



# **PAT300 Series**

## **Portable Appliance Testers**

### **User Manual**

Thank you for purchasing the Megger portable appliance tester.

For your own safety and to get the maximum benefit from your instrument, please ensure that you read and understand the safety warnings and instructions before attempting to use the instrument.











*These instruments are designed and manufactured by:*

*Megger Limited  
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Megger Limited reserves the right to change the specification of these instruments at any time without prior notice.

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## 1.1 Unpacking the carton

Unpack the carton contents carefully. There are important documents that you should read and keep for future reference.

Please complete the pre-paid warranty card and return it to Megger Limited as soon as possible to help us reduce any delays in supporting you should the need arise.

### PAT320 carton contents

- 1 PAT300 series appliance tester
- 1 Carry case
- 1 Quick-start guide
- 1 Black test lead set with probe and clip
- 1 IEC lead 0.5m (Extension lead adaptor)
- 1 Warranty card
- 1 Owners CD manual

### PAT350 Carton contents

- 1 PAT300 series appliance tester
- 1 Carry case
- 1 Quick-start guide
- 1 Black test lead set with probe and clip
- 1 IEC lead 0.5m (Extension lead adaptor)
- 1 Warranty card
- 1 Owners CD manual
- 1 Flash test lead

## 1.2 Safety Warnings

The following Safety Warnings and Precautions must be read and understood before the instrument is used. They **must** be observed during use.

- For safety, only connect the PAT to a supply that is properly earthed. If in doubt, the supply should be checked by a qualified electrician.
- Do not use the instrument if there are any signs of damage.
- All test leads, probes and clips **must** be in good order, clean and with no broken or cracked insulation.
- Probes and clips should be held behind the finger guard.
- Test leads not used during a measurement should be disconnected from the Appliance tester.
- For dual voltage testers, both sockets can be live simultaneously.
- Only connect one asset to the PAT during testing.
- Tests should be carried out in the order recommended below. An appliance that fails a test should be repaired before further testing is carried out.

Recommended Sequence:

1. Earth Bond/ Continuity of the protective earth conductor (Class I devices)
2. Insulation test (or earth leakage)

In addition further tests can be performed

3. Operation test
  4. Leakage test
- Only perform an operational test after the Earth bond and insulation tests have been completed, as this test operate at mains voltage.
  - During testing, ensure no hazard will exist as a result of normal running or under fault conditions.
  - During testing the unit under test (asset) should not be touched, other than using the appropriate accessories, as faulty appliances can present a shock hazard.
  - Do not touch the exposed parts of test leads during tests as hazardous voltages may be present due to potentially faulty appliance.
  - Do not touch the IEC extension lead socket pins especially during a test, as hazardous voltages may be present due to a potentially faulty appliance
  - Assets should not be routinely flash tested. Where flash testing is required, refer to further guidance on Flash testing, section 4.5.
  - Replacement fuses **must** be of the correct rating and type. Refer to section 6.3
  - The USB connection should only be used by approved service personnel; nothing should be connected to the USB port during testing.
  - Only use NiMH rechargeable 9V PP3 battery, do not use a non rechargeable type as this could become dangerous if charged by the instrument.
  - Serviceable fuses should only be replaced with those that are suitably rated
  - In case of an emergency use an easily accessible power point

### 1.3 Symbols used on the instrument



Caution: risk of electric shock



Caution: refer to accompanying notes. When displayed at the start of an insulation test, warns that a hazardous voltage may exist at the test lead probes



Equipment complies with relevant EU Directives

N13117



Equipment complies with 'C tick' requirements



FUSED



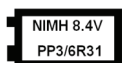
THIS EQUIPMENT SHOULD BE RECYCLED AS ELECTRONIC WASTE



HV TEST LEAD IN UNLOCKED POSITION



HV TEST LEAD IN LOCKED POSITION



BATTERY TYPE FITTED



DO NOT CONNECT TO 230 V SUPPLY

## **2. Getting started**

### **2.1 Carry case**

The carry case for the appliance tester has a lead storage pouch in the lid of the case when opened. This is designed for basic lead and document storage.

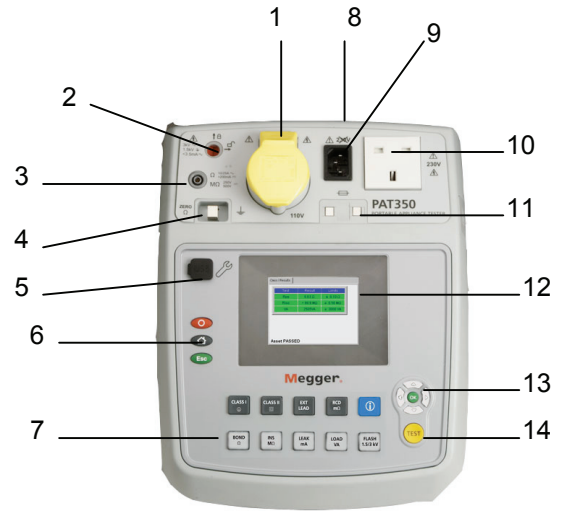
Further items can be stored in the pouch. If it becomes difficult to close the case, the storage pouch can be removed from inside the case and attached to the front using the straps on the reverse of the pouch.

These are passed through the D-loops on the outside of the case and secured to the underside of the pouch using the Velcro fixings.

An additional storage pouch is available from Megger Ltd for extended storage, such that there is a pouch on both the inside and outside of the carry case.

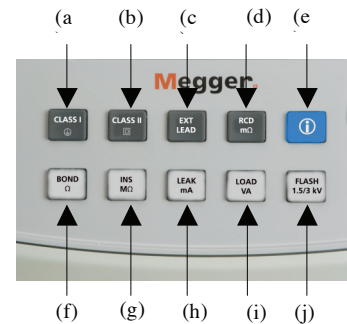
## 2.2 Instrument layout

- 1 Appliance test socket 110 V
- 2 Flash test socket (PAT 350 only)
- 3 Earth bond and Insulation test probe socket
- 4 Lead null post
- 5 Firmware upgrade port
- 6 Power off (Red), Home (Grey) and Escape (Green) keys
- 7 Test keypad
- 8 Mains lead entry
- 9 Extension lead / IEC lead test return socket
- 10 Appliance test socket (230 V)
- 11 Fuse checker
- 12 Display
- 13 Display navigation  
UP / DPWN / LEFT / RIGHT  
OK
- 14 TEST button



## 2.3 Controls layout

The following tests are available on the PAT350.  
Note: The PAT320 does not include the Flash test option (j).



Test groups (a) to (d) – See section 3 for details		
	Test group	Description
(a)	Class I test	For testing assets with an earth return conductor
(b)	Class II test	For testing assets without an earth return conductor
(c)	IEC lead and Extension lead test	For testing extension leads and IEC type power leads (found on computers, kettles etc)
(d)	RCD tests	For testing Plug-in RCDs and extension leads fitted with RCDs.
(e)	Information	Provides technical support contact information
Individual tests (f) to (j)		
(f)	Bond test (Rpe)	Performs an earth bond/continuity test at 200 mA, 10 A or 25 A
(g)	INS test (Riso)	Performs an Insulation test at either 250 V or 500 V
(h)	Leakage test (Ipe)	Performs a RUN test and measures the power drawn
(i)	Load test (VA)	Performs an earth leakage test, either: Differential earth leakage Touch leakage Substitute leakage
(j)	Flash 1.5 kV/3 kV	Performs a flash test at the required voltage



## 2.4 Instrument start-up

Connect the instrument to a suitable electrical supply:

The appliance tester will automatically start when connected to the mains supply.

### NOTE:

**DO NOT connect any equipment to the PAT tester until it has been switched on and passed self test. Connected equipment will create a relay error and necessitate restarting the appliance tester by pressing the OFF button. Once switched off the power should be disconnected and reconnected.**

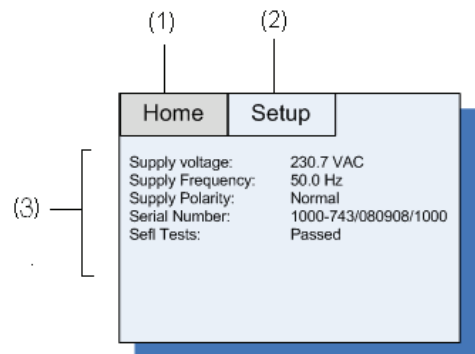
### Important:

For testing **230 V electrical equipment**, connect the PAT320 or PAT350 to a 230 V electrical outlet.

For testing **110 V electrical equipment**, connect the PAT320 or PAT350 to a 110 V electrical outlet, using the optional 110 V to 230 V supply lead adaptor.

The instrument will display the following when all initial tests pass.


1	Home screen	All testing can be run from this screen
2	Setup options	Test limits, test duration, Language, Auto or Manual test modes etc can be changed here.
3	Power-up status and test results	Displays supply status and Self test results



## 2.5 Switching off the appliance tester

To switch off the tester, press the RED off button. The display will show the message "It is now safe to remove power". Now the mains plug can be removed from the supply.

Failure to press the RED off button will discharge the FAST START battery un-necessarily as per section 2.5.1.

If the RED off button is pressed accidentally, pressing the  button will return the PAT to normal testing mode.

### 2.5.1 FAST Restart


If the tester is to be moved to a new location and testing continued, simply unplug the unit from the mains supply and reconnect it in the new location. The appliance tester will enter a hibernation mode during the move and restart instantly from the point power was disconnected, without any delay.

The rechargeable 9 V NIMH battery is used to maintain hibernation status whilst unplugged. This cell is continuously charged whilst the appliance tester is connected to the mains supply. Continuous use of the hibernation mode will discharge the battery. Only use the hibernation mode when a fast restart is required.

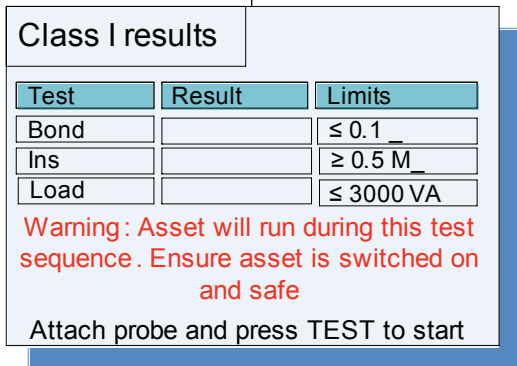
Should the move take longer than 5 minutes, the appliance tester will leave hibernation mode and complete a full power down.


## 2.6 Testing an asset

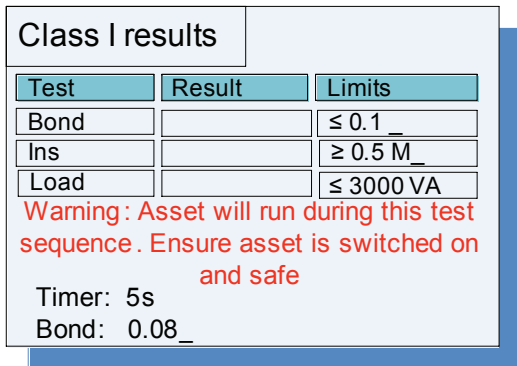
### 2.6.1 To run a test - (Example shows a Class I test in AUTOMATIC test mode)

- (a) Connect the asset to be tested to the portable appliance tester.
- (b) Press the  button for a CLASS I test for assets with a protective earth conductor.

The display will show the initial test information:



- (c) Connect the bond lead to the asset and press the  button to start the test.
- (d) The Appliance tester will display any operational warnings as well as the measured values during the test and the remaining test time.




The first test will be an **Rpe** (Earth continuity / bond) test.

The resistance during the test is displayed.

The Timer shows the number of seconds remaining of the test.

After each test the worst case measurement will be displayed and tagged with a **GREEN** marker for a PASS, or a **RED** marker for a FAIL.

#### Note – ABORTING A TEST:

A test can be aborted at any time by pressing the  button.

Each test will run automatically unless there is a manual operation required.

**Example:**

**Earth bond test passed**

Earth bond test (Rpe) passed

Insulation test (Riso) now running

Test	Result	Limits
Bond	0.07Ω	≤ 0.1 Ω
Ins		≥ 0.5 MΩ
Load		≤ 3000 VA

Timer: 3s

Rpe: >99.9MΩ

Maximum permissible limit for Bond test

Worst case measurement during the Bond test

Automatically starts Insulation test (Riso)

**Example:**

**Isolation (Insulation) test failed**


Rpe (Bond test) passed

Riso (Insulation test) failed

Further tests aborted

Test	Result	Limits
Bond	0.07Ω	≤ 0.1 Ω
Ins.		≥ 0.5 MΩ
Load		≤ 3000 VA

**Asset FAILED**

To return to the HOME screen or run a different type of test, press the  button

At the completion of a successful set of tests the display will show all results marked **GREEN** and the “Asset PASSED” message displayed:




**Example:**

Indicates all tests have passed

Test	Result	Limits
Bond	0.07Ω	≤ 0.1 Ω
Ins.	>199MΩ	≥ 0.5 MΩ
Load	135VA	≤ 3000 VA

**Asset PASSED**

**OPTIONS:**

- (1) To return to the HOME screen press the  button.
- (2) To repeat the same test (or test another CLASS I asset) press the test  button. The appliance tester will return to the first test screen and wait for the TEST  button to be pressed to commence testing.
- (3) To change the test type, press the appropriate function button.

Should a test fail it will be marked with a RED tag, testing will stop and the display will show “**Asset Failed**”. Any fault should be made good before testing is re-started.

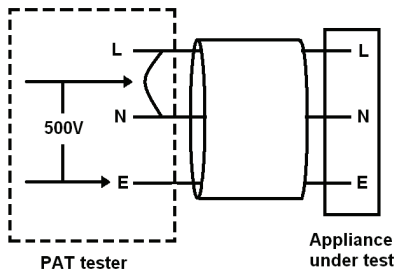
## 2.7 Remote test probe and clip

Some tests will require the use of the remote probe and clip. These are used where the asset under test has no earth return (Class II assets). The probe is used for both insulation and bond testing, under the control of the instrument.

### Example:

#### **Class I Insulation test (Riso)**

Live and neutral are shorted together automatically in the PAT tester and a voltage (250 V or 500 V) is applied between the shorted L/N and the earth conductor as below.

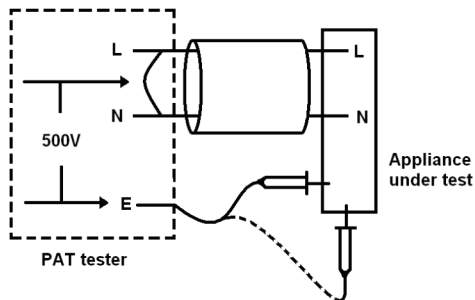


**Remote probe not required**

#### **Class II Insulation test (Riso)**

Live and neutral are shorted together automatically in the PAT and a voltage (250 V or 500 V) is applied between the shorted L/N and the remote probe.

The probe is connected to any metallic locations on the "Appliance Under Test" to ensure there is no breakdown of the insulation.



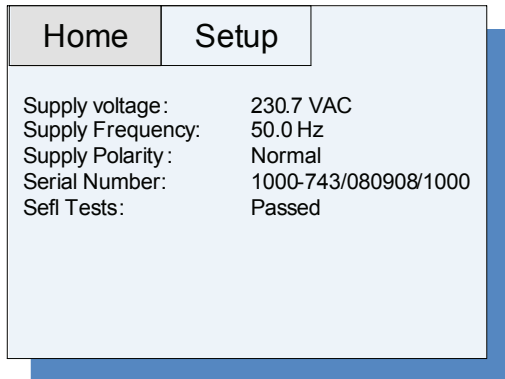
**Remote probe required**

### 3. Test options


Each test option (button) consists of a group of tests required for that class of test. The instrument will display the tests to be completed and the status of each test as they are completed, against the set Pass limit for that test. TO change PASS limits, refer to section 5 – Setup.


The following sections show the difference between automatic and manual operation, what is displayed during each test and which connections are required during the test sequence.

All tests commence from the HOME screen as below:



Any test can be selected or changed until the OK or TEST buttons are pressed.

On completion of the test the PAT can be returned to the home screen by pressing the  button.

Alternatively the test can be repeated by pressing the test  button **twice**. In this case the PAT will return to the first test screen of the previous test selected.

#### 3.1 110V or 230V selection:

Testing 110 V ac or 230 V ac equipment is dependent on the supply voltage. Connecting the appliance tester to a 110 V ac supply automatically switches the appliance tester to the yellow 110 V test socket.

Connecting the appliance tester to a 230 V ac supply switches the tester to the 230 V test socket.

Testing examples in this document use the 230 V test socket and assume the appliance tester is connected to a 230 V ac supply.

### 3.2 Class I - Assets with an earth return conductor

Class I equipment depends on having an earth within the equipment and an earth return in the supply cable to provide protection should a part of the equipment become live under fault conditions.

#### 3.2.1 Class I – automatic testing mode

AUTOMATIC		Manual action required
(1)	Bond (Rpe)	Connect remote probe to asset and press OK to continue
(2)	Insulation (Riso)	Disconnect bond probe from asset
(3)	Load (VA)	None

Test sequence:

Connections:



(1)  
Connect remote probe to metal parts of asset

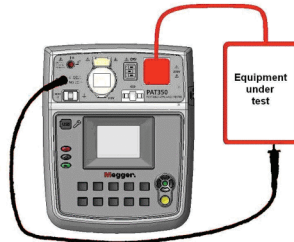


Class I results

Test	Result	Limits
Bond		≤ 0.1
Ins		≥ 0.5 M
Load		≤ 3000 VA

Warning: Asset will run during this test sequence. Ensure asset is switched on and safe

Attach probe and press TEST to start



Test sequence continued:  
(3) & (4)

Class I results

Test	Result	Limits
Bond	0.07	≤ 0.1
Ins.	>199M	≥ 0.5 M
Load		≤ 3000 VA

Warning: Faulty appliances can present a shock hazard. Avoid contact with all connectors and conductive parts

Timer: 5s  
Load: >195 VA

Class I results

Test	Result	Limits
Bond		≤ 0.1
Ins		≥ 0.5 M
Load		≤ 3000 VA

Warning: Asset will run during this test sequence. Ensure asset is switched on and safe

Timer: 5s  
Bond: 0.07

Class I results

Test	Result	Limits
Bond	0.07	≤ 0.1
Ins.	>199M	≥ 0.5 M
Load	135VA	≤ 3000 VA

Asset PASSED

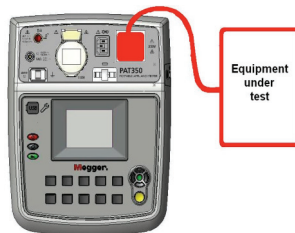
(2)

Class I results

Test	Result	Limits
Bond	0.07	≤ 0.1
Ins.		≥ 0.5 M
Load		≤ 3000 VA

Warning: Asset will run during this test sequence. Ensure asset is switched on and safe

Timer: 5s  
Ins: >99.9M



Note: Disconnect remote probe.

### 3.3 Class II – Assets with no earth conductor

#### 3.3.1 Class II - automatic test mode

AUTOMATIC mode		Operator action required
(1)	Insulation (Riso)	Connect remote probe to asset and press OK to continue.
(2)	Load (VA)	Disconnect remote probe
(3)	Leakage (Ipe)	None

Test sequence:

Connection required:



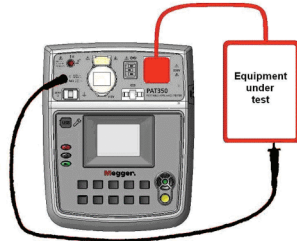
(1)  
Connect remote probe to metal parts of asset

Class II results

Test	Result	Limits
Ins.		$\geq 0.5 \text{ M}$
Load		$\leq 3000 \text{ VA}$

Warning: Asset will run during this test sequence. Ensure asset is switched on and safe

Attach probe and press TEST to start



Class II results

Test	Result	Limits
Ins.		$\geq 0.5 \text{ M}$
Load		$\leq 3000 \text{ VA}$

Warning: Asset will run during this test sequence. Ensure asset is switched on and safe

Timer: 5s

Ins: >99.9M\_

Class II results

Test	Result	Limits
Ins.	>199M_	$\geq 0.5 \text{ M}$
Load		$\leq 3000 \text{ VA}$

Warning: Faulty appliances can present a shock hazard. Avoid contact with all connectors and conductive parts

Timer: 5s

Load: 1195VA

Testing continued:

Note: Disconnect remote probe

(2) & (3)

Class II results

Test	Result	Limits
Ins.	>199M_	$\geq 0.5 \text{ M}$
Load	1195VA	$\leq 3000 \text{ VA}$

Asset PASSED

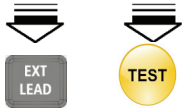
### 3.4 IEC - Power leads fitted with 10A IEC connector

#### 3.4.1 IEC lead - automatic test mode

AUTOMATIC		Operator action required
(1)	Bond (Rpe)	None
(2)	Insulation (Riso)	None
(3)	Polarity	None

Test sequence:

Connection required:



(1)

Extension (IEC) lead		
Test	Result	Limits
Bond		≤ 0.1 _
Ins		≥ 0.5 M
Load		≤ 3000 VA

Timer: 5s  
Bond: 0.07\_

(2)

IEC Lead		
		AUTO
Test	Result	Limits
Bond	0.07_	≤ 0.1 _
Ins.		≥ 0.5 M
Polarity		Pass/Fail

Timer: 5s  
Ins: >99.9M\_

(3)

Extension (IEC) Lead		
Test	Result	Limits
Bond	0.07_	≤ 0.1 _
Ins.	>99.99M_	≥ 0.5 M
Polarity		Pass/Fail

Polarity test:  
Reverse polarity not permitted

Extension (IEC) Lead		
Test	Result	Limits
Rpe	0.07_	≤ 0.1 _
Riso	>199M	≥ 0.5 M
Polarity	Normal	Normal/Rev

Asset PASSED



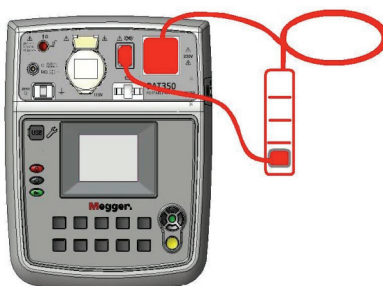
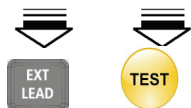
### 3.5 Extension leads EXT LEAD - Single and multi-way extension leads

#### 3.5.1 Extension leads – automatic mode

AUTOMATIC		Manual action required
(1)	Bond (Rpe)	None
(2)	Insulation (Riso)	None
(3)	Polarity	None

Test sequence:

Connection required:



(1)

Extension (IEC) lead		
Test	Result	Limits
Bond		≤ 0.1
Ins		≥ 0.5 M
Load		≤ 3000 VA

Timer: 5s  
Bond: 0.07\_

(2)

IEC Lead <span style="float: right;">AUTO</span>		
Test	Result	Limits
Bond	0.07_	≤ 0.1
Ins		≥ 0.5 M
Polarity		Pass/Fail

Timer: 5s  
Ins: >99.9M\_

(3)

Extension (IEC) Lead		
Test	Result	Limits
Bond	0.07_	≤ 0.1
Ins	>99.99M_	≥ 0.5 M
Polarity		Pass/Fail

Polarity test:  
Reverse polarity not permitted

Extension (IEC) Lead		
Test	Result	Limits
Rpe	0.07_	≤ 0.1
Riso	>199M	≥ 0.5 M
Polarity	Normal	Normal/Rev

Asset PASSED

**Note:** Test sequence can be repeated on the remaining sockets to ensure all outlets are compliant.



### 3.6 RCD

#### 3.6.1 Testing portable residual current devices (RCDs) – Manual only

As there is a need to reset the RCD during the test sequence there is no fully automated test sequence, no AUTO mode exists. All testing is completed in manual mode.

AUTOMATIC	Manual action required
(1) 1/2 x 30mA	None
(2) 1 x 30mA (0°)	Reset RCD after trip
(3) 1 x 30mA (180°)	Reset RCD after trip
(4) 5 x 30mA (0°)	Reset RCD after trip
(5) 5 x 30mA (180°)	None

**Test sequence:**

**Connection required:**

**Plug in the RCD to the 230V appliance test socket**

**Connect the RCD to the IEC socket using the red 0.5m IEC test lead.**

**(1)**

Test	Result	Limits
Test button	Pass	Pass/Fail
0.5 x I	>2000ms	>2000ms
1 x I	21.3ms	<300ms
5 x I	7.6ms	<40ms

Press the MANUAL TEST BUTTON on the RCD. Does RCD trip?

**(2)**

Test	Result	Limits
Test button		Pass/Fail
0.5 x I		>2000ms
1 X I		<300ms
5 x I		<40ms

Reset the RCD and Press OK.

Timer: 1

**(3)**

Test	Result	Limits
Test button	Pass	Pass/Fail
0.5 x I	>2000ms	>2000ms
1 x I		<300ms
5 x I		<40ms

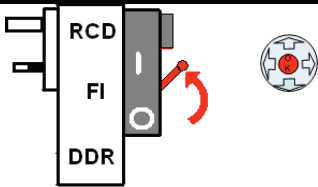
1 x I at 180° trip test: 20ms  
Please reset the RCD and press OK

**(4)**

Test	Result	Limits
Test button	Pass	Pass/Fail
0.5 x I	>2000ms	>2000ms
1 x I	22ms	<300ms
5 x I		<40ms

5 x I at 0° trip test: 7ms  
Please reset the RCD and press OK

**(5)**



### RCD Test

Test	Result	Limits
Test button	Pass	Pass/Fail
0.5 x I	>2000ms	>2000ms
1 x I		<300ms
5 x I		<40ms

1 x I at 0° trip test : 22ms  
Please reset the RCD and press OK

### RCD Test

Test	Result	Limits
Test button	Pass	Pass/Fail
0.5 x I	> 2000ms	> 2000ms
1 x I	22ms	< 300ms
5 x I		< 40ms

5 x I at 180° trip test: 9ms

### RCD Test

Test	Result	Limits
Test button	Pass	Pass/Fail
0.5 x I	>2000ms	>2000ms
1 x I	21.3ms	<300ms
5 x I	9ms	<40ms

Asset PASSED

### 3.7 Test failure

#### 3.7.1 Test failure - automatic test mode

Should any test fail during the test sequence, the PAT will abort further testing and display a test failure screen as below:

Class I results		
Test	Result	Limits
Visual	PASS	Pass/Fail
Bond	0.35	≤ 0.1
Ins.		≥ 0.5 M
Load		≤ 3000 VA

Asset FAILED

The failed test will be tagged with a RED marker and the failed result will be recorded in the appropriate column.

No further testing should be attempted until the fault is rectified. However individual tests can be run for diagnostic purposes. However some tests may be hazardous depending on the failure mode of the asset and should only be undertaken after a risk assessment of the failed asset.

### 3.8 Changing PASS limits

See section 5 - SETUP

### 3.9 Changing test duration

See section 5 - SETUP

## 4. Individual tests – Quick tests:

These tests are individual tests and perform a single type of test. Where several options exist under the one function (such as Bond with 25A, 10A or 200mA) then those options will be available for selection.










### Notes:

There is no automatic mode for these tests.

Pass fail limits are not enabled. Actual measurement values are displayed during and at the completion of testing.

### 4.1 Bond (Rpe)



MANUAL ONLY	Manual action required				
Bond (Rpe)	Select insulation test voltage Select test socket Press OK to accept				
<p><b>Test sequence:</b></p>  <div data-bbox="149 892 553 1186"> <p><b>Bond Menu</b></p> <p>Select test current and Press OK or TEST</p> <ul style="list-style-type: none"> <li>25 Amp Earth Bond</li> <li>10 Amp test Earth Bond</li> <li>200 mA test Continuity</li> </ul> <p>Note: Use remote probe</p> <p>Test duration: 5s</p> </div> <p>Select the test current using the up/down arrows</p>  <p>When ready press:</p>  or  to continue <div data-bbox="149 1577 553 1871"> <p><b>Bond Results</b></p> <table border="1"> <thead> <tr> <th>Test</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Bond</td> <td></td> </tr> </tbody> </table> <p>Timer: 3 Bond: 0.07_</p> </div>	Test	Result	Bond		<p><b>Connection required:</b></p>  <p><b>Testing continued:</b></p> <p>Press  to navigate back to HOME screen or</p> <p>Press  to return to the INS selection screen or</p> <p>Press  to retest</p> <p><b>NOTE:</b></p> <p>To abort a test press the  button.</p>
Test	Result				
Bond					

Bond Results	
Test	Result
Bond	0.07Ω

Timer: 0 s  
Bond: 0.07Ω



## 4.2 Insulation (also referred to as Riso)

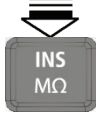
### 4.2.1 Running an Insulation (Isolation) test

This test will apply a 250V or 500V (default) test voltage between the live/neutral pair and the earth conductor.


During this test the live and neutral are shorted together by the PAT tester for the duration of the test.

MANUAL ONLY	Manual action required
Insulation (Riso)	Select insulation test voltage Select class of test Press OK to accept

**Test sequence:**



**Connection required:**



**Insulation Menu**


Select voltage and Press OK or TEST

Class I 500V >	230V Appliance
Class II 500V >	110V Appliance
Class I 250V >	
Class II 250V >	



Note: For Class II use the remote probe

Test Duration: 4 seconds


Select the "Class type" and "Test voltage"




Select the "Voltage rating"

When ready, press:





or



Insulation results (230V test socket)

Class I Test	Result
Ins 500V	

Please ensure appliance is switched on .  
Press OK to continue, TEST to abort

 to continue or  to abort

Insulation results (230V test socket)


Class I test	Result
Ins 500V	


Timer: 3  
Riso: >199M\_

Insulation results (230V test socket)

Test	Result
Ins 500V	>99.99M_


Timer: 0s  
Ins: >99.99M\_

Press  to navigate back to HOME screen or

Press  to return to the Insulation selection screen or

Press  to retest

**NOTE:**

To abort a test, press the  button.



## 4.4 Leakage (Ipe)

The Leakage test provides three different methods for measuring leakage current of equipment:

### Differential leakage test: (section 4.4.1)

This measures the difference in current between the live and neutral conductors. The difference is displayed as the leakage current. The test socket will be automatically chosen depending on the supply voltage. The measured value is adjusted to reflect the worst leakage current at the upper operating voltage limit.

### Touch leakage: (section 4.4.2)






Where no earth return path exists, (Class II) one has to be provided to simulate the equipment being held in the hand. The test socket will be automatically chosen depending on the supply voltage. The measured value is adjusted to reflect the worst leakage current at the upper operating voltage limit.

### Substitute leakage: (section 4.4.3)

This measures the leakage current in the earth conductor using a low AC voltage (typically 40Vac). This reduces the risk of electric shock and prevents the equipment from running during the test, where this would otherwise be considered dangerous. The test socket is optional since this test is independent of the supply voltage. The measured value is adjusted to reflect the worst leakage current at the upper operating voltage limit.

**IMPORTANT:** The equipment must be running in its normal operating mode for the test, i.e. a hair dryer must be set to its hottest setting and have its trigger depressed.

### 4.4.1 Ipe Differential

MANUAL ONLY	Manual action required
Leakage - Differential	Select the differential test voltage Select classification of test type Press OK to accept
<b>Test sequence:</b>	
 <div style="border: 1px solid black; padding: 5px;">           Leakage Menu            Select voltage and Press OK or TEST            Differential leakage &gt; Class I 230V            Touch current (230V) &gt; Class II 230V            Substitute leakage &gt;  <span style="color: red;">Warning: Faulty appliances can present a shock hazard. Avoid contact with all connectors and conductive parts</span>            Note: For Class II appliances, use the remote probe            Test duration: 5 seconds         </div>	<b>Connection required:</b> 
Select the test type using the up/down arrows	
	
Select the class of test using right arrow then up/down arrows	
	
When ready press:	
	





or



Leakage results (230V test socket)

Class I test	Result
Leakage (Diff)	

Warning: Faulty appliances can present a shock hazard. Avoid contact with all connectors and conductive parts

Please ensure appliance is switched on .  
Press OK to continue, TEST to abort.

This is displayed if the PAT does not detect an Asset connected to the test socket or the asset is open circuit.



to continue or



to abort

Leakage results (230V test socket)

Class I test	Result
Leakage (Diff)	


Warning: Faulty appliances can present a shock hazard. Avoid contact with all connectors and conductive parts


Timer: 3s  
Ipe: 0.15mA

Leakage results (230V test socket)

Class I test	Result
Leakage (Diff)	0.15mA


Timer: 0s  
Ipe: 0.15mA

Press  to navigate back to HOME screen or

Press  to return to the Leakage Menu selection screen or

Press  to retest

**NOTE:**


To abort DURING a test, press the  button.

#### 4.4.2 Touch Leakage - I<sub>touch</sub>


Test sequence is the same as I<sub>pe</sub> – differential, except the earth leakage connection must be made using the remote probe to simulate contact by the operator.

MANUAL ONLY	Manual action required
Touch leakage (I <sub>touch</sub> )	Press OK to accept Connect remote test probe

**Test sequence:** **Connection required:**



Select the test type using the UP/Down arrows



Leakage Menu

Select voltage and Press OK or TEST


Differential leakage >  
Touch current (230V)  
 Substitute leakage >

Warning: Faulty appliances can present a shock hazard. Avoid contact with all connectors and conductive parts


Note: For Class II appliances, use the remote probe

Test duration: 5 seconds

When ready press:



or

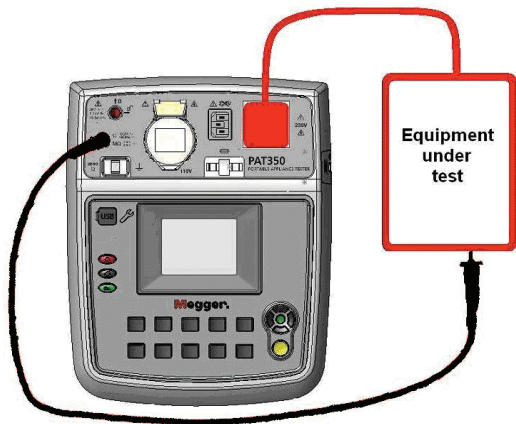


Leakage results (230V test socket)

Class II test	Result
Leakage (Touch)	


Warning: Faulty appliances can present a shock hazard. Avoid contact with all connectors and conductive parts

Please ensure appliance is switched on.  
Press OK to continue, TEST to abort.




This is displayed if the PAT does not detect an Asset connected to the test socket or the asset is open circuit.

When ready press:



to continue or



to abort

Leakage results (230V test socket)

Class II test	Result
Leakage (Touch)	


Warning: Faulty appliances can present a shock hazard. Avoid contact with all connectors and conductive parts


Timer: 3s  
Ipe: 0.15mA

Leakage results (230V test socket)

Class II test	Result
Leakage (Touch)	0.15mA


Timer: 0s  
Ipe: 0.15mA

Press  to navigate back to HOME screen or

Press  to return to the Leakage Menu selection screen or

Press  to retest


**NOTE:**

To abort DURING a test press the  button.


### 4.4.3 Ipe – Substitute leakage

MANUAL ONLY	Manual action required
Ipe - Substitute	Select the test socket Select classification of test type Press OK to accept

**Test sequence:**                      **Connection required:**



Select the test type using the up/down arrows



Leakage Menu

Select voltage and Press OK or TEST

- Differential leakage >
- Touch current (230v)
- Substitute leakage >



Class I 230V  
 Class I 110V  
 Class II 230V  
 Class II 110V

Warning: Faulty appliances hazard. Avoid contact with conductive parts



Note: For Class II appliances, use the remote probe

Test duration: 5 seconds

Select the class of test using right arrow then up/down arrows


When ready press:


or


Leakage results (230V test socket)



Class I test	Result
Leakage (Sub)	

Please ensure appliance is switched on.  
Press OK to continue, TEST to abort



Equipment  
under  
test

This is displayed if the PAT does not detect an Asset connected to the test socket or the asset is open circuit.


to continue or

to abort

Leakage results (230V test socket)


Class I test	Result
Leakage (Sub)	


Timer: 3 s  
Ipe: 0.15mA

Leakage results (230V test socket)

Class I test	Result
Leakage (Sub)	0.15mA


Timer: 0 s  
Ipe: 0.15mA

Press  to navigate back to HOME screen or

Press  to return to the Riso selection screen or

Press  to retest

**NOTE:**

To abort DURING a test press the  button.

### 4.3 VA



This test measures the power consumption of the equipment when running. The results are displayed in VA.

**IMPORTANT:** The equipment must be running in its normal operating mode for the test, i.e. a hair dryer must be set to its hottest setting and have its trigger depressed.

MANUAL ONLY	Manual action required				
<b>Load (VA)</b>	<b>Press OK to accept</b>				
<p><b>Test sequence:</b></p> <div style="text-align: center; margin-bottom: 10px;"> </div> <div style="border: 1px solid gray; padding: 5px; margin-bottom: 10px;"> <p><b>Load test</b></p> <p style="color: red; font-size: small;">Warning: Faulty appliances can present a shock hazard. Avoid contact with all conductive parts when testing!</p> <p style="font-size: x-small;">230Vac will be applied to the appliance . Ensure the asset is switched on during the test. Press OK or TEST to continue.</p> <p style="font-size: x-small;">Test Duration: 5s</p> </div> <p>When ready press:</p> <div style="display: flex; align-items: center; justify-content: center; gap: 10px;"> <div style="text-align: center;"> </div> <span>or</span> <div style="text-align: center;"> </div> </div> <div style="border: 1px solid gray; padding: 5px; margin-bottom: 10px;"> <p><b>Load test</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid gray; width: 60%; padding: 2px;">Class II test</td> <td style="border: 1px solid gray; padding: 2px;">Result</td> </tr> <tr> <td style="border: 1px solid gray; padding: 2px;">Leakage (Touch)</td> <td style="border: 1px solid gray; padding: 2px;"></td> </tr> </table> <p style="color: red; font-size: x-small;">Warning: Faulty appliances can present a shock hazard. Avoid contact with all connectors and conductive parts</p> <p style="font-size: x-small;">Please ensure appliance is switched on . Press OK to continue, TEST to abort</p> </div> <p>When ready press:</p> <div style="display: flex; align-items: center; justify-content: center; gap: 10px;"> <div style="text-align: center;"> </div> <span>to continue or</span> <div style="text-align: center;"> </div> <span>to abort</span> </div>	Class II test	Result	Leakage (Touch)		<p><b>Connection required:</b></p> <div style="display: flex; align-items: center; justify-content: center; gap: 20px;"> <div style="border: 2px solid red; padding: 5px; text-align: center; color: red;">             Equipment under test         </div> </div>
Class II test	Result				
Leakage (Touch)					

Load test

Test	Result
Load	


Warning: Faulty appliances can present a shock hazard. Avoid contact with all connectors and conductive parts


Timer: 3s  
Load: 356VA

Load test

Test	Result
Load	356VA


Timer: 3s  
Load: 356VA

Press  to navigate back to HOME screen or

Press  to return to the VA initial screen

Press  to retest appliance

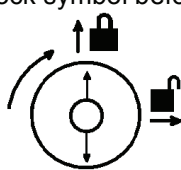
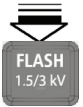
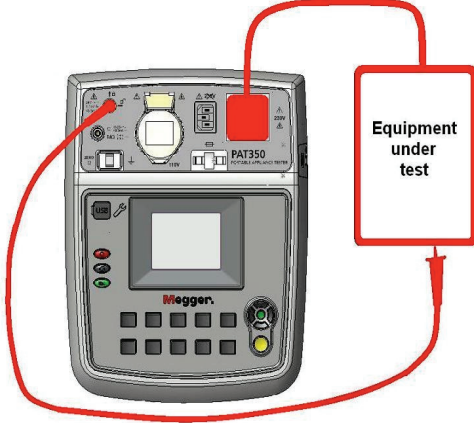




**NOTE:**

To abort a test press the  button.

## 4.5 1.5 kV/ 3kV (not available on PAT320)

**Warning:** The flash test should not be used for general “In-service” testing. It should only be used when instruments have been repaired.

The flash test provides a high AC test voltage (1500 V or 3000 V) and measures the leakage current. This can be a destructive test and is usually only used on equipment that has been repaired. It is not generally used for “IN-service testing” of electrical equipment.

MANUAL ONLY	Manual action required				
Flash	<b>Select Flash test voltage</b> <b>Press OK to accept</b> <b>Hold down TEST key to apply Flash test voltage</b>				
<b>Test sequence:</b>					
<b>Flash lead connection:</b> The flash test lead should be inserted fully and turned so the arrows align with the lock symbol before testing.					
 	<b>Connection required:</b> 				
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Flash Menu</p> <p>Select test voltage and Press OK or TEST:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 2px;">Flash 1500Vac &gt;</td> <td style="padding: 2px;">230V appliances 110V appliances</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">Flash 3000Vac &gt;</td> <td></td> </tr> </table> <p>Note: For Class II use the remote FLASH TEST probe</p> <p>Test Duration: NA</p> </div> <p>Select the test voltage using the up/down arrows</p>  <p>Select the class of test using right arrow  then up/down arrows </p> <p>Press  to select</p>		Flash 1500Vac >	230V appliances 110V appliances	Flash 3000Vac >	
Flash 1500Vac >	230V appliances 110V appliances				
Flash 3000Vac >					



### Flash menu

To commence testing, press and HOLD DOWN the TEST button

When ready press and **HOLD DOWN** the TEST button




The test will only run while the button is depressed.


Flash result (230V test socket)	
Class II test	Result
Flash 1500V ac	
Flash test: 0.85uA	



Release the button to abort the test.

Flash result (230V test socket)	
Class II test	Result
Flash 3000Vac	0.85uA
Test Aborted	

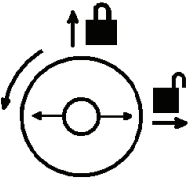
Press  to navigate back to HOME screen or

Press  to return to the Riso selection screen or

Press  to retest

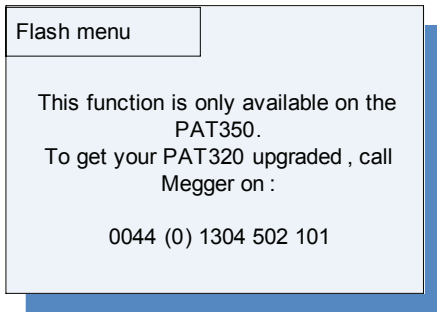
### Disconnecting the flash probe lead

To release the flash test probe, turn the arrow on the probe connector to the unlock symbol before attempting to extract the connector.



#### Note:

The flash test is only available on the PAT350. The following message is displayed on the PAT320 if the flash test function is selected:

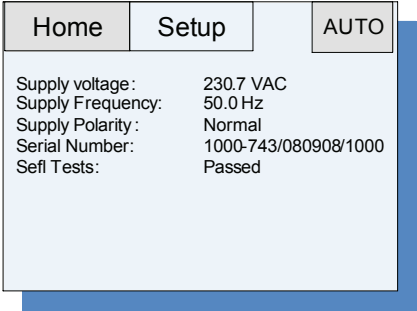




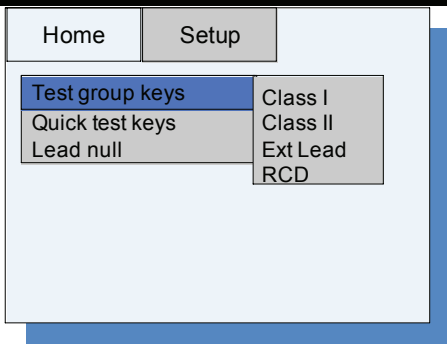
The PAT 320 can be upgraded at a later date if necessary.


## 5. SETUP


### 5.1 Test Group key configuration

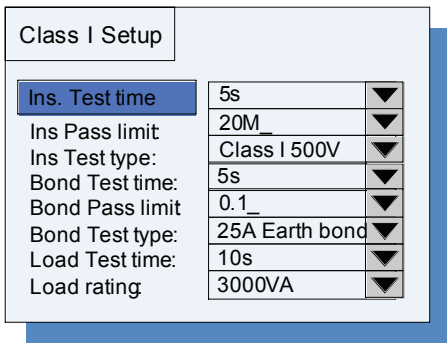
Allows changes the test parameters of the individual test groups Class I, Class II, IEC and RCD tests.

 <p>Home   Setup   AUTO</p> <p>Supply voltage:    230.7 VAC Supply Frequency:   50.0 Hz Supply Polarity:    Normal Serial Number:      1000-743/080908/1000 Self Tests:          Passed</p>	
Press  to select setup	
Press  to select "Test Group"	

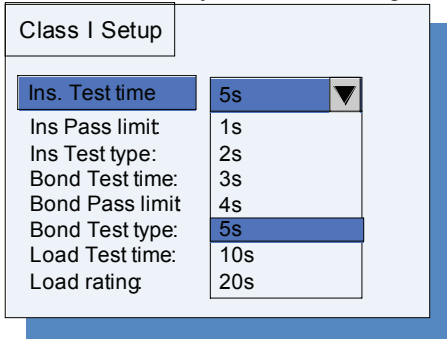


Press  to select Test Group


Press  to accept selection.





Press  followed by  to change test limits

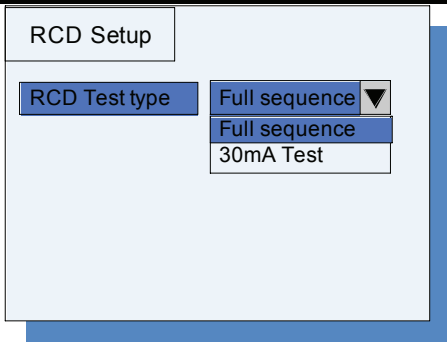


Press  to accept.

To return to Main test screen press 

Alternatively press  first to select a different test

then  and  to change the test limits, test time or test type, for example selecting RCD:



Press  to accept.

To repeat process for Test times, pass limits etc

To return to Setup menu press



To return to Main test screen press




## 5.2 Quick test key setup

Changes the test parameters of the individual test groups Riso, Rpe lpe and Flash test.  
Note: The Flash test function is only available on the PAT350 models.


Home	Setup	AUTO
Supply voltage:	230 Vac	
Supply frequency:	50Hz	
Polarity:	Passed	
Self Test:	Passed	
Battery:	OK	
Select a test...		

Press  to select "Setup"

Home	Setup
Test group keys	Class I
Quick test keys	Class II
Lead null	Ext Lead
	RCD

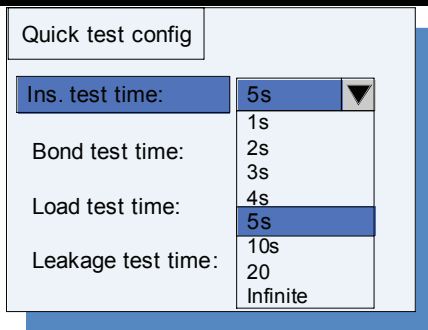
Press  to select "Quick test keys"

Home	Setup
Test group keys >	
Quick test keys	
Lead null	


Press  to select Quick Test

Quick test config	
Ins. test time:	5s ▼
Bond test time:	5s ▼
Load test time:	5s ▼
Leakage test time:	5s ▼


Press  followed by  to change test times




Press  to accept

To return to Main test screen press 

Alternatively press  first to select a different test

then  to change the test time or test limits.

Press  to accept

To return to Main test screen press 

## 5.4 Lead Null


Allows the compensation for additional lead resistance when performing Bond and continuity measurements.


Lead null will remove test lead resistance up to 19.99  $\Omega$ . Setting a null value greater than 19.99  $\Omega$  will generate the warning message:

“Lead NULL > 19.99  $\Omega$  Null not set”

Home Setup AUTO


Supply voltage: 230.7 VAC  
Supply Frequency: 50.0 Hz  
Supply Polarity: Normal  
Serial Number: 1000-743/080908/1000  
Self Tests: Passed

Press  to select setup

Press  to select “Lead Null”

Home Setup AUTO


Test group keys >  
Quick test keys  
Lead null

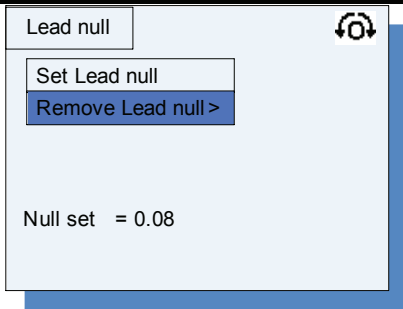
Press  to enter “Lead Null”


Lead null

Set Lead null  
Remove Lead null >


Connect bond lead between  $\Omega$  probe socket and ZERO  $\Omega$  post  
Press TEST button to NULL

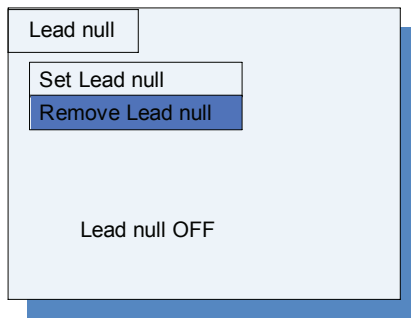
Connect Bond lead as instructed and press  to set Null



Press  to return to initial screen

To remove Lead Null select "Remove Lead Null".

Open circuit the Bond test lead and press 





## 6. Battery and fuses

### 6.1 Battery function

The PAT300 series are mains powered instruments. However a 9V PP3 rechargeable NiMH battery is fitted to allow fast restart should the PAT be unplugged and reconnected to an electrical supply in less than 5 minutes.

The PAT tester will operate with a discharged battery or no battery fitted, but will perform a full power-up sequence when re-connected to a supply.

The battery is continually charged whilst the Appliance tester is operating. Only fit NiMH rechargeable batteries.

Low battery is indicated by the battery warning in the main screen.

**Warning: Do not switch on the instrument or connect test leads with the battery cover removed. Only use NiMH rechargeable battery, other types may cause battery explosion.**

### 6.2 Battery replacement

**Warning: Do not switch the instrument on with the battery cover removed or test leads connected.**

1. Disconnect any test leads from the instrument.
2. Switch off the instrument and disconnect (the instrument) from any electrical circuits.
3. Remove the battery cover with a small crosshead screwdriver.
4. Remove the old battery and refit a new one, observing the terminal polarity.
5. Replace the cover and retaining screw.

**Note:** Battery cells should not be left in an instrument which may remain unused for an extended period.

**Warning:** Only use NiMH rechargeable cells. It is dangerous to fit alkaline cells which could explode or catch fire.

### 6.3 Fuse replacement

**Warning: Do not switch the instrument on with the fuse cover removed or test leads connected.**

1. Disconnect any test leads from the instrument.
2. Switch off the instrument and disconnect (the instrument) from any electrical circuits.
3. Remove the fuse cover with a small crosshead screwdriver.
4. Replace the blown fuse with the correct type and rating, e.g. 5x20mm 250 V, 100 mA, 1.5 kA high breaking capacity (HBC) type.
5. Replace the fuse cover

## 7. Care and maintenance

The PAT300 series instruments require very little maintenance. Instrument and test leads should be checked before use to ensure there is no damage.

When necessary, the instrument can be cleaned with a damp cloth or Isopropyl alcohol.

## 8. Specification

All quoted accuracies are stated at +20 °C.

**Power Supply:** 110 V  $\pm 10\% \pm 1$  V 50Hz  $\pm 1\% \pm 0.1$ Hz 60Hz  
230 V  $\pm 10\% \pm 1$  V 50Hz  $\pm 1\% \pm 0.1$ Hz

**Internal battery:** 1 x 9V type NiMH rechargeable cell (PP3, MN1604, 6F22, 6LR61, U9LV-J).  
Battery types need to be checked e.g. PP3 type is an old zinc carbon not NiMH  
DO NOT USE NON-RECHARGEABLE (Alkaline) CELLS - Risk of explosion.

### Accuracy (at 20°C)

#### Supply

Voltage measurement:  $\pm 2\% \pm 1$  V  
Frequency measurement:  $\pm 1\% \pm 0.1$ Hz

#### Bond test

Open circuit test voltage: 9 V ac  $\pm 10\% \pm 0.1$  V (supply :230 V 50Hz)  
10 A Bond test current: 10 A rms  $\pm 20\% \pm 0.5$ A into 0.1  $\Omega$   
26 A Bond test current: 26 A rms  $\pm 5\% \pm 0.5$ A into 0.1  $\Omega$   
Earth Bond resistance accuracy:  $\pm 5\% \pm 3$  digits (0 to 0.5  $\Omega$ )  
 $\pm 5\% \pm 5$  digits (0.5 to 1.99  $\Omega$ )  
Earth bond resistance resolution: 10 m $\Omega$  (0 to 1.99  $\Omega$ )  
Display range: 0 to 1.99  $\Omega$   
Bond test nulling: Up to 1.99  $\Omega$   
Adjustable test duration: User selectable from 1 sec to 20 sec

#### Continuity test

Continuity test compliance voltage:  $> +4$  V dc  $-0\%/+10\%$  open circuit  
Continuity test current:  $\pm 210$  mA  $\pm 10\%$   
 $\geq 200$  mA when measuring load 0.2  $\Omega$  to 2  $\Omega$   
Continuity resistance accuracy:  $\pm 5\% \pm 3$  digits (0 to 0.99  $\Omega$ )  
 $\pm 5\% \pm 5$  digits (1 to 19.99  $\Omega$ )  
Continuity resistance resolution: 10 m $\Omega$  (0 to 19.99  $\Omega$ )  
Display range: 0 to 19.99  $\Omega$   
Continuity test nulling: up to 9.99  $\Omega$   
Test duration: User selectable from 1 sec to 20 sec

#### Insulation test

Insulation test voltage: 250 V dc  $-0\%/+25\%$  open circuit  
500 V dc  $-0\%/+25\%$  open circuit  
 $\geq 500$  V  $-10\%$  dc across 0.5 M $\Omega$  load  
Short circuit current:  $< 2$  mA dc  
Insulation resistance accuracy:  $\pm 2\% \pm 3$  digits  $< 20$  M $\Omega$   
 $\pm 5\% \pm 10$ digits  $> 20$  M $\Omega$   
Insulation resistance resolution: 0.01 M $\Omega$  (0.10 to 99.99 M $\Omega$ )  
Display Range: 0.01 M $\Omega$  to 99.99 M $\Omega$   
Test duration: User selectable from 1 sec to 1 minute

### Substitute Leakage Test

Test Voltage: 40 V ac  $\pm 5\%$   
Test Frequency: Nominal mains 50/60 Hz  
Leakage Current Accuracy:  $\pm 5\% \pm 5$  digits  
Leakage Current Resolution: 0.01 mA  
Display Range: 0 to 19.99 mA  
Test Duration: User selectable from 1 sec to 1 minute  
Reading corrected to 230 V + 10% or 110 V + 10% ac.

### Differential Leakage Current

Test Voltage: Nominal mains 110/230 V ac  
Test Frequency: Nominal mains 50/60 Hz  
Differential Leakage Current Accuracy:  $\pm 5\% \pm 5$  digits  
Differential Leakage Current Resolution: 0.01 mA  
Display Range: 0 to 19.99 mA  
Test Duration: User selectable from 1 sec to 1 minute

Reading corrected to 230 V + 10% or 110 V + 10% ac.

### Touch Current Test

Test Voltage: Nominal mains 110/230 V ac  
Test Frequency: Nominal mains 50/60 Hz  
Touch Current Accuracy:  $\pm 5\% \pm 5$  digits  
Touch Current Resolution: 0.01mA  
Display Range: 0 to 10mA  
Test Duration: User selectable from 1 sec to 5 sec  
Reading corrected to 230 V + 10% or 115 V + 10% ac.

### Operational Test

Test Voltage: Nominal mains 110/230 V ac  
Accuracy:  $\pm 5\% \pm 5$  digits (0 VA to 99 VA)  
 $\pm 5\% \pm 50$  digits (100 VA to 999 VA)  
 $\pm 5\% \pm 100$  digits (1000 VA to 3700 VA)  
Resolution: 1 VA (0 to 3700 VA)  
Display Range: 0 to 3990 VA  
Reading corrected to 230 V or 110 V ac. Results show load VA,

### Extension Lead Test

Test includes Insulation and Bond tests.

Polarity Test Voltage: 12V  
Polarity: Lead OK  
Live Neutral shorted  
Live Neutral Reversed  
Live/Neutral Open Circuit

### Flash Test

Flash Test Voltage: 1500 V ac nominal for Class 1  
3000 V ac nominal for Class 2  
Flash Test Current:  $< 3.5$  mA short circuit @ 253 V primary supply voltage  
Flash Test Breakdown Current Accuracy:  $\pm 5\% \pm 5$  digits  
Flash Test Breakdown Current Resolution: 0.01 mA  
Display Range: 0 to 3 mA  
Test Duration: For as long as the TEST button is pressed

## Portable RCD Test

RCD Test Voltage:	Nominal mains 110 V/230 V
RCD Test Frequency:	50 Hz
Test Current Accuracy:	-8% to -2% ( $\frac{1}{2} \times I$ ) +2% to +8% (1 x I, 5 x I)
Trip Time Accuracy:	$\pm 1\% \pm 5$ digits
Trip Time Resolution:	0.1ms
Display Range:	0 to 1999ms ( $\frac{1}{2} \times I$ ) 0 to 300ms (1 x I) 0 to 40ms (5 x I)

## Fuse Test

Fuse Test Voltage:	3.3 V
Indication:	Audible buzzer for OK

## Circuit Test (Carried out automatically, not available to user)

Circuit Test Voltage:	12 V
Circuit Test Frequency:	Nominal Mains 50/60 Hz
Circuit Test Current:	< 100mA short circuit

## Dimensions:

Instrument	250mm x 320mm x 175mm
Instrument + case	290mm x 400mm x 190mm
Auxiliary pouch:	60mm x 300mm x 200mm

## Weight:

### PAT320

Instrument only:	3kg
Instrument plus case:	3.5kg

### PAT350

Instrument only:	4kg
Instrument plus case:	4.5kg

## Fuses:

**PAT320 and PAT350** Mains plug fuse uses BS1363 13A fuse type: 5x20mm 250V, 100mA, 1.5kA High Breaking Capacity (HBC) type.

## Safety Protection

The instruments meet EN 61010-1 (2001) to 300V phase to earth, Category II. Also refer to safety warnings supplied.

## E.M.C.

In accordance with IEC 61326:2006 including amendment No.1.

Operating temperature:	-10°C to +50°C
Storage temperature:	-20°C to +60°C
Humidity:	90%RH @ -10°C +30°C 75%RH @ +30°C to +50°C
Supply Voltage:	99 Volts to 253 Volts @ 50 Hz
Free fall:	0.25m
Bump test:	6 x 1000 bumps at 40g
Push button switch life:	>50,000 operations
Maximum altitude:	2,000m to full safety spec.
Dust and water:	IP40

## 9. Repair and Warranty

The instrument contains static sensitive devices, and care must be taken in handling the printed circuit board. If an instrument's protection has been impaired it should not be used, but sent for repair by suitably trained and qualified personnel. The protection is likely to be impaired if for example, it shows visible damage, fails to perform the intended measurements, has been subjected to prolonged storage under unfavourable conditions, or has been subjected to severe transport stresses.

NEW INSTRUMENTS ARE GUARANTEED FOR 1 YEAR FROM THE DATE OF PURCHASE BY THE USER.

Note: Any unauthorized prior repair or adjustment will automatically invalidate the Warranty.

### CALIBRATION, REPAIR AND SPARE PARTS

For service requirements for Megger Instruments contact:

Megger Limited or	Megger
Archcliffe Road	Valley Forge Corporate Centre
Dover	2621 Van Buren Avenue
Kent CT17 9EN	Norristown PA 19403
England.	U.S.A.
Tel: +44 (0) 1304 502 243	Tel: +1 610 676 8579
Fax: +44 (0) 1304 207 342	Fax: +1 610 676 8625

Megger operate fully traceable calibration and repair facilities, ensuring your instrument continues to provide the high standard of performance and workmanship you expect. These facilities are complemented by a worldwide network of approved repair and calibration companies to offer excellent in-service care for your Megger products.

Returning your product to Megger - UK and USA service centres

1. When an instrument requires recalibration, or in the event of a repair being necessary, a Returns Authorisation (RA) number must first be obtained from one of the addresses shown above. You will be asked to provide the following information to enable the Service Department to prepare in advance for receipt of your instrument, and to provide the best possible service to you.
  - Model, e.g. PAT300.
  - Serial number, to be found on the underside of the case or on the calibration certificate.
  - Reason for return, e.g. calibration required, or repair.
  - Details of the fault if the instrument is to be repaired.
2. Make a note of the RA number. A returns label can be emailed or faxed to you if you wish.
3. Pack the instrument carefully to prevent damage in transit.
4. Ensure the returns label is attached, or that the RA number is clearly marked on the outside of the package and on any correspondence, before sending the instrument, freight paid, to Megger. Copies of the original purchase invoice and packing note should be sent simultaneously by airmail to expedite clearance through customs. In the case of instruments requiring repair outside the warranty period, an immediate quotation can be provided when obtaining the RA number.
5. You may track the progress of your return on line at [www.megger.com](http://www.megger.com)

### Approved Service Centres

A list of Approved Service Centres may be obtained from the UK address above, or from Megger's website at [www.megger.com](http://www.megger.com)

Megger Limited  
Archcliffe Road  
Dover Kent, CT17 9EN  
England  
Tel: +44 (0) 1304 502100  
Fax: +44 (0) 1304 207342

Megger  
4271 Bronze Way  
Dallas  
TX 75237-1017 U.S.A.  
Tel: +1 (800) 723-2861 (U.S.A. only)  
Tel: +1 (214) 330-3203 (International)  
Fax: +1 (214) 337-3038

Megger  
Valley Forge Corporate Centre  
2621 Van Buren Avenue  
Norristown, PA 19403, USA  
Tel: +1 (610) 676-8500  
Fax: +1 (610) 676-8610

Megger SARL  
Z.A. Du Buisson de la Couldre  
23 rue Eugène Henaff  
78190 TRAPPES  
France  
Tel : +33 (1) 30.16.08.90  
Fax : +33 (1) 34.61.23.77

This instrument is manufactured in the United Kingdom.  
The company reserves the right to change the specification or design without prior notice.

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[www.megger.com](http://www.megger.com)