

# Engine Control Unit MS 5.1

www.bosch-motorsport.com



- ▶ 8 injection output stages
- ▶ 8 ignition output stages
- ▶ 59 data inputs

The MS 5.1 engine control unit manages gasoline engines up to 8 cylinders. As a member of our MS 5 family, it features a powerful digital processing core with floating point arithmetic and a high-end FPGA for ultimate performance and flexibility. The MS 5 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 5.1 to support complex or unusual engine or chassis configurations.

## Application

Engine layout	Max. 8 cyl., 2 bank
Control strategy	Torque structure based
Lambda control	With adaptation function
Speed limiter	
Gear cut for sequential gear box	
Map switch corresponds to 3 different target lambda and spark maps.	
Fuel cut off	
Turbo boost control	
Knock control	

Electronic throttle control	
Traction control	
Sequential fuel injection	
Asymmetric injection timing	Optional
Asymmetric ignition timing	Optional
Calibration interface	CCP via CAN or XCP via Ethernet
Interface to Bosch Data Logging System	
Max. Vibration	Vibration Profile 1 (see Appendix or www.bosch-motorsport.com)

## Technical Specifications

### Mechanical Data

Aluminum housing	
3 high pin density motorsport connectors	
165 pins, each pin individually filtered	
Vibration suppression via multipoint fixed circuit boards	
Size	180 x 155 x 40 mm
Weight	1,060 g

Protection Classification	IP67 to DIN 40050, Section 9, Issue 2008
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Temp. range (at internal sensors)	-20 to 85°C
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### Electrical Data

Power cons. (w/o loads)	Approx. 9 W at 14 V
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### Power supply

Operating range	6.5 to 18 V
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Recommended	11 to 14 V
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Absolute maximum	6 to 24 V
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### Inputs

2 thermocouple exhaust gas temperature sensors

2 lambda interfaces (LSU 4.9)

1 crankshaft sensor (2-wire, inductive or Hall-effect)

1 camshaft sensor (2-wire, inductive or Hall-effect)

2 turbo speed sensors (2-wire, inductive or Hall-effect)

4 wheel speed sensors (inductive or Hall-effect)

38 universal analog inputs 0 to 5 V, 12 Bit

4 analog inputs (angle synchronous or time synchronous triggering up to 250 ksp/s, 12 Bit)

4 inputs for vibration knock sensors

1 lap trigger input

### Outputs

8 injection power stages (peak & hold)

8 ignition power stages (up to 20 A)

20 power stages (2 A; low side; PWM)

4 power stages (4 A; low side; PWM)

2 H-bridges (5 A)

3 sensor supplies 5 V/400 mA

1 sensor supply 10 V/100 mA

1 protected Ubat output 1 A

6 diagnostic outputs with selectable internal signals

1 time base reference synch-in/out

### Software Tools

Modas Sport Calibration Software	Inclusive
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### Environment (not included)

Programming interface MSA-Box II	F 02U V00 327-03
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Data logger C 60	F 02U V00 875-03
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Display DDU 8	F 02U V00 873-05
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### Mating Connectors (not included)

Mating Connector yellow AS 6-16-35 SA	F 02U 000 467-01
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Mating Connector blue AS 6-16-35 SB	F 02U 000 468-01
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Mating Connector red AS 6-16-35 SN	F 02U 000 466-01
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### Installation Notes

Internal battery for data preservation included.

Required service interval 12 months (internal battery is replaced).

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.

### Communication

2 x 100 Mbps Ethernet interfaces

1 x RS232 serial interface

3 x 1 Mbps CAN interfaces

1 x LIN interface

### Ordering Information

**Engine Control Unit MS 5.1**

Order number **F 02U V00 995-01**

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