

HV IEPE3 ECAT MM Series

Type FL100



Product description

Measurement module **HV IEPE3 FL100** belongs to the series of CSM high-voltage measurement modules, especially developed for safe measurements on high-voltage components. The **HV IEPE3 FL100** has been specifically designed for measuring analog voltages with IEPE sensors, e.g. triaxial accelerometers, in high-voltage environments.

The **HV IEPE3 FL100** is equipped with three analog inputs and a sensor excitation suitable for IEPE sensors. If combined with special sensor cables, standard IEPE sensors, which are typically used in the field of low-voltage applications, can be safely operated even in high-voltage environments.

EtherCAT

Key features

- Safe measurement of acceleration, force and pressure with IEPE sensors in high-voltage environments
- Measurement data rate up to 100 kHz per channel
- Precise synchronization (modules & channels)
- For robust, decentralized use

Scope of delivery

- Measurement module HV IEPE3 FL100
- Configuration software CSMconfig
- Documentation
- Device Description File (*.xml)
- Test report
- HV isolation test certificate

Maintenance

- HV isolation test according to EN 61010 at least every 12 months
- Calibration every 12 months recommended

Accessories

See datasheet "XCP/ECAT Accessories"

Technical data

Type designation	HV IEPE3 FL100
Measurement inputs	3 analog inputs with reinforced insulation
Measurement ranges	±200, ±500 mV, ±1, ±2, ±5 V
Internal resolution	16 bit
Internal sampling rate per ch.	1,000 kHz
Measurement data rate per ch. ¹	1, 2, 5, 10, 20, 50, 100 kHz
HW input filter	bandpass filter
	f _{L3dB} = 0.5 Hz (1 st order)
	f _{H3dB} = 100 kHz (6 th order)
SW filter options per channel	▶ 6 th order Butterworth filter, range: 10 Hz to 50 kHz:
	 automatically adjusted based on sending rate or
	 user-selectable cutoff frequency
Measurement uncertainty	
Gain error at 25 °C	max. ±0.1% of measured value (at a signal frequency of 1 kHz)
Offset and scaling error	max. ± 0.02 % of range (in a measurement range of ± 5 V)
Gain drift	max. ±20 ppm/K of measured value
Zero drift	max. ±10ppm/K of range
Sensor excitation	per module, shared by all three analog inputs, galvanically isolated from module power supply
Voltage	24 V DC (cannot be switched off)
Tolerance	max. ±5 %
Current	typ. 3.5 mA per channel (constant current)
Fields of application ²	for measurements in high-voltage environments ³
Measurement voltages (unipolar & bipolar)	up to 1,000 V DC
Routine test ²	test voltage ³ 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
Sensor excitation	ON

Type designation	HV IEPE3 FL100
Measurement categories ⁴	
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. 2.9 W (with sensor excitation)
Housing	aluminum with HV designation on the front-side (RAL 2003)
Protection class	IP67
Ground connection	M6 threaded hole
Weight (device)	approx. 600g
Dimensions (w × h × d)	approx. 200 × 40 × 76 mm (Slide Case)
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 C (grey/black)
Operating and storage conditions	
Operating temperature range	-40°C to +125°C
Relative humidity	5% to 95% (non-condensing)
Operating altitude	max. 5,000 m above sea level (CAT 0) max. 3,000 above sea level (CAT II and CAT III)
Pollution degree	4
Storage temperature	-40 °C to +125 °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 Please also read the CSM document "Safety Instructions HV IEPE3 FL100" $\,$

³ According to EN 61010-1:2020+COR1:2022, +COR2:2023, EN 61010-2-030:2022

⁴ For further information, please refer to the Technical Information "Measurement Categories for CSM HV Measurement Modules".



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