



EcoFlash User Manual

Revision History

Date	Version	Detail
2019.01	V1.0	Initial Release
2019.06	V1.1	Included description of UDS protocol, applicable to EcoFlash V1.1.2.6 or newer.
2019.06	V1.2	Updated screenshots.
2019.05	V1.4	
2021.06	V1.5	Removed the message of restarting EcoFlash, applicable to EcoFlash V1.1.5.3 or newer.
2021.07	V1.6	Added ufc file description for flashing with UDS protocol.
2021.12	V1.6.1	Added description of Trace feature. Added UDS flashing procedure. Updated logo. Updated screenshots. Added common issues and solutions.
2021.12	V1.6.2	Updated screenshots. Added descriptions of common issues. Updated flashing procedure orders.
2021.12	V1.6.3	Updated common issues, included errors of loading CCP and UDS DLL files. Added screenshots.
2022.01	V1.6.4	Added documentation terms/definitions. Added quick start. Updated some screenshots



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1 Introduction

1.1 Safety Notice

Unreasonable flashing operations may cause flashing failures, causing errors in the operation of electronic systems such as ECUs or damage to their controlled objects. Only personnel who have undergone comprehensive operation training and are fully aware of the possible consequences of the operation can use this software.

1.2 Notice

People who use this flashing tool need to understand the technical details of flashing and understand the characteristics of the flashing objects. The flashing tool is based on the Windows operating system. Users need to understand the menu operation mode and file storage system in the Windows system and need to understand the use of Windows Explorer.

If the user lacks operating experience in using this software, we recommend that it strictly follow the method and sequence of the operating instructions in Chapter 2.

1.3 Hardware requirements

Minimum Hardware requirements:

CPU: 1 GHz

OS: Windows XP or above

RAM: 1 GB

Free space: 250 MB


Recommended Hardware requirements:

CPU: 2 GHz

OS: Windows 7

RAM : 2 GB

Free space: 10 GB

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2 Terminology

ALM	Accurate Lambda Meter
ECU	Electronic Control Unit
CCP	CAN Calibration Protocol
UDS	Unified Diagnostic Services
CRO	Command Receive Object
DTO	Data Transmission Object
DLL	Dynamic Link Library
CAN	Controller Area Network
USB	Universal Serial Bus
COM	cluster communication port
KWP2000	Keyword Protocol 2000


3 Basic Operation Instructions

3.1 Installation of EcoFlash

3.1.1 Download EcoFlash

Download the EcoFlash from the Ecotron website:

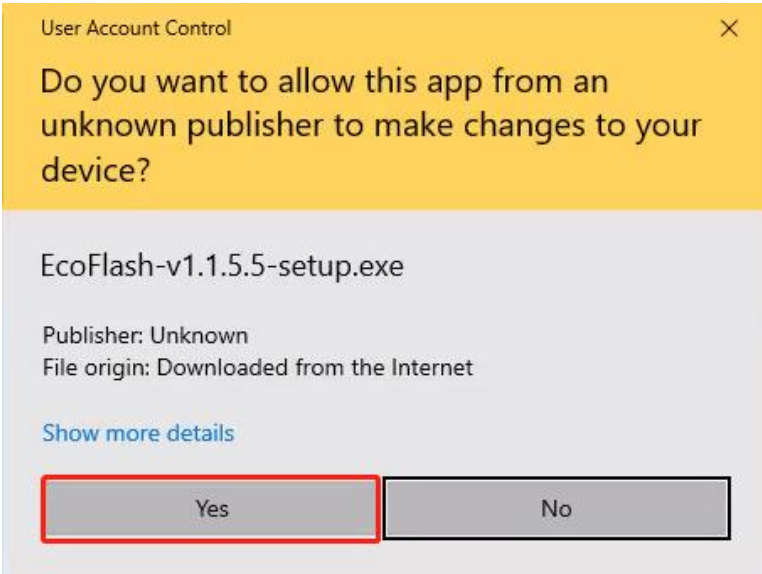
<https://ecotron.ai/download/>

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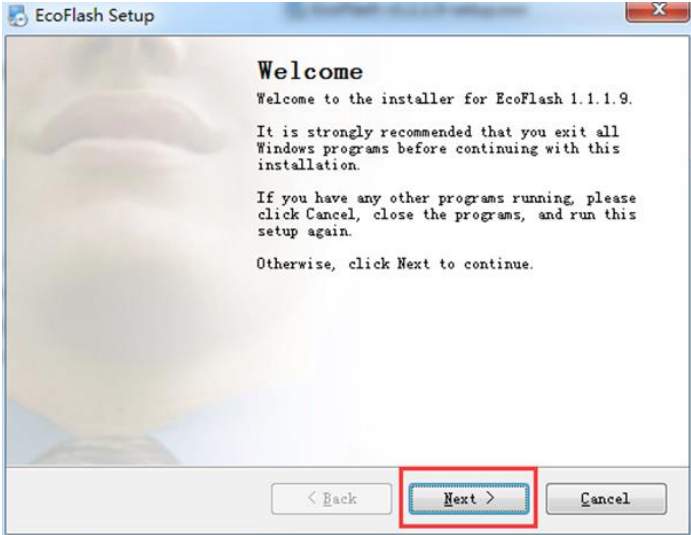
3.1.2 Install EcoFlash

The EcoFlash software installation package is a separate "EcoFlash vx.x.x.x-setup" file. Run the file to start the installation. The specific steps are as follows:


- 1) Double click the EcoFlash installation file, click yes on User Account Control window:

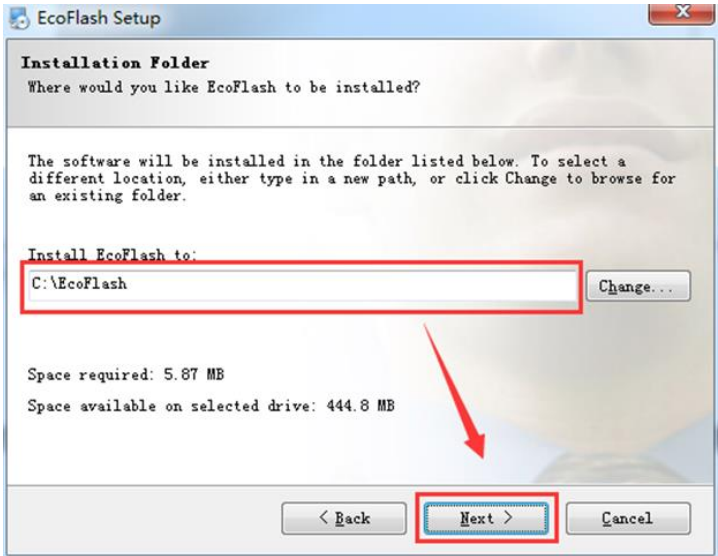


- 2) Click "Next"

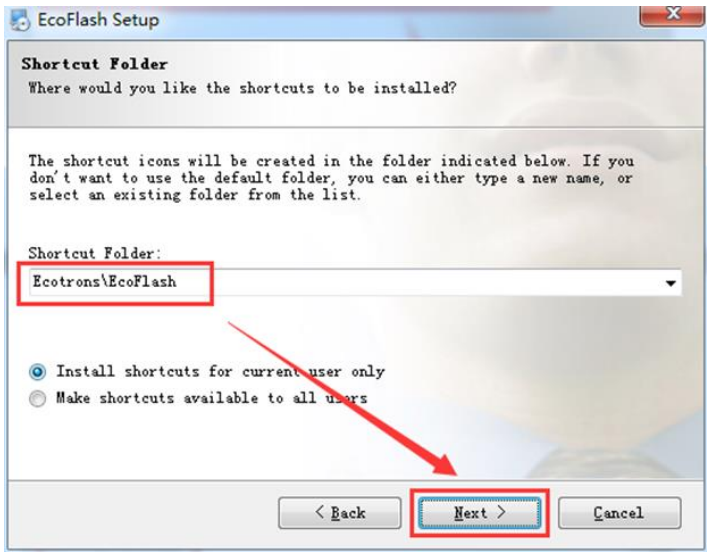


- 3) Click "Next" and choose the path to install EcoFlash


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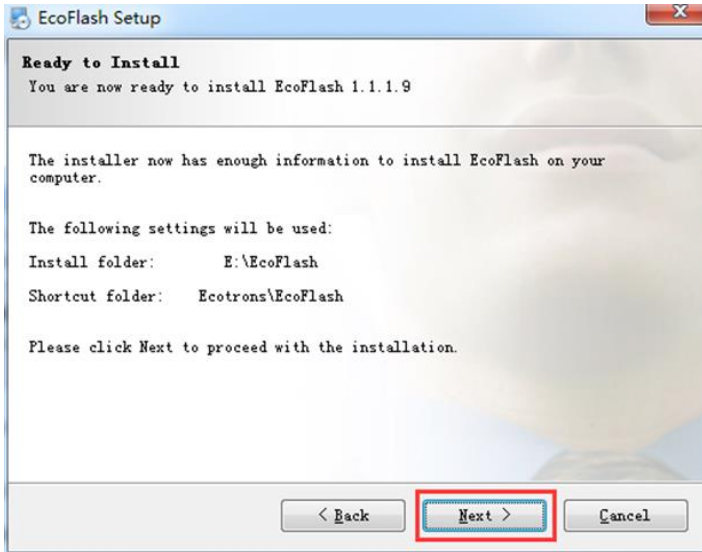


4) Creating a folder for the shortcut. Click “Next”

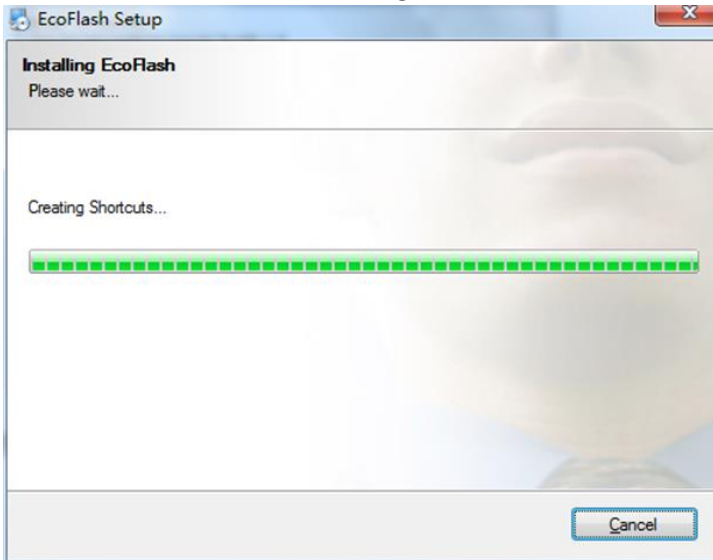


5) Click “Next” to proceed with installation.


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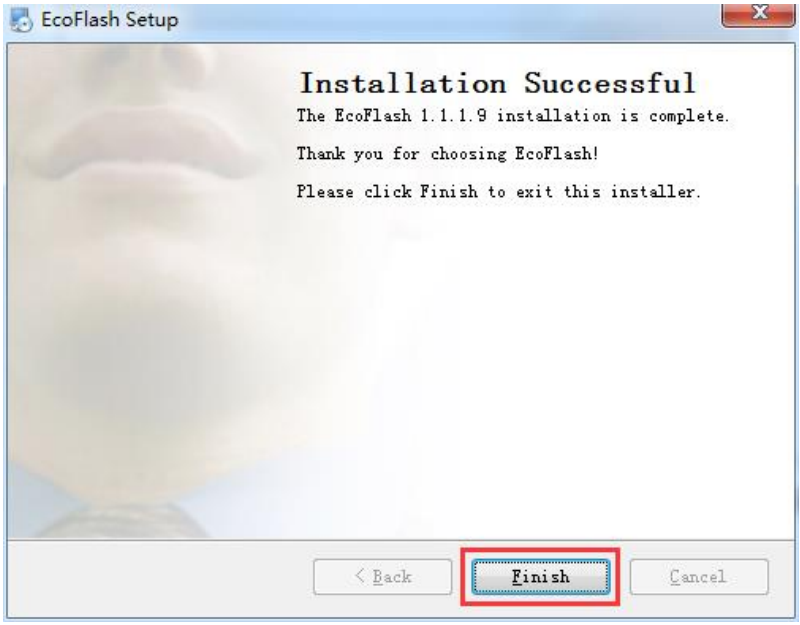


6) Click "Next" and wait for installing



7) Click "Finish"

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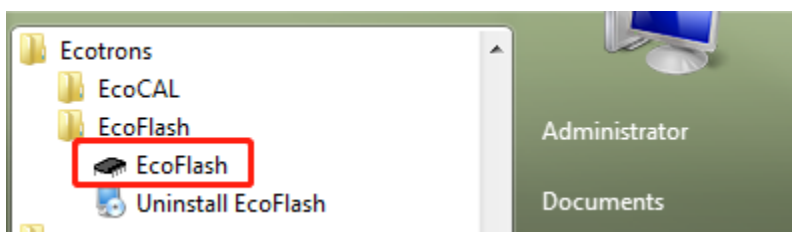


The installation of "EcoFlash" is successful.


3.2 Start EcoFlash

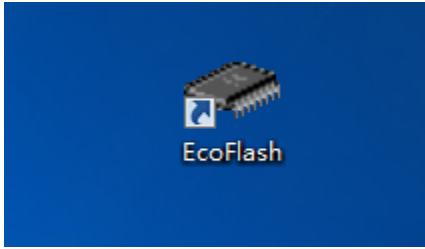
EcoFlash can be started in the following 2 manners:

1) Click "All Programs ---> Ecotrons ---> EcoFlash" in the start menu, as shown in the figure below:

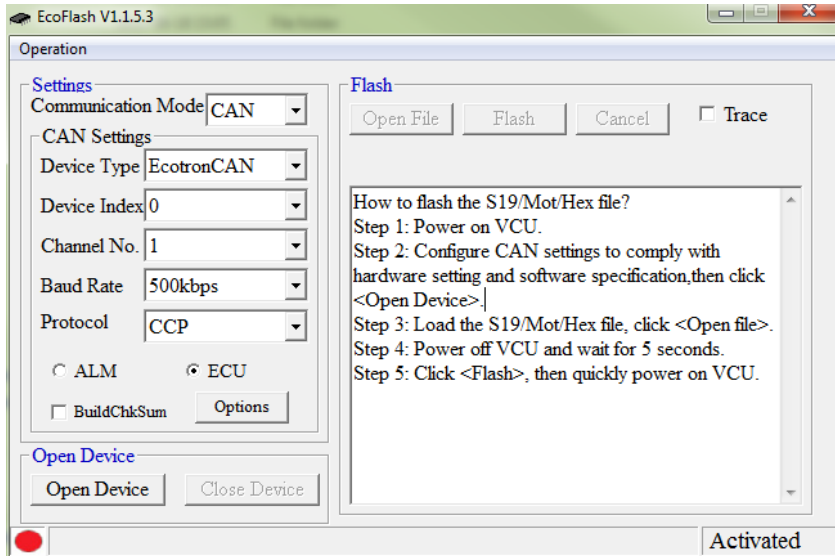


2) Double-click the EcoFlash shortcut on the desktop, as shown in the figure below:

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The software interface after startup is as follows:




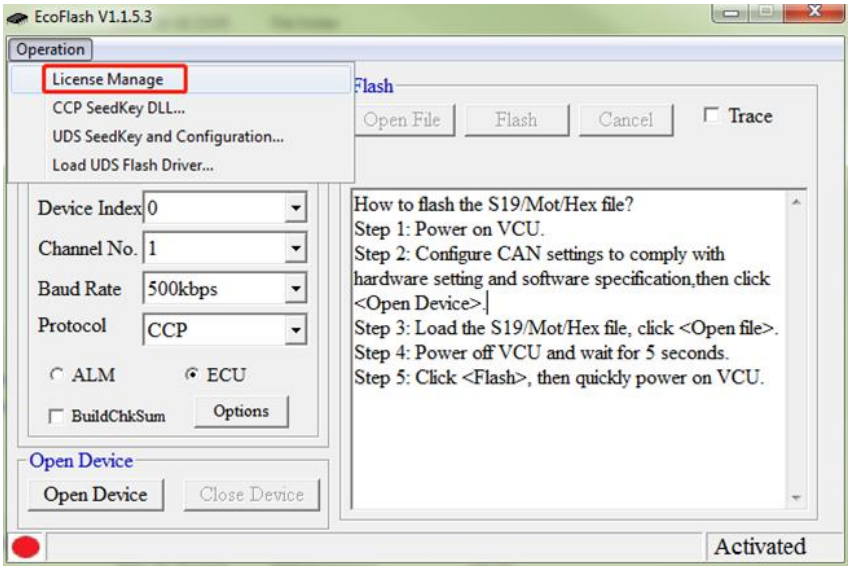
3.3 Activate EcoFlash

3.3.1 Activate EcoFlash with License Key File

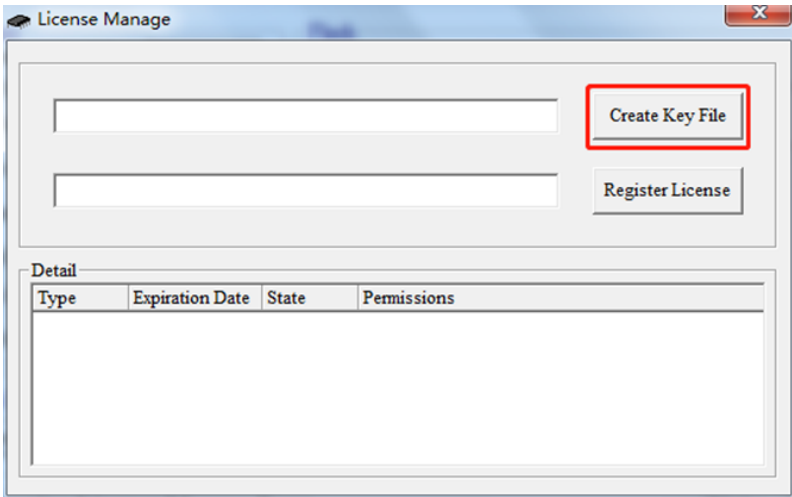
Generate Key file via EcoFlash user interface and email the key file to Ecotron.


- 1) Select Operation -> License Manage

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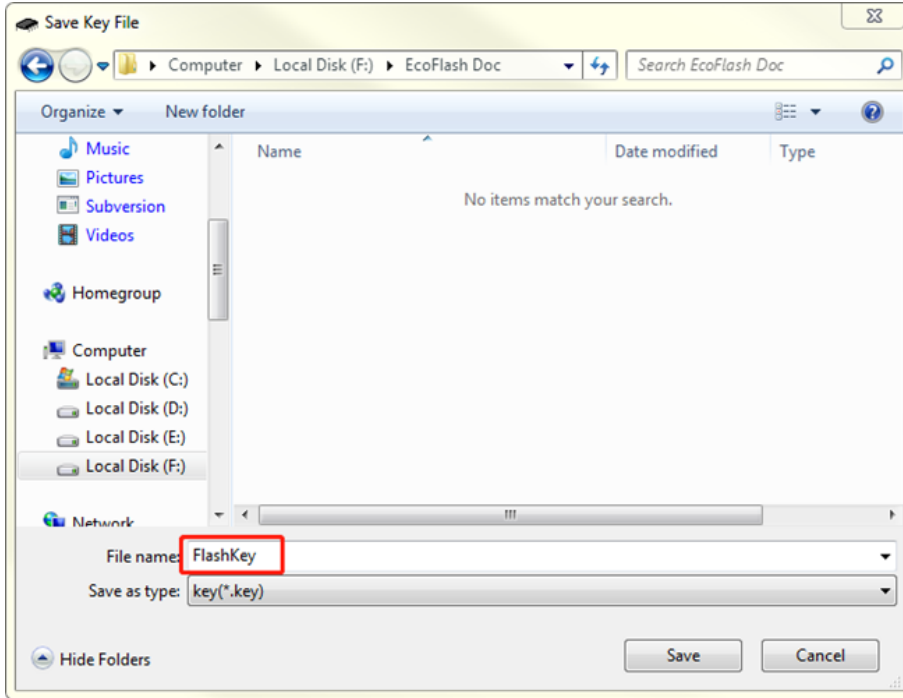


2) Click "Create Key File"



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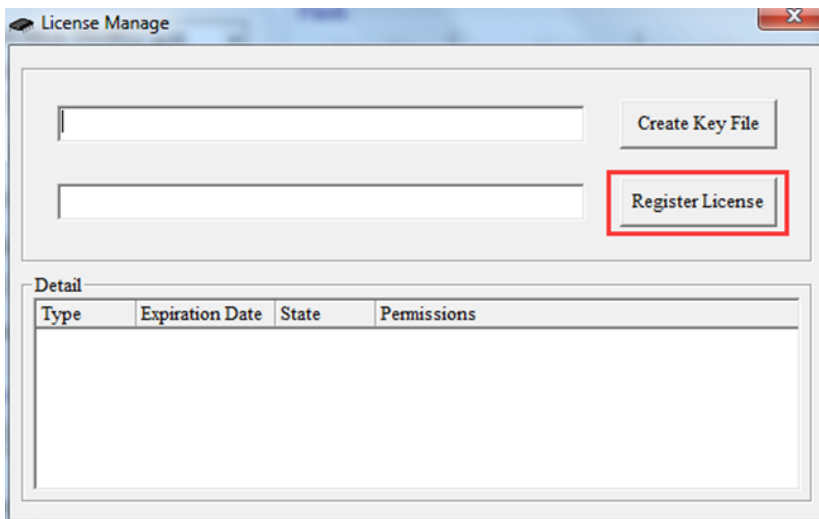
3) Save the key file, for example, choose “EcoFlash_key” as the file name, then click “Save”.




4) Please send the key file to support@ecotron.ai for license file.

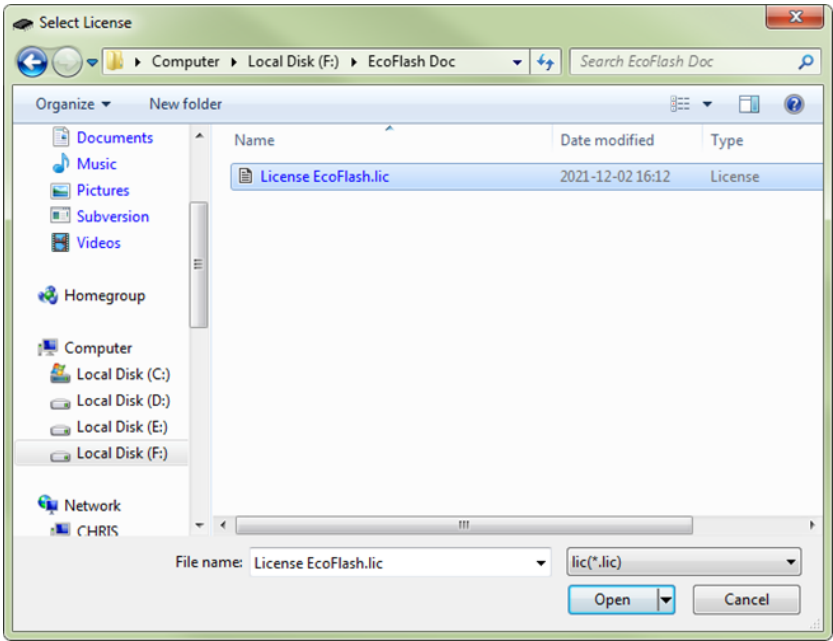
Note: Please do not generate new key files after emailing us key files.

5) Select Operation -> License Manage -> Register License

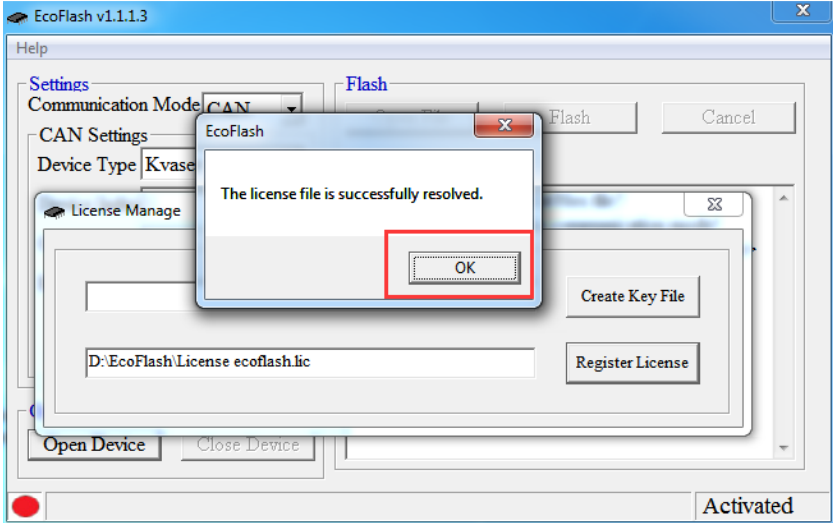


6) Open license file, “License Ecoflash.lic” for example.

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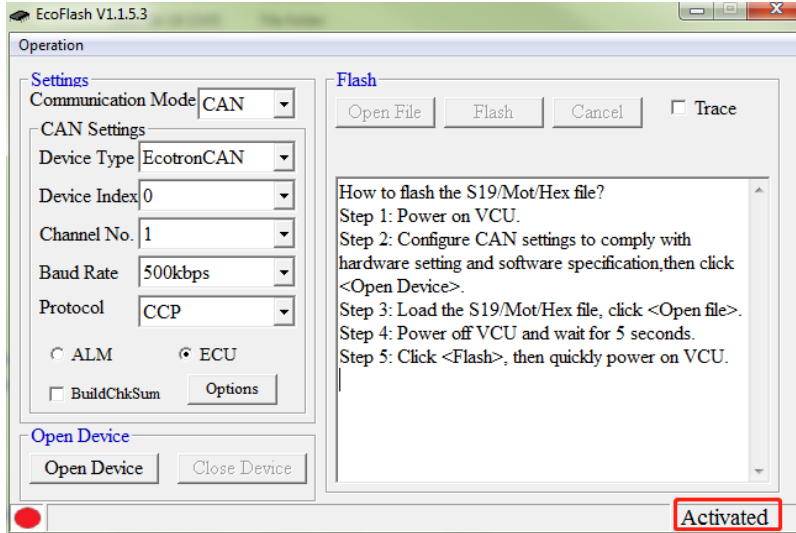
Click "OK". The activation is successful if the "EcoFlash" window is displayed as follows.



3.3.2 Activate EcoFlash by USB dongle

EcoFlash can be activated by purchasing a USB dongle device independently developed by our company. The EcoFlash will be activated once the USB dongle is connected. A USB dongle device can be used on multiple computers. If the following prompt appears at the bottom right of the interface after connecting the dongle, it means that the activation is successful.

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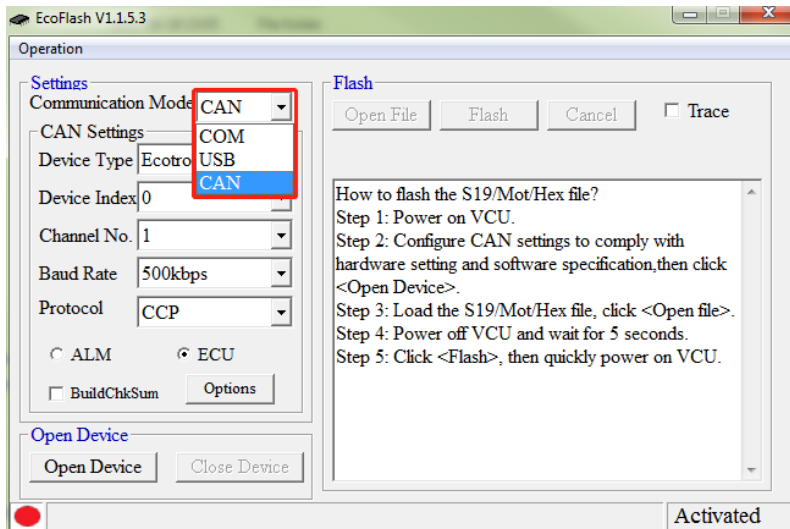



3.4 Parameters description

3.4.1 Select communication mode

EcoFlash supports 3 communication methods: serial communication, USB communication, and CAN communication.

Users can configure different communication modes according to the "Communication Mode" option under the "Settings" menu.

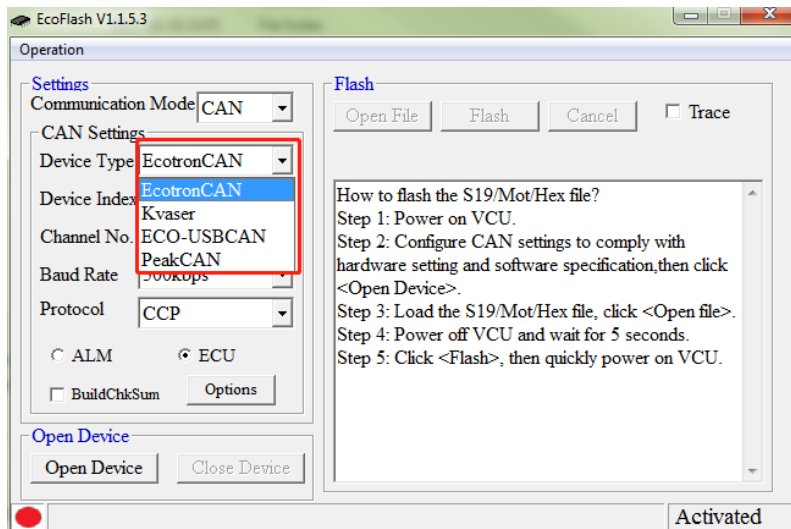


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3.4.2 Select communication device

EcoFlash supports 4 communication devices: EcotronCAN, Kvaser, Eco-USBCAN, PeakCAN.


The user can select different options according to the "Device Type" option under the "CAN Settings" menu.

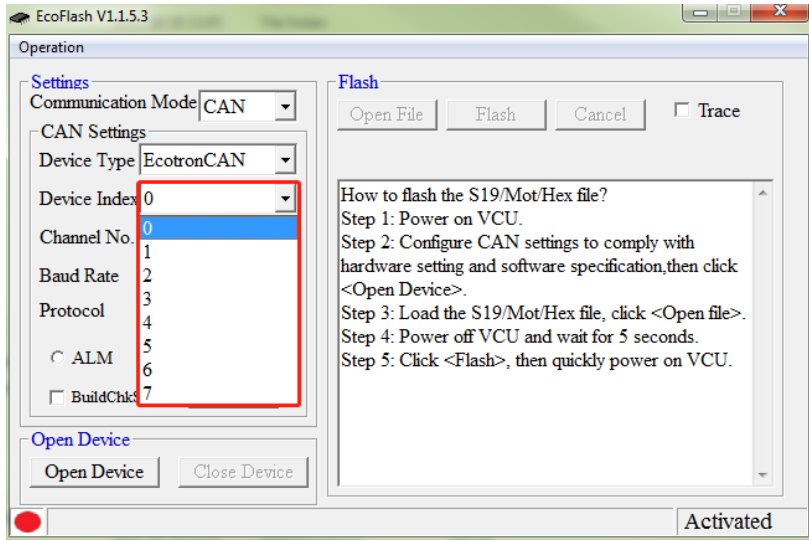


3.4.3 Select device index

Each computer can connect up to 8 devices of the same kind at the same time.

When the computer is connected to only one device, the device number is 0; when the computer is connected to several same devices at the same time, they are numbered in the order in which they are connected to the computer. Users can select different device numbers according to the "Device Index" option under the "CAN Settings" menu.

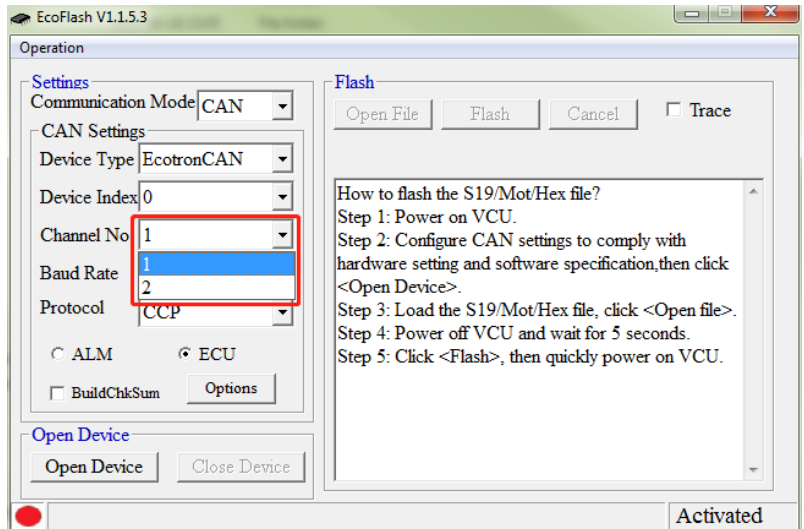
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3.4.4 Select device channel No.


When the device has two channels, this option is used to select the channel number currently used by the device, 1 or 2.

The user can select the device channel number according to the "Channel No." option under the "CAN Settings" menu.

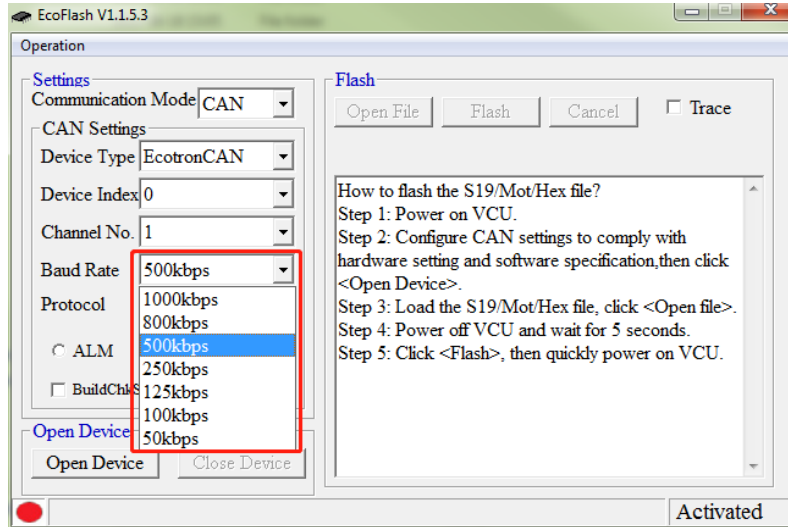


3.4.5 Select Baud rate

This option is used to select the baud rate of communication.

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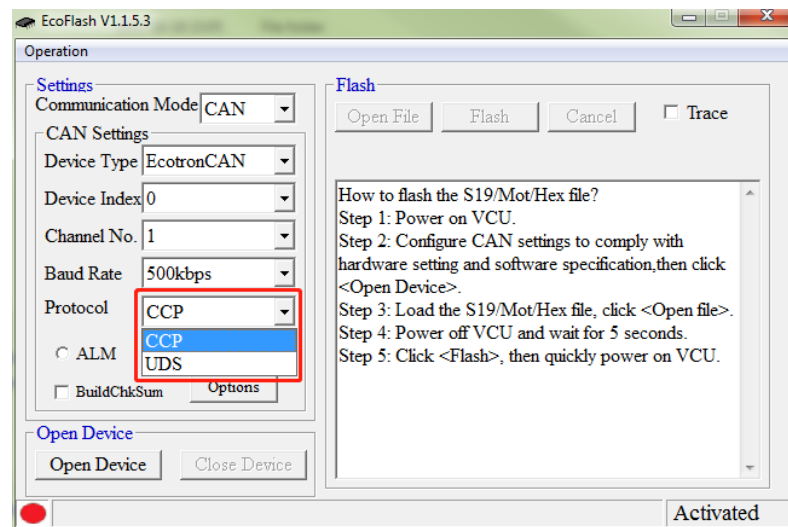
The user can select the communication baud rate according to the "Baud Rate" option under the "CAN Settings" menu.




3.4.6 Select communication protocol

Currently supports two communication protocols: CCP protocol and UDS protocol.

The user can select the communication protocol according to the "Protocol" option under the "CAN Settings" menu.

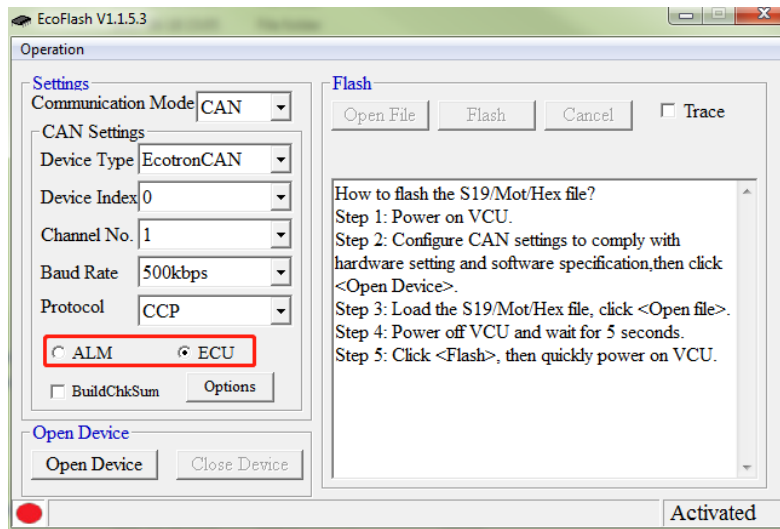


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3.4.7 Select flashing hardware

Currently, two types of hardware flashing programs are supported: ALM and ECU.

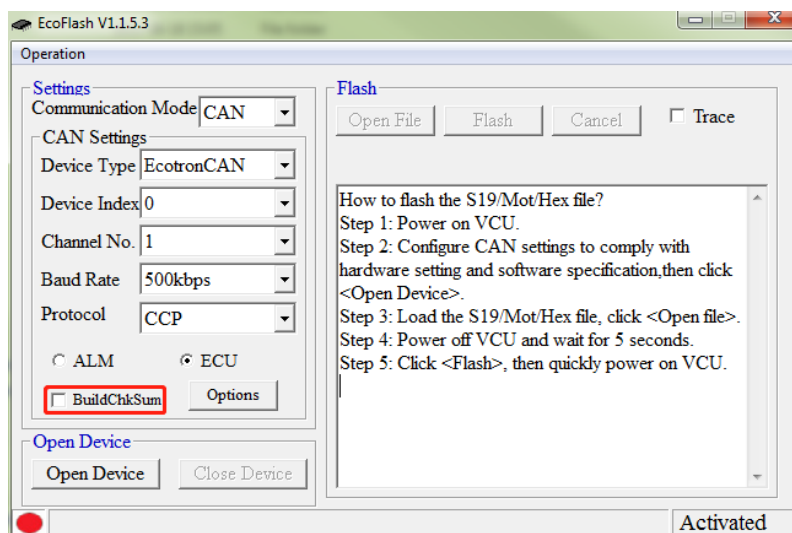
The user can choose according to the actual hardware.




3.4.8 Select BuildChkSum

This option is used to verify whether the flashing data is correct.

Users can choose according to actual needs.



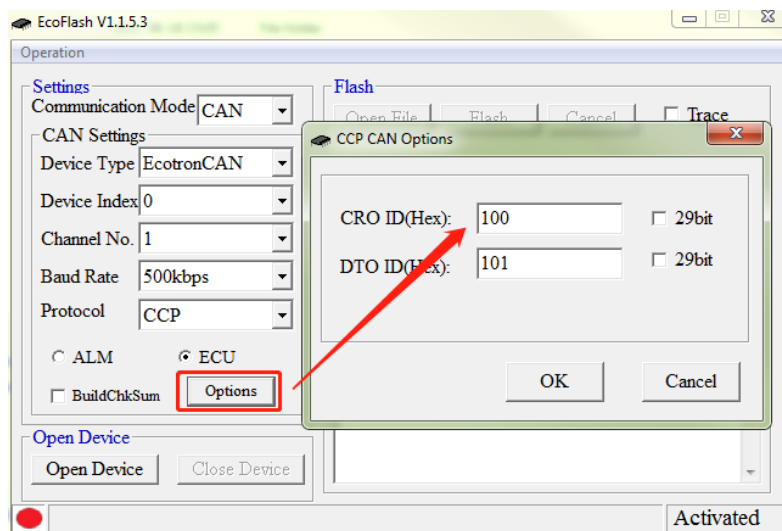
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Caution: only select this option if communication mode is CAN.

3.4.9 Configuring CRO ID/DTO ID

This option is only applicable to CCP communication protocol.

Under the CCP protocol, the user can configure the CRO ID/DTO ID through the "Options" menu. Checking 29bit means extended frame ID, and unchecking means standard frame ID.




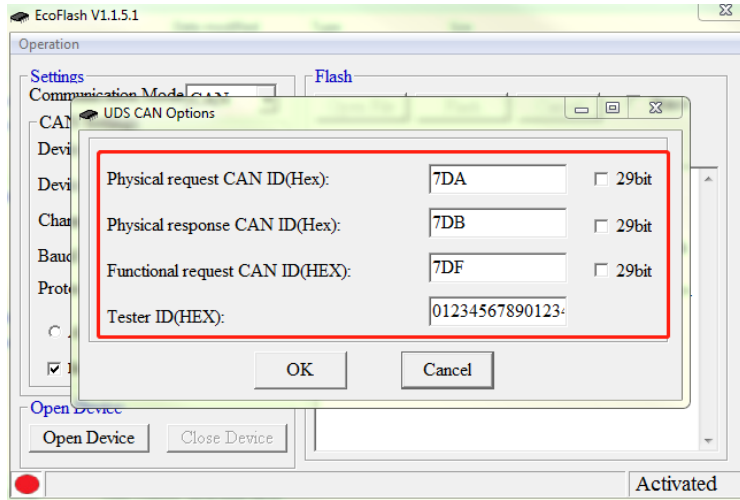
Caution: only select this option if communication mode is CAN.

3.4.10 Configuring UDS CAN options

This option is only applicable to UDS communication protocol. Checking 29bit means extended frame ID, unchecking means standard frame ID.

Under the UDS protocol, Physical request CAN ID represents the physical address of the diagnostic tool, which is the CAN message ID sent from EcoFlash to ECU, and the Physical response CAN ID represents the physical address of the ECU, which is the CAN message ID sent from ECU to EcoFlash. Function request CAN ID is the function address. Tester ID is the diagnostic instrument ID

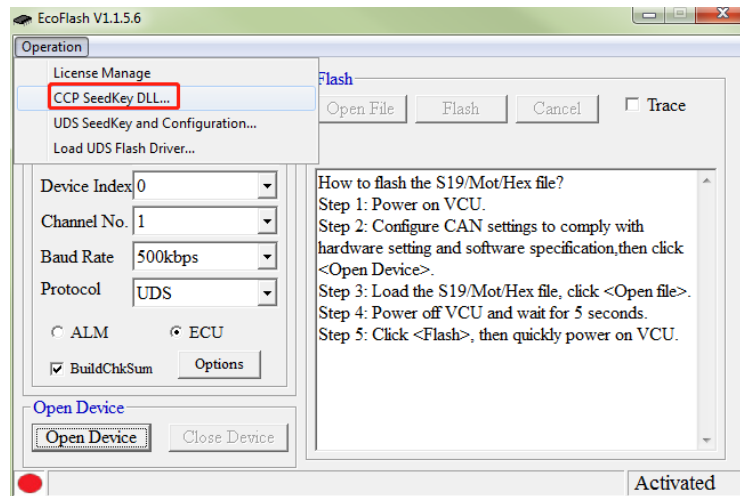
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Caution: only select this option if communication mode is CAN.

3.4.11 Configuring CCP Seedkey DLL

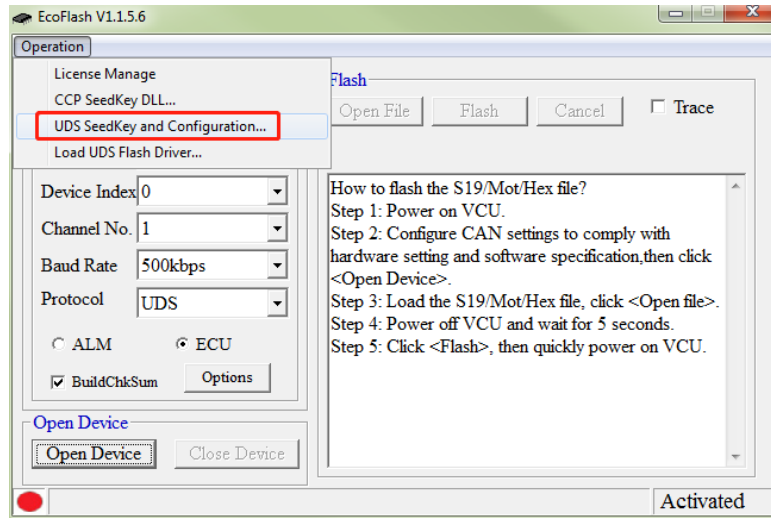
This option is used for CCP protocol to load a DLL that unlocks the hardware flash function, select CCP SeedKey DLL...



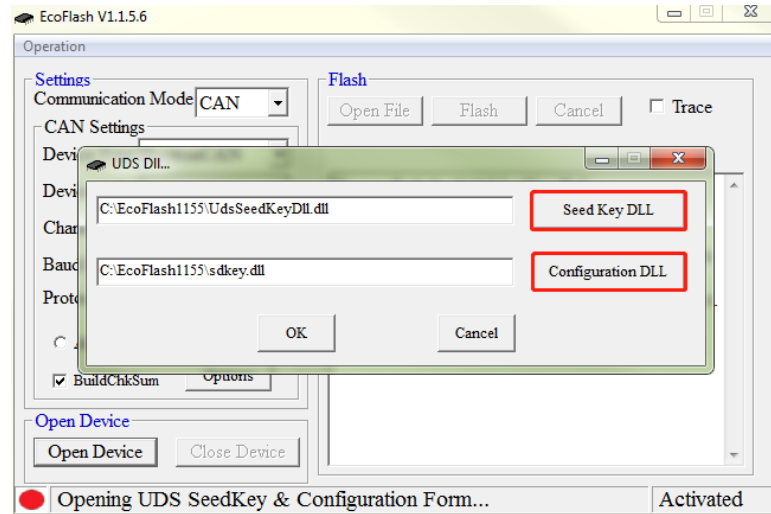
3.4.12 Configuring UDS DLL

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This option is used for the UDS protocol to load the DLL that unlocks the hardware flash function and the UDS Configuration DLL. Select UDS SeedKey and Configuration...

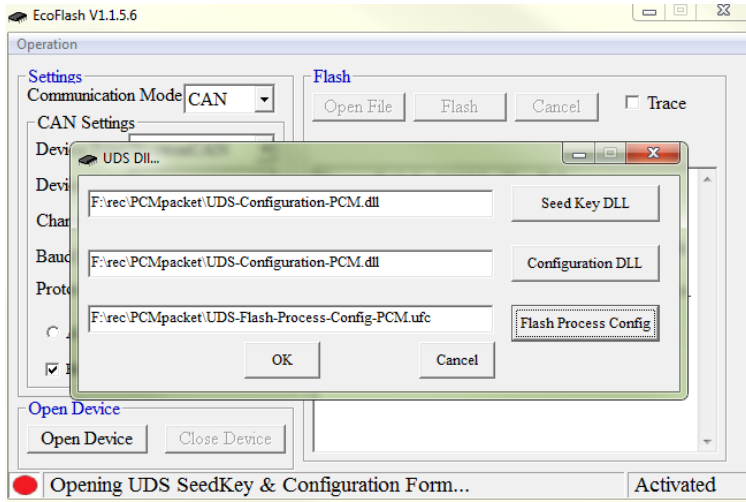


Click the appropriate button to load the SeedKey DLL and Configuration DLL.



If you need to load the Configuration file of the flash process in the Configuration DLL, the load flash process button is displayed. Shown as following

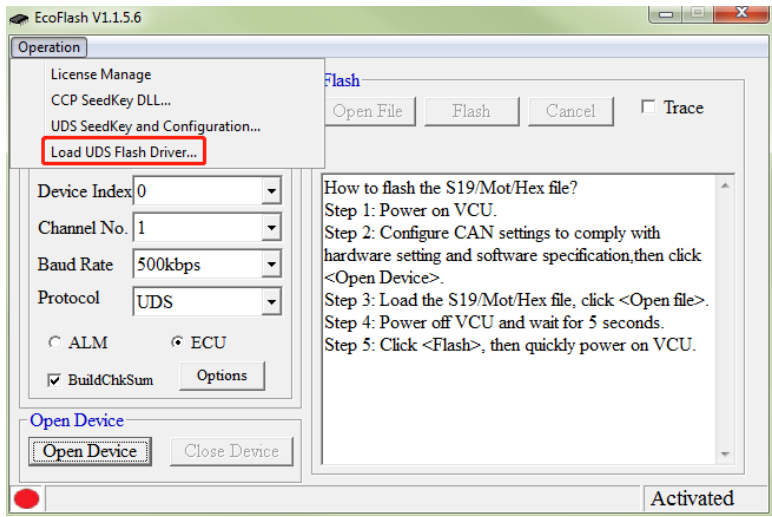
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Then, load the corresponding ufc file.

3.4.13 Selecting UDS Flash Driver

This option is used to load the Flash Driver of the UDS protocol. Determine whether to load the Flash Driver according to the write process.



3.5 Flashing Process

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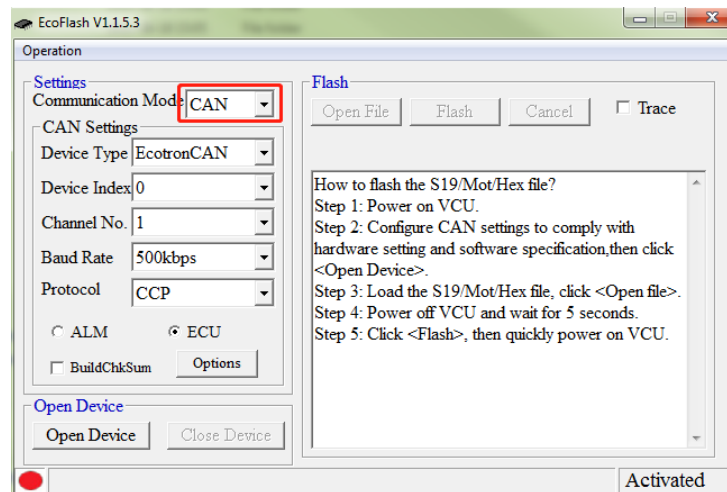
3.5.1 Flash ECU with MOT/HEX/S19/SREC files via CCP

- 1) Connect the computer and ECU wiring harness through CAN equipment. We used Ecotron CAN as an example. Other devices work in the same way.




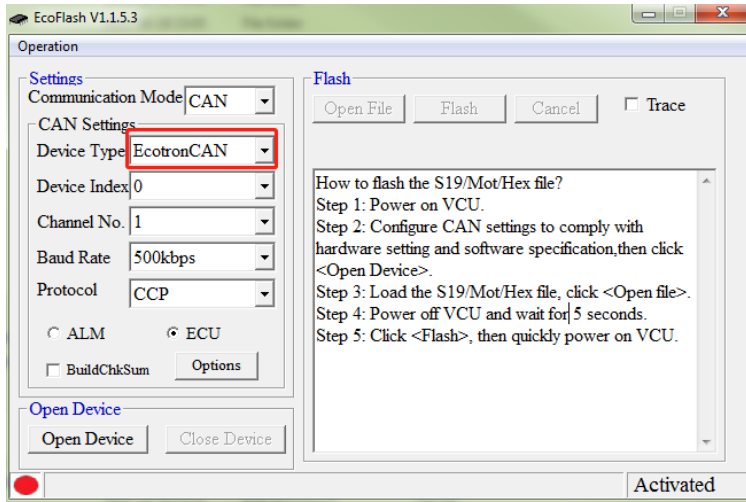
Caution: Make sure the connection between the two is fully inserted

- 2) Set the communication mode to CAN.

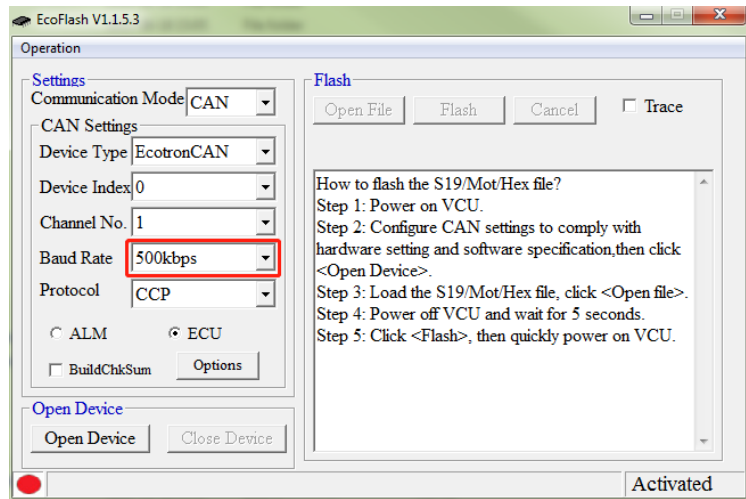


- 3) Select the CAN device as Ecotron CAN.


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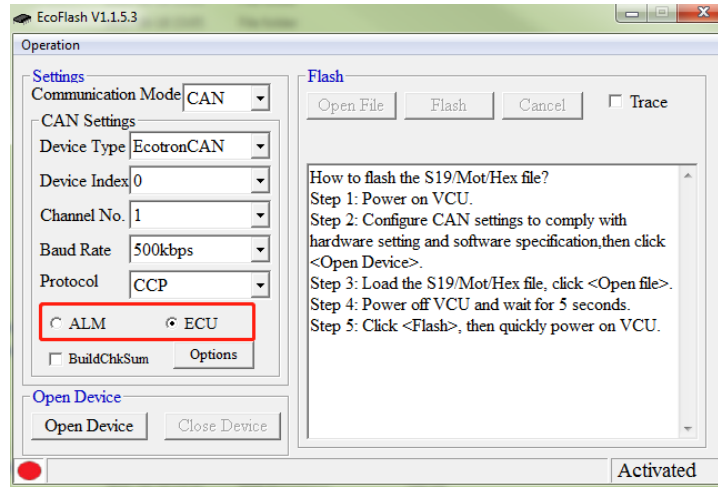


4) Select baud rate of 500kbps.

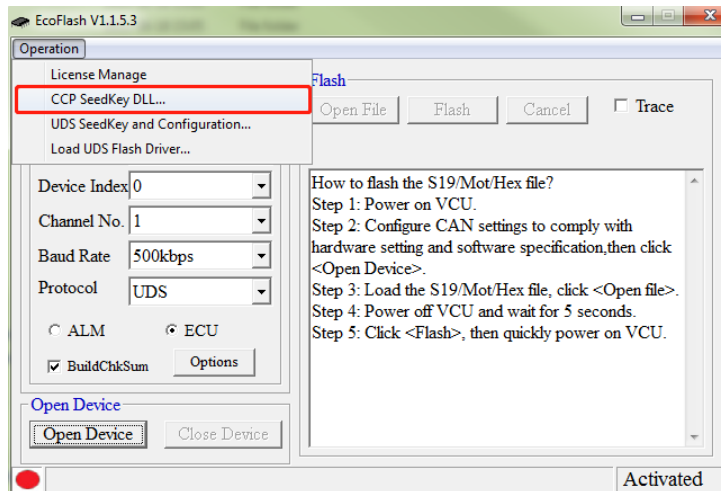


5) Select ECU hardware.


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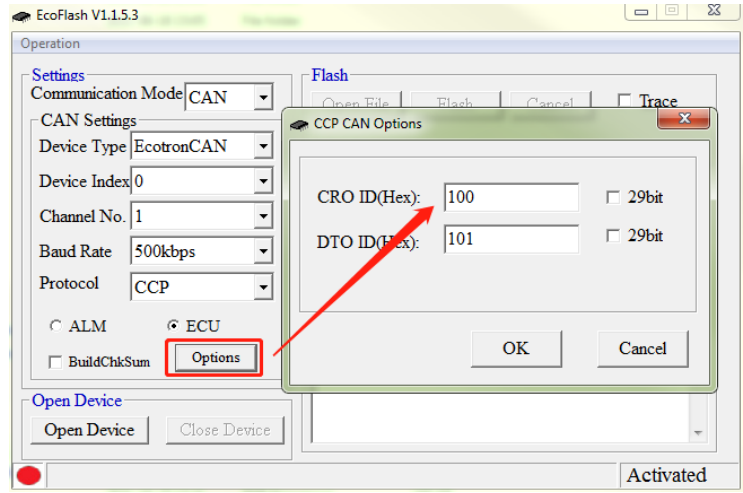


6) Select the SeedKey DLL file

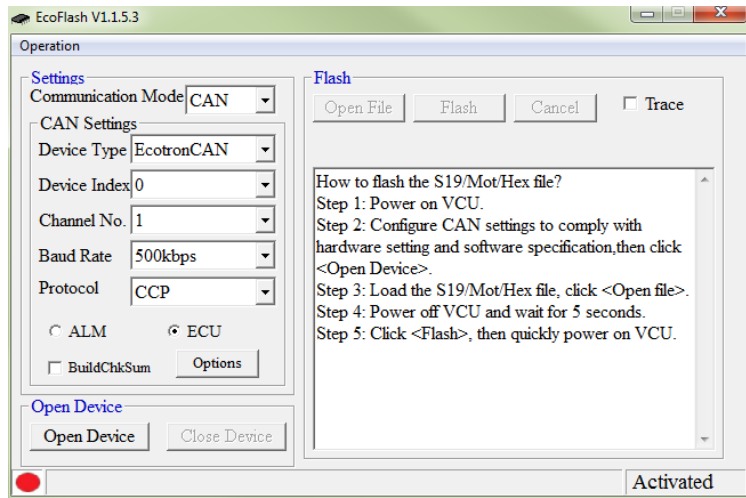


7) Configure the CRO ID and DTO ID


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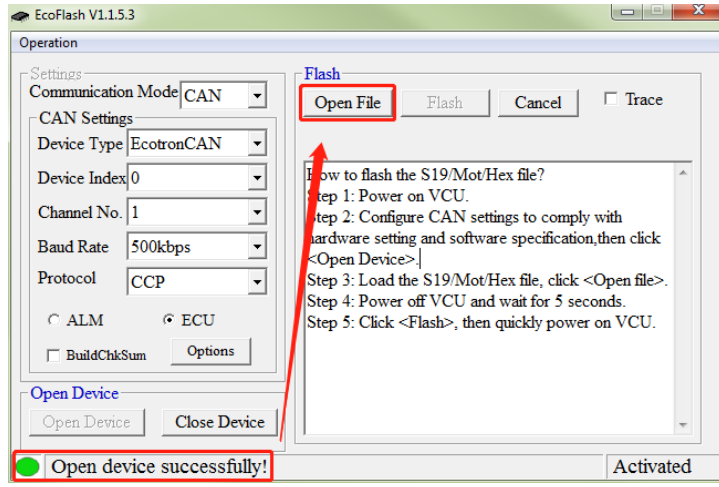


8) Click "Open Device" button to Open the Device.

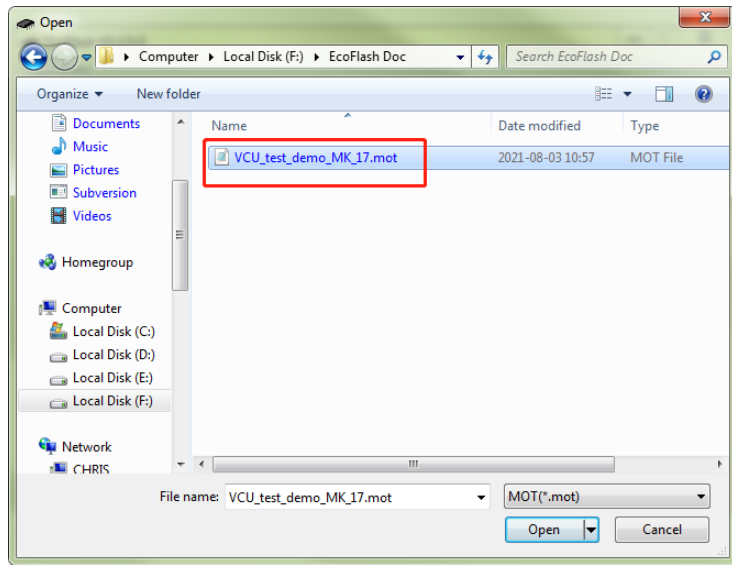


9) After the device is opened, click the "Open File".


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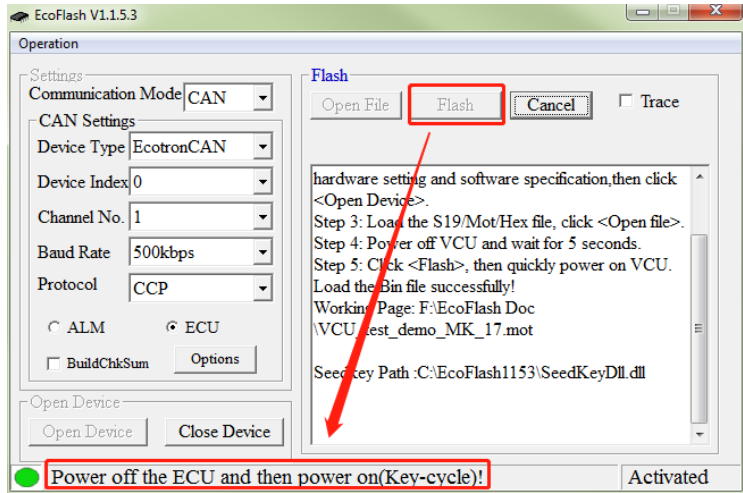


10) Find the "MOT" file you want to flash and click open.

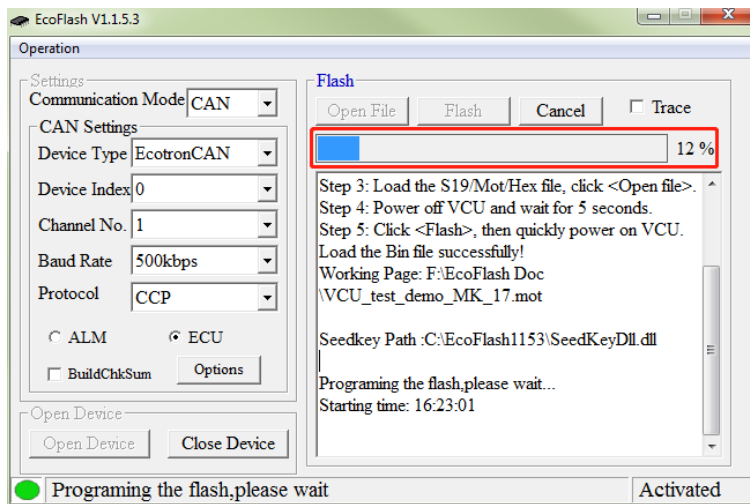


11) Click the "Flash" button, and the prompt information of Key Cycle will appear in the lower left corner.


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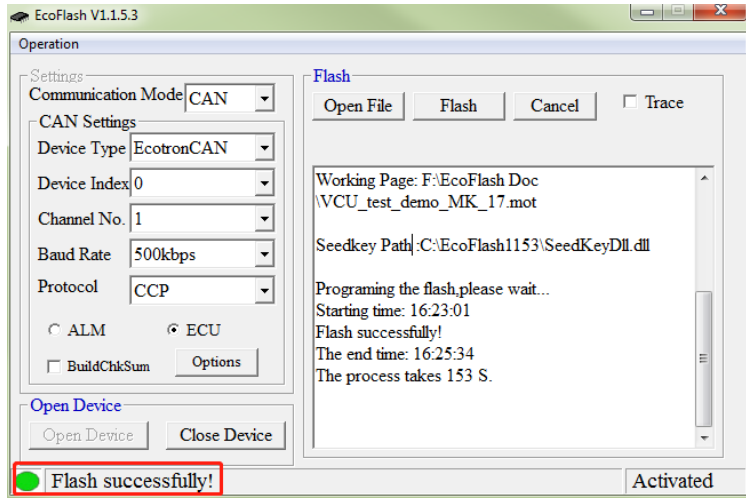


12) Power on and off the device again, then the progress bar starts running.

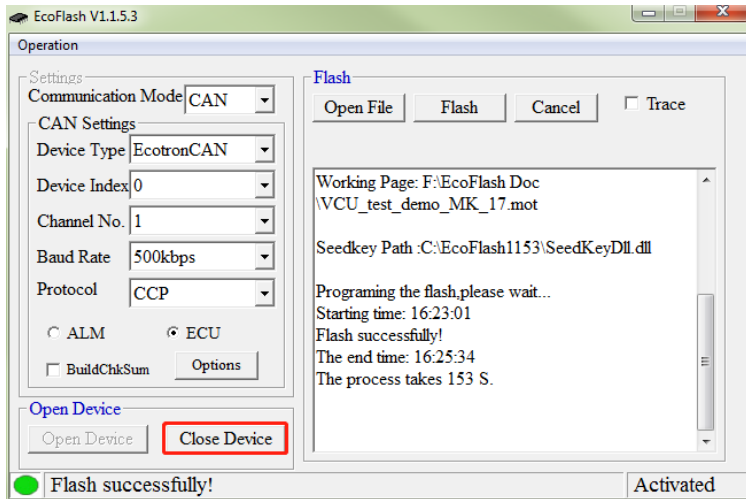


13) After the operation is complete, "Flash successfully!" will display in the lower left corner of the screen.

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14) Click "Close Device" to finish flashing.



3.5.2 Flash ECU with MOT/HEX/S19/SREC files via UDS protocol

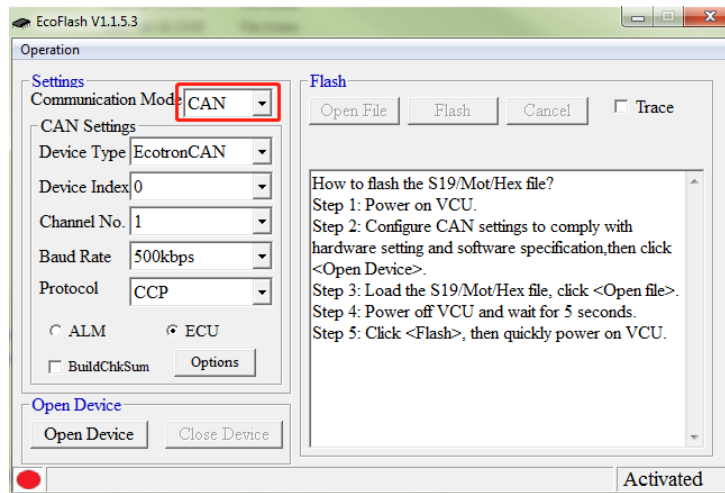
- 1) Connect the computer and ECU wiring harness through CAN equipment. We use Ecotron CAN as an example. Other devices work in the same way.

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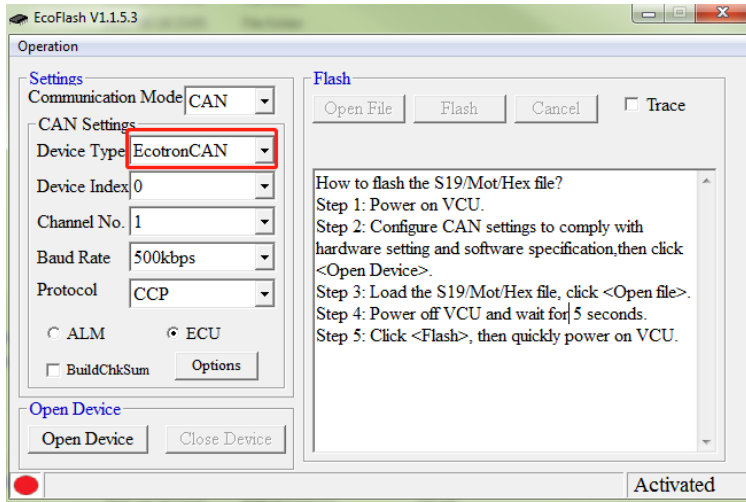
Caution: Make sure the connection between the two is fully inserted

- 2) Set the communication mode to CAN.

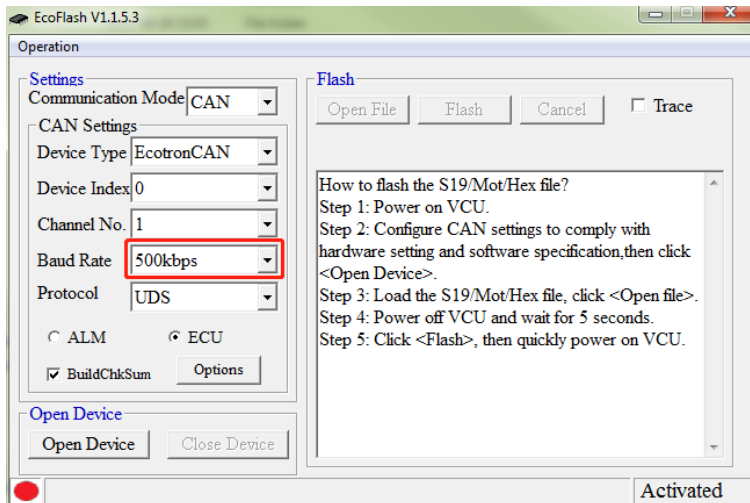


- 3) Select the CAN device as Ecotron CAN.


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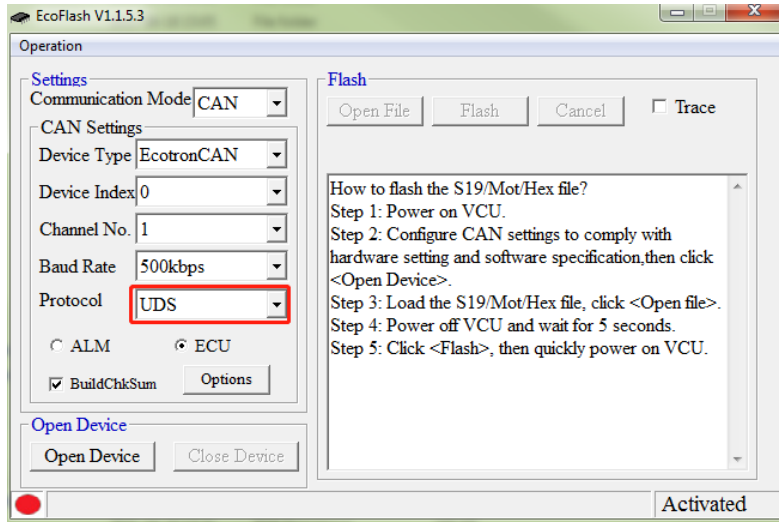


4) Select baud rate.

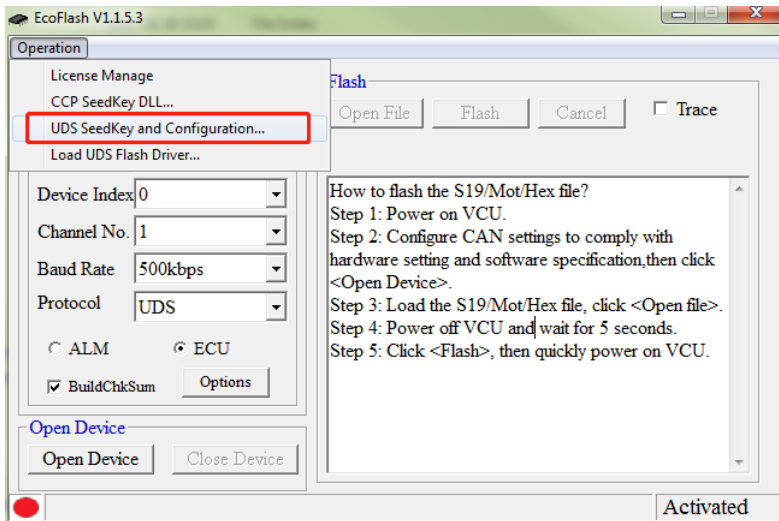


5) Select UDS.


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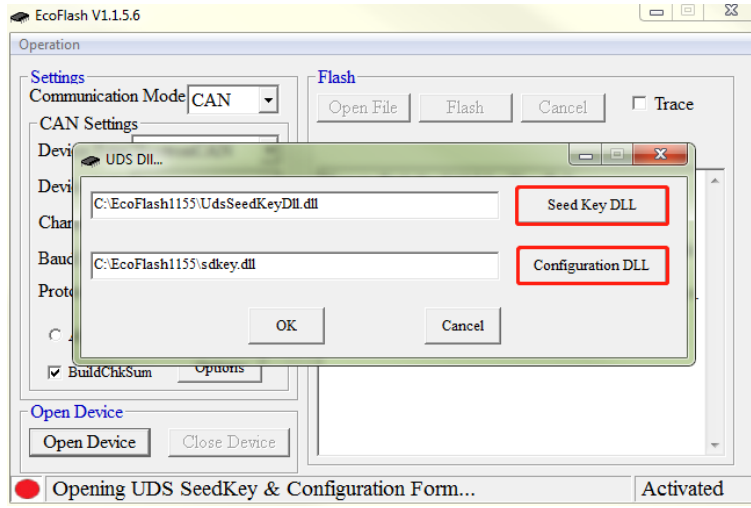


6) Select SeedKey and Configuration DLL files

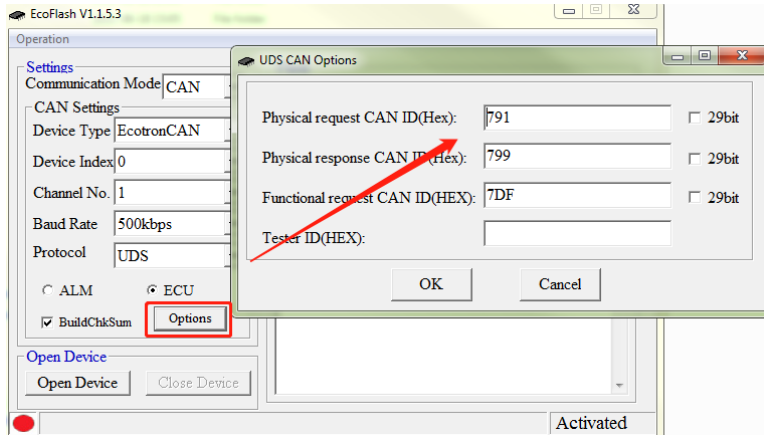


Load the DLL based on the controller type


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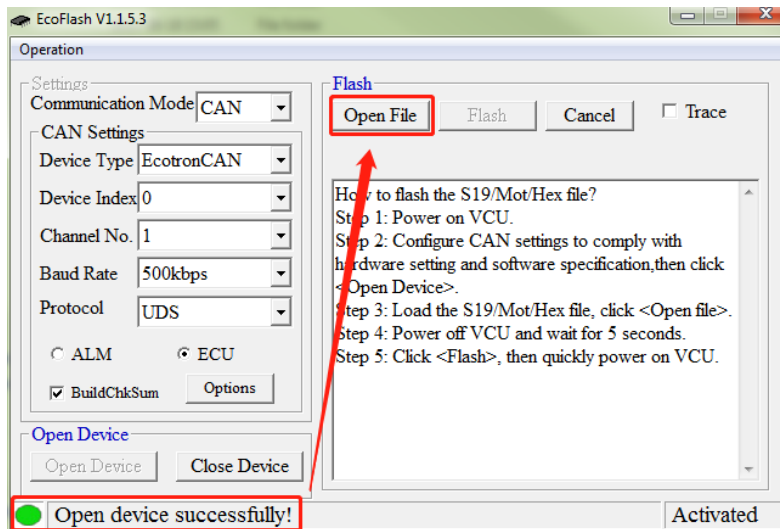
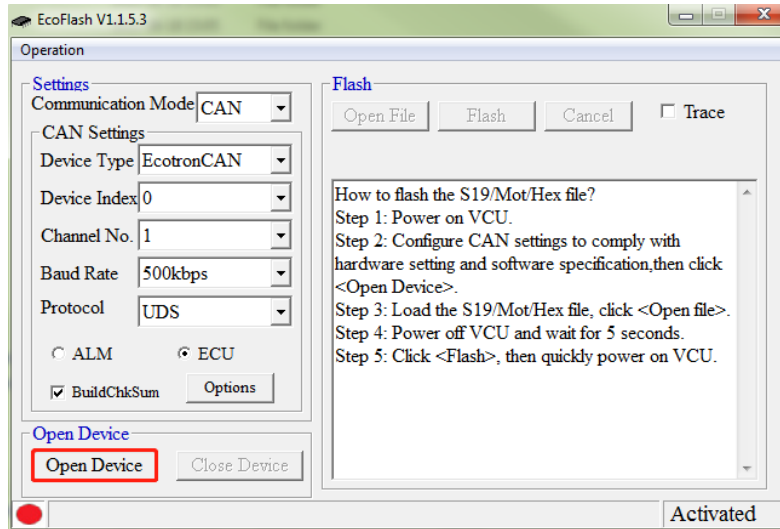


7) Configure the UDS CAN option




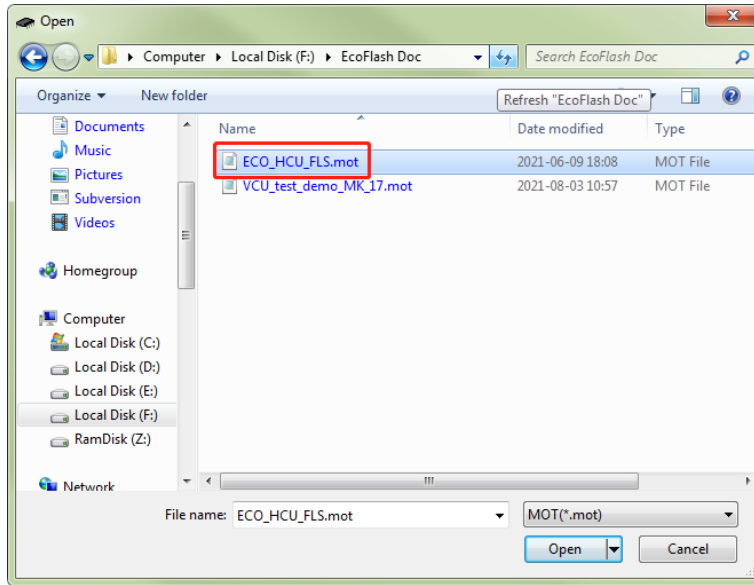
8) Click "Open Device" button to Open the Device.

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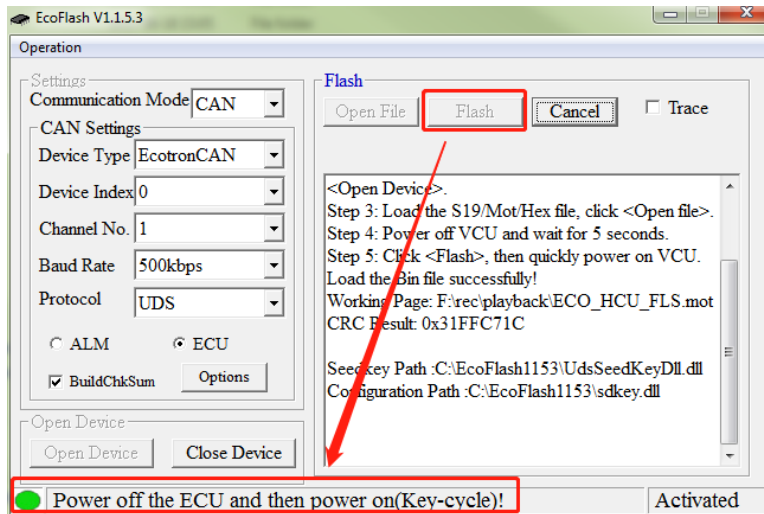


9) After the device is opened, click the "Open File" button.


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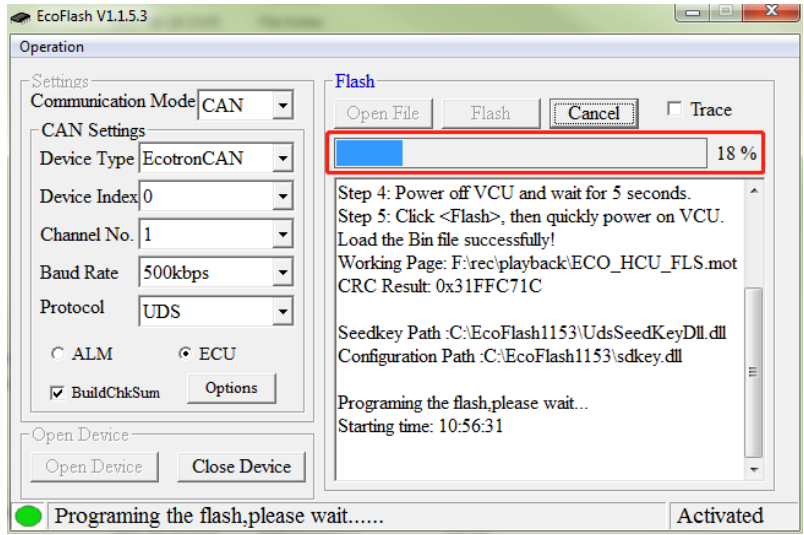


10) Click the "Flash" button, and the prompt information of Key Cycle will appear in the lower left corner.

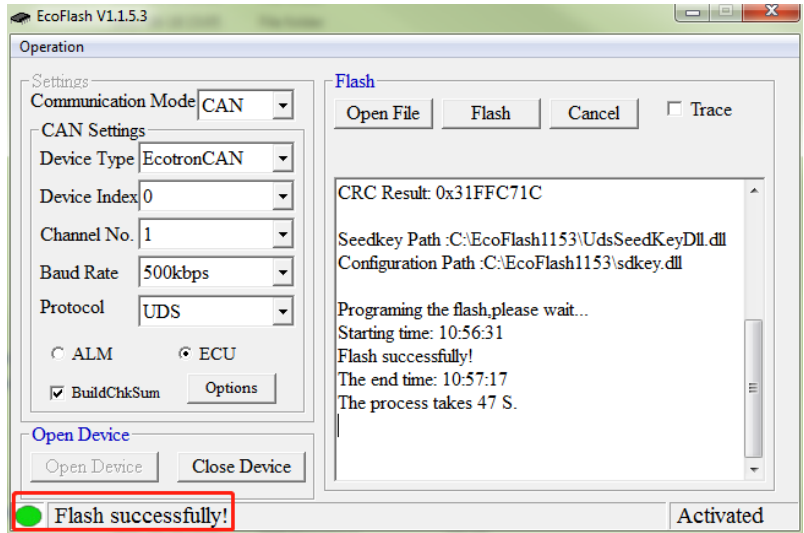


11) Power on and off the device again, then the progress bar starts running


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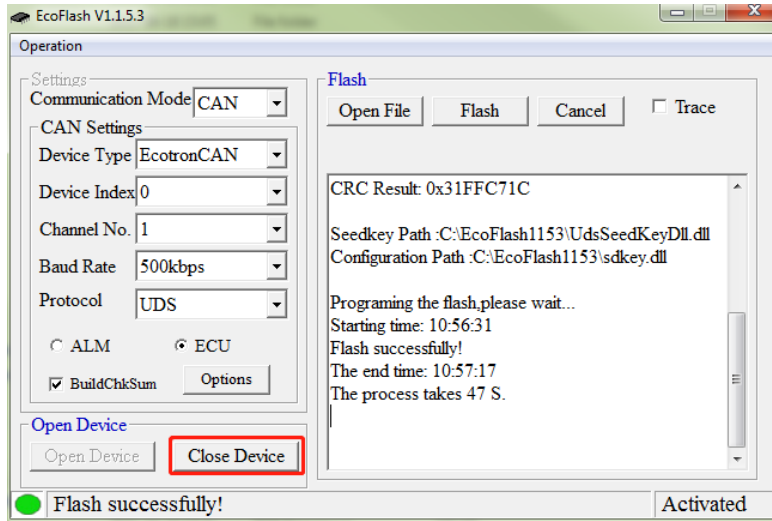


12) After the operation is complete, "Flash successfully!" will display in the lower left corner of the screen.



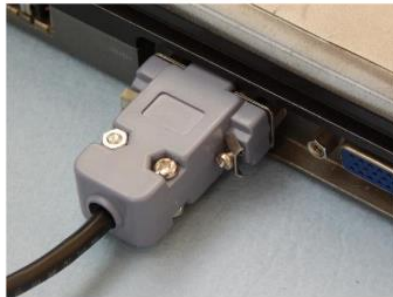
13) Click "Close Device" to finish flashing.

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3.5.3 Flash ECU with S19 files via USB or RS232

- 1) Connect the computer and ECU wiring harness via USB or RS232. This section uses the USB device as an example. RS232 runs in the same way.




RS232 cable

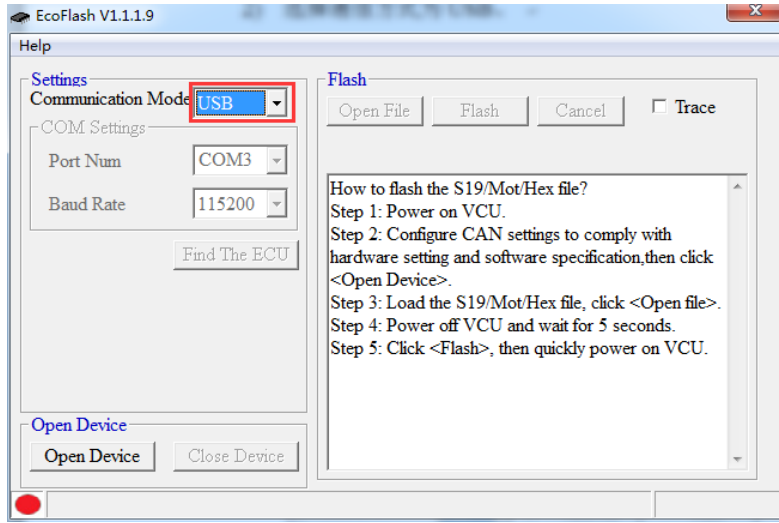


USB adaptor

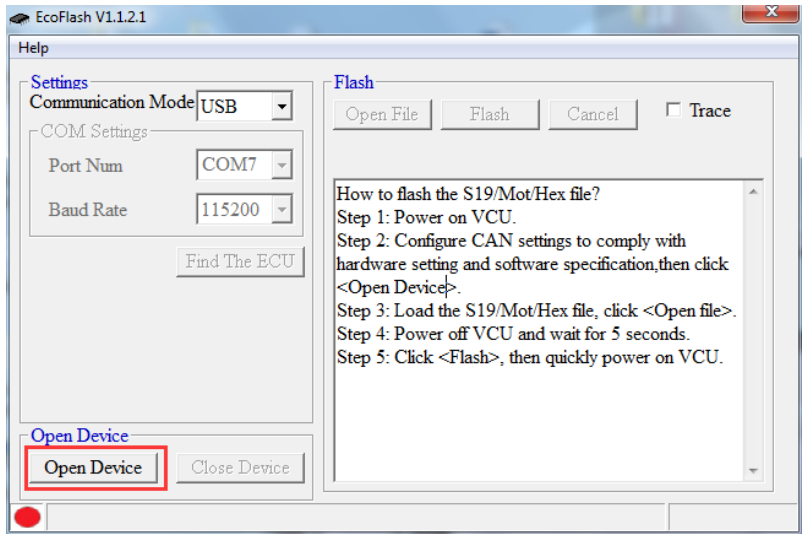
Caution: Make sure the connection between the two is fully inserted

- 2) Select USB as the communication mode.


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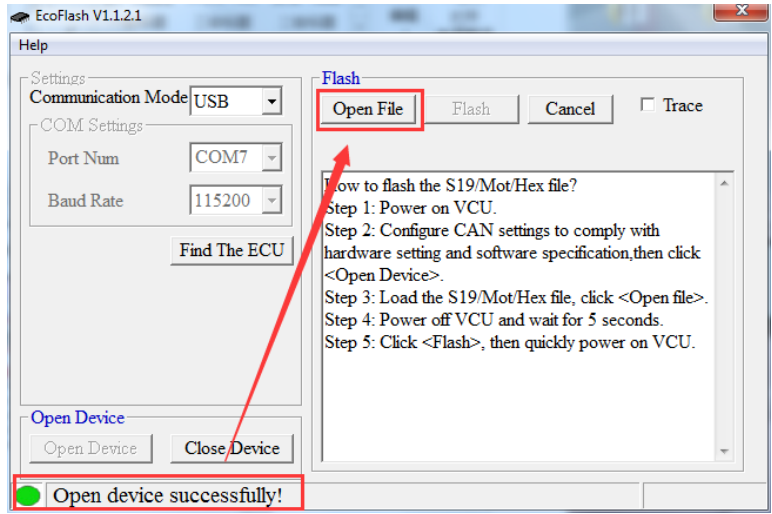


3) Click "Open Device" button to open the device

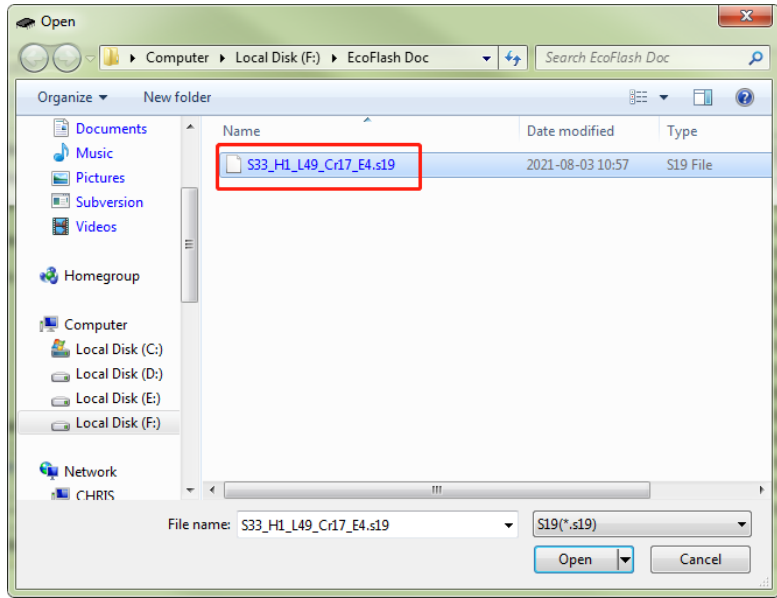


4) After the device is opened, click the "Open File" button.


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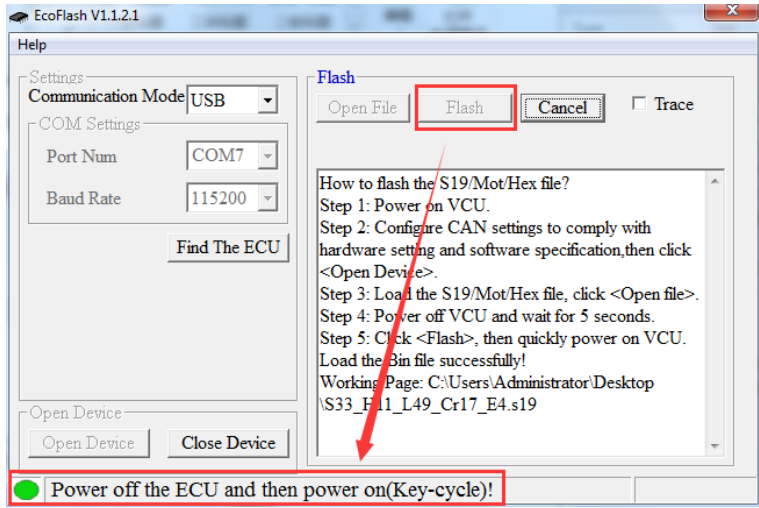


5) Find the "S19" file you want to flash and click open.

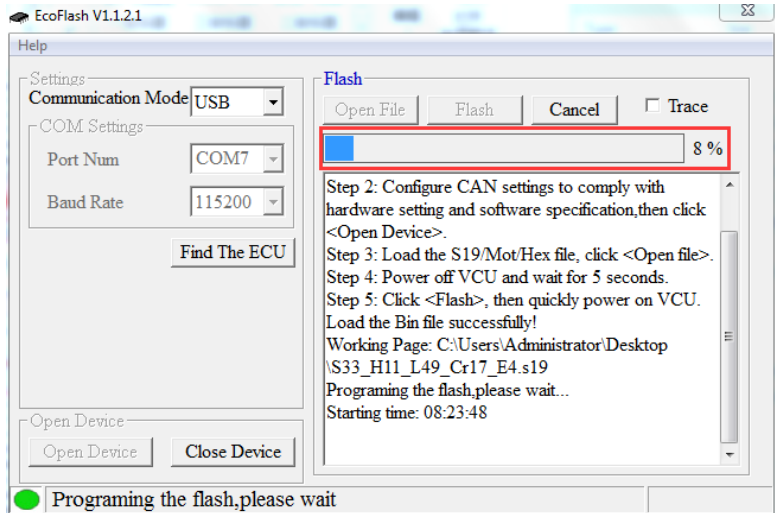


6) Click the "Flash" button, and the prompt information of Key Cycle will appear in the lower left corner.


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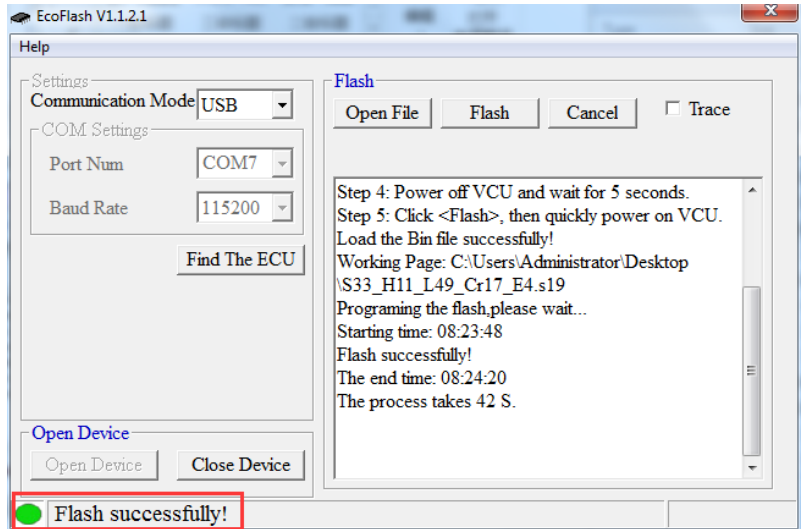


7) Power on and off the device again, and the progress bar starts running.

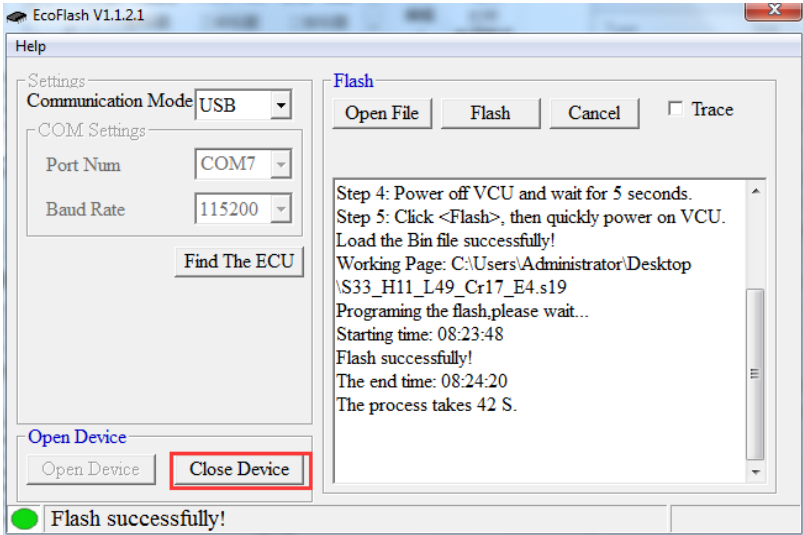


8) After the operation is complete, "Flash successfully!" will appear in the lower left corner of the screen.

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9) Click "Close Device" to finish flashing.



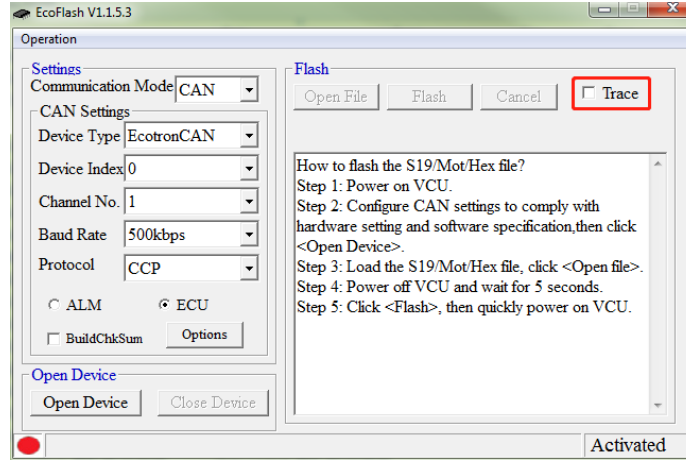
3.6 Viewing CAN Trace

The CAN trace provides feedback about the interaction between the EcoFlash and the controller. You can check whether the communication between the EcoFlash and the controller is normal by viewing the CAN trace. If the EcoFlash fails to flash data, you can analyze the trace to quickly locate the fault. (Note: The trace in the Trace window cannot truly reflect the communication of the bus. If you need to accurately check the communication, you can use the method of monitoring the three-party communication device to check it.)

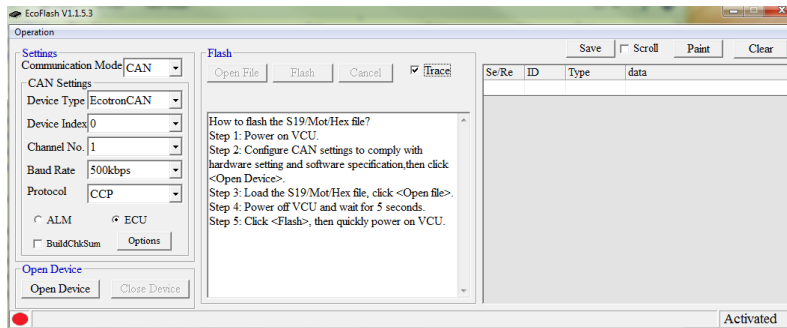
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3.6.1 Showing Trace Window

Open the Trace window by checking the Trace check box in the main window

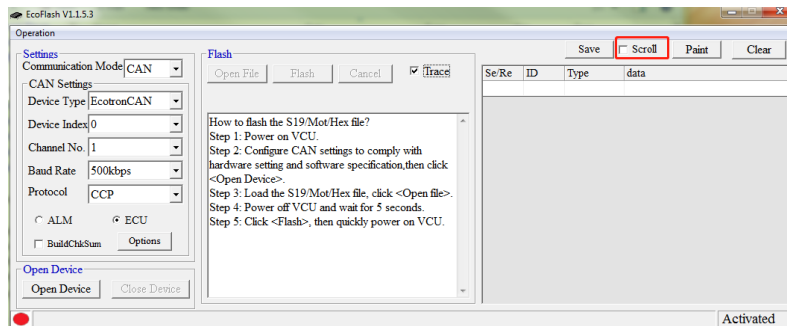



Shown as follow



3.6.2 Enabling Trace List Scrolling

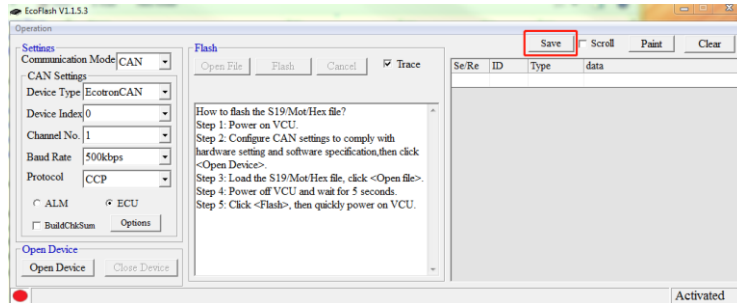
The trace list is not scrolled by default. You can select the Scroll check box to enable the race list scrolling (Note: This function will slightly slow down the flashing speed).



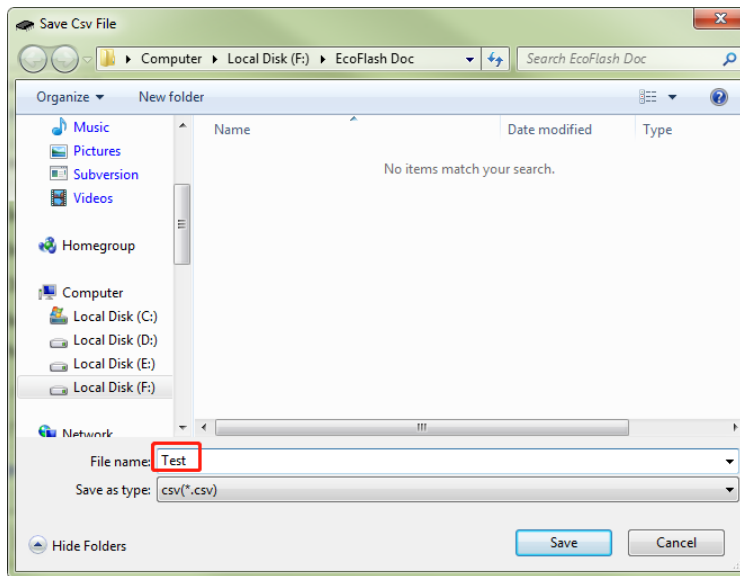
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3.6.3 Saving CAN Trace

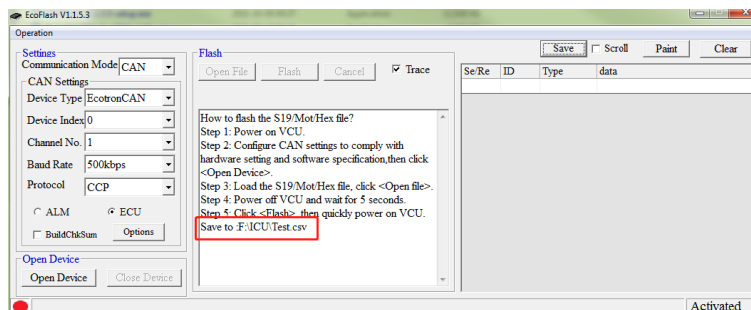
Click the Save button, the Save CSV file dialog box will pop up.




After entering the file name, click Save.



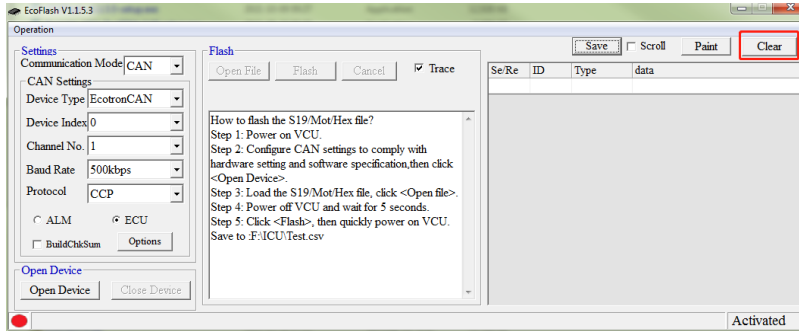
After the EcoFlash writes the trace data to the file, the Message window displays the save path.



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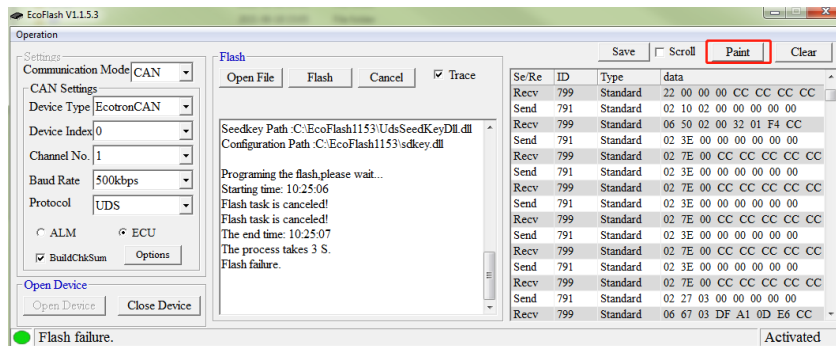
3.6.4 Cleaning Trace


Click the Clear button to Clear the currently displayed packets.



3.6.5 Setting Trace Color

Some traces, such as CCP trace, are received on a one-shot basis. To distinguish incoming and outgoing packets, you can click the Paint button. The incoming and outgoing traces are displayed in different background colors.

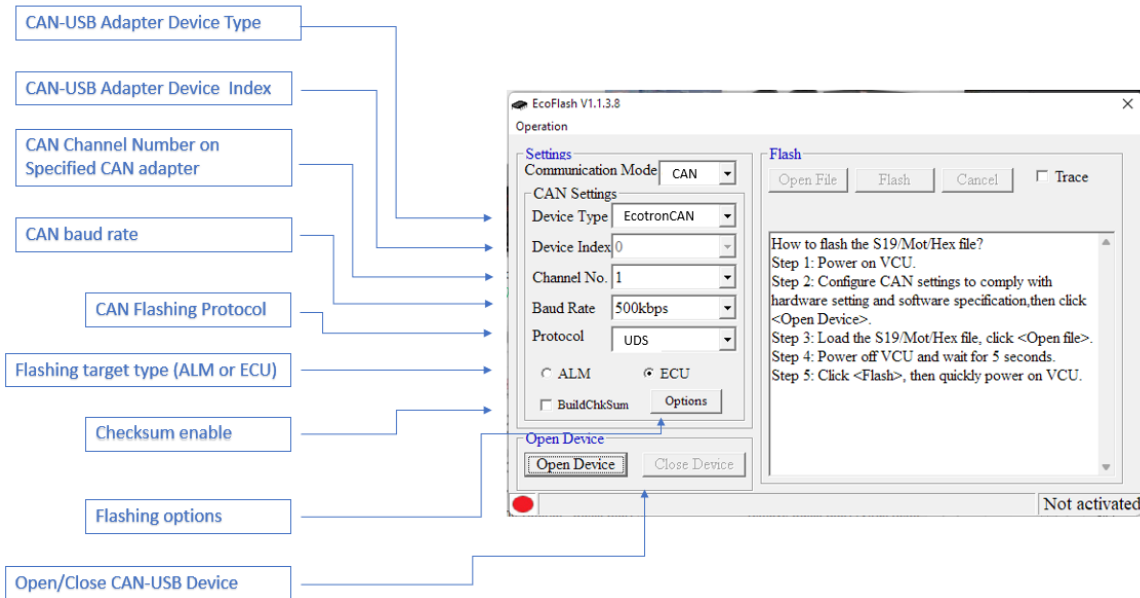


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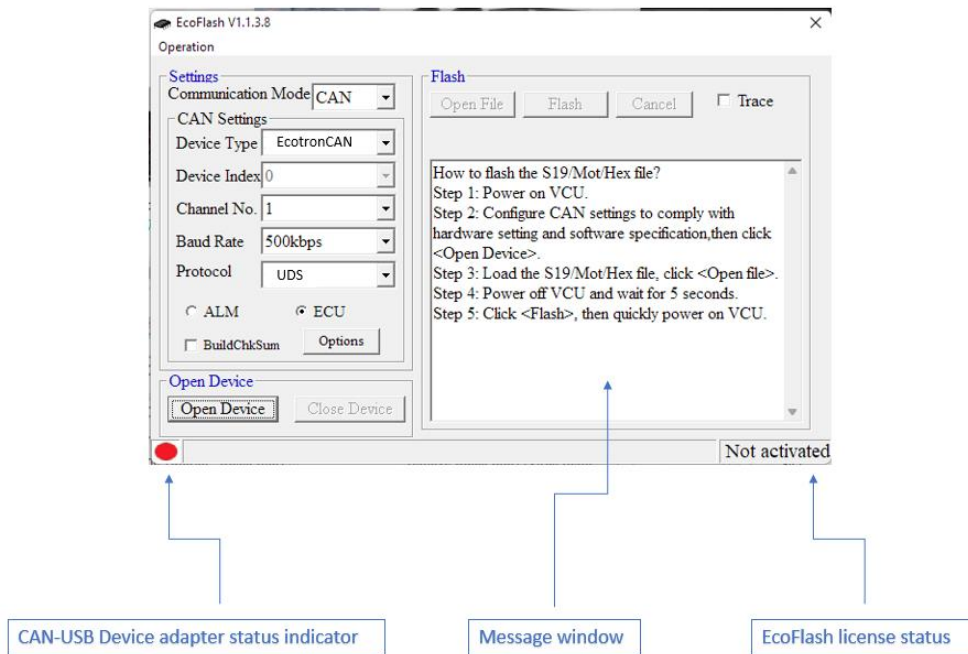
4 Quick Start


4.1 Software Interface Description

1. Button, radio button and drop-down menu description:



2. Status indicator, message box and text status indicator description:



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4.2 Flash Parameters

Each controller specified flash parameters by default. Even the same type of controllers could have different parameters. EcoFlash's built-in flash parameter is not enough to cover all controllers. So before getting the controller (especially the VCU, TCU, SCU, etc.) for flashing applications, **you should consult our technical staff if you're not clear flash parameter**. If the wrong flash happens, it will cause flash failure, and damage the controller if the situation is serious.

4.3 Different Types of Controller Flashing Methods

4.3.1 ALM Flashing

According to the different communication modes, it can be divided into two flashing modes:

1. Using USB or serial port for communication:

For details about the flash process, see 3.5.3 ECU using the USB or RS232 to flash S19 files.

If the serial port is used for communication, the baud rate is 115200 bps.

2. Using CAN equipment to communicate:


For details about the flash process, see 3.5.1 ECU, using CCP protocol flash MOT/HEX/S19 / SREC files. In the process, change the target hardware of item 5 to ALM.

Caution:

- a. ALM BootLoader only runs at 500 Kbps baud rate, and it does not need to load unlock DLL. CAN CRO ID is 0x100, CAN DTO ID is 0x101.
- b. Disconnect the oxygen sensor during flashing.
- c. At the beginning, keep the ALM power off and then switch on the power after clicking "Flash".
- d. If the connection is faulty, try "Close Device" and then "Open Device".
- e. Please use EcoFlash V1.1.1.1.

4.3.2 ECU Flashing

According to the different communication modes, it can be divided into two flashing modes:

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3. Using USB or serial port for communication:

For details about the flash process, see 3.5.3 ECU using the USB or RS232 to flash S19 files.

If the serial port is used for communication, the baud rate is 115200 bps.

4. Using CAN equipment to communicate:

For details about the flash process, see 3.5.1 ECU, using CCP protocol flash MOT/HEX/S19/SREC files.

Flash parameters: CAN baud rate is 500 Kbps. DLL does not need to be loaded. CAN CRO ID is 0x100 CAN DTO ID is 0x101.

4.3.3 EV Controller Flashing


New energy controllers include VCU, SCU, TCU, etc. These controllers mainly use CAN to flash, and the flash protocols used include CCP and UDS. The flash parameters (including communication ID and DLL loaded) are not fixed. **Please consult our technical personnel to obtain the flash parameters before the flashing starts.**

1. Using CCP Protocol Flash

For details about the flash process, see 3.5.1 ECU, using CCP protocol flash MOT/HEX/S19/SREC files.

2. Using UDS Protocol Flash

For details about the flash process, see 3.5.2 ECU, using UDS protocol flash MOT/HEX/S19/SREC files.

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5 Frequently Asked Questions and Solutions

5.1 No Progress Bar Appears After the Flash Button is Clicked

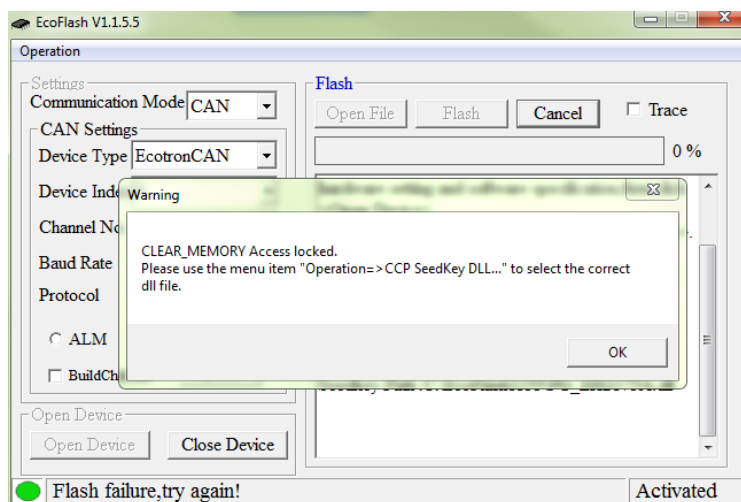
1. Check whether the controller is powered on.
2. Check whether the CAN or serial port device is properly connected to the controller and whether the CAN or serial port is corrected selected.
3. Check whether the scurb parameters are correct. For example, whether the protocol selected is consistent with the BootLoader protocol, if CCP protocol is used, whether the CRO DTO is correct.
4. Flash CAN channel without 120 Ohm termination resistor.
5. If the controller is not powered off successfully, check whether the total power supply needs to be cut off.

5.2 Fail to open CAN Device


1. Check whether the CAN driver is installed correctly and whether the device is running properly in device manager.
2. Check whether the index of the CAN device is correct.

5.3 CCP fails to be unlocked during Flash

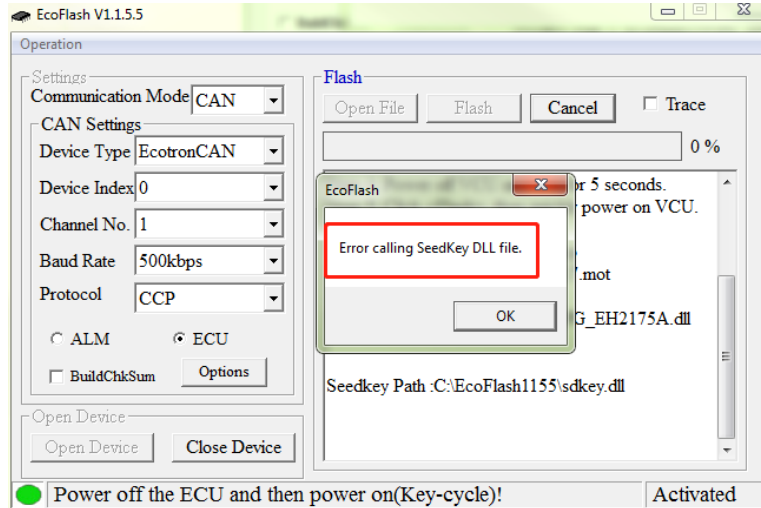
CCP reported the following error during flashing:



This is generally since the loaded SeedKey DLL does not match the current controller. The correct SeedKey DLL should be selected.

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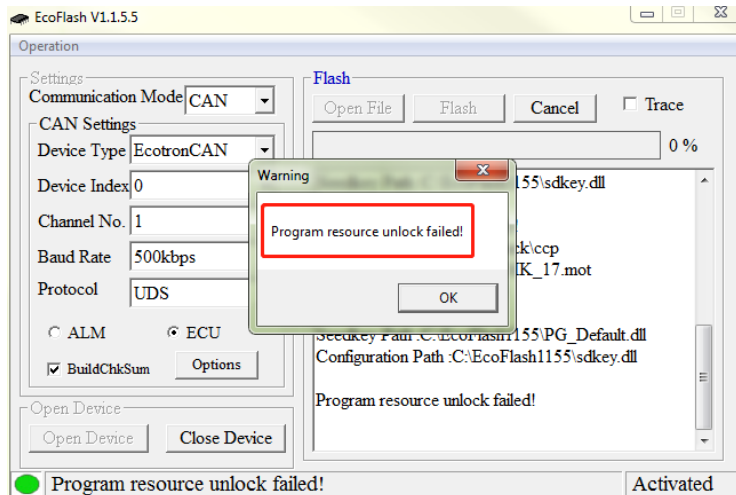
If the following error occurs:




This is generally since the DLL loaded does not contain unlocking functions. For example, the DLL of UDS or other DLLS is loaded into the DLL of CCP.

5.4 Fail in the Flashing Process

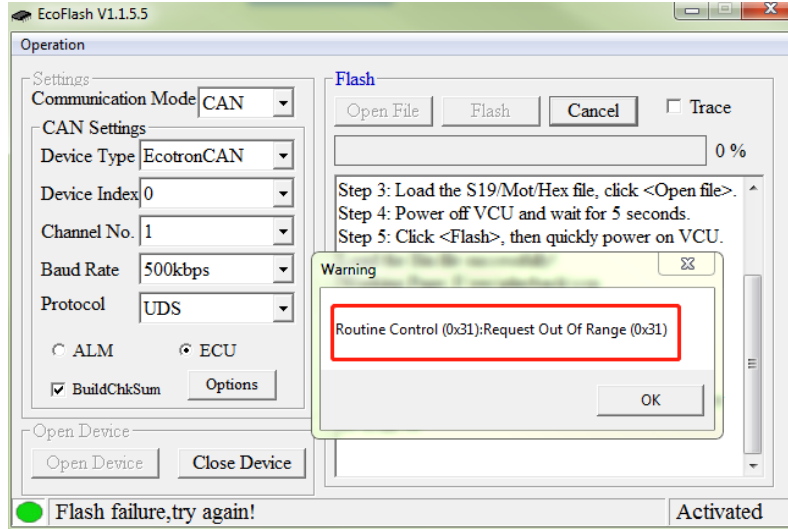
A progress bar is displayed during the UDS write process, and the following error is reported:



The failure of unlocking is usually caused by loading the wrong Seedkey DLL and exiting the flash.

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A message indicating that a UDS service is Out Of Range is displayed as follow:



In this case, an incorrect Configuration DLL is loaded, causing the BootLoader to respond negatively to some CAN messages.