# PAT 250 series
## Handheld portable appliance testers with Bluetooth®




- **CertSuite PAT software included (1 year licence*)**
- **Control of testing from CertSuite PAT**
- **Save results to the cloud and produce reports quickly**
- **Simple tick or cross for pass or fail indication**
- **Battery powered with rechargeable options**
- **Safe 250 V insulation and leakage test for surge-protected and IT equipment**
- **Continuity test 200 mA**
- **Substitute leakage testing**
- **Mains powered and 10 mA and 30 mA portable RCD lead testing**
- **Fast testing and report generation**
- **Tough, rubber armour with built-in front cover and lightweight for portability**

## DESCRIPTION

The PAT250 series of hand-held portable appliance testers enables simple, fast safety testing in all environments including offices, shops and business units. Its tough, reliable functionality is ideally suited for training organisations with high turnover, intensive courses.

With rubber armoured cases and hardened, scratch-proof glass, the PAT250s are exceptionally tough instruments.

Battery powered operation makes the PAT250s perfect for those locations where an electrical supply is not available, inconvenient or unsafe, especially building sites and warehouses. The PAT250 series conforms to all UK and European requirements for electrical safety testing.

## CERTSUITE PAT SOFTWARE

The PAT250 series is supplied with CertSuite PAT as standard (1 year licence, subscription applies after 1 year). With CertSuite PAT, recording PAT test results and producing professional quality test reports is quick and easy. Unlimited reports and jobs are supported.

For more information on CertSuite PAT please visit **megger.com** or scan the QR code ➔

*After 1 year a subscription charge applies please see **megger.com** for further information.

### 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.

## THE PAT250:

- The PAT250 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.

# PAT 250 series
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### Insulation testing
Used for measuring the separation of conductive parts or conductors from earth. This test is usually performed at 500 V dc. The PAT250 series maintains the necessary test voltage down to 0.5 MΩ.

### 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 PAT250SX. 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 PAT250SX permits up to 50 V AC measurement, with a PASS or fail indication for SELV.

### Differential Leakage (Protective Conductor Current), Touch Current and 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 PAT250SX operates from AA Alkaline or NiMH cells. Battery life is typically four days, based on one hundred and twenty assets per day.

The PAT250SX can be re-charged with NiMH batteries fitted.

## SPECIFICATIONS
### Environmental Condition

| | |
|---|---|
| **Operating ambient** | 20 °C |
| **Humidity** | 45% rh ± 20 points |

### Continuity Test

| | |
|---|---|
| **Test voltage** | Compliance voltage:<br>+4 V DC -0% / +30% (open circuit) |
| **Test current** | Bi-directional +200 mA<br>-0 % + 50 mA (into 2 Ω load) |
| **Continuity accuracy** | Resistance: ± 5% ± 3 digits<br>(0 to 19.99 Ω) |
| **Resolution** | Resistance 10 mΩ |
| **Display range** | 0.01 to 19.99 Ω |
| **Continuity** | test nulling<br>up to 9.99 Ω |
| **Test time** | User selectable from 2 s to 20 s<br>or selected during test to 180 s |

### Insulation Test

| | |
|---|---|
| **Insulation test** | 250 V DC -0% +25% open circuit<br>500 V DC -0% +25% open circuit<br>≥ 500 V 0% DC across 0.5 MΩ load |
| **Short circuit/charge current** | < 2mA DC |
| **Insulation accuracy** | ± 3% ± 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 s to 20 s or<br>selected during test to 180 s |

### Substitute Leakage Test

| | |
|---|---|
| **Leakage current** | Accuracy ± 5% ± 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** | 0.01 mA |
| **Display range** | User selectable from 2 s to 5 s<br>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** | ± 5% ± 3 digits ± 3 uA/A |
| **Resolution** | 0.01 mA |
| **Display range** | 0.10 to 19.99 mA |
| **Test duration** | User selectable from 2 s to 5 s |

### 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 s to 5 s |

### 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 |

# PAT 250 series
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### Extension Lead Test

| | |
|---|---|
| **Test voltage** | 5 V |
| **Polarity** | Lead OK<br>Live/neutral shorted<br>Live/neutral reversed<br>Live/neutral open circuit |

### Extension Portable RCD Test

| | |
|---|---|
| **Test voltage** | Nominal mains 230 V |
| **Test frequency** | 50 Hz |
| **Test current accuracy** | +2 % to +9 % (1 x I, 5 x I) |
| **Test accuracy** | Trip time<br>± 1 % ± 1 ms |
| **Resolution** | Trip time 0.01 ms |
| **Display range** | 0 to 200 ms (1 x I)<br>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 short-circuit |

### Safety

**Instrument designed to IEC 61010-1: 2010**
**Test leads designed to IEC 61010-031: 2008**

**PAT250**

300 V to Earth Category II
Mains fuse protection to 250 V rms AC

### EMC

**Design to meet IEC 61326-1: 2012 and IEC 61326-2-2: 2005.**

### Performance standard

**BS EN 50678:2020**
**BS EN 50699:2020**

| | |
|---|---|
| **User replaceable fuse** | 13 A fused mains plug (PAT250-UK only)<br>One F 100 mA 250 V 5x20 mm HBC |
| **Operating temperature** | 0 °C to +40 °C |
| **Storage temperature** | -20 °C to +60 °C |
| **Humidity** | 90 % rh @ +10 °C to +30 °C<br>75 % rh @ +10 °C to +60 °C |
| **Operating altitude** | up to 2,000 m |
| **IP rating** | IP40 (with front cover closed) |

### Mechanical

| | |
|---|---|
| **Battery life** | Over 1000 full Class 1 tests using 3400 mAh Alkaline battery |
| **Battery type** | eight AA LR6 cells<br>12 V DC (Alkaline cells)<br>9.6 V DC (NiMH cells) |

**Weight**

| | |
|---|---|
| PAT250 (instrument) | 1300g (45.8 oz) |
| (shipping) | 2795g (98.6 oz) |
| PAT250SRX (instrument) | 1300g (45.8 oz) |
| (shipping) | 2975g (104.9 oz) |

### Dimensions

| | |
|---|---|
| **Dimensions** | Instrument and case<br>203 (L) x 148 (W) x 78 mm (H)<br>(8 x 5.7 x 3.2 inches)<br>Instrument and packaging<br>456 (L) x 178 (W) x 89 mm (H)<br>(18 x 7.1 x 3.5 inches) |

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| Product Selection Table: | UK | Germany | Netherlands Spain Belgium | France Belgium Poland | Switzerland | Australia New Zealand |
|---|---|---|---|---|---|---|
| **Connector Interfaces** | | | | | | |
| Mains test socket | BS1363 | CEE 7/4 Schuko | CEE 7/4 Schuko | CEE 7/5 French | Swiss SEV 1011 | AS/NZS 3112 (15A) |
| Power Supply | | | | | | |
| AA alkaline/NiMH | ■ | ■ | ■ | ■ | ■ | ■ |
| Rechargeable | ■ | ■ | ■ | ■ | ■ | ■ |
| **Testing** | | | | | | |
| Protective Earth Resistance | ■ | ■ | ■ | ■ | ■ | ■ |
| 250V 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** | | | | | | |
| 4m plug lead probe + croc clip | 2 | 2 | 2 | 2 | 2 | 2 |
| Extension lead adaptor | BS1363 | IEC 83:1975 Std C 1b | IEC 83:1975 Std C 1b | IEC 83:1975 Std C 1b | SN SEV 1011 | ASNZS 3112:2000 |
| AC Charger Adaptor | | | | | | |
| Mains Supply Cord | | | | | | |
| Carry case | | | | | | |

**Note:** The rechargeable version of the PAT250 has the identifier (R)

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## ORDERING INFORMATION

| Description | Order Code |
|---|---|
| PAT250SX-UK PAT & SOFTWARE | 1016-040 |
| PAT250SX-AU PAT & SOFTWARE | 1016-041 |
| PAT250SX-CH PAT & SOFTWARE | 1016-042 |
| PAT250SX-DE PAT & SOFTWARE | 1016-044 |
| PAT250SX-EU PAT & SOFTWARE | 1016-045 |
| PAT250SX-FR PAT & SOFTWARE | 1016-046 |
| PAT250SRX-UK PAT & SOFTWARE | 1016-047 |
| PAT250SRX-AU PAT & SOFTWARE | 1016-048 |
| PAT250SRX-CH PAT &SOFTWARE | 1016-049 |
| PAT250SRX-DE PAT & SOFTWARE | 1016-050 |
| PAT250SRX-EU PAT & SOFTWARE | 1016-051 |
| PAT250SRX-FR PAT & SOFTWARE | 1016-052 |
| PAT250SRX-UK-RS PAT & SOFTWARE | 1016-053 |
| PAT250SX-UK-RS PAT & SOFTWARE | 1016-054 |

| Description | Order Code |
|---|---|
| Included accessories for PAT250 | |
| Extension lead adaptor | |
| Mains plug test lead | |
| Continuity/earth bond lead | 1001-233 |
| SELV/mains voltage test lead Red x1 | 1005-077 |
| Carry case 1005-075 | |
| | |
| Included accessories for PAT250SRX | |
| AC Mains charger – multi-country | 1003-436 |
| | |
| Optional accessories | |
| Plug adaptor IEC C6 - C13 | 1001-232 |
| 110 V Extension lead adaptor | 6220-639 |
| 415 V adaptor lead (4-pin) to BS1363 (16 A) | 1000-767 |
| 415 V adaptor lead (5 pin) to BS1363 (16 A) | 1000-770 |
| Extension lead adaptor BS1363 | 1001-234 |
| Extension lead adaptor Schuko | 1001-235 |
| Extension lead adaptor Australia | 1001-236 |
| Extension lead adaptor Switzerland | 1005-081 |
| Mains plug test lead | 6231-601 |
| Mains plug test lead (CEE 7/7) | 1005-078 |
| Mains plug test lead (AS/NZS 3112) | 1005-080 |

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