



IOLITEI-3XMEMS-ACC

3-axial MEMS accelerometer with EtherCAT interface and DEWESoft software support.

A data acquisition device with embedded triaxial MEMS accelerometer, analog-to-digital conversion and EtherCAT interface based on the IOLITE EtherCAT platform.



FEATURES

- 25 $\mu\text{g}/\text{Hz}$ noise density
- EtherCAT bus, daisy-chaining with single cable up to 50 m device-device
- DEWESoftX software support

APPLICATIONS

- Bridge structural monitoring
- Seismic measurements
- Mobile network antenna structural monitoring

SPECIFICATIONS OF THE MEMS ACCELEROMETER

	Min.	Typ.	Max.	Unit
Measurement ranges	± 2		$\pm 8^*$	g
-3 dB bandwidth		1000		Hz
Sample rate			4	kHz
Dynamic range		96		dB
Noise density (± 2 g)		25		$\mu\text{g}/\sqrt{\text{Hz}}$
Residual noise (± 2 g @50 Hz bandwidth)		100		μg RMS
Residual noise (± 2 g @125 Hz bandwidth)		150		μg RMS
Offset error	-25	± 10	+25	mg
Offset temp. drift (-20...60 degC)	-0.15	± 0.02	0.15	mg/degC
Sensitivity temp. drift (-20...60 degC)		± 0.01		%/degC
Linearity error -1g ... +1g range		0.1		% FS
Crossaxis sensitivity	-1		+1	%

*a version with $\pm 10 \dots \pm 40$ g range is also available, contact your local sales representative for more info

SPECIFICATIONS OF THE IOLITEI 3XMEMS-ACC DEVICE

Digital interface	EtherCAT
Interface connectors	RJ45
Power consumption	1300 mW
Supply voltage	12-48 V
Operating temperature	-20 ... 65 degC
IP rating	IP20
Weight	105 g
Housing material	Aluminium

Software support: DEWESoft X3, any standard EtherCAT master

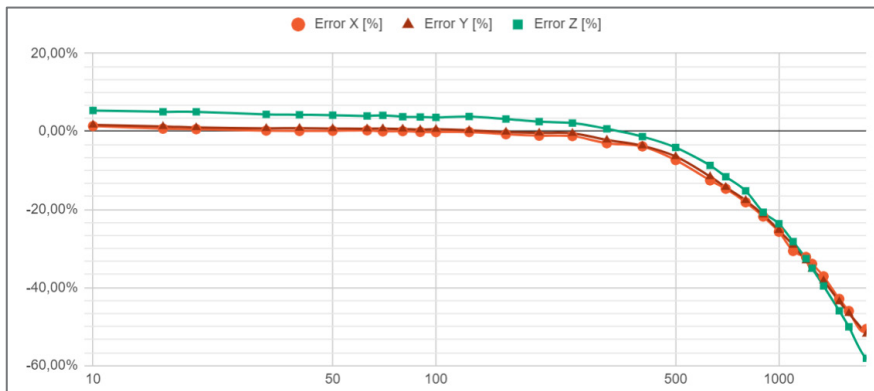
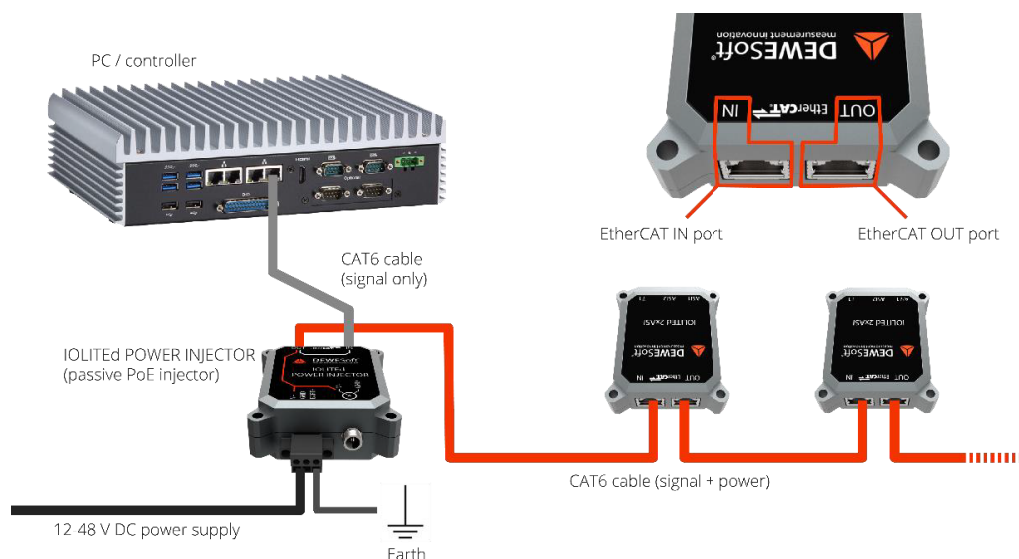


Figure 1 - IOLITEi 3xMEMS-ACC frequency response (Range: 2g, SR: 4 kS/s)

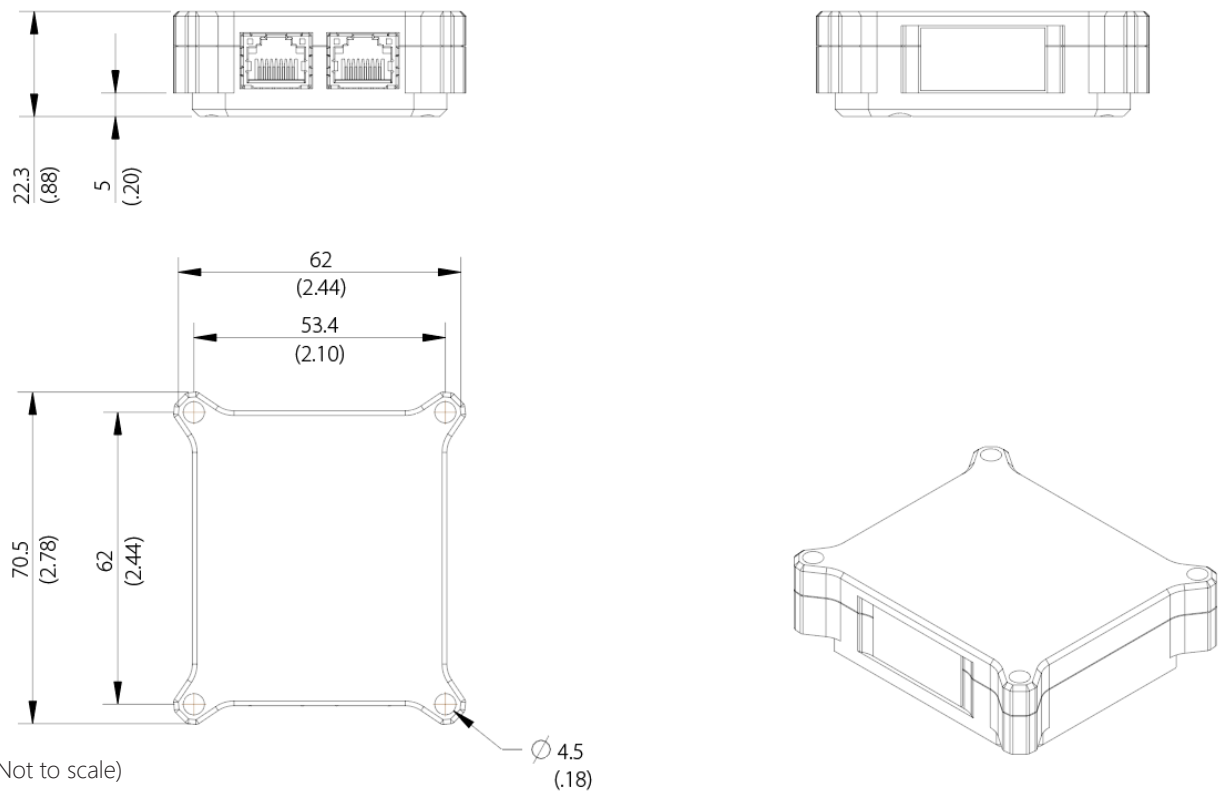
HARDWARE INSTALLATION

Devices are daisy chained with a standard network cable. It is recommended that the cable is shielded (SFTP, CAT5e) and has a minimum 24 AWG wire thickness. The cable must have 4 wire pairs. The maximum distance node-to-node is 50 m. Power supply: Passive PoE power injector is necessary for merging the EtherCAT signal and power into a single cable.

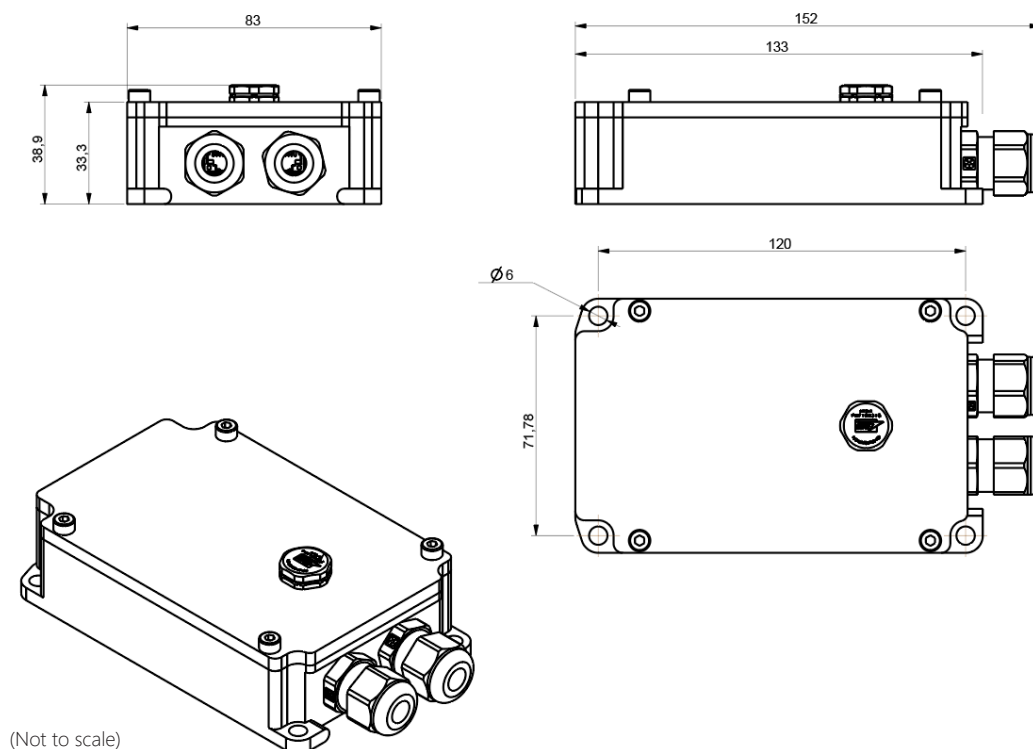


Power supply voltage	Cable length device-to-device	Cable size	Max. number of devices from a single power supply
24 V	1 m	AWG 24	8
24 V	50 m	AWG 24	4
48 V	1 m	AWG 24	12
48 V	50 m	AWG 24	10

MECHANICAL DRAWING - IOLITEI 3XMEMS-ACC



IOLITEI 3XMEMS-ACC-W (OUTDOOR ENCLOSURE)



OPTION: IOLITEI 3XMEMS-ACC-INC (INCLINOMETER)

IOLITEi 3xMEMS-ACC can be used as a two-axial inclinometer. The requirement needs to be specified at the time of order since additional calibration procedure is required to guarantee the calibrated accuracy of the device. 3xMEMS-ACC can be used to measure the roll and pitch angles (about its X and Y axes) with the Z axis positioned vertically. The angles must be calculated in software, consult DEWESOFT support for providing the software setups.

Inclinometer specifications	
Measurement range	±15 deg
Resolution	0.001 deg
Relative accuracy (23 degC)	0.01 deg

OPTION: IOLITEI 3XMEMS-ACC-W (OUTDOOR VERSION)

IOLITEi 3xMEMS-ACC can be supplied in a waterproof aluminium enclosure with cable glands. The enclosure is designed to be mounted outdoor. Cables are to be inserted through the cable glands at the installation location and crimped to the male RJ45 connectors. Female RJ45 connector of the 3xMEMS-ACC are located inside the waterproof enclosure. The top lid is to be fixed to the enclosure using an O-ring seal and four bolts after the connectors are mated.

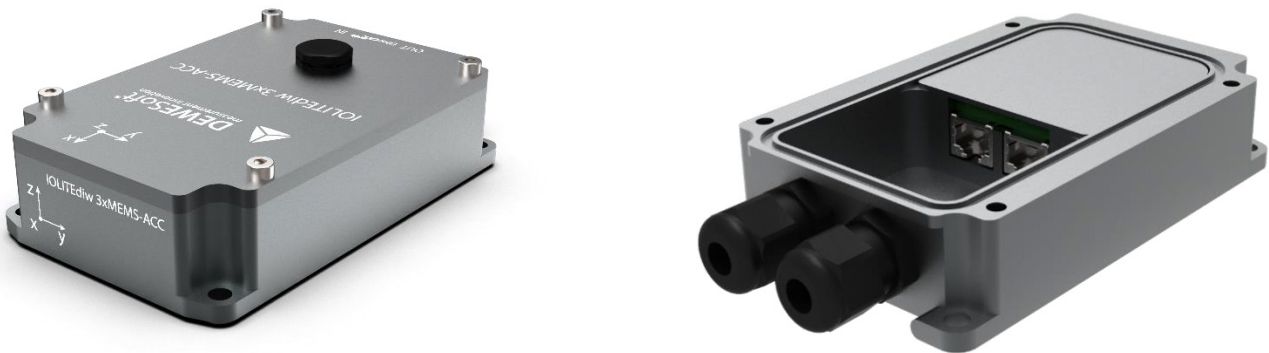


Figure4-I OLITEi 3xMEMS-ACC-w option - outdoor enclosure

The outdoor enclosure automatically vents air to equalize pressure inside the enclosure to the outside air pressure while it does not allow water to pass into the enclosure. This prolongs the life span of the seal and increases durability of the enclosure.