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a*FLAT*-Series

CRT*to*LCD-6

	Technical Manual
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1.0	Warranty
	Each board is carefully and thoroughly tested before being shipped. If, however, problems should occur during the operation, please check your user specific settings of all boards included in your system. This is often the source of the fault. If a board is defective, it can be sent to your supplier for repair. Please take care of the following steps: - The board returned should correspond to the factory default settings since a test is only possible under these settings. - In order to repair your board as fast as possible , we require some additional information from you. Please fill out the attached Repair Form and include it with the defective board. - If possible, the board will be upgraded to the latest version without additional cost. - Upon receipt of the board, please be aware that your user specific settings were changes during the test. Within the guarantee, the repair is free as long as the guarantee conditions were kept. If no fault has been found, you will be charged with the test cost due to the high test expenditure. Repairs outside of the guarantee will be charged. This Kontron Embedded Modules GmbH product is warranted against defects in material and workmanship for our guaranteed warranty period from the date of shipment. During the warranty period, Kontron Embedded Modules GmbH will, at its option, either repair or replace products which prove to be defective. For warranty service or repair, the product must be returned to a service facility designated by Kontron Embedded Modules GmbH. The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance or handling by buyer, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper installation or maintenance. Kontron Embedded Modules GmbH will not be responsible for any defects or damages due to a faulty Kontron Embedded Modules GmbH product other than the products supplied by Kontron Embedded Modules GmbH.

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1.1 Introduction

The CRTtoLCD-6 is a highly integrated TFT panel interface controller, which allows an easy adaptation of standard video input sources like DVI or Analog RGB to a digital TFT panel. The CRTtoLCD-6 need only one single 12V DC power supply and incorporates all needed functionality to build up a full featured TFT monitor. The card generates the necessary power sequencing for the flat screen. The highly flexible architecture of the CRTtoLCD-6 panel interface allows adapting nearly any available TFT panel. Therefore a variety of panel adapters and programming are available on request.

1.2 Technical Information Summary

Features
- Zoom (from VGA) and shrink (from UXGA) scaling
- Integrated 8-bit triple-channel ADC / PLL
- Integrated Ultra-Reliable DVI™ 1.0 compliant receiver
- embedded Microcontroller with serial ROM Interface
- On-chip versatile OSD engine
- All system clocks synthesized from a single external crystal
- Programmable gamma correction (CLUT)
- RealColor control provide sRGB compliance
- Adjustable back light intensity control
- Light sensor input
- Independent Panel Power supply
- Low EMI and power saving features

High-Quality Advanced Scaling
- Fully programmable zoom ratios
- High quality shrink capability from UXGA resolution
- RealRecovery function provides full color recovery image for refresh rates higher than those supported by the LCD panel
- Moiré cancellation

Analog RGB Input Port
– Supports up to SXGA at 75Hz / UXGA 60 Hz

Auto-Configuration / Auto-Detection
– Phase and image positioning
– Input format detection
– Compatibility with all graphic cards and standard VESA modes

Ultra-Reliable DVI Compliant Input Port
– Operating up to 165 MHz (up to UXGA 60 Hz)
– Direct connect to all DVI compliant digital transmitters

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1.2 Technical Information Summary

RealColor Technology
– Digital brightness and contrast controls
- TV color controls including hue and saturation control
- Flesh tone adjustment
- Full color matrix allows end users to experience the same color as viewed on CRTs and other displays (e.g. sRGB compliance)

LVDS Output Format
- Single / double channel up to SXGA 75 Hz output
- Support for 8 or 6-bit panels (with high quality dithering)
- One or two pixel output format

TTL Output Format
- Digital RGB panel 18-Bit interface

On-chip OSD Controller
- On-chip RAM for downloadable menus
- 1,2 and 4-Bit per pixel character cells
- Horizontal and vertical stretch of OSD menus
- Blinking, transparency and blending
- Proportional fonts

Display Interface Features :
- Control signal generation for backlight inverter
- backlight dimming support
- voltage generation and power sequence control for panel
- Flat screens can be used with either 3.3V, 5V or 12V.
- Digital RGB panel 18-Bit interface (optional)
- LVDS panel interface (one and double port up to 24 Bit)

Operating Features :
- 5 or 6 (optional) button user interface
- On Screen Display (OSD) control for full features
- Full multi sync capable
- VESA DPMS and DDC2B support
- Single voltage supply (+12V DC)
- No software drivers needed!

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1.3	Connectors	
1.3.1	RGB analog input	CN2
1.3.2	OSD keypad connector	CN500 or CN501 ***Note1**
1.3.3	Backlight connector	CN101, CN102 ***Note1**
1.3.4	Serial Port connector	CN200
1.3.5	KAB-FLEX32 Interface	CN400 ***Note1**
1.3.6	KAB-JILI30-Interface	CN100 ***Note1**
1.3.7	DC Power supply	CN300
1.3.8	Flatpanel power supply configuration	JP102
1.3.9	Backlight control configuration	JP100, JP101
1.3.10	ADC Input connector	CN201
1.3.11	DVI-D input connector	CN1

***Note1** can vary. Depends on version of CRTtoLCD-6

1.3.1	RGB Analog Input CN2		
High Density Sub-D-Connector 15 Contacts, Receptacle Case/Size : Right Angle, Through Hole			
Name	**Pin**		**Description**
RED	**1**	**O**	analog input red
GREEN	**2**	**O**	analog input green
BLUE	**3**	**O**	analog input blue
NC	**4**	**O**	Not connected
GND	**5**	**O**	Analog Ground
GND	**6**	**O**	Analog Ground red
GND	**7**	**O**	Analog Ground green
GND	**8**	**O**	Analog Ground blue
DDC+5V	**9**	**O**	Supply Voltage for DDC
GND	**10**	**O**	Analog Ground
NC	**11**	**O**	Not connected
DDC_SDA	**12**	**O**	DDC serial data
HSYNC	**13**	**O**	Horizontal sync input
VSYNC	**14**	**O**	Vertical sync input
DDC_SCL	**15**	**O**	DDC serial clock

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1.3.2	OSD Keypad Connector CN501

14 Contacts IDC Connector, Gold plated, double row, vertical mount, through hole

Description	Name	Pin		Pin	Name	Description
+5V Keypad Power out	VCC	**1**	**O O**	**2**	LED 2	LED Red ***Note1**
Keypad Button (Exit)	KEY	**3**	**O O**	**4**	KEY	Keypad Button (Menu)
Keypad Button (Right)	KEY	**5**	**O O**	**6**	KEY	Keypad Button (Left)
Transmit Data (TTL)	TXD	**7**	**O O**	**8**	RXD	Receive Data (TTL)
LED Green ***Note1**	LED 1	**9**	**O O**	**10**	KEY	Keypad Button (Power)
Not connected	NC	**11**	**O O**	**12**	Vcc12	+12V Power Keypad out
Power Ground	GND	**13**	**O O**	**14**	GND	Power Ground

***Note1** Max. 4,5 mA output current

1.3.2	OSD keypad connector CN500
	Connector: Molex 53261-1471 **Matching Connector: Molex 51021-1400** Connector Single Row, 14 contacts, Case/Size : Right Angle, 1,25mm Pitch

Name	Pin		Description
LED2	**1**	**O**	LED Red ***Note1**
LED1	**2**	**O**	LED Green ***Note1**
GND	**3**	**O**	Key Power Ground
KEY	**4**	**O**	Key Button(Power)
GND	**5**	**O**	Key Power Ground
KEY	**6**	**O**	Key Button(Menu)
KEY	**7**	**O**	Key Button(Right)
NC	**8**	**O**	Not Connected
NC	**9**	**O**	Not Connected
KEY	**10**	**O**	Key Button(Left)
KEY	**11**	**O**	Key Button(Exit)
KEY	**12**	**O**	Key Button(Autoadjust)
GND	**13**	**O**	Power Ground
VDD	**14**	**O**	+ 3.3 V Keypad Power out
Key Active = Button connected to Power Ground			

***Note1** Max. 4,5 mA output current

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1.3.3	**Backlight Connector CN102** **Connector: Molex 53261-0771** **Matching Connector: Molex 51021-0700**		
Connector Single Row, 7 Contacts, Case/Size : Right Angle, 1,25mm Pitch			
	Pin	**Name**	**Description**
O O O O O O O	**1** **2** **3** **4** **5** **6** **7**	NC BKLTADJ GND Backlight power supply Backlight power supply GND BLON	Not connected analog 0V to +5V or 0V to +12V (refer JP101) Power Ground Typ. +12V (Note same as DC Input Voltage , 1 Ampere per contact allowed) Power Ground Backlight control signal (TTL, refer to JP100) Polarity settings

1.3.3	**Backlight Connector CN101**		
Connector: Molex 53261-1071 **Matching Connector: Molex 51021-1000** Connector Single Row, 10 Contacts, Case/Size : Right Angle, 1,25mm Pitch			
	Pin	**Name**	**Description**
O O O O O O O O O O	**1** **2** **3** **4** **5** **6** **7** **8** **9** **10**	BLON GND GND Backlight power supply Backlight power supply Backlight power supply Backlight power supply GND GND BKLTADJ	Backlight control signal (TTL, refer to JP100) Power Ground Power Ground Typical. +12V (Note same as DC Input Voltage , 1 Ampere per contact allowed) Power Ground Power Ground analog 0V to +5V or 0V to +12V (refer to JP101)

1.3.4	**Serial Port connector CN200** The OSD (On Screen Display) can be controlled either trough the keypad or the serial connector CN500/501 for configuration purposes or mass production. See also chapter 1.8 for detailed description. **Caution !** The transmit and receive signals have TTL level!		
Connector: Molex 53261-0471 Matching Connector: Molex 51021-0400			
	Pin	**Name**	**Description**
O O O O	**1** **2** **3** **4**	VCC RXD TXD GND	+5V DC Power (output) Receive Data Signal Transmit Data Signal Power Ground

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1.3.5 KAB-FLEX32-Interface CN400

This connector directly matches through an interface cable for 31/41 pin VGA/SVGA TFT interface. All flat screen signals are LVTTL compatible (3.3V)

Flatfoil Connector 32 Contacts, Right Angle, Bottom Contact
Case/Size : 0,5mm Pitch, ZIF

Description	Name	Pin			Pin	Name	Description
Power Ground	GND	**1**	**O**	**O**	**2**	SCLK	Data clock
Latch pulse	LP	**3**	**O**	**O**	**4**	FLM	First Line Marker
Power Ground	GND	**5**	**O**	**O**	**6**	P0	Panel Data R0
Panel Data RED1	P1	**7**	**O**	**O**	**8**	P2	Panel Data RED2
Panel Data RED3	P3	**9**	**O**	**O**	**10**	P4	Panel Data RED4
Panel Data RED5	P5	**11**	**O**	**O**	**12**	GND	Power Ground
Panel Data GREEN0	P6	**13**	**O**	**O**	**14**	P7	Panel Data GREEN1
Panel Data GREEN2	P8	**15**	**O**	**O**	**16**	P9	Panel Data GREEN3
Panel Data GREEN4	P10	**17**	**O**	**O**	**18**	P11	Panel Data GREEN5
Power Ground	GND	**19**	**O**	**O**	**20**	P12	Panel Data BLUE0
Panel Data BLUE1	P13	**21**	**O**	**O**	**22**	P14	Panel Data BLUE2
Panel Data BLUE3	P15	**23**	**O**	**O**	**24**	P16	Panel Data BLUE4
Panel Data BLUE5	P17	**25**	**O**	**O**	**26**	GND	Power Ground
Data Enable	MOD (DE)	**27**	**O**	**O**	**28**	Panel_VCC	Panel Power ***Note1***
Panel Power ***Note1***	Panel_VCC	**29**	**O**	**O**	**30**	R/L	Right/Left
Up/Down rotate	U/D	**31**	**O**	**O**	**32**	NC	Not connected

Note1: Refer to JP102 how to configure the panel power

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1.3.6	KAB-JILI30-Interface CN100		
	Connector: JAE FI-X30S-HF Matching Connector: JAE FI-X30H		
	Name	**Pin**	**Description**
	FTX0- FTX0+ FTX1- FTX1+ FTX2- FTX2+ GND FTXC- FTXC+ FTX3- FTX3+ STX0- STX0+ GND STX1- STX1+ GND STX2- STX2+ STXC- STXC+ STX3- STX3+ GND NC PPWR NC PANEL_VCC PANEL_VCC PANEL_VCC	**1** O **2** O **3** O **4** O **5** O **6** O **7** O **8** O **9** O **10** O **11** O **12** O **13** O **14** O **15** O **16** O **17** O **18** O **19** O **20** O **21** O **22** O **23** O **24** O **25** O **26** O **27** O **28** O **29** O **30** O	Even Receiver Signal Even Receiver Signal Even Receiver Signal Even Receiver Signal Even Receiver Signal Even Receiver Signal Power Ground Even Clock Signal Even Clock Signal Even Receiver Signal Even Receiver Signal Odd Receiver Signal Odd Receiver Signal Power Ground Odd Receiver Signal Odd Receiver Signal Power Ground Odd Receiver Signal Odd Receiver Signal Odd Clock Signal Odd Clock Signal Odd Receiver Signal Odd Receiver Signal Power Ground Not Connected Controls Panel Digital Power Not Connected Panel Power (refer to JP102) Panel Power (refer to JP102) Panel Power (refer to JP102)

1.3.7	DC Power Supply CN300 Apply operating voltage using connector CN300 or CN301.		
4 Contact Connector, Single Row, Right Angle, Polarization, through hole			
	Pin	**Name**	**Description**
O **O** **O** **O**	**1** **2** **3** **4**	NC GND GND +12V	Not connected Power Ground Power Ground +12 V DC Power Input

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1.3.8	Flatpanel Power Supply Configuration JP102				
	Short pins 1-2 or 2-3 or leave open to choose required voltage supply. **Caution !** Only one configuration for flatpanel is allowed, otherwise the board is permanently damaged.				
	Connector Single Row 2,54 mm, 3 Contacts, Gold plated Case/Size : Vertical, Through Hole				
	1 2 3 Pin	**2-3**	**1-2**	**open**	**Delivery Default**
	O O O	+12V	+5V	+3.3V	**1-2 closed**
		Never unplug/replug while in use!			

1.3.9	Backlight Control Configuration JP100			
	Use JP100 to control polarity of backlight control signal.			
	Connector Single Row 2,54 mm, 3 Contacts, Gold plated Case/Size : Vertical, Through Hole			
	1 2 3 Pin	**2-3**	**1-2**	**Delivery Default**
	O O O	/BLON	BLON	**1-2 closed**
		Never unplug/replug while in use!		

1.3.9	Backlight Output Adjust Configuration JP101			
	Use JP101 to set correct backlight adjust range I-out 20mA max.			
	Connector Single Row 2,54 mm, 3 Contacts, Gold plated Case/Size : Vertical, Through Hole			
	1 2 3 Pin	**2-3**	**1-2**	**Delivery Default**
	O O O	Typ. 0-12V	Typ. 0-5V	**1-2 closed**
		Never unplug/replug while in use!		

1.3.10	ADC Input Connector CN201 (Light Sensor Input)		
	Connector: Molex 53261-0571 Matching Connector: Molex 51021-0500		
	Pin	**Name**	**Description**
O O O O O	**1**	GND	Power Ground
	2	ADC1	ADC1 Input ***Note1***
	3	DVDD3.3	3.3V output source (max.50mA)
	4	ADC2	ADC2 Input ***Note1***
	5	GND	Power Ground

Note1 Input range is 0 - 3V. Onboard pulled up to DVDD3.3 through 4, 7 KΩ resistor.

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1.3.11 DVI-D Input Connector CN1 (optional)

This input supports the connection of DVI capable video cards and supports resolutions from 640x480 up to 1600x1200.

Connector 24 Contacts, Gold plated
Case/Size : Vertical, Through Hole

Description	Name	Pin		Pin	Name	Description
Receiver Signal(-) (RX2-)	RX2-	1	O O	2	RX2+	Receiver Signal(+) (RX2+)
Power Ground	GND	3	O O	4	NC	Not connected
Not connected	NC	5	O O	6	SCL	I^2C clock
I^2C Data	SDA	7	O O	8	NC	Not connected
Receiver Signal(-) (RX1-)	RX1-	9	O O	10	RX1+	Receiver Signal(+) (RX1+)
Power Ground	GND	11	O O	12	NC	Not connected
Not connected	NC	13	O O	14	+5V	+5V from DVI video card
Power Ground	GND	15	O O	16	HP	Hot Plug
Receiver Signal(-) (RX0-)	RX0-	17	O O	18	RX0+	Receiver Signal(+) (RX0+)
Power Ground	GND	19	O O	20	NC	Not connected
Not connected	NC	21	O O	22	GND	Power Ground
Clock Signal(+) (RXC+)	RXC+	23	O O	24	RXC-	Clock Signal(-) (RXC-)
Not connected	NC	C1	O O	C2	NC	Not connected
Not connected	NC	C3	O O	C4	NC	Not connected
Not connected	NC	C5	O O	C5-1	NC	Not connected

1.4 On Screen Display

With the OSD (On Screen Display) you can modify the settings and control the special features of the CRTtoLCD-6. The OSD uses a number of menus for making changes and turning the special features on or off. The configuration can be done via the OSD-keypad (OSD-Panel-Kit).
To start the OSD press the “OSD” button on the keypad, after switching the power supply on. If a valid flat panel configuration is installed, the OSD Main Menu will be displayed.

To select an tab, simply use the button “UP” or ”DOWN” to move the cursor to the tab you want and press button “OSD”. When you use the tab “Exit” and press the “CONFIRM”-button, the OSD will be closed.
To use a tab menu, simply use “OSD”-button to select the field.
Use “UP” or “DOWN” to select a value for that field. The “Exit”-field on the bottom-side on the tab will go up to the tab-selection. Simply press the “OSD”-button.

Note: All changed values will only be saved by selecting “Exit” from the OSD. If not, the adjusted values will be lost after loss of power.

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Input Select

Feature	Button	Description
Select VGA	Press “OSD”	Select VGA input
Select DVI	Press “OSD”	Select DVI input
Exit	Press “OSD”	Exit menu

Brightness

Feature	Button	Description
Brightness	Press “OSD” to enter Adjust with “Up” and “Down”	Adjust brightness
Contrast	Press “OSD” to enter Adjust with “Up” and “Down”	Adjust contrast
Backlight Brightness	Press “OSD” to enter Adjust with “Up” and “Down”	Adjust backlight brightness
Backlight Mode	Use “Up” and “Down”	Enter Backlight Mode submenu
- Manual Backlight	Use “Up” and “Down”	Control backlight over the OSD
- External Backlight Control	Use “Up” and “Down”	Enable external control of backlight
- Exit		Exit submenu
Exit	Press “OSD”	Exit menu

Color Settings

Feature	Button	Description
Auto Color Adjust	Press “OSD”	Adjust colors automatically
Switch sRGB Mode	Press “OSD”	Switch to sRGB mode
Color Temperature	Press “OSD”	Enter Color Temperature submenu
- Select Color Temperature	Press “OSD”	Select predefined color temperatures
- Adjust RGB Values	Press “OSD”	Enter Adjust RGB Values submenu
- Red Color Value	Use “Up” and “Down”	User defined value of color temperature
- Green Color Value	Use “Up” and “Down”	User defined value of color temperature
- Blue Color Value	Use “Up” and “Down”	User defined value of color temperature
- 4200K	Press “OSD”	Set predefined color temperature of 4200K
- 5000K	Press “OSD”	Set predefined color temperature of 5000K
- 6500K	Press “OSD”	Set predefined color temperature of 6500K
- 7500K	Press “OSD”	Set predefined color temperature of 7500K
- 9300K	Press “OSD”	Set predefined color temperature of 9300K
- Exit	Press “OSD”	Exit submenu
Exit	Press “OSD”	Exit menu

Image Settings

Feature	Button	Description
Auto Adjust	Press “OSD”	Adjust image automatically
Adjust Width	Press “OSD” to enter Adjust with “Up” and “Down”	Adjust image width
Adjust Phase	Press “OSD” to enter Adjust with “Up” and “Down”	Adjust image phase
Horizontal Pos	Press “OSD” to enter Adjust with	Adjust image horizontal position

	"Up" and "Down"	
Vertical Pos	Press "OSD" to enter Adjust with "Up" and "Down"	Adjust image vertical position
Exit	Press "OSD"	Exit menu

Tools

Feature	Button	Description
OSD Settings	Press "OSD"	Enter OSD Settings submenu
- OSD Timeout	Use "Up" and "Down"	Set the OSD time to close automatically
- OSD Hor. Position	Use "Up" and "Down"	Set OSD horizontal position
- OSD Ver. Position	Use "Up" and "Down"	Set OSD vertical position
- OSD Orientation	Press "OSD"	Enter OSD Orientation submenu
- Standard	Press "OSD"	OSD standard orientation
- Rotate 90	Press "OSD"	Set OSD orientation at 90 degrees
- Rotate 180	Press "OSD"	Set OSD orientation at 180 degrees
- Rotate 270	Press "OSD"	Set OSD orientation at 270 degrees
- Horizontal Mirror	Press "OSD"	View the OSD horizontally mirrored
- Exit		Exit submenu
Factory Reset	Press "OSD"	Recall all default factory settings
Factory Color Reset	Press "OSD"	Recall the factory default color settings
Factory Position Reset	Press "OSD"	Recall the factory default position of screen
Sharpness	Use "Up" and "Down"	Adjust level of sharpness
Overlapped Mode Select	Press "OSD"	Select overlapped mode
Exit	Press "OSD"	Exit menu

Exit OSD Menu

Feature	Button	Description
Exit	Press "OSD"	Exit the OSD and save changes

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1.5 Technical Specification

These values were measured with OSD-Panel attached and without flatpanel and backlight inverter.

- Supply voltage at 25˚C without load:

Minimum supply voltage	:	+ 11,4 V DC
Typical supply voltage	:	+ 12,0 V DC
Absolute Maximum supply voltage	:	+ 12.6 V DC

- Typical Input current at 25˚C without load:

CRTtoLCD-6 with input signal (XGA)	:	200 mA
CRTtoLCD-6 with power down typical	:	tbd mA

- Input Supply voltage ripple : typical 100 mV peak to peak 0 – 20 MHz

- Current Rating of Flatpanel Power supply:

PANEL VCC	Steady State 3V / 5V and 12V @ +-5% : 3A
PANEL VCC	5sec. -5% 3V3 @4,22A
PANEL VCC	5sec. -5% 5V @ 4,15A
PANEL VCC	5sec. -2% 12V @ 3,73 A

Note: Output power without any switch or short circuit breaker

- Slewrate of Flatpanel Power supply with 3A load

PANEL VCC 3V3	385us
PANEL VCC 5V	481us
PANEL VCC 12V	1.7ms

- Voltage and Current Rating of Backlight Power supply:

Direct +12V Output voltage without any switch or short circuit breaker
CN400: Maximum output current 4A
CN401: Maximum output current 2A
There are no limitations between Backlight Power and Flatpanel Power
The only limitation is the capability of the DC Input Power supply

VGA connector signals :

Sync input voltage low	:	0.8 V
Sync input voltage high	:	2.4 V
RGB input voltage	:	0 – 0.7 V with 75 Ohm external termination
RGB input current	:	0 – 5 mA

- Temperature : ambient : 0˚ C – 60˚ C (*1)
Non operating : - 10˚ C – 85˚ C

(*1) The maximum temperature on the module surface can exceed above mentioned ambient temperature. It is the user responsibility to keep this temperature within the above specification.

- Thermal gradient : operating : 25˚ C per hour
non-operating : 40˚ C per hour

- Relative Humidity : operating : 10% - 90 % RH non-condensing
non operating : 5% - 95% RH non-condensing

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1.5 Technical Specification

- Mechanical : Shock : 50G/20ms square wave maximum
Vibration : 1G/0-600Hz, dwell not to exceed

- Altitude : operating : 0 – 3000 m
non-operating : 0 – 5000 m

- Dimensions of the printed circuit board :

Width	:	88.9 mm
Length	:	101.6 mm
Thickness	:	1.50 mm

- Dimensions of the module :

Width	:	95.00 mm
Length	:	118,60 mm
Height	:	16.50 mm +2mm (*)

Note : The dimension of the module can change if cable, Adapter or Keypad plugged in!

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1.6 Supported Video Modes (Analog Input)

Generally all VESA compatible video modes are supported. If modes are not supported the controller displays “Invalid Mode” on the flat panel. In this case use the KCWB (**K**ontron **C**onfiguration **W**ork**B**ench), available on the a.m. website, to add this special mode to the supported mode table.

Following modes are tested

Video Mode Input	Vertical refresh rate	Mode standard
720 x 400	70 Hz	DOS
640 x 350	70 Hz	DOS
640 x 400	70 Hz	DOS
640 x 480	59,9 Hz	VGA
640 x 480	60 Hz	VGA
640 x 480	72 Hz	VGA
640 x 480	72,8 Hz	VGA
640 x 480	75 Hz	VGA
800 x 600	56,25 Hz	SVGA
800 x 600	60 Hz	SVGA
800 x 600	70 Hz	SVGA
800 x 600	72 Hz	SVGA
800 x 600	75 Hz	SVGA
1024 x 768	60 Hz	XGA
1024 x 768	70 Hz	XGA
1024 x 768	72 Hz	XGA
1024 x 768	75 Hz	XGA
1152 x 864	60 Hz	
1152 x 864	70 Hz	
1152 x 864	75 Hz	
1280 x 1024	60 Hz	SXGA
1280 x 1024	70 Hz	SXGA
1280 x 1024	75 Hz	SXGA
1600 x 1200	60 Hz	UXGA

1.6 Supported Video Modes (DVI Input)

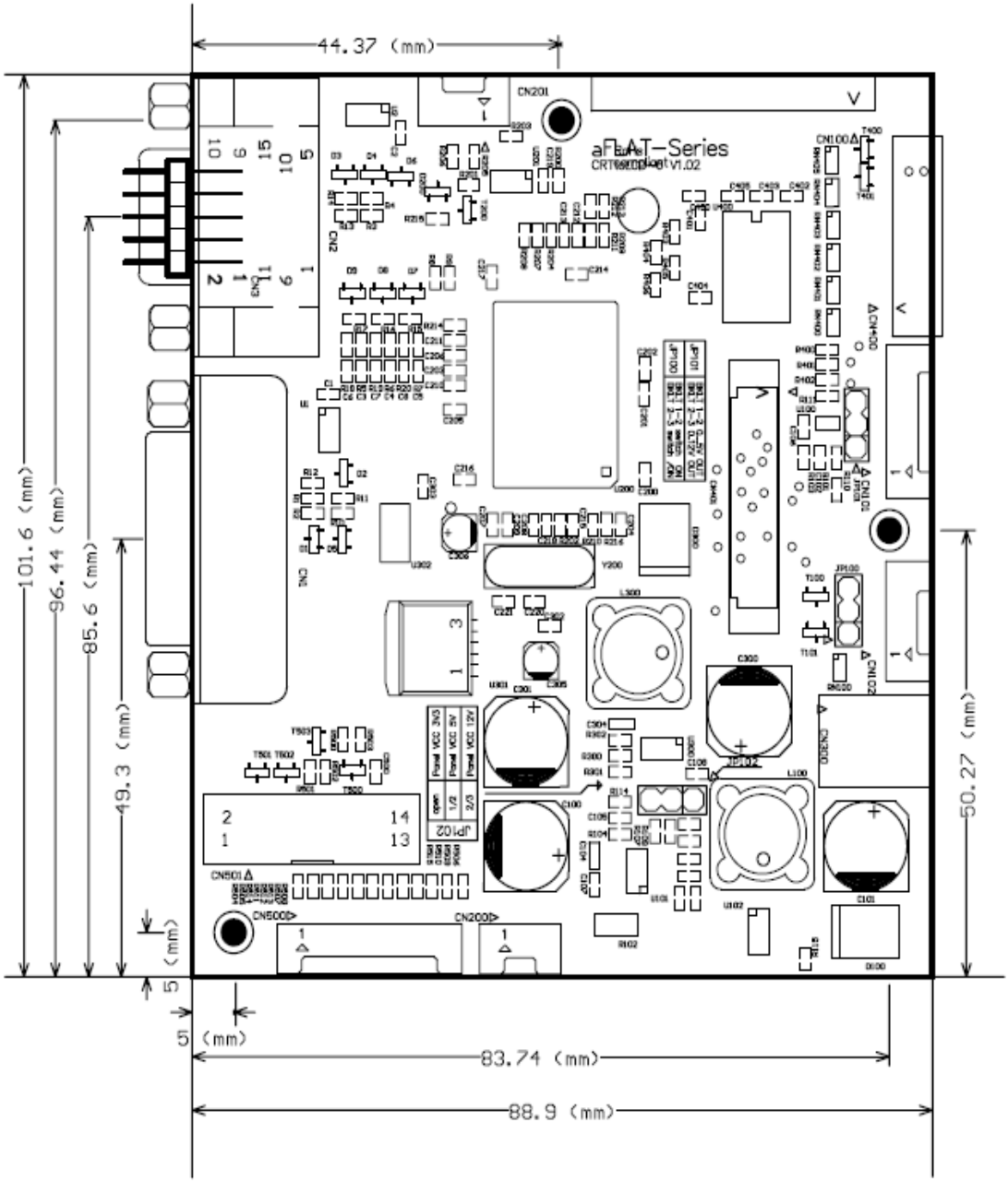
Generally all VESA compatible video modes are supported. If modes are not supported the controller displays “Invalid Mode” on the flat panel. In this case use the KCWB (**K**ontron **C**onfiguration **W**ork**B**ench), available on the a.m. website, to add this special mode to the supported mode table.

Following modes are tested

Video Mode Input	Vertical refresh rate	Mode standard
640 x 480	60 Hz	VGA
800 x 600	60 Hz	SVGA
1024 x 768	60 Hz	XGA
1280 x 1024	60 Hz	SXGA

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1.7 Layout/Schematics

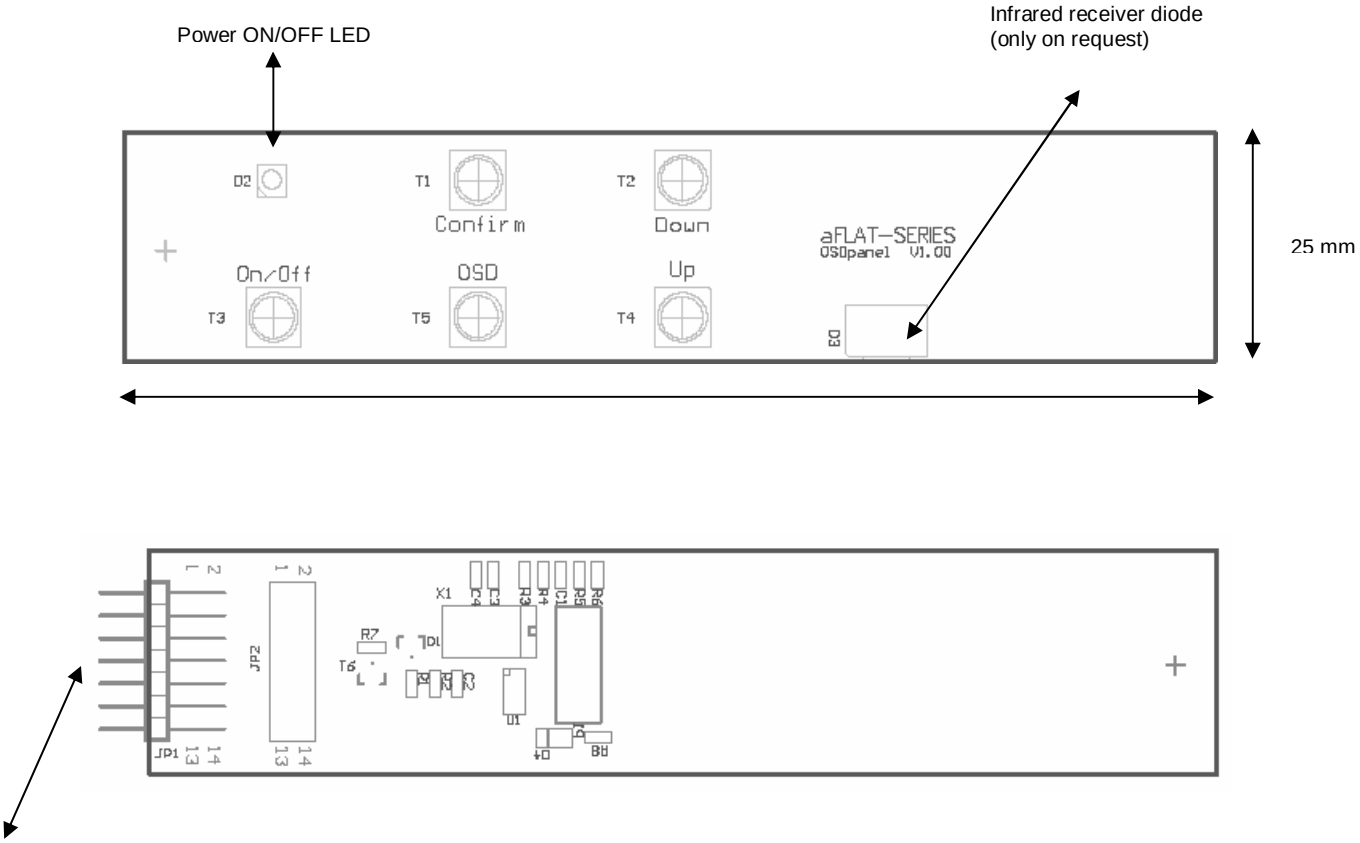


CRT*to*LCD-6

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1.7 Layout/Schematics

OSD-Keypad “OSD-Panel“



Keypad JP1 connected to CN501 of CRTtoLCD-6!

1.8 Serial OSD

coming soon ...

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1.9 Technical Support

Please report any errors or problems to this email address: sales_graphic@kontron.com.
Normally, there is no telephone support. In your email message, please include the following information :

Company Name
Your Name
Address
Email
Telephone/Fax
Exact description of the hardware, etc.
Exact description of the software used (for example: Win XP with driver XYZ)
Exact description of the error.

2.0 Revision History

Date	Author	Version	Description
07.02.2005	D. Piper	1.0	Initial release
20.06.2007	N. Abels	1.1	Molex-Order code Update