HV AD4 ECAT TBM Series

Type OW1000

Product description

The measurement module **HV AD4 OW1000** of the ECAT TBM series is equipped with four voltage measurement inputs and has been specifically designed for measuring analog voltages in high-voltage environments on the DC-side.

Designed as a slide-in unit for 19-inch racks, this module is excellently suited for test bench applications. It is also applicable for mobile use in all types of vehicles and can also be mounted in the trunk of a car.

The **HV AD4 OW1000** ECAT measurement module features a maximum measurement data rate of 1 MHz per channel and can be used for the measurement of very fast analog signals.

Scope of delivery

- Measurement module HV AD4 OW1000
- Configuration software CSMconfig
- Documentation
- Device Description File (*.xml)
- Calibration certificate in accordance with DIN EN ISO/IEC 17025
- HV isolation test certificate

Key features

- 4 voltage inputs with reinforced insulation, galvanically isolated
- Measurement data rate up to 1 MHz per channel
- Measurement range adjustable per channel up to ±90 V
- Precise synchronization (modules & channels), important for calculation of electrical power, etc.
- Type approval and routine test according to safety standard EN 61010

Maintenance

- HV isolation test at least every 12 months, see EN 61010 for scope of testing
- Calibration every 12 months recommended

Accessories

- See datasheet "XCP/ECAT Accessories"

Technical data

Type designation	**HV AD4 OW1000**
	
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
Measurement data rate/ send rate per channel [1]	1, 2, 5, 10, 20, 50, 100, 200, 500, 1,000 kHz
HW input filter	9th order Butterworth filter, cutoff frequency approx. 360 kHz
Option SW filter per channel	▶ 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 impedance	approx. 900 kΩ/approx. 100 pF
Channel-specific comments	free text consisting of up to 100 characters per channel
Measurement deviation [2]	
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
Fields of application [3]	for measurements in HV environments [4]
Measurement voltages (unipolar & bipolar)	up to 90 V peak for working voltages [4] up to 1,000 V DC
Isolation test [3]	
Routine test	test voltage [4] 3,100 V DC
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 EtherCAT® master software via CANopen over EtherCAT® (CoE), settings and configurations stored in the device
LED indicators	
ECAT	Status/Link Activity IN/Link Activity OUT
Measurement channels	configuration/operation

Type designation	HV AD4 OW1000
Measurement categories[5]	
CAT 0	1,000 V
CAT II	600 V
CAT III	300 V
Power supply	
Minimum	6 V DC (-10 %)
Maximum	30 V DC (+10 %)
Power consumption	typ. 3.5 W
Housing	aluminum with HV designation on the front-side (RAL 2003)
Protection class	IP65
Ground connection	M6 threaded hole
Weight (device)	approx. 700 g
Dimensions (w × h × d)	12 HP (approx. 61 mm) 3 U (approx. 129 mm) 134 mm (+ 25 mm protective bracket)
Connectors	
EtherCAT® IN	LEMO 1B, 8-pole, code L
EtherCAT® OUT	LEMO 1B, 8-pole, code A
Signal inputs	LEMO Redel 2P, 8-pole, code B, (grey/black)
Operating and storage conditions	
Operating temperature range	-40 °C to +85 °C
Relative humidity	5 % to 95 % (non-condensing)
Operating altitude	max. 5,000 m above sea level (CAT 0) max. 3,000 m above sea level (CAT II and CAT III)
Pollution degree	3
Storage temperature	-40 °C to +85 °C
Conformity	CE
Device safety	EN 61010-1:2020+COR1:2022, COR2:2023 EN 61010-2-030:2022

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

[3] Please also read the CSM document “Safety Instructions HV AD4 ECAT TBM-Series”

[4] According to EN 61010-1:2020+COR1:2022, COR2:2023, EN 61010-2-030:2022

[5] For further information, please refer to the Technical Information "Measurement Categories for CSM HV Measurement Modules".

CSM GmbH Headquarters (Germany)

Raiffeisenstraße 36 • 70794 Filderstadt
+49 711-77 96 40 sales@csm.de

CSM Office Southern Europe (France, Italy)

ArchParc • Immeuble ABC 1 • Entrée A
60, rue Douglas Engelbart • 74160 Archamps, France
+33 4 50 95 86 44 info@csm-produits.fr

CSM Products, Inc. USA (USA, Canada, Mexico)

1920 Opdyke Court, Suite 200 • Auburn Hills, MI 48326
+1 248 836-4995 sales@csmproductsinc.com

CSM (RoW)

Vector Informatik (China, Japan, Korea, India, Great Britain)
ECM AB (Sweden)
DATRON-TECHNOLOGY (Slovakia, Czech Republic)

Our partners guarantee you worldwide availability.
Feel free to contact us.

CSM GmbH Germany is certified.

ISO 9001, ISO 14001
Certified Integrated Quality and Environmental Management System
www.tuv-sud.com/ms-cert

DAkkS
Deutsche Akkreditierungsstelle
D-K-15214-01-00