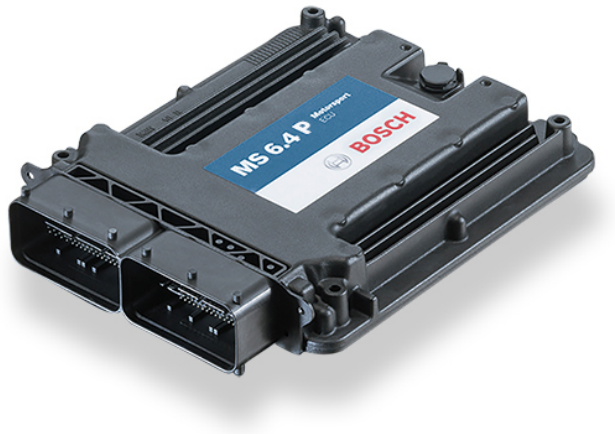
Engine Control Unit MS 6.4 Performance



- Increased computation power for projects with high performance demand
- Optimized for low and high pressure injection
- HP package for flat and V-engines inclusive
- Measurement with 41 analog inputs
- Multiple Software options available

The MS 6.4 Performance 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 6.4 Performance needed, not compatible with MS 6.4 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
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 several 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	
Internal logger	Partition 1, 1 GB memory, diagnostic channels, 100 free configurable channels, fastest sampling 20 Hz, digital filter respecting sampling theorem
Logger options	See Software Options (not included)

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

Communication

2 Ethernet
3 CAN
1 LIN
1 USB
1 RS232
1 Time sync synchronization Ethernet
3 Network screens

Inputs

Analog inputs	41
Internal measurement	1 triax acceleration 1 ambient pressure 2 ECU temperature 2 ECU voltage
Thermocouple	2 K-type
Lambda	2 LSU 4.9
Knock	4
Digital inputs	9
Digital switch Engine ON/OFF	1
Power supplies	4 sensor supplies 5 V, 50 mA 3 sensor supplies 5 V, 150 mA 7 sensor grounds 2 sensor screens

Outputs

Outputs	2 x high pressure pump with MSV control 8 x high pressure injection for magnetic injectors
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)
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
Low pressure injection	Max. 12 cylinders up to 12,500 rpm, high impedance injectors only
Ignition	Max. 12 cylinders, coils with integrated amplifier
Further outputs	2 x 4 amp pwm lowside switch 2 x 4 amp pwm lowside switch for Lambda heater 4 x 3 amp pwm lowside switch 8 x 2.2 amp pwm lowside switch 2 x 1 amp pwm lowside switch 2 x 1 amp pwm lowside switch low dump resistant 3 x 8,5 amp H-bridge (2 reserved for electronic throttle) 12 x low pressure injection for high impedance injectors 12 x ignition control
Outputs signals	1 x flywheel 1 x trigger wheel 1 x engine 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

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

Software Options (not included)

Customer Code Area	Enable Customer Code Area
Logger Package I	Extension for Partition 1: up to 720 channels, fastest sampling 1,000 Hz or 1 syncro, (max number of 1,080 channels to respect)
Logger Package II	Partition 2: 720 channels, 1 GB memory, fastest sampling 1,000 Hz or 1 syncro, long-term recording, own data protection code (max number of 1,080 channels to respect)
Ethernet Telemetry	Communication via Ethernet Telemetry Modem

Innovation License Device	Activation of engine speed functions* per unit
Innovation Package Project	Activation of engine speed functions* per project version

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

Software Options (included for base versions beginning with MS6A_BASE_0800 or comparable)

Logger Package III	Copy data of partition 1 to USB data stick
Gear Control Package I	Gear control Mega-Line functionality, has to be used with Mega-Line components (License model via Megaline) [included for base versions beginning with MS6A_BASE_0800 or comparable]
Gear Control Package II	Gear control Bosch Motorsport functionality
Gear Control Package III	Gear control coordination to external GCU systems [included for base versions beginning with MS6A_BASE_0600 or comparable]

Installation Notes

Inspection services	Recommended after 220 h or 2 years, no components to replace

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.

Ordering Information

Engine Control Unit MS 6.4 Performance
Order number **F02U.V02.906-01**

System Configuration Tool RaceCon
Order number **free download at our homepage**

Software Options

Customer Code Area
Order number **F02U.V02.137-01**

FULL_LOG_1
Order number **F02U.V01.993-01**

FULL_LOG_2
Order number **F02U.V01.998-01**

USB_DATA C 65
Order number **F02U.V02.082-01**

Gear Control Package 1
Order number **please contact Mega-Line**

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

Innovation License Device
Order number **F02U.V02.510-01**

Innovation Package Project
Order number **F02U.V02.511-01**

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

Accessories

Breakout Box BOB MS 6
Order number **F02U.V02.294-01**

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

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

Modas Sport
Order number **free download at our homepage**

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

© Bosch Engineering GmbH 2023 | Data subject to change without notice
48571787 | en, V, 15. Feb 2023