

# Programming an EEPROM from a Command Terminal with RICBox

This document discusses how to use the [RICBox](#) virtual Python environment for EEPROM programming using FemtoClock 3 (FC3), FemtoClock 3-Wireless (FC3W), and VersaClock 8 (VC8) devices.

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## 1. Overview

RICBox harnesses a Python virtual environment for each individual device plugin. The environments are stored locally in the “\AppData\Roaming\RICBox\venvs\” directory after a plugin has been used in RICBox for the first time.

The virtual Python environments can be activated and used from a command terminal application. When the environment is active, users can run Python scripts to interact with device drivers and run preinstalled Python-based applications.

RICBox is installed with a tool called “rbeeprom” that can interface with a connected EEPROM device using FTDI, AARDVARK, or Devasys drivers.

## 2. Activating a Device Virtual Environment

1. Open a command terminal in Windows®.

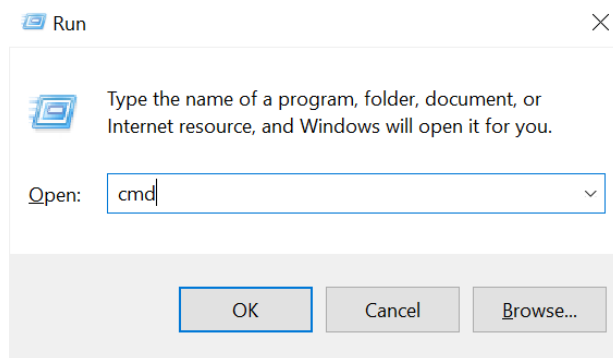


Figure 1. Opening Windows CMD

- Navigate to the directory containing the installed plugin Python environment:  
 "C:\Users\\AppData\Roaming\RICBox\"

```
C:\Users\username>cd C:\Users\username\AppData\Roaming\RICBox
C:\Users\username\AppData\Roaming\RICBox>dir
Volume in drive C is Windows
Volume Serial Number is 325D-B97F

Directory of C:\Users\username\AppData\Roaming\RICBox

07/13/2023  05:06 PM    <DIR>          .
07/13/2023  05:06 PM    <DIR>          ..
07/13/2023  09:42 AM    <DIR>          logs
06/20/2023  12:14 PM             28,672 packages.db
04/25/2023  06:58 PM    <DIR>          plugins
07/13/2023  05:04 PM             601 settings.json
04/13/2023  09:59 AM    <DIR>          tmp
06/20/2023  12:06 PM    <DIR>          venvs
                2 File(s)              29,273 bytes
                6 Dir(s)  58,134,704,128 bytes free

C:\Users\username\AppData\Roaming\RICBox>
```

Figure 2. Navigating to RICBox Stored Python Files

- Open the “venvs” directory and navigate to the device that you are programming.

```
C:\Users\username\AppData\Roaming\RICBox\venvs>dir
Volume in drive C is Windows
Volume Serial Number is 325D-B97F

Directory of C:\Users\username\AppData\Roaming\RICBox\venvs

06/20/2023  12:06 PM    <DIR>          .
06/20/2023  12:06 PM    <DIR>          ..
04/17/2023  02:56 PM    <DIR>          FemtoClock2-x64
06/20/2023  12:06 PM    <DIR>          FemtoClock3-x64
04/18/2023  01:45 PM    <DIR>          ProXo2-x64
04/25/2023  06:58 PM    <DIR>          VersaClock7-x64
                0 File(s)              0 bytes
                6 Dir(s)  58,128,277,504 bytes free
```

Figure 3. Open the venvs folder

- Open the scripts directory and type “activate”. When the environment is activated, the device name is displayed on the left in parentheses.

```
C:\Users\username\AppData\Roaming\RICBox\venvs>cd FemtoClock3-x64\Scripts
```

Figure 4. Opening the Scripts Folder

```
C:\Users\username\AppData\Roaming\RICBox\venvs\FemtoClock3-x64\Scripts>activate
(FemtoClock3-x64) C:\Users\username\AppData\Roaming\RICBox\venvs\FemtoClock3-x64\Scripts>
```

Figure 5. Activating the Virtual Environment

### 3. RBEEPROM

When the environment is activated, the EEPROM programming utility can be run by typing “rbeeprom --help”. I2C\_ADDR refers to the i2c address of the programmed EEPROM. When the -address argument is not passed then the address 0x50 will be assumed. The arguments -channel and -port are dependent on the serial controller being used (e.g., FTDI).

```
(FemtoClock3-x64) C:\Users\username\AppData\Roaming\RICBox\venvs\FemtoClock3-x64\Scripts>rbeeprom --help
usage: rbeeprom [-h] {erase,blank,dump,program,verify,save} ...

I2C EEPROM programming utility

optional arguments:
  -h, --help            show this help message and exit

commands:
  {erase,blank,dump,program,verify,save}

usage: rbeeprom program [-h] [-address I2C_ADDR] [-interface {ftdi,aardvark,devasys}] [-channel PORT] [-port PORT]
                        [-verify]
                        {AT24C04,AT24C08,AT24C16,AT24C32,AT24C64,AT24C128,AT24C256,AT24C512,AT24C1024,AT24C1025,24LC64}
                        filename

usage: rbeeprom verify [-h] [-address I2C_ADDR] [-interface {ftdi,aardvark,devasys}] [-channel PORT] [-port PORT]
                       {AT24C04,AT24C08,AT24C16,AT24C32,AT24C64,AT24C128,AT24C256,AT24C512,AT24C1024,AT24C1025,24LC64}
                       filename

usage: rbeeprom save [-h] [-address I2C_ADDR] [-interface {ftdi,aardvark,devasys}] [-channel PORT] [-port PORT]
                    {AT24C04,AT24C08,AT24C16,AT24C32,AT24C64,AT24C128,AT24C256,AT24C512,AT24C1024,AT24C1025,24LC64}
                    filename

usage: rbeeprom erase [-h] [-address I2C_ADDR] [-interface {ftdi,aardvark,devasys}] [-channel PORT] [-port PORT]
                    [-fill FILL]
                    {AT24C04,AT24C08,AT24C16,AT24C32,AT24C64,AT24C128,AT24C256,AT24C512,AT24C1024,AT24C1025,24LC64}

usage: rbeeprom blank [-h] [-address I2C_ADDR] [-interface {ftdi,aardvark,devasys}] [-channel PORT] [-port PORT]
                      [-fill FILL]
                      {AT24C04,AT24C08,AT24C16,AT24C32,AT24C64,AT24C128,AT24C256,AT24C512,AT24C1024,AT24C1025,24LC64}

usage: rbeeprom dump [-h] [-address I2C_ADDR] [-interface {ftdi,aardvark,devasys}] [-channel PORT] [-port PORT]
                    {AT24C04,AT24C08,AT24C16,AT24C32,AT24C64,AT24C128,AT24C256,AT24C512,AT24C1024,AT24C1025,24LC64}
```

Figure 6. RBEEPROM Help Description

*Note:* If an EEPROM part number is not listed then contact Renesas support to have it added. Use the EEPROM part number that best resembles the compatible EEPROM of the device being tested.

#### Examples:

If connected to a Renesas EVB with FTDI, use the following commands to program, erase, and dump EEPROM contents of a 24LC64 EEPROM.

1. “rbeeprom erase 24LC64”

```
(FemtoClock3-x64) C:\Users\username\AppData\Roaming\RICBox\venvs\FemtoClock3-x64\Scripts>rbeeprom erase 24LC64
establishing connection to I2C adapter...
connected
erasing...
progress: 100%
```

Figure 7. Erasing 24LC64 EEPROM

## 2. “rbeeprom dump 24LC64”

```
(FemtoClock3-x64) C:\Users\username\AppData\Roaming\RICBox\venvs\FemtoClock3-x64\Scripts>rbeeprom dump 24LC64
establishing connection to I2C adapter...
connected
reading...
progress: 100%
0000 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
0010 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
0020 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
0030 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
0040 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
0050 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
0060 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
0070 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
0080 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
0090 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
00A0 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
00B0 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
00C0 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
00D0 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
00E0 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
00F0 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF | .....
```

Figure 8. EEPROM Read Dump

## 3. rbeeprom program “24LC64”

```
(FemtoClock3-x64) C:\Users\username\AppData\Roaming\RICBox\venvs\FemtoClock3-x64\Scripts>rbeeprom program 24LC64 "C:\Users\username\Desktop\test.rbs"
```

Figure 9. Program 24LC64 EEPROM

*Note:* For connections other than FTDI on a Renesas EVB, use the connection interface options when sending commands. This process supports Aardvard, Devasys, and FTDI interfaces.

## 4. Revision History

Revision	Date	Description
1.00	Nov 1, 2024	Initial release.

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