

AD4 ECAT MM Series

Type OE100



Product description

The measurement module **AD4 OE100** has been designed for the acquisition of fast analog signals in the fields of automotive measurement technology. The module provides options to perform measurements with up to 100 kHz per channel at a high Ethernet bandwidth. EtherCAT® time synchronization is supported. Due to its galvanically isolated sensor excitation of up to 24 V DC, this measurement module is suited for IEPE sensors.

The **AD4 OE100** is operated by using the Ethernet/EtherCAT® protocol converter XCP-Gateway in combination with an XCP-compatible data acquisition software, like for example vMeasure CSM, CANape® or INCA, or by using an EtherCAT® master.

Scope of delivery

- ▶ Measurement module AD4 OE100
- ▶ Configuration software CSMconfig
- ▶ Documentation
- ▶ Device Description File (*.xml)
- ▶ Calibration certificate in accordance with DIN EN ISO/IEC 17025

EtherCAT →

Key features

- ▶ 4 differential voltage inputs, galvanically isolated
- ▶ Measurement data rate up to 100 kHz per channel
- ▶ Unipolar sensor excitation,
 - ▶ adjustable per channel,
 - ▶ galvanically isolated,
 - ▶ suited for IEPE sensors
- ▶ Precise module and channel synchronization (<1 μs)
- ▶ TEDS functionality according to IEEE 1451.4 (Template 30) supported
- ▶ Operating temperature range: -40 °C to +125 °C


Maintenance

- ▶ Calibration every 12 months recommended

Accessories

- ▶ See datasheet "XCP/ECAT Accessories"

Technical data

Type designation	AD4 OE100
	
Technical data valid as of revision	D110
Measurement inputs	4 voltage inputs
Measurement ranges	± 5 , ± 10 , ± 20 , ± 45 , ± 90 V
Internal resolution	16 bit
Internal sampling rate per ch. ¹	1,000 kHz
Data sending rate per ch. ²	1, 2, 5, 10, 20, 50, 100 kHz
HW input filter	9 th order Butterworth filter, cutoff frequency approx. 360 kHz
SW filter options per channel	<ul style="list-style-type: none"> ▶ 6th order Butterworth filter, range: 10 Hz to 50 kHz: <ul style="list-style-type: none"> ▶ automatically adjusted based on sending rate or ▶ user-selectable cutoff frequency
Input protection ³ Operational safety Device safety	± 60 V permanent ± 100 V permanent, additional ESD protection
Input impedance	≥ 900 k Ω /20 pF
TEDS functionality supported	according to IEEE 1451.4 (Template 30)
Measurement uncertainty	
Gain error at 25 °C	max. ± 0.05 % of measured value
Offset and scaling error	max. ± 0.02 % of range
Gain drift	max. ± 10 ppm/K of measured value
Zero drift	max. ± 10 ppm/K of range
Sensor excitation	unipolar, galvanically isolated per channel from module power supply and from each other
Voltage	5, 8, 10, 12, 15, 24 V DC
Tolerance	max. ± 10 %
Output power	max. 250 mW per channel
Galvanic isolation ⁴	no safety isolation in terms of high-voltage applications
Channel/channel	500 V
Channel/power supply	500 V
Sensor excitation/ power supply	500 V
Sensor excitation/ sensor excitation	500 V
EtherCAT® interface	Ethernet 100 Base-TX, 100 Mbit/s, EtherCAT® slave controller, synchronization via Distributed Clocks or Sync Manager 3
Configuration	with configuration software CSMconfig via XCP-Gateway or with EtherCAT® master software via CANopen over EtherCAT® (CoE), settings and configurations stored in the device

Type designation	AD4 OE100
Power supply	
Minimum	6 V DC (-10 %)
Maximum	50 V DC (+10 %)
Power consumption	typ. 2.8 W (without sensor excitation)
LED indicators	
ECAT	Status/Link Activity IN/Link Activity OUT
Measurement channels	configuration/operation/sensor excitation
Housing	aluminum, silver anodized
Protection class	IP67
Weight (device)	approx. 500 g
Dimensions (w × h × d)	approx. 200 × 40 × 50 mm (Slide Case)
Connectors	
EtherCAT® IN	LEMO 1B, 8-pole, code L
EtherCAT® OUT	LEMO 1B, 8-pole, code A
Signal inputs	LEMO 1B, 8-pole, code G
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 As of hardware revision B

² All measurement data rates are configurable via XCP-Gateway. When configuring via an EtherCAT® master software, a maximum measurement data rate of 10 kHz/channel is supported (EtherCAT® standard).

³ Observe information regarding the intended use. See CSM document "Safety Instructions MiniModules".

⁴ These measurement modules are designed for measurements in vehicles with 12V, 24V or 48V on-board power supply systems. The maximum operating voltage at the measurement inputs is 60V. Not suitable to be directly connected to systems with higher operating voltages, e.g. high-voltage batteries of hybrid or electric vehicles.



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