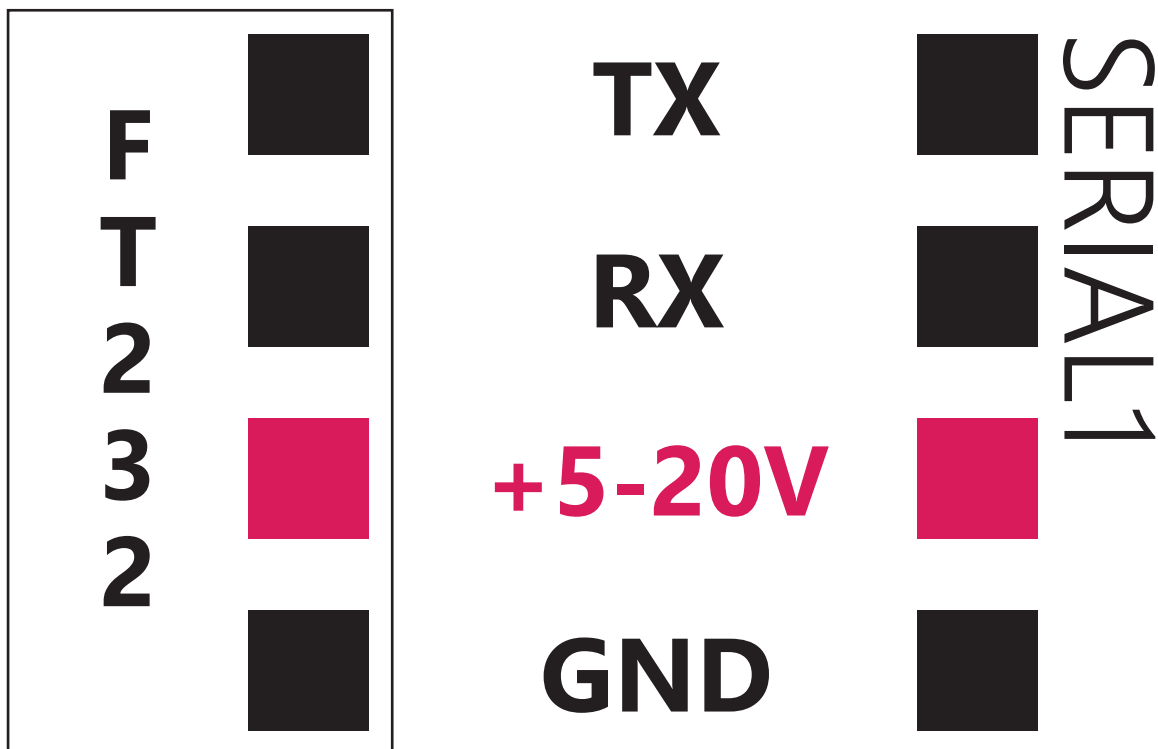# 24LC256 Serial EEPROM Programmer

## I - Overview

Serial EEPROM Programmer 24LC256 allows the user to easily and quickly read/write any 24LC256 EEPROM, just plug in your memory and you are ready to go!
Its recommended to power this programmer with no less than **5V**, the suggested range being **5-20V**.

**FT232**

**TX**

**RX**

**+5-20V**

**GND**

**SERIAL1**

The default **baud rate** for the communication is **9600**, it can eventually be changed by notifying Saturn Technologies via email.

After connecting the FT232 as instructed, and having mounted the EEPROM, the user will be able to send requests to the device in the form of an **uint8_t[9]** array. Any serial device, being it a Python desktop application (i.e. using the SERIAL library) or a microcontroller can interface this programmer.

If the request is succesfully performed, the device sends back an **ASCII** serial response to be interpreted from the user's system.

The structure of the request bits will be covered in **chapter III**.

# II - EEPROM



The default **read page** returned from a reading operation is **128bits** long, it can eventually be changed by notifying Saturn Technologies via email.

PLEASE NOTE THAT CHANGES IN READPAGE WILL MAKE THE DEVICE INCOMPATIBLE WITH THE UPCOMING DESKTOP APPLICATION.

## III - Serial communication structure using decimal format

**A** **MAIN COMMAND BIT:** used to declare the class of the command: INITALIZATION (1), READ(2) or WRITE(3). **MUST NEVER BE (0)**

**B** **OPERATION COMMAND BIT:** used to declare the type of operation: READ_SINGLE_BYTE(2), READ_RANGE(3), FIND_SINGLE_BYTE(4), WRITE_SINGLE_BYTE(5). **MUST NEVER BE (0)**

**C** **ADDRESS START MSB:** used to send address start's Most Important Byte.

**D** **ADDRESS START LSB:** used to send address start's Less Important Byte.

**E** **ADDRESS END MSB or WRITE PAYLOAD BIT :** used to send address end's Most Important Byte or an 8bit payload to use the WRITE_SINGLE function.

**F** **ADDRESS END LSB:** used to send address end's Less Important Byte.

**G** **FIND PAYLOAD BIT:** used to send and 8bit payload to be searched inside the set range of addresses.

**H** **ADDRESS START VALIDATION BIT: REQUIRED AND RESERVED TO DESKTOP APP COMPATIBILITY , MUST BE (255)**

**I** **ADDRESS END VALIDATION BIT: REQUIRED AND RESERVED TO DESKTOP APP COMPATIBILITY, MUST BE (255)**

## INITIALIZATION

**1** ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪

This function is automatically executed once at startup. You can however change the EEPROM in the slot and re-intialize it by sending this command

If the memory is not damaged, the device will respond writing the ASCII sequence on the serial:

**#CLEAR**

## READ_SINGLE

**2** **2** **C** **D** ▪ ▪ ▪ **255** **255**

Call this function to read a single value from a single address.

Examples:
a. Reading address x128: [ 2, 2, **C = 0**, **D = 128**, 0, 0, 0, 255, 255]
b. Reading address x24785: [ 2, 2, **C = 96**, **D = 209**, 0, 0, 0 , 255, 255]

If the reading **b.** is correctly performed, the device will respond writing the ASCII output containing the diagnostics and the reading in format **#ADDR#VALUE**:

**#SR**
**#SR OK**
**#24781#255**
**#SR DONE**

## WRITE_SINGLE

**3** **5** **C** **D** **E** ▪ ▪ **255** **255**

Call this function to write a single value in a single address.

a. Writing address x128: [ 3, 5, **C = 0**, **D = 128**, **E = 101**, 0, 0, 255, 255]
b. Writing address x24785: [ 3, 5, **C = 96**, **D = 209**, **E = 111**, 0, 0 , 255, 255]

If the writing **a.** is performed and verified, the device will respond writing the ASCII output containing the diagnostics and the reading in format **#ADDR#VALUE**:

**#SW**
**#SW OK**
**#128#101**
**#SR DONE**
**#SW DONE 1**

**READ_RANGE**

**2** **3** **C** **D** **E** **F** ■ **255** **255**

Call this function to read values in a continuous range of addresses. The device uses by default a **READ_PAGESIZE** of **128bits**, thus fixing a limit to the quantity of addresses you can query each time you call the function. Increases in READ_PAGESIZE can be request by sending an email to Saturn Technologies, but will most likely make your device incompatible with the upcoming desktop application, that will enable the user to perform abstract and complex operations on the memory such as cut and copy-pasting chunks of data, importing and exporting binary files etc.

a. Reading address x128 to x256: [ 2, 3, **C = 0**, **D = 128**, **E = 1**, **F= 0**, 0, 255, 255]
b. Reading address x24785 to 24912 : [ 2, 3, **C = 96**, **D = 209**, **E = 97**, **F= 81**, 0, 255, 255]

If the reading **b.** is correctly performed, the device will respond writing the ASCII output containing the diagnostics and the reading in format **^#ADDR#VALUE^**:

```
#MR
#MR OK
Read Page size: 128
System Allocated Page size: 128^
#24785#255
#24786#255
...
#24912#255
^
#MR DONE
```

SATURN TECHNOLOGIES

ℏ

saturn.technologies@outlook.com

1

C12