

1650 Series Multifunction Installation Testers

FLUKE®

New
RCD Type B Compatibility



Fluke 1654B



Fluke 1653B



Fluke 1652C



BS7671 17th Edition IEE Wiring Regulations IEC 60364.6.61, HD 384

Included Accessories

6 AA Cell batteries
C1600 Hard carrying case
Zero Adapter
Mains test cord
TL165X STD Standard Test Lead Set
TL165/UK Fused Test Lead Set (UK only)
Padded carrying strap
Quick reference guide
TP165X Remote control probe and lead
Users manual on CD-ROM

Ordering Information

Fluke 1652C Multifunction Installation Tester
Fluke 1653B Multifunction Installation Tester
Fluke 1654B Multifunction Installation Tester

Check the Fluke website for the various software modules

Extra functionality, faster testing, and as rugged as ever

Safer, easier installation testing. The new 1650 Series builds on the rugged reputation of the earlier 1650 Series, only it's re-designed to meet your need for more productive test tools. With new features like the fast, high current loop test (including a non-trip test) and a variable RCD trip current setting, accuracy is even better and the test cycle even faster. And with the addition of a unique zero adapter accessory for accurate mains test lead compensation, the 1650 Series continues to set the standard in installation testers. The 1650 Series testers verify the safety of electrical installations in domestic, commercial and industrial applications. They can ensure that fixed wiring is safe and correctly installed to meet the requirements of IEC 60364, HD 384 and BS 7671 17th Edition wiring regulations.

1654B - The complete tester for advanced users

This is the instrument that has it all, in a word: it's complete. From all the test functions you need to in-built memory for documenting results. This makes it the complete solution for professionals,

especially contractors, everyone who would want to have the best tool available and always understands (or know) how to use.

1653B - The ideal tester for professional trouble-shooters

This is the instrument that is indeed ideal for professional users due to its additional functionality. It is also ideal since even though it has high-end features, it is still easy to use – even after longer periods of non-use; because operating it is intuitive and not forgotten easily.

1652C - The everyday tester, for every electrical installer

This is the instrument that can be used every single day (day in, day out), and covers all the basic needs. It is the preferred tester for every front-line electrician/installer.

Features

Measurement Function	1652C	1653B	1654B
Voltage & Frequency	•	•	•
Wiring polarity checker	•	•	•
Insulation Resistance	•	•	•
Continuity & Resistance	•	•	•
Loop & Line Resistance	•	•	•
Loop & Line Resistance—mΩ resolution			•
Prospective Earth Fault Current (PEFC/IK)	•		•
Prospective Short-Circuit current (PSC/IK)			•
RCD switching time	•	•	•
RCD tripping level	ramp test •	ramp test •	ramp test •
RCD variable current	•	•	•
Automatic RCD test sequence	•	•	•
Test pulse current sensitive RCDs (Type A)	•	•	•
Test smooth dc sensitive RCDs (Type B)			•
Earth Resistance		•	•
Phase Sequence Indicator	•	•	•
Other Features			
Self-test	•	•	•
Illuminated Display	•	•	•
Memory, Interface			
Memory		•	•
Extended Memory			•
Computer Interface		•	•
Time and date (When used with FlukeView software)		•	•
Software		•	•
Included Accessories			
Hard case	•	•	•
Remote control probe	•	•	•
Zero Adapter	•	•	•

Recommended Accessories



TLK290
Test Probe Kit



MTC1363 (UK)
Mains Test Cord



MTC77 (Europe)
Mains Test Cord



ES165X 1653B
& 1654B
Earth Spike Test Kit



FVP-SC2

1650 Series Multifunction Installation Testers

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and as rugged as ever

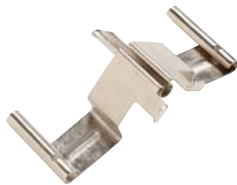
Specifications

(Check the Fluke web for detailed specifications)



Slim probe design

Thanks to its slim probe with integral test button, you can safely make one-handed measurements on hard to reach points, while keeping your eyes on the panel. This remote probe is powered by the tester so always operable (does not require additional batteries!).



Zero Adaptersign

For easy, always reliable and accurate compensation for test leads and mains cords. This adapter can be used for all different kind of mains plugs as well as test accessories like probes, alligator clips etc.



Complete kit

All 1650 models are equipped with detachable leads that can be replaced in case of damage or loss. A durable hard case will protect your instrument in tough field conditions.

AC Voltage Measurement				
Range	Resolution	Accuracy 50 Hz - 60 Hz	Input Impedance	Overload Protection
500 V	0.1 V	± (0.8% + 3 digits)	3.3 MΩ	660 Vrms

Continuity Testing				
Range (autoranging)	Resolution	Test Current	Open Circuit Voltage	Accuracy
20 Ω	00.1 Ω	> 200 mA	> 4 V	± (1.5% + 3 digits)
200 Ω	0.1 Ω			
2000 Ω	1 Ω			

Insulation Resistance Measurement					
Model	Test Voltage	Insulation Resistance Range	Resolution	Test Current	Accuracy
1653B / 1654B	50 V	10 kΩ to 50 MΩ	0.01 MΩ	1 mA @ 50 kΩ	± (3% + 3 digits)
1653B / 1654B	100 V	20 kΩ to 100 MΩ	0.01 MΩ 0.1 MΩ	1 mA @ 100 kΩ	± (3% + 3 digits)
1653B / 1654B	250 V	20 kΩ to 200 MΩ	0.01 MΩ 0.1 MΩ	1 mA @ 250 kΩ	± (1.5% + 3 digits)
1653B / 1654B	500 V	20 MΩ 200 MΩ 500 MΩ	0.01 MΩ 0.1 MΩ 1 MΩ	1 mA @ 500 kΩ	± (1.5% + 3 digits) + 10%
1653B / 1654B 1652C	1000 V	20 MΩ 200 MΩ 1000 MΩ	0.1 MΩ 1 MΩ	1 mA @ 1 MΩ	± (1.5% + 3 digits) + 10%

Loop Impedance Measurement		
Range	Resolution	Accuracy ⁽¹⁾
10 Ω	0.001 Ω	Hi Current mΩ mode: ± (2 % + 15 digits)
20 Ω	0.01 Ω	No Trip mode: ± (3 % + 6 digits)
200 Ω	0.1 Ω	Hi Current mode: ± (2 % + 4 digits)
2000 Ω	1 Ω	No Trip mode: ± (3 %)
		Hi Current mode: ± (2 %)

Notes
[1] Valid for resistance of neutral circuit <20 Ω and up to a system phase angle of 30°. Test leads must be zeroed before testing.
[2] Valid for mains voltage >200 V.

PFC, PSC Test	
Range	1000A / 10kA(50kA)
Resolution and Units	1A / 0.1kA
Accuracy	Determined by accuracy of loop resistance and mains voltage measurements
Computation Prospective Earth Fault Current (PEFC) or Prospective Short Circuit Current (PSC) determined by dividing measured mains voltage by measured loop (L-PE) resistance or line (L-N) resistance, respectively.	

RCD Testing			
RCD Type ⁽⁶⁾		Model 1652C	Model 1653B
AC ⁽¹⁾	G ⁽²⁾	•	•
AC	S ⁽³⁾	•	•
A ⁽⁴⁾	G	•	•
A	S	•	•
B ⁽⁵⁾	G		•
B	S		•

Notes
[1] AC - Responds to ac
[2] G - General, no delay
[3] S - Time delay
[4] A - Responds to pulsed signal
[5] B - Responds to smooth dc
[6] RCD test inhibited for V >265 ac
RCD tests permitted only if the selected current, multiplied by earthing resistance, is <50 V.

Tripping Time Test (ΔT)			
Current Settings	Multiplier	Test Current Accuracy	Trip Time Accuracy
10, 30, 100, 300, 500, 1000 mA, VAR	x 1/2	+ 0% - 10%	± (1% Reading + 1 digit)
10, 30, 100 mA	x 5	+ 10% - 0%	± (1% Reading + 1 digit)

Tripping Current (Ramp) Test				
Current Range	Step Size	Dwell Time		Measurement Accuracy
		Type G	Type S	
30 % to 110 % of RCD rated current ⁽¹⁾	10 % of I Δ N ⁽²⁾	300 ms/step	0 ms/step	±5 %
Notes [1] 30 % to 150 % for Type A Δ N >10 mA 30 % to 210 % for Type A Δ N =10 mA 20 % to 210 % for Type B Specified trip current ranges (EN 61008-1): 50 % to 100 % for Type AC 35 % to 140 % for Type A (>10 mA) 35 % to 200 % for Type A (<10 mA) 50 % to 200 % for Type B [2] 5% for Type B				

Earth Resistance Test (RE) - Fluke 1654B and 1653B only		
Range	Resolution	Accuracy
200 Ω	0.1 Ω	± (2% + 5 digits)
2000 Ω	1 Ω	± (3.5% + 10 digits)

Battery type: Alkaline supplied, usable with 1.2 V NiCD or NiMH rechargeable batteries

Size (HxWxD):

100 mm x 250 mm x 125 mm

Weight: 1.3 kg

Three Years Warranty

1650 Series/6000 Series Accessories

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Accessories for Fluke 1650 Series Installation Testers



ES165X Earth Spike Test Kit (Fluke 1653B and 1654B)

Earth Spike Test kit contents:

- Auxiliary earth probes
- Test connection leads and crocodile clips
- Purpose-made carry case



FVF-SC2 Fluke ViewForms Software

To address the increasing demands for reporting and documentation, Fluke presents FlukeView Forms documenting software. Download the data from the Fluke 1653B and create an easy report. The Fluke ViewForms Software also supports other Fluke tools.



TLK 290 Test Probe Kit

- Kit includes three flexible socket probes and a large alligator clip
- To be used on three phase sockets
- Probes have flexible width test points that fit securely in 4 to 8 mm sockets
- CAT III 1000 V, 8 A



MTC1363



MTC77

Mains Test Cord for 1650B series

MTC1363
MTC77

UK plug
Schuko plug

Accessories for Fluke 6500 Series Portable Appliance Testers



PASS560R Appliance Pass Labels

Quantity 500



APP1000/APP2000 Bar Code Appliance Number Labels

APP1000: Labels numbered 0001-1000

APP2000: Labels numbers 1001-2000

Label number >2000 on request



BDST3/BDST4 Snap Tags

BDST3: Cable Tie

BDST4: Clip On

Quantity 20. Without labels.



EXTL100-02 (UK plug)



EXTL100-02 (Schuko plug)

EXTL100 Extension Lead Test Adaptor

Adaptor for testing extension leads. Allows the earth test lead to be connected to the extension leads to perform insulation and earth bond tests.



SPSscan15 Barcode Scanner

Easy to use, low current, intelligent barcode reader. SPSscan15 can be used to scan barcodes attached to curved surfaces or where actual contact with the barcode surface is difficult.



SP1000 Mini Printer

Without using any additional software the SP1000 can be used to directly printout stored test records on to thermal paper. The printer is compact and easily transported and is ideal for test professionals who need to issue an immediate written account of work carried out. The printer is powered by a rechargeable battery and comes complete with mains charger and RS232 Printer Lead.

SP1000 Paper

Replacement thermal paper for the SP1000 Mini Printer

Fluke DMS software for 1650/6000 Series



The Fluke DMS (Data Management Software) is an efficient program for administration and reporting of installation tests in compliance with EN 60364, DIN VDE 0100/0105, BS7671 17th edition wiring regulation and appliance tests in compliance with DIN VDE 0701/0702, ÖVE E 8701.

DMS 0100/INST Software for Installation Tester Fluke 1653B and 1654B

Supporting reports for Austria, Germany, UK, Switzerland, Netherlands

DMS 0702/PAT Software for Portable Appliance Tester Fluke 6500

Supporting reports for Austria, Germany, UK, Netherlands

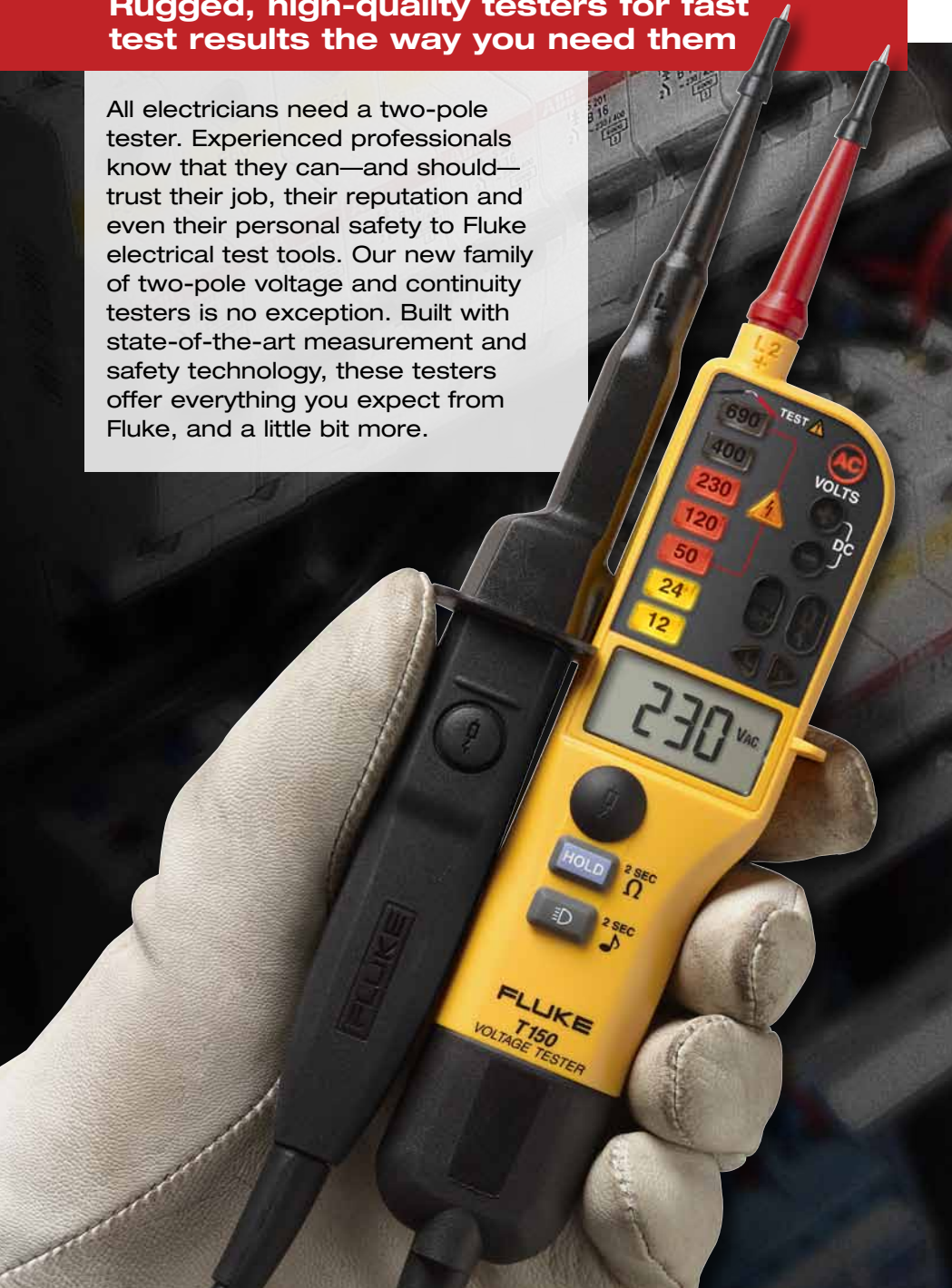
DMS COMPL PROF Software for the Fluke 1654B, 1653B and Fluke 6500

Supporting reports for Austria, Germany, UK, Switzerland, Netherlands

T90/T110/T130/T150 Voltage and Continuity Testers

Rugged, high-quality testers for fast test results the way you need them

All electricians need a two-pole tester. Experienced professionals know that they can—and should—trust their job, their reputation and even their personal safety to Fluke electrical test tools. Our new family of two-pole voltage and continuity testers is no exception. Built with state-of-the-art measurement and safety technology, these testers offer everything you expect from Fluke, and a little bit more.



Technical Data

Listening to customers. Making better tools.

The new Fluke two-pole voltage and continuity testers are now more rugged and easier to use than ever before.

- Fast test results the way you need them, with large, easy-to-use buttons, bright backlights, and clear audible and physical indicators designed for any work situation.
- Rugged, high-quality construction is built to last. This includes a heavy duty molded case, a thicker cord with wear indicator, sturdy battery case, and well-fitting and durable probe protector.
- Enhanced ergonomic design feels good in your hand, is easy to use (even with gloves) and quick, secure probe docking.
- A complete family of testers with the features, functions, and price/performance to fit your applications and preferences.

Built to work the way you work

Fluke's new two-pole testers are built with you in mind. They give you the best combination of safety, ease-of-use and fast answers available anywhere.

- **CAT IV 600 V, CAT III 690 V safety rating.**

Fluke's new family of two-pole testers comply with both regulation HSE GS 38 (tip caps) and IEC EN 61243-3: 2010, the most recent and applicable standards for this type of test equipment.

- **4 ways to detect ac/dc voltage.**

Fluke two-pole testers make answers easy to understand, indicating voltage four ways: A clear, instantly visible LED indicator, a bright digital display of the measurement value, an audible continuity test, and vibration to give tactile feedback (vibration indicator on T110, T130, T150). It's your preference. Use the most effective method for each situation.



- **Backlit graduated scale and backlit indicators.** Bright backlights ensure that the buttons and the indicators are visible under any lighting conditions—and you can easily see and understand the answers.

- **Vibration provides tactile feedback (T110, T130, T150).** Even when viewing the display or hearing the beeper is difficult, you'll know voltage is present. This is especially useful in noisy environments, or when you can't take your eyes off the probes.

- **Audio on/off for testing in quiet areas.**

If you're working in quiet surroundings, such as a medical or office setting, you don't want to disturb people in the vicinity with noises. The tester's acoustic alert switches on or off to fit your environment.

- **Never guess whether your batteries are in good working order.** The low battery indicator gives you advance warning when they fall below proper working voltage.

- **Detects voltage even with discharged batteries.**

The tester can still detect the presence of voltage (>50 V ac, >120 V dc) even with dead batteries, an important safety feature. You should always use your two-pole tester with working batteries, but for that rare time when your batteries fail in the field, it's nice to know you still have this one indication of live voltage.

- **Improved probe docking for secure storage.**

When the probes are docked, the two-pole tester is ready to use, with proper spacing for instant testing on standard outlets. If you've ever been frustrated with wobbly probes that slowed you down, you'll appreciate Fluke's rugged design.

- **Phase rotation indicator for 3-phase systems.**

Where three-phase power supplies feed motors, drives and electrical systems, use Fluke's innovative three-phase rotation detection system to quickly determine phase sequence. Ensure the system is wired correctly, without reaching for another tool.

- **RCD functionality.** Convenient two-button controls allow you to draw more current from the circuit under test and intentionally trip Residual-Current Devices (RCDs) remotely and determine if they are wired correctly. A Quick Start Guide covering the basics of RCD testing is included with the product.

- **Display hold (T130, T150).** Focus on placing your probes, take the measurement, then read the LC display.

- **Built in electric torch (T110, T130, T150).**

Light up dim testing environments at the touch of a button for faster, safer probing.



- **Single-phase voltage offers fast identification of live conductors.** Need to verify that a row of “hot” conductors are indeed connected to power? The two-pole tester can tell with you a single touch of the main probe. Simply touch a live conductor and the probe instantly give an audible and visual signal if the power is on. A great timesaver before you begin actual testing.

- **Probe tip protection adapts to your changing environment.** Push-on probe tips reduce metal exposure from 19 mm to 4 mm, reducing the chance of accidentally touching the wrong conductor when probing in tight spaces. The probe tips of the two-pole tester are threaded, taking optional screw-on 4 mm diameter tips for applications where more sturdy probing may be required.



- **Probe tip protector and storage accessory.** Never lose the push-on caps and 4 mm diameter tips again. As a bonus, the tool’s storage serves as an extra hand when opening UK electrical safety outlets.
- **Resistance testing (T150).** Testers measure and display resistance up to 1999 ohms, adding more power and versatility to this essential tester.
- **WearGuard™ insulation shows damage to test leads.** The two-pole tester’s rugged, durable test leads have two layers of insulation for added durability. But if the inner, contrasting-colored layer is showing, that’s a sign that the test leads have been damaged and replacement is in order.

Selection table

Features	T90	T110	T130	T150
Backlit LED indicator	•	•	•	•
Backlit LCD digital display			LCD	LCD
Continuity test—visual results	•	•	•	•
Continuity test—audible results	•	• with on/off	• with on/off	• with on/off
Vibratory indicator under load		•	•	•
Display hold			•	•
Voltage test	•	•	•	•
Indication of polarity	•	•	•	•
Resistance measurement				•
Switchable load		•	•	•
Single pole test for phase detection	•	•	•	•
Rotary field indicator		•	•	•
Probe tip protection	•	•	•	•
Voltage display with discharged batteries	•	•	•	•
Electrical torch function		•	•	•
Wear indicator test lead wire	•	•	•	•

Specifications

	T90	T110	T130	T150
Voltage ac/dc	12 V to 690 V	12 V to 690 V	6 V to 690 V	6 V to 690 V
Continuity	0 to 400 kΩ			
Frequency	0 / 40 to 400 Hz			
Phase rotation	—	100 V to 690 V		
Resistance measurement	—	—	—	Up to 1999 Ω
Response time (LED indicator)	< 0.5 s			
200 kΩ input impedance	Current draw 3.5 mA @ 690 V, Current draw 1.15 mA @ 230 V			
7 kΩ input impedance (with load buttons pressed)	—	Current draw 30 mA @ 230 V		
Safety rating	CAT II 690 V CAT III 600 V	CAT III 690 V, CAT IV 600 V		
IP rating	IP54	IP64	IP64	IP64

General specifications

Power requirement	2-AAA batteries
Net weight	180 g (6.4 oz) (T90) 280 g (9.9 oz) (T110, T130, T150)
Size (LxWxH)	23 cm x 6.5 cm x 3.8 cm (T90) 26 cm x 7 cm x 3.8 cm (T110, T130, T150)
Warranty	2 years
Country of origin	Romania

Ordering information

FLUKE-T90 Voltage/Continuity Tester
FLUKE-T110 Voltage/Continuity Tester With Switchable Load
FLUKE-T130 Voltage/Continuity Tester With LCD, Switchable Load
FLUKE-T150 Voltage/Continuity Tester With LCD, Ohms, Switchable Load

Fluke. *Keeping your world up and running.®*

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 Printed in U.S.A. 11/2011 4115552A D-EE

Pub_ID: 11842-eng

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