　Parameter #2 = > User No.: 31h~33h (3 users)

　--- Answer ---

　　Parameter #1 = > 30h=store, 31h=recall

　　Parameter #2 = > User No.: 31h~33h (3 users)

Example#1: Set the time unit to "10mSEC".

　　The control data stream: *F0h,**1Fh,0Ah**,08h,**72h,31h,30h,**34h,3Fh,FFH*

　　　　F0h,ID(1Fh),length(0Ah),08h,command code(72h),para#1(31h),para#2(30h),CHECKSUM_L(34h),

　　　　CHECKSUM_M(3Fh),FFh

　　Checksum= F0h+1Fh+0Ah+08h+72h+31h+30h=F4h

　　The answer from SE900's audio delay board: *FCh,**1Fh,0Ah**,08h,**72h,31h,30h**,30h,30h,FFH*

Example#2: Set the delay time to 100 mSEC.

　　The control data stream: *F0h,**1Fh,0Ah**,08h,**72h,33h,14h,**3Ah,3Dh,FFH*

　　　　F0h,ID(1Fh),length(0Ah),08h,command code(72h),para#1(33h),para#2(14h),

　　　　CHECKSUM_L(3Ah),CHECKSUM_M(3Dh),FFh

　　Checksum= F0h+1Fh+0Ah+08h+72h+33h+14h=DAh

　　The answer from SE900's audio delay board: *FCh,**1Fh,0Ah**,08h,**72h,33h,14h**,36h,3Eh,FFH*