

PAT120, PAT150 and PAT150R

Handheld portable appliance testers



- **Simple tick or cross, pass or fail indication plus measurement**
- **Battery powered with rechargeable options**
- **Includes 250 V insulation and leakage testing for safe IT testing and surge protected devices**
- **Testing portable and fixed electrical equipment**
- **Substitute leakage testing**
- **10 mA and 30 mA portable RCD lead testing (PAT150)**
- **Adjustable PASS test limits and mains powered leakage testing (PAT150)**
- **Tough, rubber armoured with built-in front cover, hardened, scratch proof display window**

DESCRIPTION

The PAT100 series of hand-held portable appliance testers enable simple, fast safety testing in all environments including offices, shops and business units. It is ideally suited to training organisations with a very short learning curve and tough, reliable functionality.

With rubber armoured cases and fitted with hardened, scratch proof glass, the PAT100s are exceptionally tough instruments.

Battery powered operation makes the PAT100s perfect for those locations where an electrical supply is not available, inconvenient or unsafe, especially building sites and warehouses. The PAT100 series conforms to all UK and European requirements for electrical safety testing.

Test groups

Test groups enable the correct sequence of tests to be performed automatically with minimum intervention by the user. This keeps testing simple, reduces test times to a minimum and helps to prevent testing errors.

PAT120:

- The PAT120 model has test groups available for Class I, Class II and Extension/Power leads.
- Fixed PASS limits.
- Insulation testing at 500 V (default) or 250 V can be selected at the start of the test.
- Leakage testing uses a "Substitute Leakage" also known as the "Alternative" method to remove the need for a mains supply during test.

The PAT150:

- The PAT150 has additional tests available for testing portable RCDs (PRCDs) of 10 mA and 30 mA.
- Separate tests for continuity, insulation, mains powered leakage testing and SELV measurements can be made using the Quick Test (QT) button.
- Test group pass limits and test duration can be configured by the user.
- Bond lead resistance can be nulled to reduce measurement errors.
- Live circuit measurement is available for testing the mains supply and socket polarity or electrical circuit voltage to 300 V ac.
- Can be used for testing fixed appliances.

Continuity test

Used for measuring the proper bonding of all metal parts of a class I device to the protective conductor.

Tests are performed at 200 mA dc in both polarities to be compliant with international and UK regulation or recommendations. This test is safe to perform on equipment where higher test currents could cause damage.

Insulation testing

Used for measuring the separation of conductive parts or conductors from earth. This test is usually performed at 500 V dc. The PAT100 series maintain the necessary test voltage down to 0.5 Mohms.

An additional 250 V dc insulation test is available on all models for use on IT equipment, on devices or extension leads that are fitted with surge protection, or simply where it may be considered undesirable to use a 500 V test.

Substitute leakage testing

Substitute leakage testing enables the measurements of AC leakage currents, which could differ significantly from the DC Insulation test results.

Substitute leakage testing is performed at less than 40 V ac. and does not require a mains supply.

Substitute leakage testing is used for measuring protective conductor current and touch current, in addition to an insulation test, or where it is considered an insulation test may damage equipment.

The Substitute leakage test will not operate equipment and so can be used where the operation of the equipment under test is undesirable.

Portable RCD testing (PRCD)

Portable RCDs can be tested using the PAT150. There is no need to find a non-RCD protected supply as the PAT150 will not trip external RCDs.

Both 10 mA and 30 mA RCDs can be tested both for disconnection times and the manual test button function.

Separated Extra Low Voltage (SELV) supplies

SELV supplies should be tested to ensure the output voltage does not exceed maximum limits as defined in the international regulations for Extra Low voltage systems. The PAT150 permits up to 50 V ac measurement, with a PASS or fail indication for SELV.

Differential Leakage (Protective Conductor Current), Touch Current & operational test

The PAT150 includes the facility for mains powered leakage test. This test has the benefit that equipment under test will function during the test sequence.

Battery life

The PAT120 & PAT150 operates from AA Alkaline or NiMH cells. Battery life is typically 4 days, based on 120 assets per day.

The PAT150R can be re-charged with NiMH batteries fitted.

SPECIFICATIONS

ENVIRONMENTAL CONDITION:

Operating ambient	20 °C
Humidity	Nominal humidity

CONTINUITY TEST

Test voltage	Compliance Voltage: +4 V dc –0 % /+10 % (open circuit)
Test current	Bi-directional +200 mA –0 % + 50 mA (into 2Ω load)
Continuity accuracy	Resistance: $\pm 5\% \pm 3$ digits (0 to 19.99 Ω)
Resolution	resistance 10 mΩ
Display range	0.01 to 19.99 Ω
Continuity	test nulling up to 9.99 Ω
Test time	User selectable from 2 sec to 20 sec or selected during test to 180sec

INSULATION TEST

Insulation test	250 V dc –0 % /+25 % open circuit 500 V dc –0 % /+25 % open circuit ≥ 500 V 0% dc across 0.5 MΩ load
Short circuit/charge current	< 2mA dc
Insulation accuracy	$\pm 3\% \pm 10$ digits (0 to 19.99 MΩ)
Resolution	0.01 mA
Display range	0.10 MΩ to 99.99 MΩ
Test duration	User selectable from 2 sec to 20 sec or selected during test to 180 sec

SUBSTITUTE LEAKAGE TEST

Leakage current	Accuracy $\pm 5\% \pm 3$ digits
Test frequency	Nominal mains frequency 50 Hz
Test voltage	< 50V ac
Resolution	0.01 mA
Display range	0.10 to 19.99 mA
Test duration	User selectable from 2 sec to 5 seconds Reading corrected to 230 V ac.

Reading corrected to 230 V AC

DIFFERENTIAL LEAKAGE CURRENT

Test voltage	Nominal supply voltage 230 V ac
Test frequency	Nominal mains frequency 50 Hz
Test accuracy	$\pm 5\% \pm 3$ d ± 3 uA/A
Resolution	0.01 mA
Display range	0.10 to 19.99 mA
Test duration	User selectable from 2 sec to 5 seconds

TOUCH CURRENT TEST

Test voltage	Nominal mains 230 V ac
Test frequency	Nominal mains 50 Hz
Test accuracy	± 5% ± 3 digits
Resolution	0.01 mA
Display range	0.10 to 3.99 mA
Test duration	User selectable from 2 sec to 5 sec

SELV DEVICE TEST

Test voltage	0 to 300 V ac
Test accuracy	± 3% ± 3 digits
Resolution	0.1 V ac
Display range	0.1 to 300 V ac

EXTENSION LEAD TEST

Test voltage	5 V
Polarity	Lead OK Live/neutral shorted Live/neutral reversed Live/neutral open circuit

PORTABLE RCD TEST

Test voltage	Nominal mains 230 V
Test frequency	50 Hz
Test current accuracy	+2 % to +8 % (1 x I, 5 x I)
Test accuracy	trip time ± 1 % ± 1 ms
Resolution	Trip time 0.01 ms
Display range	0 to 200 ms (1 x I) 0 to 40 ms (5 x I)

MAIN SUPPLY TEST

Frequency measurement range	50 Hz
Test voltage	40 to 300 V ac
Test accuracy	± 3% ± 3 digits
Resolution	0.1 V ac
Display range	40 to 300 V ac

CIRCUIT TEST

(Carried out automatically, not available to user)

Test voltage	5 V
Test frequency	Nominal mains 50 Hz
Test current	<100mA kortsluitstroom

SAFETY

Instrument designed to IEC 61010-1: 2012
Test leads designed to IEC 61010-031: 2005

PAT150
- 300 V to Earth Category II
Mains fuse protection to 250 V rms ac

EMC

Design to meet IEC 61326-1: 2006
and IEC 61326-2-2: 2005.

Fuse	(user replaceable) UK PAT150 Variants have mains plug fuse One F 100 mA 250 V 5 x 20 mm HBC fuse.
-------------	---

Operating temperature range	0 °C do +40 °C
------------------------------------	----------------

Storage temperature range	-20 °C do +60 °C
----------------------------------	------------------

Humidity	90 % RH @ +10 °C +30 °C 75 % RH @ +30 °C to +40 °C
-----------------	---

Maximum altitude	2,000m to full safety spec.
-------------------------	-----------------------------

IP rating	IP40 (with front cover closed)
------------------	--------------------------------

MECHANICAL

Battery life	Over 1000 full Class 1 tests using 3400 mAh Alkaline battery
---------------------	--

Battery type	Supply voltage 12 V dc (Alkaline AA LR6) 9.6 V dc (NiMH AA LR6)
---------------------	---

Weight

PAT120 (appareil seul) : 1150 g	(40,4 onces)
Poids à l'expédition : 2370 g	(83,6 onces)

PAT150 (appareil seul) : 1300 g	(45,8 onces)
Poids à l'expédition : 2795 g	(98,6 onces)

PAT150R (appareil seul) : 1300 g	(45,8 onces)
Poids à l'expédition : 2975 g	(104,9 onces)

DIMENSIONS

Dimensions (instrument and case)	203 mm (L) x 148 mm (W) x 78 mm (H) (8 x 5.7 x 3.2 inches)
---	---

Dimensions (instrument and packaging)	456 mm (L) x 178 mm (W) x 89 mm (H) (18 x 7.1 x 3.5 inches)
--	--

Product selection table:	UK		Germany		Netherlands Spain Belgium		France Belgium Poland		Switzerland		Australia New Zealand
	PAT120	PAT150	PAT120	PAT150	PAT120	PAT150	PAT120	PAT150	PAT120	PAT150	PAT150
Connector Interfaces											
Mains test socket	BS1363		CEE 7/4 Schuko				CEE 7/5 French		Swiss SEV 1011		AS/NZS 3112 (15A)
Power supply											
AA alkaline/NiMH	■	■	■	■	■	■	■	■	■	■	■
Rechargeable (PAT150R)*		■		■		■		■		■	■
Testing											
Protective Earth Resistance	■	■	■	■	■	■	■	■	■	■	■
250 V insulation	■	■	■	■	■	■	■	■	■	■	■
500 V insulation	■	■	■	■	■	■	■	■	■	■	■
Cable test	■	■	■	■	■	■	■	■	■	■	■
Live protective conductor current		■		■		■		■		■	■
Live touch current		■		■		■		■		■	■
Substitute leakage	■	■	■	■	■	■	■	■	■	■	■
Functional test (part of Live leakage test)		■		■		■		■		■	■
10 mA PRCD		■		■		■		■		■	■
30 mA PRCD		■		■		■		■		■	■
SELV voltage		■		■		■		■		■	■
Lead resistance nulling		■		■		■		■		■	■
Function keys											
Class 1	■	■	■	■	■	■	■	■	■	■	■
Class 2	■	■	■	■	■	■	■	■	■	■	■
Lead/cord	■	■	■	■	■	■	■	■	■	■	■
PRCD		■		■		■		■		■	■
Single test		■		■		■		■		■	■
LCD Backlight	■	■	■	■	■	■	■	■	■	■	■
Setup		■		■		■		■		■	■
On/Off	■	■	■	■	■	■	■	■	■	■	■
Standard accessories											
4mm plug lead probe + croc clip	1	2	1	2	1	2	1	2	1	2	2
Extension lead adaptor	BS1363		IEC 83:1975 Std C 1b						SN SEV 1011		AS/NZS 3112:2000
AC Charger Adaptor * (PAT150R)		■		■		■		■		■	■
Mains Supply Cord		■		■		■		■		■	■
Carry case	■	■	■	■	■	■	■	■	■	■	■

* Note: The rechargeable version of the PAT150 has the identifier (R)

ORDERING INFORMATION

Description	Order Code	Description	Order Code
PAT120-CH PORTABLE APPLIANCE TESTER	1003-074	Included accessories for PAT150	
PAT120-DE PORTABLE APPLIANCE TESTER	1003-066	Extension lead adaptor	
PAT120-EU PORTABLE APPLIANCE TESTER	1003-070	Mains plug test lead	
PAT120-FR PORTABLE APPLIANCE TESTER	1003-072	Continuity/earth bond lead	1001-233
PAT120-UK PORTABLE APPLIANCE TESTER	1003-062	SELV/mains voltage test lead Red x1	1005-077
PAT150-AU PORTABLE APPLIANCE TESTER	1003-077	Carry case	1005-075
PAT150-CH PORTABLE APPLIANCE TESTER	1003-075	Included accessories for PAT150R	
PAT150-DE PORTABLE APPLIANCE TESTER	1003-068	AC Mains charger – multi-country	1003-436
PAT150-EU PORTABLE APPLIANCE TESTER	1003-071	Optional accessories	
PAT150-FR PORTABLE APPLIANCE TESTER	1003-073	Plug adaptor IEC C6 - C13	1001-232
PAT150-UK PORTABLE APPLIANCE TESTER	1003-064	110 V Extension lead adaptor	6220-639
PAT150R-AU PORTABLE APPLIANCE TESTER	1003-435	415 V adaptor lead (4-pin) to BS1363 (16 A)	1000-767
PAT150R-CH PORTABLE APPLIANCE TESTER	1003-434	415 V adaptor lead (5 pin) to BS1363 (16 A)	1000-770
PAT150R-DE PORTABLE APPLIANCE TESTER	1003-430	Extension lead adaptor BS1363	1001-234
PAT150R-EU PORTABLE APPLIANCE TESTER	1003-432	Extension lead adaptor Schuko	1001-235
PAT150R-FR PORTABLE APPLIANCE TESTER	1003-433	Extension lead adaptor Australia	1001-236
PAT150R-UK PORTABLE APPLIANCE TESTER	1003-428	Extension lead adaptor Switzerland	1005-081
Included accessories for PAT120		Mains plug test lead	6231-601
Extension lead adaptor		Mains plug test lead (CEE 7/7)	1005-078
Continuity/earth bond lead	1001-233	Mains plug test lead (AS/NZS 3112)	1005-080
Carry case	1005-075		

UK
Archcliffe Road Dover
CT17 9EN England
T +44 (0) 1304 502101
F +44 (0) 1304 207342
UKsales@megger.com

UNITED STATES
4271 Bronze Way
Dallas TX 75237-1019 USA
T 800 723 2861 (USA only)
T +1 214 333 3201
F +1 214 331 7399
USsales@megger.com

OTHER TECHNICAL SALES OFFICES
Valley Forge USA, College Station USA,
Sydney AUSTRALIA, Danderyd SWEDEN,
Ontario CANADA, Trappes FRANCE,
Oberursel GERMANY, Aargau SWITZERLAND,
Kingdom of BAHRAIN, Mumbai INDIA,
Johannesburg SOUTH AFRICA, Chonburi THAILAND

CERTIFICATION ISO
Registered to ISO 9001:2000 Cert. no. Q 09290

PAT100_DS_en_V03
www.megger.com

Megger is a registered trademark