Application note

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Author	U. Geisler
Subject	How to connect a flat panel to the DIMM-PC/Combo2
Related Products	**Kontron** DIMM-PC/Combo2; ADA7 (new design)

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15.04.2002	U. Geisler	Initial release
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22.08.2002	H. Bruhn	Changed to Kontron style
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2. INTRODUCTION

Due to the obsolete graphic controller Cirrus Logic GD6235 the following products are no longer available:
- DIMM-PC/COMBO1
- DIMM-PC/VGA1

These boards can be replaced by using the new DIMM-PC/VGA2 (COMBO2). Both of the new boards use the TOPRO TP6508 graphic controller.

The data mapping of the TOPRO TP6508 is completely different to the Cirrus Logic therefore it is *not* possible to use the existing KAB-M4... cables. A graphic controller with the same data mapping as the Cirrus Logic is not available on the market so Kontron decided to use the JIPA (Jump*tec*®´s Intelligent Panel Adaptation) interface for the DIMM-PC/VGA2 instead of designing new KAB-M4..cables. For the JIPA-Interface many cables are already available for such products as the CoolMonster, LittleMonster, MOPSlcd or the PCI-Sprint 6x. Refer to the cable configurator available on our homepage.

Note: Multi-4 cables, which are connected to the DIMM-PC/VGA1 on the old design of the ADA7, are not suitable for connecting the new DIMM-PC/VGA2 on the new design of the ADA7

This application note shows you how to connect a flat panel to the new DIMM-PC/Combo2.

3. HOW TO CONNECT A FLAT PANEL (TFT) TO THE DIMM-PC/COMBO2

This description, with the below mentioned parts and tools, will help you connect a flat panel to the DIMM-PC/Combo2.

3.1. Parts and tools used

- DIMM-PC/Combo2 (DIO4 (article number: 08014-0000-01-0))
- DIMM-PC (e.g. DIMM-PC/586)
- Eval board ADA7 (08005-0000-00-4 with JIPA interface) with floppy and hard disk
- JIPA Adapter (e.g. KAB-JIPA-TVDA01(2))
- Flat panel (e.g. NEC NL6448AC33-18)
- Software: DIO4EDT.EXE (Panel Editor (useable on WIN9x only)
  Default.fpd (default panel file)
  DIO4UPD.EXE (Update program for *.fpd files; under DOS useable)
  VGA*.EXE / SVGA*.EXE -> Testprograms HiColor
  Jtopro9x.zip (driver for WIN9x if necessary)

The software is necessary only if the panel doesn't work with the default values that are stored in the serial EEPROM on the DIMM-PC/Combo2. If you require the software mentioned above please contact Kontron technical support.

3.2. Getting started

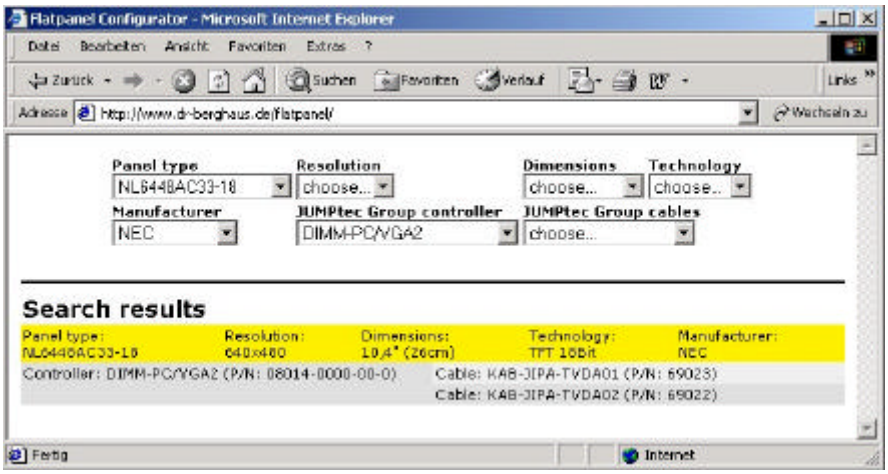
3.2.1. DIMM-PC/Combo2 and Flat Panels

General information: The panel interface for the Combo2 is based on the JIPA-concept. JIPA means, **J**UMP*tec*® AG **I**ntelligent **P**anel **A**daptation. For further information about the JIPA-interface refer to the JIPA Design Guide. The panel interface of the old (obsolete) DIMM-PC/VGA1 (Cirrus Logic GD6235) is based on the MULTI4 interface. The data mapping of the Combo2 and the VGA1 is different so it's not possible to use the same cables to connect flat panels. Connecting flat panels to the Combo2 is possible on the new ADA7 only.

3.2.2. Selecting the JIPA-Cable

In our example we are going to connect the LCD panel, NEC NL6448AC33-18, to the Combo2. To select the corresponding JIPA-Adapter, go to the flat panel configurator on our homepage http://www.dr-berghaus.de/flatpanel/.

Select the panel manufacturer, the panel type (in this case the NEC NL6448AC-33) and the controller (in this case the DIMM-PC/VGA2) that you want to use. If you have selected the correct items you will have the same configuration as shown in the corresponding picture.

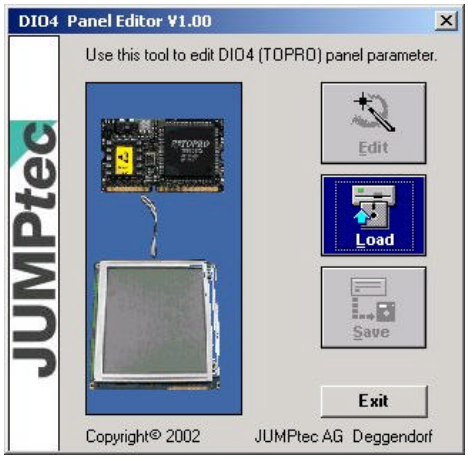


The cable that we will be using, for the Combo2, to connect the NEC NL6448AC33-18 is the **KAB-JIPA-TVDA01(2)**. The difference between 1 and 2 is the length of the flat foil cable only. Type 1 is using 1m, type 2 uses 0,5 m.

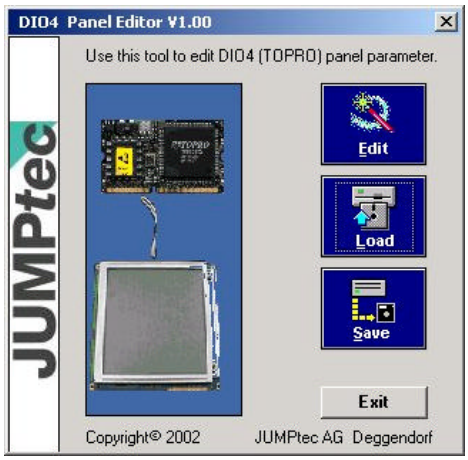
3.2.3. Preparing the Panel Configuration File

The following steps 3.2.3 and 3.2.4 are **only to be used** if the connected panel doesn't work correctly the first time you boot. In this case it is possible to change the panel data that is stored in the serial EEPROM on the DIO4.

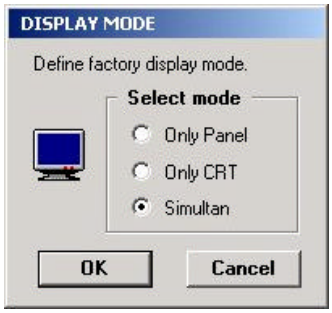
Copy onto a PC, with WIN9x, the program DIO4EDT.EXE and the file default.fpd into a folder (e.g. c:\topro).
Start the program DIO4EDT.EXE and you will see the screen shown in the picture. Press the "Load" button to load the default values (*.fpd file) for the panel editor.



When the default values are loaded the "Edit" and "Save" buttons are enabled. If you click on the "Edit" button you are able to change the parameters for the different panel types. Use this function only if your panel is not working correctly with the JIPA-interface.



Click on the "Save" button to save the panel parameters in an extra file and to define the display mode. For the first test it's good practice to select the "simultan" mode. Now click on "OK" and give the file a name (e.g. test or nl6448). Use the "Exit" button to leave the program. Copy the newly created file (test.fpd or nl6448.fpd) and the update program, DIO4UPD.EXE, onto a bootable floppy disk.



3.2.4. Building up the system

Mount all parts DIMM-PC, DIMM-Combo2, Floppy and HDD on the ADA7 except for the KAB-JIPA-TVDA01.
Start the system using the bootable floppy disk with the update program and the configuration file on it.
You can use the update program with the following parameters:
Usage: DIO4UPD <options> <filename>
Options: /W Read file and write content to EEPROM
/R Read EEPROM and write contents to file
/C Read file and compare with EEPROM

Type in **DIO4UPD /W TEST.FPD**. After the file is correctly loaded into the EEPROM, switch off your system.

3.2.5. Connecting the flat panel

Connect (mount) the following:
- The panel data interface to the KAB-JIPA-TVDA01 (flat foil cable)
- The backlight converter to the KAB-JIPA-TVDA01 or directly to a 12 V power supply
- The KAB-JIPA-TVDA01 to the corresponding socket on the eval board (ADA7).

Now you can switch on your system and you should have display on both the standard CRT and flat panel. If you wish you can test several video modes using vga*.exe program.

3.2.6. Using flat panels with the DIMM-PC/520 under Windows 98

When loading Windows 98 it is possible that the flat panel may be switched off due to a driver conflict. If you use “simultan” mode while using a CRT and flat panel and this occurs, open the registry and delete the following key:

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\VxD\VFBACKUP

If you only have an LCD connected, start Windows 98 in safe mode and then delete the key.

NOTE:

If the cable configurator does not support your panel compare your datasheet with the datasheet of one of the panels in the cable configurator that you think could be similar to yours. At this point pay close attention to the technology used (TFT, STN), and the resolution (640x480, 800x600). If you find one that is similar to yours, compare the data input connector and the signals with your panel datasheet.

If there is nothing similar to your panel listed in the configurator table, then it will be necessary to adapt the panel by using the KAB-JIPA-Proto → Refer to the JIPA Design Guide.

4. HOW TO CONNECT A FLAT PANEL (STN) TO THE DIMM-PC/COMBO2

4.1. Parts and tools used

- DIMM-PC/Combo2 (DIO4 (article number: 08014-0000-01-0))
- DIMM-PC (e.g. DIMM-PC/586)
- Eval board ADA7 (08005-0000-00-4 with JIPA interface) with floppy and hard disk
- JIPA Adapter (e.g. KAB-S6-LM64P11)
- Flat panel (e.g. SHARP LM64P11)
- Software: DIO4EDT.EXE (Panel Editor (useable on WIN9x only)
  Default.fpd (default panel file)
  DIO4UPD.EXE (Update program for *.fpd files; under DOS useable)
  VGA*.EXE / SVGA*.EXE -> Testprograms HiColor
  Jtopro9x.zip (driver for WIN9x if necessary)

The software is necessary to change the contrast values of the STN Flat Panel. If you require the software mentioned above please contact Kontron technical support.

4.2. Getting Started

4.2.1. DIMM-PC/Combo2 and Flat Panels

General information: The panel interface for the Combo2 is based on the JIPA-concept. JIPA means, **J**UMP*tec*® AG **I**ntelligent **P**anel **A**daptation. For further information about the JIPA-interface refer to the JIPA Design Guide. The panel interface of the old (obsolete) DIMM-PC/VGA1 (Cirrus Logic GD6235) is based on the MULTI4 interface. The data mapping of the Combo2 and the VGA1 is different so it's not possible to use the same cables to connect flat panels. Connecting flat panels to the Combo2 is possible on the new ADA7 only.

4.2.2. Selecting the JIPA-Cable (refer to section 3.2.2)

The following steps 4.2.3 and 4.2.4 are **only to be used** if the connected panel doesn't work correctly the first time you boot. In this case it is possible to change the panel data that is stored in the serial EEPROM on the DIO4 by using steps 4.2.3 and 4.2.4.

4.2.3. Preparing the Panel Configuration File (refer to section 3.2.3)

4.2.4. Building up the system (refer to section 3.2.4)

4.2.5. Connecting the flat panel (refer to section 3.2.5)

4.2.6. Using flat panels with the DIMM-PC/520 under Windows 98 (refer to section 3.2.6)

NOTE:

If the cable configurator does not support your panel compare your datasheet with the datasheet of one of the panels in the cable configurator that you think could be similar to yours. At this point pay close attention to the technology used (TFT, STN), and the resolution (640x480, 800x600). If you find one that is similar to yours, compare the data input connector and the signals with your panel datasheet.

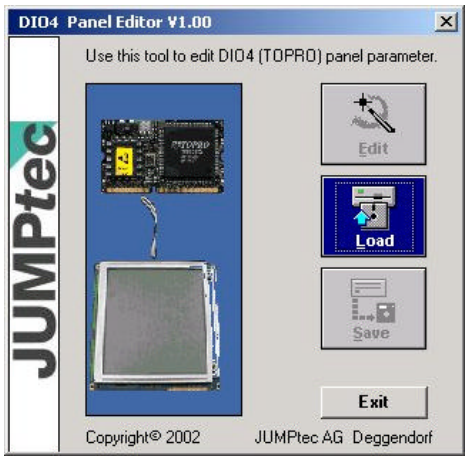
If there is nothing similar to your panel listed in the configurator table, then it will be necessary to adapt the panel by using the KAB-JIPA-Proto → Refer to the JIPA Design Guide.

5. HOW TO CHANGE THE CONTRAST OF A FLAT PANEL DISPLAY (STN ONLY)

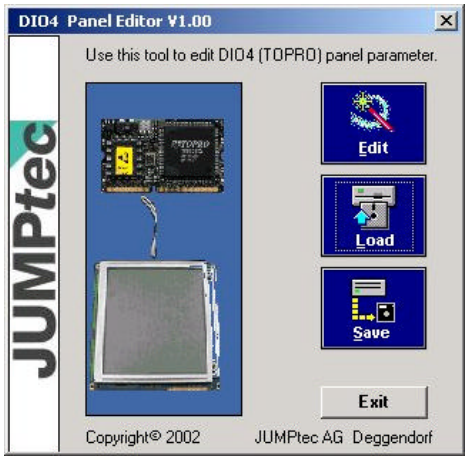
5.1. Using the Panel Editor

5.1.1. Preparing the Panel Contrast File

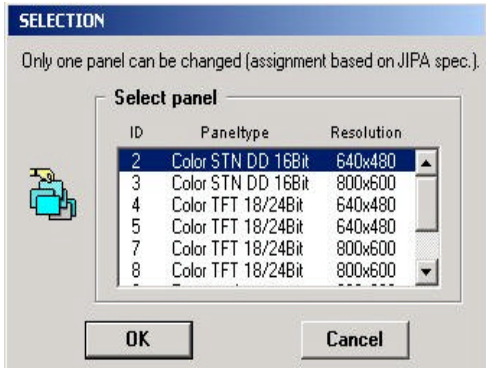
Copy onto a PC, with WIN9x, the program DIO4EDT.EXE and the file default.fpd into a folder (e.g. c:\topro).
Start the program DIO4EDT.EXE and you will see the screen shown in the picture. Press the “Load” button to load the default values (*.fpd file) for the panel editor.



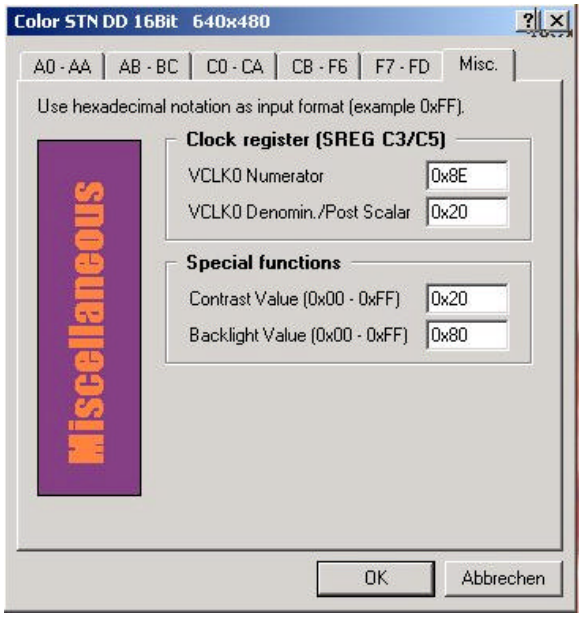
When the default values are loaded the “Edit“ and “Save“ buttons are enabled. When you click on the “Edit” button the “Selection” box will open.



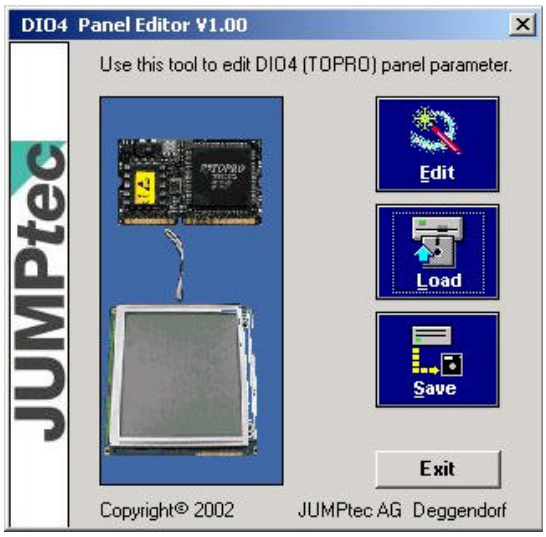
Once the “Selection“ box is open you must choose your panel and click on the “OK“ button.



When the next dialogue box opens you must select the “Misc.“ tab. In the special functions section there is a field for entering “Contrast Value (0x00-0xFF)“. You can **only enter hexidecimal values** from 0x00 (high contrast) to 0xFF (low contrast). When you have entered a contrast value you must click the “OK“ button. That will return you to the main “Panel Editor“ dialogue box.



Once you have returned to the main Panel Editor dialogue box you click on the “Save” button to save the ”Contrast Value” in an extra file and to define the display mode. For the first test it’s good practice to select the “simultan” display mode. Now click on “OK” and give the file a name (e.g. contrast.fpd or FF.fpd). Use the “Exit” button to leave the program. Copy the newly created file (e.g. contrast.fpd or FF.fpd) and the update program, DIO4UPD.EXE, onto a bootable floppy disk.



5.1.2. Updating the serial EEPROM with the new contrast values

Start the system using the bootable floppy disk with the update program and the contrast value file on it.
You can use the update program with the following parameters:
Usage: DIO4UPD <options> <filename>
Options: /W Read file and write content to EEPROM
/R Read EEPROM and write contents to file
/C Read file and compare with EEPROM

Type in the file **DIO4UPD /w contrast.fpd** (or FF.fpd depending on what you named the contrast value file).
After the file is correctly loaded into the EEPROM, switch off the system.

The next time the system is started the new contrast values will be implemented.