



# RS232 Command List

IFP-6502/IFP-7502/IFP-8602

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# 1. INTRODUCTION

## 1.1 Purpose

The purpose of this document is to explain in detail the commands and steps that can be used to control a display via RS232C.

## 1.2 Physical Specification

- a. Baud Rate: 9600
- b. Data bits: 8
- c. Parity: None
- d. Stop Bit: 1
- e. Flow Control: None

## 1.3 Monitor Setting

MONITOR ID Set 1~255

## 1.4 Configure the IP address and Port

IP LAN port number is 5000.

# 2. Command Format

The RS232 packet format:

Header	Monitor ID	Category	Code 0	Code 1	Length	Data Control	Data [0]	...	Data [N]	Checksum
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Set / Get in detail:

Number of Field	Name of Field	Description
Byte 1	Header	Header = 0xA6
Byte 2	Monitor ID	Monitor ID Range: 1 ~ 255. All Display no ACK or Report is expected.
Byte 3	Category	Category = 0x00 (fixed)
Byte 4	Code0 (Page)	Reserve
Byte 5	Code1 (Function)	Reserve
Byte 6	Length	Length of message plus checksum code. Calculate the length from Control byte to Checksum byte.
Byte 7	Data Control	Data Control = 0x01 (fixed)
Byte 8	Data[0]	Command code.
Byte 9~Byte9+(N-1)	Data[1]~Data[N]	Data. This field can be also empty.
Last Byte	Checksum	Checksum. Range = 0 to 255 (0xFF). Algorithm: The EXCLUSIVE-OR (XOR) of all bytes in the message except the checksum itself. Checksum = [Header] XOR [Monitor ID] XOR ... DATA[0] ... XOR DATA[N]

### 3. Message System

This defines the feedback command from monitor to host controller when it receives the display command from the host controller, depending on the commands availability, the command reported back to host controller can be one of the ACK(0x00), ACK(0x03) or NAV(0x04).

**Note: there is no reply message when the wrong ID address is being used.**

#### Message-Report

Number of Field	Name of Field	Description
Byte 1	Header	Header = 0x21
Byte 2	Monitor ID	Monitor ID Range : 1 ~ 255
Byte3	Category	0x00
Byte4	Page	0x00
Byte5	MsgLen	Length of message plus checksum code. Calculate the length from Control byte to Checksum byte.
Byte6	Control	0x01
Byte7	Data[0]	Copy the received Command code.
Byte8~Byte8+(N-1)	Data[1]~Data[N]	Returned data associated with command code.
Byte 8+N	Checksum	XOR of all byte in reply/report packet (except checksum itself).

#### Example: ACK reply (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data [0]	Data [1]	Checksum	Description
0x21	0x01	0x00	0x00	0x04	0x01	0x00	0x00	0x25	Command is well executed.

#### Example: NACK reply (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data [0]	Data [1]	Checksum	Description
0x21	0x01	0x00	0x00	0x04	0x01	0x00	0x03	0x26	No this command code - Data(0), the system will reply "NACK".

#### Example: NAV reply: (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data [0]	Data [1]	Checksum	Description
0x21	0x01	0x00	0x00	0x04	0x01	0x00	0x04	0x21	1. Checksum error, the system will reply "NAV". 2. No this parameter - Data(1), the system will reply "NAV".

Data [1]:

0x00: Completed, normal response.

0x01: Limit Over, the packets were received normally, but the data value was over the upper limit.

0x02: Limit Over, the packets were received normally, but the data value was over the lower limit.

0x03: Command canceled, the packet is received normally but either the value of data is incorrect or request is not permitted for the current host value.

0x04: Parse Error, received not defined format data or check sum error.

## 4. Message General

### 4.1 Backlight ON/OFF

This command is used to set/get the backlight on/off parameters as it is defined as below.

#### 4.1.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0xA8 = Backlight ON/OFF - Set		Command to change the backlight on/off parameters of the display.
Data [1]	Backlight ON/OFF		0x00 = OFF 0x01 = ON

Example: Backlight on/off - Set ON – 0x01 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xA8	0x01	0x0B

#### 4.1.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xA8	0x00	0x8D

#### 4.1.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0xA9 = Backlight ON/OFF - Get		Command requests the display to report its current backlight on/off parameters.

Example: Backlight on/off - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xA9	0x0C

#### 4.1.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0xA9 = Backlight ON/OFF - Report		Command reports backlight on/off parameters.
Data [1]	Backlight ON/OFF		0x00 = OFF 0x01 = ON

Example: Backlight on/off - Get ON – 0x01 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xA9	0x01	0x8D

## 4.2 Treble

This command is used to set/get the audio treble level as it is defined as below.

### 4.2.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0x7A = Treble - Set		Command to change the audio treble level of the display.
Data [1]	Audio Treble		0x01 ~ 0x0B (1 ~ 11) of the user selectable range of the display.

Example: Treble – Set OSD -5 - 0x01 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x7A	0x01	0xD9

### 4.2.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x7A	0x00	0x5F

### 4.2.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0x7B = Treble - Get		Command requests the display to report its current audio treble level.

Example: Treble - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x7B	0xDE

### 4.2.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0x7B = Treble - Report		Command reports audio treble level.
Data [1]	Audio Treble		0x01 ~ 0x0B (1 ~ 11) of the user selectable range of the display.

Example: Treble – Get OSD -5 - 0x01 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x7B	0x01	0x5F

### 4.3 Bass

This command is used to set/get the audio bass level as it is defined as below.

#### 4.3.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0x7C = Bass - Set		Command to change the audio bass level of the display.
Data [1]	Audio Bass		0x01 ~ 0x0B (1 ~ 11) of the user selectable range of the display.

Example: Bass – Set OSD -5 - 0x01 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x7C	0x01	0xDF

#### 4.3.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x7C	0x00	0x59

#### 4.3.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0x7D = Bass - Get		Command requests the display to report its current audio bass level.

Example: Bass - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x7D	0xD8

#### 4.3.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0x7D = Bass - Report		Command reports audio bass level.
Data [1]	Audio Bass		0x01 ~ 0x0B (1 ~ 11) of the user selectable range of the display.

Example: Bass – Get OSD -5 - 0x01 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x7D	0x01	0x59

#### 4.4 Balance

This command is used to set/get the audio balance level as it is defined as below.

##### 4.4.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0x7E = Balance - Set		Command to change the Audio Balance level of the display.
Data [1]	Audio Balance		0x00 ~ 0x64 (0 ~ 100) of the user selectable range of the display. OSD: -50 (0x00); OSD: 0 (0x32); OSD: 50 (0x64)

Example: Balance – Set OSD 0 - 0x32 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x7E	0x32	0xEE

##### 4.4.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x7E	0x00	0x5B

##### 4.4.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0x7F = Balance - Get		Command requests the display to report its current Audio Balance level.

Example: Balance - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x7F	0xDA

##### 4.4.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0x7F = Balance - Report		Command reports Audio Balance level.
Data [1]	Audio Balance		0x00 ~ 0x64 (0 ~ 100) of the user selectable range of the display. OSD: -50 (0x00); OSD: 0 (0x32); OSD: 50 (0x64)

Example: Balance – Get OSD 0 - 0x32 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x7F	0x32	0x68

## 4.5 Contrast

This command is used to set/get the video contrast level as it is defined as below.

### 4.5.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0x6A = Contrast - Set		Command to change the video contrast level of the display.
Data [1]	Video Contrast		0x00 ~ 0x64 (0 ~ 100) of the user selectable range of the display. OSD: 0 (0x00); OSD: 50 (0x32); OSD: 100 (0x64)

Example: Contrast – Set OSD 50 - 0x32 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x6A	0x32	0xFA

### 4.5.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x6A	0x00	0x4F

### 4.5.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0x6B = Contrast - Get		Command requests the display to report its current video contrast level.

Example: Contrast - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x6B	0xCE

### 4.5.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0x6B = Contrast - Report		Command reports video contrast level.
Data [1]	Video Contrast		0x00 ~ 0x64 (0 ~ 100) of the user selectable range of the display. OSD: 0 (0x00); OSD: 50 (0x32); OSD: 100 (0x64)

Example: Contrast – Get OSD 50 - 0x32 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x6B	0x32	0x7C



## 4.6 Brightness

This command is used to set/get the video brightness level as it is defined as below.

### 4.6.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0x68 = Brightness - Set		Command to change the video brightness level of the display.
Data [1]	Video Brightness		0x00 ~ 0x64 (0 ~ 100) of the user selectable range of the display. OSD: 0 (0x00); OSD: 50 (0x32); OSD: 100 (0x64)

Example: Brightness – Set OSD 50 - 0x32 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x68	0x32	0xF8

### 4.6.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x68	0x00	0x4D

### 4.6.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0x69 = Brightness - Get		Command requests the display to report its current video brightness level.

Example: Brightness - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x69	0xCC

### 4.6.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0x69 = Brightness - Report		Command reports video brightness level.
Data [1]	Video Brightness		0x00 ~ 0x64 (0 ~ 100) of the user selectable range of the display. OSD: 0 (0x00); OSD: 50 (0x32); OSD: 100 (0x64)

Example: Brightness – Get OSD 50 - 0x32 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x69	0x32	0x7E

## 4.7 Sound Mode

This command is used to set/get the audio sound mode parameters as it is defined as below.

### 4.7.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0x78 = Sound Mode - Set		Command to change the audio sound mode parameters of the display.
Data [1]	Audio Sound Mode		0x01 = Standard 0x02 = Custom 0x03 = Media 0x04 = Meeting

Example: Sound Mode – Set Custom – 0x02 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x78	0x02	0xD8

### 4.7.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x78	0x00	0x5D

### 4.7.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0x79 = Sound Mode - Get		Command requests the display to report its current audio sound mode parameters.

Example: Sound Mode - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x79	0xDC

### 4.7.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0x79 = Sound Mode - Report		Command reports audio sound mode parameters.
Data [1]	Audio Sound Mode		0x01 = Standard 0x02 = Custom 0x03 = Media 0x04 = Meeting

Example: Sound Mode – Get Custom – 0x02 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x79	0x02	0x5E

## 4.8 Volume

This command is used to set/get the audio volume level as it is defined as below.

### 4.8.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0x44 = Volume - Set		Command to change the audio volume level of the display.
Data [1]	Audio out volume level		0x00 ~ 0x64 (0 ~ 100) of the user selectable range of the display. OSD: 0 (0x00); OSD: 50 (0x32); OSD: 100 (0x64)

Example: Volume – Set OSD 50 – 0x32 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x44	0x32	0xD4

### 4.8.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x44	0x00	0x61

### 4.8.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0x45 = Volume - Get		Command requests the display to report its current audio volume level.

Example: Volume - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x45	0xE0

### 4.8.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0x45 = Volume - Report		Command reports audio volume level.
Data [1]	Audio out volume level		0x00 ~ 0x64 (0 ~ 100) of the user selectable range of the display. OSD: 0 (0x00); OSD: 50 (0x32); OSD: 100 (0x64)

Example: Volume – Get OSD 50 – 0x32 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x45	0x32	0x52

#### 4.9 Mute

This command is used to set/get the audio mute parameters as it is defined as below.

##### 4.9.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0xE0 = Audio Mute - Set		Command to change the audio mute parameters of the display.
Data [1]	Audio Mute		0x00 = OFF 0x01 = ON

Example: Audio Mute – Set OFF – 0x00 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xE0	0x00	0x42

##### 4.9.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xE0	0x00	0xC5

##### 4.9.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0xE1 = Audio Mute - Get		Command requests the display to report its current audio mute parameters.

Example: Audio Mute - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xE1	0x44

##### 4.9.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0xE1 = Audio Mute - Report		Command reports audio mute parameters.
Data [1]	Audio Mute		0x00 = OFF 0x01 = ON

Example: Audio Mute – Get OFF – 0x00 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xE1	0x00	0xC4

#### 4.10 Video Source

This command is used to set/get the video source parameters as it is defined as below.

##### 4.10.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0xAC = Video Source - Set		Command to change the video source parameters of the display.
Data [1]	Video Source		0x05 : VGA 0x0D: HDMI 1 0x06 : HDMI 2 0x0F : HDMI 3 0x14 : Android
Data [2]~[4]	Reserved		[2]: 0x00 [3]: 0x00 [4]: 0x00

Example: Video Source – Set VGA – 0x05 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Data [2]
0xA6	0x01	0x00	0x00	0x00	0x07	0x01	0xAC	0x05	0x00

Data [3]	Data [4]	Checksum
0x00	0x00	0x08

##### 4.10.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xAC	0x00	0x89

### 4.10.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0xAD = Video Source - Get		Command requests the display to report its current video source parameters.

Example: Video Source - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xAD	0x08

### 4.10.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0xAD = Video Source - Report		Command reports video source parameters.
Data [1]	Video Source		0x05 : VGA 0x0D : HDMI 1 0x06 : HDMI 2 0x0F : HDMI 3 0x14 : Android
Data [2]~[4]	Reserved		[2]: 0x00 [3]: 0x00 [4]: 0x00

Example: Video Source – Get VGA – 0x05 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Data [2]
0x21	0x01	0x00	0x00	0x07	0x01	0xAD	0x05	0x00

Data [3]	Data [4]	Checksum
0x00	0x00	0x8E

## 4.11 Aspect Ratio

This command is used to set/get the aspect ratio parameters as it is defined as below.

### 4.11.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0x3A = Aspect Ratio - Set		Command to change the aspect ratio parameters of the display.
Data [1]	Aspect Ratio		0x00 = 4:3 0x06 = 16:9 0x0F = FULL

Example: Aspect Ratio – Set 16:9 – 0x06 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x3A	0x06	0x9E

### 4.11.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x3A	0x00	0x1F

### 4.11.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0x3B = Aspect Ratio - Get		Command requests the display to report its current aspect ratio parameters.

Example: Aspect Ratio - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x3B	0x9E

### 4.11.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0x3B = Aspect Ratio - Report		Command reports aspect ratio parameters.
Data [1]	Aspect Ratio		0x00 = 4:3 0x06 = 16:9 0x0F = FULL

Example: Aspect Ratio – Get 16:9 – 0x06 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x3B	0x06	0x18

## 4.12 Language

This command is used to set/get the language parameters as it is defined as below.

### 4.12.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0xC1 = Language - Set		Command to change the language parameters of the display.
Data [1]	Language		0x00: English, 0x01: Deutsch, 0x02: 中文 (簡體), 0x03: Français, 0x04: Italiano, 0x05: Español, 0x09: 中文 (繁體),

Example: Language – Set English – 0x00 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xC1	0x00	0x63

### 4.12.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xC1	0x00	0xE4



### 4.12.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0xC0 = Language - Get		Command requests the display to report its current language parameters.

Example: Language - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xC0	0x65

### 4.12.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0xC0 = Language - Report		Command reports language parameters.
Data [1]	Language		0x00: English, 0x01: Deutsch, 0x02: 中文 (簡體), 0x03: Français, 0x04: Italiano, 0x05: Español, 0x09: 中文 (繁體),

Example: Language – Get English – 0x00 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xC0	0x00	0xE5

### 4.13 Picture Mode

This command is used to set/get the picture mode parameters as it is defined as below.

#### 4.13.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0xD0 = Picture Mode - Set		Command to change the picture mode parameters of the display.
Data [1]	Picture Mode		0x00 = Standard 0x01 = Bright 0x02 = Soft 0x03 = Custom

Example: Picture Mode – Set Standard – 0x00 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xD0	0x00	0x72

#### 4.13.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xD0	0x00	0xF5

#### 4.13.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0xD1 = Picture Mode - Get		Command requests the display to report its current picture mode parameters.

Example: Picture Mode - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xD1	0x74

#### 4.13.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0xD1 = Picture Mode - Report		Command reports picture mode parameters.
Data [1]	Picture Mode		0x00 = Standard 0x01 = Bright 0x02 = Soft 0x03 = Custom

Example: Picture Mode – Get Standard – 0x00 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xD1	0x00	0xF4

#### 4.14 Backlight Level

This command is used to set/get the backlight level as it is defined as below.

##### 4.14.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0x30 = Backlight level - Set		Command to change the backlight level of the display.
Data [1]	Backlight level		0x00 ~ 0x64 (0 ~ 100) of the user selectable range of the display. OSD: 0 (0x00); OSD: 50 (0x32); OSD: 100 (0x64)

Example: Backlight level – Set OSD 50 – 0x32 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x30	0x32	0xA0

##### 4.14.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x30	0x00	0x15

##### 4.14.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0x31 = Backlight level - Get		Command requests the display to report its current backlight level.

Example: Backlight level - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x31	0x94

##### 4.14.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0x31 = Backlight level - Report		Command reports backlight level.
Data [1]	Backlight level		0x00 ~ 0x64 (0 ~ 100) of the user selectable range of the display. OSD: 0 (0x00); OSD: 50 (0x32); OSD: 100 (0x64)

Example: Backlight level – Get OSD 50 – 0x32 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x31	0x32	0x26

#### 4.15 Color Temperature

This command is used to set/get the color temperature parameters as it is defined as below.

##### 4.15.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0x34 = Color temperature - Set		Command to change the color temperature parameters of the display.
Data [1]	Color temperature		0x03 = Cool 0x04 = Standard 0x06 = Warm

Example: Color temperature – Set Standard – 0x04 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x34	0x04	0x92

##### 4.15.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x34	0x00	0x11

##### 4.15.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0x35 = Color temperature - Get		Command requests the display to report its current color temperature parameters.

Example: Color temperature - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x35	0x90

##### 4.15.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0x35 = Color temperature - Report		Command reports color temperature parameters.
Data [1]	Color temperature		0x03 = Cool 0x04 = Standard 0x06 = Warm

Example: Color temperature – Get Standard – 0x04 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x35	0x04	0x14

#### 4.16 RC Lock State

This command is used to set/get the RC lock state parameters as it is defined as below.

##### 4.16.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0x1C = RC Lock State - Set		Command to change the RC lock state parameters of the display.
Data [1]	RC Lock State		0x01 = Unlock all 0x02 = Lock all

Example: RC Lock State – Set Lock all – 0x02 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x1C	0x02	0xBC

##### 4.16.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x1C	0x00	0x39

##### 4.16.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0x1D = RC Lock State - Get		Command requests the display to report its current RC lock state parameters.

Example: RC Lock State - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x1D	0xB8

##### 4.16.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0x1D = RC Lock State - Report		Command reports RC lock state parameters.
Data [1]	RC Lock State		0x01 = Unlock all 0x02 = Lock all

Example: RC Lock State – Get Lock all – 0x02 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x1D	0x02	0x3A

## 4.17 RC Command

This command is used to set the RC Command parameters as it is defined as below.

### 4.17.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0xFD = RC Command - Set		Command to change the RC Command parameters of the display.
Data [1]	RC Command		0xA0 = Power 0xA1 = Menu 0xA2 = Input 0xA3 = Vol_Up 0xA4 = Vol_Down 0xA5 = Mute 0xA6 = Cursor_Up 0xA7 = Cursor_Down 0xA8 = Cursor_Left 0xA9 = Cursor_Right 0xB1 = OK 0xB2 = Return 0xBE = Blank 0xBF = Freeze 0xC1 = Red (Enables or disables the Front keyboard and Touch function) 0xC2 = Green (Enables or disables the Front keyboard) 0xC3 = Yellow (Enables or disables the Touch function) 0xC4 = Blue (Opens or closes the screen freezing tools) 0xD2 = Info 0x00 = BTN_0 0x01 = BTN_1 0x02 = BTN_2 0x03 = BTN_3 0x04 = BTN_4 0x05 = BTN_5 0x06 = BTN_6 0x07 = BTN_7 0x08 = BTN_8 0x09 = BTN_9

Example: RC Command – Set Menu – 0xA1 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xFD	0xA1	0xFE

### 4.17.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xFD	0x00	0xD8

#### 4.18 Platform and Version Labels

This command is used to get the platform and version label as it is defined as below.

##### 4.18.1 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0xA2 = Platform & Version Label - Report		Command reports platform and version label.
Data [1]	Platform & Version Label		0x00 = FW Version 0x01 = Brand name & Model name

Example: Platform & Version Label - Get FW version – 0x00 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xA2	0x00	0x00

##### 4.18.2 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0xA2 = Platform & Version Label - Report		Command reports platform and version label.

Example: Platform & Version Label - Get FW version (201911152025) - Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Data [2]
0x21	0x01	0x00	0x00	0x0F	0x01	0xA2	0x32	0x30

Data [3]	Data [4]	Data [5]	Data [6]	Data [7]	Data [8]	Data [9]	Data [10]	Data [11]	Data [12]	Checksum
0x31	0x39	0x31	0x31	0x31	0x35	0x32	0x30	0x32	0x35	0x87

#### 4.19 Key Lock State

This command is used to set/get the key lock state parameters as it is defined as below.

##### 4.19.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0x1A = Key Lock State - Set		Command to change the key lock state parameters of the display.
Data [1]	Key Lock State		0x01 = Unlock all 0x02 = Lock all

Example: Key Lock State – Set Lock all – 0x02 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x1A	0x02	0xBA

##### 4.19.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x1A	0x00	0x3F

##### 4.19.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0x1B = Key Lock State - Get		Command requests the display to report its current key lock state parameters.

Example: Key Lock State - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x1B	0xBE

##### 4.19.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0x1B = Key Lock State - Report		Command reports key lock state parameters.
Data [1]	Key Lock State		0x01 = Unlock all 0x02 = Lock all

Example: Key Lock State – Get Lock all – 0x02 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x1B	0x02	0x3C



#### 4.20 Power State

This command is used to set/get the power state parameters as it is defined as below.

##### 4.20.1 Message – Set

Bytes	Bytes Description	Bits	Description
Data [0]	0x18 = Power state - Set		Command to change the Power state parameters of the display.
Data [1]	Power state		0x01 = Power OFF 0x02 = Power ON

Example: Power State - Set OFF – 0x01 (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Data [1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x18	0x01	0xBB

##### 4.20.2 Message - Set - ACK Reply

Display address 01

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x18	0x00	0x3D

##### 4.20.3 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0x19 = Power state - Get		Command requests the display to report its current power state parameters.

Example: Power State - Get (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x19	0xBC

##### 4.20.4 Message – Get Report

Bytes	Bytes Description	Bits	Description
Data [0]	0x19 = Power state - Report		Command reports Power state parameters.
Data [1]	Power state		0x01 = Power OFF 0x02 = Power ON

Example: Power State - Get ON - 0x02 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x19	0x02	0x3E

## 5. Command Summary

Command Name	Set Command	Get Command	Command Code	Remark
Backlight ON/OFF Set	V		0xA8	
Backlight ON/OFF Get		V	0xA9	
Treble Set	V		0x7A	
Treble Get		V	0x7B	
Bass Set	V		0x7C	
Bass Get		V	0x7D	
Balance Set	V		0x7E	
Balance Get		V	0x7F	
Contrast Set	V		0x6A	
Contrast Get		V	0x6B	
Brightness Set	V		0x68	
Brightness Get		V	0x69	
Sound Mode Set	V		0x78	
Sound Mode Get		V	0x79	
Volume Set	V		0x44	
Volume Get		V	0x45	
Mute Set	V		0xE0	
Mute Get		V	0xE1	
Video Source Set	V		0xAC	
Video Source Get		V	0xAD	
Aspect Ratio Set	V		0x3A	
Aspect Ratio Get		V	0x3B	
Language Set	V		0xC1	
Language Get		V	0xC0	
Picture Mode Set	V		0xD0	
Picture Mode Get		V	0xD1	
Backlight Level Set	V		0x30	
Backlight Level Get		V	0x31	
Color Temp. Set	V		0x34	
Color Temp. Get		V	0x35	
RC Command Set	V		0xFD	
RC Lock Set	V		0x1C	
RC Lock Get		V	0x1D	
Platform & Version Get		V	0xA2	
Key Lock Set	V		0x1A	
Key Lock Get		V	0x1B	
Power State Set	V		0x18	
Power State Get		V	0x19	