

Engine Control Unit MS 6.4 EVO



- ▶ Optimized for low and high pressure injection
- ▶ Measurement with 38 analog inputs
- ▶ Supports Customer Code Area CCA
- ▶ 4 GB memory plus 4 GB upgrade
- ▶ SENT support

The MS 6.4 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 6.4 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 injection types and pressure ranges)

HP package for flat and V-engines inclusive (2nd Bank, MSV2, cylinder 7&8, external cylinder 9-12)

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 rI
- 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

VVT

Turbo control

Traction control

Launch control

LTE Ethernet telemetry support

Internal logger

- 4 GB memory on partition 1 (standard)
- Plus 4 GB memory on partition 2 (optional)
- 100 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

38 analog inputs

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

8 analog/digital inputs (shared)

8 x option for angle synchronous measurement / digital (e.g. SENT)

6 internal measurements

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

9 function related inputs

2 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

10 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

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
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

Activation of Partition 2

- 1,500 channels
- 4 GB memory
- 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 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 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 6.4 EVO

Order number **F02U.V03.114-01**

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 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**

Accessories

USB_DATA

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

Breakout Box BOB MS 6 EVO

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

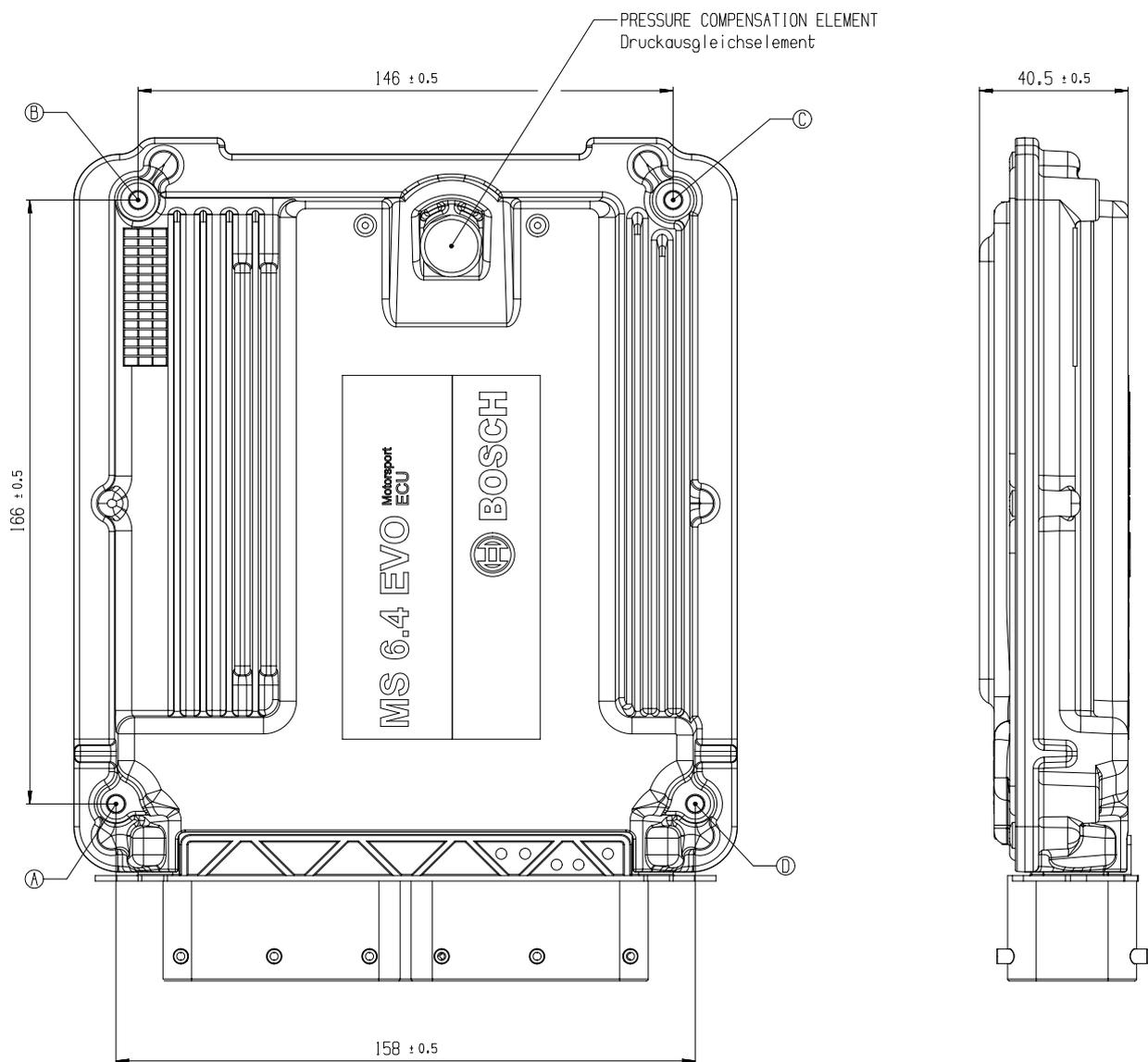
Mating Connector 91 pins

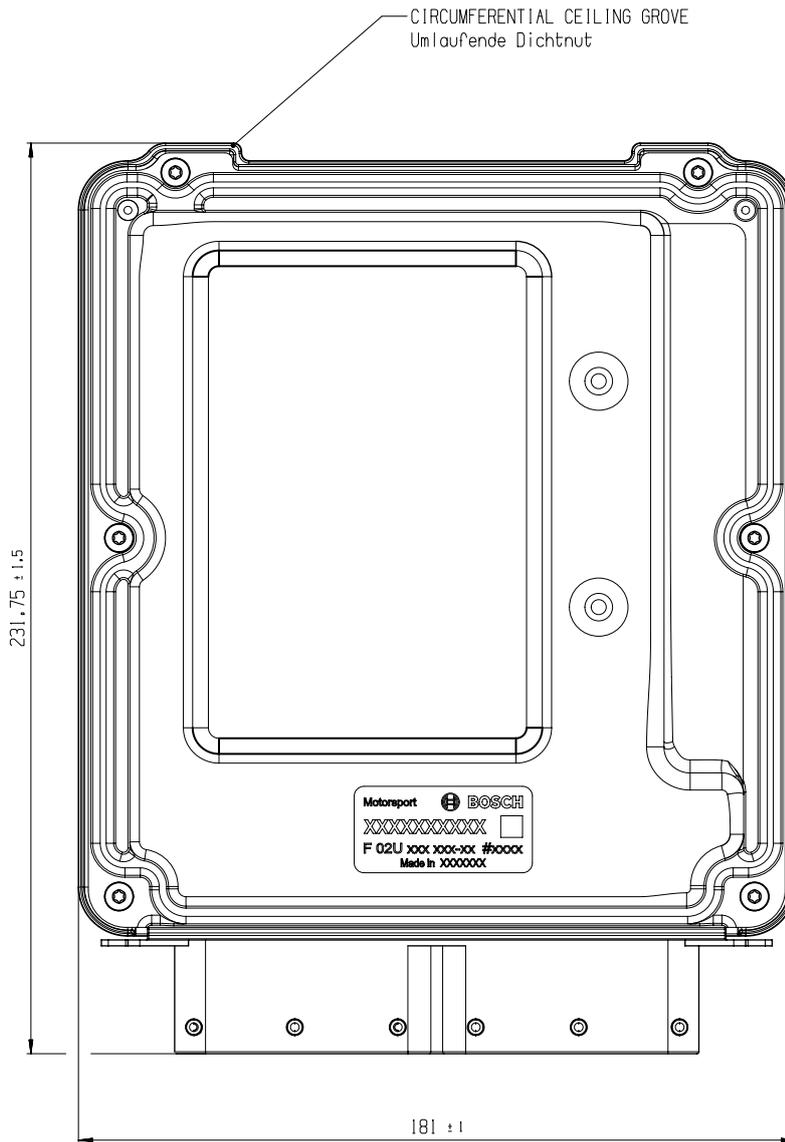
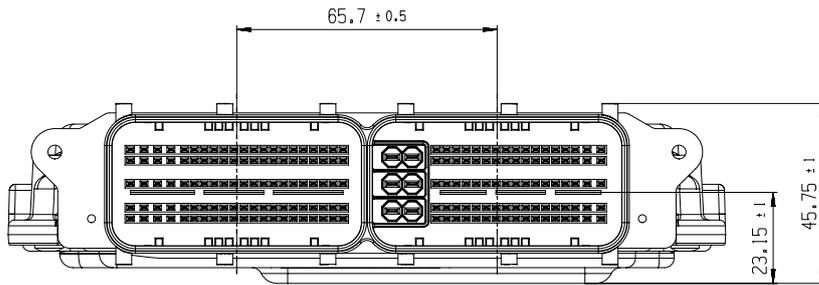
Order number **F02U.B00.711-01**

Mating Connector 105 pins

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

Dimensions





Represented by:

Europe:
Bosch Engineering GmbH
Motorsport
Robert-Bosch-Allee 1
74232 Abstatt
Germany
Tel.: +49 7062 911 9101
Fax: +49 7062 911 79104
motorsport@bosch.com
www.bosch-motorsport.de

North America:
Bosch Engineering North America
Motorsport
38000 Hills Tech Drive
Farmington Hills, MI 48331-3417
United States of America
Tel.: +1 248 876 2977
Fax: +1 248 876 7373
motorsport@bosch.com
www.bosch-motorsport.com

Asia-Pacific:
Bosch Engineering Japan K.K.
Motorsport
18F Queen's Tower C, 2-3-5 Minato
Mirai Nishi-ku, Yokohama-shi
Kanagawa 220-6218
Japan
Tel.: +81 45 650 5610
Fax: +81 45 650 5611
www.bosch-motorsport.jp

Australia, New Zealand and South Africa:
Robert Bosch Pty. Ltd
Motorsport
1555 Centre Road
Clayton, Victoria, 3168
Australia
Tel.: +61 (3) 9541 3901
motor.sport@au.bosch.com