



**PC & VIDEO INTERFACE CONTROLLER
FOR 1280 x 1024, 1024 x 768 RESOLUTIONS TFT LCD**

Model: SVP-1280

Part number : 4165100-XX

INSTRUCTIONS

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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 SVP-1280 controller provides an auto-input synchronization and easy to use interface controller for:

- TFT (active matrix) LCD panels of 1280x1024, 1024x768, 800x600 and 640x480 resolutions;
- Computer video signals of VGA, SVGA, XGA and SXGA standard.
- Video signals of NTSC, PAL and SECAM standard.
- Volume control of audio (optional add-on board required)

HOW TO PROCEED

- Ensure you have all parts & that they are correct, refer to:
 - Connection diagram (separate document for each panel)
 - Connector reference (in following section)
 - Assembly notes
- Check controller switch & jumper settings (errors may damage the panel)
- Prepare the PC
- 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:

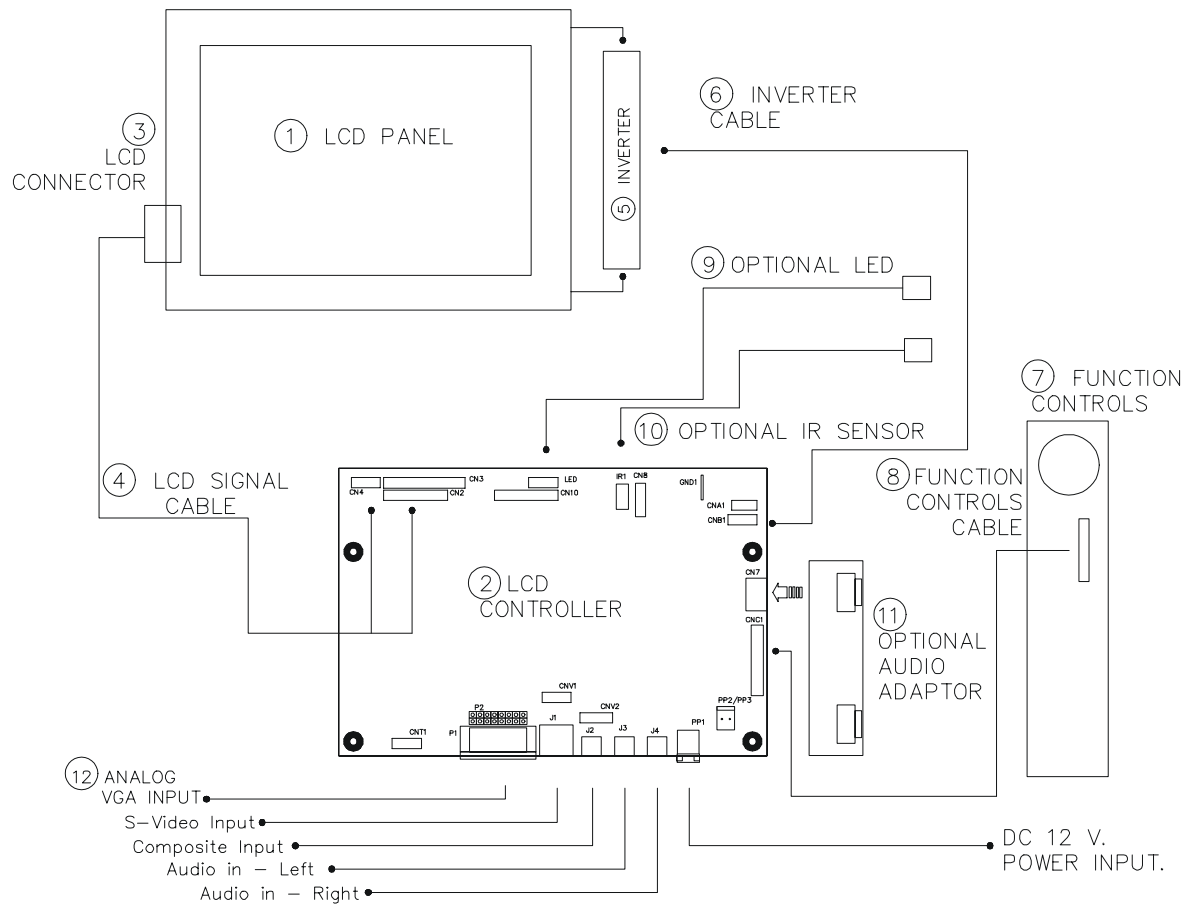
- Ensure that all necessary and appropriate safety measures are taken.
- Obtain suitable regulatory approvals as may be required.
- **Check power settings to all component parts before connection.**

DISCLAIMER

There is no implied or expressed warranty regarding this material.

SYSTEM DESIGN

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



Summary:

1. LCD panel
2. LCD controller card, SVP-1280
3. LCD panel connector board for LCD signal cable (if necessary)
4. LCD signal cables
5. Inverter for backlight (if not built into LCD)
6. Inverter cable
7. Function controls
8. Function controls cable
9. Status LED
10. IR sensor
11. Audio add-on board (optional)
12. External type VGA cable
 - AV cables (J1: S-video, J2: Composite video, J3/4: audio, CNV2: Component video)
 - Power supply
 - Enclosure or Mounting (not shown)

Digital View provides a range of parts, such as listed above, to make up complete display solutions.

ASSEMBLY NOTES

This controller is designed for monitor and custom display projects using 1280 x 1024 or 1024 x 768 resolution TFT panels with a VGA, SVGA, XGA or SXGA signal input. 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 for TFT panels with 3.3V, 5V or 12V TTL or LVDS/TMDS interface. For LVDS/TMDS a separate add-on board is required. Due to the variation between manufacturers 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. **Controller:** Handle the controller with care as static charge may damage electronic components. Make sure correct jumper and dip switches settings to match the target LCD panel.
3. **LCD connector board:** Different makes and models of LCD panel require different panel signal connectors and different pin assignments.

WIRING NOTE: If panels of less than 3 x 8 bit are used, eg 3 x 6 bit, then connection of panel signal high value should correspond to the controllers highest bit. For example for a 6 bit panel R5 (Red data bit) on the panel should connect to R7 on the controller, in this case R1 & R0 on the controller will not be connected. Same for Green & Blue.

4. **LCD signal cables:** In order to provide a clean signal it is recommended that LCD signal cables should not longer than 33cm (13 inches). If loose wire cabling is utilised these can be made into a harness with cable ties. Care should be taken when placing the cables to avoid signal interference. Additionally it may be necessary in some systems to add ferrite cores to the cables to minimise signal noise.
 5. **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 for more information on connection.
 6. **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.
 7. **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.
 8. **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.
 9. **Status LED:** The pin direction of the LED should be corrected for right colour indication. Red colour stands for standby. Green colours stands for signal on. The status LED is an optional part only, can be unconnected.
 10. **IR sensor:** It is an optional part only, can be unconnected if not using IR remote control.
 11. **Audio add-on board:** With the optional audio add-on board it is possible to control volume through the OSD menu. The audio board fits on the right hand edge of the main controller.
 12. **VGA Input Cable:** As this may affect regulatory emission test results and the quality of the signal to the controller a suitably shielded cable should be utilized.
- **AV cables:** Standard Composite or S-video cables can be used. Reasonable quality cable should be used to avoid image quality degradation.
 - **Power Input:** 12V DC is required, this should be a regulated supply. The power rating is depending on the panel and inverter used. Normally, power supply with 3.5Amp current output should enough for most of 4x CCFT panels. 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.
 - **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 12VDC 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.
 - 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.
- **Touch Panels:** Support for touch panels or other low power consumption accessories is available by:
 - Connector CNA1 provides 5V & 12V DC which can be used to power such accessories subject to a maximum loading recommended at 500mA.
- **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.

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. **TTL type panels:** Plug the signal cables direct to CN2, CN3 and CN4 (CN4 will not be used for 3x6-bit panel) on the controller board. Plug the other end of cables to the LCD connector board (if connector board is required, otherwise the signal can be direct plug to the LCD panel connector). Then plug the board connector to the LCD panel connector.
LVDS/PanelLink type panels: A LVDS/PanelLink transmitter board is required. Plug the transmitter board to CN2, CN3 & CN4. Then insert the LCD signal cable with controller end to the connector on the transmitter board. Insert the panel end of the cable the LCD panel connector.
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 colour 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 & Switches:** Check all jumpers and switches (SW1) are set correctly. Details referring the connection diagram (a separate document) or the jumpers and switches setting table (in the following section).
8. **Jumpers & Inverter & Panel voltage:** Particularly pay attention to the settings of JA3, JA5, 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 are used for panel voltage input (read panel specification and information on the jumper table to define the correct settings).
9. **VGA cable & Controller:** Plug the VGA cable to the connector P1 on the controller board.
10. **Power supply & Controller:** Plug the DC 12V power in to the connector PP1.
11. **Power on:** Switch on the controller board and panel by using the OSD switch mount.

The red LED will light up when power on. The LED will change to green when VGA signal on.

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.

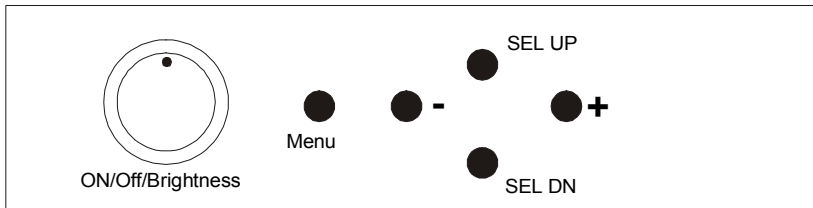
OPERATION

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.

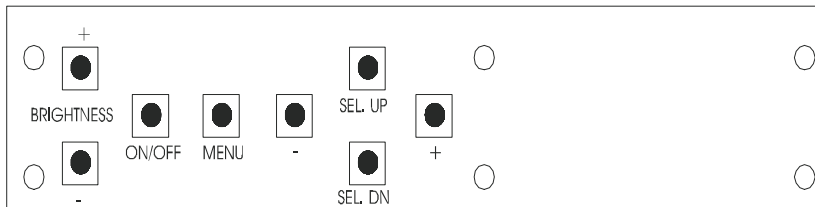
LCD DISPLAY SYSTEM SETTINGS

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) | 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 setting/confirm the select | + | + |
| - – decrease setting | - | - |



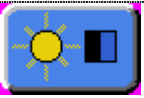


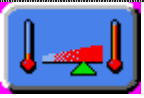




Analog VR type

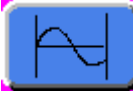














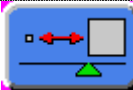
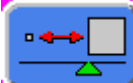





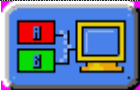








Digital type

| | |
|----------------------------------|--------------------------------------------------------------|
| To turn on the OSD menu: | Press the MENU button |
| Move to next icon: | Press the MENU button |
| Select options within icon menu: | Use SEL UP/SEL DN buttons, the selected option is in yellow. |
| Increase/decrease setting: | Use +/- buttons |
| Move selection left/right: | Use +/- buttons, the selected option is in green |
| To confirm the selection: | Use + button |

OSD functions

| | |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Brightness and Contrast : Brightness  Increase/decrease panel brightness level, total: 100 steps Contrast  Increase/decrease panel contrast level, total: 100 steps |
|  | Color Temperature : 9500K / 8000K / 6500K / 5000K Adjust the warmth of the image displayed. The higher temperature the coolest image looks like. The lower temperature the warmest image looks like. |
|  | Video Adjustment : (DISPLAYED IN VIDEO MODE ONLY) Color:  adjust video color level Tint:  adjust video tint level Sharpness:  adjust video image sharpness level Picture Type : Motion / Still Select still mode to getting a stable image in displaying still picture Video Type: DVD / VCR Change brand width to match the source |

| | |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>Frequency and Phase : (DISPLAYED IN PC MODE ONLY)</p> <p>Frequency  Adjust the image horizontal size</p> <p>Phase  Fine tune the data sampling position (adjust image quality)</p> <p>Picture Type : Motion / Still Select still mode to getting a stable image in displaying still picture</p> |
|  | <p>Video System : Select video system and input signals (DISPLAYED IN VIDEO MODE ONLY)</p> <p>AUTO : automatic detection of NTSC and PAL system (not applicable in SECAM system)</p> <p>NTSC / NTSC 4.43 : manual select NTSC system</p> <p>PAL / PAL M : manual select PAL system</p> <p>SECAM : manual select SECAM system</p> |
|  | <p>Status : (DISPLAYED IN PC MODE ONLY)</p> <p>Display graphic information: resolution and frequency</p> |
|  | <p>Position :</p> <p>Image up/down : Use SEL UP/SEL DN to move the image vertically</p> <p>Image left/right : Use +/- to move the image horizontally</p> |
|  | <p>Rotation : (DISPLAYED IN VIDEO MODE ONLY)</p> <p>Rotates the image from landscape format to portrait format.</p> |
|  | <p>Picture in Picture : (DISPLAYED IN PC MODE ONLY)</p> <p>PIP Size : Off / 1 / 2 / 3 Select PIP window size: close, size 1, size 2 and size 3</p> <p>PIP Source : Select video source to be display in PIP window:</p> <p>Auto – automatic detection of Composite, S-video and Component</p> <p>Composite – manual select composite video only</p> <p>SVideo – manual select S-video only</p> <p>YCbCr/RGB* – manual select YCbCr</p> <p><i>* RGB only applicable in SV-1600</i></p> <p>Horizontal Position  adjust the position of the PIP window horizontally</p> <p>Vertical Position  adjust the position of the PIP window vertically</p> <p>Advanced PIP Settings :</p> <p>Brightness  adjust the image brightness of the PIP window</p> <p>Contrast  adjust the image contrast of the PIP window</p> <p>Sharpness  adjust the image sharpness of the PIP window</p> <p>Tint  adjust the tint of the image of the PIP window</p> <p>Color  adjust the color of the image of the PIP window</p> |
|  | <p>Video Scaling : (DISPLAYED IN VIDEO MODE ONLY)</p> <p>Use the UP and DOWN arrow keys to select the following scaling modes.</p> <p>Normal</p> <p>Letterbox</p> <p>Letterbox with Subtitles</p> <p>Nonlinear Scaling Modes : Horiz Clipping / Horiz Offset / Horiz Stretch / Vert Clipping / Vert Offset / Vert Stretch</p> |
|  | <p>Graphic Scaling Modes : (DISPLAYED IN PC MODE ONLY)</p> <p>Use the up and down arrow keys to choose a scaler mode.</p> <p>Use the + or - key to modify a following scaler parameters.</p> <p>One to One :</p> <p>Horizontal Pan </p> <p>Vertical Pan </p> <p>Fill Screen : enable full screen expansion for lower resolution Image</p> <p>Fill to Aspect ratio : enable fill screen expansion for lower resolution image according to aspect ratio.</p> <p>Nonlinear Scaling Modes : Horiz Clipping / Horiz Offset / Horiz Stretch / Vert Clipping / Vert Offset / Vert Stretch</p> |

| | |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>Language : Select OSD menu language display</p> <ol style="list-style-type: none"> 1. English 2. Danish 3. Chinese |
|  | <p>Video source : Select the input video signal</p> <p>Analog RGB / Component Video / Composite Video / S-Video</p> |
|  | <p>Utilities :</p> <p>User Setting : User Timeout : adjust the OSD menu timeout period in a step of 5 seconds DPMS : Disable / Enable the DPMS function Display Input : Disable / Enable the input source name on screen</p> <p>Auto Source Select : Off - Disable auto source select function. Low - Auto source select enable ONLY in power up. High - Auto source select ALWAYS enable.</p> <p>Gamma : 1.0 (Default setting) 1.6 2.2</p> <p>OSD Setting : OSD Horz Position :  move the OSD menu horizontally OSD Vert Position :  move the OSD menu vertically OSD Background : Translucent / Opaque OSD Rotate : Normal / Rotate</p> <p>Freeze : Freeze the image (use "+" button)</p> <p>Zoom : Zoom level : enable the zoom in function on the image displayed. Use "+" button to zoom in the image. Use "-" button to decrease the zoomed image.</p> <p>Horizontal Pan :  Vertical Pan : </p> <p>Direct Access #1: Define the hot key function ("+" and "-") for one of the following adjustments : Brightness / Contrast / Volume / Freeze / Zoom / Video Source* / PIP</p> <p>Direct Access #2: Define the hot key function ("SEL UP" and "SEL DN") for one of the following adjustments : Brightness / Contrast / Volume / Freeze / Zoom / Video Source* / PIP</p> <p>Display Orientation : Normal / Horizontal Inverse / Vertical Inverse / Inverse</p> <p>Calibrate RGB Gain : Color Calibration (DISPLAYED IN PC MODE ONLY)</p> <p>Load Factory Defaults : Recall factory default settings.</p> <p>* By pressing the hot key, the source is in sequence of Analog RGB/Composite Video/S-Video/Component Video.</p> |
|  | <p>Volume :</p> <p></p> <p>Adjust the audio volume level (functions only if the audio add-on installed)</p> |
|  | <p>Exit menu</p> |

The OSD settings chosen will be stored in memory. The OSD menu can be cleared from the screen by moving the selection bar to the EXIT icon pressing the + button otherwise it will automatically clear after a few seconds (time-out period) of non-use.

RS-232 serial control (Baud rate = 2400 bps)

The OSD function can be controlled through send HEX code with the following button mapping table.

| | | | | | |
|---------------------|------|-------------------|------|-----------------|------|
| MENU | 0xf7 | Language | 0x95 | Scalar V Pan | 0xb2 |
| SEL_DN | 0xfa | Input Source | 0x98 | Color Temp | 0xb3 |
| SEL_UP | 0xfb | Source Priority | 0x99 | Hori Resolution | 0xb7 |
| + | 0xfc | Video System | 0x9b | Vert Resolution | 0xb8 |
| - | 0xfd | Video type | 0x9c | Hori Frequency | 0xb9 |
| Volume | 0x80 | Gamma | 0x9d | Vert Frequency | 0xba |
| Brightness | 0x81 | DPMS | 0x9f | OSD Status | 0xbb |
| Contrast | 0x82 | Direct Access | 0xa0 | Display Video | 0xbc |
| Color | 0x83 | PIP Brightness | 0xa2 | OSD Turn-off | 0xbd |
| Tint | 0x84 | PIP Contrast | 0xa3 | Acknowledge | 0xc1 |
| Phase | 0x85 | PIP H Position | 0xa4 | Auto-setup | 0xc3 |
| Hosi Position | 0x86 | PIP V Position | 0xa5 | Command | 0xc4 |
| Vert Position | 0x87 | PIP Window Size | 0xa6 | Calibration | 0xc5 |
| Sharpness | 0x8a | PIP source | 0xa7 | Freeze | 0xc6 |
| Frequency | 0x8b | Zoom | 0xa8 | Video Rotate | 0xc7 |
| Scaling | 0x8c | Scalar H Clipping | 0xab | Power on/off | 0xc8 |
| Display Orientation | 0x8e | Scalar H Offset | 0xac | Reset | 0xce |
| OSD Rotate | 0x8f | Scalar H Stretch | 0xad | | |
| OSD H Position | 0x90 | Scalar V Clipping | 0xae | | |
| OSD V Position | 0x91 | Scalar V Offset | 0xaf | | |
| OSD Transparency | 0x92 | Scalar V Stretch | 0xb0 | | |
| OSD Timeout | 0x93 | Scalar H Pan | 0xb1 | | |

(This table is for reference only)

MANUAL & REMOTE CONTROL

The following table shows the comparison of functions available from different controls:

| Operation | One for All | Sony multi remote | DV switchmount | DV digital VR switchmount | DV remote |
|-----------|-------------|-------------------|----------------|---------------------------|---------------|
| Menu | Power | Power | Menu | Menu | OSD Back/NEXT |
| - | Mute | Mute | - | - | - |
| Select + | Ch+ | Ch+ | Select + | Select + | SEL UP |
| Select - | Ch- | Ch- | Select - | Select - | SEL DN |
| Setting + | Vol+ | Vol+ | Setting + | Setting + | Setting + |
| Setting - | Vol- | Vol- | Setting - | Setting - | Setting - |

Other multi-system IR transmitters will also be suitable if they support common Sony signal timings.

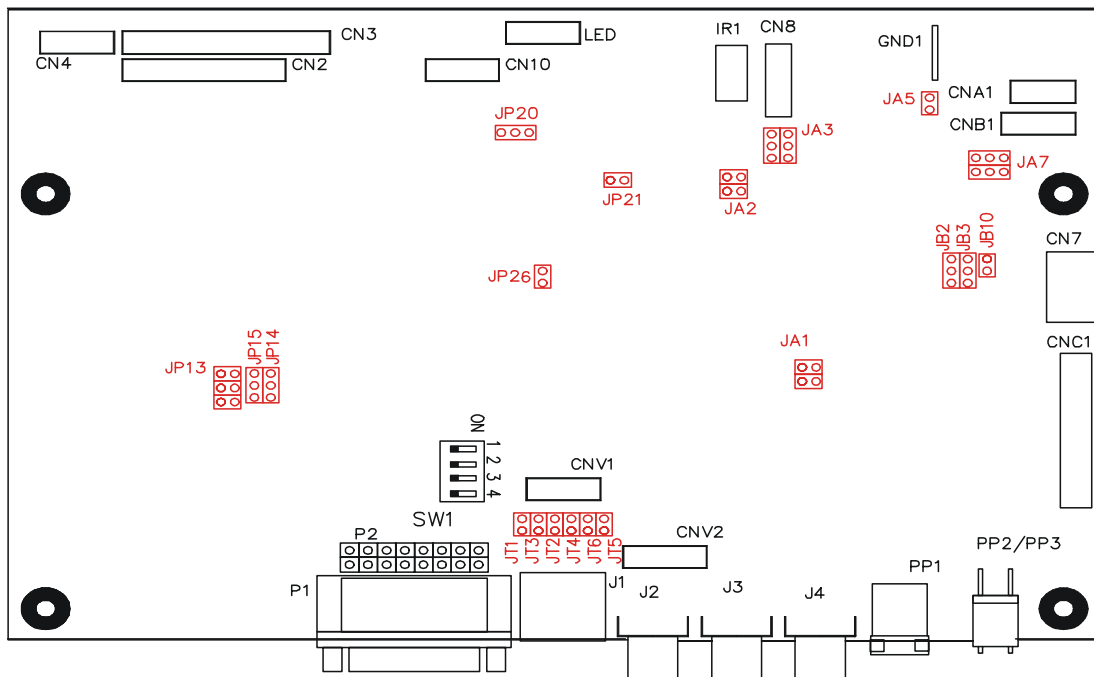
DV remote control unit

| BUTTON | FUNCTION |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| POWER BUTTON | Power ON/OFF button. (Standby mode) |
| ATTENTION BUTTON | Use combined with digit keys to enable/disable the IR function. SVP-1280 : "Attention" + "1" |
| MUTE BUTTON | Switch to mute on/off mode. |
| AV/TV BUTTON | Use to select the input source. (RGB/Composite/S-Video/Component) |
| ZOOM BUTTON | Use to display the zoom menu. Press the "+" to zoom in the picture and the "-" to zoom out the picture. |
| SEL UP / SEL DN (BRIGHTNESS) BUTTON | Use this button to direct control the brightness. Press the "SEL UP" button to increase the brightness value and the "SEL DN" button to decrease the brightness value. In OSD menu, pressing this button to select the items. |
| VOLUME BUTTON | Press the "+" button to increase the volume and the "-" to decrease the volume. |
| + / - (CONTRAST) BUTTON | Use this button to direct control the contrast. Press the "+" button to increase the contrast value and the "-" button to decrease the contrast value. In OSD menu, pressing this button to adjust the settings. |
| PIP BUTTON | Use to display the PIP (picture in picture) window on screen. |
| 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. |
| STOP (RGB) BUTTON | In input source selection mode, pressing this button to select RGB source. |
| PLAY (YCrCb) BUTTON | In input source selection mode, pressing this button to select Component (YCrCb) source. |
| TRACK (S-Vid) BUTTON | In input source selection mode, pressing this button to select S-Video source. |
| TRACK (Comp) BUTTON | In input source selection mode, pressing this button to select Composite source. |
| FREEZE BUTTON | Use this button to freeze and release the picture on your screen. |

Note : For details, please refer to the remote control unit manual.

CONNECTORS, PINOUTS & JUMPERS

The various connectors are:



Summary: Connectors

| Ref | Purpose | Description |
|-------|----------------------------|--------------------------------------------------------------|
| CN2 | Panel signal | Hirose 28-pin, DF11-28DP-2DSA (Matching type : DF11-28DS-2C) |
| CN3 | Panel signal | Hirose 32-pin, DF11-32DP-2DSA (Matching type : DF11-32DS-2C) |
| CN4 | Panel signal | Hirose 20-pin, DF11-20DP-2DSA (Matching type : DF11-20DS-2C) |
| CN7 | Audio board connector | DIL socket header 5x2 right angle |
| CN8 | RS-232 serial control | JST 6-way, B6B-XH-A (Matching type : XHP-6) |
| CN10 | Panel signal | Hirose 10-pin, DF11-10DP-2DSA (Matching type : DF11-10DS-2C) |
| CNA1 | Auxiliary power output | JST 4-way, B4B-XH-A (Matching type : XHP-4) |
| CNB1 | Backlight inverter | JST 5-way, B5B-XH-A (Matching type : XHP-5) |
| CNC1 | OSD controls | JST 12-way, B12B-XH-A (Matching type : XHP-12) |
| CNV1 | Alternate video in | JST 5-way, B5B-PH-K (Matching type : PHR-5) |
| CNV2 | Component video in | JST 6-way, B6B-PH-K (Matching type : PHR-6) |
| J1 | S-video in | Mini din 4-way |
| J2 | Composite video in | RCA jack (yellow) |
| J3 | Audio left channel | RCA jack (white) |
| J4 | Audio right channel | RCA jack (red) |
| IR1 | Infra-Red sensor connector | JST 3-way, B3B-XH-A (Matching type : XHP-3) |
| LED1 | Dual color LED connector | Header pin 3x1 |
| P1 | VGA analog input | DB-15 way high density 3 row |
| P2 | VGA input (alternative) | Pin header, 8 x 2 |
| PP1 | Main power input | DC power jack, 2.5mm contact pin diameter |
| PP2/3 | Power input (alternative) | DC power Molex 2 pin 0.156" pitch |
| SW1 | Panel selection | 4-way DIP Switch |

Summary: Jumpers setting

| Ref | Purpose | Note |
|---------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| JA1 | On board +5V logic power enable | 1-2 & 3-4 closed, factory set, do not remove |
| 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 | 1-3 & 2-4 = +5V panel voltage (Factory set) 3-5 & 4-6 = +3.3V panel voltage |
| JA5 | +12V panel power | Close = +12V panel power available on CN3 Open = +12V panel power not available on CN3 |
| JA7 | +12V power source on connector CNA1 | 1-3 & 2-4 = DC12V available on pin 1 of CNA1 3-5 & 4-6 = backlight 12V (controlled by JB10) available on pin 1 of CNA1 ** CNA1 provides additional +12V power pin for high current backlight driver board. |
| JB2 | Backlight inverter on/off control – signal level CAUTION: Incorrect setting can damage inverter. | 1-2 = On/Off control signal 'High' = +12V 2-3 = On/Off control signal 'High' = +5V Open = On/Off control signal 'High' = Open collector |
| JB3 | Backlight inverter on/off control – polarity | 1-2 = control signal 'high' = CCFT ON 2-3 = control signal 'low' = CCFT ON |
| JB10 | Backlight power enable | Open = backlight +12V power supply is always enabled Close = backlight +12V power supply is switched off when backlight is off. |
| JP13~15 | Panel clock select | JP13: 1-2 & JP14: 2-3 & JP15: open = 101.6MHz (for SXGA) JP13: 1-2 & JP14: 2-3 & JP15: 2-3 = 65MHz (for XGA) JP13: 3-4 & JP14: 1-2 & JP15: 2-3 = 40.6MHz (for SVGA) JP13: 3-4 & JP14: 1-2 & JP15: open = 25.4MHz (for VGA) |
| JP20 | Reserved | Factory set to 1-2 |
| JP21 | Reserved | Factory set to open |
| JP26 | Reserved | Factory set to open |
| JT1 | Composite video-in terminator enable | Open = composite video input is not terminated Close = composite video input is terminated with 75Ω |
| JT2 | S-Video luma-in terminator enable | Open = S-video luma input is not terminated Close = S-video luma input is terminated with 75Ω |
| JT3 | S-Video chroma-in terminator enable | Open = S-video chroma input is not terminated Close = S-video chroma input is terminated with 75Ω |
| JT4 | Component luma-in terminator enable | Open = component luma input is not terminated Close = component luma input is terminated with 75Ω |
| JT5 | Component Cr-in terminator enable | Open = component Cr input is not terminated Close = component Cr input is terminated with 75Ω |
| JT6 | Component Cb-in terminator enable | Open = component Cb input is not terminated Close = component Cb input is terminated with 75Ω |
| SW1 | Panel & function selection | See table below |

SW1: Panel and function selection

| Pos. #1 | Pos. #2 | Description |
|---------|---------|-------------|
| OFF | OFF | VGA |
| ON | OFF | SVGA |
| OFF | ON | XGA |
| ON | ON | SXGA |

Pos. #3 : Panel type selection. Please refer to the connection diagram for proper setting.

Pos. #4 : Clock Phase selection (Use this setting to stabilize the screen display. Please refer to connection diagram for proper setting).

CN2 – Panel connector: HIROSE DF11-28DP-2DSA (Matching type : DF11-28DS-2C)

| PIN | SYMBOL | DESCRIPTION |
|-----|--------|------------------|
| 1 | GND | Ground |
| 2 | GND | Ground |
| 3 | ER2 | Even data bit R2 |
| 4 | OR2 | Odd data bit R2 |
| 5 | ER3 | Even data bit R3 |
| 6 | OR3 | Odd data bit R3 |
| 7 | ER4 | Even data bit R4 |
| 8 | OR4 | Odd data bit R4 |
| 9 | ER5 | Even data bit R5 |
| 10 | OR5 | Odd data bit R5 |
| 11 | EG2 | Even data bit G2 |
| 12 | OG2 | Odd data bit G2 |
| 13 | EG3 | Even data bit G3 |
| 14 | OG3 | Odd data bit G3 |
| 15 | EG4 | Even data bit G4 |
| 16 | OG4 | Odd data bit G4 |
| 17 | EG5 | Even data bit G5 |
| 18 | OG5 | Odd data bit G5 |
| 19 | EB2 | Even data bit B2 |
| 20 | OB2 | Odd data bit B2 |
| 21 | EB3 | Even data bit B3 |
| 22 | OB3 | Odd data bit B3 |
| 23 | EB4 | Even data bit B4 |
| 24 | OB4 | Odd data bit B4 |
| 25 | EB5 | Even data bit B5 |
| 26 | OB5 | Odd data bit B5 |
| 27 | GND | Ground |
| 28 | GND | Ground |

CN3 – Panel connector: HIROSE DF11-32DP-2DSA (Matching type : DF11-32DS-2C)

| PIN | SYMBOL | DESCRIPTION |
|-----|--------|---------------------------------------------------|
| 1 | +12v | DC +12v, reserved & not normally used |
| 2 | +12v | DC +12v, reserved & not normally used |
| 3 | VLCD12 | Optional +12V panel supply (selected by JA5) |
| 4 | NC | No connection |
| 5 | GND | Ground |
| 6 | GND | Ground |
| 7 | ER6 | Even data bit R6 |
| 8 | OR6 | Odd data bit R6 |
| 9 | ER7 | Even data bit R7 (MSB of lower colour bit panels) |
| 10 | OR7 | Odd data bit R7 (MSB of lower colour bit panels) |
| 11 | EG6 | Even data bit G6 |
| 12 | OG6 | Odd data bit G6 |
| 13 | EG7 | Even data bit G7 (MSB of lower colour bit panels) |
| 14 | OG7 | Odd data bit G7 (MSB of lower colour bit panels) |
| 15 | EB6 | Even data bit B6 |
| 16 | OB6 | Odd data bit B6 |
| 17 | EB7 | Even data bit B7 (MSB of lower colour bit panels) |
| 18 | OB7 | Odd data bit B7 (MSB of lower colour bit panels) |
| 19 | GND | Ground |
| 20 | GND | Ground |
| 21 | Vcc | DC +5v, reserved & not used normally |
| 22 | Vcc | DC +5v, reserved & not used normally |
| 23 | VS | Vertical sync |
| 24 | PWRDN | Power down control signal (5v TTL) |
| 25 | HS | Horizontal sync |
| 26 | DE | Display enable |
| 27 | VLCD | Panel power supply (3.3V/5V configurable) |
| 28 | VLCD | Panel power supply (3.3V/5V configurable) |
| 29 | CKE | Even dot clock |
| 30 | CKO | Odd dot clock |
| 31 | GND | Ground |
| 32 | GND | Ground |

CN4 – Panel connector: HIROSE DF11-20DF-2DSA (Matching type : DF11-20DS-2C)

| PIN | SYMBOL | DESCRIPTION |
|-----|-----------|--------------------------------------------------|
| 1 | GND | Ground |
| 2 | GND | Ground |
| 3 | NC | No connection |
| 4 | NC | No connection |
| 5 | ER0 | Even data bit R0 (LSB) |
| 6 | OR0 | Odd data bit R0 (LSB) |
| 7 | ER1 | Even data bit R1 |
| 8 | OR1 | Odd data bit R1 |
| 9 | EG0 | Even data bit G0 (LSB) |
| 10 | OG0 | Odd data bit G0 (LSB) |
| 11 | EG1 | Even data bit G1 |
| 12 | OG1 | Odd data bit G1 |
| 13 | EB0 | Even data bit B0 (LSB) |
| 14 | OB0 | Odd data bit B0 (LSB) |
| 15 | EB1 | Even data bit B1 |
| 16 | OB1 | Odd data bit B1 |
| 17 | NC | No connection |
| 18 | ODD_FIELD | Odd field (when connected to an interlace panel) |
| 19 | GND | Ground |
| 20 | GND | Ground |

CN7 - Audio connector: DIL socket header 5x2 right angle

| PIN | SYMBOL | DESCRIPTION |
|-----|-----------|---------------------------------------------------------------|
| 1 | VCC | Audio board logic power supply, +5V |
| 2 | VOLSEL0 | Volume control select signal |
| 3 | VOLSEL1 | Volume control select signal |
| 4 | DATA/DN | Data for audio volume control |
| 5 | CLK | Clock for audio volume control |
| 6 | GND | Ground |
| 7 | +12V | Audio board power supply, +12V |
| 8 | LIN | Audio left channel L (re-route RCA connector to audio board) |
| 9 | RIN | Audio right channel R (re-route RCA connector to audio board) |
| 10 | AUDIO_GND | Ground for audio analog |

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

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

CN10 – Panel signal : Hirose 10-pin, DF11-10DP-2DSA (Matching type : DF11-10DS-2C)

| PIN | SYMBOL | DESCRIPTION |
|-----|--------|-----------------------------------------------------------------|
| 1 | PORT 0 | Panel configuration port 0 |
| 2 | PORT 1 | Panel configuration port 1 |
| 3 | PORT 2 | Panel configuration port 2 |
| 4 | BLON | Hpower-ENA(High voltage power enable for panel/address drivers) |
| 5 | PORT 3 | Panel configuration port 3 |
| 6 | PORT 4 | Panel configuration port 4 |
| 7 | PORT 5 | Panel configuration port 5 |
| 8 | NC | No connection |
| 9 | GND | Ground |
| 10 | PORT 6 | Panel configuration port 6 |

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

| PIN | SYMBOL | DESCRIPTION |
|-----|---------|--------------------|
| 1 | AUX 12V | +12V DC, 500mA max |
| 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 | +12VDC, 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 – Function controls connector: JST B12B-XH-A (Matching type : XHP-12)

| PIN | SYMBOL | DESCRIPTION |
|-----|----------|----------------------------------------------------------|
| 1 | PSWIN | Power switch A |
| 2 | SW_ON | Power switch B |
| 3 | BVR_A | Backlight brightness VR pin A |
| 4 | BVR_WIP | Backlight brightness VR pin WIP |
| 5 | BVR_B | Backlight brightness VR pin B (470Ω resistor to +5V Vcc) |
| 6 | GND | Ground |
| 7 | MENU | OSD menu button |
| 8 | -/LEFT | OSD -/Left button |
| 9 | + /RIGHT | OSD +/Right button |
| 10 | SEL_DN | OSD Select down button |
| 11 | SEL_UP | OSD Select up button |
| 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.

CNV1 – Alternate Video in input, JST B5B-PH-K (Matching type : PHR-5)

| PIN | DESCRIPTION |
|-----|---------------------|
| 1 | S-Video : Chroma in |
| 2 | S-Video : Luma in |
| 3 | Ground |
| 4 | Ground |
| 5 | Composite video in |

CNV2 – Component Video in input, JST B6B-PH-K (Matching type : PHR-6)

| PIN | DESCRIPTION |
|-----|-------------------|
| 1 | Luma in /Green in |
| 2 | Ground |
| 3 | Cb in / Blue in |
| 4 | Ground |
| 5 | Cr in / Red in |
| 6 | 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 |

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 - Alternate VGA in – DIL socket header 8x2

| 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 |
| 16 | NC | No connection |

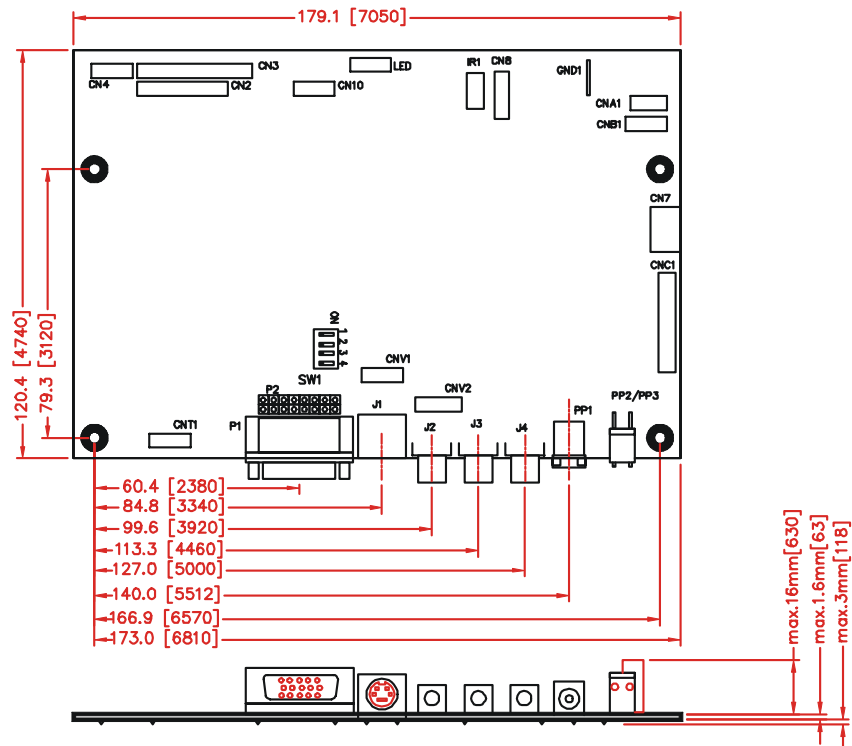
PP1 - 12VDC power supply

| PIN | DESCRIPTION |
|-----|----------------------|
| 1 | +12VDC in middle pin |
| 2 | Ground |

PP2/PP3 – Alternate 12VDC power supply

| PIN | DESCRIPTION |
|-----|-------------|
| 1 | +12VDC in |
| 2 | Ground |

CONTROLLER DIMENSIONS



The maximum thickness of the controller is 20.6mm 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 DC. This should be matched with the inverter specification: see table.

CNB1

| PIN | DESCRIPTION |
|-----|-------------|
| 1 | Ground |
| 2 | +12VDC |

Remark: For higher power inverter, more current (for 12V) 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 = 12V, 2-3 H = 5V (Vcc), 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 be controlled 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 |

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, ie 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 1280x1024, 1024 x 768, 800x600 & 640x480 resolutions of TFT LCD panels from manufacturers such as: Toshiba, Sharp, Samsung, Philips/Hosiden, NEC, Mitsubishi/ADI, LG, IBM, Hitachi, Fujitsu, etc A specified BIOS and some factory adjustment may be required for individual panel timings. |
| No. of colours | Up to 3 x 8 bit providing 16.7 million colours. |
| Signal Level | 3.3V , 5V |
| Panel signal | TTL with LVDS & TMDS options (through add-on board) |
| Vertical refresh rate | Up to 75Hz at SXGA Up to 85Hz at VGA, SVGA, XGA |
| Dot clock (pixel clock) maximum | 135MHz |
| Graphics formats | Standard VESA VGA, SVGA, XGA & SXGA; Other special formats through specified BIOS and factory adjustment. |
| Graphics auto mode detect | VGA, SVGA, XGA & SXGA, interlaced and non-interlaced |
| Standard input at source (analog RGB) | VGA analog (15 pin) standard with automatic detection of: Digital Separate Sync; Composite Sync & Sync On Green. |
| Video formats | PAL, NTSC & SECAM |
| Video inputs | Composite video S-Video Component video (YCbCr) |
| Functions display | On screen display (OSD) of functions |
| OSD menu functions | Image controls: Panel brightness/contrast, Color Temperature, Video Adjustment, Video System, Position, PIP, Rotation, Gamma, Video Scaling, Language, Video source, Utilities, Volume |
| OSD menu controls available | Power On/Off Backlight brightness OSD Menu OSD Select up OSD Select down Setting + Setting - |
| Control interface | Buttons Infra red RS-232 serial control |
| Settings memory | Settings are stored in non volatile memory |
| PC Connectivity | VGA / SVGA / XGA / SXGA analog |
| Controller dimensions | 179mm x 120.4mm (7.1" x 4.74") |
| Power consumption | 10w approx. (not including panel power consumption) |
| Power load maximum | The controller has an overall 3Amp current limit. |
| Input voltage | 12VDC |
| Power protection | Fuse fitted |
| DC Power handling | An on board relay handles the power load for On/Off and power protection to the LCD. |
| 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.

Graphic/Video Modes Supported

| Mode | Resolution | Clk [MHz] | Horizontal freq [KHz] | Vertical freq [Hz] | Sync Mode |
|-------|------------|-----------|-----------------------|--------------------|------------------------------------------------|
| E1_70 | 640x350 | 25.175 | 31.469 | 70 | Digital Separate Sync |
| E1_70 | 640x350 | 25.175 | 31.469 | 70 | Sync On Green (with or without serrate pulse) |
| E1_70 | 640x350 | 25.175 | 31.469 | 70 | Composite Sync (with or without serrate pulse) |
| E1_85 | 640x350 | 31.500 | 37.861 | 85 | Digital Separate Sync |
| E1_85 | 640x350 | 31.500 | 37.861 | 85 | Sync On Green (with or without serrate pulse) |
| E1_85 | 640x350 | 31.500 | 37.861 | 85 | Composite Sync (with or without serrate pulse) |
| E2_70 | 640x400 | 25.175 | 31.469 | 70 | Digital Separate Sync |
| E2_70 | 640x400 | 25.175 | 31.469 | 70 | Sync On Green (with or without serrate pulse) |
| E2_70 | 640x400 | 25.175 | 31.469 | 70 | Composite Sync (with or without serrate pulse) |
| E2_85 | 640x400 | 31.500 | 37.861 | 85 | Digital Separate Sync |
| E2_85 | 640x400 | 31.500 | 37.861 | 85 | Sync On Green (with or without serrate pulse) |
| E2_85 | 640x400 | 31.500 | 37.861 | 85 | Composite Sync (with or without serrate pulse) |
| T_70 | 720x400 | 28.322 | 31.469 | 70 | Digital Separate Sync |
| T_70 | 720x400 | 28.322 | 31.469 | 70 | Sync On Green (with or without serrate pulse) |
| T_70 | 720x400 | 28.322 | 31.469 | 70 | Composite Sync (with or without serrate pulse) |
| T_85 | 720x400 | 35.500 | 37.927 | 85 | Digital Separate Sync |
| T_85 | 720x400 | 35.500 | 37.927 | 85 | Sync On Green (with or without serrate pulse) |
| T_85 | 720x400 | 35.500 | 37.927 | 85 | Composite Sync (with or without serrate pulse) |
| V_62 | 736x480 | 28.200 | 31.403 | 62 | Digital Separate Sync |
| V_62 | 736x480 | 28.200 | 31.403 | 62 | Sync On Green (with or without serrate pulse) |
| V_62 | 736x480 | 28.200 | 31.403 | 62 | Composite Sync (with or without serrate pulse) |
| V_60 | 640x480 | 25.175 | 31.469 | 60 | Digital Separate Sync |
| V_60 | 640x480 | 25.175 | 31.469 | 60 | Sync On Green (with or without serrate pulse) |
| V_60 | 640x480 | 25.175 | 31.469 | 60 | Composite Sync (with or without serrate pulse) |
| V_67 | 640x480 | 31.500 | 37.500 | 67 | Digital Separate Sync |
| V_67 | 640x480 | 31.500 | 37.500 | 67 | Sync On Green (with or without serrate pulse) |
| V_67 | 640x480 | 31.500 | 37.500 | 67 | Composite Sync (with or without serrate pulse) |
| V_72 | 640x480 | 31.500 | 37.861 | 72 | Digital Separate Sync |
| V_72 | 640x480 | 31.500 | 37.861 | 72 | Sync On Green (with or without serrate pulse) |
| V_72 | 640x480 | 31.500 | 37.861 | 72 | Composite Sync (with or without serrate pulse) |
| V_75 | 640x480 | 31.500 | 37.500 | 75 | Digital Separate Sync |
| V_75 | 640x480 | 31.500 | 37.500 | 75 | Sync On Green (with or without serrate pulse) |
| V_75 | 640x480 | 31.500 | 37.500 | 75 | Composite Sync (with or without serrate pulse) |
| V_85 | 640x480 | 36.000 | 43.269 | 85 | Digital Separate Sync |
| V_85 | 640x480 | 36.000 | 43.269 | 85 | Sync On Green (with or without serrate pulse) |
| V_85 | 640x480 | 36.000 | 43.269 | 85 | Composite Sync (with or without serrate pulse) |
| SV_56 | 800x600 | 36.000 | 35.156 | 56 | Digital Separate Sync |
| SV_56 | 800x600 | 36.000 | 35.156 | 56 | Sync On Green (with or without serrate pulse) |
| SV_56 | 800x600 | 36.000 | 35.156 | 56 | Composite Sync (with or without serrate pulse) |
| SV_60 | 800x600 | 40.000 | 37.879 | 60 | Digital Separate Sync |
| SV_60 | 800x600 | 40.000 | 37.879 | 60 | Sync On Green (with or without serrate pulse) |
| SV_60 | 800x600 | 40.000 | 37.879 | 60 | Composite Sync (with or without serrate pulse) |
| SV_72 | 800x600 | 50.000 | 48.077 | 72 | Digital Separate Sync |
| SV_72 | 800x600 | 50.000 | 48.077 | 72 | Sync On Green (with or without serrate pulse) |
| SV_72 | 800x600 | 50.000 | 48.077 | 72 | Composite Sync (with or without serrate pulse) |
| SV_75 | 800x600 | 49.500 | 46.875 | 75 | Digital Separate Sync |
| SV_75 | 800x600 | 49.500 | 46.875 | 75 | Sync On Green (with or without serrate pulse) |
| SV_75 | 800x600 | 49.500 | 46.875 | 75 | Composite Sync (with or without serrate pulse) |
| SV_85 | 800x600 | 56.250 | 53.674 | 85 | Digital Separate Sync |
| SV_85 | 800x600 | 56.250 | 53.674 | 85 | Sync On Green (with or without serrate pulse) |
| SV_85 | 800x600 | 56.250 | 53.674 | 85 | Composite Sync (with or without serrate pulse) |
| X_60 | 1024x768 | 65.000 | 48.363 | 60 | Digital Separate Sync |
| X_60 | 1024x768 | 65.000 | 48.363 | 60 | Sync On Green (with or without serrate pulse) |
| X_60 | 1024x768 | 65.000 | 48.363 | 60 | Composite Sync (with or without serrate pulse) |

| | | | | | |
|----------------------|-------------------------|---------|--------|----|------------------------------------------------|
| X_70 | 1024x768 | 75.000 | 56.476 | 70 | Digital Separate Sync |
| X_70 | 1024x768 | 75.000 | 56.476 | 70 | Sync On Green (with or without serrate pulse) |
| X_70 | 1024x768 | 75.000 | 56.476 | 70 | Composite Sync (with or without serrate pulse) |
| X_72 | 1024x768 | 75.000 | 57.515 | 72 | Digital Separate Sync |
| X_72 | 1024x768 | 75.000 | 57.515 | 72 | Sync On Green (with or without serrate pulse) |
| X_72 | 1024x768 | 75.000 | 57.515 | 72 | Composite Sync (with or without serrate pulse) |
| X_75 | 1024x768 | 78.750 | 60.023 | 75 | Digital Separate Sync |
| X_75 | 1024x768 | 78.750 | 60.023 | 75 | Sync On Green (with or without serrate pulse) |
| X_75 | 1024x768 | 78.750 | 60.023 | 75 | Composite Sync (with or without serrate pulse) |
| X_87i | 1024x768 43Hz Interaced | 44.900 | 35.522 | 87 | Digital Separate Sync |
| X_87i | 1024x768 43Hz Interaced | 44.900 | 35.522 | 87 | Sync On Green (with or without serrate pulse) |
| X_87i | 1024x768 43Hz Interaced | 44.900 | 35.522 | 87 | Composite Sync (with or without serrate pulse) |
| X_85 | 1024x768 | 94.500 | 68.677 | 85 | Digital Separate Sync |
| X_85 | 1024x768 | 94.500 | 68.677 | 85 | Sync On Green (with or without serrate pulse) |
| X_85 | 1024x768 | 94.500 | 68.677 | 85 | Composite Sync (with or without serrate pulse) |
| SX_60 | 1280x1024 | 108.000 | 63.981 | 60 | Digital Separate Sync |
| SX_60 | 1280x1024 | 108.000 | 63.981 | 60 | Sync On Green (with or without serrate pulse) |
| SX_60 | 1280x1024 | 108.000 | 63.981 | 60 | Composite Sync (with or without serrate pulse) |
| SX_72 | 1280x1024 | 135.000 | 78.125 | 72 | Digital Separate Sync |
| SX_72 | 1280x1024 | 135.000 | 78.125 | 72 | Sync On Green (with or without serrate pulse) |
| SX_72 | 1280x1024 | 135.000 | 78.125 | 72 | Composite Sync (with or without serrate pulse) |
| SX_75 | 1280x1024 | 135.000 | 79.976 | 75 | Digital Separate Sync |
| SX_75 | 1280x1024 | 135.000 | 79.976 | 75 | Sync On Green (with or without serrate pulse) |
| SX_75 | 1280x1024 | 135.000 | 79.976 | 75 | Composite Sync (with or without serrate pulse) |
| NTSC S_Video | --- | 14.318 | 15.734 | 60 | --- |
| PAL S_Video | --- | 17.75 | 15.625 | 50 | --- |
| NTSC Composite Video | --- | 14.318 | 15.734 | 60 | --- |
| PAL Composite Video | --- | 17.75 | 15.625 | 50 | --- |
| 1080i29 | 1920x1080 | 74.18 | 33.716 | 30 | Separate sync |
| 1080i30 | 1920x1080 | 74.25 | 33.750 | 30 | Separate sync |

WARRANTY

The products are warranted against defects in workmanship and material for a period of one (1) 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.

TRADEMARKS

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- Digital View
- SVP-1280

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