ADI DUMP READ/WRITE

I2C 24Cxx EEPROM R/W dumper by Adrian YO3HJV Ver. R.1.1.

Key Features:

EEPROM Operations
- Reads/writes 24Cxx EEPROM chips (24C01-24C512)
- Handles multiple EEPROM sizes (128B-65KB)

Data Storage
- SD card integration with multiple output formats
- Human-readable, Intel HEX, and raw binary formats

Hardware Interface
- I2C for EEPROM communication
- SPI for SD card (CS-D4, MOSI-D11, CLK-D13, MISO-D12)

Button triggers for operations
- READ/DUMP EEPROM
- WRITE/PROGRAM EEPROM

Status Indicators
- LED system for operation status (RED, BLUE, GREEN, YELLOW)
- 115200 baud serial interface

Safety & Diagnostics
- I2C bus scanning
- Safe SD card handling

WARNING:

!!!!!!!!!!!!!!!!!! DO NOT EJECT SD CARD WHILE RED LED IS ON !!!!!!!!!!!!!!!!!!

The device allows the extraction of content from 24Cxxx type memories, saving it on an SD card and writing a file located on the SD card to the memories, without the need for a computer, which is useful in the field.

It can be connected and operated using two buttons on the device or via the command line on the serial interface.

Any terminal program can be used to connect to the serial interface; the default speed is 115,200 baud.

When used "in the field", a 5V power supply is required.

Using different coloured LEDs, the status and errors are displayed.

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HOW TO OPERATE IT

Connect the I2C EEPROM to appropiate pins.

Connect the device to PC or to a power bank via USB.

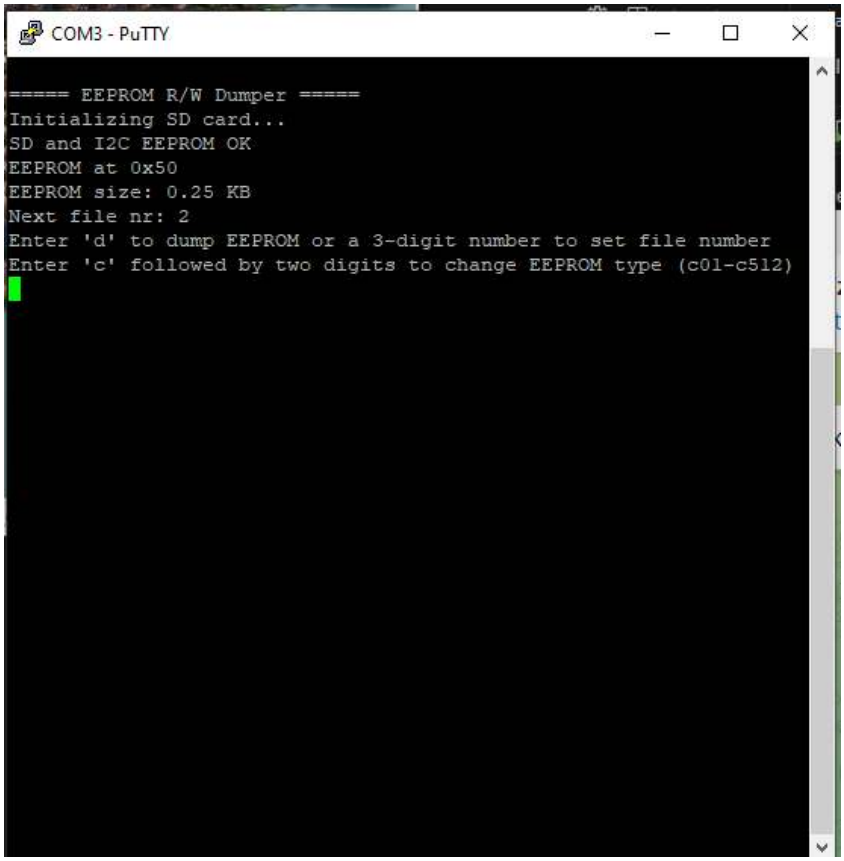
LED status indicators:

1. After Boot, the LEDs are tested with a short flash. All will light a short time.
2. RED and BLUE LEDs will lit untill the SD card is scanned for errors, type, presence of files.
    a. If SD card is OK, RED LED is OFF, GREEN LED is ON, continuously
    b. If SD ERROR, RED LED flash untill RESET
3. RED LED will be OFF, BLUE LED flashing (short period), I2C is scanned for known 24Cxxx addresses.
    a. If I2C is OK, EEPROM address OK, BLUE LED is OFF, GREEN is ON.
    b. If I2C error, then BLUE LED FLASH fast untill RESET.
4. If SD Card and I2C are OK, just the GREEN LED is lit.

The device is waiting for READ/DUMP or WRITE/PROGRAM command by hardware buttons or via Serial commands. (See Notes for specific setup for PuTTY).

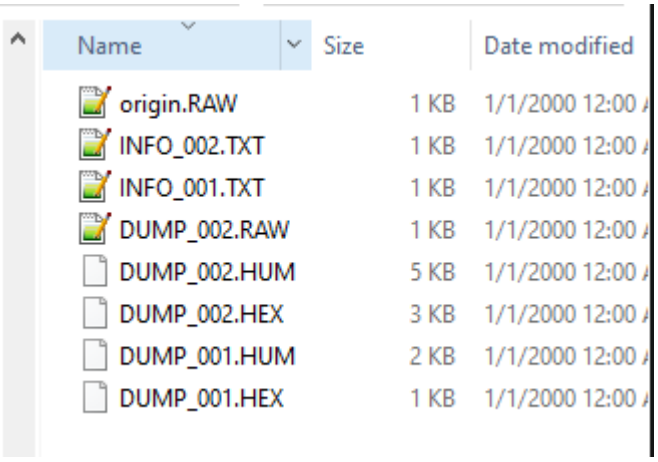
After success BOOT and checks:

On Serial Console (if you connected to a PC) there is a short informative message:



a. THE SD CARD FILE SYSTEM

The dump files are saved in multiple formats and a “INFO_XXX.TXT” is generated for each reading. The files are named the same and a sequential incremental number is added to the file name to identify the DUMP session.

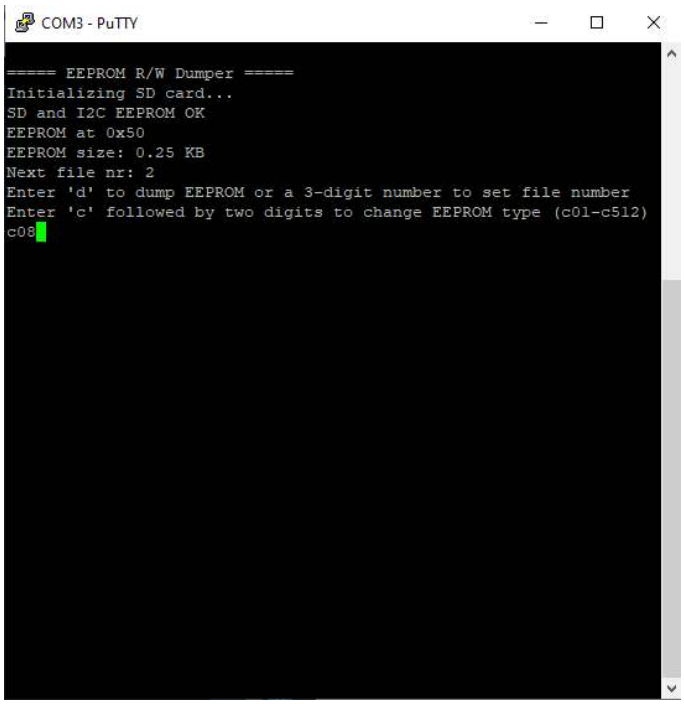


The bit-to-bit, bin type file is “DUMP_xxx.RAW”. The other are different format for the same reading.

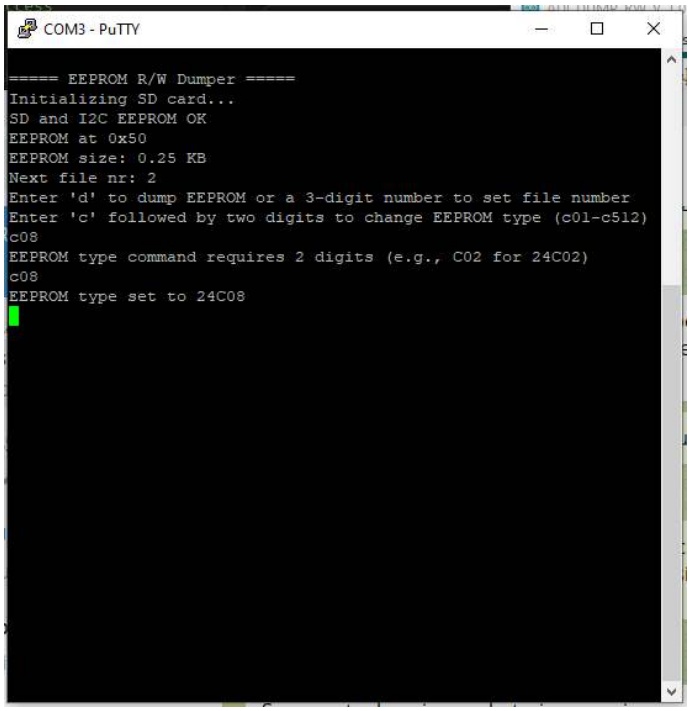
If a bin file is needed to programm a specific EEPROM in the field, the file should be saved as “origin.RAW”. An error message will be generated if one will try to WRITE/PROGRAMMING a bin without that file on SD card.

b. EEPROM SIZE SELECTION

To READ or WRITE 24Cxxx type EEPROMs, specific methods are used. The type/size should can be choose ONLY via Serial console by entering “Cxx” or “cxx” (See Notes for specific setup for PuTTY):



If the correct size is entered, a confirmation is printed on Serial Console:



2. DUMP/READ

By pressing READ HW button or sending “d” or “D” on serial console, BLUE LED lit while reading, RED LED lit to show SD CARD activity.

The device will write 4 files as previously shown.

While SD card is accessed, the RED LED will be active; the BLUE LED will lit when EEPROM is read.

After successful READ/DUMP, all LEDs are OFF!

After the RED LED is OFF, the SD card could be safely removed.

To take another EEPROM reading, a RESET is needed

3. WRITE/PROGRAMMING

Assuming you connected the device to an EEPROM and the right size is set, after the initial checks – GREEN LED ON – you can press the WRITE/PROGRAM hardware button to execute the programming of the pre-existent “origin.RAW” file into the EEPROM.

YELLOW LED will flash while the EEPROM is written and RED LED will flash when SD Card is accessed for the bin file.
The device will double check the correct programming, at each memory page and after all are written, the whole EEPROM content is compared with the “origin.RAW” file from the SD Card.

If the programming is successfully completed, YELLOW and BLUE LEDs will slowly flash, celebrating together.

Notes on specific setup for PuTTY

PuTTY will transmit each character entered from the keyboard instead of waiting for the entire sequence to be transmitted; thus, when attempting to set the memory size, you will receive error messages from the device.
You must first configure the console after opening the serial communication session with the device: