Engine Control Unit MS 6.4P EVO

▶ 866 MHz Dual Core Processor for projects with high performance demand

▶ Supports Customer Code Area CCA

▶ 4 GB memory plus 16 GB upgrade

▶ SENT support

The MS 6.4P EVO engine control unit manages gasoline engines up to 12 cylinders. The MS 6 family provides high control performance, logging capabilities and an extensive feature set to improve performance in your application. It features a powerful digital processing core and a high-end FPGA for ultimate performance and flexibility. Custom functions can be provided quickly and easily as a service or implemented as customer code with MATLAB/Simulink. The MS 6 family is fully integrated into the Bosch Motorsport system architecture.
Hint: Specific Software Version for MS 6.4P EVO needed, not compatible with MS 6.4 EVO software.

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 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

VVT

Turbo control

Traction control

Launch control

LTE Ethernet telemetry support

Internal logger
- 4 GB memory on partition 1 (standard)
- 16 GB memory on partition 1 (optional)
- Plus 4 GB memory on partition 2 (optional)
- 100 free configurable channels, 20 Hz

Logging rate
- Usage of all features: 400 kB/s
- Primary logging use case: 800 kB/s
- Logging data download rate: up to 5 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)	0 to 80°C

Electrical Data

Power supply	6 to 18 V
CPU	Dual Core 866 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

PERF_LOG_1 (requires FULL_LOG_1)

Increase logging partition 1 from 4 GB to 16 GB memory

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

Specific project SW for MS 6.4P EVO, based on MS 6.4 EVO SW, offered as engineering service

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 6.4P EVO
Order number **F02U.V03.112-01**

Engine Control Unit MS 6 EVO RX
FIA-homologated version for WRX Championship
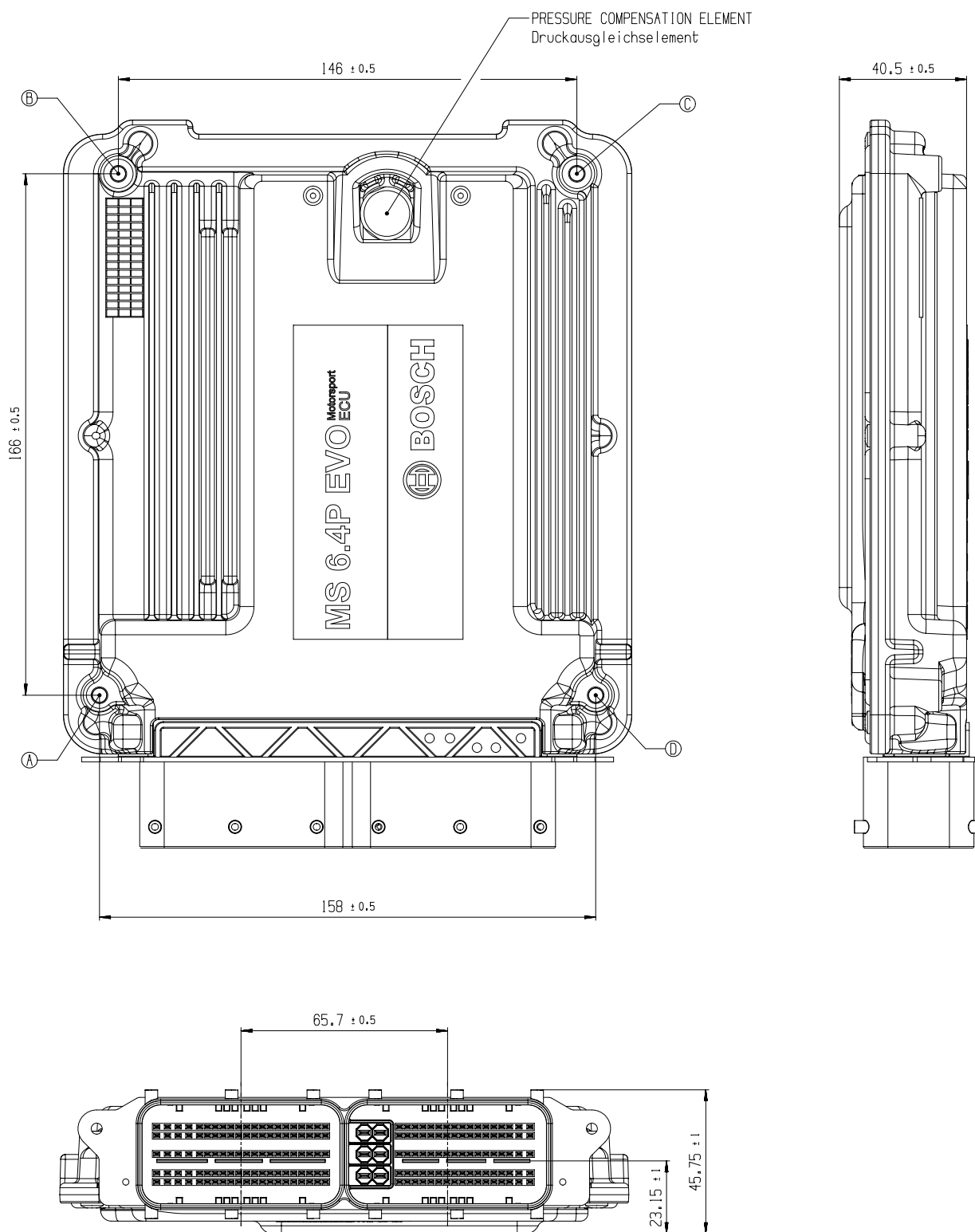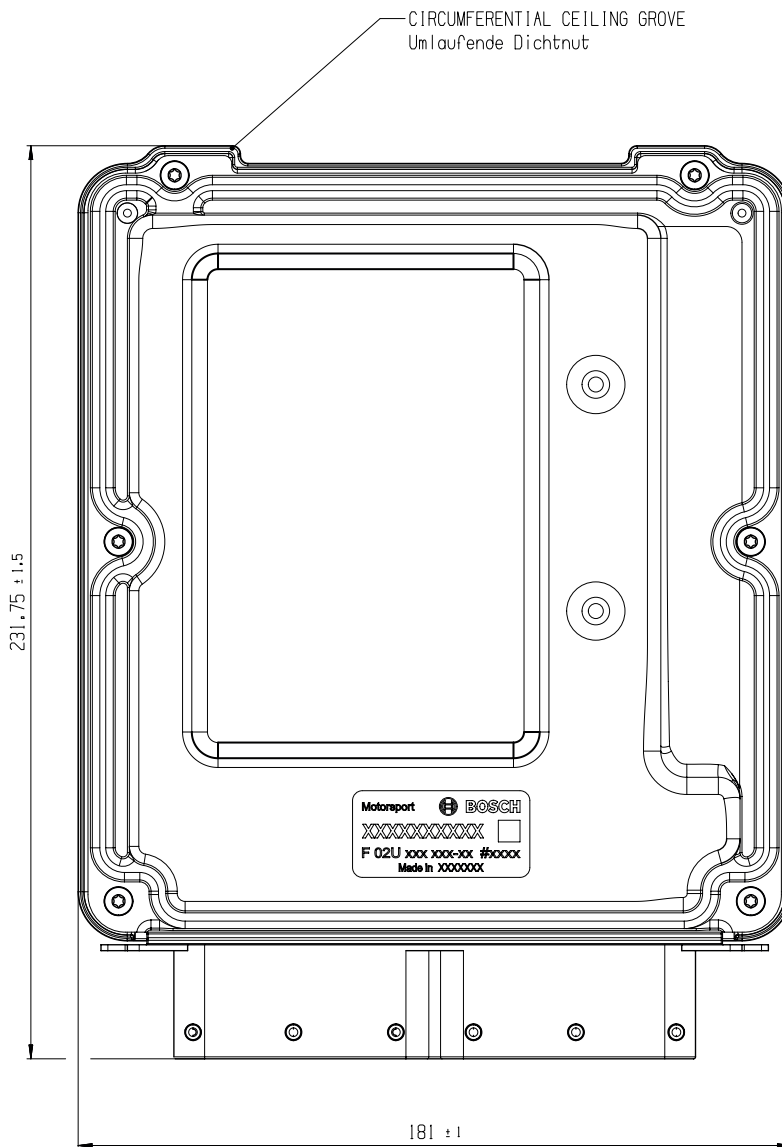Order number **on request**

Software Options

Hardware Upgrade for CCA per device
Order number **F02U.V02.137-01**

FULL_LOG_1
Order number **F02U.V02.304-01**

PERF_LOG_1
Order number **F02U.V03.054-01**

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**

Specific project SW for MS 6.4 Performance, based on MS 6.4 SW, offered as engineering service
Order number **on request**

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

PRESSURE COMPENSATION ELEMENT
Druckausgleichselement

146 ±0.5

166 ±0.5

158 ±0.5

40.5 ±0.5

MS 6.4P EVO Motorsport ECU

BOSCH

65.7 ±0.5

45.75 ±1

23.15 ±1

CIRCUMFERENTIAL CEILING GROVE
Umlaufende Dichtnut

231.75 ±1.5

181 ±1