

# PAT400 series

## Portable appliance testers



- **10,000 memory storage with USB download**
- **Large 5.7"  $\frac{1}{4}$  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**
- **230 V and 110 V operation 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 230 V only solution without the added weight required of 110 V operation, 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 110 V operation, and also 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 dual 230 V and 110 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 also include Download Manager software, to enable data to be converted 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.

### 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                            | ■      | ■      | ■      |
| <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     | ■      | ■      | ■      |

## SPECIFICATIONS

### Electrical supply range

**PAT410** 230 V  $\pm$  10% @ 50/60 Hz

**PAT420, PAT450** 110 V  $\pm$  10% + 110 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 .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 .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 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 to 10 mA

### Operational test

### Test voltage and frequency:

Nominal mains supply

### VA rating:

230 V 3700 VA

110 V 1800 VA

### 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 3990 VA

### Ext 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

### 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:

$\pm$ 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% (1/2 x I)

+2% to +8% (1 x I, 5 x I)

### Trip time accuracy:

$\pm$ 1%  $\pm$ 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

## 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

**Maximum altitude** 2000 m

**IP rating** IP40

**Dimensions** **PAT410** 145 (H) x 255 (W) x 320 (L)  
**PAT420 & PAT450** 180 (H) x 255 (W) x 320 (L)

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

**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-BE/FR DLOADING LOW PROFILE           | 1002-500   |
| PAT410-CH DLOADING LOW PROFILE              | 1002-458   |
| PAT410-DE                                   | 1001-748   |
| PAT410-DE + PROTOKOLLMANAGER SOFTWARE       | 1001-845   |
| PAT410-IL DLOADING LOW PROFILE              | 1002-501   |
| PAT410-NL-ES DOWNLOADING LOW PROFILE        | 1000-747   |
| PAT410-PL DLOADING LOW PROFILE              | 1002-499   |
| PAT420-CH                                   | 1005-128   |
| PAT420-DE                                   | 1005-019   |
| PAT450-CH DLOADING 25A BOND+FLASH           | 1002-459   |
| PAT450-DE                                   | 1000-751   |
| PAT450-NL-ES DLOADING 25A BOND+FLASH        | 1000-750   |
| <b>Optional accessories</b>                 |            |
| 110 V Extension lead adaptor                | 6220-639   |
| 110 V mains lead adaptor                    | 1000-766   |
| 415 V adaptor lead (4-pin) to BS1363 (16 A) | 1001-769   |
| 415 V adaptor lead (5 pin) to BS1363 (16 A) | 1001-772   |
| Barcode reader, USB                         | 1001-047   |
| Pass/fail barcode label printer (USB)       | 1001-046   |
| USB cable                                   | 25970-041  |
| Barcode printer label refills (cartridge)   | 90001-010  |
| 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   |
| Screen protector (2)                        | 1002-572   |
| <b>Included accessories</b>                 |            |
| Printed quick start guide                   |            |
| Full user guide on CD                       |            |
| Calibration Certificate                     |            |
| Screen protector                            |            |
| Continuity/earth bond lead                  | 1001-233   |
| Extension lead adaptor BS1363               | 1001-234   |
| Flash test lead                             | 5310-401   |
| Carry case with lead/document pouch         | 2000-962   |
| Plug adaptor IEC C6 - C13                   | 1001-232   |

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