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DL1097 Electronic Wall Scanner

Instruction Manual

Stud Wall - Wooden Beam, Metal & Voltage Scanner

Contents

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Certificate of conformity

As the manufacturer of the instrument listed below, we declare under our sole responsibility that the product:

Di-LOG DL1097

to which this declaration relates is in conformity with the relevant clauses of the following standards:

EN 61326-1:2013
EN 61326-2-2:2013
EN 60825-1:2014 ROHS FCC

EMC

The safety and performance of this instrument is assured when operated within the specifications in this instruction manual.

CE The product identified above conforms to the requirements of EU council directive 2014/35/EU

UKCA The product identified above conforms to the UK requirements of council directive Electromagnetic Compatibility Regulations 2016

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I. Overview

Thank you for purchasing a Di-LOG electronic wall scanner. The DL1097 has been designed in accordance with the latest UK and international safety standards.

This product can detect metals (reinforcement bars (rebars) and copper pipes, cables and wood hidden in walls, ceilings, floors and under gypsum plaser boards.

II. Safety Notices

This instruction manual contains information that must be followed for operating the scanner safely and maintaining the scanner in a safe operating condition. If this scanner is not used in the manner that is specified, the protection provided may be impaired.

⚠ Warning! Warns of potential danger, refer to the instruction manual to avoid personal injury or damage to the meter.

⚠ Caution! Dangerous voltage. Danger of electrical shock.

⚠ Optimal operation is only guaranteed within a temperature range of 0 - 40°C, with an operating relative humidity dependent on the material being scanned:

- Metal Mode: <85% RH.
- AC Mode: <30% RH
- Wood Mode: <60% RH

II. Safety Notices (continued)

⚠ A statement about protection impairment if used in a manner not specified by the manufacturer.

The wall scanner is designed to be used by competent persons and in accordance with safe methods of work.

⚠ Do not attempt to repair this product. If the product becomes damaged, please contact your place of purchase or contact Di-LOG directly, please see section 9.

⚠ Electromagnetic radiation may cause interference to other devices (such as pacemakers or hearing aids and other medical instruments). Do not use this product in a flammable or explosive environment, near any medical equipment or on an aircraft.

⚠ Please dispose of the obsolete instrument in accordance with the local laws and regulations.

Do not use or store the scanner in an environment of high temperature, humidity, fumes, vapour, gaseous, inflammable, and strong magnetic field.

The scanner may only be opened by a qualified service technician for calibration and repair.

III. Instrument & Manual Symbols

Symbols displayed on the instrument and in the instruction manual:

Warning! Warns of potential danger, and to comply with the instruction manual.

Caution! Dangerous voltage, potential risk of electrical shock.

CE Symbol of conformity confirms conformity with relevant EU directives. The scanner complies with EMC directives (2014/35/EU)

UKCA Symbol of conformity confirms conformity with relevant UK directives. The scanner complies with EMC directives (Electromagnetic Compatibility Regulations 2016)

The DL1097 meets the standard (2012/19/EU) WEEE. This marking indicates that this product should not be disposed of with other household waste throughout the EC. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. The retailer can manage the disposal of this product for environmentally safe recycling.

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III. Instrument Symbols (continued)

The instruction manual contains information and references, necessary for safe operation and maintenance of the instrument. Prior to using the instrument, the user is kindly requested to thoroughly read the instruction manual and comply with it in all sections.

Failure to read the instruction manual or to follow the warnings and references contained herein can result in serious bodily injury or instrument damage. The respective accident prevention regulations established by the professional associations are to be strictly enforced at all times.

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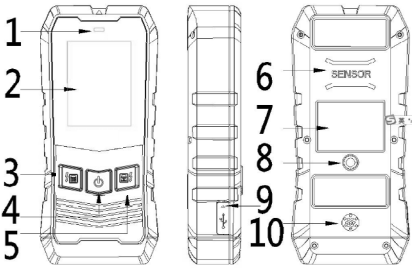
IV. DL1097 Specification

Wood scanning depth (precision mode)*	20mm
Wood scanning depth (depth mode)*	38mm
Metal scanning depth*	100mm
Non-ferrous metal scanning depth*	80mm
Live wire alarm accuracy*	Live 110-250V, 50-60Hz, 50mm
Copper wire (≥4mm2)	40mm
Auto calibration	✔
Operating temperature	0-40°C
Operating humidity	Metal mode: 0-85%RH
	AC mode: 0-30%RH
	Wooden beam mode: 0-60%RH
Storage temperature	-20-60°C
Drop proof	1m
LCD	2.4 inch colour TFT screen
Auto power off	About 5min
Battery	300mAh lithium battery
Battery life	3000 single measurements
Shut-down current	0 mA
Audio alarm	Voice broadcast

*The detection result will be affected by factors such as the material, shape, and size of the detected object, as well as the material and condition of the detection surface. If the cable is not live, the detection depth will be reduced.

V. Display and Controls



1	LED indicator
2	2.4 inch colour screen
3	Foreign material detection (wooden beam)
4	Power button, long press to power on, short press to power off
5	Metal detection
6	Sensor area (objects around will be detected)
7	Label
8	Mounting point (not used)
9	Protective cover of Type-C USB charging interface
10	Loudspeaker

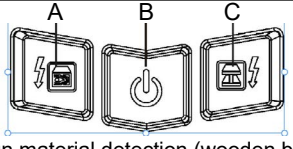


Figure 1

A. Foreign material detection (wooden beam)

B. Power button | C. Metal detection

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1. Scanning Caution

To avoid damage, keep the product away from moisture and direct sunlight.

Wait for the product to reach room temperature before turning it on, especially if it has been stored in an environment with extreme temperatures.

The detection result can be affected by the use of a microwave oven or other transmitting equipment near the wall scanner.

Surrounding environmental factors can also impact the detection result. These factors include the proximity of the product to machines that generate strong magnetic or electro-magnetic fields during detection. Additionally, moisture, metal-containing building materials, aluminum-coated insulation materials, wall-papers with good conductivity, and carpets or tiles with conductivity can also affect detection results. Therefore, it is important for users to relevant information, such as architectural drawings, before drilling or sawing on the wall, ceiling, or floor.

2. Scanner Accuracy Suggestions

• We recommend not wearing any jewellery i.e. rings or watches while using this product, as metal can interfere with the detection process.

• Ensure that you move the product evenly across the surface without lifting or changing the pressure applied.

• The product must remain in contact with the surface at all times during detection.

• Avoid touching the surface being scanned with the hand used to hold the product.

• Refrain from touching the wall scanner or the scanned surface with any other body part or free hand.

• To achieve the highest accuracy and sensitivity, move the product slowly during detection.

3. Metal Detection Mode

a. Calibrating the Wall Scanner

To ensure accurate detection, it is important to make sure the product housing is completely dry before beginning. If necessary, use a cloth to dry the scanner.

To enter the metal detection interface, turn on the product and press and hold button “C” (*figure 1*). The loudspeaker will announce the current detection mode (if sound is enabled). If any of the icons for rebars, copper pipes, or stainless steel pipes appear on the display without any interference from metal, calibration is required.

To calibrate, place the product in an environment without any metal interference or strong magnetic fields (such as lifting it into the air). Then, press and hold the button “C” until only the battery status icon and “Detect metal” are displayed on the screen.

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b. Metal Detection - Detecting metals in proximity to the product

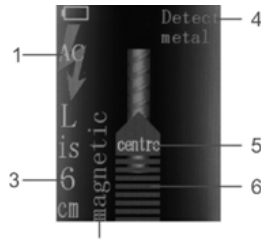

Figure 2

1. Alternating current
2. Magnetic or non-magnetic metal
3. Depth of metal
4. Detection mode
5. Centre
6. Signal strength

1. The maximum detection depth of metal is 100mm.

2. After turning on the product, it will enter the metal detection interface.

3. To detect metal objects, place the product on the surface and move it left or right. As you get closer to the metal, the signal strength on the display will gradually increase and the centre icon will appear when you are closest to the object.

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4. If the product can distinguish between magnetic and non-magnetic metals during measurement, the display screen will show the corresponding label along with the depth of the metal detected. If this feature is not available, the display will not show any additional information.

5. The product will emit a beep when both the metal and AC signal are detected simultaneously.

6. If the AC symbol appears on the display, it indicates the presence of an AC signal in the vicinity.

Please note that the display will show changes in the detection depth when metal is detected. The accuracy of the depth is dependent on various factors, such as the shape, material, and distribution of the metal being measured, as well as the properties of the surrounding medium. For objects such as rebars or copper pipes with a diameter of 18mm, the depth accuracy is the highest. However, for other objects, the accuracy may be lower, and the depth value should only be used as a rough reference.

⚠ CAUTION

It is important to note that relying solely on a product for detecting live wires in a wall may not always provide accurate results in case of malfunction or improper operation of internal equipment. To ensure accurate detection, it is recommended to refer to construction drawings or visually identify wiring or pipeline entry points for additional evidence.

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Safety precautions must be taken when dealing with live wires. Before penetrating the wall surface with a drill, screws or nails, ensure that all utilities are turned off to prevent danger.

Concrete, bricks, and ceramics may interfere with the electric field signal from live wires, affecting detection when the AC signal is detected on their surface.

Connecting an electric appliance to the required conductor and turning it on will make it easier to detect the AC signal.

The “live” wire signal spreads from both sides of the actual wire, so the area of the “live” wire alarm may appear larger than the actual wire.

The AC signal mainly comes from live wires and may also be indicated from static electricity or induced electricity in the environment. Placing hands on the wall next to the detector may help eliminate static electricity and induced electricity.

The location of the cable affects the signal strength of a “live” wire. Additional measurements nearby or other information should be used to check for the presence of “live” wires.

Thin copper wires may not be detected, and non-live wires may register as metal objects when scanning is in progress.

4. Wood/Stud Detection Mode

This device has two detection modes: precision mode with a maximum depth of 20mm and depth mode with a maximum depth of 38mm. To switch between these modes, simply press and hold the wooden beam detection button for a few seconds.

The foreign material detection mode is capable of detecting objects in gypsum drywalls, plywood, solid wood boards, and coated wood walls. However, it is not able to detect objects in materials such as concrete, mortar, blocks, bricks, carpets, foil materials, metal surfaces, tiles, glass or any other materials with uneven density.

It is important to note that the scanning depth and accuracy may vary due to differences in moisture, material content, wall texture and paint.

Apart from wooden beams, the foreign material detection mode is also capable of detecting metals and other dense materials.

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Figure 3

Figure 4

Figure 5

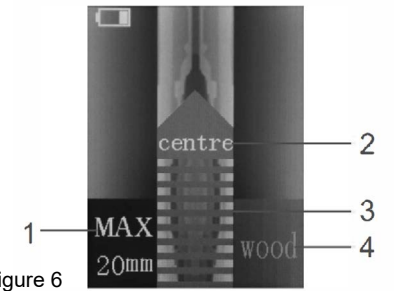

Figure 6

1. Wooden beam detection mode (precision/ depth mode).
2. Centre.
3. Signal strength.
4. Property of measured object: when the centre icon is displayed, the property of the measured object will show on the screen.

 The measured object is non-metallic, usually a wooden beam.

 The measured object is a small metal material, usually iron nails.

 The measured object is a large metal material, usually a steel frame.

 The measured object is a small non-magnetic metal, usually a cable.

 The measured object is a small amount of metal materials, usually cables or nails.

5. Operating Instructions

Once you turn on the product, press the wooden beam detection button to enter the foreign material detection interface. When you do this, the loudspeaker will broadcast the current detection mode (if the broadcast function is turned off, there will be no sound).

When detecting foreign materials (wooden beams), hold the product upright against the wall and then apply a short press of the foreign material detection button “A”. Keep the product still for 1-3 seconds and wait for the calibration to complete. Once the calibration is done, the interface shown in *Figure 4* (please move slowly) will appear, and you can then perform the detection operation.

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5. Operating Instructions (continued)

To perform the detection, place the product on the surface of the detection object and move it left or right. It is important to move the product evenly to the surface and avoid lifting or changing the pressure applied.

When the product detects a foreign material or wood, the screen will display the signal strength synchronously. Keep moving the product in the same direction. When the wall scanner is in the middle of the wooden beam, the screen will display the centre icon shown in *Figure 6* and the property of the measured object.

Continue moving the product in the same direction until it leaves the centre of the measured object. At this point, the display will show the interface as shown in *Figure 5.* Keep moving the product until it is far from the wooden beam. The signal will gradually decrease until there is no signal, and the display will only show the battery status and detection mode. This indicates that the detection is complete.

⚠ Please note that with repeated detections, the position accuracy will improve. Although no other body part is to be touching the surface whilst scanning, you may need to touch the scanned surface when detecting voltage to remove false reading caused by static electricity.

If you encounter an error alarm signal while using the product, you may need to calibrate it manually. This can happen due to environmental factors. Calibration involves short pressing the wooden beam detection button and waiting for the process to complete.

6. Important Environmental Factors

After calibration, move the product out of the wooden beam's range and detect it again if needed.

If you notice unstable scanning results, it could be due to moisture in the wall cavity or dry wall, paint that hasn't fully dried, or wallpaper. Moisture can interfere with the product's sensor, so it's best to wait for a few days until the wall is completely dry.

In some environments or on uneven surfaces, using the foreign material detection mode to find wooden beams may prove difficult. In such cases, switching to the metal detection mode to locate nails on the wooden beams may be helpful.

Please note that wires or pipes close to the wall can be detected using the foreign material detection method. Exercise caution when nailing, cutting, or drilling holes in walls, floors, and ceilings that may contain these items.

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7. Maintenance

It is important to avoid exposing the product to extreme temperatures, whether hot or cold. Additionally, the product must not be subjected to external force or vibration for extended periods of time. When not in use, the product should be stored indoors and placed in its box to prevent damage.

To clean the product, use a soft cloth that has been dipped in clean water and then squeezed dry. Do not use any corrosive or volatile substances. It is also important to avoid posting any labels or nameplates on the front and back of the detection area, and do not apply metal name-plates.

For safe storage and transportation, please use the protective case that comes with the product.

8. Trouble Shooting

Issue	Reason	Solution
The product fails to power on	Low battery	Charge via USB-C
	Minimal power button contact	Press and hold for >2s. If issue continues, please contact Di-LOG Support
Error codes are displayed on the screen	The instrument has detected an error.	Please contact Di-LOG Support

9. Charging

To ensure optimal performance, it is important to fully charge the DL1097 before using it. You can do this by connecting the USB-C lead supplied with the wall scanner to the USB-C port located on the side of the scanner, and then plugging it into a suitable USB plug. Once connected, the wall scanner will display an indication that it is charging. It is recommended that you charge the scanner for approximately 40-60 minutes, taking care not to overcharge it. Once fully charged, please disconnect the charging cable.

10. 24 Month Warranty

Di-LOG instruments are subject to stringent quality controls. If in the course of normal daily use a fault occurs we provide a 24 month warranty (only valid with proof of purchase). Faults in manufacture and material defects will be rectified by us free of charge, provided the instrument has not been tampered with and returned to us unopened. Damage due to dropping, abuse or misuse are not covered by the warranty.

Product Support

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