SERIAL / ETHERNET INTERFACE COMMUNICATION PROTOCOL SPECIFICATION
(SICP V1.99)

For
PHILIPS Professional Displays

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2017. May .20

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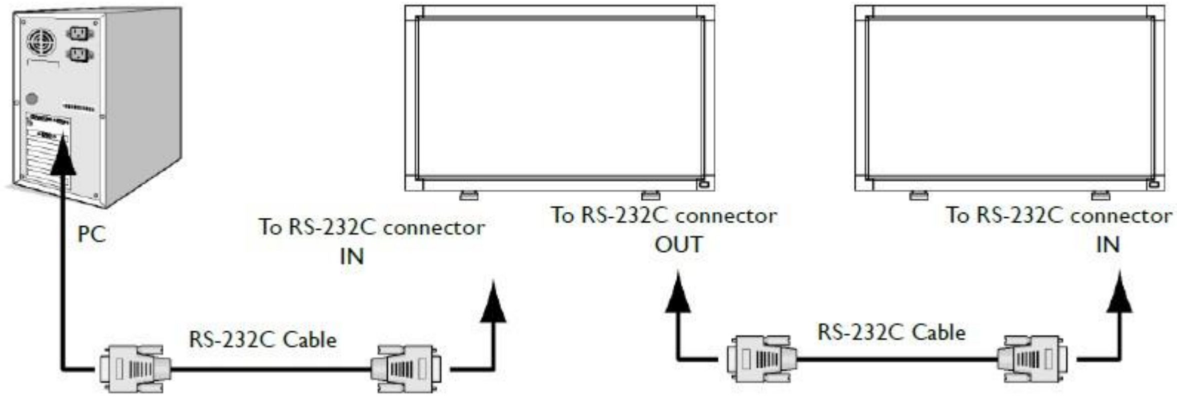
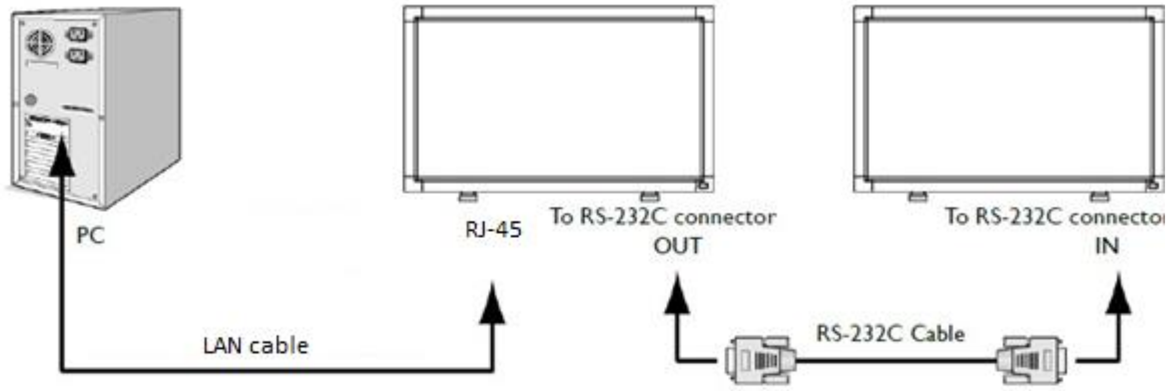
1. INTRODUCTION

1.1 Purpose

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


PC
To RS-232C connector
IN
To RS-232C connector
OUT
To RS-232C connector
IN
RS-232C Cable
RS-232C Cable


PC
RJ-45
To RS-232C connector
OUT
To RS-232C connecto
IN
LAN cable
RS-232C Cable

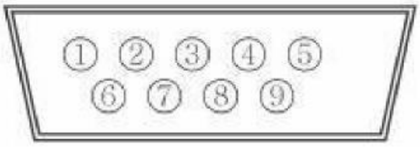
1.2 Definitions, Abbreviations and Acronyms

PBS	Professional Business Solutions
RC	Remote Control
ACK	Acknowledge
NACK	Not Acknowledge
NAV	Not Available
ID	Identification
0xXX	Hexadecimal notation
OSD	On Screen Display (menu information on the screen of the monitor)

2. COMMAND PACKET FORMAT

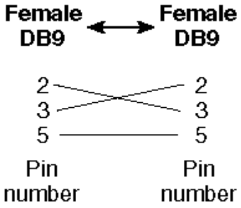
2.1 Physical Specifications

1. Baud Rate : 1200, 2400, 4800, **9600(default)**, 19200, 38400, 57600
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)



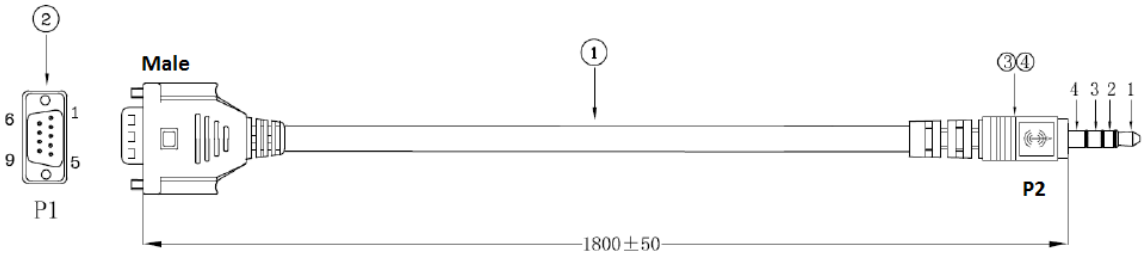
Pin #	Signal	Remark
1	NC	
2	RXD	Input to LCD Monitor
3	TXD	Output from LCD Monitor
4	NC	
5	GND	
6	NC	
7	NC	
8	NC	
9	NC	
frame	GND	

Note: A crossover cable (null modem) is needed for connection to the host controller:



Philips Signage displays use RXD, TXD and GND pins for RS-232C control. For RS-232C cable, the reverse type cable should be used.

If the RS232 is a jack 2.5 mm connection in the monitor than also a jack to SubD9 cable is included in the box of the monitor, see picture below:



WIRING TABLE

P1	WIRING COLOR	P2
2	RED 红色	1
3	BLUE 蓝色	2
9	BLACK 黑色	3
5	DRAIN 地线	4

2.2 Communication Procedure

Control commands can be sent from a host controller via the RS232/Ethernet (port 5000) 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.

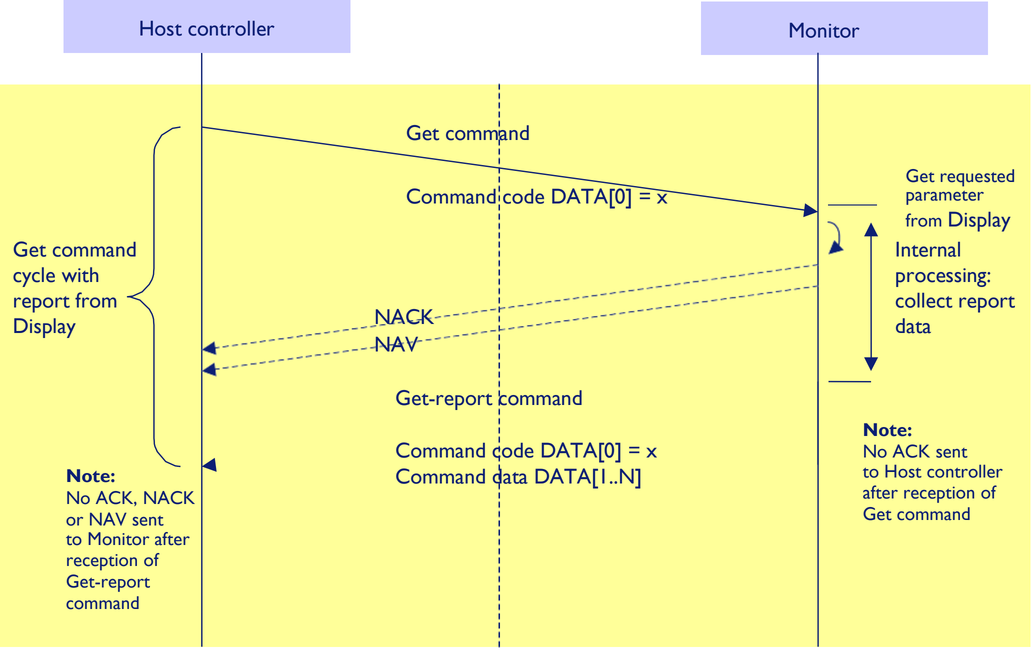

Host controller
Monitor
Get command
Command code DATA[0] = x
Get requested parameter from Display
Internal processing: collect report data
Get command cycle with report from Display
NACK
NAV
Get-report command
Command code DATA[0] = x
Command data DATA[1..N]
Note: No ACK sent to Host controller after reception of Get command
Note: No ACK, NACK or NAV sent to Monitor after reception of Get-report command

Figure 1: Explanation of mechanism of Get Command.

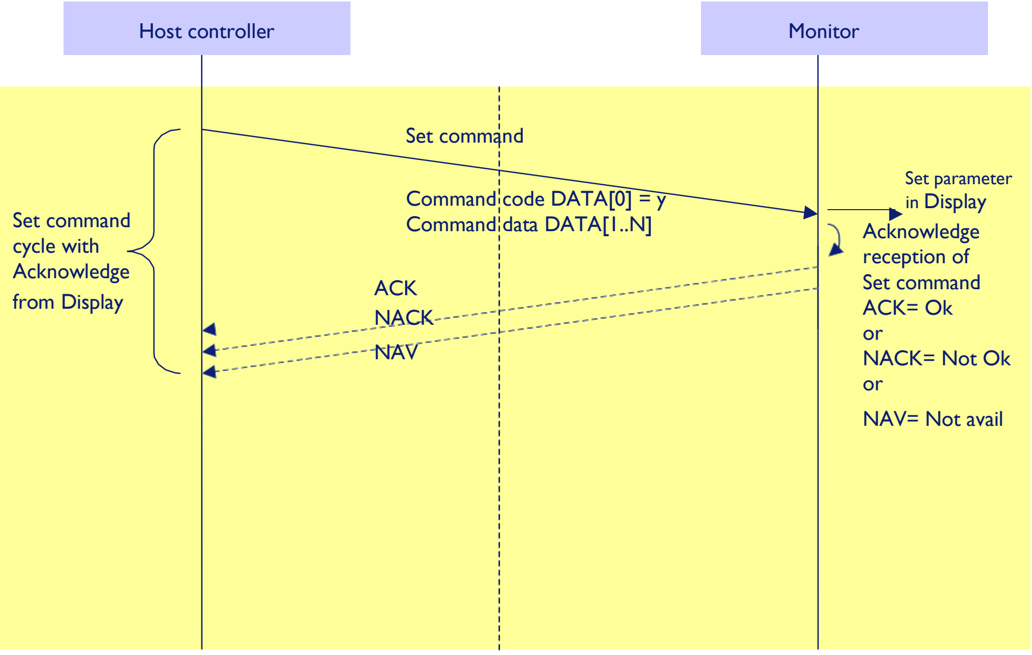

Host controller
Monitor
Set command
Command code DATA[0] = y
Command data DATA[1..N]
Set parameter in Display
Set command cycle with Acknowledge from Display
ACK
NACK
NAV
Acknowledge reception of Set command
ACK= Ok
or
NACK= Not Ok
or
NAV= Not avail

Figure 2: Explanation of mechanism of Set Command.

2.2.1 Command Format

The serial/Ethernet command packet format is as follows:

MsgSize	**Control**	**Group**	**Data[0]**	**Data[1]**	**…**	**Data[N]**	**Checksum**

Note: TCP/IP port 5000 is used by default for control in all displays at the time of this writing.

In detail:

<table>
<tr><th>Number of Field</th><th>Name of Field</th><th>Description</th></tr>
<tr><td>Byte 1:</td><td>MsgSize</td><td>Message Size has to be calculated in the fallowing way:
MsgSize + Control + Data(0) + … + Data(N) + Checksum
Range = 3 to 40 (0x3 to 0x28).</td></tr>
<tr><td>Byte 2:</td><td>Control</td><td>Message Control.
Bit 7..0: Monitor ID

Signal mode: Display Address range from 1 to 255
Broadcast mode: Display Address is 0 which indicates no ACK or Report is expected.</td></tr>
<tr><td>Byte 3:</td><td>Group</td><td>Group ID range: Off (= 255), 1-254
<table>
<tr><th>Monitor ID</th><th>Group ID</th><th></th></tr>
<tr><td>0-255</td><td>0-254</td><td>Range</td></tr>
<tr><td>0</td><td>0</td><td>Broadcast</td></tr>
<tr><td>1-255</td><td>0</td><td>Control by Monitor ID</td></tr>
<tr><td>0-255</td><td>1-254</td><td>Control by Group ID</td></tr>
</table>
Himalaya 1.0 do not support group off (group = off or 255)
Group off will not be supported in the future models.
Group ID value OSD
setting: 1-255
Command: 0-255
If group ID = off in the monitor than the group ID byte may not been sent.
Example: get power state command:
04 01 19 1C (without group byte)
05 01 00 19 1D (with group byte)

There will be no ACK if the group byte is different than 0</td></tr>
<tr><td>Byte 4 to Byte 39:</td><td>Data[0] to Data[N]</td><td>Data.
This field can be also empty.
If not empty then the range of Data Size, N = 0 to 36 (0x24).</td></tr>
<tr><td>Last Byte:</td><td>Checksum</td><td>Checksum.
Range = 0 to 255 (0xFF).
Algorithm: The EXCLUSIVE-OR (XOR) of all bytes in the message except the checksum itself.
Checksum = [MSG-SIZE] XOR [CONTROL] XOR [GROUP] XOR DATA[0] … XOR DATA[N]</td></tr>
</table>

2.3 MESSAGES – SYSTEM

2.4 Communication Control

This defines the feedback command from Philips Professional Display 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

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x00 = Communication Control – Report**		Generic report message after Get or Set message
DATA[1]	Communication Control		0x06 = Acknowledge (ACK) 0x15 = Not Acknowledge (NACK) 0x18 = Not Available (NAV). Command not available, not relevant or cannot execute

Example
Send:

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum	Description
0x06	0x01	**0x00**	0x00	0x01	0x06	

ACK reply: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum	Description
0x06	0x01	**0x00**	0x00	0x06	0x01	Command is well executed.

Example
Send:

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum	Description
0x06	0x01	**0x00**	0x17	0x01	0x11	

NACK reply: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum	Description
0x06	0x01	**0x00**	0x00	0x15	0x12	Wrong command code-Data (0), the system will reply “NACK”.

Example
Send:

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum	Description
0x06	0x01	**0x00**	0x00	0x01	0x06	

NAV reply: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum	Description
0x06	0x01	**0x00**	0x00	0x18	0x1F	Checksum error, the system will reply “NAV”.

Example
Send:

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum	Description
0x06	0x01	**0x00**	0x00	0x04	0x03	

NAV reply: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum	Description
0x06	0x01	**0x00**	0x00	0x18	0x1F	Wrong parameter-Data (1), the system will reply “NAV”.

Example
Send:

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum	Description
0x06	0x01	**0x00**	0x00	0x01	0x06	

NAV reply: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum	Description
0x06	0x01	**0x00**	0x00	0x18	0x1F	Command is correct, while system is already in stand–by mode, so reply "NAV".

Example
Send:

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum	Description
0x06	0x01	**0x00**	0x00	0x01	0x06	

No reply: (Display address 01- not active ID)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum	Description
0x06	0x01	**0x00**	0x00	0x18	0x1F	Command is correct, while system would NOT reply any message due to it's not active.

Example
Send:

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum	Description
0x06	0x01	**0x00**	0x00	0x01	0x06	

No reply: (Display address 00- Broadcast ID)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum	Description
0x06	0x01	**0x00**	0x00	0x18	0x1F	Command is correct; all systems would NOT reply any message due to "Daisy Chain's limitation- Collision might occur.

3 Platform, SICP version, Model Number and FW, SW Version numbers

This command provides the complete set of Model & Version information

3.1 Message-Get (SICP version, platform information)

Bytes	Bytes Description	Bits	Description
DATA[0]	**0xA2 = Get Platform and Version Labels**		Request the SICP version
DATA[1]	Which Label		0x00 = Get SICP implementation version 0x01 = Get the platform label (Ex: Eagle, Phoenix, Himalaya, Dragon) 0x02 = Get the platform version (Ex: Eagle 1.2, Eagle 1.3, Phoenix 1.0, Himalaya 1.0, Dragon 1.0, 10BDL3051T 1.0)

Example: Get SICP version (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0xA2	0x00	0xA5

3.2 Message Report (SICP version, platform information)

Bytes	Bytes Description	Bits	Description
DATA[0]	**0xA2 = Platform and Version Label – Report**		Request the internal Hardware (platform) 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.

3.3 Message-Get (Model Number, FW Version, Build date)

Bytes	Bytes Description	Bits	Description
DATA[0]	**0xA1 = Get Model Number & FW version of device with Date**		Request the Model Number and FW version of the device
DATA[1]	Codes to request		0x00 = Model Number 0x01 = FW version 0x02 = Build Date

3.4 Message-Report (Model Number, FW Version, Build date)

In case of having two firmware versions (scaler, Android) or more, please report all with space character in between each of them.

Bytes	Bytes Description	Bits	Description
DATA[0]	**0xA1 = Report – Model Number & FW version of device with Date**		Request the Model number, FW version, FW build date
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.

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]	**0x19 = Power state – Get**		Command requests the display to report its current power state

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x19	0x1D

4.1.2 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 (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x19	0x02	0x1C

Special Note: 2016 model 10BDL3051T defines DATA[1] meaning as below
0x01 = Power Off (backlight off/CPU clock low)
0x02 = On (means backlight on/CPU clock normal)

4.1.3 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

Example: Power State Deep Sleep (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x18	0x01	0x1E

Special Note: 2016 model 10BDL3051T defines DATA[1] meaning as below
0x01 = Power Off (backlight off/CPU clock low)
0x02 = On (means backlight on/CPU clock normal)

4.2 Lock Functions for IR-Remote Control & Keypad

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

4.2.1 Message-Get (IR-Remote Control)

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)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x1D	0x19

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/ Primary/Secondary 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 0x05 = Primary (Master) 0x06 = Secondary (Daisy chain PD) 0x07 = Lock all except Power & Volume

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

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x1D	0x01	0x1B

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/ Primary/Secondary 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 0x05 = Primary (Master) 0x06 = Secondary (Daisy chain PD) 0x07 = Lock all except Power & Volume

Example: IR Remote Control – lock all but power (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x1C	0x03	0x18

4.2.3 Message-Get (Keypad)

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x1B = Get – Keypad Lock Status**		Get unlock all /lock all/lock all but power/ lock all but Volume

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x1B	0x1F

4.2.4 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 0x03 = Lock all but Power 0x04 = Lock all but Volume 0x07 = Lock all except Power & Volume

Example: Reporting status of Keypad indicating Lock all for (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x1B	0x02	0x1E

4.2.5 Message-Set (Keypad)

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x1A = Set – Keypad Lock Status**		Set 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 0x03 = Lock all but Power 0x04 = Lock all but Volume 0x07 = Lock all except Power & Volume

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

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x1A	0x02	0x1F

4.3 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. In the OSD setting of the monitor it is called “switch on state”.

4.3.1 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)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0xA4	0xA0

4.3.2 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 at Cold Start		0x00 = Power Off 0x01 = Forced On 0x02 = Last Status

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

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0xA4	0x02	0xA1

4.3.3 Message-Set

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0xA3 = Power at Cold Start – Set**		Set Power state at Cold Start
DATA[1]	Power 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 automatically switched Off (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 (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0xA3	0x02	0xA6

4.4 MESSAGES – INPUT SOURCES

4.4.1 Input Source

This command is used to change or to get the current input source.

4.4.1.1 *Message-Set*

DATA[1] or DATA[2] or both will set the current source value as below. They can't be different values – this is just to maintain support for legacy CMDs. If supplied with different values for DATA[1] or DATA[2], results may be unpredictable.

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/Number		0x01 = VIDEO 0x02 = S-VIDEO 0x03 = COMPONENT 0x04 = CVI 2 (not applicable) 0x05 = VGA 0x06 = HDMI 2 0x07 = Display Port 2 0x08 = USB 2 0x09 = Card DVI-D 0x0A = Display Port 1 0x0B= Card OPS 0x0C = USB 1 0x0D= HDMI 0x0E= DVI-D 0x0F = HDMI3 0x10= BROWSER 0x11= SMARTCMS 0X12= DMS (Digital Media Server) 0x13= INTERNAL STORAGE 0x14= Reserved 0x15= Reserved 0x16= Media Player 0x17= PDF Player 0x18= Custom

DATA[2]	Reserved		0x01 = VIDEO 0x02 = S-VIDEO 0x03 = COMPONENT 0x04 = CVI 2 (not applicable) 0x05 = VGA 0x06 = HDMI 2 0x07 = Display Port 2 0x08 = USB 2 0x09 = Card DVI-D 0x0A = Display Port 1 0x0B= Card OPS 0x0C = USB 1 0x0D= HDMI 0x0E= DVI-D 0x0F = HDMI3 0x10= BROWSER 0x11= SMARTCMS 0X12= DMS (Digital Media Server) 0x13= INTERNAL STORAGE 0x14= Reserved 0x15= Reserved 0x16= Media Player 0x17= PDF Player 0x18= Custom
DATA[3]	OSD Style	Bit7	Reserved
		Bit6	Do not switch. Source is made current. Set is updated with the details of this source; however, source change is performed. 1 = Do not switch. 0 = Switch
		Bit2.0	Source info. Display Style 0 = Reserved 1 = Source label
DATA[4]	Mute Style	Bit 7	(Reserved, value is 0)
		Bit 6	(Reserved, value is 0)
		Bit 5	(Reserved, value is 0)
		Bit 4	(Reserved, value is 0)
		Bit 3	(Reserved, value is 0)
		Bit 2	(Reserved, value is 0)
		Bit 1	(Reserved, value is 0)
		Bit 0	(Reserved, value is 0)

Example: Set on DVI-D with Source label displaying on OSD (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)	Checksum
0x09	0x01	**0x00**	0xAC	0x09	0x09	0x01	0x00	0xA5

Source command examples:

HDMI 1 : 09 01 00 AC 0D 09 01 00 A1 Ack: 06 01 01 00 06 00
HDMI 2 : 09 01 00 AC 06 09 01 00 AA Ack: 06 01 01 00 06 00
HDMI 3 : 09 01 00 AC 0F 09 01 00 A3 Ack: 06 01 01 00 06 00
DVI : 09 01 00 AC 0E 09 01 00 A2 Ack: 06 01 01 00 06 00
AV : 09 01 00 AC 01 09 01 00 AD Ack: 06 01 01 00 06 00
YPBPR : 09 01 00 AC 03 09 01 00 AF Ack: 06 01 01 00 06 00
VGA : 09 01 00 AC 05 09 01 00 A9 Ack: 06 01 01 00 06 00
DP : 09 01 00 AC 0A 09 01 00 A6 Ack: 06 01 01 00 06 00

USB : 09 01 00 AC 0C 09 01 00 A0 Ack: 06 01 01 00 06 00
OPS : 09 01 00 AC 0B 09 01 00 A7 Ack: 06 01 01 00 06 00
BROWSER: 09 01 00 AC 10 09 01 00 BC Ack: 06 01 01 00 06 00
SMARTCMS: 09 01 00 AC 11 09 01 00 BD Ack: 06 01 01 00 06 00
Media player: 09 01 00 AC 16 09 01 00 BA Ack: 06 01 01 00 06 00
PDF player: 09 01 00 AC 17 09 01 00 BB Ack: 06 01 01 00 06 00
Custom : 09 01 00 AC 18 09 01 00 B4 Ack: 06 01 01 00 06 00

4.4.1.2 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)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0xAD	0xA9

4.4.1.3 Message-Report

DATA[1] or DATA[2] or both will get the current source value as below.
DATA[3], DATA[4] can be ignored by requestor or may not be returned by device depending on model .

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/Number**		0x01 = VIDEO 0x02 = S-VIDEO 0x03 = COMPONENT 0x04 = CVI 2 (not applicable) 0x05 = VGA 0x06 = HDMI 2 0x07 = Display Port 2 0x08 = USB 2 0x09 = Card DVI-D 0x0A = Display Port 1 0x0B= Card OPS 0x0C = USB 1 0x0D= HDMI 0x0E= DVI-D 0x0F = HDMI3 0x10= BROWSER 0x11= SMARTCMS 0X12= DMS (Digital Media Server) 0x13= INTERNAL STORAGE 0x14= Reserved 0x15= Reserved 0x16= Media Player 0x17= PDF Player 0x18= Custom

DATA[2]	**Reserved**		0x01 = VIDEO 0x02 = S-VIDEO 0x03 = COMPONENT 0x04 = CVI 2 (not applicable) 0x05 = VGA 0x06 = HDMI 2 0x07 = Display Port 2 0x08 = USB 2 0x09 = Card DVI-D 0x0A = Display Port 1 0x0B= Card OPS 0x0C = USB 1 0x0D= HDMI 0x0E= DVI-D 0x0F = HDMI3 0x10= BROWSER 0x11= SMARTCMS 0X12= DMS (Digital Media Server) 0x13= INTERNAL STORAGE 0x14= Reserved 0x15= Reserved 0x16= Media Player

			0x17= PDF Player 0x18= Custom
DATA[3]	**OSD Style**	Bit7	Reserved
		Bit6	Reserved
		Bit2.0	Source info. Display Style 0 = Reserved 1 = Source label
DATA[4]	**Mute Style**	Bit 7	(Reserved, value is 0)
		Bit 6	(Reserved, value is 0)
		Bit 5	(Reserved, value is 0)
		Bit 4	(Reserved, value is 0)
		Bit 3	(Reserved, value is 0)
		Bit 2	(Reserved, value is 0)
		Bit 1	(Reserved, value is 0)
		Bit 0	(Reserved, value is 0)

Example: Current Input Source: VIDEO *(Display address 01)*

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)	Checksum
0x09	0x01	**0x00**	0xAD	0xFD	0x01	0x00	0x00	0x59

4.5 Auto Signal Detecting / Failover

Failover means, if current input source has no signal system will switch to another based on settings as defined by commands below. The specification file explains the usage/behaviour.

4.5.1 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)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0xAF	0xAB

4.5.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	**0xAF = Auto Signal Detecting – Report**		Command reports Auto Signal Detecting Setting
DATA[1]	**On / All / PC sources only / Video sources only / Failover**		**0x00 = Off** **0x01 = All** **0x02 = Reserved** **0x03 = PC sources only** **0x04 = Video sources only** **0x05 = Failover**

Special Note:

2016 Dragon 1.0 (see platform) excludes DATA [1] values below
0x03 = PC sources only 0x04 = Video sources only

Example: Current Display settings: Off and All (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0xAF	0x00	0xA8
0x06	0x01	**0x00**	0xAF	0x01	0xA9

4.5.3 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 / All /PC sources only / Video sources only / Failover**		**0x00 = Off** **0x01 = All** **0x02 = Reserved** **0x03 = PC sources only** **0x04 = Video sources only** **0x05 = Failover**

Special Note:

2016 Dragon 1.0 (see platform) excludes DATA [1] values below
0x03 = PC sources only 0x04 = Video sources only

Example: Set the Display to the fallowing: Auto Signal Detecting Off (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0xAE	0x00	0xA9

4.5.4 Message-Get

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0xA6 = Failover – Get**		**Command requests the display to report its current Failover status**

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	**0xA6**	

4.5.5 Message-Report

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0xA6 = Failover – Report**		Command reports Failover Setting
DATA[1]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**1st priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** 0x10= Media Player 0x11= PDF Player 0x12= Custom

DATA[2]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**2nd priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** 0x10= Media Player 0x11= PDF Player 0x12= Custom
DATA[3]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**3rd priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** 0x10= Media Player 0x11= PDF Player 0x12= Custom

DATA[4]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**4th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** 0x10= Media Player 0x11= PDF Player 0x12= Custom
DATA[5]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**5th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** 0x10= Media Player 0x11= PDF Player 0x12= Custom

DATA[6]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**6th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** 0x10= Media Player 0x11= PDF Player 0x12= Custom
DATA[7]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**7th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** 0x10= Media Player 0x11= PDF Player 0x12= Custom

DATA[8]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**8th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** 0x10= Media Player 0x11= PDF Player 0x12= Custom
DATA[9]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**9th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** 0x10= Media Player 0x11= PDF Player 0x12= Custom

DATA[10]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay**		**10th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** 0x10= Media Player 0x11= PDF Player 0x12= Custom
DATA[11]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**11th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** 0x10= Media Player 0x11= PDF Player 0x12= Custom

DATA[12]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**12th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** 0x10= Media Player 0x11= PDF Player 0x12= Custom
DATA[13]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**13th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** 0x10= Media Player 0x11= PDF Player 0x12= Custom

DATA[14]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**14th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** 0x10= Media Player 0x11= PDF Player 0x12= Custom
DATA[15]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**14th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** **0x10= Media Player** **0x11= PDF Player** **0x12= Custom**

DATA[16]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**14th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** **0x10= Media Player** **0x11= PDF Player** **0x12= Custom**
DATA[17]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**14th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** **0x10= Media Player** **0x11= PDF Player** **0x12= Custom**

Example: Current Display settings: Sources priority = HDMI – Component – Composite – Display Port – DVI-D – VGA – OPS – USB – Browser – SmartCMS – Internal Storage – DMS – HDMI 2 – HDMI3 (Display address 01)

MsgSize	**Control**	**Group**	**Data (0)**	**Data (1)**	**Data (2)**	**Data (3)**	**Data (4)**	**Data (5)**
0x0D	**0x01**	**0x00**	**0xA6**	**0x00**	**0x01**	**0x02**	**0x03**	**0x04**
Data (6)	**Data (7)**	**Data (8)**	**Data (9)**	**Data (10)**	**Data (11)**	**Data (12)**	**Data (13)**	
0x05	**0x06**	**0x07**	**0x08**	**0x09**	**0x0A**	**0x0B**	**0x0C**	
Data (14)	**Data (15)**	**Data (16)**	**Data (17)**	**Checksum**				
0x0D								

4.5.6 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0xA5 = Failover – Set**		Command to change the Failover setting of the display
DATA[1]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**1st priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay** **0x10= Media Player** **0x11= PDF Player** **0x12= Custom**
DATA[2]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay / Media Player / PDF player / Custom**		**2nd priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay**

DATA[3]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay**		**3rd priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay**
DATA[4]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay**		**4th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay**
DATA[5]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3/ USB Playlist / USB AutoPlay**		**5th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay**

DATA[6]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay**		**6th priority: 0x00 = HDMI 0x01 = Component 0x02 = Composite 0x03 = Display Port 0x04 = DVI-D 0x05 = VGA 0x06 = OPS 0x07 = USB 0x08 = Browser 0x09 = SmartCMS 0x0A= Internal Storage 0x0B = DMS (Digital Media Server) 0x0C = HDMI2 0x0D = HDMI3 0x0E = USB Playlist 0x0F = USB AutoPlay**
DATA[7]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3/ USB Playlist / USB AutoPlay**		**7th priority: 0x00 = HDMI 0x01 = Component 0x02 = Composite 0x03 = Display Port 0x04 = DVI-D 0x05 = VGA 0x06 = OPS 0x07 = USB 0x08 = Browser 0x09 = SmartCMS 0x0A= Internal Storage 0x0B = DMS (Digital Media Server) 0x0C = HDMI2 0x0D = HDMI3 0x0E = USB Playlist 0x0F = USB AutoPlay**
DATA[8]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3/ USB Playlist / USB AutoPlay**		**8th priority: 0x00 = HDMI 0x01 = Component 0x02 = Composite 0x03 = Display Port 0x04 = DVI-D 0x05 = VGA 0x06 = OPS 0x07 = USB 0x08 = Browser 0x09 = SmartCMS 0x0A= Internal Storage 0x0B = DMS (Digital Media Server) 0x0C = HDMI2 0x0D = HDMI3 0x0E = USB Playlist 0x0F = USB AutoPlay**

DATA[9]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay**		**8th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay**
DATA[10]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay**		**8th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay**
DATA[11]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay**		**8th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay**

DATA[12]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay**		**8th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay**
DATA[13]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay**		**13th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay**
DATA[14]	**HDMI / Component / Composite / Display Port / DVI-D / VGA / OPS / USB / Browser / SmartCMS / Internal Storage / DMS / HDMI 2/ HDMI 3 / USB Playlist / USB AutoPlay**		**14th priority:** **0x00 = HDMI** **0x01 = Component** **0x02 = Composite** **0x03 = Display Port** **0x04 = DVI-D** **0x05 = VGA** **0x06 = OPS** **0x07 = USB** **0x08 = Browser** **0x09 = SmartCMS** **0x0A= Internal Storage** **0x0B = DMS (Digital Media Server)** **0x0C = HDMI2** **0x0D = HDMI3** **0x0E = USB Playlist** **0x0F = USB AutoPlay**

Example: Set the Display to the fallowing: Sources priority = HDMI – Component – Composite – Display Port – DVI-D – VGA – OPS – USB – Browser – SmartCMS – Internal Storage – DMS – HDMI2 – HDMI3 (Display address 01)

MsgSize	**Control**	**Group**	**Data (0)**	**Data (1)**	**Data (2)**	**Data (3)**	**Data (4)**	**Data (5)**
0x0D	**0x01**	**0x00**	**0xA5**	**0x00**	**0x01**	**0x02**	**0x03**	**0x04**
Data (6)	**Data (7)**	**Data (8)**	**Data (9)**	**Data (10)**	**Data (11)**	**Data (12)**	**Data (13)**	
0x05	**0x06**	**0x07**	**0x08**	**0x09**	**0x0A**	**0x0B**	**0x0C**	
Data (14)	**Checksum**							
0x0D	**A8**							

5. MESSAGES – VIDEO

5.1 Video Parameters

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

5.1.1 Message-Get Video parameters

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

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x33	0x37

5.1.2 Message-Report Video parameters

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x33 = Video Parameters – Report**		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.
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 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= Native, 0x02 = S gamma, 0x03 = 2.2, 0x04 = 2.4, **0x05 = D-image(DICOM gamma)**

SPECIAL NOTE: Following table applicable for Phoenix 2.0 platform only (year 2015 BDLxx70EL/BDLxx90VL/BDLxx30QL/BDLxx35QL)

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x33 = Video Parameters – Report**		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.
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 10 (%) of the user selectable range of the display.
DATA[5]	Tint (Hue)		-50 to +50 (%) 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= Native, 0x02 = S gamma, 0x03 = 2.2, 0x04 = 2.4, **0x05 = D-image(DICOM gamma)**

Example: All video parameters are set to 55 % (0x37) (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)	Data (5)	Data (6)	Data (7)	Checksum
0x0C	0x01	**0x00**	0x33	0x37	0x37	0x37	0x37	0x37	0x37	0x03	0x3D

5.1.3 Message-Set Video parameters

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x32 = Video Parameters – Set**		Command to change the current video parameters
DATA[1]	Brightness.		0 to 100 (%) of the user selectable range of the display.
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 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= Native, 0x02 = S gamma, 0x03 = 2.2, 0x04 = 2.4, **0x05 = D-image(DICOM gamma)**

NOTE: Following table applicable for Phoenix 2.0 platform only (year 2015 BDLxx70EL/BDLxx90VL/BDLxx30QL/BDLxx35QL)

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x32 = Video Parameters – Set**		Command to change the current video parameters
DATA[1]	Brightness.		0 to 100 (%) of the user selectable range of the display.
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 10 (%) of the user selectable range of the display.
DATA[5]	Tint (Hue)		-50 to +50 (%) 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= Native, 0x02 = S gamma, 0x03 = 2.2, 0x04 = 2.4, **0x05 = D-image(DICOM gamma)**

NOTE: Following table applicable for Phoenix 2.0 platform only (year 2015 BDLxx70EL/BDLxx90VL/BDLxx30QL/BDLxx35QL)

NOTE: Tint(Hue) value (-50) ～ (-1)

-50	-49	-48	-47	-46	-45	-44	-43	-42	-41
0xCE	0xCF	0xD0	0xD1	0xD2	0xD3	0xD4	0xD5	0xD6	0xD7
-40	-39	-38	-37	-36	-35	-34	-33	-32	-31
0xD8	0xD9	0xDA	0xDB	0xDC	0xDD	0xDE	0xDF	0xE0	0xE1
-30	-29	-28	-27	-26	-25	-24	-23	-22	-21
0xE2	0xE3	0xE4	0xE5	0xE6	0xE7	0xE8	0xE9	0xEA	0xEB
-20	-19	-18	-17	-16	-15	-14	-13	-12	-11
0xEC	0xED	0xEE	0xEF	0xF0	0xF1	0xF2	0xF3	0xF4	0xF5
-10	-9	-8	-7	-6	-5	-4	-3	-2	-1
0xF6	0xF7	0xF8	0xF9	0xFA	0xFB	0xFC	0xFD	0xFE	0xFF

Example: Set all video parameters to 0x37 (55 %) (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)	Data (5)	Data (6)	Data (7)
0x0C	0x01	**0x00**	0x32	0x37	0x37	0x37	0x37	0x37	0x37	0x03

Checksum	
0x3C	

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

5.1.4 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)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x35	0x31

5.1.5 Message-Report Color Temperature

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** 0x01 = Native 0x02 = 11000K(Not applicable) 0x03 = 10000K 0x04 = 9300K 0x05 = 7500K 0x06 = 6500K 0x07 = 5770K (Not applicable) 0x08 = 5500K(Not applicable) 0x09 = 5000K 0x0A = 4000K 0x0B = 3400K (Not applicable) 0x0C = 3350K (Not applicable) 0x0D = 3000K 0x0E = 2800K (Not applicable) 0x0F = 2600K (Not applicable) 0x10 = 1850K (Not applicable) **0x12 = User 2**

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

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x35	0x01	0x33

5.1.6 Message-Set Color Temperature

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x34 = Color Temperature – Set**		Command to change the current color parameters
DATA[1]	Color temperature		0x00 = **User 1** 0x01 = Native 0x02 = 11000K(Not applicable) 0x03 = 10000K 0x04 = 9300K 0x05 = 7500K 0x06 = 6500K 0x07 = 5770K (Not pplicable) 0x08 = 5500K(Not applicable) 0x09 = 5000K 0x0A = 4000K 0x0B = 3400K (Not applicable) 0x0C = 3350K (Not applicable) 0x0D = 3000K

			0x0E = 2800K (Not applicable) 0x0F = 2600K (Not applicable) 0x10 = 1850K (Not applicable) **0x12 = User 2**

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

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x34	0x01	0x32

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

5.1.7 Message-Get RGB parameters

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)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x37	0x33

5.1.8 Message-Report RGB parameters

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x37 = Color Parameters – Report**		Command reports to the host controller the current color parameters of the display.
DATA[1]	Red color gain value		0 to 255 of the user selectable range of the display.
DATA[2]	Green color gain value		0 to 255 of the user selectable range of the display.
DATA[3]	Blue color gain value		0 to 255 of the user selectable range of the display.
DATA[4]	Red color offset value		0 to 255 of the user selectable range of the display.
DATA[5]	Green color offset value		0 to 255 of the user selectable range of the display.
DATA[6]	Blue color offset value		0 to 255 of the user selectable range of the display.

Example: All color parameters are set to 255 (0xFF) (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)	Data (5)	Data (6)	Check
0x0B	0x01	**0x00**	0x37	0xFF	0xFF	0xFF	0xFF	0xFF	0xFF	0x3D

5.1.9 Message-Set RGB parameters

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x36 = Color Parameters – Set**		Command to change the current color parameters
DATA[1]	Red color gain value		0 to 255 of the user selectable range of the display.
DATA[2]	Green color gain value		0 to 255 of the user selectable range of the display.
DATA[3]	Blue color gain value		0 to 255 of the user selectable range of the display.
DATA[4]	Red color offset value		0 to 255 of the user selectable range of the display.
DATA[5]	Green color offset value		0 to 255 of the user selectable range of the display.
DATA[6]	Blue color offset value		0 to 255 of the user selectable range of the display.

Example: All color parameters are set to 255 (0xFF) (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)	Data (5)	Data (6)	Check
0x0B	0x01	**0x00**	0x36	0xFF	0xFF	0xFF	0xFF	0xFF	0xFF	0x3C

The following commands are used to get/set the color temperature 100K/step adjustment.

5.1.9.1 Message-Get Color Temperature 100K steps

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x12 = Color Temperature 100K steps – Get**		Command requests the display to report its current color temperature 100K steps.

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x12	0x16

5.1.9.2 Message-Report Color Temperature 100K steps

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x12 = Color Temperature 100K – Report**		Command reports to the host controller the current color temperature 100K steps of the display.
DATA[1]	**Color temperature steps**		20 to 100 of the user selectable range of the display. 0x14(20) = 2000K 0x15(21)= 2100K 0x16(22) = 2200K …………….. 0x61(97) = 9700K 0x62(98) = 9800K 0x63(99) = 9900K 0x64(100) = 10000K

NOTE: Following table applicable for Phoenix 2.0 platform only (year 2015 BDLxx70EL/BDLxx90VL/BDLxx30QL/BDLxx35QL)

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x12 = Color Temperature 100K – Report**		Command reports to the host controller the current color temperature 100K steps of the display.
DATA[1]	**Color temperature steps**		20 to 100 of the user selectable range of the display. **0x1A(26) = 2600K** **0x1B(27) = 2700K** **0x1C(28) = 2800K** …………….. 0x61(97) = 9700K 0x62(98) = 9800K 0x63(99) = 9900K 0x64(100) = 10000K

Example: The current color temperature is set to 10000K (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x12	0x64	0x71

5.1.9.3 Message-Set Color Temperature 100K steps

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x11 = Color Temperature 100K steps – Set**		Command to change the current color temperature 100K steps
DATA[1]	Color temperature		20 to 100 of the user selectable range of the display. 0x14(20) = 2000K

			0x15(21)= 2100K 0x16(22) = 2200K …………….. 0x61(97) = 9700K 0x62(98) = 9800K 0x63(99) = 9900K 0x64(100) = 10000K

NOTE: Following table applicable for Phoenix 2.0 platform only (year 2015 BDLxx70EL/BDLxx90VL/BDLxx30QL/BDLxx35QL)

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x11 = Color Temperature 100K steps – Set**		Command to change the current color temperature 100K steps
DATA[1]	Color temperature		20 to 100 of the user selectable range of the display. **0x1A(26) = 2600K** **0x1B(27) = 2700K** **0x1C(28) = 2800K** …………….. 0x61(97) = 9700K 0x62(98) = 9800K 0x63(99) = 9900K 0x64(100) = 10000K

Example: The current color temperature is set to 10000K (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x11	0x64	0x72

5.2 Picture Format

This command is used to control the display screen format.

5.2.1 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)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x3B	0x3F

5.2.2 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*	Bit 7..4	Not used.
		Bit 3..0	Picture Format. 0x00 = Normal (4:3) 0x01 = Custom 0x02 = Real (1:1) 0x03 = Full 0x04 = 21:9 0x05 = Dynamic 0x06 = 16:9

Special Note:-

DATA [1] value 0x05 = Dynamic not supported in 2016 Dragon 1.0 (see platform list).

* For further explanations, please see section 6.2.3 – Message-Set.

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

MsgSize	Control	**Group**	Data (0)	Data (0)	Checksum
0x06	0x01	**0x00**	0x3B	0x03	0x3F

5.2.3 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	Bit 7..4	Not used.
		Bit 3..0	Picture Format. 0x00 = Normal 0x01 = Custom 0x02 = Real 0x03 = Full 0x04 = 21:9 0x05 = Dynamic 0x06 = 16:9

Special Note:-

DATA [1] value 0x05 = Dynamic not supported in 2016 Dragon 1.x (see platform list)

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 (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (0)	Checksum
0x06	0x01	**0x00**	0x3A	0x03	0x3E

5.3 VGA video Parameters

This command is used to control the VGA video parameters.
Value in(0,10,20,30,40,50,60,70,80,90,100)

5.3.1 Message-Get

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x39 = VGA Video Parameters – Get**		Command requests the display to report its VGA current video parameters.

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x39	0x3D

5.3.2 Message-Report

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x39 = VGA Video Parameters – Report**		Command reports to the host controller the VGA current video parameters of the display.
DATA[1]	Clock		0 to 100 (%) of the user selectable range of the display.
DATA[2]	Clock Phase		0 to 100 (%) of the user selectable range of the display.
DATA[3]	H. position		0 to 100 (%) of the user selectable range of the display.
DATA[4]	V. Position		0 to 100 (%) of the user selectable range of the display.

Example: All VGA video parameters are set to 55 % (0x37) (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)	Checksum
0x09	0x01	**0x00**	0x39	0x37	0x37	0x37	0x37	0x31

5.3.4 Message-Set

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x38 = VGA Video Parameters – Set**		Command to change the VGA current video parameters
DATA[1]	Clock(Invalid)		0 to 100 (%) of the user selectable range of the display.
DATA[2]	Clock Phase(Invalid)		0 to 100 (%) of the user selectable range of the display.
DATA[3]	H. position		0 to 100 (%) of the user selectable range of the display.
DATA[4]	V. Position		0 to 100 (%) of the user selectable range of the display.

Example: Set all VGA video parameters to 0x37 (55 %) (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)	Checksum
0x09	0x01	**0x00**	0x38	0x37	0x37	0x37	0x37	0x30

5.4 Picture-in-Picture (PIP)

This command is used to control PIP on/off with different Quadrants of the screen.

5.4.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x3D = Picture-in-Picture – Get**		Command requests the display to get the specified PIP settings.

Example: Get PIP setting (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x3D	0x39

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 settings.
DATA[1]	Picture-in-Picture	Bit 7..4	(reserved, default 0)
		Bit 0..3	0x00 = Off 0x01 = On (PIP) 0x02 = POP 0x03 = Quick swap 0x04 = PBP 2win 0x05 = PBP 3win 0x06 = PBP 4win 0x07 = PBP 3win-1 0x08 = PBP 3win-2 0x09 = PBP 4win-1 0x0A = SICP (Custom) Note: see platform list: 1.Eagle 1.3 platform only support (0x00 / 0x01) 2.HIMALAYA platform only support (0x00 ~0x06) 3.DRAGON 1.0 platform only support (0x00/ 0x01/ 0x03 /0x04 / 0x0A) 4.Phoenix platform doesn't support PIP
DATA[2]	Additional PIP parameters	Bit 7..3	(reserved, default 0)
		Bit 2..0	Position of the PIP window: 0x00 = position 0 (typically bottom-left) 0x01 = position 1 (typically top-left) 0x02 = position 2 (typically top-right) 0x03 = position 3 (typically bottom-right) 0x04 = position 4 (typically center).
DATA[3]			(reserved, default 0)
DATA[4]			(reserved, default 0)

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

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)	Checksum
0x09	0x01	**0x00**	0x3D	0x01	0x02	0x00	0x00	0x36

5.4.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x3C = Picture-in-Picture – Set**		Command requests the display to set the specified PIP settings.
DATA[1]	Picture-in-Picture	Bit 7..4	(reserved, default 0)
		Bit 0..3	0x00 = Off 0x01 = On (PIP) 0x02 = POP 0x03 = Quick swap 0x04 = PBP 2win 0x05 = PBP 3win 0x06 = PBP 4win 0x07 = PBP 3win-1 0x08 = PBP 3win-2 0x09 = PBP 4win-1 0x0A = SICP (Custom) Note: see platform list 1.Eagle 1.3 platform only support (0x00 / 0x01) 2.HIMALAYA platform only support (0x00 ~0x06) 3.DRAGON platform only support (0x00 / 0x01/ 0x03 /0x04 / 0x0A) 4.Phoenix platform doesn't support PIP
DATA[2]	Additional PIP parameters	Bit 7..2	(reserved, default 0)
		Bit 1..0	Position of the PIP window: 0x00 = position 0 (typically bottom-left) 0x01 = position 1 (typically top-left) 0x02 = position 2 (typically top-right) 0x03 = position 3 (typically bottom-right) 0x04 = position 4 (typically center).
DATA[3]			(reserved, default 0)
DATA[4]			(reserved, default 0)

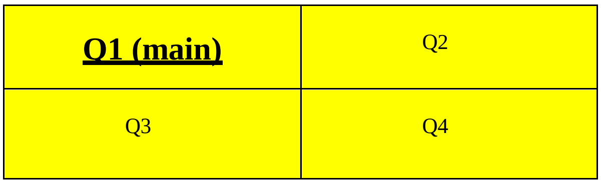
Example: Set PIP ON, top-right (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)	Checksum
0x09	0x01	**0x00**	0x3C	0x01	0x02	0x00	0x00	0x37

5.4.4 Picture-In-Picture (PIP) Source

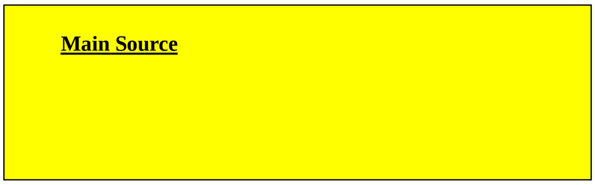
This command is used to control the PIP source settings for each display quadrant on the screen.

2015, 2016 Himalaya 1.x platform carries the following PIP Design only
Example: If display resolution is 4K2K, user can select input source for each Full HD quadrant.



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

2016 Dragon 1.x platform and older platforms (Eagle) carries the following PIP Design only.



5.4.4.1 Message-Get PIP source

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x85 = PIP Source – Get**		Command requests the display to report its current PIP source setting.

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)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x85	0x81

5.4.4.2 Message-Report PIP source

2016 Dragon 1.x platform DATA[3] & DATA[4] are invalid.
Return bytes are DATA[0]~DATA[2]+Checksum byte.

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x85 = PIP Source – Get**		Command requests the display to report its current PIP source setting.
DATA[1]	Source Type		0xFD = Input Source (normal state) 0xFE = Reserved for smartcard
DATA[2]	Q2 Source Number		If Source types == 0xFD then… 0x01 = VIDEO 0x02 = S-VIDEO 0x03 = COMPONENT 0x04 = CVI 2 (not applicable)

			0x05 = VGA 0x06 = HDMI 2 0x07 = Display Port 2 0x08 = USB 2 0x09 = Card DVI-D 0x0A = Display Port 0x0B= Card OPS 0x0C = USB 0x0D= HDMI 0x0E= DVI-D 0x0F = HDMI3 0x10= BROWSER 0x11= SMARTCMS 0X12= DMS (Digital Media Server) 0x13= INTERNAL STORAGE 0x14= Reserved 0x15= Reserved 0x16= Media Player 0x17= PDF Player 0x18= Custom
DATA[3]	Q3 Source Number		If Source type == 0xFD then… 0x01 = VIDEO 0x02 = S-VIDEO 0x03 = COMPONENT 0x04 = CVI 2 (not applicable) 0x05 = VGA 0x06 = HDMI 2 0x07 = Display Port 2 0x08 = USB 2 0x09 = Card DVI-D 0x0A = Display Port 0x0B= Card OPS 0x0C = USB 0x0D= HDMI 0x0E= DVI-D 0x0F = HDMI3 0x10= BROWSER 0x11= SMARTCMS 0X12= DMS (Digital Media Server) 0x13= INTERNAL STORAGE 0x14= Reserved 0x15= Reserved 0x16= Media Player 0x17= PDF Player 0x18= Custom
DATA[4]	Q4 Source Number		If Source type == 0xFD then… 0x01 = VIDEO 0x02 = S-VIDEO 0x03 = COMPONENT 0x04 = CVI 2 (not applicable) 0x05 = VGA 0x06 = HDMI 2 0x07 = Display Port 2 0x08 = USB 2 0x09 = Card DVI-D 0x0A = Display Port

			0x0B= Card OPS 0x0C = USB 0x0D= HDMI 0x0E= DVI-D 0x0F = HDMI3 0x10= BROWSER 0x11= SMARTCMS 0X12= DMS (Digital Media Server) 0x13= INTERNAL STORAGE 0x14= Reserved 0x15= Reserved 0x16= Media Player 0x17= PDF Player 0x18= Custom

Example: Get PIP source report (Display address 01, Q2 Video, Q3 VGA, Q4 DVI-D)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data(3)	Data(4)	Checksum
0x09	0x01	**0x00**	0x85	0xFD	0x01	0x05	0x0E	0x7A

5.4.4.3 Message-Set

This is the PIP source selection command

2016 Dragon 1.x platform – DATA[3] & DATA[4] are invalid.
Return bytes are DATA[0]~DATA[2]+Checksum byte.

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x84 = PIP Source – Set**		Command requests the display to set the specified PIP source.
DATA[1]	Source Type		0xFD = Input Source (normal state) 0xFE = Reserved for smartcard
DATA[2]	Q2 Source Number		If Source type == 0xFD then… 0x01 = VIDEO 0x02 = S-VIDEO 0x03 = COMPONENT 0x04 = CVI 2 (not applicable) 0x05 = VGA 0x06 = HDMI 2 0x07 = Display Port 2 0x08 = USB 2 0x09 = Card DVI-D 0x0A = Display Port 0x0B= Card OPS 0x0C = USB 0x0D= HDMI 0x0E= DVI-D 0x0F = HDMI3 0x10= BROWSER 0x11= SMARTCMS 0X12= DMS (Digital Media Server) 0x13= INTERNAL STORAGE 0x14= Reserved 0x15= Reserved 0x16= Media Player

			0x17= PDF Player 0x18= Custom
DATA[3]	Q3 Source Number		If Source type == 0xFD then… 0x01 = VIDEO 0x02 = S-VIDEO 0x03 = COMPONENT 0x04 = CVI 2 (not applicable) 0x05 = VGA 0x06 = HDMI 2 0x07 = Display Port 2 0x08 = USB 2 0x09 = Card DVI-D 0x0A = Display Port 0x0B= Card OPS 0x0C = USB 0x0D= HDMI 0x0E= DVI-D 0x0F = HDMI3 0x10= BROWSER 0x11= SMARTCMS 0X12= DMS (Digital Media Server) 0x13= INTERNAL STORAGE 0x14= Reserved 0x15= Reserved 0x16= Media Player 0x17= PDF Player 0x18= Custom
DATA[4]	Q4 Source Number		If Source type == 0xFD then… 0x01 = VIDEO 0x02 = S-VIDEO 0x03 = COMPONENT 0x04 = CVI 2 (not applicable) 0x05 = VGA 0x06 = HDMI 2 0x07 = Display Port 2 0x08 = USB 2 0x09 = Card DVI-D 0x0A = Display Port 0x0B= Card OPS 0x0C = USB 0x0D= HDMI 0x0E= DVI-D 0x0F = HDMI3 0x10= BROWSER 0x11= SMARTCMS 0X12= DMS (Digital Media Server) 0x13= INTERNAL STORAGE 0x14= Reserved 0x15= Reserved 0x16= Media Player 0x17= PDF Player 0x18= Custom

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

Example: Set source PIP (Display address 01, Q2 Video, Q3 VGA, Q4 DVI-D)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data(3)	Data(4)	Checksum
0x09	0x01	**0x00**	0x84	0xFD	0x01	0x05	0x0E	0x7B

6 MESSAGES – AUDIO

6.1 Volume

This command is used to set/get the volume of speaker out and audio out as it is defined as below.

6.1.1 Message-Get current volume level speakers and audio out

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

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x45	0x41

6.1.2 Message-Report current volume level speakers and audio out

This command can get current volume level for speaker & audio out individually. Valid values range from 0x00 (lowest 0% volume) through 0x64 (highest – 100% volume).
Some platforms don't have variable audio out and the report (Ack) is different, see the special note remark in this chapter.

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x45 = Volume – Report**		Command reports current Volume level
DATA[1]	Speaker Out Volume level		0 to 100 (%) of the user selectable range of the display.
DATA[2]	Audio Out Volume level		0 to 100 (%) of the user selectable range of the display.

DATA[1]	Speaker Out Volume level		0 to 60 (%) of the user selectable range of the display.
DATA[2]	Audio Out Volume level		0 to 60 (%) of the user selectable range of the display.

*Example: Current Display settings: Volume:**22% (0x16)** for Speak out and **10%(0x0A)** for Audio out (Display address 01)*

MsgSize	**Control**	**Group**	**Data (0)**	**Data (1)**	**Data (2)**	**Checksum**
0x07	**0x01**	**0x00**	**0x45**	**0x16**	**0x0A**	**0x5F**

SPECIAL NOTE:

Himalaya and Eagle don't have variable audio out and data(2) is not received.
See below example: Data(1) is the speaker out volume level 100% (0x64).

MsgSize	**Control**	**Group**	**Data (0)**	**Data (1)**	**Checksum**
0x06	**0x01**	**0x01**	**0x45**	**0x64**	**0x27**

6.1.3 Message-Set current volume level speakers and audio out

This command can set volume level for speaker & audio out individually. Valid values range from 0x00 (lowest 0% volume) through 0x64 (highest – 100% volume). If DATA [1] or [2] are higher than 0x64 no action will be taken in the display and current volume level will be maintained without any effect.
Some platforms don't have variable audio out and the command is different, see the special note remark in this chapter.

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x44 = Volume – Set**		
DATA[1]	Speaker Out Volume level		0 to 100 (%) of the user selectable range of the display.
DATA[2]	Audio Out Volume level		0 to 100 (%) of the user selectable range of the display.

DATA[1]	Speaker Out Volume level		0 to 60 (%) of the user selectable range of the display.
DATA[2]	Audio Out Volume level		0 to 60 (%) of the user selectable range of the display.

*Example: Set the Display Volume to **22% (0x16)** for Speaker out and **50 %(0x32)** for Audio out (Display address 01)*

MsgSize	Control	Group	Data (0)	Data (1)	Data (2)	Checksum
0x07	**0x01**	**0x00**	**0x44**	**0x16**	**0x32**	**0x66**

SPECIAL NOTE:

Himalaya and Eagle don't have variable audio out and data(2) may not be sent.
See below example: Data(1) is the speaker out volume level 22% (0x16).

MsgSize	Control	Group	Data(0)	Data(1)	Checksum
0x06	**0x01**	**0x00**	**0x44**	**0x16**	**0x55**

6.1.4 Message-Set Volume level – step up or step down for Speaker out or Audio Out

This command can set volume level in step up or step down a count for speaker & audio out individually.
DATA [1] or [2] must supply "0x00" to count down a step and supply "0x01" to count up a step of volume.
All other values supplied to DATA [1] or [2] will get no "response" from the display.
Some platforms don't have variable audio out and the command is different, see the special note remark in this chapter.

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x41 = Volume +/- – Set**		Adjust volume up/down
DATA[1]	Speaker Out.		0 : down, 1: up
DATA[2]	Audio Out.		0 : down, 1: up

Example: Set the Display Volume up (0x01) (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data(2)	Checksum
0x07	0x01	**0x00**	0x41	0x01	0x00	0x46

SPECIAL NOTE:

Himalaya and Eagle don't have variable audio out and data(2) may not be sent.
See below example: Data(1) is the speaker out volume.

MsgSize	Control	Group	Data(0)	Data(1)	Checksum	Volume
0x06	**0x01**	**0x00**	**0x41**	**0x00**	**0x46**	**Step -**
0x06	**0x01**	**0x00**	**0x41**	**0x01**	**0x47**	**Step +**

6.1.5 Volume Limit – Speaker out

This command is used to set or get the volume limit (minimum, maximum and switch on volume) for speaker out

6.1.5.1 Message-Set Volume Limit

Bytes	Bytes Description	Bits	Description
DATA[0]	**0xB8 = Volume Limits– Set for Speaker out**		The 3 values must conform to the rule : Min <= Switch On <= Max
DATA[1]	Minimum Volume		0 to 100 (%) of the user selectable range of the display.
DATA[2]	Maximum Volume		0 to 100 (%) of the user selectable range of the display.
DATA[3]	Switch On Volume		0 to 100 (%) of the user selectable range of the display.

Example: Set the Display Speaker out to the following: 10% (0x0A), 77% (0x4D), 50% (0x32) (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Checksum
0x08	0x01	**0x00**	0xB8	0x0A	0x4D	0x32	0xC4

6.1.5.2 Message-Get Volume Limit

2. Bytes	Bytes Description	Bits	Description
DATA[0]	**0xB6 = Volume Limits– Get for Speaker out**		The 3 values must conform to the rule : Min <= Switch On <= Max
DATA[1]	Minimum Volume		0 to 100 (%) of the user selectable range of the display.
DATA[2]	Maximum Volume		0 to 100 (%) of the user selectable range of the display.
DATA[3]	Switch On Volume		0 to 100 (%) of the user selectable range of the display.

Example: Get the Speaker out values as follows: 10% (0x0A), 77% (0x4D), 50% (0x32) (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Checksum
0x08	0x01	**0x00**	0xB6	0x0A	0x4D	0x32	0xB0

6.1.6 Volume Limit – Audio out

This command is used to set or get the volume limit (minimum, maximum and switch on volume) for Audio out

6.1.6.1 Message-Set Volume Limit – Audio out

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0xB9 = Volume Limits– Set for Audio out.**		The 3 values must conform to the rule : Min <= Switch On <= Max
DATA[1]	Minimum Volume		0 to 100 (%) of the user selectable range of the display.
DATA[2]	Maximum Volume		0 to 100 (%) of the user selectable range of the display.
DATA[3]	Switch On Volume		0 to 100 (%) of the user selectable range of the display.

SPECIAL NOTE:

Following DATA [1], DATA [2], DATA [3], applicable for Phoenix 2.0 platform only (year 2015 BDLxx70EL/BDLxx90VL/BDLxx30QL/BDLxx35QL)

DATA[1]	Minimum Volume		0 to 60 (%) of the user selectable range of the display.
DATA[2]	Maximum Volume		0 to 60 (%) of the user selectable range of the display.
DATA[3]	Switch On Volume		0 to 60 (%) of the user selectable range of the display.

Example: Set the Display Audio out to the following: 10% (0x0A), 77% (0x4D), 50% (0x32) (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Checksum
0x08	0x01	**0x00**	0xB9	0x0A	0x4D	0x32	0xC5

6.1.6.2 Message-Get Volume Limit – Audio out

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0xB7 = Volume Limits– Get values for Audio out.**		The 3 values must conform to the rule : Min <= Switch On <= Max
DATA[1]	Minimum Volume		0 to 100 (%) of the user selectable range of the display.
DATA[2]	Maximum Volume		0 to 100 (%) of the user selectable range of the display.
DATA[3]	Switch On Volume		0 to 100 (%) of the user selectable range of the display.

SPECIAL NOTE:

Following DATA [1], DATA [2], DATA [3], applicable for Phoenix 2.0 platform only (year 2015 BDLxx70EL/BDLxx90VL/BDLxx30QL/BDLxx35QL)

DATA[1]	Minimum Volume		0 to 60 (%) of the user selectable range of the display.
DATA[2]	Maximum Volume		0 to 60 (%) of the user selectable range of the display.
DATA[3]	Switch On Volume		0 to 60 (%) of the user selectable range of the display.

Example: Get the Display Audio out values as follows: 10% (0x0A), 77% (0x4D), 50% (0x32) (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Checksum
0x08	0x01	**0x00**	0xB7	0x0A	0x4D	0x32	0xCB

6.1.7 Audio Parameters

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

6.1.7.1 Message-Get

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

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x43	0x47

6.1.7.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x43 = Audio Parameters – Report**		Command reports Audio Parameters
DATA[1]	Treble.		0 to 100 (%) of the user selectable range of the display.
DATA[2]	Bass.		0 to 100 (%) of the user selectable range of the display.

SPECIAL NOTE:

Following DATA [1], DATA [2] applicable for Phoenix 2.0 platform only (year 2015 BDLxx70EL/BDLxx90VL/BDLxx30QL/BDLxx35QL)

DATA[1]	Treble.		-8 to 8 are the boundaries of the user selectable range of the display.
DATA[2]	Bass.		-8 to 8 are the boundaries of the user selectable range of the display.

Example: Current Display settings: Treble: 80% (0x50), Bass: 93% (0x5D) (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Checksum
0x07	0x01	**0x00**	0x43	0x50	0x5D	0x48

6.1.7.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x42 = Audio Parameters – Set**		Command to change the Audio Parameters of the display
DATA[1]	Treble.		0 to 100 (%) of the user selectable range of the display.
DATA[2]	Bass.		0 to 100 (%) of the user selectable range of the display.

SPECIAL NOTE:

Following DATA [1], DATA [2] applicable for Phoenix 2.0 platform only (year 2015 BDLxx70EL/BDLxx90VL/BDLxx30QL/BDLxx35QL)

DATA[1]	Treble.		-8 to 8 are the boundaries of the user selectable range of the display.
DATA[2]	Bass.		-8 to 8 are the boundaries of the user selectable range of the display.

SPECIAL NOTE: Following table applicable for Phoenix 2.0 platform only (year 2015 BDLxx70EL/BDLxx90VL/BDLxx30QL/BDLxx35QL)

The value (-8) ～ (-1)

-8	-7	-6	-5	-4	-3	-2	-1

0xF8	0xF9	0xFA	0xFB	0xFC	0xFD	0xFE	0xFF

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

Example: Set the Display to the fallowing: Treble: 77% (0x4D), Bass: 77% (0x4D) (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Checksum
0x07	0x01	**0x00**	0x42	0x4D	0x4D	0x44

7. MISCELLANEOUS

7.1 Operating Hours

The command is used to record the working hours of the display.

7.1.1 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]	Item		0x02 = Operating Hours (All other values are reserved)

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x0F	0x02	0x0A

7.1.2 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		DATA [1] and DATA [2] form the MS Byte and LSByte, respectively, of the 16-bit-wide Operational Hours value.

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

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Checksum
0x07	0x01	**0x00**	0x0F	0x4D	0x00	0x44

7.2 Power Saving Mode

This command is used for dimming back light power consumption control. Different levels of power consumptions can be achieved by using this command.

7.2.1 Message-Get

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0xDE = Smart Power – Get**		Command requests the display to get the specified Power Saving Mode.

Example: Get the Smart Power Level (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0xDE	0xDA

7.2.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	**0xDE = Smart Power – Report**		Command reports Power Saving Mode Setting
DATA[1]	Level of Smart Power control		0x00 = OFF 0x01 = Low (defined to be same as OFF) 0x02 = Medium 0x03 = High

Example: Current Display settings: Power Saving Mode setting is Low (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0xDE	0x01	0xD8

7.2.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0xDD = Smart Power – Set**		Command requests the display to set the specified Power Saving Mode.
DATA[1]	Level of Smart Power control		For the currently-defined Type = 0: 0x00 = OFF (no special action, default mode) 0x01 = Low (defined to be same as OFF) 0x02 = Medium 0x03 = High (highest power-saving mode)

Example: Set the Display to Medium Smart Power Level (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0xDD	0x02	0xD8

Note1: This command controls the level of power-saving when the display is active-on.
Note2: Exactly how this feature is implemented, or whether it can be done at all, depends on the platform. It is possible that the picture quality might be compromised as a trade-off.

7.3 Auto Adjust

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

7.3.1 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]	Item		0x40 = Auto Adjust (* All other values are reserved *)
DATA[2]			(reserved, default 0)

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Checksum
0x07	0x01	**0x00**	0x70	0x40	0x00	0x36

7.4 Temperature Sensors

Compare two sensor data and report higher value of the two sensors in 1 data byte for reporting.

7.4.1 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 (±3°C).

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x2F	0x2B

7.4.2 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 in Celsius degrees represented in hex.
DATA[2]	Temperature Sensor 2		0-100 in Celsius degrees represented in hex.

SPECIAL NOTE: 2016 Dragon 1.0 platform only supports DATA[I] only. DATA[2] value is invalid.

Example: Current Temp Sensor 1 read out: = 28°C (Display address 01)
Current Temp Sensor 2 read out: = 31°C (Display address 02)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Checksum
0x06	0x01	**0x00**	0x2F	0x1C	0x1F	0x2B

7.5 Serial Code

7.5.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x15 = Serial Code Get**		Command requests the display to report its Serial Code Number (Production code) 14 digits

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x15	0x11

7.5.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x15 = Serial Code – Report**		Command reports Serial Code
DATA[1]	1st Character		Character acc. ASCII character map (HEX)
DATA[2]	2nd Character		
DATA[3]	3rd Character		
DATA[14]	14th Character		Character acc. ASCII character map (HEX)

Example: Current Display settings: Serial Code = HA1A0917123456 (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)	Data (5)	Data (6)	Data (7)
0x13	0x01	**0x00**	0x15	0x48	0x41	0x31	0x41	0x30	0x39	0x31

Data (8)	Data (9)	Data (10)	Data (11)	Data (12)	Data (13)	Data (14)	Checksum
0x37	0x31	0x32	0x33	0x34	0x35	0x36	0x76

7.6 Tiling

The command is used to set/get the tiling status as it is defined as below. Tiling is basically splitting video content to appear in more than one display. Video wall, is an example.

7.6.1 Message-Get

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x23 = Tiling – Get**		Command requests the display to report Tiling status.

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x23	0x27

7.6.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x23 = Tiling – Report**		Command reports Tiling Setting
DATA[1]	Enable		0x00 = No 0x01 = Yes
DATA[2]	Frame comp.		0x00 = No 0x01 = Yes
DATA[3]	Position		0x01 = position 1 0x02 = position 2 … See Note 1
DATA[4]	V Monitors, H Monitors		0x00 = don’t care 0x01 = V Monitors =1, H Monitors =1 0x02 = V Monitors =1, H Monitors =2 … See Note 2

Note 1:
(1) For Zero Bezel models, the maximum Position value is 150 (hexadecimal value is 0x96).
(2) For other models, the maximum Position value is 25 (hexadecimal value is 0x19).
(3) The Position is counted from left to right, then up to down in the Tiling Wall.
Example: See Figure 3 for the hexadecimal Position value in a 4x3 (H Monitors x V Monitors) Tiling Wall.
Example: See Figure 4 for the hexadecimal Position value in a 5x5 (H Monitors x V Monitors) Tiling Wall.
Example: See Figure 5 for the hexadecimal Position value in a 15x10 (H Monitors x V Monitors) Tiling Wall.

Note 2:

(20) For Zero Bezel models, the maximum H Monitors are 15 and the maximum V Monitors are 10. The formulas for DATA [4], V Monitors, and H Monitors are as follows:

H Monitors = MOD (Data [4], 15) (Data [4] ÷ 15, take the remainder)
V Monitors = INT (Data [4], 15) + 1 (Data [4] ÷ 15, take the quotient and plus one)
Data [4] = (V Monitors – 1) x 15 + H Monitors

Example: If H Monitors = 12 and V Monitors = 6, the Data [4] value will be (6–1) x 15 + 12 = 87
(2) For other models, the maximum H Monitors and V Monitors are 5, and the formulas for DATA [4], V Monitors, and H Monitors are as follows:

H Monitors = MOD (Data [4], 5) (Data [4] ÷ 5, take the remainder)
V Monitors = INT (Data [4], 5) + 1 (Data [4] ÷ 5, take the quotient and plus one)

Data [4] = (V Monitors – 1) x 5 + H Monitors

Example: If H Monitors = 4 and V Monitors = 3, the Data [4] value will be (3–1) x 5 + 4 = 14.

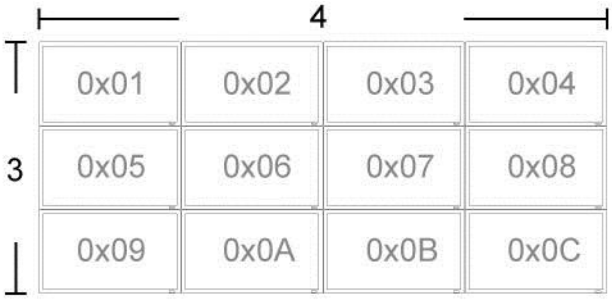
Example for BDL4675XU, Display address 01,
Set the display as follows:
Tiling enabled: Yes
Frame comp.: No
Position: 2
H Monitors: 3
V monitors: 2
Data [4] value will be: (2–1) x 15 + 3 = 18 (hex value: 0x12)

MsgSize	Control	**Group**	Data[0]	Data (1)	Data (2)	Data (3)	Data (4)	Checksum
0x09	0x01	**0x00**	0x23	0x01	0x00	0x02	0x12	0x3A

Example for BDL4230E, Display address 01
Set the display as follows:
Tiling enabled: Yes
Frame comp.: No
Position: 2
H Monitors: 3
V monitors: 2
Data [4] value will be: (2–1) x 5 + 3 = 8

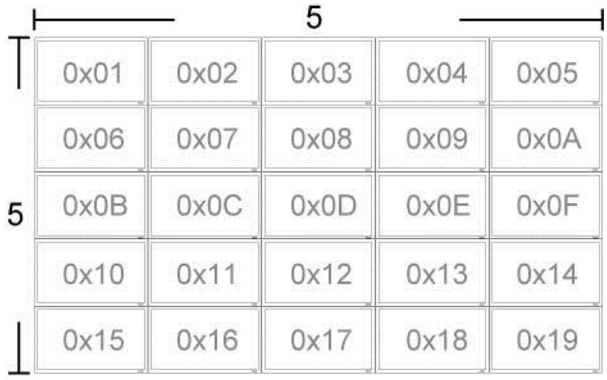
MsgSize	Control	**Group**	Data[0]	Data (1)	Data (2)	Data (3)	Data (4)	Checksum
0x09	0x01	**0x00**	0x23	0x01	0x00	0x02	0x08	0x20

Figure 3. The hexadecimal Position value in a 4x3 (H Monitors x V Monitors) Tiling Wall.



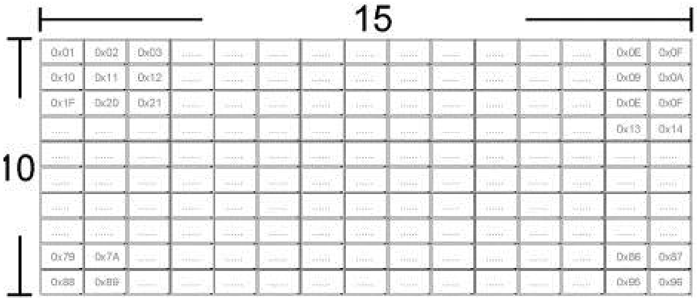
0x01	0x02	0x03	0x04
0x05	0x06	0x07	0x08
0x09	0x0A	0x0B	0x0C

Figure 4. The hexadecimal Position value in a 5x5 (H Monitors x V Monitors) Tiling Wall.



0x01	0x02	0x03	0x04	0x05
0x06	0x07	0x08	0x09	0x0A
0x0B	0x0C	0x0D	0x0E	0x0F
0x10	0x11	0x12	0x13	0x14
0x15	0x16	0x17	0x18	0x19

Figure 5. The hexadecimal Position value in a 15x10 (H Monitors x V Monitors) Tiling Wall.



7.6.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x22 = Tiling – Set**		Command reports Tiling Setting
DATA[1]	Enable		0x00 = No 0x01 = Yes
DATA[2]	Frame comp.		0x00 = No 0x01 = Yes 0x02 = don't overwrite (keep previous value)
DATA[3]	Position		0x00 = don't overwrite (keep previous value) 0x01 = position 1 0x02 = position 2 … See Note 1 at 8.6.2
DATA[4]	V Monitors, H Monitors		0x00 = don't overwrite (keep previous value) 0x01 = V Monitors =1, H Monitors =1 0x02 = V Monitors =1, H Monitors =2 … See Note 2 at 8.6.2

Example for BDL4675XU, Display address: 01
Set the display as follows:
Tiling enabled: Yes
Frame comp.: No
Position: 2
H Monitors: 3
V monitors: 2

Data [4] value will be (2–1) x 15 + 3 = 18 (hex value: 0x12)

MsgSize	Control	**Group**	Data[0]	Data (1)	Data (2)	Data (3)	Data (4)	Checksum
0x09	0x01	**0x00**	0x22	0x01	0x00	0x02	0x12	0x3B

Example for BDL4675XU, Display address 01
Set the display as follows:
Tiling enabled: Yes
Frame comp., Position, H Monitors, V Monitors: Keep as before

MsgSize	Control	**Group**	Data[0]	Data (1)	Data (2)	Data (3)	Data (4)	Checksum
0x09	0x01	**0x00**	0x22	0x01	0x02	0x00	0x00	0x29

Example for BDL4230E, Display address 01
Set the display as follows:
Tiling enabled: Yes
Frame comp.: No
Position: 2
H Monitors: 3
V monitors: 2

MsgSize	Control	**Group**	Data[0]	Data (1)	Data (2)	Data (3)	Data (4)	Checksum
0x09	0x01	**0x00**	0x22	0x01	0x00	0x02	0x08	0x21

Example for BDL4230E, Display address 01
Set the display as follows:
Tiling enabled: Yes
Frame comp., Position, H Monitors, V Monitors: Keep as before

MsgSize	Control	**Group**	Data[0]	Data (1)	Data (2)	Data (3)	Data (4)	Checksum
0x09	0x01	**0x00**	0x22	0x01	0x02	0x00	0x00	0x29

7.7 AnyTile (Canvas)

Tiling can be set beyond the OSD menu options and therefore can be flexible to a certain extent allowable by command thresholds.

SPECIAL NOTE: only 2016 Dragon 1.0 platform supports these commands

7.7.1 AnyTile Assign Group ID and monitor ID

Bytes	Bytes Description	Bits	Description
DATA[0]	**0xC0 = AnyTile Set Group ID & Monitor ID**		Assign SICP Group ID and monitor ID for PD
DATA[1]	Monitor ID		Monitor ID
DATA[2]	Group ID		Group ID

7.7.2 Display monitor ID

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x4C = Display monitor ID – Set**		Enable or Disable displaying monitor ID on the monitor
DATA[1]	Monitor ID		

7.7.3 AnyTile –Report

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x4A = Custom Tiling – Report**		Command reports Custom Tiling Setting
DATA[1]	Enable		0x00 = No 0x01 = Yes
DATA[2]	Rotation (lsb)		0 degree 90 degree 270 degree
DATA[3]	Rotation (msb)		
DATA[4]	Input H Start(lsb)		H Start of captured input picture(lsb).
DATA[5]	Input H Start(msb)		H Start of captured input picture(msb).
DATA[6]	Input V Start(lsb)		V Start of captured input picture(lsb).
DATA[7]	Input V Start(msb)		V Start of captured input picture(msb).
DATA[8]	Input H Size(lsb)		H Size of captured input picture(lsb).
DATA[9]	Input H Size(msb)		H Size of captured input picture(msb).
DATA[10]	Input V Size(lsb)		V Size of captured input picture(lsb).
DATA[11]	Input V Size(msb		V Size of captured input picture(msb).

7.7.4 AnyTile Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x4B = Custom Tiling – Report**		Command reports Custom Tiling Setting
DATA[1]	Enable		0x00 = No 0x01 = Yes
DATA[2]	Rotation (lsb)		0 degree 90 degree 270 degree
DATA[3]	Rotation (msb)		

DATA[4]	Input H Start(lsb)		H Start of captured input picture(lsb).
DATA[5]	Input H Start(msb)		H Start of captured input picture(msb).
DATA[6]	Input V Start(lsb)		V Start of captured input picture(lsb).
DATA[7]	Input V Start(msb)		V Start of captured input picture(msb).
DATA[8]	Input H Size(lsb)		H Size of captured input picture(lsb).
DATA[9]	Input H Size(msb)		H Size of captured input picture(msb).
DATA[10]	Input V Size(lsb)		V Size of captured input picture(lsb).
DATA[11]	Input V Size(msb		V Size of captured input picture(msb).

7.7.4 AnyTile Set/Get Resolution Mode

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x4E = Display monitor ID – Get** **0x4F = Display monitor ID – Set**		Set/get the resolution input mode
DATA[1]	Mode		0x00 : default 0x01 : FHD 0x02 : UHD4K

7.8 Light Sensor

The command is used to set/get the light sensor status as it is defined as below.

7.8.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x25 = Light Sensor – Get**		Command requests the display to report its current light sensor status

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x25	0x21

7.8.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x25 = Light Sensor – Report**		Command reports Light Sensor Setting
DATA[1]	On / Off		0x00 = Off 0x01 = On 0xFF = HW unavailable in this model

Example: Current Display settings: Off and On (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x25	0x00	0x22
0x06	0x01	**0x00**	0x25	0x01	0x23

7.8.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x24 = Light Sensor – Set**		Command to change the Light Sensor setting of the display
DATA[1]	On / Off		0x00 = Off 0x01 = On

Example: Set the Display to the fallowing: Light Sensor off (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum

0x06	0x01	**0x00**	0x24	0x00	0x23

7.9 Human Sensor

The command is used to set/get the external human sensor (CRD41) status as it is defined as below.

The command is only available on Dragon 1.0 and Dragon 1.5 platform from firmware version: x.xxx (tbc) onwards.

7.9.1 Human Sensor Message-Get

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0xB3 = Human Sensor – Get**		Command requests the display to report its current Human sensor time status

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0xB3	0xB7

7.9.2 Human Sensor Message-Report

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0xB3 = Human Sensor – Report**		Command reports Human Sensor Setting
DATA[1]	Off /mins		0x00 = Off 0x01 = 10 mins 0x02 = 20 mins 0x03 = 30 mins 0x04 = 40 mins 0x05 = 50 mins 0x06 = 60 mins 0xFF = HW unavailable in this model

Example: Current Display settings: Off and 30 mins (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0xB3	0x00	0xB4
0x06	0x01	**0x00**	0xB3	0x03	0xB7

7.9.3 Human Sensor Message-Set

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0xB4 = Human Sensor – Set**		Command to change the Human Sensor setting of the display
DATA[1]	Off /mins		0x00 = Off 0x01 = 10 mins 0x02 = 20 mins 0x03 = 30 mins 0x04 = 40 mins 0x05 = 50 mins 0x06 = 60 mins

Example: Set the Display to the fallowing: Human Sensor off and 50 mins (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0xB4	0x00	0xB3
0x06	0x01	**0x00**	0xB4	0x05	0xB6

7.10 OSD Rotating

The command is used to set/get the OSD menu direction as it is defined as below.

7.10.1 Message-Get

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x27 = OSD Rotating – Get**		Command requests the display to report its current OSD rotating status

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x27	0x23

7.10.2 Message-Report

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x27 = OSD Rotating – Report**		Command reports OSD Rotating Setting
DATA[1]	On / Off		0x00 = Off 0x01 = On

Example: Current Display settings: Off and On (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x27	0x00	0x20
0x06	0x01	**0x00**	0x27	0x01	0x21

7.10.3 Message-Set

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x26 = OSD Rotating – Set**		Command to change the OSD Rotating setting of the display
DATA[1]	On / Off		0x00 = Off 0x01 = On

Example: Set the Display to the fallowing: OSD rotating Off (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x26	0x00	0x21

7.11 Display Orientation

The command is used to set/get the Orientation of the display as defined as below for 2016 dragon 1.0 platform models ONLY.

7.11.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x16 = Display Orientation – Get**		Command requests the display to report its current Display orientation status

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x27	0x23

7.11.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x16 = Display Orientation Report**		Command reports Display orientation status
DATA[1]	Auto Rotate		0x00 = Off 0x01 = On
DATA[2]	OSD Rotation		0x00 = Landscape 0x01 = Portrait
DATA[3]	Image All		0x00 = Off 0x01 = On
DATA[4]	Display Window 1(Main)		0x00 = Off 0x01 = On
DATA[5]	Display Window 2(Sub1)		0x00 = Off 0x01 = On
DATA[6]	Display Window 3(Sub2)		0x00 = Off 0x01 = On
DATA[7]	Display Window 4(Sub3)		0x00 = Off 0x01 = On

7.11.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x17 = Display Orientation Set**		Command sets Display orientation details
DATA[1]	Auto Rotate		0x00 = Off 0x01 = On
DATA[2]	OSD Rotation		0x00 = Landscape 0x01 = Portrait
DATA[3]	Image All		0x00 = Off 0x01 = On
DATA[4]	Display Window 1(Main)		0x00 = Off 0x01 = On
DATA[5]	Display Window 2(Sub1)		0x00 = Off 0x01 = On
DATA[6]	Display Window 3(Sub2)		0x00 = Off 0x01 = On
DATA[7]	Display Window 4(Sub3)		0x00 = Off 0x01 = On

7.11 Information OSD

The command is used to set/get the Information OSD Feature as it is defined as below.

7.11.1 Message-Get

Bytes	Bytes Description	Bits	Description

DATA[0]	**0x2D = Information OSD Feature – Get**		Command requests the display to report its current Information OSD Feature status

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x2D	0x29

7.11.2 Message-Report

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x2D = Information OSD Feature – Report**		Command reports the Information OSD Feature enabled or disabled
DATA[1]	Off, 1 – 60		0x00 = Off 0x01 – 0x3C = 1 – 60

Example: Current Display Information OSD Feature settings: Off (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x2D	0x00	0x2A

7.11.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x2C = Information OSD Feature – Set**		Command to set the Information OSD Feature of the display enabled or disabled
DATA[1]	Off, 1 – 60		0x00 = Off 0x01 – 0x3C = 1 – 60

Example: Set the Display to the fallowing: Information OSD Feature: Off (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x2C	0x00	0x2B

7.12 MEMC Effect

The command is used to set/get the MEMC effects as it is defined as below.

NOTE: Himalaya 1.0 & Dragon 1.0 platform does NOT support MEMC effect

7.12.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x29 = MEMC Effect – Get**		Command requests the display to report its current MEMC effect status

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x29	0x2D

7.12.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x29 = MEMC Effect – Report**		Command reports the MEMC effect level
DATA[1]	Off/Low/Medium/High		0x00 = Off 0x01 = Low 0x02 = Medium 0x03 = High

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

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x29	0x00	0x2E

7.12.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x28 = MEMC Effect – Set**		Command to set the MEMC level of the display for various picture motion performance
DATA[1]	Off/Low/Medium/High		0x00 = Off 0x01 = Low 0x02 = Medium 0x03 = High

Example: Set the Display to the fallowing: MEMC Effect off (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x28	0x00	0x2F

7.13 Touch Feature

The command is used to set/get the Touch Feature as it is defined as below.

NOTE: Himalaya 1.0 & Dragon 1.0 platform does NOT support this commands.

7.13.1 Message-Get

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x1F = Touch Feature – Get**		Command requests the display to report its current Touch Feature status

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x1F	0x1B

7.13.2 Message-Report

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x1F = Touch Feature – Report**		Command reports the Touch Feature enabled or disabled
DATA[1]	On / Off		0x00 = Off 0x01 = On

Example: Current Display Touch Feature settings: Off (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x1F	0x00	0x18

7.13.3 Message-Set

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x1E = Touch Feature – Set**		Command to set the Touch Feature of the display enabled or disabled
DATA[1]	On /Off		0x00 = Off 0x01 = On

Example: Set the Display to the fallowing: Touch Feature off (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x1E	0x00	0x19

7.14 Noise Reduction

The command is used to set/get the Noise reduction Feature as it is defined as below.

7.14.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x2B = Noise Reduction Feature – Get**		Command requests the display to report its current Touch Feature status

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x2B	0x2F

7.14.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x2B = Noise reduction Feature – Report**		Command reports the Noise Reduction Feature enabled or disabled
DATA[1]	Off / Low / Middle / High		0x00 = Off 0x01 = Low 0x02 = Middle 0x03 = High

Example: Current Display Noise Reduction Feature settings: Off (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x2B	0x00	0x2C

7.14.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x2A = Noise reduction Feature – Set**		Command to set the Noise Reduction Feature of the display enabled or disabled
DATA[1]	Off / Low / Middle / High		0x00 = Off 0x01 = Low 0x02 = Middle 0x03 = High

Example: Set the Display to the fallowing: Noise Reduction Feature off (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x2A	0x00	0x2D

7.15 Scan Mode

The command is used to set/get the Scan Mode Feature as it is defined as below.

7.15.1 Message-Get

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x51 = Scan Mode Feature – Get**		Command requests the display to report its current Scan Mode Feature status

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x51	0x55

7.15.2 Message-Report

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x51 = Scan Mode Feature – Report**		Command reports the Scan Mode Feature enabled or disabled
DATA[1]	Over scan / Under scan		0x00 = Over scan (ON) 0x01 = Under scan 0x02 = Off

Example: Current Display Scan Mode Feature settings: Over scan (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x51	0x00	0x56

7.15.3 Message-Set

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0x50 = Scan Mode Feature – Set**		Command to set the Scan mode Feature of the display enabled or disabled
DATA[1]	Over scan / Under scan		0x00 = Over scan 0x01 = Under scan 0x02 = Off

Example: Set the Display to the fallowing: Scan Mode Feature over scan (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x50	0x00	0x57

7.16 Scan Conversion

The command is used to set/get the Scan Conversion Feature as it is defined as below.

NOTE: Himalaya 1.0 & Dragon1 platform does NOT support Scan Conversion)

7.16.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x53 = Scan Conversion Feature – Get**		Command requests the display to report its current Scan Conversion Feature status

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x53	0x57

7.16.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x53 = Scan Conversion Feature – Report**		Command reports the Scan Conversion Feature enabled or disabled
DATA[1]	Progressive / Interlace		0x00 = Progressive 0x01 = Interlace

Example: Current Display Scan Conversion Feature settings: Progressive (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x53	0x00	0x54

7.16.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x52 = Scan Conversion Feature – Set**		Command to set the Scan Conversion Feature of the display enabled or disabled
DATA[1]	Progressive / Interlace		0x00 = Progressive 0x01 = Interlace

Example: Set the Display to the fallowing: Scan Conversion Feature Progressive (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x52	0x00	0x55

7.17 Switch On Delay (Tiling)

The command is used to set/get the Switch on Delay (Tiling) Feature as it is defined as below.
Value in (**OFF (0), 2, 4, 6, 8, 10, 20, 30, 40, 50, Auto (60)**)

7.17.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x55 = Switch On Delay (Tiling) Feature – Get**		Command requests the display to report its current Switch On Delay (Tiling) Feature status

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x55	0x51

7.17.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x55 = Switch On Delay (Tiling) Feature – Report**		Command reports the Switch On Delay (Tiling) Feature enabled or disabled
DATA[1]	Switch on delay time		0x00 = Off 0x01 = Auto 0x02 = 2 seconds 0x03 = 3 seconds 0x04 = 4 seconds ………………… 0xFD = 253 seconds 0xFE = 254 seconds 0xFF = 255 seconds

Example: Current Display Switch On Delay (Tiling) Feature settings: Off (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x55	0x01	0x53

7.17.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x54 = Switch On Delay (Tiling) Feature – Set**		Command to set the Switch On Delay (Tiling) Feature of the display enabled or disabled
DATA[1]	Switch on delay time		0x00 = Off 0x01 = Auto 0x02 = 2 seconds 0x03 = 3 seconds 0x04 = 4 seconds ………………… 0xFD = 253 seconds 0xFE = 254 seconds 0xFF = 255 seconds

Example: Set the Display to the fallowing: Switch On Delay (Tiling) Feature: Off (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x54	0x00	0x53

7.18 Factory Reset

The command is used to set/get the Factory Reset as it is defined as below.

7.18.1 Message-Set

<table>
<tr><th>Bytes</th><th>Bytes Description</th><th>Bits</th><th>Description</th></tr>
<tr><td>DATA[0]</td><td>0x56 = Factory Reset – Set</td><td></td><td>Command to do the Factory Reset of the display
<table>
<tr><td>1</td><td>User Input Control: Local Keyboard/Remote Control</td><td></td></tr>
<tr><td>2</td><td>User Input Control State: Remote Control State/Local Keyboard State</td><td></td></tr>
<tr><td>3</td><td>Power at Cold Start</td><td></td></tr>
<tr><td>4</td><td>Auto Signal Detecting</td><td></td></tr>
<tr><td>5</td><td>Video Parameters: Brightness/Contrast/Sharpness/Color/Tint/Black Level/Gamma</td><td>每個 Input source 設定</td></tr>
<tr><td>6</td><td>Color Temperature</td><td>每個 Input source 設定</td></tr>
<tr><td>7</td><td>Color Parameters: Red Gain/Green Gain/Blue Gain/Red Offset/Green Offset/Blue Offset</td><td>每個 Input source 設定</td></tr>
<tr><td>8</td><td>Picture Format</td><td>每個 Input source 設定</td></tr>
<tr><td>9</td><td>nVGA Video Parameters: Clock/Clock Phase/Hor Position/Ver Position</td><td>所有 Input source 儲存</td></tr>
<tr><td>10</td><td>Picture-in-Picture（Disable PIP function）:PIP Off</td><td></td></tr>
<tr><td>11</td><td>Volume</td><td></td></tr>
<tr><td>12</td><td>Volume Limits: Max/Min/SwitchOn（After reset, put Max=100，Min=0，SwitchOn=0）</td><td></td></tr>
<tr><td>13</td><td>Audio Parameters: Treble/Bass</td><td>每個 Input source 設定</td></tr>
<tr><td>14</td><td>Smart Power</td><td></td></tr>
<tr><td>15</td><td>Tiling: Position/V. Monitor/H.Monitor(Clear Tiling Position=1, V. Monitor=1, H.Monitor=1)</td><td></td></tr>
<tr><td>16</td><td>Light Sensor</td><td>No supported.</td></tr>
<tr><td>17</td><td>OSD Rotating</td><td>No supported.</td></tr>
<tr><td>18</td><td>Information OSD Feature</td><td></td></tr>
<tr><td>19</td><td>MEMC Effect</td><td>No supported.</td></tr>
<tr><td>20</td><td>Touch Feature</td><td>No supported.</td></tr>
<tr><td>21</td><td>Noise Reduction Feature</td><td>每個 Input source 設定</td></tr>
<tr><td>22</td><td>Scan Mode Feature</td><td>每個 Input source 設定</td></tr>
<tr><td>23</td><td>Scan Conversion Feature</td><td>每個 Input source 設定</td></tr>
<tr><td>24</td><td>Switch On Delay (Tiling) Feature</td><td></td></tr>
</table>
</td></tr>
</table>

Example: Set the Display to factory reset

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x56	0x52

7.19 Power On logo

The command is used to set/get the Power on logo status as it is defined as below.

7.19.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0x3F = Power On logo status – Get		Command requests the display to report its current Power On logo status

Example: (Display address 01)

MsgSize	Control	Group	Data (0)	Checksum
0x05	0x01	0x00	0x3F	0x3B

7.19.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0x3F = Power On logo status – Report		Command reports the Power On logo enabled or disabled
DATA[1]	Off / On / User		0x00 = Off 0x01 = On 0x02 = User

Example: Current Display Power On logo setting: Off (Display address 01)

MsgSize	Control	Group	Data (0)	Data (1)	Checksum
0x06	0x01	0x00	0x3F	0x00	0x38

7.19.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0x3E = Power On logo status – Set		Command to set the Power On logo of the display enabled or disabled
DATA[1]	Off / On / User		0x00 = Off 0x01 = On 0x02 = User

Example: Set the Display to the fallowing: Power on logo Off (Display address 01)

MsgSize	Control	Group	Data (0)	Data (1)	Checksum
0x06	0x01	0x00	0x3E	0x00	0x39

7.20 Fan Speed

The command is used to set/get the Fan Speed status as it is defined as below.

NOTE: Dragon 1.0 platform does not support Fan Speed commands.

7.20.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0x62 = Fan Speed status – Get		Command requests the display to report its current Fan Speed status

Example: (Display address 01)

MsgSize	Control	Group	Data (0)	Checksum
0x05	0x01	0x00	0x62	0x66

7.20.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0x62 = Fan Speed status – Report		Command reports the Fan Speed status enabled or disabled
DATA[1]	Off / Auto / Low / Middle / High		0x00 = Off 0x01 = Auto 0x02 = Low 0x03 = Middle 0x04 = High

Example: Current Display Fan Speed settings: Off (Display address 01)

MsgSize	Control	Group	Data (0)	Data (1)	Checksum
0x06	0x01	0x00	0x62	0x00	0x65

7.20.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0x61 = Fan Speed status – Set		Command to set the Fan Speed status of the display enabled or disabled
DATA[1]	Off / Auto / Low / Middle / High		0x00 = Off 0x01 = Auto 0x02 = Low 0x03 = Middle 0x04 = High

Example: Set the Display to the fallowing: Fan Speed off (Display address 01)

MsgSize	Control	Group	Data (0)	Data (1)	Checksum
0x06	0x01	0x00	0x61	0x00	0x66

7.21 APM status

The command is used to set/get the APM status as it is defined as below.

2016 Dragon 1.x platform doesn't support this CMD

7.21.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD1 = APM status – Get		Command requests the display to report its current APM status

Example: (Display address 01)

MsgSize	Control	Group	Data (0)	Checksum
0x05	0x01	0x00	0xD1	0xD5

7.21.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD1 = APM status – Report		Command reports the APM enabled or disabled
DATA[1]	Off / On		0x00 = Off 0x01 = On

Example: Current Display APM setting: Off (Display address 01)

MsgSize	Control	Group	Data (0)	Data (1)	Checksum
0x06	0x01	0x00	0xD1	0x00	0xD6

7.21.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD0 = APM status – Set		Command to set the APM enabled or disabled
DATA[1]	Off / On		0x00 = Off 0x01 = On

Example: Set the Display to the fallowing: APM off (Display address 01)

MsgSize	Control	Group	Data (0)	Data (1)	Checksum
0x06	0x01	0x00	0xD0	0x00	0xD7

7.22 Power saving mode status

The command is used to set/get the Power Saving Mode status as it is defined as below.

7.22.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD3 = Power Saving mode status – Get		Command requests the display to report its current Power Saving Mode status

Example: (Display address 01)

MsgSize	Control	Group	Data (0)	Checksum
0x05	0x01	0x00	0xD3	0xD7

7.22.2 Message-Report

2016 Dragon 1.x platform supports 4 power modes only (0x04 ~ 0x07) are valid

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD3 = Power Saving Mode status – Report		Command reports the Power Saving Mode enabled or disabled
DATA[1]	Off / On		0x00 = RGB Off & Video Off 0x01 = RGB Off, Video On 0x02 = RGB On, Video Off 0x03 = RGB On & Video On 0x04 = mode 1 0x05 = mode 2 0x06 = mode 3 0x07 = mode 4

Example: Current Display Power Saving Mode setting: RGB & Video off (Display address 01)

MsgSize	Control	Group	Data (0)	Data (1)	Checksum
0x06	0x01	0x00	0xD3	0x00	0xD4

7.22.3 Message-Set

2016 Dragon 1.x platform supports 4 power modes only (0x04 ~ 0x07) are valid

Bytes	Bytes Description	Bits	Description
DATA[0]	0xD2 = Power Saving Mode status – Set		Command to set the Power Saving Mode enabled or disabled
DATA[1]	Off / On		0x00 = RGB Off & Video Off 0x01 = RGB Off, Video On 0x02 = RGB On, Video Off 0x03 = RGB On & Video On 0x04 = mode 1 0x05 = mode 2 0x06 = mode 3 0x07 = mode 4

Example: Set the Display to the fallowing: Power Saving Mode RGB & Video Off (Display address 01)

MsgSize	Control	Group	Data (0)	Data (1)	Checksum
0x06	0x01	0x00	0xD2	0x00	0xD5

7.23 Pixel Shift

The command is used to set/get the pixel shift value.

The command is only available on Dragon 1.0 and Dragon 1.5 platform from firmware version: x.xxx (tbc) onwards.

7.23.1 Message-Get Pixel Shift

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0xB1 = Pixel Shift – Get**		Command requests the display to report its current Pixel shift value

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0xB1	0xB5

7.23.2 Message-Report Pixel Shift

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0xB1 = Pixel Shift – Report**		Command reports Pixel Shift Setting
DATA[1]	Off /secs		0x00 = Off 0x01 = 10 secs 0x02 = 20 secs 0x03 = 30 secs 0x04 = 40 secs … 0x5A = 900 secs 0x5B = AUTO

Example: Current Display settings: Off and ?? secs (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0xB1	0x00	0xB6
0x06	0x01	**0x00**	0xB1	0x03	0xB5

7.23.3 Message-Set Pixel Shift

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0xB2 = Pixel Sensor – Set**		Command to change the Pixel shift setting of the display
DATA[1]	Off /mins		0x00 = Off 0x01 = 10 secs 0x02 = 20 secs 0x03 = 30 secs 0x04 = 40 secs … 0x5A = 900 secs 0x5B = AUTO

Example: Set the Display to the fallowing: Pixel Sensor off and 50 secs (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0xB2	0x00	0xB5
0x06	0x01	**0x00**	0xB2	0x05	0xB0

7.24 Off Timer

The command is used to set/get the Off Timer value.

The command is only available on Dragon 1.0 and Dragon 1.5 platform from firmware version: x.xxx (tbc) onwards.

7.24.1 Message-Get Off Timer

Bytes	Bytes Description	Bits	Description
DATA[0]	0x91 = Off Timer– Get		Command requests the display to report its current Off timer value

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x91	0x95

7.24.2 Message-Report Off Timer

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x91 = Off Timer – Report**		Command reports Off Timer Setting
DATA[1]	Off /Hours		0x00 = Off 0x01 = 1 Hour 0x02 = 2 Hours 0x03 = 3 Hours 0x04 = 4 Hours … 0x18 = 24 Hours

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Example: Current Display settings: Off and 3 hours (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x91	0x00	0x96
0x06	0x01	**0x00**	0x91	0x03	0x95

7.24.3 Message-Set Off Timer

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x92 = Off Timer – Set**		Command to change the Off Timer setting of the display
DATA[1]	Off /Hours		0x00 = Off 0x01 = 1 Hour 0x02 = 2 Hours 0x03 = 3 Hours 0x04 = 4 Hours … 0x18 = 24 Hours

Example: Set the Display to the fallowing: Pixel Sensor off and 5 hours (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x92	0x00	0xB5
0x06	0x01	**0x00**	0x92	0x05	0xB0

8. Scheduling

8.1 Scheduling Parameters

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

8.1.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x5B = Scheduling Parameters – Get**		Command requests the display to report its current Scheduling parameters.
DATA[1]	**Page**		1 to 7 of the scheduling pages

Example: (Display address 01)

MsgSize	Control	Group	Data (0)	Data (1)	Checksum
0x06	0x01	0x00	0x5B	0x01	0x5D

8.1.2 Message-Report

Only 2016 Dragon 1.0 platform supports additional DATA[8] to indicate playlist/bookmark/file number

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x5B = Scheduling Parameters – Report**		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		0 to 100 (%) of the user selectable range of the display. For video source: 0x00 = NULL 0x01 = VIDEO 0x02 = S-VIDEO 0x03 = COMPONENT 0x04 = CVI 2 (not applicable) 0x05 = VGA 0x06 = HDMI 2 0x07 = Display Port 2 0x08 = USB 2 0x09 = Card DVI-D 0x0A = Display Port 0x0B= Card OPS 0x0C = USB 0x0D= HDMI 0x0E= DVI-D 0x0F = HDMI3 0x10= BROWSER 0x11= SMARTCMS 0X12= DMS (Digital Media Server) 0x13= INTERNAL STORAGE

			0x14= Reserved 0x15= Reserved 0x16=Media Player 0x17=PDF Player 0x18=Custom
DATA[7]	Working day(s)		To set the scheduling working days. Bit0 = 1: every week Bit1 = Monday Bit2 = Tuesday Bit3 = Wednesday Bit4 = Thursday Bit5 = Friday Bit6 = Saturday Bit7 = Sunday
DATA[8]	Bookmark/Playlist/File Tag(s)		To set the set Tag from 1 through 7 0x01 = Tag 1 0x02 = Tag 2 0x03 = Tag 3 0x04 = Tag 4 0x05 = Tag 5 0x06 = Tag 6 0x07 = Tag 7

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

MsgSize	Control	Group	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)	Data (5)
0x0C	0x01	0x00	0x5B	0x01	0x06	0x1E	0x16	0x00
Data (6)	Data (7)	Checksum						
0x0A	0xFF	0xAC						

8.1.3 Message-Set

Only 2016 Dragon 1.0 platform supports additional DATA[8] to indicate playlist/bookmark/file number

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x5A = Scheduling Parameters – Set**		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		0 to 100 (%) of the user selectable range of the display. For video source: 0x00 = NULL 0x01 = VIDEO 0x02 = S-VIDEO 0x03 = COMPONENT 0x04 = CVI 2 (not applicable) 0x05 = VGA 0x06 = HDMI 2 0x07 = Display Port 2 0x08 = USB 2 0x09 = Card DVI-D 0x0A = Display Port 0x0B= Card OPS 0x0C = USB 0x0D= HDMI 0x0E= DVI-D 0x0F = HDMI3 0x10= BROWSER 0x11= SMARTCMS 0X12= DMS (Digital Media Server) 0x13= INTERNAL STORAGE 0x14= Reserved 0x15= Reserved 0x16=Media Player 0x17=PDF Player 0x18=Custom
DATA[7]	Working day(s)		To set the scheduling working days. Bit0 = 1: every week Bit1 = Monday Bit2 = Tuesday Bit3 = Wednesday Bit4 = Thursday Bit5 = Friday Bit6 = Saturday Bit7 = Sunday
DATA[8]	Bookmark/Playlist/File Tag(s)		To set the set Tag from 1 through 7 0x01 = Tag 1 0x02 = Tag 2 0x03 = Tag 3 0x04 = Tag 4 0x05 = Tag 5 0x06 = Tag 6 0x07 = Tag 7

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

MsgSize	Control	Group	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)	Data (5)
0x0C	0x01	0x00	0x5A	0x10	0x06	0x1E	0x16	0x00
Data (6)	Data (7)	Checksum						
0x0A	0xFF	0xBC						

9. Group ID

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

9.1.1 Message-Get

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x5D = Group ID – Get**		**Command requests the display to report its Group ID**

Example: (Display address 01)

MsgSize	Control	**Group**	Data (0)	Checksum
0x05	0x01	**0x00**	0x5D	0x59

9.1.2 Message-Report

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x5D = group ID – Report**		**Command reports Group ID**
DATA[1]	Group ID		~~**Group ID range: Off(for old command),1-254**~~ **0x01-0xFE = 1-254** **0xFF = Off, It is for the old command.**

Example: Group ID = 1 (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x01**	0x5D	0x01	0x5A

9.1.3 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x5C = Group ID Set**		**Command to set the Group ID**
DATA[1]	Group ID		~~**Group ID range: Off(for old command),1-254**~~ **0x01-0xFE = 1-254** **0xFF = Off, It is for the old command.**

Example: set the Group ID = 1 (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0x5C	0x01	0x5A

10. Custom Multi-Window Settings

This command is used to set or get screen divisions – called windows on the display screen & configure the multi window individually. A window contains the video from a particular input source.

NOTE: Width, Height parameters can’t be higher than the LCD panel resolution. Aspect ratio 16:9 is only supported.

10.1.1 Message-Set

Bytes	Bytes Description	Bits	Description
DATA[0]	**0xFB = Execute Custom Multi-Win – Set**		Command requests the display to set the image of window.
DATA[1]	**Switch Custom Multi-Win**		0x00 = Custom Multi-Win OFF 0x01 = Custom Multi-Win ON
DATA[2]	**Windows**		0x00 = Open one window

			0x01 = Open two windows 0x02 = Open three windows 0x03 = Open four windows

Example: Set Display address 01, Custom Multi-Win ON, open 3 windows,

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Checksum
0x07	0x01	**0x00**	0xFB	0x01	0x02	0xFE

10.1.2 Message-Get (report) –

SPECIAL NOTE: 2016 Dragon 1.x platform supports only a maximum of 2 windows. Main window and a sub(x) window.

This message report can be just about which window is currently active or can be very detailed. Both examples are presented after the table.

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	**0xFD = Custom Multi-Win – Report**		Command report to the host controller the window's information of the display.
DATA[1]	Window		0x00 = Main(Display Win1) 0x01 = Sub1(Display Win2) 0x02 = Sub2(Display Win3) 0x03 = Sub3(Display Win4)
DATA[2]	Image rotation		0x00 = ROT_NONE (OFF) 0x01 = ROT_90 (ON) 0x02 = ROT_270, 0x03 = ROT_H_MIRROR 0x04 = ROT_V_MIRROR 0x05 = ROT_HV_MIRROR
DATA[3]	X position of image(High byte)		X position of image(High byte)
DATA[4]	X position of image(Low byte)		X position of image(Low byte)
DATA[5]	Y position of image(High byte)		Y position of image(High byte)
DATA[6]	Y position of image(Low byte)		Y position of image(Low byte)
DATA[7]	Width of image(High byte)		Width of image(High byte)
DATA[8]	Width of image(Low byte)		Width of image(Low byte)
DATA[9]	Height of image(High byte)		Height of image(High byte)
DATA[10]	Height of image(Low byte)		Height of image(Low byte)
DATA[11]	Picture Format		Picture Format. 0x00 = Normal (4:3) 0x01 = Custom 0x02 = Real (1:1) 0x03 = Full 0x04 = 21:9 0x05 = Dynamic 0x06 = 16:9 0xFF = Current setting(don't change)

SPECIAL NOTE: 2016 Dragon 1.x platform doesn't support DATA [11] value 0x05.

Example: Display address 01, Main window, ROT_NONE, X:0, Y:0, W:1920, H:1080, Zoom mode: Full

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)
0x10	0x01	**0x01**	0xFD	0x00	0x00	0x00	0x00
Data (5)	Data (6)	Data (7)	Data (8)	Data (9)	Data (10)	Data (11)	Checksum
0x00	0x00	0x07	0x80	0x04	0x38	0x03	0x55

Example: Get information of Main window (Display address 01)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0xFD	0x00	0xFA

10.1.3 Message-Set

SPECIAL NOTE: 2016 Dragon 1.x platform supports only a maximum of 2 windows. Main window and a sub(x) window.

Bytes	Bytes Description	Bits	Description
DATA[0]	**0xFC = Custom Multi-Win – Set**		Command requests the display to set the image data of window.
DATA[1]	Window		0x00 = Main(Display Win1) 0x01 = Sub1(Display Win2) 0x02 = Sub2(Display Win3) 0x03 = Sub3(Display Win4)
DATA[2]	Image rotation		0x00 = ROT_NONE (OFF) 0x01 = ROT_90 (ON) 0x02 = ROT_270, 0x03 = ROT_H_MIRROR 0x04 = ROT_V_MIRROR 0x05 = ROT_HV_MIRROR
DATA[3]	X position of image(High byte)		X position of image(High byte)
DATA[4]	X position of image(Low byte)		X position of image(Low byte)
DATA[5]	Y position of image(High byte)		Y position of image(High byte)
DATA[6]	Y position of image(Low byte)		Y position of image(Low byte)
DATA[7]	Width of image(High byte)		Width of image(High byte)
DATA[8]	Width of image(Low byte)		Width of image(Low byte)
DATA[9]	Height of image(High byte)		Height of image(High byte)
DATA[10]	Height of image(Low byte)		Height of image(Low byte)
DATA[11]	Picture Format		Picture Format. 0x00 = Normal 0x01 = Custom 0x02 = Real 0x03 = Full 0x04 = 21:9 0x05 = Dynamic 0x06 = 16:9 0xFF = Current setting(don't change)

SPECIAL NOTE: 2016 Dragon 1.x platform doesn't support DATA [11] value 0x05.

Example: Set Display address 01, Main window, ROT_NONE, X:0, Y:0, W:1280, H:2160, Zoom mode: Full

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data (3)	Data (4)
0x10	0x01	**0x00**	0xFC	0x00	0x00	0x00	0x00
Data (5)	Data (6)	Data (7)	Data (8)	Data (9)	Data (10)	Data (11)	Checksum
0x00	0x00	0x07	0x80	0x04	0x38	0x03	0x55

11. Color Calibration – MIC (TBD)

This command is used to set color calibration related special operations.

11.1 Message-Set

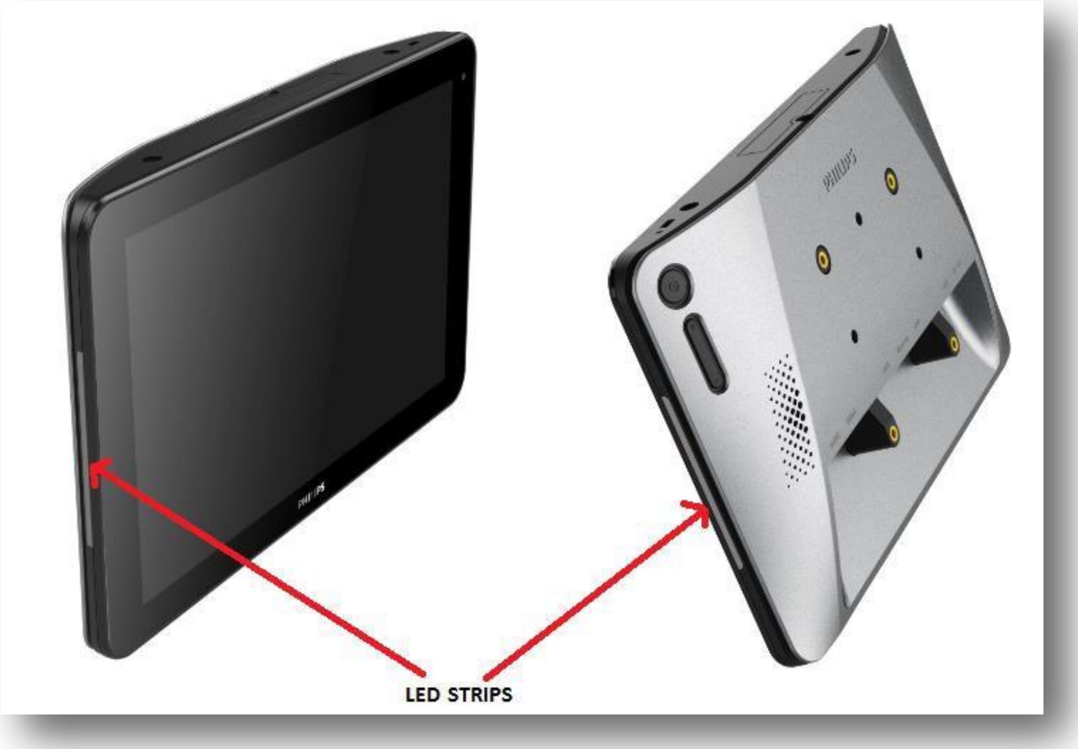
CMD: **0xFE**

12. LED STRIP control for 10BDL3051T

LED strips one each on left and right side of 10BDL3051T – both, at once, can be switched ON or OFF together and set to a particular color with following command parameters. By default, both LED strips are OFF at all times. Android standard API will allow users to switch ON/OFF these LED(s) and set a particular color. Independently changing colors or status (ON/OFF) of the (LEFT or RIGHT) LED strips is not possible.

These LED strips are intended for user control just similar to notification LED(s) on Android mobile phones using Android standard API.

Fig A: External front /back view of 10BDL3051T



12.1 Message-Get (Report)

Use this command to Read status of LED strips such as light up status, and color assigned in terms of R, G and B values.

Bytes	Bytes Description	Bits	Description
DATA[0]	0xF4 = Get		Command to get LED light up status and color combination values currently assigned as R, G and B values
DATA[1]	Light up status		0x00 = off (default), 0x01 = on
DATA[2]	Red value		Valid return values range from 0x00~0xFF
DATA[3]	Green value		Valid return values range from 0x00~0xFF
DATA[4]	Blue value		Valid return values range from 0x00~0xFF

Example: The return values indicates LED strips are ON and are of bright Yellow color

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data(3)	Data(4)	Checksum
0x09	0x01	**0x00**	0xF4	0x01	0xFF	0xF2	0x00	0xF0

12.2 Message-Set

Use this command to simultaneously switch on/off LED strips as shown above and set color based on R, G, and B values.

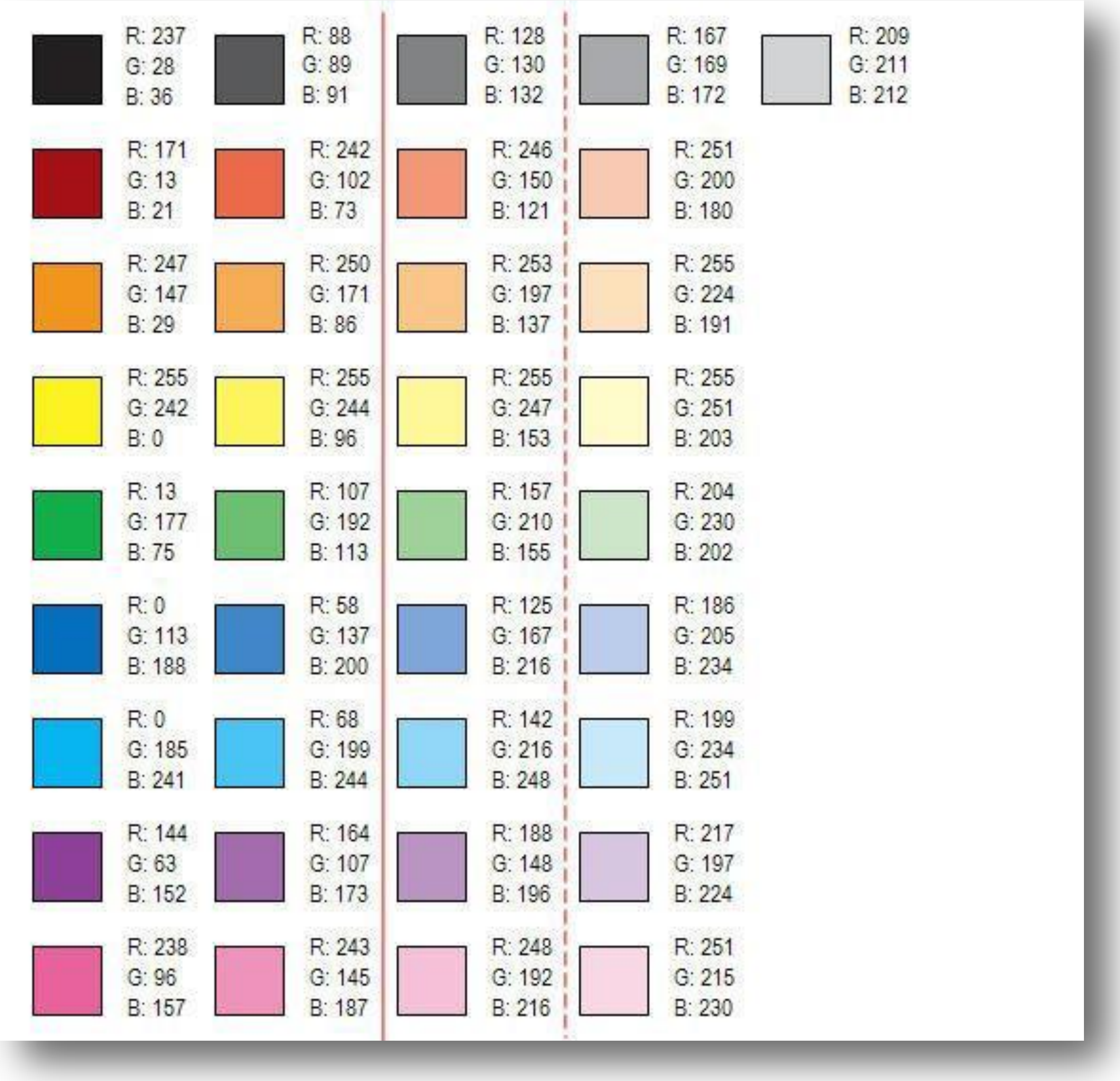
Bytes	Bytes Description	Bits	Description
DATA[0]	0xF3 = Set		Command to set LED STRIPS ON/OFF and Choose color
DATA[1]	Light up status		0x00 = off, 0x01 = on
DATA[2]	Red value		Valid Values range from 0x00~0xFF only if DATA[1] = 0x01

DATA[3]	Green value		Valid Vzalues range from 0x00~0xFF only if DATA[1] = 0x01
DATA[4]	Blue value		Valid Values range from 0x00~0xFF only if DATA[1] = 0x01

Example: set the RGB values to bright Yellow and light ON the LED strips

MsgSize	Control	**Group**	Data (0)	Data (1)	Data (2)	Data(3)	Data(4)	Checksum
0x09	0x01	**0x00**	0xF3	0x01	0xFF	0xF2	0x00	0xF7

Fig B: A few R, G, B values shown as decimals against the color they represent for reference purposes.



R: 237 G: 28 B: 36	R: 88 G: 89 B: 91	R: 128 G: 130 B: 132	R: 167 G: 169 B: 172	R: 209 G: 211 B: 212
R: 171 G: 13 B: 21	R: 242 G: 102 B: 73	R: 246 G: 150 B: 121	R: 251 G: 200 B: 180	
R: 247 G: 147 B: 29	R: 250 G: 171 B: 86	R: 253 G: 197 B: 137	R: 255 G: 224 B: 191	
R: 255 G: 242 B: 0	R: 255 G: 244 B: 96	R: 255 G: 247 B: 153	R: 255 G: 251 B: 203	
R: 13 G: 177 B: 75	R: 107 G: 192 B: 113	R: 157 G: 210 B: 155	R: 204 G: 230 B: 202	
R: 0 G: 113 B: 188	R: 58 G: 137 B: 200	R: 125 G: 167 B: 216	R: 186 G: 205 B: 234	
R: 0 G: 185 B: 241	R: 68 G: 199 B: 244	R: 142 G: 216 B: 248	R: 199 G: 234 B: 251	
R: 144 G: 63 B: 152	R: 164 G: 107 B: 173	R: 188 G: 148 B: 196	R: 217 G: 197 B: 224	
R: 238 G: 96 B: 157	R: 243 G: 145 B: 187	R: 248 G: 192 B: 216	R: 251 G: 215 B: 230	

13. MicroSD and USB ports Unlock/Lock -

10BDL3051T USB A type ports, microUSB ports and MicroSD slots – all at once can either be disabled by “lock” command or enabled by “unlock” command. Commercial use demands protection from malware and other digital intrusions.

These commands are only valid for:

Dragon 1.0 from firmware version: tbc

Dragon 1.5 from firmware version: tbc

QL2k17 from firmware version : tbc

Individual lock/unlock of MicroSD or any of the USB A type ports or microUSB ports is not available. At “lock” state, any USB device or T-Flash/MicroSD memory card plugged into any the USB ports or MicroSD slot respectively, will not be “accessible” or “recognizable” although they might receive power from the monitor. By default MicroSD and USB ports are unlocked.

13.1 Message-Get (Report)

Use this command to Read Lock/Unlock status of MicroSD and USB ports in 10BDL3051T.

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	0xF2 = Get		Read status of whether MicroSD and USB ports on the monitor is locked or unlocked
DATA[1]	Read status		0x00 = unlocked (default) 0x01 = Locked

Example: The return value indicates MicroSD and USB ports are locked (disabled)

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0xF2	0x01	0xF4

13.2 Message-Set

Use this command to lock or unlock MicroSD and USB ports in the monitor.

Bytes	**Bytes Description**	**Bits**	**Description**
DATA[0]	0xF1 = Set		Set MicroSD and USB ports to locked or unlocked status
DATA[1]	Set status		0x00 = unlocked 0x01 = Locked

Example: This commands shows how to unlock (enable) MicroSD and USB ports

MsgSize	Control	**Group**	Data (0)	Data (1)	Checksum
0x06	0x01	**0x00**	0xF1	0x00	0xF6

14. Platforms

Very often we speak of platforms, this is the name of the electronic chassis, the mainboard inside the monitor. An overview of the platforms with their corresponding model names can be found in below table

model	platform	model	platform	model	platform	model	platform	model	platform
10BDL3051T	*Android*	BDL6520EL	eagle 1.2	BDL5586XL	eagle 1.3	65BDL3000Q	Phoenix 1.0	55BDL1007X	Phoenix 1.0
32BDL4050D	Dragon 1.0	BDL6524ET/02	eagle 1.2	BDL8470EU	Himalaya	65BDL3010T	Phoenix 1.0	BDL4990VL	Phoenix 2.0
43BDL4050D	Dragon 1.0	BDL3250EL	eagle 1.3	BDL8470QT	Himalaya	BDL3260EL	Phoenix 1.0	BDL5570EL	Phoenix 2.0
43BDL4051T	Dragon 1.0	BDL4250EL	eagle 1.3	BDL8470QU	Himalaya	BDL4260EL	Phoenix 1.0	BDL5590VL	Phoenix 2.0
49BDL4050D	Dragon 1.0	BDL4252EL	eagle 1.3	BDL9870EU	Himalaya	BDL4280VL	Phoenix 1.0	55BDL9018L	LED
55BDL4050D	Dragon 1.0	BDL4254ET	eagle 1.3	75BDL3000U	Himalaya 1.2	BDL4660EL	Phoenix 1.0	55BDL9025L	LED
55BDL4051T	Dragon 1.0	BDL4256ET	eagle 1.3	75BDL3010T	Himalaya 1.2	BDL4680VL	Phoenix 1.0		
65BDL3051T	Dragon 1.0	BDL4271VL	eagle 1.3	75BDL3003H	Himalaya 1.2	BDL4765EL	Phoenix 1.0		
65BDL4050D	Dragon 1.0	BDL4650EL	eagle 1.3	BDL3220QL	MTK5580	BDL4780VH	Phoenix 1.0		
42BDL5055P	Dragon 1.5	BDL4652EL	eagle 1.3	BDL4220QL	MTK5580	BDL4988XC	Phoenix 1.0		
42BDL5057P	Dragon 1.5	BDL4671VL	eagle 1.3	BDL4235DL	MTK5580	BDL4988XL	Phoenix 1.0		
49BDL5055P	Dragon 1.5	BDL4677XH	eagle 1.3	BDL4620QL	MTK5580	BDL5560EL	Phoenix 1.0		
49BDL5057P	Dragon 1.5	BDL4678XL	eagle 1.3	BDL5520QL	MTK5580	BDL5580VL	Phoenix 1.0		
55BDL5055P	Dragon 1.5	BDL4776XL	eagle 1.3	BDL3230QL	MTK5580P2	BDL5588XC	Phoenix 1.0		
55BDL5057P	Dragon 1.5	BDL4777XH	eagle 1.3	BDL4330QL	MTK5580P2	BDL5588XH	Phoenix 1.0		
BDL4676XL	eagle	BDL4777XL	eagle 1.3	BDL4335QL	MTK5580P2	BDL5588XL	Phoenix 1.0		
BDL4677XL	eagle	BDL5551EL	eagle 1.3	BDL4830QL	MTK5580P2	BDL6520QL	Phoenix 1.0		
BDL4682XL	eagle	BDL5554ET	eagle 1.3	BDL4835QL	MTK5580P2	BDL6526QT	Phoenix 1.0		
BDL5585XL	eagle	BDL5556ET	eagle 1.3	BDL5530QL	MTK5580P2	BDL4270EL	Phoenix 2.0		
BDL5587XL	eagle	BDL5571VL	eagle 1.3	BDL5535QL	MTK5580P2	BDL4290VL	Phoenix 2.0		
BDL6551V	eagle	BDL5586XH	eagle 1.3	55BDL1005X	Phoenix 1.0	BDL4970EL	Phoenix 2.0		

15. Command summary (Last updated: 05/20/2017)

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	
Keypad Lock status Get		√	0x1B	Changed Functionality
Keypad Lock status Set	√		0x1A	Changed Functionality
IR Lock status Get		√	0x1D	Changed Functionality
IR Lock status Set	√		0x1C	Changed Functionality
Power state at cold start Get		√	0xA4	
Power state at cold start Set	√		0xA3	
Input Source	√		0xAC	Change/Add input sources
Current Source		√	0xAD	Change/Add input sources
Auto Signal Detecting Get		√	0xAF	Change/Add input sources

Auto Signal Detecting Set	√		0xAE	Change/Add input sources
Failover Get		√	0xA6	Change/Add input sources
Failover Set	√		0xA5	Change/Add input sources
Video parameters Get		√	0x33	Brightness, etc.
Video parameters Set	√		0x32	Add DICOM gamma
Color Temperature Get		√	0x35	
Color Temperature Set	√		0x34	
Color Parameters Get		√	0x37	
Color Parameters Set	√		0x36	
VGA Video Parameters Get		√	0x39	
VGA Video Parameters Set	√		0x38	
Picture Format Get		√	0x3B	
Picture Format Set	√		0x3A	
Picture-in-picture Get		√	0x3D	
Picture-in-picture Set	√		0x3C	
PO source Get		√	0x85	Change/Add input sources
PIP source Set	√		0x84	Change/Add input sources
Volume Get		√	0x45	
Volume Set	√		0x44	
Volume up/down Set	√		0x41	
Volume limits Speaker out	√		0xB8	
Volume limit Audio out	√		0xB9	
Audio parameters Get		√	0x43	
Audio parameters Set	√		0x42	
Miscellaneous info		√	0x0F	Operating hours
Smart power Get		√	0xDE	Dimming backlight
Smart power Set	√		0xDD	Dimming backlight
Auto Adjust	√		0x70	VGA only
Temperature Get		√	0x2F	
Serial Code Get		√	0x15	
Tiling Get		√	0x23	
Tiling Set	√		0x22	
Light Sensor Get		√	0x25	
Light Sensor Set	√		0x24	
OSD Rotating Get		√	0x27	
OSD Rotating Set	√		0x26	
MEMC Effect Get		√	0x29	Himalaya 1.0 – no support
MEMC Effect Set	√		0x28	Himalaya 1.0 – no support

Information OSD Features Get		√	0x2D	
Information OSD Features Set	√		0x2C	
Noise Reduction Get		√	0x2B	
Noise Reduction Set	√		0x2A	
Touch Feature Get		√	0x1F	Himalaya 1.0 – no support
Touch Feature Set	√		0x1E	Himalaya 1.0 – no support
Scan Mode Get		√	0x51	
Scan Mode Set	√		0x50	
Scan Conversion Get		√	0x53	Himalaya 1.0 – no support
Scan Conversion Set	√		0x52	Himalaya 1.0 – no support
Switch On Delay Get		√	0x55	
Switch On Delay Set	√		0x54	
Factory Reset Set	√		0x56	
Scheduling Get		√	0x5B	Change/Add input sources
Scheduling Set	√		0x5A	Change/Add input sources
Group ID Get		√	0x5D	
Group ID Set	√		0x5C	
Power On logo Get		√	0x3F	
Power On logo Set	√		0x3E	
Fan Speed status Get		√	0x62	
Fan Speed status Set	√		0x61	
APM status Get		√	0xD1	
APM status Set	√		0xD0	
Power Save status Get		√	0xD3	
Power Save status Set	√		0xD2	
Color Temperature 100K – Get		√	0x12	
Color Temperature 100K – Set	√		0x11	
Model Number, FW, Build			0xA1	Help ID the PD info
Custom Multi-Win Get		√	0xFD	Himalaya 1.0
Custom Multi-Win Set	√		0xFC	Himalaya 1.0
Custom Multi-Win Set	√		0xFB	Himalaya 1.0
MIC color calibration	√		0xFE	Reserved for Future use
Power state at cold start Get		√	0xA4	
Power state at cold start Set	√		0xA3	
Picture-in-picture Get		√	0x3D	
Picture-in-picture Set	√		0x3C	
PIP source Get		√	0x85	
PIP source Set	√		0x84	

Smart power Get		√	0xDE	Dimming backlight
Smart power Set	√		0xDD	Dimming backlight
Light Sensor Get		√	0x25	
Light Sensor Set	√		0x24	
OSD Rotating Get		√	0x27	
OSD Rotating Set	√		0x26	
MEMC Effect Get		√	0x29	
MEMC Effect Set	√		0x28	
Touch Feature Get		√	0x1F	
Touch Feature Set	√		0x1E	
User Input Control State Get		√	0x1B	
User Input Control State Set	√		0x1A	
Color Temperature Get		√	0x35	
Color Temperature Set	√		0x34	
Color Parameters Get		√	0x37	
Color Parameters Set	√		0x36	
VGA Video Parameters Get		√	0x39	
VGA Video Parameters Set	√		0x38	
Information OSD Features Get		√	0x2D	
Information OSD Features Set	√		0x2C	
Noise Reduction Get		√	0x2B	
Noise Reduction Set	√		0x2A	
Scan Mode Get		√	0x51	
Scan Mode Set	√		0x50	
Scan Conversion Get		√	0x53	
Scan Conversion Set	√		0x52	
Switch On Delay Get		√	0x55	
Switch On Delay Set	√		0x54	
Factory Reset Set	√		0x56	
Power On logo Get		√	0x3F	
Power On logo Set	√		0x3E	
Fan Speed status Get		√	0x62	
Fan Speed status Set	√		0x61	
APM status Get		√	0xD1	
APM status Set	√		0xD0	
Power Save status Get		√	0xD3	
Power Save status Set	√		0xD2	
Failover Get		√	0xA6	
Failover Set	√		0xA5	
Volume up/down Set	√		0x41	
Color Temperature 100K – Get		√	0x12	

Color Temperature 100K – Set	√		0x11	
Model Number, FW Version, Build date		√	0xA1	
Volume Limit Speaker out		√	0xB6	
Volume limit Audio out		√	0xB7	
Display orientation get		√	0x16	
Display orientation set	√		0x17	
custom tiling report/get		√	0x4A	
custom tiling set	√		0x4B	
Pixel Shift Get		√	0xB1	
Pixel Shift Set	√		0xB2	
Human sensor Get		√	0xB3	
Human sensor Set	√		0xB4	
Off Timer Get		√	0x91	
Off Timer Set	√		0x92	

16. Revision history

V1.6 → V1.7 (To modify some commands)

Command name	Set Command	Get Command	Command Code	Remarks
Power state at cold start Get		√	**0xA4**	
Power state at cold start Set	√		**0xA3**	
Picture-in-picture Get		√	**0x3D**	
Picture-in-picture Set	√		**0x3C**	
PIP source Get		√	**0x85**	
PIP source Set	√		**0x84**	
Smart power Get		√	**0xDE**	**Dimming backlight**
Smart power Set	√		**0xDD**	**Dimming backlight**

V1.7 → V1.8 (To support some commands)

Command name	Set Command	Get Command	Command Code	Remarks
Light Sensor Get		√	**0x25**	
Light Sensor Set	√		**0x24**	
OSD Rotating Get		√	**0x27**	
OSD Rotating Set	√		**0x26**	
MEMC Effect Get		√	**0x29**	
MEMC Effect Set	√		**0x28**	
Touch Feature Get		√	**0x1F**	
Touch Feature Set	√		**0x1E**	

V1.8 → V1.82 (Add some more commands)

Command name	Set Command	Get Command	Command Code	Remarks

User Input Control State Get		√	**0x1B**	
User Input Control State Set	√		**0x1A**	
Color Temperature Get		√	**0x35**	
Color Temperature Set	√		**0x34**	
Color Parameters Get		√	**0x37**	
Color Parameters Set	√		**0x36**	

V1.82 → V1.84 (Change definition of byte 2)

Number of Field	Name of Field	Description
Byte 1:	MsgSize	Message Size has to be calculated in the fallowing way: MsgSize + Control + Data(0) + … + Data(N) + Checksum Range = 3 to 40 (0x3 to 0x28).
Byte 2:	Control (first case)	Message Control. Bit 7..6: (reserved; set to 00) Bit 5..0: Monitor ID [Display Address range from 0 to 64]
Byte 2:	Control for Broadcast commands	Message Control. Bit 7: Does not allow Replies. Set to 1 to indicate no ACK or Report is expected. Bit 6: (reserved; set to zero) Bit 5..0: Monitor ID [Display Address range from 0 to 64] **Reserved for RS232 chaining:** all zeroes means all devices in the chain.

Number of Field	Name of Field	Description
Byte 1:	MsgSize	Message Size has to be calculated in the fallowing way: MsgSize + Control + Data(0) + … + Data(N) + Checksum Range = 3 to 40 (0x3 to 0x28).
Byte 2:	**Control**	**Message Control.** **Bit 7..0: Monitor ID** **Signal mode: Display Address range from 1 to 255** **Broadcast mode: Display Address is 0 which indicates no ACK or Report is expected.**

V1.84 → V1.85 (add some more commands)

Command name	Set Command	Get Command	Command Code	Remarks
VGA Video Parameters Get		√	**0x39**	
VGA Video Parameters Set	√		**0x38**	
Information OSD Features Get		√	**0x2D**	
Information OSD Features Set	√		**0x2C**	
Noise Reduction Get		√	**0x2B**	
Noise Reduction Set	√		**0x2A**	
Scan Mode Get		√	**0x51**	
Scan Mode Set	√		**0x50**	
Scan Conversion Get		√	**0x53**	
Scan Conversion Set	√		**0x52**	
Switch On Delay Get		√	**0x55**	
Switch On Delay Set	√		**0x54**	
Factory Reset Set	√		**0x56**	

V1.85 → V1.86

- Add Group byte

<table>
<tr><td>Byte 3:</td><td>Group</td><td>Group ID range: Off(for old command),1-254
<table>
<tr><th>Monitor ID</th><th>Group ID</th><th></th></tr>
<tr><td>0-255</td><td>0-254</td><td>range</td></tr>
<tr><td>0</td><td>0</td><td>broadcast</td></tr>
<tr><td>1-255</td><td>0</td><td>Control by Monitor ID</td></tr>
<tr><td>0-255</td><td>1-254</td><td>Control by Group ID</td></tr>
</table>
</td></tr>
</table>

- Add DICOM gamma in video parameters

DATA[7]	Gamma Selection		0x01= Native, 0x02 = S gamma, 0x03 = 2.2, 0x04 = 2.4, **0x05 = D-image(DICOM gamma)**

- Add scheduling/Group commands

Command name	Set Command	Get Command	Command Code	Remarks
Scheduling Get			**0x5B**	
Scheduling Set			**0x5A**	
Group ID Get			**0x5D**	
Group ID Set			**0x5C**	

V1.86 → V1.87

1. Add Power On logo/Fan Speed status commands.

Command name	Set Command	Get Command	Command Code	Remarks
Power On logo Get		√	**0x3F**	
Power On logo Set	√		**0x3E**	
Fan Speed status Get		√	**0x62**	
Fan Speed status Set	√		**0x61**	
APM status Get		√	**0xD1**	
APM status Set	√		**0xD0**	
Power Save status Get		√	**0xD3**	
Power Save status Set	√		**0xD2**	
Failover Get		√	**0xA6**	
Failover Set	√		**0xA5**	
Volume up/down Set	√		**0x41**	
Color Temperature 100K – Get		√	**0x12**	
Color Temperature 100K – Set	√		**0x11**	

2. Add User 2 option in Color Temperature control.

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** 0x01 = Native 0x02 = 11000K(Not applicable) 0x03 = 10000K 0x04 = 9300K 0x05 = 7500K 0x06 = 6500K 0x07 = 5770K (Not applicable)

			0x08 = 5500K(Not applicable) 0x09 = 5000K 0x0A = 4000K 0x0B = 3400K (Not applicable) 0x0C = 3350K (Not applicable) 0x0D = 3000K 0x0E = 2800K (Not applicable) 0x0F = 2600K (Not applicable) 0x10 = 1850K (Not applicable) **0x12 = User 2**

3. User can adjust color temperature by 100K/step.

Bytes	Bytes Description	Bits	Description
DATA[0]	**0x12 = Color Temperature 100K – Report**		Command reports to the host controller the current color temperature 100K steps of the display.
DATA[1]	**Color temperature steps**		20 to 100 of the user selectable range of the display. 0x14(20) = 2000K 0x15(21)= 2100K 0x16(22) = 2200K ……………… 0x61(97) = 9700K 0x62(98) = 9800K 0x63(99) = 9900K 0x64(100) = 10000K

V1.87 → V1.88 (last edited by Siddarth MAR/18/2015)

Lock IR Get		√	0x1D
Lock IR Set	√		0x1C
Lock Keypad Get		√	0x1B
Lock Keypad Set	√		0x1A

Added input source list & modified order and Data byte definitions

Input Source	√		0xAC
Current Source		√	0xAD

Added /modified input source list

PIP source Get		√	0x85
PIP source Set	√		0x84

1. 4K2K has 4 Full HD quadrants – added quadrant fields to select for Q2, Q3, Q4

Picture-in-picture Get		√	0x3D
Picture-in-picture Set	√		0x3C

2. Removed “All except USB” and made it “Reserved”

Auto Signal Detecting Get		√	0xAF
Auto Signal Detecting Set	√		0xAE

3. BDLXX70EU/ BDLXX70QU/ BDLXX70QT has 11 input sources - added additional input sources

Failover Get		√	0xA6

Failover Set	√		0xA5

Added additional input sources

Scheduling Get		√	0x5B
Scheduling Set	√		0x5A

Modified command to get Platform label, platform label

SICP version, Platform Label, version		√	0xA2

Added a command to get Model number, FW version, Build Date

Model Number, FW Version, Build date		√	0xA1

Added Failover input signal sources
Added new input signal sources
Modified Checksum values in example CMD packet formats
Added Volume control for Audio Out
Added Quadrant notes for BDLXX70EU/ BDLXX70QU/ BDLXX70QT display models
Added Volume Get/Set for Speaker out & Audio out

Volume Limit Speaker out	√		0xB8
Volume limit Audio out	√		0xB9

SICP 1.88 (03192015) → SICP 1.88 (03302015)

Added a few commands

Command name	Set Command	Get Command	Command Code	Remarks
Custom Multi-Win Get		√	**0xFD**	
Custom Multi-Win Set	√		**0xFC**	
Custom Multi-Win Set	√		**0xFB**	
MIC color calibration	√		**0xFE**	

SICP 1.88 (03302015) → SICP 1.88 (June 3, 2015)

Added values:

0x3B = Picture Format – Report
0x3A = Picture Format – Set

Modified values

0x55 = Switch On Delay (Tiling) Feature – Report
0x54 = Switch On Delay (Tiling) Feature – Set
Group ID

Special NOTE for Phoenix 2.0 use ONLY

0x33 Video Parameters – Report
0x32 Video Parameters – Set
0x12 Color Temperature 100K – Report

0x11 Color Temperatures 100K – Set
0x45 = Volume – Report
0x44 = Volume – Set
0xB8 = Volume Limits– Set
0x43 = Audio Parameters – Report
0x42 = Audio Parameters – Set

SICP 1.88 (06032015) → SICP 1.88 (06292015)

Added special note and added valid ranges

0x32 Video Parameters – Set
0x45 = Volume – Report
0x44 = Volume – Set
0x42 = Audio Parameters – Set
0x3F = Power On logo status – Report
0x3E = Power On log status – Set

SICP 1.88 (06292015) → SICP 1.88 (08192015)

Added Volume Get for Speaker out & Audio out

Volume Limit Speaker out		√	0xB6
Volume limit Audio out		√	0xB7

SICP 1.88 (08192015) → SICP 1.89 (03072016)

Color Temperature – Data [1] naming changed from “nature” to “native”.
Input source – added newer sources (PDF player, Media Player, Custom), modified DATA[2]
Other minor changes

SICP 1.89 (03072016) → SICP 1.90 (04132016)

Added

Display orientation get		√	0x13	
Display orientation set	√		0x14	

Changed

		√	0x4A	
custom tiling set	√		0x4B	
APM status Get		√	0xD1	
APM status Set	√		0xD0	
Power Save status Get		√	0xD3	
Power Save status Set	√		0xD2	
Light Sensor Get		√	0x25	
PIP source Get		√	0x85	
PIP source Set	√		0x84	
Custom Multi-Win Get		√	0xFD	Himalaya 1.0

Custom Multi-Win Set	√		0xFC	Himalaya 1.0
Custom Multi-Win Set	√		0xFB	Himalaya 1.0
Tiling Get		√	0x23	
Tiling Set	√		0x22	
PIP source Set	√		0x84	Change/Add input sources
Picture-in-picture Get		√	0x3D	
Picture-in-picture Set	√		0x3C	

SICP 1.90 (04132016) → SICP 1.91 (04142016)

Changed CMD code

Display orientation get		√	0x16	
Display orientation set	√		0x17	

Updated command summary table

SICP 1.91 (04132016) → SICP 1.92 (04182016)

Changed CMD code

Scheduling Get		√	0x5B	Added DATA[8]

SICP 1.92 (04182016) → SICP 1.93 (06222016)

Checksum changes, Checksum inclusions and Typo corrections

SICP 1.93 (06222016) → SICP 1.94 (09022016)

Adding command validity list for 2016 model 10BDL3051T

Command name	Set	Get	Command Code
Communication Control	V	V	0x00
Miscellaneous info		V	0x0F
Serial Code Get		V	0x15
Power state Set	V		0x18 (Screen status only)
Power state Get		V	0x19 (Screen status only)
Touch Feature Set	V		0x1E
Touch Feature Get		V	0x1F
Power On logo Set	V		0x3E
Power On logo Get		V	0x3F
Audio parameters Set	V		0x42
Audio parameters Get		V	0x43
Audio Volume Set	V		0x44

Audio Volume Get		V	0x45
Factory Reset Set	V		0x56
Scheduling Set	V		0x5A
Scheduling Get		V	0x5B
Group ID Set	V		0x5C
Group ID Get		V	0x5D
Model Number, FW Version, Build date		V	0xA1
Input Source	V		0xAC
Current Source		V	0xAD
External Storage Lock Set	V		0xF1
External Storage Lock Get		V	0xF2
Led Control Set	V		0xF3
Led Control Get		V	0xF4

SICP 1.94 (09022016) →SICP 1.95 (09072016)

Modified Sub Chapter numbers under section 8.6.4

Modified Chapter 4.1.2, Chapter 4.1.3 – defined Special note

+ Added 0xA2 supported command list for 10BDL3051T

+ Added Chapter 13 about LED strips commands applicable only for 10BDL3051T

Command name	Set	Get	Command Code
Communication Control	V	V	0x00
Miscellaneous info		V	0x0F
Serial Code Get		V	0x15
Power state Set	V		0x18 (Screen status only)
Power state Get		V	0x19 (Screen status only)
Touch Feature Set	V		0x1E
Touch Feature Get		V	0x1F
Power On logo Set	V		0x3E
Power On logo Get		V	0x3F
Audio parameters Set	V		0x42
Audio parameters Get		V	0x43
Audio Volume Set	V		0x44
Audio Volume Get		V	0x45
Factory Reset Set	V		0x56

Scheduling Set	V		0x5A
Scheduling Get		V	0x5B
Group ID Set	V		0x5C
Group ID Get		V	0x5D
Model Number, FW Version, Build date		V	0xA1
Platform and version labels		V	0xA2
Input Source	V		0xAC
Current Source		V	0xAD
External Storage Lock Set	V		0xF1
External Storage Lock Get		V	0xF2
Led Control Set	V		0xF3
Led Control Get		V	0xF4

SICP 1.95 (09072016) →SICP 1.96 (09082016)

Modified Chapter 3.2.1 with more info for platform label and version 10BDL3051T 1.0

SICP 1.96 (09082016) → SICP 1.97(09092016)

-Deleted unsupported “Audio Parameters Set/Get” commands for 10BDL3051T
+Added Chapter 14 for External Storage Lock/Unlock description.

Updated command list for 10BDL3051T

Command name	Set	Get	Command Code
Communication Control	V	V	0x00
Miscellaneous info		V	0x0F
Serial Code Get		V	0x15
Power state Set	V		0x18 (Screen status only)
Power state Get		V	0x19 (Screen status only)
Touch Feature Set	V		0x1E
Touch Feature Get		V	0x1F
Power On logo Set	V		0x3E
Power On logo Get		V	0x3F
Audio Volume Set	V		0x44
Audio Volume Get		V	0x45
Factory Reset Set	V		0x56
Scheduling Set	V		0x5A
Scheduling Get		V	0x5B
Group ID Set	V		0x5C
Group ID Get		V	0x5D
Model Number, FW Version, Build date		V	0xA1
Platform and version labels		V	0xA2
Input Source	V		0xAC
Current Source		V	0xAD
External Storage Lock Set	V		0xF1
External Storage Lock Get		V	0xF2
Led Control Set	V		0xF3
Led Control Get		V	0xF4

SICP 1.97(09092016) → SICP 1.98 (11172016)

Group byte example inclusion – Page 9
TCP/IP port 5000 definition – Page 9
Custom MultiWindow Width/Height definition – Page 80
Typo correction – Page 80
PIP source platform name changes
Checksum miscalculations have been corrected

18 April 2017 SICP 1.98
0x45 = Volume –Get
Message-Report current volume level for Speaker out or Audio Out
Changed
Old: Valid values range from 0x00 (lowest 0% volume) through 0xFE (highest – 100% volume).
New: Valid values range from 0x00 (lowest 0% volume) through 0x64 (highest – 100% volume).
Add reply for models with no audio out variable level

18 April 2017 SICP 1.98
0x44 = Volume – Set
Changed:
Old:
This command can set volume level for speaker & audio out individually. Valid values range from 0x00 (lowest 0% volume) through 0xFE (highest – 100% volume). If DATA [1] or [2] value supplied is "0xFF" no action will be taken in the display and current volume level will be maintained without any effect.

New:
This command can set volume level for speaker & audio out individually. Valid values range from 0x00 (lowest 0% volume) through 0x64 (highest – 100% volume). If DATA [1] or [2] are higher than 0x64 no action will be taken in the display and current volume level will be maintained without any effect.

18 April 2017 SICP 1.98
Add vol set, step+ & - command for models with no audio out variable level
Add platform info

20 May 2017 SICP 1.98 > 1.99

- Add Pixel Shift command
- Add Off Timer command
- Add Human Sensor command
- Add more platforms to command 0XF2 (lock/unlock USB)

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