

# PAT400 series

## Portable appliance testers



- **10,000 memory storage with USB download**
- **Large 5.7" 1/4 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**
- **Mains Powered for industrial, commercial and residential applications**

### 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 the Code of Practice for the In-Service Inspection and Testing of Electrical Equipment. There are 3 products in the range; the PAT410 providing a low-profile 200mA continuity solution without added weight, 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 barcode label printer operating directly from the USB port. The PAT400 series has mains power 230 V operation 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 the UK Code of Practice.

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 can export data directly in CSV format which can be read and stored 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.

### APPLICATION

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		■	■
<b>INSULATION TEST</b>			
250 V	■	■	■
500 V	■	■	■
Bond lead null	■	■	■
<b>ALTERNATIVE LEAKAGE TESTS</b>			
Substitute	■	■	■
Differential	■	■	■
Touch current	■	■	■
<b>OPERATION TEST</b>			
VA Measurement	■	■	■
<b>EXTENSION LEAD TEST</b>			
Earth bond	■	■	■
Insulation	■	■	■
Polarity	■	■	■
Portable RCD test	■	■	■
<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	■	■	■

## SPECIFICATIONS

### Electrical supply range

230 V  $\pm 10\%$   $\pm 1$  V @ 50 Hz  $\pm 10\%$   $\pm 0.1$  Hz  
Instrument accuracy cannot be guaranteed when operated on supply frequencies other than those specified above

### 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

(200mA)

#### 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 19.99  $\Omega$ )

#### 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:

$\pm 2\%$   $\pm 5$  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 current

#### 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

### 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:

0.00 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 3.99 KVA

### Ext Lead Test

#### Tests performed:

Bond, insulation and polarity

#### Polarity test voltage:

12 V dc

#### Polarity checks:

Lead OK

Live neutral S/C

Live neutral reversed

Live/neutral O/C

### Flash test

(PAT450 only)

#### 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:

$\pm 5\%$   $\pm 5$  digits

#### Flash test breakdown current resolution:

0.01 mA

#### Display range:

0 to 3.0 mA

### RCD tests

#### Test voltage and frequency:

Nominal mains supply

#### Test current accuracy:

-8% to -2% ( $i_r/2 \times I$ )

+2% to +8% ( $1 \times I$ ,  $5 \times I$ )

#### Trip time accuracy:

$\pm 1\%$   $\pm 5$  digits

#### Trip time resolution:

0.1 ms

#### Display range:

0 to 1999 ms ( $i_r/2 \times I$ )

0 to 300 ms ( $1 \times I$ )

0 to 40 ms ( $5 \times I$ )

### Fuse Test

#### Test voltage: 3.3 V

Warning: Audible beep if fuse is OK

#### Operating temperature range and humidity

-10 to +50 °C  
90% RH @ -10 to +30 °C  
75% RH @ +30 to +50 °C

**Storage temperature range and humidity** -20 to +60 °C  
90% RH @ -10 to +30 °C  
75% RH @ +30 to +50 °C

**Maximum altitude** 2000 m

**IP rating** IP40

#### Dimensions

PAT410 145 (H) x 255 (B) x 320 (L)  
PAT420 180 (H) x 255 (B) x 320 (L)  
PAT450 180 (H) x 255 (B) x 320 (L)

**Dimensions (instrument and packaging)** 210 mm (H) x 280 mm (W) x 390 mm (L)

#### 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)

**Over-voltage safety category** IEC 61010-1: CAT II 300 V

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

### ORDERING INFORMATION

Description	Order Code
PAT410-AU	1000-753
PAT420-AU	1000-746
PAT450-AU	1000-749
<b>Included accessories</b>	
Printed quick start guide	
Full user guide on CD	
Calibration Certificate	1001-284
Continuity/earth bond lead	1001-233
Extension lead adaptor BS1363	1001-234
Flash test lead	1007-165
Carry case with lead/document pouch	2000-962
Plug adaptor IEC C6 - C13	1001-232
<b>Optional accessories</b>	
UKAS certificate	1001-285
415 V adaptor lead (4-pin) to BS1363 (16 A)	1000-767
415 V adaptor lead (5 pin) to BS1363 (16 A)	1000-770
Barcode reader, USB	1001-047
Barcode Label Printer (Brother P700) (USB)	1005-423
USB cable	1004-610
Appliance bar-code labels (1-1000)	6121-483
Roll of 1000 FAIL test labels	1001-227
Roll of 1000 PASS test labels	1000-971
PAT accessory pouch	2001-044
PAT test certificate book	1001-299