



ST7MDTx-KIT

ST7 MCU STARTER KIT

Each ST7 Starter kit includes all you need to get started with the selected ST7 devices.

Hardware Features

- EPROM Programming Board (EPB)
- 13.5 V Power Supply
- Interface Cable for connection to PC parallel port (LPT)
- EPROM Sample Devices:
 - MDT1:
2 x ST72E251G2 (CERDIP 32-pin)
 - MDT2:
ST72E311N4D0S (CERDIP 56-pin)
ST72E311J4D0S (CERDIP 42-pin)
 - MDT4:
ST72E272K4D0 (CERDIP 32-pin)
ST72E372J4D0 (CERDIP 42-pin)
ST72E671N6D0 (CERDIP 56-pin)

Software Features (ST7 CDROM)

- Software Development Tools for Windows 3.11, Windows 95 and Windows NT:
- ST Assembler, Linker, Librarian and Formatter
- WGDB7 Simulator/Debugger
- EPROMer Utility
- Demo Version of Hiware C Toolchain
- Application Notes with source code software examples.
- ST7 Instruction Set Help File



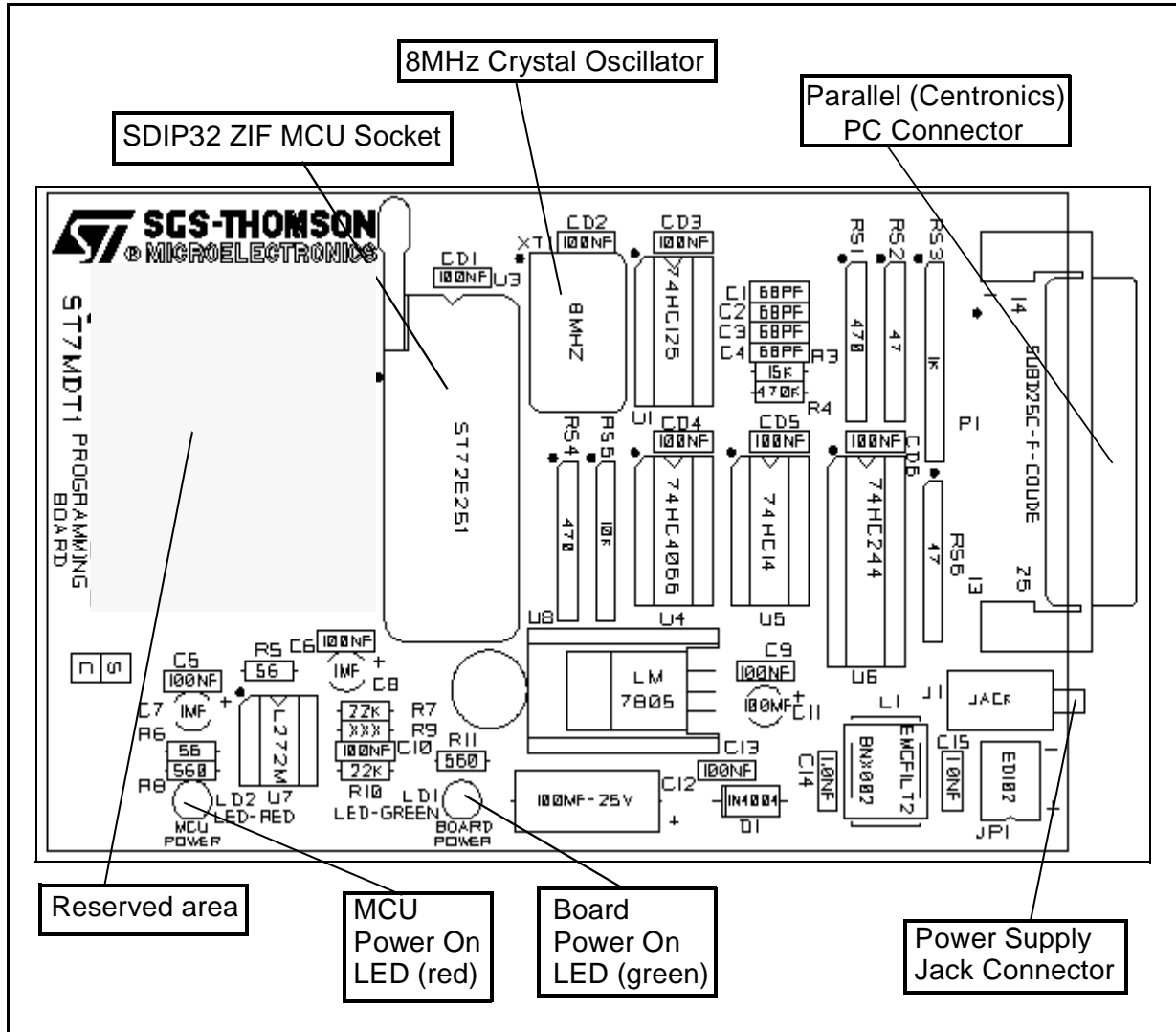
Rev. 1.0

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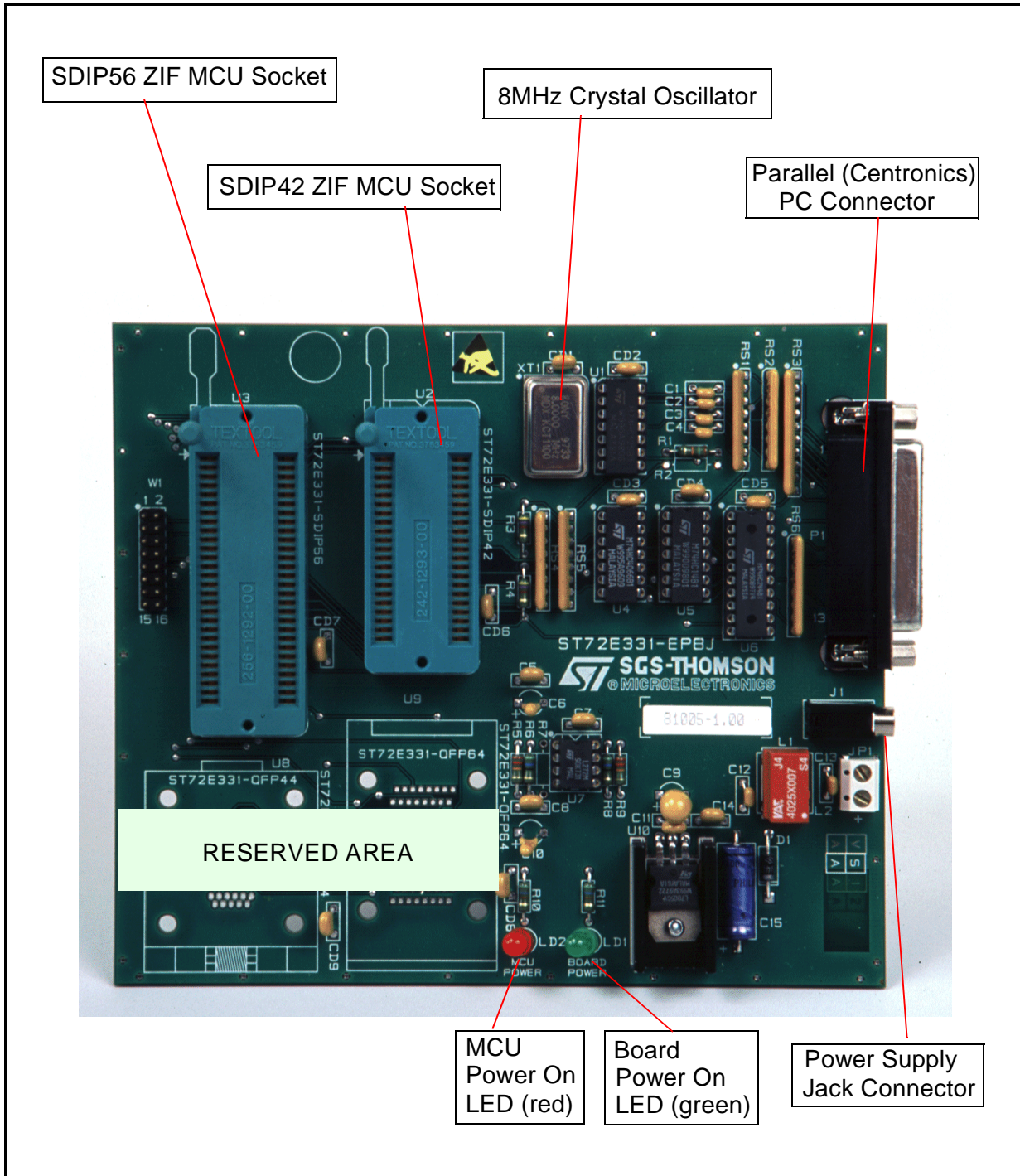
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1 OVERVIEW

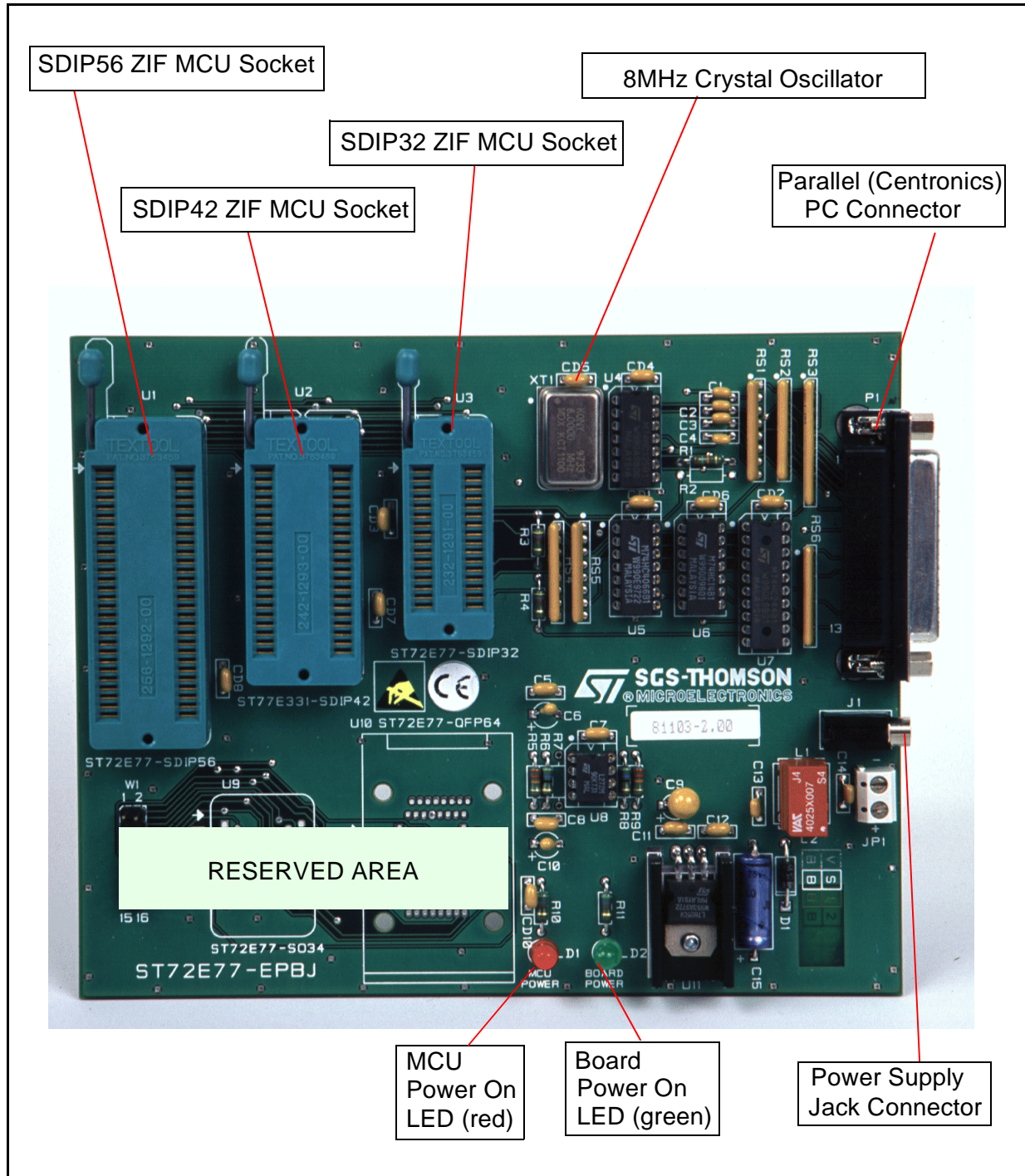
1.1 MDT1 BOARD LAYOUT



1.2 MDT2 BOARD LAYOUT



1.3 MDT4 BOARD LAYOUT



1.4 SOFTWARE

1.4.1 Tools

To help you design and program your applications, the following software has been included in the Starter Kit:

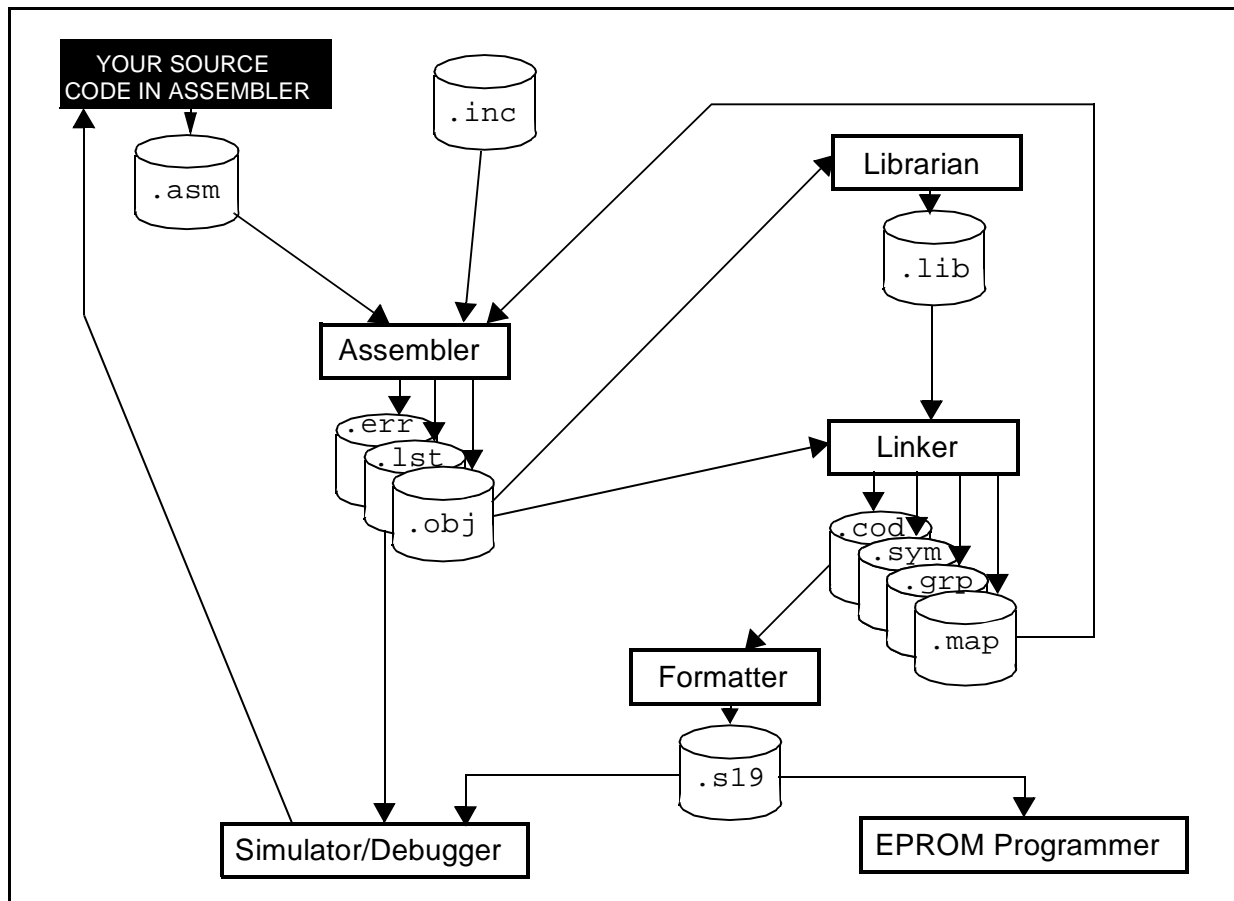
- ST Assembly Chain
- ST7 Simulator
- Windows Epromer for ST7 MCUs

A stand-alone ST7 instruction help file is also available. In many circumstances, it will help you select the most suitable code for your programs and improve the overall performance of your applications.

1.4.2 ST Assembly Chain for the ST7 Family

The ST Assembly Chain is a cross development system for ST7-driven applications. It includes an assembler, a linker, a formatter and a librarian.

The information flow is summarized in the chart below:



2 METHOD OF OPERATION

2.1 SOFTWARE INSTALLATION

To install and setup the Starter Kit software, follow these steps:

- 1 Insert the delivery CD-ROM into your CD-ROM drive.
- 2 Using Windows Explorer, open the root directory of your CDROM drive.

IF...	THEN...
Acrobat Reader is already installed on your system.	Double-Click WELCOME.pdf. When the Welcome screen is displayed, click FREEWARE
Acrobat Reader is not yet installed on your system.	<ol style="list-style-type: none"> 1. Open the folder /PROGRAM/ACROBAT3 2. Select and install the appropriate language version of Acrobat (for more details refer to the readme.txt in the CDROM root directory) 3. When Acrobat is installed, double-click WELCOME.pdf. When the Welcome screen is displayed, click FREEWARE

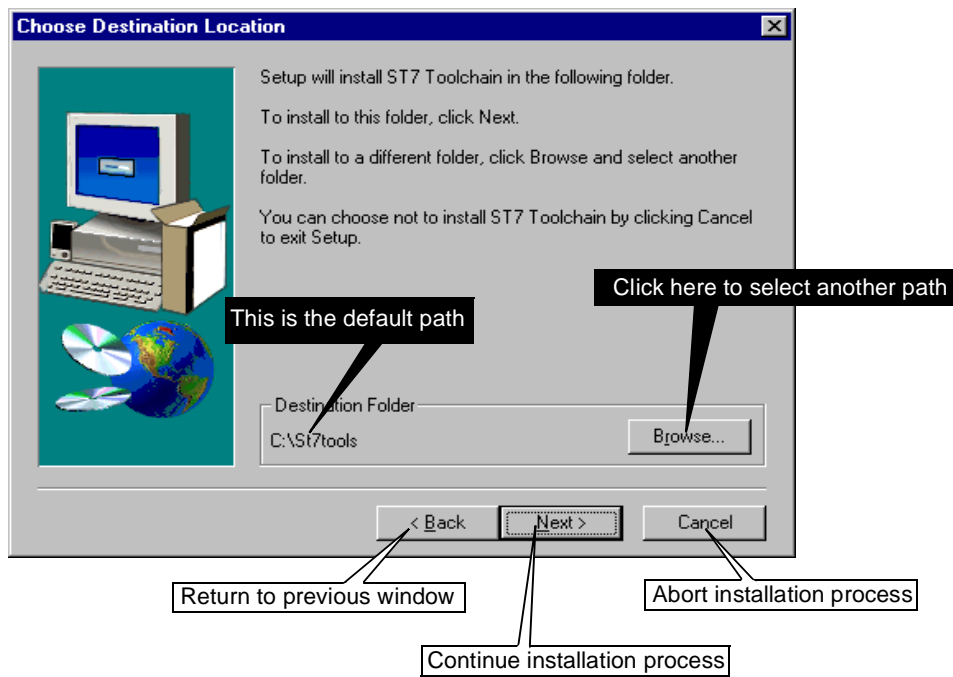


The **ST7 Tool Chain Setup** introductory window appears on your screen, referring to the three software components of the Starter Kit:

- WGDB7 Debugger
- ST Assembly Chain for the ST7 Family
- ST7 Epromer

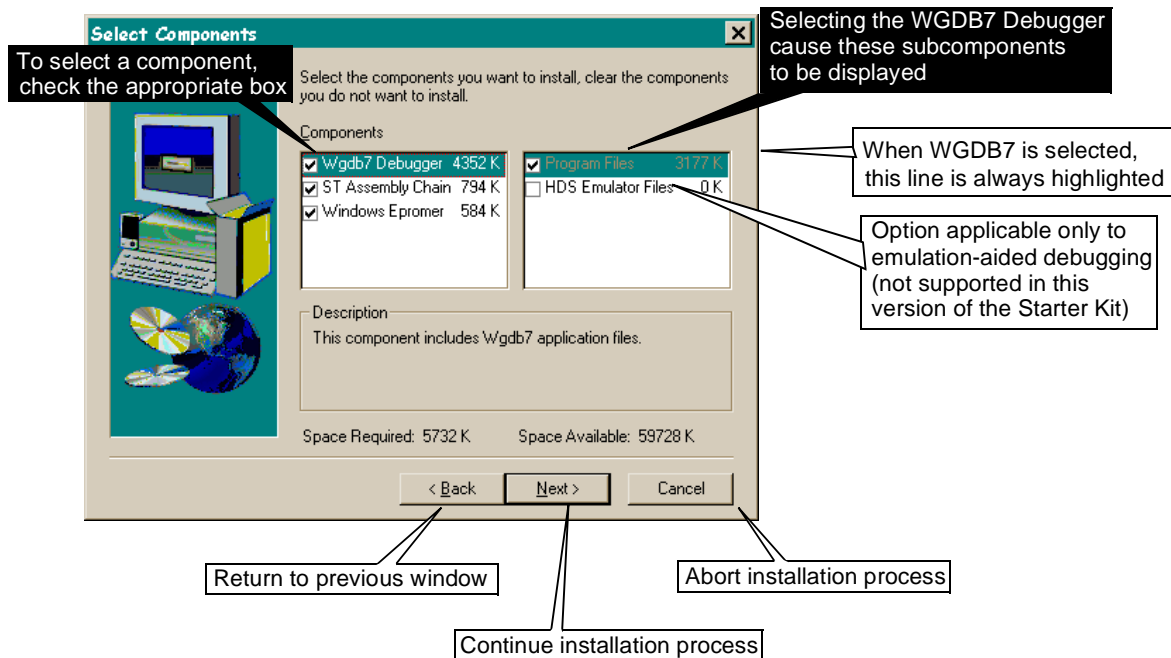
Click **Next** to continue.

3 In the next window, **Choose Destination Location**, you will specify the folder (or directory) where to copy the whole Starter Kit software. Use the default folder (or directory) or choose another folder (or directory):



Click **Next** to continue.

- 4 In the next window, **Select Components**, you will select the software components that are to be copied from the CD-ROM into the folder (directory) you specified before:



Click **Next** to continue.

- 5 The next window, **Check Setup Information**, displays the settings you have specified:

- Destination folder (directory)
- Components to be installed

Click **Next** to confirm. Click **Back** to change any settings.

- 6 The copying process takes place. A progress indicator keeps you informed of the status of the operation.

When the copying process terminates, and if you didn't select the **ST Assembly Chain** as a component to be installed, you are directed to the **Setup Complete** window (see further on).

If you selected the **ST Assembly Chain**, you are prompted to modify your AUTOEXEC.BAT file (or your system registry).

These changes affect:

- the **PATH** option, where the path for the components of the Assembly Chain should be added,
- the **META1** and **DOS4G** environment variables that have to be set to the following values, respectively:

SET META1=C:\<install folder>\asm

where **<install folder>** is the installation root folder (directory), **St7tools** by default.

SET DOS4G=QUIET

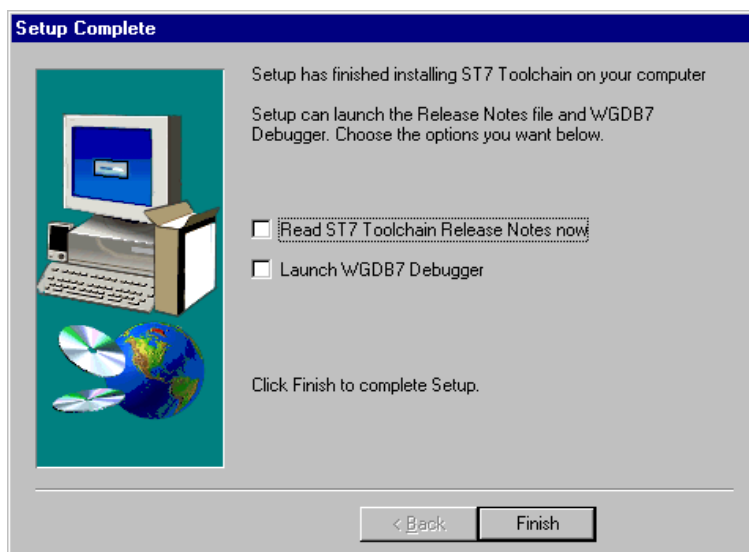
You may let the system proceed to the changes or make the changes by yourself. In any case, for the modifications to be effective, you will have to reboot the system. If you make the changes by yourself, the values to be typed can be found in:

C:\<install folder>\asm\St7vars.bat

where **<install folder>** is the installation root folder (directory), **St7tools** by default.

For more information refer to the *ST7 Software Tools for the ST7 Family User Manual*.

You are then directed to the **Setup Complete** window.



By checking the appropriate box, you may display a Release Note for the WGDB7 Debugger, Version 2.0, and/or start a debugging session, immediately after the installation is completed.

2.2 USING THE ST ASSEMBLY CHAIN

The **ST Assembly Chain** components are installed in a subdirectory of the installation root directory, named `asm`.

By default, you will find all the software development tools that constitute the **ST Assembly Chain** in:

```
C:\st7tools\asm
```

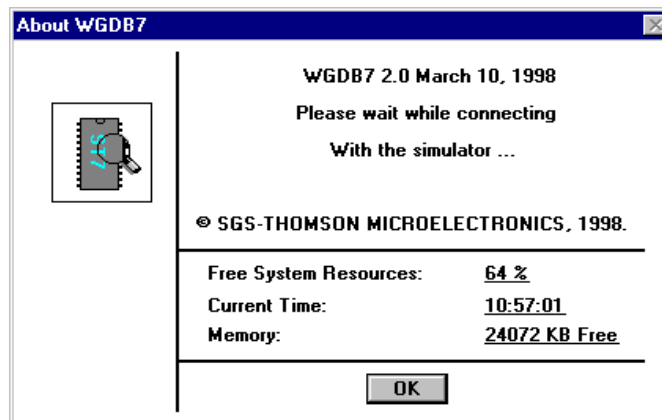
For more information on how to develop applications or programs for the ST7 microcontroller, refer to the *Software Tools for the ST7 Family User Manual* included in the CD-ROM.

2.3 STARTING THE WGDB7 DEBUGGER

The WGDB7 debugger is installed in the installation root directory. By default, you will find it in:

```
C:\st7tools
```

To start WGDB7, just click the corresponding icon (or name in the cascading menus) in the Windows desktop. The WGDB7 Introductory window appears:



You will notice that this is the simulation-aided version of the debugger in which the behaviour of your program is just *simulated*, using a special software, as if it were running on an actual microcontroller. To debug it, you don't need any external hardware.

The debugging session starts a few seconds later.

To get accustomed to the product, you may start one of the sample programs provided with the package, via the **File/Open** debugger menu chain.

The sample programs can be found in:

```
C:\<install folder>\sample
```

where `<install folder>` is the installation root folder (directory), `st7tools` by default.

For more information on how to use the WGDB7 Debugger, refer to the *WGDB7 Windows Debugger for the ST7 Family User Manual* included in the CD-ROM.

2.4 PROGRAMMING ST7 DEVICES

2.4.1 Target Devices

Once bug-free and ready for operation, the program you just developed needs to be transferred into an ST7 MCU program space.

With the ST7 MDT1 Starter Kit, you may program these MCUs(*):

ST72101G1 or G2
ST72212G2
ST72213G1
ST72251G1 or G2

With the ST7 MDT2 Starter Kit, you may program these MCUs (*):

ST72121J2 or J4
ST72311J2 or J4
ST72311N2 or N4
ST72331J2 or J4
ST72331N2 or N4

With the ST7 MDT4 Starter Kit, you may program these MCUs (*):

ST72272K2 or K4
ST72372J4
ST72371N4
ST72671N4 or N6

(*) These lists are subject to modifications

2.4.2 Board and Device Setting Up

Proceed as follows:

- 1 Place the device into the Zero Insertion Force (ZIF) socket mounted on the board.
CAUTION. Ensure correct device orientation when plugging it into the ZIF socket. Incorrect insertion may damage the device and/or the board.
- 2 Using the parallel interface cable, connect the parallel port of the PC (LPT1 or LPT2) to the board connector (PI).
- 3 Power on the PC and the board. The board power LED (LD1) lights up.

Notes

The parallel port of your PC should have been configured as a **Centronics** parallel port.

The supplied interface cable has been tested in order to operate properly on most PCs. Do not use any other cable, especially if it is longer than the one provided by STMicroelectronics: the board may not operate properly.

The cable should be connected directly to the DB-25 female connector of the PC parallel port. This connector is similar to the one installed on the board. Do not insert any additional cables or switchboxes between the PC and the board: a malfunctioning of the board may result.

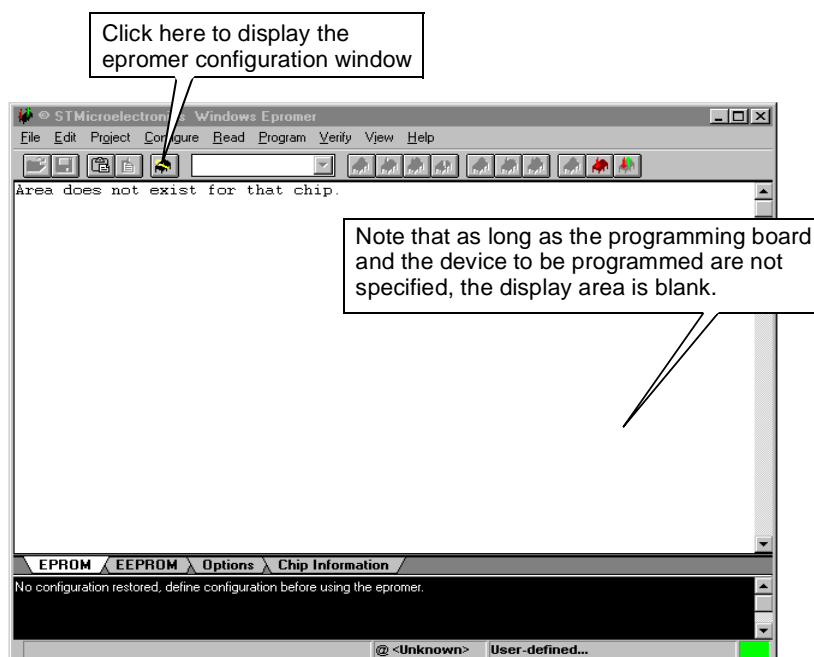
If a dongle is mounted on the PC parallel port, it should not interfere with the programming board. Should you notice a dysfunctioning of the board, remove the dongle and restart the installation procedure.

2.4.3 Starting the Windows Epromer

The Windows Epromer (Winee) is installed in the installation root directory. By default, you will find it in:


`C:\st7tools\Epromer`

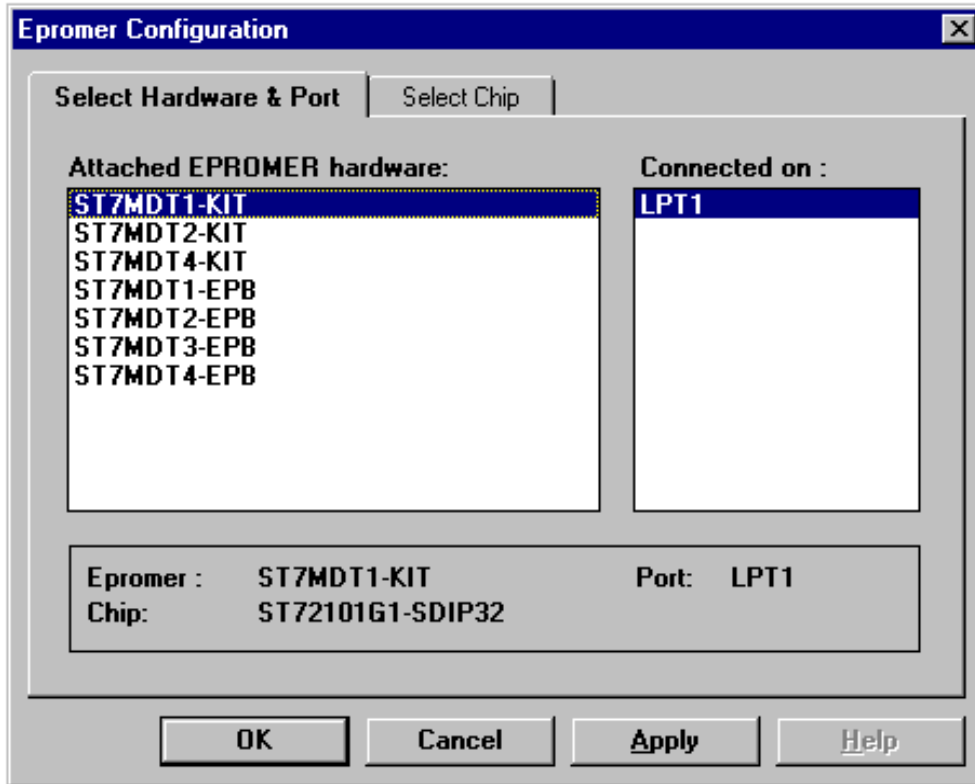
To start the Windows Epromer, just click the corresponding icon (or name in the cascading menus) in the Windows desktop. The Epromer main window appears:



2.4.4 Configuring the Epromer

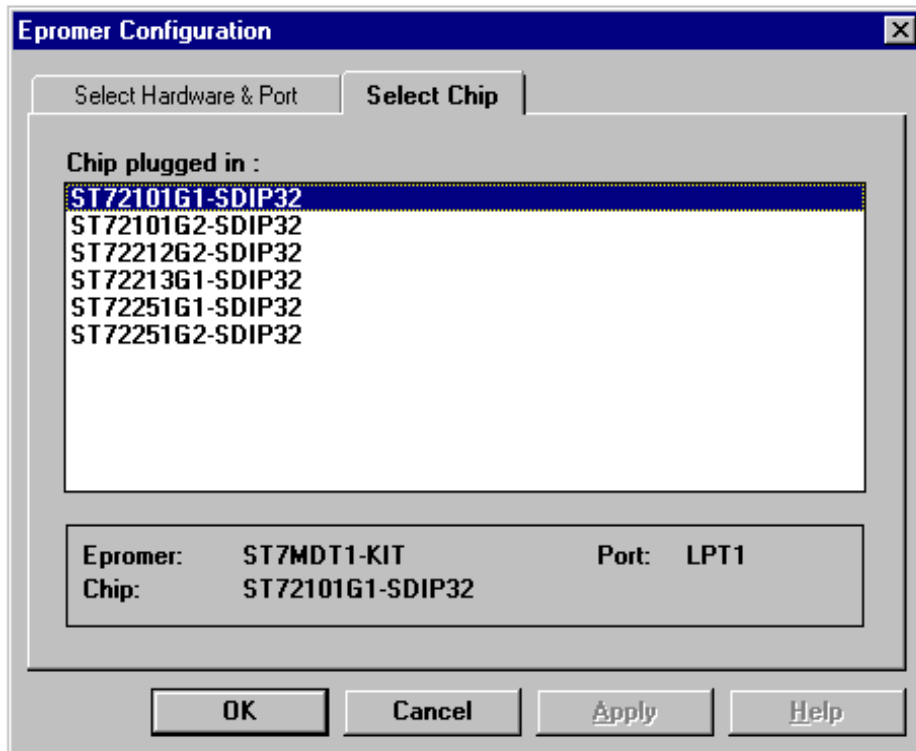
Follow these steps:

- 1 In the main window tool bar, click the  icon to select the epromer configuration window:



- 2 In the list, select the programming board for the Starter Kit:
`ST7MDT1-KIT`, `ST7MDT2-KIT` or `ST7MDT4-KIT`,
- 3 Click the **Select Chip** tab to display the list of the devices that can be programmed with this Starter Kit.

A list box similar to the one shown below appears.



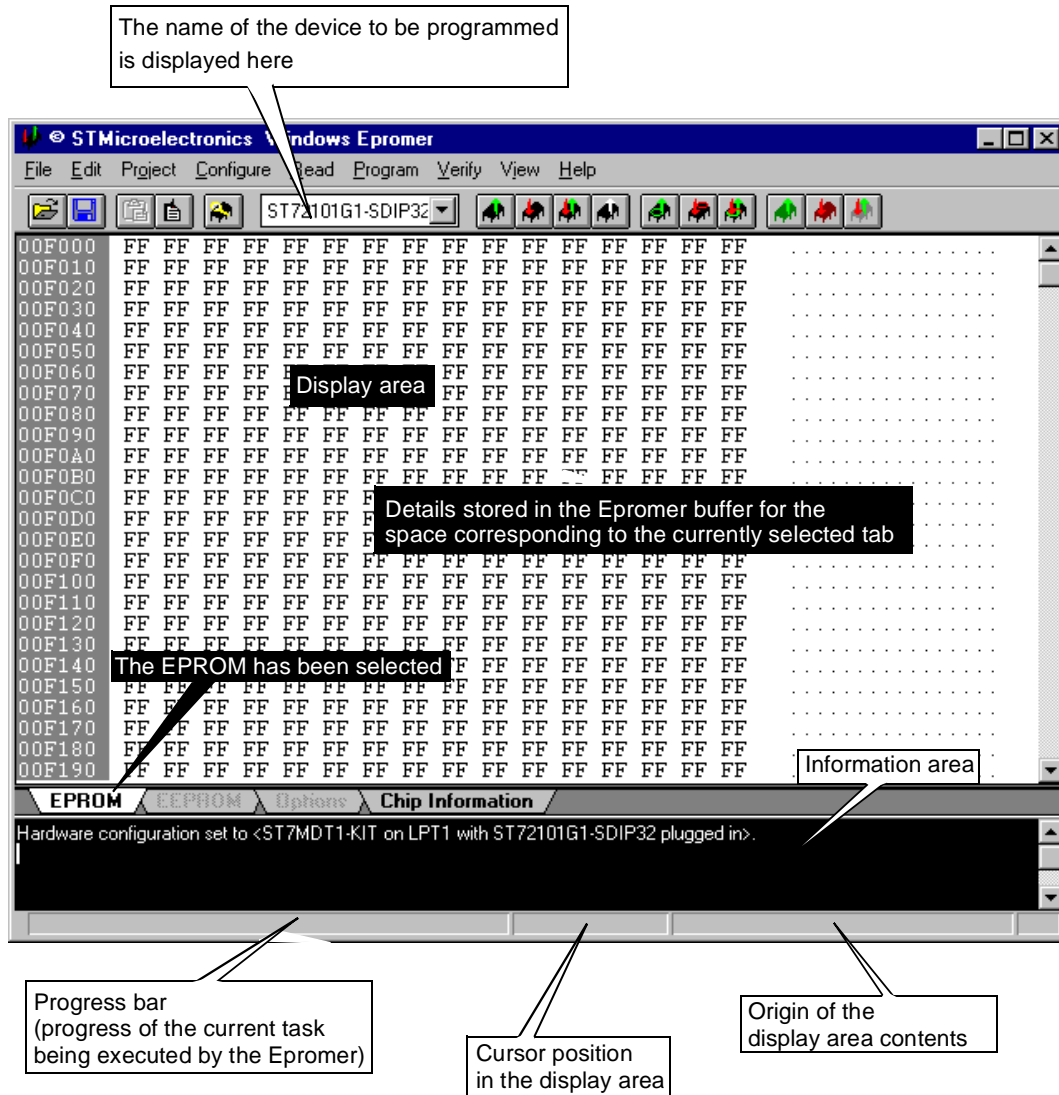
4 In the list, select the device to be programmed.

Click **OK** to confirm. The list box closes.

The memory mapping of the specified device now appears in the display area of the main window. It is made up of "FFs", as one may expect, since programming has not taken place yet.

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To view in turn the memory mapping of a selection of devices plugged in, open the configuration window again, then the **Select Chip** list box, and click **Apply**. The display area of the main window changes while the list box stays open, for you to choose another chip if necessary.



5 Start your programming session.

For more information on how to use the Windows Epromer, click the **Help** command in the main menu bar.

Notes:

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