

# **C** for BASIC-Tiger™

- ANSI C Compiler (nearly 100%)
- Standard C Library
- Device Drivers + I/O-Functions
- Debugger
- Downloader
- Eclipse IDE

# *Tiger C*™ 1.0

[www.wilke-technology.com](http://www.wilke-technology.com)



# Getting Started with Tiger C™

Welcome to Tiger C™ tools, new powerful development environment for BASIC-Tiger™ embedded computers.

## Installation

1. To install Tiger C tools on your computer, please run the program „**TigerC\_1\_01\_Installer.exe**“ that is placed in the root directory of the install medium.
2. The installation wizard will lead you through the process of selecting and copying the files to your hard disk.
3. While installing the software, you will be asked to enter the serial number of the product. The serial number has format XXXX-XXXX-XXXX and is delivered together with the purchased software either as a label on the outside of the Tiger C CD jewel box or a part of an email.
4. The software packages that are offered for installing include Tiger C, Hardware Manual, Eclipse and Java. You are free to choose any or all of these software packages, dependently on what tools are already installed on your computer. Please, read very carefully information about required versions of the used programs in the chapter „Versions and Dependencies“.
5. Tiger C package consists of the C compiler, linker, debugger, libraries, samples and documentation.
6. Hardware Manual is a PDF Manual describing the Basic Tiger™ Hardware.
7. Eclipse package contains the Eclipse SDK, CDT SDK implementing the general support of the C programming language for Eclipse, Tiger C plugins for Eclipse enabling the comfortable software development of Tiger C programs, Tiger C online help for Eclipse.
8. Java Runtime Environment (JRE) package is necessary to run the Eclipse IDE.
9. The files of the packages will be moved to the following subdirectories created in the root directory of your choice (which will be referenced as X:\ROOTDIR from now on): Tiger C to „*TigerC.windows*“, Eclipse SDK with CDT SDK, Tiger C plugins for Eclipse and Tiger C online help for Eclipse to „*eclipse*“.
10. The installation program adds the Tiger C compiler path (,X:\ROOTDIR\TigerC.windows\bin“) to the windows environment variable **PATH** and creates an environment variable **TIGERC\_HOME** and assigns to the Tiger C path (,X:\ROOTDIR\TigerC.windows“) to it.

# Getting Started using Eclipse

1. Start Eclipse
  - 1.1 Start Eclipse by clicking in Program menu „Eclipse for Tiger C“. If Eclipse starts the first time, Eclipse will ask you for the path of a WORKSPACE. Choose this given default Workspace.
  
2. Create new project
  - 2.1 For creating a new project, click *File* → *New* → *Managed Make C Project...*
  - 2.2 Enter the Project name: „hello\_world“ and click button „**Next**“.
  - 2.3 Choose the Project Type: Executable (TigerC on Windows) and click button „**Finish**“. New project is created.
  
3. Create new C-File (NOTE: for using an existing C-File **continue reading from 4.**)
  - 3.1 For creating a new C-File in your project click *File* → *New* → *Source File*.
  - 3.2 Enter the Source File: „hello\_world.c“ and click button „**Finish**“. The C-Source file is created.
  - 3.3 In the recently created source file, type the source text of your „hello\_world.c“ program.
  
4. Import the existing C-File „hello\_world.c“
  - 4.1 You don't want type the program by yourself, so continue reading here.
  - 4.2 In the view „C/C++ Projects“, right click a project and select „Import“.
  - 4.3 Select in the box „File system“ and click „**Next**“.
  - 4.4 Enter the path or browse to the directory of the source file.
  - 4.5 Underneath, in the left box, you can see the directory. In the right box you can see the files. Check the files which you want to import in the project and click button „**Finish**“.
  
5. Choose driver for Output
  - 5.1 In the view „C/C++ Projects“, right click the project and choose „Properties“.
  - 5.2 In the view of the left site, select „C/C++ Build“.
  - 5.3 On the right site, in the above frame „Active configuration“, change the „Configuration“ from „Debug\_Tiger1“ to „Release\_Tiger1“.
  - 5.4 In the tab „Tool Settings“, click on „Drivers“.
  - 5.5 Now choose Driver1: „SERIB\_K1“ and click button „**OK**“.
  - 5.6 If the project was not saved, click „Save“ for building the project. (*Project*→*Build automatically* is selected) or click *project*→*Build Project* (*Project*→*Build automatically* is **not** selected).

6. Create the run configuration
  - 6.1 In the view „C/C++ Projects“, select the project.
  - 6.2 In the menu „Run“ select „Run...“.
  - 6.3 In the box „Configurations“, expand „TigerC Application“.
  - 6.4 Choose „New“. The name of the new project is displayed in the box „Configurations“. The default name is the name of the project.
  - 6.5 Select the tab „Main“ to set a specific „Project“ and „C/C++ Application“: In Textbox „Project“ there has to be written the „*project\_name.exe*“. In the Textbox „C/C++ Application“, there has to be written „*release\_Tiger1/project\_name.exe*“. (use the button for easy input)
  - 6.6 **Be careful, the board has to be switched to „PC“ mode.**
  - 6.7 Click button „Run“ to download the program by starting automatically Tiger C Downloader. Tiger C Downloader can be found in a folder „TIGERC\_HOME/bin“ and called „twload32.exe“. If necessary Tiger C Downloader has to be configured, too. (Default Download Port is COM1)
  
7. To see „Hello, World!“, attach any serial terminal (e.g. Windows Hyper Terminal) and configure port
  - 7.1 Set the serial port connected to the board
  - 7.2 Set the Baud Rate to 38400
  - 7.3 Set the Data Bit to 8
  - 7.4 Set the Parity to none
  - 7.5 Set the Stop Bit to 1
  - 7.6 Connect the configured PC COM Port to serial 0 on the board.
  
8. Switch board to „Run“ mode
  
9. Press „Reset“ button on the board
  
10. Now you see „Hello, World!“ on the screen of your serial terminal

## Getting Started using Command Line Tools (tigc, make)

1. Change to sample directory
  - 1.1 Change to the directory „TIGERC\_HOME/samples/hello\_world“ that contains the file „hello\_world.c“. This program will install the serial driver ser1b\_k1.o (under the symbolic name „SER1B\_K1“) and output the text „Hello, World!“ over the serial channel 0 (zero) using printf function.

## 2. Build executable file

- 2.1 To build the executable file using **tigc**, type in the command line:  
`„tigc -o hello_world.exe hello_world.c -driver SER1B_K1=ser1b_k1.o“.`
- 2.2 To build the executable file using **make**, type in the command line:  
`„make“.`
- 2.3 If the program doesn't contain any errors, the **tigc** creates the downloadable file `hello_world.tgu`.

## 3. Download executable file

- 3.1 Connect a PC serial port to the SER1 port of the board.
- 3.2 Switch the board to the PC mode and press „Reset“ button on the board.
- 3.3 To download the file `hello_world.tgu` to the board, start the Tiger C downloader (`TIGERC_HOME/bin/twload32.exe`), select the file `hello_world.tgu` over the menu „Download/Program module...“ and start download.

## 4. Run program

- 4.1 To see the results of the program execution, attach any serial terminal and configure the serial port corresponding to the installation settings used for the driver „SER1B\_K1“ in the call of the function „`device_install`“ in the source text of the program „`hello_world.c`“. The settings are 38400 Baud, 8N1.
- 4.2 Connect a PC serial port to the SER0 port of the board.
- 4.3 Switch the board to the RUN mode.
- 4.4 Now you see „Hello, World!“ on the screen of your serial terminal

## 5. Help

- 5.1 If the `tigc` or `make` can not found or some of necessary components are reported to be not available, first of all check the environment variables `TIGERC_HOME` and `PATH`.
- 5.2 See Online Help for detailed information about Tiger C compiler options, libraries and hardware.

## Versions and Dependencies

1. The versions of the software packages can be of crucial importance for the faultless cooperation of different programs.
2. All delivered software components were thoroughly tested only in the versions combination that will be described below. We cannot guarantee that another constellation of releases of the components will work properly.

3. The versions of the delivered packages are the following: *Tiger C 1.01*, *Eclipse SDK 3.1.1*, *CDT SDK 3.0.0*, *Tiger C plugins for Eclipse 1.0.7*, *Java Runtime Environment (JRE) 1.5.0.06*.
4. Tiger C plugins for Eclipse 1.0.7 require to be correctly executed CDT SDK 3.0.0.
5. CDT SDK 3.0.0 requires Eclipse SDK 3.1.1. The CDT SDK is developed very actively now, therefore the dependencies of the future releases should be checked very carefully. If you would like to keep the CDT and Eclipse up-to-date without our support, visit the Web Sites of Eclipse ([www.eclipse.org](http://www.eclipse.org)) and CDT ([www.eclipse.org/cdt/](http://www.eclipse.org/cdt/)).
6. Eclipse SDK 3.1.1 requires Java Runtime Environment (JRE) 1.5.0.00 or higher.
7. Tiger C tools make use of some Cygwin programs that are based on several Cygwin DLLs. These DLLs are copied to the Tiger C „bin“ directory when installed. Other software products use extensively different Cygwin tools and DLLs also. The availability of many variants of the same DLL can cause the versions collision that must not remain unresolved.
8. Basic Tiger™ Hardware Manual is in no way bound to any of other software components. But if you already used Tiger Basic™, you could have this Manual on your computer and do not need to install it again.

## Samples

1. The directory „**TIGERC\_HOME/samples**“ contains samples that demonstrate how to work with device drivers, multitasking mechanisms, tiglib functions.
2. To build all samples that are related to one sample area, run **make** program in the root directory of this area (i.e. in directories ‘tiglib’, ‘drivers’, ‘multitasking’).
3. To build samples from the particular subdirectory only, change to this subdirectory and run **make** program in it.
4. All samples use the channel 0 (zero) of the serial device driver to print the test results.
5. The symbolic name used by samples for the serial device driver is always „SERIB\_K1“.
6. The parameters of the serial channel are the following: 38400 Baud, 8N1.
7. If a sample is compiled from the command line, the argument „-driver SERIB\_K1=serIb\_k1.o“ must occur among the compiler (linker) arguments.

## Documentation

1. Tiger C Online Help can be used either as HTML (CHM) help or as built-in online help for Eclipse.
2. The HTML help file can be found in the directory „[TIGERC\\_HOME/doc](#)“ and is called „[TigerC\\_Help.chm](#)“. This online help will be also started if you activate „[Wilke Technology/Tiger C 1.01/Help/Tiger C Online Help](#)“ in the Program menu.
3. The online help for Eclipse is directly launched from Eclipse over the menu „[Help/Help Contents](#)“.

## System Requirements

These are the minimum system resources Tiger C requires:

- Pentium®-class processor
- Microsoft® Windows® 98 SE, Windows NT Workstation 4.0 with SP6, Windows 2000 Professional with SP2, Windows XP Professional or Home
- 256 MB RAM for Tiger C compiler (for building very large projects)
- 512 MB RAM (1 GB recommended) for Eclipse, CDT and Tiger C plugins for Eclipse
- 220 MB of available hard-disk space for full installation
- CD-ROM drive if installing from a CD

## Company Information

Wilke Technology GmbH  
Heider-Hof-Weg 23D • 52080 Aachen •  
Germany

Phone: +49 (241) 918900

Fax: +49 (241) 9189044

Email: [support@wilke.de](mailto:support@wilke.de)

Web (German): <http://www.wilke.de>

Web (English): <http://www.wilke-technology.com>

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