

PAVLO PASHCHENKO

REVIEW OF COMPUTER ENGINE DIAGNOSTIC TOOLS (ON THE EXAMPLE OF THE BMW M57 ENGINE)

Vinnytsia National Technical University

Анотація

Представлено огляд засобів комп'ютерного діагностування двигунів (на прикладі двигуна BMW M57). Розглянуто і описано функціонал трьох поширених на нашому ринку автомобільних сканерів.

Ключові слова: Діагностика, засоби комп'ютерного діагностування двигунів.

Abstract

A review of computer engine diagnostic tools (using the BMW M57 engine as an example) is presented. The functionality of three common car scanners in our market is considered and described.

Key words: scanner, adapter, diagnostics, OBD.

Introduction

Today, computer diagnostics of cars, especially system scanning, has become widespread. Scanners allow you to obtain key parameters and perform tests by connecting to the engine control unit via the OBD connector. We will consider the most modern and promising scanners that are optimally suited for diagnosing BMWs, particularly with M57 engines. Overview of the ELM327 V2.1 Mini-Scanner With Bluetooth.

Overview of the ELM327 V2.1 Mini-Scanner with Bluetooth

The ELM327 V2.1 mini-scanner is a convenient tool for car diagnostics. It supports all OBD-II protocols and many diagnostic programs. It is compatible with almost all passenger cars with an injection engine, manufactured after 1996. The scanner allows you to clear errors, turn off the MIL indicator, read error codes (standard and manufacturer), display their values (over 3000 codes). It shows engine speed, load, coolant temperature, fuel system status, speed, fuel consumption, air pressure, ignition timing, intake air temperature, air flow, and throttle position. It works with all OBD-II cars (since 1996 in the USA) and EOBD (petrol since 2001, diesel since 2003/2004 in Europe) and supports programs for Android, Symbian, Palm, Windows Mobile, and PC.

Overview of the BMW Inpa D+CAN Adapter

The BMW Inpa D+CAN adapter is an alternative to dealer scanners (GT1, OPS) and provides dealer functions for BMW diagnostics. It connects to a laptop via USB and works with the car via the K-line or CAN bus. The Inpa adapter is characterized by high speed. It supports programming and coding of control units, their reflashing, activation/deactivation of equipment, adaptation, real-time parameter viewing, error memory reading and clearing. With it, you can diagnose EWS, ABS, AirBag, engine, automatic transmission, on-board computer, and other systems. Real-time parameter reading and actuator testing functions allow you to control the operation of any module. The adapter uses the Edibus bus to communicate with programs that are available in English or German. It supports D-CAN, PT-CAN, KCAN, K-LINE, and BMW-OBD protocols. Adapter capabilities include ECU parameter identification, error code reading and clearing, real-time parameter reading, VIN and mileage control, ECU coding, actuator activation, ECU emulation, and activation/deactivation of engineering functions.

Overview of the Launch CReader VII Scanner

The Launch CReader VII is a new compact scanner for personal use. It is designed for cars that support the OBDII protocol, including CAN BUS. It reads and clears engine error codes, performs additional tests (readiness check, data stream reading, "freeze frame" viewing, oxygen sensor test, on-board system test, fuel

vapour recovery system test). A distinctive feature of the Creader VII is the ability to fully diagnose one car brand. It is specifically designed for OBDII-compliant cars, including CAN BUS. Scanner capabilities include reading and clearing error codes, readiness check, data stream reading, "freeze frame" viewing, oxygen sensor test, on-board system test, EGR system test, vehicle information reading, and error code description viewing.

Conclusions

In this paper, we examined three popular car scanners that are suitable for diagnosing BMWs, particularly M57 engines. The analysis showed that the INPA BMW adapter and the Launch CReaderVII scanner are the most effective. However, given the higher price of the latter, it is more practical to use the BMW Inpa D+ adapter for diagnosing BMWs with M57 engines.

References

1. Діагностика URL: <http://autoliteratura.com.ua/product/diagnostika-dizelnyh-dvigateli-gubertus-gyunter-412752>.
2. Прилади URL: <https://uk.wikipedia.org/wiki/ELM327>, <https://ab.nebeso.cx.ua/articles/bmw-jak-pracjuvati-v-inpa.html>, <https://en.cnlaunch.com>.
3. Двигун URL: <https://manualov.net/downloadbooks.php?id=4242>
4. Машини. URL: https://manualov.net/downloadbooks.php?id=4240#google_vignette, <https://manualov.net/downloadbooks.php?id=4242>, <https://manualov.net/downloadowners.php?id=26>.

Пащенко Павло Романович – студент групи ЕЛ-246, факультету інформаційних електронних систем, Вінницький Національний університет, Вінниця, e-mail: wort123201@gmail.com.

Науковий керівник: **Піддубчак Світлана Юрївна** – викладач кафедри іноземних мов, Вінницький національний технічний університет, м. Вінниця, e-mail: sstebnovska@gmail.com.

Pashchenko Pavlo Romanovych – student of group EL-24b, faculty of information electronic systems, Vinnytsia Technical University, Vinnytsia e-mail: wort123201@gmail.com.

Supervisor: **Svitlana Y. Pidubchak** – a teacher of English, Foreign Languages Department, Vinnytsia National Technical University, Vinnytsia, e-mail: sstebnovska@gmail.com.