

Tango+ Subaru OBD Framework

I. Getting Started

Introduction

This Help relates to Tango+ for Subaru software of version V1.0 up.

The Subaru module of Tango+ is the OBDII solution for Subaru's vehicles equipped with Smart Systems (Keys **Page 1 F1 [80bit] & F3 [128bit]**).

The software has various options and scenarios depending on a car's year and configuration.

The software supports CAN communications with a vehicle.

To use this software you need to have:

- Tango programmer
- J2534 PassThru Adapter
- Subaru+ maker
- SLK-02 or 04 (depending on 80 or 128bit)

To run the software in the restricted mode it is possible not to have the Tango programmer. The restricted mode allows connecting with a vehicle, read the PartNo. of the detected immobilization system, quantity and types of used keys etc. The listing of available actions depends on the scenario and vehicle's security system features and the release year.

Updates

Unlike Tango base software which updates automatically through our servers, Subaru Plus Updates are manual. Link with latest version can always be found in Tango > FAQ section on Tango forum (forum.scorpio-lk.com)

J2534 PassThru Adapter

The software uses the Pass Thru adapter to communicate with the car's network.

Our company neither manufactures nor sells the Pass Thru adapters.

Pass Thru adapters are quite common and there are many different manufacturers worldwide.

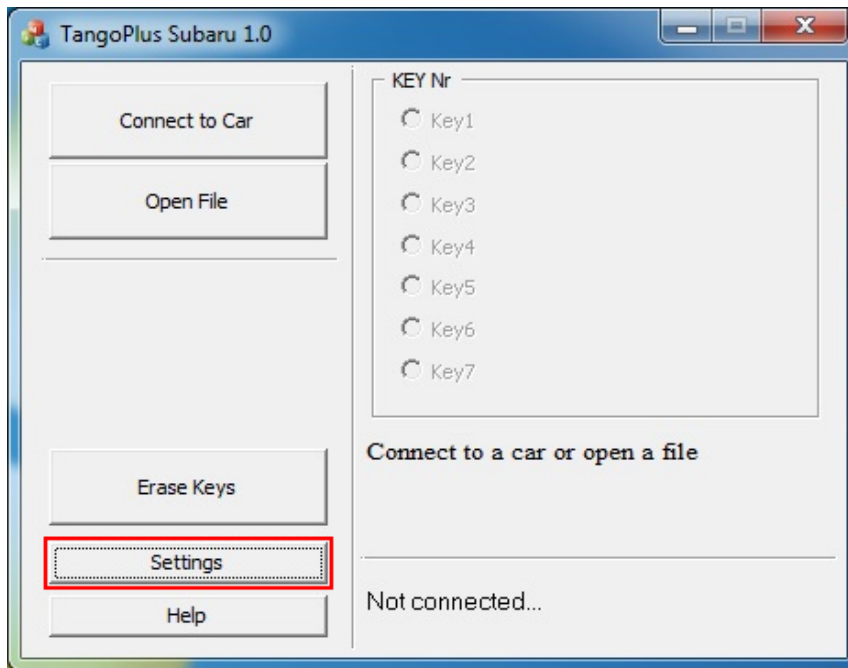
Usually there are no special differences between all these adapters.

Each manufacturer supplies a driver for its adapter. The driver is suitable for adapters of this manufacturer.

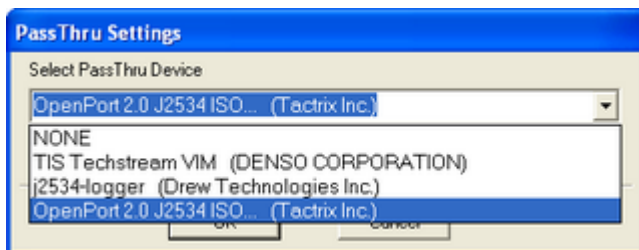
The drivers and adapters are not interchangeable along all manufacturers. You should avoid assigning a driver of one manufacturer to an adapter of another manufacturer.

The Subaru software allows user to assign any of installed drivers to his adapter, but this does not mean that the wrong assign will operate correctly.

Install the driver as required by the adapter manufacturer. Launch **Tango+ Subaru.exe** (physically adapter is not needed) and click the **SETTINGS** button:



The dialog with available drivers will appear:



From the drop down menu select driver appropriate for your adapter and click OK. The program asks for a confirmation and retains the selected driver choice. Further work will not require driver selection. If program can't communicate with the adapter it will substitute your choice in an attempt to establish communication. If an adapter of another manufacturer is connected it is necessary to assign the right driver.

If there are no drivers in the drop list (only the NONE string), it means that this computer does not have J2534 PasThru adapter drivers installed at all !

FAQ

Q: I already have the Pass Thru adapter of Techstream. Is it compatible to the Subaru+ software?

A: Yes, it is fully compatible.

Q: Which adapters have been tested?

A: We have written the Subaru+ software using the Tactrix' adapter <https://goo.gl/QB9A2x> , also we have tested the Toyota MVCI.

The list of compatible adapters is posted on Tango Forum : <https://goo.gl/sbv00e>

Q: Are there known problems with adapters' drivers for Windows?

A: The only problem we have encountered is a weak support of 64-bit versions by most Chinese MVCI. Make sure when purchasing an adapter that it is compatible for your OS. Check adapter manufacturer details regarding drivers and OS support they provide.

SLK Transponders

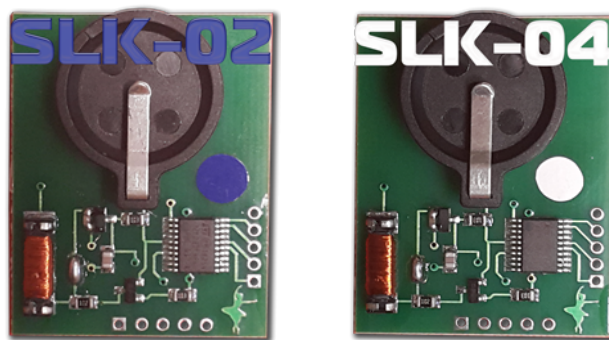
The SLK transponders are battery powered. **Note that a battery is not included with an emulator and has to be obtained locally.** Three standard types of battery are compatible for our emulators: **CR1616, CR1620, CR1632.**

If battery is removed all key data from the emulator will be lost. When power is restored the default data will be loaded into the transponder memory.

Thus the transponder can be cleaned to default state just taking off the battery.

We did not test how long is the battery lifetime in this application, because of the main purpose of the SLK emulator is to get the authorization for learning of usual keys. However a CR1620 can supply about 9 months (depends on how often you start an engine) and therefore it is possible to use the emulator as an ordinary key for engine starting. The battery shouldn't drop much below 3V or emulator won't save data.

We are supplying two types of emulators. To distinguish each type we use the Color Code labels, see the picture:



Color Codes from the left to the right: Blue, White.

Page1	Logic	Orig. Chip	Emulator	Color Code
F1	DST80	TMS37126	SLK-02	Blue
F3	DSTAES	RF430	SLK-04	White

Tango main software also can determine the type of a transponder and its status:



The transponder is not programmed.
Default state after the battery replacement.



The transponder is programmed.

II. System Overview

Smart Key Systems

The systems employing a key fob without a blade are known as the Smart Key Systems. Formally if a key is lost it is possible to learn an additional one, if a customer has at least one key. The situation "all keys lost" requires replacement of Certification ECU, Keycode ECU and Steering lock ECU. Our software allows to avoid wasting of money for the new ECUs. The underlying idea of our method is to use Emulator instead of the lost key and force the vehicle to learn a new key. Currently supported are systems using keys with Page1 **F1 (80bit)** and **F3 (128bit)**.

How To make a Smart key

Briefly explained the goal of this software is to create a "dummy key" and get permission by the vehicle to register new Smart Keys. Features in this section are suitable to use on Subaru vehicles. The learning procedure consists of the two steps:

- **Make the dummy key (Emulator programming)**
- **Learn (Register) new Smart Key(s)**

III. Emulator programming

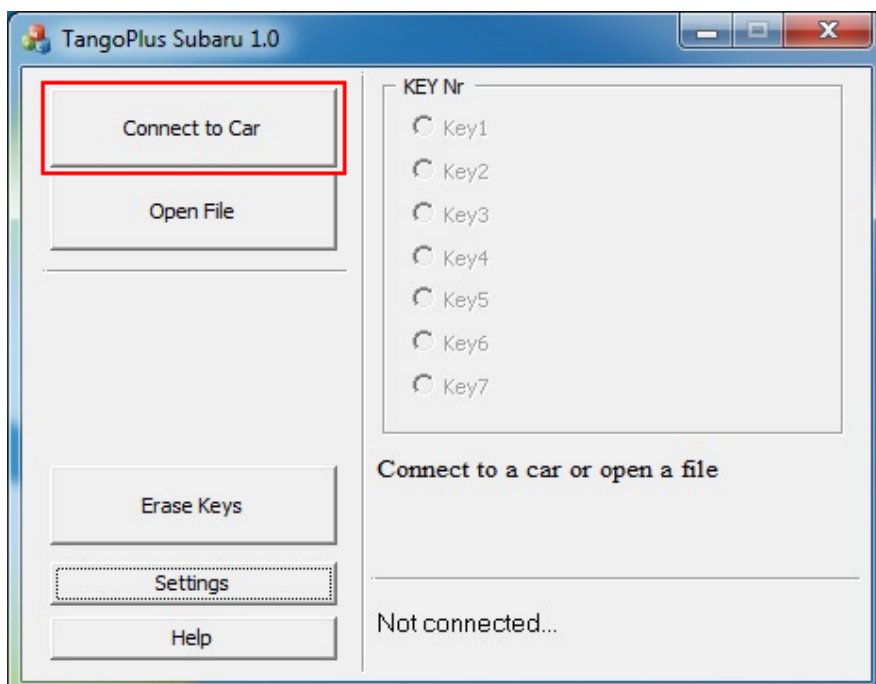
Connecting to a Car

At this point it is assumed that the Pass Thru adapter is installed and properly selected.

[See Pass Thru adapter settings](#)

In order to connect to a car proceed with the following steps:

- Connect the Pass Thru adapter to the vehicle and to a PC
- Connect Tango to the PC
- Run the Tango+ Subaru.exe (double click on the icon, or start from Tango main software)
- Click the **Connect to Car** button

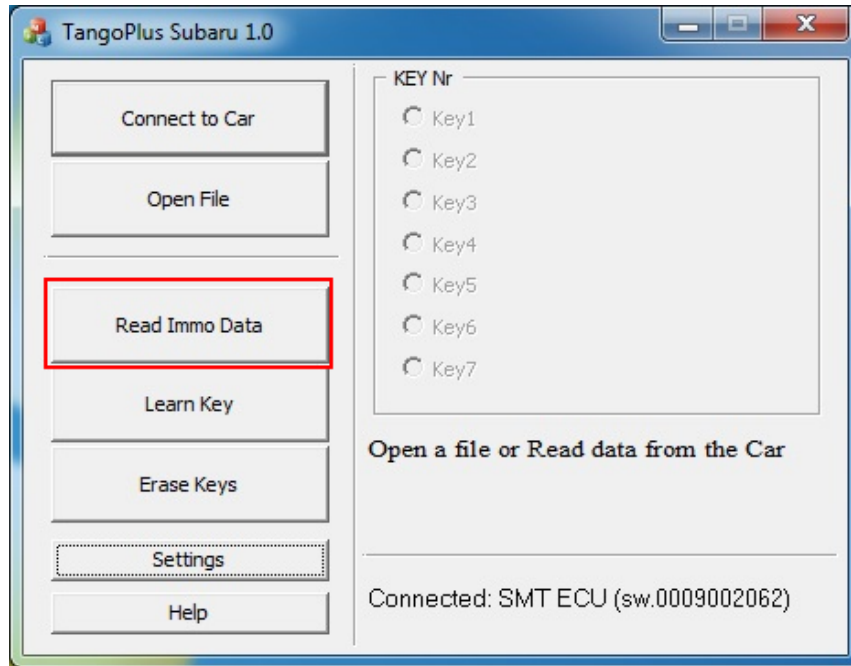


After the successful connection the text with the target unit name will appear:



On some versions of ECU the PartNo. may be empty

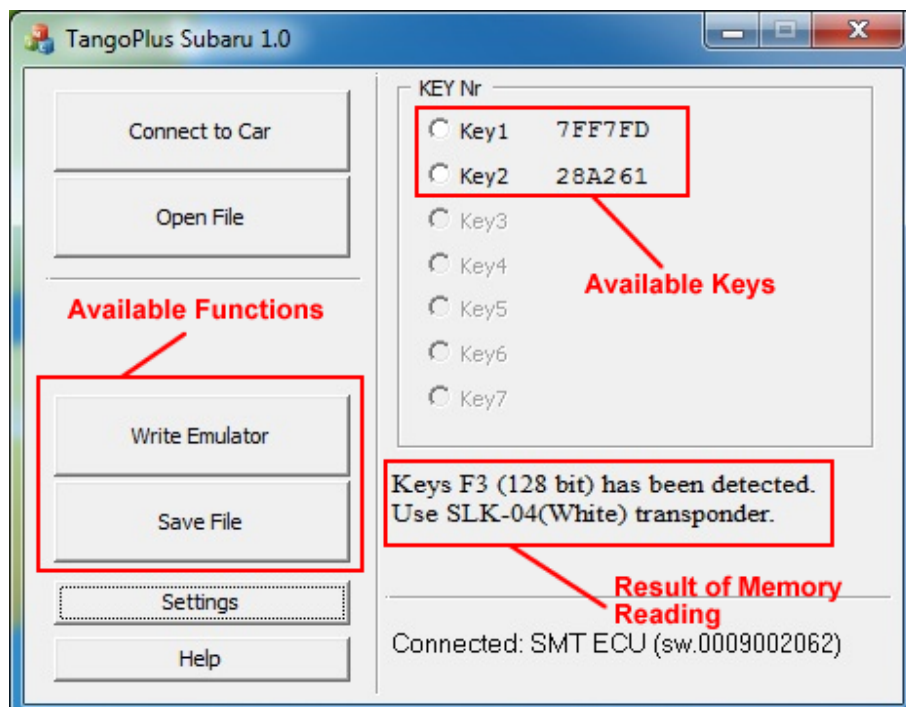
If all is correct, the new button **Read Immo Data** will become available:



Reading of Memory

Click the **Read Immo Data** button and wait until the process is finished.

After the software successfully reads the vehicle's memory, the result displayed will look similar to the example shown in the picture below:



The text Use **SLK-04** informs about the type of the emulator suitable for the car. Additionally two new buttons **Write Emulator** and **Save File** will appear (see picture).

Writing of Emulators

Place the emulator of the type shown in the result string into Tango. Select any of available keys and click the **Write Emulator** button. List of various types of emulators can be found in section SLK Transponders of this document. Once emulator is written it can serve as **authorization** for learning new smart keys and erasing keys from the vehicle's system.

File saving

This is an optional feature and is not necessary for key making. The read data may be saved as a file. The file may be loaded to the software using the **Open File** button, that is available without a car. After the loading the standard interface for writing of emulators will appear. Use the **Save File** button to save the read data and **Open File** to involve it.

IV. Learn New Smart Keys

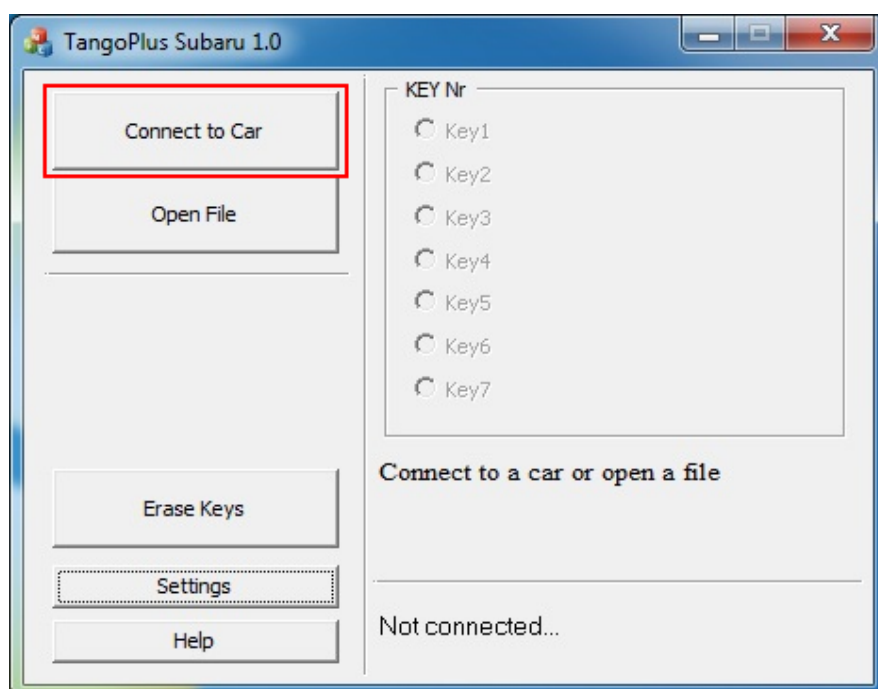
Procedure

Connecting to a Car

At this point it is assumed that the Pass Thru adapter is installed and properly selected. [See Pass Thru adapter settings](#) and an [emulator is already programmed](#).

In order to connect to a car proceed with the following steps:

- Connect the Pass Thru adapter to the vehicle and to a PC
- Connect Tango to the PC
- Run the Tango+ Subaru.exe (double click on the icon, or start from Tango main software)
- Click the **Connect to Car** button

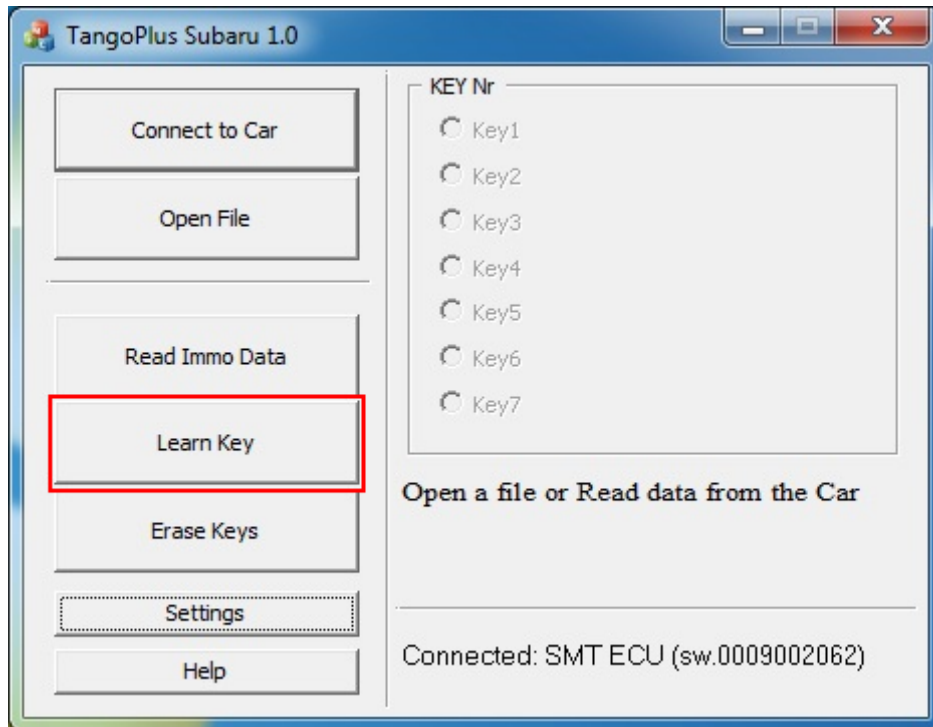


After the successful connection the text with the target unit name will appear:

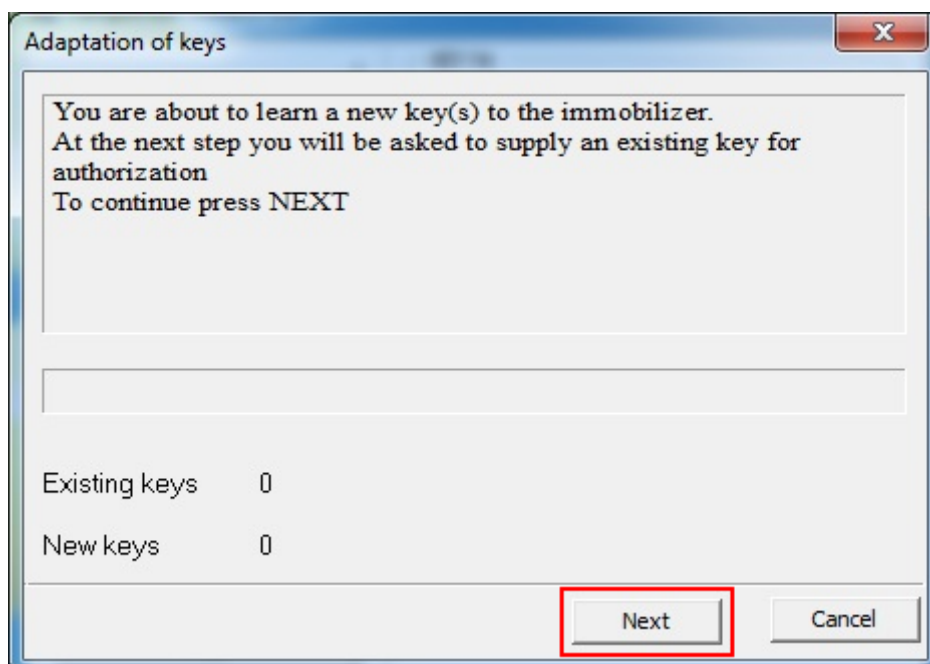


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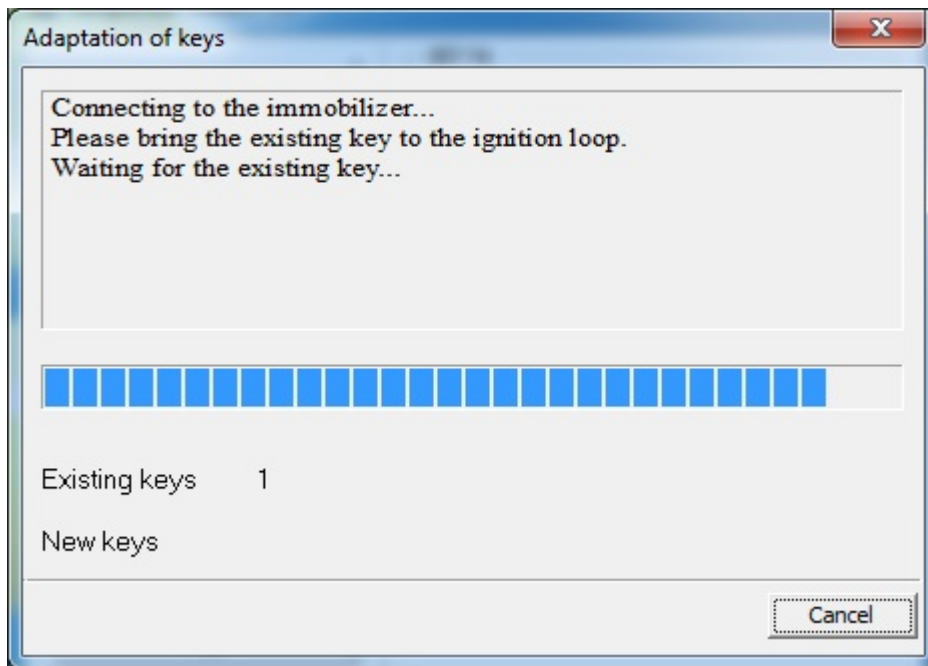
If all is correct, the new button **Learn Key** will become available:



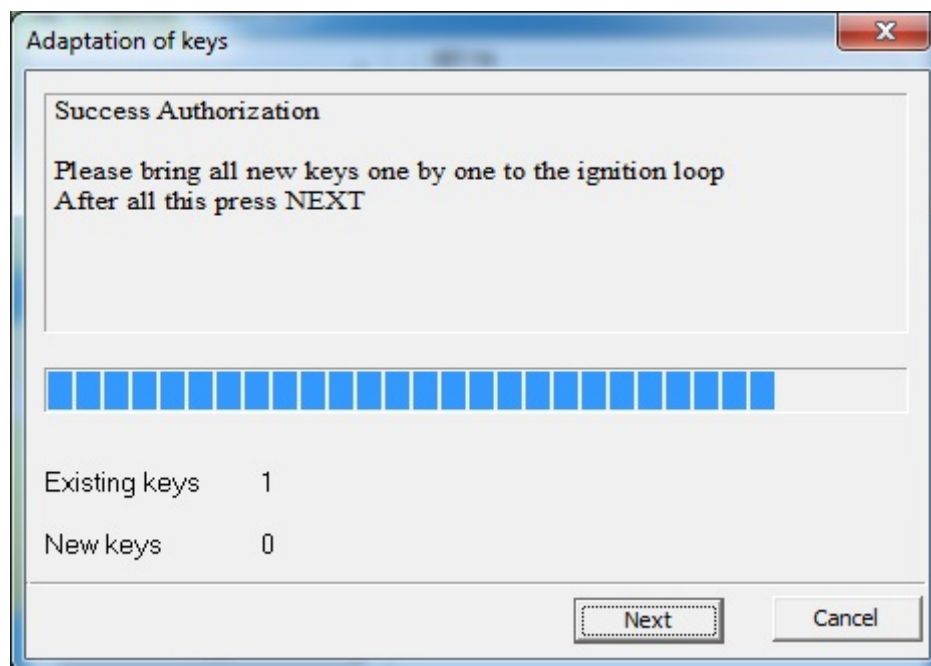
Pressing it will initiate Key learning procedure in a new dialog box containing on screen instructions:



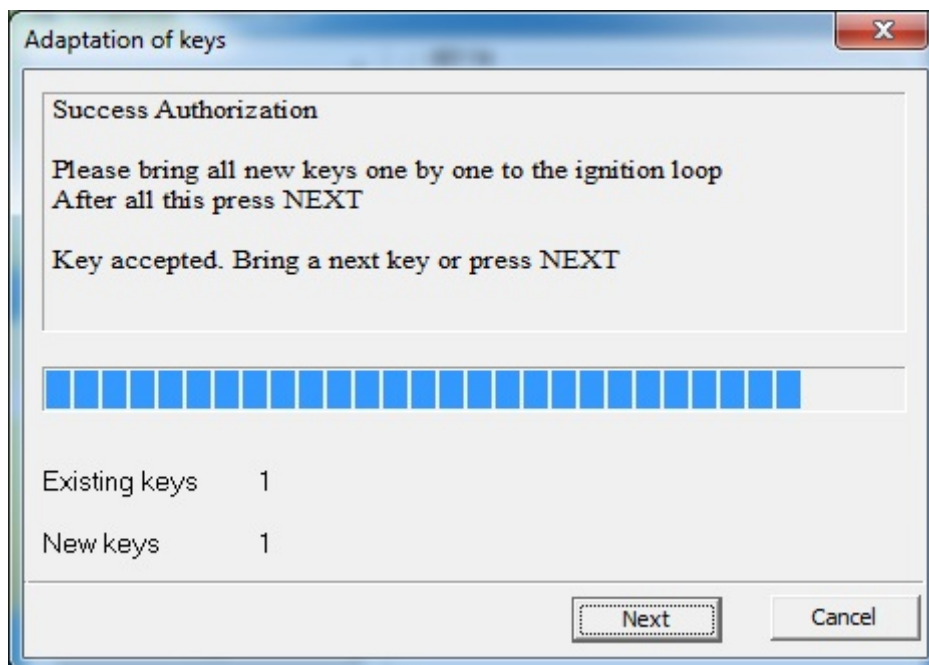
Bring the already [programmed emulator](#) to the ignition loop in order to authorize the procedure.



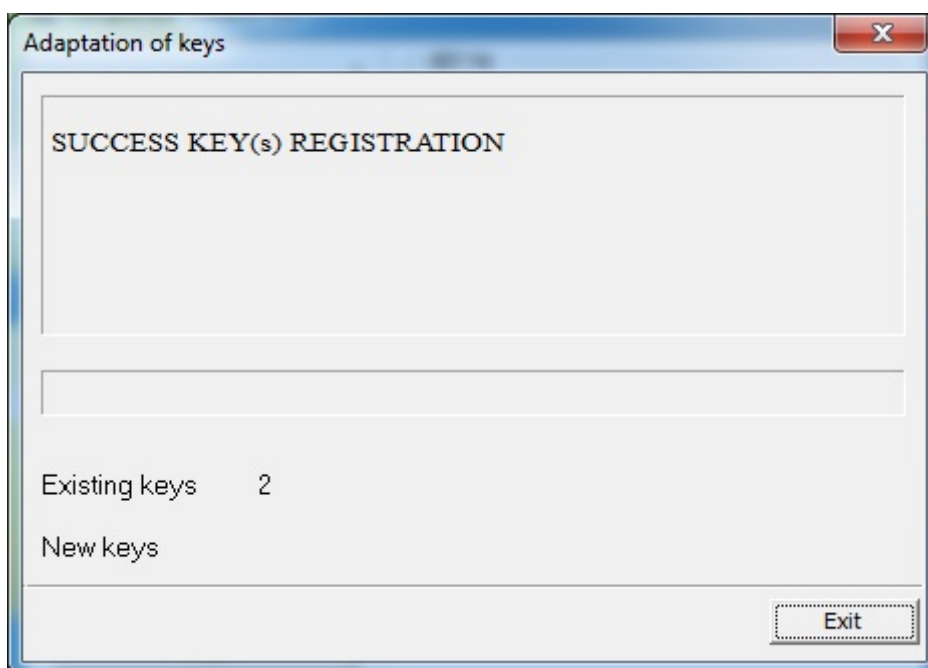
After successful authorization start bringing actual new smart keys to the ignition loop one by one in order to register them with the vehicle.



Each successful key registration will be indicated in both text in the dialog screen and also in New Keys counter.



Continue with this procedure until required amount of keys is registered.
Once finished press button Next and software will inform that the procedure is finished.



V. Erase Keys

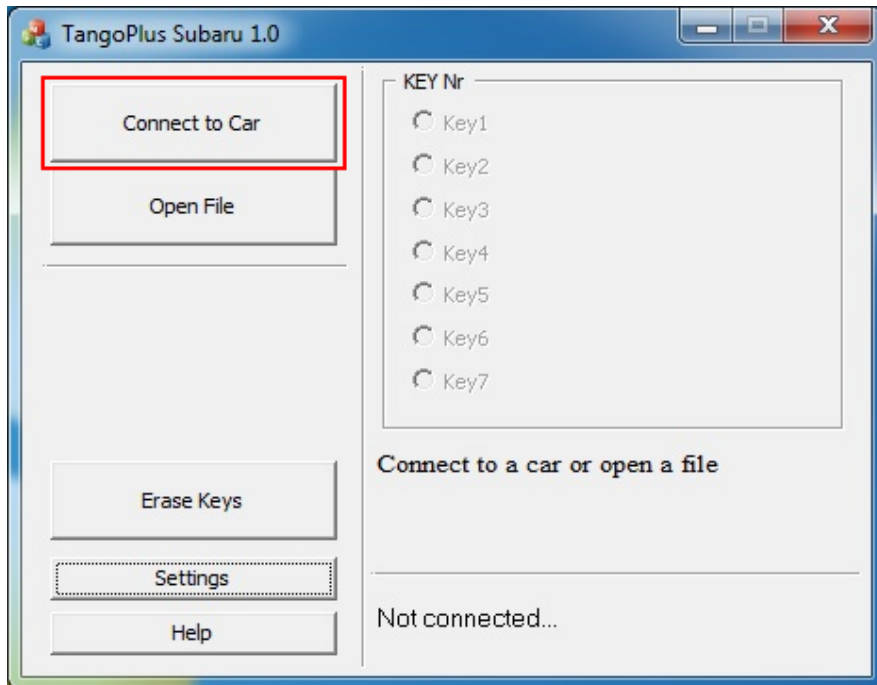
Procedure

Connecting to a Car

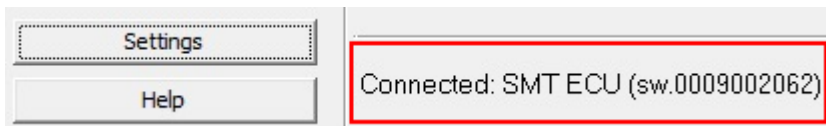
At this point it is assumed that the Pass Thru adapter is installed and properly selected.
[See Pass Thru adapter settings](#) and an [emulator is already programmed](#)

In order to connect to a car proceed with the following steps:

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- Connect Tango to the PC
- Run the Tango+ Subaru.exe (double click on the icon, or start from Tango main software)
- Click the **Connect to Car** button

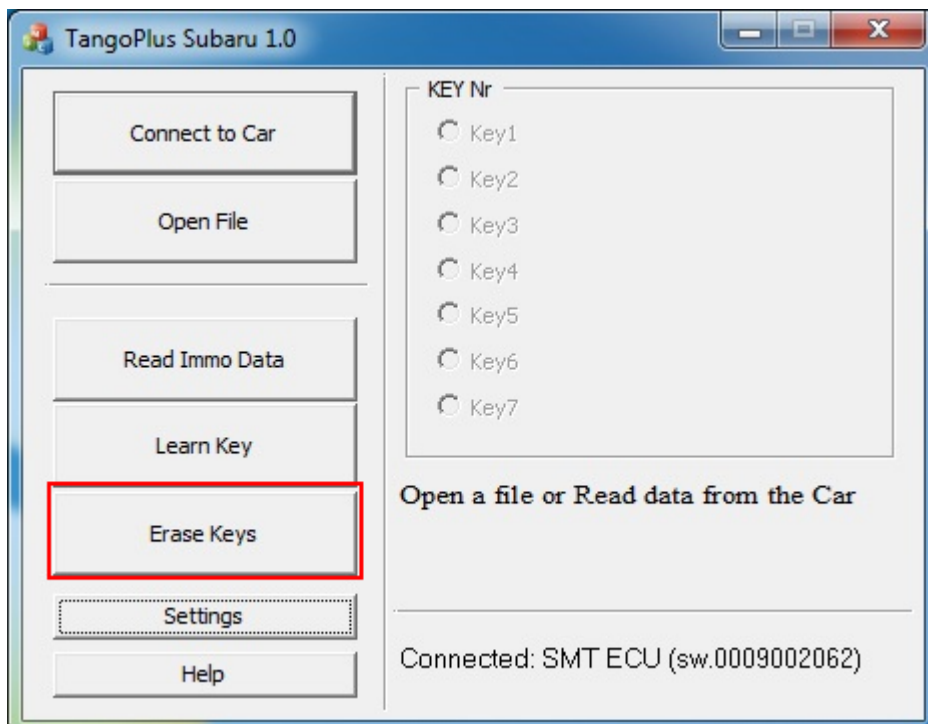


After the successful connection the text with the target unit name will appear:

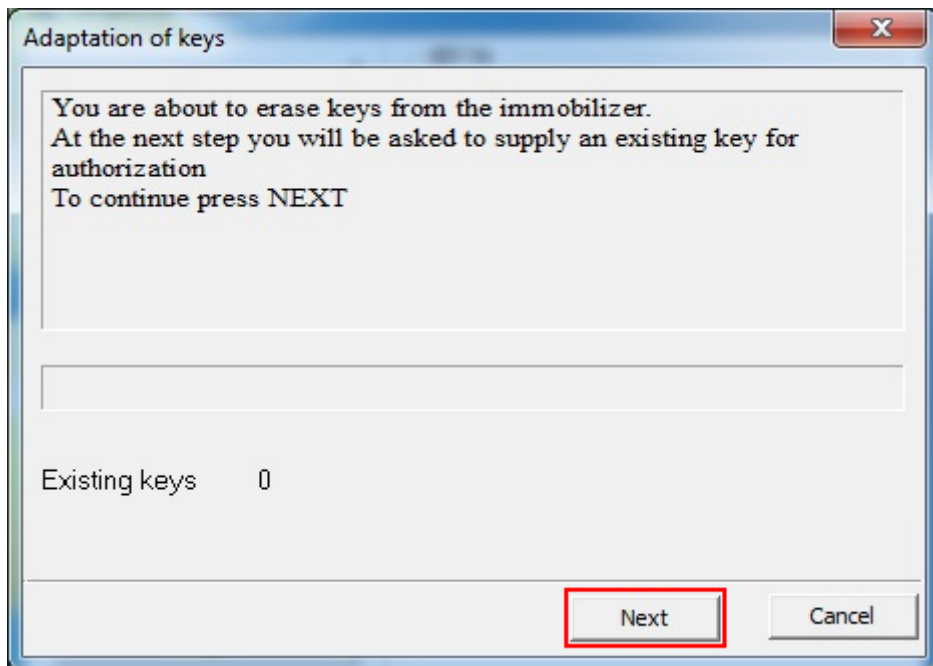


On some versions of ECU the PartNo. may be empty

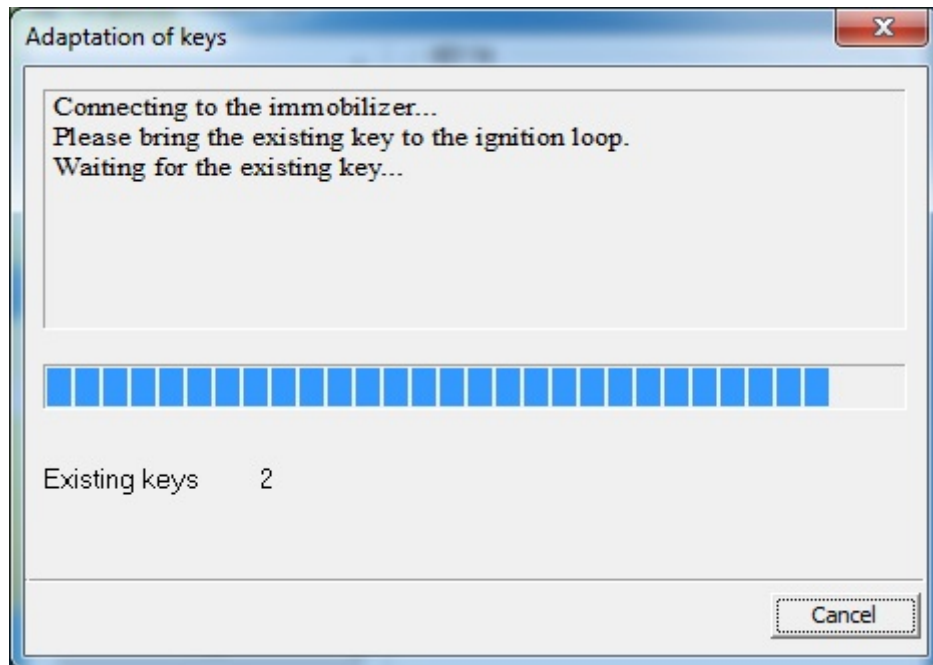
If all is correct, the new button **Erase Keys** will become available:



Pressing it will initiate Key Erasing procedure in a new dialog box containing on screen instructions:



Bring the already [programmed emulator](#) or [registered smart key](#) to the ignition loop in order to authorize the procedure.



Once finished the only key, which will remain registered in the vehicle's system is the one used to initiate the erasing procedure.

