CAN Convertor RPM

Installation

Black/Purple	12v switched power
Brown	Ground
Black/Red	Output RPM Coil pulse for Mk1/Mk2
Gray/Red	Output RPM 12v pulse for Mk3/Corrado
Blue/White	Output VSS Speed
Orange/Brown	Input CAN-BUS Low
Orange/Black	Input CAN-BUS High
White	Input VSS Speed

WARNING!
Black/Red RPM wire has HIGH VOLTAGE connect and isolate before turning on the device.
Only connect this output to a Coil Tacho!! Golf Mk1, Golf Mk2.

CE2 Fusebox

Golf Mk2/3	RPM	G1/12 White connector, Green/Black or Red/Black wire
Golf Mk3	Speed	G1/11 White connector, White/blue wire

CE1 Fusebox

Golf Mk1/2	RPM	D26 Red/Black

The convertor has WiFi for settings and firmware updates.
Connect WiFi to 'CAN Convertor'.
WiFi Password: 1234567890

Go to webpage http://192.168.200.1

CAN BUS RPM input works with all VAG CANBUS ECU's.

On power up the controller will do a needle sweep.

vd Veer Engineering Netherlands

Info@vdveer-engineering.nl
www.vdveer-engineering.nl

Facebook @haldexcontroller
Instagram @haldexcontroller

Van der Veer
ENGINEERING

jhjhj

Installation 1
CAN Converter RPM Installation Guide 3
Settings menu 6
Functions of the CAN Converter RPM 6
RPM Output Signal for Cluster 6
Custom RPM Output Conversion Value 6
Output 2 Mode 7
CAN Protocol 7
CAN Speed output 7
Speed Input 8
DSG Speed request 8
OBD protocol 8
Analog speed input 9
CAN Debug 9
Needle Sweep 9
CAN Simulation 10
Test Outputs 10
Firmware Update for CAN Converter RPM 11
Additional information 13

CAN Converter RPM Installation Guide

Welcome to the installation guide for the CAN Converter RPM. This device allows you to convert your vehicle's ECU CANBUS signals into analog RPM outputs. The CAN Converter RPM features customizable outputs and inputs, and is designed to work with a variety of vehicles, including Golf Mk1, Mk2, Mk3, Corrado and other compatible models.

Wiring Description

To ensure proper installation, follow the wiring descriptions below to connect the CAN Converter RPM to your vehicle's system. Please refer to your vehicle's manual or wiring diagram for specific connections.

- **Black/Purple**: **12V Switched Power**
  Connect to a 12V switched power source (e.g., ignition power). This will provide power to the CAN Converter RPM when the vehicle is turned on.
- **Brown**: **Ground**
  Connect to the vehicle's ground to ensure proper electrical grounding for the device.
- **Black/Red**: **Output RPM Coil Pulse for Mk1/Mk2**
  Output a high-voltage RPM Coil pulse signal for Mk1/Mk2 vehicles. This should only be connected to a Coil Tacho.
- **Gray/Red**: **Output RPM 12V Pulse for Mk3/Corrado**
  Output a 12V RPM pulse signal for Mk3 and Corrado models.
- **Blue/White**: **Output VSS (Vehicle Speed Signal)**
  Output the vehicle's speed signal to connect to compatible speedometer or control systems.
- **Orange/Brown**: **Input CAN-BUS Low**
  Connect to the CAN-BUS Low wire for data communication with the vehicle's CAN network.
- **Orange/Black**: **Input CAN-BUS High**
  Connect to the CAN-BUS High wire for data communication with the vehicle's CAN network.
- **White**: **Input VSS Speed**
  Connect to the vehicle's speed sensor to provide an input signal for speed data.

WARNING!

- **Black/Red RPM Wire** has **HIGH VOLTAGE**. It is essential to **connect and isolate** this wire **before turning on the device**.
- Only connect this output to a **Coil Tacho** for **Golf Mk1** and **Golf Mk2** vehicles.

Wiring Connections for Specific Vehicles

CE2 Fusebox:

- **Golf Mk2/3 RPM**:
  Connect to **G1/12 White connector**, using the **Green/Black** or **Red/Black** wire for RPM signal.
- **Golf Mk3 Speed**:
  Connect to **G1/11 White connector**, using the **White/Blue** wire for speed signal.

CE1 Fusebox:

- **Golf Mk1/2 RPM**:
  Connect to **D26 Red/Black** for RPM signal.

Installation Notes

- Carefully connect all wires according to the descriptions above.
- Ensure all connections are secure and properly insulated to avoid shorts or interference.
- Once the wiring is complete, power on the vehicle and the CAN Converter RPM to verify functionality.

If you encounter any issues during installation, refer to the troubleshooting section or contact customer support for assistance.

How to Connect to the CAN Converter RPM's Wi-Fi AP

The CAN Converter RPM comes with a convenient **web interface** that allows you to view and modify various settings, as well as update the firmware. By connecting your PC or laptop to the CAN Converter RPM's Wi-Fi network, you can easily access the web interface and manage your device settings or initiate a firmware update.

Step-by-Step Guide to Connect to the CAN Converter RPM's Wi-Fi AP in Windows

1. **Turn on Your CAN Converter RPM:**
    - Ensure that the CAN Converter RPM is powered on and broadcasting its Wi-Fi network.
2. **Open the Wi-Fi Settings on Your PC or Laptop:**
    - Click on the **Wi-Fi icon** located in the bottom-right corner of your taskbar.
    - A list of available Wi-Fi networks will appear.
3. **Connect to the CAN Converter RPM's Wi-Fi AP:**
    - Look for the network named **"CAN Convertor RPM"** in the list of available networks.
    - Click on the **"CAN Convertor RPM"** network name.
    - If prompted, you may need to enter a password. 1234567890
4. **Open a Web Browser:**
    - Open your preferred web browser (e.g., Google Chrome, Firefox, or Edge).
5. **Navigate to the Converter's IP Address:**
    - In the browser's address bar, enter the following URL: **http://192.168.200.1**
    - Press **Enter** to access the CAN Converter RPM's web interface.

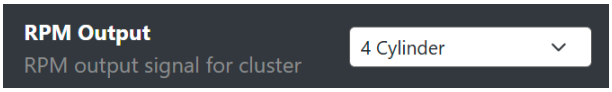
The web interface also allows you to monitor device performance, adjust settings, and manage configurations, making it a powerful tool for customizing your CAN Converter RPM experience.

If you encounter any connection issues or cannot access the web interface, try restarting both your PC and the CAN Converter RPM. Ensure the Wi-Fi signal is strong enough and that you're connected to the correct network.

Settings menu

The CAN Converter RPM provides a range of functions essential for the operation of the RPM signal in various vehicle components. The key functions are as follows:

Functions of the CAN Converter RPM



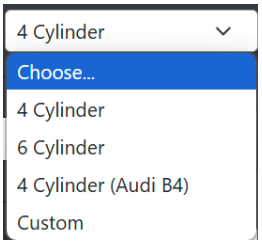
RPM Output Signal for Cluster

The RPM output of the CAN Converter provides an accurate RPM signal compatible with various vehicle instrument clusters.

Options

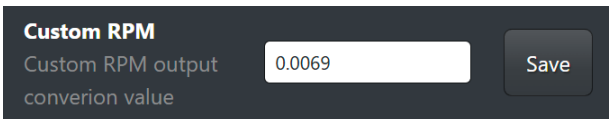
The CAN Converter RPM offers multiple configuration options:

- 4 Cylinder
- 6 Cylinder
- 4 Cylinder (Audi B4)
- Custom



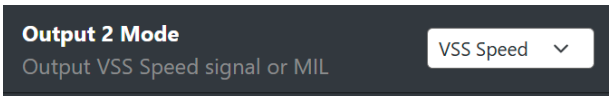
Select the option that corresponds to the instrument cluster in use. For example, the Golf Mk2 cluster is always a 4 cylinder cluster, the Golf Mk3 VR6 is a 6 cylinder cluster, and the Mk3 with 4 cylinder engines have 4 Cylinder clusters.

If the displayed value on the cluster is incorrect, try one of the other options. If none are accurate, the custom option allows you to set your own conversion output.



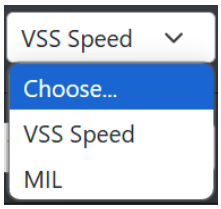
Custom RPM Output Conversion Value

When using the custom RPM output, adjust the RPM to pulse value to match your tachometer. Make small adjustments to align the RPM output accurately.



Output 2 Mode

The second output can be used for either the VSS speed signal or the MIL light output.

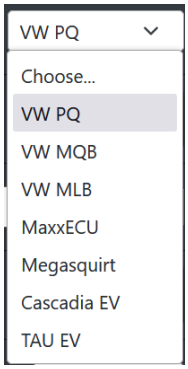


- VSS Speed provides a 12V pulse VSS signal for a speedometer.
- MIL outputs a 12V on/off signal for the engine fault light, which is read from the ECU by Canbus.



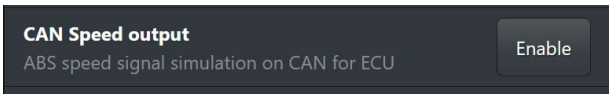
CAN Protocol

The converter is compatible with a range of CAN bus data streams, including standalone ECU and EV controllers. Please select the appropriate protocol for your ECU:



- VW PQ: VAG protocol for all ECUs from the PQ platform (1998 ~ 2014)
- VW MQB: VAG protocol for all ECUs from the MQB platform (2014 ~ 2024+)
- VW MLB: VAG protocol for all ECUs from the MLB platform
- MaxxECU: MaxxECU standalone engine management system (ECU)
- Megasquirt: MegaSquirt (MS) standalone engine management system (ECU)
- Cascadia EVCU: eCascadia Electric Vehicle Control Unit
- TAU EV: TAU Electric Vehicle Control Unit

Additional protocols can be added upon request.



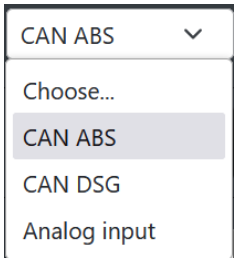
CAN Speed output

When the CAN converter receives a speed signal, this option will simulate the ABS speed signal on the CAN bus. Consequently, the ECU will be able to interpret and utilize this speed signal.

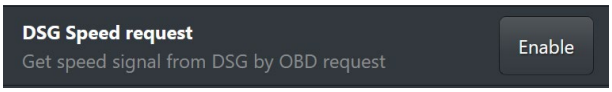


Speed Input

The CAN Converter offers several options for obtaining a speed signal from the vehicle:

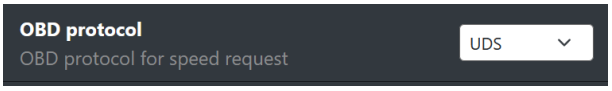


- CAN ABS: Use this option when the car has an ABS unit with CAN.
- CAN DSG: Use this option to get a speed signal from the DSG if there's no ABS with CAN.
- Analog input: When the vehicle is equipped with a Vehicle Speed Sensor (VSS), it can be connected to the VSS input on the converter to utilize this input.



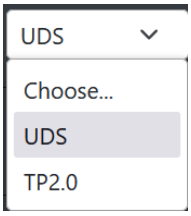
DSG Speed request

Obtain the speed signal from the DSG through an OBD request when no other speed signal option is available. This function reads the speed signal from the internal speed sensor of the DSG. Please note that, as this is an OBD request, it will interfere with any diagnostic tools. Therefore, this function should be disabled during OBD diagnostics.

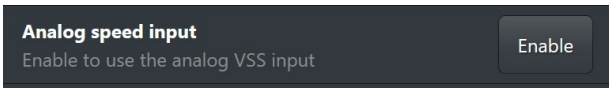


OBD protocol

Volkswagen Auto Group (**VAG**) vehicles use different communication protocols for **diagnostics and ECU communication** over **CAN bus**.



- TP2.0 (Transport Protocol 2.0) – Older VAG Cars (~2000–2008), Found in older VW/Audi models (Mk4, early Mk5, B6, early B7, etc.)
- UDS (Unified Diagnostic Services, ISO 14229) – Newer VAG Cars (~2008–Present), Found in newer VW/Audi models (Mk6, Mk7, B8, MLB, MQB, etc.)



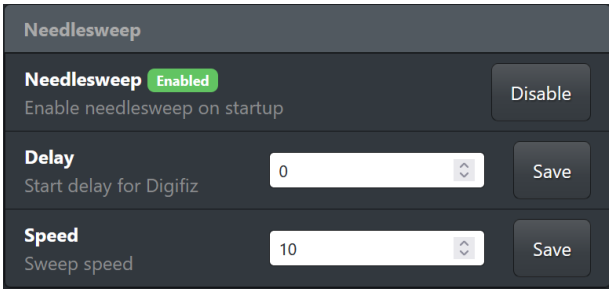
Analog speed input

To use the analog VSS input of the CAN converter, connect a VSS sensor to the VSS input on the converter and enable this function.



CAN Debug

This function is available for use when analysis of CAN bus data is required for support.



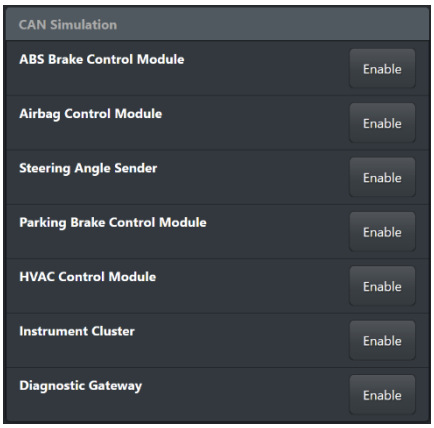
Needle Sweep

The needle sweep function is activated by default, causing both speed and rpm indicators to perform a sweep when the ignition is turned on. If you prefer not to utilize the needle sweep function, it can be disabled.

The Digifiz cluster displays certain messages when the ignition is turned on; however, it skips these messages upon detecting an rpm signal. Implementing a delay in the needle sweep will enable the Digifiz to display its messages effectively.
The value is in seconds, and typically 1 second should be sufficient.

The speed of the sweep can be adjusted, a lower number results in a faster needle movement.
The default value is 10.

CAN Simulation



The CAN Converter is capable of simulating CAN bus signals from various modules. During an engine swap, many modules may not be installed in the vehicle, leading to diagnostic trouble codes (DTCs) in the ECU. By enabling these modules, the fault codes can be cleared without the need to modify the ECU to conceal them.

Example fault codes:

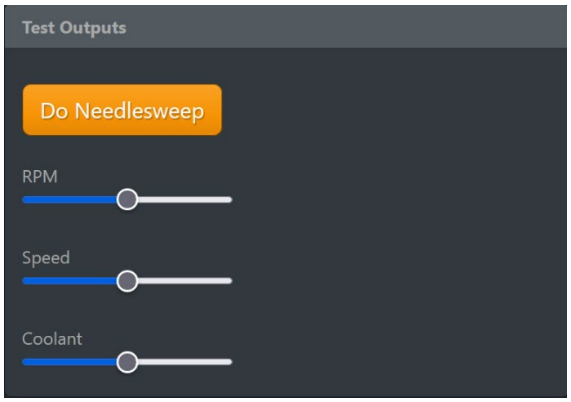
18044/P1636/005686 - Powertrain Data Bus: Missing Message from Airbag Controller

18057/P1649/005705 - Powertrain Data Bus: Missing Message from ABS Controller

18058/P1650/005712 - Powertrain Data Bus: Missing Message from Instrument Cluster

---

Test Outputs



The “Do Needlesweep” button will perform a needlesweep to test the RPM and Speed output.

The RPM slider allows you to adjust the RPM output within the range of 0 to 7000 rpm.
Note that this functionality is only available in the absence of an RPM input signal from the ECU. To enable this feature, you may disconnect the CAN line or configure the CAN protocol to an alternative protocol.

The Speed slider adjusts the Speed output to a value between 0 and 250 km/h.
Note: This function operates only when there is no Speed input signal.

The Coolant slider is used to regulate the Coolant output. (Note: This feature may not be available on certain Can Converters.)

Firmware Update for CAN Converter RPM

Welcome to the firmware update guide for your CAN Converter RPM. This document provides step-by-step instructions to help you update the firmware of your device, ensuring you benefit from the latest features, optimizations, and bug fixes. Firmware updates are essential for improving the functionality and performance of your CAN Converter RPM and ensuring compatibility with other systems.

Before beginning the update process, please ensure that you have the following:

1. **A stable power supply** for the CAN Converter RPM.
2. **The correct firmware file** for your device model.
3. **A PC or laptop with Wi-Fi** to connect the CAN Converter RPM for the update process.

Important Notes:

- Do not interrupt the update process once it has started. Interruptions can result in a damaged firmware and may require additional recovery steps.
- Ensure that your device is compatible with the latest firmware version.

Here You Can Find the Update Files

You can download the latest firmware version for your CAN Converter RPM from the official download page:

Download Firmware Update

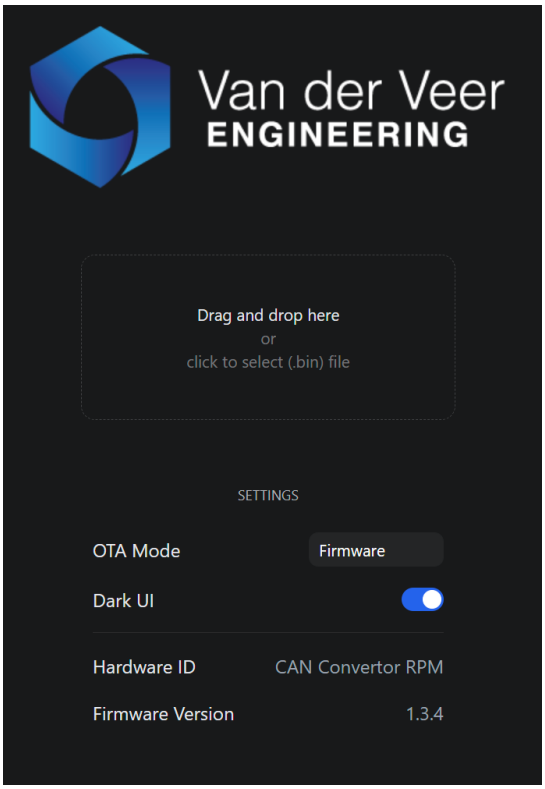
Here You Can Find the Release Notes

The release notes for the firmware update are available on this page:

View Release Notes

To begin the firmware update process, you must connect your Windows PC or laptop to the CAN Converter RPM's Wi-Fi AP.

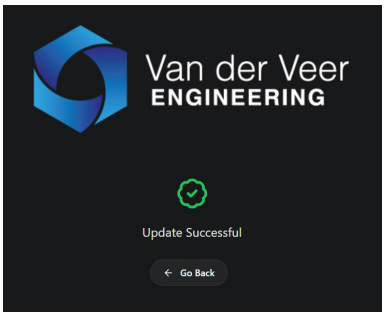
The firmware of the CAN converter can be updated easily through the update menu. To initiate the firmware update, set the OTA Mode to Firmware and either select or upload the new firmware file CANConvertorRPM-v1.X.X.bin



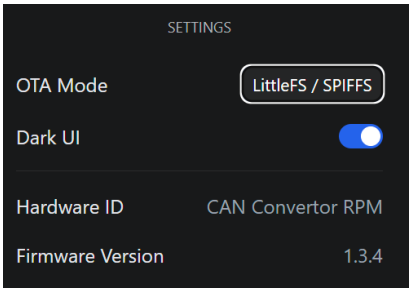
The update process will commence automatically once a firmware file is provided.



After the update is completed and displays "update successful," the new firmware is active. The device should reconnect to Wi-Fi automatically, but a manual reconnection might be necessary in some cases.



In addition to the main firmware, the web interface also requires updating. To update the web interface, use the same update menu. Set the OTA Mode to SPIFFS and either select or drop the new firmware file CANConvertorRPM.spiffs-v1.X.X.bin.



The update process will commence automatically once a firmware file is provided.

After the update is completed and displays "update successful," the new firmware is active. The device should reconnect to Wi-Fi automatically, but a manual reconnection might be necessary in some cases.

Additional information

The **Volkswagen Group PQ platform** (Plattform Quer, meaning "transverse platform") was used for vehicles with **transversely mounted engines** before the transition to the MQB platform. The PQ platforms were divided into different versions based on vehicle size. Here are the main ones:

PQ25 (Small Cars - Subcompact B-Segment)

- **Volkswagen Polo (Mk5, 2009–2017)**
- **Volkswagen Vento (Mk5, 2009–2022, sedan version of Polo)**
- **SEAT Ibiza (Mk4, 2008–2017)**
- **Audi A1 (Mk1, 2010–2018)**
- **Škoda Fabia (Mk2/Mk3, 2007–2019)**
- **Volkswagen Saveiro (2010–present, small pickup)**

PQ34 (Compact C-Segment - Golf Mk4 Era)

- **Volkswagen Golf Mk4 (1997–2006)**
- **Volkswagen Jetta/Bora Mk4 (1998–2014, depending on market)**
- **Volkswagen New Beetle (1997–2011)**
- **Audi A3 (8L, 1996–2003)**
- **Škoda Octavia Mk1 (1996–2010)**
- **SEAT León Mk1 (1999–2006)**
- **SEAT Toledo Mk2 (1998–2004)**

PQ35 (Compact C-Segment - Golf Mk5/Mk6 Era)

- **Volkswagen Golf Mk5 & Mk6 (2003–2013)**
- **Volkswagen Jetta Mk5 & Mk6 (2005–2018)**
- **Volkswagen Passat B6 (2005–2010, transverse version)**
- **Volkswagen Tiguan (2007–2016)**
- **Audi A3 (8P, 2003–2013)**
- **Škoda Octavia Mk2 (2004–2013)**
- **SEAT León Mk2 (2005–2012)**

PQ46 (Mid-Size D-Segment - Passat/CC Era)

- **Volkswagen Passat B6/B7 (2005–2015, transverse engine layout)**
- **Volkswagen Passat CC / Volkswagen CC (2008–2017)**
- **Škoda Superb Mk2 (2008–2015)**

PQ24 (Older Small Cars - Predecessor to PQ25)

- **Volkswagen Polo Mk4 (2002–2009)**
- **Škoda Fabia Mk1 (1999–2007)**
- **SEAT Ibiza Mk3 (2002–2008)**

PQ Platform Summary

- **PQ25** → Small cars (Polo, Ibiza, A1)
- **PQ34** → Compact cars (Golf Mk4, A3 8L, Octavia Mk1)
- **PQ35** → Compact cars (Golf Mk5/Mk6, Tiguan, A3 8P)
- **PQ46** → Mid-size cars (Passat B6/B7, Superb Mk2)
- **PQ24** → Older small cars (Polo Mk4, Ibiza Mk3)

After **PQ**, Volkswagen introduced the **MQB platform**, which replaced most PQ-based vehicles.

The **MQB platform (Modularer Querbaukasten)** is Volkswagen Group's modular platform for **transverse-engine vehicles**, replacing the old **PQ** platforms. It is highly flexible, used across multiple brands and segments from **compact hatchbacks to SUVs and even vans**.

Main Cars on the MQB Platform

Compact Cars (C-Segment, Golf-Class)

- **Volkswagen Golf Mk7 & Mk8 (2012–present)**
- **Volkswagen Jetta Mk7 (2018–present)**
- **Audi A3 (8V, 8Y) (2012–present)**
- **Škoda Octavia Mk3 & Mk4 (2012–present)**
- **SEAT León Mk3 & Mk4 (2012–present)**
- **Volkswagen Scirocco Mk3 (Facelift, 2014–2017)**

Subcompact Cars (B-Segment, Polo-Class)

- **Volkswagen Polo Mk6 (2017–present)**
- **Audi A1 Mk2 (2018–present)**
- **SEAT Ibiza Mk5 (2017–present)**
- **Škoda Fabia Mk4 (2021–present)**

Midsize and Larger Cars (D-Segment, Passat-Class)

- **Volkswagen Passat B8 (2015–present)**
- **Volkswagen Arteon (2017–present)**
- **Škoda Superb Mk3 (2015–present)**

SUVs and Crossovers

- **Volkswagen Tiguan Mk2 (2016–present)**
- **Volkswagen T-Roc (2017–present)**
- **Volkswagen T-Cross (2018–present)**
- **Audi Q2 (2016–present)**
- **Audi Q3 (2018–present)**
- **Škoda Karoq (2017–present)**
- **Škoda Kodiaq (2016–present)**

- **SEAT Ateca (2016–present)**
- **SEAT Tarraco (2018–present)**

Performance Models (MQB-Based)

- **Volkswagen Golf GTI / Golf R (Mk7 & Mk8)**
- **Audi S3 / RS3 (8V, 8Y)**
- **Cupra León (2020–present)**
- **Cupra Formentor (2020–present)**
- **Škoda Octavia RS (2013–present)**

Vans & Utility Vehicles

- **Volkswagen Caddy Mk4 & Mk5 (2015–present)**
- **Volkswagen Transporter T7 (2021–present, Multivan on MQB platform)**

Summary of MQB

- **Highly Modular** → Used for everything from small hatchbacks to large SUVs.
- **Common Parts** → Standardized engines, transmissions, and electrical systems.
- **Improved Efficiency** → Lighter weight, better fuel economy, and hybrid integration.

The **VW Audi MLB platform** is a modular platform primarily for longitudinally mounted engines in mid-size and full-size vehicles from **Audi, Volkswagen, Porsche, Bentley, and Lamborghini**. Here are the main cars built on the **MLB** and its variations (**MLB Evo**):

Audi Models

- **Audi A4 (B8, B9) (2008–present)**
- **Audi A5 (8T, F5) (2007–present)**
- **Audi A6 (C7, C8) (2011–present)**
- **Audi A7 (C7, C8) (2010–present)**
- **Audi A8 (D4, D5) (2010–present)**
- **Audi Q5 (8R, FY) (2008–present)**
- **Audi Q7 (4M) (2015–present)**
- **Audi Q8 (2018–present)**
- **Audi e-tron SUV (2018–present)**

Volkswagen Models

- **Volkswagen Phideon (China-only luxury sedan, 2016–present)**

Porsche Models (MLB Evo-based SUVs)

- **Porsche Macan (2014–present, shares MLB Evo components)**

Bentley Models

- **Bentley Bentayga (2016–present)**

Lamborghini Models

- **Lamborghini Urus (2018–present)**

Basic Overview of VAG UDS & TP2.0 Protocols in Cars

Volkswagen Auto Group (**VAG**) vehicles use different communication protocols for **diagnostics and ECU communication** over **CAN bus**.

1. TP2.0 (Transport Protocol 2.0) – Older VAG Cars (~2000–2008)

- Used for **CAN-based diagnostics** before **UDS**
- Works with **KWP2000 (ISO 14230) & ISO-15765-2 (CAN bus transport layer)**
- Requires **special handshaking** for communication with ECUs
- Found in **older VW/Audi models (Mk4, early Mk5, B6, early B7, etc.)**
- Supported by **VCDS & some aftermarket tools**

2. UDS (Unified Diagnostic Services, ISO 14229) – Newer VAG Cars (~2008–Present)

- Standardized **modern diagnostic protocol** over **CAN & FlexRay**
- Used for **ECU flashing, diagnostics, and live data**
- More **secure & structured** than TP2.0
- Found in **newer VW/Audi models (Mk6, Mk7, B8, MLB, MQB, etc.)**
- Supported by **ODIS, VCDS (partially), and professional tools**

Comparison

Feature	**TP2.0**	**UDS**
Used in	2000–2008 VAG	2008+ VAG
Protocol	ISO-15765-2 (CAN)	ISO-14229 (UDS)
Speed	Slower	Faster
Security	Basic	Enhanced
ECU Flashing	Limited	Full support
Diagnostics	Legacy tools	Modern tools (ODIS, VCDS, etc.)