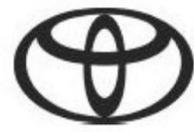# UST KIT V2.0   ⬡ LEXUS   ⬡ TOYOTA

TOYOTA / LEXUS EMERGENCY ENGINE START TOOL KIT (UST + PRO SMART)   FOR **ALL MODELS** MY2015 - **MY2022**

➢ **THE UST KIT v2.0 CONSISTS OF UST v1.0 AND PRO SMART v3.1**

The UST Kit v2.0 is designed for emergency opening, unlocking and start of Toyot/Lexus cars. Restoring the vehicle's functionality in case all keys are lost. Programming (registration) of additional smart keys.

➢ **FEATURES OF UST v1.0**

- Opening/**CLOSING** all doors (the central locking);
- Emergency **AUTOSTART** of the engine (immediately after opening the central lock) **without any additional connections;**
- **BLOCKING** other non-standard systems connected to **CAN-bus** interface;
- Turning off/on standard Toyota/Lexus car alarm.

After using UST v1.0 **all working keys remain functional** (**NO NEED TO RESTORE !!!**) and all systems operates in standard way! **NO NEED** **to carry out** diagnostics, programming or registering (binding) procedures!!!

➢ **FEATURES OF PRO SMART v3.1**

- Restoring operability in case all keys are lost by REPLACEMENT with another SmartECU (**NEW or USED ECU** with a **key registered (bound) to this unit**).
- Programming the additional smart keys.

➢ **SUPPORTED MODELS**

Toyota / Lexus: **All models** of MY2015- **MY2022**

- **Lexus:** GX, IS, LS, LX, NX, RX;
- **Toyota:** Alphard, Camry, CHR, Fortuner, Highlander, Hilux, Land Cruiser, Land Cruiser Prado, RAV4;

➢ **SUPPORTED KEY TYPES** - **AA, A8, A9, 39, 88** ✱

✱ For **88 key type**, the device has **only** the function of **opening/closing** the central lock.

➢ **THE KIT**

- UST v1.0 device;
- The cable with the needles;
- OBD cable;
- The cables with Smart ECU adapters (A8 , A9 and 39 key types);
- ProSmart v3.1 device.

Attention!!! *UST v1.0 is not intended for permanent use, only for a temporary solution in an emergency!*

DESCRIPTION OF THE UST v1.0 OPERATION
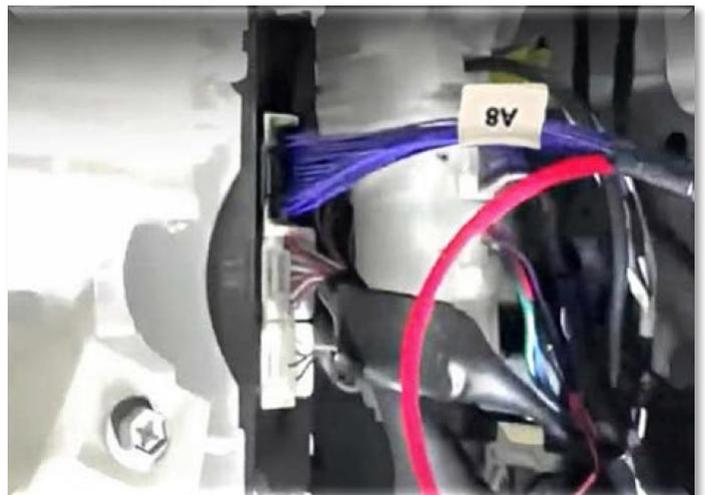
➢ **CONNECTION**

Depending on the configuration, UST v1.0 is connected via the CAN bus of following units:

- **Body ECU** (use the cable with needles);
- **Smart ECU** (use extra cable with adapters (type A8, A9/AA, 39);
- **Headlight ECU** (use the cable with needles);
- **ABS , Wave Radar Sensor, etc.** (use the cable with needles);
- **OBD** (use OBD cable).

☑ Connection via **OBD connector** is possible if the vehicle **doesn't have a Gateway** module.
☑ The connection points of the device are shown in **table #1.**

Connection to the CAN bus
using a cable with needles.

Connection to Smart Ecu via
adapter cable (A8, A9/AA, 39)

➢ **SEQUENCE OF ACTIONS** (Step-by-step instruction)

1. Connect the cable to CAN-bus, in accordance with the car model and the selected connection option **(table #1)**.

2. To **turn on the device**, press and hold **RED** button until the LED lights up. The LED flashes **green** once and then starts blinking **red**.

3. Connect the USB cable to USB port of the device. The LED will blink green and then glow **green** permanently. The **standard car alarm system will be deactivated automatically**.

4. To **deactivate the central locking**, briefly press **RED** button on the device. After that, the doors and steering column will be unlocked.

5. To **activate central locking**, press **BLACK** button on the device.

6. After disabling the central lock and standard car alarm, **disconnect the USB cable** from the device.

7. **To start the engine**, you need to wait until backlight of the dashboard and information LEDs go out. Then push the brake pedal and press the START button. The engine will be started.

8. **To activate central lock** after starting the engine, you must re-switch on UST v1.0, connect the USB cable and press the **Black** button on the device.

Attention!!!

☑ The device allows turn on the ignition and start the engine **only once**. To **start again**, you need to repeat the procedure of connecting and turning on the device **(Nos. 1-7).**

☑ Connection via **OBD connector** is possible if the vehicle **doesn't have a Gateway** module.

☑ After using UST v1.0 all working keys remain functional and all systems operates in standard way. No need to carry out diagnostics, programming or registering (binding) procedures!

➢ **CHARGING AND ADDITIONAL FEATURES**

☑ **Attention!!!** To use UST v1.0, the device's batteries must be charged!

The device is charged via micro-USB connector located on UST back panel. You can use charge power adapter from your phone/table.

☑ UST v1.0 device can also be used as an external battery (Power Bank) for mobile devices. The "Power Bank" mode is activated by ON/OFF button located on the back of the device.
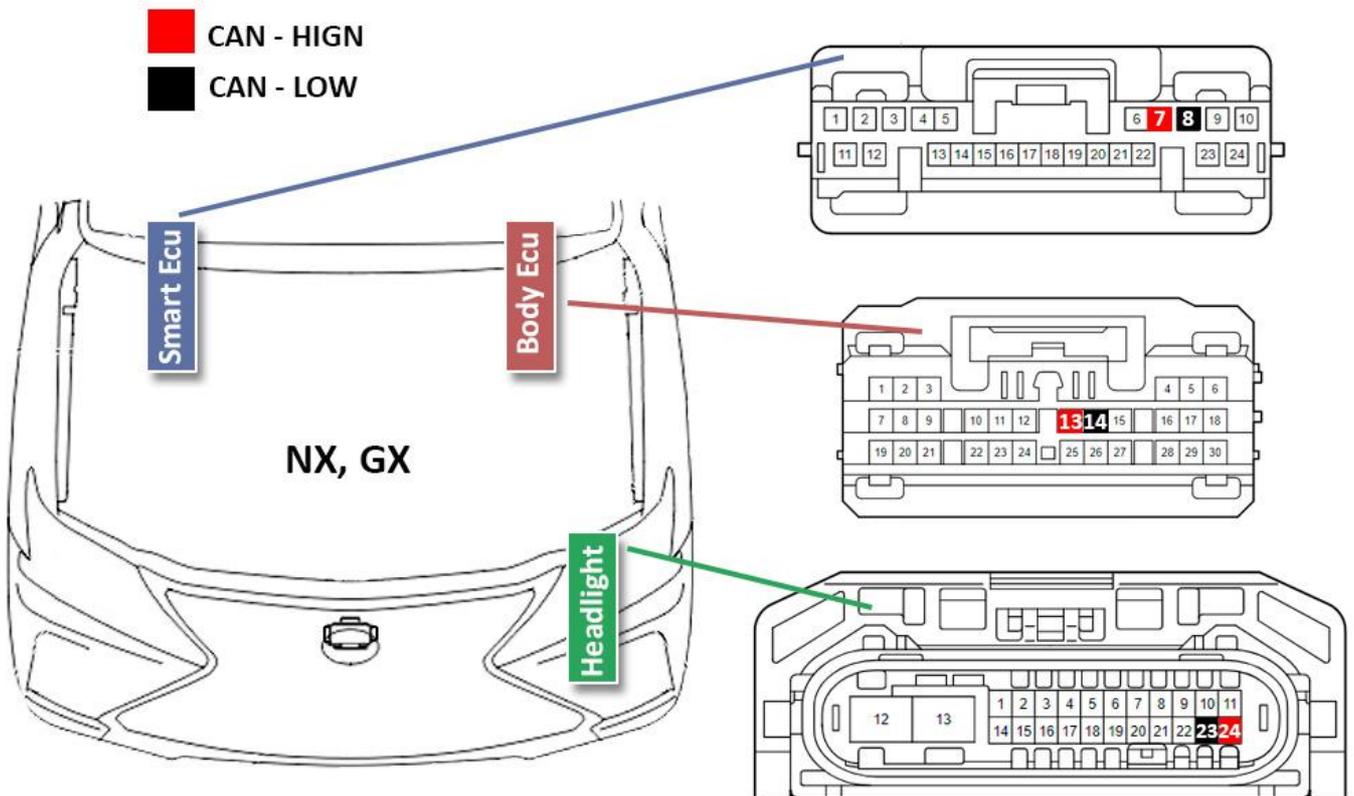
* *The device uses rechargeable batteries **18650 type** !!!*

* *Charger adapter, micro USB cable and USB cable for mobile devices are **NOT INCLUDED** in the kit !!!*
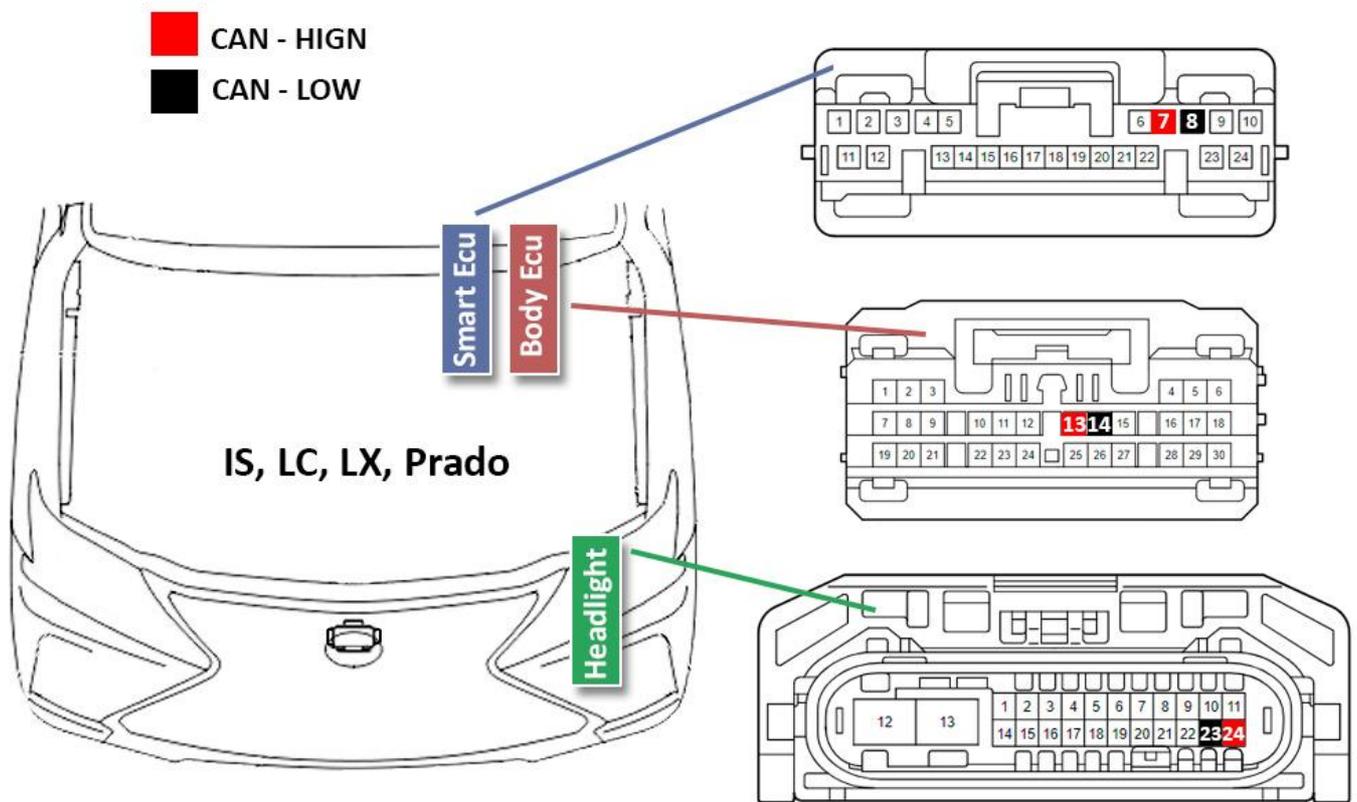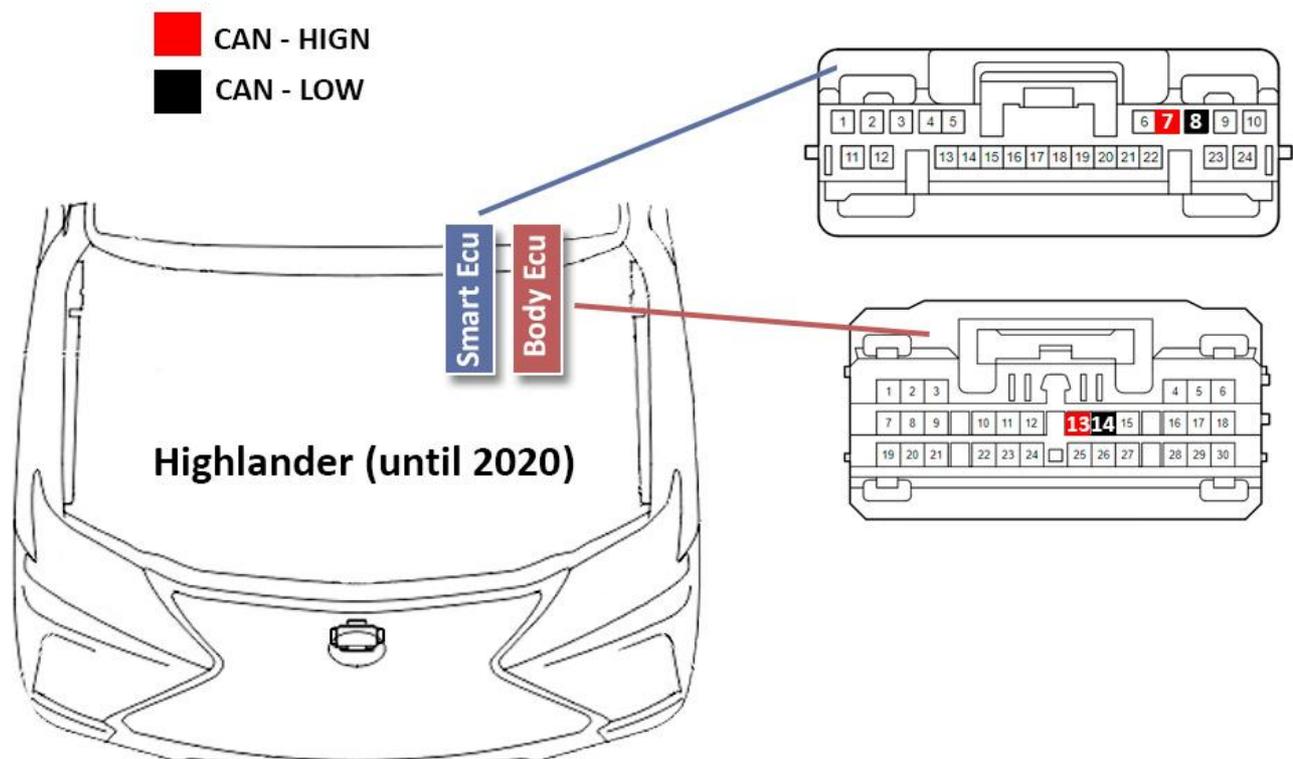
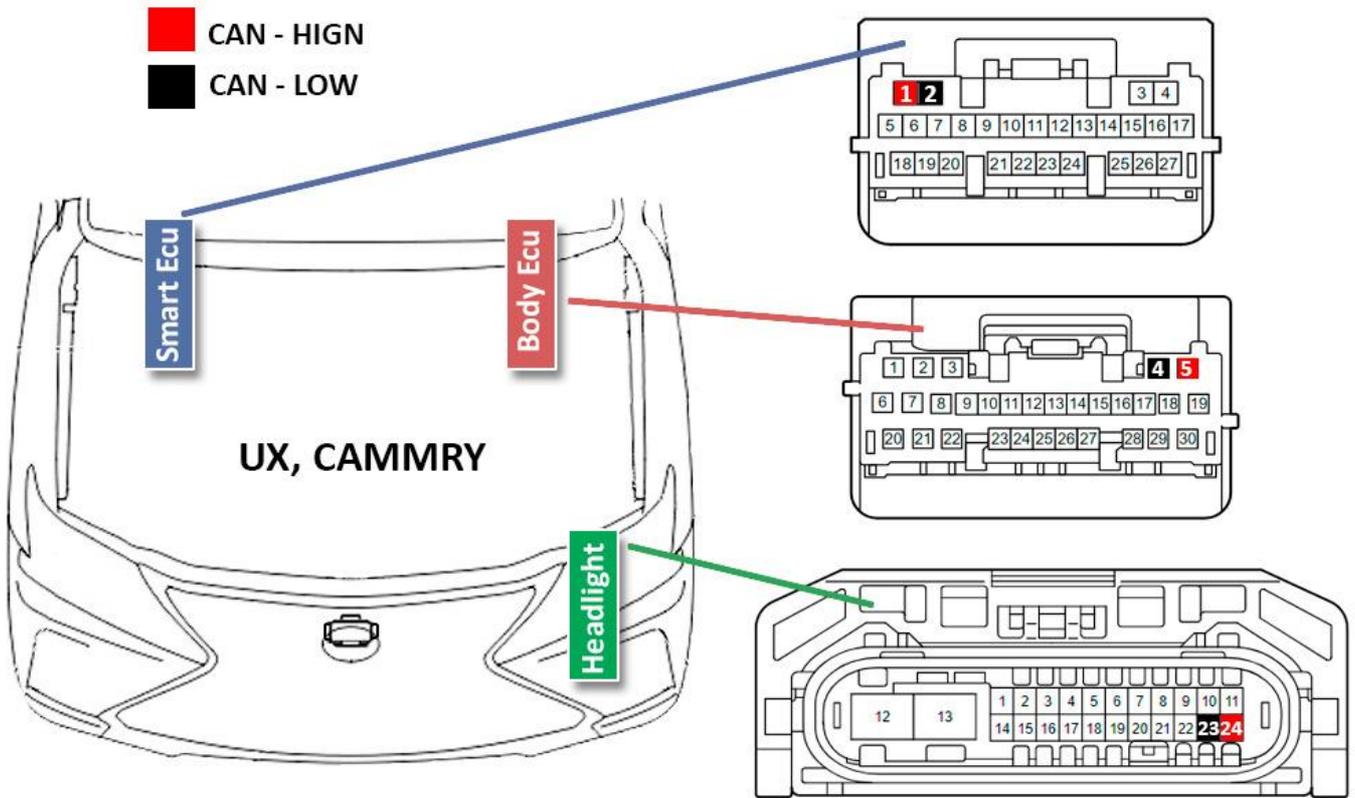> **TABLE #1**

A1) Connection points for NX, GX - (key A8)

■ CAN - HIGN
■ CAN - LOW

Smart Ecu

Body Ecu

NX, GX

Headlight

A2) Connection points for IS, LC, LX, Prado - (key A8)

CAN - HIGN
CAN - LOW

Smart Ecu
Body Ecu

IS, LC, LX, Prado

Headlight

| 1 | 2 | 3 | 4 | 5 | | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | | 23 | 24 |

1	2	3					4	5	6
7	8	9		10	11	12	13	14	15	16	17	18
19	20	21		22	23	24	25	26	27	28	29	30

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |

A3) Connection points for Highlander (until 2020) - (key A8)

CAN - HIGN
CAN - LOW

Smart Ecu
Body Ecu

Highlander (until 2020)

| 1 | 2 | 3 | 4 | 5 | | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | | 23 | 24 |

1	2	3					4	5	6
7	8	9		10	11	12	13	14	15	16	17	18
19	20	21		22	23	24	25	26	27	28	29	30

B1) Connection points for UX, Cammry - (key A9, AA)

CAN - HIGN
CAN - LOW

Smart Ecu
Body Ecu
Headlight

UX, CAMMRY

B2) Connection points for LS, Corolla - (key A9, AA)

CAN - HIGN
CAN - LOW

Smart Ecu
Body Ecu
Headlight

LS, Corolla
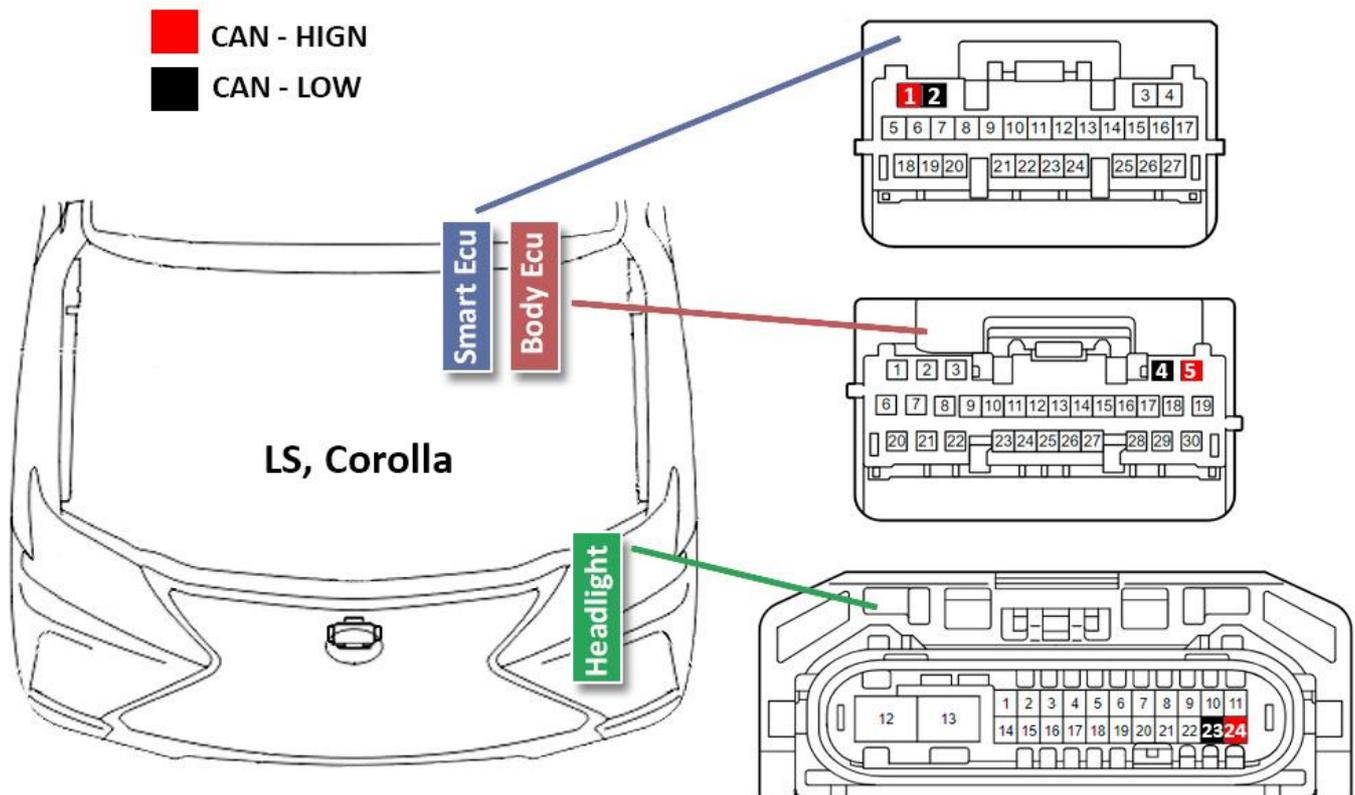
B3)   Connection points for RAV4 - (key A9, AA)

CAN - HIGN
CAN - LOW

Body Ecu

Smart Ecu

RAV4

Headlight
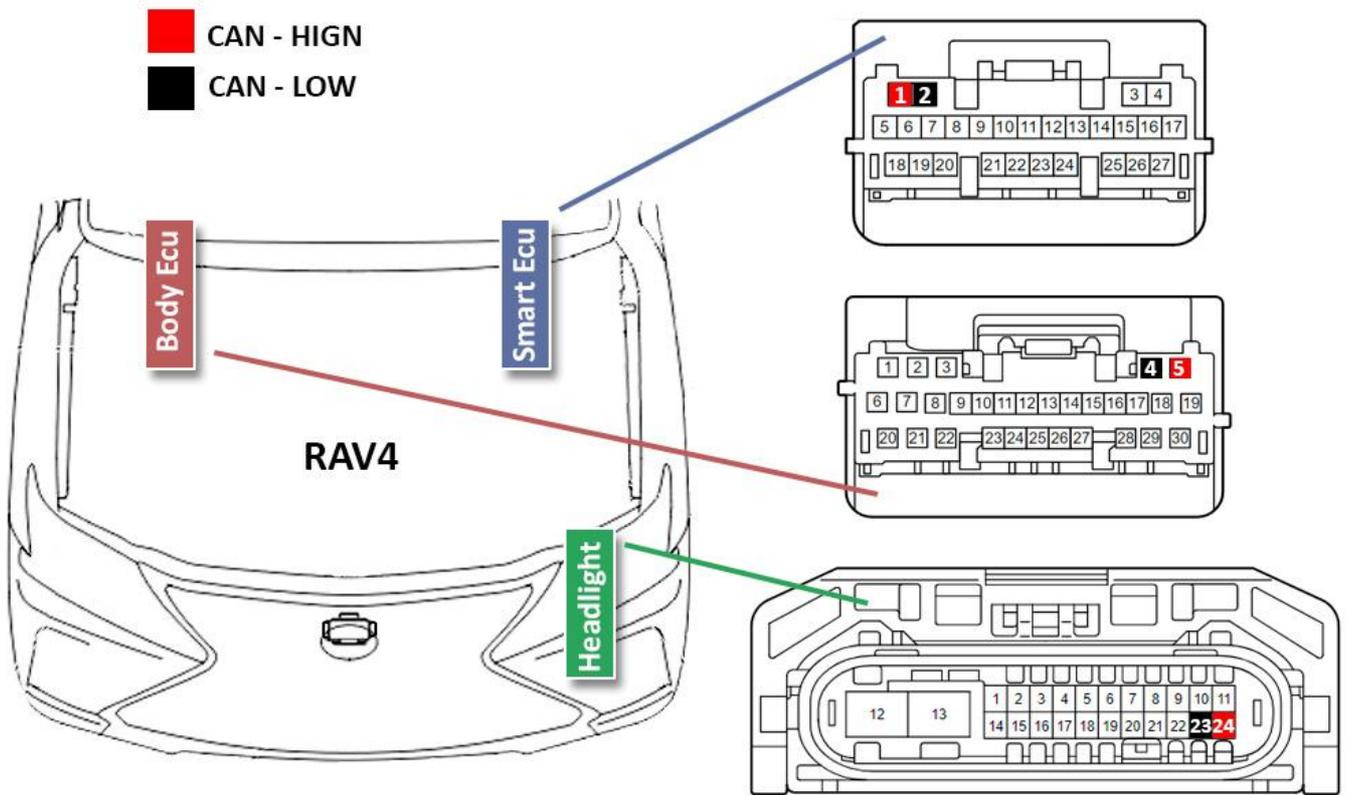
B4)   Connection points for Highlander (after 2020) - (key A9, AA)

CAN - HIGN
CAN - LOW

Smart Ecu

Body Ecu

Highlander (after 2020)
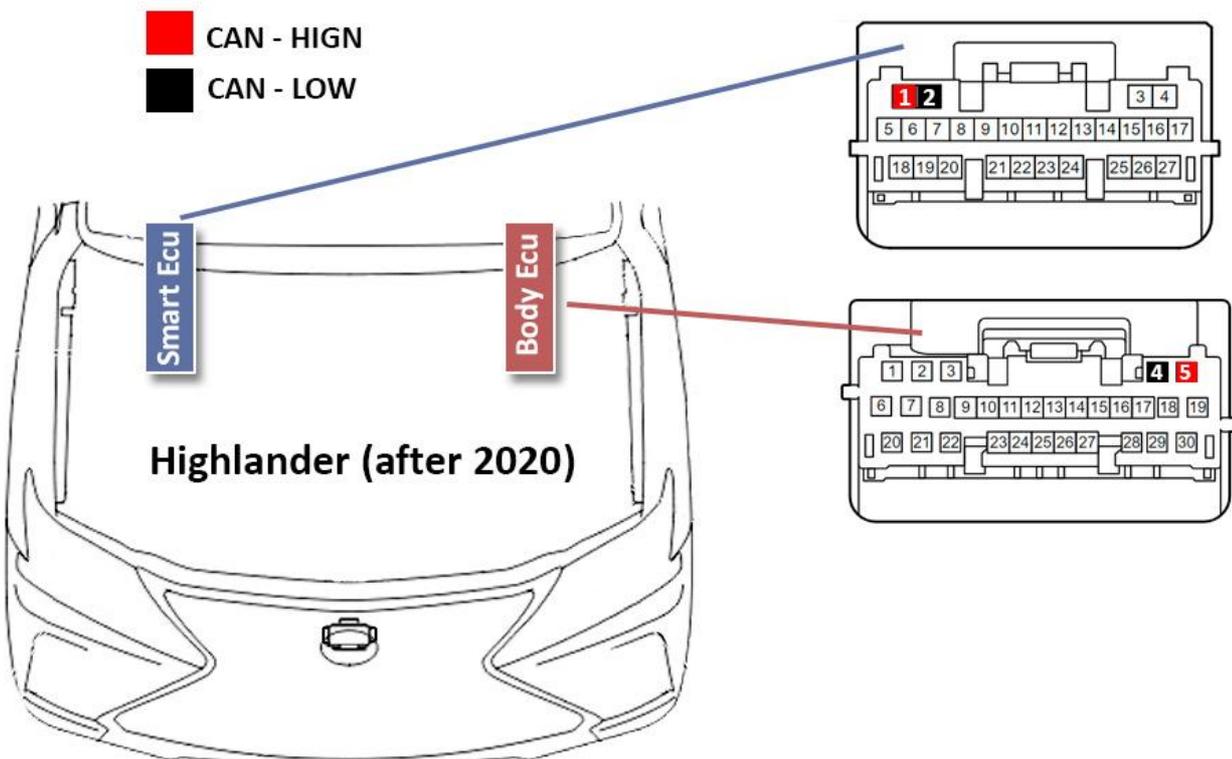
B5) Connection points for RX, Harrier - (key A9, AA)

CAN - HIGN

CAN - LOW

Smart Ecu

Body Ecu

RX

Headlight
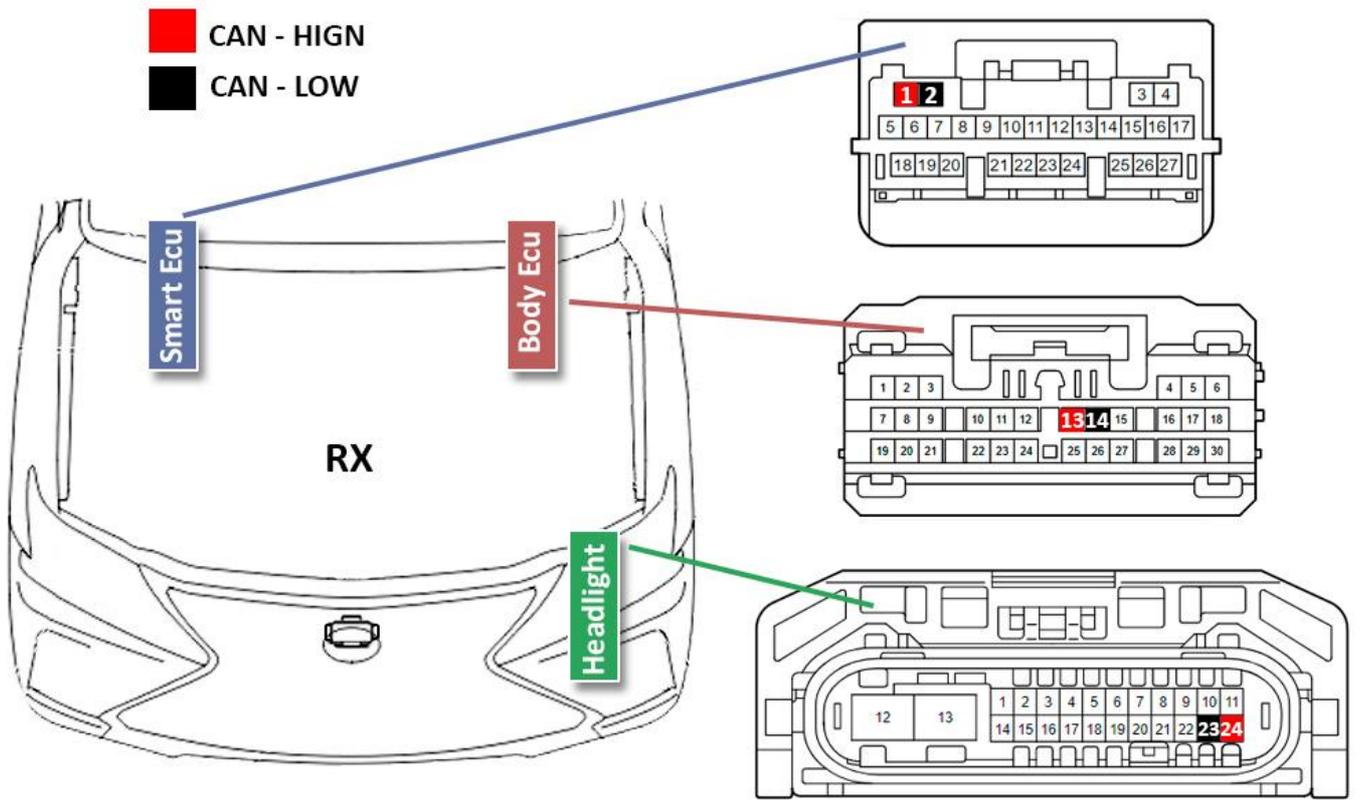
C1) Connection points for Fortuner, Hilux - (key 39)

CAN - HIGN

CAN - LOW

Smart Ecu

FORTUNER, HILUX

Headlight
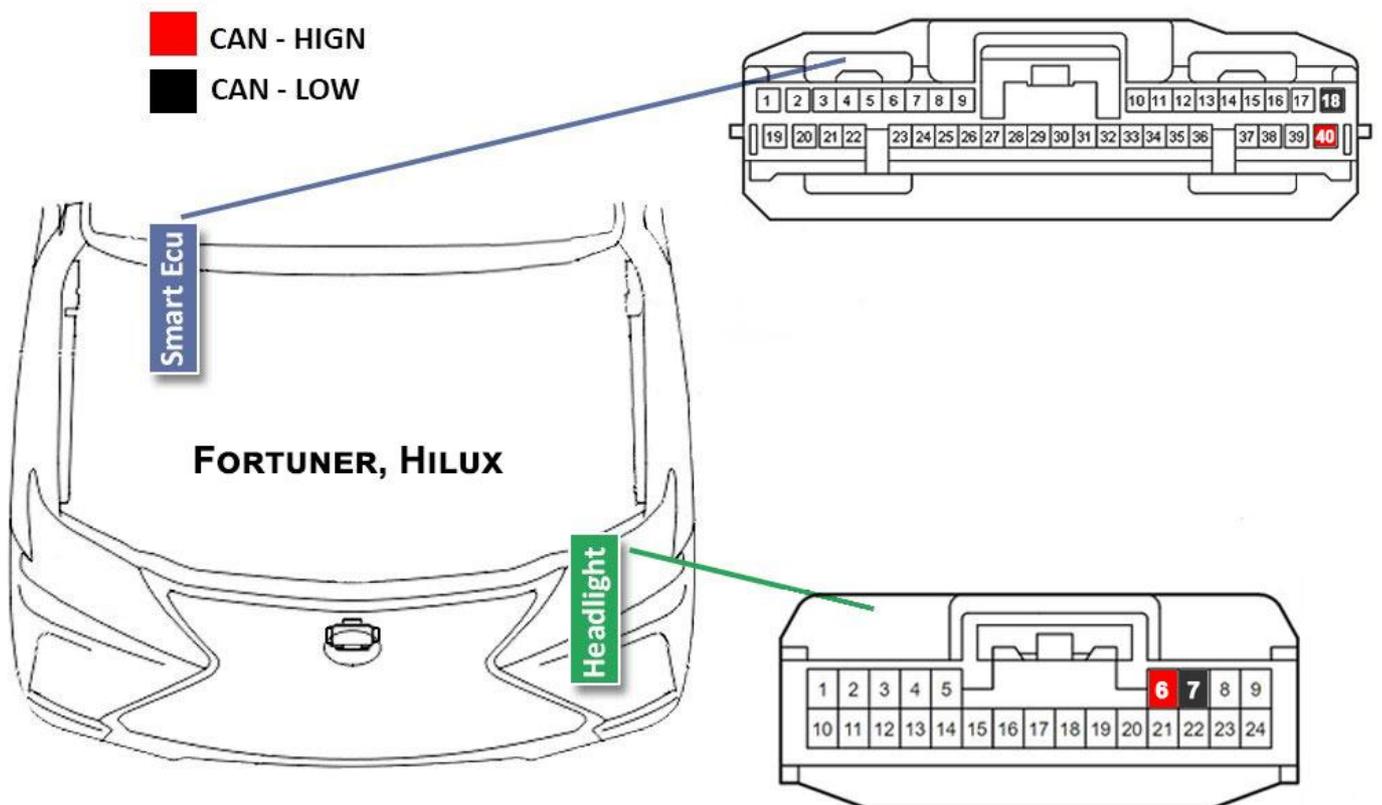
DESCRIPTION OF THE PRO SMART v3.1 OPERATION

ProSmart is special OBD adapter with the needle-probe for connection via LIN bus of the vehicle.

New Toyota/Lexus models with Smart Keys use Smart ECUs **(table #3)**. The information about the keys is stored in read-protected processors. Programming of the smart keys in these vehicles is possible with at least one working key.

☑ If all keys are lost, you can restore car operability by replacement Smart ECU (by **NEW ECU** or **USED ECU** with **a key registered (bound) to this unit**).

Attention !!!

⚠ *During the programming new Smart ECU or additional keys, the gear selector MUST BE in the "PARK" position !!! In case of the "NEUTRAL" position, all ECUs will be BLOCKED! To fix this issue, use Toyota TK-Prog Master v5.0 to reset these ECUs.*

⚠ *In new vehicles with AA smart keys (Toyota Corolla, Toyota RAV4 2019 and others), smart key programming and ECU adaptation to the certification system are carried out by the dealer's diagnostic equipment only online.*

Restoring operability of these cars is possible only by replacement Smart ECU (AA) with NEW ECU (A9) with new key or USED ECU (A9) with a key registered (bound) to this unit.

For restoring the vehicle's functionality in case of losing all keys or programming additional smart keys, you need to **PERFORM THE FOLOWING PROCEDURES:**

- **ResetImmo** - resetting the vehicle immobilizer ECU (in this version, this process is automatic, without any additional actions);

- **SmartAdaptation** – programming another Smart ECU (NEW or USED ECU with the key programmed (registered) to the unit);

- **AddKey** - programming additional smart keys (if necessary).

➢   **RESET IMMO PROCEDURE + SMART ADAPTATION**

To perform ResetImmo + SmartAdaptation requires:

1)   **Unplug all connectors from Smart ECU !!!**
2)   Connect **ProSmart 3.1** to SmartECU connector using blue needle probe (**see fig. 2-7**).
       Or you can connect it to ESCL (Electronic Steering Column Lock) plug, without unlinking this connector (**fig. 1**).
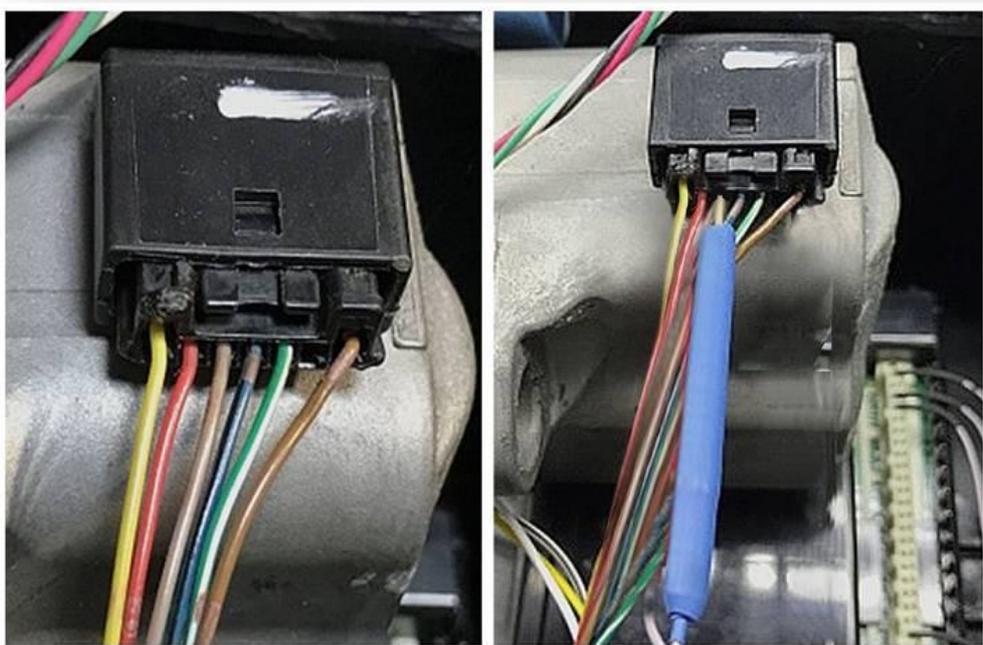

Connection to ESCL plug	
Pin	**Color of needle-probe**
5	Blue

Fig.1

Fig. 2
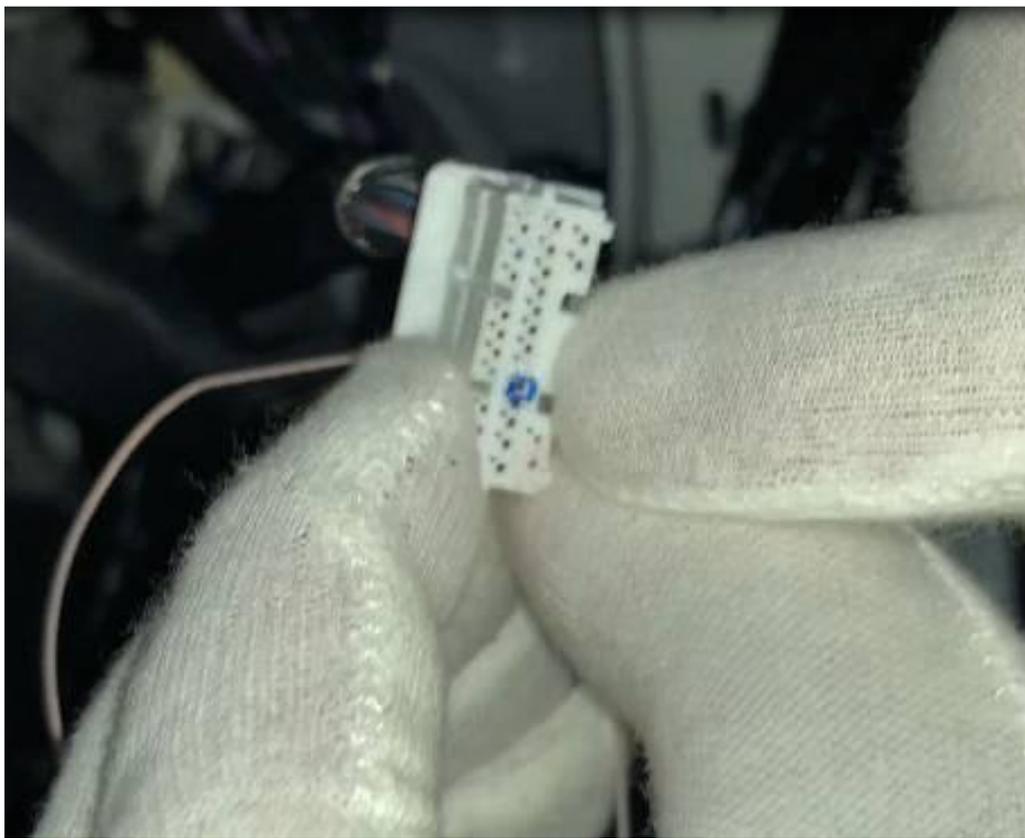
Fig. 3

Smart ECU connection for Higlander, IS, LC150, LC200, LX, NX, Prado		
Key	Pin	Color of needle-probe
A8	6	Blue
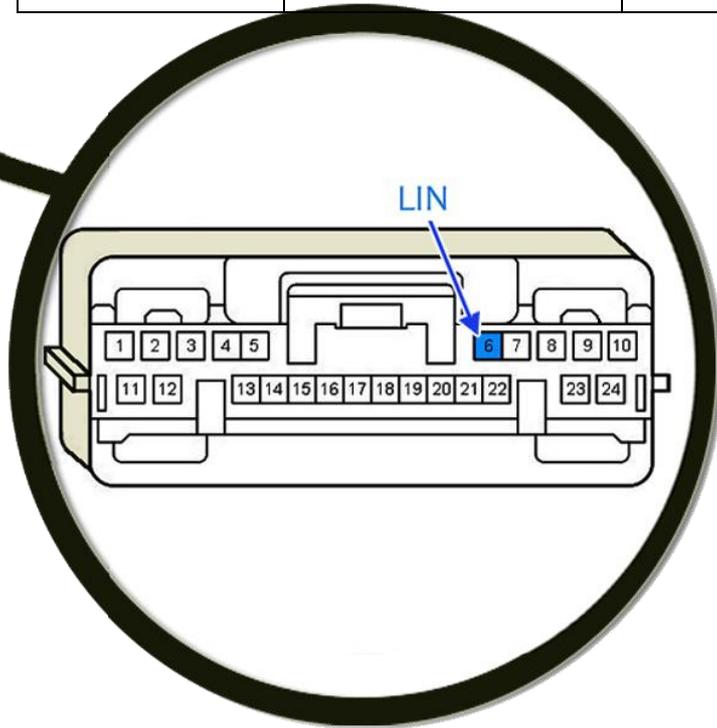
Fig. 4

Smart ECU connection for Camry from 2018, CH-R, RX200t, RX450h, LS500		
Key	Pin	Color of needle-probe
A9	13	Blue
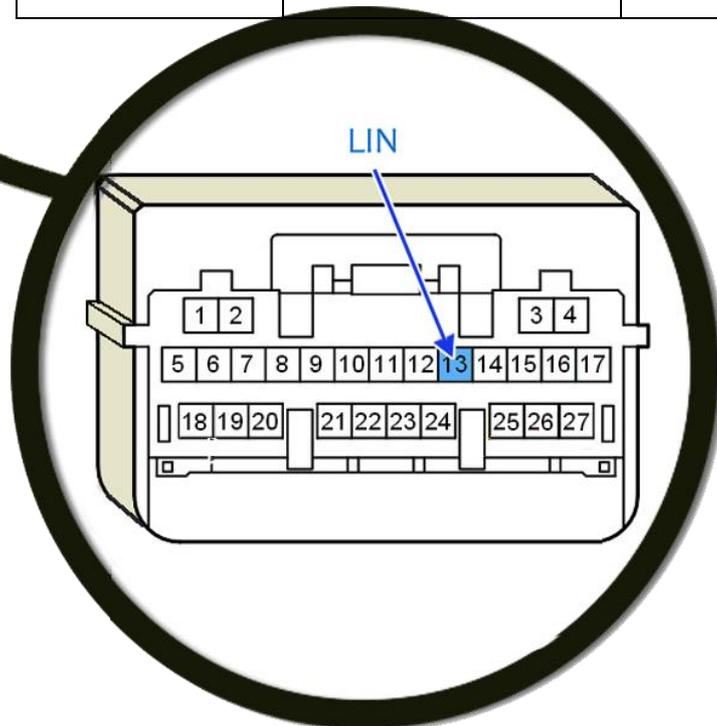
Fig. 5

Smart ECU connection for Camry до 2018, ES, GS, RAV4		
Key	Pin	Color of needle-probe
88	17	Blue
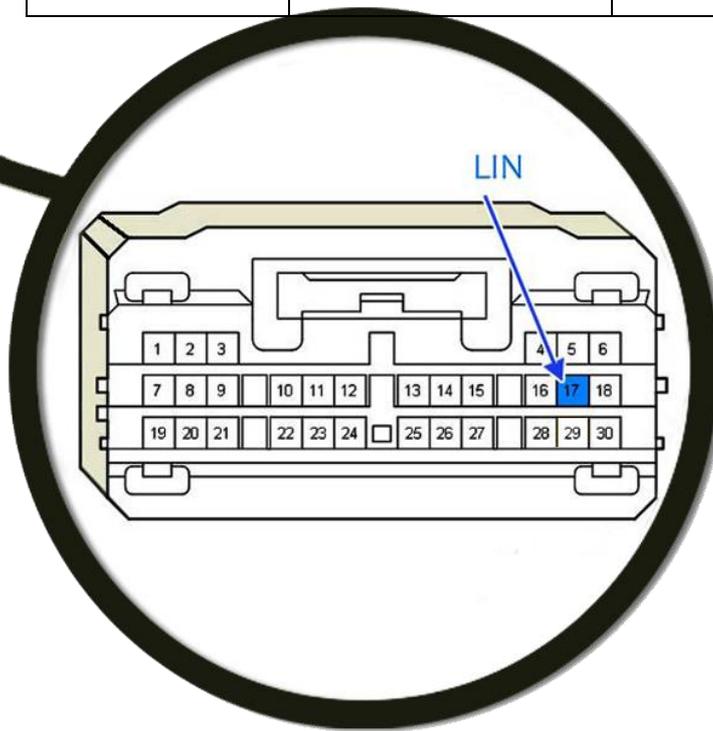
Fig. 6

Smart ECU connection for Fortuner, Hilux (from 2015 to 2018)		
Key	Pin	Color of needle-probe
39	5	Blue

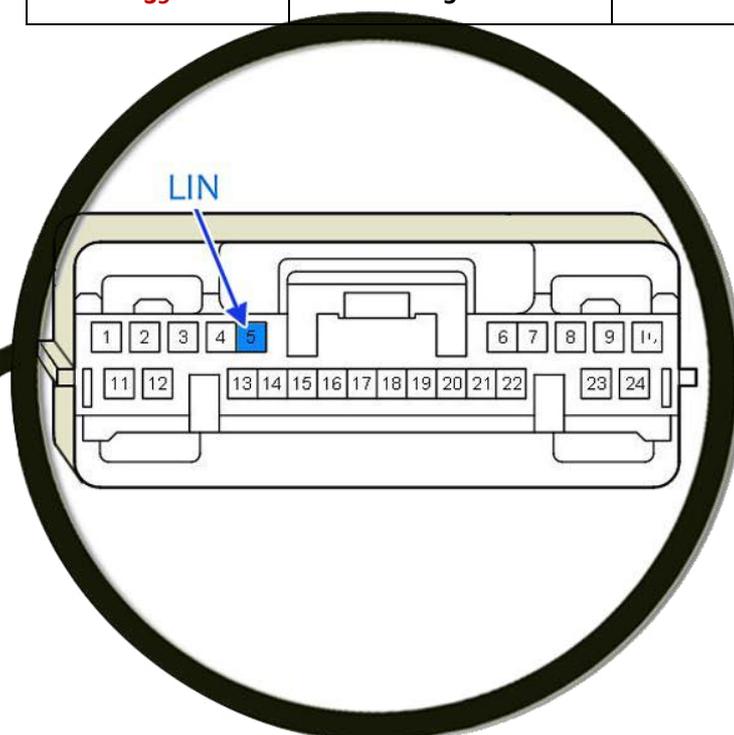**Fig 7**

3) Plug connectors to another SmartECU **(new or used ECU with a key registered to this unit)**;

4) Set OBD adapter switch to position **#1**;

5) Turn the ignition off;

6) Insert the OBD adapter into the OBD connector;

7) After connecting the sound **beep once**. LED blinks **green** quickly;

8) Bring smart-key to **"START"** button. A beep will sound (**a single signal for the used ECU**, and a **double beep for the new ECU**). The LED will **turn green** and then flash periodically;

9) Remove smart-key from "START" button;

10) Wait OBD adapter emits **three beeps**. Disconnect ProSmart from OBD connector;

11) Procedure is complete. You can start your car.

➢ **TABLE #2**

List of possible LED signals	
LED Signals	**State of the procedure**
Single flashing (green color)	The connection is established
Single flashing (red color)	Incorrect connection or LIN bus is damaged
Fast flashing of the LED (green color)	Procedure of reset is in progress
Double flashing of the LED (green color)	Reset of Immo ECU is complete
The LED constantly turns red	Error during the reset procedure

➢ **ADDKEY PROCEDURE**

The AddKey procedure is performed if you need to program (register) additional smart keys.

1) Set the switch of the OBD adapter to **position #2**;
2) Turn the ignition off;
3) Insert the OBD adapter into the OBD connector. After connecting the adapter emits **double beep**. The immobilizer lamp on the dashboard will stop flashing and go out;
4) Within 30 seconds, bring the registered (bound) smart key to the START button. **One beep** sounds and smart-key LED lights up;
5) Remove the smart-key from the car;

6) Within 30 seconds, bring additional smart key to the START button;
7) After a **single beep**, remove smart-key from START button;
8) If the **second single beep** sounded, it means the additional key programmed successfully. After that, you need to remove the smart key from the vehicle.

✓ *If the second audio signal does not sound, this means the smart key is not registered!*

The key cannot be registered for the following reasons:

☑ Type of smart key does not match the type of key used in the vehicle. In this case, you must use the appropriate smart-key;

☑ Smart key is locked (the key is registered to another car). You need to unlock this key using a special programmer, or use a new smart key**.**

9) To continue registering smart keys, you need to repeat steps 6-8.

10) After you finish the programming of last smart key, you need to wait OBD adapter emits **three beeps**. Disconnect the adapter from the OBD connector.

AddKey procedure is complete. After completion of the procedure the immobilizer lamp starts flashing on the dashboard.

✓ **The ResetImmo** procedure is performed by the **ProSmart** device via the LIN bus.
In version 3.1, the process of ECU reset is automatic, without any additional actions.

After reset of Immo ECU occurs **SmartAdaptation procedure**. This procedure is the programming (binding) of the **new** or **used** SmartECU to the car.

✓ **Attention !!!** The programming of **Used ECU** is possible if you have a **registered (bound) smart-key to this block** only! ProSmart 3.1 works with SmartKey system that uses new generation SmartEcu (* see SKU numbers of Smart ECU units, **table #3**). When performing SmartAdaptation, the smart key is automatically registered to the car.

➢ **TYPES OF ADAPTERS FOR SMART ECU UNITS**

*SmartECU adapters differ in key type − **AA, A8, A9, 39, 88***.

AA - (LS, UX, ES, RAV4 from 2018)
A8 - (LX, NX, Alphard, Highlander, LC200, Prado)
A9 - (RX, LS500, CH-R, Camry, RAV4 after 2018 and etc.)
39 - (Fortuner, Hilux (from 2015 to 2021)
88 - (ES, GS, Rav4, Camry (till 2018)

TABLE #3

* SKU numbers of SmartECU				
Model	**Petrol (Gasoline)**	**Diesel**	**Hybrid**	**Key**
Lexus ES	89990-33412 (2018) 89990-33411 (2017)	-	-	88
Lexus GS	89990-30441	-	-	88
Lexus IS	89990-53381	-	-	A8
Lexus LS 500	899H0-50010	-	899H0-50020	A9
Lexux LX 570	89990-60291	(till 07/2017) 89990-60470 (from 08/2017) 89990-60471	-	A8
Lexus NX	89990-78080	-	89990-78100	A8
Lexus RX	(from 2015-22) 89990-48430 (from 2017-22) 89990-48431	-	(from 2015-22) 89990-48450 (from 2017-22) 89990-48451	A9
Lexus UX	-	-	89990-76190	-
Toyota Alphard	89990-58110, 89990-58210 89990-58240	-	-	A8
Toyota Camry	89990-33400, 89990-33690	-	89990-33480	A9
Toyota CH-R	89990-F4010	-	89990-F4050	A9
Toyota Hilux	89990-0K081, 89990-0e080	-	-	39
Toyota Highlander	89990-0E081	-	89990-0E150	A8
Toyota LC 200	89990-60471	89990-60280	-	A8
Toyota Prado	89990–60196, 89990-60430	89990-60205, 89990-60440	-	A8
Toyota RAV4	89990-42112	89990-42112	89990-42091	88