

# **PAT400 series**

## **Portable appliance testers**



- **Tests to AS/NZS 3760 for In Service Safety Inspection and Testing of Electrical Equipment**
- **10,000 memory storage with USB download**
- **Large 5.7" ¼ VGA backlit full colour screen for clear results**
- **200 mA; 10 A and 25 A Bond Test with high duty cycle for repetitive testing (PAT410 – 200 mA only)**
- **Selectable PASS/FAIL limits provide instant indication of a faulty asset**
- **Optional barcode scanner and printer available to save time typing asset IDs**

### **DESCRIPTION**

The PAT400 series from Megger is a new generation of downloading portable appliance testers, fully testing portable electrical equipment to the latest edition of AS/NZS 3760 for the In-Service Safety Inspection and Testing of Electrical Equipment. There are 3 products in the range; the PAT410 providing a low-profile solution without the added weight required for high-current bond testing, plus a database capacity for up to 10,000 test results. The PAT420 provides the same extensive memory and downloading capability, and has the added features of 10 A and 25 A earth bond testing. The PAT450, the top of the range, has all of these features and includes 1.5 kV and 3 kV flash testing, ideal for tool hire outlets and service workshops where flash testing is routine. All products in the range have a high duty-cycle, with the design tailored to fast testing, easy operation, and all-day use. The PAT400s feature a unique fast-re-start, so that when moving the tester from one room to another, it re-starts instantly from the same menu where it was unplugged. This is a significant timesaver, so allowing more tests per day.

USB communication provides convenient download to a standard USB memory stick, and an on-board 10,000 record memory provides interruption-free testing for improved efficiency, with a large QWERTY keypad for fast data entry. Data is directly compatible with Megger PowerSuite® software for professional certification, and all products have the option of a barcode scanner and a thermal transfer barcode label printer operating directly from the USB port. Thermal transfer labels are highly resistant, stable and easily available. The PAT420 and PAT450 have high current bond test capability for complete industrial, commercial and residential applications.

5 soft-keys give direct access to frequently used functions, accelerating navigation through menus and therefore increasing productivity, where time is money. Both standard and customer configurable test groups are available for fast, flexible asset testing.

Tests available in the range include 250 V and 500 V insulation tests, 200 mA, 10 A and 25 A earth bond tests, differential, touch and alternative (substitute) leakage tests, operational VA tests, RCD trip-tests for portable RCDs, anti-surge and RCD protected extension leads and power cords. RCD testing is now a requirement of AS/NZS 3760.

Accessories supplied with all models include a combined earth-bond and insulation test lead, an adaptor for testing 230 V extension leads, a laptop power supply adaptor, and a carry-case for convenient product and lead storage. All instruments also download data into a CSV format which can be read directly on a PC using Microsoft® Excel.

Megger PowerSuite software can be purchased to compliment any PAT400, providing full databased asset management and professional electronic certificate generation, providing options for multiple clients and locations.

### **APPLICATIONS**

There is a legal requirement for any landlord, employer or owner of a place of work or public place, to ensure that all electrical equipment accessible by tenants, employees or the public is maintained in a safe condition, and an acceptable method of ensuring this is by routine electrical testing. This can be performed by electrical contractors, specialist PAT testing organisations, maintenance departments, or facilities management companies.

The PAT400 range is suitable for performing portable appliance testing in locations such as hotels, public houses, schools, colleges, nurseries, shops, offices, theatres, banks, restaurants, cafés, sports and leisure facilities, cinemas, factories and hair salons etc. where high volume testing requires that accurate records may be difficult to maintain, or aided by, on-board memory and download to management software. The PAT450 is particularly suitable for use in tool-

hire shops where equipment is routinely tested prior to hire, or service workshops where deep disassembly is routine, and will perform a flash test in addition to standard PAT tests.

	PAT410	PAT420	PAT450
<b>SUPPLY</b>			
230 V	■	■	■
Supply measurement	■	■	■
<b>EARTH BOND/CONTINUITY</b>			
200 mA	■	■	■
10 A		■	■
25 A		■	■
Bond lead null	■	■	■
<b>INSULATION TEST</b>			
250 V	■	■	■
500 V	■	■	■
<b>ALTERNATIVE LEAKAGE TESTS</b>			
Substitute	■	■	■
Differential	■	■	■
Touch current	■	■	■
<b>OPERATION TEST</b>			
VA Measurement	■	■	■
<b>EXTENSION LEAD TESTS</b>			
Earth bond	■	■	■
Insulation	■	■	■
Polarity	■	■	■
Portable RCD tests	■	■	■
<b>FLASH TEST</b>			
1.5 kV and 3 kV			■
<b>OTHER FEATURES</b>			
Low-profile light weight	■		
Auto test routine	■	■	■
Manual testing	■	■	■
Fuse check	■	■	■
Colour display	■	■	■
Configurable tests times	■	■	■
Selectable pass limits	■	■	■
Lead storage pouch	■	■	■
10,000 record on-board storage	■	■	■
Download to USB memory stick	■	■	■
PowerSuite compatible	■	■	■

### Electrical supply range

PAT410, PAT420, PAT450 230 V  $\pm$  10% @ 50/60 Hz

### Bond test (10 A and 25 A) (not PAT410)

Open circuit voltage: 9 V a.c.  $\pm$  10%  $\pm$  0.1 V  
 (Supply: 230 V 50Hz)

Earth bond resistance accuracy:

$\pm$ 5%  $\pm$ 3 digits (0 to 0.49  $\Omega$ )

$\pm$ 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  $\Omega$

### Continuity test (200 mA)

Continuity test voltage: 4.0 V d.c. -0% +10%

Continuity resistance accuracy:  $\pm$ 5%  $\pm$ 3 digits (0 to 0.49  $\Omega$ )

$\pm$ 5%  $\pm$ 5 digits 0.5 to .99  $\Omega$ )

Continuity resistance resolution: 10 m $\Omega$  (1 to 19.99  $\Omega$ )

Display range: 0 to 19.99  $\Omega$

### Insulation test (250 V and 500 V)

Insulation resistance accuracy (230 V):

$\pm$ 2%  $\pm$ 5 digits (0 to 19.99 M $\Omega$ )

$\pm$ 5%  $\pm$ 10 digits (20 to 99.99 M $\Omega$ )

Insulation resistance resolution: 0.01 M $\Omega$

Display range: 0 to 99.99 M $\Omega$

### Substitute leakage test

Test voltage and frequency: 40 V a.c.  $\pm$ 10% nominal mains frequency

Leakage current accuracy:  $\pm$ 5%  $\pm$ 5 digits

Leakage current resolution: 0.01 mA

Display range: 0 to 19.99 mA

### Differential leakage current

Test voltage and frequency: Nominal mains supply

Differential leakage current accuracy:  $\pm$ 5%  $\pm$ 5 digits

Differential leakage current resolution: 0.01 mA

Display range: 0 to 19.99 mA

### Touch current test

Test voltage and frequency: Nominal mains supply

Touch current accuracy:  $\pm$ 5%  $\pm$ 5 digits

Touch current resolution: 0.01 mA

Display: 0 to 10 mA

### Operational test

Test voltage and frequency: Nominal mains supply

VA accuracy:  $\pm$ 5%  $\pm$ 10 digits (0 - 99 VA)

$\pm$ 5%  $\pm$ 50 digits (100 VA - 999 VA)

$\pm$ 5%  $\pm$ 100 digits (1000 VA - 3700 VA)

Resolution: 1 VA (0 to 3700 VA)

Display range: 0 to 3999 VA

### Extension lead test

Tests performed: Bond, insulation and polarity

Polarity test voltage: 12 V

Polarity checks: Lead OK

Live neutral S/C

Live neutral reversed

Live/neutral O/C

## SPECIFICATIONS

**Flash test**

Flash test voltage:	1500 V a.c. nominal for Class 1 3000 V a.c. nominal for Class 2
Flash test current:	<3.5 mA short circuit @ 253 V primary supply voltage
Flash test breakdown current accuracy:	±5% ±5 digits
Flash test breakdown current resolution:	0.01 mA
Display range:	0 to 3.0 mA

**Portable RCD test**

Test voltage and frequency:	Nominal mains supply
Test current accuracy:	-8% to -2% (1/2 x I) +2% to +8% (1 x I, 5 x I)
Trip time accuracy:	±1% ±5 digits
Trip time resolution:	0.1 ms
Display range:	0 to 1999 ms (1/2 x I) 0 to 300 ms (1 x I) 0 to 40 ms (5 x I)

**Fuse test**

Test voltage:	3.3 V
Warning:	Audible beep if fuse is OK

**Environmental**

Operating temperature:	-10 to +50 °C
Storage temperature:	-20 to +60 °C
Humidity:	90% RH @ -10 to +30 °C 75% RH @ +30 to +50 °C
Maximum altitude:	2000 m
Ingress protection:	IP40

**Weight**

PAT410 (with packaging)	2.7 kg (3.2 kg)
PAT420 (with packaging)	4.4 kg (4.9 kg)
PAT450 (with packaging)	5.0 kg (5.5 kg)

**Dimensions**

PAT410	120 (H) x 255 (W) x 320 (L)
PAT420 & PAT450	155 (H) x 255 (W) x 320 (L)
Packaging:	210 (H) x 280 (W) x 390 (L)

**Safety**

IEC 61010-1: CAT II 300 V

**EMC**

 IEC 61326-1: 2006  
 IEC 61326-2-2: 2005

**ORDERING INFORMATION**

Product	Order Code	Product	Order Code
PAT410-AU	1000-753	<b>Optional accessories</b>	
PAT420-AU	1000-746	415 V Adaptor lead (4 pin) to AS/NZ253112 16 A	1000-767
PAT450-AU	1000-749	415 V Adaptor lead (5 pin) to AS/NZ253112 16 A	1000-770
<b>Included accessories</b>		Bar code scanner (USB)	1001-047
Printed quick start guide		Pass/fail barcode label printer (USB)	1001-046
Full user guide on CD		USB lead – PAT – printer	25970-041
Calibration Certificate		Appliance bar-code labels (1-1000)	6121-483
Continuity / earth bond lead + probe (black)	2000-870	Roll of 1000 FAIL test labels	1001-227
Extension lead adaptor	2000-883	Roll of 1000 PASS test labels	1000-971
Flash lead 3.0 KV 3.5 mA (red) (PAT450 only)	5310-401	PAT accessory pouch	2001-044
Carry case with lead/document pouch	2000-962	Screen protector (2)	1002-572
Plug adaptor IEC C6 - C13 (3 way 5 A PSU)	2000-551		
Screen protector			