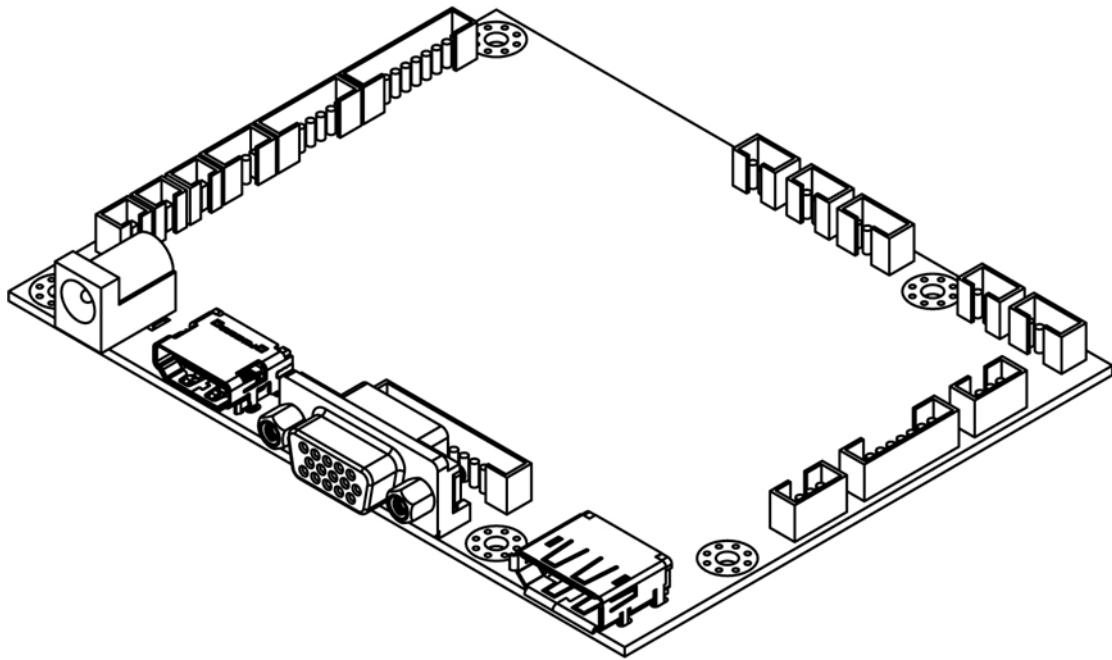# Panel Control Board

R6HD-100

The Winmate R6HD-100 is a powerful graphics processing board, providing high-quality images for TFT panels

V100

User Manual

Contents

Preface

Copyright Notice

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Trademark Acknowledgement

Brand and product names are trademarks or registered trademarks of their respective owners.

Disclaimer

We reserve the right to make changes, without notice, to any product, including circuits and/or software described or contained in this manual in order to improve design and/or performance. We assume no responsibility or liability for the use of the described product(s), conveys no license or title under any patent, copyright, or masks work rights to these products, and makes no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified. Applications that are described in this manual are for illustration purposes only. We make no representation or warranty that such application will be suitable for the specified use without further testing or modification.

Warranty

We warrant that each of its products will be free from material and workmanship defects for a period of one year from the invoice date.(Standard is one year, extended warranty will need to discuss with our sales representatives. If the customer discovers a defect, we will, at its option, repair or replace the defective product at no charge to the customer, provided it is returned during the warranty period of one year, with transportation charges prepaid. The returned product must be properly packaged in its original packaging to obtain warranty service.

If the serial number and the product shipping data differ by over 30 days, the in-warranty service will be made according to the shipping date. In the serial numbers the third and fourth two digits give the year of manufacture, and the fifth digit means the month (e. g., with A for October, B for November and C for December).

For example, the serial number 1W16Axxxxxxxx means October of year 2016.

Packing List

Before using this Motherboard, please make sure that all the items listed below are present in your package:

- R6HD-100 A/D Board
- User Manual

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Customer Service

We provide a service guide as below for any problem by the following steps: First, contact your distributor, sales representative, or our customer service center for technical support if you need additional assistance.

You need to prepare the following information before you call:

- Product serial number
- Peripheral attachments
- Software (OS, version, application software, etc.)
- Detailed problem description
- The exact wording of any error messages

In addition, free technical support is available from our engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products. Please do not hesitate to call or e-mail us.

Advisory Conventions

Four types of advisories are used throughout the user manual to provide helpful information or to alert you to the potential for hardware damage or personal injury. These are Notes, Important, Cautions, and Warnings. The following is an example of each type of advisory.

NOTE:
A note is used to emphasize helpful information

IMPORTANT:
An important note indicates information that is important for you to know.

CAUTION
A Caution alert indicates potential damage to hardware and explains how to avoid the potential problem.

WARNING!
An Electrical Shock Warning indicates the potential harm from electrical hazards and how to avoid the potential problem.

Safety Precautions

CAUTION

Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

Safety and Warranty

1. Please read these safety instructions carefully.
2. Please keep this user manual for later reference.
3. Please disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
7. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
8. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
9. All cautions and warnings on the equipment should be noted.
10. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
11. If any of the following situations arises, get the equipment checked by service personnel:
    A. The power cord or plug is damaged.
    B. Liquid has penetrated into the equipment.
    C. The equipment has been exposed to moisture.
    D. The equipment does not work well, or you cannot get it to work according to the user's manual.
    E. The equipment has been dropped and damaged.
    F. The equipment has obvious signs of breakage.

About This User Manual

This User Manual provides information about using the Winmate R6HD-100 AD Board. The documentation set for the R6HD-100 AD board provides information for specific user needs, and includes:

- **R6HD-100 AD Board User Manual** – contains detailed description on how to use the HMI device, its components and features.

NOTE:
Some pictures in this guide are samples and can differ from actual product.

Revision History

Document Version	Board Version	Date	Note
1.0	V100	16-Jan-2018	Initial release

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General Information

This chapter includes the R6HD-100 panel control board background information.

1

Chapter 1: General Information

This chapter includes the R6HD-100Panel Control Board background information.

1.1 Introduction

Thank you for choosing R6HD-100 Panel Control Board. The Winmate RA2H-100 is a powerful graphic processing board, providing high quality images for TFT panels and suitable for the variety of systems. The R6HD-100 provides all A/D board key functions required for image capture, processing and display timing control

With all these functions integrated onto a single board, the R6HD-100 is able to keep up with the cost of high-end multimedia LCD monitors while maintaining a high degree of flexibility and quality .It is suitable for large size and high resolution panels and meets the demanding performance requirements of today's business and industrial applications. A single board reduces the costs of high-end multimedia LCD monitors, meanwhile maintaining high degree of flexibility and quality.

1.2 Product Features

The R6HD-100 Panel Control Board offers the following features:

- Support resolution up to 1920 x 1200 @ 60Hz.
- Support LVDS panel interface
- Content protection HDCP 1.2 is supported with HDMI.
- VGA support Sync-On-Green (SOG) and composite mode.
- RS232 remote control (optional)
- IR remote control (optional)
- 12V DC Input
- Operating temperature 0 to 50°C
- Storage temperature -20 to 60° C

1.3 Hardware Specifications

	Model Name
	R6HD-100
System Specifications	
Scaler	RTD2486
Internal Connector	
To Backlight Unit	Wafer , 5V/12V (by Jumper setting)
IR Sensor	Wafer , 3Pin
GPIO	4 x Wafer
LVDS	Wafer , 40 Pin
OSD Key Pad	Wafer , 10 Pin
3.3V	3.3V / 1A Output wafer
5V	5V / 1A Output wafer
12V	12V / 1A Output wafer
RS232	1 x Wafer , Remote Control
VGA input	1 x Wafer
DVI Input	1 x Wafer
Audio In	4Pin Wafer , (R/L)
Audio Out	Wafer
Line Out	8 Pin Wafer
Speaker Output	4Pin Wafer , 8W (R/L)
Output Interface (Internal)	
LVDS	Hirose-DF13DP-1.25V
Input Signal	
Display Port	Display Port 1.1
HDMI1.4	HDMI 1.4 Type A
VGA	D-Sub 15 Pin
Audio In /Out	
Speaker Output	2W, class D
Power Requirements	
Power Input	12V DC Input (2.5 mm jack)
Power Output	Wafer
Mechanical Specifications	
Dimensions (W x H x D)	120 x 95 mm

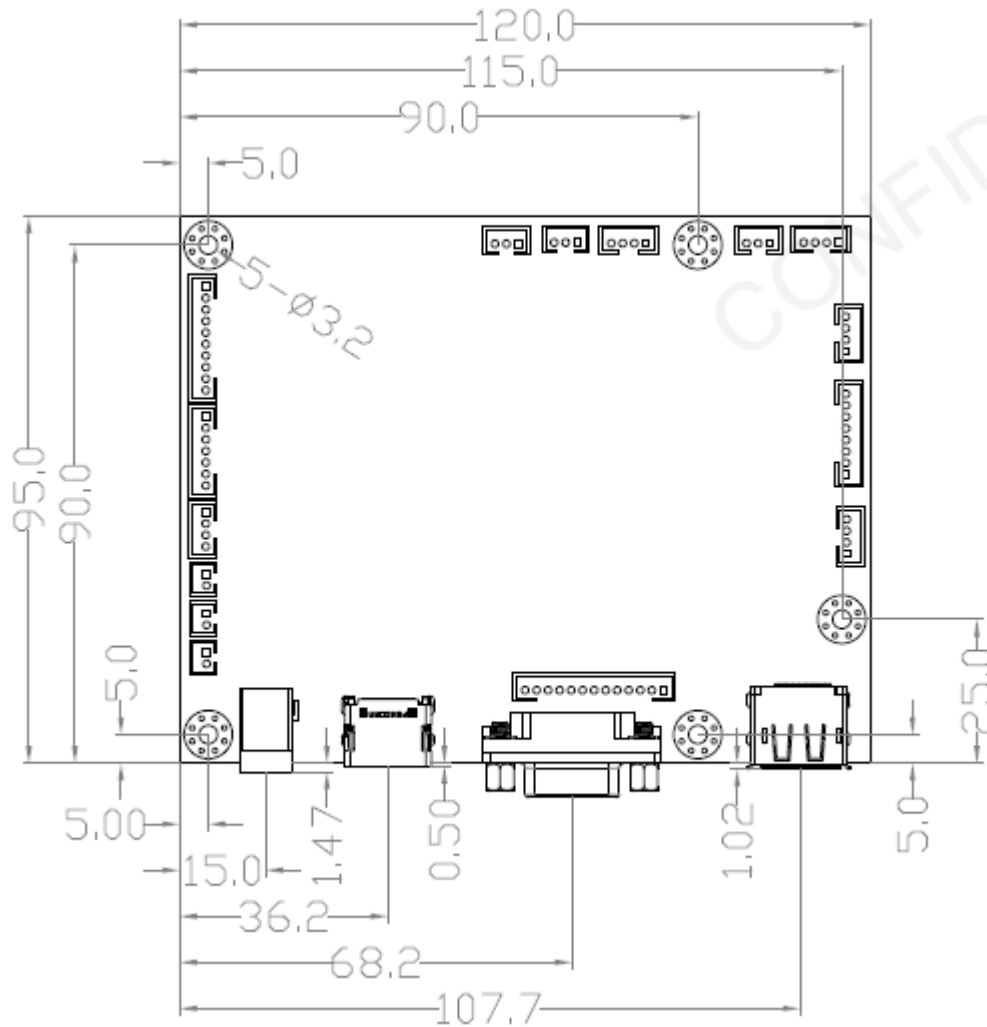| Environment Considerations	
Operating Temperature	0°~+50°C
Storage Temperature	-20°~+60°C
Operating Humidity	10%~ 90% (non-condensing, RH)
Standards and Certification	
Electromagnetic	CE, FCC

1.4 Functional Description

R6HD-100 Function Block (V100)
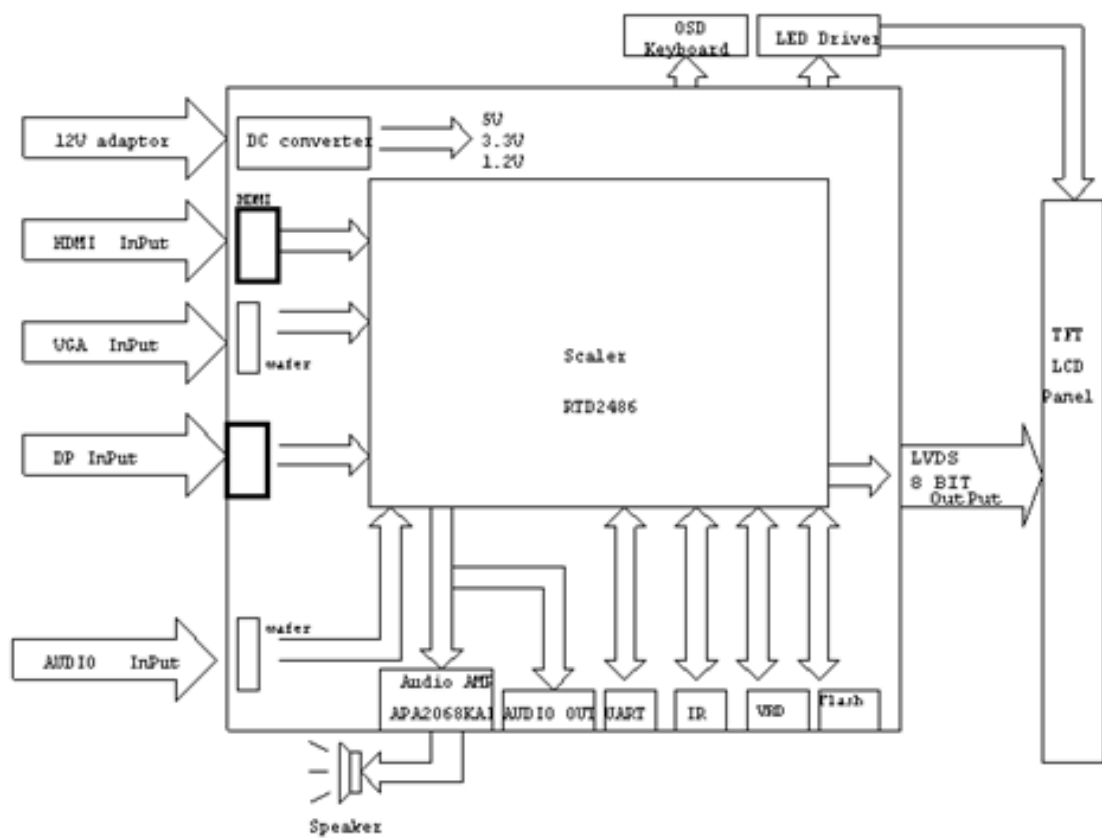
1.5 Physical Description

R6HD-100 Board Dimensions (V100)

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Hardware Installation

This chapter provides information on how to use jumpers and connectors on the R6HD-100 panel control board.

2

Chapter 2: Hardware Installation

This chapter provides information on how to use jumpers and connectors on the R6HD-100 control board. Be cautious while working with these modules. Carefully read the content of this chapter in order to avoid any damages.
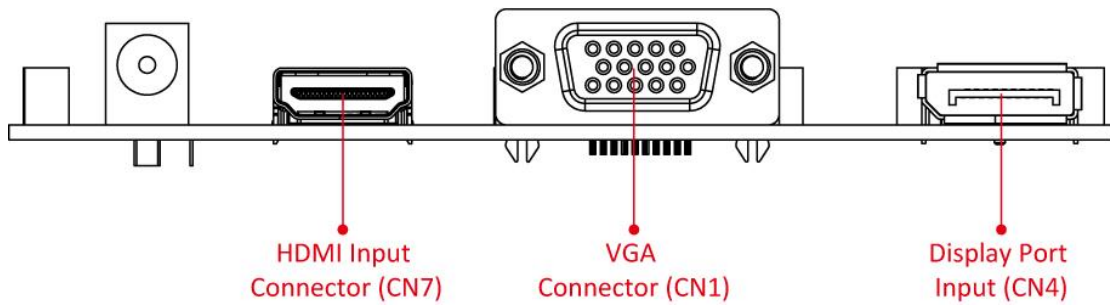
2.1 Motherboard Components

2.1.1 Front Side

2.1.2 Rear Side

2.1.3 I/O Side

HDMI Input
Connector (CN7)

VGA
Connector (CN1)

Display Port
Input (CN4)
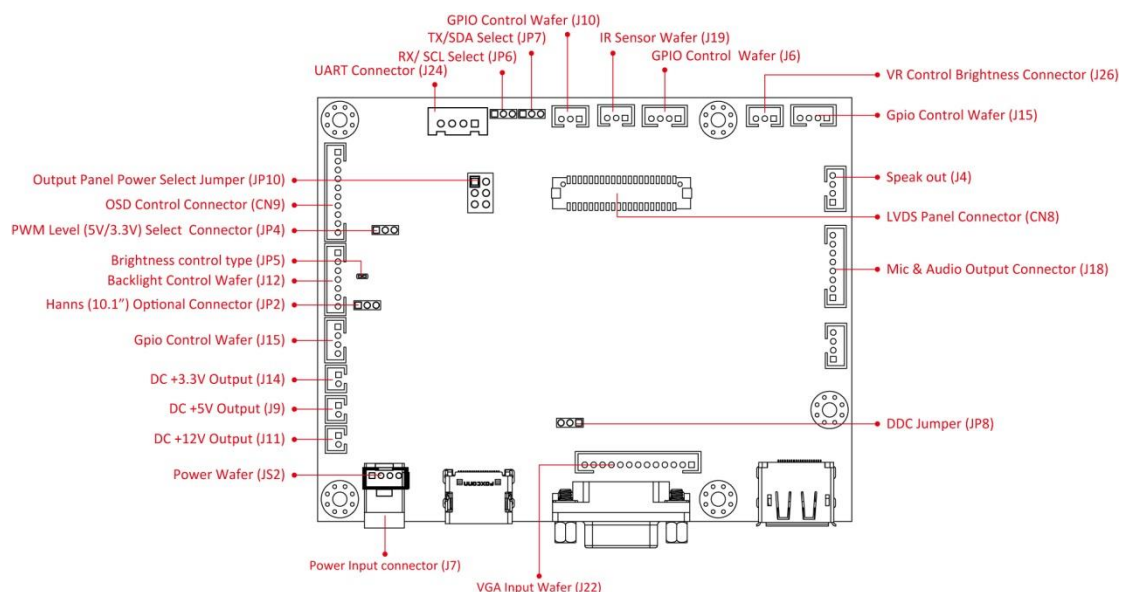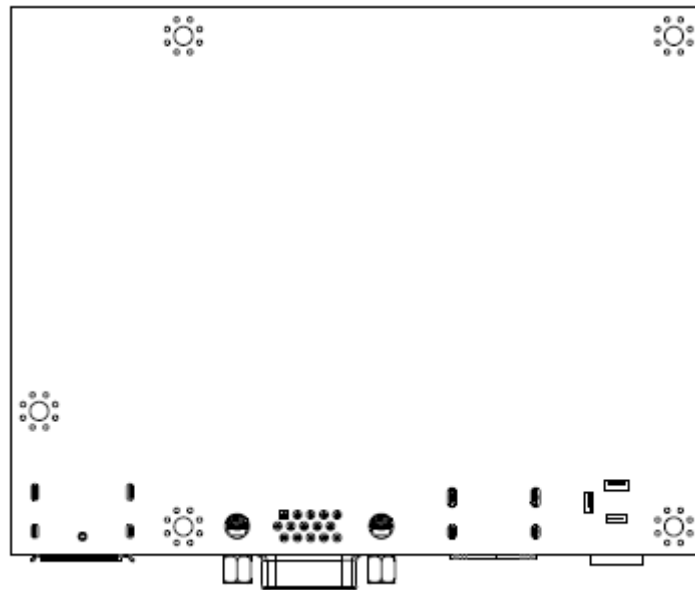
NOTE:

Some connectors are optional depends on your order.

2.2 I/O Equipment Installation

This chapter provides information on how to use jumpers and connectors on the R6HD-100 A/D Board. Be cautious while working with these modules. Please carefully read the content of this chapter in order to avoid any damages.

2.2.1 Power

Switch off the power on the monitor and the Keypad. The power switch is located at the most right button of the keypad.

2.2.2 Power Cable

Connect the power cord to monitor, and then connect the power to the AC outlet through the AC/DC adapter.

2.3 Options

The R6HD-100 panel control port is designed for monitors that work with a variety of compatible video sources. Due to the possible deviations between these signal sources, you may have to make adjustments to the monitor settings from the OSD menu when switching between these sources.

2.3.1 VGA Cable

Plug 15-pin VGA signal cable to the VGA connector in the rear of motherboard, and plug the other end to the monitor. Secure cable connectors with hexagonal copper pillars M3x4mm.

2.3.2 Display Port Cable

Plug in display port signal cable to the display port connector on the rear side of the motherboard, and plug in the other end to the monitor.

2.3.3 HDMI Cable

Plug HDMI signal cable to the HDMI connector on the rear side of PC system, and plug the other end to the monitor. Secure cable connectors hexagonal copper pillars M3x4mm.

2.3.5 RS-232 Cable

You will be able to develop your own application software utilizing built-in RS-232 command code. The application software can send command from PC to LCD monitor via RS-232 port to control LCD monitor. Please refer to Appendix B for built-in RS-232 command code.

2.4 Connector Pin Assignment

This section explains how to set jumpers for correct configuration of the motherboard.

NOTE:
A pair of needle nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes. Generally, you simply need a standard cable to make most connections.

The jumper setting diagram is shown below. When the jumper cap is placed on both pins, the jumper is SHORT. The illustration below shows a 3-pin jumper; pins 1 and 2 are short. If you remove the jumper cap, the jumper is OPEN.


PIN 1-2 SHORT
PIN 3 OPEN
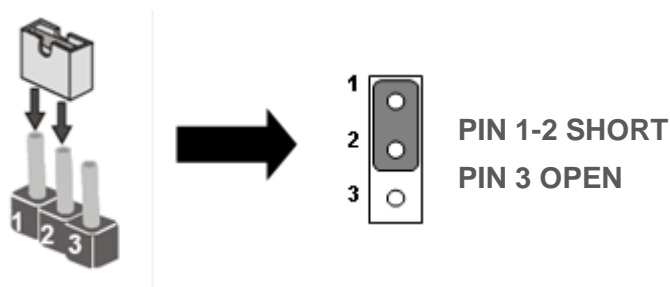
2.4.1 Front Side Connectors

The table below shows each of front side connectors and its functions.

| Connector	Description	Note
J4	Speak out	JST-B4B-PH-K-S or equivalent
J6	GPIO Control　Wafer	JST-B4B-PH-K-S or equivalent
J7	Power Input connector	3pin DC Power Jack, inside diameter:2.5mm ; outside diameter:5.5mm
J9	DC +5V Output	JST-B2B-PH-K-S or equivalent
J10	GPIO Control Wafer	JST-B3B-PH-K-S or equivalent
J11	DC +12V Output	JST-B2B-PH-K-S or equivalent
J12	Backlight Control Wafer	JST-B7B-PH-K-S or equivalent
J14	DC +3.3V Output	JST-B2B-PH-K-S or equivalent
J15	GPIO Control Wafer	JST-B4B-PH-K-S or equivalent
J18	Mic & Audio Output Connector	JST-B8B-PH-K-S or equivalent
J19	IR Sensor Wafer	JST-B3B-PH-K-S or equivalent
J22	VGA Input Wafer	JST-B13B-PH-K-S or equivalent
J24	UART Connector	2.54mm 1 x 4 Pin Header
J26	VR Control Brightness Connector	JST-B3B-PH-K-S or equivalent
J29	DVI Input Wafer	2*10p P:1.25mm SMD 180° White
JS2	Power Wafer	JST-B4B-PH-K-S or equivalent
JP2	Hanns (10.1") Optional Connector	Header 1x3 Pin, diameter: 2 mm
JP4	PWM Level (5V/3.3V) Select　Connector	Header 1x3 Pin, diameter: 2 mm
JP5	Brightness control type	Header 1x3 Pin, diameter: 2 mm
JP6	RX/ SCL Select	Header 1x3 Pin, diameter: 2 mm
JP7	TX/SDA Select	Header 1x3 Pin, diameter: 2 mm
JP8	DDC Jumper	-
JP10	Output Panel Power Select Jumper	HIROSE A1-6PA-2.54DSA or Equivalent
CN9	OSD Control Connector	JST-B10B-PH-K-S or equivalent

2.4.1.1 Speaker Output Connector (J4)
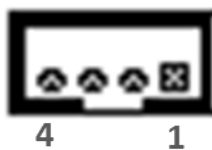
Pin №	Signal Name
1	LOUT+
2	LOUT-
3	ROUT-
4	ROUT+

2.4.1.2 GPIO Connector (J6)
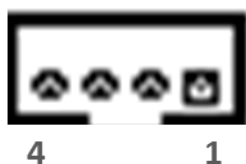
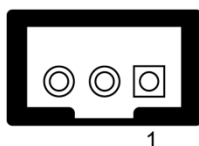| Pin №	Signal Name
1	+5V
2	GPIO
3	GPIO
4	GND

2.4.1.3 Power Jack (J7)
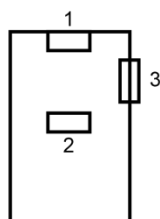
Pin №	Signal Name
1	+12V
2	GND
3	GND

2.4.1.4 DC +5V Output (J9)

Pin №	Signal Name
1	+5V
2	GND

2.4.1.5 GPIO Control Wafer (J10)

Pin №	Signal Name
1	GPIO Control 1
2	GPIO Control 2
3	GPIO Control 3

2.4.1.6 DC +12V Output (J11)

Pin №	Signal Name
1	+12V
2	GND

2.4.1.7 Backlight Output Connector (J12)

Pin №	Signal Name
1	+12V
2	+12V
3	+12V
4	GND
5	BRIGHT
6	GND
7	ON/OFF

2.4.1.8 DC +3.3V Output (J14)

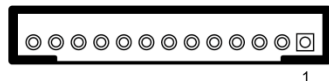| Pin №	Signal Name
1	+3.3V
2	GND

2.4.1.9 GPIO Connector (J15)

Pin №	Signal Name
1	+5V
2	GND
3	GPIO
4	GPIO

2.4.1.10 Mic & Audio Output Connector (Wafer, J18)
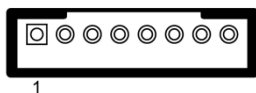
Pin №	Signal Name
1	EAR_R
2	GND
3	EAR_L
4	EAR_DETECT
5	MIC_R
6	GND
7	MIC_L
8	GND

2.4.1.11 IR Connector (J19)

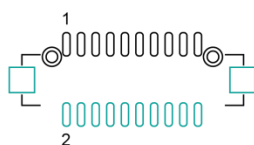| Pin №	Signal Name
1	IR
2	GND
3	+5V

2.4.1.12 VGA Connector (Wafer, J22)

Pin №	Signal Name
1	RIN
2	AGND
3	GIN
4	AGND
5	BIN
6	AGND
7	DDCSDA
8	HS
9	VS
10	NC
11	DDCSCL
12	GND
13	VGA_DE

2.4.1.13 UART Connector (J24)
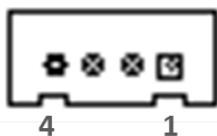
Pin №	Signal Name	Description
1	+5V	+5V
2	TXD	UART Transmit Signal
3	RXD	UART Receive Signal
4	GND	Ground

2.4.1.14 VR Control Brightness Connector (J26)

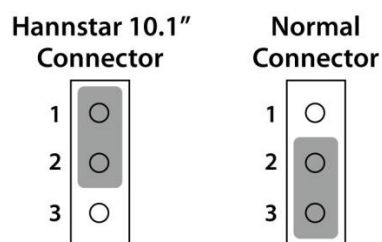| Pin №	Signal Name
1	+3.3V
2	ADC Control
3	Ground

2.4.1.15 DVI Input Wafer (J29)

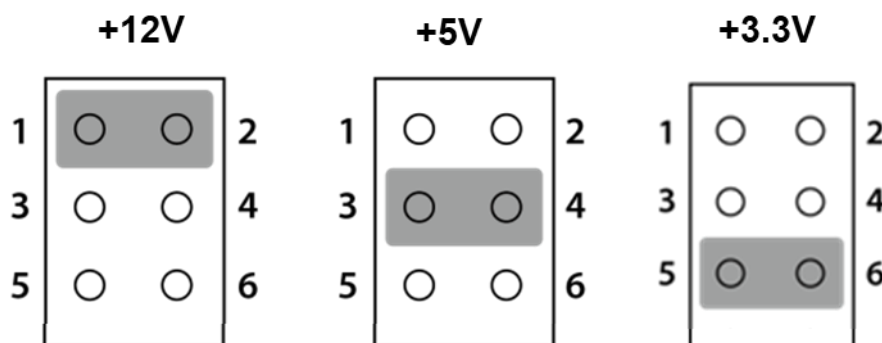| Pin №	Signal Name
1	RXC-IN
2	DVI 5V
3	RXC+IN
4	DVI CAB
5	DVI SDA
6	Ground
7	DVI SCL
8	Ground
9	RX0-IN
10	Ground
11	RX0+IN
12	Ground
13	RX1-IN
14	Ground
15	RX1+IN
16	Ground
17	RX2+IN
18	Ground
19	RX2-IN
20	Ground

2.4.1.16 Power In (Wafer, JS2)

Pin №	Signal Name
1	+12V
2	+12V
3	GND
4	GND

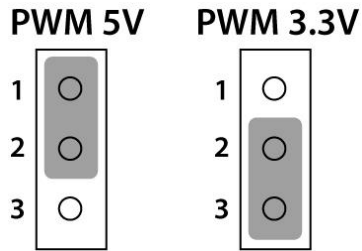## 2.4.1.17 Hanns (10.1") Option Connector (JP2)

Pin №	Signal Name
1-2	Hannstar(10.1") Connector
2-3	Normal Connector

2.4.1.18 Output Panel Power Select Jumper (JP10)

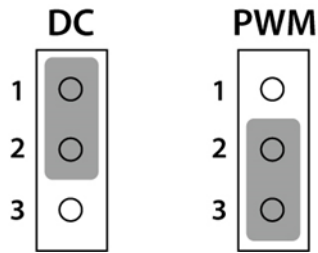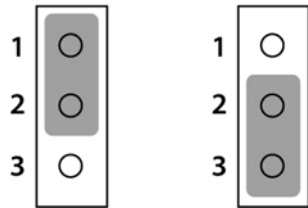| Pin №.	Signal Name
1-2	+12V Panel Power
3-4	+5V Panel Power
5-6	+3.3V Panel Power

2.4.1.19 Adjust PWM Level(5V/3.3V) Connector (JP4)

PWM 5V　**PWM 3.3V**

Pin №	Signal Name	Description
1-2	PWM_5V	PWM 5V Connector
2-3	PWM_3V3	PWM 3.3V Connector

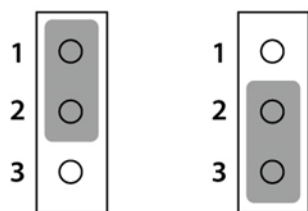## 2.4.1.20 Brightness Control Type (PWM or DC control, JP5)

DC　**PWM**

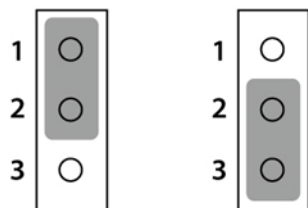| Pin №	Signal Name
1-2	DC voltage
2-3	PWM signal

2.4.1.21 RX/ SCL Select (JP6)

Pin №	Signal Name
1-2	DDC(SCL)
2-3	UART(RX)

2.4.1.22 TX/SDA Select (JP7)

Pin №	Signal Name
1-2	DDC (SDA)Connector
2-3	UART (TX)Connector

2.4.1.23 DDC Jumper (JP8)

Pin №	Signal Name
1-2	DDC Protect
2-3	DDC Enable

2.4.2.24 OSD Control Connector (CN9)

| Pin №	Signal Name	Description
1	PWR	Power LED
2	PWR_SW	Power on/off control
3	>	Right key
4	+	Increase
5	-	Decrease
6	NC	No connection
7	<	Left key
8	STB	Standby LED
9	GND	Ground
10	DC5V	5V input

2.4.2 I/O Side Connectors

The table below shows each of I/O side connectors and its functions.

| Connector	Description	Note
CN1	VGA Connector	Standard 15pin D-sub connector 8.89mm, right angle
CN4	Display Port Input	3VD51203-D7JJ-7H
CN7	HDMI Input Connector	U7211-19P-110R/SMD+DIP
CN8	LVDS Panel Connector	Hirose-DF13DP-1.25V

2.4.2.1 VGA Connector (CN1)

R6HD-100 A/D Board uses standard 15pin D-sub connector.
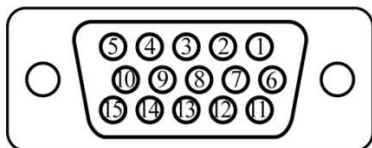
Pin №	Signal Name	Pin №	Signal Name
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	AGND
7	AGND	8	AGND
9	+5V	10	GND
11	NC	12	SDA
13	H Sync	14	V Sync
15	SCL		

2.4.2.2 Display Port Connector (CN4)

R6HD-100 A/D Board uses one Display Port 1.1 connector.
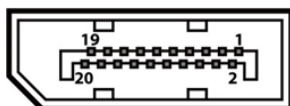
Pin №	Signal Name	Pin №	Signal Name
1	Lane 0+	2	GND
3	Lane 0-	4	Lane 1+
5	GND	6	Lane 1-
7	Lane 2+	8	GND
9	Lane 2-	10	Lane 3+
11	GND	12	Lane 3-
13	GND	14	GND
15	AUX+	16	GND
17	AUX-	18	Hot Plug
19	GND	20	+3.3V

2.4.2.3 HDMI Input (CN7)

Pin №	Signal Name
1	HDMI_RX2+
2	GND
3	HDMI_RX2-
4	HDMI_RX1+
5	GND
6	HDMI_RX1-
7	HDMI_RX0+
8	GND
9	HDMI_RX0-
10	HDMI_RXC+
11	GND
12	HDMI_RXC-
13	HDMI_CON_CEC
14	NC
15	HDMI_CON_SCL
16	HDMI_CON_SDA
17	HDMI_CON_CABLE
18	+5V_HDMI
19	HDMI_CON_HP

2.4.2.4 8Bits LVDS Signal Output (CN8)
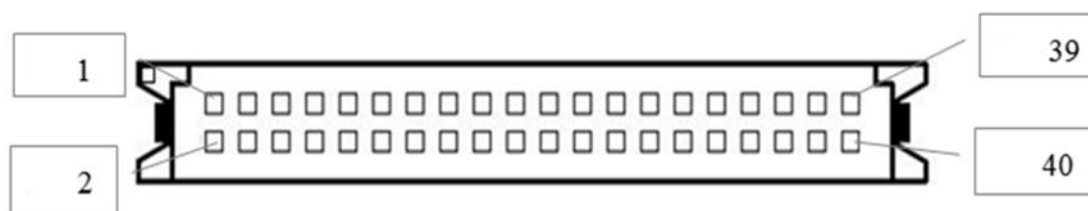
Pin №	Signal Name	Description
1	Vpnl	Panel power
2	BTX0-	LVDS negative even bit 0
3	Vpnl	Panel power
4	BTX0+	LVDS positive even bit 0
5	NC	No connection
6	BTX1-	LVDS negative even bit 1
7	NC	No connection

8	BTX1+	LVDS positive even bit 1
9	GND	Ground
10	BTX2-	LVDS negative even bit 2
11	GND	Ground
12	BTX2+	LVDS positive even bit 2
13	GND	Ground
14	BCLKTX-	LVDS negative even clock
15	GND	Ground
16	BCLKTX+	LVDS positive even clock
17	GND	Ground
18	BTX3-	LVDS negative even bit 3
19	GND	Ground
20	BTX3+	LVDS positive even bit 3
21	GND	Ground
22	ATX0-	LVDS negative odd bit 0
23	GND	Ground
24	ATX0+	LVDS positive odd bit 0
25	GND	Ground
26	ATX1-	LVDS negative odd bit 1
27	GND	Ground
28	ATX1+	LVDS positive odd bit 1
29	GND	Ground
30	ATX2-	LVDS negative odd bit 2
31	GND	Ground
32	ATX2+	LVDS positive odd bit 2
33	GND	Ground
34	ACLKTX-	LVDS negative odd clock
35	NC	No connection
36	ACLKTX+	LVDS positive odd clock
37	NC	No connection
38	ATX3-	LVDS negative odd bit 3
39	NC	No connection
40	ATX3+	LVDS positive odd bit 3

Using the LCD Monitor

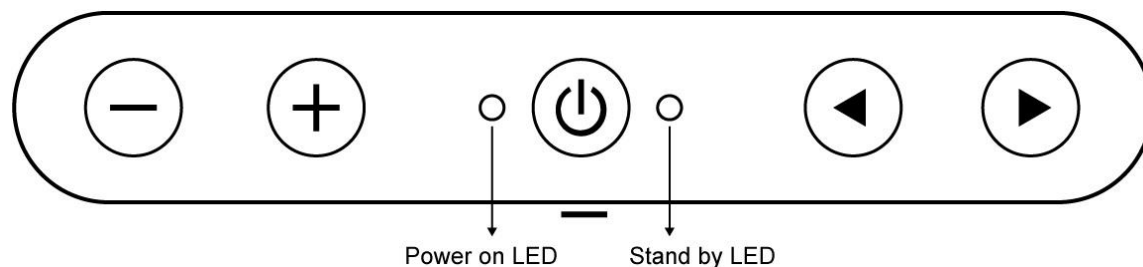This chapter contains operating LCD monitor guide. You can find OSD key definitions and menu navigation in this chapter.
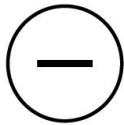
3

Chapter 3: Using the LCD Monitor

This chapter contains operating LCD monitor guide. You can find OSD key definitions and menu navigation in this chapter.

3.1 OSD Key Functions

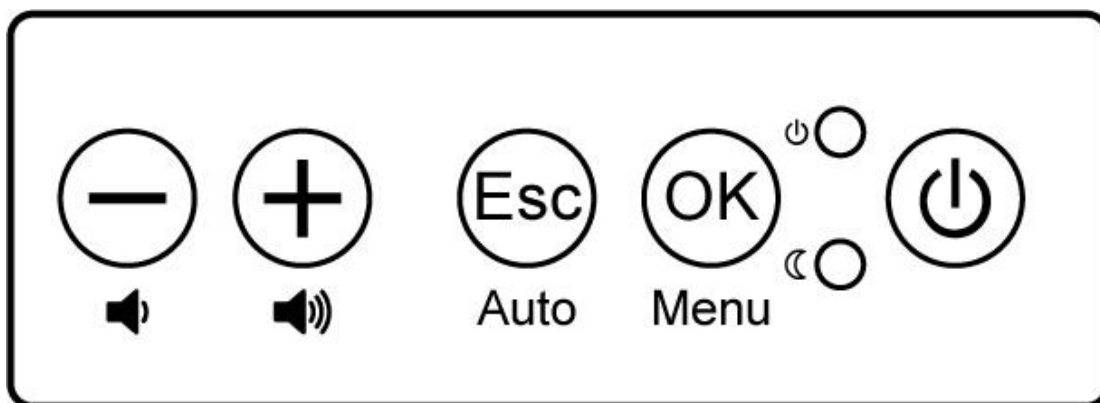**OSD Control Panel**

Type A

Icon	Function
⊖	Decrease the value / Select up
⊕	Increase the value / Select down
⏻	Power switch
◀	Select left
▶	Select right / Call main OSD menu

Type B

Icon	Function
	Decrease the value / Select up
	Increase the value / Select down
	Power switch
	Exit / Auto adjustment
	Enter / Call main OSD menu

LED Indicators

Icon	Description	Function
	Power Indicator	Lights up in "Green" when the monitor turn on
	Stand by Indicator	Lights up in "Orange" when the device cannot detect any input source

3.2 OSD Menu Navigation

☀	BRICONTRAST	BRIGHTNESS CONTRAST	XII	GAMMA	GAMMA0 GAMMA1 GAMMA2
▭	POSITION	Only support VGA mode	⊕/☉	CHANNEL	AUTO ANALOG DVI HDMI
↔	IMAGE	Only support VGA mode	▭	RECALL	YES NO
☺	COLOR	USER 9300K 6500K ADC RIGHTNESS	EXIT	OSD EXIT	YES NO
OP	OPTION	VOLUME ADJUST SPEAK ON/OFF			

BRICONTRAST

OSD icon	Sub menu	Settings	Note
☀ BRICONTRAST	**BRIGHTNESS**	**slider bar**	Default 50
	Use to adjust the screen's brightness. Range 0 to 100		
	CONTRAST	**slider bar**	Default 50
	Use to adjust the screen's contrast. Range 0 to 100		

POSITION (VGA mode only)

OSD icon	Sub menu	Settings	Note
POSITION	**H POSITION**	**slider bar**	
	Use to adjust the image to the left or right on the screen		
	V POSITION	**slider bar**	
	Use to adjust the image up or down on the screen		

IMAGE (VGA mode only)

| OSD icon	Sub menu	Settings	Note
⊞ IMAGE	**AUTO**	**Select and execute**	
	Use to choose the best settings for the current input signal		
	CLOCK	**slider bar**	Default 50
	Use to adjust the value of horizontal image. Range 0 to 100		
	PAHSE	**slider bar**	Default 50
	Use to adjust the phase control (Phase adjustment may be required to optimize the display quality)		
	WHITE BALANCE	**Select and execute**	
	Use to set RGB signal voltage level		

COLOR

OSD icon	Sub menu	Settings	Note
COLOR	**USER**	**R.G.B slider bar**	
	Choose RED/GREEN/BLUE to set value of color temperature brightness to suit you own preference		
	9300K	**Select and execute**	
	Use to set value of monitor for the CIE coordinate 9300 color temperature		
	6500K	**Select and execute**	
	Use to set value of monitor for the CIE coordinate 6500 color temperature		
	ADC RIGHTNESS	**slider bar**	Default 50
	Set value of monitor for ADC Brightness. Range 0 to 100		

GAMMA

OSD icon	Sub menu	Settings	Note
XII GAMMA	**GAMMA 0**	**Select and execute**	Default GAMMA0
	Choose the parameter of GAMMA 0 as default setting.		
	GAMMA 1	**Select and execute**	
	Choose the parameter of GAMMA 1 as default setting.		
	GAMMA 2	**Select and execute**	
	Choose the parameter of GAMMA 2 as default setting.		

OPTION

OSD icon	Sub menu	Settings	Note
OP OPTION	**RS232**	**ON/OFF**	Default ON
	Remote control		
	VR Brightness	**ON/OFF**	Default OFF
	Choose the brightness control mode by VR control		
	Volume	**slider bar**	Default 10
	Use to set value of Volume		
	Speaker	**ON/OFF**	Default 10 OFF
	Use to set value of Volume Speaker		

CHANNEL

OSD icon	Sub menu	Settings	Note
CHANNEL	**AUTO SCAN**	**Select and execute**	Default mode
	Auto detect the input source		
	ANALOG	**Select and execute**	
	Switch the setting of signal input to Analog mode		
	HDMI	**Select and execute**	
	Switch the setting of signal input to HDMI mode		
	DP	**Select and execute**	
	Switch the setting of signal input to DP mode		

RECALL

OSD icon	Sub menu	Settings	Note
RECALL	**YES**	**Select and execute**	
	Recall the factory default setting		
	NO	**Select and execute**	
	Return to main menu		

EXIT

OSD icon	Sub menu	Settings	Note
EXIT EXIT	**YES**	**Select and execute**	
	Exit the OSD menu		
	NO	**Select and execute**	
	Return to main menu		

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Troubleshooting

This chapter contains troubleshooting information. Check this guide before calling for repairs.

Chapter 4: Troubleshooting

If your monitor fails to operate correctly, check the following chart for possible solution before calling for repairs:

Condition	Check Point
The picture does not appear	• Check if the signal cable is firmly seated in the socket. • Check if the Power is ON at the computer • Check if the brightness control is at the appropriate position, not at the minimum.
The screen is not synchronized	• Check if the signal cable is firmly seated in the socket. • Check if the output level matches the input level of your computer. • Make sure the signal timings of the computer system are within the specification of the monitor. • If your computer was working with a CRT monitor, you should check the current signal timing and turn off your computer before you connect the VGA Cable to this monitor.
The position of the screen is not in the center	• Adjust the H-position, and V-position, or Perform the Auto adjustment.
The screen is too bright (too dark)	• Check if the brightness or contrast control is at the appropriate position, not at the Maximum (Minimum).
The screen is shaking or waving	• Perform the Auto adjustment. • Moving all objects which emit a magnetic field such as motor or transformer, away from the monitor. • Check if the specific voltage is applied. • Check if the signal timing of the computer system is within the specification of monitor.

If you are unable to correct the fault by using this chart, stop using your monitor and contact your distributor or dealer for further assistance

Frequency Table

This section includes frequency table and the list of supported modes. The choice of supported modes depends on the monitor native resolution.

Appendix

Appendix A: Frequency Table

The choice of supported modes depends on the monitor native resolution.

Display Port 1.1

№	Resolution	Frequency (Hz)
1	800x600	60
2	1024x768	60
3	1280x1024	60
4	1366x768	60
5	1600x1200	60
6	1680x1050	60
7	1920x1080	60
8	1920x1200	60

VGA

№	Resolution	Frequency (Hz)
1	640x480	60
2	640x480	72
3	640x480	75
4	800x600	56
5	800x600	60
6	800x600	72
7	800x600	75
8	1024x768	60
9	1024x768	70
10	1024x768	75
11	1280x1024	60
12	1280x1024	75
13	1366x768	60
14	1600x1200	60
15	1680x1050	60
16	1920x1200	60
17*	1920x1080	60

HDMI 1.4

№	Resolution	Frequency (Hz)
1	800x600	60
2	1024x768	60
3	1280x1024	60
4	1366x768	60
5	1600x1200	60
6	1680x1050	60
7	1920x1080	60
8	1920x1200	60

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Remote Control Set Command

This section includes remote control set command.

Appendix

Appendix B： Remote Control Set Command

№	Function	Length	Command index	Value	Checksum(*1)
1	Power	0x05	0x40	0x00	0= ON 1=OFF	0xBB= ON 0xBA=OFF
2	Auto	0x05	0x40	0x01	0=Auto	0xBA=Auto
3	Recall	0x05	0x40	0x02	0=Recall	0xB9=Recall
4	White Balance	0x05	0x40	0x03	0=White Balance	0xB8=White Balance
5	Main Input Source	0x05	0x40	0x04	0=VGA 7=HDMI 8=DP	0xB7=VGA 0xB0=HDMI 0xAF=DP
6	Brightness	0x05	0x40	0x10	0x00~0x64	0xAB=00 ~ 0x47=100
7	Contrast	0x05	0x40	0x11	0x00~0x64	0xAA=00 ~ 0x46=100
8	ADC Brightness	0x05	0x40	0x14	0x00~0x64	0xA7=00 ~ 0x43=100
9	Gamma	0x05	0x40	0x31	0=Gamma 0 1=Gamma 1 2=Gamma 2	0x8A=Gamma 0 0x89=Gamma 1 0x88=Gamma 2
10	Color Temp	0x05	0x40	0x32	0=user 1=9300K 2=6500K	0x89=User 0x88=9300K 0x87=6500K
11	Color-R	0x05	0x40	0x33	0x00-0x64	0x88=00 ~ 0x24=100
12	Color-G	0x05	0x40	0x34	0x00-0x64	0x87=00 ~ 0x23=100
13	Color-B	0x05	0x40	0x35	0x00-0x64	0x86=00 ~ 0x22=100
14	Volume	0x05	0x40	0x50	0x00-0x1F	0x6B=00 ~ 0x4C=31
15	Volume Mute	0x05	0x40	0x54	0x00=Mute On 0x01=Mute Off	0x67=Mute On 0x66=Mute Off

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Remote Control Get Command

This section includes remote control get command.

C

Appendix

Appendix C: Remote Control Get Command

Command(Tx)				Acknowledgement(Rx)			
Function	Length	Command	index	Checksum (*1)	Length	Index	Value	Checksum (*1)
Power	0x04	0x30	0x00	0xCC	0x04	0x00	0=ON 1=OFF	0xFC=ON 0xFB=OFF
Main Input Source	0x04	0x30	0x04	0xC8	0x04	0x04	0=VGA 7=HDMI 8=DP	0xF8=VGA 0xF1=HDMI 0xF0=DP
Brightness	0x04	0x30	0x10	0xBC	0x04	0x10	0x00-0x64	0xEC=0 ~ 0x88=100
Contrast	0x04	0x30	0x11	0xBB	0x04	0x11	0x00-0x64	0xEB=0 ~ 0x87=100
ADC Brightness	0x04	0x30	0x14	0xB8	0x04	0x14	0x00~0x64	0xE8=0 ~ 0x84=100
Gamma	0x04	0x30	0x31	0x9B	0x04	0x31	0=Gamma 0 1=Gamma 1 2=Gamma 2	0xCB=Gamma 0 0xCA=Gamma 1 0xC9=Gamma 2
Color Temp	0x04	0x30	0x32	0x9A	0x04	0x32	0=user 1=9300K 2=6500K	0xCA=user 0xC9=9300k 0xC8=6500k
Color-R	0x04	0x30	0x33	0x99	0x04	0x33	0x00-0x64	0xC9=0 ~ 0x65=100
Color-G	0x04	0x30	0x34	0x98	0x04	0x34	0x00-0x64	0xC8=0 ~ 0x64=100
Color-B	0x04	0x30	0x35	0x97	0x04	0x35	0x00-0x64	0xC7=0 ~ 0x63=100
Volume	0x04	0x30	0x50	0x7C	0x04	0x50	0x00-0x1F	0xAC=0 ~ 0x8D=31
Volume Mute	0x04	0x30	0x54	0x78	0x04	0x54	0x00=Mute On 0x01=Mute Off	0xA8=Mute On 0xA7=Mute Off

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Electrical Characteristics

This section includes important information on power input, input/analog input voltage and power consumption in different modes.

Appendix

D

Appendix D: Electrical Characteristics

This section includes important information on power input, input/analog input voltage and power consumption in different modes.

Power Input

Parameter		Symbol	Min.	Typ.	Max.	Unit.	Remark
Input Voltage		Vin	+11	+12	+13	VDC	Note 1
Analog Input Voltage		VCVS	-	1.0	1.1	Vp-p	Note 2
		VRGB	-	0.7	1.1	Vp-p	Note 2,3
Digital Input Signal	H-level	Vih	2.75	-	5.0	VDC	Note 4
	L-level	Vil	0	-	1.0	VDC	

Note 1: Power input.

Note 2: Composite and standard RGB video signal input impedance: 75Ω.

Note 3: RIN, GIN, BIN terminals (RGB video signals).

Note 4: HS, VS, DDCSDA, DDCSCL.

Power Consumption

Parameter	Min.	Typ.	Max.	Unit.	Remark
Operating Mode	3	4	4.5	Watt	
Standby Mode	-	-	2	Watt	
Off Mode	-	-	1	Watt	

NOTES

NOTES