



Description

The Electronic Engineers Level (EEL) offers faster and more accurate levelling, with a 5-second stabilisation time and a levelling accuracy of ± 0.5 arc seconds ($2\mu\text{m/m}$). The accuracy throughout the $\pm 300''$ measurement range is $\pm 5''$, enabling precise measurement of small angles. Built-in Bluetooth connectivity allows remote viewing of the EEL's readings via a free iOS and Android app which simplifies and speeds up machine levelling. The precision ground granite base maintains its accuracy long-term, will not corrode or distort and can't be dented. The base is available in 125 or 200mm length options and includes flat contact points and prismatic "V" surfaces, enabling levelling on both flat and cylindrical surfaces. A graphical cross-vial is displayed to assist upright positioning on cylindrical objects. The level's robust construction and sensor design ensures excellent stability, with a ± 1 arc second long-term stability rating and a temperature drift of $\leq 0.5''/^{\circ}\text{C}$. It also offers high resistance to shock and vibration which reduces the need for recalibration. However, user re-calibration and absolute / relative functions are built into the device and are simple to use if required.

Features

- Highly accurate measurements with $\pm 0.5''$ levelling accuracy and $\pm 5''$ accuracy over the $\pm 300''$ measurement range
- Fast and precise operation with a 5 second stabilisation time and $0.1''$ resolution
- Remote Bluetooth connectivity to free iOS and Android App simplifies and speeds up machine levelling.
- Precision ground granite base maintains accuracy over the life of the product as the material will not corrode or distort and cannot be dented
- The base includes both flat contact points and prismatic 'V' surfaces for levelling on flat and cylindrical surfaces (includes a graphical cross-vial for upright positioning of level on cylinders)
- Robust construction and sensor design is highly stable, with $\pm 1''$ long term stability and $\leq 0.5''/^{\circ}\text{C}$ temperature drift, plus high resistance to shock and vibrations e.g. during transport.
- Built-in rechargeable battery (~40 hours use)
- Two base length options: 125mm and 200mm
- OLED Display with graphic and numerical modes
- Selectable units in arc seconds and mm/m
- Absolute/Relative mode & simple user-calibration



Specifications

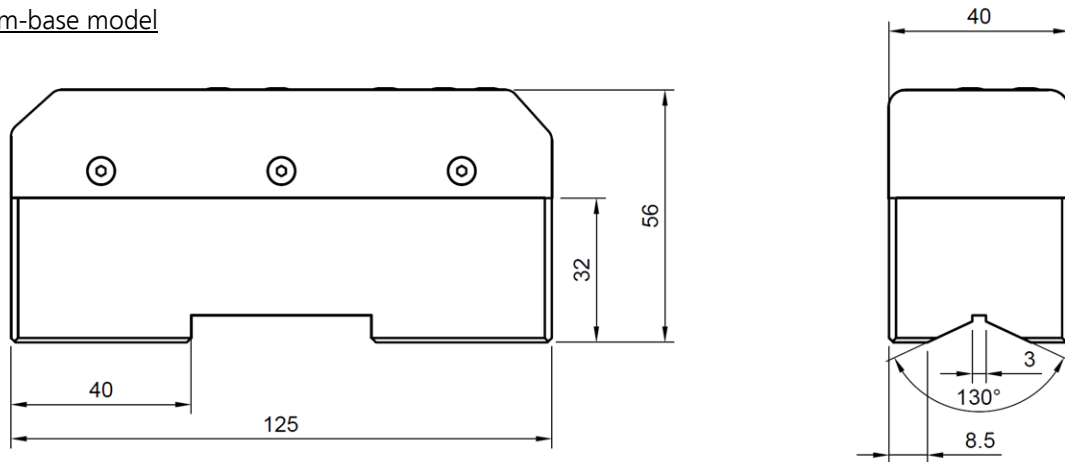
Parameter	Value	Units	Notes
Levelling Accuracy	± 0.5 ± 0.002	" (arc secs) mm/m	
Accuracy Over Measurement range	± 5 ± 0.024	" (arc secs) mm/m	In the measurement range $\pm 300''$ In the measurement range ± 1.45 mm/m
Bi-directional Repeatability	± 0.5 ± 0.002	" (arc secs) mm/m	
Resolution	0.1 0.0005	" (arc secs) mm/m	
Measurement Range (Linear)	± 300 ± 1.5	" (arc secs) mm/m	
Measurement Range (Non-Linear)	± 500 ± 2.5	" (arc secs) mm/m	
Temperature Drift (max)	0.5 0.002	arc secs / °C mm/m per °C	
Long Term Stability	± 1 ± 0.005	" (arc secs) mm/m	
Sensitivity Per Division	Various Settings (" and mm/m)		2", 4", 10", 20", 80" 0.01, 0.02, 0.05, 0.1 and 0.4mm/m
Charging Connection Style	USB-C		Requires a 5V DC supply to charge. If connected to a charger then it can be operated with a depleted battery.
Adjustable Low Pass Filter	0.0625 to 0.5 Default: 0.25	Hz	User adjustable damping filter settings, accessible via the settings menu: 0.0625, 0.125, 0.25, 0.5Hz
Stabilisation Time	5	seconds	Time after a step change to reach 1" of the final reading
Battery Life	~40	hours	Rechargeable internal battery (see page 5)
Operational Temperature Range	0 to 40	°C	
Storage Temperature Range	-20 to 60	°C	
Weight 125mm unit	1	Kg	Not including carry case
Weight 200mm unit	1.6	Kg	Not including carry case

Parameter	Notes
Levelling Accuracy	This maximum error between the measured and displayed value when the level is at 0°
Accuracy Over Measurement range	This maximum error between the measured and displayed value at any point in the linear measurement range.
Bi-directional Repeatability	The consistency of measurement when the same tilt angle is measured repeatedly under identical conditions.
Resolution	The smallest measurable change in output.
Measurement Range	Defines the measurement range of the internal sensor.
Temperature Drift	When the level is in the null position, this is the maximum drift in position that will occur due to a change in temperature.
Long term stability	Maximum change in zero bias under normal operating conditions over a 1 year period.
Sensitivity Per Division	This is the angle change required to move the graphical bubble by one division mark on the display, the sensitivity unit and scale is user-adjustable using the settings shown above.



Dimensions

125mm-base model



200mm-base model



Screen Interface and Button Functions

The device features an OLED display with multiple display modes (graphic or numerical), and units of measurement options (mm/m or arc minutes and seconds). The button layout and functions are shown below:

Note: While the EEL is in graphic mode, the unit button changes the sensitivity scaling, whereas in numerical mode it changes the unit of measure. The display mode is saved and maintained after power cycling.





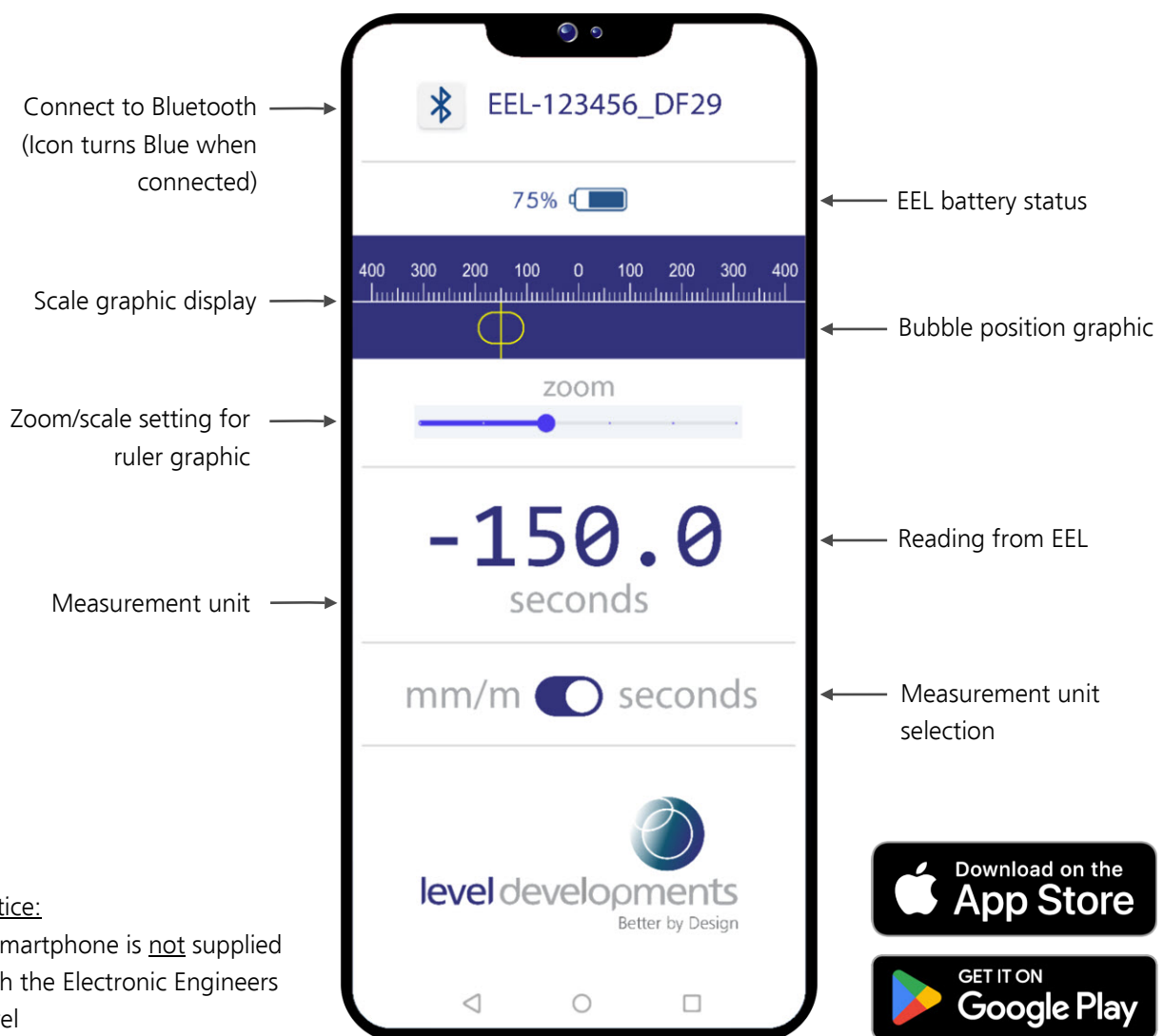
Bluetooth Connectivity for Remote Measurement

The EEL features a wireless Bluetooth interface, enabling remote connectivity to a Bluetooth-enabled smartphone via the relevant app (see next section). This facilitates easy accessibility for measurements, even in hard-to-reach or visually obstructed areas. When the EEL is switched on, it will scan for nearby Bluetooth devices, requiring the phone's Bluetooth to be switched on for connection.



Android & iOS Mobile Application

The EEL is compatible with a dedicated Level Developments application which is available for both Android and iOS platforms. This app allows for remote reading of the level using Bluetooth connectivity, provided the mobile phone is Bluetooth-enabled and within range. To download the app, search for 'EEL app' in your mobile's app store. Alternatively, (if viewing this document on a smartphone), touch the relevant app store link below. Once installed, press the 'Connect to Bluetooth' symbol at the top of the screen (as indicated below) to find the EEL listed among the available devices, then touch the EEL's device ID to establish a direct connection. The app interface and functions are shown below:





Granite Base with Prismatic V-surfaces



The EEL uses a precision ground granite base with flat feet and prismatic 'V' surfaces for levelling and measuring on both flat and cylindrical surfaces. It is available with 125mm or 200mm length options for suitability in a wide range of applications. The high-quality granite material eliminates common issues seen in cast-iron/metal bases, such as corrosion, denting and distortion. This ensures accuracy is maintained over the life of the product. In most cases, if the granite base is damaged, a small piece of the surface will chip away instead of creating a high spot (as seen in metal deformation), this ensures that the EEL remains stable and is not resting or rocking over a deformation.

Battery Information

The device uses a lithium-ion rechargeable battery for continuous use for up to 40 hours. Connecting the EEL device to the power supply provided will charge the internal battery whilst simultaneously providing power to the device itself, if necessary. This enables full operation even when the battery is discharged.

The table below shows the specifications for the internal lithium polymer battery.

Parameter	Rating	Unit	Notes
Battery type	Lithium-ion	NA	Rechargeable Lithium-ion Polymer Battery
Output Voltage	3.7	V	
Storage capacity	1,900	mAh	0.2C Discharge
Discharge time	≤40	Hours	In continuous use

**Caution:**

Do not attempt to open or service the battery pack, it should be replaced by Level Developments staff only. Do not crush, puncture or short external contacts. Keep battery away from children. Do not dispose of battery in fire or water. **Improper use of the battery pack can cause fire.**

USB-C Charging Connector

The internal battery is charged using the USB (Type-C) connection located on the top of the level. Each level is supplied with a USB-A to USB-C type cable for charging. Please note that an AC-DC wall-adapter is not provided, but the EEL can be used with any standard 5V USB charging port. Please also note that the USB port is for charging only, this product does not feature a USB interface.



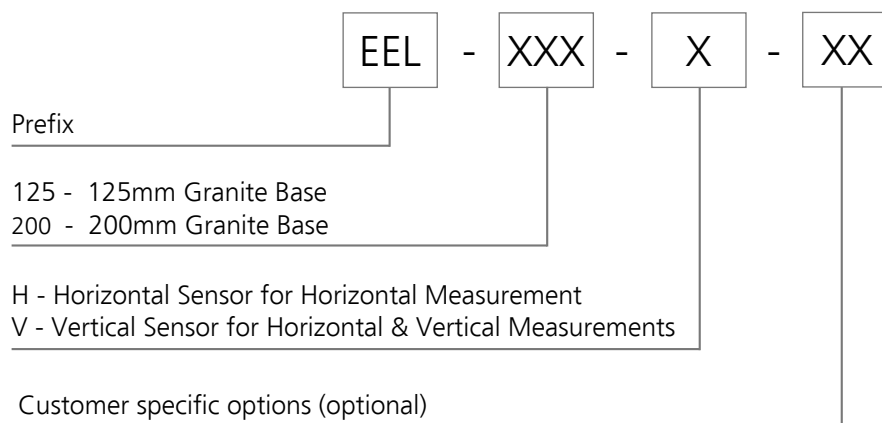


Protective Case

Each level is supplied with a padded aluminium case for protection, storage, and convenient transport in everyday use. The internal padding is thick and the case construction is robust, ensuring durability throughout the product's life span. With the case's protection and inherent stability of the EEL's design, it can be used straight out of the case with no need for calibration or setup.



Part Numbering



The standard configuration for the EEL is EEL-200-H

Example:

EEL - Electronic Engineers Level Device

200 - 200mm Granite Base

H - Horizontal Sensor for Horizontal Levelling Measurements