



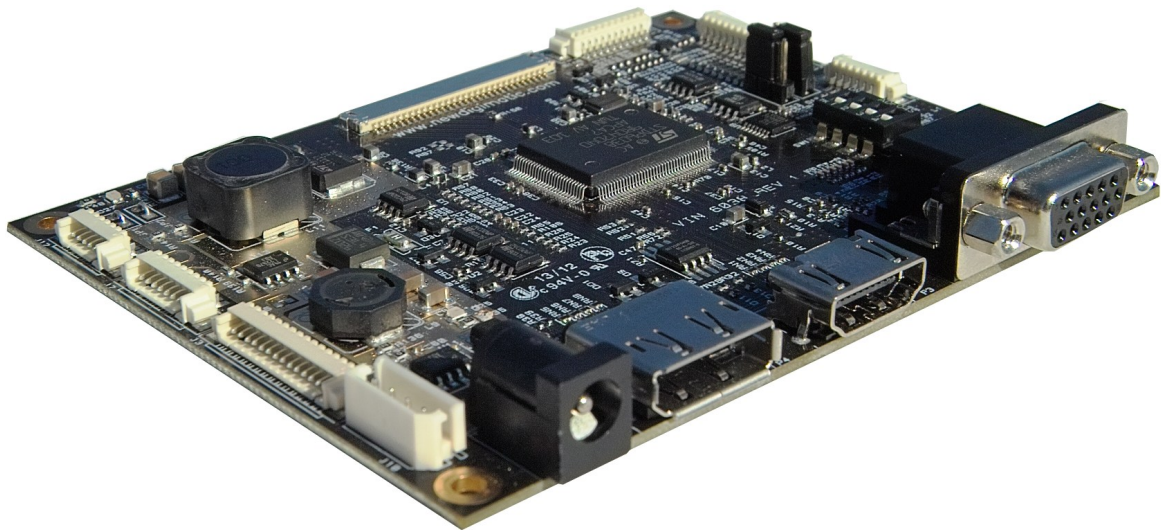
NEW DIGIMATIC s.r.l.
Digital Video Division

VIN6038

WUXGA TFT LCD Controller

VGA, HDMI, DP and Sensing

User Manual



HDMI®
HIGH-DEFINITION MULTIMEDIA INTERFACE

((HDCP))





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Revision History

Date	Rev.	Paragraph	Description
September 15, 2011	0	NA	Initial Release



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1. Description

The VIN6038 is a highly integrated board that interfaces digital HDMI, DisplayPort and Analog RGB video inputs in virtually any format to a flat-panel display.

The VIN6038 is optimized for high-performances, value line, flat-panel monitors and is equipped with advanced highly integrated Image Processor with an internal HDMI, DisplayPort and 10-bit ADC.

The HDMI and DisplayPort inputs are HDCP (High-bandwidth Digital Content Protection) compliant.

Computer, from VGA to WUXGA (1920X1200), and Video images can be resized to fit on a target display device with any resolution, up to WUXGA.

Optimization circuitry: this creates sharp and clear images, centered on the screen, without user intervention.

The VIN6038 includes light sensor for automatic backlight control, temperature sensor for programmable fan control and faulty backlight alarm.



2. General Specification

2.1 Chip Set

- STDP6038

2.2 Panel Connectivity

- All LCD TFT Panels up to 1920X1200 - 4 :3 and 16:9

2.3 Graphic Digital (HDMI) Interface

- 1 HDMI Standard Connector
- HDMI 1.3 compliant Rx
- Supports resolutions up to 1080p/WUXGA 1920X1200@60Hz
- Deep color and wide gamut support: 12-bit HDMI input at YCC 4:4:4
- Backwards compatible with DVI
- Supports integrated HDCP

2.4 Graphic Digital (DisplayPort) Interface

- 1 DisplayPort Standard Connector
- 4-lane DisplayPort 1.1a compliant Rx
- One auxiliary channel
- Supports integrated HDCP

2.5 Graphic Analog Interface

- 1 15-pin, Standard VESA DSUB Connector
- 205 MHz 10-bit ADC supports analog input up to UXGA 1920X1200@75Hz
- Composite-sync and Sync-on-Green (SOG) support
- Instant Auto™ for automatic phase and clock adjustment

2.6 Control by On-Screen Display (OSD)

- Brightness (Backlight adjustment)
- Contrast
- Sharpness
- Colour Temperature
- Phase and Frequency
- Horizontal and Vertical position
- Auto Adjustments
- LVDS Output Mapping National/JEIDA
- LVDS Pixel Order Swapping Odd/Even
- Set-up Temperature Fan ON



2.7 Control Modes

- Seven push-buttons
- Infrared (Optional)
- One Serial RS232

2.8 Analog and Digital I/O

- 1 Analog in 0-5V 10-KOhm
- 1 TTL in 10-KOhm P.U.
- 2 LVTTTL out 25mA T.P.

2.9 Output Panel Signal

- 18/24bit Single or Dual LVDS

2.10 Panel Power Supply

- 3,3 – 5 – 12 VDC / 3A Max

2.11 Inverter Support

- 12/24 VDC Power
- Enable pin signal
- Analog Dimmer adjust 0 – 3.3VDC or Digital PWM pin signal

2.12 Measurement

- On board temperature or External NTC@10K-Ohm -55°C to 125°C
- Ambient Light Dark to 10.000lux (Relative measure)

2.13 Fan Control

- 1 line setup via OSD 12-24VDC 2A

2.14 Power requirements

- 12 –24VDC Max 2,5W Only VIN6038 Control Board



3. Environmental and Reliability

3.1 Operating Conditions

- Temperature : 0°~ 60°
- Humidity : 10% ~ 90%, non-condensing
- Altitude : maximum 3,000m

3.2 Transportation Conditions

- Temperature : -25°~ 85°
- Humidity : 5% ~ 95%, non-condensing
- Altitude : maximum 15,000m

3.3 Storage Conditions

- Temperature : -25°~ 85°
- Humidity : 5% ~ 95%, non-condensing
- Altitude : maximum 3,000m

3.4 Reliability Specifications

- MTBF : more than 200,000 hours at 90% confidence level,



4. Electrical Specification

4.1 Connectors Pin Assignment

- P3 - Digital HDMI Input

Mate with	Pin n.	Function
Standard Type A HDMI Pluggable Connector	1	TMDS Data2+
	3	TMDS Data2 Shield
	3	TMDS Data2-
	4	TMDS Data1+
	5	TMDS Data1 Shield
	6	TMDS Data1-
	7	TMDS Data0+
	8	TMDS Data0 Shield
	9	TMDS Data0-
	10	TMDS Clock+
	11	TMDS Clock Shield
	12	TMDS Clock-
	13	CEC
	14	Reserved
	15	SCL for DDC
	16	SDA for DDC
	17	DDC/CEC Ground
18	+5 V (max 50 mA)	
19	Hot Plug detec	



- P4 - Digital DP Input

Mate with	Pin n.	Function
Standard DP Pluggable Connector	1	Lane 0+
	3	Lane 0 Shield
	3	Lane 0-
	4	Lane 1+
	5	Lane 1 Shield
	6	Lane 1-
	7	Lane 2+
	8	Lane 2 Shield
	9	Lane 2-
	10	Lane 3+
	11	Lane 3 Shield
	12	Lane 3-
	13	CONFIG1
	14	CONFIG2
	15	AUX CH+
	16	AUX Shield
	17	AUX CH-
	18	Hot Plug
	19	GND
	20	DP_PWR



- **P1 - RGB Analog Input**

Mate with	Pin n.	Function
DB15-HD Standard VGA Connector	1	RED
	2	GREEN
	3	BLUE
	4	GND
	5	GND (DDC RETURN)
	6	GND-RED
	7	GND-GREEN
	8	GND-BLUE
	9	NC
	10	GND-SYNC
	11	GND
	12	DDC DATA
	13	HOR. OR COMPOSITE
	14	VERTICAL SYNC
	15	DDC CLOCK

- **J11 - DC Input**

Mate with	Pin n.	Function
DC Plug 5.5x 2,.5mm	1	VCC 12/24V-60W Max
	2	GND
	3	GND



- **J10 - Auxiliary DC Input**

Mate with	Pin n.	Function
Molex 50-37-5043	1	VCC (12-24V/5A)
	2	VCC (12-24V/5A)
	3	GND
	4	GND

- **J8 - OSD Key Control**

Mate with	Pin n.	Function
Molex 51021-1200	1	MENU
	2	LEFT/MINUS
	3	RIGHT/PLUS
	4	UP
	5	DOWN
	6	SOURCE
	7	DISPLAY MODE
	8	STAND-BY
	9	5/3,3V
	10	LED
	11	IR RECEIVER
	12	GND

- **J6 - Front Panel Board**

Mate with	Pin n.	Function
Molex 51021-0600	1	5/3,3VDC OUT (100mA)
	2	LED
	3	IR RECEIVER
	4	GND
	5	GND
	6	LIGHT SENSOR



- **J7 - Fans Connector**

Mate with	Pin n.	Function
Molex 51021-0800	1	12-24 VDC
	2	12-24 VDC
	3	12-24 VDC
	4	12-24 VDC
	5	GND
	6	GND
	7	GND
	8	GND

- **J3 - Output to Inverter**

Mate with	Pin n.	Function
Molex 51021-1400	1	GND
	2	Backlight Dimming Analog 0 ~ 3.3 V Digital PWM*
	3	GND
	4	ON (3.3 V) - OFF (0 V)
	5	GND
	6	GND
	7	GND
	8	GND
	9	GND
	10	12-24 VDC **
	11	12-24 VDC *+
	12	12-24 VDC **
	13	12-24 VDC **
	14	12-24 VDC **

* See Table 1
** MAX 3A Total



- **J12 - Auxiliary LCD Panel Power Supply**

Mate with	Pin n.	Function
Molex 51021-0600	1	LCD_Power_Supply *
	2	LCD_Power_Supply *
	3	LCD_Power_Supply *
	4	GND
	5	GND
	6	GND

* Use this connector for large current LCD Panel See Table 1

- **J9 - Analog and Digital I/O**

Mate with	Pin n.	Function
Molex 51021-1210	1	NTC10K@25°C
	2	GND
	3	3.3 VDC 300 mA MAX
	4	DRIVER TO GND 200 mA
	5	AUX I/O LVTTTL
	6	I2CBUS SCL
	7	I2CBUS SDA
	8	NTC10K@25°C
	9	BPW77 COLLECTOR
	10	GND

- **J4 - Serial Com1**

Mate with	Pin n.	Function
Molex 51021-0400	1	RX (RS232 Level)
	2	TX (RS232 Level)
	3	GND
	4	GND



- J2 - Output to Panel Data (LVDS)

Mate with	Pin n.	Function
Hirose DF19-30S-1C	1	GND
	2	TXE3+
	3	TXE3-
	4	TXEClk+
	5	TXEClk-
	6	TXE2+
	7	TXE2-
	8	TXE1+
	9	TXE1-
	10	TXE0+
	11	TXE0-
	12	GND
	13	GND
	14	LCD_Power_Supply *
	15	LCD_Power_Supply *
	16	LCD_Power_Supply *
	17	LCD_Power_Supply *
	18	LCD_Power_Supply *
	19	GND
	20	TXO3+
	21	TXO3-
	22	TXOClk+
	23	TXOClk-
	24	TXO2+
	25	TXO2-
	26	TXO1+
	27	TXO1-
	28	TXO0+
	29	TXO0-
	30	GND

*** See Table 1**

For single LVDS channel LCD panel use E (Even) connection

- 4.2 Connectors Position

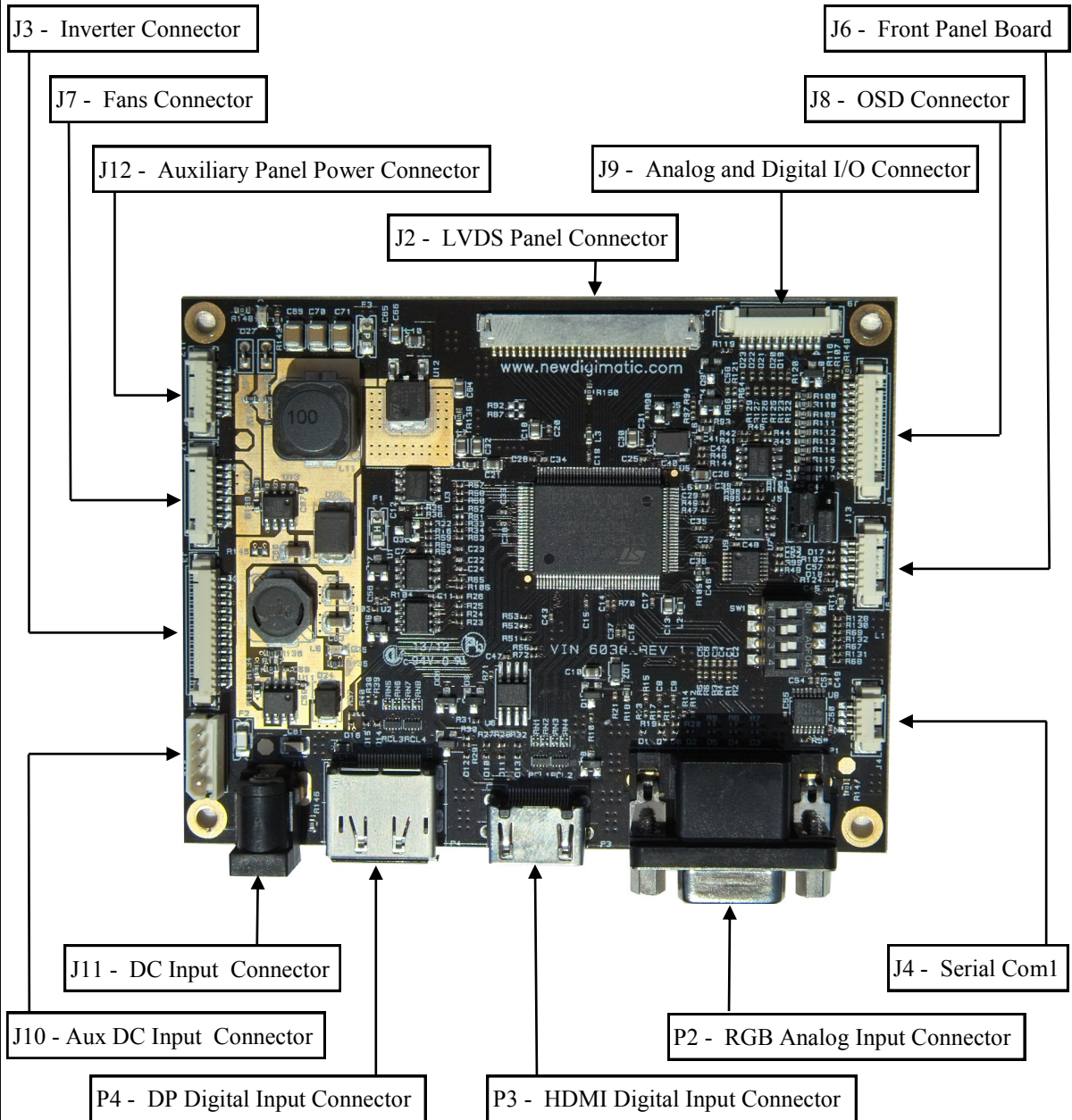
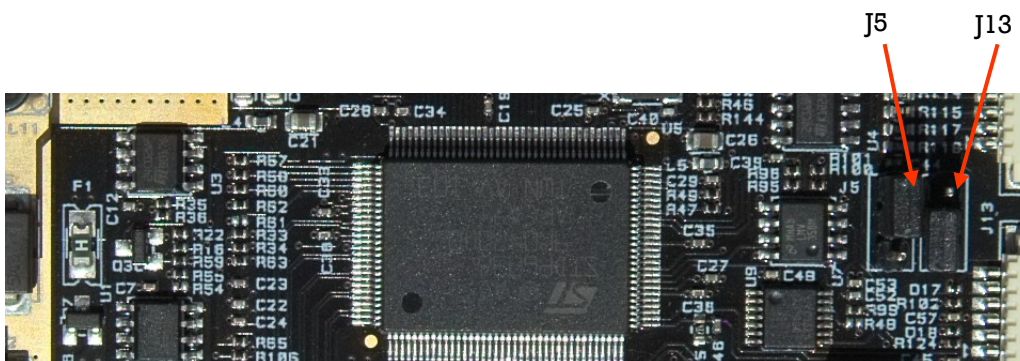


Table 1 : LCD_Power_Supply and Backlight Dimming

LCD Power Supply	JP1	JP2
3,3VDC (Default)	SOLDERING	SOLDERING
5VDC	CUT	SOLDERING
12VDC	CUT	CUT

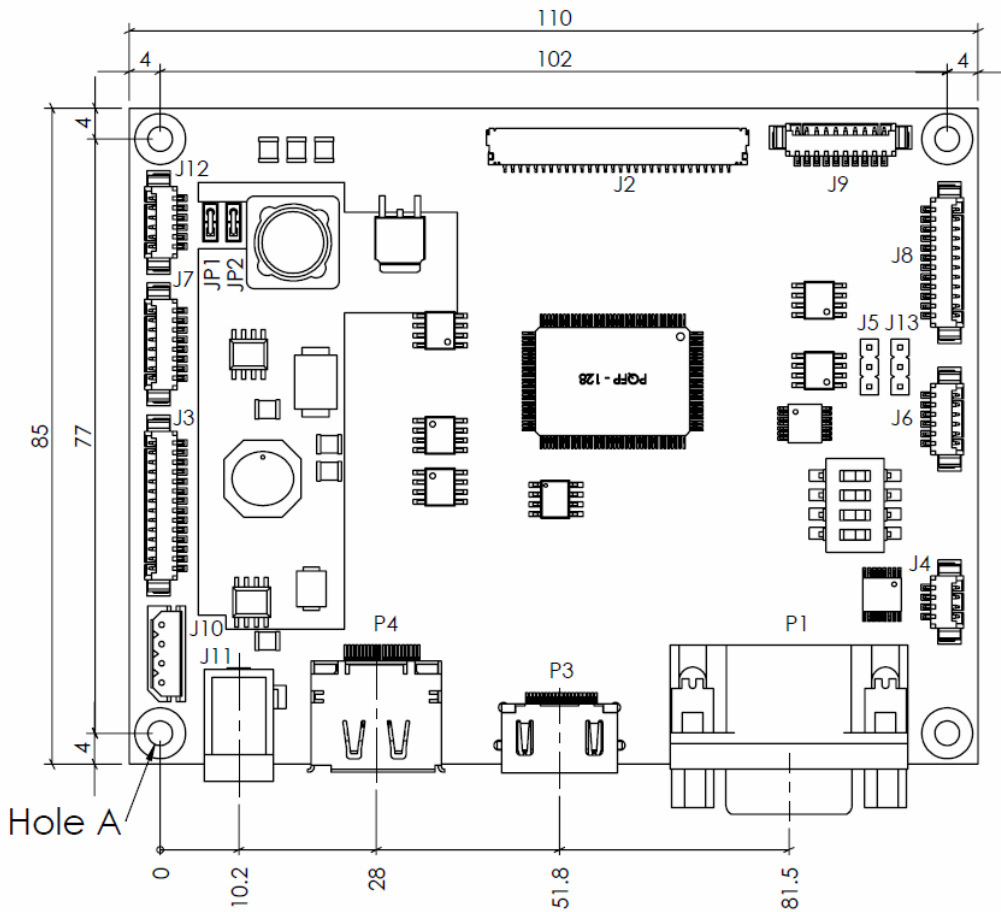
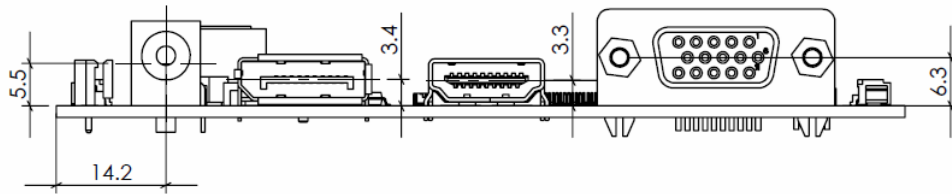


BACKLIGHT DIMMING			
J5		J13	
<input type="checkbox"/>	Analog 0 ~ 3.3 V	<input type="checkbox"/>	100 -- 0 (Inverted)
<input type="checkbox"/>	Digital PWM	<input type="checkbox"/>	0 -- 100 (Normal)



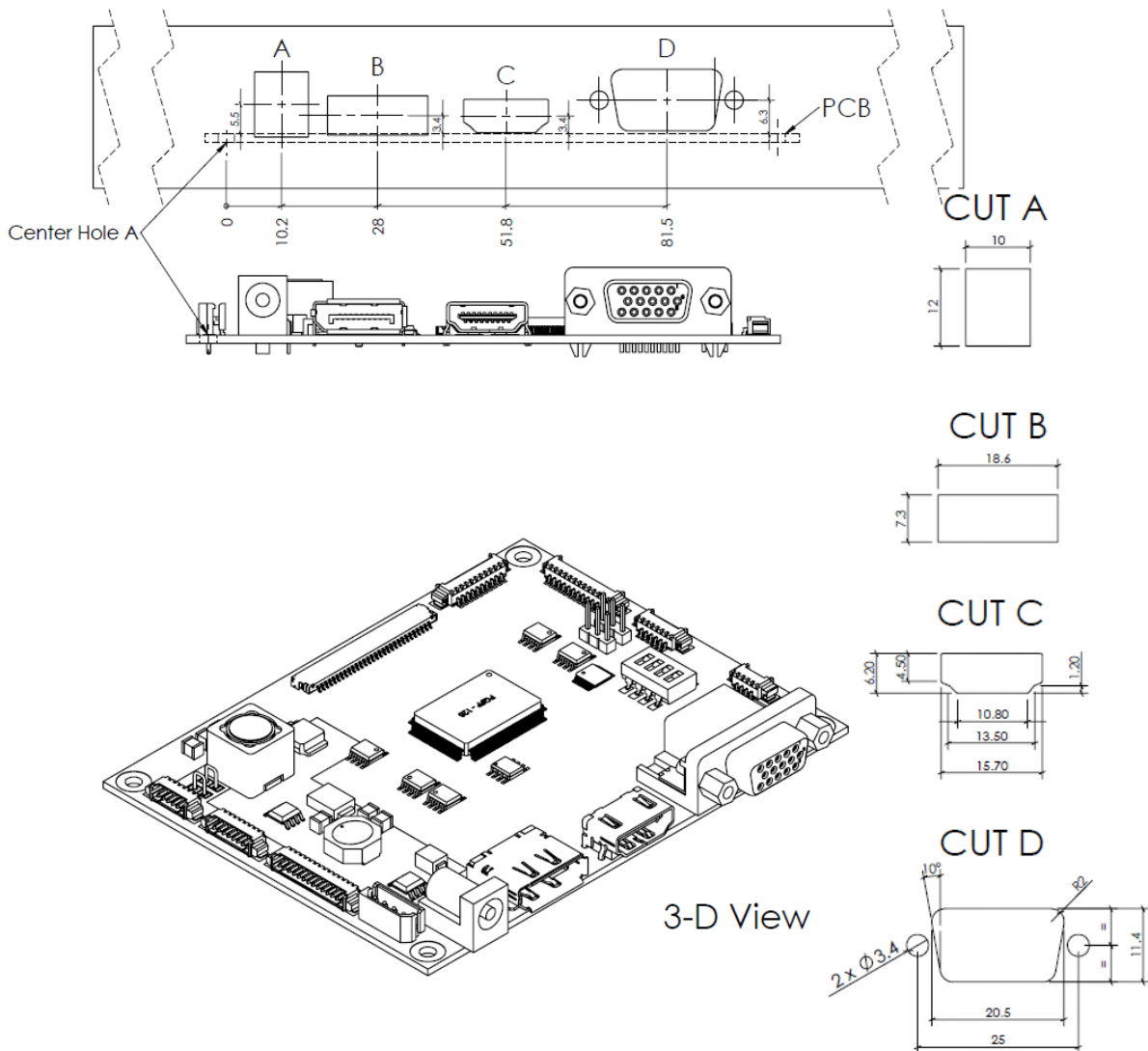
5. Mechanical Specification

- 5.1 Main Board Dimension

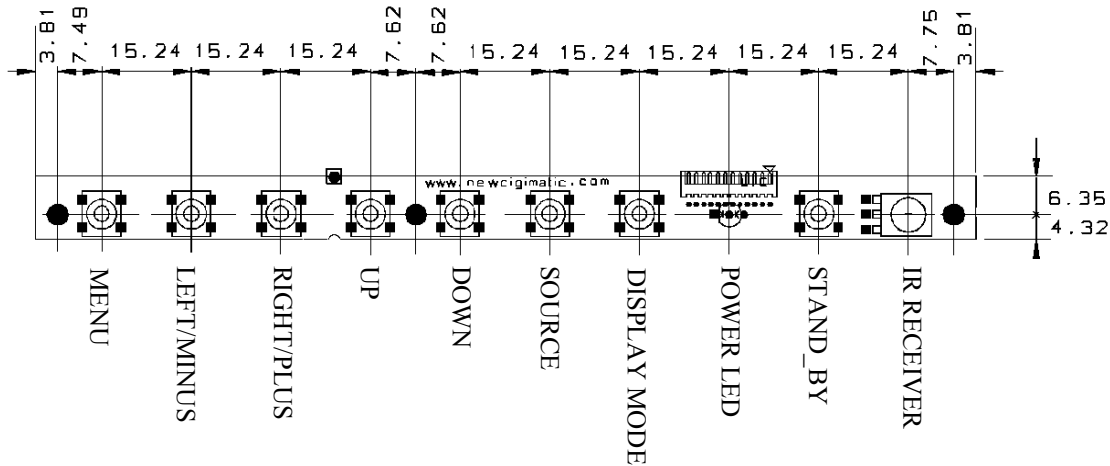


- 5.2 Front Panel Cut

Recommended panel cut out dimension



• **5.3 OSD Keyboard Dimension and Functions**



6. Operation Guide

• **6.1 OSD Adjustment**

VIN6038 gives various and very easy graphic user interface. User can easily access to the function that user wants. Be sure that your system power and LED is turned on (Green) before operating key board.

• **6.2 Key Name and Function**

KEY NAME	DESCRIPTION
STAND_BY	Turns ON/STAND_BY the system
MENU	Activates the OSD menu or goes to previous menu
UP	Moves the highlight icon up to the function that user wants
DOWN	Moves the highlight icon down to the function that user wants
LEFT/MINUS	Decreases the adjustment of the selected function
RIGHT/PLUS	Increases the adjustment of the selected function
SOURCE	Select Video Input
DISPLAY MODE	Select the display mode
IR	Receives the signal from Remote Control (Optional)



- 6.3 Accessing the menu system by keyboard
 1. With the OSD off, push the **Menu** button to activate the main OSD menu
 2. Use the **Up** or **Down** buttons to move from one icon function to another. As you move from one icon to another the function is highlighted.
 3. Press the **Right** button once to activate the highlighted icon, use the **Up** or **Down** buttons to select the function.
 4. After selecting a function, use the **Minus** or **Plus** buttons to make optimum adjustments. The setting bar moves and the numeric value indicator changes to reflect your adjustments. (Note : the numeric value indicator is provided as a point of reference only and has nothing to do with a real measurement.)
 5. Press the **Menu** button once to return to the main menu to select another function or press twice to exit from the OSD.
 6. Press the **Source Select** button to select the Video Input.
 7. Press the **Display Mode** button to select the Display Mode type.

- 6.4 IR Remote Control Keys Function





- 6.5 Accessing the menu system by IR Remote Control
 1. With the OSD off, push the **Menu** button to activate the main OSD menu
 2. Use the **Up** or **Down** buttons to move from one icon function to another. As you move from one icon to another the function is highlighted.
 3. Press the **Right** button once to activate the highlighted icon, use the **Up** or **Down** buttons to select the function.
 4. After selecting a function, use the **Minus** or **Plus** buttons to make optimum adjustments. The setting bar moves and the numeric value indicator changes to reflect your adjustments. (Note : the numeric value indicator is provided as a point of reference only and has nothing to do with a real measurement.)
 5. Press the **Menu** button once to return to the main menu to select another function or press twice to exit from the OSD.
 6. Press the **Source Select** button to select the Video Input.
 7. Press the **Display Mode** button to select the Display Mode type.



7. Appendix

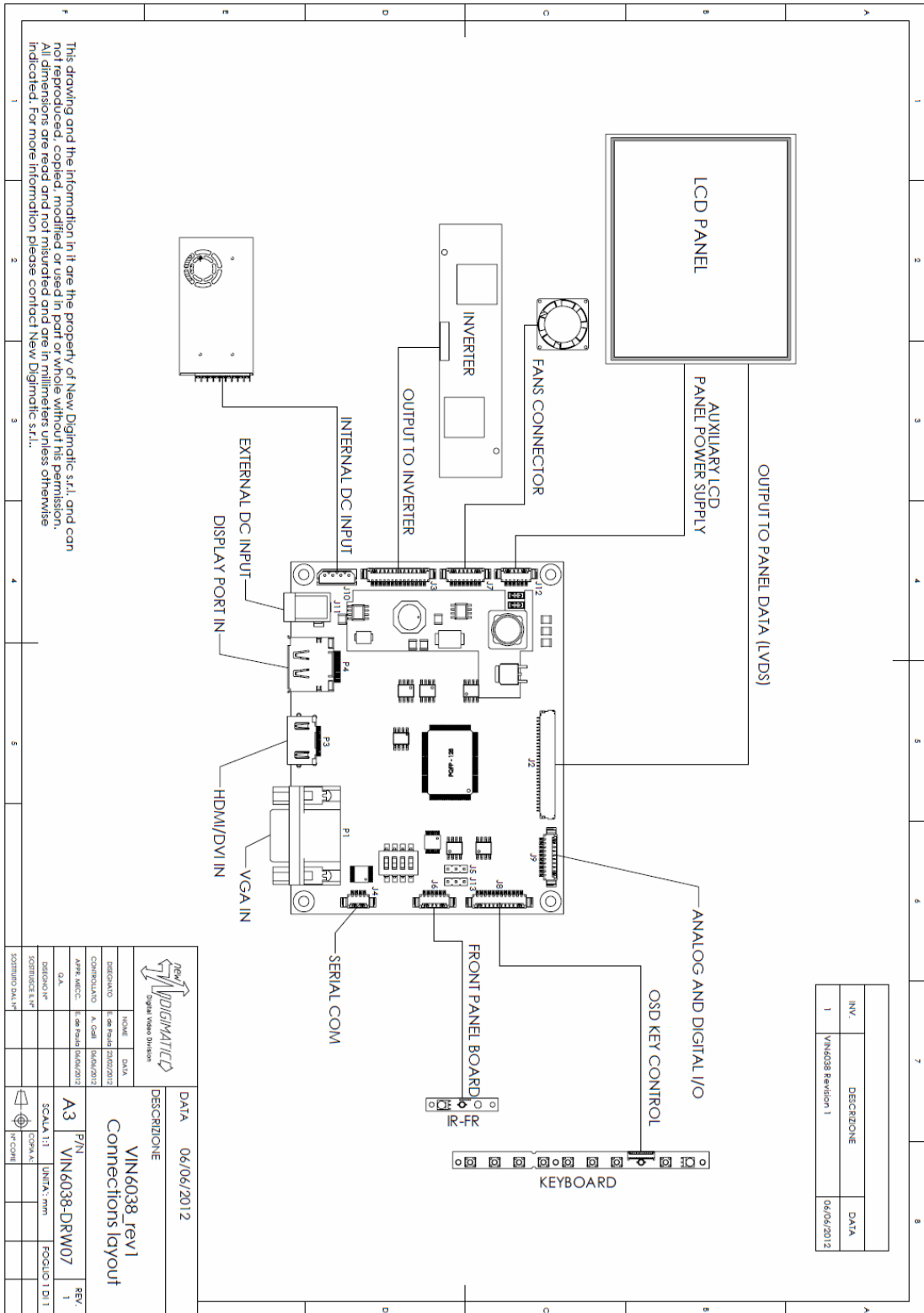
• 7.1 Information Technology Video Timing Chart

VIN6038 IT Video Format Supported							
Pixel Format	Refresh Rate	Hor. Frequency	Pixel Frequency	Reference Standard	VGA In	HDMI In	DP In
640 x 350	85 Hz	37.9 kHz	31.500 MHz	VESA Standard	0	0	0
640 x 400	85 Hz	37.9 kHz	31.500 MHz	VESA Standard	0	0	0
720 x 400	85 Hz	37.9 kHz	35.500 MHz	VESA Standard	0	0	0
640 x 480	60 Hz	31.5 kHz	25.175 MHz	Industry Standard	0	0	0
	72 Hz	37.9 kHz	31.500 MHz	VESA Standard	0	0	0
	75 Hz	37.5 kHz	31.500 MHz	VESA Standard	0	0	0
	85 Hz	43.3 kHz	36.000 MHz	VESA Standard	0	0	0
800 x 600	56 Hz	35.2 kHz	36.000 MHz	VESA Guidelines	0	0	0
	60 Hz	37.9 kHz	40.000 MHz	VESA Guidelines	0	0	0
	72 Hz	48.1 kHz	50.000 MHz	VESA Standard	0	0	0
	75 Hz	46.9 kHz	49.500 MHz	VESA Standard	0	0	0
848 x 480	85 Hz	53.7 kHz	56.250 MHz	VESA Standard	0	0	0
	60 Hz	31.0 kHz	33.750 MHz	VESA Standard	0	0	0
	43 Hz (Int.)	35.5 kHz	44.900 MHz	Industry Standard	0	0	0
	60 Hz	48.4 kHz	65.000 MHz	VESA Guidelines	0	0	0
1024 x 768	70 Hz	56.5 kHz	75.000 MHz	VESA Standard	0	0	0
	75 Hz	60.0 kHz	78.750 MHz	VESA Standard	0	0	0
	85 Hz	68.7 kHz	94.500 MHz	VESA Standard	0	0	0
	1152 x 864	75 Hz	67.5 kHz	108.000 MHz	VESA Standard	0	0
1280 x 768	60 Hz(RB)	47.4 kHz	68.250 MHz	CVT Red. Blanking	0	0	0
	60 Hz	47.8 kHz	79.500 MHz	CVT	0	0	0
	75 Hz	60.3 kHz	102.250 MHz	CVT	0	0	0
	85 Hz	68.6 kHz	117.500 MHz	CVT	0	0	0
1280 x 800	60 Hz(RB)	49.3 kHz	71.000 MHz	CVT Red. Blanking	0	0	0
	60 Hz	49.7 kHz	83.500 MHz	CVT	0	0	0
	75 Hz	62.8 kHz	106.500 MHz	CVT	0	0	0
	85 Hz	71.6 kHz	122.500 MHz	CVT	0	0	0
1280 x 960	60 Hz	60.0 kHz	108.000 MHz	VESA Standard	0	0	0
	85 Hz	85.9 kHz	148.500 MHz	VESA Standard	0	0	0
1280 x 1024	60 Hz	64.0 kHz	108.000 MHz	VESA Standard	0	0	0
	75 Hz	80.0 kHz	135.000 MHz	VESA Standard	0	0	0
	85 Hz	91.1 kHz	157.500 MHz	VESA Standard	0	0	0
1360 x 768	60 Hz	47.7 kHz	85.500 MHz	VESA Standard	0	0	0
	60 Hz(RB)	64.7 kHz	101.000 MHz	CVT Red. Blanking	0	0	0
	60 Hz	65.3 kHz	121.750 MHz	CVT	0	0	0
	75 Hz	82.3 kHz	156.000 MHz	CVT	0	0	0
1400 x 1050	85 Hz	93.9 kHz	179.500 MHz	CVT	0	X	X
	60 Hz(RB)	55.5 kHz	88.750 MHz	CVT Red. Blanking	0	0	0
	60 Hz	55.9 kHz	106.500 MHz	CVT	0	0	0
	75 Hz	70.6 kHz	136.750 MHz	CVT	0	0	0
1440 x 900	85 Hz	80.4 kHz	157.000 MHz	CVT	0	0	0
	60 Hz	75.0 kHz	162.000 MHz	VESA Standard	0	0	0
	65 Hz	81.3 kHz	175.500 MHz	VESA Standard	0	X	X
	70 Hz	87.5 kHz	189.000 MHz	VESA Standard	0	X	X
1600 x 1200	75 Hz	93.8 kHz	202.500 MHz	VESA Standard	0	X	X
	60 Hz(RB)	64.7 kHz	119.000 MHz	CVT Red. Blanking	0	0	0
	60 Hz	65.3 kHz	146.250 MHz	CVT	0	0	0
	75 Hz	82.3 kHz	187.000 MHz	CVT	0	X	X
1680 x 1050	60 Hz(RB)	74.0 kHz	154.000 MHz	CVT Red. Blanking	0	0	0
	60 Hz	74.6 kHz	193.250 MHz	CVT	0	X	X



- 7.2 Consumer Electronic Video Timing Chart

VIN6038 CE Video Format Supported							
Pixel Format	Refresh Rate	Hor. Frequency	Pixel Frequency	ReferenceStandard	VGA In	HDMI In	DP In
640 x 480	59,940 Hz	31,469 kHz	25,175 MHz	VESA DMT	0	0	0
720 x 480	59,940 Hz	31,469 kHz	27,000 MHz	CEA-770.2-D	0	0	0
720 x 576	50,080 Hz	31,250 kHz	27,000 MHz	ITU-R BT.1358	0	0	0
1280 x 720	24,000 Hz	18,000 kHz	59,400 MHz	SMPTE 296M	0	0	0
	25,000 Hz	18,750 kHz	74,250 MHz	SMPTE 296M	0	0	0
	30,000 Hz	22,500 kHz	74,250 MHz	SMPTE 296M	0	0	0
	50,000 Hz	37,500 kHz	74,250 MHz	SMPTE 296M	0	0	0
	60,000 Hz	45,000 kHz	74,250 MHz	CEA-770.3-C	0	0	0
1920 x 1080	24,000 Hz	27,000 kHz	74,250 MHz	SMPTE 274M	0	0	0
	25,000 Hz	28,125 kHz	74,250 MHz	SMPTE 274M	0	0	0
	30,000 Hz	33,750 kHz	74,250 MHz	SMPTE 274M	0	0	0
	50,000 Hz (Int.)	31,250 kHz	72,000 MHz	AS 4933.1-2005	0	0	0
	50,000 Hz (Int.)	28,125 kHz	74,250 MHz	SMPTE 274M	0	0	0
	50,000 Hz	56,250 kHz	148,500 MHz	SMPTE 274M	0	0	0
	60,000 Hz (Int.)	33,750 kHz	74,250 MHz	CEA-770.3-C	0	0	0
60,000 Hz	67,500 kHz	148,500 MHz	SMPTE 274M	0	0	0	



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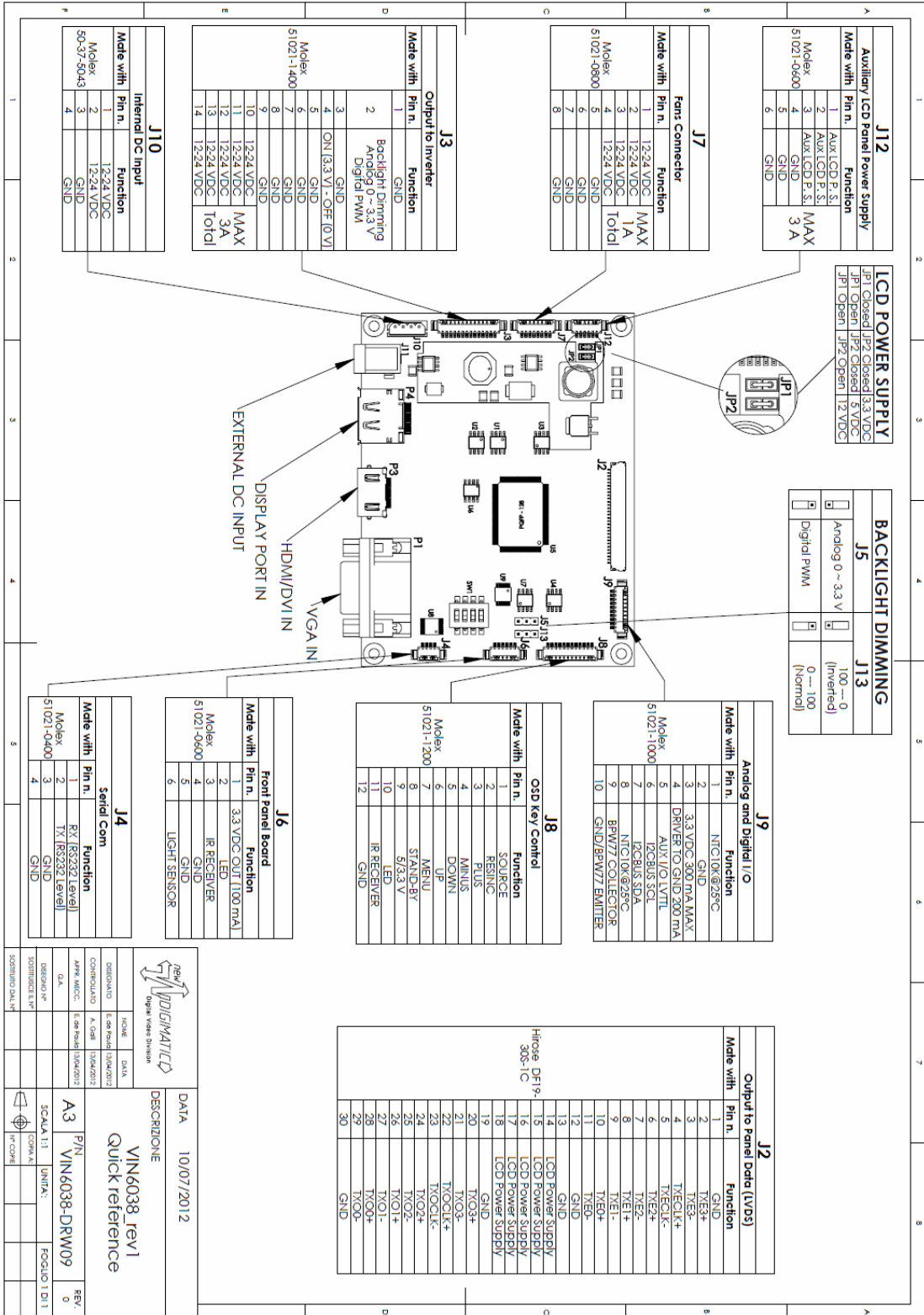
REV.	DESCRIZIONE	DATA
1	VIN6038 Revision 1	06/06/2012

NEW DIGIMATIC Digital Video Division		DATA	06/06/2012
DESCRIZIONE	VIN6038_rev1 Connections layout		
PROGETTATO	A. GIBI	VERIFICATO	A. GIBI
APPROVATO	A. GIBI	REVISIONI	
Q.A.		SCALE	1:1
DESCRIZIONE	SCALA 1:1	UNITA'	mm
FOGLIO	1	DI	1
CONTINUIAMO DA			



NEW DIGIMATIC s.r.l.

Digital Video Division





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.