TVtoLCD User's Guide



TVtoLCD

Document Revision 1.0 preliminary

Preliminary

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General information and important notes

1.1 User Information

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1.3 General

For the circuits, descriptions and tables indicated no responsibility is assumed as far as patents or other rights of third parties are concerned.
The information in the Technical Descriptions describes the type of the boards and shall not be considered as assured characteristics.
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1.4 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 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 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.
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 will not be responsible for any defects or damages due to a faulty Kontron Embedded Modules product other than the products supplied by Kontron Embedded Modules.

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2. Introduction

The TVtoLCD is an “add-on” Tuner-Audio-Video card to expand the functionality of the aFlat CRTtoLCD-7.

3. Technical Information Summary

Features
> Stereo 10Watt Class D Audio Power Amplifier
> No Heat sink needed
> Klick-free Volume Adjust
> Two Stereo Line level Inputs
> One Stereo Line level output selectable fixed or variable gain
> TV Tuner Multi Standard Video Input
> TV Tuner FM Radio Input
> Analog RGB with SOG capability
> No external Power supply needed

Power Amplifier
> Thermal and Short-Circuit Protection
> 14W Peak per Channel into an 4Ohm load @ 12 Supply voltage
> 12W Peak per Channel into an 8Ohm load @ 24V Supply voltage
> 10W Continuous Output Power

Tuner
> PAL/SECAM Multi Standard covers frequency range from 48.25MHz to 863.25MHz
> FM Radio covers frequency range from 87.50MHz to 108.00MHz
> NTSC Version on request
> IEC Input connector

Audio Sound Processor
> 30 step Volume Control
> Balance L/R control, mute up to 100%
> Surround Normal or Spatial
> Adjustable Loudness control max +17dB
> Adjustable Pseudo Stereo enlargement
> Line Pre-level control
> Adjustable Five Band equalizer
> Automatic Volume Correction

Line Buffer
> Fixed or Variable Gain Line level output Amplifier
> Drives Load Impedance down to 4,7K OHm

Analog Component RGB Input
> Supports 480, 576i, 720i, 480p ,576p, 720p, 1080i
> Supports YPbPr,YUV

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4. Connectors

4.1 External DC Power supply input

Optional External DC power supply Input CN7 Connector IDC straight RM2.54			
	Pin	**Name**	**Description**
0 0 0 0	1 2 3 4	GND VIN DC VIN DC GND	Power Ground Optional additional DC-Power for Amplifier should only used for 8Ohm Speakers ***Note 1*** Power Ground

Note 1: Range 13V DC up to max. 24V DC

4.2 Power Amp output

Power amp output CN8 Connector: right angle RM5.08 (match with Phoenix MSTB 2.5/4-ST-5.08)			
	Pin	**Name**	**Description**
0 0 0 0	1 2 3 4	Left + Left - Right - Right +	Positive output for left channel Negative output for left channel Negative output for right channel Positive output for right channel

4.3 Line out L/R

Line Output L/R CN5/6 Connector: RCA jack right angle (match with RCA cinch plug) output impedance 47OHM AC coupling 2VRMS			
	Pin	**Name**	**Description**
0 0	1 2	SIGNAL GND	Inner contact: Signal Left =White / Right=Red Outer contact : Ground

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4.4 Line in L/R

Line Input L/R CN1/2 and CN3/4 Connector: RCA jack right angle (match with RCA cinch plug) Input impedance 47kOHM//390pf/ 2VRMS			
	Pin	**Name**	**Description**
0 **0**	**1** **2**	SIGNAL GND	Inner contact: Signal Left =White / Right=Red Outer contact : Ground

4.5 Analog Component/RGB Input

Analog component RGB Input CN400/401/402 Connector: RCA jack right angle (match with RCA cinch plug)			
	Pin	**Name**	**Description**
0 **0**	**1** **2**	SIGNAL GND	Analog Input Y Inner contact : Signal Green Outer contact : Ground
	Pin	**Name**	**Description**
0 **0**	**1** **2**	SIGNAL GND	Analog Input Pb Inner contact: Signal Blue Outer contact : Ground
	Pin	**Name**	**Description**
0 **0**	**1** **2**	SIGNAL GND	Analog Input Pr Inner contact : Signal Red Outer contact : Ground

4.6 TV Tuner Input

TV Tuner Input Connector: IEC male			
	Pin	**Name**	**Description**
0 **0**	**1** **2**	SIGNAL GND	Inner contact : Signal Outer contact : Ground

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4.7 FM Radio Input

FM Radio Input Connector: IEC female			
	Pin	**Name**	**Description**
0 **0**	**1** **2**	SIGNAL GND	Inner contact : Signal Outer contact : Ground

4.8 Main aFLAT Interface connector

Main aFLAT Interface Connector CN200
Connector: Triple Row Header, right angle 2mm Pitch Only allowed to connect to an aFLAT Controller, for example aFLAT-7

4.9 Internal test connector

Connector CN201
Connector double Row 2.54mm, 10 Contacts, Gold plated Case/Size : Straight, Through Hole Only for Internal use

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5. On Screen Display

With the OSD (On Screen Display) you can modify the settings and control the special features of the CRT*to*LCD-7. 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 menu point, simply use the button "UP" or "DOWN" to move the cursor to the menu point you want and press the button "OSD". To get back to the previous menu point press the "CONFIRM" button.

To select a function, simply use "OSD"-button to select the field.
Use "UP" or "DOWN" to select a value for that field. With the "CONFIRM" button you can exit the current function.

5.1 Main Menue

The OSD always starts with the "Main Menu"-screen.



figure 1: Main Menu

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5.2 Input Select

In the “Input Select” menu the sources for the “Main Picture Channel” and for the “PIP” (picture in picture) can be selected.

5.2.1 Input Select - Main Picture Channel



figure 2: Input Select - Main Picture Channel

For the “Main Picture Channel” every possible input source can be selected (VGA, Component, DVI, S-Video, Composite Video, Tuner).

5.2.2 Input Select - Scan Inputs



figure 3: Input Select - Scan Inputs

When “Scan inputs” is switched on the system is continously monitoring all inputs for input signals. The “Main Picture Channel” will be switched to the input that is active at first.

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5.2.3 Input Select - PIP Mode



figure 4: Input Select - PIP Mode

When the “PIP Mode” is activated all options for the “PIP” are available in the menu. There are 2 possible settings for the “PIP”. When the “Picture in Picture”-Mode is selected the “PIP”-video signal will be shown in a window. When “Side by Side” is selected the “Main Picture Channel” and the “PIP Channel” are shown side by side in the same fixed size.

5.2.4 Input Select - PIP Channel



figure 5: Input Select - PIP Channel

For the “PIP Channel” any video source, except the video source that is selected for the “Main Picture Channel”, can be selected.

5.2.5 Input Select - PIP Size



figure 6: Input Select - PIP Size

Three different window sizes for the “PIP Mode” can be selected (small, medium and large).

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5.2.6 Input Select - PIP hor. Position



The horizontal position of the "PIP" can be set from 0 (left margin) to 100 (right margin).

figure 7: Input Select - PIP hor. Position

5.2.7 Input Select - PIP ver. Position



The vertical position of the "PIP" can be set from 0 (upper margin) to 100 (bottom margin).

figure 8: Input Select - PIP ver. Position

5.2.8 Input Select - Swap Main & PIP



By pressing "Swap Main & PIP" the input signals for the "Main Picture Channel" and the "PIP Channel" are switched.

figure 9: Input Select - Swap Main & PIP

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5.3 Image Adjustments

In this section several adjustments of the image position and timing for the “Main Picture Channel”can be made. The settings made in this section don´t affect the “PIP”.

5.3.1 Image Adjustments - Auto Adjust



When the “Auto Adjust” function is selected the system tries to adjust the image (clock, phase, bandwith and position) automatically.

figure 10: Image Adjustments - Auto Adjust

5.3.2 Image Adjustments - Clock



The pixel clock for the “Main Picture Channel” is set here.

figure 11: Image Adjustments - Clock

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5.3.3 Image Adjustments - Phase



The phase of the display can be set for the “Main Picture Channel” here.

figure 12: Image Adjustments -Phase

5.3.4 Image Adjustments - Bandwith



The bandwith of the display can be set for the “Main Picture Channel” here.

figure 13: Image Adjustments -Bandwith

5.3.5 Image Adjustments - Hor. Position



The “horizontal Position” of the picture can be set for the “Main Picture Channel” here.

figure 14: Image Adjustments –Hor. Position

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5.3.6 Image Adjustments - Ver. Position



The “vertical Position” of the picture can be set for the “Main Picture Channel” here.

figure 15: Image Adjustments –Ver. Position

5.4 Color Adjustment

In this section the color of the picture can be optimized for the “Main Picture Channel”. The settings made in this section don´t affect the “PIP”

5.4.1 Color Adjustment – Brightness



The “Brightness” can be set from 0 (dark) to 100 (light) for the “Main Picture Channel”. The default value is 50.

figure 16: Color Adjustment - Brightness

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5.4.2 Color Adjustment – Contrast



The contrast level for the "Main Picture Channel" is set here. The range of adjustment is 0 (very low contrast) to 100 (very high contrast). The default vaule is 50.

figure 17: Color Adjustment - Contrast

5.4.3 Color Adjustment – Saturation



The color saturation level for the "Main Picture Channel" is set here. The range of adjustment is 0 (low color saturation) to 100 (high color saturation). The dafault vaule is 50.

figure 18: Color Adjustment -Saturation

5.4.4 Color Adjustment – Hue



The hue level for the "Main Picture Channel" is set here. The range of adjustment is 0-100. The default vaule is 50.

figure 19: Color Adjustment - Hue

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5.4.5 Color Adjustment – Fleshtone



The “Fleshtone” for the “Main Picture Channel” can be selected here. The range of adjustment is 0 to 3. The dafault vaule is 0.

figure 20: Color Adjustment - Fleshtone

5.4.6 Color Adjustment – Backlight



The backlight brightness for the “Main Picture Channel” is set here. The range of adjustment is 0 (bright backlight) to 100 (dark backlight). The dafault vaule is 25.

figure 21: Color Adjustment - Backlight

5.4.7 Color Adjustment - Auto Color Adjust



The “Auto Color Adjust” function automatically adjusts the colors for the “Main Picture Channel”.

figure 22: Color Adjustment – Auto Color Adjustment

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5.5 Advanced Color Adjustment



The "Advanced Color Adjustment" comprises gamma, color space and the color temperature settings. The rates for the 3 fundamental colors can also be set within the "Advanced Color Adjustment"-menu. The "Advanced Color Adjustment" only effects the "Main Picture Channel".

figure 23: Color Adjustment – Advanced

5.5.1 Color Adjustment – Advanced – Gamma



The gamma correction for the "Main Picture Channel" is set here. It can be turned of (default) or set from 1.8 (bright) to 2.6 (darker) in 0.2 steps.

figure 24: Color Adjustment – Advanced - Gamma

5.5.2 Color Adjustment – Advanced –Color Space



This section is implemented to select the correct "Color Space" for the "Main Picture Channel" (RGB, YUV or YPbPr).

figure 25: Color Adjustment – Advanced – Color Space

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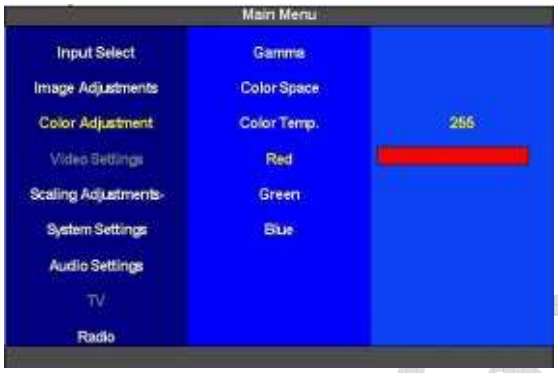
5.5.3 Color Adjustment – Advanced – Color Temp.



To adjust the "Color Temperature" 6 different values can be selected for the "Main Picture Channel"(4200K, 5000K, 5400K, 6500K, 7500K, 9300K). When the "Color Temperature" is set to "User" the color temperature is adjusted by the 3 fundamental colors.

figure 26: Color Adjustment – Advanced – Color Temp.

5.5.4 Color Adjustment – Advanced – Red



The rate of red for the "Main Picture Channel" is set here. The range of adjustment is 0 to 255. The default value is 255.

figure 27: Color Adjustment – Advanced - Red

5.5.5 Color Adjustment – Advanced – Green



The rate of green for the "Main Picture Channel" is set here. The range of adjustment is 0 to 255. The default value is 255.

figure 28: Color Adjustment – Advanced - Green

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5.5.6 Color Adjustment – Advanced – Blue



The rate of red for the "Main Picture Channel" is set here. The range of adjustment is 0 to 255. The default value is 255.

figure 29: Color Adjustment – Advanced - Blue

5.6 Video Settings

The "Video Settings" are available when a video source is selected as "Main Picture Channel" (S-Video, Composite Video or TV-Tuner).

5.6.1 Video Settings – Motion Processing



The type of "Motion Processing" is defined here. When "Motion Processing" is set to 0 it is switched off. The default value is 3.

figure 30: Video Settings – Motion Processing

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5.6.2 Video Settings – Sharpness



The “Sharpness” of the video signal is set here. The range of adjustment is -15 to 29. The dafault vaule is 0.

figure 31: Video Settings – Sharpness

5.6.3 Video Settings – Film Mode



The “Film Mode” can be switched on or off here. As dafault the film mode is turned on.

figure 32: Video Settings – Film Mode

5.6.4 Video Settings – Noise Reduction



The level of “Noise Reduction” is set here. The range of adjustment is 0 to 6. The default value is 2.

figure 33: Video Settings – Noise Reduction

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5.6.5 Video Settings – Mpeg Processing



The level for the "Mpeg Processing" is set here. The range of adjustment is 0 to 15. The default vaulue is 0.

figure 34: Video Settings – Mpeg Processing

5.7 Video Settings – Decoder Settings



In this section several settings for the "Video Decoder" can be set.

figure 35: Video Settings – Decoder Settings

5.7.1 Decoder Settings – Video Brightness



The level for the "Video Brightness" is set here. The range of adjustment is 0 to 100. The default value is 50.

figure 36: Decoder Settings – Video Brightness

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5.7.2 Decoder Settings – Video Contrast



The level for the "Video Contrast" is set here. The range of adjustment is 0 to 100. The default value is 50.

figure 37: Decoder Settings – Video Contrast

5.7.3 Decoder Settings – Video Saturation



The level for the "Video Saturation" is set here. The range of adjustment is 0 to 100. The default value is 50.

figure 38: Decoder Settings – Video Saturation

5.7.4 Decoder Settings – Video Hue



The level for the "Video Hue" is set here. The range of adjustment is 0 to 100. The default value is 50

figure 39: Decoder Settings – Video Hue

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5.7.5 Decoder Settings – Video Sharpness



The level for the "Video Sharpness" is set here. The range of adjustment is 0 to 7. The default vaulue is 0.

figure 40: Decoder Settings – Video Sharpness

5.8 Video Settings – CRTtoLCD7 multimedia

5.8.1 Video Settings – Motion Processing (CRTtoLCD7 multimedia)



The "Motion Processing" mode is set here. The user has the choice between "Full Motion Processing", "Adaptive Motion Processing" or "No Motion Processing". As default the "Motion Processing" is turned to "Adaptive Motion Processing".

figure 41: Video Settings – Motion Processing (CRTtoLCD7 multimedia)

5.8.2 Video Settings – Film Mode (CRTtoLCD7 multimedia)



The "Film Mode" is set here. The "Film Mode" can be switched on or off here. As default the Film Mode is turned off.

figure 42: Video Settings – Film Mode (CRTtoLCD7 multimedia)

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5.8.3 Video Settings – Enhancer (CRTtoLCD7 multimedia)



The “Enhancer” is configured here. It can be switched either on or off. As default the “Enhancer” is turned on.

figure 43: Video Settings – Enhancer (CRTtoLCD7 multimedia)

5.8.4 Video Settings – Sharpness (CRTtoLCD7 multimedia)



The level for the “Sharpness” is set here. The range of adjustment is 0 to 50. The default value is 20.

figure 44: Video Settings – Sharpness (CRTtoLCD7 multimedia)

5.8.5 Video Settings – Cross Color (CRTtoLCD7 multimedia)



The “Cross Color” is set here. It can be switched on or off. As default “Cross Color” is turned on.

figure 45: Video Settings – Cross Color (CRTtoLCD7 multimedia)

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5.8.6 Video Settings – Noise Reduction (CRTtoLCD7 multimedia)



The level for the "Noise Reduction" is set here. Three different levels of "Noise Reduction" can be selected (Low, Medium, High) or it can be set to automatic "Noise Reduction". The default value is "Auto".

figure 46: Video Settings – Noise Reduction (CRTtoLCD7 multimedia)

5.8.7 Video Settings – Decoder Settings (CRTtoLCD7 multimedia)

The "Decoder Settings" for the multimadia version of the CRTtoLCD7 are the same as shown in chapter 5.7.

5.8.8 Video Settings – Ext. Deinterlacer (CRTtoLCD7 multimedia)



The "External Deinterlacer" is set here. It can be switched either on or off. As default the "External Deinterlacer" is turned "On".

figure 47: Video Settings – Ext. Deinterlacer (CRTtoLCD7 multimedia)

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5.9 Scaling Adjustment

In this section the picture of the "Main Picture Channel" can be scaled.

5.9.1 Scaling Adjustment – Scaling Mode



The "Scaling Mode" for the "Main Picture Channel" is set here. As default the "Main Picture Channel" is set to "Expand". There are three more possible settings for the "Main Picture Channel". The picture can be set to "Strech", "Aspect" or "1:1".

figure 48: Scaling Adjustment – Scaling Mode

5.9.2 Scaling Adjustment – Picture Flip



In this section the picture of the "Main Picture Channel" can be mirrored horizontal or vertical.

figure 49: Scaling Adjustment – Picture Flip

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5.9.3 Scaling Adjustment – Zoom



In this section the “Zoom” for the picture of the “Main Picture Channel” is set. The level of adjustment is 0 to 302. The dafault value is 0 (no zoom).

figure 50: Scaling Adjustment – Zoom

5.9.4 Scaling Adjustment – Hor. Pan



In this section the “Horizontal Pan” (position of the display detail) is set. The level of adjustment depends on the selected zoom level. The default “Horizontal Pan” is 0. When “Zoom” is set to 0 the position of the picture can not be changed here.

figure 51: Scaling Adjustment – Hor. Pan

5.9.5 Scaling Adjustment – Ver. Pan



In this section the “Vertical Pan” (position of the display detail) is set. The level of adjustment depends on the selected zoom level. The default “Vertical Pan is 0. When “Zoom” is set to 0 the position of the picture can not be changed here.

figure 52: Scaling Adjustment – Ver. Pan

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5.10 System Settings

In this section some general settings for the OSD can be set.

5.10.1 System Settings – OSD Timeout



The "OSD Timeout" is set in this section. The default value for the timout is 30 seconds. The level of adjustment is 0 to 60 seconds in 5 second steps. 0 seconds stands for an infinite value. The OSD won´t be switched of when 0 is selected here.

figure 53: System Settings – OSD Timeout

5.10.2 System Settings – OSD Hor. Pos.



In this section the "Horizontal Position" of the OSD is set. The level of adjustment is 0 (left margin) to 100 (right margin). The default value is 0 (center of the Display).

figure 54: System Settings – OSD Hor. Pos.

5.10.3 System Settings – OSD Ver. Pos.



In this section the vertical position of the OSD is set. The level of adjustment is 0 (upper margin) to 100 (bottom margin). The default value is 0 (center of the Display).

figure 55: System Settings – OSD Ver. Pos.

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5.10.4 System Settings – OSD Blend



In this section the level of transperency of the OSD is set. The level of adjustment is 0 (solid OSD) to 15 (clear OSD). The default value for the "OSD Blend" is 3.

figure 56: System Settings – OSD Blend

5.10.5 System Settings – OSD Orientation



In this section the "OSD Orientation" can be modified. There are three different modes for the orientation of the OSD. It can be rotated by 90°, mirrored horizontal or mirrored vertical.

figure 57: System Settings – OSD Orientation

5.10.6 System Settings – OSD Language

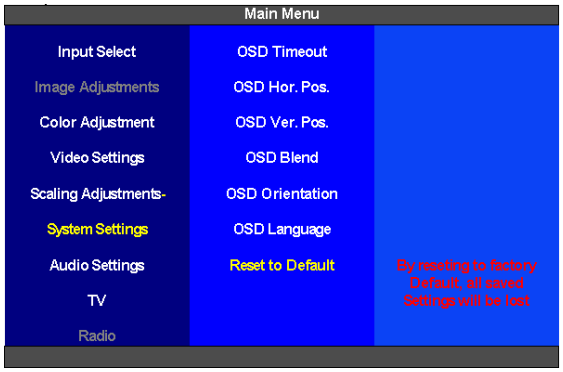


The language of the OSD is set here. By default the language is set to English.

figure 58: System Settings – OSD Language

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5.10.7 System Settings – Reset to Default



In this section the OSD can be resetted to factory defaults.

figure 59: System Settings – Reset to Default

5.11 Audio Settings

Several audio settings for the TvtoLCD can be set in this section.

5.11.1 Volume



The “Volume” can be set from 0 to 30. The default setting is 10.

figure 60: Audio Settings - Volume

5.11.2 Balance



The “Balance” for the audio output is set in this section. The balance can be set from -120 (left) to +120 (right). The default value is 0 (center).

figure 61: Audio Settings - Balance

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5.11.3 Surround



The surround mode is selected in this section. As defalut the surround mode is turned off. There are two different possible surround modes (normal and spatial).

figure 62: Audio Settings - Surround

5.11.4 Loudness



The level of “Loudness” is set in this section. The loudness can be set from 0 (default) to 68 (+17dB).

figure 63: Audio Settings - Loudness

5.11.5 Pseudo Stereo



In this section the “Pseudo Stereo” effect can be set from -120 to +120. The default value for “Pseudo Stereo” is 0 (Pseudo Stereo turned off).

figure 64: Audio Settings – Pseudo Stereo

preliminary

5.11.6 Mode



In this section three different audio modes can be selected. The user can choose between “Mono”, “Stereo” and “SAP” (second audio source). By default the audio mode is set to “Stereo”.

figure 65: Audio Settings - Mode

5.11.7 Equalizer



In this section the “Equalizer” can be set up. The quota of the different frequencies can be defined here. By default all values are set to a medium level.

figure 66: Audio Settings - Equalizer

Preliminary

5.12 TV

Several settings for the TV-Tuner can be set in this section.

5.12.1 TV - Program



In the “Program” section the user can switch between all saved programs.

figure 67: TV – Program

5.12.2 TV - Channel



In this section the channels can be scanned manually. When a channel needs to be saved as a program it can be added to the list of saved programs by selecting favourites (see chapter 5.12.6).

figure 68: TV - Channel

Preliminary

5.12.3 TV - Frequency



In this section the "Frequency" can be scanned manually. When a "Frequency" needs to be saved it can be added to the list of saved programs by selecting "Favourites" (see chapter 5.12.6)

figure 69: TV - Frequency

5.12.4 TV - System



In this section the different PAL norms are selected. By default the system is set to PAL B/G.

Systems with a NTSC TV-tuner are set to NTSC-M by default.

figure 70: TV - System

5.12.5 TV - Scan Channel



In the "Scan Channel" section the user can choose wether to find the previous or the next channel that has a signal on it.

figure 71: TV – Scan Channel

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5.12.6 TV – Favorites



In the "Favourites" section the user can add new programs to the programlist or update the list of favourite programs with all recently found stations. The favourite programs list can also be edited (see chapter 5.12.7).

figure 72: TV – Favorite Edit Menu

5.12.7 TV – Favorite Edit Menu



In the "Favourite Edit Menu" the programs can be rearranged, deleted or renamed.

figure 73: TV – Favorite Edit Menu

5.12.8 TV - Auto install



In this section an "Auto Install" can be started. All found TV-stations will be saved to the favourites list.

figure 74: TV – Auto Install

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5.13 Radio

In this section the radio can be set up. When the TV-Tuner is activated the radio settings are not available.



In this menu the radio can be turned on or off. When the radio is activated the TV-Tuner settings are not available.

figure 75: Radio

5.13.1 Radio - Station



In the “Station” section the saved radio-stations can be selected.

figure 76: Radio - Station

5.13.2 Radio - Frequency



In the “Frequency” section the frequency can be scanned manually for radio-stations.

figure 77: Radio - Frequency

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5.13.3 Radio - Scan Station



In the “Scan Station” section the user can scan either for the next or for the previous radio-station automatically.

figure 78: Radio – Scan Station

5.13.4 Radio - Save Station



In this section the radio-stations can be saved so they are available in the “Station” menu (see chapter 5.13.1).

figure 79: Radio – Save Station

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6. Technical Specifications

- Supply voltage at 25˚C :

Typical supply voltage Board : + 12V DC
Minimum external supply voltage Power amp : + 12,5V DC
Maximum external supply voltage Power amp : + 24V DC

- Typical Audio only current at 25˚C : standby
@12V : 150mA

- Typical Audio/Tuner current at 25˚C : standby
@12V : 400mA

- Typical current Audio/Component at 25°C: standby
@12V : 180mA

- The maximum current depends on the Power amp load Impedance, and may vary up to 4Amp.

- Temperature : operating : 0˚ C – 60˚ C (*1)

NON OPERATING : - 10˚ C – 85˚ C

(*1) The maximum operating temperature is the maximum measurable temperature on any spot on the module surface. It is the user responsibility to keep this temperature within the above specification.

- Relative Humidity : operating : TBD
non operating : TBD

- Mechanical : Shock : TBD
Vibration : TBD

- Dimensions of the module :

Width : 145 mm
Length : 114.3mm
Height : 20mm

Note : The dimension of the module may vary depending on P/N or change if cable, Adapter or Keypad plugged in! Highest Part :Tuner module

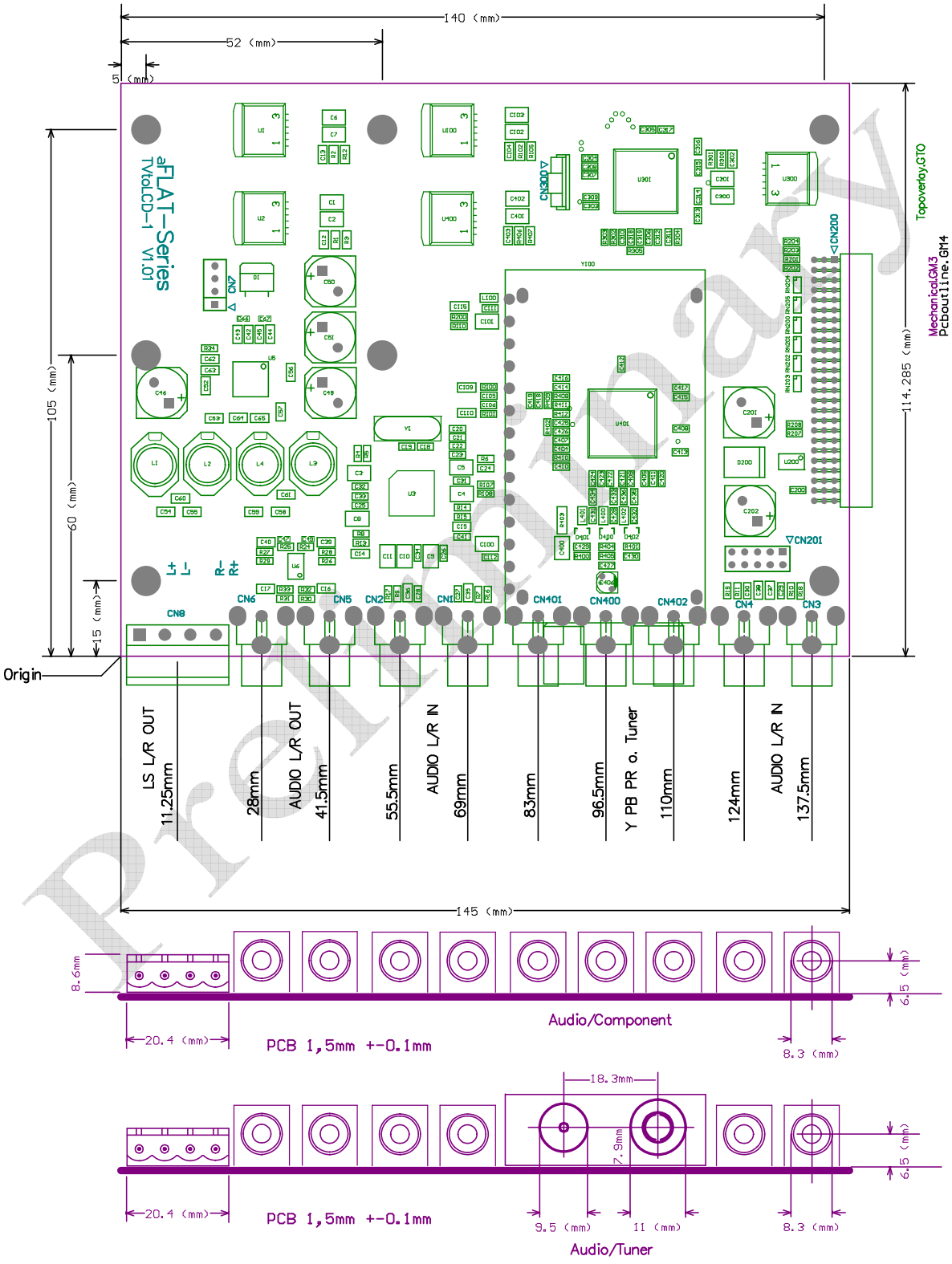
7. Supported Video Modes

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 Flat Panel Editor, available on request, to

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add this special mode to the supported mode table. A list of tested video modes can be found in the CRTtoLCD7 manual.

8. Layout / Schematics



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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 in use (for example: WinXP with driver XYZ)
Exact description of the error.

10. Revision History

Date	Author	Version	Description
20.09.2006	L.Trotter	1.0	Initial Release
02.02.2007	M.Hagemann	1.1	Added Description of OnScreenDisplay (OSD)

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