



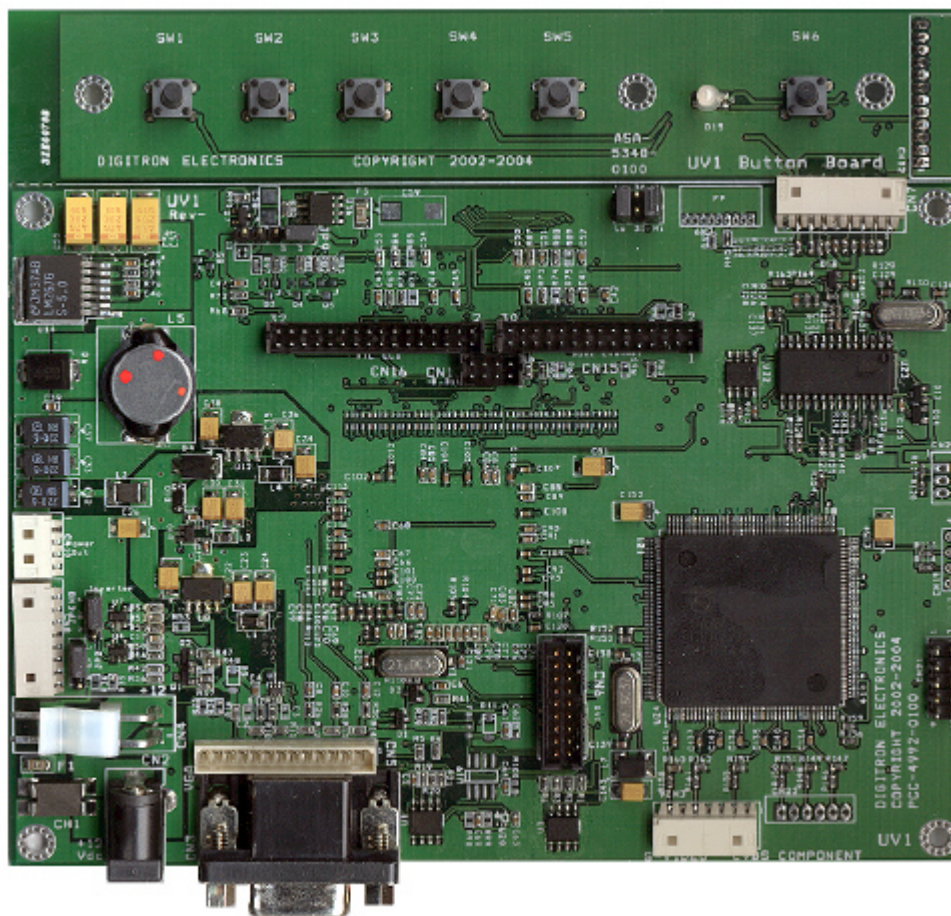
TFT LCD Controller
VIDEO/ANALOG/DIGITAL INTERFACE

Base Model: UV1

OEM

Installation & Users Manual

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TFT LCD VIDEO/ANALOG/DIGITAL INTERFACE CONTROLLER

UV1 Series

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DESCRIPTION & FEATURES

Description

The UV1 Series LCD Controller is a feature rich, cost effective board designed to drive most of today's TFT LCD flat panel displays. The UV1 series provides the engineer many options not found on other controllers, and is designed and manufactured in the USA. An array of inverter controls and cabling options allows easy integration into any product. Auto-input synchronization circuitry, complete system processor, integrated ADC, multi-standard video decoder, adaptive video scaler, and LCD scaler provides outstanding image quality and reliability. These controllers can be configured to support TTL, LVDS and open LDI panels directly. Optional cables and inverters are also available in kit form for many panels. The UV1 power supply is designed to be robust enough to handle even the largest panels with power to spare and producing less heat. UV1 series supports LCD panels from VGA to SXGA resolution. The model UV1 controllers can support Composite Video, S-Video, Component Video, DVI and Analog inputs, up to SXGA resolutions.

FEATURES:

- ✍ Long Product Life support
- ✍ Programmable Context Sensitive Scaling
- ✍ IQSync AutoSetup
- ✍ Perfect Picture Technology
- ✍ Video Accumulating Interpolation
- ✍ Integrated Ultra-Reliable DVI 1.0 compliant receiver
- ✍ Support for TTL 6-bit, 8-bit, Dual Clock, LVDS, Open LDI
- ✍ Robust Power Supply Circuitry
- ✍ Production firmware embedded in internal ROM
- ✍ Energy Spectrum management techniques for system EMI reduction
- ✍ Real Recovery image manipulation for memory-less support of "out of range" signals
- ✍ Low power stand-by mode of operation



BASIC INFORMATION

Integration Preparation:

Ensure you have all parts necessary and that the board is set up for the panel you are supporting.
Check connector reference in following section for proper connection.
Check controller jumpers for proper panel voltage (errors may damage panel and or the controller)

The UV1 series controller is designed for TFT LCD Panels from VGA (640x480) to SXGA (1280x1024) with either TTL, LVDS or OPEN LDI inputs. The following guidelines will help in the installation and preparation of the display project.

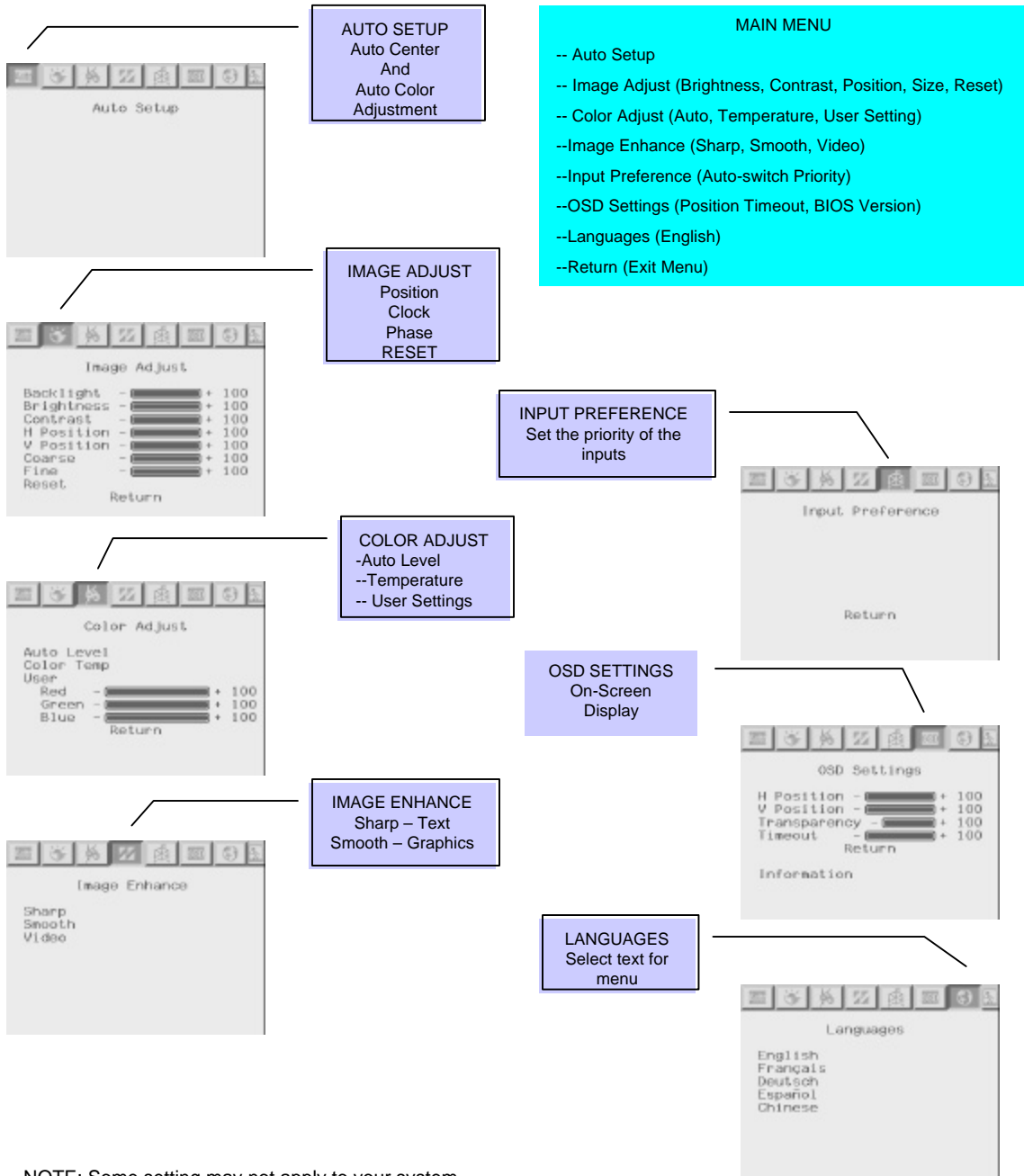
- ⚡Preparation: Before proceeding it is important to familiarize yourself with the parts making up a system and the various connectors, mounting holes and general layout of the controller. Guides to connectors and mounting holes are shown in the following sections.
- ⚡LCD Panel: This controller is designed for typical TFT panels with 3.3V, 5V or 12V TTL, LVDS or OPEN LDI interfaces. Due to the variation between manufacturers of signal timing and other panel characteristics, factory setup and confirmation should be considered when ordering your controller and connecting to a panel.
- ⚡UV1 controller: Handle the controller card with care as static charge may damage electronic components.
- ⚡LCD signal cable: In order to provide a clean signal it is recommended that the LCD signal cables are no longer than 33cm (13 inches). Care should be taken when placing the cables to avoid signal interference. Additionally, it may be necessary in some systems to add ferrite cores or shielding to the cables to minimize signal noise.
- ⚡Inverter: An inverter will be required for most displays that are not reflective and/or have an inverter already built in. As panels may have 1 or more backlight tubes and the power requirements for different panel models backlights may vary, it is important to match the inverter in order to obtain optimum performance.
- ⚡Inverter Cables: Different inverter models require different cables and different pin assignments. Make sure correct cables are used to match the inverter. Using wrong cables may damage the inverter and/or the UV1 controller.
- ⚡OSD: The On-Screen Display board or membrane switch is required to make adjustments to the setting of the UV1 controller. These controls are language independent icon-based.
- ⚡OSD Cable: The cables to the OSD should be of suitable quality and length so that impedance does not affect performance. Lengths of up to 1 meter (3 feet) should be acceptable.
- ⚡Status LED: Red indicator stands for no signal & green for signal on.
- ⚡Video and VGA Input Cable: As this may affect the quality of the signal to the controller and regulatory emission test results, a suitably shielded cable should be utilized.
- ⚡Power Input: 12V DC is required and should be a stable regulated supply. Although the controller provides power regulation for the LCD's power, the power to the inverter is passed directly from the main power source. 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.
- ⚡Inverter Safety: Note that although only 12V DC is supplied as "power-in," an inverter for the panel backlighting provides significantly higher voltages. We strongly advise appropriate insulation for all circuitry to avoid the possibility of serious shock.
- ⚡EMI: Shielding may be required for passing certain regulatory emission test with certain panels.
- ⚡Ground: The various PCB mounting holes are connected to the ground plane.
- ⚡Servicing: The controller 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.
- ⚡PC Graphics Output: Signal quality is very important. If noise or instability in the PC graphics output is present it may result in visible noise on the display. The preferred vertical refresh rate should be 60Hz. Non-interlaced is required.

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

NOTES:

- ⚡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.

OSD MENU FUNCTIONS



NOTE: Some setting may not apply to your system.

There are several ways to exit the OSD menu system:

- 1) select the RETURN icon at the top of the MENU and hit the EXECUTE key (**saves** changes and exits),
- 2) wait for the OSD to time-out (**saves** changes and exits).

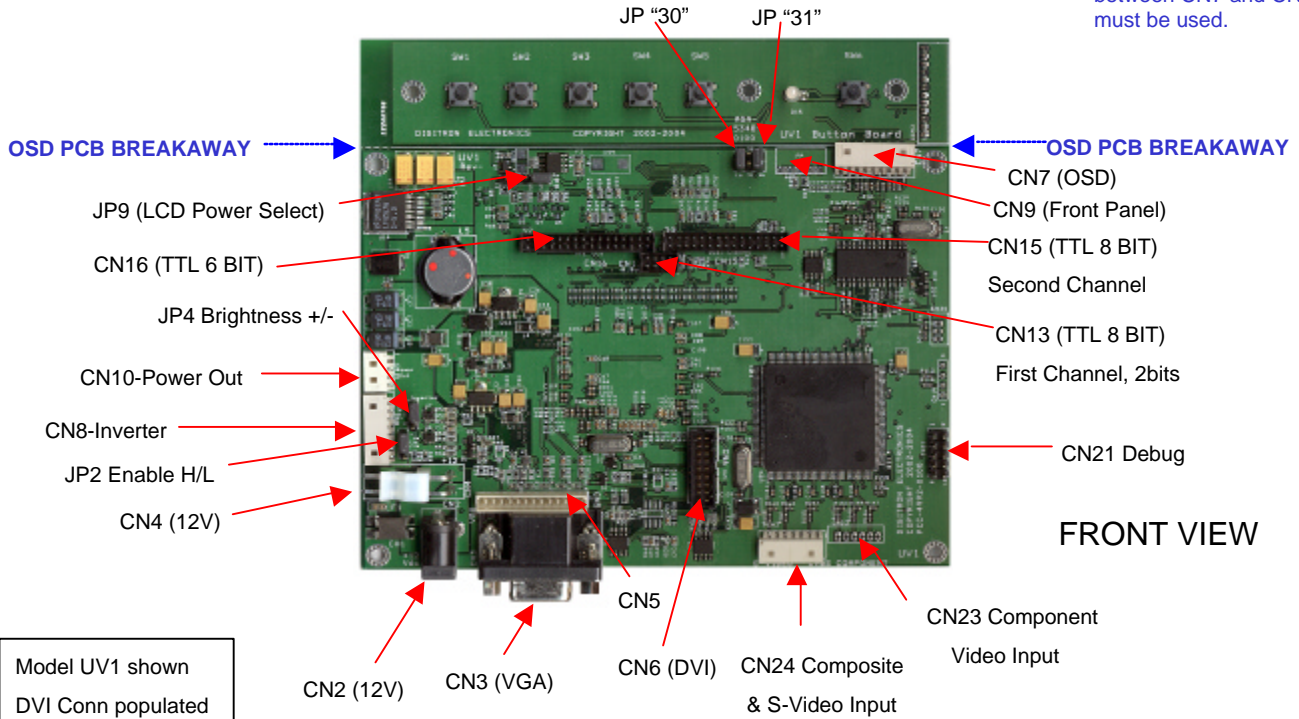


CONNECTOR & JUMPER IDENTIFICATION

Reference	Description	Board Part # (or Similar)	Mating part # (or Similar)	Pin # (or Similar)
CN2	12VDC Power In 5.5/2.5 Barrel, Positive Center	Kycon KLD-0202-BC	Switchcraft 760	N/A
CN3	VGA analog input	HDF15 D-Sub	Standard VGA Cable	N/A
CN4	12VDC Optional Power In	Molex 0975-2024 (5274)	Molex 0952-4024 (5239)	Molex series 2478
CN5	VGA analog input (for cable assembly)	Molex 53014-1310	Molex 51004-1300	Molex 50011-8x00
CN6	DVI Input (for cable assembly)	Molex 87332-1820	Molex 88741-9600 or Molex 51110-1851	Molex 50394-8xxx
CN7	OSD Connector	Molex 53015-0910	Molex 51004-0900	Molex 50011-8x00
CN8	Inverter Power and Control	Molex 53015-0810	Molex 51004-0800	Molex 50011-8x00
CN9	Front Panel Connector (Optional)	Molex 53048-0910	Molex 51021-0900	Molex 50058-8x00
CN10	Power Output 5 & 12V (touch-screen or amplifier)	Molex 53015-0410	Molex 51004-0400	Molex 50011-8x00
CN13	TTL 8 Bit (First Channel, 2 bits)	HRS DF-11-8DP-2DSA	HRS DF11-8DS-2C	HRS-DF11-EP2428PCFA
CN15	TTL 8 Bit (Second Channel)	HRS DF-11-30DP-2DSA	HRS DF11-30DS-2C	EP2428PCFA
CN16	TTL 6 Bit (First Channel, 6 bits)	HRS DF-11-32DP-2DSA	HRS DF11-32DS-2C	EP2428PCFA
CN18	LVDS Output	JAE FI-WE31PB-HF	JAE FI-W31S, FI-WE31M	FI-C3-A1-15000
CN19	Factory Programming	Not Populated	DO NOT USE	N/A
CN20	IR Receiver (Optional)	Molex 53014-0310	Molex 51004-0300	Molex 50011-8x00
CN21	Factory Programming	2x5 Inline Header	DO NOT USE	N/A
CN22	OSD Board Connector	Molex 53015-1210	Molex 51004-1200	Molex 50011-8x00
CN23	Component Video Input	Molex 53014-0610	Molex 51004-0600	Molex 50011-8x00
CN24	Composite & S-Video Inputs	Molex 53014-0710	Molex 51004-0700	Molex 50011-8x00
JP2	Inverter Enable Select	3 Pin Jumper		N/A
JP4	Brightness Select	3 Pin Jumper		N/A
JP9	Primary LCD Power Selector	3 Pin Jumper		N/A
JP "30"	DF9-30 High/Low	3 Pin Jumper		N/A
JP "31"	DF9-31 High/Low	3 Pin Jumper		N/A

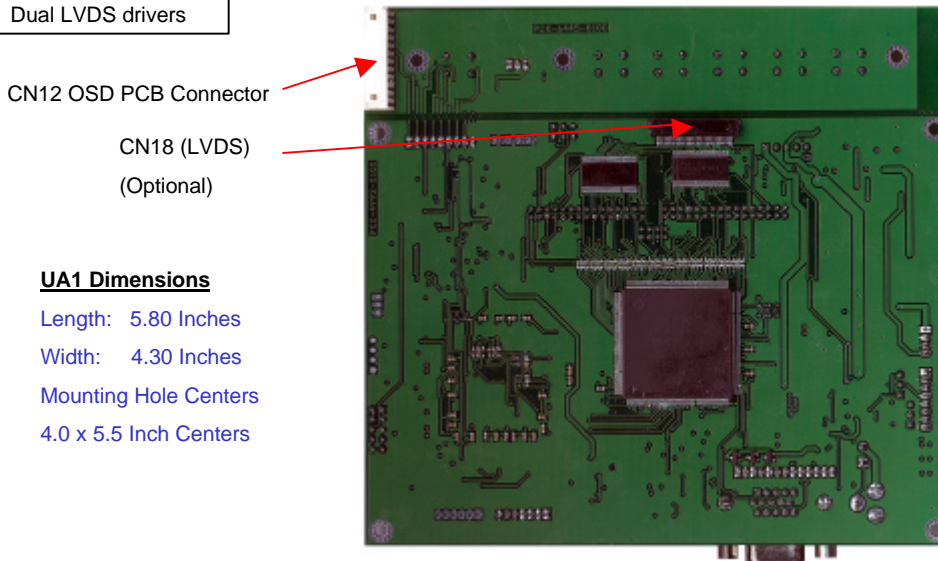
CONTROLLER LAYOUT

OSD Functions without cable prior to separation from main controller. When broken away a cable between CN7 and CN12 must be used.



FRONT VIEW

Model UV1 shown
 DVI Conn populated
 SXGA resolution
 Dual LVDS drivers



REAR VIEW

UA1 Dimensions

Length: 5.80 Inches
 Width: 4.30 Inches
 Mounting Hole Centers
 4.0 x 5.5 Inch Centers



Connector Pin Out Definition

CN2 – 12V Power Supply In

Mates with Switchcraft 760 or similar

PIN	SYMBOL	DESCRIPTION
1	+12V	+12VDC Power In
2	GND	Ground
3	GND	Ground

CN4 – 12V Power Supply In

Mates with Molex 0952-4024 or similar

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	+12V	+12VDC Power In

CN3 – Analog VGA Input

Mates with Standard VGA cable

PIN	SYMBOL	DESCRIPTION
1	RED	Analog Red
2	GREEN	Analog Green
3	BLUE	Analog Blue
4	NC	No Connection
5	GND	Ground
6	RGND	Red Return
7	GGND	Green Return
8	BGND	Blue Return
9	+5V	5V in from Video Card
10	GND	Ground
11	NC	No Connection
12	SDA	DDC Serial Data
13	HSYNC	Horizontal Sync
14	VSYNC	Vertical Sync
15	SCL	DDC Data Clock

CN5 – Analog VGA Input Alternate

Mates with Molex 51004-1300 or similar

PIN	SYMBOL	DESCRIPTION
1	RED	Analog Red
2	RGND	Red Return
3	GREEN	Analog Green
4	GGND	Green Return
5	BLUE	Analog Blue
6	BGND	Blue Return
7	GND	Ground
8	GND	Ground
9	HSYNC	Horizontal Sync
10	GND	Ground
11	VSYNC	Vertical Sync
12	SDA	DDC Serial Data
13	SCL	DDC Data Clock



Connector Pin Out Definition

CN6 – DVI Input

Mates with Molex 51110-1851 connector or

Mates with Molex 88741-9600 Cable Assembly

PIN	SYMBOL	DESCRIPTION
1	HP	Hot Plug
2	GND	Ground
3	SCL	DVI DDC Clock
4	SDA	DVI DDC Serial Data
5	DDC_5V	+5V Power
6	GND	Ground
7	GND	Ground
8	RXC+	TMDS Clock +
9	RX0-	TMDS Data 0-
10	RXC-	TMDS Clock -
11	RX0+	TMDS Data 0+
12	GND	Ground
13	GND	Ground
14	RX1-	TMDS Data 1-
15	RX2-	TMDS Data 2-
16	RX1+	TMDS Data 1+
17	RX2+	TMDS Data 2+
18	GND	Ground

CN7 – OSD Connector

Mates with Molex 51004-0900 or Similar

NOTE: See App Notes for usage.

PIN	SYMBOL	DESCRIPTION
1	SW1	Key Switch 1
2	SW2	Key Switch 2
3	SW3	Key Switch 3
4	SW4	Key Switch 4
5	SW5	Key Switch 5
6	SW6	Key Switch 6
7	GRN	LED Green
8	ORG	LED Red
9	GND	Ground

CN8 – Backlight Inverter Connector

Mates with Molex 50114-0900 or similar

PIN	SYMBOL	DESCRIPTION
1	+12V	+12VDC 3.5A*
2	+12V	+12VDC 3.5A*
3	GND	Ground
4	BKLT_ADJ	Brightness Adjust (JP4)
5	GND	Ground
6	BLCTRL	Backlight Enable (JP2)
7	GND	Ground
8	+5V	+5VDC 200ma

*Combined current pins 1 & 2



Connector Pin Out Definition

CN9 – Front Panel Connector

Mates with Molex 51021-0900 or similar

PIN	SYMBOL	DESCRIPTION
1	PS HP	Hard Power ON/OFF
2	GND	Ground
3	SP	Soft Power ON/OFF
4	GRN	LED Green
5	GND	Ground
6	ORG	LED Orange
7	+5V	+5VDC 100ma
8	BKLT_ADJ	Brightness Adjust (Remove JP4)
9	GND	Ground

CN10 – Auxiliary Power Output

Mates with Molex 51004-0400

PIN	SYMBOL	DESCRIPTION
1	+5V	+5VDC 1A max (see app note)
2	GND	Ground
3	GND	Ground
4	+12V	+12VDC (see app note)

CN13 – TTL 8 BIT (2 BIT FIRST CHANNEL)

Mates with Hirose DF11-8DS-2C

PIN	SYMBOL	DESCRIPTION
1	ER0 (ER6) *	Even Red 0 (6)
2	ER1 (ER7) *	Even Red 1 (7)
3	EG0 (EG6) *	Even Green 0 (6)
4	EG1 (EG7) *	Even Green 1 (7)
5	EB0 (EB6) *	Even Blue 0 (6)
6	EB1 (EB7) *	Even Blue 1 (7)
7	PWR1	LCD Power 1
8	GND	Ground

* These bits can be remapped for LVDS purposes.

CN15 – TTL 8 Bit Second Channel

Mates with Hirose DF11-30DS-2C

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	OR0 (OR6) *	Odd Red 0
3	OR1 (OR7) *	Odd Red 1
4	OR2 (OR0) *	Odd Red 2
5	OR3 (OR1)*	Odd Red 3
6	OR4 (OR2)*	Odd Red 4
7	OR5 (OR3) *	Odd Red 5
8	OR6 (OR4) *	Odd Red 6
9	OR7 (OR5) *	Odd Red 7
10	GND	Ground
11	GND	Ground
12	OG0 (OG6) *	Odd Green 0
13	OG1 (OG7) *	Odd Green 1
14	OG2 (OG0) *	Odd Green 2
15	OG3 (OG1) *	Odd Green 3
16	OG4 (OG2) *	Odd Green 4
17	OG5 (OG3) *	Odd Green 5
18	OG6 (OG4) *	Odd Green 6
19	OG7 (OG5) *	Odd Green 7
20	GND	Ground
21	GND	Ground
22	OB0 (OB6) *	Odd Blue 0
23	OB1 (OB7) *	Odd Blue 1
24	OB2 (OB0) *	Odd Blue 2
25	OB3 (OB1) *	Odd Blue 3
26	OB4 (OB2) *	Odd Blue 4
27	OB5 (OB3) *	Odd Blue 5
28	OB6 (OB4) *	Odd Blue 6
29	OB7 (OB5) *	Odd Blue 7
30	GND	Ground



Connector Pin Out Definition

CN16 – TTL 6 BIT First Channel

Mates with Molex DF11-32DS-2C

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	CLK	Dot Clock
3	HSYNC	Horizontal Sync
4	VSYNC	Vertical Sync
5	GND	Ground
6	ER2 (ER0) *	Even Red 2
7	ER3 (ER1) *	Even Red 3
8	ER4 (ER2) *	Even Red 4
9	ER5 (ER3) *	Even Red 5
10	ER6 (ER4) *	Even Red 6
11	ER7 (ER5) *	Even Red 7
12	GND	Ground
13	EG2 (EG0) *	Even Green 2
14	EG3 (EG1) *	Even Green 3
15	EG4 (EG2) *	Even Green 4
16	EG5 (EG3) *	Even Green 5
17	EG6 (EG4) *	Even Green 6
18	EG7 (EG5) *	Even Green 7
19	GND	Ground
20	EB2 (EB0) *	Even Blue 2
21	EB3 (EB1) *	Even Blue 3
22	EB4 (EB2) *	Even Blue 4
23	EB5 (EB3) *	Even Blue 5
24	EB6 (EB4) *	Even Blue 6
25	EB7 (EB5) *	Even Blue 7
26	GND	Ground
27	DE	Data Enable
28	PWR1	LCD Power 1
29	PWR1	LCD Power 1
30	PIN 30	LCD Logic Select 30
31	PIN 31	LCD Logic Select 31
32	GND	Ground

* These bits can be remapped for LVDS purposes.



Connector Pin Out Definition

CN18 – LVDS Panel Output

Mates with JAE FI-W31S or Similar

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	FTX0-	Data
3	FTX0+	Data
4	FTX1-	Data
5	FTX1+	Data
6	FTX2-	Data
7	FTX2+	Data
8	FCK-	Clock
9	FCK+	Clock
10	FTX3-	Data
11	FTX3+	Data
12	STX0-	Data
13	STX0+	Data
14	STX1-	Data
15	STX1+	Data
16	STX2-	Data

PIN	SYMBOL	DESCRIPTION
17	STX2+	Data
18	SCK-	Clock
19	SCK+	Clock
20	STX3-	Data
21	STX3+	Data
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground
26	GND	Ground
27	PW1	LCD Power 1
28	PW1	LCD Power 1
29	PW1	LCD Power 1
30	PW1	LCD Power 1
31	PW1	LCD Power 1

CN23 – Component Video Input

Mates with Molex 51004-0600 or Similar

PIN	SYMBOL	DESCRIPTION
1	CR	Component “CR” Signal
2	GND	Ground
3	CB	Component “CB” Signal
4	GND	Ground
5	Y	Component “Y” Signal
6	GND	Ground

CN24 – CV and S-Video Inputs

Mates with Molex 51004-0700 or Similar

PIN	SYMBOL	DESCRIPTION
1	Chroma	S-Video “Chroma” Input
2	GND	Ground
3	Luma	S-Video “Luma” Input
4	GND	Ground
5	GND	Ground
6	CVBS	Composite Video Input
7	GND	Ground

Connector Pin Out Definition

JP2 – Inverter Enable Select

PIN	DESCRIPTION
1 - 2	Enable High
2	Common
2 - 3	Enable Low

JP “30” – DF9-30 High/Low Designator

PIN	DESCRIPTION
1	LCD Power
2	Pin 30
3	Ground

JP4 – Brightness Adjust Select

PIN	DESCRIPTION
1 - 2	Brightness Inverted
2	Common
2 - 3	Brightness Standard

JP “31” – DF9-31 High/Low Designator

PIN	DESCRIPTION
1	LCD Power
2	Pin 30
3	Ground

NOTE: Remove BOTH jumpers BKL_ADJ (See CN9)

JP9 – LCD Primary Power (1)

PIN	DESCRIPTION
1	+3.3 V Safe
2	Common
3	+5 V Safe
4	Common
5	+12 V Fused

NOTE: 2 Position Jumper. Only jumper one Voltage to Common.

Connector Pin Out Definition

OSD Board Info

CN22 – OSD Connector (on OSD Board)

PIN	DESCRIPTION
1	Key Switch 4
2	Key Switch 3
3	Key Switch 5
4	Key Switch 4
5	Key Switch 6
6	Key Switch 1
7	LED Green
8	LED Orange
9	Ground (Switches and LEDs)
10	NC
11	NC
12	NC

OSD Board

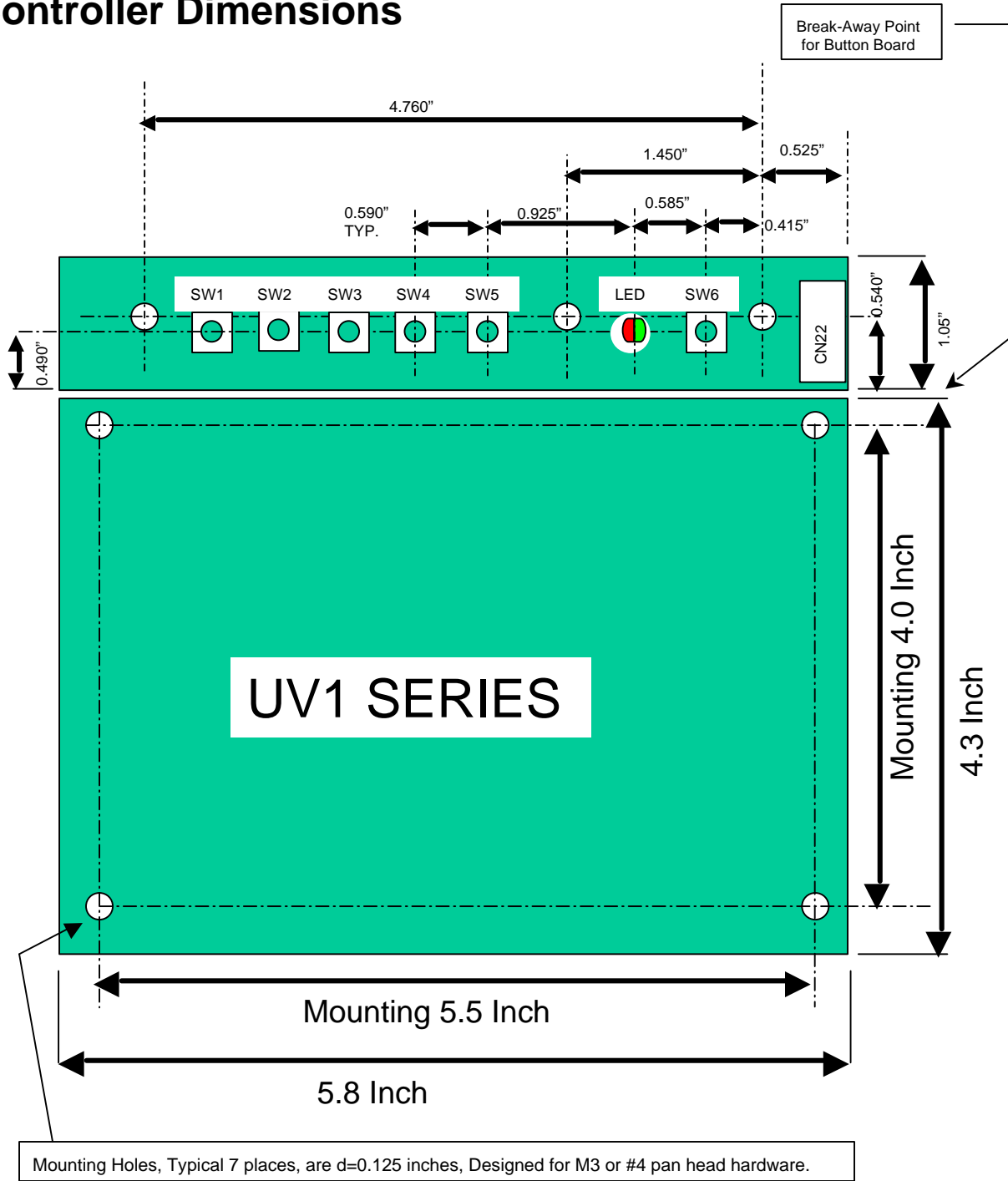
Switch	DESCRIPTION
1	Input Select
2	Auto-Adjust (Hot Key) Also switch CV/SV/YPbPr
3	Right
4	Left
5	Menu/Select
6	LCD On/Off

Accessories for the UV1 series.

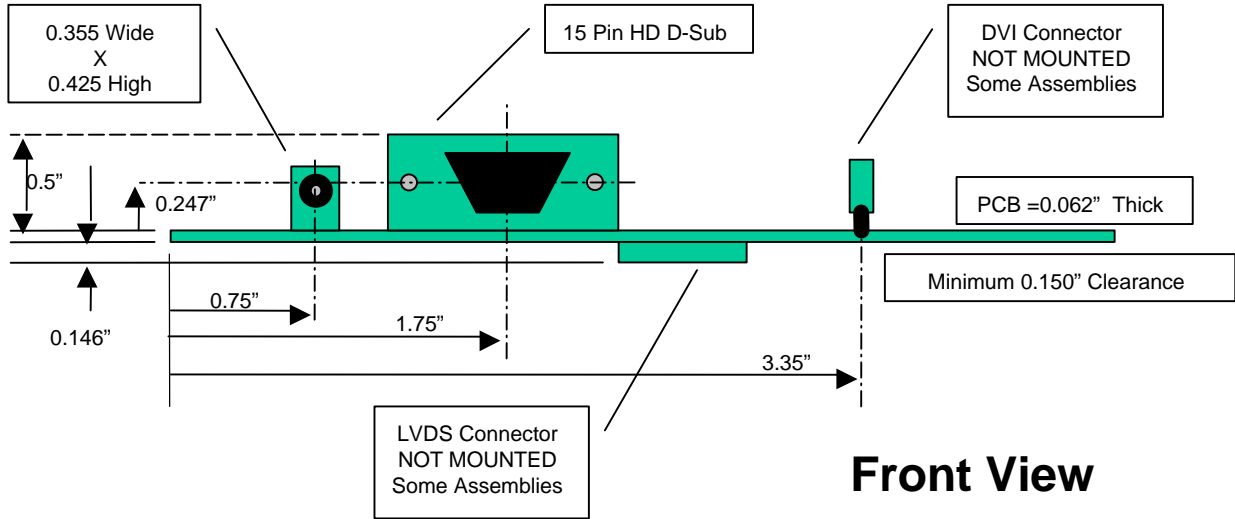
Specifications available upon request.

- Membrane OSD w/ Bi-Color LED integrated
- Remote Control
- Audio Amplifier / Touch Controller
- Special BIOS configuration

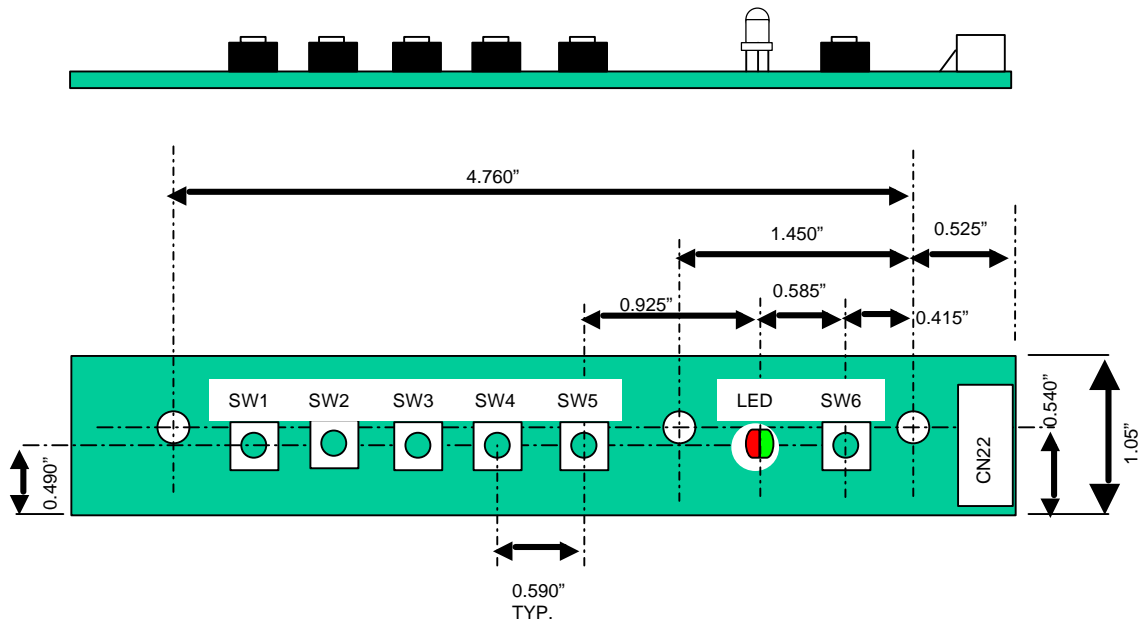
Controller Dimensions



Controller Dimensions (Continued)



OSD Button Board Dimensions



Shown here as a separate PCB for Clarity



IMPORTANT NOTES

IMPORTANT NOTE

This product is for use by system 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
- Understand the operation and connectivity requirements of this controller

LIFE SUPPORT POLICY

The UA1 product line should not be used in medical devices with life support functions nor in safety equipment (or similar applications) where component failure might result in loss of life or physical harm without the written approval of an officer of Digitron Electronics.

DISCLAIMER

There is no implied or expressed warranty regarding this material.

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 been 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.

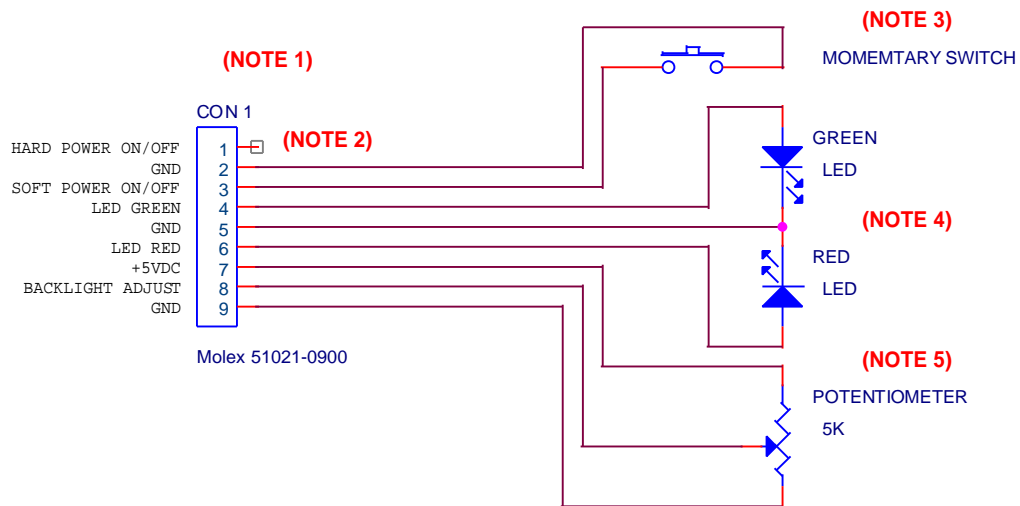


Specifications

Panel compatibility	TFT LCD's from manufacturers such as Samsung, LG.Philips, Sharp, Fujitsu, NEC, AU Optronics, Toshiba, among others
LCD Resolution and Vertical Refresh	UV1 – up to SXGA 1280 x 1024, Up to 75 Hz
Input	UV1 – VGA analog, optional DVI digital, Composite Video, S-Video, Component Video
Memory Settings	Settings are stored in non-volatile memory
Language Support	Multi-Language OSD with Icons
VESA DPMS implementation	Yes
Plug & Play	VESA DDC 1, 2/b compatible
Voltage output for LCD	+3.3VDC, +5VDC, +12VDC, Dual voltage available
Input Voltage	12VDC
Power Load Maximum	5 Amps fused
Controller consumption	tbd W (no panel) / tbd W in standby
Storage temperature	-40 C to +70 C
Operating temperature	0 C to +60 C

APPLICATION NOTE 1

APP NOTE 1: FEATURE CONNECTOR (CN9)



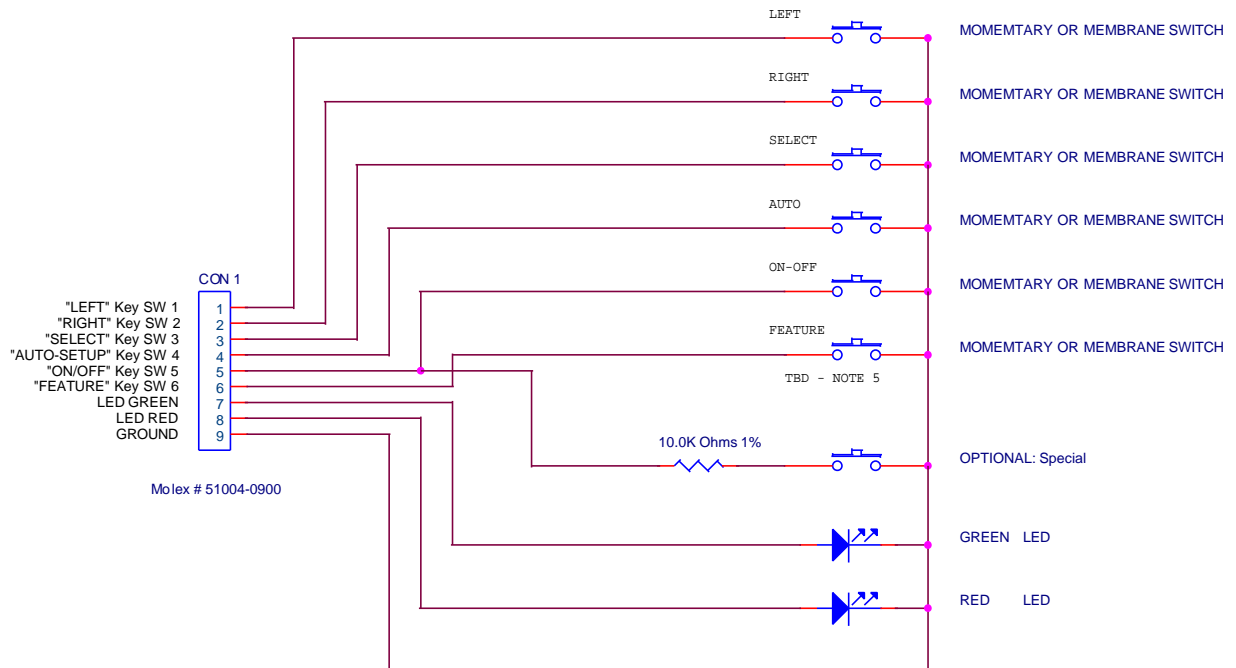
NOTE 1: CONNECTOR CN9 IS NOT NORMALLY POPULATED. THIS IS AN OPTION, AND MUST BE ORDERED SPECIAL, OR INSTALLED BY THE INTEGRATOR.

NOTE 3: SWITCH IS WIRED IN PARALLEL WITH OSD MOMENTARY POWER SWITCH
 NOTE 4: NO CURRENT LIMITING RESISTORS REQUIRED

NOTE 5: JP4 MUST BE REMOVED WHEN USING EXTERNAL POTENTIOMETER
 SHOULD JP4 BE LEFT INSTALLED, THEN PIN 8 WILL BE THE VOLTAGE SIGNAL USED FOR BRIGHTNESS.

APPLICATION NOTE 2

APP NOTE 2: OSD CONNECTOR (CN7)



NOTE 1: PULL UP RESISTORS AND CURRENT LIMITING RESISTORS LOCATED ON LCD CONTROLLER

NOTE 2: MOMENTARY SWITCHES AND MEMBRANE SWITCHES LESS THEN 100 OHMS OK

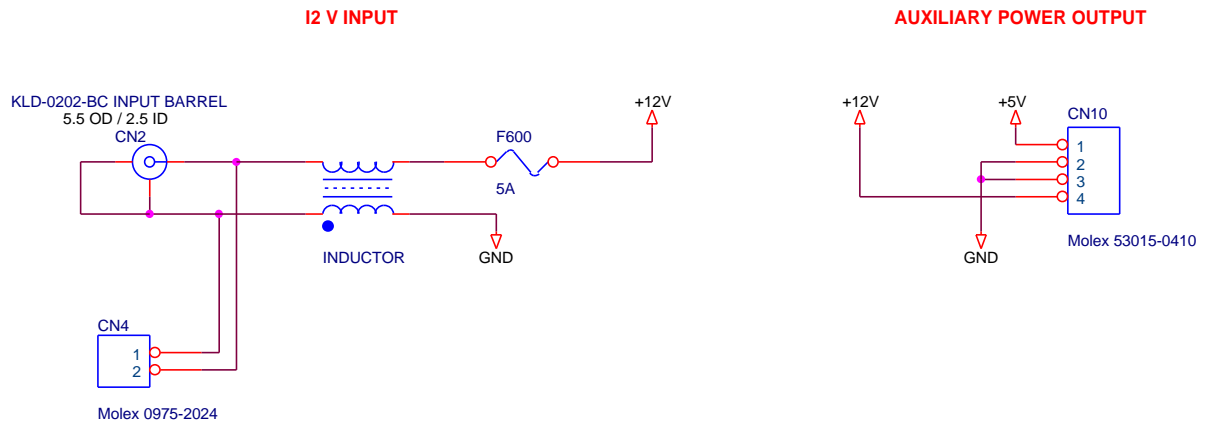
NOTE 3: CURRENT LIMITING RESISTORS FOR LED ARE 300 OHMS, DRIVEN FROM A 3.3V LOCATED ON THE LCD CONTROLLER

NOTE 4: OSD BUTTTON BOARD STANDARD WITH COMPLETE CONTROLLER KIT SOLUTION

NOTE 5: OPTION SWITCH REQUIRES SPECIAL BIOS

APPLICATION NOTE 3

APP NOTE 3: POWER IN & AUX OUT



NOTE 1: 12V CONTINUALLY ON

NOTE 2: CN10 +12V OUT = CURRENT IN (MAX 5A) - UA1 (0.2A) - INVERTER CURRENT (X) - PANEL CURRENT
 EXAMPLE: 5A - 0.2A (UA1) - 1.5A (INVERTER) - 1A (PANEL) = 2.3A AVAILABLE AT CN4
 NOT TO EXCEED 2 AMP

NOTE 3: CN10 +5V SHUT OFF WHEN HARD POWER ON CN9 (FRONT PANEL CONNECTOR PIN 1) IS ACTIVE