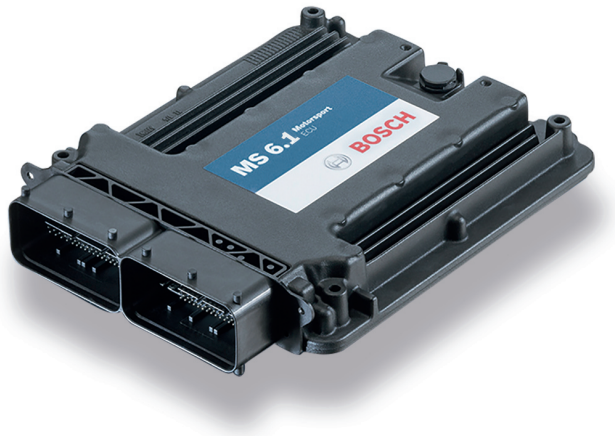
Engine Control Unit MS 6.1



- Optimized for low pressure injection
- Basic number of low pressure control functions
- Basic number of engine functions
- Measurement with 21 analog inputs
- Multiple Software options available

The MS 6.1 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 6.1 to support complex or unusual engine or chassis configurations.

Application

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	Optional
VVT	Optional
Turbo control	Optional
Traction control	Optional
Launch control	Optional
LTE Ethernet telemetry support	
Internal logger	Partition 1, 1 GB memory, diagnostic channels, 50 free configurable channels, fastest sampling 50 Hz, digital filter respecting sampling theorem
Logger options	See Software Options (not included)

Technical Specifications

Inputs

Analog inputs	21 (41 opt.)
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

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

Communication

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

Outputs

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 7 Light
Data Application tool Modas Sport
System Configuration tool RaceCon

Mating Connectors (not included)

Mating Connector 91 pins	F 02U B00 711-01
Mating Connector 105 pins	F 02U B00 712-01

Software Options (not included)

Engine Function Package I	Electronic throttle control, VVT, Turbo control
Engine Function Package II	Traction and launch control
Measurement Package	Increase to 41 analog inputs
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)
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 Mega-Line) [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]
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

Installation Notes

Inspection services recommended after 220 h or 24 months, 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 6.1
Order number **F 02U V01 961-04**

Accessories

Breakout Box BOB MS 6
Order number **F 02U V02 294-01**

Mating Connector 91 pins
Order number **F 02U B00 711-01**

Mating Connector 105 pins
Order number **F 02U B00 712-01**

Data Application Tool Modas Sport
Order number **free download at our homepage**

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

Data Analysis Tool WinDarab V7
Order number **free download at our homepage**

Software Options

Engine Function Package I
Order number **F 02U V02 001-01**

Engine Function Package II
Order number **F 02U V02 002-01**

Measurement Package
Order number **F 02U V02 000-01**

Logger Package I
Order number **F 02U V01 993-01**

Logger Package II
Order number **F 02U V01 998-01**

Logger Package III
Order number **F 02U V02 082-01**

Gear Control Package I
Order number **F 02U V02 107-01 (on request)**

Gear Control Package II
Order number **F 02U V02 108-01**

Gear Control Package III
Order number **F 02U V02 109-01 (on request)**

Innovation License Device
Order number **F 02U V02 510-01**

Innovation Package Project
Order number **F 02U V02 511-01**

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