DIGITAL **VIEW**®

PC, DVI, DISPLAY PORT, HDMI, VIDEO INTERFACE CONTROLLER FOR TFT PANEL

Model: SVX-3840

Part number : 417460X2X-3 or up

INSTRUCTIONS

CONTENTS

It is essential that these instructions are read and understood before connecting or powering up this controller.

Introduction

Designed for LCD monitor and other flat panel display applications, the SVX-3840 is a feature rich interface controller for :

- ➢ **TFT (active matrix) LCD panels of 3840x2160 resolutions in 60Hz and 120Hz with V-by-One interface.**
- ➢ **Support true 10 bits panel**
- ➢ **Support HDMI, DVI, VGA, Display Port & Component Video input.**

Ordering information :

4K 60Hz panel			
Controller	*Supported panel model*	*Panel resolution*	*Ordering Part number*
SVX-3840(60Hz-INN28)	Innolux M280DGJ-L30	3840x2160	P/N 4174601XX-3
SVX-3840(60Hz-AUO55)	AU Optronics P550QVN01v0	3840x2160	P/N 4174602XX-3

4K 120Hz panel			
Controller	*Supported panel model*	*Panel resolution*	*Controller Part number*
SVX-3840(120Hz-LG84)	LG LD840EQD-SEM1	3840x2160	P/N 4174600XX-3
	Sharp LQ695R3xxxx	3840x2160	
	LG LC550EQD-FGF2	3840x2160	
	AUO P750QVN01v0 4K 120Hz	3840x2160	
SVX-3840(120Hz-AUO65)	AUO P650QVN01.0 4K 120Hz	3840x2160	P/N 4174603XX-3
SVX-3840(120Hz-SAM74)	Samsung LTA750FJ01 4K 120Hz	3840x2160	P/N 4174604XX-3

HOW TO PROCEED
- ➢ Ensure you have all parts & that they are correct, refer to:
  - • Connection diagram

> **Controller Solution Generator**
>
> Full web resource matching controllers & panels with **connection diagrams** for download.
> See at : http://www.digitalview.com/csg

  - • Connector reference (in following section)
  - • Assembly notes
- ➢ Check controller switch & jumper settings (errors may damage the panel)
- ➢ Prepare the signal sources
- ➢ Connect the parts
- ➢ Understand the operation & functions

IMPORTANT USAGE NOTE
This equipment is for use by developers and integrators, the manufacturer accepts no liability for damage or injury caused by the use of this product. It is the responsibility of the developer, integrators or other user of this product to:
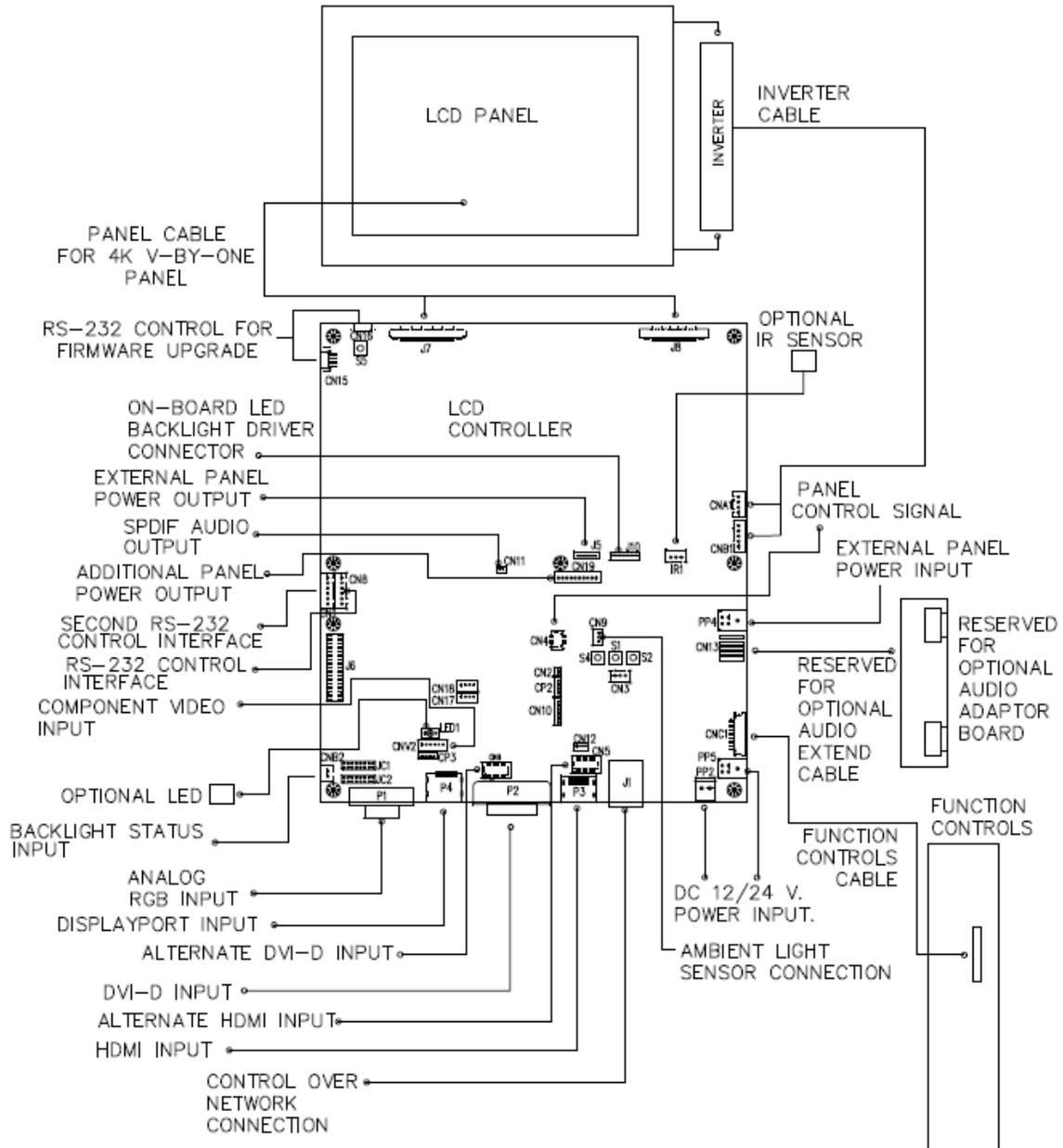- • Ensure that all necessary and appropriate safety measures are taken.
- • Obtain suitable regulatory approvals as may be required.
- • **Check power settings to all component parts before connection.**

DISCLAIMER
There is no implied or expressed warranty regarding this material.

SYSTEM DESIGN

A typical LCD based display system utilizing this controller is likely to comprise the following:

LCD PANEL

INVERTER

INVERTER CABLE

PANEL CABLE FOR 4K V-BY-ONE PANEL

RS-232 CONTROL FOR FIRMWARE UPGRADE

OPTIONAL IR SENSOR

ON-BOARD LED BACKLIGHT DRIVER CONNECTOR

LCD CONTROLLER

EXTERNAL PANEL POWER OUTPUT

PANEL CONTROL SIGNAL

SPDIF AUDIO OUTPUT

EXTERNAL PANEL POWER INPUT

ADDITIONAL PANEL POWER OUTPUT

SECOND RS-232 CONTROL INTERFACE

RS-232 CONTROL INTERFACE

RESERVED FOR OPTIONAL AUDIO ADAPTOR BOARD

COMPONENT VIDEO INPUT

RESERVED FOR OPTIONAL AUDIO EXTEND CABLE

OPTIONAL LED

BACKLIGHT STATUS INPUT

FUNCTION CONTROLS

FUNCTION CONTROLS CABLE

ANALOG RGB INPUT

DISPLAYPORT INPUT

DC 12/24 V. POWER INPUT.

ALTERNATE DVI-D INPUT

DVI-D INPUT

ALTERNATE HDMI INPUT

AMBIENT LIGHT SENSOR CONNECTION

HDMI INPUT

CONTROL OVER NETWORK CONNECTION

ASSEMBLY NOTES

This controller is designed for monitor and custom display projects using 3840x2160 resolution with V-by-One interface TFT panels. The following provides some guidelines for installation and preparation of a finished display solution.

Preparation: Before proceeding it is important to familiarize yourself with the parts making up the system and the various connectors, mounting holes and general layout of the controller. As much as possible connectors have been labeled. Guides to connectors and mounting holes are shown in the following relevant sections.

1. **LCD Panel**: This controller is designed for typical V-by-One 8 & 16 lanes interfaced panels with panel voltage 3.3V, 5V, 12V or 18V, External for 12V~18V interface. Due to the variation between manufacturers of panels signal timing and other panel characteristics, factory setup and confirmation should be obtained before connecting to a panel. **(NOTE: Check panel power jumper settings before connection)**

2. **LCD Controller**: Handle the controller with care as static charge may damage electronic components. Make sure correct jumper to match the target LCD panel.

3. **Panel cable (4K V-by-One panel)**: In order to provide a clean signal it is recommended that V-by-One signal supplied by DigitalView. Care should be taken when placing the cables to avoid signal interference.

4. **Inverter**: This will be required for the backlight of an LCD, some LCD panels have an inverter built in. As LCD panels may have 1 or more backlight tubes and the power requirements for different panel backlights may vary it is important to match the inverter in order to obtain optimum performance. See Application notes page 26 for more information on connection.

5. **Inverter Cables**: Different inverter models require different cables and different pin assignment. Make sure correct cable pin out to match inverter. Using wrong cable pin out may damage the inverter.

6. **Function Controls**: The following section discusses the controls required and the section on connectors provides the detail. The controls are minimal: On/Off, Backlight Brightness (depends on inverter), OSD (5 momentary buttons) analog VR type or (8 momentary buttons) digital type.

7. **Function controls cable:** The cables to the function switches should be of suitable quality and length so that impedance does not affect performance. Generally lengths up to 1 meter (3 feet) should be acceptable.

8. **Optional LED**: The pin direction of the LED should be corrected for right color indication. Red color stands for standby. Green colors stands for signal on. The status LED is an optional part only, can be unconnected.

9. **Optional IR sensor**: It is an optional part only, can be unconnected if not using IR remote control. See Appendix IV in details.

10. **RS-232 control interface :** Firmware upgrade and serial control via this interface port.

11. **Second RS-232 control interface :** This interface support controlled under "Programming mode" .
    Press and hold "MENU" button on the OSD switch mount and turn on the controller to enter the "Programming mode".
    Choose "Set Uart 1 to CN1" Input Port shown below :
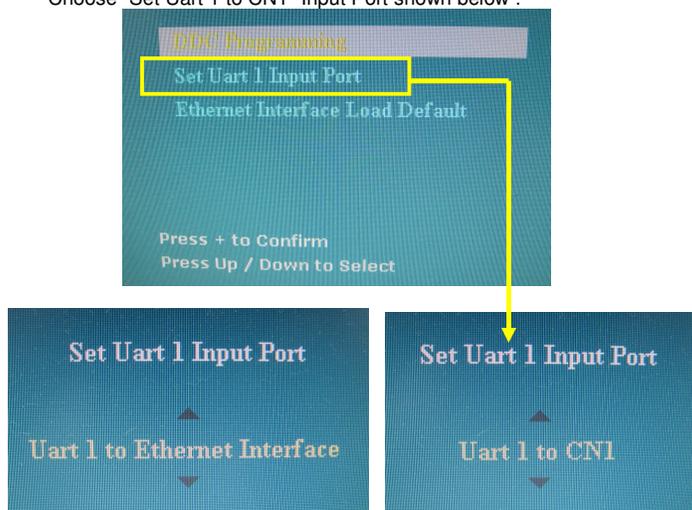
Set "Uart 1 to Ethernet Interface : Enable Ethernet network (J1) support and disable second RS-232 serial control (CN1) support
Set "Uart 1 to CN1 : Enable second RS-232 serial control (CN1) support. Disable Ethernet network (J1) support

Specifications subject to change without notice

12. **External panel power output** : User for specific panel model.

13. **Panel control signal :** Use for specific panel model.

14. **SPDIF Audio output :** This port support SPDIF audio output from the HDMI / Display Port audio source inputted.

15. **Ambient light sensor connection :** 3 ways connector provides interface for ambient light sensor connection by using Kit 70220-3.

16. **Backlight status input :** 2 ways connector provides interface for connection with the specific panel type which support the panel with backlight status monitoring function.

17. **On board LED backlight driver :** The on board LED driver supports 4 LED strings max 50V total LED backlight via J10 connector.

18. **DVI-D input cable :** Plug the DVI cable to the connector P3 on the controller board.

19. **HDMI input :** Plug the HDMI cable to the connector P2 on the controller board. This port is not supported when CN5 is connected.

20. **Analog RGB Input** : As this may affect regulatory emission test results and the quality of the signal to the controller a suitably shielded cable should be utilized.

21. **Component video input** : Plug the component video input cable P/N 426000600-3 on CNV2 connector

22. **Alternate HDMI input :** This port gives alternate HDMI input support.

23. **Alternate DVI-D input :** This port gives alternate DVI-D input support.

24. **Control over network connection :** This is a network device that allow to control RS-232 enable devices over a TCP/IP based Ethernet and the Internet using a web browser. Please refer to Appendix V in details.

25. **Reserved for Audio adaptor board P/N 416940020-3:** The audio add-on board gives the audio input and output signal connection. It is an optional and reserved part only, can be unconnected if not using audio.
CAUTION : The Audio Add-on Board P/N 416940020-3 can only operate with 12VDC power input environment.

26. **Reserved for Audio extend cable :** The audio extend cable P/N 426009700-3 designs for connection between audio add on board P/N 416940020-3 and the controller. It is an optional and reserved part only, can be unconnected if not using audio.

27 **RS-232 control for firmware upgrade :** CN15 & CN16 connectors reserved for firmware upgrade the U5 & U18 chipset for supporting different panel timings.

28. **Additional panel power input :** Provide additional (+12/+18VDC) panel power input for driving high power consumption panels.

29. **Power Input**: 12V/24VDC is required, this should be a regulated supply. It allows 12V (5A) or 24V (5A) via PP5 power input connector. The power rating is depending on the panel and inverter used. Although the controller provides power regulation for the LCD power this does not relate to the power supplied to the backlight inverter.
If an unregulated power supply is provided to an inverter any fluctuations in power may affect operation, performance and lifetime of the inverter and or backlight tubes.

30. **External panel power input** : Allow to supply external power to the panel separately for max 3.3V (7A) or 5V (7A) or 12V (5A) or 18V (3.5A) via PP4 power input connector. Corresponding jumper setting of JA3, JA5 & JA6 are required for each panel power input by referring to page 15.

- **Power output**: Note the controller has an overall 3Amp current limit and the current available from the auxiliary power output will be dependent on the power input and other system requirements.

- **Power Safety**: Note that although only 12V / 24VDC is required as 'power-in' a backlight inverter for panel backlighting produces significantly higher voltages (the inverter does not connect to the ground plane). We strongly advise appropriate insulation for all circuitry.

- **EMI**: Shielding will be required for passing certain regulatory emissions tests. Also the choice of external Controller to PC signal cable can affect the result.

- **Ground**: The various PCB mounting holes are connected to the ground plane.

- **Servicing**: The board is not user serviceable or repairable. Warranty does not cover user error in connecting up to the controller and is invalidated by unauthorized modification or repairs.

- **Controller Mounting**: It is recommended that a clearance of at least 10mm is provided above and 5mm below the controller when mounted. Additionally consideration should be given to:
  - Electrical insulation.
  - Grounding.
  - EMI shielding.

Specifications subject to change without notice

- Cable management. Note: It is important to keep panel signal cables apart from the inverter & backlight cables to prevent signal interference.
- Heat & Ventilation: Heat generated from other sources, for example the backlight of a very high brightness panel may generate significant heat which could adversely affect the controller.
- Other issues that may affect safety or performance.

- **PC Graphics Output**: A few guidelines:
  - Signal quality is very important, if there is noise or instability in the PC graphics output this may result in visible noise on the display.
  - Refer to graphics modes table in specifications section for supported modes.
  - Non-interlaced & interlaced video input is acceptable.

IMPORTANT: Please read the Application Notes section for more information.

Specifications subject to change without notice

CONNECTION & OPERATION

CAUTION: Never connect or disconnect parts of the display system when the system is powered up as this may cause serious damage.

CONNECTION
Connection and usage is quite straight forward (it is useful to have the relevant connection diagram available at this time):
1. **LCD panel & Inverter:** Connect the inverter (if it is not built-in the panel) to the CCFT lead connector of the LCD panel.
2. **4K V-by-One interface panels:** The controller board supports V-by-One interface 4K panel. Plug the cable to J7 for driving 4K 60Hz panel and J7 & J8 for driving 4K 120Hz panel. And make sure the matching panel timings file and controller part number to be used by referring to the panel support table in page 17.
3. **Inverter & Controller:** Plug the inverter cable to CNB1 and CNA1 (if necessary). Plug another end to the connector on the inverter.
4. **Function switch & Controller:** Plug the OSD switch mount cable to CNC1 on the controller board and another to the OSD switch mount.
5. **LED & Controller:** Plug in a 3-way with dual color LED to connector LED1 on the controller board.
6. **IR & Controller:** Plug in a 3-way with IR sensor to connector IR1 on the controller board.
7. **Jumpers & Inverter & Panel voltage:** Particularly pay attention to the settings of JA3, JA5, JA6, JB2 and JB3. JB2 & JB3 are used for inverter control (read inverter specification and information on the jumper table to define the correct settings). JA3 & JA5 & JA6 is used for panel voltage input (read panel specification and information on the jumper table to define the correct settings).
8. **Input signal cable & Controller:** Plug the corresponding signal input to the connector on the controller board.
9. **Power supply & Controller:** Plug the DC 12V/24V power in to the connector PP5 or PP2. You can consider to use DigitalView mating power cable P/N 426013710-3, 1000mm for PP5 connection.
10. **External panel power input :** Plug power cable : P/N 426013700-3 for external panel power input (3.3 (max 7A) / 5V (max 7A) / 12V (max 5A) / 18V (max3.5))
11. **Power on:** Switch on the controller board and panel by using the OSD switch mount.

General:
- If you are using supplied cables & accessories, ensure they are correct for the model of panel and controller.
- If you are making your own cables & connectors refer carefully to both the panel & inverter specifications and the section in this manual, "Connectors, Pinouts & Jumpers" to ensure the correct pin to pin wiring.

PC SETTINGS
The controller has been designed to take a very wide range of input signals however to optimize the PC's graphics performance we recommend choosing 60Hz vertical refresh rate – this will not cause screen flicker.

OPERATION
Once the system has been connected and switched on there are a number of functions available to adjust the display image as summarized in the following sections. The settings chosen will be saved for each mode independently.

Specifications subject to change without notice

LCD DISPLAY SYSTEM SETTINGS
NOTE: By way of explanation the following refers to a set of sample buttons that may be obtained as an option. In addition to power on/off and connection for backlight brightness the controller provides an On Screen Display of certain functions which are controlled by 5 momentary type buttons (analog VR type) or 8 momentary type buttons (digital type):

Controls	Analog VR type	Digital type
On/Off – turns controller board power on	VR toggle switch	On/Off button
Brightness – controls backlight brightness	Rotary VR	Brightness +/- buttons
Menu – Turns OSD menu On or Off (it will auto time off) – Back to previous OSD menu page	Menu button	Menu button
Select down – Moves the selector to the next function (down)	SEL DN	SEL DN
Select up – Moves the selector to the previous function (up)	SEL UP	SEL UP
+ – Increase the OSD parameter values – Go into the sub-menu page from the top – Confirm to select the OSD function	+	+
- – Decrease the OSD parameter values - Go into the sub-menu page from the bottom	-	-
Reset to Factory Defaults	Press and hold SEL DN button, then power on the controller	Press and hold SEL DN button, then power on the controller
Access "Programming Mode"	Press and hold MENU button, then power on the controller	Press and hold MENU button, then power on the controller
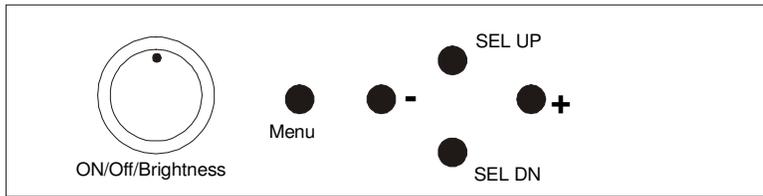
Analog VR type

12V / 24VDC power input :
Analog 10K VR Type OSD switch mount uses
P/N 410680550-3 or up
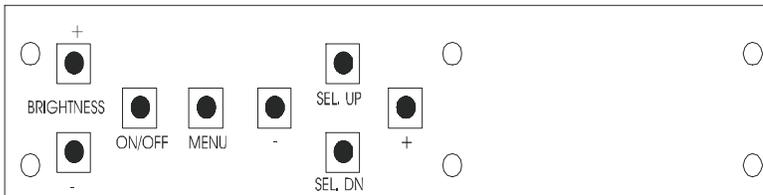
Digital type

12V / 24VDC power input :
Digital 10K Type OSD switch mount uses
P/N 416100520-3 or up

OSD functions

Picture :

Brightness   Increase/decrease panel brightness level, total: 100 steps

Contrast   Increase/decrease panel contrast level, total: 100 steps

Saturation   Increase/decrease saturation, total: 100 steps

Hue **   Increase/decrease Hue level, total: 100 steps

Sharpness*   Increase/decrease sharpness, total: 30 steps

Backlight   Backlight brightness adjustment (Functions when light detector sets OFF)

Position##

Move the image position upward

Move the image position downward

Move the image position to the left

Move the image position to the right

** : FUNCTION IN ARGB/ DVI / VIDEO NTSC MODE ONLY
: FUNCTION IN ARGB MODE ONLY

Source : Select the input video signal

Main Port Change ▸
VGA
DVI
HDMI
Display Port
Component 1

Utilities :

Setup ▸
Auto Picture Setup#   : Auto adjust the image position, phase and size
Auto Color Gain+ ▸   : Auto Color Calibration (See appendix IV)
      - Return
      - Execute
Wide Screen Mode Selection# ▸ : Recognize the wide screen mode coming from ARGB port
      - Group 1
           -    1024x768
           -    1280x768
           -    1360x768
           -    1366x768
     - Group 2
           -    1440x900
           -    1600x900

Manual Clock# :   Adjust the image horizontal size

Manual Phase# :   Fine tune the data sampling position (adjust image quality)

Auto Source Seek :
    - Auto : OFF ON   : OFF / ON
          ON – Auto source select always enable
          OFF – Disable auto source select function
    - Setup ▸   Selection for the corresponding input sources detection
         VGA   OFF ON
         DVI   OFF ON
         HDMI   OFF ON
         Display Port   OFF ON
         Component 1   OFF ON
         The corresponding input port name display on OSD menu will disappear once setting "OFF".
Auto Power :   OFF ON   OFF / ON

Specifications subject to change without notice

ON – Enable soft power off function if absence of input signals
OFF – Disable soft power function

OSD ▸
OSD position :

Move the OSD menu image position upward

Move the OSD menu position downward

Move the OSD menu position to the left

Move the OSD menu position to the right

OSD Timeout (sec) : ON – 60 : Adjust the OSD menu timeout period in a step of 5
seconds (max 60 seconds)
ON = Continuous to display OSD menu.
60 = 60 seconds later will turn off the OSD menu.

Language : English / Spanish / French / German / Chinese :Select OSD menu language
display
Display Input : OFF [ ] ON OFF / ON : Display input source info after switching source.

IR Remote control : IR Remote Enable : Set enable on IR remote control
IR Remote Disable : Set disable on IR remote control
Real time clock ▸ show and edit the real time clock (This function is valid when "Display Input"
sets ON.)
DATE : DD/MM/YYYY : Date/Month/Year
TIME : HH/MM/SS (AM/PM): Hour/Minute/Second
SETUP ▸
Month / Day / Year
Hour / Minute / AM/PM
Display Clock OFF [ ] ON : Disable or enable to display the real time clock when
display video source info after switching source.

Freeze : OFF [ ] ON : OFF / ON : Freeze the image

Color Temperature ▸
5000K
Red Gain :
Green Gain :
Blue Gain :
Red Offset :
Green Offset :
Blue Offset :
Reset to Defaults : Resume to the default values
6500K
Red Gain :
Green Gain :
Blue Gain :
Red Offset :
Green Offset :
Blue Offset :
Reset to Defaults : Resume to the default values
8000K
Red Gain :
Green Gain :
Blue Gain :
Red Offset :
Green Offset :
Blue Offset :

Specifications subject to change without notice

Reset to Defaults : Resume to the default values

9300K

        Red Gain : ⊟━━━━▽━━━⊞

        Green Gain : ⊟━━━━▽━━━⊞

        Blue Gain : ⊟━━━▽━━━━⊞

        Red Offset : ⊟━━━▽━━━━⊞

        Green Offset : ⊟━━━▽━━━━⊞

        Blue Offset : ⊟━━━▽━━━━⊞

        Reset to Defaults : Resume to the default values

User setting :

        Red Gain : ⊟━━━━▽━━━⊞

        Green Gain : ⊟━━━━▽━━━⊞

        Blue Gain : ⊟━━━━▽━━━⊞

        Red Offset : ⊟━━━▽━━━━⊞

        Green Offset : ⊟━━━▽━━━━⊞

        Blue Offset : ⊟━━━▽━━━━⊞

        Reset to Defaults : Resume to the default values

Reset All to Defaults : Resume all color temperature settings to the default values.

Hot Key ▸
Hot key 1 : Brightness / Contrast / Inputs / Aspect Ratio/ Zoom / Freeze / Saturation / Hue / Backlight / Auto Picture Setup / No Function

Hot key 2 : Brightness / Contrast / Inputs / Aspect Ratio/ Zoom / Freeze / Saturation / Hue / Backlight / Auto Picture Setup / No Function

Backlight Setup ▸
- B/L Invert : OFF [━━] ON : Invert for the backlight brightness
- B/L Control : D/A / PWM : Selection for voltage level dimming control / PWM
                                  dimming control
- Backlight Frequency : ⊟━━━▽━━━⊞ 100 ~ 440Hz in a step of 20
- Light Detector : OFF [━━] ON : Enable ambient light detector function by using KIT
                                  70220-3
- Min Backlight Level : 0 ~ 50% : Default the minimum backlight adjustment.

Default Setting ▸
Reset to Factory Defaults ▸ (Activate when JC1 position 4 sets open)
                Are you sure ? Yes/No
Reset to Factory Defaults with (Color Temp.) ▸ (Activate when JC1 position 4 sets open)
                Are you sure ? Yes/No
Save Current Settings as Calibrated Values ▸ (Activate when JC1 position 2 sets closed)
                Are you sure ? Yes/No
Recall Stored Calibrated Values ▸
                Are you sure ? Yes/No

                        # : DISPLAY IN ARGB MODE ONLY
                + DISPLAY IN ARGB & COMPONENT MODE ONLY

Firmware V1.12.00.00 or up

Specifications subject to change without notice

CONNECTORS, PINOUTS & JUMPERS

The various connectors are:
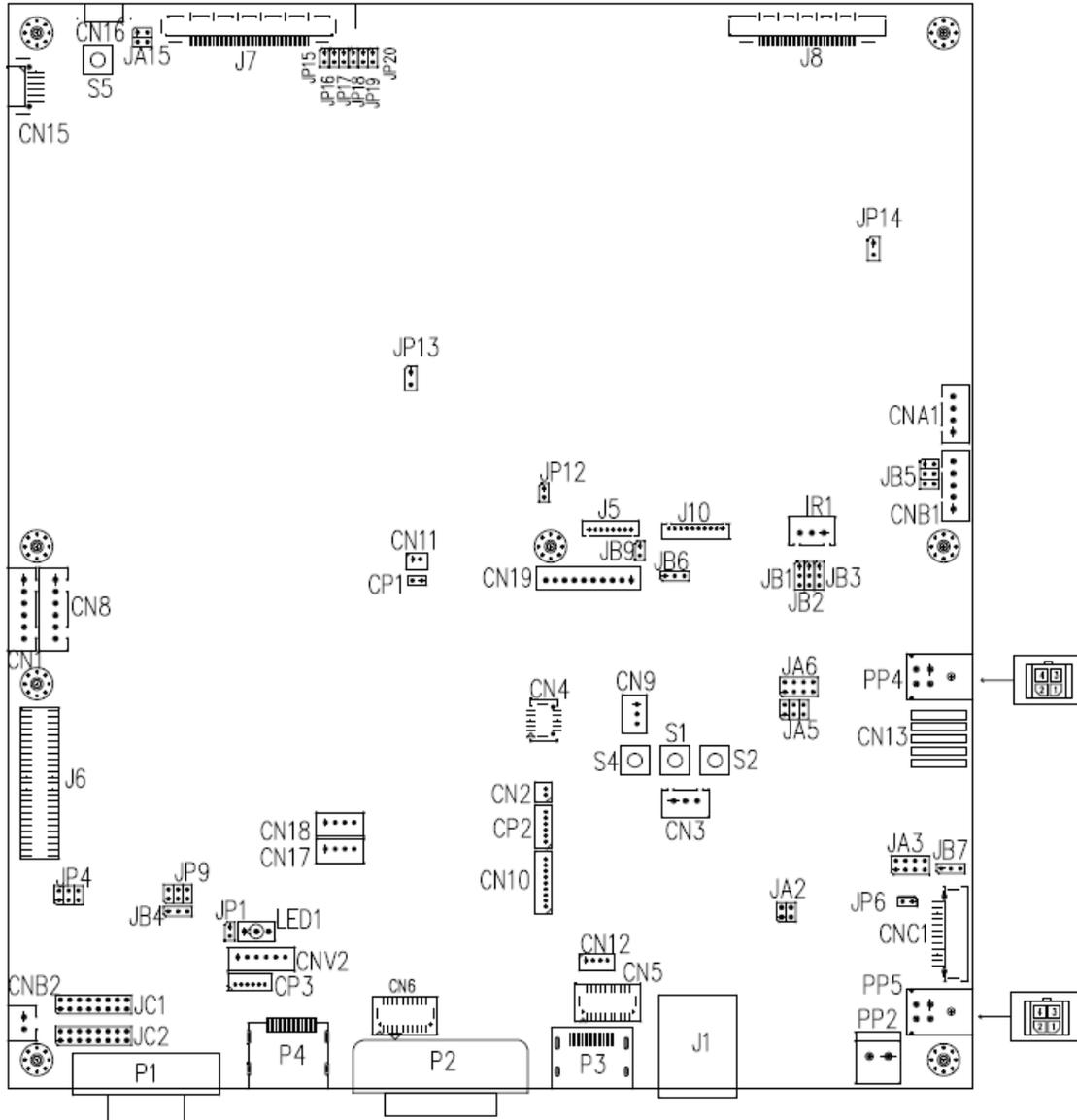
Summary: Connectors

Ref	Purpose	Description
CN1	Reserved for second RS-232 serial control	JST 6-way, B6B-XH-A (Matching type : XHP-6)
CN2	Reserved for light sensor	DF13 2 ways (Mating type : DF13-2S-1.25C)
CN3	Reserved for external temperature sensor	JST 3-way, B3B-XH-A (Matching type : XHP-3)
CN4	Panel control signal connector	Hirose 10-pin, DF20G-10DP-1V (Matching type : DF20A-10DS-1C)
CN5	Alternate HDMI connector	JST BM20B-SRDS (Matching type : SHDR-20V-S-B)
CN6	Alternate DVI connector	JST BM20B-SRDS (Matching type : SHDR-20V-S-B)
CN8	RS-232 serial control	JST 6-way, B6B-XH-A (Matching type : XHP-6)
CN9	Ambient light sensor connector	JST 3-way, B3B-PH-K (Matching type : PHR-3)
CN10	Reserved for Fan & backlight power monitoring connector	Hirose DF13-9P-1.25 DSA (Mating type : DF13-9S-1.25C)
CN11	SPDIF Audio output	JST B2B-ZR (Matching type : ZHR-2) (Matching extend cable P/N 426007400-3)
CN12	Reserved for engineering use	Reserved
CN13	Reserved for Audio board connector	Dual pin header 5x2, 0.1" pitch right angle (Matching audio add-on board P/N 416940020-3 & Audio extend cable P/N 426009700-3)

Specifications subject to change without notice

CN15	RS-232 serial control for firmware upgrade	Molex 53261-0671	(Matching type : Molex 51021-0600)
CN16	RS-232 serial control for firmware upgrade	Molex 53261-0671	(Matching type : Molex 51021-0600)
CN17	Reserved for Speaker in	JST B4B-ZR	(Matching type : PHR-4)
CN18	Reserved for SpeakerRS-232 out	JST B4B-ZR	(Matching type : PHR-4)
CN19	Additional panel power output	JST B10B-PH-K	(Matching type : PHR-10)
CNA1	Auxiliary power output	JST 4-way, B4B-XH-A	(Matching type : XHP-4) (Matching cable P/N 426040200-3)
CNB1	Backlight inverter	JST 5-way, B5B-XH-A	(Matching type : XHP-5) (Matching cable P/N 426058300-3)
CNB2	Backlight status input connector	JST 2 way, B2B-XH-A	(Matching type : XHP-2)
CNC1	OSD control	Hirose DF13A-12P-1.25H (Mating type : DF13-12S-1.25C) (Matching OSD switch mount cable P/N 426122200-3 (150mm) or 426122210-3 (250mm)	
CNV2	Component (YPbPr) video input connector	JST 6-way, B6B-PH-K	(Matching type : PHR-6) (Matching video cable P/N 426000600-3)
CP1	Reserved for internal programming	Reserved	
CP2	Reserved	Reserved	
CP3	Reserved for internal programming	Reserved	
IR1	Infra-red sensor connector	JST 3-way, B3B-XH-A	(Matching type : XHP-3)
J1	Ethernet	RJ-45 connector	
J5	Panel power output	JS-1147A-08 Top 1.25mm	(Matching type : JS-1146-08)
J6	Reserved for Digital interface for SDI / Video mux board connector	DIL Header 25x2, 1.27x2.54 SMT	
J7	V-by-One panel signal output 1	JAE FI-RE51S-HF	(Matching type : FI-RE51HL)
J8	V-by-One panel signal output 2	JAE FI-RE41S-HF	(Matching type : FI-RE41HL)
J10	On board LED backlight driver connector	Molex 53261-1000	(Matching type : Molex 51021-1000)
P1	VGA	DB-15 way high density 3 row	
P2	DVI-D	DVI-D connector	
P3	HDMI	HDMI connector	
P4	Displayport	Display port connector	
PP2	Power input (alternative)	DC power Molex 2 pin 0.156" pitch	
PP4	External panel power input	Molex 43045-0400 compatible (Matching connector type : Molex 43025-0400 compatible) (Matching power cable : P/N 426013710-3)	
PP5	Power input	Molex 43045-0400 compatible (Matching connector type : Molex 43025-0400 compatible) (Matching power cable : P/N 426013710-3)	
S1	Reset button (for Ethernet function)	Tact switch button	
S2	Reserved	Tact switch button	
S4	Config Menu button (for Ethernet function)	Tact switch button	
S5	Reserved for internal programming	Tact switch button	

Specifications subject to change without notice

Summary: Jumpers setting

Ref	Purpose	Note
JA2	On board +3.3V logic power enable	1-2 & 3-4 closed, factory set, do not remove
JA3	Panel power voltage select **CAUTION**: Incorrect setting can damage panel	See panel voltage setting table 1
JA5	Panel power voltage select **CAUTION:** Incorrect setting will cause panel damage	See panel voltage setting table 1
JA6	Panel power voltage select **CAUTION:** Incorrect setting will cause panel damage	See panel voltage setting table 1
JA15	Panel power output control via J7 pin 1-8	1-3, 2-3 = Enable panel power output via J7 pin 1-8 Open = Disable panel power output via J7 pin 1-8
JB1	Backlight brightness voltage range	1-2 closed = 5V max 2-3 closed = 3.3V max
JB2	Backlight inverter on/off control – signal level	2-3 = On/Off control signal 'High' = +5V 1-2 = On/Off control signal 'High' = +3.3V Open = On/Off control signal 'High' = Open collector **CAUTION**: Incorrect setting can damage inverter.
JB3	Backlight inverter on/off control – polarity	1-2 = control signal 'high' = CCFT ON 2-3 = control signal 'low' = CCFT ON
JB4	Reserved	Reserved
JB5	Backlight control type selection	1-2 = VR/Digital switch mount control 3-4 = Analog backlight brightness - voltage range 0~5V 5-6 = PWM (Pulse Width Modulation) brightness
JB6	Maximum LED backlight current selection	1-2 = 150mA 3-4 = 120mA
JB7	Backlight control voltage on CNB1 pin 4 (Function when JB5 sets 1-2 closed)	Open = For OSD switch mount control (Default) 1-2 = 0V 2-3 = 3.3V / 5V controlled by JB1
JB9	On board LED backlight driver function	Open = Disable Closed = Enable
JC1	Custom configuration	Position 1 : Closed = Disable B/L setup menu Position 2 : Closed = Enable save Current Settings as Calibrated Values on OSD menu Position 3 : Closed = Enable baud rate selection function in programming mode Position 4 : Closed = Hide "Reset to Factory Defaults" and "Reset to Factory Defaults with (Color Temp.)" from OSD menu.
JC2	Custom configuration	Reserved
JP4	Custom configuration	1-2 closed = Reserved 3-4 closed = On-board programming 5-6 closed = Reserved
JP1	Factory use	Default Open
JP6	Input power control	Short = External switch control Open = Switch mount control
JP12	Reserved for internal programming	Reserved
JP13	Reserved for internal programming	Reserved
JP14	Reserved for internal programming	Reserved
JP15	Signal logic state on J7 pin 24	Open = 3.3V Closed = Ground
JP16	Signal logic state on J7 pin 22	Open = 3.3V Closed = Ground
JP17	Signal logic state on J7 pin 21	Open = 3.3V Closed = Ground
JP18	Signal logic state on J7 pin 17	Open = 3.3V Closed = Ground
JP19	Signal logic state on J7 pin 16	Open = 3.3V Closed = Ground
JP20	Signal logic state on J7 pin 15	Open = 3.3V Closed = Ground
JP9	Factory use	Default Open

Table 1 : Panel voltage setting table :

Input voltage via PP2/PP5	Panel Voltage	JA3	JA5	JA6	Jumper on board
12VDC	3.3V	3V3 closed	1-3 & 2-4	1-3 & 2-4	
	5V	5V closed	1-3 & 2-4	1-3 & 2-4	
	12V	OPEN	1-3 & 2-4	5-7 & 6-8	

CAUTION: Incorrect setting can damage panel & controller

Input voltage via PP2/PP5	Panel Voltage	JA3	JA5	JA6	Jumper on board
24VDC**	3.3V	3V3 closed	1-3 & 2-4	1-3 & 2-4	
	5V	5V closed	1-3 & 2-4	1-3 & 2-4	
	12V	12V closed	1-3 & 2-4	3-5 & 4-6	
	18V	18V closed	1-3 & 2-4	3-5 & 4-6	

CAUTION: Incorrect setting can damage panel & controller

** Ensure that the backlight inverter supports 24V operation prior to connecting a 24VDC input. Because CNA1 pin 1 and CNB1 pin 2 will output 24VDC if input 24VDC via PP2 or PP5.

Input voltage via PP4	Input voltage via PP2 / PP5	Panel Voltage	JA3	JA5	JA6	Jumper on board
3.3 / 5 / 12 / 18VDC*	12V / 24VDC	3.3V	OPEN	3-5 & 4-6	1-3 & 2-4	
		5V	OPEN	3-5 & 4-6	1-3 & 2-4	
		12V	OPEN	3-5 & 4-6	3-5 & 4-6	
		18V	OPEN	3-5 & 4-6	3-5 & 4-6	

* Maximum current for 3.3V, 5V = 7A, Maximum current for 12V = 5A, Maximum current for 18V = 3.5A

JA3, JA5 & JA6 location on board : (Please pay attention to the jumper settings on JA3, JA5 & JA6 which are red in color)

Panel support :

4K 60Hz panel		
Panel model	Panel resolution	Controller Part number
Innolux M280DGJ-L30*	3840x2160	P/N 4174601XX-3
AU Optronics P550QVN01v0*	3840x2160	P/N 4174602XX-3

4K 120Hz panel		
Panel model	Panel resolution	Controller Part number
LG LD840EQD-SEM1*	3840x2160	P/N 4174600XX-3
Sharp LQ695R3xxxx	3840x2160	
LG LC550EQD-FGF2	3840x2160	
AUO P750QVN01v0 4K 120Hz	3840x2160	
AUO P650QVN01.0 4K 120Hz*	3840x2160	P/N 4174603XX-3
Samsung LTA750FJ01 4K 120Hz	3840x2160	P/N 4174604XX-3

Remark :
* - Verified this panel support by DigitalView.

CN1 – Slave RS-232 serial control: JST B6B-XH-A   (Matching type : XHP-6)

PIN	SYMBOL	DESCRIPTION
1	EXT_MSTR2_SCL	Reserved
2	EXT_MSTR2_SDA	Reserved
3	VCC	+5V
4	TXD	RS-232 Tx data
5	GND	Ground
6	RXD	RS-232 Rx data

CN4 – Panel connector: HIROSE DF20G-10DP-1V (Matching type : DF20A-10DS-1C)

PIN	SYMBOL	DESCRIPTION
1	OP1	Reserved
2	OP2	Reserved
3	OP3	Reserved
4	OP4	Reserved
5	IP1	Reserved
6	IP2	Reserved
7	IP3	Reserved
8	IP4	Reserved
9	EXT_MSTR2_SDA	Reserved
10	EXT_MSTR2_SCL	Reserved

CN5 - Alternate HDMI connector : JST BM20B-SRDS (Matching type : SHDR-20V-S-B)

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	GND	Ground
3	RXC+	TMDS Data C+
4	RXC-	TMDS Data C-
5	RX0+	TMDS Data 0+
6	RX0-	TMDS Data 0-
7	RX1+	TMDS Data 1+
8	RX1-	TMDS Data 1-
9	RX2+	TMDS Data 2+
10	RX2-	TMDS Data 2-
11	GND	Ground
12	GND	Ground
13	MSTR2_SCL	Reserved
14	MSTR2_SDA	Reserved
15	DDC_5V	+5V power supply for DDC (optional)
16	HPD	Hot plug detection
17	DDC_SCL	DDC serial clock
18	DDC_SDA	DDC Data
19	CEC	Consumer Electronics Control(CEC) pin
20	VCC2	VCC 5V output

CN6 – Alternate DVI connector: JST BM20B-SRDS (Matching type : SHDR-20V-S-B)

PIN	SYMBOL	DESCRIPTION
1	GND	Digital Ground
2	GND	Digital Ground
3	RXC	TMDS Clock+
4	/RXC	TMDS Clock-
5	RX0	TMDS Data 0+
6	/RX0	TMDS Data 0-
7	RX1	TMDS Data 1+
8	/RX1	TMDS Data 1-
9	RX2	TMDS Data 2+
10	/RX2	TMDS Data 2-
11	GND	Ground (+5, Analog H/V Sync)
12	GND	Digital Ground
13	EXT_MSTR2_SCL	Reserved
14	EXT_MSTR2_SDA	Reserved
15	DDC_5V	+5V power supply for DDC (optional)
16	HPD	Hot plug detect
17	DDC_CLK	DDC Clock
18	DDC_DAT	DDC Data
19	NC	No connection
20	GND	Ground

CN8 – RS-232 serial control: JST B6B-XH-A (Matching type : XHP-6)

PIN	SYMBOL	DESCRIPTION
1	EXT_MSTR2_SCL	Reserved
2	EXT_MSTR2_SDA	Reserved
3	VCC	+5V
4	TXD	RS-232 Tx data
5	GND	Ground
6	RXD	RS-232 Rx data

CN9 – Ambient light sensor connector : JST B3B-PH-K (Matching type : PHR-3)

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	VCC_5V	VCC 5V
3	ALSF	Ambient light sensing feedback

CN11 – SPDIF audio output connector : JST B3B-PH-K (Matching type : PHR-3)

PIN	SYMBOL	DESCRIPTION
1	SPDIF	SPDIF Digital audio output
2	GND	Ground

CN13 - 2x5 right angled header (Matching audio add-on board P/N 416940020-3 & Audio extend cable P/N 426009700-3)

PIN	SYMBOL	DESCRIPTION
1	VCC	Audio board logic power supply, +5V
2	VOLSEL0	Reserved
3	VOLSEL1	Reversed
4	TUNAUDSEL	Reserved
5	CLK/CNT	Reserved
6	GND	Ground
7	+12V/+24V	Audio board power supply, +12V/+24V
8	NC	No connection
9	NC	No connection
10	GND	Ground

CN15 – RS-232 serial control for firmware upgrade : Molex 53261-0671, 6 ways 1.25mm pitch (Matching type : Molex 51021-0600)

PIN	SYMBOL	DESCRIPTION
1	EXT_MSTR2_SCL	Reserved
2	EXT_MSTR2_SDA	Reserved
3	VCC	+5V
4	TXD	RS-232 Tx data
5	GND	Ground
6	RXD	RS-232 Rx data

CN16 – RS-232 serial control for firmware upgrade : Molex 53261-0671, 6 ways 1.25mm pitch (Matching type : Molex 51021-0600)

PIN	SYMBOL	DESCRIPTION
1	EXT_MSTR2_SCL	Reserved
2	EXT_MSTR2_SDA	Reserved
3	VCC	+5V
4	TXD	RS-232 Tx data
5	GND	Ground
6	RXD	RS-232 Rx data

CN19 – Additional panel power output : JST B10B-PH-K (Matching type : PHR-10)

PIN	SYMBOL	DESCRIPTION
1	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
2	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
3	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
4	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
5	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	GND	Ground
10	GND	Ground

CNA1 - Auxiliary power output: JST B4B-XH-A (Matching type : XHP-4)

PIN	SYMBOL	DESCRIPTION
1	AUX 12V / 24V	+12V / +24V DC
2	GND	Ground
3	GND	Ground
4	AUX 5V	+5V DC, 500mA max

CNB1 – Backlight inverter connector: JST B5B-XH-A (Matching type : XHP-5)

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	VBKL	+12V / +24V DC, backlight power supply
3	BLCTRL	On/Off control (enable) – see JB2 & JB3
4	BVR_WIP	Brightness VR – WIP
5	BVR_A	Brightness VR A

CNB2 – Backlight status input inverter connector: JST B2B-XH-A (Matching type : XHP-2)

PIN	SYMBOL	DESCRIPTION
1	BL_STATUS	Backlight status (Normal = High)
2	GND	Ground

CNC1 – OSD switch mount control, Hirose DF13A-12P-1.25H   (Mating type : DF13-12S-1.25C)

PIN	SYMBOL	DESCRIPTION
1	PSWIN	Power button A
2	SW_ON	Power button B
3	BVR_A	Backlight Brightness VR pin A
4	BVR_WIP	Backlight Brightness R pin WIP
5	BVR_B	Backlight Brightness VR pin B (470 ohm resistor to +5V Vcc)
6	GND	Ground
7	MENU	OSD menu
8	-/LEFT	OSD -/Left
9	+/RIGHT	OSD +/Right
10	SEL_DN	OSD Select down
11	SEL_UP	OSD Select up
12	NC	No connection

The VR for brightness depends on the inverter. The main power load for On/Off is handled by a relay on the controller.

CNV2 – Component (YPbPr) video input connector: JST 6-way, B6B-PH-K (Matching type : XHP-6)

PIN	SYMBOL	DESCRIPTION
1	A_Y1	Luma in / Green in
2	GND	Ground
3	A_CB1	Cb in / Blue in
4	GND	Ground
5	A_CR1	Cr in / Red in
6	GND	Ground

IR1 – Infra-Red sensor connector: JST B3B-XH-A   (Matching type : XHP-3)

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	STDBY_Vcc	Stand by voltage
3	IR Data	IR data

J5 – LVDS Panel connector: Molex 53261-0871, (Matching type : 51021-0800)

PIN	SYMBOL	DESCRIPTION
1	PVLCD_Low (3,3V/5V)	Panel power supply (3,3V/5V) (selected by JA3, JA5 & JA6)
2	PVLCD_Low (3,3V/5V)	Panel power supply (3,3V/5V) (selected by JA3, JA5 & JA6)
3	GND	Ground
4	GND	Ground
5	GND	Ground
6	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
7	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
8	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)

J7 – LVDS output connector: JAE FI-RE51S-HF (Matching type : JAE FI-RE51HL)

PIN	SYMBOL	DESCRIPTION
1	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
2	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
3	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
4	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
5	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
6	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
7	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
8	PVLCD_High (12V/18V)	Panel power supply (+12V / 18V) (selected by JA3, JA5 & JA6)
9	NC	No Connection
10	GND	Ground
11	GND	Ground
12	GND	Ground
13	GND	Ground
14	GND	Ground
15	DF0	High/Low state control (Controlled by JP20)
16	DF1	High/Low state control (Controlled by JP19)
17	PCID	High/Low state control (Controlled by JP18)
18	NC	No Connection
19	NC	No Connection
20	NC	No Connection
21	BITSEL	High/Low state control(Controlled by JP17)
22	LD_EN	High/Low state control(Controlled by JP16)
23	GND	Ground
24	GND_SCN	High/Low state control(Controlled by JP15)
25	HTPDN	V-by-One HTPDN
26	LOCKN	V-by-One LOCK
27	GND	Ground
28	VB1_0_TX-	V-by-One HS Data Lane 0
29	VB1_0_TX-	V-by-One HS Data Lane 0
30	GND	Ground
31	VB1_1_TX-	V-by-One HS Data Lane 1
32	VB1_1_TX-	V-by-One HS Data Lane 1
33	GND	Ground
34	VB1_2_TX-	V-by-One HS Data Lane 2
35	VB1_2_TX-	V-by-One HS Data Lane 2
36	GND	Ground
37	VB1_3_TX-	V-by-One HS Data Lane 3
38	VB1_3_TX-	V-by-One HS Data Lane 3
39	GND	Ground
40	VB1_4_TX-	V-by-One HS Data Lane 4
41	VB1_4_TX-	V-by-One HS Data Lane 4
42	GND	Ground
43	VB1_5_TX-	V-by-One HS Data Lane 5
44	VB1_5_TX-	V-by-One HS Data Lane 5
45	GND	Ground
46	VB1_6_TX-	V-by-One HS Data Lane 6
47	VB1_6_TX-	V-by-One HS Data Lane 6
48	GND	Ground
49	VB1_7_TX-	V-by-One HS Data Lane 7
50	VB1_7_TX-	V-by-One HS Data Lane 7
51	GND	Ground

J8 – LVDS output connector: JAE FI-RE41S-HF (Matching type : JAE FI-RE41HL)

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	VB1_0_TX-	V-by-One HS Data Lane 8
3	VB1_0_TX-	V-by-One HS Data Lane 8
4	GND	Ground
5	VB1_0_TX-	V-by-One HS Data Lane 9
6	VB1_0_TX-	V-by-One HS Data Lane 9
7	GND	Ground
8	VB1_0_TX-	V-by-One HS Data Lane 10
9	VB1_0_TX-	V-by-One HS Data Lane 10
10	GND	Ground
11	VB1_0_TX-	V-by-One HS Data Lane 11
12	VB1_0_TX-	V-by-One HS Data Lane 11
13	GND	Ground
14	VB1_0_TX-	V-by-One HS Data Lane 12
15	VB1_0_TX-	V-by-One HS Data Lane 12
16	GND	Ground

Specifications subject to change without notice

17	VB1_0_TX-	V-by-One HS Data Lane 13
18	VB1_0_TX-	V-by-One HS Data Lane 13
19	GND	Ground
20	VB1_0_TX-	V-by-One HS Data Lane 14
21	VB1_0_TX-	V-by-One HS Data Lane 14
22	GND	Ground
23	VB1_0_TX-	V-by-One HS Data Lane 15
24	VB1_0_TX-	V-by-One HS Data Lane 15
25	GND	Ground
26	NC	No Connection
27	NC	No Connection
28	NC	No Connection
29	NC	No Connection
30	NC	No Connection
31	NC	No Connection
32	NC	No Connection
33	NC	No Connection
34	NC	No Connection
35	NC	No Connection
36	NC	No Connection
37	NC	No Connection
38	NC	No Connection
39	NC	No Connection
40	NC	No Connection
41	NC	No Connection

J10 – On-board LED backlight driver connection : Molex 53261-1000 (Matching type : Molex 51021-1000)

PIN	SYMBOL	DESCRIPTION
1	LED_VLED1+	Channel A – Anode
2	LED_VLED1+	Channel A – Anode
3	LED_CH4	Channel A – Cathode 1
4	LED_CH3	Channel A – Cathode 2
5	LED_CH2	Channel A – Cathode 3
6	LED_CH1	Channel A – Cathode 4
7	NC	No Connection
8	NC	No Connection
9	NC	No Connection
10	NC	No Connection

LED1 – Status LED connector: 3-pin header

PIN	DESCRIPTION
1	Green LED pin (anode)
2	LED pin common (cathode)
3	Red LED pin (anode)

P1 - Analog VGA in - 15 way connector

PIN	SYMBOL	DESCRIPTION
1	PCR	Red, analog
2	PCG	Green, analog
3	PCB	Blue analog
4	ID2	Reserved for monitor ID bit 2 (grounded)
5	DGND	Digital ground
6	AGND	Analog ground red
7	AGND	Analog ground green
8	AGND	Analog ground blue
9	DDC_5V	+5V power supply for DDC (optional)
10	DGND	Digital ground
11	ID0	Reserved for monitor ID bit 0 (grounded)
12	DDC_SDA	DDC serial data
13	HS_IN	Horizontal sync or composite sync, input
14	VS_IN	Vertical sync, input
15	DDC_SCL	DDC serial clock

P2 – DVI-D in

PIN	SYMBOL	DESCRIPTION
1	/RX2	TMDS Data 2-
2	RX2	TMDS Data 2+
3	GND	Digital Ground
4	NC	No connection
5	NC	No connection
6	DDC_CLK	DDC Clock
7	DDC_DAT	DDC Data
8	NC	No connection
9	/RX1	TMDS Data 1-
10	RX1	TMDS Data 1+
11	GND	Digital Ground
12	NC	No connection
13	NC	No connection
14	DDC_5V	+5V power supply for DDC (optional)
15	GND	Ground (+5, Analog H/V Sync)
16	NC	No connection
17	/RX0	TMDS Data 0-
18	RX0	TMDS Data 0+
19	GND	Digital Ground
20	NC	No connection
21	NC	No connection
22	GND	Digital Ground
23	RXC	TMDS Clock+
24	/RXC	TMDS Clock-
C1	NC	No connection
C2	NC	No connection
C3	NC	No connection
C4	HS_IN	Analog horizontal sync
C5	GND	Ground
C6	NC	No connection

P3 – HDMI connector

PIN	SYMBOL	DESCRIPTION
1	DATA2+	TMDS Data2+
2	DATA2S	TMDS Data2 Shield
3	DATA2-	TMDS Data2–
4	DATA1+	TMDS Data1+
5	DATA1S	TMDS Data1 Shield
6	DATA1-	TMDS Data1–
7	DATA0+	TMDS Data0+
8	DATA0S	TMDS Data0 Shield
9	DATA0-	TMDS Data0–
10	CLK+	TMDS Clock+
11	CLK@	TMDS Clock Shield
12	CLK-	TMDS Clock–
13	CEC	CEC
14	NC	No connection
15	SCL	SCL (I²C Serial Clock for DDC)
16	SDA	SDA (I²C Serial Data Line for DDC)
17	CEC/GND	Ground
18	+5V	+5 V Power (max 50 mA)
19	HPDET	Hot Plug Detect

P4 – Display Port input

PIN	SYMBOL	DESCRIPTION
1	ML_Lane 0 (p)	Lane 0 (positive)
2	GND	Ground
3	ML_Lane 0 (n)	Lane 0 (negative)
4	ML_Lane 1 (p)	Lane 1 (positive)
5	GND	Ground
6	ML_Lane 1 (n)	Lane 1 (negative)
7	ML_Lane 2 (p)	Lane 2 (positive)
8	GND	Ground
9	ML_Lane 2 (n)	Lane 2 (negative)
10	ML_Lane 3 (p)	Lane 3 (positive)
11	GND	Ground
12	ML_Lane 3 (n)	Lane 3 (negative)
13	CONFIG1	connected to Ground
14	CONFIG2	connected to Ground
15	AUX CH (p)	Auxiliary Channel (positive)
16	GND	Ground
17	AUX CH (n)	Auxiliary Channel (negative)
18	Hot Plug	Hot Plug Detect
19	GND	Ground
20	DP_PWR	Power for connector (3.3 V 500 mA)

PP2 – Alternate 12V/24VDC input power supply

PIN	DESCRIPTION
1	+12VDC / 24VDC in
2	Ground

PP4 – External panel power input

PIN	DESCRIPTION
1	External panel power
2	Ground
3	External panel power
4	Ground

PP5 – 12V/24VDC input power supply

PIN	DESCRIPTION
1	+12VDC / 24VDC in
2	Ground
3	+12VDC / 24VDC in
4	Ground
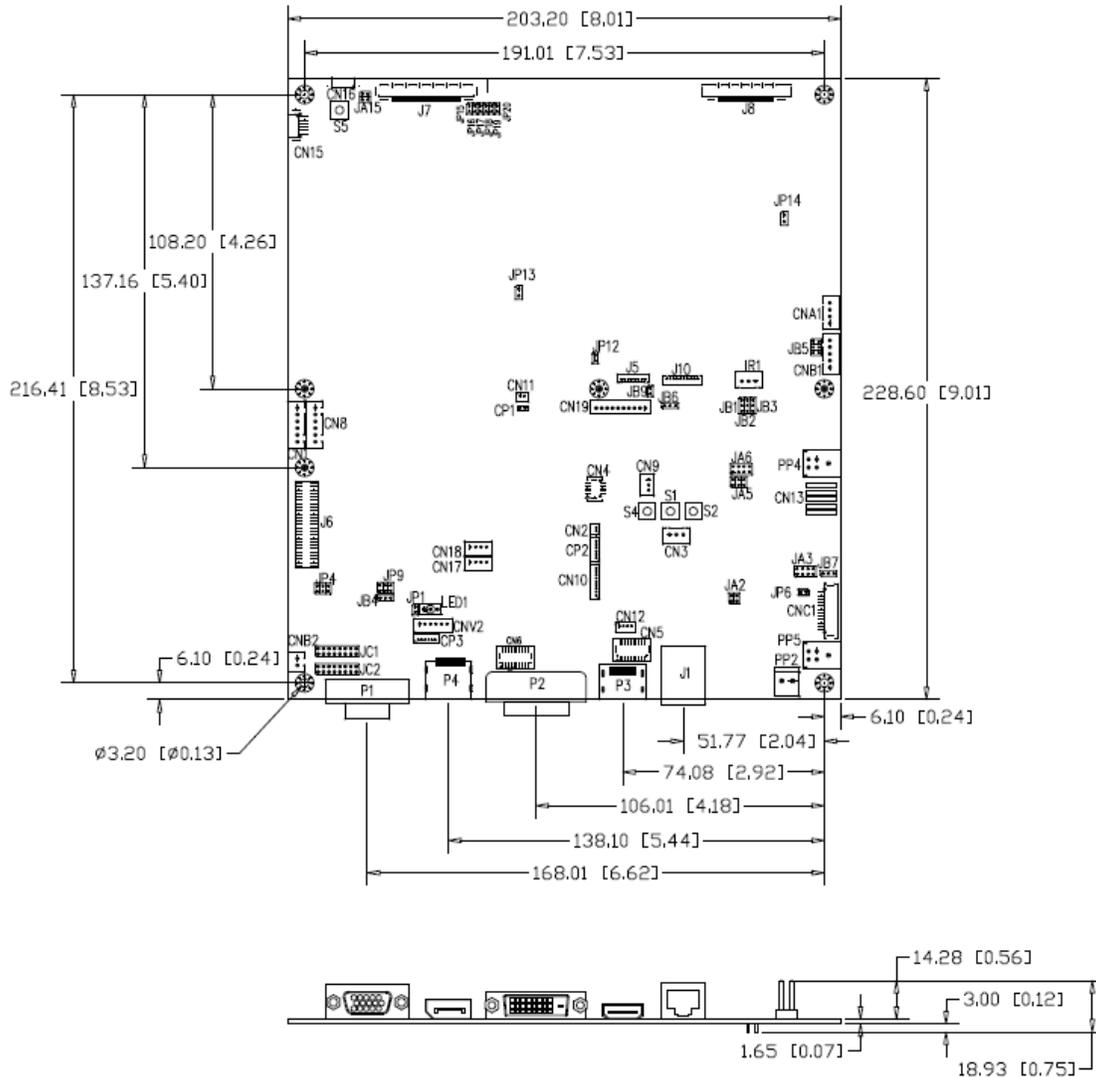
Ready-made 3D Pro-E (SLDPRT) drawing files - Save time and effort for your system volumetric analysis design. Includes jpg file previews. Please go to download at http://www.digitalview.com/products/svx-3840-lcd-controller

The maximum thickness of the controller is 18.93mm with or without video add-on board (measured from bottom of PCB to top of components, including any underside components & leads). We recommend clearances of:

- 5mm from bottom of PCB - if mounting on a metal plate we also recommend a layer of suitable insulation material is added to the mounting plate surface.
- 10mm above the components
- 3~5mm around the edges

Any of the holes shown above can be used for mounting the PCB, they are 3.2mm in diameter.

CAUTION: Ensure adequate insulation is provided for all areas of the PCB with special attention to high voltage parts such as the inverter.

APPLICATION NOTES

USING THE CONTROLLER WITHOUT BUTTONS ATTACHED
This is very straightforward:
- Firstly setup the controller/display system with the buttons. With controls attached and display system active make any settings for colour, tint and image position as required then switch everything off.
- Remove the control switches, the 12-way (CNC1) cable.
- Use a jumper or similar to connect pins 1 & 2 on CNC1, this will fix the board On.
- Refer to inverter specifications for details as to fixing brightness to a desired level, this may require a resistor, an open circuit or closed circuit depending on inverter.

Summary: On CNC1 the only pins that are used are for On/Off and Brightness (if controller mounted inverter is used). On CNC1 the pins are for momentary type buttons so it doesn't matter that no buttons are attached.

INVERTER CONNECTION
There are potentially 3 issues to consider with inverter connection:
- Power
- Enable
- Brightness

Please read the following sections for a guide to these issues.

Inverter Power: As per the table for CNB1 pin 1 is ground and pin 2 provides 12V/24V DC. This should be matched with the inverter specification: see table.

CNB1

PIN	DESCRIPTION
1	Ground
2	+12V/+24VDC

Remark: For higher power inverter, more current (for 12V/24V) can be taken from CNA1 pin 1.

Enable: This is a pin provided on some inverters for On/Off function and is used by this panel controller for VESA DPMS compliance. If the inverter does not have an enable pin or the enable pin is not used then DPMS will not be operational. Pin 3 should be matched to the inverters specification for the 'enable' or 'disable' pin.

CNB1

PIN	DESCRIPTION
3	Enable

Further, jumpers JB2 & JB3 should be set to match the inverters specification for the enable pin power and High or Low setting: see table.

Ref	Purpose	Note
JB2	Inverter enable voltage	1-2 H = 3.3V, 2-3 H = 5V, OPEN H = open collector
JB3	Inverter control	1-2 H = On, 2-3 L = On

Brightness: There are various methods for brightness control and it is important to consider the specifications for the inverter to be used. Generally the situation is:
- Brightness can control by using a resistor or VR (Variable Resistor).
- Brightness controlled by adding a circuit such as PWM (Pulse Width Modulation).
- No adjustment of brightness is possible.

CNB1 pins 4 & 5 are available for connecting to an inverter or circuit where VR control is supported.

CNB1

PIN	DESCRIPTION
4	VR WIP
5	VR A

This can then be matched with function controls connected to CNC1 pins 4 & 3 or 5: see table.

CNC1

PIN	DESCRIPTION
3	VR A
4	VR WIP
5	VR B

Specifications subject to change without notice

Design Guideline for making VR circuitry :
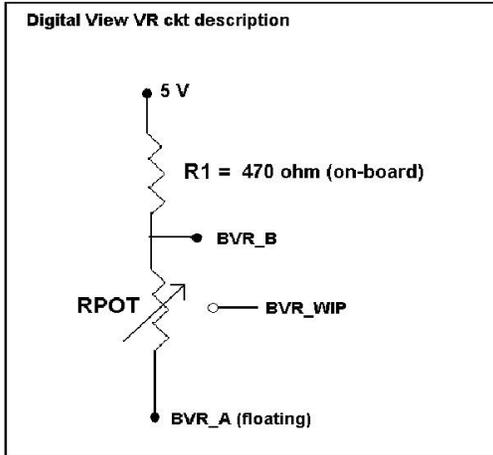
Signal description / Notes :
1) R1 : 470ohm on board
2) RPOT is an external potentiometer (in-line dip style) that can be plugged directly into CNC1 pins 3,4,5. RPOT must be supplied / installed by user.
3) BVR_B : Voltage tapped from "top" of potentiometer, the node of R1 and RPOT.
4) BVR_WIP : Voltage tapped from wiper arm of RPOT.
5) BVR_A : Voltage tapped from "bottom" of RPOT.
Note : BVR_A voltage is left floating on the controller board. To use this circuit, you need to tie this point to a potential (usually GND, available at CNC1 pin 6).

CNB1 – Backlight inverter connector: JST B5B-XH-A (Matching type : XHP-5)

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	VBKL	+12V/24VDC, backlight power supply
3	BLCTRL	On/Off control (enable) – see JB2 & JB3
4	BVR_WIP	Brightness VR - WIP
5	BVR_A	Brightness VR A

CNC1 – OSD switch mount control, Hirose DF13A-12P-1.25H   (Mating type : DF13-12S-1.25C)

PIN	SYMBOL	DESCRIPTION
1	PSWIN	Power button A
2	SW_ON	Power button B
3	BVR_A	Backlight Brightness VR pin A
4	BVR_WIP	Backlight Brightness R pin WIP
5	BVR_B	Backlight Brightness VR pin B (470 ohm resistor to +5V Vcc)
6	GND	Ground
7	MENU	OSD menu
8	-/LEFT	OSD -/Left
9	+/RIGHT	OSD +/Right
10	SEL_DN	OSD Select down
11	SEL_UP	OSD Select up
12	NC	No connection

The VR for brightness depends on the inverter. The main power load for On/Off is handled by a relay on the controller.

Example for circuit design :
1.)Choose RPOT = 10K
2.) Tie BVR_A to GND
3.) Circuit analysis gives BVR_WIP as the following (see Figure 1)
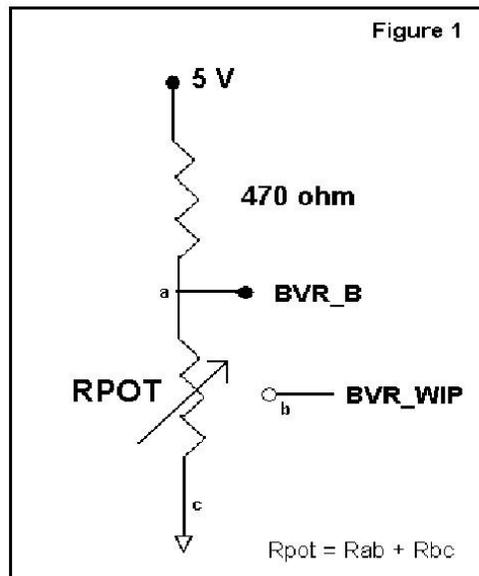
$BVR\_WIP = 5 \times (Rbc/10.47)$

where BVR_WIP is in Volts.
And Rbc is the resistance from the wiper arm to bottom of pot in Kohms.

To evaluate, plug in different values of Rbc :

Rbc	BVR_WIP
0	0 V
2.5 K	1.2 V
5 K	2.4 V
7.5 K	3.6 V
10 K	4.8 V

So this circuit could provide Brightness adjust voltage ranging from 0V to 5V.

Figure 1

Specifications subject to change without notice

TROUBLESHOOTING

General

A general guide to troubleshooting a flat panel display system it is worth considering the system as separate elements, such as:

➢ Controller (jumpers, PC settings)
➢ Panel (controller, cabling, connection, panel, PC settings)
➢ Backlight (inverter, cabling, backlight tubes)
➢ Cabling
➢ Computer system (display settings, operating system)

Through step by step cross checking with instruction manuals and a process of elimination to isolate the problem it is usually possible to clearly identify the problem area.

No image:

➢ If the panel backlight is not working it may still be possible to just see some image on the display.
➢ A lack of image is most likely to be caused by incorrect connection, lack of power, failure to provide a signal or incorrect graphic card settings.

Image position:

If it is impossible to position the image correctly, i.e. the image adjustment controls will not move the image far enough, then test using another graphics card. This situation can occur with a custom graphics card that is not close to standard timings or if something is in the graphics line that may be affecting the signal such as a signal splitter (please note that normally a signal splitter will not have any adverse effect).

Image appearance:

➢ A faulty panel can have blank lines, failed sections, flickering or flashing display
➢ Incorrect graphics card refresh rate, resolution or interlaced mode will probably cause the image to be the wrong size, to scroll, flicker badly or possibly even no image.
➢ Incorrect jumper settings on the controller may cause everything from total failure to incorrect image. CAUTION: Do not set the panel power input incorrectly.
➢ Sparkling on the display: faulty panel signal cable.

Backlight:

Items to check include: Power input, Controls, Inverter and Tubes generally in this order.
If half the screen is dimmer than the other half:

➢ Check cabling for the inverter.
➢ For a specific backlight tube check the AC pins orientation (CAUTION: Never reverse any DC power pins).

Also:

➢ If adjusting brightness control has no effect the chances are that the VR rating or method of adjusting brightness is not compatible or correctly connected to the inverter.
➢ If system does not power down when there is a loss of signal

Continued failure:

If unit after unit keeps failing consider and investigate whether you are short circuiting the equipment or doing something else seriously wrong.

Generally after common sense issues have been resolved we recommend step by step substitution of known working parts to isolate the problem.

SPECIFICATIONS

Panel compatibility	Compatible with 3840x2160 resolutions of TFT LCD panels with V-by-One panel interface. A specified BIOS and some factory adjustment is required for individual panel timings.
No. of colors	Up to 3 x 10 bit providing 1.06 billion colors.
Panel power	DC 3.3V, 5V, 12V, 18V
Panel signal	V-by-One 8 & 16 Lane
Standard input at source (analog RGB)	VGA analog (15 pin) standard with automatic detection of: Digital Separate Sync; Sync On Green.
Video formats	PAL, NTSC & SECAM
Video inputs	ARGB (VGA) DVI-D (Dual Link) Component video Display Port 1.2 HDMI 1.4
Functions display	On screen display (OSD) of functions
OSD menu functions	Image controls: Panel brightness/contrast, Saturation, Hue, Color temperature, Sharpness, Aspect ratio etc.
OSD menu controls available	Power On/Off Backlight brightness OSD Menu OSD Select up OSD Select down Setting + Setting -
Control interface	Buttons, RS-232, IR Remote control, Ethernet control
Settings memory	Settings are stored in non volatile memory
PC Connectivity	VGA / SVGA / XGA / SXGA / UXGA / WUXGA analog or digital
Controller dimensions	203.2mm x 228.6mm (8.01." x 9.01")
Power consumption	10w approx. (not including panel power consumption)
Power load maximum	The controller has an overall 3Amp current limit.
Input voltage	12V/24VDC +/- 5%
On board battery lifetime	3 years at storage (without applying power to the unit). The battery is not rechargeable.
Power protection	Fuse fitted (Resettable)
DC Power handling	Reverse power polarity protection is equipped on the board
Storage temperature limits	-40°C to +70°C
Operating temperature limits	0°C to +60°C

NOTES

Please note the following:
• For specific panel setup a sample of an LCD may be required (this will be returned) and a copy of the full technical specifications for the panel from the manufacturer.
• Re-layout and custom development services are available.

APPENDIX I – SIGNAL SUPPORT MODE TABLE

ARGB (P1) PORT :

Mode	Resolution	Clk [MHz]	Horizontal freq [KHz]	Vertical freq [Hz]	Sync Mode
V_60	640x480 60Hz	25.175	31.469	59.940	Digital Separate Sync
V_60	640x480 60Hz	25.175	31.469	59.940	Composite Sync
V_72	640x480 72Hz	31.500	37.861	72.809	Digital Separate Sync
V_72	640x480 72Hz	31.500	37.861	72.809	Sync On Green
V_75	640x480 75Hz	31.500	37.500	75.000	Digital Separate Sync
V_75	640x480 75Hz	31.500	37.500	75.000	Sync On Green
SV_56	800x600 56Hz	36.000	35.156	56.250	Digital Separate Sync
SV_60	800x600 60Hz	40.000	37.879	60.317	Digital Separate Sync
SV_60	800x600 60Hz	40.000	37.879	60.317	Sync On Green
SV_72	800x600 72Hz	50.000	48.077	72.188	Digital Separate Sync
SV_72	800x600 72Hz	50.000	48.077	72.188	Sync On Green
SV_75	800x600 75Hz	49.500	46.875	75.000	Digital Separate Sync
SV_75	800x600 75Hz	49.500	46.875	75.000	Sync On Green
X_60	1024x768 60Hz	65.000	48.363	60.004	Digital Separate Sync
X_60	1024x768 60Hz	65.000	48.363	60.004	Sync On Green
X_70	1024x768 70Hz	75.000	56.476	70.069	Digital Separate Sync
X_70	1024x768 70Hz	75.000	56.476	70.069	Sync On Green
X_75	1024x768 75Hz	78.750	60.023	75.029	Digital Separate Sync
X_75	1024x768 75Hz	78.750	60.023	75.029	Sync On Green
SX_60	1280x1024 60Hz	108	63.81	60.020	Digital Separate Sync
SX_60	1280x1024 60Hz	108	63.81	60.020	Sync On Green
SX_75	1280x1024 75Hz	135	79.976	75	Digital Separate Sync
SX_75	1280x1024 75Hz	135	79.976	75	Sync On Green
WXGA	1280x768 60Hz	79.5	47.776	59.87	Digital Separate Sync

Specifications subject to change without notice

WXGA	1280x768 60Hz	79.5	47.776	59.87	Sync On Green
WXGA	1360x768 60Hz	85.5	47.712	60.015	Digital Separate Sync
WXGA	1360x768 60Hz	85.5	47.712	60.015	Sync On Green
WXGA	1366x768 60Hz	87.75	47.852	59.964	Digital Separate Sync
WXGA+	1440x900 60Hz	88.75	55.469	59.901	Digital Separate Sync
HD+	1600x900 60Hz	97.75	55.54	59.978	Digital Separate Sync
WUX_60	1920x1080 60Hz	172.8	67.5	60	Digital Separate Sync
WUX_60	1920x1080 60Hz	172.8	67.5	60	Composite Sync
WUX_60	1920x1200 60Hz	154	74	60	Digital Separate Sync
WUX_60	1920x1200 60Hz	154	74	60	Sync On Green

Remark :
The controller has been designed to take a very wide range of input signals however to optimize the PC's graphics performance we recommend choosing 60Hz vertical refresh rate. To support on higher refresh rate over 60Hz, the LCD panel may not support.

DVI input port :

Resolution
640x480 60Hz
640x480 75Hz
800x600 56Hz
800x600 60Hz
800x600 72Hz
800x600 75Hz
1024x768 60Hz
1024x768 70Hz
1024x768 75Hz
1280x768 60Hz
1280x1024 60Hz
1280x1024 75Hz
1366x768 60Hz
1440x900 60Hz
1600x900 60Hz
1600x1200 60Hz
1920x1080 60Hz
1920x1080 60Hz
1920x1080 59Hz
1920x1080 50Hz
2560x1600 60Hz

Specifications subject to change without notice

HDMI input port :

Resolution
640x480 60Hz
640x480 72Hz
640x480 75Hz
800x600 56Hz
800x600 60Hz
800x600 72Hz
800x600 75Hz
1024x768 60Hz
1024x768 70Hz
1024x768 75Hz
1280x768 60Hz
1280x1024 60Hz
1280x1024 75Hz
1366x768 60Hz
1400x1050 60Hz
1440x900 60Hz
1600x900 60Hz
1600x1200 60Hz
1680x1050 60Hz
1920x1200 60Hz
2560x1600 60Hz
3840x2160 30Hz

Display port input port :

Resolution
640x480 60Hz
640x480 72Hz
640x480 75Hz
720x480 60Hz
720x576 50Hz
800x600 56Hz
800x600 60Hz
800x600 72Hz
800x600 75Hz
1024x768 60Hz
1024x768 70Hz
1024x768 75Hz
1280x768 60Hz
1280x1024 60Hz
1280x1024 75Hz
1366x768 60Hz
1400x1050 60Hz
1440x900 60Hz
1600x900 60Hz
1600x1200 60Hz
1680x1050 60Hz
1920x1200 60Hz
2560x1600 60Hz
3840x2160 30Hz

Component video port :

Mode
480p60
576p50
720p60
720p59.94
720p50
720p30
720p29.97
720p24
720p23.976
1080p30
1080p29.97
1080p25
1080p24
1080p23.98

Appendix II – RS-232 control protocols

RS-232 Serial control (Baud rate 2400/4800/9600/14400/19200/38400/57600/115200, 8 bits, 1 stop bit and no parity)
Physical connection :

Controller side
Connector interface : CN8
Mating connector : JST XHP-6

6 5 4 3 2 1   Mating face of CN8

Computer side
Connector interface : Serial port
Mating connector : DB9 Female

1 2 3 4 5
6 7 8 9   Mating face of RS-232 DB9 Male

PIN#	Description
4	RS-232 Tx Data
5	Ground
6	RS-232 Rx Data

PIN#	Description
2	RS-232 Rx Data
3	RS-232 Tx Data
5	Ground

Remark :
(1) : RS-232 connection cable, 600mm P/N 4260902-00 can be ordered separately for connection.

Software connection :

The OSD function can be controlled through sending the RS-232 protocol.
The RS-232 program can be custom-made to fit for application or it can be used the serial control program, like Accessport, Telix or Serial Utility program developed by DigitalView. Please contact your local support for information.

1. Commands to implement switch mount control buttons

Function	Command	Description	Remark
Menu button	0xf7	Menu button pressed	Button equivalent
Select-down button	0xfa	Select-down button pressed	Button equivalent
Select-up button	0xfb	Select-up button pressed	Button equivalent
Right/+ button	0xfc	Right/+ button pressed	Button equivalent
Left/- button	0xfd	Left/- button pressed	Button equivalent

2. Parameter setting - immediate, relative, reset and query

Function	Command	Description	Acknowledge (if enabled)
Brightness control	0x81, nn | "+" | "-" | "r" | "R" | "?" "m" "n" "i" , ss, nn "o", ss,	Set brightness = value/increment/decrement Reset Query Current Source Maximum query *1 Minimum query *1 Set, Source, value *1 Query, Source *1	Brightness. Range : "4""E"-"B""2" Default : "8""0" ss - reference by Input main select(0x98)
Contrast control - all channels	0x82, "a" | "A", nn | "+" | "-" | "r" | "R" | "?" "m" "n" "i " , ss, nn "o", ss,	Set all contrast = value/increment/decrement Reset Query Maximum query *1 Minimum query *1 Set, Source, value *1 Query, Source *1	Contrast Range : "1""C"-"E""4" Default : "8""0" ss - reference by Input main select(0x98)
Saturation control	0x83, nn | "+" | "-" | "r" | "R" | "?" "m" "n" "i" , ss, nn "o", ss,	Set color = value/increment/decrement Reset Query Maximum query *1 Minimum query *1 Set, Source, value *1 Query, Source *1	PAL/NTSC color (In video mode only) Range : "0""1"-"F""F" Default : "8""0" ss - reference by Input main select(0x98)
Hue control	0x84, nn | "+" | "-" | "r" | "R" | "?" "m" "n" "i" , ss, nn "o", ss,	Set tint = value/increment/decrement Reset Query Maximum query *1 Minimum query *1 Set, Source, value *1 Query, Source *1	NTSC tint (In NTSC mode only) Range : "0""1"-"F""F" Default : "8""0" ss - reference by Input main select(0x98)
Phase (tuning) control	0x85, nn | "+" | "-" | "?"	Set dot clock phase = value/increment/decrement Query	Dot clock phase. (In PC mode only)
Image H position	0x86, nnnn | "+" | "-" | "?"	Set img_hpos = value/increment/decrement Reset Query	Image horizontal position. (In PC mode only)
Image V position	0x87, nnnn | "+" | "-" | "?"	Set img_vpos = value/increment/decrement Reset Query	Image vertical position. (In PC mode only)
Sharpness	0x8a, nn | "+" | "-" |	Set sharpness = value/increment/decrement	Sharpness. (Video Mode Source only)

	"r" | "R" | "?"	Reset Query	
Frequency	0x8b, nnnn | "+" | "-" | "?"	Set frequency = Value/increment/decrement Query	Graphic mode H active size (in pixels)
OSD menu timeout	0x93, nn | "+" | "-" | "r" | "R" | "?"	Select menu timeout = value/increment/decrement Reset Query	OSD menu timeout value. "0""0" – Continuous. value – Round up to nearest available step. if value > max available step, set it to the max available step.
Select OSD language	0x95, n | "r" | "R" | "?"	Select language = English, Chinese,… Reset Query	"0" – English. "2" - French "3" – Spanish "6" - German "8" – Chinese
Input main select	0x98, nn | "+" | "-" | "r" | "R" | "?"	Select input main = PC or VIDEO or next available Reset Query	Main selected. "0x41,0x31" ARGB "0x44,0x31" HD/SD Component "0x46,0x31" DVI "0x48,0x31" HDMI "0x50 0x31" Display Port
Auto Source Seek	0x99, nn , "0" | "1" | "?" | "o"	Set Auto source enable = *1 Source Disable/ Enable Query Valid Source query	"nn" = "0x41,0x31"- ARGB "0x44,0x31"- HD/SD Component "0x46,0x31"- DVI "0x48,0x31" HDMI "0x50,0x31" Display Port
Auto power off	0x9f, "0" | "1" | "r" | "R" | "?"	Set power down option = On/Off Reset Query	"0" – Off. "1" – On.
Hotkey 1	0xa0, "1", n | "r" | "R" | "?"	Set Hotkey 1= Value Reset Query	"2" – brightness.(Default) "3" – contrast. "4" – colour. "5" – input source. "7" – zoom "8" – freeze "B" – No function "E" – Aspect Ratio "G" – Hue "H" – Backlight "I" – Auto Picture Setup
Hotkey 2	0xa0, "2", n | "r" | "R" | "?"	Set Hotkey 2 = value Reset Query	"2" – brightness. "3" – contrast.(Default) "4" – colour. "5" – input source. "7" – zoom "8" – freeze "B" – No function "E" – Aspect Ratio "G" – Hue "H" – Backlight "I" – Auto Picture Setup
Runtime counter	0xa1, nnnnn | "r" | "R" | "?"	runtime counter value = nnnnn (* 0.5 hour) Reset Query	Runtime = nnnnn.
Colour temperature select	0xb3, n | "r" | "R" |	Select colour temperature = value Reset	Main selected. "0" – 9300K. "1" – 8000K.(Default)

Specifications subject to change without notice

	"?"	Query	"2" – 6500K. "3" – 5000K "4" - User
Red level for selected colour temperature	0xb4, nn | "+" | "-" | "r" | "R" | "?" "m" "n" "i" , ss, c, nn "o", ss, c	Set the level of the red channel for the selected colour temp. = value/increment/decrement Reset Query Maximum query *1 Minimum query *1 Set, Source, Temperature Group, value *1 Query, Source *1	Red level for selected colour temperature. Range : "9""C"-"F""F" Default : "E""3" for 8000K c – reference by Color Temperature ss - reference by Input main select(0x98)
Green level for selected colour temperature	0xb5, nn | "+" | "-" | "r" | "R" | "?" "m" "n" "i" , ss, c, nn "o", ss, c	Set the level of the green channel for the selected colour temp. = value/increment/decrement Reset Query Maximum query *1 Minimum query *1 Set, Source, Temperature Group, value *1 Query, Source *1	Green level for selected colour temperature Range : "9""C"-"F""F" Default : "E""3" for 8000K c – reference by Color Temperature ss - reference by Input main select(0x98).
Blue level for selected colour temperature	0xb6, nn | "+" | "-" | "r" | "R" | "?" "m" "n" "i" , ss, c, nn "o", ss, c	Set the level of the blue channel for the selected colour temp. = value/increment/decrement Reset Query Maximum query *1 Minimum query *1 Set, Source, Temperature Group, value *1 Query, Source *1	Blue level for selected colour temperature. Range : "9""C"-"F""F" Default : "E""3" for 8000K c – reference by Color Temperature ss - reference by Input main select(0x98).
Graphic horizontal resolution enquiry	0xb7	Horizontal resolution (in pixels) in 3 digit hex number	"nnn" = horizontal resolution
Graphic vertical resolution enquiry	0xb8	Vertical resolution (in lines) in 3 digit hex number	"nnn" = vertical resolution
Graphic horizontal sync frequency enquiry	0xb9	Horizontal sync frequency (in units of 100Hz) in 3 digit hex number	"nnn" = horizontal frequency
Graphic vertical sync frequency enquiry	0xba	Vertical sync frequency (in units of Hz) in 3 digit hex number and 1 char	"nnnn" = vertical frequency nnn = 3 digit hex c= "i" or "p" interlace or Progressive 0xba added the interlace(i) or Progressive(p) feedback.
OSD status enquiry	0xbb	Status of OSD	"0" – OSD turned off "1" – OSD turned on
Display Video Source Select	0xbc, "?" | "0" | "1"	Display Video source select Query Name of video source not displayed. After switching to a new video source, the name of the video source is displayed for 5 seconds.	"0" – Disabled. "1" – Enabled.
Backlight control	0xe0, nn | "+" | "-" | "="| "R" | "r" |	Set Backlight = value/increment/decrement Display OSD indicator Reset	Backlight. Range: D/A : "0""0" ~ "5""2" 100Hz : "0""0" ~ "8""3"

Specifications subject to change without notice

	"?"	Query	120Hz : "0""0" ~ "6""D" 140Hz : "0""0" ~ "5""D" 160Hz : "0""0" ~ "5""2" 180Hz : "0""0" ~ "4""8" 200Hz : "0""0" ~ "4""2" 220Hz : "0""0" ~ "3""B" 240Hz : "0""0" ~ "3""6" 260Hz : "0""0" ~ "3""2" 280Hz : "0""0" ~ "2""E" 300Hz : "0""0" ~ "2""B" 320Hz : "0""0" ~ "2""8" 340Hz : "0""0" ~ "2""6" 360Hz : "0""0" ~ "2""4" 380Hz : "0""0" ~ "2""2" 400Hz : "0""0" ~ "2""0" 420Hz : "0""0" ~ "1""E" 440Hz : "0""0" ~ "1""D"
Backlight On/Off	0xe1, "0" | "1" | "R" | "r" | "?"	Backlight Off / Backlight On /Status	"0" – Backlight Off "1" – Backlight On.(Default) "?" – Backlight On/Off Query
Backlight D/A / PWM	0xe5 "0" | "1" | "R" | "r" | "?"	Set : PWM or D/A Reset Query	"0" – PWM "1" – D/A (Default)
Backlight PWM Frequency	0xe6, nnn | "+" | "-" | "R" | "r" | "?"	Set Backlight PWM Frequency = value/increment/decrement Reset Query	+/- 20Hz Value 100Hz : "0","6","4" 120Hz : "0","7","8" 140Hz : "0","8","C" 160Hz : "0","A","0" (Default) 180Hz : "0","B","4" 200Hz : "0","C","8" 220Hz : "0","D","C" 240Hz : "0","F","0" 260Hz : "1","0","4" 280Hz : "1","1","8" 300Hz : "1","2","C" 320Hz : "1","4","0" 340Hz : "1","5","4" 360Hz : "1","6","8" 380Hz : "1","7","C" 400Hz : "1","9","0" 420Hz : "1","A","4" 440Hz : "1","B","8"
Backlight Invert	0xe7 "0" | "1" | "R" | "r" | "?"	Set On or Off Reset Query	"0" – Off "1" – On
Red Offset for selected colour temperature	0xe8, nn | "+" | "-" | "r" | "R" | "?" "m" "n" "i" , ss, c, nn "o", ss, c	Set the Offset of the red channel for the selected colour temp. = value/increment/decrement Reset Query Maximum query *1 Minimum query *1 Set, Source, Temperature Group, value *1 Query, Source *1	Red Offset for selected colour temperature. Range : "8""0"-"7""F" Default : "0""0" c – reference by Color Temperature ss - reference by Input main select(0x98)
Green Offset for selected colour temperature	0xe9, nn | "+" | "-" |	Set the Offset of the green channel for the selected colour temp. =	Green Offset for selected colour temperature.

Specifications subject to change without notice

	"r" | "R" | "?" "m" "n" "i" , ss, c, nn "o", ss, c	value/increment/decrement Reset Query Maximum query *1 Minimum query *1 Set, Source, Temperature Group, value *1 Query, Source *1	Range : "8""0"-"7""F" Default : "0""0" c – reference by Color Temperature ss - reference by Input main select(0x98)
Blue Offset for selected colour temperature	0xea, nn | "+" | "-" | "r" | "R" | "?" "m" "n" "i" , ss, c, nn "o", ss, c	Set the Offset of the blue channel for the selected colour temp. = value/increment/decrement Reset Query Maximum query *1 Minimum query *1 Set, Source, Temperature Group, value *1 Query, Source *1	Blue Offset for selected colour temperature. Range : "8""0"-"7""F" Default : "0""0" c – reference by Color Temperature ss - reference by Input main select(0x98)
Light Detector	"0xee", "0x4A" "0" | "1" | "R" | "r" "?" "S" | "s"	 Light Detector Off / Light Detector On Light Detector On/Off Query Light Detector Value Query	"0" –Light Detector Off (Default) "1" –Light Detector On. "?" – Light Detector On/Off Query "S"|"s" –Light Detector Value Query 0x00~0xFF
Access Programming Mode	"0xee", "0x59" "0" | "1" "?"	 Cancel Access / Set Access Query	"0" - Cancel Access "1' - Set next start up to access the programming mode.
Minimum Backlight Value	0xee, "0x5C" nn| "+" | "-"| "R" | "r" | "?"	Set Minimum Backlight value = value / increment / decrement Reset Query	Minimum Backlight value/ Range : D/A : "0""0" ~ "3""2" 100Hz : "0""0" ~ "3""2" 120Hz : "0""0" ~ "3""2" 140Hz : "0""0" ~ "3""2" 160Hz : "0""0" ~ "3""2" 180Hz : "0""0" ~ "3""2" 200Hz : "0""0" ~ "3""2" 220Hz : "0""0" ~ "3""2" 240Hz : "0""0" ~ "3""2" 260Hz : "0""0" ~ "3""2" 280Hz : "0""0" ~ "3""2" 300Hz : "0""0" ~ "3""2" 320Hz : "0""0" ~ "3""2" 340Hz : "0""0" ~ "3""0" 360Hz : "0""0" ~ "3""0" 380Hz : "0""0" ~ "3""0" 400Hz : "0""0" ~ "3""1" 420Hz : "0""0" ~ "3""1" 440Hz : "0""0" ~ "3""1"
OSD Switch Mount Lock	"0xee", "0x62" "0" | "1" "?"	 Unlock / Lock Query	"0" - Unlock "1" - Lock

3. Other control

Function	Command	Description	Acknowledge (if enabled)
Select RS-232 acknowledge	0xc1, "0" | "1"	Disable/enable command acknowledge.	"0" – acknowledge disabled. "1" – acknowledge enabled.
Auto-setup	0xc3	Start auto-setup of current vmode.	"0" – fail. "1" – successful.
Auto-calibration	0xc5	Start auto-calibration of gain of the RGB amplifier.	"0" – fail. "1" – successful.
Soft Power On/Off	0xc8,	Soft power	"0" - Soft power off

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	"0" | "1" | "?"	off/on query	"1" - Soft power on
Query video input status	0xc9	Query the status of the primary & pip status	"nn,nn" = input status "nn,xx" digit = primary status: "0","0" : invalid "A","1" ARGB "D","1" HD/ SD Component "F","1" DVI "H" "1" HDMI "P" "1" Display Port "xx,nn"= PIP input status: "0","0": invalid
Query BIOS version	0xcb, "0"	Read BIOS version	BIOS version "VV.YY.ZZ" VV = V0 or E0, V0 = Release version E0 = Engineering Sample YY= Version Number ZZ= Customer Number
Query PCBA number	0xcb, "1"	Read PCBA number	"nnnnn" = PCBA number SVX-3840= " 41746"
Query External Memory	0xcb, "2"	Check External Memory 24c256	"0" - Not installed "1" - Installed "2" - Not Support
Query Revision Number	0xcb, "3"	Read Revision Number	'nn" - Revision number
Reset to Factory Defaults	0xce	Reset all parameters to default value	"1" – successful.
Reset to Factory Defaults with (color temp)	0xcf	Reset all parameters for all video modes to default value	"1" - successful.
Saved Calibrated default	0xd7	Saving all parameters to user default value	"1" - successful.
Load Calibrated default	0xd8	Loading all parameters to user default value	"1" - successful. "0" - not successful "E" – Checksum Error
Wide Screen Mode Selection	0xd9, "n""n" "r" | "R" "?"	Wide Screen Mode Reset Query	"n,n" = input status "n,x" digit = Group 1 mode select: "0" – 1024x768 (Default) "1" – 1280x768 "2" – 1366x768 "3" - 1360x768 "x,n"= :Group 2 mode select "4" - 1440x900 (Default) "5" - 1600x900

 The RS-232 command strings sent in one time can support up to 380 bytes via CN8 port
The RS-232 command string sent in one time can support up to 50 bytes via CN1 or J1 port.

n = 1-byte ascii-coded hex number, e.g., parameter value of 0x1 is represented by "1" (0x31).
**mn or nn = 2-byte ascii-coded hex number, e.g., parameter value of 0x1e is represented by "1", "e" \| "E" (0x31, 0x6e\|0x4e).**
Please refer to the ASCII to Hex convert table below.

Hex to ASCII conversion table

Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII
0x30	0	0x41	A	0x61	a	0x2B	+
0x31	1	0x42	B	0x62	b	0x2D	-
0x32	2	0x43	C	0x63	c	0x3F	?
0x33	3	0x44	D	0x64	d		
0x34	4	0x45	E	0x65	e		
0x35	5	0x46	F	0x66	f		
0x36	6	0x47	G	0x67	g		
0x37	7	0x48	H	0x68	h		
0x38	8	0x49	I	0x69	i		
0x39	9	0x4A	J	0x6A	j		
		0x4B	K	0x6B	k		
		0x4C	L	0x6C	l		
		0x4D	M	0x6D	m		
		0x4E	N	0x6E	n		
		0x4F	O	0x6F	o		
		0x50	P	0x70	p		
		0x51	Q	0x71	q		
		0x52	R	0x72	r		
		0x53	S	0x73	s		
		0x54	T	0x74	t		
		0x55	U	0x75	u		
		0x56	V	0x76	v		
		0x57	W	0x77	w		
		0x58	X	0x78	x		
		0x59	Y	0x79	y		
		0x5A	Z	0x7A	z		

Specifications subject to change without notice

Appendix III – Auto Color Gain

The Auto Color Gain function is supported in the ARGB mode only and is designed to calibrate the controller to the incoming video signal. In order to calibrate correctly, the display must be displaying an image containing both black and white data (see illustration below) when the function is used. The internal processor of the video controller chip will then execute a process to adjust the relative values of the RGB signals to achieve the best performance. The parameters of the corrected RGB values are then stored in the controller and are unaffected by the Reset Factory Defaults function.
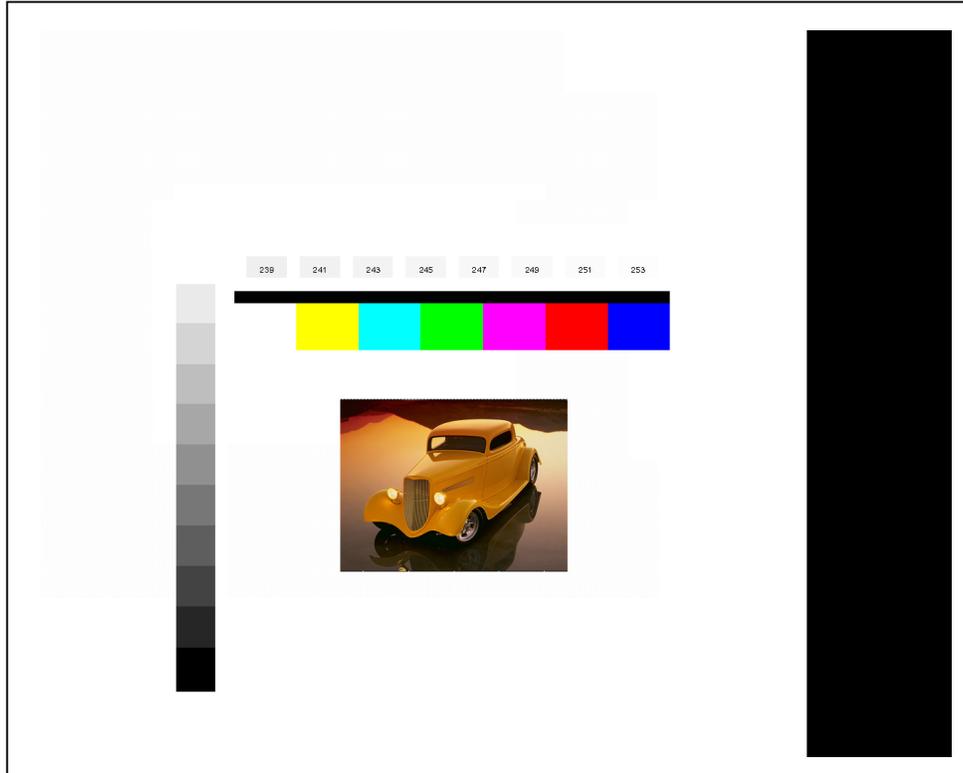
The reference pattern can be downloaded at :
http://www.digitalview.com/support/downloads/TestPattern_1280.BMP

This reference pattern is for 1280x1024 resolution and it needs to set your ARGB input source to 1280x1024 resolution before performing the Auto Color Gain function. The position of the black vertical bar in the pattern at the right side is important. It will affect the calibration result if you are setting the ARGB input to other resolution.

Warning - If the Auto Color Gain is executed without an appropriate image being displayed, then the process will set incorrect values and the display colors will be distorted. If this occurs, then it can either be corrected by performing the process correctly or if this is not possible then the Reset Color Gain function can be used. This function will reset the stored RGB values to a set of approximate values.

Appendix IV – DV remote control unit work for SVX-3840

P/N 559000106-3 :
DigitalView remote control unit
(without DV logo silk screen
printing)

P/N 559000105-3 :
DigitalView remote control unit
(with DigitalView logo silk screen
printing)

BUTTON	FUNCTION
POWER BUTTON	Soft power ON/OFF button.
SEL UP ($\wedge$) / SEL DN ($\vee$)	Use this button to direct control the hotkey function. Press the "SEL UP" button to increase the pre-set hotkey parameter value and the "SEL DN" button to decrease the pre-set hotkey parameter value. In OSD menu, pressing this button to select the items.
+ / - BUTTON	Use this button to direct control the hotkey function. Press the "+" button to increase the pre-set hotkey parameter value and the "-" button to decrease the pre-set hotkey parameter value. In OSD menu, pressing this button to adjust the settings.
OSD BACK BUTTON	Use to display the OSD menu and go to the previous OSD screen.
OSD NEXT BUTTON	Use to display the OSD menu and go to the next OSD screen.
DISPLAY BUTTON	Use to view an on-screen information. When OSD menu displayed, press this button to turn it off.
AV/TV BUTTON	Use to select the input source. (VGA/DVI/HDMI/..)
SOUND (ZOOM) BUTTON	Use to display the zoom menu. Press the "+" to zoom in the picture and the "-" to zoom out the picture.
PLAY (YPbPr) BUTTON	Press this button in the non OSD menu display mode to select Component 1 source.
STOP (VGA) BUTTON	Press this button in the non OSD menu display mode to select VGA source.
DVI BUTTON	Press this button in the non OSD menu display mode to select DVI source.
HDMI BUTTON	Press this button in the non OSD menu display mode to select HDMI source.

Appendix V – Network connection

The SVX-3840 LCD interface controller has an RJ-45 Ethernet port for control and monitoring over a network. This application note introduces the two user interface modes:

- Command line direct mode
- Browser based web server mode

There is also a short overview of the command set and how it is implemented.

QUICK GUIDE

For experienced users the following quick guide to trying out the network connection and functions may be useful.

Command line direct mode: This is relevant when a PC application is used to send and receive commands over the network port.

Browser based web server mode : The network port will require an alternative firmware version if the browser based web server mode is required.
- Works with a normal network with DHCP, i.e. must use a router.
- Connect the SVX-3840 to the network and ensure power is on.
- Use the IP Locator utility available from the IP-60 web-page.
  http://www.digitalview.com/media/downloads/IPLocator.zip (Windows only)
- Double click on the IP address in the IP Locator window, it will open the SVX-3840 browser page in your default browser. Alternatively copy the IP address into your browser address line.
- Test the functions that come up on the browser.

For details, please refer to the separate application note.

WARRANTY

The products are warranted against defects in workmanship and material for a period of three (3) year from the date of purchase provided no modifications are made to it and it is operated under normal conditions and in compliance with the instruction manual.

The warranty does not apply to:
- Product that has been installed incorrectly, this specifically includes but is not limited to cases where electrical short circuit is caused.
- Product that has been altered or repaired except by the manufacturer (or with the manufacturer's consent).
- Product that has subjected to misuse, accidents, abuse, negligence or unusual stress whether physical or electrical.
- Ordinary wear and tear.

Except for the above express warranties, the manufacturer disclaims all warranties on products furnished hereunder, including all implied warranties of merchantability and fitness for a particular application or purpose. The stated express warranties are in lieu of all obligations or liabilities on the part of the manufacturer for damages, including but not limited to special, indirect consequential damages arising out of or in connection with the use of or performance of the products.

CAUTION

Whilst care has been taken to provide as much detail as possible for use of this product it cannot be relied upon as an exhaustive source of information. This product is for use by suitably qualified persons who understand the nature of the work they are doing and are able to take suitable precautions and design and produce a product that is safe and meets regulatory requirements.

LIMITATION OF LIABILITY

The manufacturer's liability for damages to customer or others resulting from the use of any product supplied hereunder shall in no event exceed the purchase price of said product.

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Revision History

Date	Rev No.	Page	Summary
3 March 2014	1.00	All	First issued
2 April 2014	2.00	All	Reflect the features added on SVX-3840 P/N 417460020-3