

Advanced Scooter Workshop – Next (ASW-NEXT)

Short overview



January 2022

1. Introduction

Since 2015, when we introduced **Advanced Scooter Workshop (ASW)**, this tool helped thousands of its owners to solve many issues in field of scooter electronics repair. Now we introduce successor of ASW, it's next generation – **ASW-NEXT**. Device that is more suited for today's needs, more flexible, more informative and with much more better user interface.

2. What's in the box?



- **ASW-NEXT** hardware interface
- **USB-A** to **USB-C** cable
- **Plug** with target connection wires
- **Empty plug** to build custom cable by yourself
- **1 kOhm resistor** for ECU BOOT modes

3. Hardware

ASW-NEXT is connected to the PC via USB-C cable.

On the top panel device has:

- Multi-color LED for status of USB communication and indicator of power supply
- Immobilizer LED for on-the-bench ECU testing (to check, does control unit under test accept transponder key). This LED is internally connected to +12V via 1 kOhm resistor and is lit-on by applying low level to white wire „LED“.

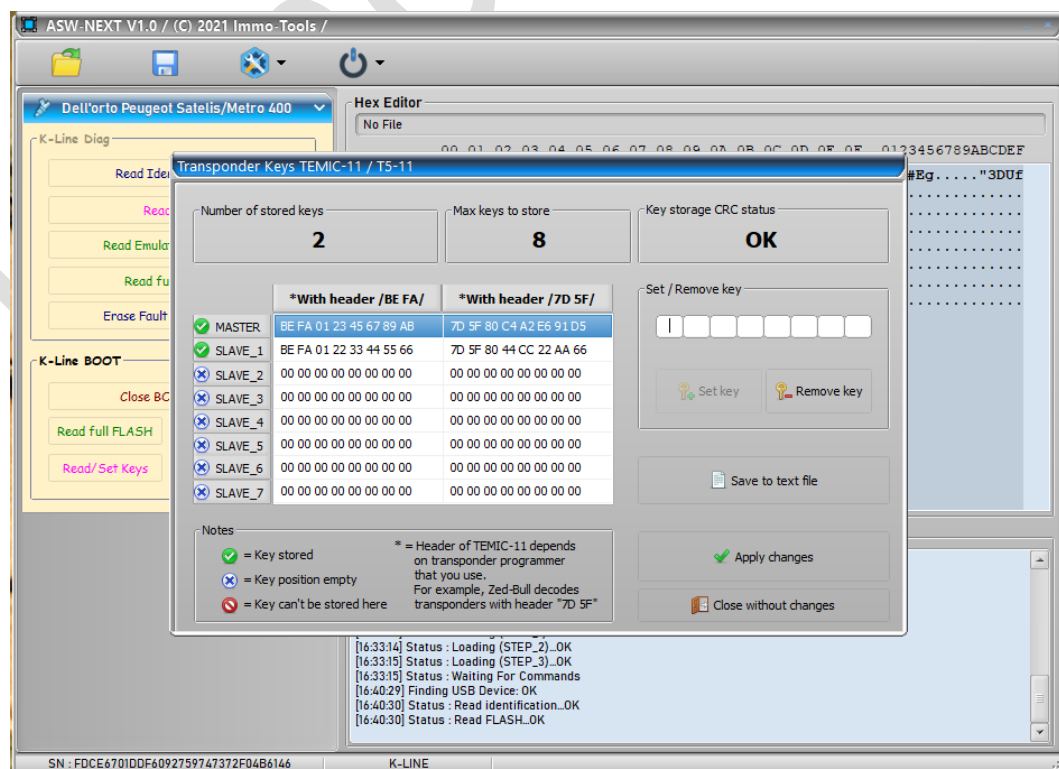
Terminals of the green connector:

- **+12V** supply input
- **Ground**
- High speed **CAN-BUS** with internal terminating resistor
- **K-Line**
- **L-Line**
- Switched **+12V** output (**2A max**). Controlled by software
- **LED** control input with internal resistor. Low level on this input turns on „Immo LED“ on the top panel. No external current limiting resistor needed.

4. Software

Software comes *free of charge* and is available to download from www.immo-tools.it



We plan to release 10 updates / year.





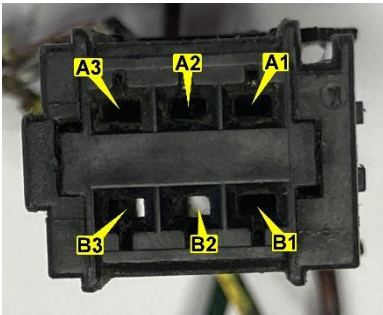
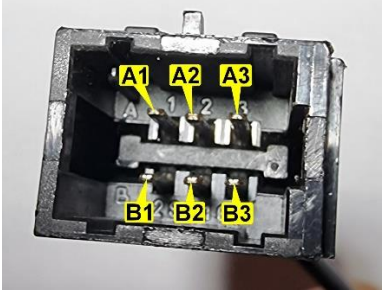
5. Common information

5.1. Diagnostic connectors

For basic functions (non-BOOT), every ECU can be accessed by in-scooter diagnostic connector. Obtain suitable connector to build yourself a diagnostic cable according tables below, to connect ASW-NEXT to the scooter's diagnostic plug.

Piaggio group EURO-5 diagnostic connector		
Diagnostic connector in scooter	Tester connector	Pinout
		<ol style="list-style-type: none"> 1. +12V IGNITION 2. CAN H 3. GND 4. +12V BATTERY 5. CAN L 6. K-LINE

Piaggio group 3-pin diagnostic connector		
Diagnostic connector in scooter	Tester connector	Pinout
		<ol style="list-style-type: none"> 1. L-LINE (if used) 2. GND 3. K-LINE

Peugeot 6-pin diagnostic connector		
Diagnostic connector in scooter	Tester connector	Pinout
		<ol style="list-style-type: none"> A1. GND A2. CAN L A3. +12V B1. K-LINE B2. CAN H B3. L-LINE

5.2. Immobilizer diagnostic LED blink codes

Immobilizer LED blinks status of immobilizer system on ignition-on. Blink pattern consist of several sections.

LED blinks virgin / programmed state first:

Short blink (~0.4 sec) – system programmed

Long blink (~0.7 sec) – system VIRGIN

LED goes off then.

If ignition was turned on with a valid MASTER key:

LED blinks number of stored keys by means of series of very short blinks (~0.2 sec). 2 very short blinks means 2 stored keys (MASTER and one SERVICE key, etc.). Then LED goes off permanently, indicating the immobilizer system was successfully disarmed.

If ignition was turned on with valid SERVICE key:

LED goes off permanently, indicating the immobilizer system was successfully disarmed.

If key recognition issue occurred:

LED blinks diagnostic fault code and goes on permanently, indicating the immobilizer system remain in armed state (engine can't be started).

1 blink – fault of serial communication.

For ECUs that uses 3-pin active transponder reader antenna this fault may be caused by faulty antenna by itself, missing power supply to antenna or broken wire between antenna and ECU.

For IMM006 this fault may be caused by broken wire between IMM006 and ECU, missing power supply to ECU or synchronisation code mismatch.

2 blinks – key not detected

3 blinks – key was detected, but it doesn't belong to ECU or immobilizer unit.

5.3. Programming of spare key when MASTER key is available or initial key learning to VIRGIN ECU or IMM006:

- 1) Insert **MASTER** key, turn ignition to ON for 2 seconds (until immobilizer LED goes OFF). Remove key from lock;
- 2) Insert **SERVICE** key, turn ignition to ON for 2 seconds (until immobilizer LED goes OFF). Remove key from lock.
Repeat for all **SERVICE** keys;
- 3) Insert **MASTER** key again and turn ignition to ON for 2 seconds (until immobilizer LED goes OFF) to close key programming procedure.

NOTE1: First key you will switch ignition on with, will be stored as a MASTER regardless of its color.

NOTE2: Do not exceed time of 1.5 seconds for key swapping between steps 1-3.

NOTE3: At least two keys required to complete initial learning of VIRGIN ECU or IMM006.

NOTE4: If MASTER key is missing for spare key learning to non-VIRGIN ECU:

Read MASTER key value from particular control unit and program it to the T5 transponder using any transponder programmer. Perform key programming procedure described above using this T5 transponder as a MASTER key.

5.4 What is the difference between MASTER and SERVICE keys

Engine can be started with both of these keys but the advantage of **MASTER** key is that you can learn additional **SERVICE** keys using **MASTER** key as described above in chapter 5.3.

No additional keys can't be learned using **SERVICE** key.