❏ Upgrading Software and DataMeter 1000

If your software, DataMeter system or CheckIT version was released before this sensor came out you may require an upgrade so that it recognises and is calibrated for the sensor's scales. LogIT brand products require Version **j** or later to support this product. If, when using the sensor for the first time, your software displays mV or UNKNOWN SENSOR or DataMeter 1000 displays ??? then they require updating. The DataMeter 1000 system & many software updates (including Insight, LogIT Lab, Psion etc) can be downloaded quickly and freely from our web site at *www.dcpmicro.com*

LogIT *brand* software - if you cannot upgrade from our web site return original disk directly to DCP & mark the package for the "Upgrade Department".

Third party software (eg Insight, RM Investigate) must be returned directly to the publishers, but please see our web site for some of these updates.

❏ Upgrading CheckIT

If CheckIT displays mV or ??? when this sensor is plugged in you will need to send it back for upgrade. CheckIT upgrades are free but we can only upgrade one CheckIT free of charge per sensor purchased. If returning hardware please ensure it is sent by secure / registered post as we cannot accept any liability for non arrival or damage of your equipment. These upgrades are only valid for UK customers - for overseas information please contact your LogIT supplier.

**LogIT is a joint British development between
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Microsense® Linear Accelerometer

❏ Introduction

The Microsense® LogIT Linear Accelerometer is based around a solid state polysilicon micromachined sensor etched onto an integrated circuit. Its standard unit of measurement is acceleration or deceleration in m/s/s (m s^{-2} or m/s^2); this is the default shown on the DataMeter or CheckIT displays and within datalogging software. Some software packages such as LogIT Lab or Insight will also display and record acceleration in g - the accelerometer can measure +/-5g (fighter pilots can risk blackout at 5g !). The same software can also use the accelerometer to measure angles (tilt) from -90° to +90° [1g = 90° : -1g=-90° : 0.707g=45° (this is because acceleration is a vector)].

❏ Adjustment

Adjust for zero
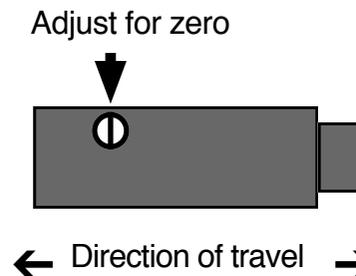
← Direction of travel →

❏ Instructions for use

Before use it is necessary to calibrate the unit by setting it to zero. This calibration is required as the sensor is affected by the Earth's gravity, hence its ability to record angular tilt. Therefore, if you were to measure a trolley running down an inclined ramp you would need to zero the unit to calibrate out the angle of the slope.

To calibrate the sensor correctly you must first set up the experiment to be measured. The accelerometer can then be attached (using a sensor extension lead up to 3 metres long, if required) and then use a suitable, SMALL, screwdriver to carefully turn the adjustment screw until the datalogger display or software displays a zero reading - most software has a test facility or the ability to display sensor readings before logging is commenced.

If you wish to measure angle (tilt) you will need to place the accelerometer on an absolutely flat, level surface before calibration.

Unlike light gates or similar switch devices the Linear Accelerometer uses the datalogging software's sensing/logging facilities rather than the timing/digital function. This means that the results are displayed as a linear line graph recorded against time.

Allowance must be made for the log rate being used by the datalogger or logging software. If the log rate is too slow readings could be missed, therefore, it is best used for 'quick' events such as collisions.

❏ Care

- The Accelerometer is not waterproof and care should be taken not to let liquid, dirt or steam get inside.
- The unit contains sensitive microelectronics which must remain protected from physical shock or electrostatic damage.
- Never dismantle the unit.

Calibrate the accelerometer before each experiment for best accuracy.

❏ Specification

Default scale (as displayed on datalogger screens and in software):

Range (acceleration):	-50 m/s/s to +50 m/s/s
Resolution:	0.1
Accuracy (after calibration):	+/- 5% of range

Additional scales available in some software LogIT Lab, Insight):

Range (g):	-5g to +5g (fighter pilots can blackout at 5g !)
Resolution:	0.1
Accuracy (after calibration):	+/- 5% of range

Range (tilt):	-90° to +90°
Resolution:	1.0
Resolution (after calibration):	+/- 5% of range

❏ Experiment ideas

- Trolley based investigations:
  - acceleration of trolley down different inclines or with a different mass
  - collisions, elastic and inelastic
  - braking effect of friction
    (if used with software that displays tilt, the angle at which the trolley overcomes the friction of a slowly raised slope could be recorded).
- Measuring acceleration produced when jumping
  - linked to force generated by muscles and work/energy in exercise.
- Elastic collisions i.e. how seat belts function:

Drop and record falling object

Elastic or string

Object e.g. soft toy

Accelerometer on sensor extension lead

To datalogger