



HV IEPE3 ECAT TBM Series

Type FL1000



Product description

Measurement module **HV IEPE3 FL1000** belongs to the series of CSM high-voltage measurement modules, especially developed for safe measurements on high-voltage components. The **HV IEPE3 FL1000** has been specifically designed for measuring analog voltages with IEPE sensors, e.g. triaxial accelerometers, in high-voltage environments.

As a 19-inch slide-in unit, this measurement module is ideal for use in test benches. Combined with the optional mounting frame, the HV IEPE3 FL1000 is a good choice for mobile use in vehicles, e.g. allowing it to be mounted in a car trunk.

The **HV IEPE3 FL1000** is equipped with three analog inputs and a sensor excitation suitable for the connection of 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.

Key features



- ▶ Safe measurement of acceleration, force and pressure with IEPE sensors in high-voltage environments
- ▶ 3 analog inputs with reinforced insulation
- ▶ High-voltage safe sensor excitation
- ▶ Measurement data rate up to 1 MHz per channel
- ▶ Precise synchronization (modules & channels)
- ▶ Operating temperature range: -40 °C to +85 °C, IP65



Shipping content

- ▶ Measurement module HV IEPE3 FL1000
- ▶ 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 "ECAT Accessories"

Technical data

Type designation	HV IEPE3 FL1000
	
Measurement inputs	3 analog inputs
Measurement ranges	±200 mV, ±500 mV, ±1 V, ±2 V, ±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, 200, 500, 1,000 kHz
HW input filter	bandpass filter $f_{L3dB} = 0.5 \text{ Hz}$ (1st order) $f_{H3dB} = 100 \text{ kHz}$ (6th order)
SW input filter	switchable 6th order Butterworth low-pass filter, threshold frequency automatically adjusted to measurement data rate, alternatively adjustable per channel
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. ±10 ppm/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⁾ For details see co-applicable document: “Technical Information: Fields of Application for CSM HV Measurement Modules”.
Measurement voltages (unipolar & bipolar)	up to 5 V peak for working voltages ³⁾ up to 846 V DC
Routine test ²⁾	test voltage ³⁾ 3,100 V DC, isolation test is to be performed at least every 12 months
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

Type designation	HV IEPE3 FL1000
Power supply	
Minimum	6 V DC (-10 %)
Maximum	30 V DC (+10 %)
Power consumption	typ. 3.5 W (with sensor excitation)
LED indicators	
ECAT	Status / Link Activity IN / Link Activity OUT
Measurement channels	configuration / operation
Sensor excitation	switched on
Housing	aluminum with HV designation on the front-side (RAL 2003)
Protection class	IP65
Ground connection	M6 threaded hole
Weight	approx. 700 g
Mounting	designed for 19 inch rack systems
Dimensions (w × h × d)	12 HP (approx. 61 mm) 3 U (approx. 129 mm) 100 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 C (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
Pollution degree	3
Storage temperature	-40 °C to +85 °C
Conformity	 (in preparation)
Device safety	EN 61010-1:2010
Part number	ART1081600

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 FL1000"!

³ According to EN 61010-1:2010



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