LOGIC POWER

Flash Programmer

User's guide

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FLASH PROGRAMMER

Table of contents

Chapter 1. Flash Programmer kit Overview

1.1 Introduction……1
1.2 Highlights……1
1.3 Flash Programmer content……1
1.4 Introducing Flash Programmer……1
1.5 Flash Programmer Overview ……2
1.5.1 USB Port Connection……2
1.5.2 Status LEDs……2
1.5.3 Zip sockets…… 3
1.6 Programming Software ……3
1.6.1 Menu bar……4

Chapter 2. Getting Started

2.1 Introduction……6
2.2 Installing SPP Programming Software……6
2.3 Installing FT232 RL driver……6
2.4 Using the SPP Programming Software……8
2.4.1 Selecting the Device Family……9
2.4.2 Import HEX File ……10
2.4.3 Write ……11
2.4.4 Read……12
2.4.5 Erase……12
2.4.6 BlankCheck……12
2.4.7 Stop……12

Chapter 3. About SPP Programmer software overview

3.1 Special features ……13

3.2 Advantages of SPP Programmer.....13
3.3 Troubleshooting ……..14
3.4 Precautions/warning…….……...14

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FLASH PROGRAMMER USER'S GUIDE

Chapter 1.Flash Programmer Overview

1.1 INTRODUCTION

This section introduces the Flash Programmer and describes the SPP Programmer features and menu functions.

1.2 HIGHLIGHTS

This chapter discusses:

- The Flash Programmer Contents
- The Flash Programmer Overview
- The SPP Programming Software

1.3 FLASH PROGRAMMER CONTENTS

The Flash Programer Kit contains the following items:

1. The Flash Microcontroller Programmer
2. USB cable
3. SPP CD ROM

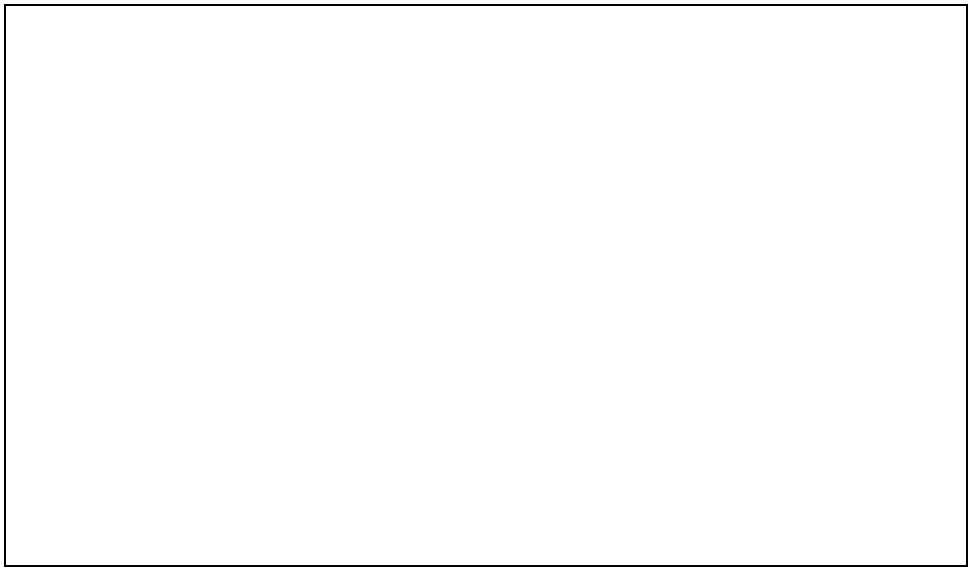
1.4 INTRODUCING THE FLASH PROGRAMMER

Flash Programmer is a new version of SPP(1.04). It is capable of Programming most of the 8051 IC and its families from different manufacturers (for more details refers *list of supported ICs* in SPP programming software).

1.5 FLASH PROGRAMMER OVERVIEW

The Flash Programmer overview is shown in Figure 1-1.

FIGURE 1-1: PICkit™ 2 MICROCONTROLLER PROGRAMMER



1.5.1 USB Port Connection

The USB Port Connection is a USB mini-B connector. Connect the Flash Programmer to the PC using the supplied USB cable.

1.5.2 Status LEDs

The Status LEDs indicate the status of the SPP Programmer.

1. **Power** (green) – Power is applied to the SPP Programmer via the USB port.
2. **VPP** (yellow) – The SPP Programmer is
3. **Program** (red) –

1.5.3 zip socket

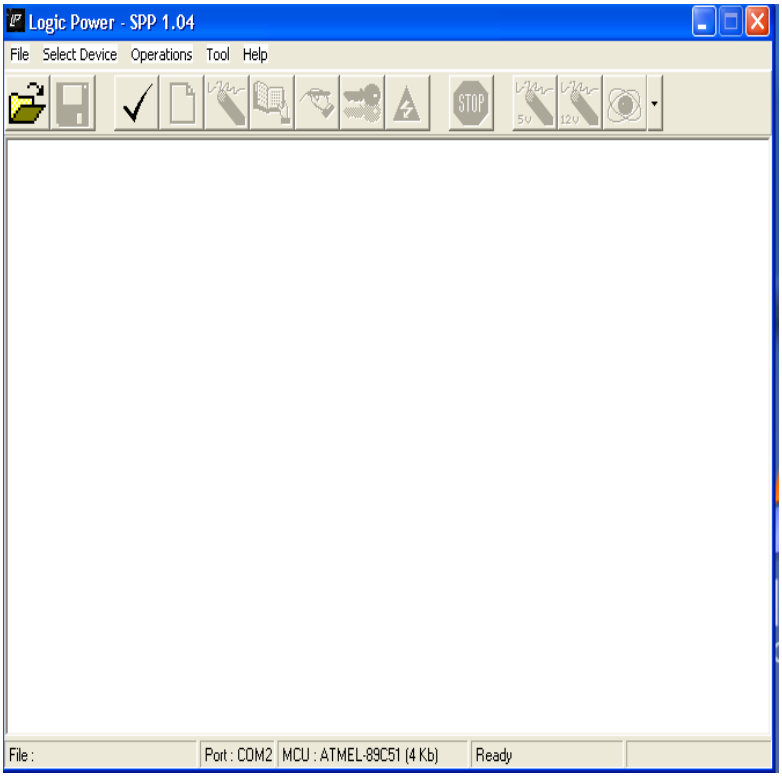
The zip socket is used for holding the ICs
It has two zip socket:-

- 40 pin DIP zip socket.
- 20 pin DIP zip socket

1.6 PROGRAMMING SOFTWARE

Start the SPP Programming Software by selecting
Start > Programs > logic power SPP Microcontroller Programmer.
The programming interface appears, as shown in fig (1-2)
For more information on how to us the SPP Programming Software, see **Chapter 2. "Getting Started".**

FIGURE 1-2: SPP PROGRAMMING SOFTWARE



1.6.1 Menu Bar

The menu bar selects various functions of the SPP Programming Software. A summary of the functions are :-

FILE

- Open – Open a hex files for Programming
- Save – save a project files
- Save as – save a project files as per your choice
- Exit – Exit the program

SELECT DEVICE

- Serial port – This is use to select a port between the CPU and SPP
- MCU – Select the microcontroller IC

OPERATIONS

- Verify Signature -- It check whether you have inserted the correct MCU in the Zip socket
- Blank check – Performs a blank check of program memory
- Erase - Perform bulk erase
- Write - write the program memory
- Lock – lock the program memory in MCU IC
- Auto – It is a combination of Lock command and Write command, which also performed the above function like **BlankCheck**, **Erase**, **Write**, **Lock** etc.
- Special commands – This command highlighted only when the selected MCU support additional programmable areas.
- Edit current cells – This command can edit the hex files as per cells

TOOLS

- Re-enable warning-

HELP

- It contains basic information about the SPP and contents

FLASH PROGRAMMER USER'S GUIDE

Chapter 2. SPP (1.3) getting started

2.1 INTRODUCTION

This chapter gives instruction on how to get started using the SPP Programmer to program microcontroller units (MCU).

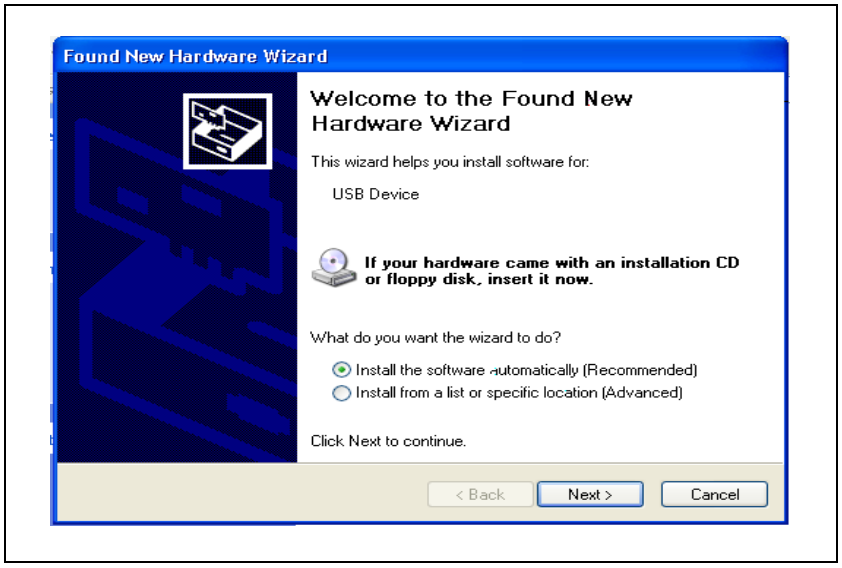
2.2 INSTALLING THE SPP PROGRAMMING SOFTWARE

Insert the SPP CD ROM into the CD ROM drive.In a few moment installation menu should be displayed.Follow the installation menu for installing the SPP software. If the installation menu does not appear on the screen, browse the CD ROM directory and select the ***auto run.exe*** program.It will automatically install into the folder:***program files\logic power\SPP &*** create a dektop icon. To complete the installation process restart the PC to let the system upgrade the Registry.

2.3 INSTALLING THE FT 232 RL DRIVER

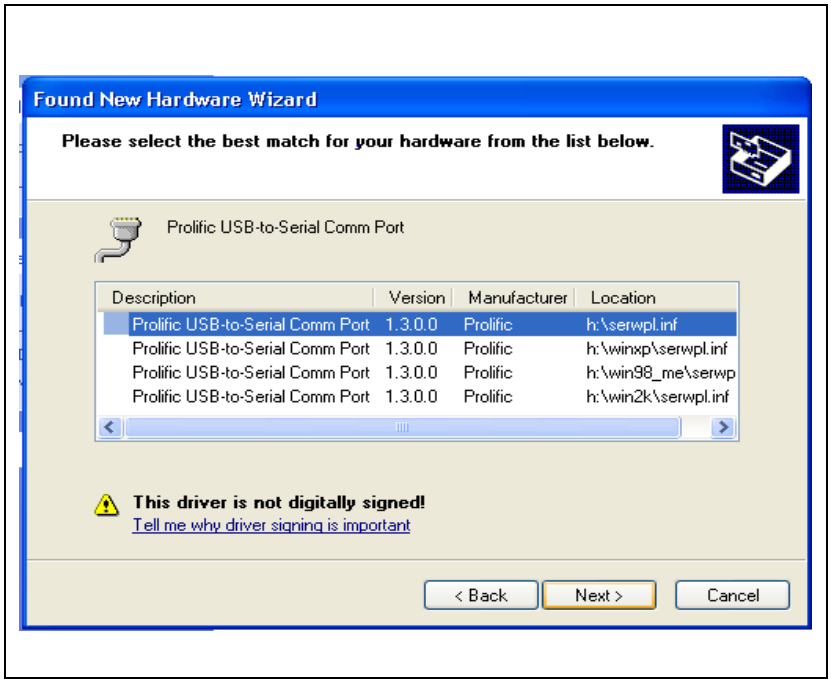
Plug in the USB type A cable to the USB connector of your computer. Browse the CD ROM directory and select USB-to-Serial folder>FT 232 RL driver.Clik 'next' at the ***Found New Hardware wizard*** screen as shown in fig(2-1)

FIGURE 2-1: INSTALLING FT 232 RL DRIVER



Select the default location and click "next " to continue

FIGURE 2-2: SELECTING THE USB PORT

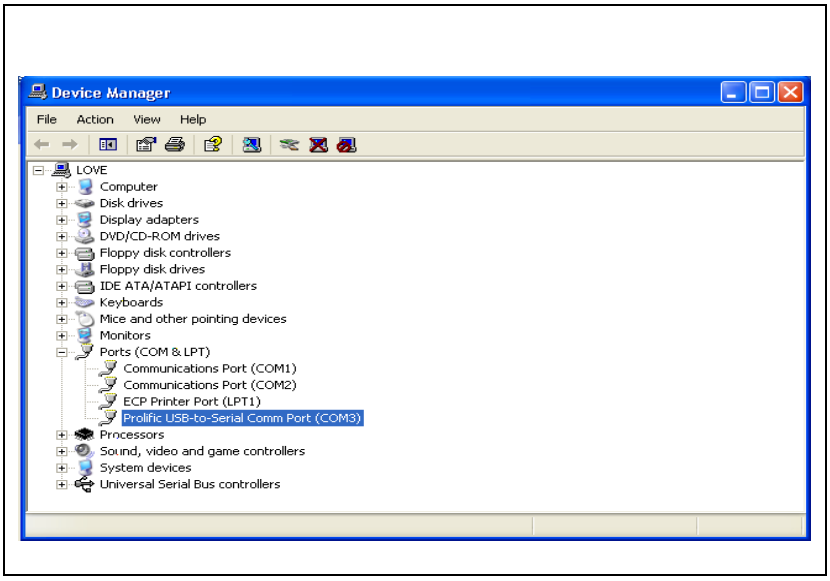


Click "***continue anyway***" to proceed the intallation after that finish dialog box should appears on the screen click **"finish"** to close the Wizard.

FIGURE 2-3: FINISH WINDOW

Check the device by double click on the My computer>system properties >device Manager to make sure the device is correctly displayed

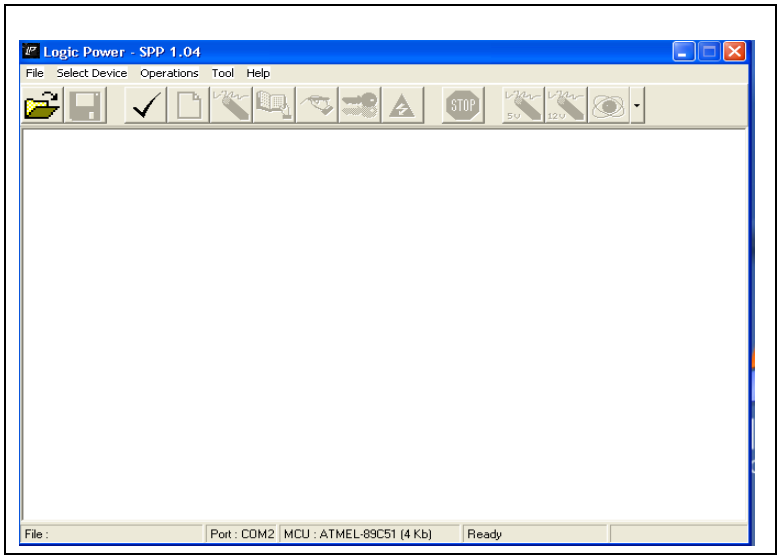
FIGURE 2-4: CHECKING THE DEVICE



2.4 USING THE SPP PROGRAMMING SOFTWARE

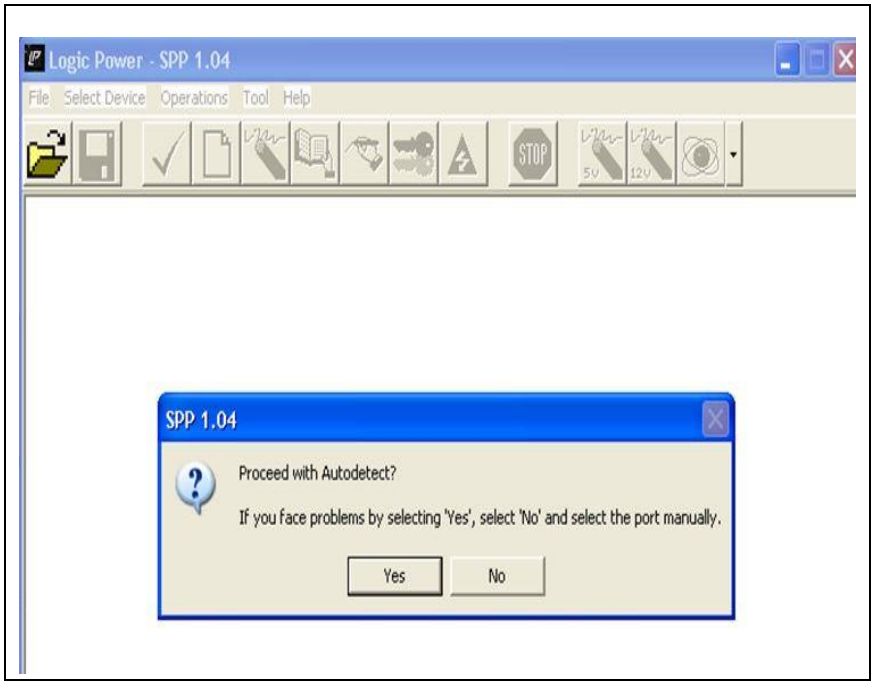
Start the SPP Programming Software by selecting
Start > Programs > logic power SPP Microcontroller Programmer.
The programming interface appears, as shown in fig (2-1)

FIGURE 2-5: PROGRAMMING SOFTWARE



After the dialog box appears, as shown in fig:(2-2) It first asks whether to carry out an Auto detect. If you select 'Yes', then the software will automatically detect to which Serial port the programmer is connected & displayed the welcome messages. If you select 'No', then the software will not detect & you may detect later from the select devices>serial port>select pull down menu.

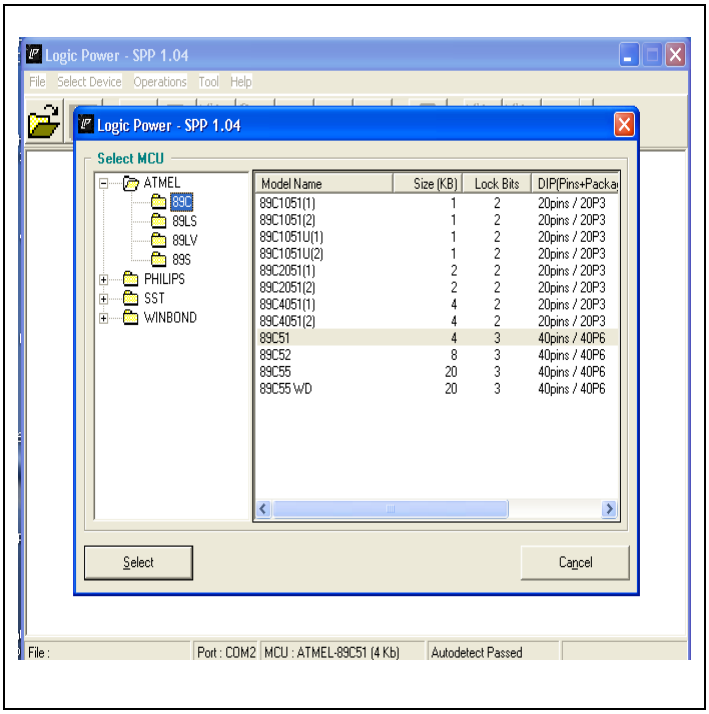
FIGURE 2-6: SPP DIALOG BOX



2.4.1 Selecting the Device Family

The SPP Microcontroller Programmer is capable of programming a variety of Microcontroller 8051 microcontroller families. The first step in using the SPP Microcontroller Programmer is to select the device family by clicking on the Device Family menu as shown in Figure 2-4. After confirming the selection, the software will automatically carried out the Signature Verification test. Once the signature verification passes (which means you have inserted the correct MCU in the zip socket) the following buttons are enable **Signature**, **BlankCheck**, **Read**, **Lock, Erase**.
If the selected MCU supports additional programmable area,then the special command button will be enabled and flash highlightened.

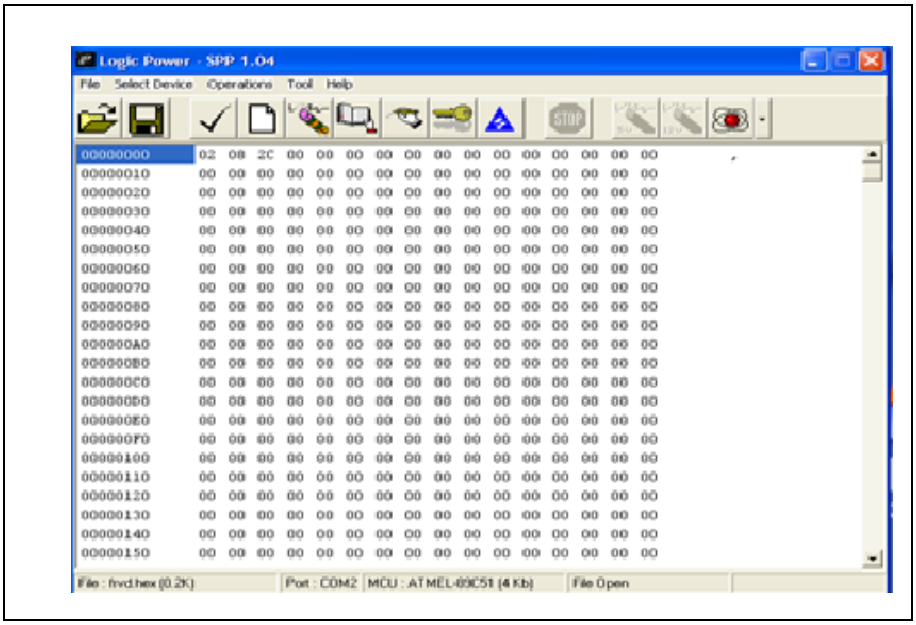
FIGURE 2-7: SELECT DEVICE FAMILY



2.4.2 Import HEX File

To import a hex file, select File > Import HEX as shown in Fig (2-5). A Hex file will converted into Binary if the file size is < MCU Code Rom size, then the remaining part of the buffer will be padded with 'XX'. To Add/Edit this part of the buffer, start from 1st 'XX' byte onwards. Once the Binary File is opened, the write and auto button is Enabled.

FIGURE 2-8: IMPORT HEX FILE



2.4.3 Write

After a device family has been selected and a hex file has been imported, the MCU IC can be Programmed by clicking on the Write button.The status of the Write operation is displayed in in the status bar .During Write operation the red led blink until it completed its task.If the File size is > the MCU CodeRom size, then the buffer will get truncated to the Code Rom size. If the File size is < MCU CodeRom size, then only the File size will be programmed in the MCU CodeRom, and the remaining CodeRom will be left blank ('FF'). The file is sent to the programmer in blocks of 32 bytes. If the file size is will be padded up with 'XX' ('FF' actually sent).The Write Status is displayed on the Status Bar at the bottom.

2.4.4 Read

The Read Command will read the entire MCU CodeRom, into the buffer.

2.4.5 Erase

The Erase function erases the program memory, data EEPROM memory, However, this function is not needed until the Write operation is performed.

To erase the device, click the Erase button.The Erase Command (with Signature Verification), automatically selects @5v or @12v, as per the MC

2.4.6 Blankcheck

Blankcheck command check the MCU whether it is blank or not, this command can be use before or after the **Erase** command

2.4.7 Stop

Use the Stop Button to terminate any Command. All the above Button Commands are also available in the 'Operations' Pull-Down menu.

FLASH PROGRAMMER USER'S GUIDE

Chapter 3. About SPP Software

3.1 SPECIAL FUNCTION

The Spp Programmer connects at a Baud rate of 19.2K, thus giving a faster total programming time.Programming logic is based upon the Busy signal (& not on a software timer), this makes the byte programming positive (independent of variations in byte programming time).
All commands have a Signature Verification Interlock, thus ensuring protection for the MCU.Blank Check & Program Verification are inherent features of the Erase & Write/Auto commands, so no need to do this separately (saves you time & energy in re-typing). Repeat Write/Auto for Bulk Programming. Hex editing of Binary object code files.
Independent of PC speed, No Damage to the MCU incase of PC runaway.

3.2 ADVANTAGES OF SPP

a. Low cost
b. Powerfull features (Windows based Hex/Bin file Downloading software). Works on Pentiums (any speed), even on Laptops, & on any Windows platform. Inherent Signature verification done before Erasing, Reading, Writing & Locking, thus ensuring safety of the MCU being programmed.
c. More reliable than Parallel port or Add-On Programmers No reluctance from end-users (especially for Add-On Programmers,since the client may refuse to allow you to open his PC & insert any Add-On pcb). Also, even if the computer hangs for any reason, the MCU does not get damaged, as can happen in the case of a Parallel port or even Add-on designs (simply because there exists an MCU inside
our Programmer, which handshakes with the software program running in the computer, & has all inbuilt interlocks).
d. Portable (Enclosure is of IP65 PC/ABS) an attractive & usefull utility for on-sit use.This Programmer has been indigeneously Designed & Developed (Hardware
& Software), which means you can be assured of quick service for any Hard &/or Software problems

3.3 HOW TO SOLVED TROUBLES SHOOTING

If the Programmer cannot be detected, then check the following :-

a. Serial cable for any dry solder/pin fault.

b. Loose connection at both ends of the Serial cable.

c. Loose connection of the flat ribbon cable between the connectors on the PC MotherBoard and the 25/9 pin D at the rear of the PC.

Even if the mouse works on the same port, but not the Programmer, this may be Because the RS232C port does not have the correct+12V/-12V levels. Because of a faulty RS232C circuit, -12V may drop down to -3V or -5V. This drop does not hamper the mouse operation, but voltage levels below -3V (threshold) will result in improper communication with the Programmer.

3.4 PRECAUTION/WARNING

First Power-On the Programmer, and then insert the MCU in the ZIF socket. first remove the MCU, and then Power-Off the Programmer. Never buy spurious or used MCUs. Faulty MCUs inspite of being programmed correctly, do not work on the application board! Get original strip packed sealed MCUs, from reputed vendors. Never let high voltages (>±15V) enter via the Serial cable, this can damage the internal RS232C driver (with associated circuit) & the CPU chip

Use Erase@12v (without Signature Verification) judiciously. If the selected MCU has Vpp=+5v only, then select Erase@5v only.

LIST OF SUPPORTED ICs

ATMEL

Model name	DIP (Pins+Package)
89C1051(1)	20pins/20P3
89C1051(2)	20pins/20P3
89C1051U(1)	20pins/20P3
89C1051U(2)	20pins/20P3
89C2051(1)	20pins/20P3
89C2051(2)	20pins/20P3
89C4051(1)	20pins/20P3
89C4051(2)	20pins/20P3
89C51	40pins/40P6
89C52	40pins/40P6
89C55	40pins/40P6
89C55WD	40pins/40P6
89LS51	40pins/40P6
89LS52	40pins/40P6
89LS53	40pins/40P
89LS8252	40pins/40P6
89LV51	40pins/40P6
89LV52	40pins/40P6
89LV55	40pins/40P6
89S51	40pins/40P6
89S52	40pins/40P6
89S53	40pins/40P6
89S8252	40pins/40P6

PHILLIPS

Model name	DIP (Pins+Package)
89C51X2 B/F	40pins/P
89C52X2 B/F	40pins/P
89C54X2 B/F	40pins/P
89C58X2 B/F	40pins/P
89C660HB/HF	NA
89C662HB/HF	NA
89C664HB/HF	NA
89C668HB/HF	NA
89C669B/F	NA
89C60X2(1)	NA
89C60X2(2)	NA
89C61X2(1)	NA
89C62X2(2)	NA
87C51UB/UF	40pins/PN
87C51FA	40pins/IN,JN
87C51FB	40pins/IN,JN
87C51FC	40pins/IN,JN
87C51RA+	40pins/IN,JN
87C51RA2	40pins
87C51RB+	40pins/IN,JN
87C51RB2	40pins/BN,FN
87C51RC+	40pins/IN,JN
87C51RC2	40pins/BN,FN
87C51RD+	40pins/IN,JN
87C51RD2	40pins/BN,FN
87C52UB/UF	40pins/PN
87C54UB/UF	40pins/PN
87C552	NA
87C554	NA
87C58UB/UF	40pins/PN

SST

Model name	DIP (Pins+Package)
89E516RD/RD2	40 PIN
89E554RC	40PIN
89E564RC	40PIN
89E564RD	40PIN
89C54-33-C/l	40pins/Pl
89C58-33-C/l	40pins/Pl
89C59-33-C/l	40pins/Pl
89F54-33- C/I	40pins/PI
89F58-33-C/I	40pins/PI

WINDBOND

Model name	DIP (Pins+Package)
78E516B	40pins
78E51B	40pins
78E52B	40pins
78E54B	40pins
78E58B	40pins
78LE51	40pins
78LE516	40pins
78LE54	40pins
78LE54	40pins

PHILLIPS

Model name	DIP (Pins+Package)
89C51 UB/UF	40pins/PN
89C51B	40pins/P
89C52 UB/UF	40pins/PN
89C52B	40pins/P
89C54 UB/UF	40pins/PN
89C54B	40pins/P
89C58B9(1)	40pins/P
89C58B9(2)	40pins/P
89C58 UB/UF	40pins/PN
87LPC760B/F	14pins/N
87LPC761B/F	16pins/N
87LPC762B/F(1)	20pins/N
87LPC762B/F(2)	20pins/N
87LPC768B/F	20pins/N
7LPC769B/F	20pins/N
89C51RC+	40pin/IN,JN
89C51RD+	40pin/IN,JN
89C51RB2HB/HF	40pins/P
89C51RC2HB/HF	40pins/P
89C51RD2HB/HF	40pins/P
89C51RA2B/F	40pins/N
89C51RB2 B	NA
89C51RC2 B	NA
89C51RD2 B/F	40pins/N
89V51RD2 B/F	40pins/N