

RS232 Command List

QX-24/QX-28/QX-32/QX-43/QX-55

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.

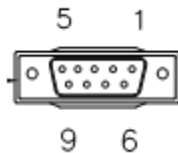
1.2 Definitions, Abbreviations and Acronyms

PBS	Professional Business Solutions
RC	Remote Control
ACK	Acknowledge
NACK	Not Acknowledge
NAV	Not Available
ID	Identification
0xXX	Hexadecimal notation

2. COMMAND PACKET FORMAT

2.1 Physical Specifications

1. Baud Rate : 9600
2. Data bits: 8
3. Parity : None
4. Stop Bit : 1
5. Flow Control : None
6. The Pin Assignments for DB9 Female connector:
Female D-Sub 9-Pin (outside view)



Pin #	Signal	Remark
1	NC	
2	RXD	
3	TXD	
4	NC	
5	GND	
6	NC	
7	NC	
8	NC	
9	NC	
frame	GND	

2.2 Communication Procedure

Control commands can be sent from a host controller via the RS232 connection. A new command should not be sent until the previous command is acknowledged. However, if a response is not received **within 500 milliseconds** a retry may be triggered. Every valid command receives an ACK. A command that is valid but not supported in the current implementation will be responded to with a NAV (Not Available). If the command buffer is corrupt (transmission errors) the command will be responded to with a NACK. The display operates according to the received command. If the command is a valid "Get" command, the display responds with the requested info. If the command is a valid "Set" command allowed, the display performs the requested operation. Figure1 and Figure2 explain the mechanism of the Get and Set commands.

Note: For LAN control, the port number is 5000.

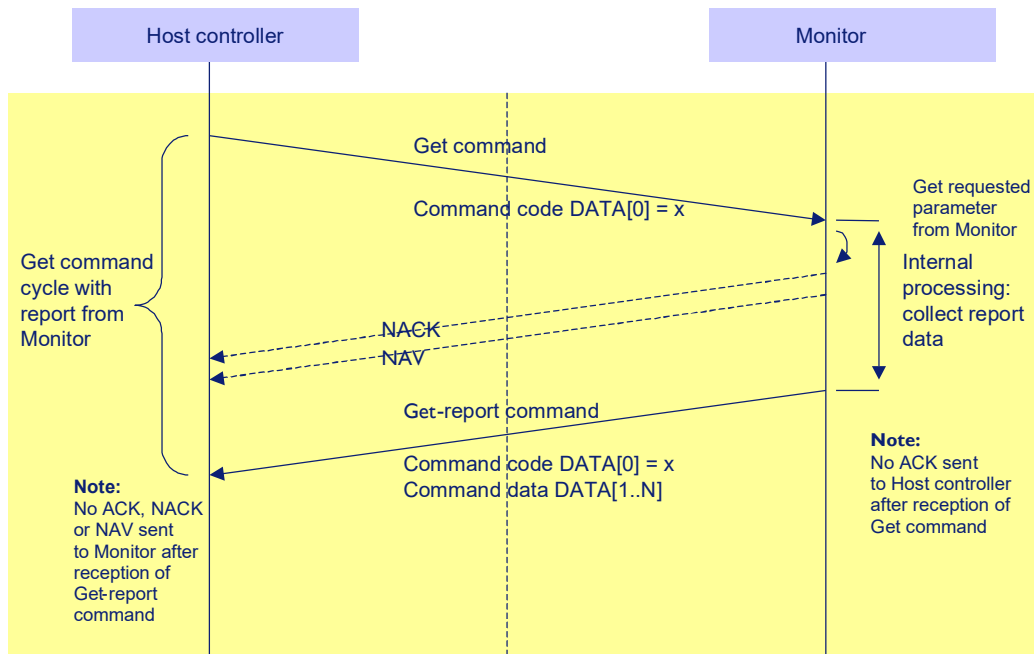


Figure 1: Explanation of mechanism of Get Command.

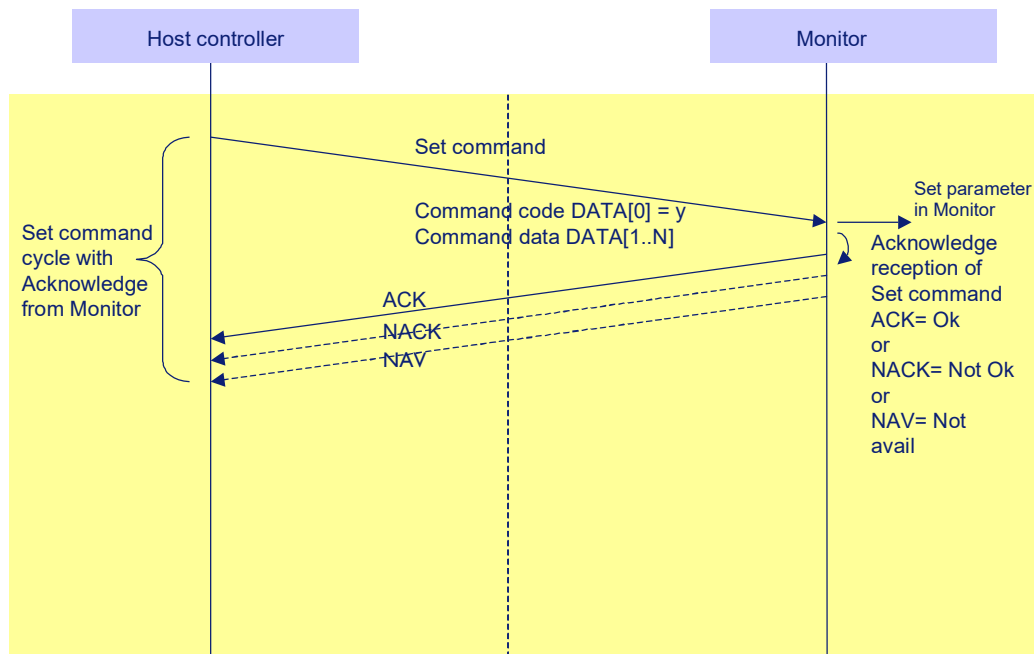


Figure 2: Explanation of mechanism of Set Command.

2.3 Command Format

The RS232 packet format:

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	...	Data[N]	Checksum
--------	------------	----------	-------	-------	--------	--------------	---------	-----	---------	----------

In detail:

Number of Field	Name of Field	Description
Byte 1	Header	Header = 0xA6
Byte 2	Monitor ID	Monitor ID Range : 1 ~ 255, 0 = broadcast.
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]

Monitor ID=0, Broadcast, (Host 送出 ID=0 時 每一台 Monitor 會收到命令, 並執行命令, 但不會回應 ACK)

MESSAGES - SYSTEM

2.4 Communication Control

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), NACK(0x03) or NAV(0x04).

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

2.4.1 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. (Cmd)
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. "ACK"

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" .

MESSAGES - GENERAL

3.1 Platform and Version Labels

This command provides the model name of platform and the display Software version to the host controller.

3.1.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xA2 = Platform and Version Labels - Get		Request the label version.
DATA[1]	Label		0x00 = Get the FW version 0x01 = Get model name of the platform.

Example: Get Model Name – 0x01 (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xA2	0x01	0x01

3.1.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xA2 = Platform and Version Label – Report		Request the internal label version.
DATA[1] to DATA[N]	Character[0] to Character[N-1]		36 (0x24) characters maximum. No. of characters, N = 1 to 36 (0x24). The actual size determines the value of the message size byte.

Example: reply Model Name QX-55 (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Data[2]	Data[3]	Data[4]	Data[5]	Checksum
0x21	0x01	0x00	0x00	0x08	0x01	0xA2	0x51	0x58	0x2D	0x35	0x35	0xAF

3.2 Power state

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

3.2.1 Message-Get

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

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x19	0xBC

3.2.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0x19 = Power State - Report		Command reports Power state
DATA[1]	Power State		0x01 = Power Off 0x02 = On

Example: Power State On – 0x02 (Display address 01)

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

3.2.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0x18 = Power state - Set		Command to change the Power state of the display
DATA[1]	Power state		0x01 = Power Off 0x02 = On

Send to Monitor *Example: Power State Deep Sleep (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x18	0x01	0xBB

Monitor ACK reply: Power Status OFF (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum	Description
0x21	0x01	0x00	0x00	0x04	0x01	0x18	0x00	0x3D	Command is well executed.

3.3 User Input Control

The following commands are used to lock/unlock the Remote Control and the Local Keyboard functionality corresponding.

3.3.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0x1D = User Input Control – Get		Get the lock/unlock state

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x1D	0xB8

3.3.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0x1D = User Input Control – Report		Report from display of lock/unlock state
DATA[1]	Bit meaning: 0 = locked 1 = unlocked	Bit 7..3	Not used
		Bit 2	Power Key Locked
		Bit 1	Local Keyboard
		Bit 0	Remote Control

Example: Lock Keyboard and unlocked Remote Control (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x1D	0xF9	0xC1

0x00 lock Keyboard(ALL)and IR Remote ,0x03 unlock keyboard and IR Remote (bit 2 invalid)

3.3.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0x1C = User Input Control – Set		Set the lock/unlock state
DATA[1]	Bit meaning: 0 = locked 1 = unlocked	Bit 7..2	Not used.
		Bit 2	Power Key Lock
		Bit 1	Local Keyboard
		Bit 0	Remote Control

Example: Unlock local Keyboard and unlock remote control (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x1C	0x03	0xBD

3.4 Power state at Cold Start

Command is used to set the cold start power state, the cold start power state are updated and stored by this command.

3.4.1 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xA3 = Power at Cold Start - Set		Set Power state at Cold Start
DATA[1]	Power state at Cold Start		0x00 = Power Off 0x01 = Forced On 0x02 = Last Status

The value is stored and it is applied only when the display starts up from cold start power state the next time: Power Off:

The monitor will be automatically switched to Power Off mode (even if the last status was on) whenever the mains power is turned on or resumed after the power interruption.

Forced On:

The monitor will be automatically switched to ON mode whenever the mains power is turned on or resumed after the power interruption.

Last Status:

The monitor will be automatically switched to the last status (either Power Off or On) whenever the mains power is turned on or resumed after the power interruption.

Example: Set Power state at cold start to last status – 0x02 (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xA3	0x02	0x03

3.4.2 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xA4 = Power at Cold Start - Get		Get Power state at Cold Start state

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xA4	0x01

3.4.3 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xA4 = Power at Cold Start – Report		Report from Power state at Cold Start state
DATA[1]	Power state at Cold Start		0x00 = Power Off 0x01 = Forced On 0x02 = Last Status

Example: Current Power state at Cold Start state-0x02: Last Status (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xA4	0x02	0x83

4. MESSAGES - INPUT SOURCES

4.4 Input Source

This command is used to change the current input source.

4.4.1 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xAC = Input Source – Set		Command requests the display to set the current input source
DATA[1]	Input Source Type		0x20= VGA 0x21= DVI 0x22= HDMI 0x23= DP
DATA[2]	Input Source Number		Not used
DATA[3]	OSD Style Reserved	Bit7	Not used.
		Bit6	Not used.
		Bit2. 0	Not used.
DATA[4]	Delay time for source change		Not used (0x00)

Example: Set Input Source: HDMI-0x22 (Display address 01)- (PIP Main and Multi-Win Win1 Input Source)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Data[2]	Data[3]	Data[4]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x07	0x01	0xAC	0x22	0x00	0x00	0x00	0x2F

4.5 Current Source

This command is used to get the source detect auto or not.

4.5.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xAD = Current Source – Get		Command requests the display to report the current input source in use.

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xAD	0x08

4.5.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xAD = Current Source – Report		Command reports to the host controller the current input source in use by the display.
DATA[1]	Input Source Type		0xFD = Input Source (normal state) 0xFE = Reserved for smartcard
DATA[2]	Input Source Number		0x20=VGA 0x21=DVI 0x22=HDMI 0x23=DP 0xFF= No Signal

Example: Current Input Source: HDMI – 0x22 (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Data[2]	Checksum
0x21	0x01	0x00	0x00	0x05	0x01	0xAD	0xFD	0x22	0x56

4.6 Auto Signal Detecting

This command is used to set source detect.

4.6.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xAF = Auto Signal Detecting – Get		Command requests the display to report its current Auto Signal Detecting status

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xAF	0x0A

4.6.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xAF = Auto Signal Detecting – Report		Command reports Auto Signal Detecting Setting
DATA[1]	On / Off		0x00 = Off 0x01 = On

Example: Current Display settings: On-0x01 (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xAF	0x01	0x8B

4.6.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xAE = Auto Signal Detecting – Set		Command to change the Auto Signal Detecting setting of the display
DATA[1]	On / Off		0x00 = Off 0x01 = On

Example: Set the Display to the following: Auto Signal Detecting On-0X01 (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xAE	0x01	0x0D

5. MESSAGES - VIDEO

5.1 Picture Format

This command is used to control the display screen format. (**Aspect**)

5.1.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0x3B = Picture Format – Get		Command requests the display to report its current picture format

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x3B	0x9E

5.1.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0x3B = Picture Format – Report		Command report to the host controller the current picture format of the display.
DATA[1]	Picture Format		Picture Format. 0x00 = 4:3 0x02 = 1:1 0x03 = WIDE 0x05 = Auto 0x20= 5:4

Example: Current Picture Format is Widescreen on Full Display - 0x03 (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x3B	0x03	0x1D

5.1.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0x3A = Picture Format – Set		Command requests the display to set the specified picture format
DATA[1]	Picture Format		Picture Format. 0x00 = 4:3 0x02 = 1:1 0x03 = WIDE 0x05 = Auto 0x20= 5:4

The display shall respond with NAV if it receives a Picture Format that is not relevant to its Display Aspect Ratio. The display shall ignore the [Picture Format - Set] if it receives a Picture Format that it cannot execute.

Example: Set Picture Format to Widescreen on Full Display-0x03 (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x3A	0x03	0x9B

5.2 Color Temperature

The following commands are used to get/set the color temperature.

5.2.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0x35 = Color Temperature – Get		Command requests the display to report its current color temperature.

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x35	0x90

5.2.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0x35 = Color Temperature – Report		Command reports to the host controller the current color temperature of the display.
DATA[1]	Color Temperature		0x20= WARM 0x21= COOL 0x22= NEUTRAL 0x23= USER

Example: The current color temperature is set to COOL-0x21 (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x35	0x21	0x31

5.2.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0x34 = Color Temperature – Set		Command to change the current color parameters
DATA[1]	Color Temperature		0x20= WARM 0x21= COOL 0x22= NEUTRAL 0x23= USER

Example: The current color temperature is set to Warm-0x20 (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x34	0x20	0xB6

5.3 Color Temperature Parameters

The following commands are used to get/set the color parameters for **color temperature**.

5.3.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0x37 = Color Parameters – Get		Command requests the display to report its current color parameters.

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x37	0x92

5.3.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0x37 = Color Parameters – Report		Command reports to the host controller the current Color Temperature's color parameters of the display.
DATA[1]	Red color gain value		0 to 100 (0x00~0x64) of the user selectable range of the display.
DATA[2]	Green color gain value		0 to 100 (0x00~0x64) of the user selectable range of the display.
DATA[3]	Blue color gain value		0 to 100 (0x00~0x64) of the user selectable range of the display.

Example: All color parameters are set to 100 (0x64) (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Data[2]	Data[3]	Checksum
0x21	0x01	0x00	0x00	0x06	0x01	0x37	0x64	0x64	0x64	0x74

5.3.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0x36 = Color Parameters – Set		Command to change the USER Color Temperature's color parameters only
DATA[1]	Red color gain value		0 to 100 (0x00~0x64) of the user selectable range of the display.
DATA[2]	Green color gain value		0 to 100 (0x00~0x64) of the user selectable range of the display.
DATA[3]	Blue color gain value		0 to 100 (0x00~0x64) of the user selectable range of the display.

Example: USER Color Temperature's All color parameters are set to 50 (0x32) (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Data[2]	Data[3]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x06	0x01	0x36	0x32	0x32	0x32	0xA4

5.4 Picture-in-Picture (PIP) MULTI-WINDOW MODE

This command is used to control PIP on/off with different locations.

5.4.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0x3D = PIP / Multi-Win – Get		Command requests the display to get the specified Multi-Win

Example: Get PIP setting (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x3D	0x98

5.4.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0x3D = Picture-in-Picture – Report		Command reports to the host controller the current PIP
DATA[1]	Picture-in-Picture		0x00=OFF 0x01= PIP 0x02= PBP 2WIN 0x03= PBP 3 WIN 0x04= PBP 4 WIN
DATA[2]	Additional PIP parameters		Position of the PIP window: 0x00 = 00 = position 0 (typically bottom-left) 0x01 = 01 = position 1 (typically top-left) 0x02 = 10 = position 2 (typically top-right) 0x03 = 11 = position 3 (typically bottom-right)
DATA[3]	PIP Size		0x01=SMALL 0x02= MID 0x03= Large 0x04=Huge
DATA[4]			(reserved, default 0)

Example: Current PIP setting is enabling and located at position 2, PIP Size Small (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data[0]	Data[1]	Data[2]	Data[3]
0x21	0x01	0x00	0x00	0x07	0x01	0x3D	0x01	0x02	0x01

Data[4]	Checksum
0x00	0x19

5.4.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0x3C = PIP / Multi-Win – Set		Command requests the display to set the specified PIP settings.
DATA[1]	Picture-in-Picture / Multi-Win		0x00=0ff 0x01=PIP 0x02=PBP 2 0x03=PBP 3 0x04=PBP 4
DATA[2]	Additional PIP parameters		Position of the PIP window: 0x00 = 00 = position 0 (typically bottom-left) 0x01 = 01 = position 1 (typically top-left) 0x02 = 10 = position 2 (typically top-right) 0x03 = 11 = position 3 (typically bottom-right)
DATA[3]	PIP Size		0x01=SMALL 0x02= MID 0x03= Large 0x04=Huge (reserved)
DATA[4]			(reserved)

Example: Set PIP ON, top-right Small Size (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Data[2]	Data[3]	Data[4]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x07	0x01	0x3C	0x01	0x02	0x01	0x00	0x9F

5.5 PIP Source (Multi-Win)

This command is used to control the PIP source settings for each display quadrant on the screen.

Example: If display resolution is 4K2K, user can select input source for each Full HD quadrant.

Q 1 (main)	Q 2
Q 3	Q 4

PIP Set/Get can only change input source for Q2, Q3, and Q4 individually by following the commands below.

5.5.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0x85 = Multi-Win Source – Get		Command requests the display to report its current PIP

This command is used to get the source for the PIP window when PIP feature is activated.

Example: Get PIP source setting (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x85	0x20

5.5.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0x85 = PIP Source – Get		Command requests the display to report its current PIP
DATA[1]	Source Type		0xFD = Input Source (normal state) 0xFE = Reserved for smartcard
DATA[2]	Q2 Source Number		0x20= VGA 0x21= DVI 0x22= HDMI 0x23= DP
DATA[3]	Q3 Source Number		0x20= VGA 0x21= DVI 0x22= HDMI 0x23= DP
DATA[4]	Q4 Source Number		0x20= VGA 0x21= DVI 0x22= HDMI 0x23= DP

Example: Get PIP source report: Q2-DVI / Q3-HDMI / Q4-DP (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data[0]	Data[1]	Data[2]	Data[3]
0x21	0x01	0x00	0x00	0x07	0x01	0x85	0xFD	0x21	0x22

Data[4]	Checksum
0x23	0x7E

5.5.3 Message-Set

This is the PIP source selection command.

Bytes	Bytes Description	Bits	Description
DATA[0]	0x84 = PIP Source – Set		Command requests the display to set the specified PIP
DATA[1]	Source Type		0xFD = Input Source (normal state) 0xFE = Reserved for smartcard
DATA[2]	Q2 Source Number		0x20= VGA 0x21= DVI 0x22= HDMI 0x23= DP
DATA[3]	Q3 Source Number		0x20= VGA 0x21= DVI 0x22= HDMI 0x23= DP
DATA[4]	Q4 Source Number		0x20= VGA 0x21= DVI 0x22= HDMI 0x23= DP

This command is used to select the source for the PIP window before the PIP feature is activated.

Example: Set source PIP: Q2-VGA / Q3-DVI / Q4-HDMI (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Data[2]
0xA6	0x01	0x00	0x00	0x00	0x07	0x01	0x84	0xFD	0x20

Data[3]	Data[4]	Checksum
0x21	0x22	0xFB

6. MESSAGES - AUDIO

6.1 Volume

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

6.1.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0x45 = Volume – Get		Command requests the display to report its current Volume level

The interface to set Software must be such that they also modify the variables representing these current parameters.

To mute the display, send Volume = 0. This command does not overwrite the system mute status of the display.

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x45	0xE0

6.1.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0x45 = Volume – Report		Command reports current Volume level
DATA[1]	Volume.		0 to 100 (0x00~0x64) of the user selectable range of the display.

Example: Current Display settings: Volume:50 (0x32) (Display address 01)

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

6.1.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0x44 = Volume – Set		
DATA[1]	Volume.		0 to 100 (0x00~0x64) of the user selectable range of the display.

Example: Set the Display Volume to 20 (0x14) (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x44	0x14	0xF2

8. MISCELLANEOUS

8.1 Operating Hours & Source Status

The command is used to record the working hours of the display and Input main Source Status.

8.1.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0x0F = Misc Info - Get		Command requests the display to report from miscellaneous information parameters
DATA[1]	Subcommand		0x01 = Current source status. 0x02 = Operating Hours (All other values are reserved)

Example: Get Operating Hours 0x02 (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x0F	0x02	0xAF

Example: Get Current source status 0x01 (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x0F	0x01	0xAC

8.1.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0x0F = Misc Info – Report		Command reports current Operating Hours
DATA[1] to DATA[2]	Operating Hours / Current source status.		Operating Hours: DATA[1] and DATA[2] form the MSByte and LSByte, respectively, of the 16-bit-wide Operational Hours value. Current source status. DATA[1]: 0x00 DATA[2]: 0x01 = signal loss / 0x02 = signal stable.

Example: Current Display Operation Hours counter value 10 hours (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Data[2]	Checksum
0x21	0x01	0x00	0x00	0x05	0x01	0x0F	0x00	0x0A	0x21

*Example: Current source Status **signal stable** (Display address 01)*

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Data[2]	Checksum
0x21	0x01	0x00	0x00	0x05	0x01	0x0F	0x00	0x02	0x29

8.2 Auto Adjust

This command works for VGA (host controller) video auto adjust.

8.2.1 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0x70 = Video Alignment – Set		Command requests the display to make auto adjustment on VGA Input source.
DATA[1]	Subcommand		0x40 = Auto Adjust (* All other values are reserved *)
DATA[2]	Reserved		(reserved, fixed 0)

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Data[2]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x05	0x01	0x70	0x40	0x00	0x93

8.4 Temperature Sensors

8.4.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0x2F = Temperature Sensor – Get		Command requests the display to report its value of the temperature sensors ($\pm 3^{\circ}\text{C}$).

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x2F	0x8A

8.4.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0x2F = Temperature Sensor – Report		Command reports Temperature sensor value
DATA[1]	Temperature Sensor 1		0-100 (0x00~0x64) in Celsius degrees represented in hex.
DATA[2]	Temperature Sensor 2		0-100 (0x00~0x64) in Celsius degrees represented in hex
DATA[3]	Temperature Sensor 3		0-100 (0x00~0x64) in Celsius degrees represented in hex

Example: Current Temp Sensor read out: Sensor 1~3 = All 35°C - 0x23 (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Data[2]	Data[3]	Checksum
0x21	0x01	0x00	0x00	0x06	0x01	0x2F	0x23	0x23	0x23	0x2B

9.3 Factory Reset

The command is used to reset all you customized settings to the factory defaults.

9.3.1 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xFE = Factory Reset		Command to do the Factory Reset of the display.

Example: Set Factory Settings (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xFE	0x5B

Extend Command

11.1 BRIGHTNESS

The following commands are used to get/set video **BRIGHTNESS** parameters.

11.1.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC1 = BRIGHTNESS – Get		Command requests the display to report its current BRIGHTNESS level

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xC1	0x64

11.1.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC1 = BRIGHTNESS – Report		Command reports current BRIGHTNESS level
DATA[1]	BRIGHTNESS.		0 to 100 (0x00~0x64) of the user selectable range of the display.

Example: Current Display settings: BRIGHTNESS: 50 (0x32) (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xC1	0x32	0xD6

11.1.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC0 = BRIGHTNESS – Set		
DATA[1]	BRIGHTNESS.		0 to 100 (0x00~0x64) of the user selectable range of the display.

Example: Set the Display BRIGHTNESS to 20 (0x14) (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xC0	0x14	0x76

11.2 CONTRAST

The following commands are used to get/set video **CONTRAST** parameters.

11.2.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC3 = CONTRAST – Get		Command requests the display to report its current CONTRAST level

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xC3	0x66

11.2.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC3 = CONTRAST – Report		Command reports current CONTRAST level
DATA[1]	CONTRAST.		0 to 100 (0x00~0x64) of the user selectable range of the display.

*Example: Current Display settings: **CONTRAST: 50 (0x32)** (Display address 01)*

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xC3	0x32	0xD4

11.2.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC2 = CONTRAST – Set		
DATA[1]	CONTRAST.		0 to 100 (0x00~0x64) of the user selectable range of the display.

*Example: Set the Display **CONTRAST** to 20 (0x14) (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xC2	0x14	0x74

11.3 BLACKLEVEL

The following commands are used to get/set video **BLACKLEVEL** parameters.

11.3.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC5 = BLACKLEVEL – Get		Command requests the display to report its current CONTRAST level

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xC5	0x60

11.3.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC5 = BLACKLEVEL – Report		Command reports current BLACKLEVEL level
DATA[1]	BLACKLEVEL.		0 to 100 (0x00~0x64) of the user selectable range of the display.

Example: Current Display settings: BLACKLEVEL: 50 (0x32) (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xC5	0x32	0xD2

11.3.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC4 = BLACKLEVEL – Set		
DATA[1]	BLACKLEVEL.		0 to 100 (0x00~0x64) of the user selectable range of the display.

Example: Set the Display BLACKLEVEL to 20 (0x14) (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xC4	0x14	0x72

11.4 SHARPNESS

The following commands are used to get/set video **Sharpness** parameters.

11.4.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC7 = Sharpness – Get		Command requests the display to report its current Sharpness level

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xC7	0x62

11.4.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC7 = Sharpness – Report		Command reports current Sharpness level
DATA[1]	Sharpness.		0 to 100 (step 10) - (0x00~0x64) of the user selectable range of the display.

*Example: Current Display settings: **Sharpness: 50 (0x32)** (Display address 01)*

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xC7	0x32	0xD0

11.4.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC6 = Sharpness – Set		
DATA[1]	Sharpness		0 to 100 (step 10) - (0x00~0x64) of the user selectable range of the display.

*Example: Set the Display **Sharpness** to 20 (0x14) (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xC6	0x14	0x70

11.5 HUE

The following commands are used to get/set video **Hue** parameters.

11.5.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC9 = Hue – Get		Command requests the display to report its current Hue level

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xC9	0x6C

11.5.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC9 = Hue – Report		Command reports current Hue level
DATA[1]	Hue.		0 to 100 (0x00~0x64) of the user selectable range of the display.

Example: Current Display settings: Hue: 50 (0x32) (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xC9	0x32	0xDE

11.5.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xC8 = Hue – Set		
DATA[1]	Hue.		0 to 100 (0x00~0x64) of the user selectable range of the display.

Example: Set the Display Hue to 20 (0x14) (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xC8	0x14	0x7E

11.6 SATURATION

The following commands are used to get/set video **Saturation** parameters.

11.6.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xCB = Saturation – Get		Command requests the display to report its current Saturation level

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xCB	0x6E

11.6.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xCB = Saturation – Report		Command reports current Saturation level
DATA[1]	Saturation.		0 to 100 (0x00~0x64) of the user selectable range of the display.

*Example: Current Display settings: **Saturation: 50 (0x32)** (Display address 01)*

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

11.6.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xCA = Saturation – Set		
DATA[1]	Saturation.		0 to 100 (0x00~0x64) of the user selectable range of the display.

*Example: Set the Display **Saturation** to 20 (0x14) (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xCA	0x14	0x7C

11.7 PICTURE MODE

The following commands are used to get/set the **Picture Mode**.

11.7.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD1 = Picture Mode – Get		Command requests the display to report its current Setting.

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xD1	0x74

11.7.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD1 = Picture Mode – Report		Command reports to the host controller the current Picture Mode of the display.
DATA[1]	Picture Mode		0x20= STANDARD 0x21= TEXT 0x22= CCTV 0x23= SIGNAGE-GRAPHICS 0x24= ECO 0x25= SIGNAGE-VIDEO

*Example: The current **Picture Mode** is set to **Standard** (Display address 01)*

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xD1	0x20	0xD4

11.7.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD0 = Picture Mode – Set		Command to change the current Picture Mode parameters
DATA[1]	Picture Mode		0x20= STANDARD 0x21= TEXT 0x22= CCTV 0x23= SIGNAGE-GRAPHICS 0x24= ECO 0x25= SIGNAGE-VIDEO

*Example: The current **Picture Mode** is set to **Standard** (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xD0	0x20	0x52

11.8 DCR

The following commands are used to get/set the **DCR**.

11.8.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD3 = DCR – Get		Command requests the display to report its current Setting .

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xD3	0x76

11.8.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD3 = DCR – Report		Command reports to the host controller the current Setting of the display.
DATA[1]	DCR		0x00 = OFF 0x01 = ON

*Example: Report the current **DCR** is set to **ON** (Display address 01)*

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xD3	0x01	0xF7

11.8.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD2 = DCR – Set		Command to change the current DCR Setting
DATA[1]	DCR		0x00 = OFF 0x01= ON

*Example: The current **DCR** is set to **ON** (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xD2	0x01	0x71

11.9 AUTO BRIGHTNESS

The following commands are used to get/set the **AUTO BRIGHTNESS**.

11.9.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD5 = AUTO BRIGHTNESS – Get		Command requests the display to report its current Setting.

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xD5	0x70

11.9.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD5 = AUTO BRIGHTNESS – Report		Command reports to the host controller the current Setting of the display.
DATA[1]	AUTO BRIGHTNESS		0x00 = OFF 0x01 = ON

*Example: Report the current **AUTO BRIGHTNESS** is set to **ON** (Display address 01)*

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xD5	0x01	0xF1

11.10.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD4 = AUTO BRIGHTNESS – Set		Command to change the current AUTO BRIGHTNESS Setting
DATA[1]	AUTO BRIGHTNESS		0x00 = OFF 0x01 = ON

*Example: The current **AUTO BRIGHTNESS** is set to **ON** (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xD4	0x01	0x77

11.10 LOW BLUE

The following commands are used to get/set the **LOW BLUE**.

11.10.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD7 = LOW BLUE – Get		Command requests the display to report its current Setting .

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xD7	0x72

11.11.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD7 = LOW BLUE – Report		Command reports to the host controller the current Setting of the display.
DATA[1]	LOW BLUE		0x00= OFF 0x01 = WEAK 0x02= MEDIUM 0x03= STRONG 0x04= STRONGEST

*Example: Report the current **LOW BLUE** is set to **WAEK** (Display address 01)*

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xD7	0x01	0xF3

11.11.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD6 = LOW BLUE – Set		Command to change the current LOW BLUE Setting
DATA[1]	LOW BLUE		0x00= OFF 0x01 = WEAK 0x02= MEDIUM 0x03= STRONG 0x04= STRONGEST

*Example: The current **LOW BLUE** is set to **WEAK** (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xD6	0x01	0x75

11.11 OVER DRIVER

The following commands are used to get/set the **OVER DRIVER**.

11.11.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD9 = OVER DRIVER – Get		Command requests the display to report its current Setting .

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xD9	0x7C

11.12.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD9 = OVER DRIVER – Report		Command reports to the host controller the current Setting of the display.
DATA[1]	OVER DRIVER		0x00= OFF 0x01 = WEAK 0x02= MEDIUM 0x03= STRONG

*Example: Report the current **OVER DRIVER** is set to **WAEK** (Display address 01)*

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xD9	0x01	0xFD

11.12.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD8 = OVER DRIVER – Set		Command to change the current OVER DRIVER Setting
DATA[1]	OVER DRIVER		0x00= OFF 0x01 = WEAK 0x02= MEDIUM 0x03= STRONG

*Example: The current **OVER DRIVER** is set to **WEAK** (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xD8	0x01	0x7B

11.12 DP VERSION

The following commands are used to get/set the **DR VERSION**.

11.12.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xDB = DP VERSION – Get		Command requests the display to report its current Setting .

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xDB	0x7E

11.12.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xDB = DP VERSION – Report		Command reports to the host controller the current Set of the display.
DATA[1]	DP VERSION		0x00= 1.1 0x01= 1.2

*Example: Report the current **DP VERSION** is set to 1.2 (Display address 01)*

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

11.12.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xDA = DP VERSION – Set		Command to change the current DP VERSION Set.
DATA[1]	DP VERSION		0x00= 1.1 0x01= 1.2

*Example: The current **DP VERSION** is set to 1.2 (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xDA	0x01	0x79

11.13 GAMMA

The following commands are used to get/set the **GAMMA**.

11.13.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xDD = GAMMA – Get		Command requests the display to report its current Setting .

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xDD	0x78

11.13.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xDD = GAMMA – Report		Command reports to the host controller the current Set of the display.
DATA[1]	GAMMA		0x00= 2.2 0x01= 2.4 0x02= 2.6 0x03= 1.8 0x04= 2.0

*Example: Report the current **GAMMA** is set to 2.2 (Display address 01)*

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xDD	0x00	0xF8

11.13.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xDC = GAMMA – Set		Command to change the current GAMMA Set.
DATA[1]	GAMMA		0x00= 2.2 0x01= 2.4 0x02= 2.6 0x03= 1.8 0x04= 2.0

*Example: The current **GAMMA** is set to 2.4 (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xDC	0x01	0x7F

11.14 **NOISE REDUCTION**

The following commands are used to get/set the **Noise Reduction**.

11.14.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xDF = Noise Reduction – Get		Command requests the display to report its current Setting .

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xDF	0x7A

11.14.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xDF = Noise Reduction – Report		Command reports to the host controller the current Set of the display.
DATA[1]	Noise Reduction		0x00= OFF 0x01= LOW 0x02= MEDIUM 0x03= HIGH

Example: Report the current Noise Reduction is set to LOW (Display address 01)

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

11.14.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xDE = Noise Reduction – Set		Command to change the current Noise Reduction Set .
DATA[1]	Noise Reduction		0x00= OFF 0x01= LOW 0x02= MEDIUM 0x03= HIGH

Example: The current Noise Reduction is set to LOW (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xDE	0x01	0x7D

11.15 DYNAMIC LUMINOUS CONTRAL

The following commands are used to get/set the **DYNAMIC LUMINOUS CONTRAL / DLC**.

11.15.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xEB = DLC – Get		Command requests the display to report its current Setting .

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xEB	0x4E

11.15.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xEB = DLC – Report		Command reports to the host controller the current Set of the display.
DATA[1]	DLC		0x00= OFF 0x01= ON

Example: Report the current DLC is set to OFF (Display address 01)

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

11.15.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xEA = DLC – Set		Command to change the current DLC Set.
DATA[1]	DLC		0x00= OFF 0x01= ON

Example: The current DLC is set to ON (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xEA	0x01	0x49

11.16 SWAP PIP

This command set PIP Source to Swap.

11.16.1 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xEC = source swap – Set		PIP source swap
DATA[1]	Subcommand		0x41 = PIP Source Swap
DATA[2]	Reserved		(reserved, fixed 0)

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Data[2]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x05	0x01	0xEC	0x41	0x00	0x0E

11.16 COLOR Auto Adjust

This command works for VGA (host controller) video auto colour adjust.

11.16.1 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xEC = Video COLOR Alignment – Set		Command requests the display to make auto Color adjustment on VGA Input source.
DATA[1]	Subcommand		0x40 = Auto Color Adjust (* All other values are reserved *)
DATA[2]	Reserved		(reserved, fixed 0)

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Data[2]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x05	0x01	0xEC	0x40	0x00	0x0F

11.18 **AUDIO MUTE**

The following commands are used to get/set the **Audio Mute**.

11.18.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xE1 = audio mute – Get		Command requests the display to report its current Setting .

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xE1	0x44

11.18.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xE1 = audio mute – Report		Command reports to the host controller the current Set of the display.
DATA[1]	Audio mute		0x00= OFF 0x01= ON

Example: Report the current mute is set to OFF (Display address 01)

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

11.18.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xE0 = audio mute – Set		Command to change the current mute Set.
DATA[1]	mute		0x00= OFF 0x01= ON

Example: The current mute is set to ON (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xE0	0x01	0x43

11.19 Power Saving

The following commands are used to get/set the **Power Saving** function.

11.19.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xE3= Saving – Get		Command requests the display to report its current Setting .

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xE3	0x46

11.19.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xE3 = Saving – Report		Command reports to the host controller the current Set of the display.
DATA[1]	Saving		0x00= OFF 0x01= ON

*Example: Report the current **Power Saving** is set to **OFF** (Display address 01)*

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xE3	0x00	0xC6

11.19.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xE2 = Power Saving – Set		Command to change the current mute Set.
DATA[1]	Saving		0x00= OFF 0x01= ON

*Example: The current **Power Saving** is set to **ON** (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xE2	0x01	0x41

11.20 ANTI BURN IN

The following commands are used to get/set the **Anti Burn In**.

11.20.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xE5= Anti Burn in – Get		Command requests the display to report its current Setting .

Example: (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xE5	0x40

11.20.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xE5 = Anti Burn in – Report		Command reports to the host controller the current Set of the display.
DATA[1]	Enable / Disable		0x00= OFF 0x01= ON
DATA[2]			0x01= 4 (Hours) 0x02= 5 (Hours) 0x03= 6 0x04= 8

Example: Report the current Anti Burn in is set to ON / 4 Hours (Display address 01)

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Data[2]	Checksum
0x21	0x01	0x00	0x00	0x05	0x01	0xE5	0x01	0x01	0xC1

11.20.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xE4 = Anti Burn In– Set		Command to change the current Anti Burn In Set.
DATA[1]	Enable / Disable		0x00= OFF 0x01= ON
DATA[2]			0x01= 4 (Hours) 0x02= 5 0x03= 6 0x04= 8

Example: The current Anti Burn In is set to ON / 5 Hours (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Data[2]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x05	0x01	0xE4	0x01	0x02	0x44

11.21 DATE TIME

The following commands are used to get/set the **DATE & TIME**.

11.21.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xE7= DATE & TIME – Get		Command requests the display to report its current Setting .

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xE7	0x42

11.21.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xE7 = DATE & TIME – Report		Command reports to the host controller the current Set of the display.
DATA[1]	Year		0x11 - 0x63 = 2017 - 2099
DATA[2]	Month		0x01 – 0x0C = JAN – DEC
DATA[3]	Day		DATA[2] = JAN, MAR, MAY, JUL, AUG, OCT, DEC: 0x01 – 0x1F = 1 – 31 DATA[2] = APR, JUN, SETP, NOV: 0x01 – 0x1E = 1 – 30 DATA[2] = FEB: 0x01 – 0x1C = 1 - 28
DATA[4]	Hour		0x00 – 0x17 = 0 - 23
DATA[5]	Minute		0x00 – 0x3B = 0 - 59
DATA[6]	Second		0x00 – 0x3B = 0 - 59
DATA[7] to DATA[13]	reserved		reserved

*Example: Report the current **DATE & TIME** (2017/01/30/ 18:59:30) (Display address 01)*

Header	Monitor ID	Category	Page	Length	Control	Data[0]	Data[1]	Data[2]	Data[3]	Data[4]
0x21	0x01	0x00	0x00	0x0F	0x01	0xE7	0x11	0x01	0x1E	0x12

Data[5]	Data[6]	Data[7]	Data[8]	Data[9]	Data[10]	Data[11]	Data[12]	Data[13]	Checksum
0x3B	0x1E	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0xF0

11.21.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xE6 = DATE & TIME – Report		Command to change the current Date & Time
DATA[1]	Year		0x11 - 0x63 = 2017 - 2099
DATA[2]	Month		0x01 – 0x0C = JAN – DEC
DATA[3]	Day		DATA[2] = JAN, MAR, MAY, JUL, AUG, OCT, DEC: 0x01 – 0x1F = 1 – 31 DATA[2] = APR, JUN, SETP, NOV: 0x01 – 0x1E = 1 – 30 DATA[2] = FEB: 0x01 – 0x1C = 1 - 28
DATA[4]	Hour		0x00 – 0x17 = 0 -23
DATA[5]	Minute		0x00 – 0x3B = 0 - 59
DATA[6]	Second		0x00 – 0x3B = 0 - 59

Example: The current DATE & TIME Set to 2017/01/30/ 18:59:30 (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Control	Data[0]	Data[1]	Data[2]
0xA6	0x01	0x00	0x00	0x00	0x09	0x01	0xE6	0x11	0x01

Data[3]	Data[4]	Data[5]	Data[6]	Checksum
0x1E	0x12	0x3B	0x1E	0x70

21. Command summary

Command name	Set Command	Get Command	Command Code	Remarks
Platform and version labels Get		√	0xA2	
Power state Get		√	0x19	
Power state Set	√		0x18	
User Input Control Get		√	0x1D	
User Input Control Set	√		0x1C	
Power at cold start Get		√	0xA4	
Power at cold start Set	√		0xA3	
Current Source Get		√	0xAD	
Input Source Set	√		0xAC	
Auto Signal Detecting Get		√	0xAF	
Auto Signal Detecting Set	√		0xAE	
Color Temperature Get		√	0x35	
Color Temperature Set	√		0x34	
Color Parameters Get		√	0x37	
Color Parameters Set	√		0x36	
Picture Format Get		√	0x3B	
Picture Format Set	√		0x3A	
Picture-in-Picture Get		√	0x3D	
Picture-in-Picture Set	√		0x3C	
PIP source Get		√	0x85	
PIP source Set	√		0x84	
Volume Get		√	0x45	
Volume Set	√		0x44	
Miscellaneous info Get		√	0x0F	Signal status Operating hours
Auto Adjust Set	√		0x70	0x40 / VGA only
Temperature Get		√	0x2F	
Factory Reset	√		0xFE	

21. Command summary (Extend)

Command name	Set Command	Get Command	Command Code	Remarks
Brightness Get			0xC1	
Brightness Set			0xC0	
Contrast Get			0xC3	
Contrast Set			0xC2	
Black Level Get			0xC5	
Black Level Set			0xC4	
Sharpness Get			0xC7	
Sharpness Set			0xC6	
HUE Get			0xC9	
HUE Set			0xC8	
Saturation Get			0xCB	
Saturation Set			0xCA	
Picture Mode Get			0xD1	
Picture Mode Set			0xD0	
DCR Get			0xD3	
DCR Set			0xD2	
AUTO BRIGHTNESS Get			0xD5	
AUTO BRIGHTNESS Set			0xD4	
LOW BLUE Get			0xD7	
LOW BLUE Set			0xD6	
OVER DRIVER Get			0xD9	
OVER DRIVER Set			0xD8	
DP Version Get			0xDB	
DP Version Set			0xDA	
Gamma Get			0xDD	
Gamma Set			0xDC	
Noise Reduction Get			0xDF	
Noise Reduction Set			0xDE	
Color Auto Adjust Set			0xEC	0x40
PIP SWAP Set			0xEC	0x41
Audio Mute Get			0xE1	
Audio Mute Set			0xE0	
Power Saving Get			0xE3	
Power Saving Set			0xE2	
ANTI-BURN-IN Get			0xE5	
ANTI-BURN-IN Set			0xE4	
DATE & TIME Get			0xE7	
DATE & TIME Set			0xE6	
DLC Get			0xEB	
DLC Set			0xEA	