



# **QM-G2 Series**

**QM-4302 / QM-5502 / QM-6502 / PM-3202**

## **Control Command**

## **I. 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 PD display via RS232C and LAN .

### **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**

#### **2.1.1**

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 **male** connector:  
Male D-Sub 9-Pin (outside view)



<b>Pin #</b>	<b>Signal</b>	<b>Remark</b>
1	NC	
2	TXD	Output from LCD Monitor
3	RXD	Input to LCD Monitor
4	NC	
5	GND	
6	NC	
7	NC	
8	NC	
9	NC	
frame	GND	

Displays use RXD, TXD and GND pins for RS-232C control.

#### **2.1.2**

LAN:

TCP IP

Port number : 5000

(LAN Long link over 2hours no any package Server will disconnections.)

### **2.2 Communication Procedure**

Control commands can be sent from a host controller via the RS232/LAN 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.

### 2.3 Command Format

The Command packet format:

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	...	Data[N]	Checksum
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In detail:

Number of Field	Name of Field	Description
Byte 1	Header	Header = 0xA6
Byte 2	Monitor ID	Monitor ID Range : 1 ~ 255  Signal mode: Display Address range from 1 to 255 Broadcast mode: Display Address is 0 which indicates no ACK or Report is expected.
Byte 3	Category	Category = 0x00 (fixed)
Byte 4	Code0 (Page)	Page = 0x00 (fixed)
Byte 5	Code1 (Function)	
Byte 6	Length	Length has to be calculated in the following way: Length = N + 3
Byte 7	Data Control	Data Control = 0x01 (fixed)
Byte 8 ~ Byte 44	Data[0] ~ Data[N]	This field can be also empty. If not empty then the range of Data Size, N = 0 to 36.
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]

## 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, NACK or NAV.

**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
Byte 3	Category	Category = 0x00 (fixed)
Byte 4	Code0 (Page)	Page = 0x00 (fixed)
Byte 5	Length	Length = 0x04
Byte 6	Data Control	Data Control = 0x01 (fixed)
Byte 7	Command	0x00(Communication Control)
Byte 8	Status	0x00: Completed Normal response. 0x01: Limit Over The packets was received normally, but the data value was over the upper limit. 0x02: Limit Over The packets was 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.
Byte 9	Checksum	Check Sum The total from Byte1 to Byte8 calculated by XOR

Example: ACK reply (Display address 01) / Completed

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.

When PD Power off , Except for the Power State command ( 0x18/0x19/0xA0/0xA1), other commands are invalid and do not reply.

### 3 Platform and Version Labels , Model Number

#### 3.1 Platform and Version Labels

This command provides the SICP protocol version and the display Software version to the host controller.

##### 3.1.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0xA2 = Platform and Version Labels - Get</b>		Request the SICP version.
DATA[1]	Which Label		0x01 = Get the platform label ( reply : AGN_92Q )

Example: Get version (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]	<b>0xA2 = Platform and Version Label - Report</b>		Request the internal Hardware 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.

##### 3.1.3 Message-Get (Model Number)

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0xA1 = Get Model Name</b>		Request the Model Number and FW version of the device
DATA[1] to DATA[N]	Codes to request		0x00 = Model Name

Example: Get Model Name (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	<b>0xA1</b>	<b>0x00</b>	<b>0x03</b>

##### 3.1.4 Message-Report (Model Number)

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0xA1 = Report - Model Name</b>		Request the Model Name
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: The current Model Name is “QM-4302” (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Data [2]
0x21	0x01	0x00	0x00	0x0A	0x01	0xA1	0x51	0x4D

Data [3]	Data [4]	Data [5]	Data [6]	Data [7]	Check sum
0x2D	0x34	0x33	0x30	0x32	0xBE

## 4 MESSAGES - GENERAL

### 4.1 Power state

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

#### 4.1.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x19 = Power state - Get</b>		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

#### 4.1.2 Message-Report

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

*Example: Power State On (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

#### 4.1.3 Message-Set

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

*Example: Power State Power Off (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

When Power off , Except for the Power State command, other commands are invalid and do not reply.

## 4.2 Lock Functions for IR-Remote Control

The following commands separately are used to lock/unlock the IR Remote Control and Keypad.

### 4.2.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0x1D = Get - Lock Status – IR – Remote Control		Get unlock all /lock all /lock all but power/lock all but volume/ Primary/Secondary status

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

### 4.2.2 Message-Report (IR-Remote Control)

Bytes	Bytes Description	Bits	Description
DATA[0]	0x1D = Report - Lock Status – IR – Remote Control		Report unlock all /lock all /lock all but power/lock all but volume status
DATA[1]	Status indicator byte for Remote Control		0x01 = Unlock all 0x02 = Lock all 0x03 = Lock all but Power 0x04 = Lock all but Volume

Example: Reply IR Remote Control – Unlock all (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x1D	0x01	0x39

### 4.2.3 Message-Set (IR –Remote Control)

Bytes	Bytes Description	Bits	Description
DATA[0]	0x1C = Set - Lock State – IR – Remote Control		Set unlock all/lock all /lock all but power/lock all but volume status
DATA[1]	Status indicator byte for Remote Control		0x01 = Unlock all 0x02 = Lock all 0x03 = Lock all but Power 0x04 = Lock all but Volume

Example: Unlock local 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	0x01	0xBF



### 4.3 Lock Functions for Keypad

#### 4.3.4 Message-Get (Keypad)

Bytes	Bytes Description	Bits	Description
DATA[0]	0x1B = Get - Keypad Lock Status		Set unlock all/lock all status

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x1B	0xBE

#### 4.3.5 Message-Report (Keypad)

Bytes	Bytes Description	Bits	Description
DATA[0]	0x1B = Report - Keypad Status		Report unlock all /lock all/lock all but power/ lock all but Volume
DATA[1]	Status indicator byte for Keypad		0x01 = Unlock all 0x02 = Lock all

Example: Reporting status of Keypad indicating Lock all for (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

#### 4.3.6 Message-Set (Keypad)

Bytes	Bytes Description	Bits	Description
DATA[0]	0x1A = Set – Keypad Lock Status		Report unlock all /lock all/lock all but power/ lock all but Volume
DATA[1]	Status indicator byte for Keypad		0x01 = Unlock all 0x02 = Lock all

Example: Set Unlock all on Keypad for (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x1A	0x01	0xB9

## 5. MESSAGES - INPUT SOURCES

### 5.1 Input Source

This command is used to change the current input source.

#### 5.1.1 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0xAC = Input Source – Set</b>		Command requests the display to set the current input source
DATA[1]	Input Source Type		0x05 = VGA 0x06 = HDMI 2 0x0C = USB 0x0D= HDMI 1 0x0F = HDMI3
DATA[2]	Reserved		(Reserved, value is 0)
DATA[3]	Reserved		(Reserved, value is 0)
DATA[4]	Reserved		(Reserved, value is 0)

Example: Set on HDMI 1 (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	0xAC	0x0D	0x00	0x00	0x00	0x00

### 5.2 Current Source

#### 5.2.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0xAD = Current Source – Get</b>		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

#### 5.2.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0xAD = Current Source – Report</b>		Command reports to the host controller the current input source in use by the display.
DATA[1]	Input Source Type/Number		0x05 = VGA 0x06 = HDMI 2 0x0C = USB 0x0D= HDMI 1 0x0F = HDMI3
DATA[2]	Reserved		(Reserved, value is 0)
DATA[3]	Reserved		(Reserved, value is 1)
DATA[4]	Reserved		(Reserved, value is 0)

Example: Current Input Source: HDMI 1 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data[0]	Data[1]	Data[2]	Data[3]	Data[4]	Checksum
0x21	0x01	0x00	0x00	0x07	0x01	0xAD	0x0D	0x00	0x01	0x00	0x87

## 6. MESSAGES - VIDEO

### 6.1 Video Parameters

The following commands are used to get/set video parameters as it is defined below.

#### 6.1.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x33 = Video Parameters – Get</b>		Command requests the display to report its current video parameters.

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x33	0x96

#### 6.1.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x33 = Video Parameters – Report</b>		Command reports to the host controller the current video parameters of the display.
DATA[1]	Brightness.		0 to 100 (%) of the user selectable range of the display. OSD Brightness Value x 2 OSD Brightness Value 32 x 2 = 64
DATA[2]	Color.		0 to 100 (%) of the user selectable range of the display.
DATA[3]	Contrast.		0 to 100 (%) of the user selectable range of the display.
DATA[4]	Sharpness.		0 to 100 (%) of the user selectable range of the display.
DATA[5]	Tint (Hue)		0 to 63 (%) of the user selectable range of the display.
DATA[6]	Black Level		0 to 100 (%) of the user selectable range of the display.
DATA[7]	Gamma Selection		0x01 = mode 1 0x03 = model 3, 0x04 = model 4 <b>0x05 = mode 2</b>

Example: All video parameters are set to 55 % (0x37) and Gamma Curve is set to 2.2 (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data[0]	Data[1]	Data[2]	Data[3]
0x21	0x01	0x00	0x00	0x0A	0x01	0x33	0x37	0x37	0x37
Data[4]	Data[5]	Data[6]	Data[7]	Checksum					
0x37	0x37	0x37	0x03	0x1B					

#### 6.1.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x32 = Video Parameters – Set</b>		Command to change the current video parameters
DATA[1]	Brightness.		0 to 100 (%) of the user selectable range of the display. OSD Brightness Value x 2 OSD Brightness Value 32 x 2 = 64
DATA[2]	Color.		0 to 100 (%) of the user selectable range of the display.
DATA[3]	Contrast.		0 to 100 (%) of the user selectable range of the display.
DATA[4]	Sharpness.		0 to 63 (%) of the user selectable range of the display.
DATA[5]	Tint (Hue)		0 to 100 (%) of the user selectable range of the display.
DATA[6]	Black Level		0 to 100 (%) of the user selectable range of the display.

DATA[7]	Gamma Selection		0x01 = mode 1 0x03 = model 3, 0x04 = model 4 <b>0x05 = mode 2</b>
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Example: Set Brightness: 40, Colors: 50, Sharpness: 10, Tint: 50, Blacklevel: 50, Gamma: Model 3 (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Data[2]	Data[3]
0xA6	0x01	0x00	0x00	0x00	0x0A	0x01	0x32	0x50	0x32	0x32
Data[4]	Data[5]	Data[6]	Data[7]	Checksum						
0x0A	0x32	0x32	0x03	0xC7						

## 6.2 Color Temperature

This command is used to control the display Color Temperature..

### 6.2.1 Message-Get ( Color Temperature )

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

### 6.2.2 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		0x00 = User 1 0x03 = Cool 0x04 = Normal 0x06 = Warm

Example: The current color temperature is set to Cool (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x35	0x03	0x13

### 6.2.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0x34 = Color Temperature – Report		Command reports to the host controller the current color temperature of the display.
DATA[1]	Color temperature		0x00 = User 1 0x03 = Cool 0x04 = Normal 0x06 = Warm

Example: The current color temperature is set to Cool (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	0x03	0x95

### 6.3 Picture Format

This command is used to control the display screen format.

#### 6.3.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x3B = Picture Format – Get</b>		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

#### 6.3.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x3B = Picture Format – Report</b>		Command report to the host controller the current picture format of the display.
DATA[1]	Picture Format*	Bit 7..4	Not used.
		Bit 3..0	Picture Format. 0x00 = Normal 0x02 = dot by dot (Real ) 0x04 = ZOOM 0x06 = Wide

Example: Current Picture Format is Normal (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0x3B	0x00	0x1E

#### 6.3.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x3A = Picture Format – Set</b>		Command requests the display to set the specified picture format
DATA[1]	Picture Format	Bit 7..4	Not used.
		Bit 3..0	Picture Format. 0x00 = Normal 0x02 = dot by dot (Real ) 0x04 = ZOOM 0x06 = Wide

Example: Set Picture Format to Wide screen (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	0x06	0x9E

## 7. MESSAGES - AUDIO

### 7.3 Volume

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

#### 7.3.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x45 = Volume – Get</b>		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

#### 7.3.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x45 = Volume – Report</b>		Command reports current Volume level
DATA[1]	Volume.		0 to 31 (%) of the user selectable range of the display.
DATA[2]	Audio Out Volume level		0 to 31 (%) of the user selectable range of the display.

*Example: Current Display settings: Volume:31 (Display address 01)*

Header	Monitor ID	Category	Page	Length	Data Control	Data[0]	Data[1]	Data[2]	Checksum
0x21	0x01	0x00	0x00	0x05	0x01	0x45	0x1F	0x1F	0x61

#### 7.3.3 Message-Set

This command can set volume level for speaker & audio out individually.

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x44 = Volume – Set</b>		
DATA[1]	Volume.		0 to 31 (%) of the user selectable range of the display.
DATA[2]	Audio Out Volume level		0 to 31 (%) of the user selectable range of the display.

*Example: Set the Display Volume to 31 (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x05	0x01	0x44	0x1F	0x1F	0xE7

### 7.3 Audio Parameters

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

#### 7.3.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x43 = Audio Parameters – Get</b>		Command requests the display to report its current audio parameters

*Example: (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x43	0xE6

#### 7.3.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x43 = Audio Parameters – Report</b>		Command reports Audio Parameters
DATA[1]	Treble.		0 to 31 of the user selectable range of the display.
DATA[2]	Bass.		0 to 31 of the user selectable range of the display.

*Example: Current Display settings: Treble:5 (0x5) , Bass:10 (0x10) (Display address 01)*

Header	Monitor ID	Category	Page	Length	Data Control	Data[0]	Data[1]	Data[2]	Checksum
0x21	0x01	0x00	0x00	0x05	0x01	0x43	0x05	0x10	0x72

#### 7.3.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x42 = Audio Parameters – Set</b>		Command to change the Audio Parameters of the display
DATA[1]	Treble.		0 to 31 of the user selectable range of the display.
DATA[2]	Bass.		0 to 31 of the user selectable range of the display.

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

*Example: Set the Display to the following: Treble:5 (0x05) , Bass:10 (0x10) (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	0x42	0x05	0x10	0xF4

## 8. MISCELLANEOUS

### 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]	<b>0x70 = Video Alignment - Set</b>		Command requests the display to make auto adjustment on VGA Input source.
DATA[1]	Item		0x40 = Auto Adjust (* All other values are reserved *)
DATA[2]			( reserved, default 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



### 8.3 Temperature

This command is used to get the Temperature Sensors value as it is defined as below.

#### 8.3.1 Message – Get

Bytes	Bytes Description	Bits	Description
Data [0]	0x2F = Temperature Sensors - Get		Command requests the display to report its current Temperature Sensors value.

Example: Get current Temperature value (Display address 01)

Header	Monitor ID	Category	Code [0]	Code [1]	Length	Data Control	Data [0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0x2F	0x8A

#### 8.3.2 Message – Get Report

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

Example: Sensor read out value is 35°C (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data [0]	Data [1]	Data [2]	Checksum
0x21	0x01	0x00	0x00	0x05	0x01	0x2F	0x23	0x00	0x28

## 9. Scheduling

### 9.1 Scheduling Parameters

The following commands are used to get/set scheduling parameters as it is defined below.

#### 9.1.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x5B = Scheduling Parameters - Get</b>		Command requests the display to report its current Scheduling parameters
DATA[1]	<b>Page</b>		1 to 7 of the scheduling pages

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0x5B	0x01	0xF8

#### 9.1.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x5B = Scheduling Parameters – Report</b>		Command reports to the host controller the current Scheduling parameters of the display.
DATA[1]	Page		0: Page disable 1: Page enable
DATA[2]	Start time hour		0 to 23 of the start time hour 24: NULL
DATA[3]	Start time minute		0 to 59 of the start time minute 60: NULL
DATA[4]	End time hour		0 to 23 of the end time hour 24: NULL
DATA[5]	End time minute		0 to 59 of the end time minute 60: NULL
DATA[6]	Video source		For video source: 0x05 = VGA 0x06 = HDMI 2 0x0C = USB 0x0D = HDMI 0x0F = HDMI3 0x14 = autoplay1 0x15 = autoplay2
DATA[7]	Working day(s)		To set the scheduling working days. Bit0 = 1: Only Once Bit1 = Monday Bit2 = Tuesday Bit3 = Wednesday Bit4 = Thursday Bit5 = Friday Bit6 = Saturday Bit7 = Sunday
DATA[8]			Fix 0x00

Example: Report page1 with HDMI starts at 06:30 and ends at 22:00 every day.

Header	Monitor ID	Category	Page	Length	Data Control	Data (0)	Data (1)	Data (2)
0x21	0x01	0x00	0x00	0x0B	0x01	0x5B	0x01	0x06
Data (3)	Data (4)	Data (5)	Data (6)	Data (7)	DATA[8]	Checksum		
0x1E	0x16	0x00	0x0D	0xFE	0x00	0x8D		

### 9.1.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0x5A = Scheduling Parameters – Set</b>		Command to change the current Scheduling parameters
DATA[1]	Page		BIT 7-BIT4: 1 to 7 of the scheduling pages BIT 3-BIT0: 0: Page disable 1: Page enable
DATA[2]	Start time hour		0 to 23 of the start time hour 24: NULL
DATA[3]	Start time minute		0 to 59 of the start time minute 60: NULL
DATA[4]	End time hour		0 to 23 of the end time hour 24: NULL
DATA[5]	End time minute		0 to 59 of the end time minute 60: NULL
DATA[6]	Video source		0x05 = VGA 0x06 = HDMI 2 0x0C = USB 0x0D = HDMI 0x0F = HDMI3 0x14 = autoplay1 0x15 = autoplay2
DATA[7]	Working day(s)		To set the scheduling working days. Bit0 = 1: Only Once Bit1 = Monday Bit2 = Tuesday Bit3 = Wednesday Bit4 = Thursday Bit5 = Friday Bit6 = Saturday Bit7 = Sunday
DATA[8]			Fix = 0x00

Example: Set page1 with HDMI starts at 06:30 and ends at 22:00 every day.

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data (0)	Data (1)
0xA6	0x01	0x00	0x00	0x00	0x0B	0x01	0x5A	0x11
Data (2)	Data (3)	Data (4)	Data (5)	Data (6)	Data (7)	Data (8)	Checksum	
0x06	0x1E	0x16	0x00	0x0D	0xFE	0x00	0x1B	

## 10. Language

### 10.1 Language Parameters

The following commands are used to get/set scheduling parameters as it is defined below.

#### 10.1.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0xC0 = Language – Get</b>		Command requests the display to report its current Language

Example: (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xC0	0x65

#### 10.1.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0xC0 = Language – Report</b>		Command report to the host controller the current language of the display.
DATA[1]	Language		0x00 = ENGLISH 0x01 = GERMAN 0x02 = SIMPLIFIED_CHINESE 0x03 = FRENCH 0x04 = ITALIAN 0x05 = SPANISH 0x06 = RUSSIAN

Example: Current Language is SIMPLIFIED\_CHINESE (Display address 01)

Header	Monitor ID	Category	Page	Length	Data Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xC0	0x02	0xE7

#### 10.1.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0xC1 = Language – Set</b>		Command requests the display to set the specified language
DATA[1]	Language		0x00 = ENGLISH 0x01 = GERMAN 0x02 = SIMPLIFIED_CHINESE 0x03 = FRENCH 0x04 = ITALIAN 0x05 = SPANISH 0x06 = RUSSIAN

Example: Set Language to ENGLISH (Display address 01)

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Data[1]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x04	0x01	0xC1	0x00	0x63

## 11. Anti-Burn-In

The command is used to set/get the Anti-Burn-un.

### 11.1.1 Message-Get- Anti-Burn-in

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0xB1 = Anti-Burn-in – Get</b>		Command requests the display to report its current Anti-Burn-in state

*Example: (Display address 01)*

Header	Monitor ID	Category	Code0	Code1	Length	Data Control	Data[0]	Checksum
0xA6	0x01	0x00	0x00	0x00	0x03	0x01	0xB1	0x14

### 11.1.2 Message-Report Anti-Burn-in

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0xB1 = Anti-Burn-in – Report</b>		Command reports Anti-Burn-in Setting
DATA[1]	status		0x00 = Off 0x01 = On

*Example: Current Display settings: Off (Display address 01)*

Header	Monitor ID	Category	Page	Length	Data Control	Data[0]	Data[1]	Checksum
0x21	0x01	0x00	0x00	0x04	0x01	0xB1	0x00	0x94

### 11.1.3 Message-Set Anti-Burn-in

Bytes	Bytes Description	Bits	Description
DATA[0]	<b>0xB2 = Anti-Burn-in – Set</b>		Command to change the Anti-Burn-in setting of the display
DATA[1]	status		0x00 = Off 0x01 = On

*Example: Set the Display to the following: Anti-Burn-in 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	0xB2	0x01	0x11

## 12. Command summary

Command name	Set Command	Get Command	Command Code	Remarks
Communication Control	√	√	0x00	Generic report
Platform and version labels		√	0xA2	
Power state get		√	0x19	
Power state set	√		0x18	
User Input Control get		√	0x1D	
User Input Control set	√		0x1C	
Power state at cold start	√		0xA3	
Input Source	√		0xAC	
Current Source		√	0xAD	
Video parameters get		√	0x33	Brightness, etc.
Video parameters set	√		0x32	
Color temperature get		√	0x35	
Color temperature set	√		0x34	
Picture Format get		√	0x3B	
Picture Format set	√		0x3A	
Volume get		√	0x45	
Volume set	√		0x44	
Audio parameters get		√	0x43	
Audio parameters set	√		0x42	
Miscellaneous info		√	0x0F	Operating hours
Auto Adjust	√		0x70	VGA only
Serial Code Get		√	0x15	
Scheduling get	√		0x5B	
Scheduling set		√	0x5A	
Language get	√		0xC0	
Language set		√	0xC1	
Anti-Burn-In			0xB1	
Anti-Burn-In			0xB2	
Temperature Get		√	0x2F	

