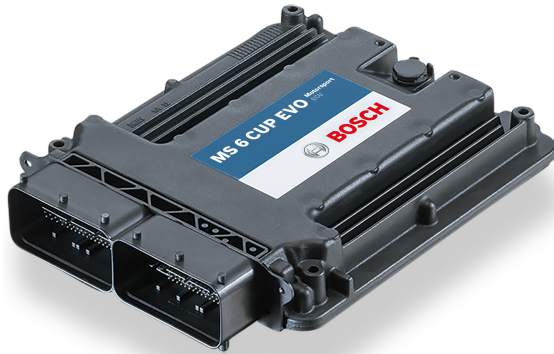


Engine Control Unit MS 6 CUP EVO



The MS 6 CUP EVO engine control unit manages gasoline engines up to 4 cylinders. As a member of our MS 6 family it features a powerful digital processing core with floating point arithmetic and a high-end FPGA for ultimate performance and flexibility. The MS 6 family utilizes a new software development process based on MATLAB/Simulink which significantly speeds algorithm development by using automatic code and documentation generation. Custom functions can be quickly and easily generated. The flexible hardware design allows the MS 6 CUP EVO to support complex or unusual engine or chassis configurations.

Application

High pressure injection

- Max. 4 cylinders up to 12,500 rpm

Low pressure injection

- Max. 4 cylinders up to 12,500 rpm

Ignition

- 4 x ignition control, IGBT or BJT, coils with integrated amplifier

Physical engine model for fast application

- determine engine load by throttle position or air pressure signals
- mixture control and basic ignition guided by main signal relative load rl
- Subsystems pit speed-, launch-, rpm-limiter and ASR are integrated inside torque control
- Separated power cut functions to assist various gear cut systems
- Diagnostics
- Integrated safety strategy for 1 electronic throttle control

Integrated support of manual gearshift

- ▶ Delivery for OEM with project-specific program status
- ▶ HP package for 4-cylinder engines
- ▶ 8 GB memory
- ▶ SENT sensor support

Electronic throttle control

Variable Valve Timing VVT

Turbo control

Traction control

Launch control

LTE Ethernet telemetry support

Internal logger Partition 1

- 4 GB memory
- 100 free configurable channels, 20 Hz sampling rate
- FULL_LOG_1 (1,500 channels/1 kHz sampling rate on Partition 1) optional

Internal logger Partition 2

- 4 GB memory
- 200 free configurable channels, 50 Hz sampling rate
- FULL_LOG_2 (1,500 channels/1 kHz sampling rate on Partition 2) optional

Logging rates

- Usage of all features: 300 kB/s
- Primary logging use case: 600 kB/s
- Logging data download rate: up to 4 MB/s

Technical Specifications

Mechanical Data

Aluminum housing	
2 Bosch connectors	196 pins in total
Size	226 x 181 x 44 mm
Weight	1,086 g
Protection Classification	IP54
Temp. range (at internal sensors)	-20 to 80°C

Electrical Data

Power supply	6 to 18 V
CPU	Dual Core 667 MHz, FPGA

Inputs

26 analog inputs

- 4 x reserved for electronic throttle controls
- 5 x no integrated pull-up
- 3 x option for angle synchronous measurement, no integrated pull-up
- 4 x fixed 3.01 kOhm pull-up
- 10 x switchable 3.01 kOhm pull-up

6 internal measurements

- 1 x ambient pressure
- 1 x acceleration 6-axis
- 2 x ECU temperature
- 2 x ECU voltage

4 function related inputs

- 1 x Thermocouple exhaust gas temperature sensor (K-type)
- 1 x Lambda interface for LSU 4.9 sensor type
- 2 x Knock sensors

18 digital inputs

- 1 x switchable Hall or inductive sensor for flywheel measurement
- 2 x Hall sensor for sync wheel detection
- 4 x switchable Hall or DF11 sensors for camshaft position or wheel speed
- 2 x switchable Hall or inductive sensors for turbo speed measurement
- 1 x digital switch Engine ON/OFF
- 8 x digital, e.g. SENT

Sensor supplies and screens

- 4 x sensor supplies 5 V, 50 mA
- 3 x sensor supplies 5 V, 150 mA
- 7 x sensor grounds
- 2 x sensor screens

Outputs

15 function related outputs

- High Pressure Injection
 - 4 x controls, magnetic injectors
 - 1 x high pressure pump with MSV control
- Low Pressure Injection
 - 4 x controls, high impedance injectors
- Ignition
 - 4 x controls, IGBT or BJT, coils with integrated amplifier
- 1 x 8.5 A H-bridge reserved for electronic throttle

- 1 x 4 A pwm lowside switch for Lambda heater

13 freely configurable outputs

- 2 x 8.5 A H-bridge
- 1 x 4 A pwm lowside switch
- 2 x 3 A pwm lowside switch
- 5 x 2.2 A pwm lowside switch
- 3 x 1 A pwm lowside switch

3 outputs signals

- 1 x engine rpm
- 1 x flywheel
- 1 x trigger wheel

Software Tools (free download)

- Data Analysis tool WinDarab V7
- System Configuration tool RaceCon 2.7.0.9 or later

Mating Connectors (not included)

- Mating Connector 91 pins F02U.B00.711-01
- Mating Connector 105 pins F02U.B00.712-01

Norms

Product Safety

- EN IEC 62368-1:2020+A11:2020

Materials

- REACH - Nr. 1907/2006

EMC

- UNECE10:rev.6/AMD1:2020
- KN41
- ISO11452-2
- ISO11452-4
- ISO10605
- ISO7637-2
- ISO7367-3
- ISO16750-2
- US FCC: Title 47, Part 15 Subpart B
- ICES-003

Testing

- SAEJ1211

Communication

- 2 Ethernet
- 3 CAN
- 1 LIN
- 8 SENT
- 1 RS232
- 1 Time sync synchronization Ethernet

3 Communication screens

Installation Notes

Maintenance Interval: 220 h or a maximum of two years

Depending on your experiences with calibration of ECUs, we recommend calibration support from Bosch Motorsport.

Please remember that the mating connectors and the programming interface MSA-Box II are not included and must be ordered separately.

Legal Restrictions

The sale of this product in Mexico is prohibited. Due to embargo restrictions, sale of this product in Russia, Belarus, Iran, Syria, and North Korea is prohibited.

Upgrades

CCA Hardware Upgrade per device

Provides the option to run customer developed software code on Bosch ECU

FULL_LOG_1

Extension for Partition 1

- 1,500 channels
- 1 kHz sampling rate

FULL_LOG_2

Extension for Partition 2

- 1,500 channels
- 1 kHz sampling rate

Gear Control

Project individual option

Innovation License Device

Activation of a set of additional functions for a single device:

- Crank rotation direction detection (using sensor DG23i)
- Using a 2nd crank backup sensor
- Crank-Pre-set, quick start based on previous crank stop position
- Far-Bank, 2nd injector per cylinder possible

- Cam-only-synchronisation, engine run without crank sensor signal (specific cam trigger wheel needed)

Innovation Package Project

Innovation Package Project has the same content as Innovation License Device, but license is valid for the whole project instead of a single device

DATA_USB

Data copy to USB flash drive

Ordering Information

Engine Control Unit MS 6 CUP EVO

Order number **F02U.V03.111-01**

Rugged USB flash drive

Order number **F02U.V03.534-01**

Connector for USB flash drive on car loom side

Order number **F02U.002.996-01**

Adapter cable to PC USB-Port

Order number **F02U.V01.343-01**

Software Options

CCA Hardware Upgrade per device

Order number **F02U.V02.137-01**

FULL_LOG_1

Order number **F02U.V02.304-01**

FULL_LOG_2

Order number **F02U.V02.305-01**

Gear Control

Order number **on request**

Innovation License Device

Order number **F02U.V02.510-01**

Innovation Package Project

Order number **F02U.V02.511-01**

DATA_USB

Order number **F02U.V03.476-01**

Accessories

Breakout Box BOB MS 6 EVO

Order number **F02U.V02.294-02**

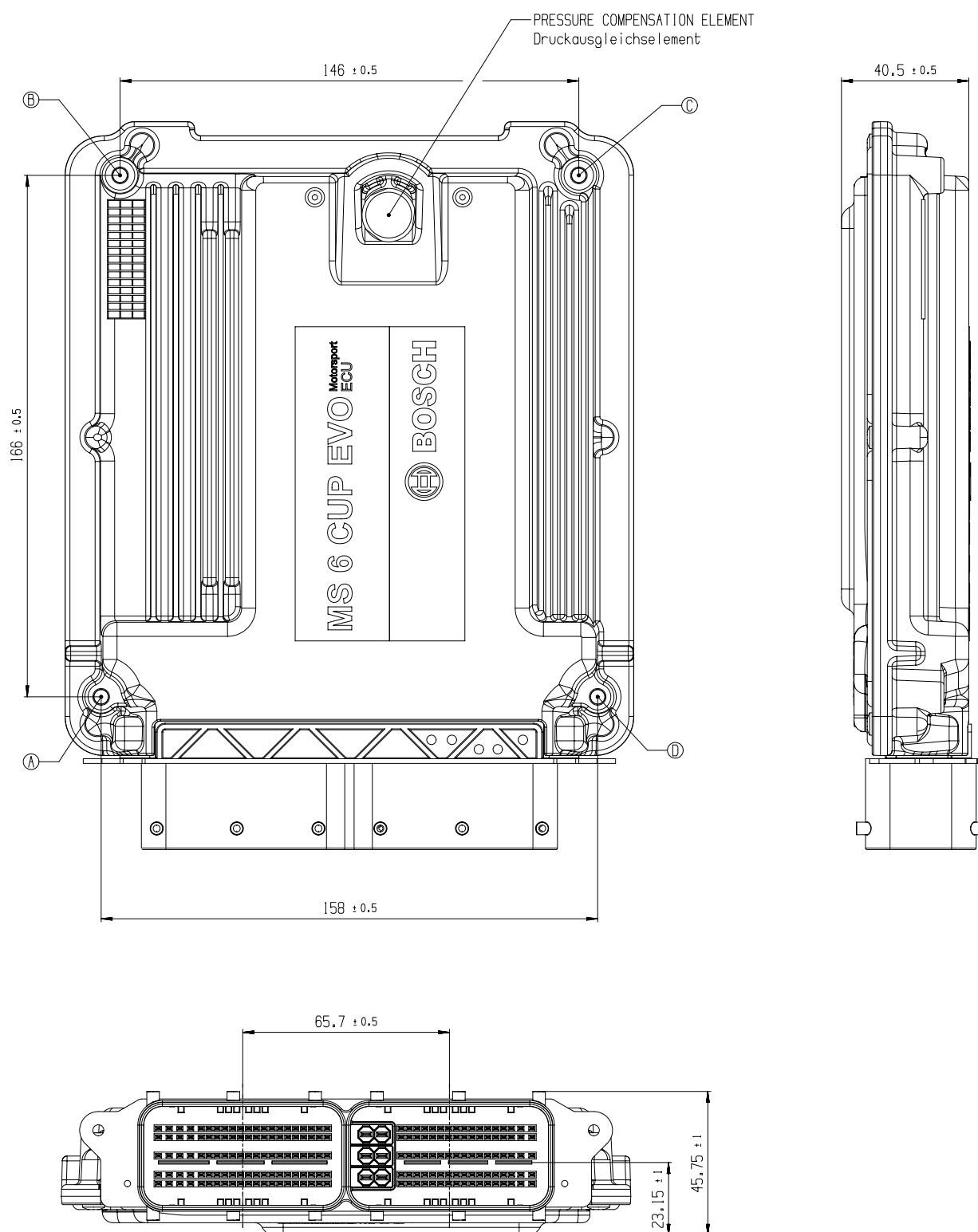
Mating Connector 91 pins

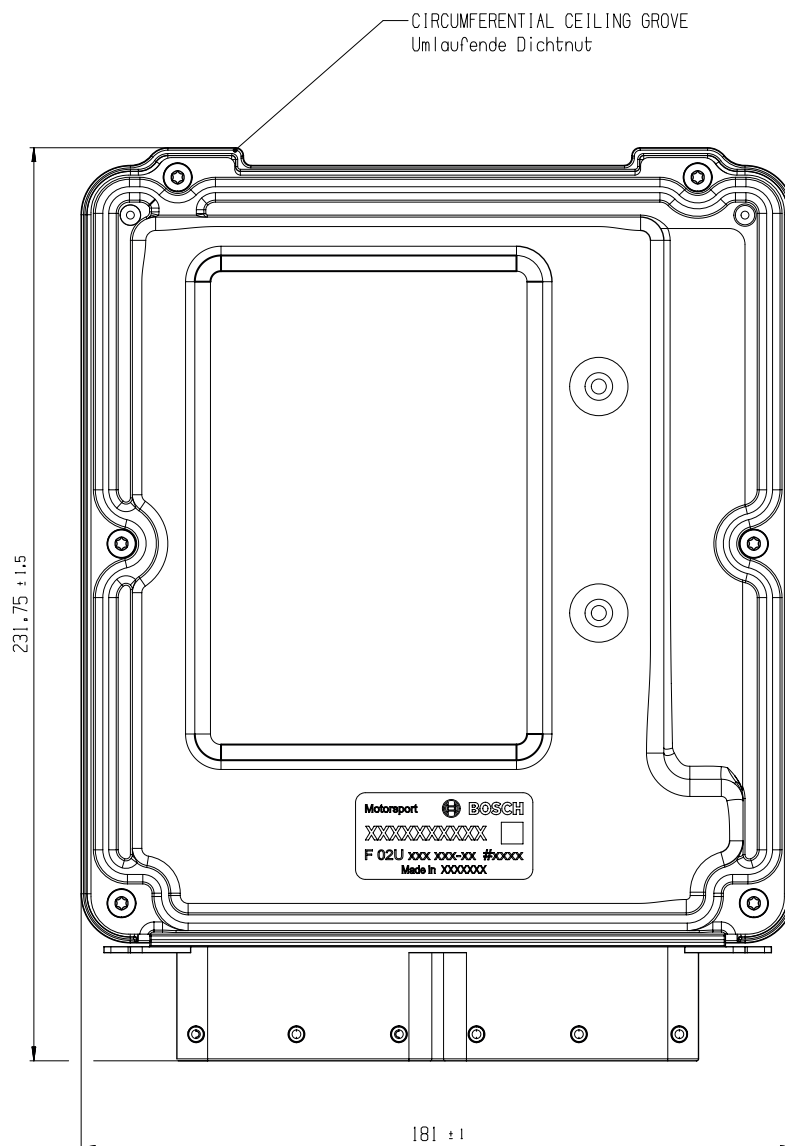
Order number **F02U.B00.711-01**

Mating Connector 105 pins

Order number **F02U.B00.712-01**

Dimensions



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