LEO DRIVE

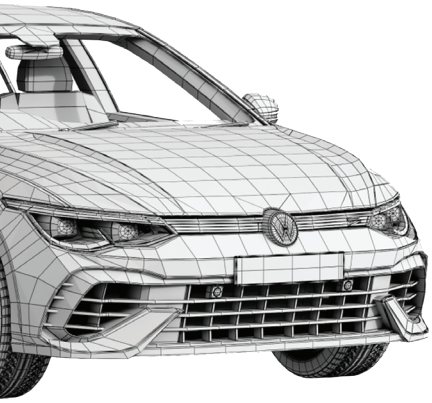
GATE VCU

GATE VCU effectively manages messages within the car's network (CAN) by using the built-in advanced driver help features (ADAS) of the integrated vehicle. This integration facilitates seamless drive-by-wire vehicle functionality, eliminating the requirement for additional actuators installation for brake or steering.

Compatibility

Compatible with various models from Audi, Ford, SEAT, Škoda, and Volkswagen. Specifically tested on **Volkswagen Golf Mk8** and **Cupra Formentor**, with extensibility to other MQB Evo platform models. Compatibility involves comprehensive functional and performance evaluations to ensure seamless integration.

- Audi A3 Mk4 (2020–present)*
- Audi Q6 (2022–present)*
- Cupra Formentor (2021–present) - **Tested**
- SEAT León Mk4 (2020–present)*
- Škoda Superb Mk4 (2023–present)*
- Škoda Octavia Mk4 (2020–present)*
- Škoda Kodiaq Mk2 (2023–present)*
- Ford Tourneo Connect Mk3 (2022–present)*
- Volkswagen Multivan (T7) (2022–present)*
- Volkswagen Passat (B9) (2023–present)*
- Volkswagen Tiguan Mk3 (2023–present)*
- Volkswagen Caddy Mk4 (2020–present)*
- Volkswagen Golf Mk8 (2019–present) - **Tested**



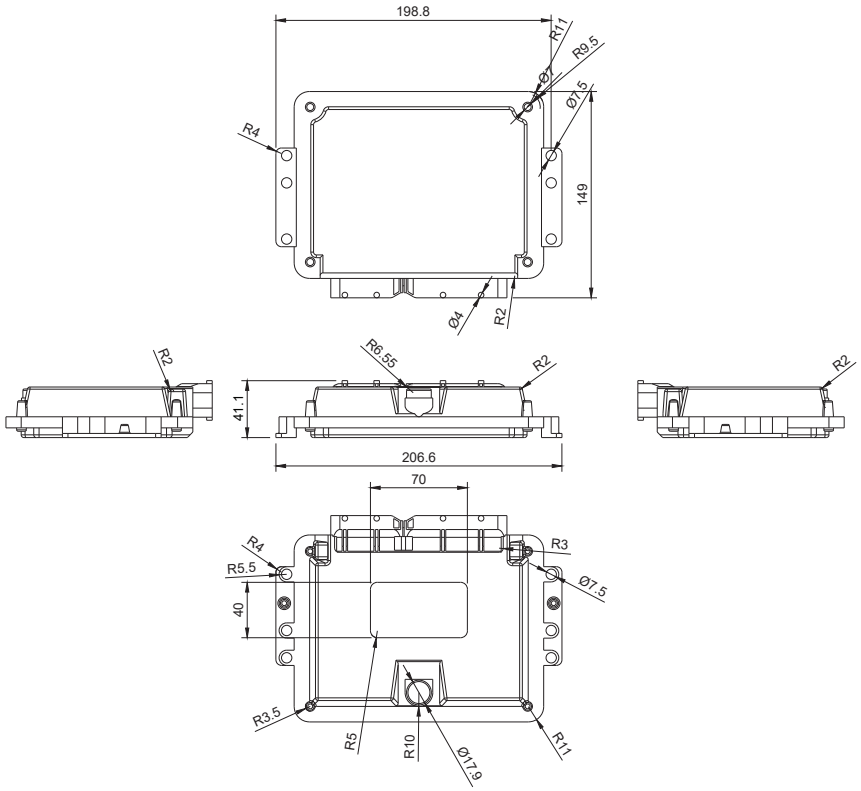
The system is also extensible to other car models built on the MQB Evo platform.

Technical Specifications

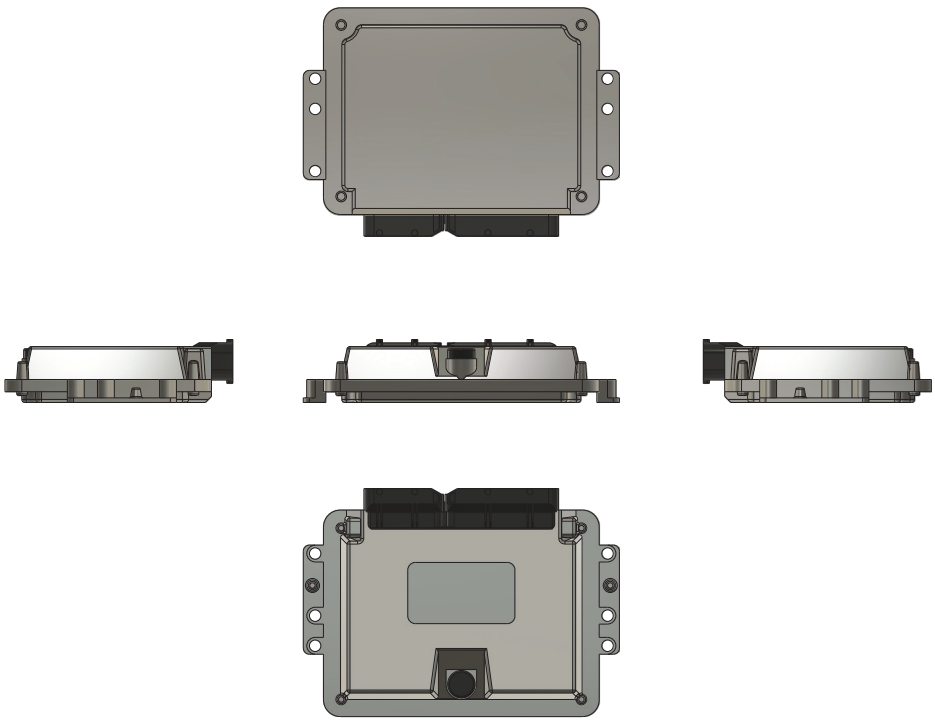
Processor	ST SPC58EG80E5 Dual Core 180 MHz	Power Consumption	~5W, Varying with Operational Load
Memory	768 kB RAM	Operating Voltage	9-32V
Storage	4 MB Flash	Operating Temperature	-40°C to 100°C
Inputs	12 Digital Input 10 Analog Input	Dimension	207x150x42mm
		Weight	≤700g
Outputs	5 High-Side Driver (1A PWM Capable) 10 Low-Side Driver (1A PWM Capable) 2 Analog Output	Housing	Die-casting Aluminum
		Connections	8 CANFD for high-speed networking. 4 LIN for local interconnect networks.

Mechanical Drawings

Box



Visual



Functions

System Capabilities

Controlling vehicle systems like steering, throttle, and brakes enhances safety and driving comfort. System capabilities provides:

- Steering Wheel Angle and Torque Limitation
- Throttle Control
- Brake and Emergency Brake Control
- Handbrake Control
- Gear Selection (DNRP)
- Lighting and Signal Operations (Blinkers, Hazard Light, High Beam, Flasher, Horn)
- Environmental Controls (Window Adjustment, Central Lock, Windshield Wiper)

Vehicle Status Messages

Critical parameters of the vehicle that can be monitored in real-time are as follows:

Steering Wheel	Angle Rate Driver Applied Torque
Throttle	Pedal Position
Motor	Torque RPM
Brake	Hydraulic Pressure Brake Pedal Position
Handbrake	Status
Gear	Level Status Position (DNRP)
Vehicle Dynamics	Individual Wheel Speeds Lateral Acceleration Longitudinal Acceleration Vehicle Mass Estimation Vehicle Pitch Value
Fuel	Level

Software

The embedded software runs on a Real Time Operating System (RTOS) designed to provide high reliability and performance in automotive applications. Software includes features like task management, timing, and network communication optimizations.

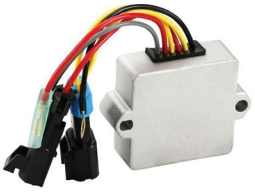
Product Package Content

GATE VCU

A unit to monitor and control the operations and functions of the vehicle.

Harness

The harness includes automotive connectors and wiring harness for easy installation. It also includes an interception relay to manage the CAN traffic of the vehicle.



E-Stop w/Mode Switch

It has an emergency stop button and mode switching feature and is designed to fit in vehicle cup holders.

Peak Systems - CAN FD Adapter (Optional)

The CAN FD adapter PCAN-USB FD allows the connection of CAN FD and CAN networks to a computer via USB.

Sony Corporation - Dualshock 4 V2 Controller (Optional)

A joystick is provided for the in-vehicle testing of X-By-Wire systems. A ROS2 driver is available, facilitating easy integration with the autonomous vehicle computer.

We are dedicated to transforming the transportation sector by leveraging our expertise in developing state-of-the-art autonomous vehicles. Since our establishment in 2015, we have followed a co-creation and design-win approach to customize our solutions according to the unique needs of our customers.

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