

# PAT100 SERIES

## Handheld portable appliance testers



- **Simple Tick/Cross, pass/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**
- **10 mA and 30 mA Portable RCD lead testing (PAT150)**
- **Adjustable PASS test limits (PAT150)**
- **Substitute 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 help 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.

## SPECIFICATIONS

### ENVIRONMENTAL CONDITION:

<b>Operating ambient</b>	20°C
<b>Humidity</b>	Nominal humidity

### CONTINUITY TEST

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

### INSULATION TEST

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

### SUBSTITUTE LEAKAGE TEST

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

### Reading corrected to 230V ac.

### DIFFERENTIAL LEAKAGE CURRENT

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

### TOUCH CURRENT TEST

<b>Test voltage</b>	Nominal mains 230 V ac
<b>Test frequency</b>	Nominal mains 50 Hz
<b>Test accuracy</b>	$\pm 5\% \pm 3$ digits
<b>Resolution</b>	0.01 mA
<b>Display range</b>	0.10 to 3.99 mA
<b>Test duration</b>	User selectable from 2 sec to 5 sec

### SELV DEVICE TEST

<b>Test voltage</b>	0 to 300 V ac
<b>Measurement accuracy</b>	$\pm 3\% \pm 3$ digits
<b>Resolution</b>	0.1 V ac
<b>Display range</b>	0.1 to 300 V ac

### EXTENSION LEAD TEST

#### Test includes Insulation and Bond tests.

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

### PORTABLE RCD TEST

<b>Test voltage</b>	Nominal mains 230 V
<b>Test frequency</b>	50Hz
<b>Test current accuracy</b>	+2% to +8% (1 x I, 5 x I)
<b>Trip time accuracy</b>	$\pm 1\% \pm 1$ ms
<b>Trip time resolution</b>	0.01ms
<b>Display range</b>	0 to 200ms (1 x I) 0 to 40ms (5 x I)

### MAINS SUPPLY TEST

<b>Frequency measurement range</b>	50 Hz
<b>Test voltage</b>	40 to 300V ac
<b>Accuracy</b>	$\pm 3\% \pm 3$ digits
<b>Resolution</b>	0.1Vac
<b>Display range</b>	40 to 300V ac

### CIRCUIT TEST

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

<b>Test voltage</b>	5V
<b>Test frequency</b>	Nominal Mains 50 Hz
<b>Test current</b>	< 100mA short circuit

### Safety

**Instrument designed to IEC 61010-1: 2012**  
**Test leads designed to IEC 61010-031: 2005**  
**300 volts to Earth Category II**  
**Mains fuse protection to 250 volts rms ac**

## EMC

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

## Fuse

(user replaceable)

UK variants has mains plug fuse

One F 100 mA 250 V 5 x 20 mm HBC fuse.

## ENVIRONMENTAL

**Operating temperature range** 0°C to +40°C

**Storage temperature range** -20°C to +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

### BATTERIES

**Battery life** 3 days based on 120 tests/  
day using 2000 mAh Alkaline  
batteries

**Battery type** Supply voltage  
12 Vdc (Alkaline AA LR6)  
9.6 Vdc (NiMH AA LR6)

## WEIGHT

PAT120 (instrument only): 1150 g (40.4 oz)

Shipping weight: 2370g (83.6 oz)

PAT150 (instrument only): 1300 g (45.8 oz)

Shipping weight: 2795g (98.6 oz)

PAT150R (instrument only): 1300 g (45.8 oz)

Shipping weight: 2975g (104.9 oz)

## DIMENSIONS

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

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

Product selection table:	UK		Germany		Dutch Spain Belgium		Belgium Poland		Switzerland		Australia New-Zealand
	PAT120-UK	PAT150-UK	PAT120-DE	PAT150-DE	PAT120-EU	PAT150-EU	PAT120-FR	PAT150-FR	PAT120-CH	PAT150-CH	PAT150-AU
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		■		■		■		■		■	■
Mains Supply Cord		■		■		■		■		■	■
Carry case	■	■	■	■	■	■	■	■	■	■	■

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