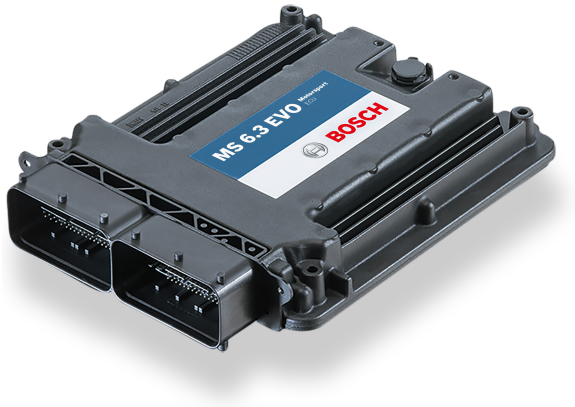
Engine Control Unit MS 6.3 EVO



- Optimized for low- and high-pressure injection
- Measurement with 21 analog inputs
- 4 GB memory plus 4 GB upgrade
- SENT sensor support

The MS 6.3 EVO engine control unit manages gasoline engines up to 12 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 6.3 EVO to support complex or unusual engine or chassis configurations.

Application

High pressure injection

Integrated power stages for the use of:
- 4 cylinders up to 12,500 rpm
- 6 cylinders up to 9,500 rpm
- 8 cylinders up to 8,500 rpm

(depending on injection types and pressure ranges)

Low pressure injection
- Max. 12 cylinders up to 12,500 rpm, high impedance injectors only

Ignition
- 12 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 2 electronic throttle controls

Integrated support of manual gearshift

Electronic throttle control

Variable Valve Timing VVT

Turbo control

Traction control

Launch control

LTE Ethernet telemetry support

Internal logger
- 4 GB memory on Partition 1 enabled
- 100 free configurable channels, 20 Hz
- FULL_LOG_1 (1,500 channels/1 kHz sampling rate on Partition 1) optional
- FULL_LOG_2 (4 GB memory/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

21 analog inputs

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

8 function related inputs

- 1 x Thermocouple exhaust gas temperature sensors (K-type)
- 2 x Lambda interfaces for LSU 4.9 sensor types
- 1 x Lap trigger/beacon input
- 4 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 for 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

38 function related outputs

High Pressure Injection

- 2 x high pressure pump with MSV control
- 8 x high pressure injection for magnetic injectors

Low Pressure Injection

- 12 x 2.2 A low pressure injection for high impedance injectors

Ignition

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

2 x 8.5 A H-bridge reserved for electronic throttle

2 x 4 A pwm lowside switch for Lambda heater

19 freely configurable outputs

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

3 output 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

High Pressure Injection Package

Enables the control of a 2nd high pressure pump

Measurement Package

17 Additional analogue inputs
- 7 x no integrated pull-up
- 1 x option for angle synchronous measurement, no integrated pull-up
- 1 x fixed 3.01 kOhm pull-up
- 8 x switchable 3.01 kOhm pull-up

Extension of the use of 8 digital channels as analogue / digital inputs (shared)

1 Additional function related inputs
- 1 x Thermocouple K-type

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

Activation of Partition 2
- 1,500 channels
- 1 kHz sampling rate
- 4 GB memory

Gear Control Package 1

Gear control MEGA-Line functionality, has to be used with MEGA-Line components (License model via MEGA-Line)

-- Link to MEGA-Line Support Request --

-- Link to MEGA-Line License Request Form --

Gear Control Package 2

Gear control Bosch Motorsport functionality

SW Package MS 6 Drag 1

- Launch Timer
- Launch Distance
- Torque Pre-Control
- Launch RPM Control
- Universal Outputs for Time/Distance Controls

SW Package MS 6 Drag 2 (requires Drag 1 License)

- Acceleration Sensor MM5.10 included
- Time/Distance Boost Control
- Driveshaft Speed Control
- Driveshaft Gradient Control
- Acceleration Control
- Wheelie Control

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 6.3 EVO
Order number **F02U.V03.110-01**

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

High Pressure Injection Package
Order number **F02U.V01.999-01**

Measurement Package

Order number **F02U.V02.000-01**

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 Package 1
Order number **please contact MEGA-Line**

Gear Control Package 2
Order number **F02U.V02.108-01**

SW Package MS 6 Drag 1
Order number **F02U.V0U.409-01**

SW Package MS 6 Drag 2
Order number **F02U.V0U.410-01**

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**

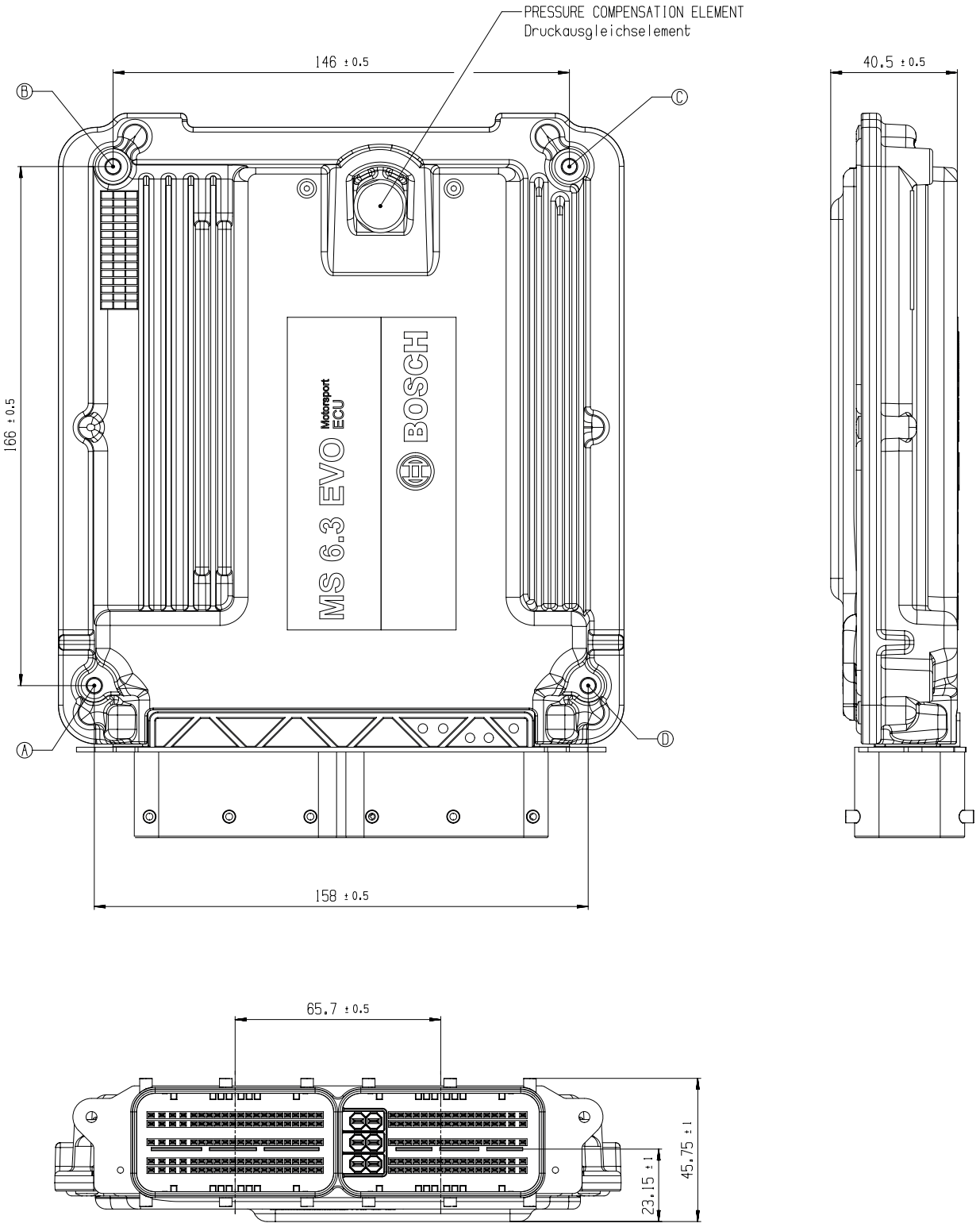
Accessories

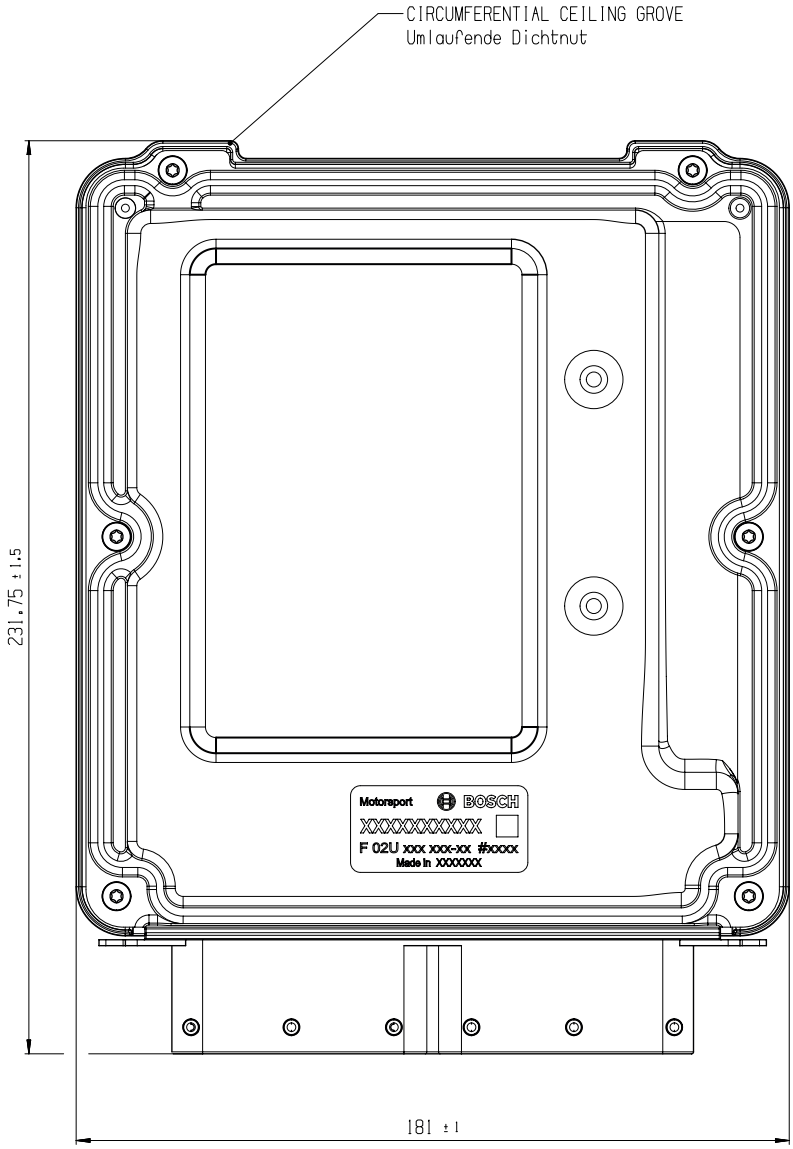
Breakout Box BOB MS 6 EVO
Order number **F02U.V02.294-02**

Mating Connector 91 pins
Order number **F02U.B00.711-01**

Mating Connector 105 pins
Order number **F02U.B00.712-01**

Dimensions


PRESSURE COMPENSATION ELEMENT
Druckausgleichselement
146 ±0.5
40.5 ±0.5
166 ±0.5
MS 6.3 EVO
Motorsport ECU
BOSCH
158 ±0.5
65.7 ±0.5
23.15 ±1
45.75 ±1



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