- **LVP615 Software version v0.0.0 and v0.0.3, RS232 serial control command**
- **The version software apply to serial port/ USB/ Wifi control**

1. RS232 Serial communication protocol

Baud rate：9600
None parity check
8 bit data bit
1 bit stop bit

2. RS232 command format

Every command is composed by 13 bytes' data string, be defined as:

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12

BYT0：device type model，for **LVP615** HD video processor，**BYT0**=0x05；

BYT1： serial number of controlled device，range from 01~FF total 255 serial numbers，0x0 indicates all device can be controlled；

BYT2：command address of every controlled device；

The eighth BIT of byte is 1 which indicates the controlled device received the command and finished the operation then return to the data command of 13 bytes;

The eighth BIT of byte is 0 which indicates the controlled device didn't return to the data command of 13 bytes;

BYTE3~BYTE11：command parameter；

BYT12：**xor** of former 12 bytes data or **device type model (0x05)** **ChkSum**；

Command return：

If device return send commands as below

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	Cmd	P1	P2	P3	P4	P5	P6	P7	P8	P9	**ChkSum**

Indicate command success；

If return with 0xFF parameter command

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	Cmd	FF	FF	FF	FF	FF	FF	FF	FF	FF	**ChkSum**

Indicate command fail

3. LVP615 control command

The example below demonstrated by using one LVP615 the serial number is 1 in command, **BYT1**=01, when cascade all device receive the command.

All command are indicated by 16 number system。

1、switch input signal（00H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	00	00	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=00

2）**BYT3**=00，seamless switching；

=01，fade in fade out 0.5s；

=02，fade in fade out 1.0s；

=03，fade in fade out 1.5s；

3）**BYT4**=00，switch to V1 channel；

=01，switch to V2 channel；

=02，switch to VGA1 channel；

=03，switch to VGA2 channel；

=04，switch to HDMI channel；

=05，switch to DVI channel；

=06，switch to DP channel；

=07，switch to EXT channel；

=08，switch to YPBPR channel；

3）**BYT5** to **BYT11** don't have actual meaning，normally be 0；

* The command only is valid in one key direct switch status

2、PIP mode（01H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	01	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=01；

2）**BYT3**=00，close PIP/POP；

=01，enter PIP/POP standby status；

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

* The command only is valid in one key direct switch status or PIP/POP standby status

3、PIP channel switch（02H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	02	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=03

2）**BYT3**=00，PIP/POP channel is V1 channel；

=01，PIP/POP channel is V2 channel；

=02，PIP/POP channel is VGA1 channel；

=03，PIP/POP channel is VGA2 channel；

=04，PIP/POP channel is HDMI channel；

=05，PIP/POP channel is DVI channel；

=06，PIP/POP channel is DP channel；

=07，PIP/POP channel is EXT channel；

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

* The command only is valid in PIP/POP status or PIP/POP standby status

4、TEXT mode（03H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	03	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=03

2）**BYT3**=00，close TEXT；

=01，enter TEXT standby status；

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

* The command only is valid in one key direct switch status or TEXT standby status

5、TEXT channel switch（04H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	04	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=04

2）**BYT3**=00，TEXT channel is V1 channel；

=01，TEXT channel is V2 channel；

=02，TEXT channel is VGA1 channel；

=03，TEXT channel is VGA2 channel；

=04，TEXT channel is HDMI channel；

=05，TEXT channel is DVI channel；

=06，TEXT channel is DP channel；

=07，TEXT channel is EXT channel；

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

* The command only is valid in TEXT status or TEXT standby status

6、BYPASS（26H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	26	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=26

2）**BYT3**=00，close BYPASS；

=01，open BYPASS；

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

* The command only is valid in one key direct switch status

7、MOSAIC（21H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	21	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=21

2）**BYT3**=00，close MOSAIC；

=01，open MOSAIC；

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

* The command only is valid in one key direct switch status

8、FREEZE（29H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	29	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=29

2）**BYT3**=00，close FREEZE；

=01，open FREEZE；

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

9、VGA-AUTO（27H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	27	00	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=27

2）**BYT3** to **BYT11** don't have actual meaning，normally be 0；

* The command only is valid in switch status and which in VGA channel

10、Set output resolution（0DH）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	0D	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=0D

2）**BYT3**=00，set output resolution 1024x768@60Hz；

=01，set output resolution 1024x768@75Hz；

=02，set output resolution 1280x1024@60Hz；

=03，set output resolution 1280x1024@75Hz；

=04，set output resolution 1600x1200@60Hz；

=05，set output resolution 1920x1080@50Hz；

=06，set output resolution 1920x1080@60Hz；

=07，set output resolution 1366x768@60Hz；

=08，set output resolution 1440x900@60Hz；

=09，set output resolution 2048x1152@60Hz；

=0A，set output resolution 2560x816@60Hz；

=0B，set output resolution 2304x1152@60Hz；

=0C，set output resolution 1920x1200@60Hz；

=0D，set output resolution 1200x1600@60Hz；

=0E，set output resolution 1080x1920@60Hz；

=0F，set output resolution 1536x1536@60Hz；

=10，set output resolution as user-defined resolution;

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

11、Set output image size and location（0EH）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	0E	00	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

Description:

1）**BYT2**=0E

2）**BYT3** don't have actual meaning，normally be 0；

3）**BYT4**，output image horizontal start high 8 bit;

4）**BYT5**，output image horizontal start low 8 bit;

5）**BYT6**，output image width high 8 bit;

6）**BYT7**，output image width low 8 bit;

7）**BYT8**，output image vertical start high 8 bit;

8）**BYT9**，output image vertical start low 8 bit;

9）**BYT10**，output image height high 8 bit;

10）**BYT11**，output image height low 8 bit;

*Please make limit range for the value you set:

* Horizontal start + image width < the biggest width of output resolution;

* Vertical start + image height < the biggest height of output resolution;

12、set user-defined resolution attribute（0FH）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	0F	00	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

Description:

1）**BYT2**=0F，the controlled device doesn't return to the data command of 13 byte;

2）**BYT3** don't have actual meaning，normally be 0；

3）**BYT4**，Horizontal width high 8 bit;

4）**BYT5**，Horizontal width low 8 bit;

5）**BYT6**，Vertical height high 8 bit;

6）**BYT7**，Vertical height low 8 bit;

7）**BYT8**，Filed frequency;

*Please make limit range for the value you set:

*The current resolution must be user-defined resolution;

*DotClock=（Width+184）x（Height+45）x Filed frequency

*25999000<DotClock<164999000;

12、Set PIP size and location of mode 1（2AH）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	2A	00	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

Description:

1）**BYT2**=2A

2）**BYT3**=00，set size and location of main channel image;

=01，set size and location of PIP channel image;

3）**BYT4**，image horizontal start high 8 bit;

4）**BYT5**，image horizontal start low 8 bit;

5）**BYT6**，image width high 8 bit;

6）**BYT7**，image width low 8 bit;

7）**BYT8**，image vertical start high 8 bit;

8）**BYT9**，image vertical start low 8 bit;

9）**BYT10**，image height high 8 bit;

10）**BYT11**，output image height low 8 bit;

*Please make limit range for the value you set:

* Horizontal start + image width < the biggest width of output resolution;

* Vertical start + image height < the biggest height of output resolution;

13、Set PIP size and location of mode 2（2BH）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	2B	00	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

Description:

1）**BYT2**=2B

2）**BYT3**=00，set size and location of main channel image;

=01，set size and location of PIP channel image;

3）**BYT4**，image horizontal start high 8 bit;

4）**BYT5**，image horizontal start low 8 bit;

5）**BYT6**，image width high 8 bit;

6）**BYT7**，image width low 8 bit;

7）**BYT8**，image vertical start high 8 bit;

8）**BYT9**，image vertical start low 8 bit;

9）**BYT10**，image height high 8 bit;

10）**BYT11**，output image height low 8 bit;

*Please make limit range for the value you set:

* Horizontal start + image width < the biggest width of output resolution;

* Vertical start + image height < the biggest height of output resolution;

14、Set PIP size and location of mode 3（2CH）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	2C	00	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

Description:

1）**BYT2**=2C

2）**BYT3**=00，set size and location of main channel image;

=01，set size and location of PIP channel image;

3）**BYT4**，image horizontal start high 8 bit;

4）**BYT5**，image horizontal start low 8 bit;

5）**BYT6**，image width high 8 bit;

6）**BYT7**，image width low 8 bit;

7）**BYT8**，image vertical start high 8 bit;

8）**BYT9**，image vertical start low 8 bit;

9）**BYT10**，image height high 8 bit;

10）**BYT11**，output image height low 8 bit;

*Please make limit range for the value you set:

* Horizontal start + image width < the biggest width of output resolution;

* Vertical start + image height < the biggest height of output resolution;

16、Set TEXT image matting（15H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	15	00	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

Description:

1）**BYT2**=15

2）**BYT3**=00，set less than threshold image matting;

BYT3=01，set larger than threshold image matting;

3）**BYT4**，text threshold red;

4）**BYT5**，text threshold blue;

5）**BYT6**，text threshold green;

6）**BYT7** to **BYT11** don't have actual meaning，normally be 0；

17、Set brightness（16H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	16	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=16

2）**BYT3**，image brightness value, range from 0～100 or 0~64;

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

*The range depends on brightness level and the brightness stepping is 2;

18、Set low grey bias（2DH）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	2D	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=2D

2）**BYT3**，low grey bias, range from 0～100;

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

19、Set color（18H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	18	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=18

2）**BYT3**，image brightness value, range from 0～100;

3）**BYT4**=00，V1 channel brightness;

BYT4=01，V2 channel brightness;
BYT4=04，HDMI channel brightness;
BYT4=05，DVI channel brightness;
BYT4=06，DP channel brightness;
BYT4=07，EXT channel brightness;
BYT4=08，YPBPR channel brightness;

4）**BYT5** to **BYT11** don't have actual meaning，normally be 0；

20、Set definition（17H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	17	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=17

2）**BYT3**=00，image smoothing;
=01，image clarity;

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

21、Audio configuration（19H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	19	XX	XX	00	00	00	00	XX	XX	XX	**ChkSum**

Description:

1）**BYT2**=19

2）**BYT3**=00，V1 output AD1 audio;
BYT3=01，V2 output AD1 audio;
BYT3=02，VGA1 output AD1 audio;
BYT3=03，VGA2 output AD1 audio;
BYT3=04，HDMI output AD1 audio;
BYT3=05，DVI output AD1 audio;
BYT3=06，DP output AD1 audio;
BYT3=07，EXT output AD1 audio;
BYT3=08，YPBPR output AD1 audio;

2）**BYT4**=00，V1 output AD2 audio;
BYT4=01，V2 output AD2 audio;
BYT4=02，VGA1 output AD2 audio;
BYT4=03，VGA2 output AD2 audio;
BYT4=04，HDMI output AD2 audio;
BYT4=05，DVI output AD2 audio;
BYT4=06，DP output AD2 audio;
BYT4=07，EXT output AD2 audio;
BYT4=08，YPBPR output AD2 audio;

3）**BYT5** to **BYT11** don't have actual meaning，normally be 0；

22、Set hot spare（13H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12

05	01	13	XX	XX	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=13

2）**BYT3**=00，V1->V2 hot spare close;

=01，V1->V2 hot spare open;

2）**BYT4**=00，HDMI->DVI hot spare close;

=01，HDMI->DVI hot spare open;

2）**BYT5**=00，VGA1->VGA2 hot spare close;

=01，VGA1->VGA2 hot spare open;

3）**BYT6** to **BYT11** don't have actual meaning，normally be 0；

23、Set interception size and location of input image（23H）

BYT0	**BYT1**	**BYT2**	**BYT3**	**BYT4**	**BYT5**	**BYT6**	**BYT7**	**BYT8**	**BYT9**	**BYT10**	**BYT11**	**BYT12**
05	01	23	00	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

Description:

1）**BYT2**=23

2）**BYT3** don't have actual meaning，normally be 0；

3）**BYT4**，intercept input image horizontal start high 8 bit;

4）**BYT5**，intercept input image horizontal start low 8 bit;

5）**BYT6**，intercept input image width high 8 bit;

6）**BYT7**，intercept input image width low 8 bit;

7）**BYT8**，intercept input image vertical start high 8 bit;

8）**BYT9**，intercept input image vertical start low 8 bit;

9）**BYT10**，intercept input image height high 8 bit;

10）**BYT11**，intercept input image height low 8 bit;

*Please make limit range for the value you set:

* Horizontal start + image width < the biggest width of output resolution;

* Vertical start + image height < the biggest height of output resolution;

25、Set PIP/POP mode（24H）

BYT0	**BYT1**	**BYT2**	**BYT3**	**BYT4**	**BYT5**	**BYT6**	**BYT7**	**BYT8**	**BYT9**	**BYT10**	**BYT11**	**BYT12**
05	01	24	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=24

2）**BYT3**=00，set PIP mode 1;

=01，set PIP mode 2;

=02，set PIP mode 3;

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

26、Set synchronization splicing mode（22H）

BYT0	**BYT1**	**BYT2**	**BYT3**	**BYT4**	**BYT5**	**BYT6**	**BYT7**	**BYT8**	**BYT9**	**BYT10**	**BYT11**	**BYT12**
05	01	22	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=22

2）**BYT3**=00，set nonsynchronous splicing;

=01，set synchronization splicing;

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

27、Set V2/YPBPR port（1AH）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	1A	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=1A

2）**BYT3**=00，port is V2;

=01，port is YPBPR;

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

27、Set V2/YPBPR port（1AH）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	1A	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=1A

2）**BYT3**=00，port is V2;

=01，port is YPBPR;

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

28、Enter TAKE standby status（09H）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	09	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=09

2）**BYT3**=00，return to SWITCH（one key switch）status;

=01，enter TAKE standby (preselect +TAKE standby）status;

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

*It is valid in SWITCH status，invalid in PIP/TEXT waiting status;

*after entering the status will reminder selecting preselecting signal（it is as same as PIP standby）;

29、Select preselecting signal and enter TAKE status（0AH）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	0A	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=0A

2）**BYT3**=00，preselecting channel is V1 channel;

=01，preselecting channel is V2 channel;

=02，preselecting channel is VGA1 channel;

=03，preselecting channel is VGA2 channel;

=04，preselecting channel is HDMI channel;

=05，preselecting channel is DVI channel;

=06，preselecting channel is DP channel;

=07，preselecting channel is EXT channel;

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

*The command is only valid in TAKE standby status;

*The signals in same group is invalid（as same as PIP）/ same signal is invalid;

30、Switch preselecting signal（0BH）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	0B	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=0B

2）**BYT3**=00，preselecting channel is V1 channel;

=01，preselecting channel is V2 channel;

=02，preselecting channel is VGA1 channel;

=03，preselecting channel is VGA2 channel;

=04，preselecting channel is HDMI channel;

=05，preselecting channel is DVI channel;

=06，preselecting channel is DP channel;

=07，preselecting channel is EXT channel;

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

*The command is only valid in TAKE status;

*The signals in same group is invalid（as same as PIP）/ same signal is invalid;

31、TAKE（0CH）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	0C	XX	00	00	00	00	00	00	00	00	**ChkSum**

Description:

1）**BYT2**=0C

2）**BYT3**=00，seamless switch;

=01，fade in fade out 0.5s；

=02，fade in fade out 1.0s；

=03，fade in fade out 1.5s；

3）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

*It is valid in TAKE status;

*After TAKE，the main signal and preselecting signal swap;

28、Read device status（FEH）

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	FE	XX	0	0	0	0	0	0	0	0	**ChkSum**

Description:

1）**BYT2**=FE

2）**BYT4** to **BYT11** don't have actual meaning，normally be 0；

3）Read device **BYT3** description:

BYT3=00, controlled device return 13 reading data, indicate current status of system;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3**=00，system leisure, can operate;
=01，system busy, can't operate;

B）**BYT4**=00，the current menu status is switch status;
BYT4=01，the current menu status is PIP/POP standby status;
BYT4=02，the current menu status is PIP/POP status;
BYT4=03，the current menu status is TEXT standby status;
BYT4=04，the current menu status is TEXT status;
BYT4=07，the current menu status is TAKE standby status;
BYT4=08，the current menu status is TAKE status;

C）**BYT5**=00，seamless switch;
BYT5=01，fade in fade out 0.5 second;
BYT5=02，fade in fade out 1.0 second;
BYT5=03，fade in fade out 1.5 second;

D）**BYT6** BIT0 indicate FREEZE status, 0-UN_FREEZE/1-FREEZE;
BYT6 BIT1 indicate BYPASS status, 0-UN_BYPASS/1-BYPASS;
BYT6 BIT2 indicate MOSAIC status, 0-UN_MOSAIC/1-MOSAIC;
BYT6 BIT3 indicate YPbPr/V2 selection status, 0-V2/1-YPbPr;
BYT6 BIT4 indicate one key/TAKE，0- one key /1-TAKE;

E）**BYT7** BIT0~BIT3 indicate MAIN channel value;
BYT7 BIT4~BIT7 indicate PIP、TEXT、TAKE channel value;

F）**BYT8** indicate current main channel signal format;

G）**BYT9** indicate current sub-channel signal format;

H）**BYT10** indicate current PIP mode（0～2 indicate M1~M3）;

I）**BYT11** OSD external module;
0，none external module;
1，external module SDI；
2，external module VGA；
3，external module DVI；
4，external module VIDEO

BYT3=03，controlled device return 13 reading data, indicate output parameter;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3**=00，output resolution 1024x768@60Hz；
BYT3=01，output resolution 1024x768@75Hz；
BYT3=02，output resolution 1280x1024@60Hz；
BYT3=03，output resolution 1280x1024@60Hz；
BYT3=04，output resolution 1600x1200@60Hz；
BYT3=05，output resolution 1920x1080@50Hz；
BYT3=06，output resolution 1920x1080@60Hz；
BYT3=07，output resolution 1366x768@60Hz；

BYT3=08，output resolution 1440x900@60Hz；
BYT3=09，output resolution 2048x1152@60Hz；
BYT3=10，output resolution 2048x1152@60Hz；
BYT3=0A，output resolution 2560x816@60Hz；
BYT3=0B，output resolution 2304x1152@60Hz；
BYT3=0C，output resolution 1920x1200@60Hz；
BYT3=0D，output resolution 1200x1600@60Hz；
BYT3=0E，output resolution 1080x1920@60Hz；
BYT3=0F，output resolution 1536x1536@60Hz；
BYT3=10，output resolution is user-defined resolution;

B）**BYT4** indicate output horizontal start location high-order;
C）**BYT5** indicate output horizontal start location low-order;
D）**BYT6** indicate output width high-order;
E）**BYT7** indicate output width low-order;
F）**BYT8** indicate output vertical start location high-order;
G）**BYT9** indicate output vertical start location low-order;
H）**BYT10** indicate output height high-order;
I）**BYT11** indicate output height low-order;

BYT3=04，controlled device return 13 reading data, indicate input parameter;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3 splicing status**;
BIT0 = 0，splicing off;
BIT0 = 1，splicing open;
BIT1 = 0，synchronous splicing off;
BIT1 = 1，synchronous splicing open;
B）**BYT4** intercept input horizontal start location high-order;
C）**BYT5** intercept input horizontal start location low-order;
D）**BYT6** intercept input width high-order;
E）**BYT7** intercept input width low-order;
F）**BYT8** intercept input vertical start location high-order;
G）**BYT9** intercept input vertical start location low-order;
H）**BYT10** intercept input height high-order;
I）**BYT11** intercept input height low-order;

BYT3=05，controlled device return 13 reading data, indicate another parameter;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3** brightness;
B）**BYT4** low grey bias;
/////C）**BYT5** reserve;
D）**BYT6** definition;
D）**BYT7** BIT0~BIT3 audio 2 configuration;

BYT7 BIT4~BIT7 audio 1 configuration;

00，V1 output AD1/AD2 audio;

01，V2 output AD1/AD2 audio;

02，VGA1 output AD1/AD2 audio;

03，VGA2 output AD1/AD2 audio;

04，HDMI output AD1/AD2 audio;

05，DVI output AD1/AD2 audio;

06，DP output AD1/AD2 audio;

07，EXT. output AD1/AD2 audio;

08，YPBPR output AD1/AD2 audio;

D）**BYT8** BIT0 AV1->AV2 hot spare status;

BYT8 BIT2 HDMI->DVI hot spare status;

BYT8 BIT3 VGA1->VGA2 hot spare status;

0，hot spare off;

1，hot spare open;

F）**BYT9** brightness range

0，0～64;

1，0～100;

To **BYT11** reserve;

BYT3=06，controlled device return 13 reading data, indicate TEXT parameter;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3** text mode;

B）**BYT4** text threshold red;

C）**BYT5** text threshold green;

D）**BYT6** text threshold blue;

E）**BYT7** to **BYT11** reserve;

BYT3=07，controlled device return 13 reading data, indicate PIP/POP mode 1 main parameter;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3**=00；

B）**BYT4** indicate main channel horizontal start location high-order;

C）**BYT5** indicate main channel horizontal start location low-order;

D）**BYT6** indicate main channel width high-order;

E）**BYT7** indicate main channel width low-order;

F）**BYT8** indicate main channel vertical start location high-order;

G）**BYT9** indicate main channel vertical start location low-order;

H）**BYT10** indicate main channel height high-order;

I）**BYT11** indicate main channel height low-order;

BYT3=08，controlled device return 13 reading data, indicate PIP/POP mode 1 sub-parameter;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3**=00；

B）**BYT4** indicate sub-channel horizontal start location high-order;

C）**BYT5** indicate sub-channel horizontal start location low-order;

D）**BYT6** indicate sub-channel width high-order;

E）**BYT7** indicate sub-channel width low-order;

F）**BYT8** indicate sub-channel vertical start location high-order;

G）**BYT9** indicate sub-channel vertical start location low-order;

H）**BYT10** indicate sub-channel height high-order;

I）**BYT11** indicate sub-channel l height low-order;

BYT3=09，controlled device return 13 reading data, indicate PIP/POP mode 2 main parameter;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3**=01；

B）**BYT4** indicate main channel horizontal start location high-order;

C）**BYT5** indicate main channel horizontal start location low-order;

D）**BYT6** indicate main channel width high-order;

E）**BYT7** indicate main channel width low-order;

F）**BYT8** indicate main channel vertical start location high-order;

G）**BYT9** indicate main channel vertical start location low-order;

H）**BYT10** indicate main channel height high-order;

I）**BYT11** indicate main channel height low-order;

BYT3=0A，controlled device return 13 reading data, indicate PIP/POP mode 2 sub-parameter;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3**=01；

B）**BYT4** indicate sub-channel horizontal start location high-order;

C）**BYT5** indicate sub-channel horizontal start location low-order;

D）**BYT6** indicate sub-channel width high-order;

E）**BYT7** indicate sub-channel width low-order;

F）**BYT8** indicate sub-channel vertical start location high-order;

G）**BYT9** indicate sub-channel vertical start location low-order;

H）**BYT10** indicate sub-channel height high-order;

I）**BYT11** indicate sub-channel height low-order;

BYT3=0B，controlled device return 13 reading data, indicate PIP/POP mode 3 main parameter;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3**=02；

B）**BYT4** indicate main channel horizontal start location high-order;

C）**BYT5** indicate main channel horizontal start location low-order;

D）**BYT6** indicate main channel width high-order;

E）**BYT7** indicate main channel width low-order;
F）**BYT8** indicate main channel vertical start location high-order;
G）**BYT9** indicate main channel vertical start location low-order;
H）**BYT10** indicate main channel height high-order;
I）**BYT11** indicate main channel height low-order;

BYT3=0C，controlled device return 13 reading data, indicate PIP/POP mode 3 sub-parameter;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3**=02；
B）**BYT4** indicate sub-channel horizontal start location high-order;
C）**BYT5** indicate sub-channel horizontal start location low-order;
D）**BYT6** indicate sub-channel width high-order;
E）**BYT7** indicate sub-channel width low-order;
F）**BYT8** indicate sub-channel vertical start location high-order;
G）**BYT9** indicate sub-channel vertical start location low-order;
H）**BYT10** indicate sub-channel height high-order;
I）**BYT11** indicate sub-channel height low-order;

BYT3=0F，controlled device return 13 reading data, indicate user-defined resolution parameter;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3**=00；
B）**BYT4** horizontal width high-order;
C）**BYT5** horizontal width low-order;
D）**BYT6** vertical height high-order;
E）**BYT7** vertical height low-order;
F）**BYT8** field frequency;

BYT3=10，controlled device return 13 reading data, indicate color;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	FE	10	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3**=10；
B）**BYT4**=V1 color value;
C）**BYT5**=V2 color value;
D）**BYT6**=HDMI color value;
E）**BYT7**=DVI color value;
F）**BYT8**=DP color value;
F）**BYT9**=EXT color value;
F）**BYT10**=YPBPR color value;

BYT3=11，controlled device return 13 reading data, indicate main channel output resolution;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3**=input main signal format;

B）**BYT4** horizontal width high-order;

C）**BYT5** horizontal width low-order;

D）**BYT6** vertical height high-order;

E）**BYT7** vertical height low-order;

F）**BYT8** field frequency;

*Input signal format, please refer input signal format comparison table;

*When input signal format >77, is none standard resolution, please use the data of BYT4、BYT5、BYT6、BYT7、BYT8;

BYT3=12，controlled device return 13 reading data, indicate sub-channel output resolution;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	**ChkSum**

A）**BYT3**= input sub-signal format;

B）**BYT4** horizontal width high-order;

C）**BYT5** horizontal width low-order;

D）**BYT6** vertical height high-order;

E）**BYT7** vertical height low-order;

F）**BYT8** field frequency;

*Input signal format, please refer input signal format comparison table;

*When input signal format >77, is none standard resolution, please use the data of BYT4、BYT5、BYT6、BYT7、BYT8;

BYT3=FE，controlled device return 13 reading data, indicate communication status;

BYT0	BYT1	BYT2	BYT3	BYT4	BYT5	BYT6	BYT7	BYT8	BYT9	BYT10	BYT11	BYT12
05	01	FE	FE	00	00	00	00	00	00	00	00	**ChkSum**

A）**BYT3**=FE；

B）**BYT4**=76；

C）**BYT5**=69；

D）**BYT6**=65；

E）**BYT7**=77；

F）**BYT8**=20；

G）**BYT9**=72；

H）**BYT10**=67；

I）**BYT11**=62；

If **BYT4~BYT11** in proper order is **76 69 65 77 20 72 67 62**, and communication succeed, if not the communication is unsuccessful;

4. Software setup

1. When software initial must configure COM port firstly;
2. Next to select the device serial number of controlled device (can through press **Info** button on frontal panel of the device to read, or through press **Setup** button on frontal panel of the device to set);
3. Test COM port to see if the communication is normal (send one **read device status** command to see if return correctly);

4. Next to read the basic configuration and current status of device;
5. Can read the basic configuration and current status of device on time, to estimate the device has executed the operation command sent from software;
6. For making sure device received command and executed relative operation, part of command has return setup option, **BYT2** the highest location 1, recommend to use the option.