



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 boot.

The **HV IEPE3 FL1000** is equipped with three analog inputs and provides a modified sensor excitation 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	t.b.d.
SW input filter	switchable 6th order Butterworth filter, threshold frequency automatically adjusted to measurement data rate, alternatively adjustable per channel
Measurement uncertainty	
Gain error at 25 °C	typ. ± 0.1 % of measured value (at a signal frequency of 1 kHz)
Offset and scaling error	typ. ± 0.01 % of range (in a measurement range of ± 5 V)
Gain drift	typ. ± 20 ppm/K of measured value
Zero drift	typ. ± 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. 4 W (with sensor excitation)
LED indicators	
ECAT	Status / Link Activity IN / Link Activity OUT
Measurement channels	configuration / operation
Sensor excitation	switched on
Housing	aluminium 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 (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	CE (in preparation)
Device safety	EN 61010-1:2010

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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