ARV-31XX Board

INSTRUCTION MANUAL

(Hardware version A1.2X)

Model Name
ARV-3100 (RGB, LVDS)
ARV-3102 (RGB, TTL)
ARV-3120 (RGB, DVI, LVDS)
ARV-3122 (RGB, DVI, TTL)

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Revision History

Version		Date	Page	Section	Description
Product	Document				
A1.2X	2.13	2015-05-05	21	3.12	Rename pin2-3 of CN5 (TX/RX)
A1.2X	2.12	2015-04-15	17 18	3.5 3.6	Definition change on CN7-Pin1/2/27/28, CN8-Pin30/32/34
A1.2x	2.11	2015-04-10	29	5	Update operating temperature
A1.2x	2.10	2015-02-17	7 13	2.1 3	Item13,note:800x480 Update PCB drawing
A1.2x	2.9	2014-08-19	7,8,14	2.1/3.3	BIOS ver 1.32x,1.35x +5V,+12V(remove 24V)
A1.2x	2.8	2013-07-24	9,17	2.8/3.9	CN14/CN15; +5V DC
A1.2	2.7	2012/08/16	7, 8	2.1	Add Jumpers Drawing
A1.2	2.6	2012/05/11	6	2.1	Revise BIOS Jumpers
A1.2	2.5	2012/03/16	10	2.12	Revise "Update firmware BIOS"
A1.2	2.4	2012/02/13	26	5	Add power consumption spec
A1.2	2.3	2012/01/19	6	2	Add description before Warning part in Sec 2
A1.2	2.2	2012/01/17	8	2.1	Revise BIOS Switch
A1.2	2.1	2012/01/05	7	2.1	Revise BIOS Switch
A1.1	2.0	2011/12/16	15	3.4	Add Brightness Control Jumpers
A1.1	1.9	2011/11/17	6, 7, 8	2.1	Revise BIOS Switch
A1.1	1.8	2011/11/15	16	3.7	Revise Backlight Connector Description
			All	All	Revise Edition
A1.1	1.7	2011/10/25	6, 7, 8	2.1	Revise BIOS Switch
A1.1	1.6	2011/09/09	10	3	Revise PCB Layout
			15	3.8	Add "Working Voltage Setting For LCD Panel"
			16	3.9	Add "Working Voltage Setting For Inverter"
			16	3.10	add" BIOS programming port"
A1.0	1.5	2011/08/01	8	2.1	Add BIOS SWITH
A1.0	1.4	2011/06/28	27	5	Revise "Operating Temperature & Humidity"
A1.0	1.3	2011/03/03	6	2	Revise BIOS SWITH description
A1.0	1.2	2010/11/22	8	2	Add BIOS SWITH
A1.0	1.1	2010/09/06	6,7	2	Add BIOS SWITH

A1.0	1.0	2010/02/01			First release

<Remarks>

1 Introduction

1.1 Overview

Thank you for purchasing Spectrah product ARV-31XX A/D converter boards. The ARV-31XX series is designed as a small size LCD driving board for industrial display systems or customized display devices. The ARV-31XX series provides excellent display quality, ease of use, and cost efficient solutions for LCD panel users.

The ARV-31XX series provides two different types of signal input ports, computer RGB and DVI. ARV-31XX supports a wide range of LCD panels including AUO, Chi-Mei, Sharp, CPT, NEC, Optrex, Mitsubishi, Toshiba, Samsung, and LG. The onboard controller Genesis GM5766 is a high quality A to D and D to D receiver device capable of converting analog or PanelLink digital signals to the required TTL or LVDS signals for various LCD panels. This controller board can drive LCD panels from VGA (640 x 480) up to WSXGA (1680 x1050) resolutions at true color, one or two pixel/clk mode. The ARV-31XX series also provides Genesis unique technology to support excellent panel display quality: ACC (Adaptive Color and Contrast) & ACM-II (Active Color Management), image phase and position adjustment, Auto-configuration, Auto-signal detection, smart OSD adjustment, and perfect scaling function.

Before you start installation, please refer to the Hardware Installation Guide in Section 2 and Hardware Information in Section 3 for details and to ensure each switch, connector, and jumper are set properly. We truly believe you will enjoy using the Spectrah ARV-31XX series products. Thank you for making Spectrah AD converter board as your choice.

1.2 Check List

Before operating this AD converter board, please make sure that all the items listed below are present in your package:

- **One ARV-31XX series AD converter board**
- **OSD470 (Optional)**
- **Display cable kits (Optional)**
- **Inverter (Optional)**
- **LED driver (Optional)**

1.3 Contact Information

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2 Hardware Installation Guide

This section provides quick installation guide. For details in connector or pin definition, please refer to Section 3 and Section 4 in the manual.

WARNING - Static electricity can severely damage electronic parts. Take these precautions:
- Before touching any electronic parts, be sure you are properly grounded or that static electricity is discharged from your body. You can do this by touching the metal frame of your computer.
- Do not remove the product from the anti-static container it was shipped in until you are ready to install it. When you remove the product from your display device, place it back in its container.
- When handling a card, hold its edges, and avoid touching its circuitry.

Before you start the installation, please ensure that three required components are available: AD converter board ARV-31XX series, signal input cable, and panel cable (Connect ARV-31XX to LCD panel).

Note:
During the installation procedures, if you need pin definition, hardware specifications, or OSD features in detail, please refer to Chapter 3 (Hardware Information) and Chapter 4 (OSD Setup).

2.1 Set BIOS Jumpers

There are 5 jumpers to allow user to set appropriate BIOS for various LCD panels. To change output display timing, after resetting jumpers, user should remove power and plug power jack in ARV-31XX again to reset system and get new display timing. The following table depicts the jumper setting and associated display timing. Please refer to Spectrah's panel selection guide or contact Spectrah's customer service center to get correct BIOS setting for your LCD panels.

Note:

1. SW6 allows users to change the polarity of PWM signal/ or DC voltage through OSD brightness control. The default is OFF which meets the requirement for most dimming controllers of backlights.
2. ON: Short; OFF: Open
3. LVDS
   - XXXX-LS (NS 8-bit LDI Standard);
   - 6B-XXXX-LS (6+2-Bit LVDS: JEIDA 8-bit LVDS Standard)

F31-1.35x BIOS Jumpers					
Item	SW1-SW2-SW3-SW4-SW5	Panel Timing	Type	Note	Jumpers
0	ON-ON-ON-ON-ON	800480	TTL	800x480	●●●●●
1	OFF-ON-ON-ON-ON	800480-LS	LVDS	800x480	○●●●●
2	ON-OFF-ON-ON-ON	6B-800480-LS	LVDS	800x480	●○●●●
3	OFF-OFF-ON-ON-ON	1024600-LS	LVDS	1024x600	○○●●●
4	ON-ON-OFF-ON-ON	6B-1024600-LS	LVDS	1024x600	●●○●●
5	OFF-ON-OFF-ON-ON	1280768-LS	LVDS	1280x768	○●○●●
6	ON-OFF-OFF-ON-ON	6B-1280768-LS	LVDS	1280x768	●○○●●
7	OFF-OFF-OFF-ON-ON	1280800-LS	LVDS	1280x800	○○○●●
8	ON-ON-ON-OFF-ON	6B-1280800-LS	LVDS	1280x800	●●●○●
9	OFF-ON-ON-OFF-ON	1024600-LS-AU	LVDS	1024x600	○●●○●
10	ON-OFF-ON-OFF-ON	6B-1024600-LS-AU1	LVDS	1024x600	●○●○●
11	OFF-OFF-ON-OFF-ON	800480-LS-NLF	LVDS	800x480	○○●○●
12	ON-ON-OFF-OFF-ON	1024600-LS-NLF	LVDS	1024x600	●●○○●
13	OFF-ON- OFF-OFF -ON	800480-LS-AU2	LVDS	800x480	○●○○●

F31-1.32x BIOS Jumpers

Item	SW1-SW2-SW3-SW4-SW5	Panel Timing	Type	Note	Jumpers
0	ON-ON-ON-ON-ON	1024768-LS	LVDS	1024x768	●●●●●
1	OFF-ON-ON-ON-ON	6B-1024768-LS	LVDS	1024x768	○●●●●
2	ON-OFF-ON-ON-ON	1024768-CMO-LS	LVDS	1024x768	●○●●●
3	OFF-OFF-ON-ON-ON	6B-1024768-CMO-LS	LVDS	1024x768	○○●●●
4	ON-ON-OFF-ON-ON	12801024-LS	LVDS	1280x1024	●●○●●
5	OFF-ON-OFF-ON-ON	6B-12801024-LS	LVDS	1280x1024	○●○●●
6	ON-OFF-OFF-ON-ON	1440900-LS	LVDS	1440x900	●○○●●
7	OFF-OFF-OFF-ON-ON	6B-1440900-LS	LVDS	1440x900	○○○●●
8	ON-ON-ON-OFF-ON	16801050-LS	LVDS	1680x1050	●●●○●
9	OFF-ON-ON-OFF-ON	6B-16801050-LS	LVDS	1680x1050	○●●○●
10	ON-OFF-ON-OFF-ON	16001200-LS	LVDS	1600x1200	●○●○●
11	OFF-OFF-ON-OFF-ON	1280720-LS	LVDS	1280x720	○○●○●
12	ON-ON-OFF-OFF-ON	1366768-LS	LVDS	1366x768	●●○○●
13	OFF-ON-OFF-OFF-ON	6B-1366768-LS	LVDS	1366x768	○●○○●
14	ON-OFF-OFF-OFF-ON	1024768-LS-NL	LVDS	1024x768	●○○○●
15	OFF-OFF-OFF-OFF-ON	640480-LS-NL	LVDS	640x480	○○○○●
16	ON-ON-ON-ON-OFF	640480-LS	LVDS	640x480	●●●●○
17	OFF-ON-ON-ON-OFF	6B-640480-LS	LVDS	640x480	○●●●○
18	ON-OFF-ON-ON-OFF	640480-SP	TTL	640x480	●○●●○
19	OFF-OFF-ON-ON-OFF	640480-65	TTL	640x480	○○●●○
20	ON-ON-OFF-ON-OFF	640480	TTL	640x480	●●○●○
21	OFF-ON-OFF-ON-OFF	640480-SH	TTL	640x480	○●○●○
22	ON-OFF-OFF-ON-OFF	640480-NL	TTL	640x480	●○○●○
23	OFF-OFF-OFF-ON-OFF	640480-NL2	TTL	640x480	○○○●○
24	ON-ON-ON-OFF-OFF	800600-NL3	TTL	800x600	●●●○○
25	OFF-ON-ON-OFF-OFF	800600-LS	LVDS	800x600	○●●○○
26	ON-OFF-ON-OFF-OFF	6B-800600-LS	LVDS	800x600	●○●○○
27	OFF-OFF-ON-OFF-OFF	6B-800600-CMO-LS	LVDS	800x600	○○●○○
28	ON-ON-OFF-OFF-OFF	6B-800600-TS-LS	LVDS	800x600	●●○○○
29	OFF-ON-OFF-OFF-OFF	800600	TTL	800x600	○●○○○
30	ON-OFF-OFF-OFF-OFF	800600-SH	TTL	800x600	●○○○○
31	OFF-OFF-OFF-OFF-OFF	800600-LS-NL	LVDS	800x600	○○○○○

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2.2 Set Panel VDD

There are 3 jumpers (JP2, JP3, JP4) to allow user to set appropriate VDD for LCD panels. Please refer to panel specifications in power supply voltage of LCD module before connecting to ARV-31XX series. Otherwise, onboard +12V or + 5V VDD setting in ARV-31XX series may damage your LCD panel with lower power supply voltage like +5V or +3.3V. (Refer to section 3.2 in detail)

JP2	JP3	JP4
+3.3V	+5V	Vin = +12V

2.3 Set Backlight VDD

There are 3 jumpers (JP8, JP9, JP10) to allow user to set appropriate VDD for backlight inverter module. Please refer to inverter specifications before you connect cable to inverter module. (Refer to section 3.3 in detail)

JP8	JP9	JP10
+3.3V	+5V	Vin= +12V

2.4 Set Brightness Control

■ Set JP11 & JP12 to select DC Voltage or PWM to control brightness. Please refer to hardware information in Section 3 for details.

2.5 Connect panel cable (LVDS or TTL cable)

■ Connect CN7 LVDS connector to panels through display cables.
■ Connect CN8 TTL connector to panels through display cables.

2.6 Connect backlight power
■ Connect CN9 to backlight controller using 7-pin inverter cable (If user has the power module for backlight inverter, turn on backlight independently, without the need to connect cable to CN9).

2.7 Connect OSD touch pad
■ Connect OSD-476/486 touch pad and cable to CN10.

2.8 Connect the power adapter to turn on system
■ Connect power cable from power adapter (+12V DC) to the input power connector of CN14 or CN15 (+12V DC is default).
■ The LED of OSD-476/486 lights red and under normal condition, a small **No Signal** screen appears on the panel in 3 seconds. If not, please check whether power adapter or cable is connected firmly.

2.9 Connect signal input cables
■ Plug analog VGA cable to CN2
■ Plug DVI-I cable to CN1 (Optional for ARV-3120)

2.10 Power on your computer
Power on your system. The LED of OSD-476/ 486 lights green when a supported active computer graphics is connected to ARV-31XX. The LED lights red when system enters standby or there is a loss of active source (Loss of sync in PC Graphics Mode). If the panel display is not normal such as dual screens, smaller screen, especially in the first installation, please select **Auto-Config** option in OSD to reconfigure all the parameters setting and save the update parameters in onboard NVRAM. User can also enter in OSD setting to get correct image phase, position, and other OSD parameters. For details, please refer to Section 4 for more OSD information.

2.11 Set OSD (On-Screen Display)
Following OSD features in Section 4, user can adjust brightness, contrast, image position, sampling phase, auto-configuration, OSD time-out, etc. and save the parameters in the NVRAM to generate an appropriate panel display yourself.

Note:
In the first setup or using a new VGA card, we suggest user to do
Auto-config or adjust image **Phase**, **Position**, or **Width** through OSD to
set appropriate parameters for LCD panel, especially for the analog RGB
input. The factory default setting may not meet the user's requirements due
to the difference RGB signal value from VGA controllers. In addition, if the
horizontal noise appears on the panel screen, please select **Image** feature
to adjust **Phase** to reduce the noise.

2.12 Update firmware BIOS
CN5 allows user to use Spectrah's programming tool to upgrade new
firmware BIOS through RS232 interface.

3 Hardware Information

Board Dimension: 95(L) x 90(W) mm [inch]
PCB Version: A1.2X

ARV-310 Rev:A1.2
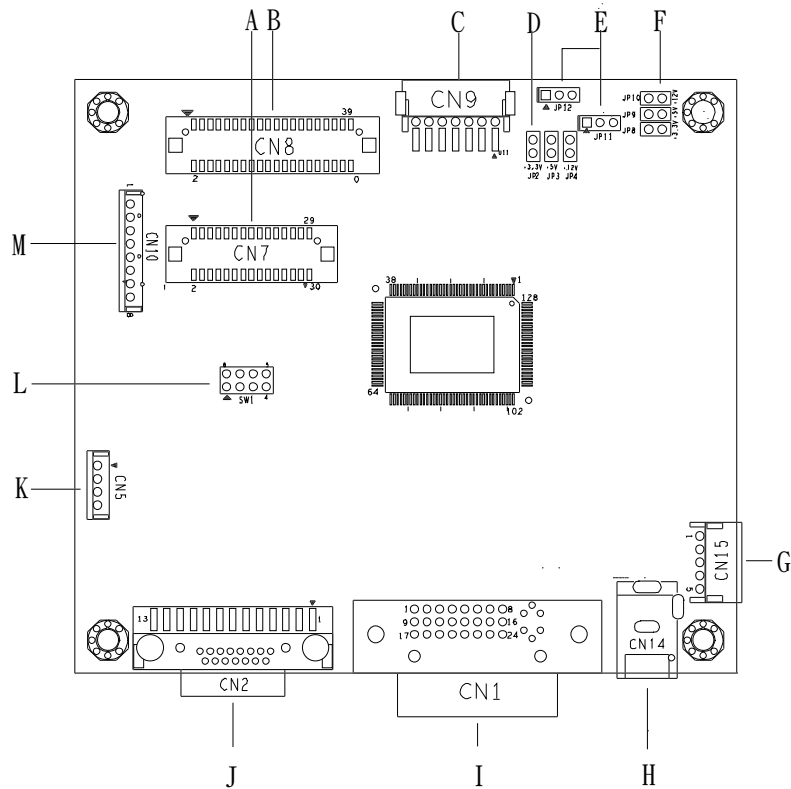
	ARV-3100 layout No. Definition
A	LVDS Connector
B	TTL Connector
C	Backlihgt Connector
D	Working Voltage Setting Jumpers for LCD panel
E	Brightness Control Jumpers
F	Working Voltage Setting Jumpers for backlight
G	5-pin Wafer Power Connector
H	DC Jack Connector
I	DVI-I Pin Connector
J	DB-15 Connector
K	BIOS programming Port
L	BIOS Switch Jumpers
M	OSD Connector

3.1 BIOS Jumpers

There are 5 jumpers in ARV-31XX to allow user to set appropriate BIOS for LCD panels. Please refer to section 2.1 (BIOS Jumper setting) before turning on ARV-31XX series. To change output display timing, user should remove power and plug power jack in ARV-31XX again to reset system and get new display timing.

3.2 Working Voltage Setting for LCD Panel

JP2, JP3, and JP4 allow user to select working voltage in ARV-31XX series for LCD panel module, +3.3V, +5V, +12V. For details in LCD panel VDD setting, please refer to the LCD panel specifications.

Note1: The voltage of JP4 is dependent on the input voltage from the DC power adapter. +12V is the required DC voltage.

JP2	JP3	JP4
+3.3V	+5V	+12V

3.3 Working Voltage Setting for Backlight

(JP8, JP9, JP10)

JP8, JP9, and JP10 allow user to select working voltage in ARV-31XX series for the backlight module of LCD panel, +3.3V, +5V, or +12V.
The voltage in pin 1&2 of CN9 is set by JP8, JP9, or JP10. For details in the backlight voltage setting, please refer to the LCD panel specifications.

Note1: The voltage of JP10 is dependent on the input voltage from the DC power adapter. +12V is the required DC voltage.

JP8	JP9	JP10
+3.3V	+5V	+12V

3.4 Brightness Control Jumpers (JP11, JP12)

There are 2 jumpers (JP11, JP12) to allow user to select brightness control through DC voltage or PWM. Please refer to the specifications of LCD panel, LED driving board, or inverter before you set up both jumpers. Normally, if LED driving board is integrated in LCD panel, it needs PWM signal for dimming control. Most Spectrah's inverters and LED boards need DC voltage for brightness control.

	1 2 3	
JP11	○ ○ ○	DC Voltage (Default)
JP12	○ ○ ○	
	1 2 3	
JP11	○ ○ ○	PWM
JP12	○ ○ ○	

3.5 LVDS Connector CN7 (DF13-30P)

■ **Using connector:** Hirose DF13-30P connector compatible
■ **Mating connector:** Hirose DF13-30S connector compatible

ARV-31X0 series provides one LVDS interface connector for LVDS panels. This connector supports single or dual channel LVDS output. The following table depicts the pin definition in CN7.

Notice: Pin1/Pin2/Pin27/Pin28 link to Pin6/Pin5/Pin1/Pin2 of CN9 to support LED backlight power on/off.

Pin	Function	Pin	Function
1	PWM/DC	2	On/Off
3	A0M	4	A4M
5	A0P	6	A4P
7	A1M	8	A5M
9	A1P	10	A5P
11	A2M	12	A6M
13	A2P	14	A6P
15	A3M	16	A7M
17	A3P	18	A7P
19	GND	20	GND
21	CLK1M	22	CLK2M
23	CLK1P	24	CLK2P
25	GND	26	GND
27	LED_VDD	28	LED_VDD
29	VDD_LCD	30	VDD_LCD

3.6 LCD TTL Level Connector CN8 (ARV-31X2 only)

■ **Using connector:** Hirose DF13-40P connector compatible
■ **Mating connector:** Hirose DF13-40S connector compatible

The ARV-31X2 series provides a 40-pin connector for single channel of TTL type panels. The ARV-31X2 series doesn't support the panel which is a dual pixels/clk mode (18-bit x 2, or 24-bit x 2). The following table depicts the pin definition in CN8.

Notice: Pin30/Pin34/Pin32 link to Pin6/Pin5/Pin1/2 of CN9 to support LED backlight power on/off.

Pin	Function	Pin	Function
1	GND	2	EB1
3	ERO	4	EB2
5	ER1	6	EB3
7	ER2	8	EB4
9	ER3	10	EB5
11	ER4	12	EB6
13	ER5	14	EB7
15	ER6	16	GND
17	ER7	18	SCLK
19	GND	20	GND
21	EG0	22	TVS
23	EG1	24	THS
25	EG2	26	GND
27	EG3	28	DEN
29	EG4	30	PWM/DC
31	EG5	32	LED_VDD
33	EG6	34	On/Off
35	EG7	36	VDD_LCD
37	GND	38	VDD_LCD
39	EB0	40	N/C

3.7 Backlight Connector CN9

(JST S7B-PH compatible, 2.0mm pitch)

CN9 allows user to provide DC power from ARV-31XX series directly to backlight inverter. Users can also use external power module to power on backlight inverter independently. The default dimming control through pin-6 is defined by JP11 & JP12 which allow user to select DC voltage or PWM signal to control brightness. For details in inverter VDD setting, please refer to the specifications of backlight inverter. The following table depicts the pin definition of CN9.

7	6	5	4	3	2	1
VR	PWM/DC	On/Off	GND	GND	VDD_In	VDD_In

3.8 OSD Connector CN10 (JST-S8B Compatible, 2.0 pitch)

CN10 allows user to plug in OSD cable and controller board. The following table depicts the pin definition of CN10.

1	2	3	4	5	6	7	8
S1-Menu	S2-Enter	S3-Right	S4-Left	S5-On/Off	LED-Orange	LED-Green	GND

3.9 DC Power-In Connector CN14, CN15

There are two connectors CN14 and CN15 to supply VDD power for ARV-31XX series. User can select either one connector as the major power input port.

- **DC Jack Connector CN14** (Diameter 2.1mm)
  Plug the connector of power adapter into CN14 to provide +12V or other voltage DC current. At least 45 watt DC power source is suggested for normal system operation.
- **5-Pin Wafer Power Connector CN15** (JST S5B-PH compatible)
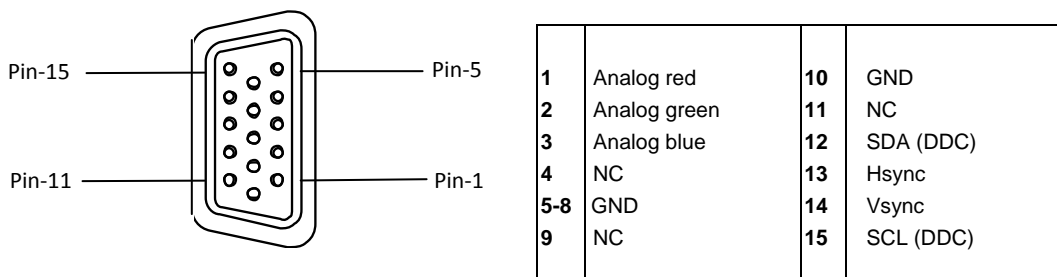 Simply plug a 5-pin power connector into CN15 to provide +12V DC and GND for ARV-31XX series.

5	4	3	2	1
+12V	+12V	GND	GND	+5V

Warning!

■ The DC voltage in JP4, JP10, and the pin1/2 of CN9 is the same as that from CN14/CN15 (+12V DC). Please refer to 3.2 and 3.3 for details.

■ Don't connect pin-1 (+5V) of CN15 except special OEM hardware version which requires external +5V DC (External +5V DC power connecting to onboard +5V DC from power regulator may cause power voltage fluctuation.)
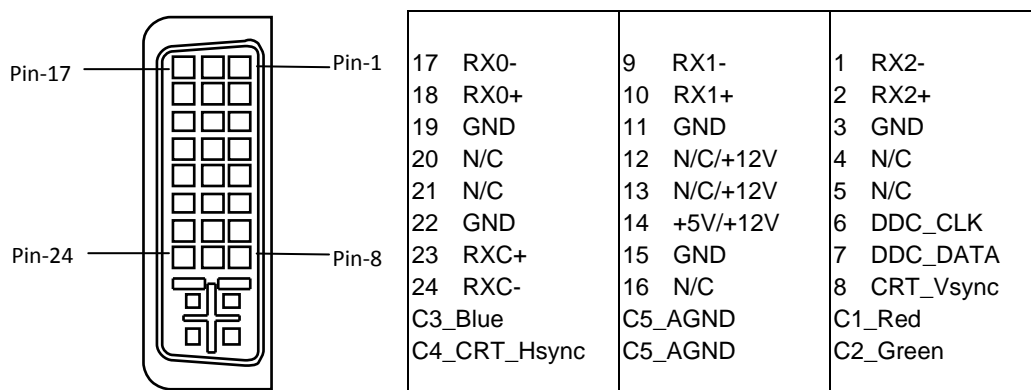
3.10 DB-15 Connector CN2 (Analog RGB Connector)

CN2 is a standard DB-15 connector for analog RGB signals input. The following diagram and table depict pin definition of CN9.

1	Analog red	10	GND
2	Analog green	11	NC
3	Analog blue	12	SDA (DDC)
4	NC	13	Hsync
5-8	GND	14	Vsync
9	NC	15	SCL (DDC)

Pin-15, Pin-5, Pin-11, Pin-1

3.11 DVI-I Connector CN1 (Optional for ARV-312X)

CN1 is a DVI-I (Digital Visual Interface) connector which provides a PanelLink signal input interface for display device. The following table depicts the pin definition of CN1.

Pin-17, Pin-1, Pin-24, Pin-8

17	RX0-	9	RX1-	1	RX2-
18	RX0+	10	RX1+	2	RX2+
19	GND	11	GND	3	GND
20	N/C	12	N/C/+12V	4	N/C
21	N/C	13	N/C/+12V	5	N/C
22	GND	14	+5V/+12V	6	DDC_CLK
23	RXC+	15	GND	7	DDC_DATA
24	RXC-	16	N/C	8	CRT_Vsync
C3_Blue		C5_AGND		C1_Red	
C4_CRT_Hsync		C5_AGND		C2_Green	

3.12 BIOS programming port CN5

(JST S4B-PH compatible, 2.0 pitch)

CN5 allows user to use Spectrah's programming tool to upgrade new firmware BIOS through RS232 interface. The following table depicts the pin definition of CN5.

4	3	2	1
GND	RX	TX	+5V

4 OSD Setup

4.1 General Description:

The ARV-31XX series features an on-chip OSD (On-Screen Display) controller that creates the OSD user interface menus and overlays them onto the output data stream. User can adjust the display conditions on LCD monitor using the OSD-476/486 touch pad. After powering on, the AD controller restores itself to the last known conditions saved in Non-Volatile Random Access Memory (NVRAM). All parameters (Settings) are saved whenever user select **Save/Exit** icon in each OSD feature page. Not making a selection within a defined time period causes the OSD menu to close. The OSD time-out variable may be user-selected from the Tool menu item. The LEFT (S4) and RIGHT (S3) keypad push buttons are used to scroll through items within the main menu. The selected item is highlighted. The MENU key (S1) is used to open and close the OSD menu. After in OSD menu, S1 key is also defined as CONFIRM key to activate the highlighted item. S2 Key is defined as the ENABLE key for VideoWindowDefine, ACC and ACM features. Power Save button (S5) enables user to place the system in a low power mode. From the low power mode, pushing S5 button wakes up the microcontroller to perform a LCD power-up sequence.

4.2 Feature Description
4.2.1 Input Interface Setting

There are 2 input interfaces in ARV-31XX series to accept computer RGB analog and digital signals.

■ **Analog Input**
■ **Digital Input (ARV-312X only)**

4.2.2 Brightness/ Contrast/ Black Level and Hue/ Saturation Adjustment

■ **Brightness -** Press S4 and S3 keys to adjust the brightness of LCD backlight directly. This feature should work together with the inverter which provides PWM (Pulse Width Modulation) or Current/ Voltage control feature. The PWM/ or Current control pin of panel inverter should be connected to pin-6 of CN9.

Light Sensor control – When Brightness icon is highlighted, press S2 and hold for 2 seconds to enable light sensor feature. This icon allows user to select Auto Dimming Control if user uses Spectrah's light sensor board SR2901. If user doesn't need Spectrah's light sensor SR2901, please press S2 and hold 2 seconds to disable light sensor feature and return to the original Brightness screen. Otherwise, the brightness control appears unstable and user will see flash on the panel screen.

■ **Contrast -** Press S4 and S3 keys to adjust contrast setting.
■ **Black Level -** Press S4 and S3 keys to adjust black level.
■ **Hue -** Press S4 and S3 keys to adjust video hue level (for video signal only).
■ **Saturation**- Press S4 and S3 to adjust video saturation (for video signal only).

4.2.3 Audio Volume Adjustment (N/A)

■ Press S4 and S3 to adjust audio volume (N/A).

4.2.4 Color Adjustment

■ **Auto Color Setup -** Press S1 to do Auto Color Setup.
■ **Standard Color Setup -** Press S1 to set standard color defined in MS Windows.
■ **RGB Color Temperature Setting and Color Adjustment -** Press S4 and S3 keys to select color temperature or adjust RGB color depth.


■ **DefineVideoWindow** - Press S2 to enable this function and then S1 to select four types of windows screen: Full Screen, 16:9, 16:10, and Left Half Screen.
■ **ACC (Adaptive Color and Contrast) -** Most video content is tailored for display on CRTs or in movie theatres. However, CRT monitors have a wider dynamic range than LCD TVs. Therefore, Genesis scaler chip is designed to enhance the dynamics range when video is displayed using LCD TV type screen. Adaptive Color and Contrast (ACC) enhances the contrast of the image to account for.
Press S2 to enable this function and then S1 to select appropriate ACC setting and YCLink to enhance the contrast and color of the images in video display. This function is terminated when DefineVideoWIndow feature is disabled.
■ **ACM-II (Active Color Management) -** Active Color Management provides video style control of global color parameters like Hue, Saturation, Contrast, and local color changes such as Normal, Cinema, Vivid etc. It can be applied within a highlight window or over the full display area.

Press S2 to enable this function and then S1 to select Normal, Cinema, Vivid, Nature, Sport or 6 Axis.

|	Normal	Cinema	Vivid	Nature	Sport	6 Axis

4.2.5 Image Setting
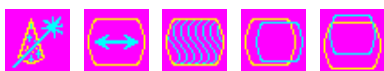
- **Auto-Config -** Press S1 key to automatically configure an optimal display setting.
- **Image Width -** Press S4 and S3 keys to adjust image width.
- **Phase Adjustment -** Press S4 and S3 keys to adjust the signal phase in the analog to digital converter.
- **H-Position -** Press S4 and S3 keys to move the screen left or right by moving the analog capture window.
- **V-Position -** Press S4 and S3 keys to move the screen up or down by moving the analog capture window.

4.2.6 Tools

4.2.6.1. OSD Control
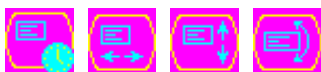
- **Timeout -** Press S4 and S3 keys to decrease or increase the amount of time that elapses before the menu disappears.
- **OSD H-Position -** Press S4 and S3 keys to adjust the horizontal position of the OSD main menu.
- **OSD V-Position -** Press S4 and S3 keys to adjust the vertical position of the OSD main menu.

■ **OSD Direction -** Press S1 to enable OSD direction functions and then S3 and S4 to set required OSD menu direction.
  ◆ OSD_Normal
  ◆ OSD_Mirroring-H
  ◆ OSD_Rotation-270
  ◆ OSD_Rotation-90
  ◆ OSD_Mirroring-H-V

4.2.6.2 Factory Reset
■ Press S1 to reset all user settings and previous setting stored in NVRAM will be lost. This feature helps user return back to original default setting in NVRAM, especially when user change onboard firmware ROM and then panel display becomes blank or noisy.

4.2.6.3 Color Reset
■ Press S1 to reset all user settings in colors and previous setting stored in NVRAM will be lost. This feature helps user return back to original default color setting in NVRAM.

4.2.6.4 Position Reset
■ Press S1 to reset all user settings in position and previous setting stored in NVRAM will be lost. This feature helps users return back to original default color setting in NVRAM.

4.2.6.5 Sharpness
■ Press S1 and then S4 and S3 to adjust Sharpness.

4.2.6.6. Overlap 640/720
■ Press S1 to set Overlap 640x480@60 and 720x400@70 modes.

Warning!
If there is no input signal detected by the system, a warning message, **No Signal** is displayed by the OSD until the supported input source is detected by the system.

5 Product Specifications

ADC Controller
Genesis GM5766

Adaptive color and contrast enhancement (Genesis ACC & ACM-II features)

8-bit triple-channel ADC/PLL

Scaling engine

OSD controller

Hue, Saturation, Brightness, Contrast, Color Temperature adjustment

Input Port
DB-15 analog VGA interface (All series)

DVI-I digital interface (ARV-312X only)

Image Processing Features
Auto-detection (Input format detection)

Auto-configuration (Input positioning & Clock phase)

On Screen Display (OSD)
Auto setup

Brightness / Contrast adjustment

ACC/ ACM-II Color Enhancement & Contrast Adjustment

Image V-Position/ H-Position adjustment

Auto Color Reset/ Standard color Setup

Hue / Saturation/ Color Temperature Adjustment

Power-In Support
LCD Panel: +3.3V, +5V, +12V

Backlight Controller: +3.3V, +5V, +12V

Panel Support
TFT VGA 640 x 480
TFT SVGA 800 x 600
TFT XGA 1024 x 768
TFT SXGA 1280 x 1024
TFT WSXGA 1680 x 1050
Single 18-bit or Dual 48-bit/36-bit LVDS panels
Single 24-bit TTL panels

Panel Connection
One 40-pin TTL connector (ARV-31X2 only)
One 30-pin LVDS connector

Image Scaling
Scale up/ down a lower/higher resolution images to fit higher/lower resolution panels

VESA Standard
Supports VESA DDC2B and a subset of VESA DPMS standards
On board EDID ROM compliant with VESA DDC2B 1.X (Optional)

Power Consumption
2.52 Watt (ARV-31XX board only without connection to LCD panel) (+12V DC input)

Power Requirement
Note: The complete power requirement is dependent on what LCD panel connected to ARV-31XX series. Around 60 Watt power adapter is recommended to supply +12V DC power for ARV-31XX series and LCD panels under 22" size. For more detail in power requirement, please contact Spectrah Customer Service Center for more information.

Board Dimension
95 (L) x 90 (W) mm

Weight
ARV-3100 (55g)
ARV-3120 (65g)

Operating Temperature & Humidity
-10℃ to 80℃ ; ~ 90%RH

Storage Temperature & Humidity
-40℃ to 95℃ ; ~ 95%RH

Mode Table

VGA	SVGA	XGA
640 x 480 @ 60HZ	800 x 600 @ 60HZ	1024 x 768 @ 60HZ
640 x 480 @ 70HZ	800 x 600 @ 70HZ	1024 x 768 @ 70HZ
640 x 480 @ 72HZ	800 x 600 @ 72HZ	1024 x 768 @ 72HZ
640 x 480 @ 75HZ	800 x 600 @ 75HZ	1024 x 768 @ 75HZ
640 x 480 @ 85HZ	800 x 600 @ 85HZ	1024 x 768 @ 85HZ

SXGA	WXGA	WSXGA+
1280 x 1024 @ 60HZ	1366 x 768 @ 60HZ	1680 x 1050 @ 60HZ
1280 x 1024 @ 70HZ	1366 x 768 @ 70HZ	1680 x 1050 @ 70HZ
1280 x 1024 @ 72HZ	1366 x 768 @ 75HZ	1680 x 1050 @ 72HZ
1280 x 1024 @ 75HZ	1366 x 768 @ 85HZ	1680 x 1050 @ 75HZ
1280 x 1024 @ 85HZ	1280 x 720 @ 60HZ	
	1280 x 720 @ 70HZ	
	1280 x 720 @ 75HZ	
	1280 x 720 @ 85HZ	
	1280 x 768 @ 60HZ	
	1280 x 768 @ 70HZ	
	1280 x 768 @ 75HZ	
	1280 x 768 @ 85HZ	
	1280 x 800 @ 60HZ	
	1280 x 800 @ 70HZ	
	1280 x 800 @ 75HZ	
	1440 x 900 @ 60HZ	
	1440 x 900 @ 70HZ	
	1440 x 900 @75HZ	
	1400 x 1050 @60HZ	
	1400 x 1050 @75HZ	

6 Customer Support

Spectrah Site

You can download the latest drivers and product specifications from the Spectrah Web site. Our address is: www.spectrah.com

If you have any problems, we recommend that you follow the procedure below for the quickest results.

- **Contact your dealer:** This is usually the quickest and most effective method of technical assistance. Your dealer is local and may be familiar with your complete system. According to the warranty, the product must be returned to the dealer, who will return it to Spectrah.
- **Fax Support:** Call our dial-up Spectrah fax service at 886-2-86472201.
- **Email Us:** Send your problems to Spectrah customer service center. The email address is: spec_support@spectrah.com

Information We Need

Please give a complete description of the problem and please include:

- Spectrah board serial number, model number, PCB version number.
- Product model name, ROM/driver version, and relative configuration setting.
- Computer brand name, system BIOS manufacturer, and version number or release date, bus type, processor speed, and amount of memory.
- LCD panel brand and model name.
- Brand and model of any other cards and devices installed on your system.

Program Specific Problems

If a problem appears with a specific program, please give us the following information:

- Display settings (color palette, display resolution, and so on) applied when the problem occurs.
- Program name and version. Name of any add-on packages you are using.
- If possible, take note of the file and segment address that caused the problem.

■ Detailed steps known to cause the bug, so that we can reproduce it.

7 Notice

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