AD4 ECAT MM Series

Type OG100 | OG1000

Product description

The **AD4 OG** ECAT MiniModule series has been designed for the acquisition of fast analog signals in the fields of automotive measurement technology. The modules provide options to perform measurements with up to 1 MHz per channel. They are also suited for multi-channel applications. EtherCAT® for time synchronization is supported.

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

Keyfeatures

- 4 differential voltage inputs, galvanically isolated
- Measurement data rate up to 1 MHz per channel
- High-precision bipolar sensor excitation, adjustable per channel
- 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

Scope of delivery

- Measurement module AD4 OG100 | OG1000
- Configuration software CSMconfig
- Documentation
- Device Description File (*.xml)
- Calibration certificate in accordance with DIN EN ISO/IEC 17025

Maintenance

- Calibration every 12 months recommended

Accessories

- See datasheet "XCP/ECAT Accessories"

Technical data

Type designation	AD4 OG100	AD4 OG1000
		
Technical data valid as of revision	D170	D070
Measurement inputs	4 voltage inputs	
Measurement ranges	±5, ±10, ±20, ±45, ±90 V	
Internal resolution	16 bit	
Internal sampling rate per ch.	1,000 kHz	
Sending rate per channel [1]	1, 2, 5, 10, 20, 50, 100 kHz	1, 2, 5, 10, 20, 50, 100, 200, 500, 1,000 kHz
HW input filter	9th order Butterworth filter, cutoff frequency approx. 360 kHz	
SW filter options per channel	▶ 6th order Butterworth filter, range: 10 Hz to 50 kHz: ▶ automatically adjusted based on sending rate or ▶ user-selectable cutoff frequency	▶ Off, only for sending rate of 1,000 kHz ▶ 6th order Butterworth filter, range: 10 Hz to 200 kHz: ▶ automatically adjusted based on sending rate or ▶ user-selectable cutoff frequency
Input protection [2] Operational safety Device safety	±60 V permanent ±100 V permanent, additional ESD protection	
Input impedance	≥ 900 kΩ/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	bipolar, galvanically isolated from module power supply	
Voltage	±5, ±8, ±10, ±12, ±15 V DC	
Current	max. 30 mA per channel switchable and adjustable per channel [3]	
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	
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 OG100	AD4 OG1000
Power supply		
Minimum[3]	7.5 V DC (-10 %)	
Maximum	50 V DC (+10 %)	
Power consumption	typ. 3.2 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] All measurement data rates are configurable via XCP-Gateway. When configuring via a standard EtherCAT® master, a maximum measurement data rate of 10 kHz/channel is supported.

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

[3] In case of full load a power supply > 11 V is required (> 15 V as of an operating temperature of +85 °C)

[4] These measurement modules 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. 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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