

# SofTec Microsystems

## Application Note AN002: Creating a New Project with ST7 Visual Debug

by A. Toniolo (atoniolo@softecmicro.com)

This Application Note explains how to create a new project with the STVD7 IDE using the ST7 Assembler, the Metrowerks (ex-Hiware) C compiler, or the Cosmic C compiler.

### 0. Common Setup

---

Before to create a new STVD7 project, you must verify that some critical path settings are correctly specified.

On STVD7, select “**Toolchains Path**” from the “**Project**” menu. A dialog box will open showing the current path settings.

The “**Cosmic builder path**”, “**Hiware builder path**” and “**ST7 Assembler path**” settings must specify the location where the corresponding files are located.

If you are working with an inDART-STX series tool, the correct paths for default installations should be:

```
C:\COSMIC\EVALST7\hst7
C:\Program Files\Metrowerks\CodeWarrior_STM_V1.1\prog
C:\Program Files\SofTec Microsystems\inDART-STX\ST7\asm
```

Actual paths may vary, depending on where you decided to install the single programs and on the version of the programs (for example, the Cosmic path shown above refers to the Cosmic evaluation version present on the inDART-STX installation CD).



Copyright © 2004 SofTec Microsystems®  
DC00748

#### SofTec Microsystems

E-mail (general information): [info@softecmicro.com](mailto:info@softecmicro.com)

E-mail (marketing department): [marketing@softecmicro.com](mailto:marketing@softecmicro.com)

E-mail (technical support): [support@softecmicro.com](mailto:support@softecmicro.com)

Web: <http://www.softecmicro.com>

#### Important

SofTec Microsystems reserves the right to make improvements to its products, their documentation and software routines, without notice. Information in this manual is intended to be accurate and reliable. However, SofTec Microsystems assumes no responsibility for its use; nor for any infringements of rights of third parties which may result from its use.

SOFTEC MICROSYSTEMS WILL NOT BE LIABLE FOR DAMAGES RESULTING FROM LOSS OF DATA, PROFITS, USE OF PRODUCTS, OR INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

#### Trademarks

inDART is a trademark of SofTec Microsystems.

Microsoft and Windows are trademarks or registered trademarks of Microsoft Corporation.

PC is a registered trademark of International Business Machines Corporation.

Other products and company names listed are trademarks or trade names of their respective companies.

## 1. Creating a New Assembly Project

The simplest way to create a new Assembly project is to start with an existing project and to change its key parameters.

You can start with the Assembly version of the `adc.wsp` project (provided by SofTec Microsystems) and modify it according to the steps below.

1. Verify the toolchain paths as explained above (*Common Setup*).
2. Copy the folder containing the `adc.wsp` project (STVD7\Samples\Asm\ADC) into another location and rename the new folder with the name of the new project (for example, `asm_new`).
3. Execute the `clean.bat` file present in the new folder.
4. Delete the following files:
  - `adc.lst`
  - `adc.map`
  - `adc.s19`
  - `ST7LITE2.lst` (or any other microcontroller-specific listing file present)
5. Replace the microcontroller-specific `.asm` file with the `.asm` file of the new target microcontroller.
6. Rename the following files:
  - `adc.wsp`        `as`     `asm_new.wsp`
  - `adc.asm`        `as`     `asm_new.asm`
7. Open the `asm_new.wsp` project with STVD7.
8. Select **“Project Settings”** from the **“Project”** menu.
9. In the *Project Settings* dialog box, in the **“Executable”** section, change the **“Filename”** parameter to name of the desired executable file, with the correct file extension (e.g. `asm_new.s19`).
10. In the same *Project Settings* dialog box, verify that the following parameters are set as specified:
  - Software Toolchain:            ST7 Assembly Chain
  - Maker:                            ST7 Assembler Batch File
  - Makefile or batch file:        `build.bat`
  - “Build” command line:        `build.bat`
  - “Rebuild All” command line:   `build.bat`
11. Save the Workspace (**File > Save Workspace**).
12. Edit the `build.bat` file as follows:

- Change the second row to:  
`asm [device.asm] -li`  
(where [device.asm] is the microcontroller-specific .asm file you specified in point 5)
- Change the third row to:  
`asm asm_new.asm -li`
- Change the fourth row to:  
`lyn [device].obj+ asm_new.obj, asm_new.cod;`  
(where [device] is the filename, without extension, of the microcontroller-specific .asm file you specified in point 5)
- Change the fifth row to:  
`asm [device] -sym -fi= asm_new.map`  
(where [device] is the filename, without extension, of the microcontroller-specific .asm file you specified in point 5)
- Change the sixth row to:  
`asm asm_new -sym -fi= asm_new.map`
- Change the last row to:  
`obsend asm_new.cod,f, asm_new.s19,s`

#### References

For more information on the ST7 Assembly language and Assembler directives, please refer to the following document:

- ST7 Assembler-Linker User Manual (ast7-lst7.pdf)

## 2. Creating a New C (Metrowerks) Project

---

The simplest way to create a new project based on the Metrowerks (ex-Hiware) C compiler is to start with an existing project and to change its key parameters.

You can start with the Metrowerks C version of the `adc.wsp` project (provided by SofTec Microsystems) and modify it according to the steps below.

1. Verify the toolchain paths as explained above (*Common Setup*).
2. Copy the folder containing the `adc.wsp` project (STVD7\Samples\Metrowerks\ADC) into another location and rename the new folder with the name of the new project (for example, `mw_new`).
3. Execute the `clean.bat` file present in the new folder.
4. Delete the following files:
  - `adc.abs`
  - `adc.map`
  - `main.lst`
  - `START07.lst`
5. Rename the following files:
  - `adc.wsp`            `as`        `mw_new.wsp`
  - `adc.mak`            `as`        `mw_new.mak`
6. Open the `mw_new.wsp` project with STVD7.
7. Select **“Project Settings”** from the **“Project”** menu.
8. In the *Project Settings* dialog box, change the following parameters as specified (the `mw_new` string can of course be replaced with the name of the desired executable file):
  - **Filename:**  
`mw_new.abs`
  - **Makefile or batch file:**  
`mw_new.mak`
  - **“Build” command line:**  
`maker mw_new.mak mw_new.abs`
  - **“Rebuild All” command line:**  
`maker -MkAll mw_new.mak mw_new.abs`
9. In the same *Project Settings* dialog box, verify that the following parameters are set as specified:
  - **Software Toolchain:**                    `ST7 Hiware Toolchain`

- Maker: Hiware maker

10. Save the Workspace (**File > Save Workspace**).
11. Open the `project.prm` file and edit the memory map according to the memory map of the target microcontroller.
12. Edit the `mw_new.mak` file as follows:
  - In the file descriptor, change the `adc` string with the `mw_new` string.
  - Change the value of the `PATHC` variable:  
`PATHC = C:\Program  
Files\Metrowerks\CodeWarrior_STM_V1.1`
  - Change the value of the `APPLI` variable to the name of the executable file:  
`APPLI = mw_new` (or the executable filename you specified in point 8)
  - Assign the `C_SRC_LIST` variable the list of the C source files making up the project:  
`C_SRC_LIST = main.c START07.c`
  - Assign the `ASM_SRC_LIST` variable the list of the Assembly source files making up the project (or leave empty if there are no Assembly source files):  
`ASM_SRC_LIST =`

### References

For more information on the Metrowerks C compiler and related tools, please refer to the following documents:

- STMicroelectronics ST7 Assembler (Manual Assembler ST7.pdf)
- STMicroelectronics ST7 Compiler (Manual Compiler ST7.pdf)
- SmartLinker (Manual SmartLinker.pdf)
- Burner (Manual Burner.pdf)
- Libmaker (Manual Libmaker.pdf)
- Decoder (Manual Decoder.pdf)
- Maker—The Make Tool (Manual Maker.pdf)

---

### 3. Creating a New C (Cosmic) Project

---

The simplest way to create a new project based on the Cosmic C compiler is to start with an existing project and to change its key parameters.

You can start with the Cosmic C version of the `adc.wsp` project (provided by SofTec Microsystems) and modify it according to the steps below.

1. Verify the toolchain paths as explained above (*Common Setup*).
2. Copy the folder containing the `adc.wsp` project (`STVD7\Samples\Cosmic\ADC`) into another location and rename the new folder with the name of the new project (for example, `cosmic_new`).
3. Execute the `clean.bat` file present in the new folder.
4. Delete the following files:
  - `adc.elf`
  - `adc.map`
  - `main.ls`
  - `vector.ls`
5. Rename the following files:
  - `adc.wsp`        `as`        `cosmic_new.wsp`
  - `adc.mak`        `as`        `cosmic_new.mak`
  - `adc.lkf`        `as`        `cosmic_new.lkf`
6. Open the `cosmic_new.wsp` project with STVD7.
7. Select **“Project Settings”** from the **“Project”** menu.
8. In the *Project Settings* dialog box, change the following parameters as specified (the `cosmic_new` string can of course be replaced with the name of the desired executable file):
  - **Filename:**  
`cosmic_new.elf`
  - **Makefile or batch file:**  
`cosmic_new.mak`
  - **“Build” command line:**  
`gmake -f cosmic_new.mak`
  - **“Rebuild All” command line:**  
`gmake -f cosmic_new.mak rebuild`
9. In the same *Project Settings* dialog box, verify that the following parameters are set as specified:

- Software Toolchain: ST7 Cosmic Toolchain
- Maker: Gmake

10. Save the Workspace (**File > Save Workspace**).
11. Open the `cosmic_new.lkf` file, edit the file header with the new project name and edit the memory map according to the memory map of the target microcontroller.
12. Edit the `cosmic_new.mak` file as follows:
  - In the file descriptor, change the `adc` string with the `cosmic_new` string.
  - Change the value of the `PATHC` variable:  
`PATHC = C:\COSMIC\EVALST7`
  - Change the value of the `APPLI` variable to the name of the executable file:  
`APPLI = cosmic_new` (or the executable filename you specified in point 8)
  - Assign the `C_SRC_LIST` variable the list of the C source files making up the project:  
`C_SRC_LIST = main.c vector.c`
  - Assign the `ASM_SRC_LIST` variable the list of the Assembly source files making up the project (or leave empty if there are no Assembly source files):  
`ASM_SRC_LIST =`

### References

For more information on the Cosmic C compiler, please refer to the following document:

- C Cross Compiler User's Guide for STMicroelectronics ST7 (cxst7\_Eval.pdf)