

2019



# Test Equipment Catalogue

Martindale • Metrohm® • Drummond



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- Best Sellers range
- special terms apply
- ◆ special terms apply

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Martindale Electric, founded in 1928, incorporates Edgcombe Instruments Metrohm® low voltage products and John Drummond test lamps and accessories.

The company's products help electricians and maintenance engineers carry out portable appliance testing, check fixed wiring and safely prove dead. They measure everything from light and sound levels to microwave leakage and power consumption.

The Martindale name is one of the most trusted brands for electrical safety testing and the company has a reputation for providing innovative and time-saving solutions for electricians and service professionals.

Industry firsts include:

- **Safe Isolation** – the definitive voltage indicator and proving unit
- **Insulation testing** – the first tester for hazardous environments
- **Test tools** – the first low cost fuse finder and the first self-proving non-contact voltage indicator
- **Socket testers** – the first ring main socket tester and the first advanced socket tester as defined by the Health & Safety Executive
- **Loop testing** – the first non-trip, plug-in loop tester, with automatic testing for all PE, PN, PFC & PSC measurements
- **PAT testing** – the smallest and lightest handheld PAT

If you have a question or would like to discuss your requirements in more detail with our experienced technical advisors: call **01923 441717** or email **sales@martindale-electric.co.uk**.

Full technical specifications, the latest product information and application notes are available at **www.martindale-electric.co.uk**. All products have a 2 year warranty excluding leads, fuses and consumables and are supplied with batteries where applicable.

Martindale products are available from electrical wholesalers, national catalogues and online distributors. All the national chains and most independent electrical wholesalers have accounts with Martindale. We carry large stocks and operate a standard next day delivery service, excluding outlying areas. So even if your favourite wholesaler doesn't have the product you want in stock, they can get it the next business day providing they order by 3.00pm.

## Measurement category (see page 89)



**FREE VC** Free verification certificate

**TRUE RMS** True RMS

18th Edition Testing

Specialist Testers

Phase Rotation & Continuity Testers

Safe Isolation & Voltage Indication

PAT Testing

Socket Testers

Multimeters & Clamp Meters

Fuse Finders & Cable Detectors

HVAC Environmental and FM

Thermometry

Calibrators & Decade Boxes

Test Leads & Accessories



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## Electrical Safety



**PD440S, PD690S, PD440SX, PD690SX**  
A new range of proving units including models with unique CALCHECK features  
Page 31-33



**HPAT400**  
Simple pass/fail handheld PAT Tester  
Page 40



**EZ165, EZ365**  
Eze Check Xtra Earth Loop Impedance Indicators with supply polarity and RCD Check (EZ365)  
Page 50

## Environmental



**CO190**  
Carbon monoxide meter with audible and visual indication  
Page 69



**LM192, LM195**  
Light meters with built-in correction factors for the latest LED lighting  
Page 70



**DT173, DT175, DTL84**  
Single, dual and four channel thermometers with a wide range of thermocouple accessories  
Page 76-77

## Voltage Indication



**NC1, NC2, NC3, NC4** Voltage & magnetic field indicators for detecting live voltages and solenoid testing [Page 36-37](#)



**DRUMTL15**  
690V test lamp with 1000V CAT IV safety rating  
[Page 27](#)

## Locking Off Devices

**CABLOKS**  
1M, 3M and 5M adjustable cable lock out with built-in hasp  
[Page 18](#)



**LOKKITGAS1**  
Gas installer lock out kit for fused spurs and mcbs  
[Page 21](#)



**LOKIT2PLUS**  
Domestic installer lock out kit  
[Page 20](#)



**LOKKIT6**  
Universal fuse carrier lock out kit  
[Page 18](#)



**LOKKITPRO**  
Ultimate industrial/commercial lock out kit  
[Page 16](#)

We have a fast growing and well resourced in-house calibration and repair department. The list below shows the products we repair and calibrate.

- multifunction installation testers
- insulation testers
- rcd testers
- loop testers
- voltage testers
- multimeters
- clamp meters
- earth testers
- thermometers
- milliohm meters/micro ohm meters
- pat testers
- high voltage
- microwave leakage detectors
- process control
- light
- sound
- gas detectors
- anemometers

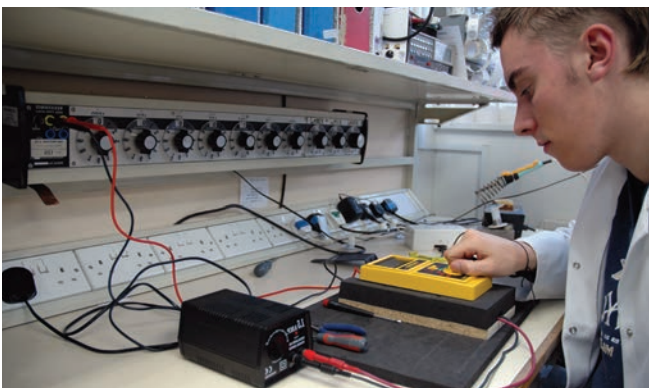
## Repair

In the unlikely event of your test equipment failing, Martindale offers a full repair service to restore your instrument to its original specification.

A full repair service is also available on many other makes of instruments across a broad range of product types. Please call our service department on 01923 441717 for further information.

Martindale's verification service conforms to the requirements of BS EN ISO 10012-2003, is certified to ISO 9001: 2015 and is traceable to national standards via UKAS (NAMAS) certificates held for our calibration equipment.

Turnaround times for repairs vary but instruments are usually turned around within 5 working days, subject to the availability of parts.



## Calibration

To ensure your equipment remains in specification throughout its life, Martindale offers a calibration service on all the equipment in this catalogue.

All Martindale instruments are supplied calibrated at the factory, but personalised certificates are available at an additional cost. We use computer driven procedures to ensure a consistent, repeatable approach.

Centralised records also allow us to maintain traceability and to generate reminders for re-calibration when next due. Additionally we offer calibration across a wide range of electrical test equipment from other manufacturers.

FAST 24 hour calibration allows you to drop your meters off at our premises and collect them the next day, for an additional fee per unit. Alternatively, send the units to us and we will return them on a next day carrier. We also offer a standard 5 day service, but usually achieve better turnaround times.

## Multifunction Installation Testers



The new ET4000 series multifunction installation testers carry out all the tests needed to verify the safety of electrical installations in domestic, commercial and industrial wiring installations in accordance with the latest 18th Edition Wiring Regulations.

Everything about the ET Series has been designed to save time and make testing easier, from the capability to display all results from an RCD autotest on one screen to the inclusion of useful HELP menus at the press of a button. Even the soft carry case has been designed to enable testing without having to unpack and repack the instrument every time.

On connection, the testers carry out an automatic polarity and wiring check identifying potentially dangerous wiring faults in advance of any testing.



Easy selection of tests and on-screen help.



Pass/fail testing to the latest loop impedance limits.



4mm sockets for standard Martindale lead sets. USB for downloading.

	ET4000	ET4500
Insulation Resistance at 50/100/250/500/1000V	✓	✓
Continuity Testing at 200mA and 8.5mA	✓	✓
Loop Resistance and PFC dual display	✓	✓
Auto RCD and Ramp Test 10/30/100/300/500/1000mA (AC, A, F, S)	✓	✓
TRMS Voltage, Frequency and Phase Sequence	✓	✓
Slimline remote start probe	✓	✓
Graphical display for multiple readings and help	✓	✓
300V CAT IV, 600V CAT III safety rating	✓	✓
Mains Rechargeable with in-car option	✓	✓
Three wire Earth Resistance Testing		✓
Memory and download for documenting results with ET-Link PC software (included)		✓

Fast, reliable high current and non-trip loop testing comes as standard together with a high level of input protection and a CAT IV safety rating. Both models include phase sequence indication and TRMS voltage measurement ready for every job.

In addition the ET4500 can be used to carry out 3 wire earth testing and has on board memory to store and download all installation test results for fast reliable documentation. Both models are also supplied with low loss AA rechargeable batteries which can be easily recharged in the tester with the mains adaptor or from a car or van using the optional in-car charger.

Standard accessories include Martindale test leads with clips and prods all terminated with industry standard 4mm plugs and the slimline Martindale remote start probe with test button allowing one handed measurement in those areas that are hard to reach.

## Multifunction Installation Testers



### Features ET4000/ET4500

- Red and green LED indicators for instant pass/fail results
- Built-in Zs loop impedance tables and help screens
- Automatic polarity and wiring check on connection
- Test and Go soft carry case, no need to unpack and repack
- Auto RCD and ramp test with all results on one screen
- TRMS voltage measurements and phase rotation on all models
- Fast, reliable high current and non-trip loop testing
- Low discharge rechargeable batteries and mains charger

### Additional features ET4500

- On-board storage and download for documenting results
- ET-Link software to upload site installation details to the tester and download results onto a PC
- Optional ET-Link Pro, to autofill, print, manage and archive certificates
- Three wire earth resistance testing

The ET4000 and ET4500 multifunction testers simplify 18th edition testing by having the latest fuse tables for Zs values built-in together with red and green LED indicators for instant pass/fail confirmation.

### Included Accessories

#### (ET4000/ET4500)

- MARTL36 MFT 3 lead set RBG
- TL207 MFT mains lead set RBG
- TL180 Remote start probe
- Soft carry case and strap
- Quick start plus full user guide on CD
- Calibration verification certificate
- Low discharge rechargeable batteries
- Mains charger

#### ET4500 only

- ET-Link Software
- USB Cable

## ET4000/ ET4500

### Insulation test:

50VDC,  
100VDC,  
250VDC,  
500VDC,  
1000VDC

### Ranges:

19.99MΩ/99.9MΩ/199.9MΩ

### Continuity test:

Short circuit current >200mA

Ranges: 19.99Ω/199.9Ω/1999Ω

### RCD test:

10mA, 30mA, 100mA, 300mA,  
500mA, 1000mA.

Type AC, A, F, S

0.5, 1, 5 x I auto and ramp test

Ranges: 40.0ms/max time

**Loop Test:** Dual display (Loop Resistance of PFC)

High Current L-L L-N, Non-trip L-PE

### Ranges:

9.99Ω/99.9Ω/999Ω/9.99kΩ

### Voltage:

TRMS 0-550V  
Frequency 9.99Hz/499.9Hz  
Phase rotation

### Earth Resistance 3 wire

Ranges (ET4500):  
19.99Ω/199.9Ω/9999Ω

### Memory (ET4500):

On screen recall  
PC download/upload via USB

**Complies with:** BS EN 61010-1  
CAT III 600V CAT IV 300V  
BS EN 61557,  
BS 57671:2018 18th Edition  
BS EN 61326-1

**Dimensions:** 230 x 103 x 115mm

**Weight:** 1.3kg approx

**Includes:** TL36 3 lead set RBG,  
TL207 mains lead set RBG, TL180  
Remote probe, soft carry case  
and strap, quick start plus CD,  
calibration verification certificate,  
6x1.5V AA low-loss rechargeables,  
mains charger

**ET4500 only:** ET-Link Software,  
USB Cable



### ACCESSORIES

- |           |                                    |
|-----------|------------------------------------|
| ER2KIT/S  | 3 wire earth test kit (for ET4500) |
| TL78      | 50m R2 continuity lead             |
| SB13      | Safebreak mains socket adaptor     |
| TL52      | fused test leads                   |
| PSUHPAT12 | In-car 12V charger                 |



ET4500 PRO Professional Multifunction Installation Tester Kit



Martindale's ET4500 PRO package is the most comprehensive 18th Edition manufacturer bundle available. Based around the class leading ET4500 multifunction installation tester with built in loop impedance limits, rechargeable batteries and 3 wire earth test capability, the kit includes essential Martindale test tools and accessories for working on-site. The new bundle includes ET-Link Pro PC software for auto filling of the latest 18th Edition certificates from the tester via USB connection. The software is unique in being able to upload client, location, distribution board and circuit information from a PC to the tester, simplifying testing and saving of results on-site.

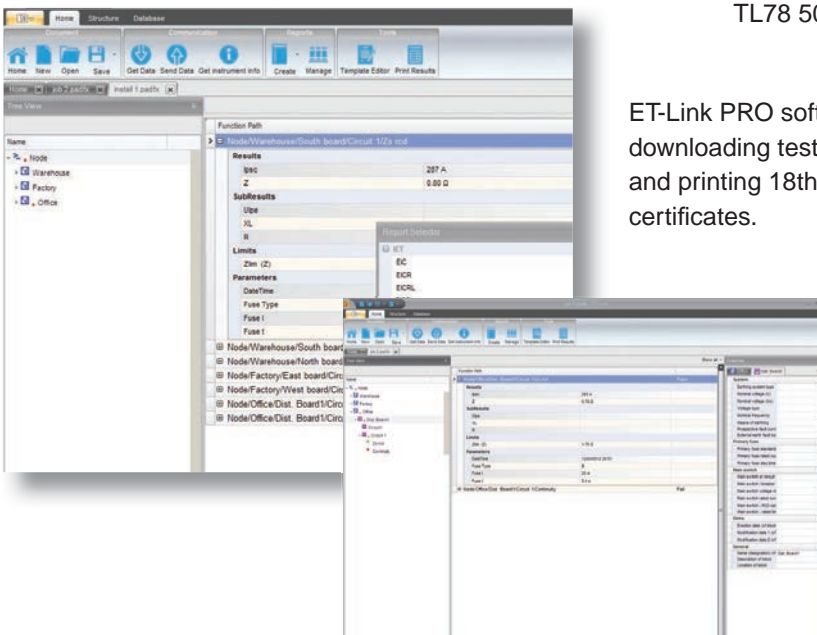
ET-Link PRO PC software

Additional Martindale accessories include the BZ101 socket tester, 3 wire earth testing set, car charger, 50m continuity lead reel and safebreak socket test adaptor.

All the essential test tools and accessories needed to verify the safety of electrical installations to the 18th Edition 2018 Wiring Regulations in one kit.

**ET4500 PRO**

- ET4500 downloading multifunction tester
- ET-Link PRO PC software with 18th Edition Certification
- PSUHPAT12 in-car charger
- BZ101 socket tester
- SB13 safebreak socket test adaptor
- ER2KIT/S three wire earth test set
- TL78 50m continuity extension lead



ET-Link PRO software for downloading test results and printing 18th Edition certificates.

**MINOR ELECTRICAL INSTALLATION WORK CERTIFICATE**  
REGULATIONS 18TH EDITION (BS 7671:2018) (AC, DC, 250V, 20A) (BS 7671:2018) (WIRING REGULATIONS)  
 To be used only for minor electrical work which does not include the provision of a new circuit

**PART 1 - Description of the minor works**

1. Details of the Client: \_\_\_\_\_ Date minor works completed: \_\_\_\_\_  
 2. Installation location / address: \_\_\_\_\_  
 3. Description of minor works: \_\_\_\_\_  
 4. Details of departures, if any, from BS 7671:2018 for the circuit altered or extended (Regulation 525.3): \_\_\_\_\_  
 5. Comments on (including any defects observed in) the existing installation (Regulation 633.2): \_\_\_\_\_

**PART 2 - Presence and adequacy of installation earthing and bonding arrangements** (Regulation 521.16)

1. System earthing arrangement: TN-C-S TN-C-T TT IT      
 2. Earth fault loop impedance at distribution board (See supporting final circuit):    
 3. Presence of adequately main protective conductors:    
 Main protective bonding (conductor(s) to: Structure metal  Gas  Other

**PART 3 - Circuit details**

Circuit No.	DB Location and Page	Circuit Description	Rating	A
Circuit No.	DB/DB	Circuit Description	Rating	A
Conductor Size	Line	med	cap	sheaf

**PART 4 - Test results for the circuit altered or extended** (where relevant and applicable)

Protection conductor continuity	R <sub>s</sub> +R <sub>c</sub>	Z <sub>s</sub>	R <sub>1</sub> +R <sub>2</sub>	Z <sub>e</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>e</sub>
Continuity of any final circuit conductors	L-L	N-N	E-N	L-E	L-E	L-E	R <sub>e</sub>
Insulation resistance	Line-Line	Line-Neutral	Line-Earth	Line-Earth	R <sub>1</sub>	R <sub>2</sub>	R <sub>e</sub>
Prospect satisfactory	Earth fault loop impedance	Z <sub>s</sub>	Z <sub>e</sub>	Z <sub>e</sub>	Z <sub>e</sub>	Z <sub>e</sub>	Z <sub>e</sub>
RCB operation	Rated residual operating current (I <sub>Δn</sub> )	mA	mA	mA	mA	mA	mA
Measured operating time at	Rated residual operating time at	ms	ms	ms	ms	ms	ms
Carrying any test burden operation	ms	ms	ms	ms	ms	ms	ms

**PART 5 - Declaration**

I declare that the work covered by this certificate does not impair the safety of the existing installation and the work has been designed, constructed, inspected and tested in accordance with BS 7671:2018 (18th Edition Wiring Regulations) permitted to stand and that to the best of my knowledge and belief, at the time of my inspection, complied with BS 7671 except as detailed in Part 1 above.

Name: \_\_\_\_\_ Position: \_\_\_\_\_  
 For and on behalf of: \_\_\_\_\_  
 Address: \_\_\_\_\_ Signature: \_\_\_\_\_  
 Date: \_\_\_\_\_

Page 1 of 1

## Insulation Tester (500V)



FREE  
VC

CAT III  
600V



The IN2101 is a compact, hand-held insulation tester which performs fast and accurate testing at 500V with automatic discharge after test.

Manufactured from durable ABS, the IN2100 Series insulation testers are designed to withstand the toughest on-site environments. All models feature a large, clear, backlit LCD display for testing in poorly lit locations with both digital and analogue readings.

The large rotary switch and readily accessible test buttons make it easy to select the required function, even when wearing gloves. Features include an internal battery check facility, auto hold, continuity buzzer and auto null function.

### ACCESSORIES

TC2A	calibration
TL57	fused test leads
TL78	50m R2 continuity lead

## IN2101

**Range:** 0.1MΩ to 1000MΩ at 500V  
**Short circuit current:** <1.5mA  
**Accuracy:** ± (3% rdg + 5 dgt)  
**Continuity:**  
**Range:** 0.01Ω-40Ω  
**Resolution:** 0.01Ω  
**Short circuit current:** >200mA  
**Accuracy:** ± (3% rdg + 5 dgt)  
**Buzzer:** <30Ω  
**Resistance:** 0.1Ω -1999kΩ  
**Accuracy:** ± (3% rdg + 5 dgt)  
**Voltage range:** 600V AC/DC  
**Voltage warning indicator:** >30V  
**Accuracy:** ± (3% rdg + 5 dgt)  
 Backlight, auto hold, auto zero  
**IP rating:** IP44  
**Complies with:** BS EN 61557 & BS 7671 and BS EN 61010-1 CAT III 600V  
**Dimensions:** 90 x 210 x 54mm  
**Includes:** batteries, TC57 carry case, TL47 test leads and manual

## Insulation Tester (250V/500V/1000V)



FREE  
VC

CAT III  
600V



The IN2102 includes additional test voltages for testing at 250V, 500V and 1000V and has extended insulation resistance ranges up to 5GΩ.

In common with the IN2100 insulation test features include auto-discharge, an insulation test lock and auto-hold function to capture completed readings on the display. For continuity testing there is an auto-null function for lead resistance compensation. When working in office environments, it's possible to disable the buzzer to avoid causing a disturbance.

There is an auto power off function to extend battery life which can be disabled if required.

### ACCESSORIES

TC2A	calibration
TL57	fused test leads
TL78	50m R2 continuity lead

## IN2102

**Range:** 0.1MΩ to 5000MΩ  
**250V:** 4/40/400/1000MΩ  
**500V:** 4/40/400/4000MΩ  
**1000V:** 4/40/400/5000MΩ  
**Short circuit current:** <1.5mA  
**Accuracy:** ± (3% rdg + 5 dgt)  
**Continuity:**  
**Range:** 0.01Ω to 40Ω  
**Resolution:** 0.01Ω  
**Short circuit current:** >200mA  
**Accuracy:** ± (3% rdg + 5 dgt)  
**Resistance:** 0.1Ω-1999kΩ  
**Accuracy:** ± (3% rdg + 5 dgt)  
**Voltage range:** 600V AC/DC,  
**Voltage warning indicator:** >30V  
**Accuracy:** ± (3% rdg + 5 dgt)  
 Backlight, autohold, auto zero, APO disable  
**Dimensions:** 90 x 210 x 54mm  
**Standards compliance:** As IN2101  
**Includes:** batteries, TC57 carry case, TL47 test leads and manual

## Insulation Tester (50V/100V/250V/500V/1000V) with Clamp



TRUE  
RMS

CAT III  
1000V

CAT IV  
600V

A unique combined insulation tester and clamp meter for the inspection and maintenance of electrical equipment and installations. The high specification CMi210 can perform insulation tests to 6G Ohms with 5 test voltages from 50V to 1000V. The clamp enables True RMS measurement of AC current to 1500A and DC current to 2000A.

Additional functionality includes AC/DC voltage to 1000V, resistance, continuity, capacitance, frequency, inrush current and temperature.

### ACCESSORIES

TC2B	calibration
TL55	fused test leads
TL180	switching insulation probe

## CMi210

**Range:** 0.05MΩ to 6000MΩ  
**50V:** 0.3/3/30/300/1000MΩ  
**100V:** 0.6/6/60/600MΩ  
**250V:** 1.5/15/150/1500MΩ  
**500V:** 3/30/300/3000MΩ  
**1000V:** 6/60/600/6000MΩ  
**Short circuit current:** <1.5mA  
**Accuracy 250-1000V:**  
 ± (1.5% rdg + 5 dgt)  
**Voltage warning:** >30V  
**Continuity range:** 0.01Ω to 40Ω  
**Resolution:** 0.1Ω  
**Accuracy:** ± (1% rdg + 5 dgt)  
**Resistance:** 0.1Ω-60MΩ  
**Accuracy to 600kΩ:**  
 ± (1% rdg + 5 dgt)  
**Voltage range:** 750V AC, 1000V/DC  
**Accuracy:** ± (2% rdg + 8 dgt)  
**Dimensions:** 326 x 108 x 53mm  
**Includes:** batteries, case, TL45 test leads, type K thermocouple and manual

## EZ2500

**Nominal voltage rating:**  
220-240V Ac

**Voltage range for wiring error detection:** 30-275V

**Open loop indication:** If open PE or PN Loop is detected, no Impedance Measurement takes place

**Voltage range for impedance**

**Measurement:** 198-264V

**Frequency:** 50Hz

**PE loop impedance ranges:**  
0-8.99Ω, 9.0-89.9Ω, 90-899Ω,  
900-1699Ω, 1700-3000Ω

**PE loop impedance accuracy:**  
0-8.99Ω ± 4% ± 0.05Ω\*  
9.0-89.9Ω ± 5% ± 0.5Ω\*  
90-899Ω ± 5% ± 5Ω\*  
900-1699Ω ± 5% ± 30Ω\*  
1700-3000Ω indicative

**PFC & PSC test**

**PN loop impedance ranges:**  
0-8.99Ω, 9.0-89.9Ω, 90-899Ω,  
900-1699Ω, 1700-3000Ω

**PN loop impedance accuracy:**  
0-8.99Ω ± 4% ± 0.05Ω\*  
9.0-89.9Ω ± 5% ± 0.5Ω\*  
90-899Ω, ± 5% ± 5Ω\*  
900-1699Ω ± 5% ± 30Ω\*  
1700-3000Ω indicative

**Frequency accuracy:** ± 4 %

**Voltage accuracy:** ± 4%

**Temperature range:**  
-10° to 40° C at max  
80 % Relative Humidity  
(Non-Condensing)

**Supply:** from mains

**Power consumption:** <1.6W

**Pollution degree:** 2

**Complies with:** BS EN 61010-1,  
BS EN 61557 & BS 7671

**Weight:** 240g approx.

**Dimensions:** 145 x 85 x 53mm

**Includes:** TC210 carry case, mains lead and manual

\*Note: measurement accuracy can be affected by noise and highly inductive or capacitive components distributed on the supply

## E-Ze Test Non-trip Earth Loop Impedance Tester



Smart and easy

Switch free operation

Battery free operation

P-E, P-N, PFC, PSC on one display

This non-trip earth loop impedance tester provides safe, switch-free operation for domestic and industrial applications. The simple and smart auto test sequence makes it ideal for both 18th Edition testing and applications where confirmation of adequate earthing is required. With the E-Ze 2500 there is no risk of making the wrong connections or carrying out the wrong test, it's all done for you.

The EZ2500 performs non-trip P-E and P-N loop impedance tests, PFC and PSC checks and lists all of the results on the clear backlit LCD display. A voltage check and confirmation of correct wiring are also performed.

The tester is supplied with a 13A plug mains lead for testing at 13A socket outlets but an additional 3 wire test lead (TL88) can be purchased for testing at light fittings and fused connection units.

A soft carry case and comprehensive manual are also included.



## ACCESSORIES

TC2A calibration  
TL88 3-way fused test leads

## Loop Tester



The LP2000 is a fast and accurate high current, auto-ranging loop tester. It will perform P-E and P-N testing and will automatically show PSSC readings up to 19.99kA on the large LCD display.

This compact, hand-held tester is supplied with a mains test lead, a wander lead for testing bonded metalwork, manual and a soft carry case.

**ACCESSORIES**  
 TC2A calibration  
 TL88 3-way fused test leads



## LP2000

**Supply voltage:** 200 to 260V rms, 50/60Hz  
**Test current:** 24A, rms, for two half cycles at 240V  
**Loop range:**  
 0 to 15Ω nominal in steps of 0.01Ω  
 15 to 199.9Ω in steps of 0.1Ω  
**Accuracy:**  
 ± 2% of rdg, ± 2 dgt  
**Temperature coefficient:**  
 ± 0.1%/°C  
**Ipsc range:** 0 to 19.99kA in steps of 0.01kA  
**Fuse:** 5A, HBC, Anti-Surge ceramic, DIN 5 X 20mm  
**Transient protection:** VDR at input  
**Thermal protection:** electronic delay  
**Overvoltage:** CAT III 300V  
**Weight:** 400g approx.  
**Dimensions:** 190 x 90 x 54mm  
**Includes:** TC57 carry case, TL205 mains test lead, TL61 green wander lead and manual

## RCD Tester



A fast and easy way to test RCDs from 6mA to 500mA. The RCD rating ( $I_{\Delta n}$ ) is set using the rotary switch and three different test current modes are available (1/2, Full & Fast Test) at either 0° or 180° (positive/negative cycle).

There are 6 different RCD rating ( $I_{\Delta n}$ ) test options which unlike most multi-function testers, will cover all common RCDs. The RC2000 is supplied with mains test lead, manual and soft carry case.

The RC2000 operates from the mains supply and does not require batteries.

**ACCESSORIES**  
 TC2A calibration  
 TL88 3-way fused test leads



## RC2000

**Supply voltage:** 240 Volts AC, 50/60Hz  
**RCD ratings ( $I_{\Delta n}$ ):** 6mA, 10mA, 30mA, 100mA, 300mA and 500mA  
**Half trip settings ( $\frac{1}{2}I_{\Delta n}$ ):** 3mA, 5mA, 15mA, 50mA, 150mA and 250mA  
**Fast trip settings:** 150mA (for  $I_{\Delta n}$ =6, 10 and 30mA only)  
**Test polarity:** 0° and 180°  
**Test current**  
**Accuracy:** ± 3% at 240V AC supply voltage rising linearly to ± 9% at ± 6% of 240V supply voltage  
**Timing range:** 0-1999ms (resolution of 1ms)  
**Timing accuracy:**  
 ± 2% of rdg ± 1 dgt  
**Duration of test current:**  

1/2	2 seconds
1	0.5 or 2 seconds selectable
FAST	0.05 seconds

**Weight:** 350g approx.  
**Dimensions:** 190 x 90 x 54mm  
**Includes:** TC57 carry case, TL205 mains test lead and manual

## TEK402

**Probe voltage:** 9V DC  
**Test current:** 5mA  
**Continuity range (audible):** Up to 10k $\Omega$  nominal  
**Audible output level:** 85dB minimum at 30cm with zero continuity resistance  
**Supply:** 9V, MN1604/PP3 alkaline battery  
**Complies with:** BS EN 61010-1 CAT I 50V peak  
**Fuse rating:** 50mA, 250V, fast acting ceramic fuse, 20mm x 5mm ref: FUSE50250X3 (Pack of 3)  
**Overvoltage:** 50V AC/DC  
**Do not use in CAT II, III or IV environments**  
**Weight:** 265g approx. (incl leads & battery)  
**Dimensions:** 150 x 64 x 31mm  
**Includes:** TL49 test leads, battery and manual

## Continuity Tester with Audible Indication

The TEK402 is a compact continuity tester with audible indication. The tough construction makes it ideal for industrial and commercial environments including low voltage signalling, process control and training or educational applications.

The loud 85dB buzzer makes it suitable for use in noisy environments where many continuity buzzers, multimeters or 18th Edition multifunction testers cannot be heard.

There is a convenient belt clip and the TEK402 is supplied with TL49 test leads.



**ACCESSORIES**  
 TC2A calibration

## TEK404

**Probe voltage:** 9V DC  
**Test current:** <50 microAmp (across short circuit)  
**Continuity range:** 0 $\Omega$  to 2.2k $\Omega$   
**Audible output level:** 85dB minimum at 30 cm with 0 $\Omega$  continuity resistance  
 Buzzer and LED intensity reduce with increasing continuity resistance  
**Alarm function:** Pulsed buzzer and LED indication if unit is connected to live circuit voltage >30V AC/DC  $\pm$  20V  
**Compliance:** BS EN 61010-1 CAT III 600V, BS EN 61326-1, EMC  
**Operating temperature range:** -10 to 40 $^{\circ}$ C at max 70% RH  
**IP rating:** IP40  
**Supply:** 9V, MN1604/PP3 alkaline battery  
**Weight:** 290g approx.  
**Dimensions:** 150 x 64 x 31mm  
**Includes:** TL47 CAT III 600V test leads, insulated croc clips, battery and manual

## CAT III Continuity Tester with Audible & Visual Indication

The TEK404 can be used for the same low voltage applications as the TEK402 with the added benefit that it's also suitable for use in CAT II and CAT III environments. There is an additional safety feature which pulses the buzzer to alert the user when connected to live circuits >30V AC.

The loud 85dB buzzer makes it ideal for use in noisy environments where many continuity buzzers, multimeters or 18th Edition multifunction testers cannot be heard.

There is a convenient belt clip and the TEK404 is supplied with CAT III 600V rated TL47 test leads.



**ACCESSORIES**  
 TC2A calibration

**CAT III**  
**600V**

## Phase Rotation & Continuity Indicator



Quickly and simply prove the presence of all three live phases (or identify which are faulty) and show the sequence of phase rotation.

The PC15250 gives a fast, effective, battery free method of identifying unmarked cables and ensures that 3-phase outlets and machines are wired correctly.

The retractable GS38 probe shrouds make it easy to choose between long exposed tips for difficult to reach contacts, and shorter tips for increased safety without the need for caps which can be easily lost.

- Bright LED indication of phase rotation
- Proves continuity
- Identification of faulty lines
- No batteries required
- High quality colour coded leads and clips

### ACCESSORIES

TC2A calibration  
TC68 carry case



## PC15250

For use on systems from 50V to 600V phase to phase, 40Hz to 60Hz.

**Operating temperature:** -10°C to 55°C

**Overvoltage:** CAT IV/600V

**Complies with:** GS38 and BS EN 61557-7

**Weight:** 354g approx.

**Dimensions:** 116 x 69 x 25mm

**Connections:** one integral fused crocodile clip & two integral fused probes with retractable shrouds

**Includes:** manual

## Non-contact Phase Sequence Indicator



A unique non-contact phase rotation indicator that carries out measurements via inductive crocodile clips.

The increased safety design of this phase rotation tester allows for use on both insulated and non-insulated conductors with a buzzer and bright LED's giving clear indication of clockwise or anti-clockwise phase rotation. There is also an Enhanced Brightness switch for clear indication in strong ambient light.

The Martindale PSI4000 is supplied with 4 x AA batteries, soft carry case and manual.

**Also available:**  
**model PSI4300 for anti-clockwise indication**

### ACCESSORIES

TC2A calibration



## PSI4000

Measurement principle is static induction

**Input voltage:** 75V-1000V  
3-Phase AC

**Frequency range:** 45-65Hz

**Conductor size:** 2.4mm-30mm diameter

**Operating temperature & humidity:** -10°C to 50°C, Max. 80% RH

**Battery current consumption:** 15mA

**Cable length:** approx. 800mm

**Supply:** 1.5V X 4 (AA or LR6) alkaline batteries

**Auto-off:** After 5 mins of non activity

**Low battery warning:** Power LED flashes below 4.6V DC battery voltage

**Safety standard:** BS EN 61010-1  
CAT III 1000V, CAT IV 600V.  
BS EN 61326-1. Class II

**Weight:** 370g approx. (incl batteries)

**Dimensions:** 118 x 69 x 38mm

**Includes:** TC54 soft case, batteries and manual

## E3511

**Insulation resistance range:**  
100kΩ to 100GΩ  
**Insulation range accuracy:**  
± 1.5% of scale length  
**Insulation range temperature Coefficient:** <0.04% of scale length/°C  
**Voltage range:** 1000 volts AC or DC  
**Voltage range accuracy:**  
± 1.5% of scale length  
**Test voltages:** 500V, 1kV, 2.5kV, 5kV DC  
**Test voltage accuracy:** ± 5% at 10MΩ  
**Break point current:** 0.5mA nominal  
**Short circuit current:** 1.2mA nominal  
**Ripple voltage:** <10V peak to peak (R <10MΩ)  
**Housing:** yellow ABS, black polycarbonate  
**Weight:** 4kg approx. (incl batteries)  
**Dimension:** 330 x 263 x 144mm  
**Includes:** DFK0075/A 2m test leads & croc clips, DFH0366 earth lead, TL205 mains power lead, accessory bag and manual

## 5kV Insulation Tester

Having both battery and mains operation and four selectable DC test voltages (500V, 1kV, 2.5kV & 5kV), this tester measures insulation resistance from 100kΩ to 100GΩ. The large, clear analogue scale also displays AC or DC voltage up to 1000V. A latching test switch allows hands-free testing.

The E3511 includes a guard terminal to minimise surface leakage errors.

With full overvoltage and overcurrent protection for measurements and up to 16 hours operation from rechargeable NiMH batteries, the E3511 comes complete in a rugged carry case. Standard accessories include locking 2m test leads with probes and clips.



### ACCESSORIES

TC2D calibration  
 DFK0075/A 2m test lead  
 DFK0094 kelvin lead set



## E1612

**Measuring ranges: Earth resistance:** 2Ω/20Ω/200Ω/2kΩ  
**Earth voltage:** 0-300V AC  
**Measurement frequency:** 820 Hz  
**Earth resistance resolution:**  
 2Ω range: 0.01Ω  
 20Ω range: 0.1Ω  
 200Ω range: 1Ω  
 2kΩ range: 0.01kΩ  
**Earth voltage resolution:** 1V  
**Accuracy:**  
**Earth resistance:**  
 ± 2% rdg ± 3 dgt  
**Earth voltage:** ± 2% rdg ± 3 dgt  
**Temperature & humidity:**  
**Operating:** 0°C ~ 50°C ≤ 80% R.H  
**Storage:** -10°C ~ 60°C ≤ 80% R.H  
**Altitude:** up to 2000m  
**Supply:** 8 x 1.5V LR6/AA batteries  
**Auto off time:** 2¼ minutes approx  
**Dimensions:** 250 x 190 x 110mm  
**Weight:** 1.5kg approx. (incl batteries)  
**Safety:** conforms to BS EN 61010-1 CAT IV 300V Class II Double Insulation  
**Pollution degree:** 2  
 Test Leads supplied conform to BS EN 61010-031 CAT III 600V, 2A  
**EMC:** conforms to BS EN 61326-1  
**Includes:** test leads (red 15m, black 10m, yellow 10m and green 5m), earth spikes, manual, carry case, batteries.

## Earth Tester - 4 Wire

The Metrohm E1612 is a compact 4 pole Earth Resistance tester for accurate measurement of earth resistance and soil resistivity.

The tester, including batteries, weighs less than 1.5kg making it ideal for the mobile approach required when performing earth testing. This microprocessor controlled unit benefits from advanced safety features and displays the test results on a large LCD screen.

The E1612 is supplied as a kit and includes batteries, 4 earth spikes with connecting cables and a manual. The manual includes simple illustrated instructions of how to carry out earth testing with 2 and 3 spikes and how to measure soil resistivity using 4 spikes. A shoulder strap completes the kit which is enclosed in a tough, durable case.



### ACCESSORIES

TC2D calibration



## Milliohm Meter



The Metrohm E1622 Milliohm meter uses a four wire system to ensure accurate low resistance measurements. Applications fall into two main areas:

Firstly the testing of electrical bonding in areas as diverse as mines, aircrafts, ships, railways and domestic and industrial electrical installations;

Secondly the measurement of electrical resistance in areas such as the winding resistance of motors, generators and transformers. Other low resistance measurement applications include ring main continuity and the resistance of electronic components such as PCB tracks, switches and relays.

### ACCESSORIES

TC2D calibration  
DFK0094 kelvin lead set



## E1622

### Measuring ranges:

200mΩ/2000mΩ/20Ω/200Ω/  
2000Ω

### Resolution:

200mΩ range: 0.1mΩ  
2000mΩ range: 1mΩ  
20Ω range: 10mΩ  
200Ω range: 100mΩ  
2000Ω range: 1Ω

**Accuracy:** ± 0.5% of rdg ± 2 dgt over the operating temperature range (-15°C to +55°C) with the supplied test leads.

### Test current:

2000Ω range - 1mA  
20Ω/200Ω ranges - 10mA  
200mΩ/2000mΩ ranges - 100mA  
Accuracy ± 1%

**Protection fuses:** 0.5A 5 x 20mm DIN

**Weight:** 1.563kg

**Dimensions:** 110 x 250 x 190mm

**Safety Standards:** BS EN 61010-1, BS EN 61326-1

**Includes:** 4 lead set, batteries and manual

## Safety Insulation Tester



In service for over 50 years in mines, on petrol sites and in hazardous areas e.g. in the presence of methane, ammonia and hydrocarbons.

This well proven design is a solution to carrying out electrical safety testing in hazardous environments. Use of this instrument in such environments should be considered only by a suitably qualified and knowledgeable person.

While this product does not qualify for Atex approval, safety officers must evaluate the risks of failing to perform adequate electrical safety testing.

The product is now only available for sale where the intended place of use is outside the EU.

### ACCESSORIES

TC2B calibration  
DFK0113 test lead  
PA24249A carry case

## 7A501

**Insulation range:** 0-50MΩ

**Test voltage:** 500V DC ± 10% across 1MΩ

**Short circuit current:** <2mA

**Accuracy:** ± 1.6mm of scale arc length

### Continuity

**Range:** 0-50Ω

**Test voltage:** nominal 200mV

**Short circuit current:** <26mA

**Accuracy:** ± 1.6mm of scale arc length

**Complies with:** BS 1259

**Supply:** batteries 1.5V AA IEC R6B

**Housing:** shatterproof ABS case

**Weight:** 600g approx.

**Dimensions:** 132 x 82 x 60mm

**Includes:** case, METDFK0113 leads & safety tool to remove battery cover.





**Disconnect** all loads.



**Locate** the source of supply.



**Isolate** the source of supply.  
Lock off and place warning signs.



**Prove** your voltage indicator  
using a proving unit.



**Test** the supply is isolated.



**Re-prove** the voltage indicator  
using a proving unit.

Six simple  
steps to safe  
maintenance

For free resources visit:

[www.martindale-electric.co.uk/safe-maintenance](http://www.martindale-electric.co.uk/safe-maintenance)

## Industrial Lock Out Kit

**NEW**



The LOKKITPRO is the ultimate lock out kit enabling safe isolation procedures to be carried out. Ideal for contractors and maintenance teams working on industrial and commercial sites as it includes the most comprehensive range of Martindale locking off devices. The latest LOK7 slimline mcb lock is ideal for use on breakers where the position of the test button may prevent the use of conventional lock outs or access is restricted. There is also a 1m cable lock device suitable for both electrical and mechanical locking out.

The kit comprises of 9 different locking devices for simple fitting to MCBs, RCBOs and fuse holders. In addition there is a universal red spot type fuse holder locking device adjustable for different current ratings, a steel safety hasp which allows multiple padlocks to be used and the versatile cable lock with integrated hasp for control panels.

A professional plastic bodied padlock with a 6mm hardened steel shackle is included for securing the locking devices. The kit is completed with a BS1633 13A mains plug lock, 5 warning tags and a marker pen, all supplied in a durable case.

## LOKKITPRO

- The full 17 piece kit includes:
- PAD10R Padlock with unique key
  - LOK6 Cartridge fuse isolation lock
  - CABLOK Cable lock-off
  - LOKHASP25 Hasp
  - LOK15 Plunge locking piece
  - PL13 Appliance lock out
  - LOKMCB MCB Isolation lock kit (LOK1-LOK5)
  - LOK7 Slimline grey isolation lock
  - LOK10 Yellow MCB lock, 10mm clip
  - LOK11 Red MCB lock, 6mm clip
  - 5 Locked out tags
  - LOKMP Black marker pen
  - TC68 Soft carry case

### Padlocks PAD10R(red), PAD10B (blue) PAD10Y(yellow)



Plastic body padlock with 6mm hardened steel shackle. Designed for use with Martindale lock out devices and compatible with most other safety lock out products.

Padlock body width - 38mm.  
Vertical shackle clearance - 38mm.

### Padlock with Insulated Shackle PAD20R



Plastic body padlock with 6mm hardened insulated shackle. Designed for use with Martindale lock out devices and compatible with most other safety lock out products.

Padlock body width - 38mm.  
Vertical shackle clearance - 38mm.

## Warning Tags TAG2



USA style packs of 10 replacement warning tags. The multipack is a cost effective solution allowing you to use a new dated and named tag every time locking off is required.

80 x 140mm.

## Warning Tags TAG4



UK packs of 10 replacement warning tags. The multipack is a cost effective solution allowing you to use a new dated and named tag every time locking off is required.

80 x 140mm.

## MCB Isolation Locks

Martindale offer a complete range of MCB/RCBO locking off devices for use on industrial distribution boards for isolation purposes. The locking off devices are available individually and in a range of kits.

### Set of 5 LOKMCB (LOK1-5)



**LOK1**  
42mm x 14mm.  
5mm opening, 7mm deep.



**LOK2**  
44mm x 14mm.  
8mm opening, 7mm deep.



**LOK3**  
48mm x 14mm.  
13mm opening, 15mm deep.



**LOK4**  
60mm x 15mm.  
6mm opening, 15mm deep.  
For BS38 fuse carriers.



**LOK5**  
100mm x 14mm.  
20mm opening, 35mm deep.  
For MCB & main switches.



### Additional low profile MCB locks



**LOK10**  
20mm x 14mm.  
10mm spacing, 3mm deep.



**LOK11**  
20mm x 14mm.  
8mm spacing, 3mm deep.



**LOK7**  
Slimline design.  
31mm x 8mm.  
6mm opening, 6mm deep.



**LOK15**  
40mm x 18mm.  
15mm spacing.

### Available in packs of three

LOK2/PK3  
LOK7/PK3  
LOK15/PK3

## Universal Fuse Carrier Lock Out Kit

NEW



The LOKKIT6 includes everything needed to lock off fuse carriers as part of a safe isolation procedure.

The kit includes the LOK6 universal fuse carrier lock off, a TAG4 (Size: 80 x 140mm) warning tag and marker pen, plus a PAD10R padlock.

The LOK6 is designed to restrict finger access to live contacts and prevent the reinsertion of a fuse whilst maintenance is in progress. The LOK6 is ideally suited to Red Spot and other similar style fuse holders. It's easily adjustable to fit fuse holders from 20A to 100A, providing a "one size fits all solution" saving time sourcing the right device for the job.

Manufactured without any metal parts, the clamp-on design avoids potential damage to the fuse holder and is easy to install without the need for any tools.



**Also available**  
**LOK6W for Henley and Lucy Cutouts**  
**LOK6-200 for 200A & 400A Red Spot Fuses**

## LOKKIT6

The full 4 piece kit includes:  
LOK6 Locking off device  
PAD10R Padlock with unique key  
Locked out tag  
LOKMP Black marker pen

## Hasp LOKHASP25



This 25mm steel lock out hasp is used to secure an isolated energy source and prevent reconnection. Once secured, the hasp can hold up to six padlocks to keep it securely fixed enabling several operators to work safely on one circuit at the same time.

Both the LOKHASP25 and CABLOK devices are compatible with the PAD10 Series and PAD20R padlocks

## Adjustable Cable Lock Out CABLOK1BL, CABLOK3BL, CABLOK5BL



The CABLOK series has been designed for locking off multiple breakers, switches and valves to prevent re-energisation of circuits and systems during maintenance. The flexible multi-stranded steel cable with PVC sheath is easy to thread and can be adjusted to the required length before locking off with a simple squeeze action. The ergonomic design has a built-in hasp with space for up to six padlocks for when there are multiple operators working on the same system.

The CABLOK Series is available with 1m, 3m and 5m cable lengths.

## LOKKIT1

The full 12 piece kit includes:  
 PAD10R Padlock with unique key  
 LOKHASP Steel safety hasp  
 LOK1 Green mini MCB lock  
 LOK2 Yellow mini MCB lock  
 LOK3 Blue medium MCB lock  
 LOK4 Red small MCB lock  
 LOK5 Red large MCB lock  
 LOK10 Yellow MCB lock, 10mm clip  
 LOK11 Red MCB lock, 8mm clip  
 5 Locked out tags  
 LOKMP Black marker pen  
 TC55 Soft carry case

## Comprehensive Lock Out Kit

The LOKKIT1 is a comprehensive lock out kit to be used as part of a safe isolation procedure. The set of locking devices is compatible with all distribution boards. Additional individual pieces are available to order separately.

The kit comprises of 7 different locking devices for simple fitting to MCBs, RCBOs and fuse holders.

There is a plastic body padlock with a 6mm hardened steel shackle for securing the locking devices plus a steel safety hasp which allows multiple padlocks to be used. The kit is completed with 5 warning tags, a marker pen and a durable case with space for storing additional accessories.



### ACCESSORIES

TAG4 pack of 10 tags

## Appliance Plug Lock Out PL13



The PL13 is a universal lock out device for UK BS1363 13A mains plugs. Simple and compact, the PL13 prevents appliances and electrical equipment from being plugged in during maintenance and can be used to restrict the use of hazardous or faulty equipment.

PAD20R not included.

## Industrial Plug Lock Out PL8



The PL8 Completely encloses industrial plugs to prevent accidental reconnection. Once the plug is inserted, the lock out device should be locked with a secure padlock and completed with a warning tag. Suitable for use with most plugs up to and including 32A.

Internal dimensions:  
 80mm Ø x 150mm (h).

## Domestic Installer Lock Out Kit



The LOKKIT2PLUS adds the widely used LOK1 to the basic domestic installer kit and a handy carry case to keep everything together. Electrical safety is paramount when performing 18th Edition and Part P installation testing. Every year people suffer electric shock, burns and other injuries which could be avoided. Implementing the correct safe isolation procedures ensures the safety of the electricians when working on electrical equipment and installations.

The use of locking off devices and clear labelling of the hazard are essential to achieving compliance with health and safety regulations.

**ACCESSORIES**  
TAG4 pack of 10 tags

## Basic Lock Out Kit



This basic lock out kit is ideal for domestic installers, or those who don't need the numerous locks included in the more expensive kits.

Supplied with three different MCB locks, catering for most standard MCBs, the Basic Martindale Lock Kit enables you to carry out safe isolation procedures correctly and in accordance with health & safety guidelines.

The LOKKITBASE provides the bare essentials for electrician regulatory body approvals.

**ACCESSORIES**  
TAG4 pack of 10 tags

## Fused Spur Lock Out



The LOKFS1 is a universal locking off device for single gang fused spur connection units complying with BS 1363-4. It enables safe isolation procedures to be carried out in residential, commercial and industrial premises in accordance with the Electricity at Work Regulations.

Designed for compatibility with a wide range of fused spurs, the LOKFS1 provides a simple solution to ensure fixed wired appliances such as cookers, boilers, hand dryers and water heaters remain safely isolated from the supply during maintenance and installation work. It has space to accommodate cabling exiting from the bottom of the faceplate when necessary.

## LOKKIT2PLUS

The full 8 piece kit includes:  
PAD10R Padlock with unique key  
LOK10 Yellow MCB lock, 10mm clip  
LOK11 Red MCB lock, 8mm clip  
LOK1 Green mini MCB lock  
LOK2 Yellow mini MCB lock  
Locked out tag  
LOKMP Black marker pen  
TC55 Soft carry case

## LOKKITBASE

The full 6 piece kit includes:  
PAD10R Padlock with unique key  
LOK10 Yellow MCB lock, 10mm clip  
LOK11 Red MCB lock, 8mm clip  
LOK2 Yellow isolation lock  
Locked out tag  
LOKMP Black marker pen

## LOKFS1

**Dimensions:** 94 x 86 x 24 mm  
(excluding shackle)  
**Fixing centres:** 60.3mm  
**Material:** Polypropylene

## TB118KIT1

The full 13 piece kit includes:

- PD440 Proving device
- V113800 Voltage indicator
- EZ650 Earth loop impedance & socket tester
- LOKFS1 Fused spur lock
- PAD10R Padlock with unique key
- LOK7 Slimline MCB lock
- LOK10 Yellow MCB lock, 10mm clip
- LOK11 Red MCB lock, 8mm clip
- Locked out tag
- LOKMP Black marker pen
- TC68 Soft carry case
- TC69 Soft carry case
- TC88 Soft carry case

## Gas Service Engineer Electrical Safety Kit

In January 2018 Gas Safe Register Technical Bulletin 118 was amended. The changes require new test procedures to keep service engineers safe from electrical hazards. The new guidance requires verification of mains earthing and safe isolation of circuits.

Martindale TB118KIT1 includes all the essential test tools for gas safety engineers to achieve compliance. The new kit combines easy to use tools for live voltage indication and earth loop verification together with fused spur and mcb locking off devices in a high quality soft carry case.

In addition to the VIPD138 voltage indicator & proving unit kit, TB118KIT1 includes the EZ650 earth loop and polarity checker for socket and spur testing and the LOKKITGAS1, described below.



### ACCESSORIES

- |      |                 |
|------|-----------------|
| TAG4 | pack of 10 tags |
| TC2C | calibration     |

## LOKKITGAS1

The full 8 piece kit includes:

- LOKFS1 Fused spur lock
- PAD10R Padlock with unique key
- LOK7 Slimline MCB lock
- LOK10 Yellow MCB lock, 10mm clip
- LOK11 Red MCB lock, 8mm clip
- Locked out tag
- LOKMP Black marker pen
- TC55 Soft carry case

## Gas Service Engineer Lock Out Kit

The LOKKITGAS1 enables gas service engineers to securely lock off circuits before carrying out work on appliances connected to the mains power supply. Locking off the supply is an essential step in safe isolation procedures as required by the Electricity at Work Regulations and Gas Safe Register Technical Bulletin TB118.

Electrical safety is paramount when servicing fixed wired appliances. Implementing the correct safe isolation procedures ensures the safety of service and maintenance personnel when working on appliances and equipment connected to the mains supply.

The kit includes both miniature MCB locks and the LOKFS1 universal fused spur locking off device which provides a simple solution for safely isolating fixed wired appliances including cookers, boilers, hand dryers and water heaters. The design has industry standard fixing centres and will accommodate flexible outlet cabling from the fused spur. Once in place and locked off, the LOKFS1 prevents reinsertion of the fuse.



## 600V Safety Voltage Indicator without Fuse



The VI13800 provides instant visual AC and DC voltage indication in four stages from 50V to 400V. The bright long life LED indicators give clear and immediate display of the voltage level range. It has retractable probes, heavy duty finger guards and a two layer double insulated cable with a white inner core to give clear indication of damage that might compromise the user's safety.

It complies with the latest standard for voltage detectors, BS EN 61243-3 2014. This standard prohibits the use of fuses in 2 pole voltage indicators so the new model has the fuse replaced by a high wattage resistor in the probe that will limit the current in the event of damage to the cable.

Safety through simplicity - no ranges, switches or batteries required.

**ACCESSORIES**  
TC2A calibration



## VI13800

**Voltage range:** 50-600V AC/DC  
**LED Indication:** ± 50, 100, 200, 400V  
**AC/DC voltage detection:** automatic  
**Range detection:** automatic  
**Response time:** <0.1s  
**Frequency range:** DC, 1-400Hz  
**Test Current:** 3.5mA max at 600V AC/DC  
**Duty ratio:** 30s ON/240s OFF  
**Temperature range:** -10°C to +55°C ≤ 85% RH  
**Pollution degree:** 2  
**IP rating:** IP54  
**Supply:** from circuit under test  
**Weight:** 130g approx  
**Dimension:** 205 x 67 x 27mm  
**Safety:** BS EN 61243-3:2014, GS38, CAT IV 600V Class II double insulation

## Voltage Indicator & Proving Device



The Martindale package of VI-13800 Voltage Indicator and PD440 proving device is an essential safety aid for electricians and comes with a carry case (TC69). Safe isolation procedures require voltage indicators to be proved before and after use.



**ACCESSORIES**  
TC2B calibration



## VIPD138

The full 3 piece kit includes:  
 PD440 Proving device  
 VI13800 Voltage indicator  
 TC69 Soft carry case



## VIPDLOK138

The full 15 piece kit includes:

- PD440 Proving device
- VI13800 Voltage indicator
- PAD10R Padlock with unique key
- LOKHASP25 Hasp
- LOK1 MCB green isolation lock
- LOK2 MCB yellow isolation lock
- LOK3 MCB blue isolation lock
- LOK4 MCB small red isolation lock
- LOK5 MCB red isolation lock
- LOK10 Yellow MCB lock, 10mm clip
- LOK11 Red MCB lock, 8mm clip
- 5 Locked out tags
- LOKMP Black marker pen
- TC55 Soft carry case
- TC69 Soft carry case

## Lock Out Kit with Voltage Indicator and Proving Device

The complete solution for safe isolation, the Martindale VIPDLOK138 Lock Out Kit contains the VI13800 voltage indicator, PD440 proving device, along with a complete lock out kit, supplied in soft carry cases. The kit simplifies compliance with Health & Safety recommendations for safe working practices when maintaining or installing electrical plant and equipment.



The VI13800 voltage indicator and matching PD440 proving device are supplied in the TC69 combination carry cases to ensure that the proving unit is always at hand and provide the simplest solution for implementing safe isolation practices on-site in accordance the Electricity at Work Regulations. For convenience and to save time, the proving unit can be used without having to remove it from the case.

The comprehensive lock out kit is compatible with all distribution boards. Spare and replacement individual lock off pieces are also available to order separately.

**ACCESSORIES**  
TC2B calibration



## VIPDLOKPRO138

The full 20 piece kit includes:

- PD440 Proving device
- VI13800 Voltage indicator
- PAD10R Padlock with unique key
- CABLOK Cable lock-off
- LOKMCB MCB Isolation lock kit (LOK1-LOK5)
- LOK6 Cartridge fuse isolation lock
- LOK7 Slimline grey isolation lock
- LOK10 Yellow MCB lock, 10mm clip
- LOK11 Red MCB lock, 8mm clip
- LOK15 Plunge locking piece
- LOKHASP25 Hasp
- PL13 Appliance lock out
- LOKMP Black marker pen
- 5 Locked out tags
- TC68 Soft carry case
- TC69 Soft carry case

For more information on the full contents of the LOKKITPRO see page 16.

## Pro Lock Out Kit with Voltage Indicator and Proving Device

The most comprehensive solution for safe isolation, the Martindale VIPDLOKPRO138 Lock Out Kit contains the VI13800 voltage indicator, matching PD440 proving device and LOKKITPRO which contains the full range of Martindale locking off devices, all supplied in two convenient soft carry cases. The kit simplifies compliance with Health & Safety recommendations for safe working practices when maintaining or installing electrical plant and equipment.



The new LOKKITPRO is the ultimate lock out kit enabling safe isolation procedures to be carried out in all types of facility. The kit is ideal for contractors and maintenance teams working on industrial and commercial sites as it includes the full range of Martindale locking off devices, compatible with all distribution boards and red spot type fuse holders.

**ACCESSORIES**  
TC2B calibration



## 1000V Safety Voltage Indicator without Fuse



The VI-15000 extends Martindale's range of indicators into higher voltage applications.

The VI-15000 has a 1000V CAT IV safety rating and LED indication for AC/DC voltages from 50V to 690V and above making it suitable for safe working in all BS EN 61010 installation categories. It's the simplest and most reliable way to ensure circuits have been de-energised and properly isolated prior to maintenance and modifications.

The tester features bright LEDs to clearly identify the voltage present in five levels with thresholds of up to 690V. The indicator, which requires no batteries, will identify both AC and DC sources and show polarity. The heavy duty, double insulated cable with white inner core, large finger guard and a retractable, lockable prod sheath make this the safest, most durable and reliable instrument of its type.

**ACCESSORIES**  
TC2A calibration



## VI-15000

**Voltage range:** 50 - 1000V DC/AC rms  
**LED Indication:** ± 50, 120, 230, 400, 690 V DC/AC rms  
**AC/DC voltage detection:** automatic  
**Range detection:** automatic  
**Response time:** <0.1s  
**Frequency range:** DC, 1 - 400 Hz  
**Test current:** <3.5mA at 1000V DC/AC rms  
**Duty ratio:** 30s ON/240s OFF  
**Temperature range:** -10°C to 55°C ≤ 85% RH  
**Pollution degree:** 2  
**IP rating:** IP54  
**Supply:** from circuit under test  
**Weight:** 130g approx  
**Dimensions:** 205 x 67 x 27mm  
**Safety:** BS EN 61243-3:2014, GS38, CAT IV 1000 V Class II double insulation

## Voltage Indicator & Proving Device



Nothing is more dangerous than trusting a defective voltage indicator to test for a dead circuit. Safe electrical work requires the use of a voltage indicator that has been proved with a proving unit before and after use.

The Martindale VIPD150 contains the VI-15000 voltage indicator and the PD690 proving device, enabling you to comply with health and safety recommendations for safe working.

**ACCESSORIES**  
TC2B calibration



## VIPD150

The full 3 piece kit includes:  
PD690 Proving device  
VI-15000 Voltage indicator  
TC69 Soft carry case TC69

## VIPDLOK150

The full 15 piece kit includes:

- PD690 Proving device
- VI-15000 Voltage indicator
- PAD10R Padlock with unique key
- LOKHASP25 Hasp
- LOK1 MCB green isolation lock
- LOK2 MCB yellow isolation lock
- LOK3 MCB blue isolation lock
- LOK4 MCB small red isolation lock
- LOK5 MCB red isolation lock
- LOK10 Yellow MCB lock, 10mm clip
- LOK11 Red MCB lock, 8mm clip
- 5 Locked out tags
- LOKMP Black marker pen
- TC55 Soft carry case
- TC69 Soft carry case

## Lock Out Kit with Voltage Indicator and Proving Device

The complete solution for safe isolation, the Martindale VIPDLOK150 Lock Out Kit contains the VI-15000 voltage indicator, matching PD690 proving device, along with a complete lock out kit, supplied in soft carry cases.



The kit makes it easy to comply with Health & Safety recommendations for safe working practices when maintaining or installing electrical plant and equipment.

The VI-15000 has a 1000V CAT IV safety rating and LED indication for AC/DC voltages from 50V to 690V, ensuring compliance with health and safety recommendations for safe working in all BS EN 61010 installation categories.

**ACCESSORIES**  
TC2B calibration



## VIPDLOKPRO150

The full 20 piece kit includes:

- PD690 Proving device
- VI-15000 Voltage indicator
- PAD10R Padlock with unique key
- CABLOK Cable lock-off
- LOKMCB MCB Isolation lock kit (LOK1-LOK5)
- LOK6 Cartridge fuse isolation lock
- LOK7 Slimline grey isolation lock
- LOK10 Yellow MCB lock, 10mm clip
- LOK11 Red MCB lock, 8mm clip
- LOK15 Plunge locking piece
- LOKHASP25 Hasp
- PL13 Appliance lock out
- LOKMP Black marker pen
- 5 Locked out tags
- TC68 Soft carry case
- TC69 Soft carry case

For more information on the full contents of the LOKKITPRO see page 16

## Pro Lock Out Kit with Voltage Indicator and Proving Device

The most comprehensive solution for safe isolation in CAT IV 1000V environments, the Martindale VIPDLOK150 Lock Out Kit contains the VI-15000 voltage indicator, PD690 proving device, along with the ultimate lock out kit, supplied with soft carry cases.



The VI-15000 voltage indicator and matching PD690 proving unit are supplied in the TC69 combination carry cases to ensure that the proving device is always at hand and provide the simplest solution for implementing safe isolation practices on-site in accordance the Electricity at Work Regulations. For convenience and to save time, the proving unit can be used without having to remove it from the case.

The comprehensive lock out kit is compatible with all distribution boards.

For more information on the full contents of the LOKKITPRO150 see page 16.

**ACCESSORIES**  
TC2B calibration



## Test Lamp with 360° viewing angle



One of the most trusted tools for safe voltage indication, the original John Drummond test lamp has been fully updated to include high intensity LED illumination over 4 discrete voltage bands, 50, 120, 230 and 400V, enabling easy identification of hazardous voltages and differentiation between 110V, 230V and phase to phase voltages. The LEDs ensure a 360° viewing angle even in bright sunlight and a long lifetime. The new design is supplied with detachable straight and right angled probe tips which can be rotated and locked to ensure easy access in all applications.

Drummond test lamps conform to the latest safety standards including the HSE GS38 Guidelines, BS EN 61243 and BS EN 61010. Safety features include a double insulated, heat and oil resistant cable with contrasting inner sheath to easily identify abrasion.

- Rugged design with high intensity LEDs
- 360° viewing in bright sunlight
- Four discrete voltage bands
- Wide range of accessories
- Conforms to latest standards



## MTL10

**Maximum working voltage:**  
500VAC, 750DC

**Voltage ranges:**  
50, 120, 230, 400V AC/DC

**Range detection:** automatically

**Response time:** <0.1s

**Frequency range:** DC, 40-65Hz

**Test current:** <3.5mA at 500V AC, 750V DC

**Temperature range:**  
-10°C – +55°C

**Humidity:** max. 85% R.H.

**Measurement CAT:** CAT IV 600V

**Pollution degree:** 2

**IP rating:** IP64

**Weight:** 32g

**Dimensions:** 213 x 112 x 72mm

**Safety:** BS EN 61243-3:2014, GS38, CAT IV 600 V Class II double insulation

### ACCESSORIES

TC2A	calibration
TC69	carry case
MTL2103	30mm straight probe
MTL2104	62mm straight probe
MTL2105	62mm L shaped probe
MTL2106	130mm straight probe
MTL2107	130mm angled probe

## MTL10 Test Lamp with Proving Device

### Recommended kit

The Martindale MTL10PD contains the Drummond MTL10 test lamp and matching PD440 proving device, enabling you to comply with health and safety recommendations for safe working. It is supplied with a carry case (TC69).



**ACCESSORIES**  
TC2B calibration



## MTL10PD

The full 3 piece kit includes:

- PD440 Proving device
- MTL10 Test lamp
- TC69 Soft carry case

**MTL15**

**Maximum working voltage:**  
1000V DC/AC rms

**Voltage ranges:**  
50, 230, 400 690V AC/DC

**Range detection:** automatically

**Response time:** <0.1s

**Frequency range:** DC, 40-65Hz

**Test current:** <3.5mA at 1000V DC/AC rms

**Temperature range:**  
-10°C – +55°C

**Humidity:** <85% R.H.

**Measurement CAT:** CAT IV 1000V

**Pollution degree:** 2

**IP rating:** IP64

**Weight:** 32g

**Dimensions:** 213 x 112 x 72mm

**Safety:** BS EN 61243-3:2014, GS38, CAT IV 1000 V Class II double insulation

**Test Lamp with 1000V CAT IV Safety Rating**

The MTL15 extends the application areas for Drummond test lamps to higher voltage installations. With AC/DC voltage indication thresholds of 50, 230, 400 and 690V plus a 1000V CAT IV safety rating, the MTL15 is the ideal solution for proving dead in all installation categories as defined in BS EN 61010. In common with all the MTL Series, the MTL15 test lamp does not require batteries and has no ranges or switches ensuring reliable indication of hazardous voltages every time.

The MTL15 is supplied with six interchangeable test probes for safe and easy measurement in all types of application particularly where access is restricted. In addition to the standard 62mm straight and right angled probe, extended 130mm probes are included.

With the highest possible BS EN 61010 safety rating and voltage thresholds up to 690V, the MTL15 test lamp is the ideal solution for safely proving dead in supply side applications up to 1000V.



**ACCESSORIES**

TC2A calibration  
TC69 carry case

**CAT IV  
1000V**

**MTL15PD**

The full 3 piece kit includes:  
PD690 Proving device  
MTL15 Test lamp  
TC69 Soft carry case

**Test Lamp with Proving Device**

Safe electrical work requires the use of a voltage indicator or test lamp that has been proved with a proving device before and after use.

The MTL15/PD includes a MTL15 test lamp complete with a matching PD690 proving device and the TC69 combination carry case.

This TC69 soft carry case ensures that the proving device is always on hand and provides the simplest solution for implementing safe isolation practices on-site in accordance the Electricity at Work Regulations. For convenience and to save time, the proving unit can be used without having to remove it from the case.

The PD690 voltage and power output is matched to the MTL15 to illuminate all voltage bands and prove the test lamp is functioning correctly.

**Recommended kit**

**NEW**



**ACCESSORIES**

TC2B calibration

**CAT IV  
1000V**

### Test Lamp with Low Impedance Function

The MTL20 is a dual impedance voltage indicator, designed to make it easy to differentiate between phantom voltages due to capacitive coupling and true hazardous voltages. In addition to all the features of the MTL10, the MTL20 incorporates two test buttons, one on the body of the unit and one on the probe.

Simultaneous depression of both switches enables the unit to draw a high current and dissipate phantom voltages. In order to prevent this being done accidentally, both buttons must be depressed to activate this feature. If there is any doubt as to whether a voltage indication is hazardous live or interference/phantom after using a dual impedance tester then alternative tests should also be performed.



**ACCESSORIES**

- TC2A calibration
- TC69 carry case
- MTL2103 30mm straight probe
- MTL2104 62mm straight probe
- MTL2105 62mm L shaped probe
- MTL2106 130mm straight probe
- MTL2107 130mm angled probe



### MTL20

- Maximum working voltage:** 500VAC, 750DC
- Voltage ranges:** 50, 120, 230, 400V AC/DC
- Range detection:** automatically
- Response time:** <0.1s
- Frequency range:** DC, 40-65Hz
- Test current:** <3.5mA, with switches depressed 28mA @ 240VAC, 60mA @ 500VAC
- Temperature range:** -10°C – +55°C
- Humidity:** max. 85% R.H.
- Measurement CAT:** CAT IV 600V
- Pollution degree:** 2
- IP rating:** IP64
- Weight:** 35g
- Dimensions:** 213 x 112 x 72mm
- Safety:** BS EN 61243-3:2014, GS38, CAT IV 600 V Class II double insulation

### MTL20 Test Lamp with Proving Device

The Martindale MTL20PD contains the Drummond MTL20 test lamp with low impedance functions and the matching PD440 proving device. It is an essential safety aid for electricians and includes a carry case (TC69).



### MTL20PD

- The full 3 piece kit includes:
- PD440 Proving device
- MTL20 Test lamp
- TC69 Soft carry case

**Recommended kit**

**ACCESSORIES**

- TC2B calibration



The complete solution to enable safe working practices during the installation of Smart Meters. The SMKITs contain all the essential test tools needed to ensure safe isolation procedures can be implemented during the installation process.

The comprehensive kits include, a Buzz-It check plug for checking the wiring on 13A sockets (SMKIT10 & SMKIT20), a non-contact voltage indicator with probe tip for identifying phase and neutral lines and a single pole contact voltage tester suitable for use when wearing protective gloves and gauntlets.

For CAT IV supply side safe isolation testing there is a Drummond test lamp with proving device.

A soft carry case is included for the whole kit.

**Smart Metering Kit SMKIT5**



Kit includes:

- TEK101 Non-contact voltage indicator with built in proving device
- VT7 Single Pole Contact Voltage Tester suitable for use when wearing PPE
- MTL10 Drummond AC/DC Test Lamp 600V CAT IV
- PD440 Proving Device
- TC70 Combination soft carry case

**ACCESSORIES**

- TC2D calibration

**Smart Metering Kit SMKIT10**



Kit includes:

- BZ101 Buzz-It Check Plug with Sounder for UK 13A Sockets (SMKIT10 only)
- TEK101 Non-contact voltage indicator with built in proving device
- VT7 Single Pole Contact Voltage Tester suitable for use when wearing PPE
- MTL10 Drummond AC/DC Test Lamp 600V CAT IV
- PD440 Proving Device
- TC70 Combination soft carry case

**ACCESSORIES**

- TC2E calibration

**Smart Metering Kit SMKIT20**



Kit includes:

- BZ101 Buzz-It Check Plug with Sounder for UK 13A Sockets (SMKIT10 only)
- TEK101 Non-contact voltage indicator with built in proving device
- VT7 Single Pole Contact Voltage Tester suitable for use when wearing PPE
- MTL20 Drummond AC/DC Dual Impedance Test Lamp 600V CAT IV
- PD440 Proving Device
- TC70 Combination soft carry case

**ACCESSORIES**

- TC2E calibration

## Proving Units

Martindale is the market leader in proving units with a product for every need.

Safe electrical working requires the use of a voltage indicator that has been proven with a suitable proving unit before and after use to ensure the instrument is working correctly.

Martindale offer a range of compact, portable devices for proving two pole voltage indicators multimeters and test lamps with voltage detection ranges up to 700V AC and DC.

It is regarded as good practice to match the output voltage of the proving device with the voltage range of the instrument to be proved.

Some indicators e.g. the Drummond MTL20 Test Lamp have the ability to safely draw high currents to suppress phantom voltages. All Martindale 440V and 690V PDs are compatible with both low impedance test lamps and high impedance voltage indicators.

**For DC systems the PD710 is available with a 700V DC output.**

All Martindale proving units are designed to ensure long battery life and most include low battery indicators.

The new range of four proving units include additional functions to carry out a calibration check of both continuity and insulation resistance ranges on multifunction 18th Edition Installation Testers.

This is ideal for identifying potential calibration issues with a multifunction tester prior to certifying a new wiring installation.

The PD440SX and PD690SX also have individual LED indicators matched to common two pole tester thresholds. Ideal for identifying potential voltage tester calibration issues.



PD690SX 690V proving device with CALCHECK

## Proving Device 240V DC



The PD240 is a compact low voltage proving device, ideally suited to test equipment being used for measurements up to 240V with combined AC/DC voltage measurement. This handy proving unit produces a 240V DC output which is current limited to 2mA making it suitable for use with multimeters and voltage detectors with an input impedance greater than 120k $\Omega$ . The PD240 has a long battery life and is fitted with a belt clip.

For higher voltage and low impedance compatible proving units see our PDS and PDSX Series opposite.

### PD240

**Output voltage:** 240V DC

**Output current:** 2mA max across 120k $\Omega$ , 3.5mA max

**Short circuit protected**

**Battery:** 6LR61/MN1604/PP3 (included)

Shut-off below 5V

**Body:** flame retardant ABS

**Weight:** 180g (incl battery)

**Dimensions:** 144 x 63 x 31mm

#### ACCESSORIES

TC2A calibration



New PD S Series

With all the benefits of the industry standard Martindale PD440 and PD690 proving units, the new S models come in an overmoulded low profile case with magnetic hanger. They are fast and easy to use, instantly supplying the full test voltage for both high and low impedance voltage indicators, test lamps and meters.



PD440S for proving 440V indicators

Ideal for proving low and high impedance voltage testers

Includes MAG3 high strength magnetic hanger

Colour coded for voltage output (440V and 690V)

Tough overmoulded low profile design



PD690S with magnetic hanger

New PD SX Series with CALCHECK

The SX Series have a unique CALCHECK feature making it easy to verify the insulation and low resistance ranges on 18th Edition multifunction testers, wherever you are working. In addition, the new units have stepped voltage LEDs with thresholds matched to most voltage indicators and two pole testers.



PD690SX with Insulation Resistance CALCHECK



PD690SX with Low Ohm CALCHECK



PD690SX matched to voltage tester thresholds

## Proving Device 440V AC

NEW



The Martindale PD440S is a direct replacement for the industry standard PD440. Its voltage output is matched to the VI13800, the MTL10 and MTL20 Drummond test lamps and all other 440V voltage indicators and testers.

- Ideal for proving both low and high impedance voltage testers up to 440V.
- Tough overmoulded low profile design
- Long battery life with low battery indicator
- Includes MAG3 high strength magnetic hanger
- Colour coded for voltage output

**ACCESSORIES**  
TC2A calibration

### PD440S

**Output voltage:** 440V AC with LED indicator  
**Operating temperature:** -10°C to +40°C  
**Power:** Auto on/off  
**Battery:** 6 x LR6 AA 1.5V alkaline (included)  
**Body:** flame retardant ABS  
**Weight:** 350g approx. (incl batteries)  
**Dimensions:** 150 x 79 x 34 mm  
**Includes:** batteries, MG3 hanger and manual

## Proving Device 30V/120V/230V/440V AC with CALCHECK

NEW



The PD440SX has all the capabilities of the PD440S plus a unique CALCHECK feature for validating the performance of both insulation and low resistance ranges of installation testers. In addition, there are stepped voltage thresholds from 50V to 440V.

- Unique CALCHECK function for multifunction installation tests
- Individual LED indicators matched to voltage indicator thresholds
- Ideal for proving both low and high impedance voltage indicators up to 440V
- Long battery life with low battery indicator

**ACCESSORIES**  
TC2B calibration

### PD440SX

**Output voltage:** 50-440V AC with LED indicator in four steps 50V, 120V, 230V, 440V  
**CALCHECK nominal resistances:** 0.5Ω, 1Ω, 0.5MΩ, 1MΩ  
**Operating temperature:** -10°C to +40°C  
**Power:** Auto on/off  
**Battery:** 6 x LR6 AA 1.5V alkaline (included)  
**Body:** flame retardant ABS  
**Weight:** 350g approx. (incl batteries)  
**Dimensions:** 150 x 79 x 34 mm  
**Includes:** batteries, MG3 hanger and manual

## Proving Device 690V AC

NEW



The Martindale PD690S is a direct replacement for the industry standard PD690. Its voltage output is matched to the VI-15000, MTL15 Drummond test lamp and all other 690V voltage indicators and two pole testers including the VT12, VT25 and VT28.

- Ideal for proving both low and high impedance voltage testers up to 690V.
- Tough overmoulded low profile design
- Long battery life with low battery indicator
- Includes MAG3 high strength magnetic hanger
- Colour coded for voltage output

**ACCESSORIES**  
TC2A calibration

### PD690S

**Output voltage:** 690V AC with LED indicator  
**Operating temperature:** -10°C to +40°C  
**Power:** Auto on/off  
**Battery:** 6 x LR6 AA 1.5V alkaline (included)  
**Body:** flame retardant ABS  
**Weight:** 350g approx. (incl batteries)  
**Dimensions:** 150 x 79 x 34 mm  
**Includes:** batteries, MG3 hanger and manual

## PD690SX

**Output voltage:** 50-690V AC with LED indicator in five steps 50V, 120V, 230V, 400V, 690V

**CALCHECK nominal resistances:** 0.5Ω, 1Ω, 0.5MΩ, 1MΩ

**Operating temperature:** -10°C to +40°C

**Power:** Auto on/off

**Battery:** 6 x LR6 AA 1.5V alkaline (included)

**Body:** flame retardant ABS

**Weight:** 350g approx. (incl batteries)

**Dimensions:** 150 x 79 x 34 mm

**Includes:** batteries, MG3 hanger and manual

## Proving Device 50V/120V/230V/400V/690V AC with CALCHECK

The PD690SX has all the capabilities of the PD690S plus a unique CALCHECK feature for validating the performance of both insulation and low resistance ranges of multifunction testers and single function insulation testers. This gives electricians confidence in the consistency of test measurements over time and is a valuable procedure recognised by electrical contractor assessment bodies.

- Ideal for proving both low and high impedance voltage testers up to 690V.
- Tough overmoulded low profile design
- Long battery life with low battery indicator
- Individual LED indicators matched to 690V voltage indicator and two pole tester thresholds
- Unique CALCHECK function for multifunction testers



NEW

### ACCESSORIES

TC2B calibration

## PD Comparison Table

	PD240	PD440S	PD440SX	PD690S	PD690SX
<b>Maximum Voltage Output</b>	240V DC	440V AC	440V AC	690V AC	690V AC
<b>LED Voltage Thresholds</b>	240V	440V	50V, 120V, 230V, 440V	690V	50V, 120V, 230V, 400V, 690V
<b>High Voltage LED</b>	✓	✓	Multiple	✓	Multiple
<b>Low Battery LED</b>		✓	✓	✓	✓
<b>High/Low Z Compatible</b>		✓	✓	✓	✓
<b>CALCHECK Resistance Values</b>			✓		✓
<b>Colour Coded to Match Voltage Indicators</b>		✓	✓	✓	✓
<b>Suitable for</b>	Digital multimeters & 2 pole voltage testers (>120kΩ)	Multimeters, voltage testers & Drummond test lamps	Multimeters, voltage testers & Drummond test lamps	Multimeters, voltage testers & Drummond test lamps	Multimeters, voltage testers & Drummond test lamps

## Single Pole Voltage Tester



A single pole contact voltage tester which detects AC voltages of 50V-600V with bright LED indication.

This ergonomically designed voltage tester has a self-test function and is IP54 rated, for indoor and outdoor use. The tester is of durable construction making it suitable for both industrial and domestic applications.

This unit can be used when wearing protective gloves and gauntlets. Potentially unsafe direct contact with a finger or hand can be avoided and existing safe working practices requiring the use of Personal Protective Equipment (PPE) can be adhered to.



**ACCESSORIES**  
TC2A calibration



## VT7

### Electrical

**Audible and visual indication**

**Voltage range:** 50V-600V AC rms

**Frequency range:** 50-60Hz

**Test current:** <math><5\mu\text{A}</math>

**Environmental Temperature (Operating & Storage):**  
-10°C to 55°C

**Humidity (Operating & Storage):**  
≤ 85% RH

**Altitude:** up to 2000m

### General

**Supply:** 9V, PP3 alkaline battery (IEC 6LR61, NEDA 1604A)  
Current consumption: 34mA max

### Safety

Conforms to BS EN 61010-1  
Pollution degree: 2  
IP rating: IP54  
Water resistant

### EMC

Conforms to BS EN 61326-1

**Weight:** 120g approx. (with batteries)

**Dimensions:** 236 x 44 x 33mm

**Includes:** 9V PP3 battery and manual

## Two Pole Voltage Tester



The VT12 is a two pole voltage & continuity tester with automatic AC/DC detection up to 690V and continuity testing with optical and acoustic indication up to 500k Ohms.

The bright LED indicators provide immediate display of the voltage range and the VT12 is supplied with probe caps for GS38 compliance.

It is ergonomically designed and durable enough for both industrial and domestic use. Constructed in accordance with the latest safety standards.

**Also available VT12PD with a VT12 and a PD690 in a carry case (TC70)**

**ACCESSORIES**  
TC2A calibration  
TC2B calibration (VT12PD)



## VT12

**Voltage range:** 12-690V AC/DC

**LED indication:**  
±12, 24, 50, 120, 230, 400, 690V

**AC/DC voltage detection:**  
automatic

**Range detection:** automatic

**Frequency range:** DC, 0-65Hz

**Continuity test:** optical/acoustic

**Continuity range:** 200kΩ

**GS 38 caps:** removable

**Standard & regulations:**  
BS EN 61243-3 2014

**Weight:** 130g approx

**Dimension:** 205 x 67 x 27mm

**Includes:** battery and manual



## VT25

**Voltage range:** 12-690V AC/DC  
**Frequency range:** 16-400Hz  
**LED indication:** ± 12, 24, 50, 120, 230, 400, 690V  
**Single Pole Phase Test:** 100-690V  
**Frequency range:** 50-60Hz  
**Phase Rotation Test:** 120-400V  
**Frequency range:** 50-60Hz  
**Continuity Range:** 0-500kΩ  
**GS38 caps:** removable  
**Standard & Regulations:**  
 BS EN 61243-3 2014  
**Cable length:** 1.2m  
**IP rating:** IP64  
**Auto power off**  
**Torch light:** White LED  
**Supply:** 2 x 1.5V AAA  
**Weight:** 130g (with batteries)  
**Dimensions:** 205 x 67 x 27mm  
**Includes:** battery and manual

## Two Pole Voltage Tester

The VT25 is a compact voltage tester which measures continuity, phase rotation and voltages between 12V and 690V. This compact tester complies with the latest edition of BS EN 61243-3 and is supplied with removable probe caps for GS38 compliance. The 1.2m cable is double insulated with a black outer and contrasting inner core to give visual warning of damage to the cable.

- Auto detect AC/DC voltage
- Single pole phase test
- Phase rotation test
- Continuity test – LED and buzzer
- Auto power off
- White LED torch light

Also available as VT25PD with a VT25 and a PD690 in a carry case (TC70)



### ACCESSORIES

TC2A calibration  
 TC2B calibration (VT25PD)  
 CAPVT25 spare GS38 caps



## VT28

**Voltage range:** 10-690V AC/DC  
**Frequency range:** 16-400Hz  
**LED indication:**  
 ± 12, 24, 50, 120, 230, 400, 690V  
**LCD Display:**  
 Range:  
 10V-690V (DC, 16Hz-400Hz)  
 Resolution: 0.1V  
 Accuracy: ± (3% + 5 dgt)  
**Single pole phase test:**  
 100-690V AC RMS  
**Frequency range:** 50-60Hz  
**Phase rotation test:**  
 120-400V AC RMS  
**Frequency range:** 50-60Hz  
**Continuity range:** 0-500kΩ  
**GS 38 caps:** removable  
**Standard & regulations:**  
 BS EN 61243-3 2014  
**Cable length:** 1.2m  
**IP rating:** IP64  
**Auto power off**  
**Torch light:** White LED  
**Supply:** 2 x 1.5V AAA  
**Weight:** 130g (with batteries)  
**Dimensions:** 205 x 67 x 27mm  
**Includes:** battery and manual

## Two Pole Voltage Tester with LCD Display

The VT28 shares the same useful functions as the VT25 but has the additional benefit of an LCD display.

All voltage, continuity and phase rotation indications have the same bright LED indication but the VT28 also displays the measured voltage reading on the 25mm x 15mm LCD display.

Also available as VT28PD with a VT28 and a PD690 in a carry case (TC70)



### ACCESSORIES

TC2A calibration  
 TC2B calibration (VT28PD)  
 CAPVT25 spare GS38 caps



## Voltage Indicator Comparison Table

	NC1	NC2	NC3	NC4	TEK100	TEK101	TEK200
AC Voltage Range		200-1000V	200-1000V	12-1000V 50-1000V	100-600V	180-600V	100-600V
Magnetic Field Detection	>10mT		>10mT				>10mT Hall effect
Frequency Range		40Hz-400Hz	40Hz-400Hz	40Hz-400Hz	45Hz-1kHz	45Hz-1kHz	45Hz-1kHz
LED Indication	Yellow LED	Red LED	Yellow LED Red LED	Red LED	Red LED	Red LED	North South Red/Green LED
Audible Indication	✓	✓	✓	✓	✓	✓	✓
Self-Test					✓	✓	✓
Power On Pulse LED	✓	✓	✓	✓			
Low Battery Indication	✓	✓	✓	✓	✓	✓	
Auto Power Off	✓		✓	✓			
High Resolution						✓	
LED Torch	✓	✓	✓	✓			

## Non-contact Solenoid/Magnetic Field Tester

NEW



The NC1 is a non-contact magnetic tester for checking the operation of relays and solenoid valves in a wide range of machinery. Applications include troubleshooting, control equipment in process industries, energy, transportation and pneumatic and hydraulic control systems servicing.

The ergonomic pen shape with clip makes it ideal for carrying in a pocket or toolbelt and a built-in torch in the tip aids use in low light areas.

**ACCESSORIES**  
TC2A calibration

**CAT IV**  
1000V

### NC1

**Magnetic Sensitivity:** >10mT  
**Audible and LED indication**  
**Supply:** 2 x 1.5V AAA batteries (included)  
**Weight:** 55g (incl battery)  
**Dimensions:** 155mm length, approx. 25mm diameter

## NC2

**Indication range:**

200V-1000V AC  
40Hz-400Hz

**Voltage sensitivity:** indicates 4mm approx. from a conductor at 240VAC

**Audible and LED indication**

**Conforms to:** BS EN 61010-1

**Supply:** 2 x AAA batteries (included)

**Weight:** 55g (incl battery)

**Dimensions:** 155mm length, approx. 25mm diameter

## Non-contact Voltage Tester

The NC2 is a non-contact voltage tester for accurately detecting the presence of AC voltages between 200V and 1000V. When voltages are detected, a bright LED illuminates the tip of the NC2.

It will indicate approximately 4mm from a conductor at 240V AC, making it ideal for tracing live circuits within cable containment and for voltage detection in sockets and junction boxes. The pen-shaped design with clip makes it ideal for carrying in a pocket or tool belt when working at height or in difficult to access locations. A built-in torch in the tip aids use in low light areas.



NEW

**ACCESSORIES**  
TC2A calibration

CAT IV  
1000V

## NC3

**Indication range:**

200V-1000V AC  
40Hz-400Hz

**Voltage sensitivity:** indicates 4mm approx. from a conductor at 240VAC

**Audible and LED indication**

**Magnetic sensitivity:** >10mT

**LED indication**

**Conforms to:** BS EN 61010-1

**Supply:** 2 x AAA batteries (included)

**Weight:** 55g (incl battery)

**Dimensions:** 155mm length, approx. 25mm diameter

## Dual Function Non-contact Voltage and Magnetic Field Tester

The NC3 is a non-contact voltage and magnetic tester for accurately detecting the presence of AC voltages between 200V and 1000V. When voltages are detected, a bright LED illuminates the tip of the NC3. A recessed on/off button prevents accidental activity and ensures a long battery life.

In addition to its voltage detection the NC3 can be used for testing relays and solenoid valves. On detecting a magnetic field a different colour LED illuminates the tip of the tester. A built-in torch in the tip aids use in low light areas.



NEW

**ACCESSORIES**  
TC2A calibration

CAT IV  
1000V

## NC4

**Indication Ranges:**

50V-1000V AC default  
12V-1000V AC high sensitivity  
40Hz-400Hz

**Audible and LED indication**

**Conforms to:** BS EN 61010-1

**Supply:** 2 x 1.5V AAA batteries (included)

**Weight:** 55g (incl battery)

**Dimensions:** 155mm length, approx. 25mm diameter

## Dual Sensitivity Non-contact Voltage Tester

The NC4 voltage tester has two sensitivity ranges for accurately detecting the presence of AC voltages. The first will detect voltages between 50V and 1000V and the second will indicate voltages between 12V and 1000V. Sensitivity can be set according to the application.

The NC4 indicates voltage by illuminating the tip section with a red LED and sounding a buzzer. The pen-shaped design with clip makes it ideal for carrying in a pocket or tool belt when working at height or in difficult to access locations. There is also a useful LED torch which illuminates the area in front of the tip.



NEW

**ACCESSORIES**  
TC2A calibration

CAT IV  
1000V

## Non-contact Voltage Tester



CAT IV  
600V



The Pocket sized TEK100 is simple to use and can detect AC voltages without requiring physical contact with the conductor. The presence of any voltage between 100V and 600V AC will generate an audible tone, together with a red LED visual indication. It has a unique built-in proving device which improves safety and saves time on-site. The integral self-test activates the sensor in the tip of the tester at 50Hz as well as checking the battery and LED, testing the entire circuit, not just the indicator LED.

**The only non-contact detectors with a built-in proving device that proves the entire circuit.**

### ACCESSORIES

TC2A calibration

## TEK100

**Voltage range:** 100 to 600V AC  
**Frequency range:** 45Hz-1kHz  
**Temperature:** -5 to 40°C

### Integrated self test

**Sensitivity:** registers at 3mm for 110V, 50Hz, 23mm for 240V, 50Hz (depending on cable type)

**Voltage Indication:** visual:  
AC voltage present - LED (red) and audible tone (3kHz)  
Battery ok - LED (green)

**Supply:** 9V alkaline battery, MN1604 or equivalent (included)

**Housing:** flame retardant ABS

**Weight:** 120g approx. (incl battery)

**Dimensions:** 205 x 36 x 25mm

## Non-contact Voltage Indicator - High Resolution



CAT IV  
1000V



The Martindale TEK101 is a simple to use non-contact voltage indicator with both audible and visual warnings and an extended probe tip for access to confined spaces. Optimised for identifying energised conductors at voltages within the range 180V to 600V AC, it incorporates a unique built-in 50Hz proving unit which tests the sensor operation, battery and LED.

The tip design and optimised sensitivity make it possible to discriminate between adjacent live conductors where standard non contact voltage indicators struggle.

### ACCESSORIES

TC2A calibration

## TEK101

**Voltage range:** 180V to 600V AC rms  
**Frequency range:** 45Hz to 1kHz  
**Temperature:** -10°C to 40°C

### Integrated self test

**Sensitivity:** Typical sensing distances at 230V, 50Hz for different cable types  
Flat 1mm<sup>2</sup> twin & earth - 3mm  
Flat 2.5mm<sup>2</sup> twin & earth - 3mm  
Round 1.5mm<sup>2</sup> - 2mm

**Voltage Indication:**  
AC voltage present - LED (red) and audible tone (3kHz)  
Battery ok - LED (green)

**Supply:** 9V, PP3 alkaline battery IEC 6LR61, NEDA 1604A (included)

**Weight:** 120g (incl battery)

**Dimensions:** 205 x 36 x 25mm

## Non-contact Voltage & Magnetic Field Tester



CAT IV  
600V



Detects the presence and polarity of magnetic fields produced by indicators, relays, solenoids and transformers in addition to voltage indication.

The TEK200 incorporates a high performance Hall Effect sensor for the reliable detection of low level AC and DC magnetic fields. The integral self-test activates the sensor in the tip of the tester at 50Hz as well as checking the battery and LED. This proves that the unit is fully functional before use.

In addition, this unit incorporates all the capability of the TEK100 voltage indicator.

### ACCESSORIES

TC2A calibration

## TEK200

**Voltage range:** 100 to 600V AC  
**Frequency range:** 45Hz-1kHz  
**Sensitivity:** registers at 3mm for 110V, 50Hz, 23mm for 240V, 50Hz (depending on cable type)

**Magnetic sensitivity:** 10mT

**Frequency range:** 0 to 30kHz

### Self test proving function

**Voltage Indication:**  
LED and audible for N/S pole magnetic fields and voltages

**Temperature:** -5°C to 40°C

**Supply:** 9V alkaline battery, MN1604 or equivalent (included)

**Weight:** 120g approx. (incl battery)

**Dimensions:** 205 x 36 x 25mm



## PAT Tester Selection Guide

	HPAT400	HPAT500	HPAT600	EPAT1600	EPAT2100	MPATPLUS	E3640
Class I/II Test	✓	✓	✓	✓	✓	✓	
Lead Test	✓	✓	✓	✓	✓	With accessory	
Pass/Fail Indication	✓	✓	✓			Auto Test inhibit on fail	
Test Values Displayed		✓	✓	✓	✓	✓	✓
Selectable Limits			✓			✓	
Test Mode	Auto	Auto	Auto/Manual	Manual	Manual	Auto/Manual	Auto/Manual
Run Test			Simulated	✓	✓	✓	
Earth Continuity Test Current	200mA	200mA	200mA	200mA/8A/25A	200mA/8A/25A	200mA/25A	
Insulation Test Voltage	500V	250/500V	250/500V	500V	500V	500V	
110V Appliances	With accessory	With accessory	With accessory	✓	✓	✓	
Flash Test					1.5kV/3kV	1.5kV/3kV	Up to 4kV
Memory			200 results for on-screen recall			1000 results for download	
Supply	Alkaline batteries	Rechargeable or mains with charger	Rechargeable or mains with charger	230V	230V/110V	230V/110V	230V/110V



**HPAT500**



**EPAT1600**



**MPATPLUS**

Whether it's a simple one button automatic battery powered tester for checking appliances in commercial premises, leisure facilities and care homes, or a mains powered PAT with high current bond test capability for industrial applications, Martindale testers make it easy to get the job done quickly and safely in accordance with the 4th Edition of the Code of Practice.

The HPAT Series are rechargeable handheld testers designed for maximum portability and ease of use.

Capabilities of the EPAT Series include on-site testing of 110V appliances and flash testing for tool hire and workshop repair applications.

The MPAT includes the same functionality plus fast pre-programmed test codes and memory with download capability to industry standard software for traceability and management of testing schedules.

All Martindale PATs include simple instructions on the tester and a soft carry case with essential accessories.

More information on the 4th Edition of the Code of Practice and Martindale training courses is available at: [bit.ly/code-of-practice](http://bit.ly/code-of-practice)

## Pass/Fail PAT Tester

NEW



The HPAT400 is an easy to use battery powered, hand held PAT tester with simple one-button test selection. Its lightweight portable design make it ideal for testing in all locations whether under a desk or testing a wall mounted monitor.

A single button press activates either a full Class I, Class II or lead test without any further interaction required by the user, unless a failure is encountered.

The display has clear PASS/FAIL indicators but does not display test values. Simple connection diagrams are permanently shown on the case body making it easy to start testing straight away.

A comprehensive range of optional adaptor leads are available enabling 110V appliance testing and testing of equipment terminated with 3 phase plugs.

The HPAT400 has a high contrast backlit display.

FREE VC

### ACCESSORIES

TC2A calibration

## HPAT400

### Earth continuity

**Test current:** 200mA DC

**Fixed pass limits:**

$\leq 0.10\Omega / \leq 0.20\Omega$

**Insulation Test Voltage**

**500V:** >500V DC at 1mA

**Test current:** 1.5mA

**Default pass level:**

**Lead:**  $\geq 1.0 M\Omega$

**Class I:**  $\geq 1.0 M\Omega$

**Class II:**  $\geq 2.0 M\Omega$

### Fuse test

**Voltage:** 4V DC (open circuit)

**Current:** 200mA DC (short circuit)

**Pass level:** >2mA

### General

**Overload protection:** 300V AC/DC

**Complies with:** BS EN 61010

**Temperature range:** -10 to 40°C

**Supply:** 6 x 1.2V AA batteries

**Dimensions:** 90 x 210 x 54mm

**Weight:** 700g (inc batteries & leads)

**Includes:** TC57 carry case, batteries, EX332 IEC lead, TL67 earth bond probe and manual

## Simple 250V/500V Rechargeable PAT Tester



The HPAT500 is an easy to use rechargeable, hand held PAT tester with simple one-button test selection. The tester comes with rechargeable batteries and mains charger for low cost of ownership and can even be used whilst recharging ensuring no downtime.

A single button press activates either a full Class I, Class II or lead test without any further interaction required by the user, unless a failure is encountered.

The display has clear PASS/FAIL indicators and shows all test results on screen. Simple connection diagrams are permanently shown on the case body making it easy to start testing straight away. For sensitive IT equipment the insulation test voltage can be reduced to 250V.

A comprehensive range of optional adaptor leads are available enabling 110V appliance testing and testing of equipment terminated with 3 phase plugs.

The HPAT500 has a new high contrast backlit display.

FREE VC



### ACCESSORIES

TC2B calibration

TL157 110V adaptor lead to test 110V appliances

EX331 adaptor lead to test 110V extension leads

PSUHPAT12 in-car charger

## HPAT500

### Earth continuity

**Test current:** 200mA DC

**Range:** 0-19.99 $\Omega$

**Resolution:** 0.01 $\Omega$

**Accuracy:**  $\pm$  (5% rdg + 2 dgt)

**Fixed pass limits:**

$\leq 0.10\Omega / \leq 0.20\Omega$

**Insulation Default Test Voltage**

500V

**User selectable:** 250V/500V DC

**Test current:** 1.5mA

**Ranges:** 2.00M $\Omega$ , 20.0M $\Omega$ , 200M $\Omega$

**Resolution:** 0.01M $\Omega$

**Accuracy:**

<100M $\Omega$   $\pm$  (5% rdg + 2 dgt)

>100M $\Omega$   $\pm$  (10% rdg + 2 dgt)

**Default pass level:**

**Lead:**  $\geq 1.0 M\Omega$

**Class I:**  $\geq 1.0 M\Omega$

**Class II:**  $\geq 2.0 M\Omega$

### Fuse test

**Voltage:** 4V DC (open circuit)

**Current:** 200mA DC (short circuit)

**Pass level:** >2mA

### General

**Overload protection:** 300V AC/DC

**Complies with:** BS EN 61010

**Temperature range:** -10 to 40°C

**Supply:** 6 x 1.2V AA NiMH

rechargeable batteries 1800mAh

**Dimensions:** 90 x 210 x 54mm

**Weight:** 700g (inc batteries & leads)

**Includes:** TC57 carry case, PSUHPAT230 mains charger, rechargeable batteries, EX332 IEC lead, TL67 earth bond probe and manual

## HPAT600

### Earth continuity

**Test current:** 200mA DC (into short circuit)

**Range:** 0-19.99Ω

**Resolution:** 0.01Ω

**Accuracy:** ± (5% rdg + 2 dgt)

### Default pass levels:

Class I: ≤ 0.1Ω Lead: ≤ 0.1Ω

**User selectable pass levels:** 0.1Ω to 0.9Ω in 0.1Ω steps

### Insulation Resistance

**Insulation Default Test Voltage** 500V

**User selectable:** 250V/500V DC

**Test current:** 1.5mA (short circuit)

**Ranges:** 2.00MΩ, 20.0MΩ, 200MΩ

**Best resolution:** 0.01MΩ

### Accuracy:

<100MΩ ± (5% rdg + 2 dgt)

>100MΩ ± (10% rdg + 2 dgt)

### Default pass level:

**Lead:** ≥ 1.0 MΩ

**Class I:** ≥ 1.0 MΩ

**Class II:** ≥ 2.0 MΩ

### User selectable pass levels:

0.3MΩ to 1MΩ in 0.1MΩ steps

1MΩ to 10MΩ in 1MΩ steps

### Fuse test

**Voltage:** 4V DC (open circuit)

**Current:** 200mA DC (short circuit)

**Pass level:** >2mA

### Simulated load test

**Voltage:** 4V DC (into open circuit)

**Current:** 200mA DC (short circuit)

**Accuracy:** ± (5% rdg + 2 dgt) (referenced to 230V)

### General

**Memory:** 200 tests can be stored

**Overload protection:** 300V AC/DC

**Complies with:** BS EN61010

**Temperature range:** -10 to 40°C

**Power supply:** 6 x 1.2V AA NiMH rechargeable batteries 1800mAh

**Dimensions:** 90 x 210 x 54mm

**Weight:** 700g (inc batteries & leads)

**Includes:** TC57 carry case, PSUHPAT230 mains charger, rechargeable batteries, EX332 IEC lead, TL67 earth bond probe, PSUHPAT12 in-car charger, earth null adaptor and manual

## Automatic and Manual 250V/500V Rechargeable PAT Tester

The HPAT600 is an easy to use battery powered, hand held PAT tester that is ideal for testing all types of portable appliances. The tester is supplied with rechargeable batteries for low running costs and a mains and in-car charger for convenience. Whilst recharging, the HPAT can still be operated from the mains supply ensuring maximum productivity.

It has a fast, automatic one button test sequence and a simple to operate manual mode useful for diagnostics. It can be used for testing both 240V and 110V appliances with the optional TL157 adaptor lead.

In automatic mode, the HPAT600 will routinely run through a selected test sequence without user interaction unless a failure is encountered. In manual mode, a connection diagram for the selected test type is shown on the display and each step of a test requires confirmation.

The user can select either the standard 500V insulation test or a 250V option for testing appliances with surge protected circuits. The pass levels can be adjusted for testing appliances with long power cords or long extension leads. The HPAT600 stores test data for up to 200 appliances for on-screen recall (not downloading), making it easy to review earlier results when on-site. The HPAT600 can also be used to carry out a simulated load test to check the integrity of the fuse and to confirm that the appliance is switched on.



### ACCESSORIES

TC2B	calibration
TL157	110V adaptor lead to test 110V appliances
EX331	adaptor lead to test 110V extension leads
PSUHPAT12	in-car charger

FREE VC



## HPAT600KIT1

The full kit includes:

- HPAT600 PAT Tester
- CP501 Classic check plug
- NC2 Non-contact voltage tester
- LAB1 Pass labels (500)
- FAIL1 Fail labels (100)
- PATREG PAT register booklet
- Batteries
- EX332 230V lead adaptor
- PSUHPAT230 Mains charger
- TL178 Null pin on key fob
- PSUHPAT12 In-car charger

## HandyPAT 600 Kit

This advanced PAT testing kit includes the HPAT600, pass and fails labels, a record book plus a socket tester and a non-contact voltage indicator.

FREE VC

### ACCESSORIES

TC2B	calibration
TL157	adaptor lead to test 110V appliances
EX331	adaptor lead to test 110V extension lead



## EasyPAT Manual PAT Tester - Dual Voltage 25A Bond Test



The EPAT1600 is a simple one button, one test, manual PAT tester which will test all 240V & 110V portable appliances. There are three earth bond test currents which can be selected on a simple rocker switch, including a 200mA soft test for computers and sensitive I.T. equipment.

The EasyPAT has a built in lead tester for testing extension leads, IEC leads and adaptors. It will also perform a

polarity test and is supplied with the EX332 240V lead test adaptor.

- Tests both 240V and 110V appliances
- Class I, Class II & power lead tests
- Simple one button, one test operation
- Earth bond test currents – 25A, 8A and 200mA for sensitive IT equipment.
- Built in lead tester



### ACCESSORIES

TC2B calibration  
EX331 adaptor lead to test 110V extension leads



## EPAT1600

### Insulation test

#### Test voltage:

500V DC -0% +20% at 0.5MΩ

#### Short circuit current:

1.5mA DC nominal

#### Display range:

0-19.9MΩ

#### Accuracy of indication:

± 5% of rdg ± 1 dgt

### Earth continuity (8A & 25A)

#### Test voltage:

6V AC nominal with no load

#### Test current:

25A AC nom @ 0.1Ω, 8A AC nom @ 0.1Ω

#### Display range:

0-1.99Ω

#### Accuracy of indication:

± 10% of rdg ± 2 dgt

### Earth continuity (200mA)

#### Test voltage:

130mV DC nominal open circuit

#### Test current:

200mA DC nominal constant current

#### Range:

0-1.99Ω

#### Accuracy of indication:

± 10% of rdg ± 2 dgt

### Fuse test

#### Test voltage:

6V AC nominal

#### Overrange threshold:

10kΩ nominal

#### Zero range threshold:

800kΩ nominal

### Leads

#### Mains:

1.7 metre fixed lead, with a 13A moulded plug

#### Earth continuity:

3 metre long, detachable lead, heavy duty shrouded crocodile clip.

#### 230V IEC adaptor:

13A BS 1363 plug to IEC 320 connector, 230mm long.

### Sockets

#### Mains:

230V 13A to BS 1363

110V 16A to BS 4343

#### Lead test:

IEC 320

### Indicators

#### Over temperature:

red LED which illuminates when the temperature limit for the instrument has been exceeded. LED extinguishes when unit cools.

#### Lamp 1/ lamp 2:

red LEDs which illuminate to indicate lead 'polarity' for extension lead test facility.

### Supply

#### Supply voltage:

230V ± 10% 50/60Hz

#### Power consumption:

10/220VA

### Complies with

EMC: BS EN 50081-1

BS EN 50082-1

LVD: BS EN 61010-1

### Housing:

ABS/polycarbonate

### Weight:

4kg approx.

### Dimensions:

330 x 263 x 144mm

### Includes:

TL66 bond lead, EX332 230V plug to socket leads adaptor and manual

## EPAT2100

### Insulation test

Same as EPAT1600 (see opposite)

**Earth continuity:** 200mA, 8A & 25A

### Run current test

**Range:** 0-19.9A (Usable: 0-13.0A)

**Accuracy:**  $\pm 10\%$  of rdg  $\pm 1$  dgt

### Earth leakage test

**Range:** 0-19.9mA

**Accuracy:**  $\pm 10\%$  of rdg  $\pm 1$  dgt

### Flash test

**Test voltage:** 1.5kV AC - Class I

3.0kV AC - Class II

**Display range:** 0-19.9mA AC

**Usable range:** 0-3.5mA AC

(current trip @ 4mA nominal)

**Accuracy:**  $\pm 5\%$  of rdg  $\pm 1$  dgt

### Leads

**Earth continuity:** 1.5m long

**Flash gun:** for extra user protection

110V/240V adaptor:

110V 16A plug (BS 4343) to

240V 13A free socket (BS 1363)

230V IEC adaptor: 13A BS 1363

plug to IEC 320 230mm long

### Sockets

**Mains:** 240V 13A to BS 1363,

110V 16A to BS 4343

**Flash:** 4mm high safety socket

**Lead test:** IEC 320

### Indicators

**Flash:** neon lamp for active test.

Over temperature: red LED.

Lamp 1 / lamp 2: red LEDs for

extension lead polarity test

### Supply

**Voltage:** 110V/240V  $\pm 10\%$  50/60Hz

**Power consumption:** 10/220VA

**Complies with:** LVD: BS EN

61010-1

**Weight:** 5.1kg approx

**Dimensions:** 330 x 263 x 144mm

**Includes:** TL66 bond lead, TL166

flash probe, TL150 110V adaptor,

EX332 230V plug to socket leads

adaptor, carry case and manual

## EasyPAT Manual PAT Tester - Professional with Flash Test



### ACCESSORIES

TC2C	calibration
TL150	110V adaptor for power tests on 110V appliances
EX331	adaptor lead to test 110V extension leads

FREE  
VC

The simple one button, one test interface for testing both 240V and 110V appliances speeds up testing both in the workshop and on-site. It performs the mandatory tests for Class I and Class II appliances for earth bond and insulation and has added benefits of run current, run leakage and flash test. Earth bond tests can be carried out at 25A, 8A and 200mA for sensitive IT equipment.

It can be powered by a 110V or 240V supply which enables run current or run

leakage tests to be performed without need for connection to an external power source. The 110V adaptor is included to enable connection to a 110V supply.

The EasyPAT2100 has a built in lead tester for testing extension leads, IEC leads and adaptors. The lead tester will perform a polarity test and is supplied with the EX332 240V lead test adaptor.

## E3640

### Power requirement:

115/230 Volts  $\pm 15\%$  50/60Hz 40VA

### Output voltage range:

0-2.2, 0-4.2kV 50/60Hz AC

**Accuracy:**  $\pm 2\%$  of rdg  $\pm 1$  dgt

**Leakage current:** 0-5 mA

(nominal) 50/60Hz in 10 $\mu$ A steps

**Accuracy:**  $\pm 2\%$  of rdg  $\pm 1$  dgt

**Trip level range:** 0 to 3mA 50/60Hz

**Setting accuracy:**  $\pm 5\%$  of full range

**Trip response leakage:** Will trip for

fault duration  $>5$ mS but not for

$<100\mu$ S

**Breakdown:** Will trip for fast

transients of 30 $\mu$ S and above

**Complies with:** EMC: to BS

EN 50081-1 and BS EN 50082-2

Safety & flash test: BS EN 61010-1

**Weight:** 4kg approx

**Dimensions:** 330 x 263 x 144mm

**Includes:** DFH0369 flash gun,

DFH0366 earth lead, TL205 mains

power lead and manual

## 4kV Flash Tester

Capable of operating from either 115V or 230V supplies at 50/60Hz, the E3640 can apply up to 4kV AC and displays both output voltage and leakage current on the twin 3½ digit LCD's.

A fail lamp and buzzer indicate test failure.

Operating modes:

**Trip** - a pre-determined current is exceeded

**Breakdown** - fast transients trigger the trip

**Burn** - trip function is by-passed and the

fault current flows continuously to expose the fault;

**Hold** - shows breakdown voltage and leakage current.



### ACCESSORIES

TC2D	calibration
DFH0369	flash gun

**Metrohm**<sup>®</sup>

**MARTINDALE**  
ELECTRIC

## MicroPAT+ Professional Downloading PAT Tester



- Downloads to computer/printer
- Simple one button, one test operation
- Tests both 240V and 110V appliances
- Class I, Class II & power lead tests
- Performs up to 5 PAT tests (earth bond, insulation, run current, run leakage, flash)
- Earth bond test currents - 25A and 200mA for sensitive IT equipment
- Suitable for onsite PAT testing and workshop applications.

The MicroPAT Plus is a dual voltage PAT tester with memory storage and download capability. It features a one-button, one test operation with a fast and simple download procedure making the MicroPAT Plus the ideal PAT tester for fast high volume PAT testing.

The MicroPAT can be connected to a barcode scanner to create an efficient system. For downloading test results we recommend using the Martindale MPATSUITE software but you can also download results to Shire Safety First Express & Simply PATs.

### ACCESSORIES

TC2C	calibration
EX331	adaptor lead to test 110V extension leads
EX332	IEC to 240V 3A plug adaptor
TL125	computer download lead
TL150	110V adaptor
LTDV	extension lead tester
BARCCD	barcode reader
MPATSUITE	downloading software



## MPATPLUS

### Insulation test

**Test voltage:** 500V DC - 0% + 20%  
**Short circuit current:** 1mA DC nominal

**Display range:** 0 to 19.9MΩ

**Accuracy:** ± 5% ± 1 dgt

### Earth continuity test

**Test voltage:** 6V AC nominal

### Test current

25A AC nominal - 0.1Ω load  
 200mA (soft test) for IT equipment

**Display range:** 0 to 1.99Ω

**Accuracy:** ± 10% ± 2 dgt

### Run test

**Display range:** 0 to 3.1kVA

**Accuracy:** ± 10% ± 2 dgt at nominal 240V/110V

### Earth leakage test

**Display range:** 0 to 6mA AC

**Accuracy:** ± 10% ± 1 dgt

### Flash test

**Test voltage:** 1.5kV AC - Class I (at nom 240V AC) 3kV AC - Class II

**Display range:** 0 to 3.0mA AC

**Accuracy:** ± 5% ± 1 dgt

**Memory:** stores 1000 sets of results

### Sockets

**Mains/AC:** 240V 13A to BS 1363, 110V 16A to BS 4343.

**Interface:** connector RS232 compatible with USB adaptor.

### Complies with:

**LVD:** BS EN 61010-1

**Housing:** polycarbonate/ABS

**Weight:** 4.75kg approx.

**Dimensions:** 330 x 263 x 144mm

**Includes:** TL66 removable earth bond lead, TL166 flash probe and TL150 110V adaptor, carry case and manual

## MicroPAT+ Downloading PAT Tester Kit



This value for money kit provides all you need for PAT testing with pass and fail labels, downloading software (MPATSUITE) with download lead, an extension lead tester, a CCD barcode reader and the Martindale Illustrated Guide to PAT Testing book.



### ACCESSORIES

TC2C	calibration
------	-------------

## MPATNGO

The full kit includes:

- MPATPLUS MicroPAT plus tester
- BARCCD CCD barcode reader
- BAR2 Barcoded pass labels (500)
- FAIL1 Fail labels (100)
- TL125 Data lead
- LTDV Extension lead tester
- EX331 110V lead
- EX332 230V lead
- MPATSUITE MicroPAT software
- PATUSBADAPT USB adaptor
- PATGUIDE Book
- Manual

## PAT Training TRAIN

A comprehensive one day course at our air conditioned training facility conveniently located just North of London. The course content is taught in accordance with the IEE Code of Practice 4th Edition and teaches delegates the theory and practical aspects of testing portable appliances safely. On completion of the course, successful candidates will be able to confidently undertake PAT Testing and record keeping and will be able to carry out testing for their organisation or as a service to others. As part of the course, all attendees receive a copy of "Portable Appliance Testing - An Illustrated Guide". Martindale can also offer on-site training anywhere in the UK.



## Portable Appliance Testing Guide PATGUIDE



This "Portable Appliance Testing - An Illustrated Guide" is a comprehensive survey of all aspects of PAT testing. The book has been updated to address all changes in the IEE Code Of Practice 4th Edition and presents the information in a user friendly format. A large number of illustrations show real world situations, with practical advice on the right approach. This A4 book contains 96 pages of advice and guidance.

## Software Package MPATSUITE



A comprehensive, easy to use software package for use with the downloading Martindale MPATPLUS and all manual testers, as it accepts manually input results.

The software has been designed with many time saving features, speeding up testing in the field and making you more productive. It has a full range of built in reports but also enables you to export your results into other common packages.

## PAT Certification Pad PATCERTS



An A4 pad of 100 portable appliance test certificates. The certificates simplify recording results by listing all tests with pass/fail tick boxes.

## Portable Appliance Register PATREG



This handy A5 register allows you to keep manual records of PAT testing results for up to 315 appliances to ensure your system is fully compliant.

## PAT Barcode Reader BARCCD



Remote sensing readers make it easier to read appliance numbers, especially ones in hard to get to locations or on cables or leads. This speeds up testing significantly, reduces errors and produces major savings in time and money. This reader is pre-configured for use with the MicroPAT+, so no setup is necessary. Supplied pre-programmed for use with MicroPAT+, connects directly to the data port and does not require a separate power supply.

## Appliance Plug Lock Out PL13



The PL13 is a universal lock out device for standard UK BS1363 13A mains plugs to restrict the use of faulty equipment.

PAD20R padlock available separately.

## Extension Lead Testers **LTDVR & LTDV**



A full range of extension lead testers for all makes of PAT testers. These units include an integral IEC mains lead test feature and are essential extras for anyone carrying out PAT tests.

**LTDVR** - Dual Voltage (110V & 240V) for Seaward PAT2000iee, PAT2000, PAT1000s, IT1000, PAT1000x, Supernova, Europa, Europa PAC & Megger PATS (except PAT4 & PAT32), Robin SmartPAT3500 and PAT5500.

**LTDV** - Dual voltage (110V & 240V) for EasyPAT, MicroPAT, PAC1500xi, PAT1900xi, PAT2100xi, PAT500H, MPAT40, MPAT60, Megger PAT4, Robin SmartPAT3000 and PAT5000 and all Edgcombe (Metrohm) PATs.

## LTDV SERIES

Both models can be used to check the continuity bond of the safety earth and check the polarity of phase and neutral conductors.

They can be used to check conventional extension leads and IEC type detachable leads as found on IT equipment and domestic appliances.

**Operating:** 0°C to 35°C

**Storage:** -10°C to 50°C

**Housing:** ABS

**Dimensions:** 141 x 82 x 51mm

## 3 Phase Adaptor Leads **TL151-TL154**



These adaptors allow a single phase PAT to carry out insulation and earth bond tests on 3 phase appliances.

**TL151** – 16 Amp 4 pin delta style

**TL152** – 16 Amp 5 pin star style

**TL153** – 32 Amp 4 pin delta style

**TL154** – 32 Amp 5 pin star style

## PAT Flash Gun **TL166**



A safety gun, giving extra user protection for flash testing. Supplied as standard with the EasyPAT2100 and MicroPAT+.

Suitable for safe use with PATs generating a test voltage of up to 3kV DC. Fitted with a 4mm connector.

## IEC to 110V **EX331**



IEC to 110V PAT adaptor for testing 110V extension leads.

## IEC to 240V **EX332**



IEC to 240V 3A plug adaptor for testing 13A extension leads.

## IEC to 110V **TL150**



110V adaptor enables the MICROPAT or EPAT2100 to be powered from a 110V supply.

## Adaptor **TL157**



110V adaptor lead – enables HPAT to test 110V appliances.

## Earth Bond Lead **TL66**



Earth Bond Lead - 3 meters (EPAT & MICROPAT).

## Earth Bond Probe **TL67**



Earth bond probe with croc clip and 4mm banana plug, suitable for use with the HPAT400, HPAT500 & HPAT600. It's also suitable for use with any PAT tester that has a standard 4mm banana socket.

## Download Lead **TL125**



Computer download lead – MICROPAT to PC (9-9 pin).

## USB Port **PATUSBADAPT**



For PC's with no serial port – uses USB port to download data from MICROPAT (requires TL125).



## Small Paper Pass Labels **LAB1**



Paper labels suitable for plug tops and use on small appliances. Available in packs of 500 (30 x 20mm).

## Pass Paper Labels **LAB2**



Paper pass safety test labels are designed to be replaced with each inspection. Available in packs of 500 (60 x 30mm).

## Pass Paper Labels **LAB3**



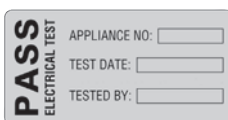
Available in packs of 500 (60 x 30mm).

## High Quality Pass Labels **POLY1**



These are higher quality pass labels made of polyester for harsh environments or if subject to frequent cleaning and abrasion. Available in packs of 500 (50 x 25mm).

## High Quality Pass Labels **POLY2**



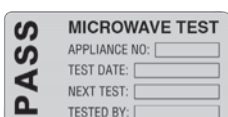
These are higher quality pass labels made of polyester for harsh environments or if subject to cleaning and abrasion. Available in packs of 500 (50 x 25mm).

## Fail Labels **FAIL1**



The fail labels are essential to prevent re-use of unsafe equipment which has failed a PAT test. Available in packs of 100 (60 x 30mm).

## Microwave Labels **MICRO**



The labels show that appliances have been tested for microwave leakage. Available in packs of 500 (50 x 25mm).

## Mark & Seal Labels **MS1**



These allow test details to be written on them, then the information is sealed in by sticking down the clear flap. This provides a very high degree of protection against abrasion, dirt & erosion from cleaning fluids. Available in packs of 500 (60 x 30mm).

## Barcode Labels **BAR1**



Bar code labels identify appliances with a unique number and corresponding bar code. Labels are produced on high quality polyester and are very durable. They withstand environments where ordinary paper labels would be unsuitable, e.g. on kettles, in greasy or dirty environments and are resistant to cleaning materials. Separate appliance number labels can be permanently attached to appliances where the pass test label is replaced after each test. Compatible with all current PAT Testers. Configured to Code 39. Available in rolls of 500 (50 x 25mm).

## Combined Barcode & Pass Label **BAR2**



Combined barcode & pass label can be fitted directly to the appliance. On re-test a new MARPOLY1 label is applied over the old test information on the bottom half of the label. Material is white vinyl. Configured to Code 39. Available in rolls of 500 (52 x 52mm).

## Combined Barcode & Pass Label **BAR3**



Combined barcode and pass label which can be fitted directly to the appliance. On re-test a new MARPOLY1 label is applied over the old test information on the bottom half of the label. Material is white vinyl. Configured to Code 39. Available in rolls of 500 (52 x 52mm).

**Labels not to scale**  
All labels supplied with pens  
except the BAR1, BAR2 and BAR3

# Choosing the right socket tester

All socket testers check that the earth, live and neutral are the right way round (called polarity testing). Some offer added features – they may include a buzzer in addition to LEDs to indicate a good socket or they may show a combination of indicators to identify which particular fault type is present.

There is one fault that a socket tester and indeed no other piece of equipment can easily find – the swapping of the Earth and Neutral wires. This is because the earth and neutral are common at the substation, (if not closer), so electrically they are indistinguishable.

When selecting a socket tester it's important to understand the different types available and their capabilities and limitations.

## Socket Tester Categories

There are 3 main categories of socket testers, simple, advanced and professional, summarised in the following table. The key differentiator is in the ability to measure and display either ranges or numerical values for earth fault loop impedance.

	Simple		Advanced		Professional
	CP501	BZ101	EZ165	EZ365	EZ2500
Indicate functional socket	✓	✓	✓	✓	✓
Detect line/neutral reversal	✓	✓	✓	✓	✓
Detect presence of earth	✓	✓	✓	✓	✓
Display range of earth loop impedance values			✓	✓	
Display the numerical value of earth loop impedance					✓
Polarity swap touch test				✓	
30mA RCD trip check				✓	

All socket testers will show the absence of an Earth; the Martindale EZ165 and EZ365 will show you how good your earth is and the EZ2500 will give you numerical values for certification and reporting.

This differentiation is important as some simple socket testers on the market have been seen to show an earth as good even when the impedance is as high as 500kΩ. As 0.5MΩ (500 kΩ) is normally considered a good insulation level, it's clear that in this case the "protective" earth will not protect.

## Earth Loop Impedance

A reliable earth loop impedance measurement is important to ensure that the over current protection devices achieve a fast enough disconnection time to avoid electrocution. In the case of an earth fault, loop impedance values must be less than those specified in the **BS7671 Wiring Regulations**.

Earth loop values higher than a few ohms can cause problems with disconnection times and therefore socket testers capable of indicating earth loop impedance values in this range reveal a lot more about the electrical safety of the installation than just an LED fault indicator. The Martindale EZ165 and EZ365 have this capability built-in.

## 18th Edition Testing and Verification

It's important to appreciate that socket testers are not an alternative to the full verification of wiring installations. However as a first line indicator to identify potentially unsafe installations and wiring faults, socket testers offer a fast and effective solution when properly specified.

They can also be particularly useful as a service tool in identifying potentially unsafe conditions prior to carrying out work on existing installations and appliances. For more information on the use of socket testers including their benefits and limitations, see the application notes on the socket tester pages at [bit.ly/socket-testers](https://bit.ly/socket-testers)

For information on professional loop testers and multifunction testers suitable for carrying out all the tests needed to verify the safety of domestic, commercial and industrial wiring installations according the 18th Edition Wiring Regulations, see our ET4000/4500 multifunction installation testers.



Find out more about the UK's favourite socket testers on our YouTube channel

## CP501

**Operating voltage range:** 230V

**Frequency range:** 30-70Hz

**Power consumption:** <2W

**Temperature range:** -10 to 40°C at max, 60% RH

**Pollution degree:** 2

**Supply:** from mains

Open Earth if earth resistance >50kΩ nom at 230VAC nom

Open Neutral if neutral resistance >50kΩ nom at 230VAC nom

**Complies with:** BS EN 61010-1

**Dimensions:** 65 x 65 x 47mm

Like all other standard socket testers, these units cannot detect common earth and neutral or earth neutral reversal.

**ALSO SOLD IN PACKS OF 10**

(CP511)

## Classic Check Plug

With over 2 million of these socket testers sold, the Martindale CP501 is the most popular socket tester available. The classic check plug is a quick and easy way to ensure that 13A sockets are correctly wired, indicated by 3 bright long life LEDs.

Wiring faults are indicated by one or more of the LEDs failing to illuminate, with the pattern of lit LEDs indicating the type of fault detected. This fail-safe system means that any LED not lit indicates a fault.

The robust ABS housing has a sculpted shape for easy removal and there is a look up chart on the tester for quick fault diagnosis. The plug induces less than 5mA of earth leakage, well below RCD trip thresholds. Detects 28 fault conditions.



**A Simple Socket Tester as described by the Health & Safety Executive.**

**ACCESSORIES**  
TC2A calibration

CAT II  
300V



## BZ101

**Operating voltage:** 230V

**Frequency:** 30-70Hz

**Power consumption:** <3W

**Temperature range:** -10 to 40°C at max, 60% RH

**Pollution degree:** 2

**Supply:** from mains

Open Earth if Earth resistance >50kΩ nom at 230VAC nom

Open Neutral if Neutral resistance >50kΩ nom at 230VAC nom

Earth Leakage <5mA on a correctly wired socket

**Complies with:** BS EN 61010-1

**Dimensions:** 65 x 65 x 47mm

## Buzz-IT Check Plug with Sounder

Together with the Classic Check Plug, the Buzz-IT is the UK's favourite socket tester.

The BZ101 provides a fast and simple solution for checking that 13A sockets are wired correctly. It uses the same LED indication as the CP501 but has the added benefit of an audible sounder to confirm that the wiring is correct. This is particularly useful when checking sockets that are not easily visible or in difficult to access locations. With the audible indication, the Buzz-It can also be used as a basic fuse finder. When the correct fuse is pulled the buzzer stops.

The Buzz-IT is an essential test tool for all electricians, maintenance and service personnel for fast fault finding and to quickly check socket integrity. Detects 28 fault conditions.



**A Simple Socket Tester with visual and audible indication as described by the Health & Safety Executive**

**ACCESSORIES**  
TC2A calibration

CAT II  
300V



## E-Ze Check Xtra™ Socket & Non-Trip Earth Loop Tester

NEW



In addition to detecting 28 fault conditions and voltage level indication, the EZ165 shows the condition of the earth wiring by carrying out a non-trip earth loop test.

A low earth resistance is essential for safety disconnection devices to work properly and prevent electrocution when faults occur. The EZ165 is an Advanced Socket Tester which indicates earth loop impedance as defined by the Health & Safety Executive.

- Quick & easy mains socket polarity and earth testing
- Red/Green LEDs show 28 fault conditions
- Non-trip earth loop impedance test
- Tough sculpted design for easy removal

**An Advanced Socket Tester as described by the Health & Safety Executive.**

**ACCESSORIES**  
TC2A calibration

CAT II  
300V

### EZ165

**Nominal supply:** 230V, 50Hz  
**Earth loop impedance span:**  
 0-1.7Ω  
 1.7 to 5Ω  
 5 to 10Ω  
 10 to 100Ω  
 100 to 200Ω  
 200 to 500Ω  
**Earth loop threshold accuracy:**  
 ± (10% + 0.3Ω)\*  
**Voltage low indication:** <195V  
**Voltage high indication:** >270V  
**Earth neutral voltage high indication:** >30V  
**Open earth indication:** >500Ω  
**Temperature Range:** -10 to 40°C, non-condensing  
**Power consumption:** <2.5 W  
**Pollution degree:** 2  
**Complies with:** BS EN 61010-1  
**Weight:** 95g approx.  
**Dimensions:** 65 x 65 x 50mm  
 \*Note: measurement accuracy can be affected by noise and highly inductive or capacitive components distributed on the supply

## E-Ze Check Xtra™ Socket, Earth Loop & RCD Tester

NEW



The EZ365 shows the condition of the earth wiring, checks for polarity swap at the incoming supply and can be used for trip testing RCDs, in addition to detecting 28 fault conditions and voltage level indication.

The EZ365 carries out a non-trip earth loop test and indicates a range of values for the loop impedance. The polarity swap test detects a serious fault condition that cannot be identified by normal socket testers. It is easily activated by using the touch pad on the EZ365.

- Quick & easy testing of polarity, loop impedance and RCDs (30mA)
- Red/Green LEDs and buzzer indicate 28 fault conditions
- Non-trip earth loop impedance test
- Incoming supply polarity swap touch test (L-NE)

**An Advanced Socket Tester as described by the Health & Safety Executive.**

**ACCESSORIES**  
TC2A calibration

CAT II  
300V

### EZ365

**Nominal supply:** 230V, 50Hz  
**Earth loop impedance span:**  
 0-1.7Ω  
 1.7 to 5Ω  
 5 to 10Ω  
 10 to 100Ω  
 100 to 200Ω  
 200 to 500Ω  
**Earth loop threshold accuracy:**  
 ± (10% + 0.3Ω)\*  
**Voltage low indication:** <195V  
**Voltage high indication:** >270V  
**Earth neutral voltage high indication:** >30V  
**Open earth indication:** >500Ω  
**Temperature Range:** -10 to 40°C, non-condensing  
**Polarity Check & RCD Trip Check**  
**Power consumption:** <2.5 W  
**Pollution degree:** 2  
**Complies with:** BS EN 61010-1  
**Weight:** 95g approx.  
**Dimensions:** 65 x 65 x 50mm  
 \*Note: measurement accuracy can be affected by noise and highly inductive or capacitive components distributed on the supply

## EZ650

**Nominal supply:** 230V, 50 Hz

**Earth loop impedance span:**

0-1.7Ω  
1.7 to 5Ω  
5 to 10Ω  
10 to 100Ω  
100 to 200Ω  
200 to 500Ω

**Earth loop threshold accuracy:**  
± (10% + 0.3Ω)\*

**Voltage low indication:** <195V

**Voltage high indication:** >270V

**Earth neutral voltage high indication:** >30V

**Open earth indication:** >500Ω

**Temperature Range:** -10 to 40°C, non-condensing

**Power consumption:** <2.5 W

**Pollution degree:** 2

**Complies with:** BS EN 61010-1

**Weight:** 1kg approx.

**Dimensions:** 65 x 65 x 50mm

**Includes:** fused lead set, carry case

\*Note: measurement accuracy can be affected by noise and highly inductive or capacitive components distributed on the supply

## E-Ze Check™ Xtra Socket & Wiring Loop Test Kit

The EZ650 kit version extends the applications of non-trip earth loop socket testing to other wiring validation applications.

The advanced socket tester kit includes a 13A mains lead for normal socket testing plus a TL88 3-way fused test leads and croc clips for carrying out the same sort of tests at light fittings, fused connection units and sub-distribution boards

The comprehensive kit is supplied in a soft carry case for extra protection and convenience.

- Complete advanced socket testing kit
- Fused leads, clips and 13A plug
- Supplied with soft carry case



**ACCESSORIES**  
TC2A calibration

**CAT II**  
300V

## EZ2500

**Nominal voltage rating:** 220-240V 50Hz

**PE loop impedance ranges:**  
0-8.99Ω, 9.0-89.9Ω, 90-899Ω, 900-1699Ω, 1700-3000Ω

**PE loop impedance accuracy:**  
0-8.99Ω ± 4% ± 0.05Ω\*

For PN, PFC & PSC test data see p9

**Frequency accuracy:** ± 4 %

**Voltage accuracy:** ± 4%

**Complies with:** BS EN61010-1, BS EN61557 & BS 7671 (18th Edition)

**Weight:** 240g approx.

**Dimensions:** 145 x 85 x 53mm

**Includes:** TC210 carry case, mains lead and manual

\*Note: measurement accuracy can be affected by noise and highly inductive or capacitive components distributed on the supply

## E-Ze Test Socket & Non-Trip Earth Loop Tester (digital display)

The EZ2500 includes a backlit digital display to show the results of a full socket test with actual values for the earth loop impedance, essential for full verification of the socket earthing. All tests are carried out automatically on plugging in the tester ensuring reliable results and simple operation every time.

The comprehensive kit is supplied in a soft carry case for extra protection and convenience.

- Full socket test with values for earth loop impedance
- Smart and easy automatic testing
- No batteries, ranges or switches

For more information see page 9.

**A Professional Socket Tester as described by the Health & Safety Executive.**



**ACCESSORIES**  
TC2A calibration

**CAT III**  
300V

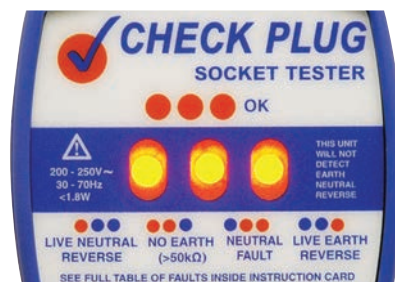


## 230V Industrial Check Plug



The CP201 is an industrial version of the classic check plug, fitted with either a 16A or 32A 230V plug. (BS 4343/IEC309).

Wiring faults are instantly indicated by one or more of the LEDs failing to illuminate, with the pattern of lit LEDs indicating the type of fault detected. There is a look up chart on the tester for quick fault diagnosis.



### 2 MODELS

CP201/16 – 16A plug  
CP201/32 – 32A plug

NEW

ACCESSORIES  
TC2A calibration

CAT III  
300V

## CP201

**Operating voltage:** 200-250V AC 30-70Hz

**Power consumption:** <1.8W

**Overvoltage:** CAT III/300V

**Temperature range:** -10 to 40°C at max, 60% RH

**Pollution degree:** 2

**Supply:** from mains

Open Earth if earth resistance >50kΩ nom at 230VAC nom

Open Neutral if neutral resistance >50kΩ nom at 230VAC nom

**Complies with:** BS EN 61010-1

**Dimensions:** 65 x 65 x 47mm (check plug body)

**Weight:** 195g approx.

**Includes:** manual

Like all other standard socket testers, these units cannot detect common earth and neutral or earth neutral reversal.

## 110V CT Industrial Check Plug



The CP301 is an industrial socket tester for instantly checking sockets on 110V centre tapped circuits. It is fitted with a yellow 110V 16A CT plug to BS 4343/IEC309 and provides similar fail-safe LED indication as the classic check plug.

Using LEDs to highlight possible fault combinations, the CP301 is invaluable for instantly checking sockets on industrial or site installations. There is a look up chart on the tester for fast and simple fault diagnosis.

Fault indications include Line 1, Line 2 and centre tap faults plus Line 1 or 2 to centre tap reversal.

### 2 MODELS

CP301/16 – 16A plug  
CP301/32 – 32A plug

NEW

ACCESSORIES  
TC2A calibration

CAT II  
150V

## CP301

**Operating voltage:** 110V AC (55-0-55V centre tapped only)

**Operating current:** 30mA

**Overvoltage:** CAT II/150V

**Temperature range:** -10 to 40°C at max, 60% RH

**Pollution degree:** 2

**Complies with:** BS EN 61010-1

**Dimensions:** 65 x 65 x 47mm (check plug body)

**Weight:** 195g approx.

**Includes:** manual

## PC104

**Input voltage range:** 380V to 415V AC (Phase to Phase)  
**Input frequency:** 50Hz  
**Input current:** <20mA  
**Power:** From circuit under test  
**Complies with** BS EN 61010-1, CAT III 300V  
 Class II Double Insulation  
**Pollution degree:** 2  
**EMC:** Conforms to BS EN 61326-1  
**Dimensions:** 131 x 94 x 54mm  
**Weight:** 550g approx.  
**Includes:** manual

## 4 Pin 3-Phase Industrial Check Plugs

The PC104/16 is a 3-phase socket tester for checking supply faults and incorrect wiring of CEE 4 pin, 16A socket outlets. It will check for phase presence and phase sequence.

- 3 phase industrial socket testers
- 4 pin configuration
- 6 wiring condition checks
- Phase sequence indication
- Bright LED indication



### 3 MODELS

**PC104/16 – 16A 4 pin**  
**PC104/32 – 32A 4 pin**  
**PC104/63 – 63A 4 pin**

### ACCESSORIES

TC2A calibration  
 TC68 case (PC104/105 Series)



## PC105

**Input voltage range:** 380V to 415V AC (Phase to Phase)  
**Input frequency:** 50Hz  
**Input current:** <20mA  
**Supply:** From circuit under test  
**Complies with** BS EN 61010-1  
 Class II Double Insulation  
**Pollution degree:** 2  
**EMC:** Conforms to BS EN 61326-1  
**Dimensions:** 131 x 94 x 54mm  
**Weight:** 550g approx.  
**Includes:** manual

## 5 Pin 3-Phase Industrial Check Plugs

The PC105/16 is a 3-phase socket tester for checking supply faults and incorrect wiring of CEE 5 pin, 16A socket outlets. It will check for phase presence, phase sequence, PE presence and also checks for neutral presence.

- 3 phase industrial socket testers
- 5 pin configuration
- 6 wiring condition checks
- Phase sequence indication
- Neutral/earth check
- Bright LED indication



### 3 MODELS

**PC105/16 – 16A 5 pin**  
**PC105/32 – 32A 5 pin**  
**PC105/63 – 63A 5 pin**

### ACCESSORIES

TC2A calibration  
 TC68 case (PC104/105 Series)



## Multimeter Comparison Table

	MM39	MM64	MM65	MM68	MM94
<b>AC Volts</b>	0.1mV - 600V 2.0% + 5	0.1mV - 600V 1.2% + 4	1mV - 600V 2.0% + 5	1mV - 750V 1.2% + 10	0.01mV-750V 1.0% + 20
<b>DC Volts</b>	0.1mV - 600V 1.0% + 2	0.1mV - 600V 0.5% + 1	0.1mV - 600V 1.0% + 2	0.01mV - 1000V 0.05% + 5	0.01mV-1000V 0.08% + 5
<b>AC Current</b>	0.01A - 10A 3.5% + 5	0.1µA - 200mA 1.5% + 4	0.1µA - 10A 2.5% + 5	11µA - 10A 1.5% + 5	0.01µA-20A 1.5% + 20
<b>DC Current</b>	0.01A - 10A 3.0% + 3	0.1µA - 200mA 1.0% + 1	0.1A µ - 10A 2.0% + 2	0.01µA - 10A 0.5% + 10	0.01µA-20A 0.5% + 10
<b>Ohms</b>	0.1Ω - 20MΩ 1.5% + 4	0.1Ω - 20MΩ 1.0% + 4	0.1Ω - 34MΩ 1.5% + 4	0.01Ω - 220MΩ 0.5% + 10	0.01Ω-60MΩ 0.3% + 20
<b>Frequency</b>		1Hz - 40kHz 0.1% + 3		0.01Hz - 22MHz 0.1% + 3	0.001Hz-10MHz 0.1% + 10
<b>Capacitance</b>		0.1µF - 20mF 4.0% + 10		1pF - 22mF 3.0% + 5	1pF-6mF 3.0% + 10
<b>True RMS</b>				✓	✓
<b>Auto-ranging</b>	✓		✓	✓	✓
<b>Holster</b>	Overmoulded holster	Overmoulded holster	Overmoulded holster	Overmoulded holster	Overmoulded holster
<b>Other</b>	Continuity Diode Test	Temperature Continuity Diode Test	Continuity Diode Test	Duty cycle Continuity Diode Test Min/Max	Duty cycle, Continuity, Diode Test, Thermocouple input, Hi Frequency Filter, Min/Max, Peak, Relative mode

Best accuracies shown ± (% readings + digits)

### Magnetic Strap **MG3**



Magnetic hanger strap (meter not included). Fits all multimeters except the MM94.

The MG3 enables secure hands free use of multimeters, proving units and thermometers.

Compatible with PD440S, PD690S, PD440SX, PD690SX, DT173 and DT175.

### Soft Case **TC55**



Suitable for all current Martindale multimeters (190 x 88 x 55mm) except the MM94.

For information on replacement or fused test leads see page 57.



**MM39****Display:** 3½ digit**AC V:** 0.1mV-600V(5 ranges)  
(50Hz-500Hz)**DC V:** 0.1mV-600V (5 ranges)**AC current:** 0.01A to 10A (50Hz to 500Hz)**DC current:** 0.01A-10A**Resistance:** 0.1Ω-20MΩ in 6 ranges**Continuity, diode test****Audible indication:** Less than 25Ω**Weight:** 315g approx.**Dimensions:** 145 x 70 x 34mm**Includes:** TL16 leads, 2 x 1.5V battery and manual**Autoranging Digital Multimeter**

The MM39 is an auto-ranging multimeter with a large rotary switch for easy selection of the required test, even when wearing gloves. There are two test buttons, one to lock the range and the other to hold the results which are displayed on a 3½ digit LCD screen.

The main test functions are AC voltage, DC voltage, current and resistance. The MM39 measures both AC and DC voltage between 0.1mV to 600V and AC and DC current between 10mA to 10A. There is a diode test and an audible continuity test which sounds at less than 25Ω.

**ACCESSORIES**

TC2A	calibration
TL55	fused test leads
MP21-08	CAT IV rated fused lead set
TC55	case

**CAT III  
600V****MM64****Display:** 3½ digit**AC V:** 0.1mV-600V (± 1.2% rdg ± 4 dgt)**DC V:** 0.1mV-600V (± 0.5% rdg ± 1 dgt)**AC A:** 0.1μA-200mA (± 1.5% rdg ± 4 dgt)**DC A:** 0.1μA-200mA (± 1% rdg ± 1 dgt)**Ohms:** 0.1Ω-20MΩ (± 1% rdg ± 4 dgt)**Frequency:** 1Hz-40kHz  
(± 0.1% rdg ± 3 dgt)**Capacitance:** 0.1μF-20mF  
(± 4% ± 10 dgt)**Temperature:**  
-35°C to 750°C (2 ranges)  
-30°C to 1400°C (2 ranges)  
(± 1% rdg ± 1°C)**Dimensions:** 165 x 78 x 42.5mm**Weight:** 285g approx**Includes:** TL16 leads, K-type thermocouple, 1 x spare fuse, 9V battery and manual**Digital Multimeter**

The MM64 is a digital multimeter which performs all the basic test functions with the benefit of temperature measurement from -35°C to 750°C.

It measures AC and DC voltages from 0.1mV to 600V and AC and DC currents from 0.1μA to 200mA. Resistance measurements up to 20MΩ, frequency measurements up to 40 kHz and capacitance from 0.01μF to 20mF.

**ACCESSORIES**

TC2A	calibration
MG3	magnetic strap
TL55	fused test leads
MP21-08	CAT IV rated fused lead set
TC55	case
TT Series	K-type thermocouples

**CAT III  
600V**

## Autoranging Digital Multimeter with Bargraph



The MM65 is an autoranging digital multimeter which measures AC and DC voltages up to 600V, and AC and DC currents of up to 10A. It measures resistance to 34MΩ and has a diode test and an audible continuity test which sounds below 35Ω.

It has a 3¾ digit LCD screen and it will display the results as digital numerical values and on a 34 segment analogue bar graph. The MM65 also has an auto-power off feature and on screen low battery indicator.

### ACCESSORIES

TC2A	calibration
MG3	magnetic strap
TL55	fused test leads
MP21-08	CAT IV rated fused lead set
TC55	case



## MM65

**Display:** 3¾ digit

**AC V:**

1mV-600V (± 2% rdg ± 5 dgt)

**DC V:**

0.1mV-600V (± 1% rdg ± 2 dgt)

**AC A:**

0.1µA-10A (± 2.5% rdg ± 5 dgt)

**DC A:**

0.1µA-10A (± 2% rdg ± 2 dgt)

**Ohms:**

0.1Ω-34MΩ (± 1.5% rdg ± 4 dgt)

**Continuity:**

<35Ω (audible indication)

**Diode test** (3% ± 3 dgt)

**Weight:** 285g approx.

**Dimensions:** 165 x 78 x 42.5mm

**Includes:** TL16 leads, 1 x spare fuse, 9V battery and manual

## True RMS Digital Multimeter with Bargraph



The MM68 is a True RMS digital multimeter which measures AC voltage up to 750V, DC voltage up to 1000V and both AC and DC current up to 10A. It measures frequency, capacitance, resistance, and also has duty cycle, diode test and an audible continuity test which sounds at less than 100Ω.

The 4½ digit LCD screen displays the results as values and on a 22 segment analogue bar graph. The MM68 also has an auto-power off feature and on screen low battery indication.

### ACCESSORIES

TC2B	calibration
MG3	magnetic strap
TL55	fused test leads
MP21-08	CAT IV rated fused lead set
TC55	case



## MM68

**Display:** 4½ digit

**AC V:** 0.01mV-750V  
(± 1.2% rdg ± 10 dgt)

**DC V:** 0.01mV-1000V  
(± 0.05% rdg ± 5 dgt)

**AC A:**

0.01µA-10A (± 1.5% rdg ± 5 dgt)

**DC A:**

0.01µA-10A (± 0.5% rdg ± 10)

**Ohms:** 0.01Ω-220MΩ  
(± 0.5% rdg ± 10 dgt)

**Continuity:** <30Ω (audible indication)

**Frequency:** 0.01Hz-22MHz  
(± 0.1% rdg ± 3 dgt)

**Capacitance:** 1pF-22mF  
(± 3.0% rdg ± 5 dgt)

**True RMS readings, duty cycle, continuity, diode test**

**Pollution degree:** 2 for indoor use

**Weight:** 285g approx.

**Dimensions:** 165 x 78 x 42.5mm

**Includes:** TL16 leads, 1 x spare fuse, 9V battery (installed) and manual

## MM94

**Display:** 4½ digit 60,000 Count

**AC V:** 0.01mV-750V  
(± 1% rdg ± 20 dgt)

**DC V:** 0.01mV-1000V  
(± 0.08% rdg ± 5 dgt)

**AC A:** 0.01µA-20A\*  
(± 1.5% rdg ± 20 dgt)

**DC A:** 0.01µA-20A\* (± 0.5% rdg ± 10 dgt) \*Continuous max 10A

**Ohms:** 0.01Ω-60MΩ  
(± 0.3% rdg ± 20 dgt)

**Continuity:** <40Ω (audible indication)

**Frequency:** 0.001Hz-10MHz  
(± 0.1% rdg ± 10 dgt)

**Capacitance:** 1pF- 6mF  
(± 3.0% rdg ± 10 dgt)

**Temperature:** -50°C to 1300°C  
(± 1% rdg ± 1°C, 0-400°C)

**Features:** True RMS readings, duty cycle, continuity, diode test, k-type, thermocouple, high frequency filter, conductance

**Weight:** 400g approx

**Dimensions:** 198 x 90 x 44 mm

**Includes:** TL16 leads, 1 x spare fuse, 9V battery, manual and 1 x k-type thermocouple

**Best accuracies shown**

## High Performance TRMS Digital Multimeter with Bargraph

The MM94 is a high performance True RMS multimeter with a 600V CAT IV safety rating. It has an extended current measurement range up to 20A for short cycle measurements.

Measurement capabilities include AC/DC voltage, capacitance, resistance and temperature with the included K-type thermocouple. Features include Min/Max and Peak measurement and a high frequency filter to optimise readings for distorted waveforms plus a relative mode.

The ruggedized design has a protective elastomer overmoulding.

The 60,000 count display is backlit for use in low light areas and includes an analogue bargraph.



### ACCESSORIES

TC2B calibration  
TL55 fused test leads  
MP21-08 CAT IV rated fused lead set  
TC57 case



## Test Leads TL16



Unfused test leads with right angle 4mm plugs for use with most multimeters including the Martindale MM range. The probes are supplied with removable probe caps for GS38 compliance. If crocodile clips are required, the TL45 (unfused) or the TL55 with fuse protection are available.

## 600V CAT III Fused Test Leads TL55



The TL55 are fused test leads with double insulated silicone cable. Designed for your safety, they comply with GS38 & BS EN1010 and include 500mA 600V 50kA rupture rating ceramic fuses. Supplied with right angle fixed shroud.

## Test Leads TL45



All-in-one test lead set. The TL45 are double insulated PVC leads. Supplied with right angle fixed shroud.

**For more information on heavy duty CAT IV leads and accessories see page 86.**

## 600V CAT IV Fused Test Leads MP21-08



Drummond heavy duty CAT IV fused leads, 1.2m long and double insulated with a contrasting white inner core to identify damage. The unique 45° plug reduces cable stress, aids grip and improves connection. These leads are 600V CAT IV rated and fitted with 500mA 600V 50kA fuses.

## Clamp Meter Comparison Table

	ET4	ET5	CM69	CM51	CM55	CM57	CM79	CM95	CM100	CM82	CM84	CM87	CMi210	
<b>AC Current</b>	200.0A 2.0% ± 10 (50-60Hz)	200.0A 2.0% ± 10 (50-60Hz)	6.0000mA/ 60.00mA 600.0mA 6.000A/ 60.00A 1.0% ± 5	40.00A 300.0A 1.8% ± 5 (40-500Hz)	40.00A 400.0A 1.9% ± 3	60.00A 600.0A 1.9% ± 5	60.00A 600.0A 2.0% ± 5	60.00A 600.0A 2.0% ± 5	4.000A 40.00A 400.0A 3.0% ± 5	30.00A 300.0A 3000A 3.0% ± 5	40.00A 400.0A 1000A 2.0% ± 6 (50-60Hz)	400.0A 1000A 2.0% ± 6	660.0A 1500A 2.0% ± 10 (50-60Hz)	600.0A 1500A 2.5% ± 10 (50-60Hz)
<b>DC Current</b>	200.0A 2.0% ± 5	200.0A 2.0% ± 5					60.00A 600.0A 2.0% ± 5					400.0A 1000A 2.0% ± 5 (<660A)	660.0A 2000A 2.0% ± 5 (<660A)	600.0A 2000A 2.0% ± 5 (<660A)
<b>AC Volts</b>	mV,V to 600V 1.2% ± 5	mV,V to 600V 1.2% ± 5	60.00V 600.0V 1.0% ± 3		400.0V 600V 1.2% ± 3	mV,V to 600V 1.2% ± 5	600.0V 1.2% ± 5				mV, V to 750V 1.5% ± 5	mV, V to 750V 1.5% ± 8	V to 750V 1.5% ± 8	mV, V to 750V 1.5% ± 8
<b>DC Volts</b>	mV, V to 600V 0.5% ± 2	mV, V to 600V 0.5% ± 2	60.00V 600.0V 1.0% ± 2		400.0V 600V 1.0% ± 3	400.0V 600V 1.0% ± 3	600.0V 1.0% ± 2				mV, V to 1000V 0.5% ± 2	mV, V to 1000V 0.5% ± 2	V to 1000V 0.5% ± 2	mV, V to 1000V 0.5% ± 2
<b>Ohms</b>	Ω, kΩ, MΩ 1.0% ± 5	Ω, kΩ, MΩ 1.0% ± 5	Ω, kΩ, 1.0% ± 2		400 Ω 1.0% ± 2	600 Ω 1.2% ± 3	1000.0 Ω 1.0% ± 2				Ω, kΩ, MΩ	Ω, kΩ, MΩ	Ω, kΩ, MΩ	Ω, kΩ, MΩ
<b>Frequency</b>	Hz	Hz				Hz, kHz					Hz, kHz, MHz	Hz, kHz, MHz	Hz, kHz, MHz	Hz, kHz, MHz
<b>Max Conductor Size</b>	15mm Ø	15mm Ø	20mm Ø	27mm Ø	25mm Ø 35x15mm	25mm Ø 35x15mm	25mm Ø 45x15mm	85mm Ø	160mm Ø	50mm Ø 70x18mm	55mm Ø 70x18mm	55mm Ø 70x18mm	55mm Ø 70x18mm	
<b>True RMS</b>			✓			✓	✓	✓	✓			✓	✓	
<b>Min Max</b>			Peak				✓	✓	✓			✓	✓	
<b>Backlight</b>	✓	✓	✓			✓	✓	✓	✓			✓	✓	
<b>Other</b>	Autorange, Continuity, Diode Test, Non contact voltage, Torch, Hold, Auto power off	As above plus Capacitance, Duty cycle, Temperature	Autorange, Low pass filter, 1µA resolution, Hold, Auto power off	Autorange, Hold, Auto power off	Autorange, Hold, Auto power off	Autorange, Non contact voltage, Smart measurement, Capacitance, Diode Test, Hold, Auto power off	Autorange, Hold, Auto power off	1mA resolution, Flexible, Inhibit for logging, Hold, Auto power off	Flexible, Auto power off Inhibit for logging, Hold	Diode Test, Capacitance, Auto/manual range, Hold, Auto power off	Diode Test, Auto/manual range options, Hold, Auto power off	Diode Test Capacitance, Inrush, Hold, Temperature, Auto power off,	50-1000V Insulation Test, Inrush, HFR filters, Capacitance, Diode Test, Temperature Duty cycle, Hold	
<b>Safety</b>	CAT III 600V	CAT III 600V	CAT III 600V CAT IV 300V	CAT III 300V	CAT III 600V	CAT III 600V	CAT III 600V	CAT IV 600V	CAT IV 600V	CAT IV 600V	CAT IV 600V	CAT IV 600V	CAT IV 600V	

## ET4/ET5

**AC/DC A:** 0.1A-200.0A  
 AC  $\pm$  (2.0% of rdg + 10 dgt)  
 DC  $\pm$  (2.0% of rdg + 5 dgt)

**AC/DC V:** 0.1mV-600V  
 AC  $\pm$  (1.2% of rdg + 5 dgt)  
 DC  $\pm$  (0.5% of rdg + 2 dgt)

**Resistance:** 0.1  $\Omega$ -50M $\Omega$   
 $\pm$  (1% of rdg + 5 dgt)

**Frequency:** 30Hz-400Hz  
 $\pm$  (0.1% of rdg + 5 dgt)

**Continuity Buzzer:** at <30 $\Omega$

**Diode Test:** 1mV-2V

**NCV indicator:** 70V- 600V

**Supply:** 9V PP3 Alkaline

**Weight:** 200g (incl battery)

**Dimensions:** 202 x 51 x 44 mm

**Includes:** TL17 test leads, 9V battery, case and manual

## ET5 additional functions

**Temperature:** -35°C-500°C

**Accuracy:**  $\pm$  2% rdg  $\pm$  3°C

**Duty Cycle:** 5% - 95%

**Capacitance:** 1nF - 5mF  
 $\pm$  (3% of rdg + 5 dgt)

**Includes:** TL17 leads, K-type thermocouple (ET5), 9V battery, case and manual

## AC/DC Electrical Tester 200.0A

The ET4 and ET5 combine all essential electrical test functions in an easy to use compact test tool with an open jaw for both AC and DC current measurement.

Other functions include voltage, resistance, continuity and diode test. The backlit dual display shows current and voltage, or frequency and voltage simultaneously.

Both models include a non-contact voltage indicator and LED torch built in to the jaw, and are supplied with detachable test leads and soft carry case.

## ET5 additional features

The ET5 has additional functionality for duty cycle, capacitance and temperature measurement and is supplied with a K-type thermocouple.



## ACCESSORIES

TC2B	calibration
TL57	fused test leads
TT Series	K-type thermocouples

CAT III  
600V

## CM69

**AC mA:**  
 6.000mA/60.00mA/600.0mA  
 autoranging

**Accuracy:** 1%  $\pm$  5 dgt

**AC A:** 6.000A/60.00A

**Accuracy:**  $\pm$  1%  $\pm$  5 dgt

**AC V:** 60.00V/300.0V

**Accuracy:**  $\pm$  1%  $\pm$  3 dgt

**DC V:** 60.00V/300.0V

**Accuracy:**  $\pm$  1%  $\pm$  2 dgt

**Ohms:** 600.0 $\Omega$  to 600.0k $\Omega$

**Accuracy:**  $\pm$  1%  $\pm$  2 dgt

**Continuity:** buzzer  $\leq$  60 $\Omega$

**Max conductor:** 20mm  $\varnothing$

**Operating environment:** 0°C to 40°C, <80% RH

**Auto power off**

**Low battery indication**

**Supply:** 2 x 1.5V AAA

**Weight:** 270g approx

**Dimensions:** 206 x 76 x 34mm

**Includes:** TL16 leads, case, batteries and manual

## TRMS AC Earth Leakage Clamp Meter 6.000mA to 60.00A

The CM69 is a high performance TRMS AC leakage clamp meter with outstanding low current capability able to resolve down to 1 $\mu$ A. This pocket sized clamp also measures AC/DC voltage and resistance. The advanced jaw design minimises the influence of conductor position and shields against external fields from other conductors to give more accurate and consistent results. The CM69 is auto ranging and has a high contrast backlit display.

Peak hold, a switchable low pass filter to remove high frequency harmonics and TRMS measurement make the CM69 ideal for many applications:

- Troubleshooting of RCD nuisance tripping
- Periodic measurement of leakage current at 50Hz to check for insulation deterioration
- Accurate measurement of triplen neutral currents and other distorted waveforms
- Differential currents for appliance testing



## ACCESSORIES

TC2B	calibration
------	-------------

TRUE  
RMS

CAT III  
600V

CAT IV  
300V

## AC Current Only Clamp Meter 40.00A/300.0A



The CM51 is a pocket sized clamp meter which reads AC current up to 300A. This low cost, auto ranging clamp meter has a jaw diameter of 27mm and is a useful tool for electrical, mechanical and engineering applications.

The clamp has a useful Data-Hold feature to freeze the displayed value when used in difficult to access locations where the display may be hard to read.

There is also an auto power off function and the clamp is supplied with a manual, battery and a soft carry case.

This compact clamp is small enough to fit in any pocket.

**ACCESSORIES**  
TC2A calibration



### CM51

**Display:** 3 1/2 digit LCD display with annunciators

**AC A:** 40.00A/300.0A (40Hz to 500Hz)

**Accuracy:**  $\pm 1.8\%$  rdg  $\pm 5$  dgt, 50-60Hz

**Max conductor:** 27mm $\varnothing$

**Operating temperature & humidity:** 0°C to 40°C, less than 80% RH.

**Weight:** 110g

**Dimensions:** 150 x 52 x 24mm

**Includes:** case, battery and manual

## AC Clamp Multimeter 40.00A/400.0A



The CM55 is a new pocket sized high performance AC Clamp meter measuring AC current, AC/DC voltage and resistance with continuity test. The compact rugged design enables accurate and reliable current measurement down to 10mA resolution without the need to break into the circuit.

Features include a thumbwheel for single handed operation, auto ranging for ease of use, auto power off, low battery indicator and a hold function useful for when working in areas with restricted access.

The CM55 has a CATIII 600V safety rating and is supplied in a high quality carry case.

**ACCESSORIES**  
TC2B calibration  
TL55 fused test leads



### CM55

**AC A:** 40.00A/400.0A (50-400Hz)

**Accuracy:**  $\pm 1.9\%$   $\pm 3$  dgt (50-60Hz)

**AC V:** 400.0V/600V (50-400Hz)

**Accuracy:**  $\pm 1.2\%$   $\pm 3$  dgt (50-60Hz)

**DC V:** 400.0V/600V

**Accuracy:**  $\pm 1\%$   $\pm 3$  dgt

**Ohms:** 400 $\Omega$

**Accuracy:**  $\pm 1\%$   $\pm 2$  dgt

**Continuity:** buzzer <25 $\Omega$

**Max conductor:** 25mm $\varnothing$

**Operating environment:** 0°C to 40°C, <80% RH

**Supply:** 2 x 1.5V AAA

**Weight:** 260g approx

**Dimensions:** 203 x 75 x 32mm

**Includes:** TL16 leads, case, batteries and manual

**CM57**

**AC A:** 60.00A/600.0A  
**Accuracy:**  $\pm 1.9\% \pm 5$  dgt  
**AC V:** 6.000V/60.00V/600V  
**Accuracy:**  $\pm 1.2\% \pm 5$  dgt  
**DC V:** 6.000V/60.00V/600V  
**Accuracy:**  $\pm 1\% \pm 3$  dgt  
**Ohms:** 600.0 $\Omega$  to 6.000M $\Omega$   
**Accuracy:**  $\pm 1.2\% \pm 3$  dgt  
**Continuity:** buzzer  $\leq 30\Omega$   
**Capacitance:** 6.000nF to 600.0 $\mu$ F  
**Accuracy:**  $\pm 3\% \pm 10$  dgt  
**Frequency:** 6.000kHz/10.00kHz (A), 6.000kHz to 100.0kHz (V)  
**Accuracy:**  $\pm 0.2\% \pm 2$  dgt  
**Max conductor:** 25mm $\varnothing$   
**Operating environment:** 0°C to 40°C, <80% RH  
**Supply:** 2 x 1.5V AAA  
**Weight:** 270g approx.  
**Dimensions:** 203 x 75 x 32mm  
**Includes:** TL16 leads, case, batteries and manual

**TRMS AC Smart Clamp Multimeter 60.00A/600.0A**

The CM57 is a pocket sized high performance AC Clamp meter measuring AC current, AC/DC voltage, resistance with continuity test plus capacitance, frequency and diode test. The compact rugged design enables accurate and reliable current measurement down to 10mA resolution without the need to break into the circuit.

Features include a thumbwheel for single handed operation, auto ranging for ease of use, auto power off and low battery indicator plus a high contrast backlit display with hold function useful for working in low light and hard to reach areas. The Smart function automatically detects and switches between resistance and capacitance measurements.

The CM57 has a CATIII 600V safety rating and includes a non-contact voltage sensor built into the jaw. It is supplied in a high quality carry case.



**ACCESSORIES**  
 TC2B calibration  
 TL55 fused test leads

TRUE  
RMSCAT III  
600V**CM79**

**AC A:** 60.00A/600.0A  
**Accuracy:**  $\pm 2\% \pm 5$  dgt  
**DC A:** 60.00A/600.0A  
**Accuracy:**  $\pm 2\% \pm 5$  dgt  
**AC V:** 600.0V  
**Accuracy:**  $\pm 1.2\% \pm 5$  dgt  
**DC V:** 600.0V  
**Accuracy:**  $\pm 1\% \pm 2$  dgt  
**Ohms:** 999.0 $\Omega$   
**Accuracy:**  $\pm 1\% \pm 2$  dgt  
**Continuity:** buzzer  $\leq 30\Omega$   
**Max conductor:** 25mm diameter, 45mmx15mm bus bar  
**Operating environment:** 0°C to 40°C, 80% RH  
**Supply:** 2 x 1.5V AAA  
**Weight:** 255g approx.  
**Dimensions:** 209 x 74 x 36mm  
**Includes:** TL16 leads, case, alkaline batteries and manual

**TRMS AC/DC Clamp Multimeter 60.00A/600.0A**

The CM79 is a new pocket sized high performance TRMS AC/DC Clamp meter measuring AC and DC current up to 600A, AC/DC voltage and resistance with continuity test. The compact rugged design enables accurate and reliable DC current measurements down to 10mA resolution in applications including PV installations, battery monitoring and electric vehicles.

The TRMS capability ensures accurate and reliable AC current and voltage measurement for distorted waveforms caused by today's power electronics and non-linear loads.

Features include elliptical jaws for bus bars up to 45x15mm, thumbwheel for single handed operation, auto ranging, auto power off and low battery indicator plus a high contrast backlit display. Useful functions include Hold and Min/Max for monitoring maximum loads, start up inrush and charging currents. A high quality carry case is included.



**ACCESSORIES**  
 TC2B calibration  
 TL55 fused test leads

TRUE  
RMSCAT III  
600V

## TRMS AC Flex Meter 4.000A/40.00A/400.0A



The CM95 has a highly flexible 5.5mm diameter current sensor ideal for measurements on large and hard to reach conductors up to 85mm in diameter. It can be easily threaded through small apertures and around large conductors and fuse holders where conventional clamps can't be used. The CM95 offers high resolution True RMS measurement down to 1mA for low current applications. Unlike conventional current transformers there is no maximum overload current as there is no transformer winding to overheat.

The separate display module is fitted with a 1.8m lead giving even more freedom in areas with restricted access and is backlit for viewing in low light conditions. The Hold function can be used for saving displayed values and Min/Max for longer term monitoring of peak loads. The auto power off function can be easily disabled when monitoring.

### ACCESSORIES

TC2B calibration  
TC68 carry case

TRUE  
RMS

CAT III  
1000V

CAT IV  
600V

## CM95

### AC current:

4.000A/40.00A/400.0A

**Accuracy:** 3.0% of rdg ± 5 dgt (45Hz to 500Hz)

**Sensor length:** 254mm

**Sensor diameter:** 5.5mm

**Max diameter conductor:** 85mm

**Cable length (to display module):** 1.8m

**Sampling rate:** 2/sec

**Operating environment:** 0°C to 50°C <80% RH, non condensing

**Storage temperature:** -10°C to 60°C, 70% RH

**Complies with:** BS EN 61010-1, BS EN 61010-2-032, CAT IV 600V, Class II, Double Insulation, EMC BS EN 61326-1

### Low battery indication

#### Auto power off/disable

**Supply:** 2 x 1.5 V AAA batteries (IEC LR03, NEDA 24A)

**Battery life:** 120 hours typical (alkaline)

**Weight:** 196g approx. incl batteries

**Dimensions:** 120 x 70 x 26 mm

**Includes:** 2 x 1.5V AAA alkaline batteries and manual

## TRMS AC Flex Meter 30.00A/300.0A/3000A



The CM100 has a highly flexible 8.5mm diameter current sensor ideal for measurements on large and hard to reach conductors up to 160mm in diameter. It's suitable for both low and high current applications up to 3000A. Unlike conventional current transformers there is no maximum overload or duty cycle limitations.

The separate display module is fitted with a 1.8m lead giving even more freedom when working in areas with restricted access and is backlit for viewing in low light conditions.

The Hold function can be used for saving displayed values and Min/Max for longer term monitoring of peak loads. The auto power off function can be easily disabled when recording Min/Max values.

### ACCESSORIES

TC2B calibration  
TC68 carry case

TRUE  
RMS

CAT III  
1000V

CAT IV  
600V

## CM100

### AC current:

30.00A/300.0A/3000A

**Accuracy:** ± 3.0% ± 5 dgt (45Hz to 500Hz)

**Flexible sensor length:** 458mm

**Flexible sensor diameter:** 8.5mm

**Max conductor:** 160mm diam.

Display cable length: 1.8m

**Sampling rate:** 2/sec.

**Operating environment:** 0°C to 50°C <80% RH, non condensing

**Storage temperature:** -10°C to 60°C, 70% RH

**Complies with:** BS EN 61010-1, BS EN 61010-2-032, Class II, Double Insulation, 600V CAT IV

**Pollution degree:** 2

**EMC BS EN 61326-1**

### Low battery indication

#### Auto power off/disable

**Supply:** 2 x 1.5 V AAA batteries

**Battery life:** 120 hrs typical alkaline

**Weight:** 286g approx. incl batteries

**Dimensions:** 120 x 70 x 26 mm

**Includes:** 2 x 1.5V AAA alkaline batteries and manual



## CM82

**AC A:** 0.01A to 1000A (3 ranges)  
(50Hz to 400Hz)

**Accuracy:** 2.0% rdg + 6 dgt  
(≤600A) 50Hz to 60Hz  
2.5% rdg + 6 dgt (>600A) 50Hz  
to 60Hz

**AC V:** 0.1mV to 750V, autoranging  
(50Hz to 500Hz) (5 ranges)

**Accuracy:** 1.5% rdg + 5 dgt

**DC V:** 0.1mV to 1000V autoranging  
(5 ranges)

**Accuracy:** 0.5% rdg + 2 dgt

**Resistance ranges:** 400Ω, 4 kΩ,  
40kΩ, 400kΩ, 4MΩ, 40MΩ

**Resolution:** 0.1 Ω on 400Ω

**Accuracy:**

1.0% rdg + 5 dgt 400Ω to 400kΩ

2.0% rdg + 5 dgt on 4MΩ

3.5% rdg + 5 dgt on 40MΩ

**Capacitance:** 4nF to 4mF (7  
ranges)

**Frequency:** 0.001 kHz to 1 MHz  
(4 ranges)

Continuity: Buzz at <25Ω

**Maximum conductor:** 50mm  
diameter or 70 x 18mm bus bar

**Diode test**

**Dimensions:** 279 x 103 x 53mm

**Weight:** 515g incl battery approx.

**Includes:** TL16 leads, TC68 case,  
battery and manual

## AC Clamp Meter 40.00A/400.0A/1000A

The CM82 is a high specification 1000A clamp meter, packed full of functions for the installation, testing and maintenance of domestic and industrial installations. It is light enough for easy one handed operation but still robust enough for use in harsh environments.

This compact meter provides accurate measurement of AC voltage to 750V, DC voltage to 1000V and AC current to 1000A. It has the same test functions you would find on a high specification multimeter making this clamp a comprehensive testing solution for electricians, maintenance and service engineers.



### ACCESSORIES

TC2A calibration  
TL55 fused test leads



## CM84

**AC A:** 0.1A to 1000A (2 ranges)

**Accuracy:** 2.0% rdg + 6 dgt (≤600A) 50Hz to  
60Hz

2.5% rdg + 6 dgt (>600A) 50Hz to  
60Hz,

**DC A:** 100mA to 1000A

**Accuracy:** 2.0% + 5 dgt (≤600A)

3.0% + 5 dgt (>600A)

**AC V:** 0.1mV to 750V, autoranging  
(50Hz to 500Hz) (5 ranges)

**Accuracy:** 1.5% rdg + 5 dgt

**DC V:** 0.1mV to 1000V autoranging  
(5 ranges)

**Accuracy:** 0.5% rdg + 2 dgt

**Resistance ranges:** 400Ω, 4kΩ,  
40kΩ, 400kΩ, 4MΩ, 40MΩ

**Resolution:** 0.1Ω

**Accuracy:**

1.0% rdg + 5 dgt to 400kΩ

2.0% rdg + 5 dgt on 4MΩ

3.5% rdg + 5 dgt on 40MΩ

**Frequency:** 0.001 kHz to 1 MHz

**Continuity:** buzz at <25Ω

**Maximum conductor:** 55mm  
diameter or 70 x 18mm bus bar

**Diode test**

**Dimensions:** 281 x 108 x 53mm

**Weight:** 570g approx. incl battery

**Includes:** TL16 leads, TC68 case,  
battery and manual

## AC/DC Clamp Meter 400.0A/1000A

The CM84 shares the same features as the CM82, apart from capacitance, but has the added benefit of DC current measurement to 1000A. It has a useful DC current zero function which can be used to offset residual magnetism and make relative measurements.

The large jaw will accommodate conductors with diameters up to approximately 55mm and bus bars up to 70mmx18mm.



### ACCESSORIES

TC2A calibration  
TL55 fused test leads



## TRMS AC/DC Clamp Meter 660.0A/2000A



A high specification True RMS clamp meter. The CM87 is a large jaw high current AC/DC clamp meter.

This robust clamp meter provides True RMS measurement for reliable readings of AC current up to 1500A and AC voltage to 750V. It also measures DC current to 2000A and DC voltage to 1000V.

The CM87 shares all of the features of the CM82 and CM84 but has the added benefit of temperature measurement between -20°C to 1000°C and is supplied with a K-type thermocouple. The comprehensive specification includes inrush current measurement for startup current monitoring and a Min/Max function.



### ACCESSORIES

TC2B	calibration
TL55	fused test leads

## CM87

**AC A:** true RMS 0.1A to 1500A  
**Accuracy:** 2.0% rdg + 10 dgt (≤660A) 50-60Hz  
**DC A:** 100mA to 2000A  
**Accuracy:** 2.0% + 5 dgt (≤660A)  
**AC V:** true RMS 0.001V to 750V, autoranging  
**Accuracy:** 1.5% rdg + 8 dgt  
**DC V:** 0.001V to 1000V autoranging (4 ranges)  
**Accuracy:** 0.5% rdg + 2 dgt  
**Resistance:** 660Ω, 6.6kΩ, 66kΩ, 660kΩ, 6.6MΩ, 66MΩ  
**Resolution:** 0.1Ω on 660Ω  
**Accuracy:**  
 1.0% rdg + 5 dgt to 660kΩ  
 2.0% rdg + 5 dgt on 6.6MΩ  
 3.5% rdg + 5 dgt on 66MΩ  
**Capacitance:** 0.001nF to 6.6mF (7 ranges)  
**Frequency:** 0.01Hz to 1MHz (6 ranges)  
**Temperature:** -20°C to 1000°C (-4°F to 1832°F)  
**Continuity:** buzz at <30Ω  
**Maximum conductor:** 55mm diameter or 70mm x 18mm bus bar  
**Diode test, Duty cycle**  
**Dimensions:** 281 x 108 x 53mm  
**Weight:** 585g approx. incl battery  
**Includes:** TL16 leads, TC68 case, type K thermocouple, battery and manual

## Combined Insulation Test and TRMS AC/DC Clamp Meter



A unique insulation clamp meter for the installation, testing and maintenance of domestic and industrial installations. This high specification clamp meter can perform insulation tests to 6G Ohms with 5 test voltages from 50V to 1000V.

The clamp provides True RMS measurement of AC current to 1500A and AC voltage to 750V. It will also measure DC current to 2000A and DC voltage to 1000V.

The CMi210 has all the same test functions you would expect to find on a high specification multimeter with the added benefit of temperature measurement.



### ACCESSORIES

TC2B	calibration
TL55	fused test leads
TL180	switching insulation probe

## CMi210

**AC A:** true RMS 0.1A to 1500A (2 ranges)  
**Accuracy:** 2.5% rdg + 10 dgt (≤ 600A) 60Hz  
**DC A:** 0.1A to 2000A (2 ranges)  
**Accuracy:** 2.0% + 5 dgt (≤600A)  
**AC V:** true RMS 0.001V to 750V, autoranging  
**Accuracy:** 1.5% rdg + 8 dgt  
**DC V:** 0.001V to 1000V autoranging (5 ranges)  
**Accuracy:** 0.5% rdg + 2 dgt  
**Insulation resistance:** 300kΩ-6GΩ depending on voltage test  
**Accuracy:** 250-1000V 1.5% +5  
**Capacitance:** 0.001μF to 6.6mF (4 ranges)  
**Frequency:** 0.01Hz to 10MHz (7 ranges)  
**Resistance ranges:** 600Ω, 6kΩ, 60kΩ, 600kΩ, 6MΩ, 60MΩ  
**Resolution:** 0.1Ω on 600Ω  
**Accuracy:** 1.0% rdg + 5 dgt on 600Ω to 600kΩ  
**Temperature:** -50°C to 1300°C (-58°F to 2372°F) K-type probes  
**Continuity:** buzz at <40Ω  
**Maximum conductor:** 55mm diameter or 70mm x 18mm bus bar  
**Diode test, duty cycle**  
**Dimensions:** 326 x 108 x 53mm  
**Weight:** 720g approx. incl batteries  
**Includes:** TL45 leads, case, type K thermocouple, battery and manual

## Fuse Finder Comparison Table

	FD500	FD550	FD650	CD1000
Live circuit fuse finding from wall sockets	✓	✓	✓	via socket wiring
Live circuit fuse finding from light fittings & distribution boards			✓	✓
Live or dead fuse finding & cable tracing				✓
Analogue detection	✓			
Digital detection		✓	✓	✓
Automode		✓	✓	✓
Multiple transmitter capability				✓
Kit includes	FD500/R FD500/T	FD650/R FD500/T	FD650/R FD600/T + leads	CD1000/R CD1000/T + leads

### FD500

**FD500 Transmitter:**  
**Voltage rating:** 230V  
**Frequency range:** 30-70Hz  
**Switching frequency:** 5Hz approx.  
**Transmission pulse width:** 1.7µS approx.

**Transmission pulse:** 20A max  
**Earth leakage:** Nil  
**Power consumption:** 1W approx.  
**IP rating:** IP20  
**Supply:** from mains  
**Dimensions:** 65 x 65 x 50mm  
**Weight:** 65g approx.

**FD500 Receiver:**  
**Tracing depth for fuse assignment:** 0-10cm approx. depending on local conditions  
**Sensitivity setting:** rotary  
**Temperature range:** -10°C to 40°C at max 60% RH  
**IP rating:** IP20  
**Supply:** 9V battery, MN1604/PP3, (included)  
**Weight:** 135g approx. incl battery  
**Dimensions:** 160 x 55 x 30mm

Units are EMC compliant

**FD500 Kit includes:**  
 FD500/R receiver, FD500/T transmitter, battery

### Analogue Fuse Finder Kit

The analogue Martindale Fuse Finder Kit (FD500) finds which fuse or breaker controls a circuit. It also enables tracing from socket to socket on a circuit.

The transmitter (FD500/T) takes its power from the mains and emits a signal which the adjustable sensitivity receiver (FD500/R) can pick up.

This combination can easily distinguish the appropriate circuit, even on a crowded fuse board.

Sensitive analogue adjustment by thumb wheel finds the right breaker rapidly.



#### ACCESSORIES

TC2A calibration

## Elite Digital Fuse Finder Kit



The FD550 makes identifying poorly labelled fuses and breakers easy without the need to power down each circuit to identify the one you need to work on. Plug the transmitter into a live 13A mains socket and then scan the board with the digital receiver to quickly identify the right breaker with audible and LED bargraph indication. The receiver has both fast manual mode and auto threshold mode set by a single sweep over the board. The auto mode sets the sensitivity to ignore weaker signals which can be caused by coupling between circuits ensuring easy detection in a wide range of installations.

The receiver will work with multiple transmitters and can also be used as a non-contact voltage indicator.



**Transmitter**



**Receiver**



- Simple tracing of fuses and breakers
- Visual & audible indication
- Fast manual mode
- Self-adjusting auto mode
- Mains powered plug-in transmitter
- Dual function receiver & non-contact voltage indicator

### ACCESSORIES

TC2A calibration

## Elite Professional Fuse Finder Kit



The comprehensive professional Kit expands the capabilities of the standard FD550 so that it can also be used on light fittings or other points in a circuit in addition to 13A sockets.

Supplied in a carry case complete with transmitter (FD600/T) and receiver (FD650/R), it is capable of operating with either the 13A plug top lead (EX332) for sockets or the TL83 lead for light fittings or other points in a circuit without standard 13A power sockets. The receiver unit should be held at right angles to the conductor.

- Trace fuses and breakers from sockets
- Trace from light fittings
- Trace from one distribution board to another
- Supplied with soft carry case



**Transmitter**



**Receiver**



### ACCESSORIES

TC2A calibration

## FD550

### FD500 Transmitter:

**Voltage rating:** 230V  
**Frequency range:** 30-70Hz  
**Switching frequency:** 5Hz approx.  
**Transmission pulse width:** 1.7µS approx.  
**Transmission pulse:** 20A max  
**Earth leakage:** Nil  
**Power consumption:** 1W approx.  
**IP rating:** IP20  
**Overvoltage:**  
 Transmitter: CATIII 300V  
 Receiver: CATIV 600V  
**Supply:** from mains  
**Dimensions:** 65 x 65 x 50mm  
**Weight:** 65g approx.

### FD650 Receiver:

**Tracing depth for fuse assignment:** 0-10cm approx. depending on local conditions  
**Sensitivity setting:** via digital stepping  
**IP rating:** IP20  
**Supply:** 9V battery, MN1604/PP3, IEC 6LA61 (alkaline only)  
**Weight:** 135g approx. (incl battery)  
**Dimensions:** 202 x 32 x 22mm

Units are EMC compliant

### FD550 includes:

FD650/R receiver  
 FD500/T transmitter  
 Battery

## FD650

### FD600 Transmitter:

**Voltage rating:** 230V  
**Frequency range:** 30-70Hz  
**Switching frequency:** 5Hz approx.  
**Transmission pulse width:** 1.7µS  
**Transmission pulse:** 20A max  
**Earth leakage:** Nil  
**Power consumption:** 1W approx.  
**IP rating:** IP20  
**Overvoltage:**  
 Transmitter: CAT III 300V  
 Receiver: CAT IV 600V  
**Supply:** from mains  
**Dimensions:** 65 x 65 x 50mm  
**Weight:** 65g approx.

### FD650 Receiver:

**Tracing depth for fuse assignment:** 0-10cm approx. depending on local conditions  
**Sensitivity setting:** via digital stepping  
**IP rating:** IP20  
**Supply:** 9V battery, MN1604/PP3, IEC 6LA61 (alkaline only)  
**Weight:** 135g approx. (incl battery)  
**Dimensions:** 202 x 32 x 22mm

Units are EMC compliant

### FD650 kit includes:

FD650/R receiver  
 FD600/T multi-purpose transmitter  
 IEC 13A mains lead adaptor  
 TL83 2 wire fused leads with IEC connector, TC57 carry case, battery

## CD1000

### Transmitter:

Output carrier signal frequency:  
125 kHz  
Voltmeter function: Range: 12V to  
400V DC & AC rms (50Hz to 60Hz)  
Accuracy:  $\pm 2.5\%$   
Maximum input voltage 400V DC  
or AC rms

### Tracking Depth

Single pole mode: 2m  
Dual pole mode: 0.5m  
Single loop line: 2.5m  
UAC mode: 0.4m

### Temperature & Humidity

Operating: 0°C to 40°C max 80%  
RH (non condensing)  
Storage: -20°C to 60°C max 80%  
RH (non condensing)  
Altitude: up to 2000m

### Supply

**Transmitter:** single 9V IEC 6LR61  
battery

**Receiver:** 6 x 1.5V AAA, IEC LR03  
batteries

### Current consumption

**Transmitter:**  
31mA approx. minimum  
115mA approx. maximum

**Receiver:** 32mA approx. minimum  
89mA approx. maximum

**Auto off time:** 10 minutes approx.  
(receiver only)

1.5V alkaline battery x 6 and  
manual

### Safety

#### Transmitter:

Conforms to BS EN 61010-1  
CAT III 300V  
Class II Double Insulation

**Pollution degree:** 2

#### Receiver:

Conforms to BS EN 61010-1  
CAT III 600V  
Class II Double Insulation

**Pollution degree:** 2

Test leads supplied conform to BS  
EN 61010-031 CAT III 1000V, 10A

**EMC:** Conforms to BS EN 61326-1

### Weight

#### Transmitter:

360g approx. (excl batteries)  
420g approx. (incl batteries)

#### Receiver:

280g approx. (excl batteries)  
350g approx. (incl batteries)

### Dimensions

**Transmitter:** 190 x 89 x 42.5mm

**Receiver:** 241.5 x 78 x 38.5mm

**Includes:** carry case, TL47  
test leads (with crocodile clips),  
earthing rod, 9V alkaline battery

## Cable Detector



The CD1000 is a multi-function Cable Detector and fuse finder kit. It is ideal for tracing circuits in walls, underground cables, and for fuse finding applications on live and dead circuits.

This two piece kit provides fast and simple location of open-circuits in cables and electric underfloor heating systems and can also be used for tracing metallic water and heating pipes.

The unit is supplied as a complete kit with a Transmitter, Receiver, a set of test leads with crocodile clips, earthing rod, batteries, comprehensive instructions and a soft carry case.

Additional transmitters and receivers are available to purchase for applications where multiple operatives are working or where more than one transmitter is needed. Transmitters can be easily set to send out a different signal to allow up to 8 units to be used at the same time.

### ACCESSORIES

TC2C	calibration
TL57	fused test leads
TL78	50m R2 continuity lead
SB13	Safefreak mains socket adaptor
CD1000TX	additional transmitter



Transmitter



Receiver



## A New Range of Sound, light and Thermometry Solutions



NEW



NEW

Thermal imagers and thermometry

Sound level metering and calibration



Whether it's sound level recording for compliance with the Noise at Work Regulations or light metering of LED installations, Martindale Electric have the latest products with the right features and performance to simplify the task.

The new LM195 light meter makes it easy to check all types of lighting. The built-in correction factors for LED lighting ensure reliable results in the latest LED installations.

To satisfy the needs of HVAC and facilities management teams Martindale have a comprehensive range of air flow, pressure and moisture meters plus an extensive selection of thermometry products and accessories.

The new IRC spot thermal cameras combine real time thermal imaging with spot infrared temperature measurement for fast and safe fault finding in live systems.



LED light metering

## Lamp Tester



Ideal for the fast testing of gas filled lamps, especially low and high pressure vapour lamps. The FL30 is a lightweight, hand-held unit and tests most gas filled lamps remotely by ionisation using a high frequency voltage of approximately 3kV.

It can be used to test fluorescent and neon tubes without removing them from light fittings. The kit is supplied with a telescopic antenna to allow testing of tubes on standard height ceilings without the need for ladders or platforms.

For use with the following types of gas filled lamps:

- Fluorescent
- Low and high pressure sodium (SOX & SON)
- Neon lamps and tubes
- Mercury vapour
- Metal halogen

## FL30

**Lamp test voltage:** 3kV at 280kHz approx. (with new battery)

**Field strength:** 100µV/m approx.

**Operating environment:** -10°C to 50°C ≤ 70% RH

**Altitude:** up to 2000m

**Complies with** BS EN 61010-1 CAT I max 50V to earth

**Pollution degree:** 2

**EMC:** Conforms to BS EN 61326

**Supply:** Single standard 9 volt battery, IEC 6LR61, NEDA 1604

**Weight:** 109g approx. incl battery

**Dimensions:** 169 x 40 x 24mm

**Includes:** soft case, telescopic antenna, 9V battery and manual

## TEK500

**Frequency of operation:**  
2450MHz ± 25MHz

**Threshold Accuracy:** ±1dB for planewave of all polarisations

**Cardinal points:** >1mW/cm<sup>2</sup>, >5mW/cm<sup>2</sup>, >10mW/cm<sup>2</sup>

**Response to step input:** 2-3 seconds to reach 90% of steady state indication

**Overload capacity:** 50mW/cm<sup>2</sup>

**Indicators:**

LED (green) - battery OK

LED (yellow) - 1mW/cm<sup>2</sup> - acceptable microwave leakage below safety limit

LEDs (red) at 5 & 10mW/cm<sup>2</sup> and audible tone - hazardous microwave leakage above safety limit

**Cone spacer:** prescribed test distance of 50mm is achieved when cone tip is in contact with appliance

**Operating temperature:** -5°C to 40°C

**Complies with**

BS EN 60335-2-25:2002 and BS EN 60335-2-90:2002

**Supply:** 9V alkaline battery, MN1604 or equivalent

**Dimensions:** 145 x 64 x 30mm

## Microwave Leakage Detector

An easy to use, low cost pass/fail microwave leakage detector suitable for commercial and domestic microwave ovens. It is designed to comply with national standards on permitted exposure levels.

The TEK500 includes a self test which simulates a real microwave input to ensure the unit is working correctly at all times.

This meter can test microwave ovens for potentially dangerous leaks.

Using the measuring beaker and thermometer supplied, microwave power output may be assessed, an important requirement for catering applications.

Indicates at 1, 5, 10mW/cm<sup>2</sup>. Tests to BS EN 5175.



**ACCESSORIES**

TC2B calibration

## CO190

**Measurement ranges:**

Carbon monoxide: 0 to 1000ppm  
Temperature: -20°C to 70°C (-4°F to 158°F)

**Resolution:** 1ppm, 0.1°C/0.1°F

**Response time:**

(at T90 in slowly moving air)  
Carbon monoxide: 60 seconds  
Temperature: 10 seconds

**Accuracy carbon monoxide:**  
± 5% or ± 5ppm

**Accuracy temperature:** ± 0.8°C

**Digital display:** 4 digit, 30mm

**Sampling rate:** 2/second

**Sensor type:** electrochemical gas sensor

**Temperature sensor type:**  
thermistor

**Supply:** 4 x 1.5V, AA alkaline batteries (IEC LR6, NEDA 15A)

**Battery Life:** 200 hours continuous approx.

**Weight:** 235g approx.

**Dimensions:** 190 x 65 x 45 mm

**Includes:** 4 x 1.5V AA alkaline batteries, manual and soft carry case

## Carbon Monoxide Meter

A rapid responding carbon monoxide meter, with digital thermometer.

A beeper gives audible indication, speeding up with CO concentration and becoming a continuous tone above 200 ppm.

Max and Hold buttons allow for the current reading or for the highest reading during a period of time to be captured. These features together with the audible tone make the CO190 ideal where access is difficult.

- LCD display with backlight
- Hold & Maximum value functions
- Audible alarm
- Variable alarm threshold
- Temperature measurement
- Optimised for easy handling

NEW



**ACCESSORIES**

TC2C calibration

## LED Light Meter



The LM195 is a high quality light meter designed for use with the latest LED lighting systems. The built-in correction factors make it easy to take reliable measurements with both conventional and LED lighting.

Suitable for commissioning new installations and checking the performance of existing lighting in industrial, office and commercial buildings.

- Built-in correction factors for LED & fluorescent lighting
- CIE photopic standard
- Hold, Min and Max functions
- Auto power off & low battery indication

**ACCESSORIES**  
TC2C calibration

## LM195

**Range:**  
0.0 to 99.9/1999/19990/199900 lx  
0.00 to 19.99/199.9/1999/19990 fc

**Resolution:** 0.1lx, 0.01fc

**Accuracy:**  $\pm 3\%$  rdg  $\pm 5$  dgt  
(Standard A light source)

**Spectral response:** CIE photopic

**Preset Light Source Weighting:**  
5 x LED settings  
2 x Fluorescent settings  
1 x Incandescent setting

**Measurement rate:** 2/second  
**Supply:** 2 x 1.5V AA alkaline batteries (IEC LR6, NEDA 15A)

**Dimensions:** 169 x 63 x 37mm

**Weight:** 185g including batteries

**Includes:** case, batteries and manual

## General Purpose Light Meter



The LM192 is a high quality general purpose light meter ideally suited to ensuring that office and commercial building lighting achieves the required levels. The tough design makes it suitable for all working areas and the intuitive layout with detachable light sensor makes it easy to take accurate and reliable measurements in all types of application. For accurate measurements with a wide range of light sources, the instruction manual includes a conversion chart.

- CIE photopic standard
- Hold, Min and Max functions
- Auto power off & low battery indication

**ACCESSORIES**  
TC2C calibration

## LM192

**Range:**  
0.0 to 199.9/1999/19990/199900 lx  
0.0 to 19.9/199.9/1999/19990 fc

**Resolution:** 0.1lx, 0.1fc

**Accuracy:**  $\pm 3\%$  rdg  $\pm 5$  dgt  
(Standard A light source)

**Spectral response:** CIE photopic

**Measurement rate:** 2/second

**Supply:** 2 x 1.5V AA alkaline batteries (IEC LR6, NEDA 15A)

**Dimensions:** 169 x 63 x 37mm

**Weight:** 185g including batteries

**Includes:** case, 2 x 1.5V AA batteries and manual

## Compact Light Meter



This compact light meter is suitable for most industrial applications and environmental monitoring.

It provides readings up to 200k Lux and will also display the results as foot candles (fc).

For more accurate measurements, the instruction manual provides a conversion chart for different light wavelengths.

**ACCESSORIES**  
TC2C calibration

## LM82

**Range:** 0 to 200k lux, 0 to 18580 fc

**Resolution:**  
1 lux (0 to 19999)  
10 lux (20k to 200k)  
1 fc (0 to 18580)

Total accuracy for CIE standard illuminant A (2856K):  $\pm (3\%$  rdg + 10 dgt)

**Measurement rate:** once per second

**Supply:** 2 x 1.5V, AAA alkaline batteries (IEC LR03, NEDA 24A)

**Weight:** 116g incl batteries

**Dimensions:** 133 x 51 x 25mm



## SPL82

**Measurement range:** 30-130dB  
**Measurement rate:** 2/second

Analogue Output 20/second

**Display:** 4 digit LCD  
**Resolution:** 0.1dB  
**Accuracy:** ± 1.4dB

**Frequency weighting:** A and C  
**Frequency range:** 20Hz-8000Hz

**Detector:** True-RMS with independent frequency weightings

**Dynamic range:** 60dB  
**Time weighting:** SLOW & FAST  
**Microphone:** ½" electret condenser  
**Complies with:** BS EN 61672-1  
**Supply:** 6LR61/MN1604/PP3

**Dimensions:** 264 x 63 x 29mm  
**Includes:** windscreen, battery, case, PC software, USB cable and manual

## Datalogging Sound Level Meter

The SPL82 is a handheld Class 2 sound level meter for on-site measurements in accordance with the Noise at Work legislation for industrial and office environments. It has a built-in logger for up to 64,000 records for monitoring and documenting noise levels.

For longer logging periods the SPL82 can be tripod mounted and externally powered. The meter features A and C frequency weighting, fast and slow time weighting and can be connected to external recording devices via the AC and DC outputs. Contents include a micro USB cable, PC software on CD, windscreen and storage case.

**ACCESSORIES**  
 TC2C calibration



NEW

## SP79

**Measurement range:** 32-130dB  
**Measurement rate:** 2/second

**Display:** 4 digit LCD  
**Resolution:** 0.1dB  
**Accuracy:** ± 1.4dB

**Frequency weighting:** A and C  
**Frequency range:** 20Hz-8000Hz

**Detector:** True-RMS with independent frequency weightings

**Dynamic range:** 60dB  
**Time weighting:** SLOW & FAST  
**Microphone:** ½" electret condenser  
**Supply:** 6LR61/MN1604/PP3

**Dimensions:** 285 x 55 x 25mm  
**Includes:** windscreen, battery & case

**Complies with:** BS EN 61672-1

## Sound Level Meter

The SP79 is a Class 2 sound level meter for on-site measurements in accordance with Noise at Work legislation in industrial and office environments. Featuring A and C frequency weighting and fast and slow time weighting, the compact design can be handheld, or mounted on a tripod for longer term monitoring of Min/Max values. Detailed recording and analysis can be made using the AC and DC outputs.

The SP79 complies with BS EN 61672-1:2003 and is supplied with a detachable windshield and hard carry case. The large high contrast display includes both digital reading and analogue bar graph.

**ACCESSORIES**  
 TC2C calibration



## SPC70

**Output sound pressure levels:** 94dB and 114dB rel 20µPa under reference conditions

**Output frequency:** 1000Hz ± 2%

**Accuracy of sound pressure level:** ± 0.5dB

**Supply:** 1 x 9V, PP3 alkaline battery (IEC 6LR61, NEDA 1604A)

**Battery life:** 40 hours approx. (alkaline battery)

**Dimensions:** 113 x 63 x 44mm

**Weight:** 170g approx. including battery

**Includes:** 1 x 9V battery, ½ inch microphone adaptor, carry case, manual

## Class 2 Sound Level Calibrator

The SPC70 is a Class 2 sound level calibrator suitable for periodic testing of sound level meters and verifying their accuracy before and after readings, in accordance with international standards.

The calibrator is simple to use and provides a 1kHz reference at 94dB and 114dB. The output is accurate to 0.5dB with low levels of harmonic distortion.

The SPC70 is compatible with both the Martindale SP79 and SPL82 Class 2 Sound Level Meters and other meters with microphones up to 25mm.

**ACCESSORIES**  
 TC2C calibration



## Anemometer with External Probe



Displays temperature (°C or °F) and airflow at the same time. Maximum and minimum figures for flow and temperature can be shown. For more accurate measurements, up to 8 readings can be taken and automatically averaged.

In addition, measurements can be taken over either 2 or 16 seconds with the average being displayed.

Airflow measurement can be displayed as: metres/second, feet/minute, knots, mph or kph.

### ACCESSORIES

TC2D calibration

## AV90

### Measurement range:

-20°C to 60°C/-4°F to 140°F

**Resolution:** 0.1°C/°F

### Accuracy:

± 1.0°C at -20°C to 0°C, 45°C-60°C

± 0.5°C at +0°C to 45°C

± 2.0°F at +4°F to 32°F, 113°F to 140°F

± 1.0°F at +32°F to 113°F

### Wind Velocity:

Range	Units	Resolution
0.3-30	m/s	0.01
60-5900	ft/min	1
0.6-58	knots	0.1
0.7-67	mph	0.1
1.1-108	km/h	0.1

0.3-30 m/s

60-5900 ft/min

0.6-58 knots

0.7-67 mph

1.1-108 km/h

**Accuracy:** ± 3% FS

**Supply:** 9V battery (PP3, NEDA 1604, IEC 6F22 006P)

**Weight:** 390g approx.

**Dimensions:** 770 x 65.5 x 35mm

**Includes:** battery and manual

## Hygro-anemometer



This compact hygro-anemometer with integrated low friction vane is suitable for both indoor and outdoor use. The meter can display simultaneous measurement of temperature and airflow or temperature and relative humidity.

There are 6 different units of measurement for airflow and the hold functions allow the user to record the maximum, minimum and average readings. The LCD screen has a backlight for working in low light environments and there is an optional auto power off function.

### ACCESSORIES

TC2D calibration

## AV85

### AIR FLOW:

**Range:** 0.4-20m/s (80-4000 ft/min)

### Accuracy:

± (0.2 m/s + 2% of rdg)

± (40 ft/min + 2% of rdg)

**Resolution:** 0.1 m/s, 1ft/m

### RELATIVE HUMIDITY

**Sensor:** Digital capacitive humidity

**Range:** 0% to 100% RH

**Accuracy:** ± 2.5% at 25°C (77°F)

10% to 90% RH

### AIR TEMPERATURE

**Range:** -20°C to 60°C (-4°F-140°F)

**Best Accuracy:** ± 0.5°C (0°C to 45°C)

**Resolution:** 0.1°C (0.1°F)

**Measurement rate:** once per second

**Supply:** 2 x 1.5V, AAA batteries

**Dimensions:** 133 x 61 x 25mm

**Weight:** 119g approx. incl batteries

**Includes:** protective cover, batteries, detachable carry strap and manual

## Differential Manometer



A simple to use differential manometer providing accurate pressure readings over 8 different units of measurement.

The results are displayed on the clear LCD display which has a backlight for working in low light environments. The compact size makes it an ideal meter for HVAC and engineering applications.

### ACCESSORIES

TC2B calibration

## PM85

**Measurement ranges:** mmH<sub>2</sub>O (0 to 1019), mmHg (0 to 75), psi (0 to 1.45), inH<sub>2</sub>O (0 to 40.1), inHg (0 to 2.95), hPa (0 to 100), mbar (0 to 100), Pa (0 to 10000)

**Accuracy:** Nominal temperature 22°C, ± 1 dgt

± 0.3 mmH<sub>2</sub>O (0 to 3.0 mmH<sub>2</sub>O)

± 0.5 mmH<sub>2</sub>O (3.1 to 10.2 mmH<sub>2</sub>O)

± 1.02 mmH<sub>2</sub>O + 1.5% of rdg

**Measurement rate:** twice per second.

**Max operating pressure:** 29PSI

**Supply:** 2 x 1.5V, AAA alkaline batteries (IEC LR03, NEDA 24A)

**Dimensions:** 133 x 51 x 25mm

**Weight:** 113g approx. incl batteries.

**Includes:** protective cover, batteries, detachable carry strap and manual

0 to 0.3 hPa ± 0.03 hPa

0.3 to 1 hPa ± 0.05 hPa

1 to 100 hPa ± (0.1 hPa+1.5% of reading)

0 to 3 mmH<sub>2</sub>O ± 0.3 mmH<sub>2</sub>O

3 to 10.2 mmH<sub>2</sub>O ± 0.5 mmH<sub>2</sub>O

10.2 to 1019.7 mmH<sub>2</sub>O ± (1.02 mmH<sub>2</sub>O + 1.5% of

## DH85

**MOISTURE:** Seven ranges  
**Accuracy:** ± 1%  
**HUMIDITY:** Digital capacitive humidity sensor  
**Range:** 0%-100% RH  
**Accuracy:** ± 2.5% at (18°C to 28°C) (64.4°F to 82.4°F) 10%-90% RH.  
**Resolution:** 0.1% RH  
**TEMPERATURE:**  
**Range:** -20°C to 60°C (-4°F to 140°F)  
**Accuracy:** ± 0.5°C for 0°C to 45°C (18°C to 28°C)  
**Temperature coefficient:** 10% per °C at 18°C to 28°C (64.4°F to 82.4°F)  
**Resolution:** 0.1°C (0.1°F)  
**Measurement rate:** per second.  
**Supply:** 2 x 1.5V, AAA alkaline batteries (IEC LR03, NEDA 24A)  
**Dimensions:** 133 x 51 x 25mm  
**Weight:** 118g incl batteries.  
**Includes:** protective cover, batteries, detachable carry strap and manual

## RT80

**Measuring range:** 100.0 to 99999 rpm, 1.7 to 1666 rps  
**Resolution:**  
 0.1 rpm (100.0 to 19999.9 rpm)  
 0.1 rps (1.7 to 333.3 rps)  
 1 rpm (20000 to 99999 rpm)  
 1 rps (334 to 1666 rps)  
**Accuracy:**  
 ± 0.02% of rdg + 1 digit  
 Stated accuracy at 18°C to 28°C <75% RH  
**Measurement rate:** per second  
**Supply:** 2 x 1.5V, AAA alkaline batteries (IEC LR03, NEDA 24A)  
**Weight:** 110g approx. incl batteries  
**Dimensions:** 133 x 51 x 25mm  
**Includes:** protective cover, batteries, detachable carry strap and manual

## DT85

**Ranges:**  
 K-Type (0.1°C) -100°C to 1372°C  
 K-Type (1°C) -200°C to -100°C  
 K-Type (0.1°F) -100°F to 2501°F  
 K-Type (1°F) -100°F to 2000°F (2000°F to 2501°F)  
 Accuracy: Stated accuracy at 18°C to 28°C (64°F to 82°F), <75% RH not including thermocouple error.  
**Resolution:** (0.1°C/1°C) (0.1°F/1°F)  
**Measurement rate:** per second  
**Supply:** 2 x 1.5V, AAA alkaline batteries (IEC LR03, NEDA 24A)  
**Weight:** 150g approx  
**Dimensions:** 133 x 51 x 25mm  
**Includes:** 2 x K-Type thermocouples, detachable carry strap, batteries, protective cover and manual

## Hygro-moisture Meter

A hygro-moisture meter giving accurate measurements of moisture levels in materials and also measures air temperature and humidity of the environment. Seven different ranges (hard wood, soft wood, plaster, anhydrite screed, cement mortar, lime mortar and brick) can be selected.

The backlit LCD screen also displays the temperature and humidity with a choice of units of measurement. As well as the usual hold, auto power off and backlit screen features, the DH85 also has a useful self-check function to ensure that the unit is working correctly at all times.

**ACCESSORIES**  
 TC2B calibration



## Optical Tachometer

A non-contact tachometer for applications where direct contact RPM measurements are not possible. The RT80 displays RPM or RPS readings on the LCD display and has a useful hold function for maximum, minimum and average readings.

The meter is supplied with reflective tape for measuring rotating objects which do not have the reflective surface required for accurate measurement.

**ACCESSORIES**  
 TC2B calibration



## Dual Input Thermometer

A dual input differential thermometer which allows the user to carry out temperature measurements of two different points at the same time. The unit is supplied with K-type probes and has an impressive measurement range between -200°C to 1372°C (-100°F to 2501°F).

The DT85 has a Relative mode which allows the user to store the last measurement as a reference value and has a hold function for recording the maximum, minimum and average readings. For applications where an offset between the two probes is required, the DT85 allows the user to create the offset via a simple to use set up menu.

**ACCESSORIES**  
 TC2A calibration  
 K-type thermocouples



## Spot Thermal Camera

NEW



The new IRC thermal imaging cameras represent a breakthrough in affordable thermal imaging for troubleshooting of electrical and mechanical installations. The point and shoot design is easy to use and enables users to get up and running without complicated menus.

- IRC325 features include:
- Easy to use single button image capture
- 4.5cm colour TFT display
- Blended image for fast troubleshooting
- Accurate spot temperature measurement
- Temperature range -20°C to 380°C

The combination of real time thermal imaging with spot infrared temperature measurement, packaged in a rugged pistol design, make it the ideal tool for fast and safe fault finding on live systems.



**ACCESSORIES**  
TC2B calibration

## IRC325

**Temperature range:** -20°C to 380°C

**Temperature resolution:** 0.1°C

**Temperature accuracy:**  
≥ 0°C ± 1.5°C or 1.5% of rdg

**Emissivity setting:** 0.95

**Distance/spot ratio:** 15:1

**Thermal imaging detector**

**Thermal imaging type:**

IR-EX™ (Integrated IR Array Sensor with CMOS)

**Imaging resolution:** 16,384 pixels (128 x 128 pixels interpolated)

**Field of view (H x W):** 33°

**Upper sense range:** 380°C

**Thermal imaging sensitivity:** 150mK

**Colour palette:** Rainbow

**Display:** 4.5cm colour TFT (128 x 160 pixels)

**Supply:** 3 x 1.5V, AA alkaline batteries (IEC LR6, NEDA 15A)

**Battery life:** 16 hours typical

**Auto power off:** after 5 minutes

**Dimensions:** 185 x 54 x 104 mm

**Weight:** 250g approx. incl batteries

**Includes:** 3 x 1.5V AA batteries and manual

## Advanced Spot Thermal Camera

NEW



The IRC cameras show hot and cold spots at a glance and accurately measure spot temperatures of hot and hard to reach surfaces.

The advanced thermal images, displayed on the 4.5cm colour display, combine colour temperature gradients and component outlines to quickly troubleshoot problems, including poor electrical connections, phase unbalance and faulty motors and bearings. The additional features of the IRC327 extend its applications into ultraviolet leak detection and include image storage for comparison and reporting.

IRC327 Additional features:

- Built-in LED torch, UV leak detector and laser pointer
- SD card memory and download for image storage and reporting
- Simple setting of emissivity and choice of colour palettes



**ACCESSORIES**  
TC2B calibration

## IRC327

**Temperature range:** -30°C to 650°C (-22°F to 1202°F)

**Temperature resolution:** 0.1°C (0.2°F)

**Temperature accuracy:**  
≥ 0°C ± 1.5°C or 1.5% of rdg

**Emissivity settings:** 0.95, 0.80, 0.60, 0.30, or variable 0.10 to 0.99

**Distance spot ratio:** 30:1

**Thermal imaging detector:**

Type: IR-EX™ Technology (Integrated IR Array with CMOS Sensor)

**Imaging resolution:** 16,384 pixels (128 x 128 pixels interpolated)

**Field of view (H x W):** 33°

**Thermal imaging sensitivity:** 150mK

**Colour palette:** Greyscale, Hot iron, Rainbow

**Display:** 4.5cm colour TFT (128 x 160 pixels)

**Laser:** Laser product class: 2

**Output power:** 1mW max.

**Micro SD card:** 2 GB card fitted, maximum card size 32GB

**Supply:** 3 x 1.5V, AA alkaline batteries (IEC LR6, NEDA 15A)

**Battery life:** 12 hours typical

**Auto power off:** settable to 1, 2, 5 or 10 minutes

**Dimensions:** 185 x 54 x 104 mm

**Weight:** 300g approx. incl batteries

**Includes:** 3 x 1.5V AA batteries, 2GB micro SD card and manual

## IR88

**Range:**  
-30°C to 550°C/-22°F to 1022°F

**Resolution:**  
0.5°C/1°C (AUTO), 1°F

**Accuracy:**  
± (2°C/4°F) for -30°C to 100°C,  
-22°F to 212°F  
± (2% of rdg) for 101°C to 550°C,  
213°F to 1022°F

**Response time:** 0.25 second

**Supply:** 9V battery (PP3, NEDA 1604, IEC 6F22006P)

**Weight:** 157g approx.

**Dimensions:** 148 x 105 x 42mm

**Includes:** battery, manual & clear plastic carry case

## Infrared Gun-Type Thermometer

The pistol style infrared thermometer has a laser marker to ensure accurate spot measurement. The display can show temperatures in Fahrenheit or Celsius.

A limit function sets upper and lower temperature thresholds and a tone alerts if the limits are exceeded. An optional auto power off feature conserves battery life.

Adjustable emissivity from 0.1 to 1.0.



### ACCESSORIES

TC2B calibration

## IR90

**Range:** -20°C to 550°C/-4°F to 1022°F

**Resolution:** 0.5°C/1°C (AUTO), 1°F

**Accuracy:** ± 2% of rdg or ± 3°C/6°F, whichever is greater

**Response time:** 1 second

**Emissivity:** 0.10 to 1.00 by steps of 0.01

K-type -200°C to 1372°C, -328°F to 1999°F  
± (0.1%rdg + 1°C) at -50°C to 1372°C  
± (0.1%rdg + 2°C) at -50°C to -200°C  
± (0.1%rdg + 2°F) at -58°F to 1999°F  
± (0.1%rdg + 4°F) at -58°F to -328°F

**Supply:** 9 volt battery (PP3, NEDA 1604, IEC 6F22) (included)

**Weight:** 195g approx

**Dimensions:** 170 x 65.5 x 35mm

## Infrared & K-type Thermometer

This thermometer has a laser marker to ensure accurate spot measurement. The display can show temperatures in Fahrenheit or Celsius. A limit function sets upper and lower temperature thresholds and a tone alerts if the limits are exceeded. An optional auto power off feature can conserve battery life.

A K-type thermocouple can also be used with a variety of probes to take contact temperature readings. In addition the emissivity is variable, to allow for a wide range of radiating surfaces. A TT1P thermocouple is included.



### ACCESSORIES

TC2B calibration

## TM2

**Display:** LCD, 3 ½ digit

**Range:** -40 to +250°C

**Resolution:** 0.1°C

Range	Accuracy:
-40... -20°C	± 3°C
-19.9... +200°C	± 0.5°C
+200.1... +250°C	± 3°C

**Temperature change/response time:** >5 K/s

**Working temperature:**  
-10°C...+50°C/at max. 80% RH

**Storing temperature:**  
-20°C...+60°C/30... 75% RH

Supply: 1 pc. 3V CR 2032

**Battery life:** 200h

**Dimensions:** 50 x 30 x 160mm

**Weight:** 16g approx. incl batteries

**Protection degree:** IP 67

## Waterproof Penetration Thermometer

The TM2 is a rapid response pocket thermometer suitable for catering applications. It's available in multiple colours including white, red and yellow, making it easy to avoid potential cross contamination of different food types. The strong, thin probe tip makes it easy to use on all foods and ensures a fast and reliable reading.

Useful features include the ability to record Min/Max values and a Hold function. The TM2 is waterproof with a full IP67 rating and is supplied with a handy protective sheath. The display can easily be set to °C or °F and includes a battery level indicator.



TM2RD (red)  
TM2WH (white)  
TM2YE (yellow)

### ACCESSORIES

TC2A calibration

## Single Input K-type Digital Thermometer



The DT173 is a high performance single input K-type digital thermometer with a measuring range of -200°C to 1372°C. The compact thermometer is supplied in a tough holster and has large digits and a back light for easy viewing in all environments. There is a fold away built in stand for optimum viewing angle.

The DT173 is supplied with a bead thermocouple and is compatible with a wide range of Martindale K-type probes including air, penetration, clamp and surface probes (see page 79).

Readings can be displayed in either Centigrade or Fahrenheit and the thermometer has an adjustable offset to optimise thermocouple performance over the desired temperature range. There is a Min/Max/Avg mode for recording extremes of readings. In this mode the auto power off function is disabled to allow recording over longer periods of time.

### ACCESSORIES

TC2A	calibration
MG3	magnetic strap

## Dual Input K-type Digital Thermometer



The DT175 is a high performance dual input K-type digital thermometer enabling the measurement of both input and output temperatures of systems and equipment simultaneously. When set to differential mode, the difference between the two thermocouple readings can be displayed which is useful for measuring the effectiveness of heating systems.

In addition to the two bead thermocouples supplied, the DT175 is compatible with a wide range of optional Martindale K-type probes including air, penetration clamp and surface probes (see page 79). The thermometer has an adjustable offset to optimise thermocouple performance over the desired temperature range.

There is a Min/Max/Avg mode for recording extremes of readings. In this mode the auto power off function is disabled to allow recording over longer periods of time.

### ACCESSORIES

TC2A	calibration
MG3	magnetic strap

## DT173/DT175

**Measurement range:** -200°C to 1372°C. (-328°F to 1999°F) (limited by the range of the thermocouple probe used)

**Resolution:** 0.1° to 199.9°C/°F, 1° ≥ 200°C/°F

### Temperature accuracy:

Range: -200°C to -60°C  
Accuracy ± (0.1% of rdg + 2°C)

Range: -60°C to 1372°C  
Accuracy ± (0.1% of rdg + 1°C)

Range: -328°F to -76°F  
Accuracy ± (0.1% of rdg + 4°F)

Range: -76°F to 1999°F  
Accuracy ± (0.1% of rdg + 2°F)

### Input protection:

24V DC or AC rms maximum input voltage on any combination of input pins.

### Input connector:

Accepts standard miniature thermocouple connectors (flat blades spaced 7.9mm. center to center).

### Supplied thermocouple probe:

1.2M Type K thermocouple bead probe (teflon tape insulated).

### Maximum insulation

**temperature:** 260°C (500°F)

### Probe accuracy:

± 2.2°C or ± 0.75% of rdg

**Display:** 3½ digit liquid crystal display (LCD) with maximum reading of 1999

**Measurement rate:** 2.5/second

**Polarity:** Automatic, positive implied, '-' for negative polarity indication

**Supply:** 4 x 1.5V, AAA alkaline batteries (IEC LR03, NEDA 24A)

**Battery life:** 200 hours

**Dimensions:** 160 x 83 x 38 mm

**Weight:** 240g approx. incl batteries

**Includes:** Type K bead thermocouple (x2 for DT175), 4 x 1.5V AAA alkaline batteries and manual

## DTL84

**Range:**

K: -200°C to 1372°C  
 (-328°F to 2501°F)  
 J: -200°C to 1000°C  
 (-328°F to 1832°F)  
 E: -200°C to 750°C  
 (-328°F to 1382°F)  
 T: -200°C to 400°C  
 (-328°F to 752°F)  
 N: -200°C to 1300°C  
 (-328°F to 2372°F)  
 R, S: 0°C to 1767°C  
 (32°F to 3212°F)

**Resolution:** K, J, E, T, N types

0.1°C < 600°C  
 0.1°F < 1000°F  
 1°C ≥ 600°C  
 1°F ≥ 1000°F

**Resolution:** R, S types

0.2°C < 600°C  
 0.5°F < 1000°F  
 1°C ≥ 600°C  
 1°F ≥ 1000°F

**Accuracy:** J, K, E, T, N types

-200°C to -100°C ± (0.5% of rdg + 0.7°C)  
 ≥100°C ± (0.1% of rdg + 0.7°C)  
 -328°F to -148°F ± (0.5% of rdg + 1.3°F)  
 ≥-148°F ± (0.1% of rdg + 1.3°F)

**Accuracy:** R, S-type

0°C to 1767°C  
 ± (0.2% of rdg + 1.4°C)  
 32°F to 3212°F  
 ± (0.2% of rdg + 2.5°F)

**General purpose 100cm Type K thermocouple bead probe**

Temperature measurement range:  
 -50°C to 200°C (-58°F to 392°F)  
 Probe accuracy: ± 2.2°C (± 3.9°F)

**Measurement rate:** 2/second

**Supply:** 4 x 1.5V AAA alkaline batteries (IEC LR03, NEDA 24A)

**Continuous operating time:**

Bluetooth OFF – 120 hours approx  
 Bluetooth ON – 30 hours approx

**Dimensions:** 187 x 75 x 29mm**Weight:** 290g

**Includes:** storage case, 2 x K-type thermocouples, bluetooth adaptor, 4 x 1.5V AAA alkaline batteries, DTL84 PC software, micro USB cable and manual

## Four Channel Data Logger Thermometer

Andriod/iOS App  
 for data analysis



NEW



The DTL84 is a high performance four-channel digital thermometer enabling the measurement of both input and output temperatures of systems and equipment simultaneously. When set to differential mode, the difference between the four thermocouple readings can be displayed which is useful for measuring the effectiveness of heating systems and industrial processes. The DTL84 has a wide measuring range from -200°C to over 1700°C.

Readings can be displayed in either Centigrade or Fahrenheit and the thermometer has an adjustable offset to optimise individual thermocouple performance at a chosen reference temperature. There is a Min/Max/Avg mode for recording extremes of readings and in this mode the auto power off function is disabled.

The data logger thermometer can be connected to a PC via the supplied micro USB cable or the Bluetooth adaptor in order to download the recorded data, perform real-time monitoring or data logging using the supplied software. A free iOS or Android app is available from the relevant app store for ultimate portability and analysis of data.

The DTL84 is supplied with two K-type thermocouples, a Bluetooth adaptor, software CD, micro USB cable and soft carry case. The DTL84 is compatible with our wider range of probe accessories which can be found on page 79.

The display has large digits and a backlight for easy viewing in all environments. There is a fold away built-in stand for optimum viewing angle.

**ACCESSORIES**

TC2C calibration

## Legionella Testing Thermometer Kit

NEW



The Legionella thermometry kit includes the DT173 thermometer with MAX function, one bead type thermocouple and two thermocouple probes in a hard carry case.

The kit can be used for temperature testing and monitoring in accordance with Health & Safety Guidelines to avoid water temperature conditions that can favour the growth of Legionella and other bacteria. The surface and immersion probes simplify measurement on pipework and tanks.

The DT173 comes with a protective rubberised holster and is switchable between °C and °F and between 1° and 0.1° resolution. Hold and maximum buttons allow the current value to be frozen or the maximum reading to be stored.

### ACCESSORIES

TC2A	calibration (thermometer only)
TC2D	calibration (for complete kit)
MG3	magnetic strap

## THERMOKITLGN

The full kit includes:

- DT173 Digital thermometer
- TT6K Penetration probe
- TT8K Surface probe
- TT1P Bead type thermocouple
- TC500/THERM1 Hard carry case

## Thermometry Kit



The Martindale Thermokit is a comprehensive temperature kit, ideal for electricians, plumbers, boiler engineers and maintenance engineers. Supplied in a soft carry case, the kit includes the Martindale DT175 dual input thermometer, bead type probes, pipe clamp probes, an air probe and a surface probe.

The DT175 is a high quality dual-input digital thermometer with differential temperature capability. It is able to measure input and output temperature and display temperature differentials through boilers, radiators etc. The thermometer is compatible with a wide range of K type probe accessories.

The meter comes with a protective rubberised holster and is switchable between °C and °F and between 1° and 0.1° resolution. HOLD and Min/Max buttons allow the current value to be frozen or the maximum reading to be stored.

### ACCESSORIES

TC2A	calibration (thermometer only)
TC2D	calibration (for complete kit)
MG3	magnetic strap

## THERMOKIT

The full kit includes:

- DT175 Digital thermometer
- TT5K Air probe
- TT8K Surface probe
- 2 x TT1P Bead type thermocouple
- 2 x TT10K Pipe clamp probes
- TC88 Carry case





## Thermocouples TT1P

The TT1P is a flexible general purpose bead K-type thermocouple, PTFE insulated cable with mini plug.

**Temperature range:** -75 to 250°C  
**Dimensions:** Ø 1.5 x 1000mm



## Surface Probe TT8K

Surface probe with spring loaded sensing tip. Suitable for a variety of industrial applications as well as heating & ventilation.

**Temperature range:** -50 to 600°C  
**Dimensions:** Ø6 x 130mm



## Needle Probe TT9K

This hand-held needle probe is ideal for penetrating soft materials. Suitable for a variety of industrial applications.

**Temperature range:** -50 to 250°C  
**Dimensions:** Ø1.8 x 130mm



## Thermocouples TT1KF

The TT1KF is a simple general purpose bead K-type thermocouple, fibreglass insulated cable with mini plug.

**Temperature range:** -75 to 350°C  
**Dimensions:** Ø 1.5 x 1000mm



## Air Probe TT5K

Specially designed for measuring the temperature of air, e.g. in heating or air conditioning ducts. A very sensitive, high quality sensor with fast response.

**Temperature range:** -50 to 250°C  
**Dimensions:** Ø4.5 x 130mm



## Velcro Probe TT12K

A sensor is built into the wrap around velcro. Ideal for measuring temperatures of large pipes or other objects where attaching a conventional probe would be difficult.

**Temperature range:** -50 to 100°C  
**Dimensions:** 20 x 500mm



## Pipe Clamp TT10K

Ideal for measuring boiler flow and return temperatures. Measures the temperature of pipes in refrigeration and H&V systems. The sensor is in the clamp jaw which fits around the pipe.

**Temperature range:** -50 to 100°C  
**Dimensions:** maximum Ø30mm



## High Temperature Probe TT4K

These mineral insulated probes are ideal for measuring temperatures up to 1100°C. They can be easily bent without affecting their performance.

**Temperature range:** -50 to 1100°C  
**Dimensions:** Ø4.5 x 130mm

### ACCESSORIES

TC2B calibration for all types of temperature probe



## Penetration Probe TT6K

The TT6K penetration probe is strong and versatile and suitable for both liquids and semi-solids.

**TT6K K-type**  
**Temperature range:** -50 to 250°C  
**Dimensions:** Ø3.3 x 130mm

**TT6T T Type**  
**Temperature range:** -50 to 250°C  
**Dimensions:** Ø3.3 x 130mm

## Current Calibrator



This Martindale current calibrator has sink and source modes for 0 to 20mA.

It is ideal for most process control as well as general purpose, signal injection applications.

The hand-held, fully portable unit has a 3½ digit display and has overload protection for additional safety.

A monitor mode facility is also incorporated into the design, whereby the current (0-20mA) in the process loop can be monitored and read directly from the digital display.

**ACCESSORIES**  
TC2B calibration

## TEK300

**DC/DC converter output:**  
28.5V (+0.1V)

**Current range:**  
0-20mA F.S. (+0.1%)

**Resolution:** 10µA

**Temperature drift:** 150ppm/°C

**Linearity:** +0.15%

**Output noise (typically):** 4mV p/p

**Indicators:**  
LED (green) - battery OK  
LED (red) - output error

**Display:** 3½ digit LCD

**Output connectors:** 4mm terminal posts (19.05mm apart)

**Operating temperature:** 0-50°C

**Supply:** 2 x 9V alkaline batteries, MN1604 or equivalent (included)

**Housing:** light grey ABS hand-held, supplied with stand

**Weight:** 380g approx.

**Dimensions:** 180 x 100 x 44mm

## Check Box



The CB12 is a portable check box for checking the resistance and continuity ranges of multimeters, insulation testers, multifunction clamp meters and test instruments which use resistance as part of their measurement capability. This check box provides a quick method of verifying that a test instrument is giving accurate readings between annual calibration.

It is simple to use and is designed to be a quick check device for workshop and site use. Connect the instrument under test via the 4mm terminals on the front of the check box. Select a resistance value using the rotary dial and set the instrument under test to the relevant test range. The values can be checked or an insulation test can be performed to check that the values are within the appropriate limits.

A verification/calibration certificate is included.

**ACCESSORIES**  
TC2B calibration



## CB12

**Resistance settings:**  
0.5Ω, 1Ω, 2Ω, 20Ω, 200Ω, 1kΩ, 10kΩ, 20kΩ, 100kΩ, 1MΩ, 2MΩ, 10MΩ

**Accuracy:**  
0.5Ω-2Ω ± 0.025Ω  
20Ω-10MΩ ± 2%

**Maximum voltage input:**  
1000V DC

**Case:** Impact Resistant ABS

**Weight:** 280g

**Dimensions:** 150 x 70 x 55mm

Verification certificate included

## TEK903

**Resistance:**  
1% grade 0.6W per resistor  
variable from 10Ω to 11.1111MΩ in  
6 decades

**Typical residual (zero)  
resistance:**  
<150mΩ

**Temperature coefficient:** 50  
ppm/°C

**Operating environment:** 0°C to  
50°C at <70% RH

**Weight:** 537g approx.

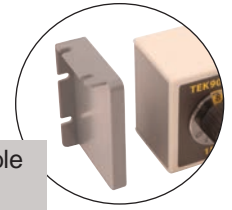
**Dimensions:** 345 x 71 x 51mm

## Decade Resistance Box

A very reliable decade resistance box with high quality rotary switches providing in-line readouts. Ideal for laboratory, educational and calibration applications. The extra terminal forms an accurate potential divider.

1% Accuracy.

Detachable  
bracket



**ACCESSORIES**  
TC2C calibration

FREE  
VC

## TEK904

**Resistance:**  
1% grade 0.6W per resistor  
variable from 1Ω to 11.1111MΩ in  
7 decades

**Typical residual (zero)  
resistance:**  
<150mΩ

**Temperature coefficient:** 50  
ppm/°C

**Operating environment:** 0°C to  
50°C at <70% RH

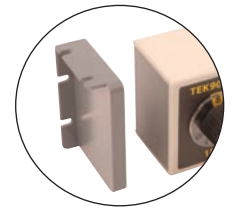
**Weight:** 536g approx.

**Dimensions:** 345 x 71 x 51mm

## Enhanced Decade Resistance Box

The TEK904 adds an extra decade at the bottom of the range and this allows resistance from 1 ohm to over 11MΩ to be set. This is an exceptionally wide range for such a compact unit.

1% Accuracy.



**ACCESSORIES**  
TC2C calibration

FREE  
VC

## TEK905

**Capacitance:** ± 5% grade 100V  
DC variable from 100pF to 4.111μF  
in 5 decades

**Typical residual (zero)  
capacitance:** <40pF

**Operating environment:** 0°C to  
50°C at <70% RH

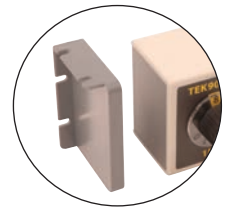
**Weight:** 489g approx

**Dimensions:** 345 x 71 x 51mm

## Capacitance Box

This is a 5 decade capacitance box giving a useful range of capacitance values from 100pF to 4.111μF. Ideal for laboratory, educational and calibration applications.

5% Accuracy.



**ACCESSORIES**  
TC2C calibration

FREE  
VC

## 4mm Unfused Lead



**TL16** leads are replacement leads, suitable for most multimeters, including the Martindale MM series. If you require crocodile clips, the TL45 (unfused) or the TL55 with fuse protection are available.

## 4mm Unfused Leads (double insulated cable)

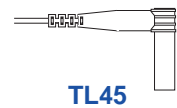


The TL4X series are double insulated PVC leads. For use with hazardous voltages and currents, we recommend the fused 5X series below for your extra safety and GS 38 compliance.

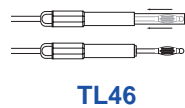
**TL45:** double insulated PVC leads – supplied with right angle fixed shroud

**TL46:** double insulated PVC leads – supplied with sprung retractable shroud

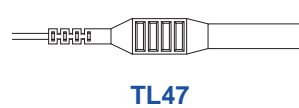
**TL47:** double insulated PVC leads – supplied with straight fixed shroud



**TL45**



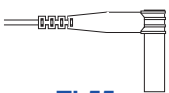
**TL46**



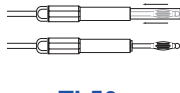
**TL47**



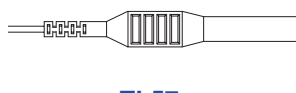
## 4mm Fused Test Leads (double insulated cable)



**TL55**



**TL56**



**TL57**



The TL5X series are fused test leads with double insulated silicone cable. Designed for your safety, they comply with GS38 & BS EN 61010 and include 500mA 600V 50kA rupture rating ceramic fuses.

**TL55** supplied with right angle fixed shroud

**TL56:** supplied with sprung retractable shroud

**TL57:** supplied with straight fixed shroud

For CAT IV 1000V leads see page 86.

## Multifunction Testers - Unfused 4mm Leads (double insulated)

All-in-one test lead sets. Each set includes 1.2m double insulated PVC leads with 4mm straight connectors on both ends, push fit probe section with removable tip caps and separate croc clip attachments.

**TL34** (red/black)



**TL35** (red/black/green)



**TL36** (red/blue/green)



**TL37** (brown/blue/green)



## Extended Fine Probes TL33RD/BL

Extended fine probes, 50mm reach.  
For use with TL34 - TL37.



## Multifunction Fused Leads, RCD & Loop Tester Leads

**TL52:** fused test leads for loop and multifunction testers (red/blue/green)

**TL88:** 3-wire, two probes with removable croc clips and 1 fixed crocodile clip, supplied with X (IEC) connector -10A fused

**TL205:** IEC style (X) Loop/RCD tester mains lead - 13A plug

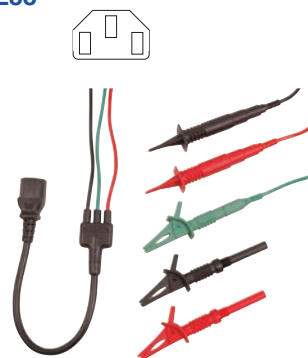
**TL206:** 13A plug to 3x4mm plug mains lead for Veritest (red/green/black)

**TL207:** 13A plug to 3x4mm plug mains lead (red/green/blue)

**TL52**



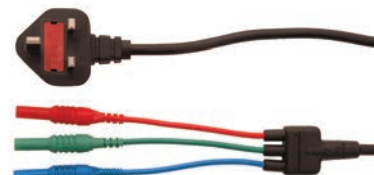
**TL88**



**TL205**



**TL206**



**TL207**

## Unfused Lead Set [TL63](#)

Unfused test lead set (red/black/green) for VR2230/40/50.



## Earth Tester Lead Kit [TL76](#)

Earth tester lead kit (red 50m, green 30m, 2 x black 3m).



## Earth Bond Lead [TL68](#)

Heavy duty earth bond lead with single 4mm banana plug connection, compatible with the Martindale HPAT500 & HPAT600, as well as any other PAT tester that has a 4mm banana socket.



## Unfused Lead Set [TL49](#)

Unfused lead set – with uninsulated croc clips (TEK402 only).



## Earth Tester Kit [ER2KIT/S](#)

Earth tester kit with carry case. For use with ET4500 tester.



## Earth Bond Probe [TL67](#)

Earth bond probe/clip for HPAT.



## Switching Insulation Probe [TL180](#)

For use with ET4000 Series and CMi210. The TL180 has a test button on the probe for easy single handed operation.



## Magnetic Strap [MG3](#)

Magnetic hanger strap (meter not included). For use with all multimeters excluding the MM94, new PDS & PDSX Series, DT173 and DT175.



## 3M Earth Bond Lead [TL693M](#)

3m heavy duty earth bond lead with twin 4mm banana plugs, suitable for use with older PAT testers that have twin 4mm banana sockets for the earth bond connection.



## Mains Charger [PSUPD230](#)

Mains charger for use with ET4000, ET4500, PD430 to PD710.



## In-Car Charger [PSUHPAT12](#)

In-car charger for use with HPAT500, HPAT600, ET4000, ET4500, PD430 to PD710.



## Null Pin on Key Fob [TL178](#)

This null pin on a key fob is used to null out a test lead.



## SB13

**Terminals:** 4mm sockets coloured coded

**Maximum voltage:** 350V AC

**Dimensions:** 65 x 65 x 47mm

**Safety:** BS EN611010-1 CAT II 300V

## Safe Break Socket Adaptor

Speed up 18th Edition, Part P and periodic testing of electrical installations with this plug-in adaptor. The SB13 enables safe and fast testing at socket outlets without the need to remove the socket faceplate from the wall. This saves time when taking R2 and R1+R2 measurements as well as voltage measurements.

The adaptor is compatible with any meter with industry standard 4mm plugs and most standard test lead probes.



CAT III  
300V

## TL78

**Lead:** PVC, outer diameter: 3.8mm, braided copper wires (32 x 0.2mm), 50m in length

**Terminals:** 4mm banana plugs

**Maximum voltage:** 300V AC/DC

**Maximum current:** 1A continuous

**Pollution degree:** 2

**Reel dimensions:** 270 x 225 x 105mm

**Weight:** 1.86kg approx

**Safety:** conforms to BS EN 61010-031 CAT II 300V, Class II double insulation

## 50m Green R2 Continuity Lead on Reel

A 50m R2 continuity lead on an easy to use extension reel. The lead is ideal for measuring earth bond continuity and for R2 measurement via the long lead method.

The double insulated PVC lead is housed in a durable reel case which offers excellent protection and prevents the lead from being damaged. The lead outlet is positioned to allow for smooth unreeling and retrieval of the lead which is important when working over long distances.

The lead is fitted with a standard 4mm plug at each end and is also supplied with a croc clip for connecting to the earth conductor.



CAT II  
300V

## Test Lamp Probes



**MTL2106**  
Straight Prod Long 130mm

**MTL2107**  
Angled Prod Long 130mm

**MTL2108**  
Straight Prod Australian 62mm

**MTL2104**  
Straight Prod Standard 62mm

**MTL2105**  
L Shaped Prod Standard 62mm

**MTL2103**  
Straight Prod Short 30mm

Compatible with MTL10, MTL15 and MTL20

## Heavy Duty CAT IV Fused Leads

Drummond Heavy Duty CAT IV Fused Leads, 1.2m long and double insulated with a contrasting white inner core to identify damage. The unique 45° plug reduces cable stress, aids grip and improves connection.

**MP21-08:** 600V CAT IV fitted with 500mA 600V 50kA fuses  
**MP30-08:** 1000V CAT IV fitted with 500mA 1000V 50kA fuses

**MP21-10BK:** 600V CAT IV heavy duty black crocodile clip  
**MP21-10RD:** 600V CAT IV heavy duty red crocodile clip

600V CAT IV fitted with 500mA 600V 50kA fuses [MP21-08](#)

1000V CAT IV fitted with 500mA 1000V 50kA fuses [MP30-08](#)



**CAT IV**  
**1000V**

600V CAT IV heavy duty croc clip [MP21-10BK/MP21-10RD](#)



**CAT IV**  
**600V**



**CAT IV**  
**600V**



## G Clamp for Bus Bar Connections

The Drummond G Clamp makes connecting to bus bars straight forward. The clamp-on design eliminates the need to drill bus bars and provides a much safer and more reliable connection via a standard 4mm socket.

Ideal for connecting power monitoring and measuring equipment, the new colour coded clamps make phase identification easy. The spring loaded contact pin and locking ring ensure reliable results throughout extended logging periods.

The G Clamp can be tightened by hand when wearing PPE gloves, eliminating the need to use tools in the bus bar chamber.

Risk assessment is required before installation.

Available in Brown, Black, Grey and Blue, the new design comes in both fused and unfused versions. The replaceable fuse is within the clamping screw providing protection at the source.

## Fused G Clamp Set DRUGCK/F/GKIT1



CAT IV  
600V

## Unfused G Clamp Set



CAT IV  
600V

DRUGCLAMP/BK (Unfused Black)  
 DRUGCLAMP/BR (Unfused Brown)  
 DRUGCLAMP/GY (Unfused Grey)  
 DRUGCLAMP/BL (Unfused Blue)

DRUGCLAMP/F0.5/BK (Fused 0.5A Black)  
 DRUGCLAMP/F0.5/BR (Fused 0.5A Brown)  
 DRUGCLAMP/F0.5/GY (Fused 0.5A Grey)

DRUGCK/F/GKIT1 (Set BK, BR, GY Fused + BL Unfused)  
 DRUGCK/F/GKIT2 (As KIT1 plus 4m CATIV Lead Set)

## Fused G Clamp and Lead Set DRUGCK/F/GKIT2



CAT IV  
600V

## Soft Carry Case TC151



Clip on tester accessory bag.

Suitable for EPAT1600, EPAT2100,

MPATPLUS, METE3511 and METE3640 210 x 275 x 50mm

## Soft Carry Case TC55



Suitable for all Martindale multi-meters except MM84 and MM94

190 x 88 x 55mm

## Safe Isolation Case TC70



Suitable for PD440/690 & VT25/VT28

320 x 100 x 100mm

## Soft Carry Case TC210



Suitable for EZ2500

210 x 105 x 105mm max

## Soft Carry Case TC57



Suitable for IN2101, IN2102, LP2000, RC2000.

220 x 95 x 90

## Multifunction Case TC88



Suitable for ET4000 and ET4500

190x270x240

## Soft Carry Case TC52



Suitable for VT12, VT25 and VT28

245 x 80 x 38mm

## Soft Carry Case TC68



Suitable for PC15250, CM100, CM50, CM80 PC104/105 16A 32A (not PC104/105 63A)

290 x 130 x 60mm

## Carry Case PP100



Pocket pouch multi-purpose tool holder (contents not included). Suitable for CP501, BZ101, TEK100, TEK101, TEK200, NC1, NC2, NC3 and NC4

170x120x60

## Soft Carry Case TC54



Suitable for PSI4000 and PSI4300

160 x 160 x 40mm

## Safe Isolation Case TC69



Suitable for PD440/690 & VI13800, VI-15000, VT12 or a Drummond Lamp

265 x 100 x 100mm

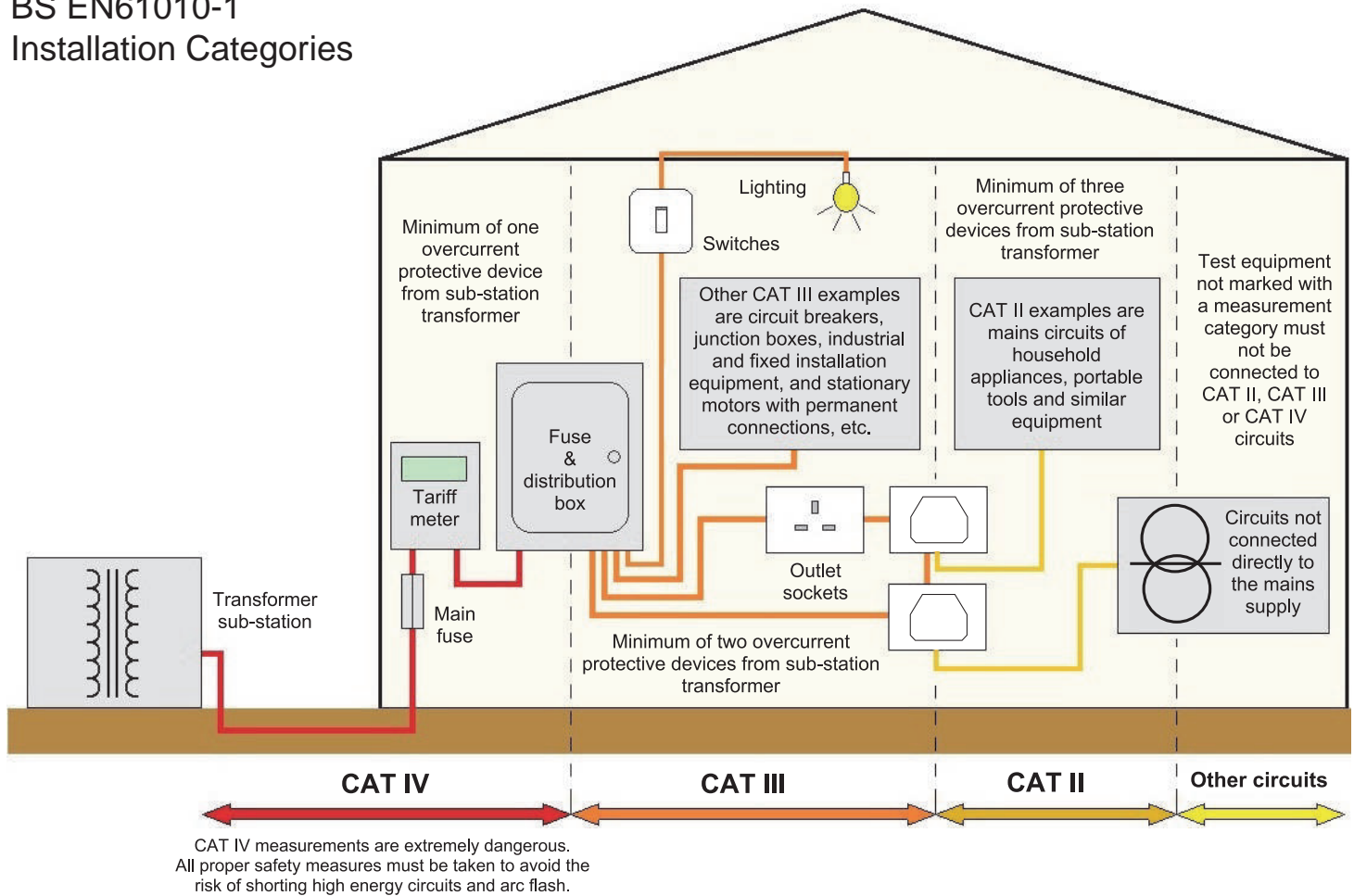


## Case Comparison Table

	TC151	TC210	TC52	TC54	TC55	TC57	TC68	TC69	TC70	TC88	PP100
<b>Size</b>	210x275x50	210x105x105	245x80x38	160x160x40	190x88x55	220x95x90	290x130x60	265x100x100	320x100x100	190x270x240	170x120x60
<b>Products</b>	EPAT1600 EPAT2100 MPATPLUS METE3511 METE3640	EZ2500	VT12 VT25 VT28	PSI4000 PSI43000	LOKKIT1 LOKIT6 LOKKITBASE LOKKIT2PLUS MM39 MM64 MM65 MM68	FD600, FD650 HPAT400 HPAT500 HPAT600 IN2101, IN2102 LP2000 RC2000	PC15250, CM100, CM95 PC104/105 16A 32A, 63A	VIPDs MTLPD PD440 PD690 VI13800 VI-15000 VT12 MTL10 MTL15 MTL20	VTPDs PD440 PD690 VT25 VT28	ET4000 ET45000	Pocket pouch, multi-purpose tool holder CP501 BZ101 TEK Series NC Series tools

## Use this diagram to decide the rating you need for your equipment

BS EN61010-1  
Installation Categories



Measurement categories are determined by the potential for dangerous transient impulses on the mains supply system, the magnitude of which depends on the amount of damping of the transient energy due to the location within the system and the system voltage. Short-circuit current levels are also a factor.

Test equipment used for measuring mains circuits will be marked with one or more of three measurement categories, CAT II, CAT III or CAT IV, to identify on which parts of a mains supply system it can safely be used.

Each category has a voltage rating marked to indicate the maximum safe phase to earth system voltage (conventionally 50V, 100V, 150V, 300V, 600V or 1000V). Transient impulses are greatest for CAT IV 1000V installations.

'CAT IV 300V, CAT III 600V' is an example of measurement category marking.

This unit can only safely be used on CAT IV installations where the phase to earth voltage is  $\leq 300V$  and on CAT III installations where the phase to earth voltage is  $\leq 600V$ .

Such products would have these symbols in this catalogue.



Such a unit could safely be connected between phases on CAT IV parts of a 3-phase distribution system where the phase to phase voltage is 400V because the phase to earth voltage is only 230V.



- 18th Edition testers
- Safe isolation solutions
- Voltage indicators & proving units
- PAT testers & accessories
- Flash testers
- Socket testers
- Multimeters & clamp meters
- Phase rotation & continuity

- Fuse finders & cable detectors
- HVAC & environmental
- Thermometry
- Test leads & accessories
- Metrohm 5kV & earth testers
- Metrohm milliohmeters
- Drummond test lamps
- Full calibration & repair service



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