

## ◆ A6000 RS232 serial control Commands

### I 、 RS232 Serial communication protocol

Baud rate: 115200

No parity

8 Data bit

1 Stop bit

### II 、 RS232 command format

Each command consists of variable-length character strings. Defined as:

BYT0	BYT1	BYT2	BYT3	BYT4	...	BYTN-1	BYTN
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**BYT0:** Device model number, for **A6000**, **BYT0**=0x3A;

**BYT1:** Device under control ID, range from 01 to 250 total 250 serial numbers;

**BYT2:** **BYT2** =0x04;

**BYT3:** **BYT3** =0x01; (fixed)

**BYT5:** Command ID;

**BYT4:** Quotient of command total length ÷256, total characters includes its own character;

**BYT6:** Remainder of command total length÷256, total characters includes its own character;

**BYT7~BYTN-1:** Command parameters;

**BYTN:** Means **checksum value, Xor Calculation (^)** or **the model number (0x3A)** of front **N-1** bites data;

### III、 A6000 control command

Take one A6000 whose serial number is 1 for example, so BYT1=01.

The commands are compiled in hexadecimal.

#### 1、 Switch input signal (01)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9
3A	01	04	01	00	01	0A	XX	XX	ChkSum

1) **BYT5**=01, switch signal command;

2) **BYT4**=00, quotient of command length ÷256;

**BYT6**=0A, remainder of command length÷256;

3) **BYT7**:BIT1~BIT0=0~3,input card A~D;

3) **BYT8**:input signal resource (Notice the correspond between input signal resource and input card) ;

01=CVBS1 (input card A) or CVBS2 (input card B) ;

03=HDMI1/VGA1 (input card A) or HDMI4/VGA2 (input card B) ;

04=SDI1 (input card A) or SDI2 (input card B) ;

05=HDMI2 (input card C) or HDMI5 (input card D) ;

06=HDMI3 (input card C) or HDMI6 (input card D) ;

07=DP1 (input card C) or DP2 (input card D) ;

\*This command is only valid under switching mode.

\*After applied this command, please read input card status every second to check whether the input card is on standby mode, refer to (IV) Command read part (part 1) .

Command sample:

"3A 01 04 01 00 01 0A 00 01 3A", Input card A---CVBS1;

“3A 01 04 01 00 01 0A 01 04 3A”, Input card B---SDI2;  
 “3A 01 04 01 00 01 0A 02 06 3A”, Input card C---HDMI3;  
 “3A 01 04 01 00 01 0A 03 07 3A”, Input card D---DP2;

## 2、PIP on/off (02)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9
3A	01	04	01	00	02	0A	XX	XX	ChkSum

- 1) **BYT5**=02, PIP on/off command;
- 2) **BYT4**=00, quotient of command length ÷256;  
**BYT6**=0A, remainder of command length÷256;
- 3) **BYT7**: BIT1~BIT0=0~1,input card A~B;
- 3) **BYT8**: On / Off  
 00=turn off PIP;  
 01=turn on PIP;

\*After applied this command, please read input card status every second to check whether the input card is on standby mode, refer to (IV) Command read part (part 1) .

Command sample:

“3A 01 04 01 00 02 0A 00 01 3A”, input card A---turn on PIP;

“3A 01 04 01 00 02 0A 01 00 3A”, input card B---turn off PIP;

## 3、PIP signal resource (03)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9
3A	01	04	01	00	03	0A	XX	XX	ChkSum

- 1) **BYT5**=03, select PIP signal resource command;
- 2) **BYT4**=00, quotient of command length ÷256;  
**BYT6**=0A, remainder of command length÷256;
- 3) **BYT7**: BIT1~BIT0=0~1,input card A~B;
- 3) **BYT8**:PIP signal resource  
 01=CVBS1 (input card A) or CVBS2 (input card B) ;  
 03=HDMI1/VGA1 (input card A) or HDMI4/VGA2 (input card B) ;  
 04=SDI1 (input card A) or SDI2 (input card B) ;

\*After finishing this command, please read input card status every second to check whether the input card is on standby mode, refer to (IV) Command read part (part 1) .

Command sample:

“3A 01 04 01 00 03 0A 00 01 3A”, input card A--- CVBS1

“3A 01 04 01 00 03 0A 01 03 3A”; input card B--- HDMI4/VGA2

## 4、Input card PIP main , sub image size and position (06)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT16
3A	01	04	01	00	06	11	XX	XX	XX	XX	XX	ChkSum

- 1) **BYT5**=06, Setup PIP main , sub image size and position;

- 2) **BYT4**=00, quotient of total command length÷256;  
**BYT6**=11, remainder of total command length÷256;
- 3) **BYT7:BIT2~BIT1**= 0~1,input card A~B;  
 BIT0=01, setup main image,  
 BIT0=00, setup sub image;
- 4) **BYT8**, quotient of output Hori Start÷256;
- 5) **BYT9**, remainder of output Hori Start÷256;
- 6) **BYT10**, quotient of output Hori Width÷256;
- 7) **BYT11**, remainder of output Hori Width÷256;
- 8) **BYT12**, quotient of output Vert Start÷256;
- 9) **BYT13**, remainder of output Vert Start÷256;
- 10) **BYT14**, quotient of output Vert Height÷256;
- 11) **BYT15**, remainder of output Vert Height÷256;

Command sample:

“3A 01 04 01 00 06 11 00 00 20 03 00 00 20 02 00 3A”,input card A sub image size and position adjust;  
 “3A 01 04 01 00 06 11 01 00 10 07 00 00 10 04 00 3A”,input card A main image size and position adjust;  
 “3A 01 04 01 00 06 11 02 00 12 03 00 00 12 03 10 3A”,input card B sub image size and position adjust  
 “3A 01 04 01 00 06 11 03 00 10 07 00 00 10 04 10 3A”,input card B main image size and position adjust;

\*Please limit the range of value:

\*All value should be Even number

\*Hori Start + Width < input max width(1920x1080);

\*Vert Start + Height < input max height(1920x1080).

## 5、Input card gray level (08)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9
3A	01	04	01	00	08	0A	XX	XX	ChkSum

- 1) **BYT5**=08;
- 2) **BYT4**=00, quotient of command length÷256;  
**BYT6**=0A, remainder of command length÷256;
- 3) **BYT7: BIT1~BIT0**=0~1,input card A~B;
- 4) **BYT8**=0~100, image gray level;

Command sample:

“3A 01 04 01 00 08 0A 00 30 3A”, gray level of input card A;

“3A 01 04 01 00 08 0A 01 30 3A”, gray level of input card B;

## 6、Brightness of input card (09)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9
3A	01	04	01	00	09	0A	XX	XX	ChkSum

- 1) **BYT5**=09;
- 2) **BYT4**=00, quotient of command length÷256;  
**BYT6**=0A, remainder of command length÷256;
- 3) **BYT7: BIT1~BIT0**=0~1,input card A~B;

3) **BYT8**=0~100, image brightness;

Command sample :

"3A 01 04 01 00 09 0A 00 30 3A", brightness input card A;

"3A 01 04 01 00 09 0A 01 40 3A", brightness input card B;

## 7、Color of input card (0A)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9
3A	01	04	01	00	0A	0A	XX	XX	ChkSum

1) **BYT5**=0A;

2) **BYT4**=00, quotient of command length÷256;

**BYT6**=0A, remainder of command length÷256;

3) **BYT7**: BIT1~BIT0=0~1,input card A~B;

3) **BYT8**=0~100, image color ;

Command sample :

"3A 01 04 01 00 0A 0A 00 30 3A", color of input card A ;

"3A 01 04 01 00 0A 0A 01 20 3A", color of input card B;

## 8、VGA calibration of input card (0D)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8
3A	01	04	01	00	0D	09	XX	ChkSum

1) **BYT5**=0D;

2) **BYT4**=00, quotient of command length÷256;

**BYT6**=0A, remainder of command length÷256;

3) **BYT7**: BIT1~BIT0=0~1,input card A~B;

\*This Command is only valid under signal switching mode.

\*After VGA automatic **calibration**, please read input card status every second to check whether the input card is on standby mode, refer to (IV) Command read part (part 1) .

Command sample:

"3A 01 04 01 00 0D 09 00 3A"; VGA calibration of input card A;

"3A 01 04 01 00 0D 09 01 3A"; VGA calibration of input card B;

## 9、Multi-window card window selection and output card port selection (10)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9
3A	01	04	01	00	10	0A	XX	XX	ChkSum

1) **BYT5**=0D;

2) **BYT4**=00, quotient of command length÷256;

**BYT6**=0A, remainder of command length÷256;

3) **BYT7[7]**=0(multi-window card), 1(output card);

**BYT7[6]**=0, when BIT7=0 (multi-window card), fixed value 0;

**BYT7[6]**=0~1, when BIT7=1 (output card), OutA~OutB;

4) **BYT8**=0~3, Win1~Win4(multi-window) or DVI1~DVI4 (output card) ;

Command sample:

“3A 01 04 01 00 10 0A 00 01 3A”, multi-window card windows 2;

“3A 01 04 01 00 10 0A 80 03 3A”, output card A DVI 4 port;

## 10、Multi-window card/output card display mode switch (11)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9
3A	01	04	01	00	11	0A	XX	XX	ChkSum

1) **BYT5**=11;

2) **BYT4**=00, quotient of command length÷256;

**BYT6**=0A, remainder of command length÷256;

3) **BYT7[7]**=0(multi-window card), 1(output card);

4) **BYT8**=0~12, display mode M0~M12 (M13~M15 is only used for backup, can't be recalled directly) ;

Command sample :

“3A 01 04 01 00 11 0A 00 02 3A”, Multi-window display mode 3;

“3A 01 04 01 00 11 0A 80 0C 3A”, output card display mode 12;

## 11、Multi-window card/output card display mode duplication (12)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10
3A	01	04	01	00	12	0B	XX	XX	XX	ChkSum

1) **BYT5**=12;

2) **BYT4**=00, quotient of total command length÷256;

**BYT6**=0A, remainder of total command length÷256;

3) **BYT7[7]**=0 (multi-window card),1(output card);

4) **BYT8**=0~15, duplication source mode M0~M15;

5) **BYT9**=0~15, duplication target mode M0~M15 (can't be present mode) ;

Command sample:

“3A 01 04 01 00 12 0B 00 01 00 3A”, multi-window mode duplication;

“3A 01 04 01 00 12 0B 80 02 00 3A”, output card mode duplication;

## 12、Multi-window card windows signal source selection (13)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	...	BYT11
3A	01	04	01	00	13	0C	XX	XX	ChkSum

1) **BYT5**=13;

2) **BYT4**=00, quotient of total command length÷256;

**BYT6**=0A, remainder of total command length÷256;

3) **BYT7**=2~3, Win1 signal (InC~InD) ;

4) **BYT8**=2~3, Win2 signal (InC~InD) ;

5) **BYT9**=0~1, Win3 signal (InA~InB) ;

6) **BYT10**=0~1, Win4 signal (InA~InB) ;

Command sample:

“3A 01 04 01 00 13 0C 02 03 01 00 3A”;

### 13、Multi-window card present model window on/off (14)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8
3A	01	04	01	00	14	09	XX	ChkSum

- 1) **BYT5**=14;
- 2) **BYT4**=00, quotient of total command length÷256;  
**BYT6**=0A, remainder of total command length÷256;
- 3) **BYT7[3]**, Win4 on (1), off (0)  
**BYT7[2]**, Win3 on (1), off (0)  
**BYT7[1]**, Win2 on (1), off (0)  
**BYT7[0]**, Win1 on (1), off (0)

Command sample:

“3A 01 04 01 00 14 09 07 3A”, windows on/off ;

### 14、Setup mode,multi-win card/output card' input,output image size and position (15)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT24
3A	01	04	01	00	15	19	XX	XX	XX	XX	XX	ChkSum

- 1) **BYT5**=15;
- 2) **BYT4**=00, quotient of total command length÷256;  
**BYT6**=0A, remainder of total command length÷256;
- 4) **BYT7[7]**=0 (multi-window card), 1 (output card);
- 5) **BYT7[6]**=0, **BIT7[7]** setup as multi-window card  
**BYT7[6]**=0、1, **BIT7[7]** setup as output card, OutA、OutB;  
**BYT7[5:4]**=0~3, Win1~Win4/DVI1~DVI4;  
**BYT7[3:0]**=0~12, model M0~M12;
- 4) **BYT8**, quotient of input Hori Start÷256;
- 5) **BYT9**, remainder of input Hori Start÷256;
- 6) **BYT10**, quotient of input Hori Width÷256;
- 7) **BYT11**, remainder of input Hori Width÷256;
- 8) **BYT12**, quotient of input Vert Start÷256;
- 9) **BYT13**, remainder of input Vert Start÷256;
- 10) **BYT14**, quotient of input Vert Height÷256;
- 11) **BYT15**, remainder of input Vert Height÷256;
- 12) **BYT16**, quotient of output Hori Start÷256;
- 13) **BYT17**, remainder of output Hori Start÷256;
- 14) **BYT18**, quotient of output Hori Width÷256;
- 15) **BYT19**, remainder of output Hori Width÷256;
- 16) **BYT20**, quotient of output Vert Start÷256;
- 17) **BYT21**, remainder of output Vert Start÷256;
- 18) **BYT22**, quotient of output Vert Height÷256;
- 19) **BYT23**, remainder of output Vert Height÷256;

\*Please limit the range of value:

\*Multi-window card input horizontal resolution is a fixed value(3840)

:  $V \leq 2160/1080$  (Win1/2 maximum 2160, Win3/4 maximum 1080) ;

\*Multi-window card output range:  $H \leq \text{multi-window card output resolution width}(3840)$ ,

$V+V \text{ start} \leq \text{multi-window card output resolution height}(2160)$ ;

\*Output card input range:  $H+H \text{ start} \leq \text{multi-window card output resolution width}$ ,

$V+V \text{ start} \leq \text{multi-window card output resolution height}$ ;

\*Output card output range:  $H+H \text{ start} \leq \text{output card output resolution width}$ ,  $V+V \text{ start} \leq \text{output card output resolution height}$ ;

Command sample :

“3A 01 04 01 00 15 19 10 00 00 0F 00 00 00 08 70 01 00 0A 01 00 00 03 00 3A”, model 0 multi-window card Win2 setup;

“3A 01 04 01 00 15 19 C0 00 00 0F 00 00 00 08 70 00 00 07 00 00 00 03 00 3A”, model 0 output card B DVI1 port setup;

## 15、Setup model,multi-window card/output card input,output image size and position (16)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT72
3A	01	04	01	00	16	49	XX	XX	XX	XX	XX	ChkSum

Description 1) **BYT5**=16;

- 2) **BYT4**=00, **BYT6**=49, total command length is 73;
- 3) **BYT7**: BIT7=0 (multi-window card), 1 (output card) ;  
**BYT7**: BIT6=0, when BIT7=0, fixed value 0;  
**BYT7**: BIT6=0、1, when BIT7=1(output card), means OutA、OutB;  
**BYT7**: BIT5~BIT4=00,reserved;  
**BYT7**: BIT3~BIT0=0~12, mode M0~M12;
- 4) **BYT8**, quotient of Win 1/DVI1 input image horizontal start÷256;
- 5) **BYT9**, remainder of Win 1/DVI1 input image horizontal start ÷256;
- 6) **BYT10**, quotient of Win 1/DVI1 input image width÷256;
- 7) **BYT11**, remainder of Win 1/DVI1 input image width ÷256;
- 8) **BYT12**, quotient of Win 1/DVI1 input image vertical start÷256;
- 9) **BYT13**, remainder of Win 1/DVI1 input image vertical start ÷256;
- 10) **BYT14**, quotient of Win 1/DVI1 input image height ÷256;
- 11) **BYT15**, remainder of Win 1/DVI1 input image height ÷256;
- 12) **BYT16**, quotient of Win 1/DVI1 output image horizontal start÷256;
- 13) **BYT17**, remainder of Win 1/DVI1 output image horizontal start ÷256;
- 14) **BYT18**, quotient of Win 1/DVI1 output image width÷256;
- 15) **BYT19**, remainder of Win 1/DVI1 output image width÷256;
- 16) **BYT20**, quotient of Win 1/DVI1 output image vertical start ÷256;
- 17) **BYT21**, remainder of Win 1/DVI1 output image vertical start ÷256;
- 18) **BYT22**, quotient of Win 1/DVI1 output image height÷256;
- 19) **BYT23**, remainder of Win 1/DVI1 output image height ÷256;
- 20) **BYT24**, quotient of Win 2/DVI2 input image horizontal start ÷256;
- 21) **BYT25**, remainder of Win 2/DVI2 input image horizontal start ÷256;
- 22) **BYT26**, quotient of Win 2/DVI2 input image width ÷256;
- 23) **BYT27**, remainder of Win 2/DVI2 input image width ÷256;

- 24) **BYT28**, quotient of Win 2/DVI2 input image vertical start ÷256;
- 25) **BYT29**, remainder of Win 2/DVI2 input image vertical start ÷256;
- 26) **BYT30**, quotient of Win 2/DVI2 input image height ÷256;
- 27) **BYT31**, remainder of Win 2/DVI2 input image height ÷256;
- 28) **BYT32**, quotient of Win 2/DVI2 output image horizontal start ÷256;
- 29) **BYT33**, remainder of Win 2/DVI2 output image horizontal start ÷256;
- 30) **BYT34**, quotient of Win 2/DVI2 output image width ÷256;
- 31) **BYT35**, remainder of Win 2/DVI2 output image width ÷256;
- 32) **BYT36**, quotient of Win 2/DVI2 output image vertical start ÷256;
- 33) **BYT37**, remainder of Win 2/DVI2 output image vertical start ÷256;
- 34) **BYT38**, quotient of Win 2/DVI2 output image height ÷256;
- 35) **BYT39**, remainder of Win 2/DVI2 output image height ÷256;
- 36) **BYT40~BYT55**, Win3/DVI3 input and output image parameter;
- 36) **BYT56~BYT71**, Win4/DVI4 input and output image parameter;

\*Please limit the range of the value:

\*Multi-win card input range: H (horizontal) parameter is fixed default value;

:  $V \leq 2160/1080$  (Win1/2 maximum is 2160, Win3/4 maximum is 1080) ;

\*Multi-win card output range:  $H \leq$  Multi-win card output resolution width,  $V \leq$  Multi-win card output resolution height;

\*Output card input range:  $H \leq$  Multi-win card output resolution width,  $V \leq$  Multi-win card output resolution height;

\*Output card output range:  $H \leq$  output card output resolution width,  $V \leq$  output card output resolution height;

Command example:

"3A 01 04 01 00 16 49 00

00 00 0F 00 00 00 08 70 00 00 07 80 00 00 04 38

00 00 0F 00 00 00 08 70 07 80 07 80 00 00 04 38

00 00 07 80 00 00 04 38 00 00 07 80 04 38 04 38

00 00 07 80 00 00 04 38 07 80 07 80 04 38 04 38 3A", Mode 0 Multi-win card parameter setting.

"3A 01 04 01 00 16 49 C0

00 00 0F 00 00 00 08 70 00 00 06 00 00 00 04 00

00 00 0F 00 00 00 08 70 00 20 06 00 00 10 04 00

00 00 0F 00 00 00 08 70 00 40 06 00 00 20 04 00

00 00 0F 00 00 00 08 70 00 80 06 00 00 30 04 00 3A", Mode 0 output card parameter setting;

## 16、Mode setting, Multi-win+2 output card input, output image size and position(17)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT200
3A	01	04	01	00	17	C9	XX	XX	XX	XX	XX	ChkSum

1) **BYT5**=17;

2) **BYT4**=00, quotient of total command length ÷256;

**BYT6**= C9, remainder of total command length ÷256;

3) **BYT7[7:4]**=00, reserved;

**BYT7[3:0]**= 0~12, Mode M0~M12;

4) **BYT8~23**, Multi-win card Win1 input image, output image; (parameter sequence: refer to "single channel input, output image size and position")



- 5) **BYT24~39**, Multi-win card Win2 input image, output image;
- 6) **BYT40~55**, Multi-win Win3 input image, output image;
- 7) **BYT56~71**, Multi-win Win4 input image, output image;
- 8) **BYT72~87**, OutA DVI1 input image, output image;
- 9) **BYT88~103**, OutA DVI2 input image, output image;
- 10) **BYT104~119**, OutA DVI3 input image, output image;
- 11) **BYT120~135**, OutA DVI4 input image, output image;
- 12) **BYT136~151**, OutB DVI1 input image, output image;
- 13) **BYT152~167**, OutB DVI2 input image, output image;
- 14) **BYT168~183**, OutB DVI3 input image, output image;
- 15) **BYT184~199**, OutB DVI4input image, output image;

\*Please limit the range of the value:

\*Multi-win card input range: H (horizontal) parameter is fixed default value ;

:  $V \leq 2160/1080$  (Win1/2 maximum is 2160, Win3/4 maximum is 1080) ;

\*Multi-win card output range:  $H \leq$  Multi-win card output resolution width,  $V \leq$  Multi-win card output resolution height;

\* Output card input range:  $H \leq$  Multi-win card output resolution width,  $V \leq$  Multi-win card output resolution height;

\* Output card output range:  $H \leq$  output card output resolution width,  $V \leq$  output card output resolution height;

Command example:

"3A 01 04 01 00 17 C9 00

00 00 0F 00 00 00 08 70 00 00 07 80 00 00 04 38 00 00 0F 00 00 00 08 70 07 80 07 80 00 00 04 38

00 00 07 80 00 00 04 38 00 00 07 80 04 38 04 38 00 00 07 80 00 00 04 38 07 80 07 80 04 38 04 38

00 00 0F 00 00 00 08 70 00 00 06 00 00 00 04 00 00 00 0F 00 00 00 08 70 00 20 06 00 00 10 04 00

00 00 0F 00 00 00 08 70 00 40 06 00 00 20 04 00 00 00 0F 00 00 00 08 70 00 80 06 00 00 30 04 00

00 00 0F 00 00 00 08 70 00 00 06 00 00 00 04 00 00 00 0F 00 00 00 08 70 00 20 06 00 00 10 04 00

00 00 0F 00 00 00 08 70 00 40 06 00 00 20 04 00 00 00 0F 00 00 00 08 70 00 80 06 00 00 30 04 00 3'A, Mode 0 Multi-win card, output card A, output card B parameter.

## 17、Multi-win card frame setting(18)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	...	BYT13
3A	01	04	01	00	18	0E	XX	XX	XX	ChkSum

1) **BYT5**=18;

2) **BYT4**=00, quotient of total command length ÷256;

**BYT6**=0E, remainder of total command length ÷256;

3) **BYT7**=0~3, Win1~Win4;

4) **BYT8**=0 (OFF) , 1 (ON) ;

5) **BYT9**=0~255, red;

6) **BYT10**=0~255, green;

7) **BYT11**=0~255, blue;

8) **BYT12**=3~127, size;

Command example:

"3A 01 04 01 00 18 0E 00 01 A0 A1 A2 2F 3A"; Multi-win card Win1 frame setting

## 18、Multi-window card, output card gray level setting (19)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	...	BYT26
3A	01	04	01	00	19	1B	XX	XX	XX	ChkSum

Description 1) **BYT5=19**;

- 2) **BYT4=00**, quotient of total command length÷256;  
**BYT6=1B**, remainder of total command length ÷256;
- 3) **BYT7[7]=0**(Multi-win card), 1 (output card) ;  
**BYT7[6]=0** when BIT7=0, means Multi-win card, it is fixed 0;  
**BYT7[6]=0~1**, when BIT7=1, means output card, OutA~OutB;
- 4) **BYT8[7:4]=0**, reserved;  
**BYT8 [3] =1**, Win4/DVI4 adjustment valid, =0 adjustment invalid;  
**BYT8 [2] =1**, Win3/DVI3 adjustment valid, =0 adjustment invalid;  
**BYT8 [1] =1**, Win2/DVI2 adjustment valid, =0 adjustment invalid;  
**BYT8 [0] =1**, Win1/DVI1 adjustment valid, =0 adjustment invalid;
- 5) **BYT9=0~255**, Multi-win card all channel gray level value range; (when **BYT7[7]=0**(Multi-win card))  
**BYT10=0~255**, Multi-win card Win1 gray level value range; when **BYT7[7]=0**(multi-window card)  
**BYT11=0~255**, Multi-win card Win2 gray level value range; when **BYT7[7]=0**(multi-window card)  
**BYT12=0~255**, Multi-win card Win3 gray level value range; when **BYT7[7]=0**(multi-window card)  
**BYT13=0~255**, Multi-win card Win4 gray level value range; when **BYT7[7]=0**(multi-window card)
- 6) **BYT9=0~255**, output card all channels gray level range; when **BYT7[7]=1**(output card)  
**BYT10=0~255**, output card DVI1 gray level in RGB; when **BYT7[7]=1**(output card)  
**BYT11=0~255**, output card DVI1 gray level of R; when **BYT7[7]=1**(output card)  
**BYT12=0~255**, output card DVI1 gray level of G; when **BYT7[7]=1**(output card)  
**BYT13=0~255**, output card DVI1 gray level of B; when **BYT7[7]=1**(output card)  
**BYT14=0~255**, output card DVI2 gray level in RGB; when **BYT7[7]=1**(output card)  
**BYT15=0~255**, output card DVI2 gray level of R; when **BYT7[7]=1**(output card)  
**BYT16=0~255**, output card DVI2 gray level of G; when **BYT7[7]=1**(output card)  
**BYT17=0~255**, output card DVI2 gray level of B; when **BYT7[7]=1**(output card)  
**BYT18=0~255**, output card DVI3 gray level in RGB ; when **BYT7[7]=1**(output card)  
**BYT19=0~255**, output card DVI3 gray level of R ; when **BYT7[7]=1**(output card)  
**BYT20=0~255**, output card DVI3 gray level of G ; when **BYT7[7]=1**(output card)  
**BYT21=0~255**, output card DVI3 gray level of B ; when **BYT7[7]=1**(output card)  
**BYT22=0~255**, output card DVI4 gray level in RGB; when **BYT7[7]=1**(output card)  
**BYT23=0~255**, output card DVI4 gray level of R ; when **BYT7[7]=1**(output card)  
**BYT24=0~255**, output card DVI4 gray level of G ; when **BYT7[7]=1**(output card)  
**BYT25=0~255**, output card DVI4 gray level of B ; when **BYT7[7]=1**(output card)

\*Adjust Multi-win card gray level: when adjust "All Wins", "Win1/2/3/4" parameters will change ; Adjust "Win1", "just Win 1 change,Win2/3/4 parameter will not change;

\*Adjust output card gray level: " All DVI Gray level", "DVIN gray level adjustment is similar with Multi-win card.

Command example:

"3A 01 04 01 00 19 1B 00 0F A0 A0 A0 A0 A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3A", Multi-win card all Wins gray level;

"3A 01 04 01 00 19 1B C0 0F A0 A0 A0 A0 A0 B0 B0 B0 B0 A0 A1 A2 A3 B0 B5 B6 B7 3A", Output card B gray level;

### 19、 Multi-win card, output card brightness(1A)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	...	BYT26
3A	01	04	01	00	1A	1B	XX	XX	XX	ChkSum

Description: 1) **BYT5=1A:**

- 2) **BYT4**=00, quotient of total command length÷256;  
**BYT6**=1B, remainder of total command length ÷256;
- 3) **BYT7[7]**=0(multi-window card), 1 (output card) ;  
**BYT7[6]**=0, when **BIT7**=0 means Multi-win card, fixed value 0;  
**BYT7[6]**=0~1, when **BIT7**=1 means output card, OutA~OutB;
- 4) **BYT8[7:4]**=0, reserved;  
**BYT8 [3]** =1, Win4/DVI4 adjustment valid, =0 adjustment invalid;  
**BYT8 [2]** =1, Win3/DVI3 adjustment valid; =0 adjustment invalid;  
**BYT8 [1]** =1, Win2/DVI2 adjustment valid; =0 adjustment invalid;  
**BYT8 [0]** =1, Win1/DVI1adjustment valid, =0 adjustment invalid;
- 5) **BYT9**=0~255, all windows' brightness of multi-win card;  
**BYT10**=0~255, Multi-win card CH1 brightness range; when**BYT7[7]**=0(Multi-win card)  
**BYT11**=0~255, Multi-win card CH2 brightness range; when**BYT7[7]**=0(Multi-win card)  
**BYT12**=0~255, Multi-win card CH3 brightness range; when**BYT7[7]**=0(Multi-win card)  
**BYT13**=0~255, Multi-win card CH4 brightness range; when**BYT7[7]**=0(Multi-win card)
- 6) **BYT9**=0~255, output card all channels brightness range; when **BYT7[7]**=1(output card )  
**BYT10**=0~255, output card DVI1 brightness in RGB; when **BYT7[7]**=1(output card ) **BYT11**=0~255,  
output card DVI1 brightness of R;when **BYT7[7]**=1(output card )  
**BYT12**=0~255, output card DVI1 brightness of G;when **BYT7[7]**=1(output card )  
**BYT13**=0~255, output card DVI1 brightness of B;when **BYT7[7]**=1(output card )  
**BYT14**=0~255, output card DVI2 brightness in RGB; when **BYT7[7]**=1(output card )  
**BYT15**=0~255, output card DVI2 brightness of R;when **BYT7[7]**=1(output card )  
**BYT16**=0~255, output card DVI2 brightness of G;when **BYT7[7]**=1(output card )  
**BYT17**=0~255, output card DVI2 brightness of B;when **BYT7[7]**=1(output card )  
**BYT18**=0~255, output card DVI3 brightness in RGB; when **BYT7[7]**=1(output card )  
**BYT19**=0~255, output card DVI3 brightness of R;when **BYT7[7]**=1(output card )  
**BYT20**=0~255, output card DVI3 brightness of G;when **BYT7[7]**=1(output card )  
**BYT21**=0~255, output card DVI3 brightness of B;when **BYT7[7]**=1(output card )  
**BYT22**=0~255,output card DVI4 brightness in RGB; when **BYT7[7]**=1(output card )  
**BYT23**=0~255, output card DVI4 brightness of R;when **BYT7[7]**=1(output card )  
**BYT24**=0~255, output card DVI4 brightness of G;when **BYT7[7]**=1(output card )  
**BYT25**=0~255, output card DVI4 brightness of B;when **BYT7[7]**=1(output card )

\*Adjust Multi-win card brightness: when adjust “All Wins”, “Win1/2/3/4” parameter will change; when adjust “Win1” parameter, only Win 1 brightness will change.

\*Adjust output card brightness:" All DVI brightness", "DVIN brightness adjustment is similar with Multi-win brightness adjustment.

Command example:

“3A 01 04 01 00 1A 1B 00 0F 80 80 80 80 80 00 00 00 00 00 00 00 00 00 00 00 3A”, Multi-win card all wins

brightness;

“3A 01 04 01 00 1A 1B C0 0F 80 80 80 80 80 81 82 83 A0 A1 A2 A3 A0 A5 A6 A7 3A”, output card B all channels brightness;

## 20、Multi-win card, output card color(1B)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	...	BYT14
3A	01	04	01	00	1B	0F	XX	XX	XX	ChkSum

Description 1) **BYT5=1B**;

- 2) **BYT4=00**, quotient of total command length÷256;  
**BYT6=1B**, remainder of total command length ÷256;
- 3) **BYT7[7]=0** (Multi-win card), 1 (output card) ;  
**BYT7[6]=0**, when BIT7=0 means Multi-win card, fixed value 0.  
**BYT7[6]=0~1**, when BIT7=1 means output card, OutA~OutB;
- 4) **BYT8[7:4]=0**, reserved;  
**BYT8 [3] =1**, Win4/DVI4 adjustment valid, =0 adjustment invalid;  
**BYT8 [2] =1**, Win3/DVI3 adjustment valid, =0 adjustment invalid;  
**BYT8 [1] =1**, Win2/DVI2 adjustment valid, =0 adjustment invalid;  
**BYT8 [0] =1**, Win1/DVI1 adjustment valid, =0 adjustment invalid;
- 5) **BYT9=0~255**, all channel color range;  
**BYT10=0~255**, Win1/DVI1 color range;  
**BYT11=0~255**, Win2/DVI2 color range;  
**BYT12=0~255**, Win3/DVI3 color range;  
**BYT13=0~255**, Win4/DVI4 color range;

Command example:

“3A 01 04 01 00 1B 0F 00 0F 80 80 80 80 80 80 80 80 3A”, Multi-win card all wins color;

“3A 01 04 01 00 1B 0F C0 0F 80 80 80 80 80 80 80 80 3A”, output card all port color;

## 21、Multi-win card current window Fade In,Fade Out setting (1D)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9
3A	01	04	01	00	1D	0A	XX	XX	ChkSum

Description 1) **BYT5=1D**;

- 2) **BYT4=00**, quotient of total command length÷256;  
**BYT6=1B**, remainder of total command length ÷256;
- 3) **BYT7[7]=1**, apply FadeIn/FadeOut operation and switching time setup;  
**BYT7[7]=0**, only setup switching time without applying FadeIn/FadeOut operation;  
**BYT7[6: 1]=0**, reserved  
**BYT7[0]=0**, **Fade In**;  
**BYT7[0]=1**, **Fade Out**;
- 4) **BYT8[7: 2]=0**, reserved;  
**BYT8[1,0]=0**, seamless switching (switching time interval);  
**BYT8[1,0]=1**, fade in/ fade out switching ( switching time interval);  
**BYT8[1,0]=2**, fade in / fade out 2s switching ( switching time interval);

**BYT8[1,0]=3**, fade in / fade out 3s switching (switching time interval);

Command example:

“3A 01 04 01 00 1D 0A 00 00 3A”, seamless switching time setting;

“3A 01 04 01 00 1D 0A 80 00 3A”, Fade In, seamless switching;

## 22、Output card custom resolution width and height setting (1E)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	...	BYT12
3A	01	04	01	00	1E	0D	XX	XX	XX	...	ChkSum

Description 1) **BYT5=1E**;

2) **BYT4=00**, quotient of total command length÷256;

**BYT6=1B**, remainder of total command length ÷256;

3) **BYT7**=quotient of custom output width resolution÷256(HW)

**BYT8**= remainder of custom output width resolution÷256 (HW)

4) **BYT9**=quotient of custom output height resolution ÷256(VH) ;

**BYT10**=remainder of custom output height resolution ÷256 (HW);

5) **BYT11=0**, output fresh rate 50 HZ;

**BYT11=1**, output fresh rate 60 HZ;

\*output frequency 50 HZ is not suggested prior selection, check system returning parameter to judge whether support 50 HZ, command refer to:“1、**BYT7=00**, **BYT8=00**”;

\*Please limit the value of the settings:

\*After setting the custom parameters, if the resolution is not applied, please restore to the previous parameters;

\*HW/VH range: 960~2160;

\* (HW+64) \* (VH+24) < 2475000, (60Hz)

\* (HW+64) \* (VH+24) < 2970000, (50Hz)

Command example:

“3A 01 04 01 00 1E 0D 07 D0 03 E8 01 3A”, HW=2000,VH=1000,fresh rate=60Hz;

## 23、Multi-win card, output card resolution (1F)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9
3A	01	04	01	00	1F	0A	XX	XX	ChkSum

Description 1) **BYT5=1B**;

2) **BYT4=00**, quotient of total command length÷256;

**BYT6=1B**, remainder of total command length ÷256;

3) **BYT7=13**(multi-window card resolution 3840x2160@60); reserved

**BYT7=22**(Multi-win card 3840x2160@50); reserved

4) **BYT8=1** (output card resolution 1440x1440@60) ;

**BYT8=6** (output card resolution 1920x1080@60) ;

**BYT8=9** (output card custom resolution) ;

**BYT8=10** (output card resolution 2160x960@60) ;

**BYT8=11** (output card resolution 1200x1600@60) ;

**BYT8=12** (output card resolution 1600x1344@60) ;

**BYT8=16** (output card resolution 2160x1160\_50) ;

**BYT8=17** (output card resolution 2048x1200\_50) ;  
**BYT8=19** (output card resolution 1920x1200\_50) ;  
**BYT8=20** (output card resolution 1920x1080\_50) ;  
**BYT8=21** (output card resolution 1680x1440\_50) ;  
**BYT8=23** (output card resolution 1440x1680\_50) ;  
**BYT8=24** (output card resolution 1200x1960\_50) ;

\*Multi-win card resolution is 3840x2160@60/3840x2160@50, reserved in this application;

\*output frequency 50 HZ is not suggested prior selection, check system returning parameter to judge whether support 50 HZ, command refer to: "1、**BYT7=00**, **BYT8=00**";

Command example:

"3A 01 04 01 00 1F 0A 0D 06 3A";

## 24、Set current display mode, LED total width and height (20)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	...	BYTN
3A	01	04	01	00	20	XX	XX	XX	XX	XX	ChkSum

Description 1) **BYT5=20**;

2) **BYT4=00**, quotient of total command length (12) ÷256; (support 1 LED screen setting)

**BYT6=1B**, remainder of total command length ÷256;

**BYT7**, quotient of LED screen width÷256;

**BYT8**, remainder of LED screen width÷256;

**BYT9**, quotient of LED screen height ÷256;

**BYT10**, remainder of LED screen height ÷256;

3) **BYT4=00**, quotient of total command length (13) ÷256; (support 4 LED screen setting)

**BYT6=0D**, remainder of total command length÷256;

**BYT7**, quotient of LED screen width ÷256;

**BYT8**, remainder of LED screen width ÷256;

**BYT9**, quotient of LED screen height ÷256;

**BYT10**, remainder of LED screen height ÷256;

**BYT11**, LED selection (0~3) ;

\*\* Reading command "**BYT7=00**, **BYT8=00**" , **BYT9[2]** =0 means1 large screen;**BYT9[2]**=1 means 4 large screens);

\*Please limit the range of the value:

\*H<=output resolution width\* output card amount\*4( each output card has 4 DVI ports);

\*V<=output resolution height\* output card amount\*4( each output card has 4 DVI ports);

Command example:

"3A 01 04 01 00 20 0C 0F 00 08 70 3A"; 1 large LED screen setting

"3A 01 04 01 00 20 0D 0F 00 08 70 00 3A"; 4 large LED screen setting

## 25、Set current display mode, unit screen size and position(21)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT15
3A	01	04	01	00	21	10	XX	XX	XX	XX	XX	ChkSum

Description 1) **BYT5=20**;

- 2) **BYT4=00**, quotient of total command length÷256;  
**BYT6=1B**, remainder of total command length ÷256;
- 3) **BYT7**, quotient of unit screen horizontal start÷256;
- 4) **BYT8**, remainder of unit screen horizontal start ÷256;
- 5) **BYT9**, quotient of unit screen width ÷256;
- 6) **BYT10**, remainder of unit screen width ÷256;
- 7) **BYT11**, quotient of unit screen vertical start ÷256;
- 8) **BYT12**, remainder of unit screen vertical start ÷256;
- 9) **BYT13**, quotient of unit screen height ÷256;
- 10) **BYT14**, remainder of unit screen height÷256;

\*Please limit the range of the value:

\*Unit screen horizontal start+unit screen width<=LED total width;

\*Unit screen vertical start+unit screen height<=LED total height;

\*Unit screen width <=output resolution width;

\*Unit screen height <=output resolution height;

Command sample:

“3A 01 04 01 00 21 10 00 10 07 80 00 10 04 38 3A” ;

## 26、Setup current display mode, 8 DVI output to unit LED screen parameter size and position (22)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT71
3A	01	04	01	00	22	48	XX	XX	XX	XX	...	ChkSum

Description 1) **BYT5=22**;

- 2) **BYT4=00**, quotient of total command length ÷256 ;  
**BYT6=48**, remainder of total command length ÷256 ;
- 3) **BYT7**, OutA DVI1 quotient of unit screen horizontal start ÷256 ;
- 4) **BYT8**, OutA DVI1 remainder of unit screen horizontal start ÷256;
- 5) **BYT9**, OutA DVI1 quotient of unit screen width ÷256;
- 6) **BYT10**, OutA DVI1 remainder of unit screen width ÷256;
- 7) **BYT11**, OutA DVI1 quotient of unit screen vertical start ÷256;
- 8) **BYT12**, OutA DVI1 remainder of unit screen vertical start ÷256;
- 9) **BYT13**, OutA DVI1 quotient of unit screen height ÷256;
- 10) **BYT14**, OutA DVI1 remainder of unit screen height ÷256;
- 11) **BYT15~22**, OutA DVI2 unit screen data;
- 12) **BYT23~30**, OutA DVI3 unit screen data;
- 13) **BYT31~38**, OutA DVI4 unit screen data;
- 14) **BYT39~46**, OutB DVI1 unit screen data;
- 15) **BYT47~54**, OutB DVI2 unit screen data;
- 16) **BYT55~62**, OutB DVI3 unit screen data;
- 17) **BYT63~70**, OutB DVI4 unit screen data

\*Please limit the range of value:

\*unit screen horizontal start + unit screen width<=whole screen width;

\*unit screen vertical start +unit screen height<=whole screen height;

\*unit screen width<=output resolution width;  
 \*unit screen height<=output resolution height;

Command sample:

“3A 01 04 01 00 22 48  
 00 10 07 80 00 10 04 38 00 10 07 80 00 10 04 38  
 00 10 07 80 00 10 04 38 00 10 07 80 00 10 04 38  
 00 10 07 80 00 10 04 38 00 10 07 80 00 10 04 38  
 00 10 07 80 00 10 04 38 00 10 07 80 00 10 04 38 3A  
 ” ;

## 27、Automatic calculation of splicing parameters (23)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7
3A	01	04	01	00	23	08	ChkSum

Description 1) **BYT5**=23;

2) **BYT4**=00, quotient of total command length ÷256;

**BYT6**=08, remainder of total command length ÷256;

\*Only calculate parameters of the unit screen in current mode

Command sample:

“3A 01 04 01 00 23 08 3A”;

## 28、System initialization (30)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7
3A	01	04	01	00	30	08	ChkSum

Description 1) **BYT5**=30;

2) **BYT4**=00, quotient of total command length ÷256;

**BYT6**=08, remainder of total command length ÷256;

\*Notice. Initialization will reset all system settings;

Command sample:

“3A 01 04 01 00 30 08 3A”

## 29、Input card data import and apply (40)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT45
3A	01	04	01	00	40	2E	XX	XX	XX	XX	...	ChkSum

Description 1) **BYT5**=40;

2) **BYT4**=00, quotient of total command length ÷256;

**BYT6**=2E, remainder of total command length ÷256;

3) **BYT7**, input card A gray;

**BYT8**, input card A brightness ;

**BYT9**, input card A color ;

**BYT10**, input card A quotient of main image horizontal start ÷256;

**BYT11**, input card A remainder of main image horizontal start ÷256;

**BYT12**, input card A quotient of main image width ÷256;



- BYT13**, input card A remainder of main image width  $\div 256$ ;
- BYT14**, input card A quotient of main image vertical start  $\div 256$ ;
- BYT15**, input card A remainder of main image vertical start  $\div 256$ ;
- BYT16**, input card A quotient of main image height  $\div 256$ ;
- BYT17**, input card A remainder of main image output image height  $\div 256$ ;
- BYT18**, input card A PIP quotient of image horizontal start  $\div 256$ ;
- BYT19**, input card A PIP remainder of image horizontal start  $\div 256$ ;
- BYT20**, input card A PIP quotient of image width  $\div 256$ ;
- BYT21**, input card A PIP remainder of image width  $\div 256$ ;
- BYT22**, input card A PIP quotient of image vertical start  $\div 256$ ;
- BYT23**, input card A PIP remainder of image vertical start  $\div 256$ ;
- BYT24**, input card A PIP quotient of image height  $\div 256$ ;
- BYT25**, input card A PIP remainder of output image height  $\div 256$ ;
- 4) **BYT26**, input card B gray;
- BYT27**, input card B brightness ;
- BYT28**, input card B color ;
- BYT29**, input card B quotient of main image horizontal start  $\div 256$ ;
- BYT30**, input card B remainder of main image horizontal start  $\div 256$ ;
- BYT31**, input card B quotient of main image width  $\div 256$ ;
- BYT32**, input card B remainder of main image width  $\div 256$ ;
- BYT33**, input card B quotient of main image vertical start  $\div 256$ ;
- BYT34**, input card B remainder of main image vertical start  $\div 256$ ;
- BYT35**, input card B quotient of main image height  $\div 256$ ;
- BYT36**, input card B remainder of main image output image height  $\div 256$ ;
- BYT37**, input card B PIP quotient of image horizontal start  $\div 256$ ;
- BYT38**, input card B PIP remainder of image horizontal start  $\div 256$ ;
- BYT39**, input card B PIP quotient of image width  $\div 256$ ;
- BYT40**, input card B PIP remainder of image width  $\div 256$ ;
- BYT41**, input card B PIP quotient of image vertical start  $\div 256$ ;
- BYT42**, input card B PIP remainder of image vertical start  $\div 256$ ;
- BYT43**, input card B PIP quotient of image height  $\div 256$ ;
- BYT44**, input card B PIP remainder of image output image height  $\div 256$ ;

### 30、Transfer Multi-window card, output card data to control board command1 (41)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT280
3A	01	04	01	01	41	19	XX	XX	XX	XX	...	ChkSum

Description 1) **BYT5=41**;

- 2) **BYT4=01**, quotient of total command length  $\div 256$ ;
- BYT6=19**, remainder of total command length  $\div 256$ ;
- 3) Multi-window card:
- BYT7**, all Win gray
- BYT8**, Win1 gray;
- BYT9**, Win2 gray;
- BYT10**, Win3 gray;

**BYT11**, Win4 gray;  
**BYT12**, all Win brightness  
**BYT13**, Win1 brightness;  
**BYT14**, Win2 brightness;  
**BYT15**, Win3 brightness;  
**BYT16**, Win4 brightness;  
**BYT17**, all Win color;  
**BYT18**, Win1 color;  
**BYT19**, Win2 color;  
**BYT20**, Win3 color;  
**BYT21**, Win4 color;

**BYT22**, Win1frame On/Off;  
**BYT23**, Win1frame red;  
**BYT24**, Win1frame green;  
**BYT25**, Win1frame blue;  
**BYT26**, Win1frame size;  
**BYT27**, Win2 frame On/Off;  
**BYT28**, Win2 frame red;  
**BYT29**, Win2 frame green;  
**BYT30**, Win2 frame blue;  
**BYT31**, Win2 frame size;  
**BYT32**, Win3 frame On/Off;  
**BYT33**, Win3 frame red;  
**BYT34**, Win3 frame green;  
**BYT35**, Win3 frame blue;  
**BYT36**, Win3 frame size;  
**BYT37**, Win4 frame On/Off;  
**BYT38**, Win4 frame red;  
**BYT39**, Win4 frame green;  
**BYT40**, Win4 frame blue;  
**BYT41**, Win4 frame size;

**BYT42**, mode 0 Win1 signal ;  
**BYT43**, mode 0 Win2 signal;  
**BYT44**, mode 0 Win3 signal;  
**BYT45**, mode 0 Win4 signal;  
**BYT46**, mode 0 Win1 layer;  
**BYT47**, mode 0 Win2 layer;  
**BYT48**, mode 0 Win3 layer;  
**BYT49**, mode 0 Win4 layer;  
**BYT50**, mode 0 overlay;

**BYT51**, mode 0 switch time + Win On/Off (BIT[7: 4] means switch time, BIT[3:0] means Win On/Off ,  
beneath the same) ;

**BYT52~BYT61**, mode 1 signal、 layer、 overlay、 switch time + Win On/Off;  
**BYT62~BYT71**, mode 2 signal、 layer、 overlay、 switch time + Win On/Off;

**BYT72~BYT81**, mode 3 signal、 layer、 overlay、 switch time + Win On/Off;  
**BYT82~BYT91**, mode 4 signal、 layer、 overlay、 switch time + Win On/Off;  
**BYT92~BYT101**, mode 5 signal、 layer、 overlay、 switch time + Win On/Off;  
**BYT102~BYT111**, mode 6 signal、 layer、 overlay、 switch time + Win On/Off;  
**BYT112~BYT121**, mode 7 signal、 layer、 overlay、 switch time + Win On/Off;  
**BYT122~BYT131**, mode 8 signal、 layer、 overlay、 switch time + Win On/Off;  
**BYT132~BYT141**, mode 9 signal、 layer、 overlay、 switch time + Win On/Off;  
**BYT142~BYT151**, mode 10 signal、 layer、 overlay、 switch time + Win On/Off;  
**BYT152~BYT161**, mode 11 signal、 layer、 overlay、 switch time + Win On/Off;  
**BYT162~BYT171**, mode 12 signal、 layer、 overlay、 switch time + Win On/Off;  
**BYT172~BYT181**, mode 13 signal、 layer、 overlay、 switch time + Win On/Off;  
**BYT182~BYT191**, mode 14 signal、 layer、 overlay、 switch time + Win On/Off;  
**BYT192~BYT201**, mode 15 signal、 layer、 overlay、 switch time + Win On/Off;

4) Output card A:

**BYT202**, all DVI gray;  
**BYT203**, DVI1 gray RGB;  
**BYT204**, DVI1 gray R;  
**BYT205**, DVI1 gray G;  
**BYT206**, DVI1 gray B;  
**BYT207**, DVI2 gray RGB;  
**BYT208**, DVI2 gray R;  
**BYT209**, DVI2 gray G;  
**BYT210**, DVI2 gray B;  
**BYT211**, DVI3 gray RGB;  
**BYT212**, DVI3 gray R;  
**BYT213**, DVI3 gray G;  
**BYT214**, DVI3 gray B;  
**BYT215**, DVI4 gray RGB;  
**BYT216**, DVI4 gray R;  
**BYT217**, DVI4 gray G;  
**BYT218**, DVI4 gray B;  
  
**BYT219**, all DVI brightness;  
**BYT220**, DVI1 brightness RGB;  
**BYT221**, DVI1 brightness R;  
**BYT222**, DVI1 brightness G;  
**BYT223**, DVI1 brightness B;  
**BYT224**, DVI2 brightness RGB;  
**BYT225**, DVI2 brightness R;  
**BYT226**, DVI2 brightness G;  
**BYT227**, DVI2 brightness B;  
**BYT228**, DVI3 brightness RGB;  
**BYT229**, DVI3 brightness R;  
**BYT230**, DVI3 brightness G;  
**BYT231**, DVI3 brightness B;  
**BYT232**, DVI4 brightness RGB;

**BYT233**, DVI4 brightness R;  
**BYT234**, DVI4 brightness G;  
**BYT235**, DVI4 brightness B;

**BYT236**, all DVI color ;  
**BYT237**, DVI1 color ;  
**BYT238**, DVI2 color ;  
**BYT239**, DVI3 color ;  
**BYT240**, DVI4 color ;

5) Output card B:

**BYT241**, all DVI gray ;  
**BYT242**, DVI1 gray RGB;  
**BYT243**, DVI1 gray R;  
**BYT244**, DVI1 gray G;  
**BYT245**, DVI1 gray B;  
**BYT246**, DVI2 gray RGB;  
**BYT247**, DVI2 gray R;  
**BYT248**, DVI2 gray G;  
**BYT249**, DVI2 gray B;  
**BYT250**, DVI3 gray RGB;  
**BYT251**, DVI3 gray R;  
**BYT252**, DVI3 gray G;  
**BYT253**, DVI3 gray B;  
**BYT254**, DVI4 gray RGB;  
**BYT255**, DVI4 gray R;  
**BYT256**, DVI4 gray G;  
**BYT257**, DVI4 gray B;

**BYT258**, all DVI brightness ;  
**BYT259**, DVI1 brightness RGB;  
**BYT260**, DVI1 brightness R;  
**BYT261**, DVI1 brightness G;  
**BYT262**, DVI1 brightness B;  
**BYT263**, DVI2 brightness RGB;  
**BYT264**, DVI2 brightness R;  
**BYT265**, DVI2 brightness G;  
**BYT266**, DVI2 brightness B;  
**BYT267**, DVI3 brightness RGB;  
**BYT268**, DVI3 brightness R;  
**BYT269**, DVI3 brightness G;  
**BYT270**, DVI3 brightness B;  
**BYT271**, DVI4 brightness RGB;  
**BYT272**, DVI4 brightness R;  
**BYT273**, DVI4 brightness G;  
**BYT274**, DVI4 brightness B;

**BYT275**, all DVI color ;  
**BYT276**, DVI1 color ;  
**BYT277**, DVI2 color ;  
**BYT278**, DVI3 color ;  
**BYT279**, DVI4 color ;

### 31、Mode setup, transfer Multi-window card, output card data to control board command 2 (42)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT200
3A	01	04	01	00	42	48	XX	XX	XX	XX	...	ChkSum

Description 1) **BYT5**=42;

- 2) **BYT4**=00, quotient of total command length ÷256;  
**BYT6**= C9, remainder of total command length ÷256;
- 3) **BYT7**[3:0]= 0~15, mode M0~M15;
- 4) **BYT8**, quotient of Win1input image horizontal start ÷256;  
**BYT9**, remainder of Win1input image horizontal start ÷256;  
**BYT10**, quotient of Win1input image width ÷256;  
**BYT11**, remainder of Win1 input image width ÷256;  
**BYT12**, quotient of Win1 input image vertical start ÷256;  
**BYT13**, remainder of Win1 input image vertical start ÷256;  
**BYT14**, quotient of Win1 input image height ÷256;  
**BYT15**, remainder of Win1 input image height ÷256;  
**BYT16**, quotient of Win1 output image horizontal start ÷256;  
**BYT17**, remainder of Win1 output image horizontal start ÷256;  
**BYT18**, quotient of Win1 output image width ÷256;  
**BYT19**, remainder of Win1 output image width ÷256;  
**BYT20**, quotient of Win1 output image vertical start ÷256;  
**BYT21**, remainder of Win1 output image vertical start ÷256;  
**BYT22**, quotient of Win1 output image height ÷256;  
**BYT23**, remainder of Win1 output image height ÷256;
- 5) **BYT24~39**, Multi-Win card Win2 input image, output image;
- 6) **BYT40~55**, Multi-Win card Win3 input image, output image;
- 7) **BYT56~71**, Multi-Win card Win4 input image, output image;
- 8) **BYT72~87**, OutA DVI1 input image, output image;
- 9) **BYT88~103**, OutA DVI2 input image, output image;
- 10) **BYT104~119**, OutA DVI3 input image, output image;
- 11) **BYT120~135**, OutA DVI4 input image, output image;
- 12) **BYT136~151**, OutA DVI1 input image, output image;
- 13) **BYT152~167**, OutA DVI2 input image, output image;
- 14) **BYT168~183**, OutA DVI3 input image, output image;
- 15) **BYT184~199**, OutA DVI4 input image, output image;

### 32、Apply transfered Multi-window card, output card data command (43)

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7
------	------	------	------	------	------	------	------

3A	01	04	01	00	43	08	ChkSum
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Description 1) **BYT5=43**;

2) **BYT4=00**, quotient of total command length  $\div 256$ ;

**BYT6=08**, remainder of total command length  $\div 256$ ;

\*Execute this command, transfer the multi-window card, the output card data from control board to the corresponding card;

\*After "41" and "42" commands are executed, execute this command, so as to transfer the parameters contained in previous commands to the corresponding card;

command sample:

“3A 01 04 01 00 43 08 3A” 。

## IV、Reading command

Send the **reading system status command (FE)** , **get system configuration data**

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9
3A	01	04	01	00	FE	0A	XX	XX	ChkSum

Description 1) **BYT4=00**, **BYT6=0A** means this command total length is 10 BYTs;

2) **BYT7/8=XX**, read data;

command sample: “3A 01 04 01 00 FE 0A 00 00 3A”;

use corresponding value to replace **BYT7/8** value;

1、**BYT7=00**, **BYT8=00**, the device udder control return 26 data BYTs , means current input card ,output card status:

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	...	BYT25
3A	01	04	01	00	FE	1A	XX	...	ChkSum

1) **BYT4=00**, **BYT6=1A**, means total command length is 26 BYTs;

2) **BYT7= BYT8=00**;

3) **BYT9**:

BIT7~3: reserved;

BIT2: 0= support 1 screen setup; 1= support 4 screen setup;

BIT1: support 50Hz output or not (1=support; 0=don't support) ;

BIT0: Customized resolution fresh rate;

4) **BYT10**: means card exist or not; BIT=1, means card exist; BIT=0, means card not exist;

BIT7: reserved;

BIT6: Output card B;

BIT5: Output card A;

BIT4: Multi-win card;

BIT3: input card D;

BIT2: input card C;

BIT1: input card B;

BIT0: input card A;

5) **BYT11**:

BIT7, reserved;

BIT6=1, means input card D have valid signal; BIT6=0, means input card D don't have signal;

BIT5=1, means input card C have valid signal; BIT5=0, means input card C don't have signal;

BIT4=1, means input card B main image have valid signal; BIT4=0, means input card B main image don't have signal;

BIT3=1, means input card A main image have valid signal; BIT3=0, means input card A main image don't have signal;

BIT2=1, means input card B sub-image have valid signal; BIT2=0, means input card B sub-image don't have signal;

BIT1=1, means input card A sub-image have valid signal; BIT1=0, means input card A sub-image don't have signal;

BIT0=1, means system on standby mode; BIT0=0, system is busy;

6) **BYT12:**

BIT7~4: signal source of in D (05=HDMI5, 06=HDMI6, 07=DP2) ;

BIT3~0: signal source of in C (05=HDMI2, 06=HDMI3, 07=DP1) ;

7) **BYT13:**

BIT7~4: signal source of in B (01=CVBS2, 03=HDMI4/VGA2, 04=SDI2) ;

BIT3~0: signal source of in A (01=CVBS1, 03=HDMI1/VGA1, 04=SDI1) ;

8) **BYT14:**

BIT7~4: sub-image source of in B (01=CVBS2, 03=HDMI4/VGA2, 04=SDI2) ;

BIT3~0: sub-image source of in A (01=CVBS1, 03=HDMI1/VGA1, 04=SDI1) ;

9) **BYT15:**

BIT7: DVI status of input B (1: DVI, 0: VGA) ;

BIT6~4: PIP status of input B (0=PIP Off, 02=PIP On) ;

BIT3: DVI status of input A (1: DVI, 0: VGA) ;

BIT2~0: PIP status of input A (0=PIP Off, 02=PIP On) ;

10) **BYT16:**

BIT7~4: Multi-Window mode;

BIT3~0: output mode;

11) **BYT17:**

BIT7: reserved;

BIT6~5: signal source of current window (0~3) ;

BIT4~0: window layer (0~23) ;

12) **BYT18:**

BIT7~6: Win4 input card (0~1 represent A~B) ;

BIT5~4: Win3 input card (0~1 represent A~B) ;

BIT3~2: Win2 input card (0~1 represent C~D) ;

BIT1~0: Win1 input card (0~1 represent C~D) ;

13) **BYT19:**

BIT7~3: output resolution;

BIT2~1: output port;

BIT0: output card;

14) **BYT20:**

BIT7~4: switching time of multi-window;

BIT3~0: window On/Off (BIT3-Win4, BIT2-Win3, BIT1-Win2, BIT0-Win1) ;

15) **BYT21, 22:** quotient and remainder of user defined resolution÷256;

16) **BYT23, 24:** quotient and remainder of user defined resolution÷256;

2、**BYT7=01, BYT8=00/01**, device under control return 29 data BYTs, means input A/B card parameters , including size of main image and sub-image, gray level 、brightness、colour:

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	...	BYT28
3A	01	04	01	00	FE	1D	XX	...	ChkSum

- 1) **BYT4=00, BYT6=1D**, total command length is 29;
- 2) **BYT7=01, BYT8=00/01**;
- 3) **BYT9**: gray level,
- 4) **BYT10**: brightness,
- 5) **BYT11**: colour,
- 6) **BYT12**, quotient of main image horizontal start÷256 ;
- 7) **BYT13**, remainder of main image horizontal start÷256 ;
- 8) **BYT14**, quotient of main image width÷256 ;
- 9) **BYT15**, remainder of main image width÷256;
- 10) **BYT16**, quotient of main image vertical start÷256;
- 11) **BYT17**, remainder of main image vertical start÷256;
- 12) **BYT18**, quotient of main image height÷256;
- 13) **BYT19**, remainder of main image height÷256;
- 14) **BYT20**, quotient of sub-image horizontal start÷256 ;
- 15) **BYT21**, remainder of sub-image horizontal start÷256 ;
- 16) **BYT22**, quotient of sub-image width÷256 ;
- 17) **BYT23**, remainder of sub-image width÷256;
- 18) **BYT24**, quotient of sub-image vertical start÷256;
- 19) **BYT25**, remainder of sub-image vertical start÷256;
- 20) **BYT26**, quotient of sub-image height÷256;
- 21) **BYT27**, remainder of sub-image height÷256;

3、**BYT7=02, BYT8=XX**, the device under control return 26 data BYTs, means parameters of display mode, multi-window card、output card、signal channel and output image:

**BYT8**: BIT3~BIT0: display mode 0~15, defined as M0~M15;

BIT5~BIT4: 0~3, Win1~Win4/DVI1~DVI4;

BIT6: =0, when BIT7=0(multi-window card), default value0;

BIT6: =0~1, when BIT7=1(output card), means output A card, output B card;

BIT7:0 means multi-window card, 1 means output card:

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT8	BYT9	BYT10	...	BYT25
3A	01	04	01	00	FE	1A	XX	XX	XX	...	ChkSum

- 1) **BYT4=00, BYT6=1A**, command total length is 26;
- 2) **BYT7=02, BYT8=XX**;
- 3) **BYT9~24**, parameters of input image/output image (inhs, inhw, invs, invh, ouths, outhw, outvs, outvh) ;
  - BYT9**, quotient of input image horizontal start÷256 ;
  - BYT10**, remainder of input image horizontal start÷256 ;
  - BYT11**, quotient of input image width÷256 ;



**BYT12**, remainder of input image width÷256;  
**BYT13**, quotient of input image vertical start÷256;  
**BYT14**, remainder of input image vertical start÷256;  
**BYT15**, quotient of input image height÷256;  
**BYT16**, remainder of input image height÷256;  
**BYT17**, quotient of output image horizontal start÷256 ;  
**BYT18**, remainder of output image horizontal start÷256 ;  
**BYT19**, quotient of output image width÷256 ;  
**BYT20**, remainder of output image width÷256;  
**BYT21**, quotient of output image vertical start÷256;  
**BYT22**, remainder of output image vertical start÷256;  
**BYT23**, quotient of output image height÷256;  
**BYT24**, remainder of output image height÷256;

4、**BYT7=03**, **BYT8=XX**, the device under control return 74 data BYTs, means parameters of display mode, multi-window card、output card、signal channel and output image:

**BYT8**: BIT3~BIT0: display mode 0~15, defined as M0~M15;

BIT5~BIT4: reserved;

BIT6: when BIT7=0(multi-window card), default value0;

BIT6: =0~1, when BIT7=1(output card), means output A card, output B card;

BIT7:0 means multi-window card, 1 means output card:

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT73
3A	01	04	01	00	FE	4A	XX	XX	XX	XX	...	ChkSum

1) **BYT4=00**, **BYT6=4A**, means command total length is 26;

2) **BYT7=03**, **BYT8=XX**;

3) **BYT9~24**, Win1/DVI1 input image、output image (inhs, inhw, invs, invh, ouths, outhw, outvs, outvh) ;

4) **BYT25~40**, Win2/DVI2 input image、output image (inhs, inhw, invs, invh, ouths, outhw, outvs, outvh) ;

5) **BYT41~56**, Win3/DVI3 input image、output image (inhs, inhw, invs, invh, ouths, outhw, outvs, outvh) ;

6) **BYT57~72**, Win4/DVI4 input image、output image (inhs, inhw, invs, invh, ouths, outhw, outvs, outvh) ;

5、**BYT7=04**, **BYT8=XX**, the device under control return 202 data BYTs, means in current display mode, size of input image and output image:

**BYT8**: BIT3~BIT0, display mode 0~15,defined as M0~M15;

BYT0	BYT1	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT201
3A	01	01	00	FE	CA	XX	XX	XX	XX	...	ChkSum

1) **BYT4=00**, **BYT6=CA**, means return 202 data BYTs;

2) **BYT7=04**, **BYT8=XX**;

3) **BYT9~24**, Multi-Win card display mode, Win1 input image、output image (inhs, inhw, invs, invh, ouths, outhw, outvs, outvh) ;

4) **BYT25~40**, Multi-Win card display mode, Win2 input image、output image (inhs, inhw, invs, invh, ouths, outhw, outvs, outvh) ;

5) **BYT41~56**, Multi-Win card display mode, Win3 input image、output image (inhs, inhw, invs, invh, ouths, outhw, outvs, outvh) ;

- 6) **BYT57~72**, Multi-Win card display mode, Win4 input image、output image (inhs, inhws, invs, invh, ouths, outhws, outvs, outvh) ;
- 7) **BYT73~88**, Output card A display mode, DVI1 input image,output image (inhs, inhws, invs, invh, ouths, outhws, outvs, outvh) ;
- 8) **BYT89~104**, Output card A display mode, DVI2 input image,output image (inhs, inhws, invs, invh, ouths, outhws, outvs, outvh) ;
- 9) **BYT105~120**, Output card A display mode, DVI3 input image,output image (inhs, inhws, invs, invh, ouths, outhws, outvs, outvh) ;
- 10) **BYT121~136**, Output card A display mode, DVI4 input image,output image (inhs, inhws, invs, invh, ouths, outhws, outvs, outvh) ;
- 11) **BYT137~152**, Output card B display mode, DVI1 input image,output image (inhs, inhws, invs, invh, ouths, outhws, outvs, outvh) ;
- 12) **BYT153~168**, Output card B display mode, DVI2 input image,output image (inhs, inhws, invs, invh, ouths, outhws, outvs, outvh) ;
- 13) **BYT169~184**, Output card B display mode, DV 3 input image,output image (inhs, inhws, invs, invh, ouths, outhws, outvs, outvh) ;
- 14) **BYT185~200**, Output card B display mode, DVI4 input image,output image (inhs, inhws, invs, invh, ouths, outhws, outvs, outvh) ;

**6、BYT7=05, BYT8=00**, the device under control return 74 (266) data BYTs, means LED screen total width and height;  
Reading command "**BYT7=00, BYT8=00**", in **BYT9[2]**, check the processor drive 1 screen or 4 screens, (0=1 one screen; 1=4 four screens) ;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	...	BYTN
3A	01	04	01	00	FE	4A	XX	XX	...	ChkSum

- 1) **BYT7=05, BYT8=00**;
- 2) **BYT4=00, BYT6=4A**, means return 74 data BYTs; (one screen)
  - BYT9**: In display mode M0, quotient of LED screen width ÷256;
  - BYT10**: In display mode M0, remainder of LED screen width ÷256;
  - BYT11**: In display mode M0, quotient of LED screen height ÷256;
  - BYT12**: In display mode M0, remainder of LED screen height ÷256;
  - BYT13~16**: Means display mode 1 LED screen width and height;
  - BYT17~20**: Means display mode 2 LED screen width and height;
  - BYT21~24**: Means display mode 3 LED screen width and height;
  - BYT25~28**: Means display mode 4 LED screen width and height;
  - BYT29~32**: Means display mode 5 LED screen width and height;
  - BYT33~36**: Means display mode 6 LED screen width and height;
  - BYT37~40**: Means display mode 7 LED screen width and height;
  - BYT41~44**: Means display mode 8 LED screen width and height;
  - BYT45~48**: Means display mode 9 LED screen width and height;
  - BYT49~52**: Means display mode 10 LED screen width and height;
  - BYT53~56**: Means display mode 11 LED screen width and height;
  - BYT57~60**: Means display mode 12 LED screen width and height;
  - BYT61~64**: Means display mode 13 LED screen width and height;
  - BYT65~68**: Means display mode 14 LED screen width and height;
  - BYT69~72**: Means display mode 15 LED screen width and height;

3) **BYT4=01, BYT6=0A**, Return 266 data BYTs; (4 LED screens)

**BYT9**: Means in display mode 0, quotient of LED screen 1 width;

**BYT10**: Means in display mode 0, remainder of LED screen 1 width;

**BYT11**: Means in display mode 0, quotient of LED screen 1 height;

**BYT12**: Means in display mode 0, remainder of LED screen 1 height;

**BYT13~16**: Means in display mode 0, LED screen 2 width and height;

**BYT17~20**: Means in display mode 0, LED screen 3 width and height;

**BYT21~24**: Means in display mode 0, LED screen 4 width and height;

**BYT25~40**: Means in display mode 1, width and height of LED 1、2、3、4;

**BYT41~56**: Means in display mode 2, width and height of LED 1、2、3、4;

**BYT57~72**: Means in display mode 3, width and height of LED 1、2、3、4;

**BYT73~88**: Means in display mode 4, width and height of LED 1、2、3、4;

**BYT89~104**: Means in display mode 5, width and height of LED 1、2、3、4;

**BYT105~120**: Means in display mode 6, width and height of LED 1、2、3、4;

**BYT121~136**: Means in display mode 7, width and height of LED 1、2、3、4;

**BYT137~152**: Means in display mode 8, width and height of LED 1、2、3、4;

**BYT153~168**: Means in display mode 9, width and height of LED 1、2、3、4;

**BYT169~184**: Means in display mode 10, width and height of LED 1、2、3、4;

**BYT185~200**: Means in display mode 11, width and height of LED 1、2、3、4;

**BYT201~216**: Means in display mode 12, width and height of LED 1、2、3、4;

**BYT217~232**: Means in display mode 13, width and height of LED 1、2、3、4;

**BYT233~248**: Means in display mode 14, width and height of LED 1、2、3、4;

**BYT249~264**: Means in display mode 15, width and height of LED 1、2、3、4;

7、**BYT7=06, BYT8= XX**, The device under control return 74 data BYTs, means in current display mode, the size and position of each LED screen driven by two output cards

**BYT5**: BIT3~BIT0, output card display mode 0~15, defined as M0~M15;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT73
3A	01	04	01	00	FE	47	XX	XX	XX	XX	...	ChkSum

1) **BYT4=00, BYT6=47**, means return 74 data BYTs;

2) **BYT7=06, BYT8= XX**;

3) **BYT9~16**, Means output A card in current display mode, screen size and position (hs, hw, vs, vh) driven by DVI 1;

4) **BYT17~24**, Means output A card in current display mode, screen size and position (hs, hw, vs, vh) driven by DVI 2;

5) **BYT25~32**, Means output A card in current display mode, screen size and position (hs, hw, vs, vh) driven by DVI 3;

6) **BYT33~40**, Means output A card in current display mode, screen size and position (hs, hw, vs, vh) driven by DVI 4;

7) **BYT41~48**, Means output B card in current display mode, screen size and position (hs, hw, vs, vh) driven by DVI 1;

8) **BYT49~56**, Means output B card in current display mode, screen size and position (hs, hw, vs, vh) driven by DVI 2;

9) **BYT57~64**, Means output B card in current display mode, screen size and position (hs, hw, vs, vh) driven by

DVI 3;

- 10) **BYT65~72**, Means output B card in current display mode, screen size and position (hs, hw, vs, vh) driven by DVI 4;

8、**BYT7=07, BYT8= 00**, the device under control return 74 data BYTs, means image quality parameters of Multi-Win card and output card , including gray level, brightness, colour etc;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT107
3A	01	04	01	00	FE	6C	XX	XX	XX	XX	...	ChkSum

- 1) **BYT4=00, BYT6=6C**, means return 108 data BYTs;
- 2) **BYT7=07, BYT8= 00**;
- 3) **BYT9**, Means gray level of all windows in Multi-Win card;
- 4) **BYT10**, Means gray level of Win1 in Multi-Win card;
- 5) **BYT11**, Means gray level of Win2 in Multi-Win card;
- 6) **BYT12**, Means gray level of Win3 in Multi-Win card;
- 7) **BYT13**, Means gray level of Win4 in Multi-Win card;
- 8) **BYT14**, Means brightness of all windows in Multi-Win card;
- 9) **BYT15**, Means gray level of Win1 in Multi-Win card;
- 10) **BYT16**, Means gray level of Win2 in Multi-Win card;
- 11) **BYT17**, Means gray level of Win3 in Multi-Win card;
- 12) **BYT18**, Means gray level of Win4 in Multi-Win card;
- 13) **BYT19~BYT23**, Means Multi-Win card color (all windows,Win, Win1, Win2, Win3, Win4) ;
- 14) **BYT24~BYT28**, Means Multi-Win card HDR (all windows,Win, Win1, Win2, Win3, Win4) ;
- 15) **BYT29~BYT45**, Means output card A gray level (all DVI out, DVI1, DVI2, DVI3, DVI4) ;
- 16) **BYT46~BYT62**, Means output card A brightness (all DVI out, DVI1, DVI2, DVI3, DVI4) ;
- 17) **BYT63~BYT67**, Means output card A colour (all DVI out, DVI1, DVI2, DVI3, DVI4) ;
- 18) **BYT68~BYT84**, Means output card B gray level (all DVI out, DVI1, DVI2, DVI3, DVI4) ;
- 16) **BYT85~BYT101**, Means output card B brightness (all DVI out,DVI1, DVI2, DVI3, DVI4) ;
- 17) **BYT102~BYT106**, Means output card B color (all DVI out,DVI1, DVI2, DVI3, DVI4) ;

9、**BYT7=08, BYT8= 00**, device under control return 30 data BYTS, means frame parameter of Multi-Win card:

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT29
3A	01	04	01	00	FE	1E	XX	XX	XX	XX	...	ChkSum

- 1) **BYT4=00, BYT6=1E**, Means return 30 data BYTs;
- 2) **BYT7=08, BYT8= 00**;
- 3) **BYT9**, Win1 frame On/Off;
- 4) **BYT10**, Win1 red level of frame;
- 5) **BYT11**, Win1 green level of frame;
- 6) **BYT12**, Win1 blue level of frame;
- 7) **BYT13**, Win1 thickness of frame;
- 8) **BYT14~18 Means** Win2 frame parameter (On/Off, Red, Green, Blue, Thickness) ;
- 9) **BYT19~23, Means** Win3 frame parameter (On/Off, Red, Green, Blue, Thickness) ;
- 10) **BYT24~28, Means** Win4 frame parameter (On/Off, Red, Green, Blue, Thickness) ;

10、**BYT7=09, BYT8= 00**, device under control return 283 data BYTs, means gray level、brightness、colour、signal source、frame parameter of Multi-Win card and output card:

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	...	BYT282
3A	01	04	01	01	FE	1B	XX	XX	XX	XX	...	ChkSum

1) **BYT4=01, BYT6=1B**, 283 data BYTs;

2) **BYT7=09, BYT8= 00**;

3) Multi-Win card:

**BYT9**, Gray level of all windows;

**BYT10**, Win1 gray level;

**BYT11**, Win2 gray level;

**BYT12**, Win3 gray level;

**BYT13**, Win4 gray level;

**BYT14**, Brightness of all windows;

**BYT15**, Win1 brightness;

**BYT16**, Win2 brightness;

**BYT17**, Win3 brightness;

**BYT18**, Win4 brightness;

**BYT19**, Colour of all windows;

**BYT20**, Win1 colour;

**BYT21**, Win2 colour;

**BYT12**, Win3 colour;

**BYT23**, Win4 colour;

**BYT24**, Win1 frame On/Off;

**BYT25**, Win1 frame red level;

**BYT26**, Win1frame green level;

**BYT27**, Win1frame blue level;

**BYT28**, Win1frame size;

**BYT29**, Win2 frame On/Off;

**BYT30**, Win2 frame red level;

**BYT31**, Win2 frame green level;

**BYT32**, Win2 frame blue level;

**BYT33**, Win2 frame size;

**BYT34**, Win3 frame On/Off;

**BYT35**, Win3 frame red level;

**BYT36**, Win3frame green level;

**BYT37**, Win3frame blue level;

**BYT38**, Win3frame size;

**BYT39**, Win4 frame On/Off;

**BYT40**, Win4 frame red level;

**BYT41**, Win4 frame green level;

**BYT42**, Win4 frame blue level;

**BYT43**, Win4 frame size;

**BYT44**, Mode 0 Win1 signal source;

**BYT45**, Mode 0 Win2 signal source;

**BYT46**, Mode 0 Win3signal source;

**BYT47**, Mode 0 Win4 signal source;  
**BYT48**, Mode 0 Win1 layer;  
**BYT49**, Mode 0 Win2 layer;  
**BYT50**, Mode 0 Win3 layer;  
**BYT51**, Mode 0 Win4 layer;  
**BYT52**, Mode 0 overlay;  
**BYT53**, Mode 0 switch time+window On/Off (BIT[7: 4] means switch time, BIT[3:0] means window On/Off, the following same meaning) ,

**BYT54~BYT63**, Mode 1 signal source、layer、overlay、switching time+window On/Off;  
**BYT64~BYT73**, Mode 2 signal source、layer、overlay、switching time+window On/Off;  
**BYT74~BYT83**, Mode 3 signal source、layer、overlay、switching time+window On/Off;  
**BYT84~BYT93**, Mode 4 signal source、layer、overlay、switching time+window On/Off;  
**BYT94~BYT103**, Mode 5 signal source、layer、overlay、switching time+window On/Off;  
**BYT104~BYT113**, Mode 6 signal source、layer、overlay、switching time+window On/Off;  
**BYT114~BYT123**, Mode 7 signal source、layer、overlay、switching time+window On/Off;  
**BYT124~BYT133**, Mode 8 signal source、layer、overlay、switching time+window On/Off;  
**BYT134~BYT143**, Mode 9 signal source、layer、overlay、switching time+window On/Off;  
**BYT144~BYT153**, Mode 10 signal source、layer、overlay、switching time+window On/Off;  
**BYT154~BYT163**, Mode 11 signal source、layer、overlay、switching time+window On/Off;  
**BYT164~BYT173**, Mode 12 signal source、layer、overlay、switching time+window On/Off;  
**BYT174~BYT183**, Mode 13 signal source、layer、overlay、switching time+window On/Off;  
**BYT184~BYT193**, Mode 14 signal source、layer、overlay、switching time+window On/Off;  
**BYT194~BYT203**, Mode 15 signal source、layer、overlay、switching time+window On/Off;

4) Output A card:

**BYT204**, All DVI output gray level;  
**BYT205**, DVI1 gray level in RGB;  
**BYT206**, DVI1 gray level of R;  
**BYT207**, DVI1 gray level of G;  
**BYT208**, DVI1 gray level of B;  
**BYT209**, DVI 2 gray level in RGB;  
**BYT210**, DVI 2 gray level of R;  
**BYT211**, DVI 2 gray level of G;  
**BYT212**, DVI 2 gray level of B;  
**BYT213**, DVI 3 gray level in RGB;  
**BYT214**, DVI 3 gray level of R;  
**BYT215**, DVI 3 gray level of G;  
**BYT216**, DVI 3 gray level of B;  
**BYT217**, DVI 4 gray level in RGB;  
**BYT218**, DVI 4 gray level of R;  
**BYT219**, DVI 4 gray level of G;  
**BYT220**, DVI 4 gray level of B;  
**BYT221**, All DVI output brightness;  
**BYT222**, DVI1brightness in RGB;  
**BYT223**, DVI1 brightness of R;  
**BYT224**, DVI1brightness of G;  
**BYT225**, DVI1brightness of B;

**BYT226**, DVI2 brightness in RGB;  
**BYT227**, DVI2 brightness of R;  
**BYT228**, DVI2 brightness of G;  
**BYT229**, DVI2 brightness of B;  
**BYT230**, DVI3 brightness in RGB;  
**BYT231**, DVI3 brightness of R;  
**BYT232**, DVI3 brightness of G;  
**BYT233**, DVI3 brightness of B;  
**BYT234**, DVI4 brightness in RGB;  
**BYT235**, DVI4 brightness of R;  
**BYT236**, DVI4 brightness of G;  
**BYT237**, DVI4 brightness of B;  
**BYT238**, All DVI output colour;  
**BYT239**, DVI1 colour;  
**BYT240**, DVI2 colour;  
**BYT241**, DVI3 colour;  
**BYT242**, DVI4 colour;

5) Output card B:

**BYT243**, All DVI output gray level;  
**BYT244**, DVI1 gray level in RGB;  
**BYT245**, DVI1 gray level of R;  
**BYT246**, DVI1 gray level of G;  
**BYT247**, DVI1 gray level of B;  
**BYT248**, DVI 2 gray level in RGB;  
**BYT249**, DVI 2 gray level of R;  
**BYT250**, DVI 2 gray level of G;  
**BYT251**, DVI 2 gray level of B;  
**BYT252**, DVI 3 gray level in RGB;  
**BYT253**, DVI 3 gray level of R;  
**BYT254**, DVI 3 gray level of G;  
**BYT255**, DVI 3 gray level of B;  
**BYT256**, DVI 4 gray level in RGB;  
**BYT257**, DVI 4 gray level of R;  
**BYT258**, DVI 4 gray level of G;  
**BYT259**, DVI 4 gray level of B;  
**BYT260**, All DVI output brightness;  
**BYT261**, DVI1brightness in RGB;  
**BYT262**, DVI1 brightness of R;  
**BYT263**, DVI1brightness of G;  
**BYT264**, DVI1brightness of B;  
**BYT265**, DVI2 brightness in RGB;  
**BYT266**, DVI2 brightness of R;  
**BYT267**, DVI2 brightness of G;  
**BYT268**, DVI2 brightness of B;  
**BYT269**, DVI3 brightness in RGB;  
**BYT270**, DVI3 brightness of R;

**BYT271**, DVI3 brightness of G;  
**BYT272**, DVI3 brightness of B;  
**BYT273**, DVI4 brightness in RGB;  
**BYT274**, DVI4 brightness of R;  
**BYT275**, DVI4 brightness of G;  
**BYT276**, DVI4 brightness of B;  
**BYT277**, All DVI output colour;  
**BYT278**, DVI1 colour;  
**BYT279**, DVI2 colour;  
**BYT280**, DVI3 colour;  
**BYT281**, DVI4 colour;

## V、Return command

After receiving command:

- 1、 If command correct, after the command applied, **and the command BIT7 is 1, then return the command**;
- 2、 If command wrong, return a wrong command, the returned wrong command is defined as following:

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT12
3A	01	04	01	00	FF	09	XX	ChkSum

Description 1) **BYT5=FF**, return the wrong command;

2) **BYT4=00**, **BYT6=09**, return 9 numbers;

3) **BYT7=00**, command successfully applied;

=04, wrong data length;

=05, wrong communication protocol;

=06, parity check wrong;

=07, system busy;

=08, communication conflict;

=09, no input card;

=0A, this input card is direct through input;

=0B, input card status error;

=0C, out of range;

=0D, wrong configuration;

## VI、Software design

1. Must configure COM port first before initialize the software; network control must setup IP address and port number (7);
2. Test whether communication is normal (send one piece of **Read Device Status** command , check whether response a correct return command);
3. Then read device basic configuration and current status;
4. Read device basic configure and current status regularly, to judge equipment has applied the command sent by software.

## VII、Revise record

Version	Date	Description	Edit
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[illegible]