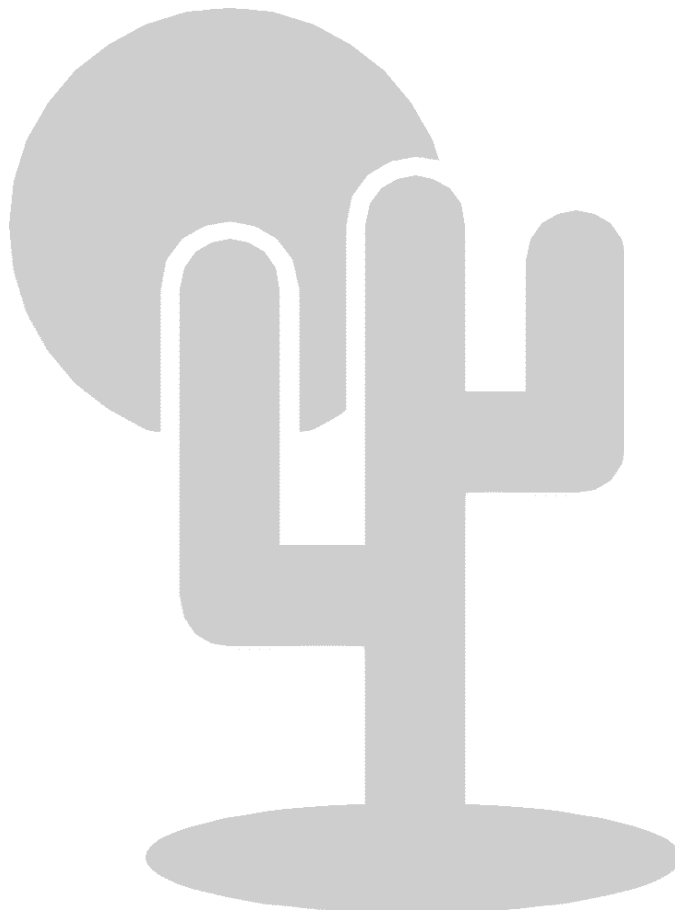


DIGILAB picoMAX MANUAL

ALTERA[®] MAX[®] Architecture
Starter Kit



DIGILAB picoMAX – What and Where

With your DIGILAB you have received the following items:

- DIGILAB board
- Power supply
- Parallel Port Cable
used to connect your board to a PC's parallel port and program a MAX 7000S, MAX 7000AE, MAX 7000B or MAX 3000A EPLD.
- Altera Digital Library CD containing:
 - Altera MAX+plus II programmable logic development system
 - Current Altera data sheets and application notes
 - Acrobat Reader for viewing and printing this and other documents
- Documentation Floppy Disc containing:
 - Readme file on installing the Acrobat Reader and viewing this document
 - This DIGILAB manual



We acknowledge that the following organizations claim trademark rights in their respective products or services mentioned in this document specifically:
Altera, MAX+plus II, MAX, ByteBlaster

We reserve the right to make changes without notice on the boards or specifications described in this document.

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Obtaining Your License File

The MAX+plus II BASELINE or E+MAX software are free, entry-level versions of the Altera MAX+plus II programmable logic development system. In order to use MAX+plus II you need to request a license and register with Altera. The license is valid for six month and free of charge. You may renew your licenses whenever necessary or use multiple systems or licenses. Refer to the Altera license agreement for further details. In order to request your license file you will need to fill out the form at the following WWW address.

<http://www.altera.com/support/licensing/lic-index.html>

If the address should have changed check <http://www.altera.com> for Tools/Licensing

You will need to provide your hard disk volume serial number or your network interface card (NIC) number.

Your hard disk volume serial number is an 8-digit Hexadecimal number (with an optional hyphen) of the format *nnnn-nnnn*, where *n* is any Hexadecimal character (e.g., 62E4-5A74). You can obtain your hard drive volume serial number by typing `dir /p` at a DOS or command prompt on your PC.

Your license file information will be sent to the e-mail address you specify. If you don't have e-mail or access to the WWW you may also use the fax form below. Follow the instructions you receive with your license file information and save it as "license.dat" on your hard disk.

If you don't have WWW access fill out the form below with block letters and fax it to:

El Camino GmbH, Fax +49-(0)8751-842876

Hard Disk ID:

E-mail:

First Name:

Last Name:

Company:

Address:

City:

State/Province: Zip/Postal Code:

Country:

Phone:

Fax:

Installing MAX+plus II

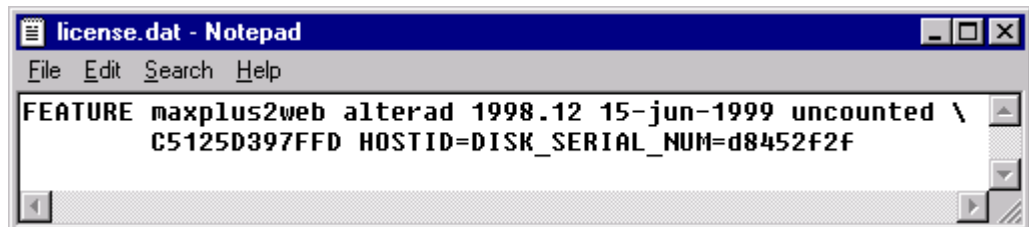
System Requirements

- Pentium class or higher- (recommended) or 486-based PC
- Microsoft Windows NT version 3.51 or 4.0, Microsoft Windows 95 or 98
- Microsoft Windows-compatible graphics card and monitor
- CD-ROM drive
- Microsoft Windows-compatible 2- or 3-button mouse
- Parallel Port
- 100 MByte free hard disk space
- 16 MByte RAM

MAX+plus II Installation

To install the MAX+plus II software, perform the following steps:

- 1) Create a directory on your hard disk to store the installed MAX+plus II files and your license file. For example, create the directory c:\baseline
- 2) Create a license.dat file as instructed in your MAX+plus II license file e-mail and save it into the installation directory you created. A sample license file is shown below:



Important: If your using Notepad be sure the file is saved as "license.dat" and not as "license.dat.txt". Registered extensions might not be shown. Use the DIR command in a DOS box to verify the name is correct.

- 3) Begin installation by executing the **baseline.exe** file from the Altera Digital Library CD \baseline directory.
- 4) The MAX+plus II installation wizard is launched. In the Welcome page click **Next**
- 5) After reading the license agreement, click **YES**. You need to scroll all the way to the bottom before you can click YES.
- 6) Click **OK** in the Warning message box.
- 7) Enter your name and company in the User Information page and click **Next**.
- 8) Select **Full Installation** in the Setup Type page and click **Next**.

- 9) Specify a destination directory for the MAX+plus II BASELINE software installation (e.g., **c:\baseline**). This directory should be the same one you created in step 1, and it should contain the license.dat file.
- 10) Specify a destination folder for the work directory (e.g., **c:\baseline\max2work**). Click **Next**.
- 11) Select a program folder in which the installation program will add a program icon. Click **Next**.
- 12) Your installation choices are displayed in the Start Copying Files page. Click **Next** to begin installation.
- 13) If you are installing on a PC with Windows NT operating system, you will receive a message that the Sentinel driver was installed successfully. This is a driver for an external software guard that only comes with some purchased versions of MAX+plus II. On Windows NT machines the installation of the driver will only work if you have administrator privileges. Click **OK**.
- 14) To view the read.me file, click **YES** when prompted.

Installing the Byteblaster Driver for Windows NT, Windows 2000, Windows XP

On a PC with Windows NT, 2000 or XP you need to install a driver for the Altera download cable Byteblaster, which is also part of your DIGILAB board. The Byteblaster is used for downloading the configuration information through the parallel port of your PC to the JTAG port of the MAX device. You don't need to install a driver on PCs with Windows 95 or 98.

Windows NT

- 1) Go to **Start/Settings/Control Panel** and double-click on **Multimedia** icon.
- 2) Click on **Devices** tab and choose the **Add** button
- 3) Select **Unlisted or Updated Driver** from the List of Drivers list box and choose **OK**. The Install Driver dialog box opens.
- 4) Type or select **\<MAX+plus II system directory>\drivers** in the text box, and choose **OK**. The Add Unlisted or Updated Driver dialog box opens.
- 5) Select **Altera ByteBlaster** from the list box and choose **OK**.
- 6) To install the driver at the current address, choose **OK**. The System Setting Change dialog box is displayed.
- 7) Choose the **Restart Now** button in the System Settings Change dialog box to reboot your computer.

Windows 2000

- 1) Open the Control Panel (Start menu -> **Settings** -> **Control Panel**).
- 2) Double-click on the Add/Remove Hardware icon to start the **Add/Remove Hardware Wizard** and click **Next** to continue.
- 3) In the **Choose a Hardware Task** panel, select the **Add/Troubleshoot a device** radio button and click **Next** to continue. Windows 2000 will search for new Plug and Play hardware (**New Hardware Detection** window).
- 4) In the **Choose a Hardware Device** window, select **Add a new device** and click **Next** to continue.
- 5) In the **Find New Hardware** window, select the **No, I want to select the hardware from a list** radio button and click **Next** to continue.
- 6) In the **Hardware Type** window, select **Sound, video and game controllers** and click **Next** to continue.
- 7) In the **Select a Device Driver** window, select **Have Disk**
- 8) Specify the full directory path to the **win2000.inf** file (e.g., <max+plus II directory>\drivers\win2000) and click **OK**.
- 9) In the **Digital Signature Not Found** warning dialog box, click **Yes** to continue the installation.
- 10) In the **Select a Device Driver** window, select the hardware to install and click **Next** to continue.
- 11) The **Start Hardware Installation** window displays the hardware being installed. Click **Next** to continue.
- 12) In the **Digital Signature Not Found** warning dialog box, click **Yes** to continue the installation.
- 13) In the **Completing the Add/Remove Hardware Wizard** window, click **Finish** to continue.
- 14) A system dialog appears prompting a reboot so that the new settings can take effect.

Windows XP

- 1) Choose **Control Panel** (Windows Start menu).
- 2) Click the **Switch to Classic View** link.
- 3) In the **Control Panel** windows, double-click **Add Hardware** and click **Next**. The **Add/Remove Hardware Wizard** dialog box appears.
- 4) Select **Yes, I have already connected the hardware** and click **Next**.
- 5) In the **Installed hardware** list, select **Add a new hardware device** and click **Next**.
- 6) Select **Install the hardware that I manually select from a list (Advanced)** and click **Next**.
- 7) Select **Sound, video and game controllers** and click **Next**.
- 8) Select **Have disk**
- 9) Specify the full directory path to the ...**maxplus2\drivers\win2000** directory with **Browse (...)**, and click **OK**.
- 10) In the **Digital Signature Not Found** page, click **Yes**. A software installation warning appears.
- 11) Click **Continue Anyway**.
- 12) Select **Altera ByteBlaster** and click **Next**. A hardware installation warning appears.
- 13) Click **Continue Anyway**.
- 14) Click **Finish**.
- 15) When prompted to restart your computer, click **Yes**.

Setting Up MAX+plus II BASELINE Licensing

- 1) Start the software by double-clicking the MAX+plus II icon.
- 2) After reading the license agreement, click **YES**. You need to scroll all the way to the bottom before you can click YES.
- 3) Click **OK** in the MAX+plus II Copy Protection message box. You will enter your license file later.
- 4) Choose **License Setup (Options menu)**.
- 5) Specify the license file by clicking Browse. In the Directories box, go to the directory, where your **license.dat** file is located. (e.g. c:\baseline), select the license.dat file in the Files box, and click **OK**.
The following features should be listed in the **Licensed Features** box:
Hierarchy Display, Message Processor, Text Editor, Graphic Editor, Symbol Editor, Floorplan Editor, Compiler, Timing Analyzer, Programmer, Classic Family, MAX 5000 Family, MAX 7000 Family, EDIF I/O, SVF/JAM Output
- 6) Click **OK** to save your changes.

Setting Up the ByteBlaster in MAX+plus II

- 1) If not running, start the software. For example, double-click the MAX+plus II icon.
- 2) Choose **MAX+plus II/Programmer**
- 3) While no hardware has been selected the Hardware Setup box automatically shows up. Later it can be accessed through **Options/Hardware Setup**.
- 4) Select **ByteBlaster** in the Hardware Type box.
- 5) Select the appropriate parallel port. On PCs with Windows NT or Windows 2000 this box is only accessible after the ByteBlaster driver has been installed.
- 6) Choose **OK** and close the Programmer window

Congratulations! You have successfully installed and licensed the MAX+plus II development system.

Using MAX+plus II for your own Designs

Further Documentation

Enclosed is the Altera Digital Library.

On this CD you'll find all current Altera documentation and data sheets. You may also want to check the Altera homepage at <http://www.altera.com> for more up to date information or newer versions of the MAX+plus II BASELINE software.

<cd-drive>:\Man\Maxiigs.pdf

or

<cd-drive>:\UG\Maxiigs.pdf

The CDROM contains the MAX+plus II Getting Started Manual. In Section 2 from page 73 to page 154 you'll find a detailed description of the MAX+plus II software. Section 3, on pages 155 through 276 contains a detailed tutorial that demonstrates the basic features of MAX+plus II.

<cd-drive>:\Ds\M7000.pdf ...\M7000A.pdf ...\M3000A.pdf

These are data sheets for all devices supported by the DIGILAB picoMAX.

Board Description

Power Supply

The DIGILAB includes a power supply, strong enough for programming a MAX device and the board itself. Depending on any custom logic, higher frequencies or other external consumers you may need to evaluate power consumption, use a different power supply and consider limitations of the on board voltage regulator.

Connectors

1. Power – J6
Connect VCC to the inner pin and GND to the outer shell of the power connector. There's a variable regulator (LM317T) on board and you may supply 5 to 10V unregulated DC.
2. Parallel Port – P1
Use the included parallel port cable to connect your PC's parallel port with the DIGILAB parallel port connector. This interface is used to program the MAX EPLD on the DIGILAB picoMAX.

Jumper Settings

The DIGILAB pico MAX has four Jumpers. Two are used to set the power supply, the two others are used to adapt for MAX3000A devices.



The Jumper Locations are documented on page 12 in this manual.

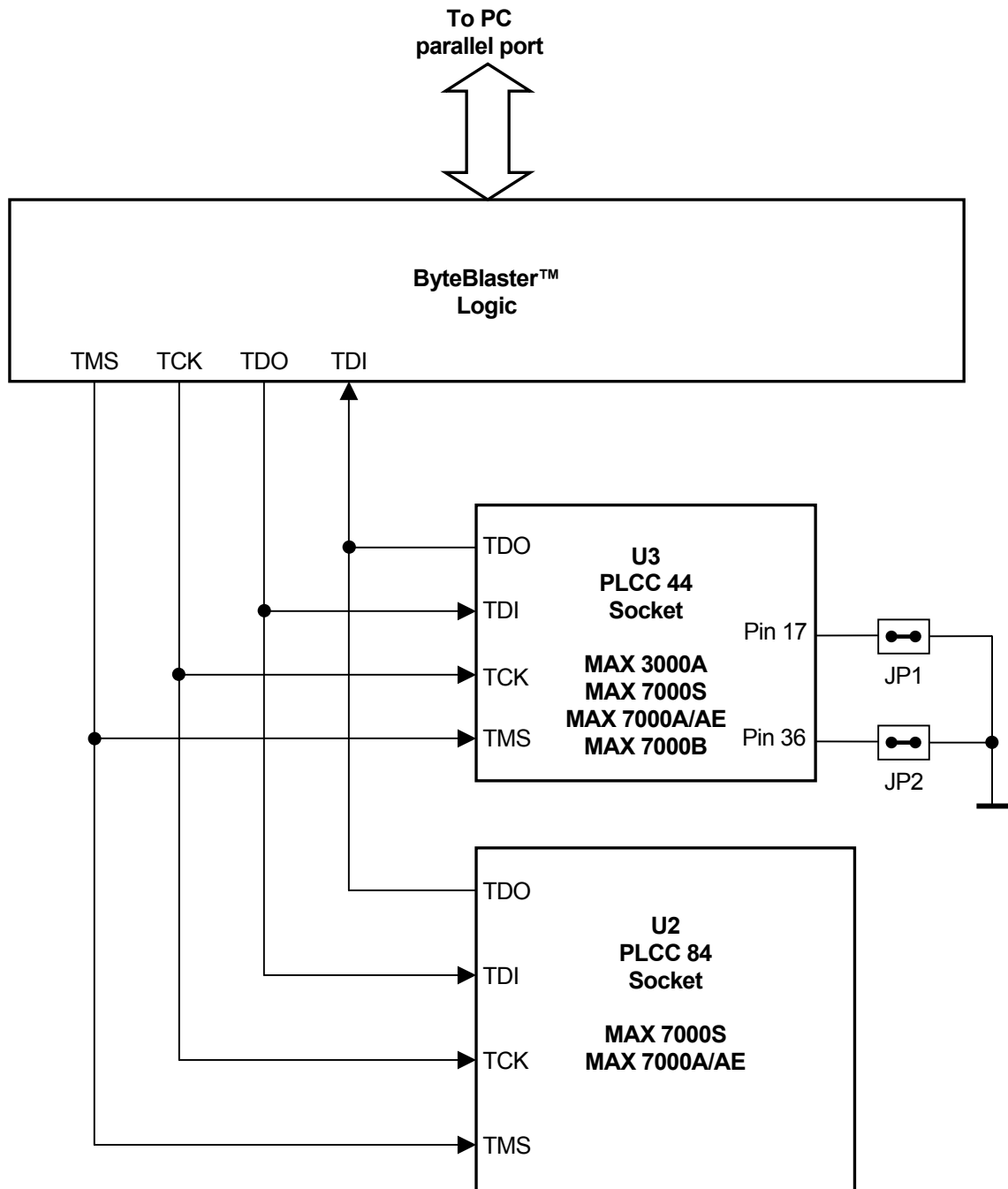


The correct setting of JP9 and JP3 is very important as they select between 2.5V, 3.3V and 5V supply voltages. Setting it to a higher voltage than required while using a 3.3V EPLD (MAX 7000A, MAX 7000AE or MAX 3000A) or 2.5V EPLD (MAX 7000B) might cause permanent damage to the MAX device.

	Voltage	JP9	JP3	JP1	JP2
MAX7000S	5V	open	open	open	open
MAX 7000A or MAX 7000AE	3.3V	closed	open	open	open
MAX 3000A	3.3V	closed	open	closed	closed
MAX 7000B	2.5V	open	closed	open	open

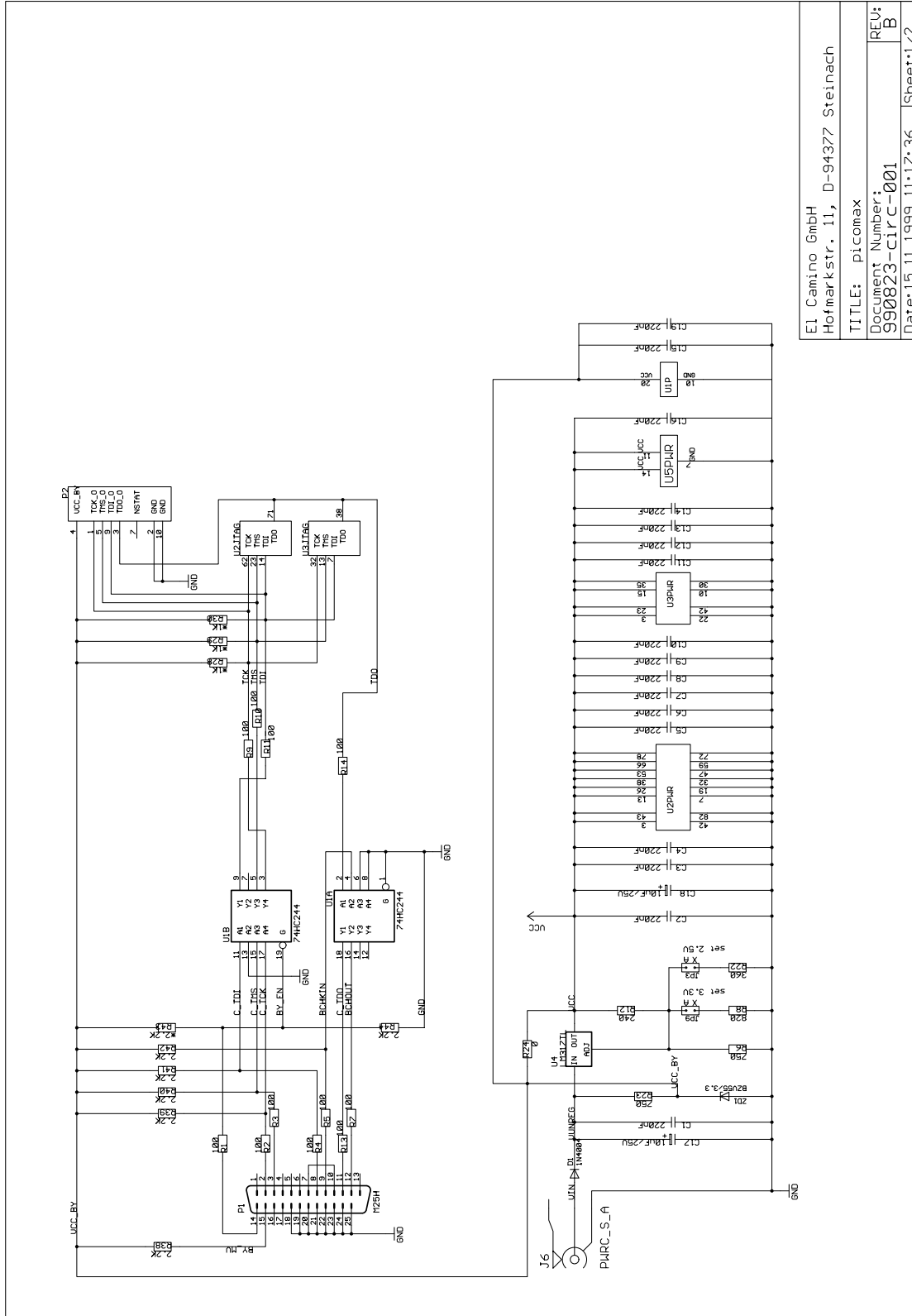
default

JTAG Chain Configuration



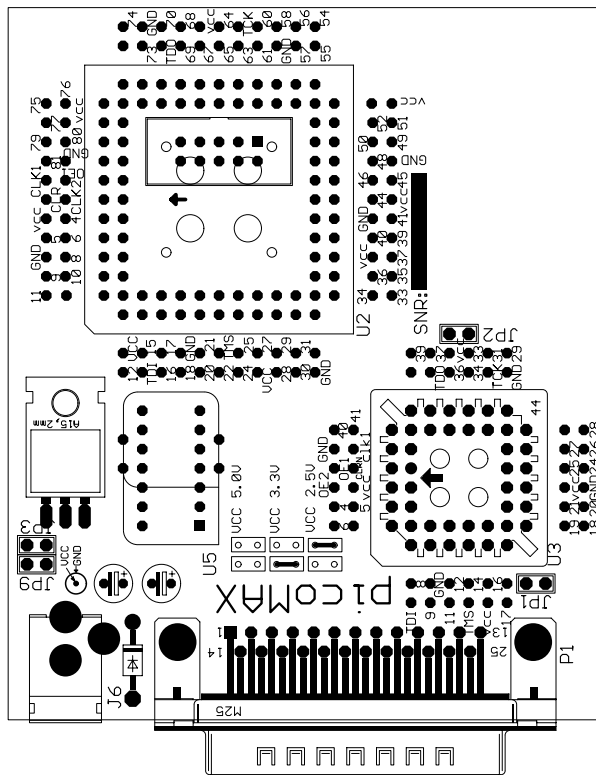
**Only one device may be on the board at any given time!
(TDO Outputs are connected)**

Board, Schematic, Page 1

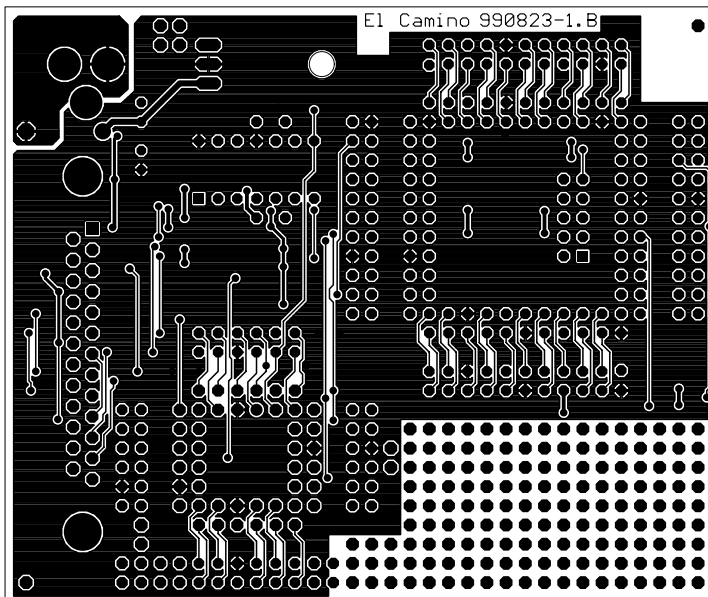


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Board, Components Top Side



Board, Layout Top Side



Board, Layout Bottom Side

