Application note

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Subject	Getting Started: ETX and JILI
Related Products	All **Kontron** ETX products

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07.01.2002	C. Hoch	Initial release
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1: Table of Contents

2: Introduction

Most Applications based on ETX CPU boards are using a graphical user interface as a display. Kontron has developed an easy to use solution to connect displays to different CPU boards. It is called JILI (JUMPtec Intelligent LVDS Interface). This interface was designed to support the display signals (data and control) and the power supply and control signals for the backlight converter.
JILI is a hard/firmware solution consisting of a small PCB with two flat-foil cables, and a configuration file stored in an EEPROM soldered onto the JILI cable.
Both the JILI cable and the configuration file are specific for the type of display used. The JILI configuration file is also specific to the graphic controller on the ETX Board.
Example: a combination cable/configuration file can be used on ETX-P3 and ETX-P1 (both CPU boards are equipped with the same graphic controller – ATi Rage Mobility), but not with the ETX-P3e (S3 Savage4 graphic controller). For the ETX-P3e you can use the same cable as the ETX-P3 or ETX-P1 but a different configuration file has to be loaded in the JILI EEPROM.

3: How to know which is the right cable or configuration file for my application?

Let's take an example – you want to use the ETX-mgx in combination with an 800x600, 12.2" display. On our web site: www.dr-berghaus.de/flatpanel/, you'll find the so-called 'Cable Configurator'. Choose the panel resolution and dimensions and you will get a list of compatible panels.
You decide to use the "*SHARP LQ121S1DG11*". For this display panel, in combination with the ETX-mgx, you find the cable "*KAB-JILI-TSDA01*". With a mouse click on the cable name you can download the configuration file you need (in this example *TSD61001.ng1*).

You must also download (from the web site located at:
www.jumptec.de/product/data/jili/jili_update.htm)
the executable file JILIPROG (you will need it to write the configuration file to the JILI EEPROM).

Next you can order the JILI cable from your Kontron sales office.

4: How to setup the adapter cable (and the CPU board).

Just plug the ETX board into the ETX-EVAL backplane. Mount the screws and the heat spreader. Connect the power supply, a floppy drive, a keyboard, a CRT, the JILI cable and the display panel. Don't forget to connect the converter for the display backlight (How? See the chapter below).
Take a bootable DOS floppy with the two downloaded files (JILIPROG.EXE and the configuration file – in our example *TSD61001.ng1*). Insert the disk in to the floppy drive and switch the power on. You will only get an output to the CRT for now.
Enter the BIOS setup (key F2) and enable the floppy drive. Exit the setup and if all was connected correctly the system will boot to a DOS prompt from the floppy.

Now one more step has to be done. Type at the DOS prompt ***'jiliprog tsd61001.ng1'***. This will write the configuration file in to the JILI EEPROM on the *KAB-JILI-TVDA01*. On the next boot you will get output to both the CRT and the display panel.

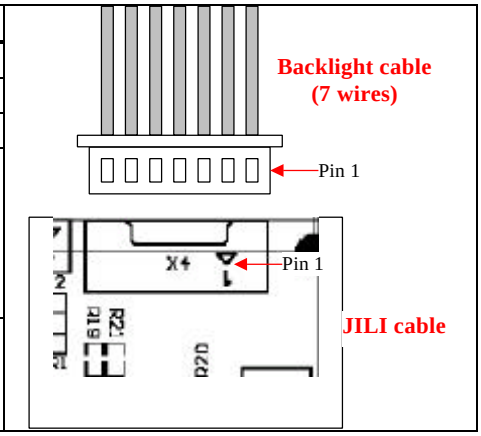
NOTE: On the ETX-mgx, you have to enable the simultaneous graphic output for the CRT and the display panel. Enter the BIOS setup menu: ***Advanced/Advanced Chipset Control/*** and set the ***Display Mode*** to ***[Simultan]***.

5: How to connect the backlight converter?

Every JILI cable offers the possibility for a direct backlight converter power supply.

Backlight connector on JILI cables (fitting connector: Molex 51021-0700):

Pin:	Name:	Function:
1	N.C.	Not connected
2	N.C.	Not connected
3 and 6	GND	Ground
4 and 5	SW_BACK	Power output for external CCFL Inverter, max. current 1.5A. Factory default setting is 12V, can also be set to 5V (for information please contact your local Kontron support).
7	ENABKL	TTL timing signal to enable backlight converter (low active).



On the backlight converter you should find the following signals:
VARIES FOR DIFFERENT MODELS!! Please check the corresponding data sheet.

Name:	Function:	Connect it to JILI backlight signal:
VCC	Input voltage 5V or 12V	SW_BACK
GND	Ground	GND
Remote Voltage	0V backlight off, 5 to 12V backlight on	ENABKL
Brightness Dimmer	Brightness control - 0V to 5V (Max brightness at 0V)	Set this Signal to GND

6: You decided to use the ETX-P1 instead of the ETX-mgx?

No problem! Go to the cable configurator, choose the SHARP *LQ12S1DG11* display and download the configuration file for the ETX-P1 (*tsd61001.am0*). Exchange the two configuration files (same steps as described above, ***'jiliprog tsd61001.am0'***), and the whole thing will work!

7: More information about JILI?

You can find more technical information regarding the JILI interface in the JILI Reference Manual (web site: www.jumptec.de/product/data/jili/index.html).