PHILIPS

sense and simplicity

One Wire CEC Commands
Directions for use

Contents

Introduction

One Wire is a feature introduced to some of our latest models of LCD public information displays which allows you to configure your display network via an HDMI cable. It is a powerful tool that not only allows you to control and configure your display, but also assists you in finding out vital information such as which firmware version it is running or even how many hours the display has been on for. It eliminates the need for an RS-232 cable, and therefore is much more convenient than having multiple cables running from one media player to a display. This manual will explain in detail all the CEC commands required for use with our One Wire feature.

All CEC codes are given in hexadecimal values, so any numerical readings that are received from the display must be decoded in to decimal. Generally, each command will be at least 6 bytes long, and a maximum of 16 bytes. However the Power Status can be queried and modified using just two bytes, as per standard CEC commands.

Byte 1 is defined by the media player or set top box that is controlling the display network. The byte value will vary from media player to media player, but will be one of the values in the table below.

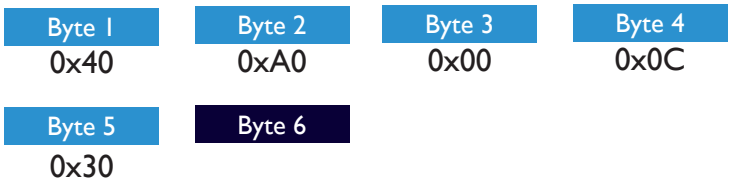
Address	Device
0	TV
1	Recording Device 1
2	Recording Device 2
3	Tuner 1
4	Playback Device 1
5	Audio System
6	Tuner 2
7	Tuner 3
8	Playback Device 2
9	Recording Device 3
10	Tuner 4
11	Playback Device 3
12	Reserved
13	Reserved
14	Free use
15	Unregistered (as initiator address) Broadcast (as destination address)

Byte Definitions

Byte 1 is split in to two blocks, where the first block refers to the source, the second block to the destination. If you are sending a command from your media player to the display, then the first block (also referred to as the Initiator) is likely (but not guaranteed) to be 4, 8 or 11. The second block (also referred to as the Destination) will be 0 or 15 - where 0 refers to one specific display on your network, and 15 broadcasts to all displays.

When the display responds to the media player, the Byte 1 value will be reversed compared with the command from the media player to the display.

In this document, for example purposes, the Byte 1 value will be 0x40 for media player to display commands, and 0x04 for responses from the display to the media player.



Bytes 2 and onwards are therefore the codes that will vary dependent on which command is being sent to the display. Most commands found in this document will have a minimum of 6 bytes, with bytes 2 to 5 inclusive remaining constant, and byte 6 changing by 1 single digit based on command sent and response received.

When sending a query via One Wire, the byte 6 response from the display will always be 1 digit higher than the request itself. For example, if the byte 6 value of the query is 0x80, then the reply will be 0x81 (which notifies the user of the command it is refering to) followed - where applicable - by the appropriate value of the response.

When sending a request for information to the display via the HDMI cable, you will need to enter all the commands in bytes one through six inclusive. The reply will come back with the original initial five bytes and the answer all together. Therefore the information requested will be in the final byte or bytes, the value of which will be shown in byte 7 onwards.

This manual will explain the functionality of each code, and - where applicable - will also define each response code received from your display.

Power Status Query

This feature allows you to find out the power status of each display in your network - whether it is powered on, off or is in deep sleep mode.

To find out whether your display is powered on, off or is in deep sleep mode, you will need to enter the hardware ID code in byte 1, followed by the request to the display for the power status in Byte 2, entered as 0x8F.

Display Power Status Query

Byte 1	Byte 2
0x40	0x8F

Power Status Response

The reply from the display will detail the display's power status, byte 2 informing the user which command it is replying to, followed by the response. The possible values will be returned in byte 3 and are tabled below.

Display Power On

Byte 1	Byte 2	Byte 3
0x04	0x90	0x00

Display in Standby

Byte 1	Byte 2	Byte 3
0x04	0x90	0x01

Display in Transition to On

Byte 1	Byte 2	Byte 3
0x04	0x90	0x02

Display in Transition to Off

Byte 1	Byte 2	Byte 3
0x04	0x90	0x03

Select Power State

You can also change the power status of each display on your network using the SICP/CEC commands. Byte 6 values of 0x86 refer to selecting the power status.

Select Power On

Byte 1	Byte 2
0x40	0x0D

Select Standby

Byte 1	Byte 2
0x40	0x36

Select Power On and change Source to HDMI

Byte 1	Byte 2	Byte 3	Byte 4
0x4F	0x82	0x10	0x00

Software Version

When adding new displays to your existing network, it is possible that they will have a different version of the software installed.

To find out which version of software is on your display, you will need to enter the hardware ID code in byte 1, followed by the constant vendor codes for bytes 2 to 5.

Byte 6 is the request to the display for the software version, and needs to be entered as 0x82.

Software Version Query

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x82

Software Version Response: Example v1.002

The reply from the display will detail the software version, starting with byte 6 which informs you it is replying to the software version request, followed by the answer. The example shown below informs the user is using software version 1.002.

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7	Byte 8
0x30	0x83	0x01	0x00

Byte 9	Byte 10
0x00	0x02

SICP/CEC Implementation Version

The SICP/CEC table may periodically be updated with additional commands being introduced to the list. Therefore knowing which SICP table is being used on your display is vital in order to know which commands can be requested.

To find out which SICP/CEC Implementation is being used on your display, you will need to enter the hardware ID code in byte 1, followed by the constant vendor codes for bytes 2 to 5.

Byte 6 is the request to the display for the SICP/CEC Implementation version, and needs to be entered as 0x80.

SICP/CEC Version Query

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x80

SICP/CEC Version Response: Example v1.001

The reply from the display will detail the SICP/CEC Implementation version, byte 6 informing the user which command it is replying to, followed by the answer. The example below shows the user is using version 1.001.

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7	Byte 8
0x30	0x81	0x01	0x00

Byte 9	Byte 10
0x00	0x01

User Input Control Query

The user is able to lock or unlock the remote control or the keyboard as a user input. This means that the buttons on the rear panel or the remote control unit can be enabled or disabled to make changes to the display configuration. To find out the current status of the User Input, send the following command:

User Input Query

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x10

User Input Control

The reply from the display will detail User Input in byte 6, followed by the status in byte 7. The answer will either be 0x01 (locked keyboard, unlocked remote control) or 0x00 (keyboard and remote control both unlocked).

Keyboard Locked, Remote Control Unlocked

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x11	0x01

Keyboard and Remote Control Unlocked

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x11	0x00

Keyboard Unlocked, Remote Control Locked

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x11	0x10

Keyboard and Remote Control Locked

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x11	0x11

User Input Set

To change the keyboard and remote control input settings, follow these commands:

Set Keyboard to Locked, Remote Control to Unlocked

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x12	0x01

Set Keyboard and Remote Control to Unlocked

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x12	0x00

Set Keyboard to Unlocked, Remote Control to Locked

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x12	0x02

Set Keyboard and Remote Control to Locked

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x12	0x03

Input Source Query/Response

To find out the current status for video input, you will need to send the command below. Byte 6 value for this request is 0x1C.

Input Source Query

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x1C

Input Source Response: Component

The response received from the display will be 11 bytes in total, and will inform you as to which video input signal is currently active as per the responses below:

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7	Byte 8
0x30	0x1D	0x00	0x12

Byte 9	Byte 10	Byte 11
0x10	0x00	0x21

Input Source Response

Input Source Response: VGA

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x1D	0x00	0x12
Byte 9	**Byte 10**	**Byte 11**	
0x10	0x00	0x41	

Input Source Response: HDMI

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x1D	0x00	0x12
Byte 9	**Byte 10**	**Byte 11**	
0x10	0x00	0x31	

Input Source Response: DVI-D 1

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x1D	0x00	0x12
Byte 9	**Byte 10**	**Byte 11**	
0x10	0x00	0x32	

Input Source Response (Cont)

Input Source Response: DVI-D Slide In Module *

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x1D	0x00	0x12
Byte 9	**Byte 10**	**Byte 11**	
0x10	0x00	0x33	

Input Source Response: DisplayPort

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x1D	0x00	0x12
Byte 9	**Byte 10**	**Byte 11**	
0x10	0x00	0x61	

* DVI-D Slide In Module is an optional extra. Your device may not have this installed.

Input Source Set

To set your video input source, you will need to send the command below. Byte 6 value for this request is 0x1E.

Set Input Source: Component

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x1E	0x21

Set Input Source:VGA

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x1E	0x41

Set Input Source: HDMI

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x1E	0x31

Set Input Source: DVI-D

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x1E	0x32

Input Source Set (Cont)

To set your video input source, you will need to send the command below. Byte 6 value for this request is 0x1E.

Set Input Source: DVI-D Slide In Module*

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x1E	0x33

Set Input Source: Display Port

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x1E	0x61

* DVI-D Slide In Module is an optional extra. Your device may not have this installed.

Video Parameter Query

This section will detail the various video parameters:

- brightness
- color
- contrast
- sharpness
- tint (hue)

You can send a query to each display to find out the respective level for each of the parameters mentioned above. The response from each display is given in hex code, and the respective values in this section are for reference only. For other values, please refer to the reference table in Appendix A. Byte 6 value will refer on each occasion to the respective parameter requested:

Brightness Level Query

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x40

Color Saturation Level Query

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x48

Video Parameter Query (Cont)

Contrast Level Query

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x44

Sharpness Level Query

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x54

Tint (Hue) Level Query

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x4C

Video Parameter Response

The value of each parameter is indicated in byte 7. The response values given in this section are for reference only, and may not be indicative of the answers received from your display.

Note: all responses from the display will be received in hexadecimal code.

Brightness Level: 55%

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x41	0x37

Color Saturation Level: 57%

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x49	0x39

Contrast Level: 60%

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x45	0x3C

Video Parameter Response (Cont)

Sharpness Level: 40%

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x55	0x28

Tint (Hue) Level: 30%

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x4D	0x1E

Video Parameter Set

To modify the video parameters set out in the previous pages, you will need to use the same values for bytes 1 through 5, with byte 6 referring to the parameter (i.e. contrast) and byte 7 giving the desired value (in %) for that specific parameter.

Note: the percentage value given to set each parameter must be set as a hexadecimal value. All values given in this chapter are for example purposes only.

Brightness Level Set (40%)

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x42	0x28

Color Saturation Level Set (15%)

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x4A	0x1E

Video Parameter Set (Cont)

Contrast Level Set (55%)

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x46	0x37

Sharpness Level Set (57%)

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x55	0x39

Tint (Hue) Level Set (60%)

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x4E	0x3C

Picture Format Request/Response

This section deals with format or aspect ratio of the display picture. You can send a command to the display to find out what screen format is currently being used. The byte 6 command to find out the current picture format is 0x0C

Picture Format Query

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x0C

The possible responses from the display are as follows:

4:3 Centered

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7	Byte 8
0x30	0x0D	0x23	0x00

Custom

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7	Byte 8
0x30	0x0D	0x23	0x06

Picture Format Response

Pixel to Pixel

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7	Byte 8
0x30	0x0D	0x23	0x05

16:9

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7	Byte 8
0x30	0x0D	0x23	0x01

21:9

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7	Byte 8
0x30	0x0D	0x23	0x07

Picture Format Set

You can modify the format of each display to the desired aspect ratio by using 0x0E for byte 6 and then entering the following commands

4:3 Centered

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x0E	0x00

Custom

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x0E	0x06

Pixel to Pixel

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x0E	0x05

Picture Format Set (Cont)

16:9

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x0E	0x01

21:9

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x0E	0x07

Picture-in-Picture (PIP) Position Set

Set the position of your Picture in Picture (PIP) by following these instructions. Byte 6 value of 0x70 is the command referring to PIP . To turn PIP off, byte 7 values should be set to 0x00. Please note that byte 8 refers to PIP source (see next page) and therefore should be modified accordingly.

PIP in Top Left Position

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x70	0x01	0x11

PIP in Top Right Position

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x70	0x02	0x11

PIP in Bottom Left Position

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x70	0x03	0x11

PIP in Bottom Right Position

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x70	0x04	0x11

Picture-in-Picture (PIP) Source Set

You can choose the AV source for your PIP using the following commands. All values for PIP Source are in byte 8. Byte 7 values are for PIP position (see previous page). The first character defines the source, the second defines which of those ports is the source in the event that there are multiple ports (e.g. if there are 2 x DVI ports and you want the 2nd DVI port to be the PIP source, then you would enter 42 as your byte 8 value).

PIP from Component Video

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x70	0x01	0x21

PIP from HDMI

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x70	0x02	0x31

PIP from VGA

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x70	0x03	0x81

PIP from DisplayPort

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x70	0x04	0x61

Picture-in-Picture (PIP) Source Set

PIP from CVBS

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x70	0x02	0x11

PIP from DVI-D

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x70	0x03	0x31

PIP from DVI-D Optional Card

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x70	0x04	0x51

Picture Auto-Adjust Setting

A video auto-adjust (also known as video alignment) feature is also available - currently this will only work with a VGA connection. The byte 6 value for this command is 0x8B. You can enable this function by the following instructions.

Picture Auto-Adjust			
Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	Byte 6	Byte 7	
0x30	0x8B	0x40	

Audio Parameters Query

You can query the levels of your audio parameters (treble and bass levels) by entering these respective byte values. Byte 6 values are 0x5C for treble query and 0x60 for bass query. All answers received from the display will be in hexadecimal values. Examples given are for reference only. For other values, please refer to the reference table in Appendix A.

Query Treble

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x5C

Query Bass

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x60

Display Response Treble (80%)

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x5D	0x50

Display Response Bass (93%)

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x61	0x5D

Audio Parameters Set

Adjust the levels of your audio parameters (treble and bass levels) by entering these respective byte values. Examples given are for reference only. For other values, please refer to the reference table in Appendix A.

Set Treble to 75%

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x5E	0x4B

Set Bass to 90%

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x62	0x5A

Volume Level Query

Query your volume level by entering these respective byte values. All answers received from the display will be in hexadecimal values. Examples given are for reference only. For other values, please refer to the reference table in Appendix A.

Query Volume Level

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x20

Display Response Volume (77%)

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x21	0x4D

Volume Level Set

Adjust your displays volume level by entering these respective byte values. You can set current volume levels, as well as default volume when you switch on the display, and the minimum and maximum volume levels. Examples given are for reference only. For other values, please refer to the reference table in Appendix A.

Set Volume to 90%

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x22	0x5A

Set Default Volume at Turn-On (70%)

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x89	0x46

Set Minimum Volume Level (10%)

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x87	0x0A

Set Maximum Volume Level (95%)

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x88	0x5F

Operational Hours Query

Query the amount of hours your display has been powered on for by entering these respective byte values. All answers received from the display will be in hexadecimal values. Examples given are for reference only. For other values, please refer to the reference table in Appendix A.

Query Operational Hours

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x6C

Display Response Volume (5900 hours)

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7	Byte 8
0x30	0x6D	0x3B	0x00

Smart Power Set

Smart Power allows you to reduce your displays energy consumption and save both money and valuable natural resources. You can set your Smart Power level (Off, Low, Medium, High) via OneWire.

Note: Smart Power Off and Low levels are the same.

Set Smart Power to OFF

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x8A	0x00

Set Smart Power to MEDIUM

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x8A	0x02

Set Smart Power to HIGH

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x8A	0x03

Query Serial Code

Find out the serial number of your display by entering the command 0x8E as the byte 6 value. The response will be 16 bytes (the maximum length of any command) and in ASCII code. The example below is for reference only. An ASCII - hexadecimal table can be found in Appendix A.

Serial Code Query

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x8E

Serial Code Response (Serial Code: HA1A0917123456)

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7	Byte 8
0x30	0x8F	0x30	0x39

Byte 9	Byte 10	Byte 11	Byte 12
0x31	0x37	0x31	0x32

Byte 13	Byte 14	Byte 15	Byte 16
0x33	0x34	0x35	0x36

Video Matrix Query

You can check to see if your display is currently an active part of a video wall or matrix by sending the command below. The response will not just let you know if it is a part of a video wall, but also if frame compensation has been enabled, what its position is within the video matrix and whether the display has been mounted in vertical (portrait) or horizontal (landscape) position.

Video Matrix Status Query

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x90

Video Matrix Status Response

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7	Byte 8
0x30	0x91	0x01	0x00

Byte 9	Byte 10
0x02	0x08

Byte 7 refers to Tiling Status : 00 disabled, 01 enabled
Byte 8 refers to Frame Compensation: 00 disabled, 01 enabled
Byte 9 refers to Display position within the Matrix (see Tables 1 and 2 on next page)
Byte 10 refers to the total number of displays in the Matrix (see Table 3 on page 41)

Video Matrix Set

We offer the possibility to install a video wall of up to 25 units in a 5 x 5 configuration. When determining the position of any given display, the start is in the top left display, working right, and then continuing on the next row down.

Table 1 below depicts the positioning of a 5 x 5 matrix. The display that has been installed in the 3rd row, 2nd from left (highlighted in yellow) is position 12 (0C in hex). The display installed in the 4th row, far right (highlighted in green) is position 20 (14 in hex).

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

Table 1

If you are installing a video wall that does not conform to this configuration then the numbering will continue in logical numerical order when you move to the next row. Table 2 (below) gives an example of the display positions inside a 4 x 2 video matrix. The display on the bottom row, 2nd from right (highlighted in red) is therefore position 7.

1	2	3	4
5	6	7	8

Table 2

Video Matrix (Cont.)

Byte 10 (see page 36) in the Video Matrix configuration refers to the total amount of displays mounted in a video wall. Table 3 below refers to a maximum 25 display matrix. The value in byte 10 would therefore be 19.

If you are installing a video matrix of a different configuration then the value of byte 10 will correspond to the number of the final display when counting the number if displays horizontally, and then vertically. For example, if you have a video matrix that is three displays horizontal and two vertical, then the value of byte 10 would be 08. If you have a video matrix that is four displays wide and five displays tall, then the value of byte 10 would be 18.

01	02	03	04	05
06	07	08	09	0A
0B	0C	0D	0E	0F
10	11	12	13	14
15	16	17	18	19

Table 3

Should the video matrix be five displays wide and two displays tall, then the value of byte 10 would be 0A.

To check the byte 10 value for all other video wall formats, please refer to table 3 above.

Video Matrix Set

To set up a video matrix using One Wire, you will need to set 4 different parameters. First you will need to enable video matrix, then set frame compensation (on or off), then for each display you will need to dedicate a position within the matrix and finally you will need to set the format of the video matrix as shown in Table 3 (previous page). The command will be 10 bytes long in total.

The following instructions are for example video matrix formats. For all other formats/requirements, please refer to the previous pages.

Video Matrix Set: ON, Frame Comp ON, Position 3, 4x2 Matrix

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x92	0x01	0x01
Byte 9	**Byte 10**		
0x03	0x09		

Video Matrix Set: ON, Frame Comp OFF, Position 10, 3x4 Matrix

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x92	0x01	0x00
Byte 9	**Byte 10**		
0x0A	0x12		

Video Matrix Set: ON, Frame Comp ON, Position 7, 2x5Matrix

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C
Byte 5	**Byte 6**	**Byte 7**	**Byte 8**
0x30	0x92	0x01	0x01
Byte 9	**Byte 10**		
0x07	0x16		

Auto Signal Detection Query/Response

Find out if Auto Signal Detection has been enabled or disabled by following these commands:

Auto Signal Detection Status Query

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x93

Auto Signal Detection Status Response: On

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x94	0x01

Auto Signal Detection Status Response: Off

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x94	0x00

Auto Signal Detection Set

To change the setting for Auto Signal Detection, use these commands:

Set Auto Signal Detection ON

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x95	0x01

Set Auto Signal Detection OFF

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x95	0x00

Query Display Temperature

You can instantly find out the current temperature of each display by sending a query command to the device. Note: all replies are in hexadecimal code, and based in degrees Celcius. Examples given are for reference only.

Display Temperature Query

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x8C

Display Temperature Response (Sensor 1: 28°, Sensor 2: 29°)

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7	Byte 8
0x30	0x8C	0x1C	0x1D

Light Sensor Status Query/Response

To find out the status of the light sensor, enter the following command:

Query Light Sensor

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6
0x30	0x96

Light Sensor Response (Off)

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x97	0x00

Light Sensor Response (On)

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x97	0x01

Light Sensor Set

Modify the setting of the ambient light sensor by using one of the following codes

Ambient Light Sensor - Set to Off

Byte 1	Byte 2	Byte 3	Byte 4
0x40	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x98	0x00

Ambient Light Sensor - Set to On

Byte 1	Byte 2	Byte 3	Byte 4
0x04	0xA0	0x00	0x0C

Byte 5	Byte 6	Byte 7
0x30	0x8C	0x01

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