

Debug TERN Controllers via USB with Paradigm C/C++ - TERN Edition

General Information:

This documentation includes information on where to buy and how install a USB to RS-232 converter to allow for debugging TERN controllers via USB port.

Confirmed compatibility as of 08-19-02: Windows 98 and 2000

Confirmed compatibility as of 08-20-02: Windows XP

Manufacturer:

ATEN™ International Co., Ltd.

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Product Distributor:

Website: www.bb-elec.com

Product name: UC232A

Introduction:

The development of TERN controller requires an RS-232 level serial port on a PC to communicate, download, and remote debug. This USB to RS-232 converter provides a simple solution for Laptops without a serial port or for users who desire multiple serial connections to the same PC but only have one serial port on their PC.

Requirements:

It will be assumed you have purchased TERN's EV-P or DV-P. Assuming this means that you already have a TERN CD, a TERN microcontroller, wall transformer, and a debug cable (DB-9 to 10-pin connector). It will also be assumed that you have installed the TERN CD, meaning that you can launch Paradigm C/C++, and be ready to download code onto a TERN microcontroller.

It will also be assumed you have purchased the UC-232A converter from ATEN™ International Co., Ltd or their distributor (information above).

Getting Ready:

- (1) Connect the DB-9 female connector of the TERN debug cable to the DB-9 male connector of the UC-232A converter.

- (2) Connect the 10-pin connector of the debug cable to your controller, referring to you controller's technical manual for details.
- (3) Insert ATEN's mini CD, "Driver and Info Pac CD", into you CD-ROM drive on your PC. Do not run anything from the CD (close any windows that open in relation to the CD-ROM drive).

Installing the correct driver:

You now have everything ready to go, all that is needed is to install the correct driver for the UC-232A converter and you will be ready to jump into development of your TERN controller.

Plug the USB side of the converter into an open USB port on your PC. Plug and Play should see the new hardware and prompt you to install a driver.

- (1) Windows should launch the *Add New Hardware Wizard*. Click *Next*.
- (2) In the next window, select *Search for the best driver for your device*.
- (3) In the next window, select *Specify a Location*. Make sure to de-select all others options. Under *Specify a Location*, choose *Browse*. Go to your CD-ROM drive (the ATEN installation CD should already be in your CD-ROM drive), and select the directory *UC232A*.

For Windows 98: Use this directory (*UC232A*), do not select the *Win98_Me* directory.

For Windows 2000: Under the *UC232A* directory, select the *Win2000* directory.

- (4) Click *Next* after specifying the correct directory as given by the above instruction.
- (5) The *Add New Hardware Wizard* should then say it has found the driver it would like to install:

For Windows 98, it should have found *m:\UC232A\SERWPL.INF*

For Windows 2000, it should have found *m:\UC232A\Win2000\SERPORT.INF*.

- (6) If the above files were found correctly, based on your PC's O/S, click *Next*.
- (7) Windows should then install the appropriate drivers. Allow Windows to finish.
- (8) The installation is almost complete. There is one more step.
- (9) Go to *Start*, then *Control Panel*, then *System*. Click on *Device Manager*.
- (10) Expand the *Ports* target in the *Device Manager* by clicking the plus (+) sign.
- (11) If the installation was successful, you should see "ATEN USB to Serial Port (COMx)" under the Ports target.
- (12) In the previous step, "COMx" tells you what COM port the converter was installed to.

Now you are ready to open Paradigm C/C++ and download to your TERN controller via the USB port and the converter.

Now that you have your controller connected to the USB port, Paradigm C/C++ needs to be told what COM port your controller is connected to. In the Paradigm C/C++ window, right mouse click on the *AXE* node of your target. Go to *Target Expert* and select *Configure Settings*. Use the drop menu under *Device* and select the COMx that corresponds with the USB port on your PC. Re-build your target and then you should be able to download.

Windows XP:

When installing driver for Windows XP follow prompts/instructions included with the converter. The above instructions were not written for Windows XP. Contact ATEN™ International Technical Support for help with Windows XP.

Extra Notes / Hints:

During TERN's usage and testing of this converter we have discovered the following, which may create fewer headaches:

- If you have Windows 98. You may have noticed that under the UC232A directory on the CD, there is a Win98_Me directory. When we have selected this directory as the place for Windows to search for the correct driver, we have observed undesirable operation. With the Win98_Me directory selected, we notice that Paradigm C/C++ was unable to open or communicate with the USB port. Using the UC232A directory instead has produced the desired operation.
- The *Support* link on the ATEN™ web site offers a troubleshooting guide for any problems you may encounter. If you are trying to install this converter on a Laptop, we suggest you seek further instruction on the ATEN™ website.
- Most importantly, this converter can allow you to create multiple serial port connections from your TERN controller to a single PC. This can provide a considerable advantage when developing your application, allowing you to debug code which uses many serial ports all on the same PC.