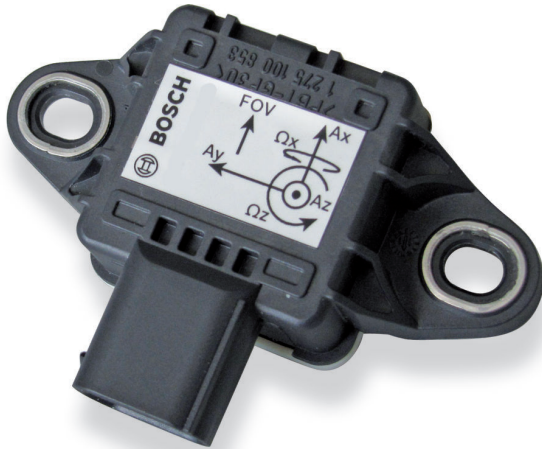


Acceleration Sensor MM5.10

www.bosch-motorsport.com



- ▶ 2-axis rotation rate (yaw rate, roll rate)
- ▶ 3-axis accelerometer (X, Y, Z)
- ▶ 1 Mbaud or 500 kbaud CAN-output
- ▶ 15 Hz low-pass filtered
- ▶ Measurement ranges: ± 4.2 g; $\pm 163^\circ/\text{s}$

The MM5.10 was designed to measure the physical effects of rotational and linear acceleration. In order to achieve this, the sensor includes MEMS measuring elements connected to an appropriate integrated circuit. A rotational acceleration around the integrated sensing elements generates a Coriolis force which changes the internal capacity of the micro machined sensing parts. Furthermore, a pure surface micro machined element is used to measure the vehicle linear acceleration in all 3 axis. This combination of rotational and lineal acceleration sensors enables a precise measurement of the vehicle dynamics.

The main feature and benefit of this sensor is the combination of 3 linear and 2 rotational accelerometers and its high speed 1 Mbaud/s CAN-signal output.

Application

Application I	$\pm 163^\circ/\text{s}$ (roll rate/yaw rate)
Application II	± 4.2 g (X, Y and Z acceleration)
Operating temperature range	-20 to 85°C

Technical Specifications

Mechanical Data

Weight w/o wire	35 g
Size	80 x 56 x 21 mm

Electrical Data

Power supply	7 to 18 V
Max input current	90 mA
CAN speed	1 Mbaud/s or 500 kbaud/s

CAN Message

CAN ID 01 0x174

Byte	Value
0	Yaw rate
1	
2	Reserved
3	
4	Acc Y-axis
5	

6	Reserved
7	Unused
CAN ID 02 0x178	
Byte	Value
0	Roll rate
1	
2	Reserved
3	
4	Acc X-axis
5	
6	Reserved
7	Unused
CAN ID 02 0x17C	
Byte	Value
0	Reserved
1	
2	Reserved
3	
4	Acc Z-axis
5	
6	Reserved
7	Unused
Characteristic	
Characteristic Application I	
Measuring range	± 160°/s
Over range limit	± 1,000°/s
Absolute physical resolution	0.1°/s
Cut-off frequency (-3 dB)	15 Hz; 30 Hz; 60 Hz
Characteristic Application II	
Measuring range	±4.2 g
Over range limit	±10 g
Absolute physical resolution	0.01 g
Cut-off frequency (-3 dB)	15 Hz; 30 Hz; 60 Hz
Connectors and Wires	
Connector (1)	AMP 114-18063-076
Mating connector (1)	F 02U B00 435-01

Pin 1	Gnd
Pin 2	CANL
Pin 3	CANH
Pin 4	UBat
Wire with open end (2)	
Red wire	UBat
Black wire	Gnd
White wire	CANH
Blue wire	CANL
Connector (3)	ASL-6-06-05PC-HE
Mating connector (3)	ASL-0-06-05SC-HE
Pin 1	UBat
Pin 2	Gnd
Pin 3	CANH
Pin 4	CANL
Pin 5	Not connected
Sleeve	DR-25
Wire size with open end (2)	4 x AWG24
Wire length L	15 to 100 cm

CAN Parameters

Byte order	LSB (Intel)
CAN speed	1 Mbaud/s or 500 kbaud/s
Bit mask	unsigned
Offset (all signals)	0x8000 hex
Quantization Yaw Rate	0.005 [°/s/digit]
Quantization Roll Rate	0.005 [°/s/digit]
Quantization Acc X-axis	0.0001274 [g/digit]
Quantization Acc Y-axis	0.0001274 [g/digit]
Quantization Acc Z-axis	0.0001274 [g/digit]

Installation Notes

The MM5.10 can be connected directly to most control units and data logging systems.

Please avoid abrupt temperature changes.

For mounting please use only the integrated fixing holes.

Please ensure that the environmental conditions do not exceed the sensor specifications.

Please find further application hints in the offer drawing at our home-page and calibration sheet.

Please deliver the calibration sheet with your order placement.

Safety Note

The sensor is not intended to be used for safety related applications without appropriate measures for signal validation in the application system.

Ordering Information

Acceleration Sensor MM5.10

Without wire (1)

Order number **F 02U V01 511-02**

Acceleration Sensor MM5.10

Wire with open end (2)

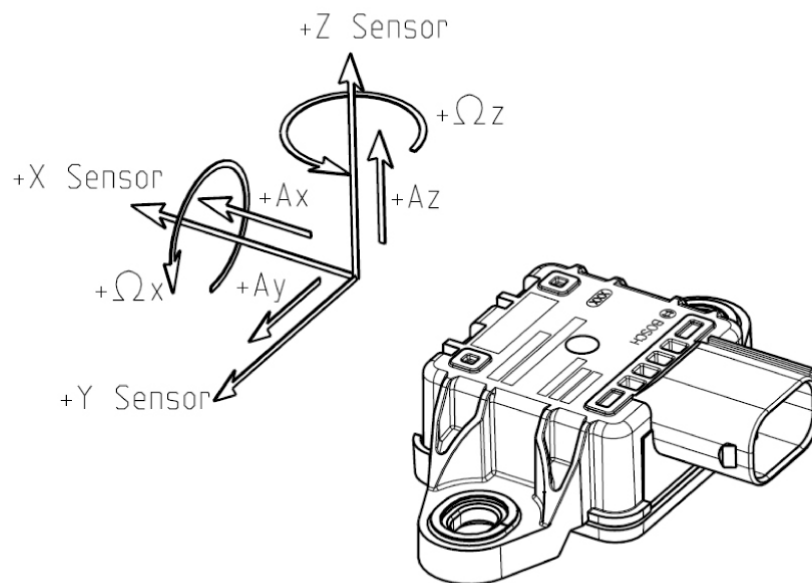
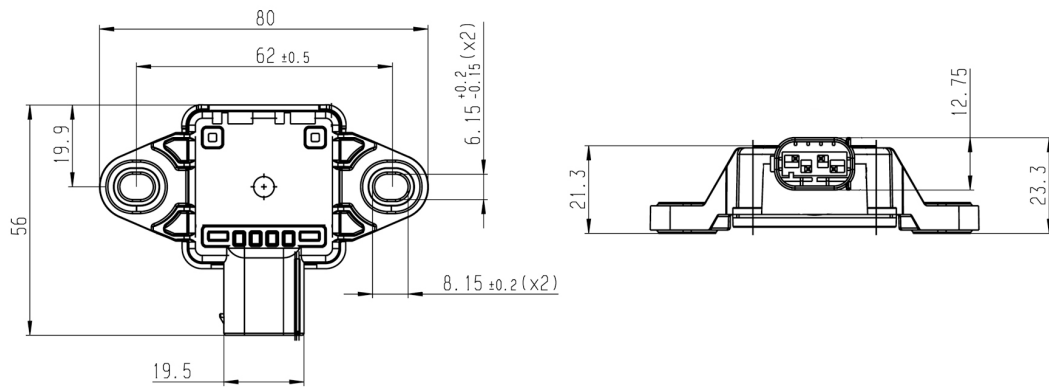
Order number **F 02U V01 511-92**

Acceleration Sensor MM5.10

Wire with motorsport connector (3)

Order number **F 02U V01 512-03**

Dimensions



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