Biometrics Ltd

ACCELEROMETER SENSOR
TECHNICAL SPECIFICATION

TYPE NO. ACL300

Including instructions on connecting the accelerometer to instrumentation not supplied by Biometrics Ltd.

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GENERAL DESCRIPTION

The *ACL300* is a precision 3 axis accelerometer with factory set offset and sensitivity adjust, signal buffers and adjustable filters for each channel. The signal conditioning electronics and power supply are housed in a separate interface unit allowing for miniaturization of the accelerometer probe. The *ACL300* readily connects to a variety of general purpose data acquisition devices due to the non-critical power requirements and stable linear outputs. Each channel is connected to the host instrument using a separate plug, so that the unit may be set up using 1, 2 or 3 channels.

The *ACL300* receives all the power for operation through the X channel plug. Therefore if only 1 channel of operation is required this must be channel X or the unit will not function. If 2 channels are required these may be channels X & Y, or channels X & Z.

WARNINGS

In general when connecting this sensor to any instrument the user must ensure that all appropriate electrical safety regulations are complied with.

In a medical application the user must ensure that all appropriate medical regulations are complied with. Any resulting system must conform to IEC601-1-1:1992 (Collateral Standard: Safety Requirements For Medical Electrical Systems).

No more than 5.00 Vdc must be applied to the ACL300 or damage will result.

The ACL300 interface unit contains ELECTROSTATIC SENSITIVE DEVICES. The correct electrical engineering handling precautions should be observed or damage to the device may result.

Biometrics Ltd accepts no liability, or consequential liabilities for the loss, or effects of loss or corruption of data caused when using this instrument.

CONNECTION DETAILS

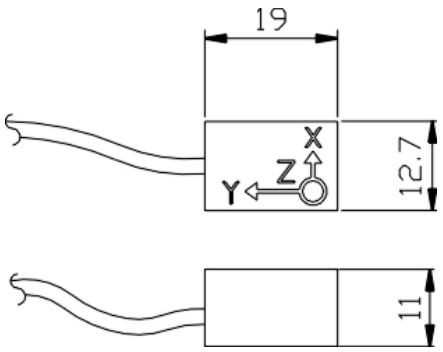
Power the unit with 3.50 to 5.00 Vdc via the X channel plug (see diagram below). Each channel (X, Y, Z) has a separate output plug and is nominally at 0.00 Vdc when no vibration or inclination occurs. The sensitivity for each channel is 100mV/G.

SPECIFICATION

MECHANICAL

Accelerometer

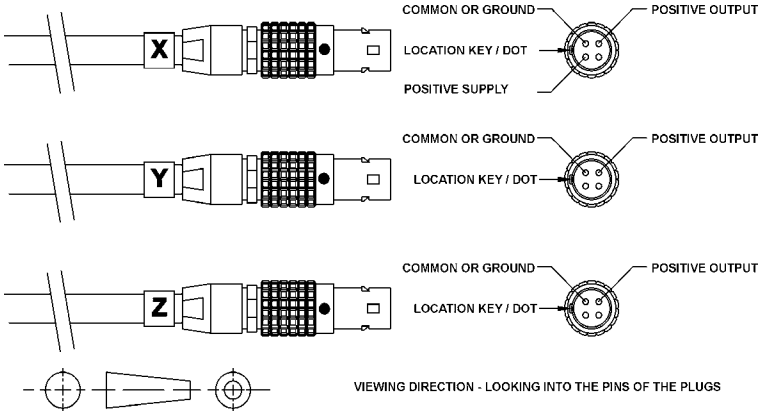
Mass	10 g
Dimensions	L x H x W (19.0 x 10.9 x 12.7 mm)



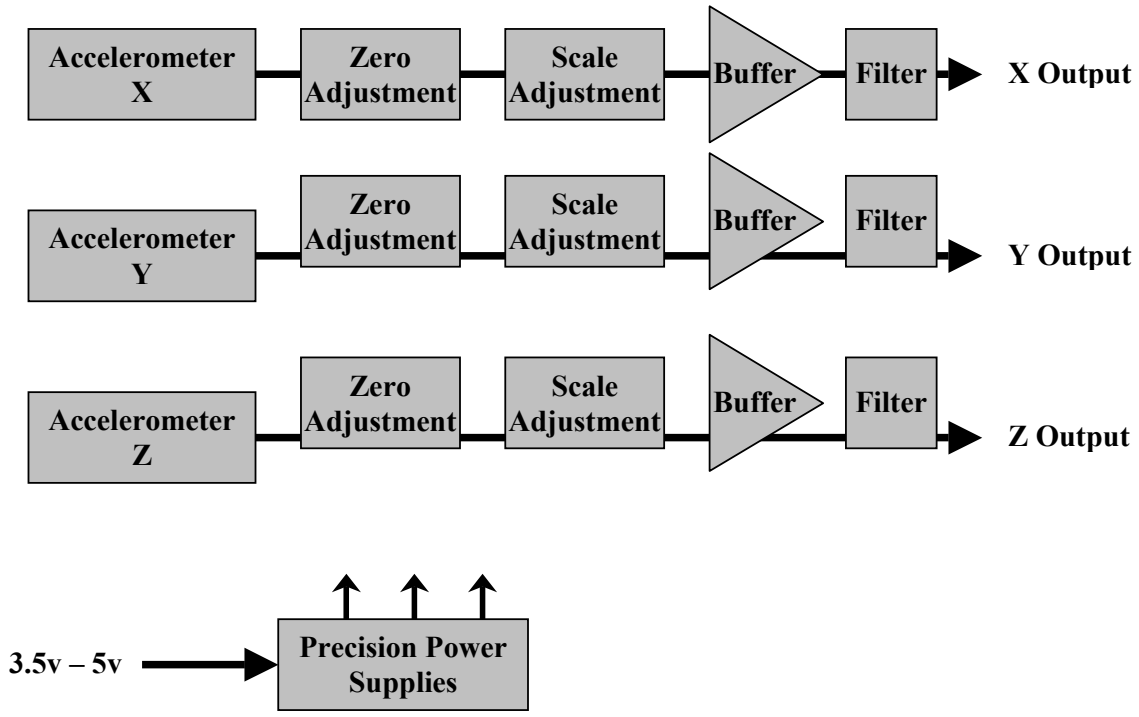
Enclosure	aluminium grade 6063TF anodized
Cable	highly flexible grade PVC
cable length	1800 mm
shock survival	unit powered 500G
	unit not powered 1000G

Interface Unit.

Dimensions	L x H x W (60 x 20 x 35 mm)
Enclosure	ABS black
	Removable lid via securing screws
	Filter adjustment via 3 x pcb header links
Output plugs	3 x Lemo type no. FGGOB304CLAD35
or	3 X ODU type no. S10LOC-T04MFDO-3200
Output cable	3 x 50 mm cable labeled X Y Z



ELECTRICAL



Output	3 plugs for 3 axes labelled X Y Z
supply voltage	+3.50 to 5.00 Vdc (X axis only) All 3 axes powered by X axis plug.
sensitivity	+/- 100mV / G
current	6 mA nominal
cross talk	< 5%.
accuracy	+/- 2 % full scale
low pass filtering	100 Hz, 500 Hz, 1000 Hz user adjustable via links by removing lid of interface unit. low pass filtering 8 pole, 8th order 1.2 Elliptic

To avoid aliasing problems when sampling the accelerometer output, an 8th order 1.2 elliptic filter is used on each output. This provides the optimum compromise between pass-band ripple and roll-off steepness; 60dB of rejection is achieved at 1.2 times the selected corner frequency. The user has the ability to adjust the low pass filter settings using simple mechanical links within the *ACL300* interface unit.

LINK setting (for each channel)	**Corner Frequency (cut-off)**
1 – 2	100 Hz
2 – 3	500 Hz
None	1000 Hz

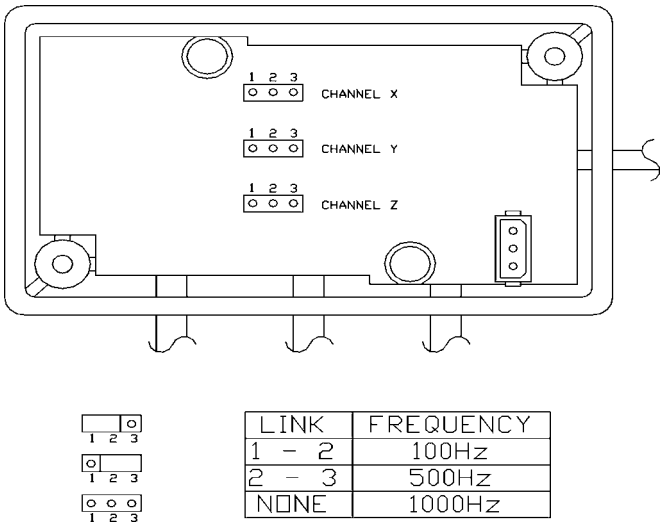


Diagram Showing Corner Frequency adjusting links within the ACL300 Interface Unit.

ENVIRONMENT

Unit not to be subject to autoclave sterilising techniques

Operating temperature range	+10 °C to +40°C
Storage temperature range	-40 °C to +70°C
Operating humidity range	30% to 75%
Storage humidity range	10% to 100%
Atmospheric pressure range	operation 500 hPa to 1060 hPa
	storage 700 hPa to 1060 hPa