

AD CAN MM Series

Type MC10 | MC2



Product description

AD measurement modules feature 4 or 8 differential, galvanically isolated voltage inputs. They are also equipped with a very precise, bipolar sensor excitation, which is adjustable per channel.

With their extended operating temperature range and extremely compact housing, AD measurement modules are designed to be used for measurement tasks in the engine compartment. Due to their wide range of applications, they are increasingly used in test benches.

Shipping content

- ▶ MiniModule AD4 MC10 | AD8 MC2
- ▶ Configuration software CSMconfig
- ▶ Documentation
- ▶ Calibration certificate in accordance with DIN EN ISO/IEC 17025

Key features

CAN

- ▶ 4 or 8 differential voltage inputs, galvanically isolated
- ▶ Measurement inputs adjustable per channel from ± 100 mV to ± 60 V
- ▶ Measurement data rate per channel up to 10 kHz (AD4 MC10)
- ▶ High-precision bipolar sensor excitation, adjustable per channel
- ▶ TEDS functionality according to IEEE 1451.4 (template 30)



Maintenance

- ▶ Calibration every 12 months recommended

Accessories

- ▶ See datasheet "CAN Accessories"

Technical data

Type designation	AD4 MC10	AD8 MC2
Technical data valid as of revision	G500	H500
		
Inputs	4 analog inputs	8 analog inputs
Measurement ranges	±100, ±200, ±500 mV and ±10, ±20, ±60V	
Internal resolution	16 bit	
Internal sampling rate per ch.	10 kHz	2 kHz
Measurement data rate/ sending rate per channel	1, 2, 5, 10, 20, 50, 100, 200, 500 Hz and 1 kHz, 2 kHz, 5 kHz ¹ , 10 kHz ¹	1, 2, 5, 10, 20, 50, 100, 200, 500 Hz and 1 kHz, 2 kHz
HW input filter	low-pass filter 3 rd order, approx. 2.5 kHz	low-pass filter 3 rd order, approx. 500 Hz
SW input filter	switchable 6 th order Butterworth filter, range: 0.1 Hz to 2 kHz	switchable 6 th order Butterworth filter, range: 0.1 Hz to 500 Hz
	automatically adjusted to measurement data rate, alternatively: threshold frequency adjustable per channel	
Input protection ²		
Operational safety	±60V permanent	
Device safety	±100V permanent, additional ESD protection	
TEDS functionality supported	according to IEEE 1451.4 (template 30)	
Gain error ³		
at 25 °C	max. ±0.05 % of measured value	
Temperature drift	max. ±10 ppm/K	
Sensor excitation	bipolar, switchable and adjustable per channel ⁴	
Voltage	±5, ±8, ±10, ±12, ±15V DC	
Current	max. ±30 mA per channel, max. ±120 mA (AD4) or ±240 mA (AD8) per module	
Galvanic isolation ⁵	no safety isolation in terms of high-voltage applications	
Channel/channel	500V	
CAN/channel	500V	
CAN/power supply	500V	
CAN interface	CAN 2.0B (active), High Speed (ISO 11898-2:2016), 125 kBit/s to max. 1 MBit/s, up to 2 MBit/s with CSMcan Interface, data transfer free running	
Configuration	via CAN bus using CSMconfig or CSM INCA AddOn, settings and configurations stored in the module	
Power supply		
Minimum	6V DC (-10 %)	
Maximum	50V DC (+10 %)	
Power consumption ⁶	typ. 0.8W (without sensor excitation)	typ. 1.3W (without sensor excitation)

Type designation	AD4 MC10	AD8 MC2
LED indicator (CAN)	power/status	
Housing	aluminium, gold anodized	
Protection class	IP67	
Weight	approx. 300 g	approx. 500 g
Dimensions (w × h × d)	approx. 120 × 32 × 50 mm approx. 120 × 37 × 50 mm (Slide Case)	approx. 200 × 35 × 50 mm approx. 200 × 40 × 50 mm (Slide Case)
Connectors⁷		
CAN/power supply	LEMO 0B, 5-pole, code G	
Signal inputs	LEMO 0B, 6-pole, code A	
Operating and storage conditions		
Operating temperature range	-40 °C to +125 °C	
Relative humidity	5 % to 95 %	
Pollution degree	3	
Storage temperature	-55 °C to +150 °C	
Conformity	CE	

¹ 5 kHz: 2 channels @ 500 kbit/s, 4 channels @ 1 Mbit/s, 10 kHz: 2 channels @ 1 Mbit/s, 4 channels @ 2 Mbit/s.

² Observe information regarding the intended use. See CSM document "Safety Instructions MiniModules".

³ Further information can be found in the Technical Information document on the subject of "Deviation of Measurement".

⁴ In case of full load (AD4 MC10: 3.6 W, AD8 MC2: 7.2 W) a power supply > 8 V is required (> 10 V as of an operating temperature of +85 °C), see "Tech Note".

⁵ These MiniModules are designed for measurements in vehicles with 12 V, 24 V, or 48 V on-board power supply systems. The maximum operating voltage at the measurement inputs is 60 V. Do not connect directly to systems with higher operating voltages, e.g. high-voltage batteries of hybrid or electric vehicles.

⁶ The specified power consumption increases to up to 1.2 W (AD4) or 1.8 W (AD8) depending on TEDS wiring.

⁷ Optionally available in other variants.

additional products

AD4 pro MC10

AD4 pro measurement modules cover an extremely wide range of applications. They can be used for voltage measurement, high-precision current measurement (via shunts), measurement of very low voltages (such as strain gauge based sensors measuring at mV levels), and the acquisition of higher frequency signals with measurement data rates up to 10 kHz.



AD4 OG100

AD4 OG100 provides the means to perform measurements with measurement data rates up to 100 kHz per channel at a high Ethernet bandwidth. EtherCAT® time synchronizations are fully supported. AD4 OG100 is either operated by using an EtherCAT® master via CANopen over EtherCAT® (CoE) or by using the Ethernet/EtherCAT® protocol converter XCP-Gateway in combination with an XCP-compatible data acquisition software.





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