

Data Logging System DLS

System Overview

The Data Logging System (DLS) is a scalable, versatile, and flexible measurement system for conditioning and acquisition of sensor data in a race car. The DLS product family consists of several hardware and software components which allow easy adoption to various measurement requirements.

Core component of the DLS is the C 55 data logger. It performs system configuration and management tasks and also serves as a communication hub for the PC configuration software. The C 55 communicates via its network interfaces with the ECU and up to eight MSI 55 sensor interface boxes to enable synchronized acquisition of engine and chassis data. The MSI 55 sensor interfaces provide high quality signal conditioning and data conversion functionality.

Additionally the FM 40 telemetry transmitter and the BT 60 burst telemetry device can be connected.

Various CAN expansion modules can be connected to provide additional input channels or output functionality.

DLS Components	
Data logger, System manager	C 55
Burst telemetry	BT 60, BR 60
Online telemetry	FM 40
Modular Sensor Interface	MSI 55
Extended CAN Modules	EM-I4, EM-C, EM-A6, EM-H4
DLS configuration Software	RaceCon
System Software	RaceCon, WinDarab

Technical Details
High measuring accuracy by 12 bits A/D converter resolution and tenfold oversampling
High recording rate up to 1 ms
High recording duration by CF card up to 1 GB
Online compression of measurement data
Highly linear analog and digital filters
Modular concept allows scalable system
Synchronized acquisition of ECU and chassis channels
Connectivity and data transfer via telemetry
Online calibration and system diagnosis with RaceCon (included)

CardMemory C 55

The CardMemory C 55 is a device used for data logging and DLS system management. The measured data is stored on a removable compact flash card with a maximum capacity of 1,024 MB.

The C 55 supports two parallel measurement configurations and recording rates from 1 s to 1 ms. Data from different Bosch ECUs can be recorded via the Ethernet and FireWire buses. For sensor signal acquisition up to eight MSI 55 devices connected via FireWire are supported.

Long range as well as high-speed burst telemetry is possible utilizing the FM 40 and BT 60 devices.



Mechanical Data	
Size	157 x 92 x 30 mm
Weight	500 g
Aluminium housing	
Operating Temperature	-20 ... 65 °C
Max. vibration	<i>Vibration profile 1 (see Appendix)</i>

Electrical Data	
Max. power consumption	20 W at 14 V
1 CAN interface	
2 Fire wire interfaces	
2 Ethernet interfaces (100 MBit)	
Real time clock	
Non volatile flash card memory	

Accessories	
Flash card 256 MB	F 01E B01 106-01
Flash card 512 MB	F 01E B01 107-01
Flash card 1,024 MB	F 01E B01 108-01
Memory adapter	B 261 206 864

Compatible ECUs	
MS 5.1, MS 5.2, MS 15.1, MS 15.2	

Part Number	
CardMemory C 55	F 01E B01 630

Modular Sensor Interface MSI 55

The MSI 55 is a high quality signal conditioning and data acquisition unit for analog and digital sensors.

The MSI 55 offers 16 configurable analog inputs. Each analog input channel features a 4th order analog prefilter, 10x oversampling and highly linear digital filtering. The cut-of frequency of the digital filters is automatically adjusted to match the acquisition rate. The latency of the digital filters is corrected during recoding, yielding zero filter delay in the recorded data. The evaluation of each MSI measurement channel is individually configurable.

Data is sent via FireWire interface to the C 55 data logger.



Mechanical Data	
Size	120 x 117 x 38 mm
Weight	600 g
Aluminium housing	
Filtered connectors of motorsports design with high pin density	
Vibration damped printed circuit boards	
Operating temperature	-20 ... 65 °C
Max. vibration	15 g sinus at 1,200 Hz for t < 5 h

Electrical Data	
Max. power consumption	20 W at 14 V
16 bit digital signal processor, 150 MIPS	
Required power supply	8 ... 18 V
4 differential analog inputs with switchable amplifier and switchable pullup resistor	
12 single ended analog inputs with switchable pullup resistor	
All analog inputs offer analog and digital anti-aliasing filter and 12 bit ADC resolution	
4 frequency inputs 0 ... 25.5 kHz for inductive sensor / Hall-effect sensor	
2 digital I/O	
2 PWM outputs 100 mA	
5 V sensor power supply	
3 ... 10 V configurable sensor power supply	
12 V sensor power supply	
Freely configurable 1 Mbit CAN Bus	

Part Number	
MSI 55	F 01T A20 024