



# Test Equipment Catalogue

Martindale • Metrohm® • Drummond

**MARTINDALE**  
ELECTRIC

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• features in our Best Sellers range

♦ special terms apply

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

Martindale Electric'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](mailto:sales@martindale-electric.co.uk)**.

Full technical specifications, the latest product information and application notes are available at **[www.martindale-electric.co.uk](http://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 it by 3.00pm.

CAT II  
300V

CAT II  
600V

CAT II  
1000V

CAT III  
300V

CAT III  
600V

CAT III  
1000V

CAT IV  
300V

CAT IV  
600V

CAT IV  
1000V

Measurement  
category  
(see page 73)

FREE  
VC

Free verification  
certificate

TRUE  
RMS

True RMS

17th Edition Testing

Specialist Testers

Phase Rotation & Continuity Testers

Safe Isolation and Voltage Indication

PAT Testing

Socket Testers

Multimeters & Clamp Meters

Fuse Finders & Cable Detectors

HVAC Environmental and FM

Thermometry

Calibrators & Decade Boxes

Test Leads and Accessories



SAI GLOBAL  
ISO 9001  
Quality



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**DRUMMOND**

**Metrohm®**

# New products



## T10 -T80

17th Edition Certification Pads  
Updated to Amendment 3  
Page 5



## ET4500 PRO

Downloading multifunction 17th  
Edition installation tester with memory,  
download and upload capability and 3  
wire earth tester built-in  
Page 5



## CM55, CM57, CM79, CM69

Clamp Meters  
New AC, AC/DC and  
leakage clamp meters  
Page 49-51



## CM95

High resolution  
AC Flex Meter  
Page 52



## VI-15000

1000V Voltage Indicator

Also available in kits:  
VIPD150 with proving unit and  
carry case  
LOKVIPD150 with proving  
unit and Lockout kit  
Page 17



## TEK101

Non-contact single pole voltage indicator.  
Optimised for use when wearing PPE gloves  
and gauntlets  
Page 26



## LOK6

Universal Cartridge Fuse  
Isolation Lock  
Page 15



## Multifunction Installation Testers



	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		✓

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 very latest Amendment 3 changes to the BS7671 17th Edition Wiring Regulations.

Everything about the new 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.

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.



Easy selection of tests and on-screen help



Pass/fail testing to the latest third amendment values



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

## Multifunction Installation Testers



### Features ET4000 / ET4500

- ♦ Red and green LED indicators for instant pass/fail results
- ♦ Built-in new third amendment 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 Amendment 3 certificates
- ♦ Three wire earth resistance testing

The new ET4000 and ET4500 multifunction testers simplify 17th edition testing by having the latest amendment 3 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 EN61010  
CAT III 600V CAT IV 300V  
BS EN61557,  
BS 7671 Amend 3:2015  
BS EN 61326-1

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

**Weight:** 1.3kg approx.

**Includes:** MARTL36 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
TL78	50m R2 continuity lead
SB13	Safebreak mains socket adaptor
TL52	Fused test leads
PSUHPAT12	In-car 12V charger
See pages 68-70	

Find out more about how the ET4000 Series make testing to Amendment 3 easy at  
[bit.ly/3rdamendmentweb](http://bit.ly/3rdamendmentweb)





## ET4500 PRO Multifunction Installation Tester Kit



Martindale's ET4500 PRO package is the most comprehensive 17th Edition Amendment 3 bundle available. Based around the class leading ET4500 multifunction installation tester with built in Amendment 3 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 17th Edition Amendment 3 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.

Additional Martindale accessories include the BZ1010 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 17th Edition Amendment 3: 2015 Wiring Regulations in one kit.

- ET4500 PRO**
- ET4500 Downloading Multifunction Tester
- ET-Link PRO PC software with Amendment 3 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

## Certification pads



With the new system of certificates, it's easier to understand which certificates need to be used together. There is one set for New Installations and one set for Existing Installations and within each set there is an option for up to 100 A supply and one for greater than 100 A supply.

Cert no.	Description
T10	Electrical Installation Certificate for up to 100A Supply
T20	Minor Works
T30	Electrical Installation Condition Report for up to 100A
T40	Electrical Installation Condition Report for greater than 100A
T50	Schedule of test results up to 12 Way
T60	Schedule of test results greater than 12 Ways
T70	Observation Record Sheet
T80	Electrical Installation Certificate for greater than 100A Supply

The 8 new pads contain approximately 80 pages of carbonless copy forms and a card divider and are based on the model forms in BS7671.

# 17th Edition Testing

## 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	optional fused test leads
TL78	50m R2 continuity lead

## IN2101

**Insulation:** 0.200M $\Omega$ -1000M $\Omega$  at 500V in 4 ranges  
**Accuracy:**  $\pm$  (3% rdgs + 5 dgt)  
**Continuity:**  
**Range:** 0.01 $\Omega$ -40 $\Omega$   
**Resolution:** 0.01 $\Omega$   
**Short circuit current:** >200mA  
**Accuracy:**  $\pm$  (3% rdgs + 5 dgt)  
**Buzzer:** <30 $\Omega$   
**Resistance:** 0.1 $\Omega$ -1999k $\Omega$   
**Accuracy:**  $\pm$  (3% rdgs + 5 dgt)  
**Voltage range:** 600V AC/DC  
**Voltage warning indicator:** >30V  
**Accuracy:**  $\pm$  (3% rdgs + 5 dgt)  
 Backlight, auto hold, auto zero  
**IP rating:** IP44  
**Complies with:** BS EN61557 & BS 7671 (17th Edition) and BS EN61010 CAT III 600V  
**Dimensions:** 90 x 210 x 54mm  
**Includes:** batteries, manual, carry case (TC57) & test leads (TL47)

## 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 5G $\Omega$ .

In common with all models in the IN2100 Series, 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 and 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	optional fused test leads
TL78	50m R2 continuity lead

## IN2102

**250V:** 4/40/400/1000M $\Omega$   
**500V:** 4/40/400/4000M $\Omega$   
**1000V:** 4/40/400/5000M $\Omega$   
**Range:** 0.200M $\Omega$  to 5000M $\Omega$   
**Short circuit current:** <1.5mA  
**Accuracy:**  $\pm$  (3% rdgs + 5 dgt)  
**Continuity:**  
**Range:** 0.01 $\Omega$  to 40 $\Omega$   
**Resolution:** 0.01 $\Omega$   
**Short circuit current:** >200mA  
**Accuracy:**  $\pm$  (3% rdgs + 5 dgt)  
**Resistance:** 0.1 $\Omega$ -1999k $\Omega$   
**Accuracy:**  $\pm$  (3% rdgs + 5 dgt)  
**Voltage range:** 600V AC/DC,  
**Voltage warning indicator:** >30V  
**Accuracy:**  $\pm$  (3% rdgs + 5 dgt)  
 Backlight, autohold, auto zero, APO disable  
**Dimensions:** 90 x 210 x 54mm  
**Standards compliance:** As IN2101  
**Includes:** batteries, manual, carry case (TC57) & test leads (TL47)

## 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. For more details see page 54.

### ACCESSORIES

TC2B	calibration
TL55	optional fused test leads
TL180	optional switching insulation probe

## CMi210

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



## 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)

**Power supply:** from mains

**Power consumption:** < 1.6W

**Pollution degree:** 2

**Complies with:** BS EN61010, BS  
EN61557 & BS 7671 (17th Edition)

**Weight:** 240g approx.

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

**Includes:** carry case (TC210),  
mains lead & manual

\* Note: measurement accuracy can  
be affected by 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 17th 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 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 PSCC 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.

This supersedes the Metrohm 16L240

### 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 reading, ±2 digit

**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

**Complies with:**

EMC: To BS EN50081-1

BS EN50082-1

LVD: To BS EN61010-1

**Weight:** 400g approx.

**Dimensions:** 190 x 90 x 54mm

**Includes:** carry case (TC57), mains test lead (TL205), green wander lead (TL61) & 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, batteries and soft carry case.

This supersedes the Metrohm 16R240A

### 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 reading ±1 digit

**Duration of test current:**

$\frac{1}{2}$	2 seconds
I	0.5 or 2 seconds
selectable	
FAST	0.05 seconds

**Complies with EMC:** Meets BS EN 50081-1, BS EN 50082-1, LVD: Meets BS EN 61010-1

**Weight:** 350g approx.

**Dimensions:** 190 x 90 x 54mm

**Includes:** carry case (TC57), mains test lead (TL205) & 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:** 2m test leads (DFK0075/A) & croc clips, earth lead (DFH0366), mains power lead (TL205), 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 re-chargeable 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
DFK0075/C	10m test lead
DFK0094	kelvin lead set

FREE  
VC

CAT III  
1000V

## 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 ± 3dgt  
**Earth voltage:** ± 2% rdg ± 3dgt  
**Temperature & humidity:**  
**Operating:** 0°C ~ 50°C ≤ 80% R.H  
**Storage:** -10°C ~ 60°C ≤ 80% R.H  
**Altitude:** up to 2000m  
**Power:** 8 x 1.5V LR6/AA batteries  
**Auto off time:** 2½ minutes approx.  
**Dimensions:** 250 x 190 x 110mm  
**Weight:** 1550g 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  
**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
DFK0075/C	10m test lead
DFK0094	kelvin lead set

CAT IV  
300V

# Specialist Testers

## 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.

## 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 reading

±2 digits over the operating temperature range (-15°C to +55°C) with the supplied test leads.

### Test current:

20Ω / 200Ω ranges - 10mA

200mΩ / 2000mΩ ranges - 100mA

2000Ω range - 1mA

Accuracy ± 1%

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

**Weight:** 1.563kg

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

**Safety Standards:** BS EN61010-1, BS EN 61326-1

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



### ACCESSORIES

TC2C calibration

## 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, leads (METDFK0113) & safety tool to remove battery cover.

## 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

## PC15250

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

**Operating temperature:** -10°C to 50°C

**Overvoltage:** CAT IV/600V

**Complies with:** GS38 and BS EN61557-7

**Weight:** 354g approx.

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

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

**Includes:** manual

## 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 when all three phases are confirmed as present.

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 fiddly caps.

- ◆ 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

CAT IV  
600V



## 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

**Power source:** 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. EN 61326-1. Class II

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

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

**Includes:** soft case (TC54), batteries and 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
------	-------------

CAT III  
1000V

CAT IV  
600V





# Continuity Testers

## 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 17th Edition multifunction testers cannot be heard.

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

### ACCESSORIES

TC2A calibration

## 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

**Power supply:** 9V, MN1604/PP3 alkaline battery

**Complies with:** BS EN 61010-2001 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:** test leads (TL49), 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 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 17th Edition multifunction testers cannot be heard.

There is a convenient belt clip and the TEK404 is supplied with CATIII 600V rated TL47 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 61010-2001 CAT III 600V, BS EN 61326-1, EMC

Do not use in CAT IV environments

**Operating temperature range:** -10 to 40°C at max 70% RH

**IP rating:** IP40

**Power supply:** 9V, MN1604/PP3 alkaline battery

**Weight:** 290g approx

**Dimensions:** 150 x 64 x 31mm

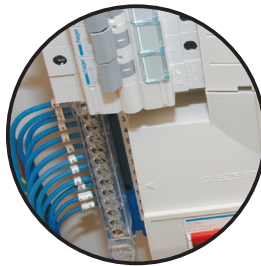
**Includes:** CAT III 600V test leads (TL47), insulated croc clips, battery and manual

# Safe Isolation and Voltage Indication



**Disconnect** all loads.

Six simple  
steps to safe  
maintenance



**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.

# Safe Isolation and Voltage Indication

## 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 and 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.

**LOKKIT1** includes: 7 locking devices, 5 warning tags, padlock, hasp, marker and case.

Essential for compliance with Electricity at Work Regulations for safe working.

## Warning Tags



These packs of 10 replacement warning tags allow you to use a new, dated and named tag every time locking off is required. 80 x 140mm.



## Padlock



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. Also available in yellow and blue.

**PAD10R (red)**  
**PAD10B (blue)**  
**PAD10Y (yellow)**

## Padlock with Insulated Shackle



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.



# Safe Isolation and Voltage Indication

## Cartridge Fuse Isolation Lock



LOK6

The LOK6 is a universal locking off device for fuse carriers. Designed to restrict finger access 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."

PAD20R not included.

## 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.

## 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

Completely encloses 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).

## MCB Isolation Locks

These locks are for use with MCBs on domestic and industrial distribution boards for isolation purposes.

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



LOK1



LOK2



LOK3



LOK4  
(For BS38  
fuse carriers)



LOK10



LOK11



LOK15



LOK5  
(For MCB &  
main switches)



LOK7  
(Slimline for MCBs)



# Safe Isolation and Voltage Indication

## 600V Safety Voltage Indicator without Fuse



Meets  
Latest  
Standard

The VI-13800 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 EN61243-3 2010 which came into force in May 2013. 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

**Power:** from circuit under test

**Weight:** 130g approx.

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

**Safety:** BS EN 61243-3:2010, 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).



VIPD138

**ACCESSORIES**  
TC2B calibration



## Lock-out Kit with VI and Proving Device

### Recommended kit



VIPDLOK138

Includes everything you need for proving dead and working safely. The lock-out kit allows you to safely isolate the supply and the proving device lets you confirm that the voltage indicator you use to prove dead is really working.

Contains VIPD138 and LOKKIT1 (page 14)

**ACCESSORIES**  
TC2B calibration



# Safe Isolation and Voltage Indication

## 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

**Power:** from circuit under test

**Weight:** 130g approx.

**Dimensions:** 205 x 67 x 27mm

**Safety:** BS EN 61243-3:2010, GS38, CAT IV 1000 V Class II double insulation

## 1000V Safety Voltage Indicator without Fuse

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

The new 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 EN61010 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.



**Meets Latest Standard**

**ACCESSORIES**  
TC2A calibration

**CAT III**  
1000V

**CAT IV**  
1000V

## Voltage Indicator & Proving Device



**VIPD150**

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 device 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

**CAT IV**  
1000V

## Lock-out Kit with VI and Proving Device

### Recommended kit



**VIPDLOK150**

The complete 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 a complete lock out kit, supplied with soft carry cases.

**Contains VIPD150 and LOKKIT1 (page 14)**

**ACCESSORIES**  
TC2B calibration



**CAT IV**  
600V



# Safe Isolation and Voltage Indication

## 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 for all measurements.

Drummond test lamps conform to the latest safety standards including the HSE GS38 Guidelines, BS EN61243-3 and BS EN 61010-1. Safety features include a double insulated, heat and oil resistant cable with contrasting inner sheath to easily identify abrasion, finger guard and insulated probe tips.

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

CAT III  
1000V

CAT IV  
600V



**DRUMMOND**

## 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% rel.H.

**Measurement CAT:** CATIV 600V

**Pollution degree:** 2

**IP rating:** IP64

**Weight:** 0.32kg

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

### ACCESSORIES

TC2A	calibration
TC2B	calibration (MTL10PD)
TC69	carry case
MTL2103	30mm straight probe
MTL2104	62mm straight probe
MTL2105	62mm L shaped probe
MTL2106	130mm straight probe
MTL2107	130mm angled probe

## 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
TC2B	calibration (MTL20PD)
TC69	carry case
MTL2103	30mm straight probe
MTL2104	62mm straight probe
MTL2105	62mm L shaped probe
MTL2106	130mm straight probe
MTL2107	130mm angled probe



CAT III  
1000V

CAT IV  
600V

**DRUMMOND**

## 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% rel.H.

**Measurement CAT:** CATIV 600V

**Pollution degree:** 2

**IP rating:** IP64

**Weight:** 0.35kg

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

# Safe Isolation and Voltage Indication

## SMKIT5

Includes:

**TEK101 specification:**  
see page 26

**VT7 specification:** see page 22

**MTL10 specification:** see page 18

**PD440 specification:** see page 21

## SMKIT10

Includes:

**TEK101 specification:**  
see page 26

**VT7 specification:** see page 22

**MTL10 specification:** see page 18

**PD440 specification:** see page 21

**BZ101 specification:** see page 40

## Smart Metering Kit

The complete solution to enable safe working practices during the installation of Smart Meters. The SMKITS contain all the 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 only), 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.



Kit includes:

- |            |  |
|------------|--|
| 1 x BZ101  | Buzz-It Check Plug with Sounder for UK 13A Sockets (SMKIT10 only)    |
| 1 x TEK101 | Non-contact voltage indicator with built in proving device           |
| 1 x VT7    | Single Pole Contact Voltage Tester suitable for use when wearing PPE |
| 1 x MTL10  | Drummond AC/DC Test Lamp 600V CAT IV                                 |
| 1 x PD440  | Proving Device   |
| 1 x TC70   | Combination soft carry case  |

### ACCESSORIES

TC2B calibration

## MTL10 Test Lamp with Proving Device

### Recommended kit



MTL10PD

**DRUMMOND**

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

## MTL20 Test Lamp with Proving Device

### Recommended kit



MTL20PD

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

### ACCESSORIES

TC2B calibration

CAT III  
1000V

CAT IV  
600V

### ACCESSORIES

TC2B calibration

CAT III  
1000V

CAT IV  
600V

# Safe Isolation and Voltage Indication

## Proving Devices

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

Safe electrical working requires the use of a voltage indicator that has been proven with a suitable proving device 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 and multimeters 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.

Devices capable of indicating to 690V should be proved at a nominal 700V. For voltage indicators with a 690V AC range, we recommend the use of a PD690 or PD700. For instruments designed for measuring single and three phase supplies up to 440V AC we recommend the use of the PD430 or PD440.

The PD430 and PD700 feature an initial low 50V output which is followed by the full test voltage to prove the complete voltage range of the instrument. The test at 50V is to ensure the indicator works at the threshold where voltages are deemed to be dangerous.

Some indicators e.g. the Drummond MTL20 have the ability to safely draw high currents to suppress phantom voltages. The PD700 is able to test that the high current draw feature of these indicators is working.

The PD710 is also available with a 700V DC output.

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



## 240V Proving Device



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 PD430-PD710 range 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



# Safe Isolation and Voltage Indication

## Proving Devices for low and high impedance testers up to 700V

### PD430 - PD710

**Operating Temperature:** -10°C to +40°C at max 70% RH

**Power:** 6 x 1.5V AA alkaline batteries (IEC LR6 NEDA 15A) (included)

**Body:** flame retardant ABS

**Dimensions:** 143 x 84 x 50mm

**Weight:** 400g approx incl batteries



PD430



PD440



PD690



PD700



PD710

### ACCESSORIES

TC2A calibration

## PD comparison table

	Low Voltage	High Voltage	Low Voltage LED	High Voltage LED	Low Battery LED	High / Low Z Compatible	Suitable for
PD240	–	240V DC	–	✓	–	–	Digital multimeters & 2 pole voltage testers (>120kΩ)
PD430	50V AC	440V AC	✓	✓	✓	✓	Multimeters, voltage testers & Drummond test lamps
PD440	–	440V AC	–	✓	✓	✓	Multimeters, voltage testers & Drummond test lamps
PD690	–	700V AC	–	✓	✓	✓	Multimeters, voltage testers & Drummond test lamps
PD700	50V AC	700V AC	✓	✓	✓	✓	Multimeters, voltage testers & Drummond test lamps
PD710	–	700V DC	–	✓	✓	✓	Multimeters, voltage testers & Drummond test lamps

External power supply options available.

PSUHPAT12 (in-car)

PSUPD230 (UK mains)

# Safe Isolation and Voltage Indication

## Single Pole Voltage Tester optimised for use with PPE



A single pole contact voltage indicator 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:** <5µA

### Environmental

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

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

**Altitude:** up to 2000m

### General

**Power:** 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 Indicator & 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.

**Adds 2 pole AC and DC detection**



### ACCESSORIES

TC2A calibration

TC2B calibration (VT12PD)

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

**Meets Latest Standard**

## 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/acoustical

**Continuity range:** 0-500kΩ

**GS 38 caps:** removable

**Standard & regulations:** BS EN 61243-3 2010

**Weight:** 130g approx.

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

**Includes:** battery and manual



# Safe Isolation and Voltage Indication

## VT25

**Voltage range:** 12-690V AC/DC  
**Frequency range DC:** 16-400Hz  
**LED indication:** ±12, 24, 50, 120, 230, 400, 690V  
**Single Pole Phase Test:** 100-690V  
**Frequency range DC:** 50-60Hz  
**Phase Rotation Test:** 120-400V  
**Frequency range DC:** 50-60Hz  
**Continuity Range:** 0-500kΩ  
**GS38 caps:** removable  
**Standard & Regulations:**  
 BS EN 61243-3 2010  
**Cable length:** 1.2m  
**IP rating:** IP64  
**Auto power off**  
**Torch light:** White LED  
**Power:** 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 version of EN61243-3 2010 and is supplied with removable probe caps for GS38 compliance. It is ergonomically designed and of durable construction for both industrial and domestic applications. 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

**Adds phase rotation and torch**

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

### ACCESSORIES

TC2A calibration  
 TC2B calibration (VT25PD)  
 CAPVT25 spare GS38 caps

CAT III  
1000V

CAT IV  
600V



## VT28

**Voltage range:** 12-690V AC/DC  
**Frequency range DC:** 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 dgts)  
**Single pole phase test:**  
 100-690V AC RMS  
**Frequency range DC:** 50-60Hz  
**Phase rotation test:**  
 120-400V AC RMS  
**Frequency range DC:** 50-60Hz  
**Continuity range:** 0-500kΩ  
**GS 38 caps:** removable  
**Standard & regulations:**  
 BS EN 61243-3 2010  
**Cable length:** 1.2m  
**IP rating:** IP64  
 Auto power off  
**Torch light:** White LED  
**Power:** 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.

**Adds 4 digit LCD display**

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

**Meets  
Latest  
Standard**

### ACCESSORIES

TC2A calibration  
 TC2B calibration (VT28PD)  
 CAPVT25 spare GS38 caps

CAT III  
1000V

CAT IV  
600V





# Safe Isolation and Voltage Indication

## Non-contact Voltage Tester



The VT2 is a non-contact voltage tester for accurately detecting the presence of AC voltages between 200V and 1000V. When voltages are detected, the VT2 will automatically illuminate its tip by use of a bright red LED, giving quick and clear indication. 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. On/off switch for maximum battery life. 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.

**ACCESSORIES**  
TC2A calibration

**CAT III**  
1000V

## VT2

**Indication range:** 200V-1000V AC, 50Hz-60Hz

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

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

**Weight:** 48g (incl battery)

**Dimensions:** 170 x 19mm

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

## Non-contact Voltage and Magnetic Field Tester



The VT3 is a non-contact voltage and magnetic tester for accurately detecting the presence of AC voltages between 200V and 1000V. When voltages are detected, it will automatically illuminate its tip with a bright red LED, giving quick and clear indication. On/off switch to stop battery consumption.

In addition to its voltage detection capabilities, it shows the presence of a magnetic field by illuminating a green LED in the tip section.

**ACCESSORIES**  
TC2A calibration

**CAT III**  
1000V

## VT3

**Indication range:** 200V-1000V AC, 50Hz-60Hz

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

**Magnetic sensitivity:** >10mT

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

**Weight:** 48g (incl battery)

**Dimensions:** 170 x 19mm.

## Dual Sensitivity Non-contact Voltage Tester with Torch



This IP64 rated non-contact 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.

The VT4 indicates voltage by illuminating the tip section with a red LED and 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.

**ACCESSORIES**  
TC2A calibration

**CAT IV**  
1000V

## VT4

**Indication Ranges:**  
12V-1000V AC  
50V-1000V AC  
50Hz-400Hz AC

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

**IP rating:** IP64 to BS EN 60529

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

**Weight:** 55g

# Safe Isolation and Voltage Indication

## Non-Contact Voltage Tester Comparison Table

	AC Voltage Range	Magnetic Field Detection	Frequency Range	LED Indication	Audible Indication	Self-Test	High Resolution
VT2	200-1000V	–	50-60Hz	✓	–	–	–
VT3	200-1000V	>10mT	50-60Hz	✓	–	–	–
VT4	12-50V 50-1000V	–	50-400Hz	✓	✓	–	–
TEK100	100-600V	–	45Hz-1kHz	✓	✓	✓	–
TEK101	180-600V	–	45Hz-1kHz	✓	✓	✓	✓
TEK200	100-600V	>10mT	45Hz-1kHz	✓	✓	✓	–

### TEK100

**Voltage range:** 100 to 600V AC

**Frequency range:** 45Hz-1kHz

**Temperature:** -5 to 40°C

**Integrated self test proving function**

**Sensitivity:** registers at 3mm for 110V, 50Hz, 23mm for 240V, 50Hz (distances are from the tip of the device to a flat PVC twin core and earth cable suspended in free space)

**Indication:** visual: LED (red) and audible tone (3kHz) - voltage present. LED (green) - battery ok

**Overvoltage:** CAT III 1000V  
CAT IV 600V

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

**Housing:** flame retardant ABS

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

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

**Includes:** 9V PP3 battery, instructions

**Safety:** BS EN 61010-1  
CAT IV 600V (TEK100 & TEK100/YE)  
CAT IV 1000V (TEK101)  
Class II, double insulation  
BS EN 61326-1

### Non-contact Voltage Indicator

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 TEK100 is packaged in a tough ABS housing and is suitable for a wide range of residential, commercial and industrial applications

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



**ACCESSORIES**  
TC2A calibration



**CAT IV  
600V**

# Safe Isolation and Voltage Indication

## Non-contact Voltage Indicator - High Resolution



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 TEK100 Series of voltage indicators are the only non-contact voltage detectors with a built-in proving device that really proves the entire circuit is fully functional avoiding the need for a separate proving unit.

The tip design and optimised sensitivity make it possible to discriminate between adjacent live conductors where standard non contact voltage indicators struggle. The high resolution capability of the TEK101 improves safety and saves time on-site. The pocket sized design conforms to CAT IV 1000V safety regulations.

**ACCESSORIES**  
TC2A calibration



## TEK101

**Voltage range:**

180V to 600V AC rms

**Frequency range:** 45Hz to 1kHz

**Temperature:** -10°C to 40°C.

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

**Sensitivity:** Typical Sensing Distances for Energised Cables at 50Hz

**Cable Type at 230V**

Flat 1mm<sup>2</sup> twin & earth - 3mm  
Flat 2.5mm<sup>2</sup> twin & earth - 3mm  
Round 1.5mm<sup>2</sup> - 2mm

**Indication:** visual: LED (red) and audible tone (3kHz) - voltage present. LED (green) - battery ok

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

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

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

**Safety:** BS EN 61010-1  
CAT IV 600V (TEK100 & TEK100/ YE) CAT IV 1000V (TEK101)  
Class II, double insulation  
BS EN 61326-1

## Non-contact Voltage & Magnetic Field Tester



Detects the presence and polarity of magnetic fields produced by indicators, relays, solenoids and transformers.

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 and avoids the need for a separate proving unit.

In addition, this unit incorporates all the capability of the TEK100 voltage indicator detailed overleaf, producing a versatile instrument in a slim and ergonomic ABS housing.

**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 (distances are from the tip of the unit to a flat 1mm<sup>2</sup> PVC twin core and earth cable suspended in free space)

**Magnetic sensitivity:** 10mT

**Frequency range:** 0 to 30kHz

**Self test proving function**

**Indication:**  
LED (green) and audible tone (3kHz) - South Pole Magnetic  
LED (red) and audible tone (3kHz) - North Pole Magnetic

**Operating temperature:** -5°C to 40°C

**Overvoltage:** CAT III 1000V  
CAT IV 600V

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

**Housing:** flame retardant ABS

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

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



# Portable Appliance Testing

## PAT Tester Selection Guide

	HPAT500	HPAT600	EPAT1600	EPAT2100	MPATPLUS	E3640 FLASH
<b>Class I / II Test</b>	✓	✓	✓	✓	✓	—
<b>Lead Test</b>	✓	✓	✓	✓	With accessory	—
<b>Pass / Fail Indication</b>	✓	✓	—	—	Auto Test inhibit on fail	—
<b>Test values displayed</b>	✓	✓	✓	✓	✓	✓
<b>Selectable Limits</b>	—	✓	—	—	✓	
<b>Test mode</b>	Auto	Auto / Manual	Manual	Manual	Auto / Manual	Auto / Manual
<b>Run Test</b>	—	Simulated	✓	✓	✓	—
<b>Earth Continuity test current</b>	200mA	200mA	200mA / 8A / 25A	200mA / 8A / 25A	200mA / 25A	—
<b>110V Appliances</b>	With accessory	With accessory	✓	✓	✓	—
<b>Flash Test</b>	—	—	—	1.5kV / 3kV	1.5kV / 3kV	Up to 4kV
<b>Memory</b>	—	200 results for on-screen recall	—	—	1000 results for download	—
<b>Power Supply</b>	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. For the full range of accessories see pages 32-34.

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

# Portable Appliance Testing

## Handypat Series - Simple Handheld PAT Testers



The HPAT Series of rechargeable handheld PAT testers can be used for testing all types of portable appliances. They are designed for ease of use with one button automatic testing and ultimate portability. The small lightweight design is ideal for testing in all locations, whether under a desk or testing a wall mounted monitor. Rechargeable batteries and mains operation mean low running costs and no down time on-site.

- ◆ Simple one button automatic testing
- ◆ Pass/Fail indicator with full test results
- ◆ Class I, Class II & Lead Test
- ◆ 200mA Earth Bond - IT Safe
- ◆ 500V Insulation Test
- ◆ Rechargeable and mains operation
- ◆ Soft carry case

### HPAT600 additional features

- ◆ Automatic and manual testing
- ◆ Lead Test with adjustable limits
- ◆ 250V / 500V Insulation Test
- ◆ Backlit display with on-board help
- ◆ Memory with on-screen recall
- ◆ Simulated load test

The 250V test option on the HPAT600 is ideal for surge protected devices and adjustable test limits allows for long leads. A comprehensive range of optional adaptors are available for testing 110V appliances and equipment fitted with 3 phase plugs.

### ACCESSORIES

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

FREE  
VC



## HPAT500/HPAT600

### Earth continuity

Test current: 200mA DC

Range: 0-19.99Ω

Resolution: 0.01Ω

Accuracy: ± (5% reading + 2 dgt)

Fixed pass limits (HPAT500):

≤ 0.10Ω / ≤ 0.20Ω

Insulation Default Test Voltage

500V default: >500V DC at 1mA

Test current: 1.5mA

Ranges: 2.00MΩ, 20.0MΩ, 200MΩ

Resolution: 0.01MΩ

Accuracy:

<100MΩ ± (5% reading + 2 dgt)

>100MΩ ± (10% reading + 2 dgt)

Default pass level:

Lead: ≥ 1.0 MΩ

Class I: ≥ 1.0 MΩ

Class II: ≥ 2.0 MΩ

Fuse test

Voltage: 4V DC (open circuit)

Current: 200mA DC (short circuit)

Pass level: >2mA

General

Overload protection: 300V AC/DC

Complies to BS EN61010 : 2001

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: carry case (TC57),

manual, mains charger,

rechargeable batteries, IEC lead,

(EX332), earth bond probe (TL67)

HPAT600 adds car charger, null

adaptor

### HPAT600 additional functions

Earth continuity

User selectable pass levels: 0.1Ω

to 0.9Ω in 0.1Ω steps

Insulation

User selectable: 250V / 500V DC

Test current: 1.5mA

User selectable pass levels:

0.3MΩ to 1MΩ in 0.1MΩ steps

1MΩ to 10MΩ in 1MΩ steps

Simulated load test

Voltage: 4V DC (into open circuit)

Current: 200mA DC (short circuit)

Accuracy: ± (5% reading + 2 dgt)

(referenced to 230V)

Memory: 200 tests can be stored

for on-screen recall

## Handypat600 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	110V adaptor lead to test 110V appliances
EX331	adaptor lead to test 110V extension leads

## HPAT600KIT1

Includes:

HPAT600 specification: see above

CP501 specification: see page 40

VT2 specification: see page 24

Pass labels (500)

Fail labels (100)

PAT register booklet

Batteries

230V lead adaptor (EX332)

Mains charger (PSUHPAT230)

Null pin on key fob (TL178)

In-car charger (PSUHPAT12)

# Portable Appliance Testing

## EPAT1600

### Insulation test

#### Test voltage:

500V DC -0% +20% at 0.5M $\Omega$

#### Short circuit current:

1.5mA DC nominal

#### Display range:

0-19.9M $\Omega$

#### Accuracy of indication:

$\pm 5\%$  of reading  $\pm 1$  digit

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

#### Test voltage:

6V AC nominal with

no load

#### Test current:

25A AC nom @

0.1 $\Omega$ , 8A AC nom @ 0.1 $\Omega$

#### Display range:

0-1.99 $\Omega$

#### Accuracy of indication:

$\pm 10\%$  of reading  $\pm 2$  dgt

### Earth continuity (200mA)

#### Test voltage:

130mV DC nominal open circuit

#### Test current:

200mA DC nominal constant

current

#### Range:

0-1.99 $\Omega$

#### Accuracy of indication:

$\pm 10\%$  of reading  $\pm 2$  digit

### Fuse test

#### Test voltage:

6V AC nominal

#### Overrange threshold:

10k $\Omega$  nominal

#### Zero range threshold:

800k $\Omega$  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 IEC320 connector, 230mm

long.

### Sockets

#### Mains:

230V 13A to BS 1363

110V 16A to BS 4343

#### Lead test:

IEC320

### 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 $\pm 10\%$

50/60Hz

#### Power consumption:

10/220VA

### Complies with

EMC: BS EN50081-1

BS EN50082-1

LVD: BS EN61010-1

### Housing:

ABS/polycarbonate

### Weight:

4kg approx.

### Dimensions:

330 x 263 x 144mm

### Includes:

manual, removable earth

bond lead (TL66), adaptor to test

230V plug to socket leads (EX332).

## 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



FREE  
VC



# Portable Appliance Testing

## EasyPAT Manual PAT Tester - Professional with Flash Test



FREE  
VC

### ACCESSORIES

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

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.

## EPAT2100

### Insulation test

Same as EPAT1600 (see page 29)

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

### Run current test

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

**Accuracy:**  $\pm 10\%$  of reading  $\pm 1$  digit

### 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

110/240V adaptor:

110V 16A plug (BS 4343) to

240V 13A free socket (BS 1363)

230V IEC adaptor: 13A BS 1363

plug to IEC320 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

EN61010-1

**Weight:** 5.1kg approx

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

Includes: manual, bond lead (TL66),

flash probe (TL166), 110V adaptor

(TL150), 230V plug to socket leads

Adaptor (EX332), carry bag.

## 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  $3\frac{1}{2}$  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®**

## 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

EN50081-1 and BS EN50082-2

Safety & flash test: BS EN61010-1

**Weight:** 4kg approx.

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

**Includes:** flash gun (DFH0369),

earth lead (DFH0366), mains

power lead (TL205) and manual

# Portable Appliance Testing

## MPATPLUS

### Insulation test

**Test voltage:** 500V DC - 0% + 20%

**Short circuit current:** 1mA DC nominal

**Display range:** 0 to 19.9MΩ

**Accuracy:** ±5% ±1 digit

### 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 digit

### Run test

**Display range:** 0 to 3.1kVA

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

### Earth leakage test

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

**Accuracy:** ±10% ±1 digit

### 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 digit

**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 EN61010-1

**Housing:** polycarbonate/ABS

**Weight:** 4.75kg approx.

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

**Includes:** manual, removable earth bond lead (TL66), flash probe (TL166) and 110V adaptor (TL150) all contained in a carry bag

## 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
PATSUITE	downloading software

FREE  
VC

## MPATNGO

### Includes:

Micropat Plus tester

CCD barcode reader (BARCCD)

Barcoded pass labels (500)(BAR2)

Fail labels (100) (FAIL1)

Data lead (TL125)

Extension lead tester (LTDV)

110V lead (EX331)

230V lead (EX332)

Micropat software (MPATSUITE)

USB adaptor (PATUSBADAPT)

Book (PATGUIDE)

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

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

FREE  
VC

# Portable Appliance Testing

## PAT Testing Competency 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.

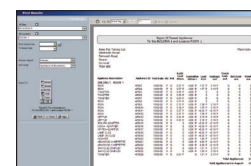
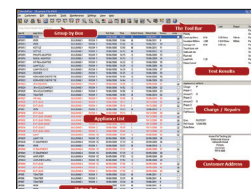
A large number of illustrations show real world situations, with practical advice on the right approach.

This A4 book contains 96 pages of advice and guidance.

## PAT Software

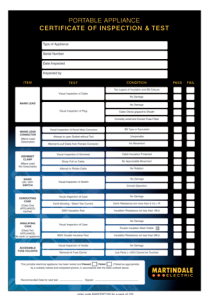


### MPATSUITE



A comprehensive, easy to use software package for use with the downloading Martindale MPATPLUS and all manual testers, as it accepts manually input results. Designed with many time saving features, speeding up testing in the field and making you more productive. Has a full range of built in reports but also enables you to export your results into other common packages.

## PAT Certificate Pad



A4 pad of 100 Portable Appliance Certificates of Test and Inspection. This gives detailed information on each appliance.

### PATCERTS

## 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.



# Portable Appliance Testing

## Extension Lead Testers



A full range of Martindale 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

## PAT Flash Gun



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.

## EX331



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

## EX332



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

## TL150



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

## TL157



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

## PAT Barcode Reader



Remote sensing readers make it easier to read appliance numbers, especially ones in hard to get at 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.

## TL66



Earth Bond Lead - 3 meters (EPAT & MICROPAT)

## TL125



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

## 3 Phase Adaptor Leads



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

## PATUSBADAPT



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

## PL13 & PAD20R



Appliance plug lock off and padlock.

# Portable Appliance Testing

## LAB1

PASS  
ELECTRICAL TEST

DATE:

TESTED BY:

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

## LAB2

PASS  
ELECTRICAL TEST

APPLIANCE NO:

TEST DATE:

NEXT TEST:

TESTED BY:

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

## LAB3

PASS  
ELECTRICAL TEST

APPLIANCE NO:

TEST DATE:

TESTED BY:

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

## POLY1

PASS  
ELECTRICAL TEST

APPLIANCE NO:

TEST DATE:

NEXT TEST:

TESTED BY:

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

## POLY2

PASS  
ELECTRICAL TEST

APPLIANCE NO:

TEST DATE:

TESTED BY:

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

## FAIL1

FAIL  
ELECTRICAL TEST

**DO NOT USE**

TEST DATE:

TESTED BY:

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

## MICRO

PASS  
MICROWAVE TEST

APPLIANCE NO:

TEST DATE:

NEXT TEST:

TESTED BY:

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

## MS1

PASS  
ELECTRICAL TEST

APPLIANCE NO:

TEST DATE:

NEXT TEST:

TESTED BY:

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 rolls of 500 (60 x 30mm).

## BAR1

APPLIANCE NO: 12345

FUSE RATING:

TEST CODE:

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).

## BAR2

APPLIANCE NO: 12345

FUSE RATING:

TEST CODE:

PASS  
ELECTRICAL TEST

APPLIANCE NO:

TEST DATE:

NEXT TEST:

TESTED BY:

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).

## BAR3

APPLIANCE NO: 12345

FUSE RATING:

TEST CODE:

PASS  
ELECTRICAL TEST

APPLIANCE NO:

TEST DATE:

TESTED BY:

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 marker pen excluding the BAR1, BAR2 and BAR3

**Martindale Kits offer value,  
simplify buying decisions and  
provide complete solutions to  
many applications.**

# Price List

PAT Testers  
17th Edition Testing  
Sockets Testers  
Voltage Indication  
Multimeters & Clamp Meters  
Continuity Testers  
Phase Rotation  
Fuse Finders  
Environmental  
Thermometry  
Test Leads &  
Accessories  
Decade Boxes  
Metrohm  
Drummond  
Calibration & Service

All products, except consumable items, have a 2 year warranty and products are supplied with batteries where applicable.



**VIPD150**  
**Voltage Indicator Kit**  
VI-15000 voltage indicator  
and PD690 proving unit in a  
TC69 case (CAT IV 1000V)



**HAPT600KIT1**  
**Comprehensive PAT**  
**Testing Kit**



**VIPDLOK138**  
**Safe Isolation kit**  
Lock off kit with VI13800  
voltage indicator and  
PD440 proving unit



**LOKKIT1**  
**Comprehensive Lock Off**  
**Kit**



**FD650**  
**Elite Professional Fuse**  
**Finder Kit**

**01923 441717**  
[www.martindale-electric.co.uk](http://www.martindale-electric.co.uk)



# Calibration

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

- ♦ insulation testers
- ♦ rcd testers
- ♦ loop testers
- ♦ multifunction
- ♦ 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: 2008 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.



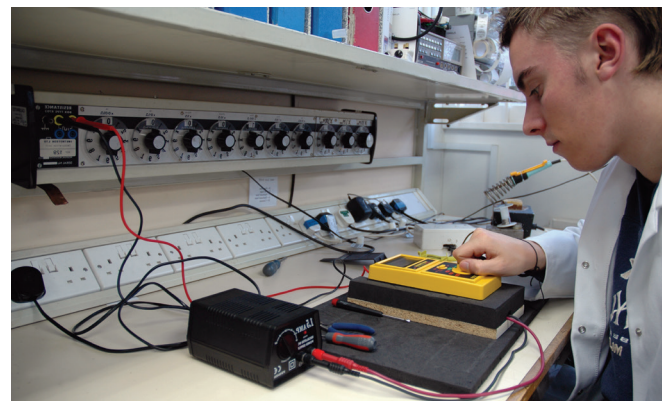
## Calibration

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.



## 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 CP501, BZ101	Advanced EZ150	Professional EZ2500
<b>Capabilities</b>			
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	✗	✗	✓

All socket testers will show the absence of an Earth; the Martindale EZ150 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 Amendment 3:2015. 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 EZ150 and EZ2500 have this capability built-in.

### 17th 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 to Amendment 3 of the 17th Edition Wiring Regulations, see our ET4000/4500 multifunction installation testers on pages 3-5.



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

# Socket Testers

## 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



## CP501

**Operating voltage range:** 200-250V

**Frequency range:** 30-70Hz

**Power consumption:** <1.8W

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

**Pollution degree:** 2

**Power 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 EN61010

**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)**

## 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



## BZ101

**Operating voltage:** 200V-250V

**Frequency:** 50Hz

**Power consumption:** <2.7W

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

**Pollution degree:** 2

**Power supply:** from mains

Open Earth if Earth resistance > 50k ohm nom at 230VAC nom

Open Neutral if Neutral resistance > 50k ohm nom at 230VAC nom

Earth Leakage <5mA on a correctly wired socket

**Complies with:** BS EN61010

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



## EZ150

**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:** 64g approx.

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

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

## E-Ze Check Xtra™ with Non-Trip Earth Loop Impedance

The EZ150 was the first socket tester to indicate the value of earth loop impedance in addition to checking the socket wiring and has become the industry standard for installers, electricians and service personnel.

Basic socket testers can show if a socket is earthed, but not if the earth has a low enough resistance for protection devices to work properly and avoid electrocution when a fault occurs. The EZ150 does both.

Martindale's T-Safe™ patented technology gives safe, earth loop impedance checking within carefully selected bands, without tripping RCDs and RCBOs.

- ◆ Identifies faults other checkers can't
- ◆ Built-in self test
- ◆ Patented non-trip earth loop test
- ◆ Socket test for open termination and correct wiring
- ◆ Voltage test

**This is an “advanced” socket tester as described by the Health & Safety Executive.**



CAT II  
300V

### ACCESSORIES

TC2A calibration

## EZ650

**EZ150 specification:** see above

**Includes:** mains lead (EX332 13A), 3-way fused leads (TL88) and carry case

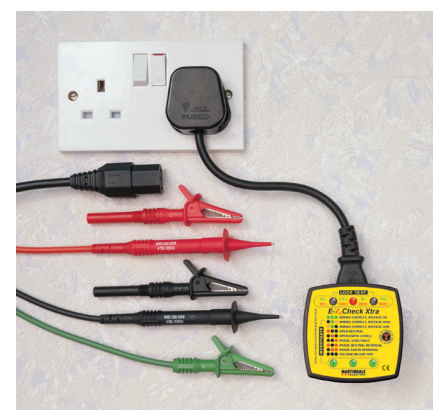
## E-Ze Check™ Xtra Professional Kit

The kit version extends the applications of the EZ150 from advanced 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 suite of tests at light fittings, fused connection units and sub-distribution boards

The EZ650 kit shares the same T-Safe™ technology as the EZ150 to ensure that RCDs and RCBOs will not trip when the loop impedance check is carried out.

The comprehensive kit is supplied in a soft carry case for extra protection and convenience. (include carry case in spec panel )

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



### ACCESSORIES

TC2A calibration

CAT II  
300V

# Socket Testers

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



Smart and easy  
Switch free operation  
Battery free operation  
Full socket testing  
All P-E, P-N, PFC, PSC  
readings on one display

A "Professional socket" tester as described  
by the Health & Safety Executive

The EZ2500 is a professional socket tester that in addition to validating the socket wiring gives actual values for earth loop impedance. It's unique in being able to carrying out all tests automatically with no complicated switches or buttons ensuring the right test every time.

The simple and smart auto test sequence makes it ideal for applications where confirmation of adequate earthing is required prior to the installation and maintenance of electrical equipment. Applications also include 17th Edition high current and non-trip loop testing for wiring installations.

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

The tester is supplied with a 13A plug mains lead for testing at 13A socket outlets. An additional 3 wire test lead can be purchased for testing at light fittings, fused connection units and sub distribution boards.

A soft carry case and comprehensive manual are included.

### EZ2500

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

**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)

**Power supply:** from mains

**Power consumption:** < 1.6W

**Pollution degree:** 2

**Complies with:** BS EN61010, BS  
EN61557 & BS 7671 (17th Edition)

**Weight:** 240g approx.

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

**Includes:** carry case (TC210),  
mains lead & manual

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



#### ACCESSORIES

TC2A calibration  
TL88 3-way fused test leads

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

**Power 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 EN61010

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

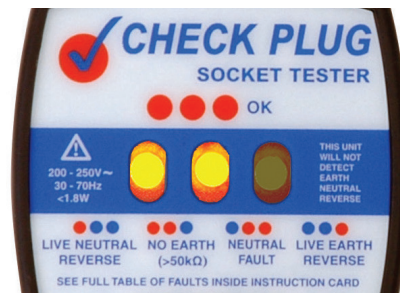
**Weight:** 195g approx.

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

## 250V Industrial Check Plug

The CP201 is an industrial version of the classic check plug, fitted with a 250V 16A 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.



**ACCESSORIES**  
TC2A calibration

**CAT III**  
300V

## 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 EN61010

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

**Weight:** 180g approx.

## 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.



**ACCESSORIES**  
TC2A calibration

**CAT II**  
150V



# Socket Testers

## 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, 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 for PC104/16 – 16A 4 pin
TC68	case for PC104/32 – 32A 4 pin

CAT III  
300V

## 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:** 292g approx (without plug)

**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 for PC104/16 – 16A 4 pin
TC68	case for PC104/32 – 32A 4 pin

CAT III  
300V

## PC105

**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

Class II Double Insulation

Pollution degree: 2

**EMC:** Conforms to BS EN 61326-1

**Dimensions:** 131 x 94 x 54mm

**Weight:** 292g approx (without plug)

**Includes:** Manual

## Multimeter Comparison Chart



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

Best accuracies shown ± (% readings + digits)



### 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.



### TL45

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



### MG2

Magnetic strap (meter not included).



### TC55

Suitable for all current Martindale multi-meters (190 x 88 x 55mm).

# Multimeters

## 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 and DC voltage and 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	optional fused test leads
TC55	case

CAT III  
600V

## MM39

**Display:** 3½ digit

**DC V:** 0.1mV-600V (5 ranges)

**AC V:** 0.1mV-600V (5 ranges)  
(50Hz-500Hz)

**DC current:** 0.01A-10A

**AC current:** 0.01A to 10A (50Hz to 500Hz)

**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:** leads (TL16), 2 x 1.5V 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
MG2	magnetic strap
TL55	optional fused test leads
TC55	case
TTXX	K-type thermocouples (see page 64)

CAT III  
600V

## MM64

**Display:** 3½ digit

**DC V:** 0.1mV-600V  
(± 0.5% rdg ± 1 dgt)

**AC V:** 0.1mV-600V  
(± 1.2% rdg ± 4 dgt)

**Ohms:** 0.1Ω-20MΩ (± 1% rdg ± 4 dgt)

**AC A:** 0.1μA-200mA (± 1.5% rdg ± 4)

**DC A:** 0.1μA-200mA (± 1% rdg ± 1 dgt)

**Frequency:** 1Hz-40kHz  
(± 0.1% rdg ± 3 dgt)

**Capacitance:** 0.1μF-20mF  
(± 4% ± 10 dgt)

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

**Weight:** 285g approx

**Includes:** leads (TL16), K-type thermocouple, 1 x spare fuse, 9V battery & manual.

## 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
MG2	magnetic strap
TL55	optional fused test leads
TC55	case

CAT III  
600V

## MM65

**Display:** 3¾ digit

**DC V:** 0.1mV-600V  
(± 1% rdg ± 2 dgts)

**AC V:** 1mV-600V  
(± 2% rdg ± 5 dgt)

**Ohms:** 0.1Ω-34MΩ  
(± 1.5% rdg ± 4 dgt)

**AC A:** 0.1μA-10A  
(± 2.5% rdg ± 5 dgt)

**DC A:** 0.1μA-10A  
(± 2% rdg ± 2 dgt)

**Continuity:**  
<35Ω (audible indication)

**Diode test**

**Weight:** 285g approx

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

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



## MM68

**Display:** 4½ digit

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

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

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

**AC A:**  
0.01μA-10A (±1.5% rdg ± 5dgt)

**DC A:**  
0.01μA-10A (±0.5% rdg ± 10)

**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:** leads (TL16), 1 x spare fuse, 9V battery(installed) & 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
MG2	magnetic strap
TL55	optional fused test leads
TC55	case

CAT III  
600V

CAT II  
1000V

## MM94

**Display:** 4 5/6 digit 60,000 Count

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

**AC V:** 0.01mV-750V  
(± 2% rdg ± 20 dgt)

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

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

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

\*Continuous max 10A

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

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

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

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

**Weight:** 400g approx.

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

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

## 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 includes a 60,000 count backlit display with analogue bargraph.



### ACCESSORIES

TC2B	calibration
TC55	case

CAT III  
1000V

CAT IV  
600V

TRUE  
RMS

# Clamp Meters

	AC Current	DC Current	AC Volts	DC Volts	Ohms	Frequency	Max Conductor Size	True RMS	Min / Max	Backlight	Other	Safety
<b>ET4</b>	200.0A 2.0% ± 10 (50-60Hz)	200.0A 2% ± 5	mV,V to 600V 1.2% ± 5	mV, V to 600V 1.2% ± 5	Ω, kΩ, MΩ 1% ± 5	Hz	15mm Ø	—	—	✓	Autorange, Continuity, Diode Test, Non contact voltage, Torch, Hold, Auto power off	CAT III 600V
<b>ET5</b>	200A-0A 2.0% ± 10 (50-60Hz)	200.0A 2% ± 5	mV,V to 600V 1.2% ± 5	mV, V to 600V 1.2% ± 5 0.5% ± 2	Ω, kΩ, MΩ 1% ± 5	Hz	15mm Ø	—	—	✓	As above plus Capacitance, Duty cycle, Temperature	CAT III 600V
<b>CM69</b>	6.0000mA/ 60.00mA 600.0mA 6.000A/ 60.00A 1% ± 3	—	60.00V 600.0V 1% ± 3	60.00V 600.0V 1% ± 2	Ω, kΩ, 1% ± 2	—	20mm Ø	✓	Peak	✓	Autorange, Low pass filter, 1µA resolution, Hold, Auto power off	CAT III 600V CAT IV300V
<b>CM51</b>	40.00A 300.0A 1.8% ± 5 (40-500Hz)	—	—	—	—	—	27mm Ø	—	—	—	Autorange, Hold, Auto power off	CAT III 300V
<b>CM55</b>	40.00A 400.0A 1.9% ± 3	—	400.0V 600V 1.2% ± 3	400.0V 600V 1% ± 3	400 Ω 1% ± 2	—	25mm Ø 35x15mm	—	—	—	Autorange, Hold, Auto power off	CAT III 600V
<b>CM57</b>	60.00A 600.0A 1.9% ± 5	—	mV,V to 600V 1.2% ± 5	mv, V to 600V 1% ± 3	Ω, kΩ, MΩ 1.2% ± 3	Hz, kHz	25mm Ø 35x15mm	✓	—	✓	Autorange, Non contact voltage, Smart measurement, Capacitance, Diode Test, Hold, Auto power off	CAT III 600V
<b>CM79</b>	60.00A 600.0A 1.9% ± 5	60.00A 600.0A 2% ± 5	600.0V 1.2% ± 5	600.0V 1% ± 5	1000.0Ω 1% ± 2	—	25mm Ø 45x15mm	✓	✓	✓	Autorange, Hold, Auto power off	CAT III 600V
<b>CM95</b>	4.000A 40.00A 400.0A 3.0% ± 5	—	—	—	—	—	85mm Ø	✓	✓	✓	1mA resolution, Flexible, Inhibit for logging, Hold, Auto power off	CAT IV 600V
<b>CM100</b>	30.00A 300.0A 3000A 3% ± 5	—	—	—	—	—	160mm Ø	✓	✓	✓	Flexible, Auto power off Inhibit for logging, Hold	CAT IV 600V
<b>CM82</b>	40.00A 400.0A 1000A 2% ± 6 (50-60Hz)	—	mV, V to 750V 1.5% ± 5	mV, V to 1000V 0.5% ± 2	Ω, kΩ, MΩ	Hz, kHz, MHz	51mm Ø 70x18mm	—	—	—	Diode Test, Capacitance, Auto/manual range, Hold, Auto power off	CAT IV 600V
<b>CM84</b>	400.0A 1000A 2% ± 6	400.0A 1000A 2% ± 5	mV, V to 750V 1.5% ± 5	mV, V to 1000V 0.5% ± 2	Ω, kΩ, MΩ	Hz, kHz, MHz	57mm Ø 70x18mm	—	—	—	Diode Test, Auto/manual range options, Hold, Auto power ofof	CAT IV 600V
<b>CM87</b>	660.0A 1500A 2% ± 10 (50-60Hz)	660.0A 2000A 2% ± 5 (<660A)	V to 750V 1.5% ± 8	V to 1000V 0.5% ± 2	Ω, kΩ, MΩ	Hz, kHz, MHz	57mm Ø 70x18mm	✓	✓	✓	Diode Test Capacitance, Inrush, Hold, Temperature, Auto power off,	CAT IV 600V
<b>CMi210</b>	600.0A 1500A 2.5% ± 10 (50-60Hz)	600.0A 2000A 2% ± 5 (<660A)	mV, V to 750V 1.5% ± 8	mV, V to 1000V 0.5% ± 2	Ω, kΩ, MΩ	Hz, kHz, MHz	57mm Ø 70x18mm	✓	✓	✓	50-1000V Insulation Test, Inrush, HFR filters, Capacitance, Diode Test, Temperature Duty cycle, Hold	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 reading + 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 reading + 5 dgt)

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

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

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

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

**Power:** 9V PP3 Alkaline

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

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

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

### ET5 additional functions

**Temperature:** -35°C-500°C

**Accuracy:**  $\pm 2\%$  rdg  $\pm 3^\circ\text{C}$

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

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

**Includes:** TL17 leads, K-type thermocouple (ET5), 9V battery, case & 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	optional fused test leads
TTXX	K-type probes (see page 64)

CAT III  
600V

## CM69

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

**Accuracy:**  $1\% \pm 3\text{dgt}$

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

**Accuracy:**  $\pm 1\% \pm 3\text{dgt}$

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

**Accuracy:**  $\pm 1\% \pm 3\text{dgt}$

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

**Accuracy:**  $\pm 1\% \pm 2\text{dgt}$

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

**Accuracy:**  $\pm 1\% \pm 2\text{dgt}$

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

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

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

Auto power off, low battery indication

**Power:** 2 x 1.5V AAA

**Weight:** 270g approx.

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

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

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

The CM69 is a new high performance TRMS AC Leakage Clamp meter with outstanding low current capability able to resolve down to 1 $\mu\text{A}$ . 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.

Peak hold, a switchable low pass filter 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 triple neutral currents and other distorted waveforms
- ◆ Differential current measurement for appliance testing

The CM69 also features auto ranging and a high contrast backlit display.



### ACCESSORIES

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

TRUE  
RMS

CAT III  
600V

CAT IV  
300V



# Clamp Meters

## 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 a shirt pocket.

### ACCESSORIES

TC2A calibration

CAT III  
300V

## CM51

**Display:** 3½ digit LCD display with annunciators

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

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

**Max conductor:** 27mm Ø

**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.

### ACCESSORIES

TC2B calibration

CAT III  
600V

## CM55

**AC A:** 40.00A / 400.0A (50-400Hz)

**Accuracy:**  $\pm 1.9\% \pm 3 \text{dgt}$  (50-60Hz)

**AC V:** 400.0V / 600V (50-400Hz)

**Accuracy:**  $\pm 1.2\% \pm 3 \text{dgt}$  (50-60Hz)

**DC V:** 400.0V / 600V

**Accuracy:**  $\pm 1\% \pm 3 \text{dgt}$

**Ohms:** 400Ω

**Accuracy:**  $\pm 1\% \pm 2 \text{dgt}$

**Continuity:** buzzer < 25Ω

**Max conductor:** 25mmØ

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

**Power:** 2 x 1.5V AAA

**Weight:** 260g approx.

**Dimensions:** 203 x 75 x 32mm

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

## CM57

**AC A:** 60.00A / 600.0A  
**Accuracy:**  $\pm 1.9\% \pm 5\text{dgt}$   
**AC V:** 6.000V / 60.00V / 600V  
**Accuracy:**  $\pm 1.2\% \pm 5\text{dgt}$   
**DC V:** 6.000V / 60.00V / 600V  
**Accuracy:**  $\pm 1\% \pm 3\text{dgt}$   
**Ohms:** 600.0 $\Omega$  to 6.000M $\Omega$   
**Accuracy:**  $\pm 1.2\% \pm 3\text{dgt}$   
**Continuity:** buzzer  $\leq 30\Omega$   
**Capacitance:** 6.000nF to 600.0 $\mu\text{F}$   
**Accuracy:**  $\pm 3\% \pm 10\text{dgt}$   
**Frequency:** 6.000kHz / 10.00kHz (A), 6.000kHz to 100.0kHz (V)  
**Accuracy:**  $\pm 1.2\% \pm 3\text{dgt}$   
**Max conductor:** 25mm (use normal symbol from CM51)  
**Operating environment:** 0°C to 40°C, <80% RH  
**Power:** 2 x 1.5V AAA  
**Weight:** 270g approx.  
**Dimensions:** 203 x 75 x 32mm  
**Includes:** leads (TL16), case, batteries and manual

## TRMS AC Smart Clamp Multimeter 60.00A / 600.0A

The CM57 is a new 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.



**ACCESSORIES**  
 TC2B calibration

TRUE  
RMS

CAT III  
600V

## CM79

**AC A:** 60.00A / 600.0A  
**Accuracy:**  $\pm 1.9\% \pm 5\text{dgt}$   
**DC A:** 60.00A / 600.0A  
**Accuracy:**  $\pm 2\% \pm 5\text{dgt}$   
**AC V:** 600.0V  
**Accuracy:**  $\pm 1.2\% \pm 5\text{dgt}$   
**DC V:** 600.0V  
**Accuracy:**  $\pm 1\% \pm 2\text{dgt}$   
**Ohms:** 999.0 $\Omega$   
**Accuracy:**  $\pm 1\% \pm 2\text{dgt}$   
**Continuity:** buzzer  $\leq 30\Omega$   
**Max conductor:** 25mm diameter, 35mmx15mm bus bar  
**Operating environment:** 0°C to 40°C, 80% RH  
**Power:** 2 x 1.5V AAA  
**Weight:** 255g approx.  
**Dimensions:** 209 x 74 x 36mm  
**Includes:** leads (TL16), 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 an elliptical jaw to accommodate bus bars up to 35x15mm, thumbwheel for single handed operation, auto ranging for ease of use, auto power off and low battery indicator plus a high contrast backlit display. Useful functions include hold and Min/Max hold for monitoring maximum loads, start up and charging currents.



**ACCESSORIES**  
 TC2B calibration

TRUE  
RMS

CAT III  
600V

# Clamp Meters

## 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 limitation.

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  $\pm$  5 dgts (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 EN61326-1

**Low battery indication**

**Auto power off/disable**

**Power:** 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:**  $\pm$ 3.0%  $\pm$  5 dgts (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 EN61326-1**

**Low battery indication**

**Auto power off/disable**

**Power:** 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

**Display:** liquid crystal display  
**AC V:** 0.1mV to 750V, autoranging (50Hz to 500Hz) (5 ranges)  
**Accuracy:** 1.5% rdg + 5 dgts  
**AC A:** 0.01A to 1000A (3 ranges) (50Hz to 400Hz)  
**Accuracy:** 2.0% rdg + 6 dgts ( $\leq 600A$ ) 50Hz to 60Hz  
 2.5% rdg + 6 dgts ( $>600A$ ) 50Hz to 60Hz  
**DC V:** 0.1mV to 1000V autoranging (5 ranges)  
**Accuracy:** 0.5% rdg + 2 dgts  
**Resistance ranges:** 400 $\Omega$ , 4 k $\Omega$ , 40k $\Omega$ , 400k $\Omega$ , 4M $\Omega$ , 40M $\Omega$   
**Resolution:** 0.1  $\Omega$  on 400 $\Omega$   
**Accuracy:** 1.0% rdg + 5 dgts on 400 $\Omega$  to 400k $\Omega$ , 2.0% rdg + 5 dgts on 4M $\Omega$ , 3.5% rdg + 5 dgts on 40M $\Omega$   
**Capacitance:** 4nF to 4mF (7 ranges)  
**Frequency:** 0.001 kHz to 1 MHz (4 ranges)  
 Continuity: Buzz at  $< 25\Omega$   
**Maximum conductor:** 51mm diameter or 70 x 18mm bus bar  
**Diode test**  
**Dimensions:** 279 x 103 x 53mm  
**Weight:** 515g incl battery approx  
**Includes:** leads (TL16), case (TC68), battery & 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 optional fused test leads

CAT III  
1000V

CAT IV  
600V

## CM84

**Display:** liquid crystal display  
**AC V:** 0.1mV to 750V, autoranging (50Hz to 500Hz) (5 ranges)  
**Accuracy:** 1.5% rdg + 5 dgts  
**AC A:** 0.1A to 1000A (2 ranges)  
**Accuracy:** 2.0% rdg + 6 dgts ( $\leq 600A$ ) 50Hz to 60Hz  
 2.5% rdg + 6 dgts ( $>600A$ ) 50Hz to 60Hz  
**DC V:** 0.1mV to 1000V autoranging (5 ranges)  
**Accuracy:** 0.5% rdg + 2 dgts  
**DC A:** 100mA to 1000A  
**Accuracy:** 2.0% + 5 dgts ( $\leq 600A$ )  
 3.0% + 5 dgts ( $>600A$ )  
**Resistance ranges:** 400 $\Omega$ , 4k $\Omega$ , 40k $\Omega$ , 400k $\Omega$ , 4M $\Omega$ , 40M $\Omega$   
**Resolution:** 0.1 $\Omega$   
**Best Accuracy:** 1.0% rdg + 5 dgts to 400k $\Omega$   
 2.0% rdg + 5 dgts on 4M $\Omega$   
 3.5% rdg + 5 dgts on 40M $\Omega$   
**Frequency:** 0.001 kHz to 1 MHz  
**Continuity:** buzz at  $< 25\Omega$   
**Maximum conductor:** 57mm diameter or 70 x 18mm bus bar  
**Diode test**  
**Dimensions:** 281 x 108 x 53mm  
**Weight:** 570g approx incl battery  
**Includes:** leads (TL16), case (TC68), battery & 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 and has a useful DC current zero function.

The large jaw will accommodate conductors with diameters up to 55mm and bus bars up to 70mmx18mm.



### ACCESSORIES

TC2A calibration  
 TL55 optional fused test leads

CAT III  
1000V

CAT IV  
600V

# Clamp Meters

## TRMS AC/DC Clamp Meter 660.0A / 2000A



A high specification True RMS clamp meter. The CM87 is packed full of functions for the installation, testing and maintenance of domestic, industrial and utility installations.

This robust clamp meter provides True RMS measurement 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.

TRUE  
RMS

CAT III  
1000V

CAT IV  
600V

### ACCESSORIES

TC2B calibration  
TL55 optional fused test leads

## CM87

**Display:** liquid crystal display  
**AC V:** true RMS 0.001V to 750V, autoranging  
**Best accuracy:** 1.5% rdg + 8 dgts  
**AC A:** true RMS 0.1A to 1500A  
**Best accuracy:** 2.0% rdg + 10 dgts ( $\leq 660A$ ) 50-60Hz  
**DC V:** 0.001V to 1000V autoranging (4 ranges)  
**Best accuracy:** 0.5% rdg + 2 dgts  
**DC A:** 100mA to 2000A  
**Best accuracy:** 2.0% + 5 dgts ( $\leq 660A$ )  
**Resistance:** 660 $\Omega$ , 6.6k $\Omega$ , 66k $\Omega$ , 660k $\Omega$ , 6.6M $\Omega$ , 66M $\Omega$   
**Resolution:** 0.1 $\Omega$  on 660 $\Omega$   
**Accuracy:**  
1.0% rdg + 5 dgts to 660k $\Omega$   
2.0% rdg + 5 dgts on 6.6M $\Omega$   
3.5% rdg + 5 dgts on 66M $\Omega$   
**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  $<30\Omega$   
**Maximum conductor:** 57mm diameter or 70mm x 18mm bus bar  
**Diode test, Duty cycle**  
**Dimensions:** 281 x 108 x 53mm  
**Weight:** 585g approx incl battery  
**Includes:** leads (TL16), case (TC68), type K thermocouple, battery & 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.

TRUE  
RMS

CAT III  
1000V

CAT IV  
600V

### ACCESSORIES

TC2B calibration  
TL55 optional fused test leads  
TL180 optional switching insulation probe

## CMi210

**AC V:** true RMS 0.001V to 750V, autoranging  
**Best accuracy:** 1.5% rdg + 8 dgts  
**AC A:** true RMS 0.1A to 1500A (2 ranges)  
**Best accuracy:** 2.5% rdg + 10 dgts ( $\leq 600A$ ) 60Hz  
**DC V:** 0.001V to 1000V autoranging (5 ranges)  
**Best accuracy:** 0.5% rdg + 2 dgts  
**DC A:** 0.1A to 2000A (2 ranges)  
**Best accuracy:** 2.0% + 5 dgts ( $\leq 600A$ )  
**Insulation resistance:** 300k $\Omega$ -6G $\Omega$  depending on voltage test  
**Best accuracy:** 250-1000V 1.5% +5  
**Capacitance:** 0.001 $\mu$ F to 6.6mF (4 ranges)  
**Frequency:** 0.01Hz to 10MHz (7 ranges)  
**Resistance ranges:** 600 $\Omega$ , 6k $\Omega$ , 60k $\Omega$ , 600k $\Omega$ , 6M $\Omega$ , 60M $\Omega$   
**Resolution:** 0.1 $\Omega$  on 600 $\Omega$   
**Best accuracy:** 1.0% rdg + 5 dgts on 600 $\Omega$  to 600k $\Omega$   
**Temperature:** -50°C to 1300°C (-58°F to 2372°F) K-type probes  
**Continuity:** buzz at  $<40\Omega$   
**Maximum conductor:** 57mm diameter or 70mm x 18mm bus bar  
**Diode test, duty cycle**  
**Dimensions:** 326 x 108 x 53mm  
**Weight:** 720g approx incl batteries  
**Includes:** leads (TL45), case, type K thermocouple, battery & manual

# Fuse Finders & Cable Detectors

## FD550 / 650

### Transmitter

**Voltage rating:** 230V

**Frequency range:** 30-70Hz

**Switching frequency:** 5Hz approx.

**Transmission pulse width:** 1.7µs approx.

**Transmission pulse amplitude:** 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.

### 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)  
(included)

**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 kit includes:

FD650/R receiver

FD600/T multi-purpose transmitter

IEC 13A mains lead adaptor

TL83 2 wire fused leads with IEC  
connector

Carry case (TC57)

Battery

## Elite Fuse Finder

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 in the transmitter to 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.

- ◆ 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



Transmitter Receiver

CAT III  
300V

CAT IV  
600V



## 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

### ACCESSORIES

TC2A calibration



CAT III  
300V





# Fuse Finders & Cable Detectors

## 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	optional fused test leads
TL78	50m R2 continuity lead
SB13	Safebreak mains socket adaptor

### Transmitter Receiver



## 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

### Power

**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 EN61010-1  
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 EN61010-031 CAT III 1000V, 10A

**EMC:** Conforms to BS EN61326

### 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,

## DC50

**Power supply:** 4 x 1.5V AA battery  
**Current consumption:** 400mA max

**Monitor:** TFT 89mm (3.5")

**Resolution:** 320 x 240 pixels

**Camera lighting:** 2 x white LEDs

**Field of view:** 54°

**Depth of field:** 30-60mm

**Operating temperature:** 0 to +45°C

**Operating humidity:** 15-85% RH

**Storage temperature:** -10 to +50°C

**Weight:** 430g approx

**Dimensions:** 90 x 205 x 131mm

**Gooseneck camera**

**Length:** 880mm approx

**Diameter:** 9.8mm

**Minimum bend radius:** 45mm

**Includes:** hard carry case, 3 x attachments, inter-connecting lead, batteries and manual

## Borescope

This borescope is ideal for fast location of cables and services in concealed locations. A 3.5" detachable TFT monitor provides a clear image for detailed engineering and mechanical applications. The waterproof 9.8mm diameter camera is IP67 rated, suitable for plumbing and drainage inspections.

The brightness of the LED lighting in the tip of the camera can be adjusted to produce a clear image, even in reflective or poorly lit locations. There is a 180 degree view rotation function to maintain correct orientation. The semi-rigid gooseneck camera can be pre-formed for difficult to access locations but still remains flexible enough to guide it around obstructions.

Three attachments clip onto the camera head. The hook attachment is ideal for retrieving cables in stud walls, the magnet for picking up metallic components and a right-angled mirror is also included for viewing behind obstructions.

### ACCESSORIES

TC2B calibration  
 DC50EXT 3m extension cable



## 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

**Power:** 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.

**Complies with** BS EN61010-1 CAT I max 50V to earth

**Pollution degree:** 2

**EMC:** Conforms to BS EN61326

## 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 by ionizing them with a high frequency voltage of approximately 3kV. It can be used to test fluorescent and neon tubes while situated in light fittings without the need for removal.

The kit is supplied with a telescopic antenna to allow testing of tubes on standard height ceilings without the need for ladders or platforms. It is also ideal for maintenance applications where new lamps can be checked before attempting installation in difficult to access locations.

It can be used for testing the following types of gas filled lamps:

- ◆ Fluorescent
- ◆ Low Press Sodium (SOX)
- ◆ High Pressure Sodium (SON)
- ◆ Neon lamps and tubes
- ◆ Mercury Vapour
- ◆ Metal Halogen

### ACCESSORIES

TC2A calibration



## 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 EN5175.



**ACCESSORIES**  
TC2B calibration

## TEK500

**Frequency of operation:** 2450 ± 25MHz

**Power density range:** ±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 (incl)

**Dimensions:** 145 x 64 x 30mm

## Carbon Monoxide Meter



A rapid responding carbon monoxide meter, ideal for checking safety.

A beeper gives audible indication, speeding up with CO concentration and becoming a continuous tone above 200 ppm.

Max and Hold buttons allow one reading (or the highest reading) to be displayed over a period of time.



**ACCESSORIES**  
TC2C calibration  
COPUMP carbon monoxide flue pump

## CO90

**Display:** 3½ digit liquid crystal display (LCD) with maximum reading of 1999 ppm

**Operating environment:** 0°C to 40°C (32°F to 105°F) at 15% to 90% relative humidity

**Response time:** <70 sec to 90% of reading

**Initial accuracy:** ± 5% of reading ± 5ppm

**Average measurement mode:** a reading is taken every 7 seconds and the average displayed on screen

**Normal measurement mode:** current reading shown on screen

**Supply:** standard 9V battery (PP3, NEDA 1604, IEC 6F22 006P) (included)

### Low battery indication

**Weight:** 193g approx. (incl battery)

**Dimensions:** 189 x 67 x 35mm



## LM90 / LM92

### LM90 ranges:

20lux, 200lux, 2000lux, 20klux  
20fc, 200fc, 2000fc, 20kfc

**Resolution:** 0.1lux, 0.1fc (LM92)

**Spectral response:** CIE photopic

**Total accuracy for CIE standard illuminant A (2856K):**

$\pm(3\%rdg + 10\ dgt)$

**Supply:** 9V battery (NEDA 1604, IEC 6F22 006P) (included)

**Dimensions:** 190 x 65.5 x 35mm

**Weight:** 210g approx. (incl battery)

**Includes:** battery and manual

**The LM90 is preferred for emergency lighting applications**

### Photometric Formulae:

10.764 foot candles=lux

(lumens/meter<sup>2</sup>)

0.0929 lux=foot candles

(lumens/ft<sup>2</sup>)

### LM92 Ranges:

200lux, 2000lux, 20klux, 200klux  
200fc, 2000fc, 20kfc, 200kfc

**The LM92 is more sensitive at higher lux levels.**

## Light Meter

The LM90 light meter resolves down to 0.01 lux, making it ideal for use in very low light applications such as certifying emergency lighting.

The manual gives details of conversion factors for different light wavelengths allowing more accurate measurements. Peak Hold & Hold functions allow a maximum reading to be recorded or one particular result to be kept. Results can be shown in lux or foot candles.

The instructions contain a graph enabling different light sources to be measured eg LED, fluorescent.

Two versions are available:

LM90 ranges: 20 lux to 20k lux (resolves to 0.01LUX)

LM92 ranges: 200 lux to 200k lux (more sensitive in higher ranges).

### 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):  $\pm(3\%rdg + 10dgt)$

**Measurement rate:** once per second

**Power:** 2 x 1.5V, AAA alkaline batteries (IEC LR03, NEDA 24A)

**Weight:** 116g incl batteries

**Dimensions:** 25 x 51 x 133mm

## 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



## SP79

**Measurement range:** 32-130 dB

**Measurement rate:** twice per second

**Display:** 4 digit LCD

**Resolution:** 0.1dB

**Frequency weighting:** A and C

**Frequency range:** 20Hz-8000Hz

**Detector:** True-RMS with independent frequency weightings

**Dynamic range:** 60dB

**Time weighting:** SLOW & FAST

**Microphone:** 1/2" electret condenser

**Supply:** 6LR61 / MN1604 / PP3

**Dimensions:** 285 x 55 x 25 mm

**Includes:** windscreen, battery & case

**Complies with:** BS EN 61672-1:2003

## 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 Class II sound level calibrator



# HVAC, Environmental and FM

## 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-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

## 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 reading)

± (40 ft/min + 2% of reading)

**Resolution:** 0.1 m/s, 1ft/m

### RELATIVE HUMIDITY

**Sensor:** Digital capacitive humidity

**Range:** 0% to 100% RH

**Best 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

**Power:** 2 x 1.5V, AAA batteries

**Dimensions:** 25 x 61 x 133mm

**Weight:** 119g approx incl batteries

**Includes:** protective cover, batteries, detachable carry strap & 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:

mmH2O (0 to 1019), mmHg (0 to 75), psi (0

to 1.45), inH2O (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, ±1dgt)

±0.3 mmH2O (0 to 3.0 mmH2O)

±0.5 mmH2O (3.1 to 10.2 mmH2O)

±1.02 mmH2O + 1.5% of reading

**Measurement rate:** twice per second.

**Max operating pressure:** 29PSI

**Power:** 2 x 1.5V, AAA alkaline

batteries (IEC LR03, NEDA 24A)

**Dimensions:** 25 x 51 x 133mm

**Weight:** 113g approx incl batteries.

**Includes:** protective cover, batteries, detachable carry strap and manual

# HVAC, Environmental and FM

## DH85

**MOISTURE:** Seven ranges  
**Accuracy:**  $\pm 1\%$   
**HUMIDITY:** Digital capacitive humidity sensor  
**Range:** 0%-100% RH  
**Best accuracy:**  $\pm 2.5\%$  at (18°C-28°C) (64.4°F-82.4°F) - 10%-90% RH. **Resolution:** 0.1% RH  
**TEMPERATURE:**  
**Range:** -20°C-60°C (-4°F-140°F)  
**Best accuracy:**  $\pm 0.5^\circ\text{C}$  for 0°C-45°C (18°C-28°C)  
**Temperature coefficient:** 10% per °C at 18°C-28°C (64.4°F-82.4°F)  
**Resolution:** 0.1°C (0.1°F)  
**Measurement rate:** per second.  
**Power:** 2 x 1.5V, AAA alkaline batteries (IEC LR03, NEDA 24A)  
**Dimensions:** 25 x 51 x 133mm  
**Weight:** 118g incl batteries.  
**Includes:** protective cover, batteries, detachable carry strap 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



## RT80

**Measuring range:** 100.0 to 99999 rpm, 1.7 to 1666 rps  
**Resolution:**  
0.1 rpm (100.0 to 99999.9 rpm)  
0.1 rps (1.7 to 333.3 rps)  
1 rpm (20000 to 99999 rpm)  
1 rps (334 to 1666 rps)  
**Accuracy:**  
 $\pm 0.02\%$  of reading + 1 digit  
Stated accuracy at 18°C to 28°C <75% RH  
**Measurement rate:** per second  
**Power:** 2 x 1.5V, AAA alkaline batteries (IEC LR03, NEDA 24A)  
**Weight:** 110g approx incl batteries  
**Dimensions:** 25 x 51 x 133mm  
**Includes:** protective cover, batteries, detachable carry strap and manual

## 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



## DT85

**Ranges:**  
K-Type (0.1°C) -100°C to 1372°C  
K-Type (1°C) -100°C to -200°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  
**Power:** 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

## 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 – see page 64





# Thermometry

## 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

## 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 reading) 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 & 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 (see page 64) 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.

## IR90

**Range:** -20°C to 550°C/-4°F to 1022°F

**Resolution:** 0.5°C/1°C (AUTO), 1°F

**Accuracy:** ±2% of reading 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

## 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 blue, 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 with an accuracy of up to 0.5°C and resolution of 0.1°C.

Useful features include the ability to record Min/Max values and a Hold function so that you never miss a reading. 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 useful battery level indicator.

TM2RD (red)  
TM2WH (white)  
TM2YE (yellow)

## TM2

**Display:** LCD, 31/2 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

**Power supply:** 1 pc. 3V CR 2032

**Battery life:** 200h

**Dimensions:** 50 x 30 x 160mm

**Weight:** 16g approx. incl. batteries

**Protection degree:** IP 67

## DT73 / DT75

**Measurement range:** -50°C to 1300°C. (-58°F to 2000°F)

**Resolution:** 0.1° to 199.9°C/°F, 1° ≥ 200°C/°F

### Accuracy:

#### DT73:

-50°C to 1000°C ±(0.3% of rdg + 1°C)  
1000°C to 1300°C ±(0.5% of rdg + 1°C)  
-58°F to 2000°F ±(0.3% of rdg + 2°F)

#### DT75:

-50°C to 0°C ± 2°C  
0°C to 1000°C ±(0.3% of rdg + 1°C)  
1000°C to 1300°C ±(0.5% of rdg + 1°C)  
-58°F to 32°F ± 4°F  
32°F to 2000°F ±(0.3% of rdg + 2°F)

### TT1P thermocouple:

4-foot K-type thermocouple bead probe (Teflon tape insulated)

Maximum insulation temperature 260°C (500°F)

Probe accuracy ± 2.2°C or ± 0.75% of reading (whichever is greater)

**Display:** 3½ digit liquid crystal display (LCD) with maximum reading of 1999

**Reading rate:** 2.5 times per second.

**Ambient operating range:** 0°C to 50°C (32°F to 122°F)

**Storage temperature:** -20°C to 60°C (-4°F to 140°F)

**SAFETY:** BS EN 61010-1 50V. Class II Double Insulation

**Pollution degree:** 2

**EMC:** Conforms to BS EN 61326-1

**Weight:** 210g approx. (incl battery)

**Dimensions:** 147 x 70 x 39mm

**Includes:** Rubberised holster, TT1P K-type thermocouple (x2 for DT75), Velcro strap, 9V battery and manual

## Single and Dual Input Digital Thermometers

The DT75 is a high quality dual-input digital thermometer with temperature difference capability. It is able to measure input and output temperature and temperature differentials through boilers, radiators etc. and can accept 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 maximum buttons allow the current value to be frozen or the maximum reading to be stored.

See page 64 overleaf for a wide range of compatible K-type probes. Two TT1P thermocouples are supplied.

The measurement range will be limited by the range of the thermocouple probe used.

The input connector accepts standard miniature K-type thermocouple connectors.

The DT73 is a single-input version of the DT75 supplied with 1 TT1P thermocouple.



### ACCESSORIES

TC2A calibration

## THERMOKIT

The sensors included are:

2 x TT1P bead thermocouples

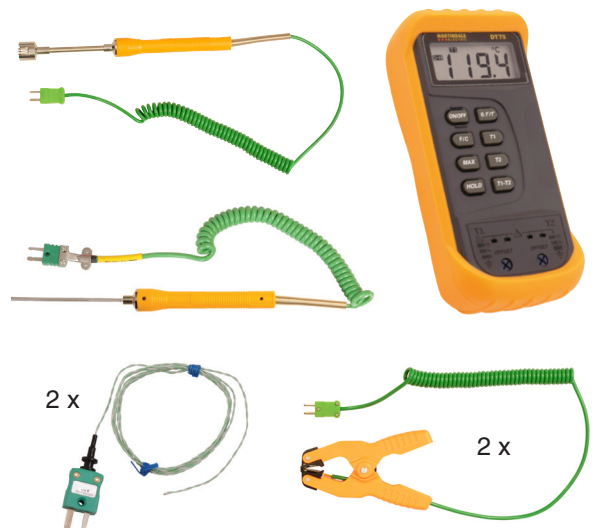
1 x TT5K air probe

1 x TT8K surface probe

2 x TT10K pipe clamp probes

## Thermometry Kit

The Thermokit includes a DT75 digital thermometer, complete with a selection of probes. The kit is supplied in a high quality soft carry case.



### ACCESSORIES

TC2A calibration (thermometer only)  
TC2D calibration (for combined kit)

## Legionella Testing Thermometer Kit



The ThermokitLGN includes the DT73 Thermometer with max function and thermocouple probes in a soft carry case. The kit can be used for temperature testing and monitoring in accordance with Health & Safety Guidelines to avoid water temperature and conditions that can favour the growth of Legionella and other bacteria. The surface and immersion probes simplify measurement on pipework and tanks.

## THERMOKITLGN

- 1 x DT73 digital thermometer
- 1 x TT6 penetration probe
- 1 x TT8 surface probe
- 1 x soft carry case

## Extension Lead TTKEXT

Sensor lengths can be extended by using a 3 metre extension lead.



## Thermocouples TT1P & TT1KF

The TT1P is a flexible general purpose bead K-type thermocouple, PTFE insulated cable with mini plug.

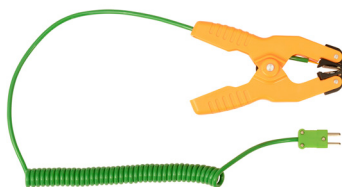
The TT1KF is a simple general purpose bead K-type thermocouple, fibreglass insulated cable with mini plug.

### TT1P

**Temperature range:** -75 to 250°C  
**Dimensions:** Ø1.5 x 1000mm

### TT1KF

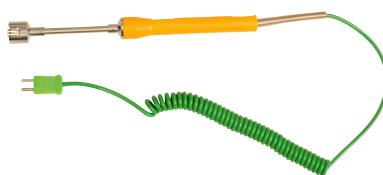
**Temperature range:** -75 to 350°C  
**Dimensions:** Ø1.5 x 1000mm



## 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



## Surface Probe TT8K

Surface probe with spring loaded sensing tip. Suitable for a variety of industrial applications as well as heating & ventilation.

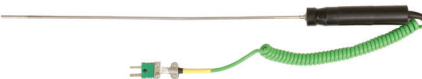
**Temperature range:** -50 to 600°C  
**Dimensions:** Ø6 x 130mm



## 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 which responds more rapidly than a general purpose probe.

**Temperature range:** -50 to 250°C  
**Dimensions:** Ø4.5 x 130mm



## 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



## 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



## 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



## 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



# Calibrators and Decade Boxes

## 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

## Process Control 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.



## 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

## Calibration Checkbox

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.



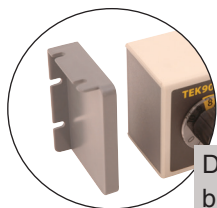
**ACCESSORIES**  
TC2B calibration

FREE  
VC

CAT IV  
300V

# Calibrators and Decade Boxes

## Decade Resistance Box



Detachable bracket

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.



TEK903

**ACCESSORIES**  
TC2B calibration

FREE  
VC

## TEK903

**Resistance:**  
1% grade 0.6W per resistor variable from 10Ω to 11.1111MΩ in 6 decades

**Typical residual (zero) resistance:**  
< 150mΩ

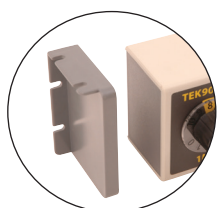
**Temperature coefficient:** 50 ppm/°C

**Operating environment:** 0°C to 50°C at < 70% RH

**Weight:** 537g approx

**Dimensions:** 345 x 71 x 51mm

## 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.



TEK904

**ACCESSORIES**  
TC2B 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

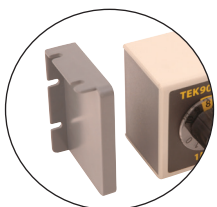
**Temperature coefficient:** 50 ppm/°C

**Operating environment:** 0°C to 50°C at < 70% RH

**Weight:** 536g approx

**Dimensions:** 345 x 71 x 51mm

## 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.



TEK905

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

# Test Leads and Accessories



## 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)

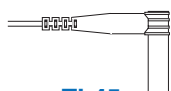
The TL4X series are double insulated PVC leads. For use with hazardous voltages and currents, we recommend the fused 5X series opposite for your extra safety and GS 38 compliance.

**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

**TL48:** double insulated PVC leads – supplied with wide bore right angle fixed shroud



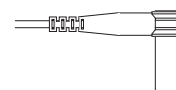
**TL45**



**TL46**



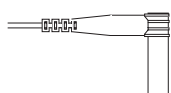
**TL47**



**TL48**



## 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 EN1010 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



# Test Leads and Accessories

## 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)



## Multifunction Fused Leads, RCD & Loop Tester Leads

**TL52:** fused test leads for loop and multifunction testers (red/blue/green)

**TL54:** fused test lead set for multifunction testers (red/green/black)

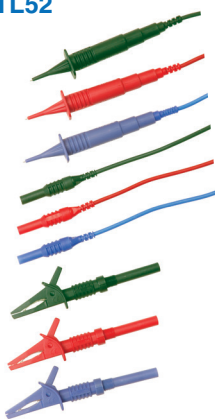
**TL88:** 3-wire, two probes with removable croc clips and 1 fixed crocodile clip, supplied with X (IEC) connector -10A fused

**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)

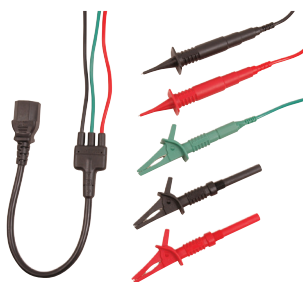
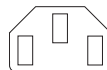
**TL52**



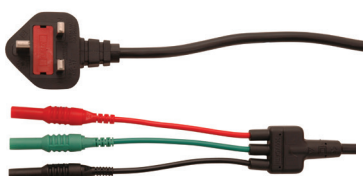
**TL54**



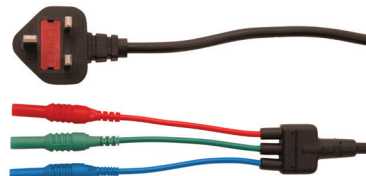
**TL88**



**TL205**



**TL206**

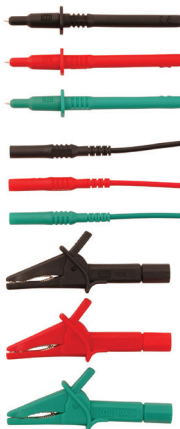


**TL207**

# Test Leads and Accessories

## TL63

Unfused test lead set (red/black/green) for VR2230/40/50



## TL49

Unfused lead set – with uninsulated croc clips (TEK402 only)



## TL180

Optional switching insulation probe



## TL33RD/BL

Extended fine probes, 50mm reach. For use with TL34 - TL37.



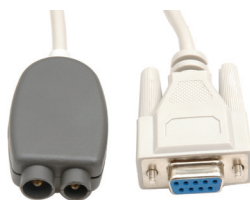
## TL130

Data lead for Veritest to printer (VRPRINT1 to VRTL1)



## VRTL1

Infrared data lead for VR2240



## TL75

Earth tester leads in case (red 15m, yellow 10m, green 5m)



## TL76

Earth tester lead kit (red 50m, green 30m, 2 x black 3m)



## MG2

Magnetic strap (meter not included)



## PSUHPAT12

In-car charger



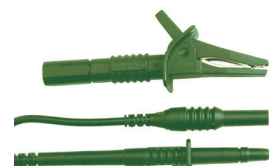
## PSUPD230

Mains charger



## TL67

Earth bond probe/clip for HPAT



## ER2KIT/S

Earth Tester Kit Includes carry case



# 17th Edition Accessories

## SB13 Safe Break Socket Adaptor



Speed up 17th 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

## 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

## TL78

**Wire:** 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:** 1860g approx  
**Safety:** conforms to BS EN61010-031 CAT II 300V, 1A Class II double insulation

## Certification pads



UPDATED  
Amendment 3: 2015  
**17<sup>TH</sup>**  
EDITION  
BS7671: 2008

With the new system of certificates, it's easier to understand which certificates need to be used together. There is one set for New Installations and one set for Existing Installations and within each set there is an option for up to 100 A supply and one for greater than 100 A supply.

Cert no.	Description
T10	Electrical Installation Certificate for up to 100A Supply
T20	Minor Works
T30	Electrical Installation Condition Report for up to 100A
T40	Electrical Installation Condition Report for greater than 100A
T50	Schedule of test results up to 12 Way
T60	Schedule of test results greater than 12 Ways
T70	Observation Record Sheet
T80	Electrical Installation Certificate for greater than 100A Supply

The 8 new pads contain approximately 80 pages of carbonless copy forms and a card divider and are based on the model forms in BS7671.

# Drummond Leads and Accessories

## 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** – Heavy duty black crocodile clip

**MP21-10RD** – Heavy duty red crocodile clip

## Test Lamp Probes



**MTL2106**

Straight Prod Long 130mm

**MTL2107**

Angled Prod Long 130mm

**MTL2108**

Straight Prod Australian 62mm

**MTL2104**

Straight Prod Standard 62mm

**MTL2105**

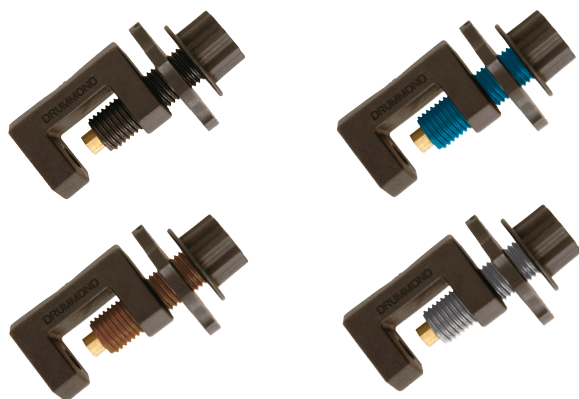
L Shaped Prod Standard 62mm

**MTL2103**

Straight Prod Short 30mm

**DRUMMOND**

## G-Clamp for Bus Bar Connections

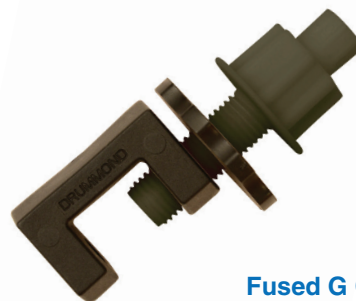


The Drummond G Clamp makes connecting to bus bars straight forward. The clamp-on design eliminates the need to drill bus bars and provides a much safer reliable connection via a standard 4mm socket.

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.



**CAT IV  
600V**

**Fused G Clamp  
in black, brown and grey**

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.

**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)



## PP100



Pocket pouch multi-purpose tool holder

## TC151



Clip on tester accessory bag

(210 x 275 x 50mm)

Suitable for EPAT1600, EPAT2100, MPATPLUS, METE3511 and METE3640

## TC52



Suitable for VT12, VT25 and VT28

(245 x 80 x 38mm)

## TC54



Suitable for PSI4000 and PSI4300

(160 x 160 x 40mm)

## TC55



Suitable for all Martindale multi-meters except MM84

(190 x 88 x 55mm)

## TC57



Suitable for HPAT500, HPAT600, FD600, FD650, IN2101, IN2102, RC2000, LP2000, DT73 and DT75.

(220 x 90 x 95mm)

## TC68



Suitable for PC15250, CM100, CM50, CM80 series and PC104/105 16A and 32A (not PC104/105 63A)

(290 x 130 x 60mm)

## TC69



Suitable for PD440/690 & VI13800, VI-15000, VT12 or a Drummond Lamp

(265 x 100 x 100mm max)

## TC70



Suitable for PD440/690 & VT25/VT28

(320 x 100 x 100mm)

## TC210



Suitable for E-Ze Test™

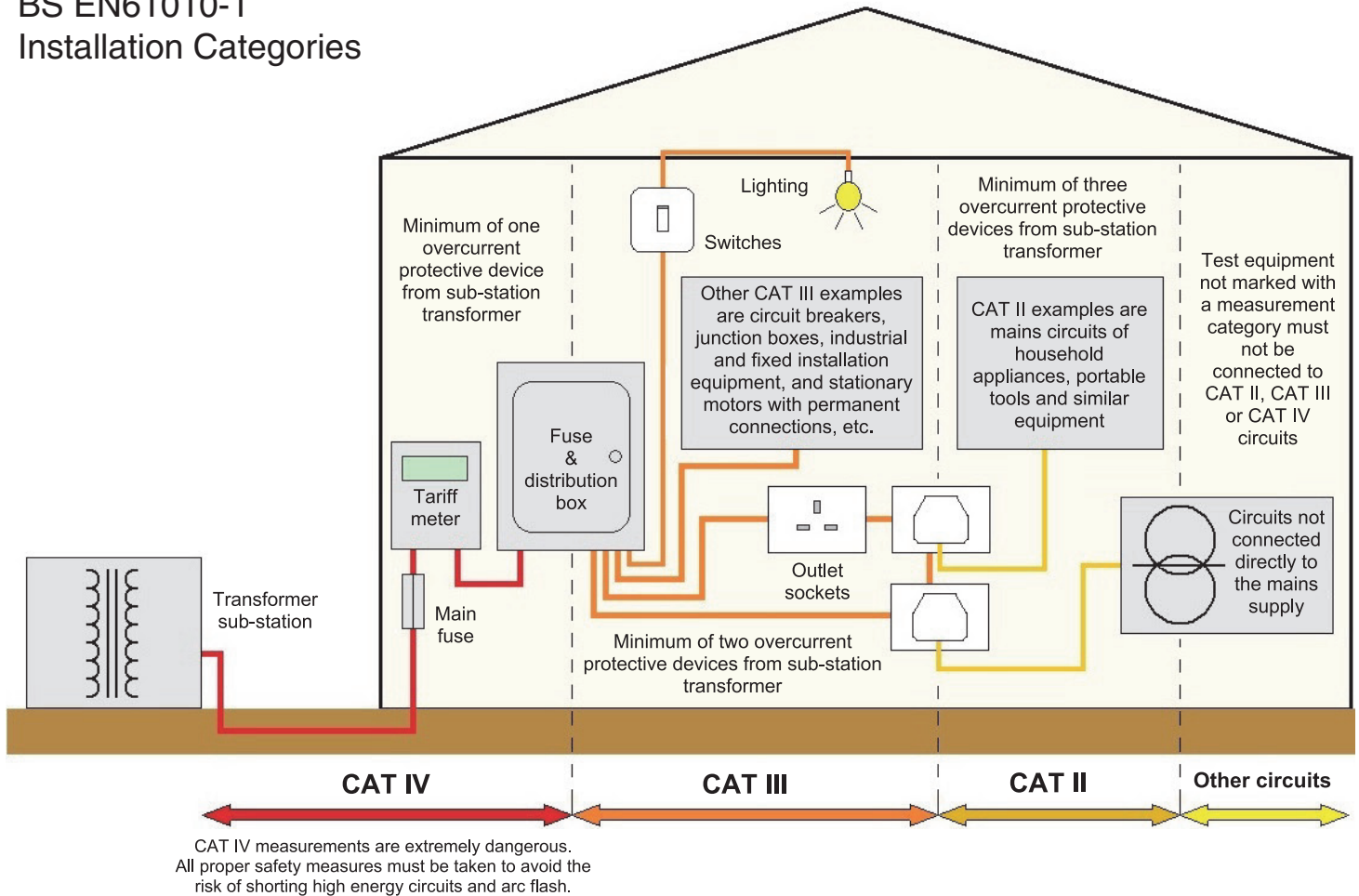
(210 x 105 x 105mm max)

# Measurement Categories

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.





- 17th 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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