

# Modular Sensor Interface MSI 60

www.bosch-motorsport.com



- ▶ Compact dimensions
- ▶ High quality signal processing
- ▶ 50 sensor inputs (differential analogue, single ended analogue, LVDT, frequency, RS232)

The MSI 60 is a high quality signal conditioning and data acquisition unit for analogue, digital, frequency and linear variable differential (LVDT) sensors.

MSI 60 offers a large number of freely configurable inputs (32 x differential analogue, 8 x single ended analogue, 8 x LVDT, 2 x frequency, 1 x RS 232 for GPS). Possible applications of the differential inputs include e.g. 31 TC-J type or TC-K type temperature sensors arranged in a sensor array (one diff. input used for compensation), PT100, PT1000 (specific pull up values available), NTC, strain gauges etc. Each differential input features 200 times oversampling.

The cut-off frequency of the digital filters in all inputs is automatically adjusted to match the acquisition rate. MSI 60 also corrects the latency of the digital filters during recording, yielding zero filter delay in the recorded data. Quantization of each MSI measurement channel is individually configurable. Data can be sent via Ethernet interface to any Bosch Motorsport logging device.

## Technical Specifications

### Mechanical Data

Size	153 x 119 x 38 mm
Weight	645 g

Aluminum housing	
High density type motorsport connectors	
Vibration damped printed circuit boards	
Operating temperature	-20 to 85°C
Max. vibration	15 g sinus at 1,200 Hz for t < 5 h

### Electrical Data

Max. power consumption (w/o sensor power supply)	15 W
Required power supply	7 to 18 V
2 frequency inputs 0 to 25.5 kHz for inductive sensor / Hall-effect sensor / DF11 sensor	
32 differential analogue inputs, switchable to single ended operation, -5 V to 5 V or 0 V to 5 V; switchable pull up values 3.01 kOhm and 4.99 kOhm, 49.9 kOhm to suit PT100/PT1000	
8 single ended analogue inputs, 0 V to 5 V; switchable pull up value 3.01 kOhm	
8 LVDT inputs, 2.5 kHz/5 kHz/10 kHz; 3 V/5 V/10 V RMS	
4 PWM outputs, max. 1 A each, max. 1 kHz	
2 x 5 V or 10 V switchable sensor power supply, max. 200 mA each	

2 x 5 V sensor power supply, max. 400 mA each

1 x sensor power supply, max. 800 mA voltage = (MSI 60 supply voltage) - 1.1 V; switched U\_Batt

RS 232 interface for GPS (data reception only)

3 x Ethernet 100 MBit/s

2 x freely configurable up to 1 MBit CAN Bus

### Environment

#### Software Upgrade 1

CCP-Master (ASAP 2 file from ECU manufacturer required) F 02U V01 012-01

### Connectors and Wires

#### Connector 1: LIFE (red) X1 ECU: AS-2-12-35PN

Harness: AS 6-12-35SN; max. AWG22 F 02U 000 443-01

#### Connector 2: SENSOR 1 (yellow) X2 ECU: ASDD-2-14-64PA

Harness: ASDD 6-14-64SA; max. AWG24 F 02U 003 098-01

#### Connector 3: SENSOR 2 (red) X3 ECU: ASDD-2-14-64PN

Harness: ASDD 6-14-64SN; max. AWG24 F 02U 000 854-01

### Ordering Information

#### Modular Sensor Interface MSI 60

Order number **F 02U V01 901-01**

#### Software Options

##### SW Upgrade 1

Order number **F 02U V01 012-01**

### Modular Sensor Interface MSI 60 Variations

	Analogue inputs, single ended	Differential analogue inputs	LVDT inputs
Number of inputs	8	32	8
Pre-filtering	analogue, 1st order	analogue, 3rd order	analogue, 1st order
ADC resolution	12 bit, 10 ks*	18 bit, 200 ks*	12 bit, 10 ks*
Compensation of digital filter latency	x	x	x
Pull up resistors	3.01 kOhm	3.01 kOhm 4.99 kOhm (PT100) 49.9 kOhm (PT1000)	-

	Analogue inputs, single ended	Differential analogue inputs	LVDI inputs
Amplifying factor	1	1, 2, 4, 8 to 512	-
Input voltage range	0 V to 5 V	-5 V to 5 V (differential mode) 0 V to 5 V (single ended mode)	3 V/ 5 V/ 10 V ( $U_{eff.}$ ), 2.5 kHz/ 5 kHz/ 10 kHz

\*  $k_s = 1000$  samples/s

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