

ST7282 EEPROM Programmer

User's Guide

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1. PREFACE

This manual will guide you through the installation and operation of the ETL ST7282 Programmer, referenced hereafter as the **ST7282-Programmer**.

The **ST7282-Programmer** has been designed for reading and programming an EEPROM of ST7282 Microcontroller.



Note: Programmer designed only for On-Board programming. Attempt to read target device In-circuit will damage the MCU and programmer.



Note: Only ST7282 Microcontroller can be correctly read, program by **ST7282-Programmer**. Attempt to read MCU other than ST7282 can lead to damage of MCU and programmer.

2. CHECKLIST AND REQUIREMENTS

The following describes what items are supplied with the **ST7282-Programmer** and the system requirements if used by a PC.

- ✓ **ST7282-Programmer** – *supplied*
 - ✓ Two On-Board programming adapters – *supplied*
 - ✓ Cable -A DB9 “straight-thru” cable - *supplied*
 - ✓ **ST7282-Programmer** PC software on CD-ROM – *Optional Extra*
-
- Desktop PC and a free Serial Communication Port (COM1...8)
 - Memory - Minimum 32 Mbytes
 - Display - Color SVGA display recommended
 - Power supply 12 Volt/200 mA linear power supply source
 - OS-MS-Windows (Win98, Win ME, Win2000/XP)

3. INSTALLATION AND USE

The *ST7282-Programmer* includes two LED's (Figure 1).
 LED's indicates programmer state and external power supply voltage (Table 1, 2).

GREEN	<i>ST7282-Programmer</i> is ready.
DARK	Voltage applied to <i>ST7282-Programmer</i> lower than 6 Volt.

Table 1. LED D3 color meaning

GREEN	Target MCU powered on. All bus signals are active.
DARK	Target MCU powered off. All bus signals are in three-state.

Table 2. LED D2 color meaning

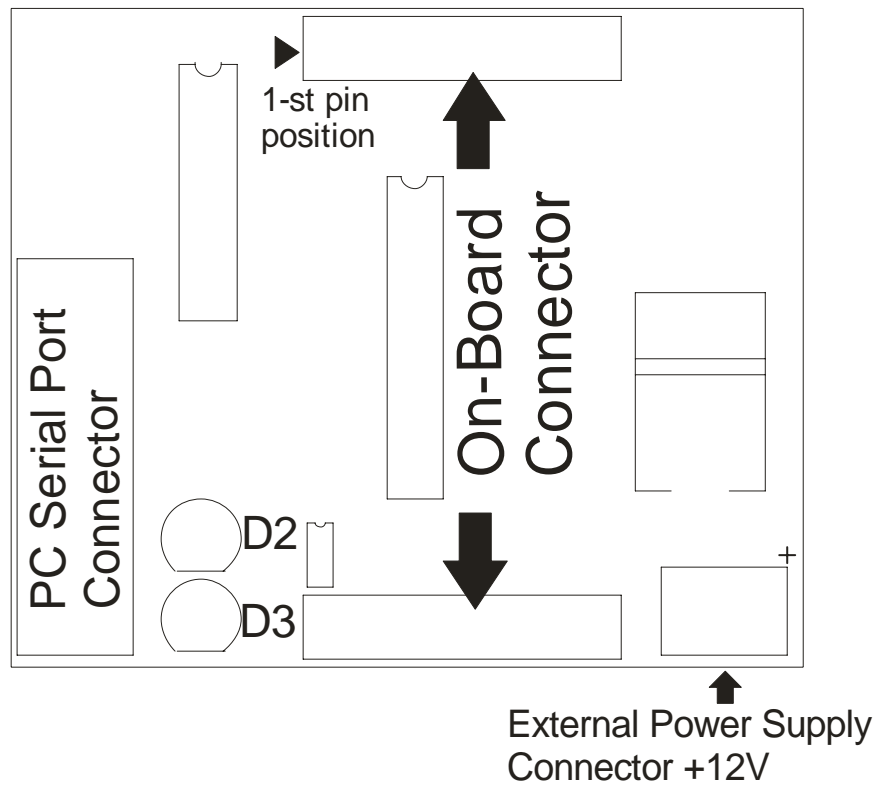


Figure 1. The *ST7282-Programmer* board layout

3.1 PROGRAMMER CHECK AND CONNECTION TO PC

- Connect the power supply source to *ST7282-Programmer* (an external 12 V DC power supply source is required).
- Attach a COM port cable to the 9-pin connector on the programmer and to a COM port on the PC.
- Remove adapter from On-Board sockets.
- Turn On power supply source and make sure that LED D3 appear green.
- Start *ST7282-Programmer* software.
- After few seconds you should see on display message: “ST7282 Programmer Ver-X.X detected”.
- In case when you should see message: “ST7282 Programmer Ver-X.X not found”, change COM port number. To do that select “Tools” menu item and than select “Comm Port Options”. Select new COM port number. After pressing “OK” button the new setting will be applied and software reattempts connection with programmer.
- Now *ST7282-Programmer* ready to operate.

4. ON-BOARD PROGRAMMING

On-Board programming interface is basic for *ST7282-Programmer*. To use On-Board mode target MCU should be soldered on adapter supplied with programmer and inserted in to On-Board socket (See picture 1).



Note: Pay attention on 1-st pin location when soldering MCU on adapter and inserting adapter into On-Board connector. Otherwise, *ST7282-Programmer* or MCU may be damaged.

4.1 On-Board EEPROM reading example

- Insert adapter with soldered MCU into On-Board connector (see Figure 1).
- Apply power to *ST7282-Programmer*. LED D3 became to green light (see Table 1).
- Select “Read Sequence” panel in *ST7282-Programmer* software.
- Select corresponding device in *ST7282-Programmer* software (“Device” button).
- Press “EEPROM button.
- Press “Start” button.
- LED D2 on *ST7282-Programmer* became to green light. That means that +5 voltage regulator switched on and VCC applied to target MCU.
- When LED D2 on *ST7282-Programmer* will turn off - reading completed. Target MCU powered off.
- After read sequence successfully completed it is necessarily to save memory dump to file (see Section 5.2).
- If some errors appeared during reading process refer to Section 6.



Note: Do not remove MCU from socket in time of LED D2 green, otherwise MCU or *ST7282-Programmer* may be damaged.

4.2 On-Board EEPROM programming example

- Insert adapter with soldered MCU into On-Board connector (see Figure 1).
- Apply power to *ST7282-Programmer*. LED D3 became to green light (see Table 1).
- Select “Program Sequence” panel in *ST7282-Programmer* software.
- Select corresponding device in *ST7282-Programmer* software (“Device” button).
- Load EEPROM data from file (see Section 5.1) or enter data to Hex Editor.
- Press “EEPROM button.
- Press “Start” button.
- LED D2 on *ST7282-Programmer* became to green light. That means that +5 voltage regulator switched on and VCC applied to target MCU.
- When LED D2 on *ST7282-Programmer* will turn off – programming completed. Target MCU powered off.
- If some errors appeared during reading process refer to Section 6.



Note: Do not remove MCU from socket in time of LED D2 green, otherwise MCU or *ST7282-Programmer* may be damaged.



Note: Strongly recommended before EEPROM programming, for a first time, read EEPROM contents and save it to file.

5. FILE OPERATIONS

This section describes basic rules working with files. Memory dump from Hex Editor (Buffer) can be load/save from/to hard disk. Also short descriptions such as project name, EEPROM type and memory cell assignment can be done for future fast remind. **ST7282-Programmer** accepts tree types of file formats:

- ✓ BIN (Binary format)
- ✓ Motorola S-Record (4 byte address)
- ✓ Motorola S-Record (6 byte address)
- ✓ EEF (Extended ETL Format)

5.1 LOAD FILE INTO BUFFER

- Select “File>Open” menu item.
- Press “Browse” button.
- In File Open Dialog window, select file witch need to be open.
- Press “Open” button.
- Than opposite “Auto Format Detected:” text, select correct file format. Note that software try automatically detects file format, but unknown records in file will fail this detection. “Load Entire file” check box must be checked if automatically loading procedures required.
- Than press “OK” button.

Sometimes load data from file to specific buffer allocations required. For Example if required load buffer from \$B600 address from binary file beginning from \$0000 address follow next steps:

- Select “File>Open” menu item.
- Press “Browse” button.
- In File Open Dialog window, select file which need to be open.
- Press “Open” button.
- Than, opposite “Auto Format Detected:” select Binary format.
- Uncheck “Load Entire File” check box.
- In field “Offset Value to Place Data to Buffer:” enter 0xB600.
- Than press “OK” button.
- Now data placed to Hex Editor Buffer from the beginning of 0xB600 address.

If more complicated operations with files required, for example load Hex Editor Buffer from many files “Lowest Address From File To Load”, “Highest Address From File To Load” and “Clear Buffer Before Loading File” options are available.

5.2 SAVE FILE FROM BUFFER

- Select “File>Save” menu item.
- Press “Browse” button.
- Select directory in which file will be saved.
- Type file name, for example “test1”
- Press “Save” button.
- Than select format in which file will be saved*.
- Press “OK” button.



Note: Use EEF Format for future “Load File Into Buffer” automatically processing. Also, only in EEF Format Project Description, Device Name and Memory Cells attributes can be saved.

6. ERRORS AND TROUBLESHOOTING

This section describes most recently encountered problems, errors and fixing solutions.

- **Problem:** LED D3 (see Figure 1) Dark.
- **Causes:** This problem can accrue when external power supply connected to **ST7282-Programmer** is damaged or connected in wrong polarity.
- **Solutions:** Check voltage on **ST7282-Programmer** power clamps. It must be 12 V +/- 1V.

- **Error Message:** ST7282 Programmer not found
- **Causes:** This message can appear when **ST7282-Programmer** software couldn't establish connection with **ST7282-Programmer** board.
- **Solutions:** Check connection of COM port cable from PC to **ST7282-Programmer** board. Apply power from external power supply to **ST7282-Programmer**. In menu item "Tools>Comm Port Options" select correct COM port number.

- **Error Message:** PC to Programmer Communication Error
- **Causes:** This message can appear when communication between **ST7282-Programmer** and PC is broken. In some cases this message can appear after programmer fatal error.
- **Solutions:** Try to close programmer software and start it again. If it doesn't helps try to use another available communication port. Also this message can appear when COM port cable has poor contact with DB-9 connectors.

- **Error Message:** EEPROM Programming Error
- **Causes:** This message can appear in time of EEPROM programming or erasing.
- **Solutions:** Try to program, erase EEPROM again. If it does not helps possible MCU's EEPROM damaged.

- **Error Message:** No Echo from ST Micro
- **Causes:** This message can appear when programmer can't establish connection with MCU.
- **Solutions:** Check correct mounting MCU to adapter in right 1-st pin location and correct insertion adapter into On-board socket. Also check soldering quality of MCU pins with adapter and shortages between pins.

- **Error Message:** Wrong Echo from ST Micro
- **Causes:** This message can appear when programmer can establish connection with MCU but communication error appeared.
- **Solutions:** Check correct mounting MCU to adapter in right 1-st pin location and correct insertion adapter into On-board socket. Also check soldering quality of MCU pins with adapter and shortages between pins. Try to start read, program sequence several times.

- **Error Message:** WRONG SUBROUTINE CALL
WRONG DEVICE TYPE
- **Causes:** These messages can appear when fatal problems with **ST7282-Programmer** hardware/firmware occurred.
- **Solutions:** Contact ETL technical support.



Note: ST7282-Programmer has Log Window which can be stored to file. To perform this operation right clicks on Log Window. Than click on “Save to st7282p.log file“ menu item. Now this file can be found in the same directory as ST7282-Programmer software. Log File can be send by E-mail to techsupport@etlweb.net for non described problem solution.

7. WARRANTY STATEMENT AND DISCLAIMER

ETL warrants that Product delivered shall conform to applicable. Report any defects for a 45 days period, from the applicable data on invoice.

All ETL's product are intended for lawful service, repair or replacement of various electronic equipment with the laws of the country in which the product is being sold or used.