

- ## 1. RS232 Serial communication protocol

2. RS232 command format

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

| 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 |

[illegible]

3. LVP615 control command

[illegible]

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;

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=10, set output resolution as user-defined resolution;
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[illegible]

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 | 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 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;

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

A) **BYT3=02;**

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

A) **BYT3=00;**

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

A) **BYT3=10:**

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

[illegible]

- 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

- When software initial must configure COM port firstly;
- 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);
- 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.