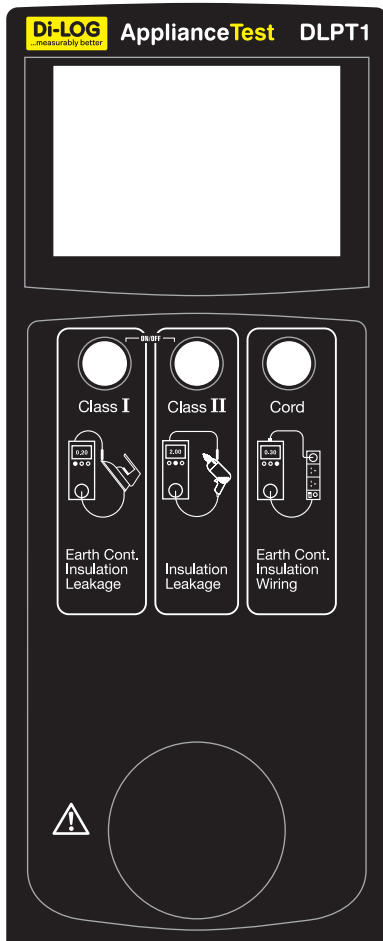




DLPT1



Operating Instructions



DLPT1

Operating Instructions

Di-LOG Test Equipment
28 Wheel Forge Way
Trafford Park
Manchester
M17 1EH

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www.dilog.co.uk
sales@dilog.co.uk

Limited Warranty & Limitation of Liability

Di-LOG Test Equipment guarantees this product to be free from defects in material and workmanship under normal use and service for a period of 2 years. The period of warranty will be effective from the day of delivery.

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Due to a policy of continuous development DI-LOG TEST EQUIPMENT reserves the right to alter the equipment specification and description outlined in this publication without prior notice and no part of this publication shall be deemed to be part of any contract for the equipment unless specifically referred to as an inclusion within such contract.

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1 Important Information

These operating instructions are intended for the use of adequately trained personnel.

The following symbols are used in these operating instructions and on the DLPT1.



Caution! Risk of electric shock!
The operating instructions must be followed to avoid personal danger.



Caution! Risk of danger!
The operating instructions must be followed to avoid danger.

Please ensure that the DLPT1 and all its accessories are in good order before use.

Standard Accessories

Description	Part Number
DLPT1	DLPT1
Operating Instructions	344A584

Full details and specifications can be found at www.dilog.co.uk or by calling Sales on 0161 877 0322

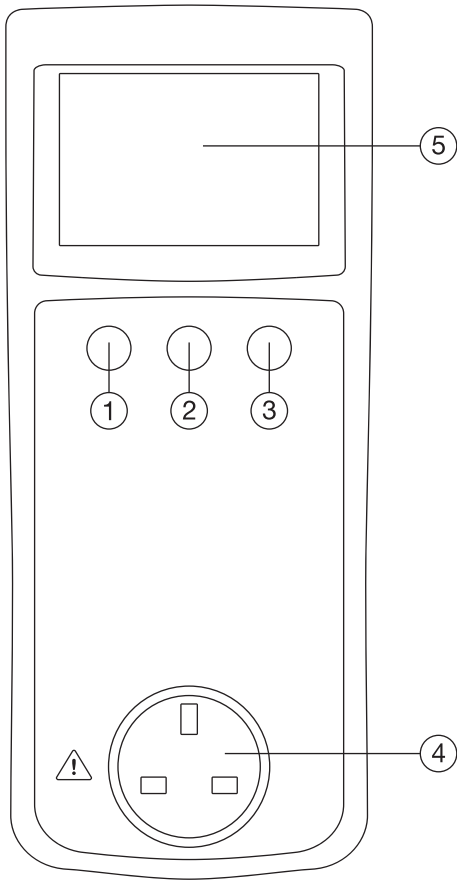


Figure 1. DLPT1 Front View

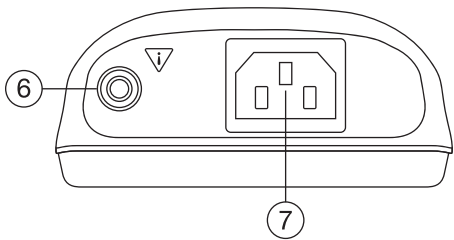


Figure 2. DLPT1 End View

2 Introduction

The DLPT1 is a handheld battery powered unit suitable for carrying out electrical safety checks on:

- Class I Appliances
- Class II Appliances
- IEC Leads
- Extension Leads and Surge-Protected Extension Leads
- Mains Power Sockets

Any number in a circle e.g. ① can be referenced to the diagrams on page 6.

Test connections on the DLPT1 are:

- 13A 250V socket on the front panel ④ for connecting appliances.
- Connection socket ⑥ for the Class I Earth Test Lead.
- IEC plug connection ⑦ for IEC lead and extension lead testing.

User Interface

The LCD display ⑤ shows the results for individual tests and the overall test result for an appliance or lead.

Tests are initiated using the **Class I**, **Class II** and **Cord** buttons.

Class I appliance test button See figure ①

Class II appliance test button See figure ②

IEC lead or extension lead test button See figure ③

Appliances

The DLPT1 tests all Class I appliances, all Class II appliances, cords or leads including extension leads including those that are surge-protected.

An appliance is any appliance no matter how small or large, light or heavy that has a lead and a plug. A Class I appliance will have a lead which contains three wires; an Earth, a Live and a Neutral.

A Class II appliance will have a lead which contains two wires; a Live and a Neutral. Many Class II appliances will have a square within a square symbol on the manufacturer's label for ease of identification.



You should ensure that all appliances and cords/leads have a unique identity or asset number before commencing any visual inspection.

The unique identity or asset number should be recorded on the Portable Appliance Test Report sheet, together with a brief description of the appliance, class of appliance and location.

It is recommended that one sheet be used for each appliance or lead.

3 Switching the DLPT1 on

The DLPT1 is switched **on** by pressing down **both the left and centre** buttons simultaneously. After a few seconds the machine will beep and the display will appear. The PAT Tester can be switched off in the same manner.

The DLPT1 will automatically switch itself off after 2 minutes if not used.

4 The Visual Inspection

It is important to visually inspect all items before they are PAT Tested. The appliance, its lead and plug should be checked for any damage.

Place a “Fail” label on any faulty item and complete the relevant Portable Appliance Test Report sheet.

Cutting off the plug of a faulty, **non-repairable** appliance is one way of preventing its re-appearance in the workplace. Make sure your action does not invalidate the manufacturer’s warranty.

Only **non-moulded** plugs should be opened to ensure all wires are securely attached to their respective terminals, and that no bare wires are visible other than at the terminals. Terminal screws should be tight, and the cable grip still holds the outer sheath of the cable firmly.

Check that the correct fuse ampere is fitted on both moulded and non-moulded plugs.

As a general rule, the IET recommend that a 3 amp fuse be used for appliances rated up to 700Watts and a 13 amp fuse for those rated above. It should however be noted that some IT manufacturers use a 5 amp fuse for their appliances.

A fuse rating label with the correct ampere can be placed on the plug. If in doubt the manufacturer of the appliance can be contacted for guidance.

The Visual Inspection section of the applicable Appliance Test Report should now be updated.

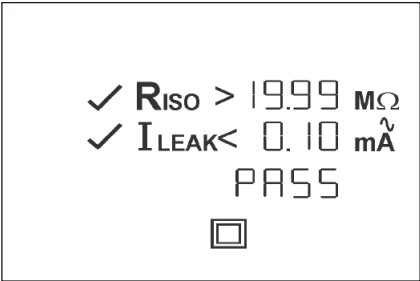
5 **Testing a Class II appliance**

A Class II appliance will have only 2 wires in the lead; a Live and a Neutral. Many Class II appliances will have a square within a square symbol on the manufacturer's label for ease of identification.



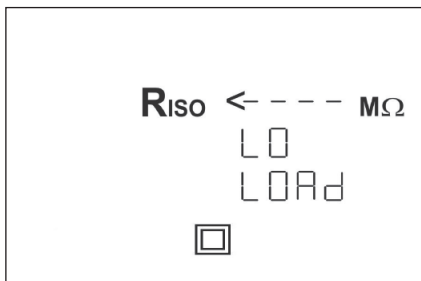
After the appliance has passed its visual inspection, insert the plug of the appliance into the socket on the front of the DLPT1, ensure the appliance switch is in the ON position and press the Class II button. The DLPT1 will automatically perform the insulation and leakage tests.

If a Pass screen similar to this appears,



place a **Pass** label on the appliance, and complete the relevant Portable Appliance Test Report sheet.

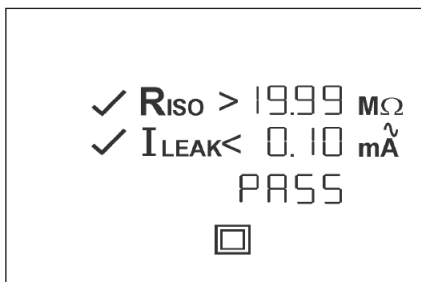
If the switch of the appliance is in the **OFF** position, the “Lo Load” display will appear on the screen.



Place the switch of the appliance in the **ON** position and the DLPT1 will automatically perform the insulation and leakage tests.

If the appliance has a switch which cannot be turned on, press the Class II button again.

If a Pass screen similar to this appears,



place a **Pass** label on the appliance, and complete the relevant Portable Appliance Test Report sheet.



If the appliance fails the insulation and leakage tests, it should not be touched for a minimum of 20 seconds in case the test voltage has leaked to a part of the external casing that is conductive.

All voltage naturally dissipates with time when its source is switched off.

Place a “Fail” label on the appliance and complete the relevant Portable Appliance Test Report sheet.

The appliance should be repaired or discarded.

Cutting off the plug of a non-repairable, faulty appliance is one way of preventing its re-appearance in the workplace. Make sure your action does not invalidate the manufacturer’s warranty.

6 Testing a Class I appliance

A Class I appliance will have a lead which contains 3 wires; an Earth, a Live and a Neutral.

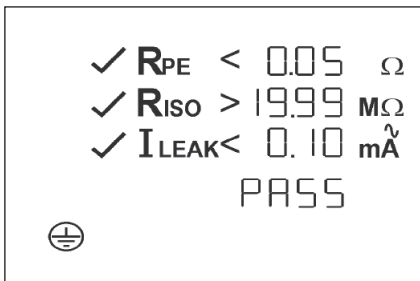
After the appliance has passed its visual inspection, insert the plug of the appliance into the socket on the front of the DLPT1.

Then insert the round jack of the earth test lead into its connection socket ⑥ on the top of the DLPT1 and apply either the probe or the crocodile clip to an external earth point on the appliance. This can be a metal part or screw of the casing.

Ensure the appliance switch is in the **ON** position and press the Class I button.

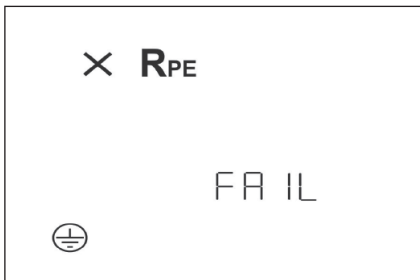
The DLPT1 will automatically perform the earth continuity test, the insulation test and the leakage test.

If a Pass screen similar to this appears,



Place a **Pass** label on the appliance, and complete the relevant Portable Appliance Test Report sheet.

If the Fail screen appears showing an **X** next to **Rpe** **without figures**, the DLPT1 will not proceed with the insulation and leakage tests.



This indicates that **the probe or the crocodile clip is not connected to an external earth, or the earth wire is broken, or the electrical resistance of the earth wire is too great to be considered safe.**

Finding an External Earth Point

The Technotrend screwdriver provided or an earth continuity finder will prove whether the contact point was a good external earth.

In the case of the former; this is done by:

1. Gripping the appliance plug's earth pin between thumb and forefinger of one hand.
2. Holding the upper-end of the light blue barrel of the Technotrend screwdriver between the thumb and the middle finger of the other hand, placing your forefinger on its black coloured end.
3. Touching the blade of the Technotrend screwdriver to a metal part of the appliance
4. If the LED illuminates, you have found an external earth point. If not, continue to touch other metal points until an earth is found.

If unsuccessful, try other metal parts of the appliance and continue testing until found. Contact the manufacturer for guidance.

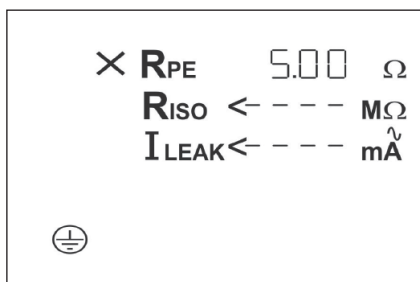
You might wish to mark a “difficult-to-find” external earth point on the appliance for future reference.

If no earth point is found, place a “Fail” label on the appliance and complete the relevant Portable Appliance Test Report sheet.

The appliance should be repaired or discarded.

Cutting off the plug of a non-repairable, faulty appliance is one way of preventing its re-appearance in the workplace. Make sure your action does not invalidate the manufacturer's warranty.

If, when performing the earth continuity test, the screen shows an **X** next to **Rpe with figures**, the DLPT1 will proceed with the insulation and leakage tests.



This indicates that the appliance has a longer lead than normal and the length and its cross-sectional area should be noted and a calculation should be performed to confirm that the electrical resistance of the earth wire falls within the acceptable limits prescribed in Table A. The CSA will be marked on the lead.

Table A

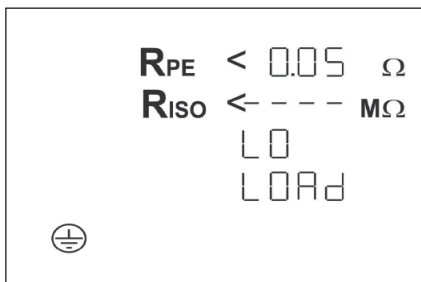
Maximum Lead/Cord Earth Resistances

Cable CSA	Ohms per Metre
0.5mm ²	0.0390 Ω
0.75mm ²	0.0260 Ω
1.0mm ²	0.0195 Ω
1.25mm ²	0.0156 Ω
1.5mm ²	0.0133 Ω
2.5mm ²	0.008 Ω
4mm ²	0.005 Ω

Calculation Example

The maximum earth resistance figure for a 50 metre lead with a cross sectional area of 0.75mm² would be $0.1\Omega + (50 \times 0.0260 \Omega) = 1.4 \Omega$

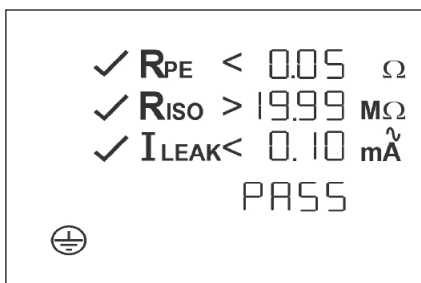
If the switch of the appliance is in the **OFF** position, the “Lo Load” display will appear on the screen after the earth continuity test.



Put the appliance switch in the **ON** position and the DLPT1 will automatically perform the insulation and leakage tests.

If the appliance has a switch which cannot be turned on, press the Class I button again.

If the Pass screen appears,



place a “Pass” label on the appliance, and complete the relevant Portable Appliance Test Report sheet.



If the appliance fails the insulation and leakage tests, it should not be touched for a minimum of 20 seconds in case the test voltage has leaked to a part of the external casing that is conductive.

All voltage naturally dissipates with time when its source is switched off.

Place a “Fail” label on the appliance and complete the relevant Portable Appliance Test Report sheet.

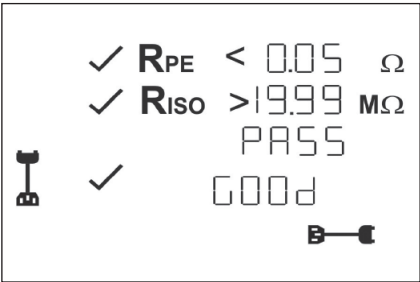
The appliance should be repaired or discarded.

7 Testing an IEC lead

After the IEC lead has passed its visual inspection, insert the socket of the IEC lead under test into the IEC plug ⑦ on the top of the DLPT1. Insert the plug of the IEC lead into the socket of the DLPT1, and press the Cord button.

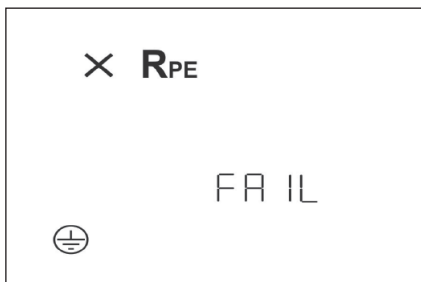
The DLPT1 will automatically perform the earth continuity test, the insulation test and the polarity test.

A “Good” display should appear.



Place a “Pass” label on the IEC lead, and complete the relevant Portable Appliance Test Report sheet.

If the Fail screen appears showing an **X** next to **Rpe without figures**, the DLPT1 will not proceed with the insulation and polarity tests.



This indicates that **the earth wire is broken, or the electrical resistance of the earth wire** is too great to be considered safe.

Place a “Fail” label on the IEC lead and complete the relevant Portable Appliance Test Report sheet. The IEC lead should be repaired or discarded.

If, when performing the earth continuity test, the screen shows an **X** next to **Rpe** with figures, the DLPT1 will proceed with the insulation and polarity tests.

This indicates that the appliance has a longer lead than normal and the length and its cross-sectional area should be noted and a calculation should be performed to confirm that the electrical resistance of the earth wire falls within the acceptable limits prescribed in Table A.

The CSA will be marked on the lead.

Table A

Maximum Lead/Cord Earth Resistances

Cable CSA	Ohms per Metre
0.5mm ²	0.0390 Ω
0.75mm ²	0.0260 Ω
1.0mm ²	0.0195 Ω
1.25mm ²	0.0156 Ω
1.5mm ²	0.0133 Ω
2.5mm ²	0.008 Ω
4mm ²	0.005 Ω

Calculation Example

The maximum earth resistance figure for a 50 metre lead with a cross sectional area of 0.75mm² would be $0.1\Omega + (50 \times 0.0260 \Omega) = 1.4 \Omega$

Note: Polarity Wiring Faults

- Open indicates that either the live or neutral conductor is broken or the fuse in the plug has failed.
- Short indicates that the live and neutral conductors have shorted.
- Cross indicates that the live and neutral connections are crossed.

8 Testing an Extension lead

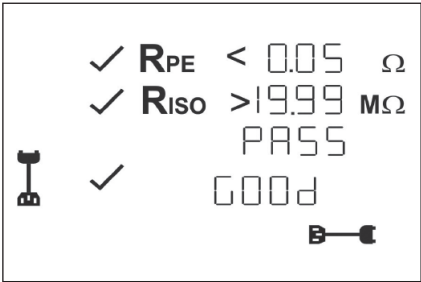
The supplied and designated IEC lead is used as an adapter to test an extension lead.

After the extension lead has passed its visual inspection, insert the IEC socket of the IEC lead into the IEC plug ⑦ on the top of the DLPT1.

Insert the plug of the IEC lead into the first or only socket of the extension lead and insert the plug of the extension lead into the socket of the DLPT1.

Ensure the extension lead switch, if it has one, is in the **ON** position and press the Cord button. The DLPT1 will automatically perform the earth continuity test, the insulation test and the polarity test.

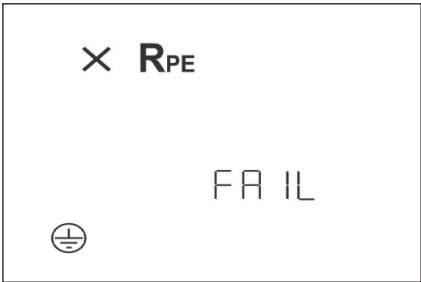
A “Good” display should appear.



Repeat the test for each individual socket.

Place a “Pass” label on the extension lead, and complete the relevant Portable Appliance Test Report sheet.

If the Fail screen below appears showing an **X** next to **R_{pe} without figures**, the DLPT1 will not proceed with the insulation test and the polarity test



This indicates that **the earth wire is broken, or the electrical resistance of the earth wire** is too great to be considered safe.

The extension lead should be repaired or discarded.

Place a “Fail” label on the extension lead and complete the relevant Portable Appliance Test Report sheet.

If the screen below appears showing an **X** next to **Rpe with figures**, the DLPT1 will proceed with the insulation test and the polarity test.

This indicates that the appliance has a longer lead than normal and the length and its cross-sectional area should be noted and a calculation should be performed to confirm that the electrical resistance of the earth wire falls within the acceptable limits prescribed in Table A.

The CSA will be marked on the lead.

Table A

Maximum Lead/Cord Earth Resistances

Cable CSA	Ohms per Metre
0.5mm ²	0.0390 Ω
0.75mm ²	0.0260 Ω
1.0mm ²	0.0195 Ω
1.25mm ²	0.0156 Ω
1.5mm ²	0.0133 Ω
2.5mm ²	0.008 Ω
4mm ²	0.005 Ω

Calculation Example

The maximum earth resistance figure for a 50 metre lead with a cross sectional area of 0.75mm² would be $0.1\Omega + (50 \times 0.0260 \Omega) = 1.4 \Omega$

If a **surge-protected extension lead** passes the earth test (**Rpe**) but fails the insulation test (**Riso**), connect it to a Class I appliance and test it as a Class I.

It should pass the earth test (**Rpe**), fail the insulation test (**Riso**) but pass the leakage test (**Ileak**). Ignore the overall Fail result.

This shows that the surge-protected device within the extension lead caused the insulation test to fail and was not caused by an insulation fault.

If the extension lead passes the earth test (**Rpe**), but fails both the insulation test (**Riso**) and the leakage test (**Ileak**), it should be repaired or discarded.

Place a “Fail” label on the extension lead and complete the relevant Portable Appliance Test Report sheet.

9 Testing a mains power outlet

The DLPT1 can check that a mains socket outlet has been correctly wired.

Switch the DLPT1 **ON**, and insert the socket of the supplied and designated IEC lead into the IEC plug ⑦ on the top of the DLPT1.

Insert the plug of the IEC lead into the mains socket and switch the socket on. The display should show a Pass.



If the wiring is faulty, the display will show a “Fail” giving the likely reason.



The mains socket outlet should not be used until repaired or replaced.



Do not leave the DLPT1 permanently connected to a mains supply.

The auto switch-off function is disabled when the DLPT1 is connected to a live mains socket. The unit will beep after 3 minutes to remind the user to disconnect it from the mains power socket.

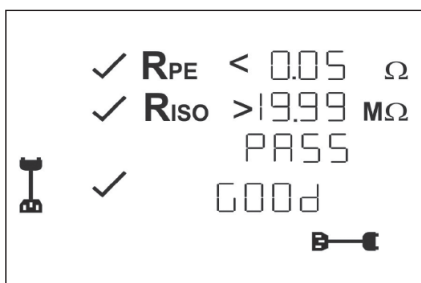
Further information on protective conductor resistance and testing of portable appliances can be found in the Code of Practise for In-service Inspection and Testing of Electrical Equipment published by the IEE.

10 Using a cloverleaf adapter

Connect the IEC socket of the cloverleaf adapter to the IEC plug on the top of the DLPT1. Insert the plug of the lead into the socket on the front of the DLPT1. insert the plug of the cloverleaf adapter into the cloverleaf socket on the transformer.

Press the Cord button.

A “Pass” screen should be displayed.



Place a “Pass” label on the extension lead, and complete the relevant Portable Appliance Test Report sheet.

If a “Fail” screen appears, the lead should be repaired or discarded. Place a “Fail” label on the lead and complete the relevant Portable Appliance Test Report sheet.

11 Using a 110 volt adapter

The 110 volt adapter is used with Class I and Class II 110 volt appliances.

The plugs of these appliances will have round pins of varying sizes, dependent upon the ampere of the appliance. The majority are either yellow 16 amp or blue 32 amp.

Insert the plug of the adapter into the socket on the front of the DLPT1 and connect the socket of the adapter to the 110 volt appliance plug.

Test according to the appropriate Class.

12 Using a 110 volt extension lead adapter

The 110 volt extension lead adapter is used in conjunction with the 110 volt adapter when testing a 110 volt extension lead.

Insert the plug of the 110 volt adapter into the socket on the front of the DLPT1 and connect the socket of the adapter to the plug of the extension lead.

Insert the IEC socket of the 110 volt extension lead adapter into the IEC plug on top of the DLPT1, and connect the 110 volt plug on the other end to the 110 volt socket on the extension lead.

Test according to the appropriate Class.

13 Specification

Earth Continuity

Accuracy	$\pm (5\% + 2 \text{ digits})$
Test current	200mA minimum
Test voltage	9V nominal

Insulation resistance

Accuracy	$\pm (5\% + 2 \text{ digits})$
Test voltage	500V
Test current	$>1\text{mA}$ into $500\text{k}\Omega$
Test current	$<2\text{mA}$ into $2\text{k}\Omega$

Leakage Current

Accuracy	$\pm (5\% + 2 \text{ digits})$
Test voltage	40V rms, 50Hz AC
Test current	$<5\text{mA}$ into $2\text{k}\Omega$

Cord Test

Earth continuity, insulation resistance are as above. Checks for Live and Neutral open circuit, short circuit or reversed polarity.

Factory Set Pass / Fail limits

	Class I	Class II	Cord
Earth Continuity	0.2 ohms	N/A	0.2 ohm
Insulation Resistance	1.0Mohm	2.0Mohm	2.0Mohm
Leakage	0.75mA	0.25mA	N/A

Environmental Rating

IP Rating IP40

The operating temperature range is 0°C to 40°C , without moisture condensation.

Storage temperature range -25° to 65° .

Note: Batteries should be removed prior to storage.

Overvoltage category 300V CAT II

14 Maintenance

The yellow bumpers and the test buttons may be cleaned with a small amount of an oxygenated cleaner on a cloth. Likewise a small amount of white spirit on a cloth will remove most dirty marks from the black case.


Electrolytic contamination can be removed from the battery contacts using a proprietary Switch Cleaner and cotton bud. Invert the case when doing so.


Note: The DLPT1 contains no user serviceable parts.

If an **Error** warning appears on the display, please contact Di-LOG Test Equipment on:

Tel: 0161 877 0322

15 Battery Check

The DLPT1 is powered from a 6 AA cells which are checked before a test is performed. When the battery voltage is low the  symbol is shown. The unit will continue to perform within specification for a limited number of tests, dependent upon the type of the batteries fitted.

When the battery voltage reaches a level where the performance is affected the  symbol will flash and all test keys are disabled. The batteries must be replaced.

16 Battery Replacement



Before opening the battery compartment of the DLPT1 ensure that all test leads are disconnected.

- Undo the captive screw in the battery compartment cover.
- Remove the battery compartment cover and remove the discharged batteries.
- Insert the replacement batteries into the battery compartment.
- Ensure that the battery polarity matches the marking on the inside of the battery compartment.
- Replace the battery cover and fasten the captive screw.

17 Service and Calibration

To maintain the specified accuracy of the measurement results, the instrument must be recalibrated annually with Di-LOG Test Equipment.

For help or advice on Service and Calibration contact:

Di-LOG Test Equipment

28 Wheel Forge Way
Trafford Park
Manchester
M17 1EH

Tel: 0161 877 0322
www.dilog.co.uk
sales@dilog.co.uk

