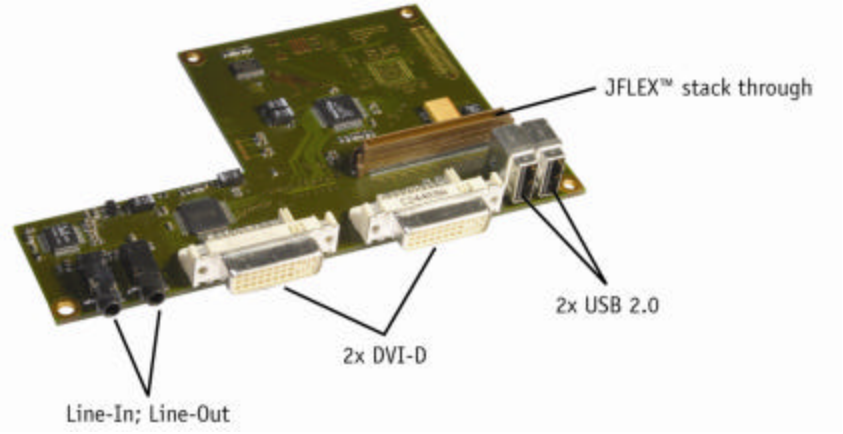


JFLEX-DUALDVI User's Guide

Document Revision 0.1

PRELIMINARY

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1. USER INFORMATION

1.1 About This Manual

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For the circuits, descriptions and tables indicated, Kontron assumes no responsibility as far as patents or other rights of third parties are concerned.

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- Microsoft is a registered trademark of Microsoft Corp.
- Intel is a registered trademark of Intel Corp.
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1.4 Standards

Kontron Embedded Modules is certified to ISO 9000 standards.

1.5 Warranty

This Kontron Embedded Modules product is warranted against defects in material and workmanship for the warranty period from the date of shipment. During the warranty period, Kontron Embedded Modules will at its discretion decide to repair or replace defective products.

Within the warranty period, the repair of products is free of charge as long as warranty conditions are observed.

The warranty does not apply to defects resulting from improper or inadequate maintenance or handling by the buyer, unauthorized modification or misuse, operation outside of the product's environmental specifications or improper installation or maintenance.

Kontron Embedded Modules will not be responsible for any defects or damages to other products not supplied by Kontron Embedded Modules that are caused by a faulty Kontron Embedded Modules product.

1.6 *Technical Support*

Technicians and engineers from Kontron Embedded Modules and/or its subsidiaries are available for technical support. We are committed to making our product easy to use and will help you use our products in your systems.

Before contacting Kontron Embedded Modules technical support, please consult our Web site at http://www.kontron-em.com/index-en.html for the latest product documentation, utilities, and drivers. If the information does not help solve the problem, contact us by telephone.

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2. INTRODUCTIONS

2.1 *JFLEX-DUALDVI*

The JFLEX-DUALDVI is an extension for Kontrons JRex 3,5'' SBC family.

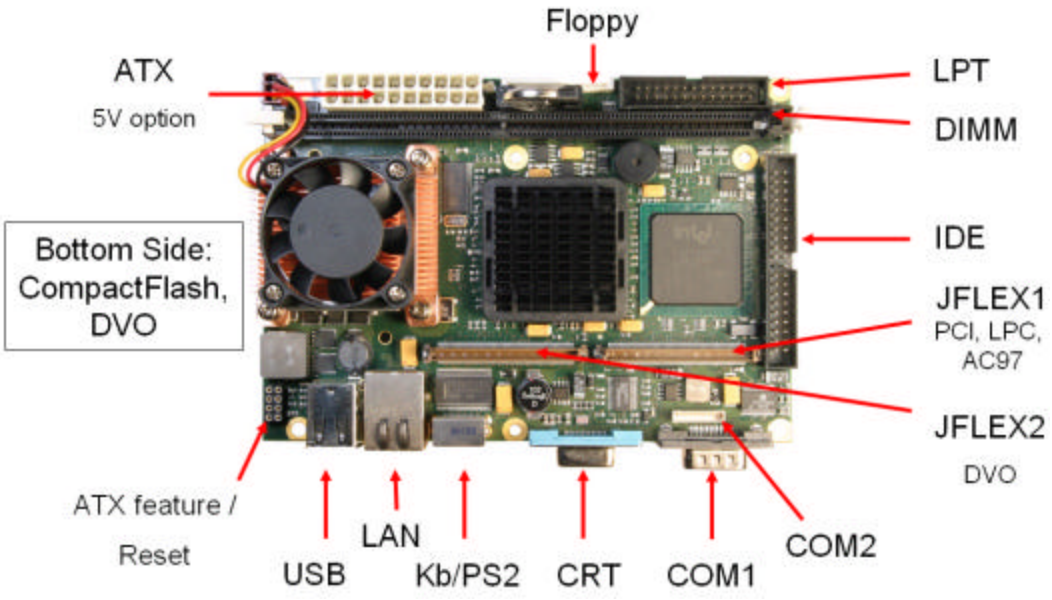
Following features are provided by the JFLEX-DUALDVI:

- One Realtek ALC650 sound controller compatible to Intel® Audio Codec ´97 Rev. 2.2
  Input connectors: Line, CD-ROM (internal)
  Output connectors: Line
- DVI digital
- USB connector

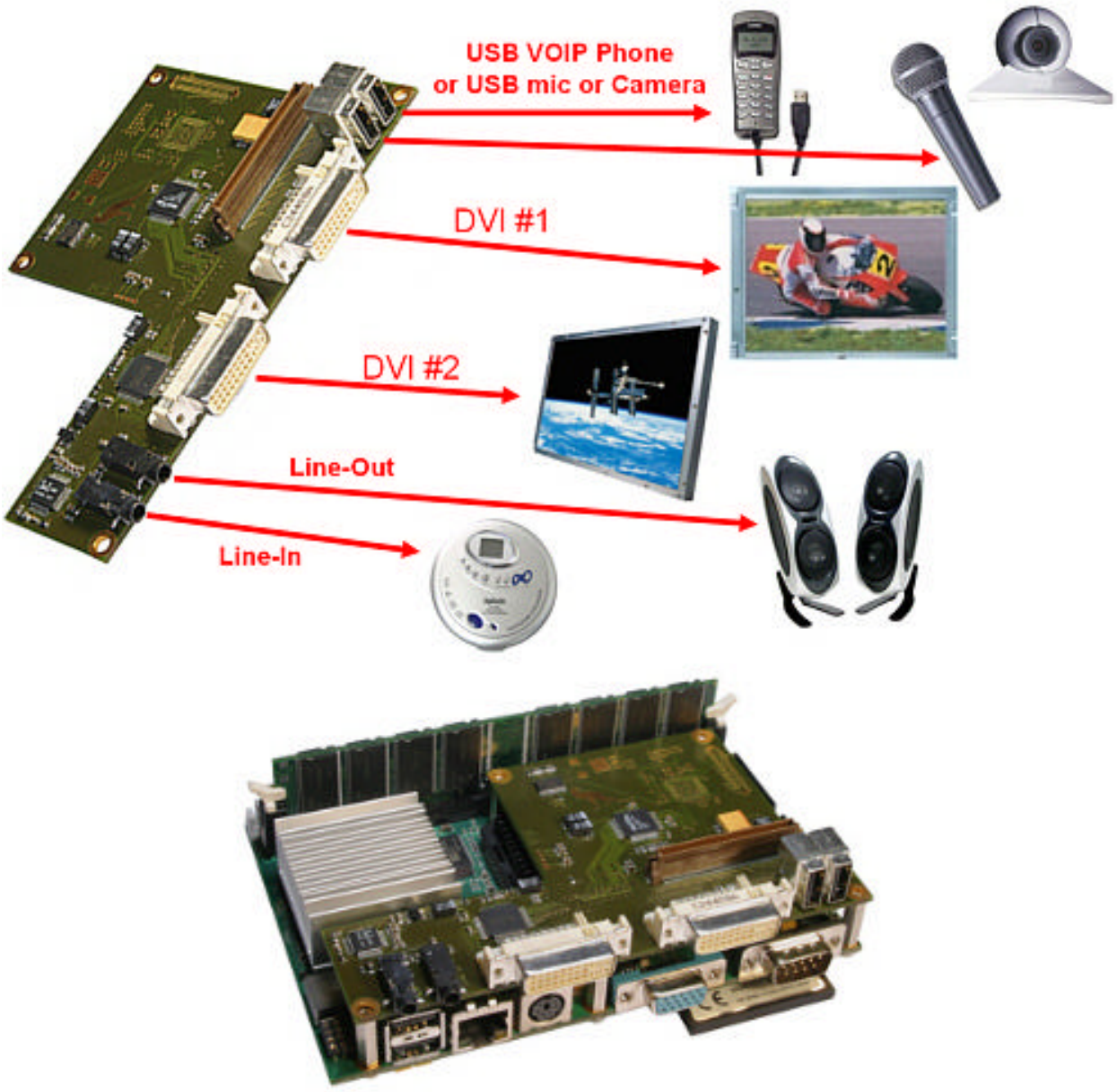
The JFLEX-DUALDVI is supported by the following Board:

***JRex –PM**, a 3.5" sized Single Board Computer with Intel Pentium M processors.*

http://emea.kontron.com/index.php?id=226&cat=58&productid=241



The assembled JRex-PM and JFLEX-DUALDVI module looks like this and allows these connections:

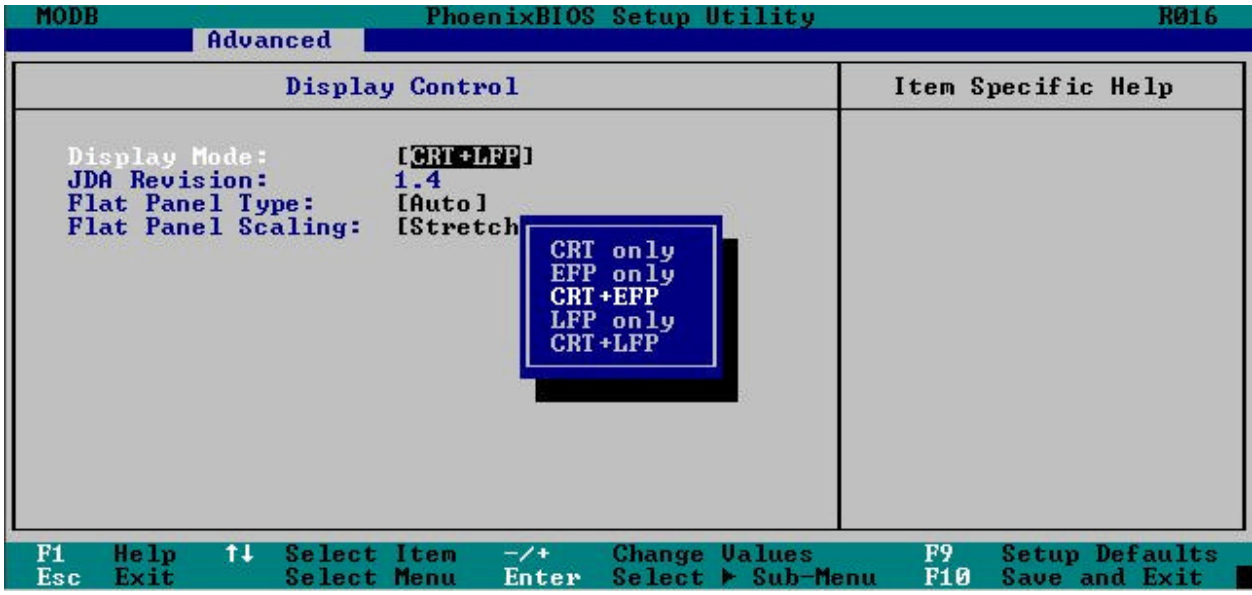


3. SPECIFICATION

3.1 *JFLEX-DUALDVI with Silicon Image SIL164 and Texas Instruments TFP410*

- The JFLEX-DUALDVI supports DVI resolutions from VGA to SXGA@60Hz
- Programmable by Using the I2C Serial Interface
- To activate the JFLEX-DUALDVI please enable in the Phoenix Bios Setup:

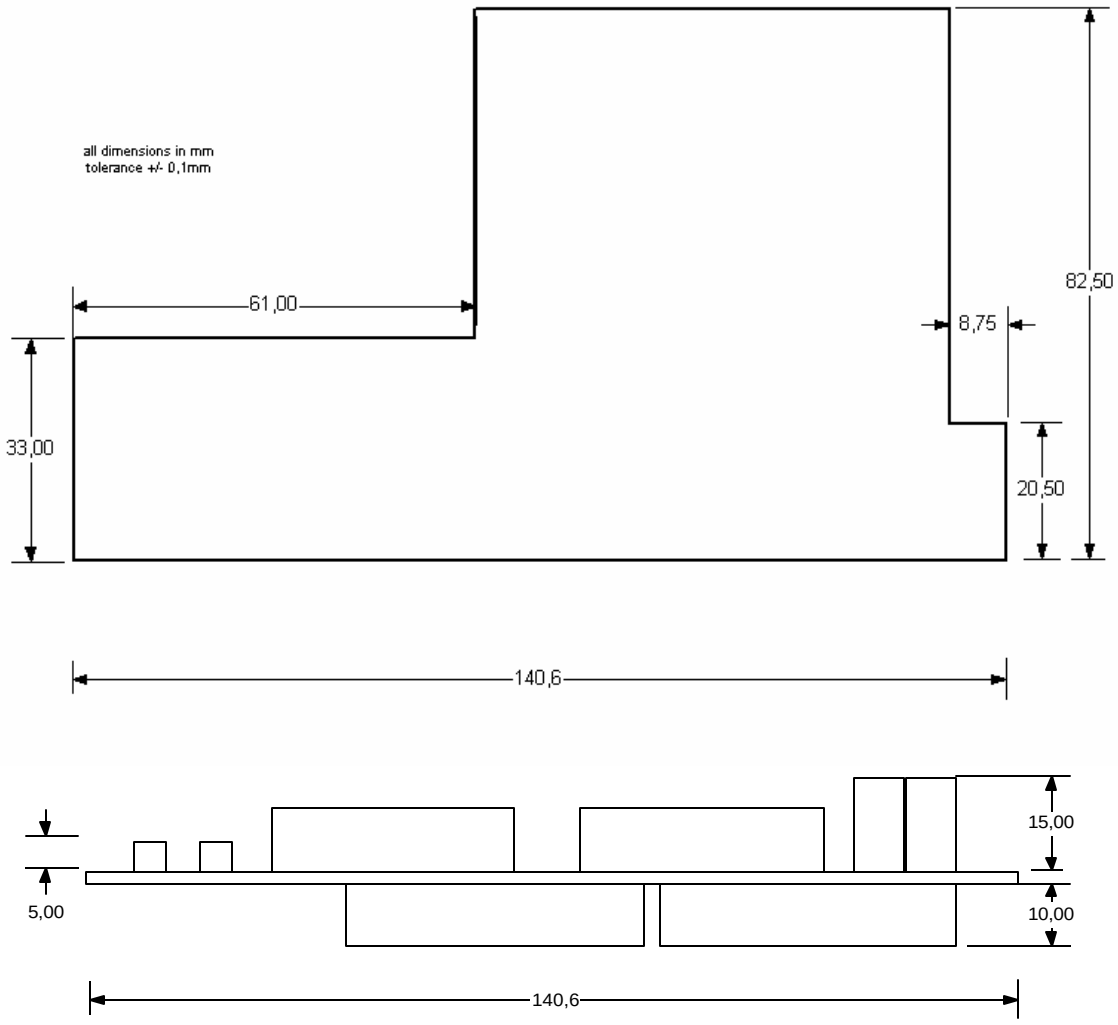
  -> **Advanced** -> **Display Control** : **EFP Only** or **CRT+EFP**



3.2 *Mechanical Specifications*

3.2.1. Dimensions

- 82.5 mm x 140.7 mm
- Height (total) approx. 15 mm



3.3 *Electrical Specifications*

3.3.1. Supply Voltage

- 5V DC +/- 5%
- 3,3V DC +/- 5%

3.3.2. Supply Voltage Ripple

- Maximum 100 mV peak to peak 0– 20 MHz

3.3.3. Supply Current

Power-consumption tests were executed during different applications conducted.

3.4 *Environmental Specifications*

3.4.1. Temperature

- Operating:
  - Ambient temperature: 0 to +60 °C
- Non-operating: -10 to +85 °C

3.4.2. Humidity

- Operating: 10% to 90% (non condensing)
- Non operating: 5% to 95% (non condensing)

4. MODULE FUNCTIONS

4.1 AC '97 Sound Controller

The JFLEX-DualDVI uses a Realtek ALC650 sound codec. The ALC650 is an 18-bit, full duplex AC'97 2.2 compatible stereo audio CODEC designed for PC multimedia systems, including host/soft audio and AMR/CNR based designs. The ALC650 incorporates proprietary converter technology to achieve a high SNR, greater than 90 dB.

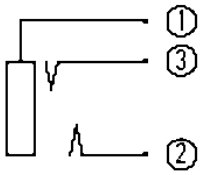
The ALC650 also supports an AC'97 2.2 compliant S/PDIF out function which allows easy connection from the PC to consumer electronic products, such as AC3 decoder/speaker and mini disk.

All major operating systems support the interface.

The ALC650 provides:

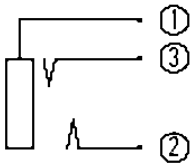
- High performance CODEC with high S/N ratio (>90 dB)
- 18-bit ADC and 20-bit DAC resolution
- Compliant with AC'97 2.2 specifications
- 18-bit stereo full-duplex CODEC with independent and variable sampling rate
- 1 analog line-level stereo input with 5-bit volume control: LINE_IN, (CD_IN is possible)
- Power management capabilities

Line-In Connector X2



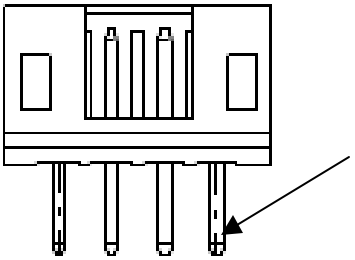
Pin	Signalname
1	GND
2	L_IN Left
3	L_IN Right

Line-Out Connector X1



Pin	Signalname
1	GND
2	L_OUT Left
3	L_OUT Right

CD-ROM Input X8



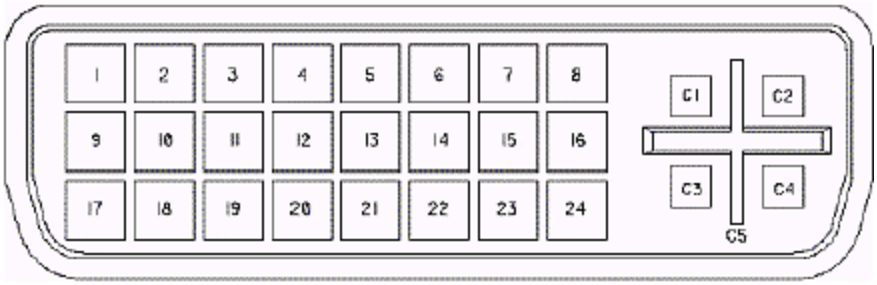
Pin	Signalname	Function
1	CD_IN Right	Audio Input Right Channel
2	NC	
3	CD_IN Left	Audio Input Left Channel
4	GND	Signal Ground

4.2 *DVI (Digital Video Interface)*

The JFLEX-DualDVI is equipped with a standard Digital Video Interface. DVI has the potential to unify the digital display industry. The DVI 1.0 specification was endorsed in April 1999 by the Digital Display Working Group (DDWG), an industry organization established by Intel. Membership consists of major PC and display manufacturers. TI is a DDWG participant.

DVI is based on Transition-Minimized Differential Signaling (T.M.D.S.), a technology that offers advantages in video data transmission. DVI adds a specific hardware interface that is compatible with older T.M.D.S.-based interfaces such as the Plug & Display (P&D) and Digital Flat Panel (DFP) standards endorsed by the Video Electronics Standards Association (VESA). DVI technology is non-proprietary to encourage the most widespread adoption.

4.3 DVI Connector X3 Pinout on JFLEX-DUALDVI



Pin	Name	Pin	Name
1	TMDS Data2-	13	Not connected
2	TMDS Data2+	14	+5 V Power
3	GND	15	GND
4	Not connected	16	Hot Plug Detect
5	Not connected	17	TMDS Data0-
6	DDC Clock [SCL]	18	TMDSData0+
7	DDC Data [SDA]	19	GND
8	Not connected	20	Not connected
9	TMDS Data1-	21	Not connected
10	TMDS Data1+	22	GND
11	GND	23	TMDS Clock +
12	Not connected	24	TMDS Clock -
C1	Not connected		
C2	Not connected		
C3	Not connected		
C4	Not connected		
C5	GND		

Legend:

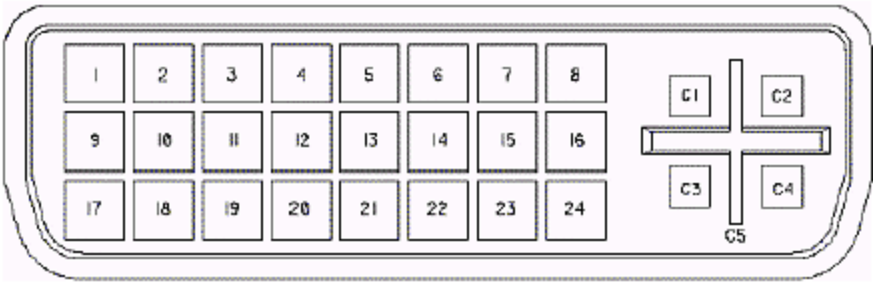
DDC = Display Data Channel

T.M.D.S. = Transition Minimized Differential Signal

Please refer to following link for detailed information about DVI specification:
http://www.ddwg.org

On VCC pins: To protect the external powerlines of peripheral devices the customer has to take care about:
that the wires have the right diameter to withstand the maximum available current
that the enclosure of the peripheral device fulfils the fire protecting requirements of IEC/EN 60950.

4.4 DVI Connector X4 Pinout on JFLEX-DUALDVI



Pin	Name	Pin	Name
1	TMDS Data2-	13	Not connected
2	TMDS Data2+	14	+5 V Power
3	GND	15	GND
4	Not connected	16	Hot Plug Detect
5	Not connected	17	TMDS Data0-
6	DDC Clock [SCL]	18	TMDSData0+
7	DDC Data [SDA]	19	GND
8	Not connected	20	Not connected
9	TMDS Data1-	21	Not connected
10	TMDS Data1+	22	GND
11	GND	23	TMDS Clock +
12	Not connected	24	TMDS Clock -
C1	Not connected		
C2	Not connected		
C3	Not connected		
C4	Not connected		
C5	GND		

Legend:

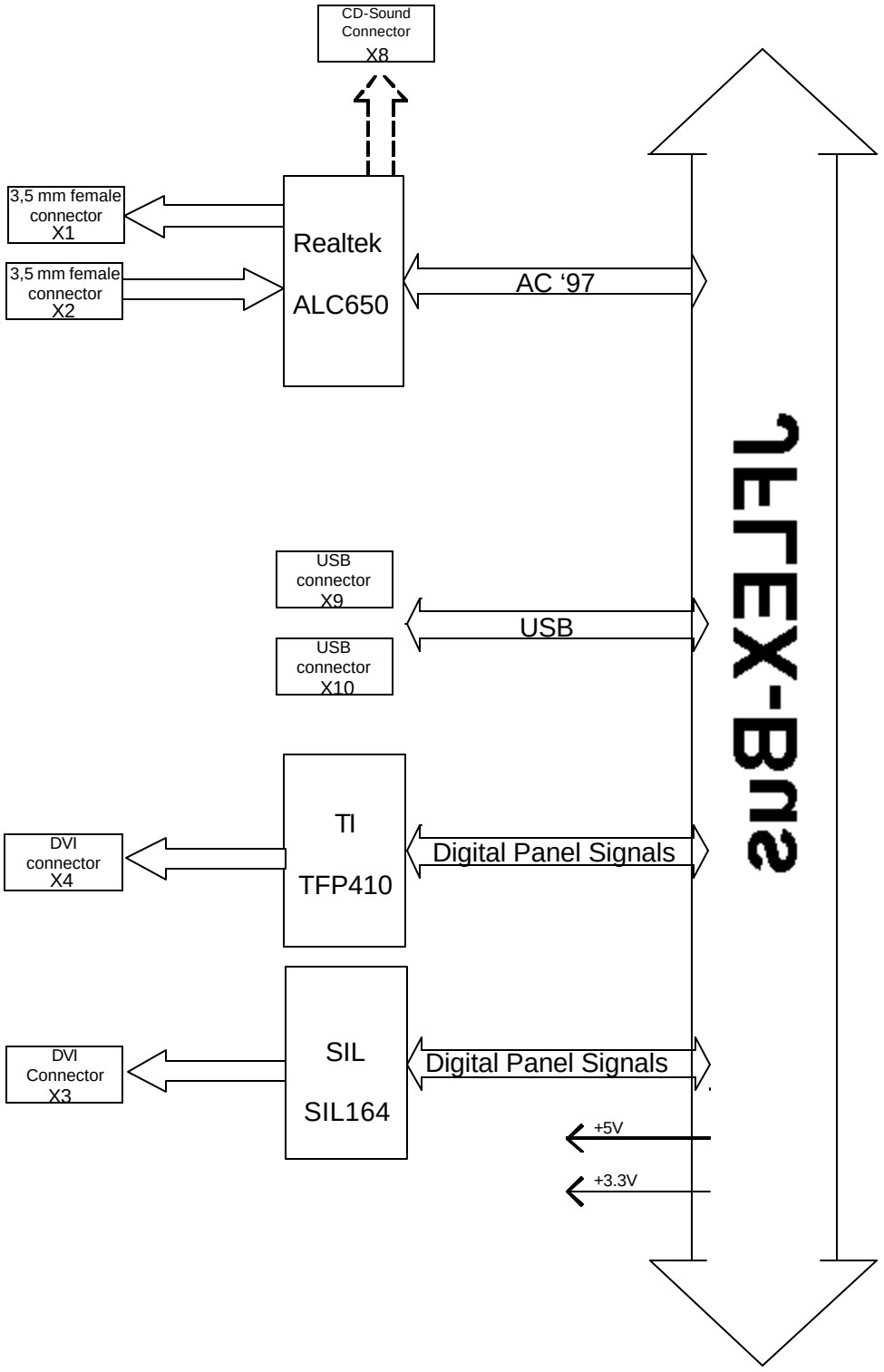
DDC = Display Data Channel

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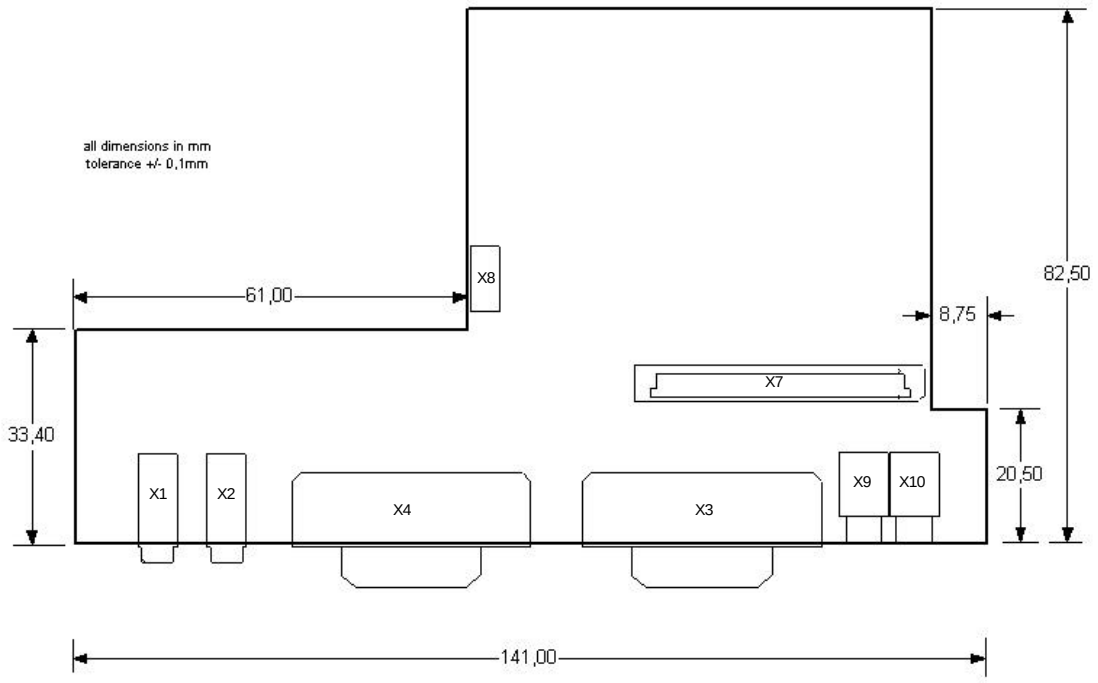
On VCC pins: To protect the external powerlines of peripheral devices the customer has to take care about:
that the wires have the right diameter to withstand the maximum available current
that the enclosure of the peripheral device fulfils the fire protecting requirements of IEC/EN 60950.

5. APPENDIX A: BLOCK DIAGRAM



6. APPENDIX B: CONNECTOR LAYOUT

6.1 *Connector Locations*



7. APPENDIX C: LITERATURE AND STANDARDS

Below is a list of information sources to help you to further understand PC architecture.

7.1 *Buses and General PC Architetcure*

7.1.1. USB

USB specification

USB Implementers Forum, Inc. is a non-profit corporation founded by the group of companies that developed the Universal Serial Bus specification. The USB-IF was formed to provide a support organization and forum for the advancement and adoption of Universal Serial Bus technology.

7.1.2. AC '97

AC '97 specification

The specification defines the Audio Codec '97 (AC '97) Architecture and Digital Interface (AC-link) specifically designed for implementing audio and modem I/O functionality in PC systems. This specification does not explicitly define the companion AC '97 Digital Controller component (sometimes referred to or abbreviated as DC '97), which typically varies in features and implementation, but is AC '97 compliant with this specification.

APPENDIX D: DOCUMENT-REVISION HISTORY

Revision	Date	Edited by	Changes
0.1	30.05.06	STC	Created preliminary manual.
0.2	08.01.2007	BOM	Updated support contact data and added product images