

Engine Control Unit MS 6 CUP EVO



- ▶ Delivery for OEM with project-specific program status
- ▶ HP package for 4 cylinder engines
- ▶ Supports Customer Code Area CCA
- ▶ 8 GB memory
- ▶ SENT support

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 r/l
- 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

Electronic throttle control

VVT

Turbo control

Traction control

Launch control

LTE Ethernet telemetry support

Internal logger Partition 1

- 4 GB memory
- 100 free configurable channels, 20 Hz

Internal logger Partition 2

- 4 GB memory
- 200 free configurable channels, 50 Hz

Logging rate

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

Logger Options

See Upgrades

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
- 1 USB
- 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.

Booster extension (HPI5)

Application notes avl. for Bosch HDP5- and Hitachi Gen3 pumps. Hitachi Gen1 notes on request. Additional booster connectable to support 9 to 12 cylinders or to realize higher rpm

Application

Configurable flywheel- and trigger disc geometries, Selectable links between functions and in- or outputs

Function documentation

Automatically created during code generation

MatLab code generation

Support for customer own MatLab function development

Legal Restrictions

The sale of this product in Mexico is prohibited.

Upgrades

Hardware Upgrade for CCA per device

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

FULL_LOG_1

Extension for Partition 1

- 1,500 channels
- fastest sampling 1,000 Hz or 1 syncro

FULL_LOG_2

Extension for Partition 2

- 1,500 channels
- fastest sampling 1,000 Hz or 1 syncro
- long-term recording
- own data protection code

USB_DATA

Rugged USB flash drive Bosch File System (BFS) format, works with Bosch File System (BFS) preformatted USB flash drive only

Adapter cable to PC USB-Port

Mating connector for USB flash drive on car loom side

SW licence USB-Port unlocked

Gear Control

Project individual option

Innovation License Device

Activation of engine speed functions* and near/far injection function per unit

Innovation Package Project

Activation of engine speed functions* and near/far injection function per project version

*Engine speed functions: second or backup engine speed sensor, quick engine start, detection of engine reverse rotation

Ordering Information

Engine Control Unit MS 6 CUP EVO

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

Software Options

Hardware Upgrade for CCA 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**

Accessories

USB_DATA

Order number **F02U.V02.214-01**

Breakout Box BOB MS 6 EVO

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

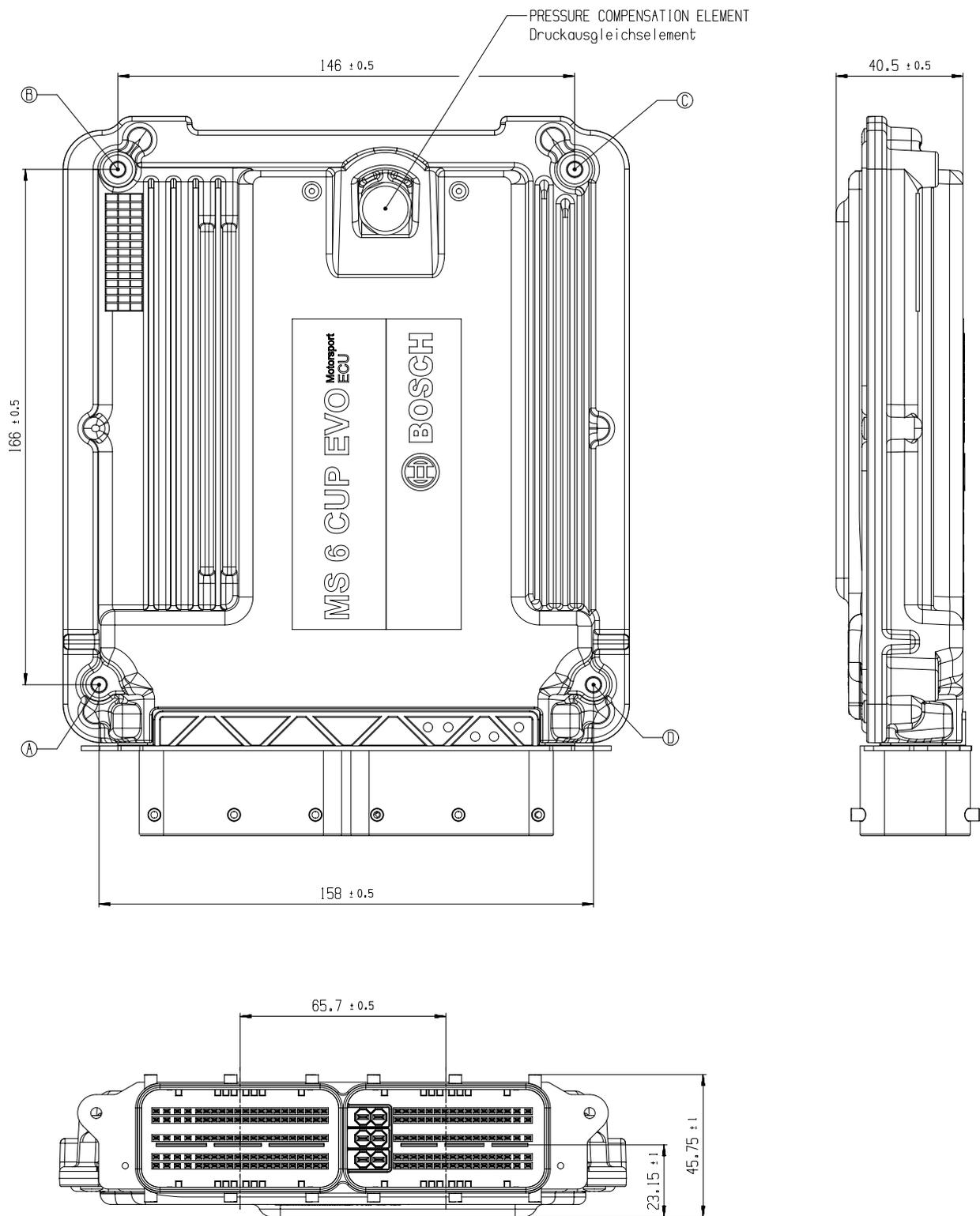
Mating Connector 91 pins

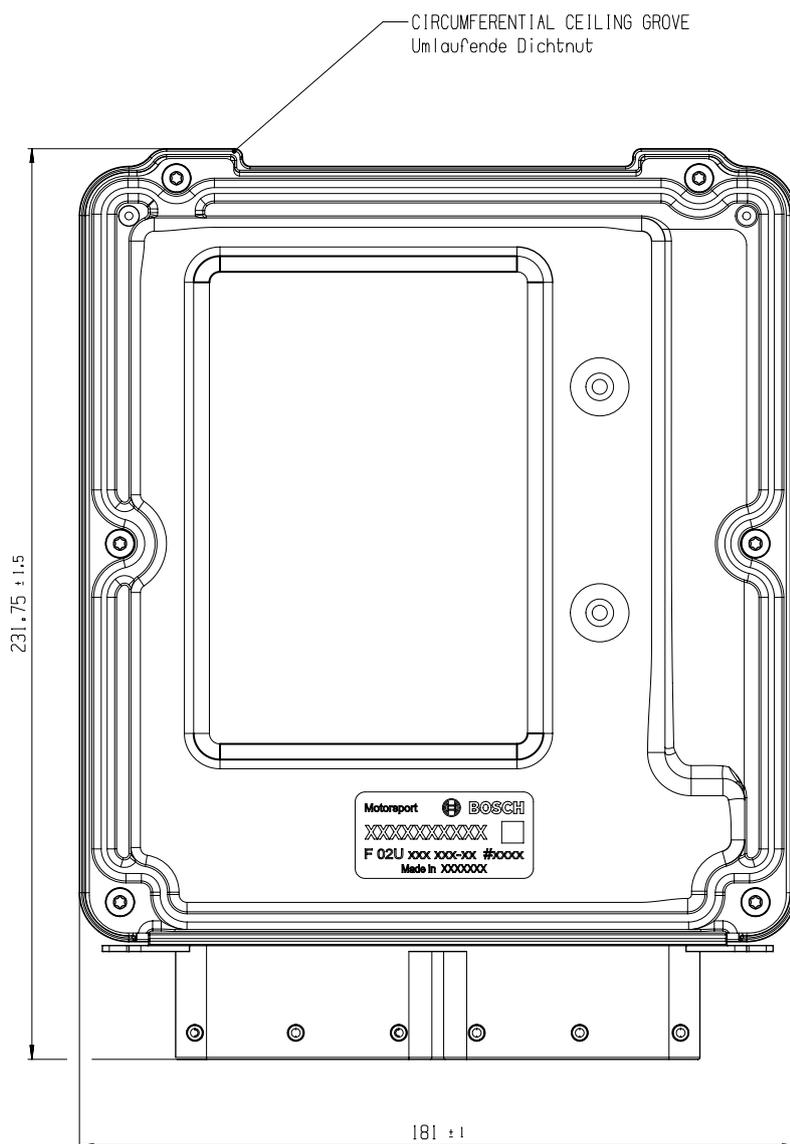
Order number **F02U.B00.711-01**

Mating Connector 105 pins

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

Dimensions





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