



RE6501/RE7501/RE8601/RE9801

RE6501K/RE7501K/RE8601K

RS232 & LAN Protocol Installation Guide



## Table of Contents

|  |    |
|--|----|
| Introduction .....                           | 2  |
| Wire arrangement .....                       | 3  |
| RS232 pin assignment.....                    | 3  |
| Communicationsetting .....                   | 4  |
| Command message reference .....              | 4  |
| Connections and communication settings ..... | 4  |
| RS232 serial port connection.....            | 4  |
| RS232 via LAN.....                           | 5  |
| RS232 via HDBaseT .....                      | 5  |
| Protocol Command Description .....           | 5  |
| Set-function listing.....                    | 6  |
| Set-function description .....               | 6  |
| Set-function format .....                    | 6  |
| Set-function table .....                     | 8  |
| Get-function listing .....                   | 12 |
| Get-function description .....               | 12 |
| Get-function format.....                     | 12 |
| PC Get-function command to IFP .....         | 15 |

## Introduction

This document describes the hardware interface spec and software protocols of RS232 interface communication between Commercial Display and PC or other control unit with RS232 protocol.

This set protocol allow users to assign the ID in the command to control the specify ID monitor.

The set protocol contains two sections command: Set-Function and Get-Function



In this document, "PC" represents all the control units that can send or receive the RS232 protocol command.

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## Wire arrangement

| Wire Arrangement |            |      |
|------------------|------------|------|
| P1               | Color      | P2   |
| 1                | Black      | 1    |
| 2                | Brown      | 3    |
| 3                | Red        | 2    |
| 4                | Orange     | 4    |
| 5                | Yellow     | 5    |
| 6                | Green      | 6    |
| 7                | Blue       | 7    |
| 8                | Purple     | 8    |
| 9                | Gray       | 9    |
| Case             | Drain wire | Case |

## RS232 pin assignment



| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | NC          | 2   | RXD         |
| 3   | TXD         | 4   | NC          |
| 5   | GND         | 6   | NC          |
| 7   | RTS         | 8   | CTS         |
| 9   | NC          |     |             |



Use of straight cable requires use with PC.

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## Communication setting

Baud rate select: 9600bps (fixed)/ Data bits: 8 bits (fixed)

Parity: None (fixed)/ Stop Bits: 1(fixed)

## Command message reference

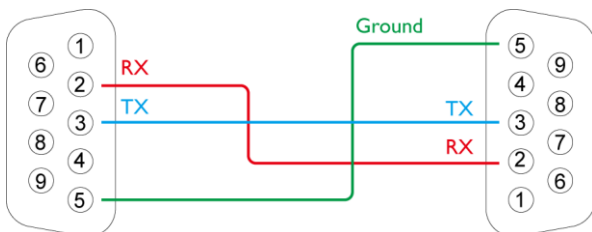
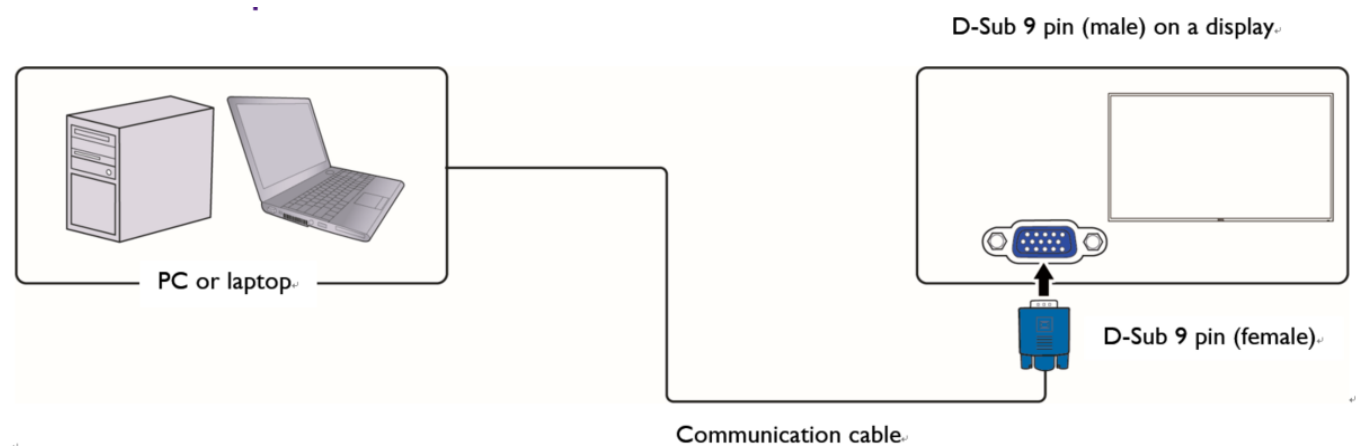
PC sends to Monitor command packet followed by "CR". Every time PC sends control command to the Monitor, the Monitor shall response as follows:

1. If the message is received correctly, it will send "+" (02Bh) followed by "CR" (00Dh).
2. If the message is received incorrectly, it will send "-" (02Dh) followed by "CR" (00Dh).

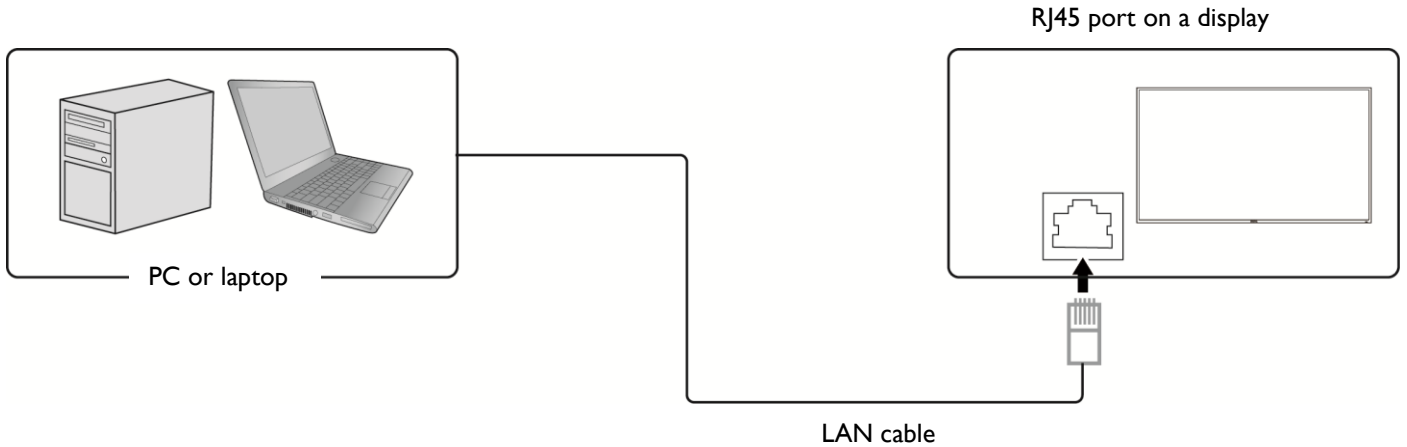
## Connections and communication settings


Choose one of the connections and set up properly before RS232 control.

## RS232 serial port connection



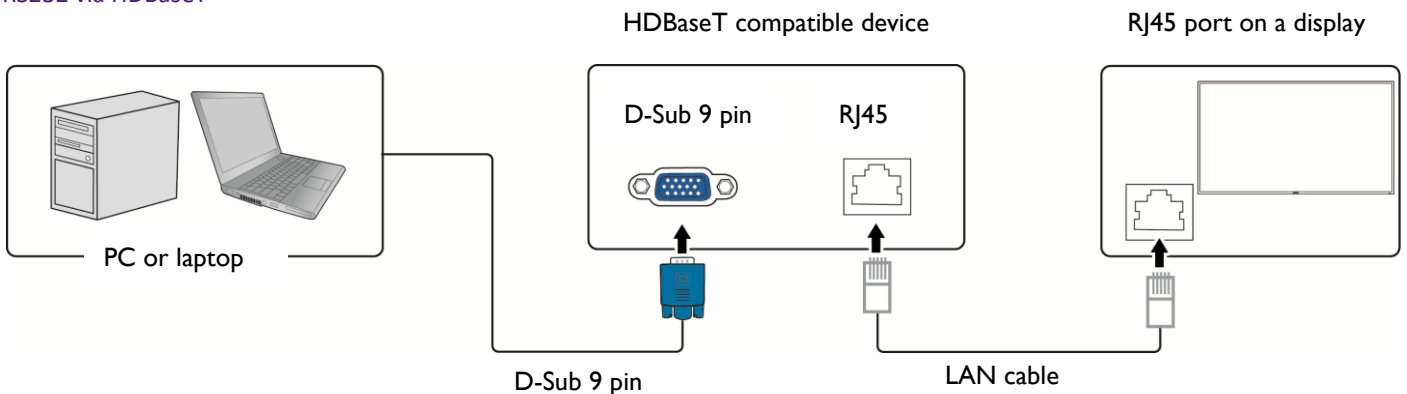
## RS232 via LAN



 Find the Wired LAN IP address of the connected display from the OSD menu and make sure the display and the computer are within the same network.

IP Protocol Port: 4660

## RS232 via HDBaseT



## Protocol Command Description

| Item         | Description   |
|--------------|---|
| Length       | Total Bytes of Message excluding "CR"   |
| TV ID        | Identification for each of TV<br>TV ID is "01" for LAN control & RS232 control  |
| Command Type | Identify command type,<br>"s" (0x73h): Set Command<br>"g" (0x67h): Get Command "r"<br>(0x72h): Reply Command<br>"+" (0x2Bh): Valid command Reply<br>"- " (0x2Dh): Invalid command Reply |
| Command      | Function command code: One byte ASCII code  |
| Value [1~3]  | Three bytes ASCII that defines the value  |
| CR           | 0x0D  |

## Set-function listing

The PC can control the LCD Monitor for specific actions. The Set-Function command allows you to control the LCD monitor behavior in a remote sit through the RS232 port. The Set-Function packet format consists of 11 bytes.

## Set-function description

| Item         | Description  |
|--------------|--|
| Length       | Total Bytes of Message excluding "CR"  |
| TV ID        | Identification for each of TV<br>TV ID is "01" for LAN control & RS232 control |
| Command Type | Identify command type, "s"<br>(0x73h): Set Command                             |
| Command      | Function command code: One byte ASCII code                                     |
| Value [1~3]  | Three bytes ASCII that defines the value                                       |
| CR           | 0x0D   |

## Set-function format

Send: (Command Type="s")

| Name        | Length | ID     | Command type | Command | Value1 | Value2 | Value3 | CR     |
|-------------|--------|--------|--------------|---------|--------|--------|--------|--------|
| Byte count  | 1 Byte | 2 Byte | 1 Byte       | 1 Byte  | 1 Byte | 1 Byte | 1 Byte | 1 Byte |
| Bytes order | 1      | 2~3    | 4            | 5       | 6      | 7      | 8      | 9      |

Reply: (Command Type="+" or "-")

| Name        | Length | ID     | Command type | CR     |
|-------------|--------|--------|--------------|--------|
| Byte count  | 1 Byte | 2 Byte | 1 Byte       | 1 Byte |
| Bytes order | 1      | 2~3    | 4            | 5      |

Example 1: Set Brightness as 76 and this command is valid.

Send (Hex Format)

| Name | Length | ID        | Command type | Command | Value1 | Value2 | Value3 | CR   |
|------|--------|-----------|--------------|---------|--------|--------|--------|------|
| Hex  | 0x38   | 0x30 0x31 | 0x73         | 0x24    | 0x30   | 0x37   | 0x36   | 0x0D |

Reply (Hex Format)

| Name | Length | ID        | Command type | CR   |
|------|--------|-----------|--------------|------|
| Hex  | 0x34   | 0x30 0x31 | 0x2B         | 0x0D |

Example 2: Set Brightness as 176 and this command is NOT valid.

Send (Hex Format)

| Name | Length | ID        | Command type | Command | Value1 | Value2 | Value3 | CR   |
|------|--------|-----------|--------------|---------|--------|--------|--------|------|
| Hex  | 0x38   | 0x30 0x31 | 0x73         | 0x24    | 0x31   | 0x37   | 0x36   | 0x0D |

Reply (Hex Format)

| Name | Length | ID        | Command type | CR   |
|------|--------|-----------|--------------|------|
| Hex  | 0x34   | 0x30 0x31 | 0x2D         | 0x0D |

Example 3: Set Balance as 50 this command is valid.

Send (Hex Format)

| Name | Length | ID        | Command type | Command | Value1 | Value2 | Value3 | CR   |
|------|--------|-----------|--------------|---------|--------|--------|--------|------|
| Hex  | 0x38   | 0x30 0x31 | 0x73         | 0x39    | 0x30   | 0x35   | 0x30   | 0x0D |

Reply (Hex Format)

| Name | Length | ID        | Command type | CR   |
|------|--------|-----------|--------------|------|
| Hex  | 0x34   | 0x30 0x31 | 0x2D         | 0x0D |

Example 4: Set Balance as 115 this command is Not valid.

Send (Hex Format)

| Name | Length | ID        | Command type | Command | Value1 | Value2 | Value3 | CR   |
|------|--------|-----------|--------------|---------|--------|--------|--------|------|
| Hex  | 0x38   | 0x30 0x31 | 0x73         | 0x39    | 0x31   | 0x31   | 0x35   | 0x0D |

Reply (Hex Format)

| Name | Length | ID        | Command type | CR   |
|------|--------|-----------|--------------|------|
| Hex  | 0x34   | 0x30 0x31 | 0x2D         | 0x0D |

Set-function table

| Set Function       | Len                | ID | Cmd Type | Cmd Code (Hex) | RS232 (ASCII Bytes)            | LAN (ASCII Bytes)                             |
|--------------------|--------------------|----|----------|----------------|--------------------------------|---|
| Power              | 8                  |    | s        | 21             |                                | 000 :Monitor Off (Blacklight off +mute)       |
|                    |                    |    |          |                | 001 : On                       | 001 :Monitor On (Blacklight on + last status) |
|                    |                    |    |          |                | 002 : Standby (or android off) | 002 : Standby (android off)                   |
|                    |                    |    |          |                | 003 : Reboot                   | 003 : Reboot                                  |
| Video Source       | 8                  |    | s        | 22             | 000 : VGA                      | 000 : VGA                                     |
|                    |                    |    |          |                | 001 : HDMI                     | 001 : HDMI                                    |
|                    |                    |    |          |                | 002: HDMI1                     | 002: HDMI1                                    |
|                    |                    |    |          |                | 021 : HDMI2                    | 021 : HDMI2                                   |
|                    |                    |    |          |                | 007 : Display Port             | 007 : Display Port                            |
|                    |                    |    |          |                | 003 : AV                       | 003 : AV                                      |
|                    |                    |    |          |                | 004 : YPbPr                    | 004 : YPbPr                                   |
|                    |                    |    |          |                | 101 : Android                  | 101 : android                                 |
|                    |                    |    |          |                | 102 : OPS                      | 102 : OPS                                     |
|                    |                    |    |          |                | 107 : EZWrite                  | 107 : EZWrite                                 |
| 108 : Wi-Fi Source | 108 : Wi-Fi Source |    |          |                |                                |   |
| Contrast           | 8                  |    | s        | 23             | 000 ~ 100                      | 000 ~ 100                                     |
| Brightness         | 8                  |    | s        | 24             | 000 ~ 100                      | 000 ~ 100                                     |
| Aspect Ratio       | 8                  |    | s        | 31             | 000 : 16:9                     | 000 : 16:9                                    |
|                    |                    |    |          |                | 002 : PTP                      | 002 : PTP                                     |
| Language           | 8                  |    | s        | 32             | 000: English                   | 000: English                                  |
|                    |                    |    |          |                | 001: Français                  | 001: Français                                 |
|                    |                    |    |          |                | 002: Español                   | 002: Español                                  |
|                    |                    |    |          |                | 003: 繁中                        | 003: 繁中                                       |
|                    |                    |    |          |                | 004: 簡中                        | 004: 簡中                                       |
|                    |                    |    |          |                | 005: Português                 | 005: Português                                |
|                    |                    |    |          |                | 006: German                    | 006: German                                   |
|                    |                    |    |          |                | 007: Dutch                     | 007: Dutch                                    |
|                    |                    |    |          |                | 008: Polish                    | 008: Polish                                   |
|                    |                    |    |          |                | 009: Russia                    | 009: Russia                                   |
|                    |                    |    |          |                | 010:Czech                      | 010:Czech                                     |
|                    |                    |    |          |                | 011:Danish                     | 011:Danish                                    |
|                    |                    |    |          |                | 012:Swedish                    | 012:Swedish                                   |



|                        |              |  |   |    |                       |                       |
|------------------------|--------------|--|---|----|-----------------------|-----------------------|
|                        |              |  |   |    | 013:Italian           | 013:Italian           |
|                        |              |  |   |    | 014:Romanian          | 014:Romanian          |
|                        |              |  |   |    | 015:Norwegian         | 015:Norwegian         |
|                        |              |  |   |    | 016:Finnish           | 016:Finnish           |
|                        |              |  |   |    | 017:Greek             | 017:Greek             |
|                        |              |  |   |    | 018 : Turkish         | 018 : Turkish         |
|                        |              |  |   |    | 019:Arabic            | 019:Arabic            |
|                        |              |  |   |    | 020:Japanse           | 020:Japanse           |
|                        |              |  |   |    | 021: Thailand         | 021: Thailand         |
|                        |              |  |   |    | 022: Korean           | 022: Korean           |
|                        |              |  |   |    | 023 : Hungarian       | 023 : Hungarian       |
|                        |              |  |   |    | 024 : Persian         | 024 : Persian         |
|                        |              |  |   |    | 025 : Vietnamese      | 025 : Vietnamese      |
|                        |              |  |   |    | 026 : Indonesia       | 026 : Indonesia       |
| Sound Mode             | 8            |  | s | 33 | 001 : Standard        | 001 : Standard        |
|                        |              |  |   |    | 002: Class            | 002: Class            |
|                        |              |  |   |    | 003: Movie            | 003: Movie            |
|                        |              |  |   |    | 004: Meeting          | 004: Meeting          |
| Volume                 | 8            |  | s | 35 | 000 ~ 100             | 000 ~ 100             |
| Mute                   | 8            |  | s | 36 | 000: Off              | 000: Off              |
|                        |              |  |   |    | 001: On               | 001: On               |
| Balance                | 8            |  | s | 39 | 000~100               | 000~100               |
| Sound reset            | 8            |  |   | 3B | 000                   | 000                   |
| Reomte control command | 8            |  | s | 40 | 000 : Vol +           | 000 : Vol +           |
|                        |              |  |   |    | 001 : Vol -           | 001 : Vol -           |
|                        |              |  |   |    | 010 : Remote 上        | 010 : Remote 上        |
|                        |              |  |   |    | 011 : Remote 下        | 011 : Remote 下        |
|                        |              |  |   |    | 012 : Remote 左        | 012 : Remote 左        |
|                        |              |  |   |    | 013 : Remote 右        | 013 : Remote 右        |
|                        |              |  |   |    | 014 : Remote OK       | 014 : Remote OK       |
|                        |              |  |   |    | 020 : Remote Menu Key | 020 : Remote Menu Key |
|                        |              |  |   |    | 022 : Remote Exit     | 022 : Remote Exit     |
|                        |              |  |   |    | 031 : Blank           | 031 : Blank           |
| 032 : Freeze           | 032 : Freeze |  |   |    |                       |                       |
| IR Control             | 8            |  | s | 42 | 000: Disable          | 000: Disable          |
|                        |              |  |   |    | 001: Enable           | 001: Enable           |
| Button&IR Control      | 8            |  | s | 43 | 000: Disable          | 000: Disable          |
|                        |              |  |   |    | 001: Enable           | 001: Enable           |
| Button Control         | 8            |  | s | 45 | 000: Disable          | 000: Disable          |
|                        |              |  |   |    | 001: Enable           | 001: Enable           |

|                         |   |  |   |    |                   |                   |
|-------------------------|---|--|---|----|-------------------|-------------------|
| Pixel Shift             | 8 |  | s | 47 | 000: Off          | 000: Off          |
|                         |   |  |   |    | 001: On           | 001: On           |
| All Reset               | 8 |  | s | 7E | 000               | 000               |
| Screen Reset            | 8 |  | s | 7F | 000               | 000               |
| Picture Mode            |   |  | s | 81 | 000: Standard     | 000: Standard     |
|                         |   |  |   |    | 001: Bright       | 001: Bright       |
|                         |   |  |   |    | 002 : Soft        | 002 : Soft        |
|                         |   |  |   |    | 003 : ECO         | 003 : ECO         |
| Backlight               | 8 |  | s | 84 | 000 ~ 100         | 000 ~ 100         |
| DCR                     | 8 |  | s | 85 | 000: Off          | 000: Off          |
|                         |   |  |   |    | 001: On           | 001: On           |
| Color Temp              | 8 |  | s | 86 | 000 : Cool        | 000 : Cool        |
|                         |   |  |   |    | 001 : Normal      | 001 : Normal      |
|                         |   |  |   |    | 002 : Warm        | 002 : Warm        |
| Auto Adjustment Execute | 8 |  | s | 8F | <---              |                   |
| VGA Clock frequency     | 8 |  | s | 90 | 000 ~ 100         | 000 ~ 100         |
| VGA Phase               | 8 |  | s | 91 | 000 ~ 100         | 000 ~ 100         |
| VGA H.Position          | 8 |  | s | 92 | 000 ~ 100         | 000 ~ 100         |
| VGA V.Position          | 8 |  | s | 93 | 000 ~ 100         | 000 ~ 100         |
| Eyecare Option          | 8 |  | s | 94 | 001 : Standard    | 001 : Standard    |
|                         |   |  |   |    | 004 : Comfortable | 004 : Comfortable |
| Ambient Light Sensor    | 8 |  | s | 95 | 000: Off          | 000: Off          |
|                         |   |  |   |    | 001: On           | 001: On           |
| RTC Year                | 8 |  | s | 98 | 000 ~ 099         | 000 ~ 099         |
| RTC Month               | 8 |  | s | 99 | 001 ~ 012         | 001 ~ 012         |
| RTC Day                 | 8 |  | s | 9A | 001 ~ 031         | 001 ~ 031         |
| RTC Hour                | 8 |  | s | 9B | 000 ~ 023         | 000 ~ 023         |
| RTC Minute              | 8 |  | s | 9C | 000 ~ 059         | 000 ~ 059         |
| Touch Feature           | 8 |  | s | 9E | 000: Off          | 000: Off          |
|                         |   |  |   |    | 001: On           | 001: On           |
| Power Save              | 8 |  | s | A9 | 000: Off          | 000: Off          |
|                         |   |  |   |    | 001: Low          | 001: Low          |
|                         |   |  |   |    | 002: High         | 002: High         |

|                    |    |  |   |    |   |   |
|--------------------|----|--|---|----|---|---|
| Switch on<br>Staus | 8  |  | s | AB | 000 : Power Off   | 000 : Power Off   |
|                    |    |  |   |    | 001 : Force On  | 001 : Force On  |
|                    |    |  |   |    | 002 : Last Status   | 002 : Last Status   |
| On/Off Timer       | 14 |  | s | E0 | <p>Byte1~Byte9</p> <p>(1) Byte1: Decide which Timer is selected, and its enable/disable setting.</p> <p>Byte1[3:0]=0x1~0x07. There are totally 7 Timers, this value is used to decide which Timer is selected.</p> <p>Byte1[7]: Reserved, should be 0.</p> <p>Byte1[6]: The Timer is enable or not. Byte1[6]=1 means enable.</p> <p>Byte1[5]: The On Timer is enable or not. Byte1[5]=1 means enable.</p> <p>Byte1[4]: The Off Timer is enable or not. Byte1[4]=1 means enable.</p> <p>(2) Byte2: The Day of the On/Off Timer. bit0 for Sunday, bit1 for Monday, bit2 for Tuesday, bit3 for Wednesday, bit4 for Thursday, bit5 for Friday, bit6 for Saturday, bit7 for Everday.</p> <p>(3) Byte3: The Hour of the On Timer. Byte3=0x00~0x17.</p> <p>(4) Byte4: The Minute of the On Timer. Byte4=0x00~0x3B.</p> <p>(5) Byte5: The Hour of the Off Timer. Byte5=0x00~0x17.</p> <p>(6) Byte6: The Minute of the Off Timer. Byte6=0x00~0x3B.</p> <p>(7) Byte7: Select the Video Source.<br/>0x00=VGA, 0x01=HDMI1,<br/>0x02=HDMI2, 0x03=AV, 0x04=YPbPr,<br/>0x05=S-Video, 0x06=DVI,<br/>0x07=DisplayPort, 0x08=SDI,<br/>0x09=Multi-Media.<br/>0x0A=Network, 0x0B=USB Display</p> <p>(8) Byte8~9 are reserved, and should be 0x00.</p> | <p>Byte1~Byte9</p> <p>(1) Byte1: Decide which Timer is selected, and its enable/disable setting.</p> <p>Byte1[3:0]=0x1~0x07. There are totally 7 Timers, this value is used to decide which Timer is selected.</p> <p>Byte1[7]: Reserved, should be 0.</p> <p>Byte1[6]: The Timer is enable or not. Byte1[6]=1 means enable.</p> <p>Byte1[5]: The On Timer is enable or not. Byte1[5]=1 means enable.</p> <p>Byte1[4]: The Off Timer is enable or not. Byte1[4]=1 means enable.</p> <p>(2) Byte2: The Day of the On/Off Timer. bit0 for Sunday, bit1 for Monday, bit2 for Tuesday, bit3 for Wednesday, bit4 for Thursday, bit5 for Friday, bit6 for Saturday, bit7 for Everday.</p> <p>(3) Byte3: The Hour of the On Timer. Byte3=0x00~0x17.</p> <p>(4) Byte4: The Minute of the On Timer. Byte4=0x00~0x3B.</p> <p>(5) Byte5: The Hour of the Off Timer. Byte5=0x00~0x17.</p> <p>(6) Byte6: The Minute of the Off Timer. Byte6=0x00~0x3B.</p> <p>(7) Byte7: Select the Video Source.<br/>0x00=VGA, 0x01=HDMI1,<br/>0x02=HDMI2, 0x03=AV,<br/>0x04=YPbPr,<br/>0x05=S-Video, 0x06=DVI,<br/>0x07=DisplayPort, 0x08=SDI,<br/>0x09=Multi-Media.<br/>0x0A=Network, 0x0B=USB Display</p> <p>(8) Byte8~9 are reserved, and should be 0x00.</p> |

|          |   |  |   |    |                |                |
|----------|---|--|---|----|----------------|----------------|
| WOL      | 8 |  | s | F0 | 000: Off       | 000: Off       |
|          |   |  |   |    | 001: On        | 001: On        |
| EDID     | 8 |  | s | F2 | 000 : EDID 1.4 | 000 : EDID 1.4 |
|          |   |  |   |    | 001 : EDID 2.0 | 001 : EDID 2.0 |
| Eyecare  | 8 |  | s | F3 | 000: Off       | 000: Off       |
|          |   |  |   |    | 001: On        | 001: On        |
| HDMI out | 8 |  | s | F4 | 000: Off       | 000: Off       |
|          |   |  |   |    | 001: On        | 001: On        |

### Get-function listing

The PC can interrogate the LCD Monitor for specific information. The Get-Function packet format consists of 5 bytes which are similar to the Set-Function packet structure. Note that the "Value" byte is always = 00.

### Get-function description

| Item         | Description  |
|--------------|--|
| Length       | Total Bytes of messages excluding "CR"   |
| TV ID        | Identification for each of TV<br>TV ID is "01" for LAN control & RS232 control   |
| Command Type | Identify command type,<br>"g" (0x67h): Get Command   |
| Command      | Function command code: One byte ASCII code   |
| Value [1~3]  | Three bytes ASCII that defines the value<br>NOTE: To get backlight sensor, thermal sensor, and ambient sensor, you need four bytes ASCII that defines the value and the length is 9. |
| CR           | 0x0D   |

### Get-function format

Send: (Command Type="g")

| Name        | Length | ID     | Command type | Command | Value1 | Value2 | Value3 | CR     |
|-------------|--------|--------|--------------|---------|--------|--------|--------|--------|
| Byte count  | 1 Byte | 2 Byte | 1 Byte       | 1 Byte  | 1 Byte | 1 Byte | 1 Byte | 1 Byte |
| Bytes order | 1      | 2~3    | 4            | 5       | 6      | 7      | 8      | 9      |

Reply: (Command Type="r" or "-")

If the Command is valid, Command Type ="r"

| Name | Length | ID | Command type | Command | Value1 | Value2 | Value3 | CR |
|------|--------|----|--------------|---------|--------|--------|--------|----|
|------|--------|----|--------------|---------|--------|--------|--------|----|

|             |        |        |        |        |        |        |        |        |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Byte count  | 1 Byte | 2 Byte | 1 Byte | 1 Byte | 1 Byte | 1 Byte | 1 Byte | 1 Byte |
| Bytes order | 1      | 2~3    | 4      | 5      | 6      | 7      | 8      | 9      |

If the Command is Not valid, Command Type="-"

| Name        | Length | ID     | Command type | CR     |
|-------------|--------|--------|--------------|--------|
| Byte count  | 1 Byte | 2 Byte | 1 Byte       | 1 Byte |
| Bytes order | 1      | 2~3    | 4            | 5      |

Example 1: Get Brightness and this command is valid.

The Brightness value is 67.

Send (Hex Format)

| Name | Length | ID        | Command type | Command | Value1 | Value2 | Value3 | CR   |
|------|--------|-----------|--------------|---------|--------|--------|--------|------|
| Hex  | 0x38   | 0x30 0x31 | 0x67         | 0x62    | 0x30   | 0x30   | 0x30   | 0x0D |

Reply (Hex Format)

| Name | Length | ID        | Command type | Command | Value1 | Value2 | Value3 | CR   |
|------|--------|-----------|--------------|---------|--------|--------|--------|------|
| Hex  | 0x38   | 0x30 0x31 | 0x72         | 0x62    | 0x30   | 0x36   | 0x37   | 0x0D |

Example 3: Get Balance from and this command is valid.

The Balance value is 32.

Send (Hex Format)

| Name | Length | ID        | Command type | Command | Value1 | Value2 | Value3 | CR   |
|------|--------|-----------|--------------|---------|--------|--------|--------|------|
| Hex  | 0x38   | 0x30 0x31 | 0x67         | 0x39    | 0x30   | 0x30   | 0x30   | 0x0D |

Reply (Hex Format)

| Name | Length | ID        | Command type | Command | Value1 | Value2 | Value3 | CR   |
|------|--------|-----------|--------------|---------|--------|--------|--------|------|
| Hex  | 0x38   | 0x30 0x31 | 0x72         | 0x39    | 0x30   | 0x33   | 0x32   | 0x0D |

Example 4: Get Balance, but the Balance command ID is error and it is NOT in the command table.

Send (Hex Format)

| Name | Length | ID        | Command type | Command | Value1 | Value2 | Value3 | CR   |
|------|--------|-----------|--------------|---------|--------|--------|--------|------|
| Hex  | 0x38   | 0x30 0x31 | 0x67         | 0xD7    | 0x30   | 0x30   | 0x30   | 0x0D |

Reply (Hex Format)

| Name | Length | ID        | Command type | CR   |
|------|--------|-----------|--------------|------|
| Hex  | 0x34   | 0x30 0x31 | 0x2D         | 0x0D |

Example 5: Get Operation time from system and this command is valid.

The System Operation time value is 1786 (ASCII code).

Send (Hex Format)

| Name | Length | ID        | Command type | Command | Value1 | Value2 | Value3 | Value4 | Value5 | CR   |
|------|--------|-----------|--------------|---------|--------|--------|--------|--------|--------|------|
| Hex  | 0x38   | 0x30 0x31 | 0x67         | 0X76    | 0x30   | 0x30   | 0x30   | 0x30   | 0x30   | 0x0D |

Reply (Hex Format)

| Name | Length | ID        | Command type | Command | Value1 | Value2 | Value3 | Value4 | Value5 | CR   |
|------|--------|-----------|--------------|---------|--------|--------|--------|--------|--------|------|
| Hex  | 0x38   | 0x30 0x31 | 0x72         | 0x76    | 0x30   | 0x31   | 0x37   | 0x38   | 0x36   | 0x0D |

Example 6: Get CO2 Value from System and this command is valid.

The lux value is 786 (ASCII code).

Send (Hex Format)

| Name | Length | ID        | Command type | Command | Value1 | Value2 | Value3 | Value4 | Value5 | CR   |
|------|--------|-----------|--------------|---------|--------|--------|--------|--------|--------|------|
| Hex  | 0x38   | 0x30 0x31 | 0x67         | 0XAB    | 0x30   | 0x30   | 0x30   | 0x30   | 0x30   | 0x0D |

Reply (Hex Format)

| Name | Length | ID        | Command type | Command | Value1 | Value2 | Value3 | Value4 | Value5 | CR   |
|------|--------|-----------|--------------|---------|--------|--------|--------|--------|--------|------|
| Hex  | 0x38   | 0x30 0x31 | 0x72         | 0xAB    | 0x30   | 0x30   | 0x37   | 0x38   | 0x36   | 0x0D |

PC Get-function command to IFP

| Get Function  | Len | ID | Cmd Type | Cmd Code (Hex) | RS232  | LAN  |
|---------------|-----|----|----------|----------------|--|--|
| Model Info    | 20  | 1  | g        | 20             | <p>(1) Input value: Byte1 - Byte2 - Byte3...Byte15<br/>Byte2~Byte11=0x00<br/>Byte1=0x01: Get Customer Name<br/>Byte1=0x02: Get Customer Model Name<br/>Byte1=0x04: Get Scaler Firmware Version<br/>Byte1=0x05: Get LAN Firmware Version<br/>Byte1=0x06: Get Serial Number</p> <p>(2) Return value: Byte1 - Byte2 - Byte3...Byte15<br/>The Byte1 value at the return value should be the same as the value of Byte1 at input value.<br/>Byte2~Byte15 should be ASCII format.<br/>Ex: If Customer=Generic, Byte1=0x01, Byte2='G', Byte3='e',...Byte8='c', Byte9~Byte11=0x00.<br/>Ex: If the Scaler Firmware Version=1.02, Byte1=0x03, Byte2='1', Byte3='.', Byte4='0', Byte5='2', Byte6~Byte11=0x00.</p> | <p>(1) Input value: Byte1 - Byte2 - Byte3...Byte15<br/>Byte2~Byte11=0x00<br/>Byte1=0x01: Get Customer Name<br/>Byte1=0x02: Get Customer Model Name<br/>Byte1=0x04: Get Scaler Firmware Version<br/>Byte1=0x05: Get LAN Firmware Version<br/>Byte1=0x06: Get Serial Number</p> <p>(2) Return value: Byte1 - Byte2 - Byte3...Byte15<br/>The Byte1 value at the return value should be the same as the value of Byte1 at input value.<br/>Byte2~Byte15 should be ASCII format.<br/>Ex: If Customer=Generic, Byte1=0x01, Byte2='G', Byte3='e',...Byte8='c', Byte9~Byte11=0x00.<br/>Ex: If the Scaler Firmware Version=1.02, Byte1=0x03, Byte2='1', Byte3='.', Byte4='0', Byte5='2', Byte6~Byte11=0x00.</p> |
| Signal Status | 8   | 1  | g        | 22             | 000: Signal unstable<br>001: Signal stable (Active Sync exists)  | 000: Signal unstable<br>001: Signal stable (Active Sync exists)  |
| Balance       | 8   | 1  | g        | 39             | 000~100  | 000~100  |
| Contrast      | 8   | 1  | g        | 61             | 000 ~ 100  | 000 ~ 100  |
| Brightness    | 8   | 1  | g        | 62             | 000 ~ 100  | 000 ~ 100  |
| Sound Mode    | 8   | 1  | g        | 65             | 001 : Standard   | 001 : Standard   |
|               |     |    |          |                | 002: Class   | 002: Class   |
|               |     |    |          |                | 003: Movie   | 003: Movie   |
|               |     |    |          |                | 004: Meeting   | 004: Meeting   |

|                   |             |   |   |    |                                |   |
|-------------------|-------------|---|---|----|--------------------------------|---|
| Volume            | 8           | 1 | g | 66 | 000 ~ 100                      | 000 ~ 100                                     |
| Mute              | 8           | 1 | g | 67 | 000: Off                       | 000: Off                                      |
|                   |             |   |   |    | 001: On                        | 001: On                                       |
| IR Control        | 8           | 1 | g | 68 | 000: Disable                   | 000: Disable                                  |
|                   |             |   |   |    | 001: Enable                    | 001: Enable                                   |
| Button&IR Control | 8           | 1 | g | 69 | 000: Disable                   | 000: Disable                                  |
|                   |             |   |   |    | 001: Enable                    | 001: Enable                                   |
| Video Source      | 8           | 1 | g | 6A | 000 : VGA                      | 000 : VGA                                     |
|                   |             |   |   |    | 001 : HDMI                     | 001 : HDMI                                    |
|                   |             |   |   |    | 002: HDMI1                     | 002: HDMI1                                    |
|                   |             |   |   |    | 021 : HDMI2                    | 021 : HDMI2                                   |
|                   |             |   |   |    | 007 : Display Port             | 007 : Display Port                            |
|                   |             |   |   |    | 003 : AV                       | 003 : AV                                      |
|                   |             |   |   |    | 004 : YPbPr                    | 004 : YPbPr                                   |
|                   |             |   |   |    | 101 : Android                  | 101 : android                                 |
|                   |             |   |   |    | 102 : OPS                      | 102 : OPS                                     |
|                   |             |   |   |    | 107 : EZWrite                  | 107 : EZWrite                                 |
| Power             | 8           | 1 | g | 6C | X                              | 000 :Monitor Off (Blacklight off +mute)       |
|                   |             |   |   |    | 001 : On                       | 001 :Monitor On (Blacklight on + last status) |
|                   |             |   |   |    | 002 : Standby (or android off) | X   |
| Pixel Shift       | 8           | 1 | g | 72 | 000: Off                       | 000: Off                                      |
|                   |             |   |   |    | 001: On                        | 001: On                                       |
| Button Control    | 8           | 1 | g | 73 | 000: Disable                   | 000: Disable                                  |
|                   |             |   |   |    | 001: Enable                    | 001: Enable                                   |
| Operation Time    | 10          | 1 | g | 76 | 00000 ~ 99999                  | 00000 ~ 99999                                 |
| Aspect Ratio      | 8           | 1 | g | 77 | 000 : 16:9                     | 000 : 16:9                                    |
|                   |             |   |   |    | 002 : PTP                      | 002 : PTP                                     |
| Language          | 8           | 1 | g | 78 | 000: English                   | 000: English                                  |
|                   |             |   |   |    | 001: Français                  | 001: Français                                 |
|                   |             |   |   |    | 002: Español                   | 002: Español                                  |
|                   |             |   |   |    | 003: 繁中                        | 003: 繁中                                       |
|                   |             |   |   |    | 004: 简中                        | 004: 简中                                       |
|                   |             |   |   |    | 005: Português                 | 005: Português                                |
|                   |             |   |   |    | 006: German                    | 006: German                                   |
|                   |             |   |   |    | 007: Dutch                     | 007: Dutch                                    |
| 008: Polish       | 008: Polish |   |   |    |                                |   |



|                     |   |   |   |    |                   |                   |
|---------------------|---|---|---|----|-------------------|-------------------|
|                     |   |   |   |    | 009: Russia       | 009: Russia       |
|                     |   |   |   |    | 010:Czech         | 010:Czech         |
|                     |   |   |   |    | 011:Danish        | 011:Danish        |
|                     |   |   |   |    | 012:Swedish       | 012:Swedish       |
|                     |   |   |   |    | 013:Italian       | 013:Italian       |
|                     |   |   |   |    | 014:Romanian      | 014:Romanian      |
|                     |   |   |   |    | 015:Norwegian     | 015:Norwegian     |
|                     |   |   |   |    | 016:Finnish       | 016:Finnish       |
|                     |   |   |   |    | 017:Greek         | 017:Greek         |
|                     |   |   |   |    | 018 : Turkish     | 018 : Turkish     |
|                     |   |   |   |    | 019:Arabic        | 019:Arabic        |
|                     |   |   |   |    | 020:Japane        | 020:Japane        |
|                     |   |   |   |    | 021: Thailand     | 021: Thailand     |
|                     |   |   |   |    | 022: Korean       | 022: Korean       |
|                     |   |   |   |    | 023 : Hungarian   | 023 : Hungarian   |
|                     |   |   |   |    | 024 : Persian     | 024 : Persian     |
|                     |   |   |   |    | 025 : Vietnamese  | 025 : Vietnamese  |
|                     |   |   |   |    | 026 : Indonesia   | 026 : Indonesia   |
| Touch Feature       | 8 |   | g | 9E | 000: Off          | 000: Off          |
|                     |   |   |   |    | 001: On           | 001: On           |
| Picture Mode        | 8 | 1 | g | B1 | 000: Standard     | 000: Standard     |
|                     |   |   |   |    | 001: Bright       | 001: Bright       |
|                     |   |   |   |    | 002 : Soft        | 002 : Soft        |
|                     |   |   |   |    | 003 : ECO         | 003 : ECO         |
| Backlight           | 8 | 1 | g | B4 | 000 ~ 100         | 000 ~ 100         |
| Color Temp          | 8 | 1 | g | B6 | 000 : Cool        | 000 : Cool        |
|                     |   |   |   |    | 001 : Normal      | 001 : Normal      |
|                     |   |   |   |    | 002 : Warm        | 002 : Warm        |
| DCR                 | 8 | 1 | g | B5 | 000: Off          | 000: Off          |
|                     |   |   |   |    | 001: On           | 001: On           |
| VGA Clock frequency | 8 |   | g | C0 | 000 ~ 100         | 000 ~ 100         |
| VGA Phase           | 8 |   | g | C1 | 000 ~ 100         | 000 ~ 100         |
| VGA H.Position      | 8 |   | g | C2 | 000 ~ 100         | 000 ~ 100         |
| VGA V.Position      | 8 |   | g | C3 | 000 ~ 100         | 000 ~ 100         |
| Eyecare Option      | 8 |   | g | C4 | 001 : Standard    | 001 : Standard    |
|                     |   |   |   |    | 004 : Comfortable | 004 : Comfortable |

|                      |    |   |   |    |  |  |
|----------------------|----|---|---|----|--|--|
| Ambient Light Sensor | 8  | 1 | g | C5 | 000: Off   | 000: Off   |
|                      |    |   |   |    | 001: On  | 001: On  |
| RTC Year             | 8  | 1 | g | C8 | 000 ~ 099  | 000 ~ 099  |
| RTC Month            | 8  | 1 | g | C9 | 001 ~ 012  | 001 ~ 012  |
| RTC Day              | 8  | 1 | g | CA | 001 ~ 031  | 001 ~ 031  |
| RTC Hour             | 8  |   | g | CB | 000 ~ 023  | 000 ~ 023  |
| RTC Minute           | 8  | 1 | g | CC | 000 ~ 059  | 000 ~ 059  |
| Power Save           | 8  | 1 | g | D9 | 000: Off   | 000 : Off  |
|                      |    |   |   |    | 001: Low   | 001 : Low  |
|                      |    |   |   |    | 002: High  | 002 : High   |
| Switch on Staus      | 8  | 1 | g | DA | 000 : Power Off  | 000 : Power Off  |
|                      |    |   |   |    | 001 : Force On   | 001 : Force On   |
|                      |    |   |   |    | 002 : Last Status  | 002 : Last Status  |
| On/Off Timer         | 14 | 1 | g | E0 | <p>Input value: Byte1 - Byte2 - Byte3...Byte9</p> <p>(1) Byte1[3:0]: The Number of the On/Off Timer. There are totally 7 On/Off Timers, and this byte is used to selected which timer is going to be accessed.</p> <p>(2) Byte1[7:4] is reserved, should be 0.</p> <p>(3) Byte2~9 are reserverd, should be 0x00.</p> <p>Return value: Byte1 - Byte2 - Byte3...Byte9</p> <p>(1) Byte1[3:0]: Should retuen the same value as Byte1 at Input value.</p> <p>Byte1[7]: Reserved, should be 0.</p> <p>Byte1[6]: The Timer is enable or not.</p> <p>Byte1[6]=1 means enable.</p> <p>Byte1[5]: The On Timer is enable or not.</p> <p>Byte1[5]=1 means enable.</p> <p>Byte1[4]: The Off Timer is enable or not.</p> <p>Byte1[4]=1 means enable.</p> <p>(2) Byte2: The Day of the On/Off Timer. bit0 for Sunday, bit1 for Monday, bit2 for Tuesday, bit3 for Wednesday, bit4 for Thursday, bit5 for Friday, bit6 for Saturday, bit7 for Everday.</p> <p>(3) Byte3: The Hour of the On Timer.</p> | <p>Input value: Byte1 - Byte2 - Byte3...Byte9</p> <p>(1) Byte1[3:0]: The Number of the On/Off Timer. There are totally 7 On/Off Timers, and this byte is used to selected which timer is going to be accessed.</p> <p>(2) Byte1[7:4] is reserved, should be 0.</p> <p>(3) Byte2~9 are reserverd, should be 0x00.</p> <p>Return value: Byte1 - Byte2 - Byte3...Byte9</p> <p>(1) Byte1[3:0]: Should retuen the same value as Byte1 at Input value.</p> <p>Byte1[7]: Reserved, should be 0.</p> <p>Byte1[6]: The Timer is enable or not.</p> <p>Byte1[6]=1 means enable.</p> <p>Byte1[5]: The On Timer is enable or not. Byte1[5]=1 means enable.</p> <p>Byte1[4]: The Off Timer is enable or not. Byte1[4]=1 means enable.</p> <p>(2) Byte2: The Day of the On/Off Timer. bit0 for Sunday, bit1 for Monday, bit2 for Tuesday, bit3 for Wednesday, bit4 for Thursday, bit5 for Friday, bit6 for Saturday, bit7 for Everday.</p> |

|                 |    |   |    |  |   |
|-----------------|----|---|----|--|---|
|                 |    |   |    | <p>Byte3=0x00~0x17.</p> <p>(4) Byte4: The Minute of the On Timer.<br/>Byte4=0x00~0x3B.</p> <p>(5) Byte5: The Hour of the Off Timer.<br/>Byte5=0x00~0x17.</p> <p>(6) Byte6: The Minute of the Off Timer.<br/>Byte6=0x00~0x3B.</p> <p>(7) Byte7: Select the Video Source.<br/>0x00=VGA, 0x01=HDMI1, 0x02=HDMI2,<br/>0x03=AV, 0x04=YpPr,<br/>0x05=S-Video, 0x06=DVI,<br/>0x07=DisplayPort, 0x08=SDI,<br/>0x09=Multi-Media.<br/>0x0A=Network, 0x0B=USB Display<br/>0xFF=Default. Other values are reserved.</p> <p>(8) Byte8~9 are reserved, and should be 0x00.</p>     | <p>(3) Byte3: The Hour of the On Timer.<br/>Byte3=0x00~0x17.</p> <p>(4) Byte4: The Minute of the On Timer.<br/>Byte4=0x00~0x3B.</p> <p>(5) Byte5: The Hour of the Off Timer.<br/>Byte5=0x00~0x17.</p> <p>(6) Byte6: The Minute of the Off Timer.<br/>Byte6=0x00~0x3B.</p> <p>(7) Byte7: Select the Video Source.<br/>0x00=VGA, 0x01=HDMI1,<br/>0x02=HDMI2, 0x03=AV, 0x04=YpPr,<br/>0x05=S-Video, 0x06=DVI,<br/>0x07=DisplayPort, 0x08=SDI,<br/>0x09=Multi-Media.<br/>0x0A=Network, 0x0B=USB Display<br/>0xFF=Default. Other values are reserved.</p> <p>(8) Byte8~9 are reserved, and should be 0x00.</p> |
| Network Setting | 14 | g | E1 | <p>Input Value: Byte1 - Byte2 -<br/>Byte3...Byte9</p> <p>(1) Byte1=0x00: IP Setup Mode<br/>Byte1=0x01: IP Address<br/>Byte1=0x02: Get Subnet Mask<br/>Byte1=0x03: Default Gateway<br/>Byte1=0x04: Primary DNS<br/>Byte1=0x05: Secondary DNS<br/>Byte1=0x06: MAC Address</p> <p>(2) Byte2~9 are reserved, should be 0x00.</p> <p>Return value: Byte1 - Byte2 -<br/>Byte3...Byte9</p> <p>The Byte1 at the return value should be the same as the value of Byte1 at Input value. Byte2~Byte15 should be hex value format</p> <p>(1) If Byte1=0x00(IP Setup Mode) at</p> | <p>Input Value: Byte1 - Byte2 -<br/>Byte3...Byte9</p> <p>(1) Byte1=0x00: IP Setup Mode<br/>Byte1=0x01: IP Address<br/>Byte1=0x02: Get Subnet Mask<br/>Byte1=0x03: Default Gateway<br/>Byte1=0x04: Primary DNS<br/>Byte1=0x05: Secondary DNS<br/><b>Byte1=0x06: 當下連線網路<br/>MAC Address</b><br/><b>Byte1=0x07: Ethernet (RJ45)<br/>MAC Address</b></p> <p>(2) Byte2~9 are reserved, should be 0x00.</p> <p>Return value: Byte1 - Byte2 -<br/>Byte3...Byte9</p> <p>The Byte1 at the return value should be the same as the value of Byte1 at</p>   |

|          |   |  |   |    |   |   |
|----------|---|--|---|----|---|---|
|          |   |  |   |    | <p>Input value, the return value should be</p> <p>Byte1=0x00</p> <p>Byte2=0x00: Manual</p> <p>0x01: DHCP</p> <p>Byte3~9 are reserved, should be 0x00.</p> <p>(2) If Byte1=0x01(IP Address) at Input value, the return value should be</p> <p>Ex: IP address=169.254.81.38</p> <p>Byte1=0x01 (same as Byte1 at Input value)</p> <p>Byte2=0xA9 (=169), Byte3=0xFE (=254), Byte4=0x51(=81), Byte5=0x26 (=38)</p> <p>Byte6~9 are reserved, should be 0x00.</p> <p>(3) If Byte1=0x02~0x05 at Input value, refer to (2)</p> <p>(4) If Byte1=0x06(MAC Address) at Input value, the return value should be</p> <p>Ex: MAC address=00:22:64:7E:2C:82</p> <p>Byte1=0x06 (same as Byte1 at Input value)</p> <p>Byte2=0x00, Byte3=0x22, Byte4=0x64, Byte5=0x7E, Byte6=0x2C, Byte7=0x82</p> <p>Byte8~9 are reserved, should be 0x00.</p> | <p>Input value. Byte2~Byte15 should be hex value format</p> <p>(1) If Byte1=0x00(IP Setup Mode) at Input value, the return value should be</p> <p>Byte1=0x00</p> <p>Byte2=0x00: Manual</p> <p>0x01: DHCP</p> <p>Byte3~9 are reserved, should be 0x00.</p> <p>(2) If Byte1=0x01(IP Address) at Input value, the return value should be</p> <p>Ex: IP address=169.254.81.38</p> <p>Byte1=0x01 (same as Byte1 at Input value)</p> <p>Byte2=0xA9 (=169), Byte3=0xFE (=254), Byte4=0x51(=81), Byte5=0x26 (=38)</p> <p>Byte6~9 are reserved, should be 0x00.</p> <p>(3) If Byte1=0x02~0x05 at Input value, refer to (2)</p> <p>(4) If Byte1=0x06(MAC Address) at Input value, the return value should be</p> <p>Ex: MAC address=00:22:64:7E:2C:82</p> <p>Byte1=0x06 (same as Byte1 at Input value)</p> <p>Byte2=0x00, Byte3=0x22, Byte4=0x64, Byte5=0x7E, Byte6=0x2C, Byte7=0x82</p> <p>Byte8~9 are reserved, should be 0x00.</p> |
| WOL      | 8 |  | g | F0 | 000: Off<br>001: On   | 000: Off<br>001: On   |
| EDID     | 8 |  | g | F2 | 000 : EDID 1.4<br>001 : EDID 2.0  | 000 : EDID 1.4<br>001 : EDID 2.0  |
| Eyecare  | 8 |  | g | F3 | 000: Off<br>001: On   | 000: Off<br>001: On   |
| HDMI Out | 8 |  | g | F4 | 000: Off<br>001: On   | 000: Off<br>001: On   |