

➤ Kontron Starter Kit Manual



➤ ePanel-PM

Document Revision 1.1

Computer On Modules	Blades & Mezzanines	CPU Boards	Systems	Mobile Rugged	Custom Solutions
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1. User Information

1.1 About This Document

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

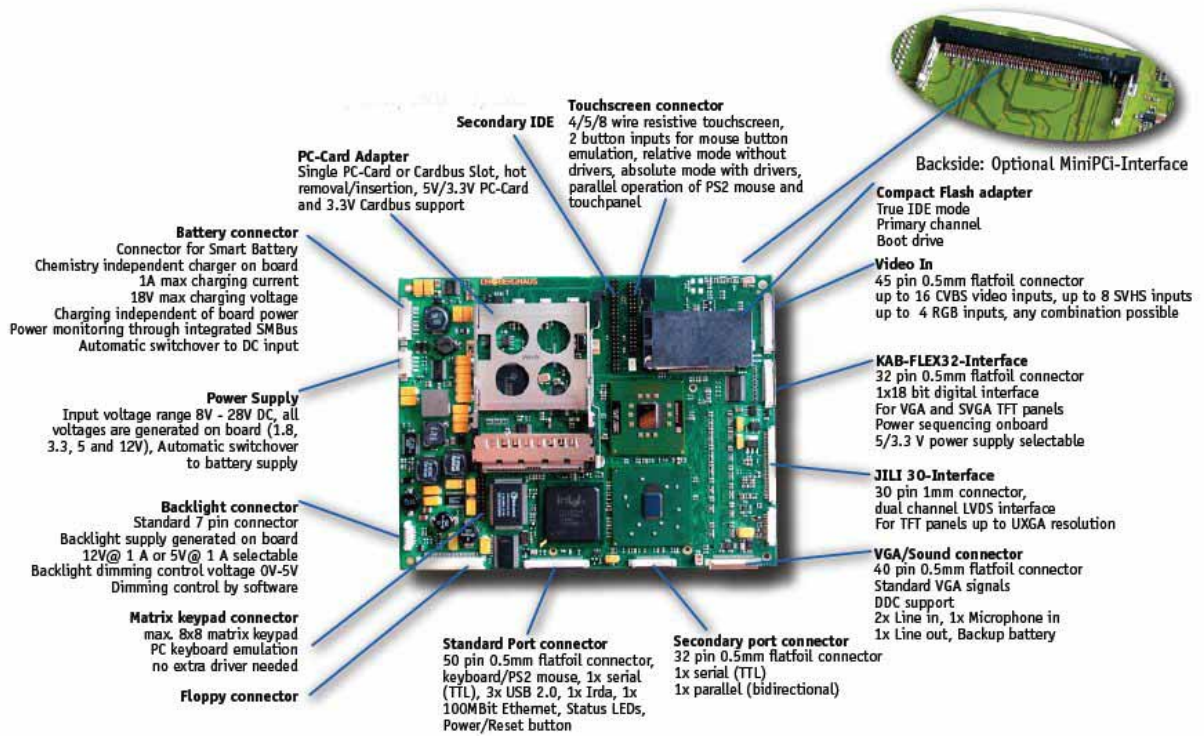
1.6 Technical Support

Technicians and engineers from Kontron Embedded Modules GmbH 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.

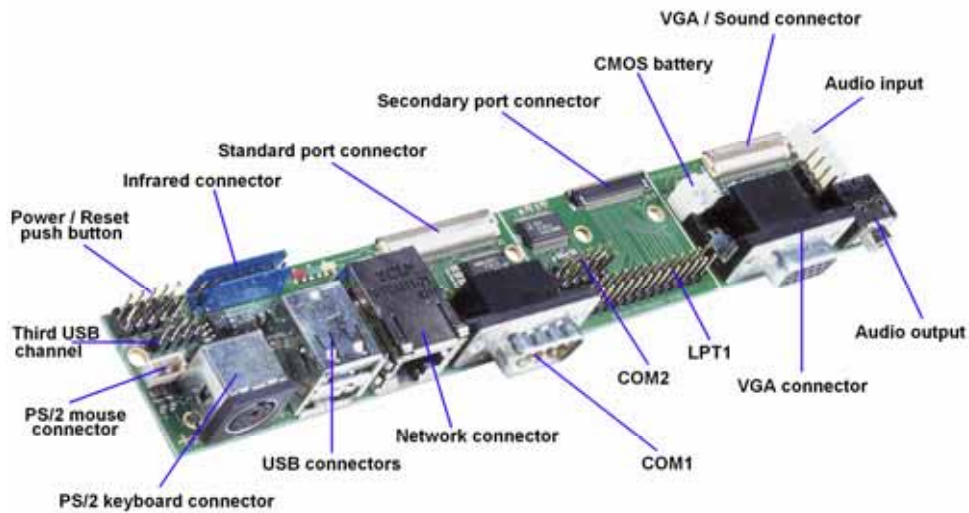
Before contacting Kontron Embedded Modules GmbH technical support, please consult our Website at <http://www.kontron-emea.com/emd> for the latest product documentation, utilities, and drivers. If the information does not help solve the problem, contact us by telephone or email.

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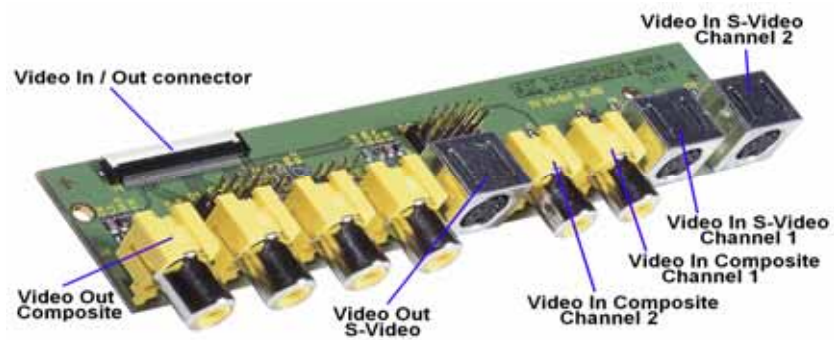
2. Components



Processor board ePanel-PM



I/O adapter



Video adapter



Memory modul

DDR SDRAM 256 MB
(module manufacturer can vary)

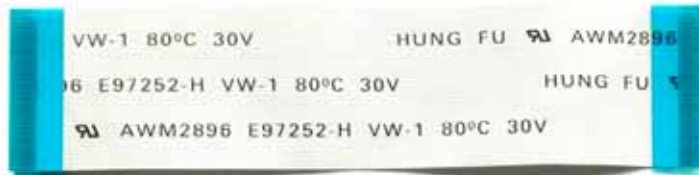


Power adapter

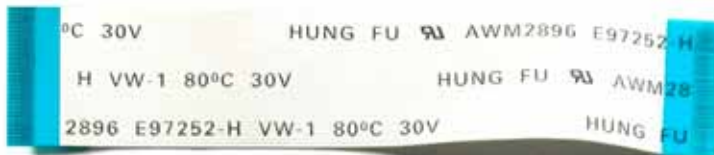
Input: 100 - 240 V
Output: 15 V / 3.3 A

**cab01:**

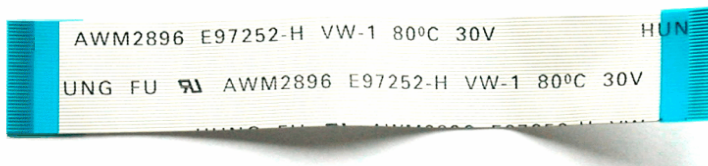
Adapter cable for power adapter

**cab02:**

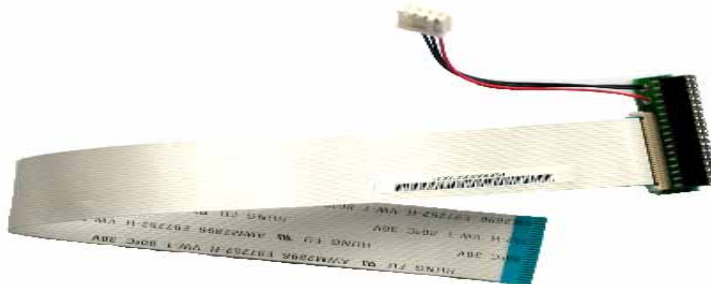
50 pin connector cable for I/O adapter (PS/2 interface, USB, network among other things)

**cab03:**

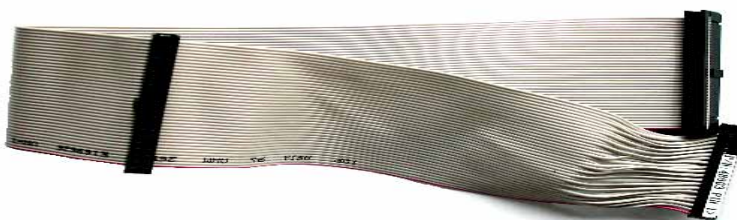
40 pin connector cable for I/O adapter (VGA, Audio interface)

**cab04:**

32 pin connector cable for I/O adapter (COM2 / LPT1)

**cab05:**

Connector cable for floppy drive

**cab06:**

40 pin connector cable for IDE components

**cab07:**

16 pin connector cable for a touch panel

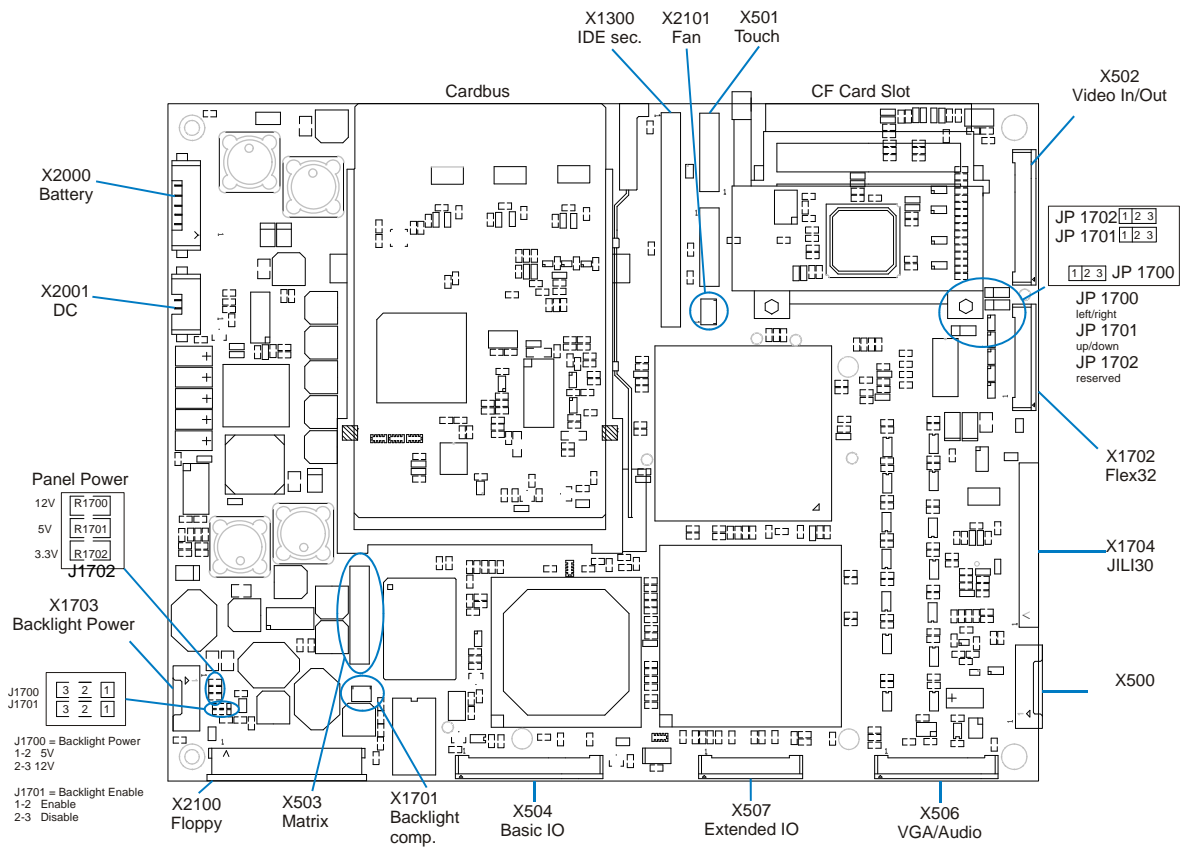
**cab08:**

20 pin connector cable for a matrix keyboard

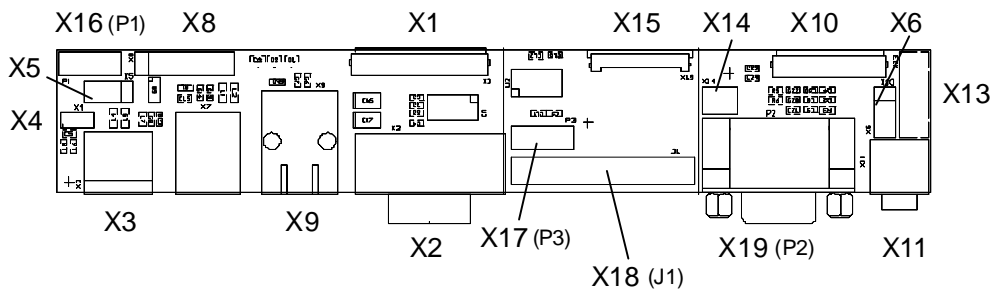
**cab09:**

45 pin connector cable to video adapter

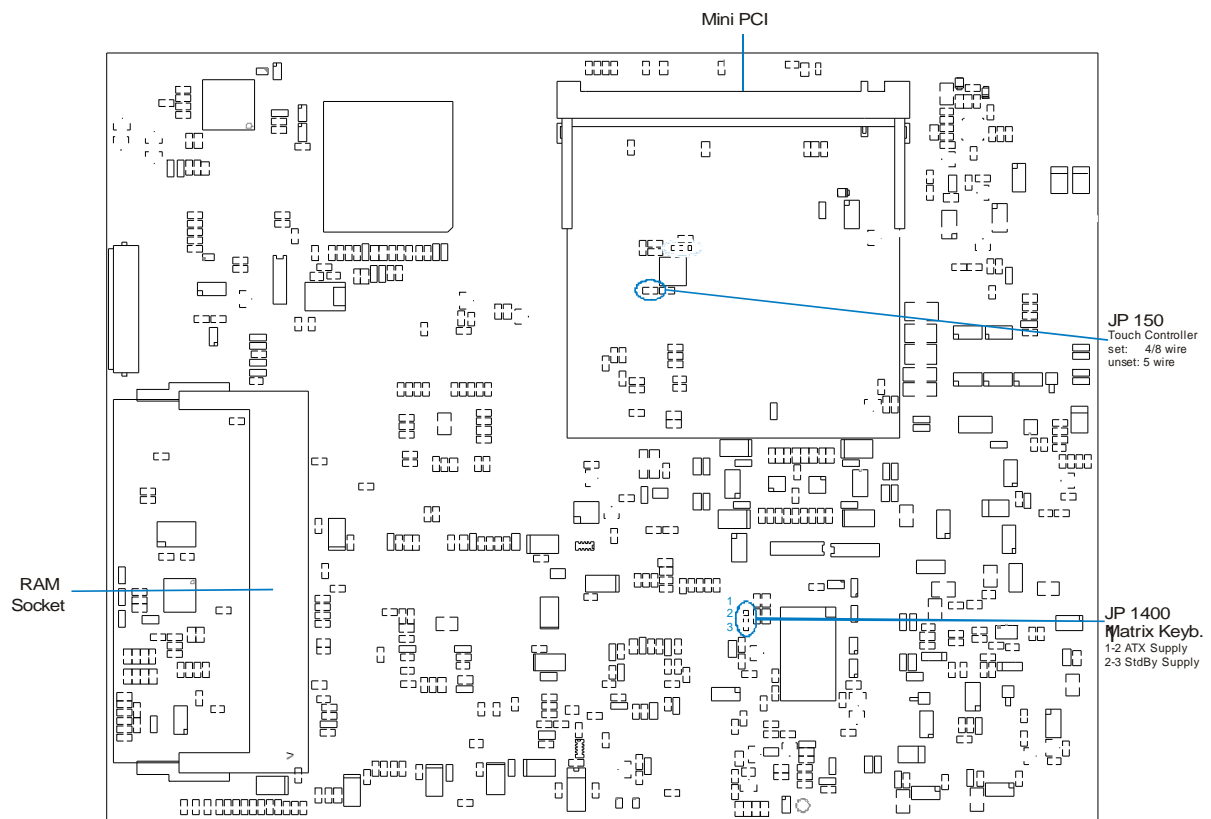
3. Connectors Overview



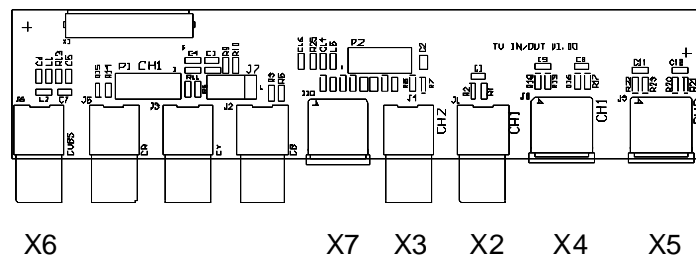
Processor board ePanel-PM (top side)



I/O adapter



Processor board ePanel-PM (bottom side)



Video adapter

4. Assembling Components

In addition to the starter kit, you will need the processor board ePanel-PM and its Cooler set.

This documentation applies only to the following hardware versions:

Processor board ePanel-PM **V 4.00 or later**

I/O adapter **V 2.00 or later**

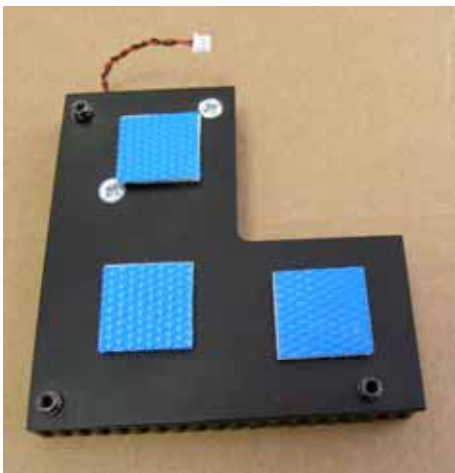
Video adapter **V 1.00 or later**

Once all parts are laid out ready, you can start assembling, following the steps below:

4.1 Mounting the Cooler set



Step 1: Put the nylon washers over the M2.5x10mm screws.



Step 2: Remove the (blue stripes) protection foils. Attention: don't touch the surface.



Step 3: Place the heat sink with correct side (standoffs on bottom side) and light pressure on contact area. The standoffs must match the mounting holes on the ePanel PCB.



Step 4: Turn the modul around, check the proper heat sink position and insert the three screws on the bottom side. Use a screwdriver and turn clockwise the screws into the heatsink standoffs. Please note the recommended torque (maximum value 0,3 Nm).



Step 5: Complete the assembling, put the polarized header into X2101.

4.2 Connecting the I/O adapter

For a minimal system, you need besides the **I/O adapter** the two ribbon cables **cab02** and **cab03**. Cable **cab02** is for connecting **X1** on the I/O adapter to **X504** on the processor board. Analogously, **cab03** connects **X10** on the I/O adapter to **X506** on the ePanel-PM. The blue ends of the cable must face upwards for all connectors.

Optionally, connecting **X15** on the I/O adapter to **X507** on the ePanel-PM using **cab04** allows you to use the second serial and the parallel interfaces.



The **power button** is also absolutely essential; the optional **reset button**, by contrast, is purely to facilitate working. Both buttons must be connected with the pin header **X16**. After attaching the power supply, the processor board can be powered on with the **power button**.

Reset button

Power button

For the first test, you need a keyboard and an ordinary monitor. You have the choice between using a PS/2 (**X3**) or USB (**X7**) keyboard. The monitor connects to connector **X19**.

There are no cables included for connectors **X4**, **X5**, **X6**, **X8**, **X13** and **X14**, since these functions are only rarely used.

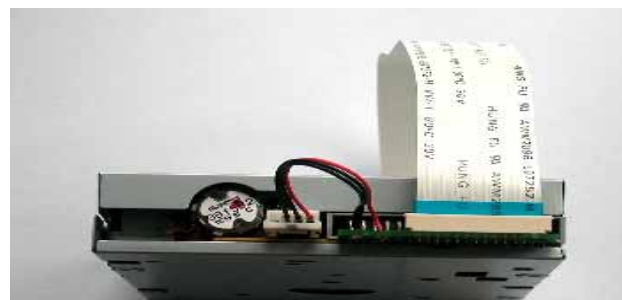
The I/O adapter can be split into three pieces if there are space limitations. The designated lines of breakage are clearly recognizable on the adapter board.

4.3 Defining Boot Drive

There are multiple alternatives for booting the system: Floppy drive, CompactFlash or ordinary hard drive or CD-ROM drive.

Connecting a floppy drive

The simplest option is a USB drive; **X7** from the I/O adapter can be used for the connection. A standard drive, on the other hand, requires the included cable **cab05**.



When the drive is connected, the connector with the cable faces upwards. The power supply connection from cable **cab05** is to be connected to the corresponding drive connector. The connector **X2100** on the ePanel-PM is available for the other end of the cable, the blue end must face upwards.

Using CompactFlash (CF)

The included CF is already formatted but not bootable. Depending on the type of CompactFlash, sometimes not all of the Flash area can be accessed. A workaround is to delete the partition and then reboot. Immediately repartitioning, with FDISK for example, without rebooting does not actually delete the old values and the problem would remain. After repartitioning and formatting, the full Flash area will be available.

Inserting or removing the CompactFlash while in operation can cause serious damage and must be avoided.

Connecting a hard drive or CD-ROM drive

The hard drive or CD-ROM drive is connected with cable **cab06** – on the processor board, the connector **X1300** is used. The interface represents the second IDE channel. The component layout clearly shows the position of Pin 1.

In this configuration, it is necessary to use an external power adapter. Simultaneously using two power adapters without bonding can lead to unexpected errors. Accordingly, the supplied power adapter should be replaced by a normal PC power supply. Cable **cab07** allows easy connection with the ePanel-PM.

It's advisable not to activate UDMA mode 3 or higher, since neither the connector (40-pin with 4 extra pins) nor the enclosed cable (also 40-pin) offer the necessary requirements for higher DMA modes.

4.4 Switching on Supply Voltage

The last step of the minimum configuration is to connect the supply voltage using the enclosed power adapter. After inserting the power cable into the power adapter, the connection to the ePanel-PM is made via cable **cab01** on connector **X2001**. The processor board is then immediately ready to operate, though only on standby power. When the **power button** is pressed the remaining supply voltages are connected and the board begins to work.

If an optional battery (accumulator) is employed, the power adapter voltage should be a few volts above the battery voltage. A 12V battery cannot be loaded with a 12V power adapter; for this, at least 15 V supply voltage would be required.



AC adapter plugs are included in the starter kit for various country power lines. The illustration shows the american adapter (code number 2).

5. Using Optional Components

Optional components also available: a connection to an LCD panel, touch panel interface, matrix keyboard, COM2 / LPT1 on the I/O adapter and an adapter board for video signals.

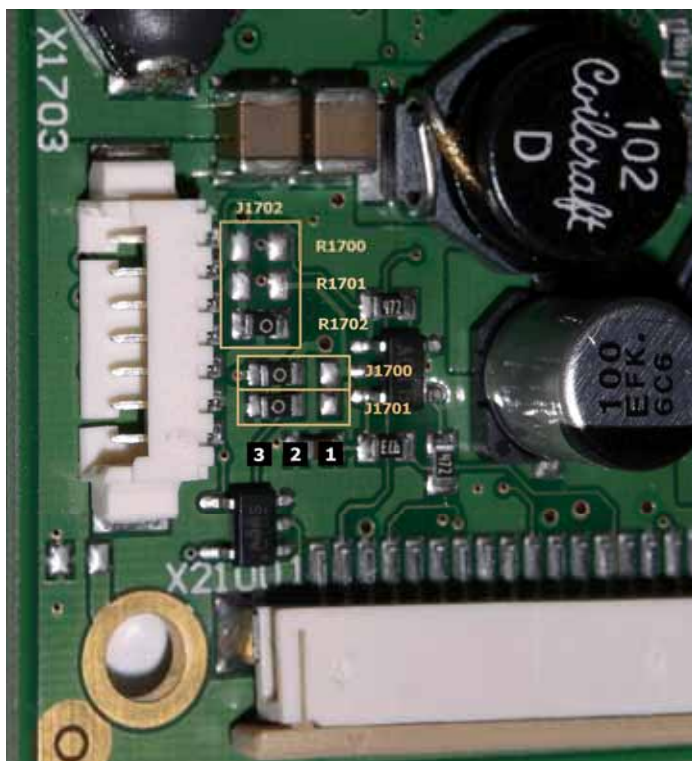
5.1 Connecting a LCD Panel

First of all, it must be explained which connection cable can be used for the specific display. Since too many variations exists, there is no cable in the starter kit. This must be ordered separately.

For panels with low resolution such as VGA (640x480 pixels) and SVGA (800x600 pixels), it is best to use a direct connection with a **KAB-FLEX32** cable. For high-resolution displays, it is recommended to use a **JILI30** cable. You can find more information at the website www.kontron-emea.com and calling up the flat panel configurator. Should you place an order, please remember to order a suitable **backlight** cable.

The **KAB-FLEX32** cable connects to the ePanel-PM on connector **X1702** (the blue end facing upwards). The **JILI30** cable, by contrast, connects to connector **X1704** (coding exists). The **backlight** cable uses connector **X1703**, though the power take-off is limited. For further information, please consult the technical manual for the ePanel-PM.

The jumper settings must be verified before turning the display on for the first time, since a too high panel voltage, for example, would probably destroy the display.



Jumper J1702

(Panel Voltage)

R1700	+12V
R1701	+5V
R1702	+3.3V

Jumper J1700

(Backlight Voltage)

1-2	+5V
2-3	+12V

Jumper J1701

(Backlight Polarity)

1-2	Low
2-3	High

Finally, the display is activated with the help of the system BIOS setup. Setting the menu point *Advanced/Display Control/Display Mode* to *LFP only* or *CRT+LFP* brings up a series of configuration options. An explanation of the individual points is found in the ePanel-PM manual.

5.2 Touch Panel Interface

A 4-wire or 8-wire touch panel can easily be connected using cable **cab07** on connector **X501**. As an option it's possible to use a 5-wire touch panel.

The touch panel interface is based on a USB touch panel controller. This is hard wired on the ePanel-PM to a USB port. Hardware dependent influence is only possible by switching the corresponding USB port on or off (via BIOS setup).

5.3 Connecting a Matrix Keyboard

A matrix keyboard of up to 7x8 keys can be connected to the board. The necessary decoupling diodes are **not** present on the ePanel-PM and must therefore be placed externally. The connection is made by **cab08** to connector **X503** on the board. Refer to the manual for the pin assignment of the pin header.

The matrix keyboard cannot work without first defining the scan codes. The DOS tool MATRIXPM.EXE is provided for this purpose.

5.4 COM2 and LPT1 Interfaces

The pin header for the parallel interface **X18** on the I/O adapter is PC compliant. A suitable adapter cable can be obtained in a computer store. The serial interface **X17**, in contrast, is not assigned according to standard and so a special cable is available from your distributor or from KONTRON sales.

The second serial interface is deactivated by default. COM2 can be activated in the system BIOS setup under *Advanced/IO Device Configuration/SIO Options/Serial Port B*.

5.5 Video Adapter

The video adapter board provides various connectors for video input signals. It connects to the processor board by cable **cab09** from connector **X1** to connector **X502** on the ePanel-PM. The blue ends again face upwards on both sides, twisting the cable by 180 degrees cannot be avoided.

The simplest way to put in video signals is via connectors **X2** to **X3** on the adapter board. **X2** and **X3** are for composite, **X4** and **X5** for S-video signals (the ePanel-PM allows only one S-video input). The connection to an ordinary DVD player, for example, can be made without trouble.

5.6 miniPCI Connector

On the underside of the ePanel-PM is a 124-pin mini-PCI connector, as is commonly used in laptop computers. In addition to the PC-Card / Cardbus adapter, it presents an alternative universal extension.



A type III connector is present on the board. Some optional signals, however, are not available among others: MPCIACT#, RING, TIP and LED signals. Support of 66 MHz operation is not specified.

APPENDIX A: REVISION HISTORY

Revision	Date	Edited by	Changes
1.0	03/13/2008	M. Hüttmann	First revision
1.1	12/12/2008	M. Hagemann	Added recommended torque for heatsink