

This document will inform you about interfacing displays to the 886LCD/ATX family.

The document is valid for the Kontron Technology 886LCD/ATX family of motherboards which are loaded with the following default BIOS's (.BIN-files):

For the 886LCD/ATX the GX203.BIN is the default BIOS.

For the 886LCD/ATX-GE the GEK102.BIN is the default BIOS.

For the 886LCD/ATX-U the MG203D.BIN is the default BIOS.

In order to drive panels via ADD-LVDS the BIOS shall be changed in according to this document. In this list you will find references to the following BIOS's:

886LCD/ATX: X203, X203-SVGA18, X203-XGA2P24O, X203-XGA1P24S, X203-XGA1P24O, X203-SXGA2P24S, X203-SXGA2P24O, X203-WSXGA2P24O, X203-UXGA2P24S

886LCD/ATX-GE: XGE102, XGE102-SVGA18, XGE102-XGA2P24O, XGE102-XGA1P24S, XGE102-XGA1P24O, XGE102-SXGA2P24S, XGE102-SXGA2P24O, XGE102-WSXGA2P24O, XGE102-UXGA2P24S

886LCD/ATXU: XU203D, XU203D-SVGA18, XU203D-XGA2P24O, XU203D-XGA1P24S, XU203D-XGA1P24O, XU203D-SXGA2P24S, XU203D-SXGA2P24O, XU203D-WSXGA2P24O, XU203D-UXGA2P24S

Table 1, Add-on interface board might be needed:

Interface	IT no.	Description
ADD-LVDS	720935	LVDS Transmitter module for AGP connector, 2 channels, OpenLDI and SPWG support. 34Pin IDC connector only. Based on Chrontel Ch7017.
ADD-LVDS-OEM	720936	Same as 720935 but inclusive JILI and JILI40 connectors.
ADD-DVI	720930	DVI and TV-out module for AGP connector.

Table 2, LVDS Cables available:

Item No.	Doc. no.	Description
740511	KTD-00435	LVDS Cable 1200 mm LVDSTX-JPLCD-A to Hirose DF14-20p
740512	KTD-00436	LVDS Cable 600 mm ADD-LVDS to Hirose DF19-20S-1C

Installation of display to the 886LCD family, in general

The VGA part of the 886LCD family has an integrated “standard analogue VGA CRT” output, which is supported by Win98SE/NT4.0/XP/ME/W2K. When using the VGA CRT interface the only thing you have to do, is to download the OS graphic drivers from <http://www.inside.dk/download/>, install the relevant graphic driver and make display settings as requested. There is no need for you continue reading this document.

If a display panel with digital interface or a TV shall be connected to the 886LCD motherboard, then an Add-On module can be used. Kontron Technology has both LVDS - and DVI Transmitter ADD modules available. Normally the DVI module will be chosen for interface to a digital Flat Panel or TV, which is located outside the computer enclosure and the LVDS modules will be chosen for a display integrated in the computer enclosure.

There are some limitations using ADD modules: Multimonitor mode is not supported at all, Mirror mode is not supported for TV-out or if digital resolution is higher than 1600x1200 (LVDS only) and finally expansion mode is only supported for Single Panel mode. If your system requirements cannot be fulfilled with the above limitations, then it is recommended to use third part PCI/AGP graphic boards. However please notice that in general Kontron Technology does not support third part PCI/AGP graphic boards.

If the ADD-DVI module is chosen for interface to a digital Flat Panel or TV, then you just have to install the standard graphic driver and make Panel or TV settings as requested and there is no need for you continue reading this document.

The remaining of this document is only concerning LVDS systems involving either the ADD-LVDS module or the ADD-LVDS/OEM module. Later in this document you will find table “Supported displays via LVDS” and this table contains information on displays already tested, the ID of the related BIOS, optional cable kit(s) and references to more information.

If a display from the table “Supported displays via LVDS” is chosen for your project, then the BIOS already exist and a cable kit or interface specification might also exist, so it is relatively easy for you to integrate the solution into your design, without really involving support from Kontron Technology.

The prototype phase will then consist of the following steps:

- Design prototype cable kit (use existing cable kit, interface specification, cable kit specification as specified in the Display List)

- Download the requested BIOS from <http://www.inside.dk/download/>

- Load the BIOS into the motherboard.

- Simple test by entering the BIOS setup menu and verifying that the picture is stabile and colors correct.

- Download the OS graphic drivers from <http://www.inside.dk/download/>

- Enter the OS and install the graphic driver.

- Select display resolution, select number of color bits and enable the panel.

- Make the display qualification test (use relevant OS and application SW and optionally DisplayMate, WinDVD etc.)

However the development in the Display market is very fast, so it's most likely that you will find a suitable display, which is not in the Display List. In this case you can continue as a “Do it yourself” project or you can more or less order assistance by Kontron Technology Support. Even though you want to “Do it yourself” it might turn out, that design assistance by Kontron Technology Support is needed for fine-tuning of BIOS display driver. In the following table you can see, what you as the designer have to do depending on the chosen type of display and of how much support you want to order.

"Do it yourself"		New display, design assistance by Kontron Technology Support		
Select display from Display List	New type of display	BIOS and qualification test	Cable kit adaptation, BIOS and qualification test	Cable kit, BIOS and qualification test
	Get Display and Inverter datasheet	Get Display and Inverter datasheet	Get Display and Inverter datasheet	Get Display and Inverter datasheet
Order display + inverter	Order display + inverter	Order display + inverter	Order display + inverter	Order display + inverter
		Email datasheet to KT Support	Email datasheet to KT Support	Email datasheet to KT Support
Order cable kit if available and useable	Find possible compatible display from Display List and download related information specified in the list	Find possible compatible display from Display List and download related information specified in the list	Order Prototype Cable kit Adaptation (Order no. 740100)	Order Prototype Cable kit (Order no. 740104)
Download related information specified in the Display List	Make Interface specification	Make Interface specification		
Design prototype cable kit	Design prototype cable kit	Design prototype cable kit		
			Send Prototype Cable kit to KT Support	
		Order Display BIOS Driver qualification (Order no. 740101)	Order Display BIOS Driver qualification	Order Display BIOS Driver qualification
		Send display and inverter and complete cable kit to KT Support	Send display and inverter to KT Support	Send display and inverter to KT Support
Download the requested BIOS	Download the requested BIOS			
Load BIOS into the motherboard	Load BIOS into the motherboard			
Simple test by entering BIOS	Simple test by entering BIOS			
Load OS driver and make setup	Load OS driver and make setup			
	Qualification test			
	Cable kit and driver approval	Cable kit and driver approval	Cable kit and driver approval	Cable kit and driver approval

In the following we will look more into the different steps of the display adaptation.

Cable kit:

Download related information specified in the "Supported displays via LVDS" and order cable kit if available.

If you can't use a cable kit even though it's available, then you might properly be able to modify it to be used for a prototype system.

If no cable kit is available then you can get some help from the document "D00438 Users Manual ADD-LVDS".

Download the requested BIOS and programming tools:

On the link <http://www.inside.dk/download/> you will be able to find the requested BIOS as specified in the list "Supported displays via LVDS".

Save the BIOS and the programming tools BF.EXE and/or BF32.EXE in the same directory.

Load BIOS into the motherboard:

Executing from DOS the command: BF BIOSUPDATE "*BIOS name*"
Or executing from Win2K/XP the command: BF32 BIOSUPDATE "*BIOS name*"

Simple Panel test:

Turn off the computer.
Connect the Display and Backlight Inverter to the computer via the cable kit.
Turn on the computer and press the to enter the BIOS.
If the computer (Monitor and/or Panel) do not turn on within 10 seconds, then immediately turn off power and start analyzing the problem.
Otherwise you can verify that the Panel displays a correct and stabile BIOS menu.

Panel qualification test:

In the target system (or prototype) you have to verify that the Panel is stabile in the maximum ambient temperature at max. CPU speed allowed.
Alternatively use DisplayMate (see www.displaymate.com) for Windows, to test color resolution and stability.
It is recommended also to run a DVD and look for pixel instability (5 minutes should be enough).

EMC test:

It might happen that EMC tests show that the display itself and/or the display cable have to high EMC level.
After changing the cable kit or any details related to the display system, it's recommended that you repeat the Panel qualification test.

Supported displays via LVDS:

Display								Cable Kit			886ATX	Doc. (KTD-xxxxx)	
Manufac.	Type no.	Technology	Size "	Resolution	Color bits	Cd/ m2	Vcc/ Vsig	Interface	Order nr.	Inverter type	BIOS selection Other settings	Interface Spec.	Specific.
CPT	CLAA150XA03	TFT Color	15	1024x768	18	140	5	ADD-LVDS 34pole conn.			* -XGA2P240.BIN SW1(1,2,3,4,5,6)= (off,on,x,x,x,x)	00430	
								ADD-LVDS/OEM 34pole conn.			* .BIN SW1(1,2,3,4,5,6)= (off,on,on,on,on,off)		
LG.Philips	LC151X01 (C3)	TFT Color	15.1	1024x768	24x1	400	3.3	ADD-LVDS 34pole conn.	740511	no supp.	* -XGA1P24S.BIN SW1(1,2,3,4,5,6)= (off,off,x,x,x,x)	00434	00435
								ADD-LVDS/OEM 34pole conn.	740511	no supp.	* .BIN SW1(1,2,3,4,5,6)= (off,off,on,on,off,on)		
LG.Philips	LM181E06	TFT Color	18.1	1280x1024	24x2	250	12	ADD-LVDS 34pole conn.	-	-	* -SXGA2P24S.BIN SW1(1,2,3,4,5,6)= (off,off,x,x,x,x)	00441	-
								ADD-LVDS/OEM 34pole conn.	-	-	* .BIN SW1(1,2,3,4,5,6)= (off,off,on,on,off,off)		
LG.Philips	LM201U03	TFT Color	18.1	1600x1280	24x2	250	18	ADD-LVDS 34pole conn.	-	-	* -UXGA2P24S.BIN SW1(1,2,3,4,5,6)= (off,on,x,x,x,x)	00472	-
								ADD-LVDS/OEM 34pole conn.	-	-	* .BIN SW1(1,2,3,4,5,6)= (off,on,on,off,on,on)		
NEC	NL8060BC31-17D	TFT Color	12.1	800x600	18	350	3.3 (5)	ADD-LVDS 34pole conn.	-	-	* -SVGA18 SW1(1,2,3,4,5,6)= (off,off,x,x,x,x)	-	-
								ADD-LVDS/OEM 34pole conn.	-	-	* .BIN SW1(1,2,3,4,5,6)= (off,off,on,on,on,on)		
NEC	NL10276BC30-10	TFT Color	15.0	1024x768	24x1	250	3.3	ADD-LVDS 34pole conn.	-	-	* -XGA1P240.BIN SW1(1,2,3,4,5,6)= (off,off,x,x,x,x)	-	-
								ADD-LVDS/OEM 34pole conn.	-	-	* .BIN (SW1 not defined)		
Samsung	LTA260W1-L02	TFT Color	26.0	1280x768	24x1	450	5	ADD-LVDS 34pole conn.	-	-	* -WSXGA1P240.BIN SW1(1,2,3,4,5,6)= (on,off,x,x,x,x)	00463	-
								ADD-LVDS/OEM 34pole conn.	-	-	* .BIN SW1(1,2,3,4,5,6)= (on,off,on,off,on,on)		
Samsung	LTM150XH-L04	TFT Color	15.1	1024x768	24x1	330	3.3	ADD-LVDS 34pole conn.	740511	no supp.	* -XGA1P24S.BIN SW1(1,2,3,4,5,6)= (off,off,x,x,x,x)	00434	00435
								ADD-LVDS/OEM 34pole conn.	740511	no supp.	* .BIN SW1(1,2,3,4,5,6)= (off,off,on,on,off,on)		
Sharp	LQ12S41	TFT Color	12.1	800x600	18	270	3.3	ADD-LVDS 34pole conn.	-	-	* -SVGA18 SW1(1,2,3,4,5,6)= (off,off,x,x,x,x)	-	-
								ADD-LVDS/OEM 34pole conn.	-	-	* .BIN SW1(1,2,3,4,5,6)= (off,off,on,on,on,on)		
Sharp	LQ150X1LW71	TFT Color	15	1024x768	1*24	200	5	ADD-LVDS 34pole conn.	740511	no supp.	* -XGA1P24S.BIN SW1(1,2,3,4,5,6)= (off,off,x,x,x,x)	00434	00435
								ADD-LVDS/OEM 34pole conn.	740511	no supp.	* .BIN SW1(1,2,3,4,5,6)= (off,off,on,on,off,on)		
Toshiba	LTM15C458T	TFT Color	15.1	1024x768	24x1	350	3.3	ADD-LVDS 34pole conn.	740511	no supp.	* -XGA1P24S.BIN SW1(1,2,3,4,5,6)= (off,off,x,x,x,x)	00434	00435

Display								Cable Kit			886ATX	Doc. (KTD-xxxxx)	
Manufac.	Type no.	Technology	Size "	Resolution	Color bits	Cd/ m2	Vcc/ Vsig	Interface	Order nr.	Inverter type	BIOS selection Other settings	Interface Spec.	Specific.
								ADD-LVDS/OEM 34pole conn.	740511	no supp.	* .BIN SW1(1,2,3,4,5,6)= (off,off,on,on,off,on)		
Unipac	UB084S01	TFT Color	8.4	800x600	18	120	3.3	ADD-LVDS 34pole conn.	740512	GH025A	* -SVGA18 SW1(1,2,3,4,5,6)= (off,off,x,x,x,x)	00394	00436
								ADD-LVDS/OEM 34pole conn.	740512	GH025A	* .BIN SW1(1,2,3,4,5,6)= (off,off,on,on,on,on)		
Unipac	UB104S01	TFT Color	10.4	800x600	18	150	3.3	ADD-LVDS 34pole conn.	740512	GH025A	* -SVGA18.BIN SW1(1,2,3,4,5,6)= (off,off,x,x,x,x)	00394	00436
								ADD-LVDS/OEM 34pole conn.	740512	GH025A	* .BIN SW1(1,2,3,4,5,6)= (off,off,on,on,on,on)		

* XGE102, XU203D or X203