

# Fluke 1653B Multifunction Installation Tester



## Extra functionality, faster testing, and as rugged as ever

The new 1653B Installation Tester builds upon the rugged reputation of the earlier 1650 Series, only it's re-designed to meet your need for more productive test tools.

This new installation tester offers the following new capabilities:

- Fast high current loop test
- Variable RCD current mode for customized settings
- PASS/FAIL indication for RCD tests
- Select voltage measurement between L-N, L-PE and N-PE
- Zero adapter for easy test lead compensation, available as new accessory and also included with standard scope of supply
- Extended Memory
- Extended documentation mode (UK only)



**Fast loop measurement.**  
(Saves up to 50% time!)



**Lightweight** (Weighs less than 1.3kg)



**Rugged** (withstands a drop from 1m)

## 1650 Series Installation Tester Comparison Chart

Measurement functions	Fluke 1652C	Fluke 1653B	Fluke 1654B
Voltage and frequency	•	•	•
Wiring polarity checker	•	•	•
Insulation resistance	250 V, 500 V, 1000 V	50 V, 100 V, 250 V, 500 V, 1000 V	50 V, 100 V, 250 V, 500 V, 1000 V
<b>Continuity</b>			
Loop and line resistance	•	•	•

Loop and line resistance-mΩ resolution			•
PEFC/PSC (fault/short-circuit current)	•	•	•
RCD tripping time	•	•	•
RCD tripping current level	•	•	•
Ramp test	•	•	•
Automatic ROD test sequence	•	•	•
Test dc-sensitive RCDs (type A)	•	•	•
Test dc-sensitive RCDs (type B)			•
Earth resistance		•	•
Phase sequence indicator	•	•	•
<b>Other features</b>			
Self-test	•	•	•
EN 61557*/VDE 0413 compliant	•	•	•
Illuminated display	•	•	•
Live voltage indicator	•	•	•
Battery indicator and battery test function	•	•	•
<b>Memory, interface</b>			
Memory		•	•
Extended memory			•
Computer interface		•	•
Time stamp (software enabled)		•	•
Software (optional)		•	•



## Safer, easier installation testing.

The 1653B Installation Tester verifies the safety of electrical installations in domestic, commercial and industrial applications. It can ensure that fixed wiring is safe and correctly installed to meet the requirements of IEC 60364, HD 384 and all relevant local standards.

### Faster

- Two measurements at once and a dual display. PEFC/PSC and loop impedance are measured and displayed in parallel, saves you more than 50% of test time compared to other loop testers.
- Additional new high current loop mode. Faster measurements compared to loop tests with non-trip mode for RCD's.
- Unique zero adapter for fast, always reliable and accurate test lead and mains cord compensation.
- Fast voltage measurement between L-N, L-PE and N-PE using the mains cord. No need to change measurement connections.

### Safer

- Earth Volt Touchpad detects raised earth voltages >50 V, indicating potential dangerous situations.
- Supplied with the SureGrip™ test leads and clips which gives the user a comfortable, reliable grip

### Easy

- Rotary dial knob indicates clearly which function is selected, all functionalities on one spot and no complex multi level menus.
- Large display with backlight, clear symbols and exceptionally wide viewing angle for easy and safe readings.
- PASS/FAIL indication for RCD test results.
- Variable RCD current mode for customized settings.
- Extended Memory
- Extended documentation mode (UK only)

**Rugged & lightweight Withstands a drop of 1 meter.**

**Compact, lightweight (less than 1.3 kg) and padded neck-strap to free your hands for all day testing.**



### 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.



### Slim probe design with test button

Keeps your eyes on the panel while probing hard to reach points. This remote probe is powered by the tester so always operable (does not require additional batteries).



### Zero Adapter

For easy, always reliable and accurate compensation of 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.



Specifications		
AC Voltage Measurement	<b>Range:</b> <b>Resolution:</b> <b>Accuracy (50 - 60 Hz)</b> <b>Input Impedance</b> <b>Overload Protection</b>	500 V 0.1 V ± (0.8% + 3 digits) 3.3 MΩ 660 Vrms
Continuity Testing	<b>Range (autoranging):</b> <b>Resolution:</b> <b>Test Current:</b> <b>Open Circuit Voltage:</b> <b>Accuracy:</b>	20 Ω, 200 Ω, 2000 Ω 0.01 Ω, 0.1 Ω, 1 Ω > 200 mA > 4 V ± (1.5%+3 digits)
Insulation Resistance Measurement	<b>Test Voltage:</b>  <b>Test Voltage:</b> <b>Test Current:</b> <b>Insulation Range:</b> <b>Resolution:</b> <b>Accuracy:</b>  <b>Test Voltage:</b> <b>Test Current:</b> <b>Range/Resolution:</b> <b>Range/Resolution:</b> <b>Accuracy:</b>  <b>Test Voltage:</b> <b>Test Current:</b> <b>Range/Resolution:</b> <b>Range/Resolution:</b> <b>Accuracy:</b>  <b>Test Voltage:</b> <b>Test Current:</b> <b>Range/Resolution:</b> <b>Range/Resolution:</b> <b>Accuracy:</b> <b>Range/Resolution:</b> <b>Accuracy:</b>  <b>Test Voltage:</b> <b>Test Current:</b> <b>Range/Resolution:</b> <b>Range/Resolution:</b> <b>Accuracy:</b> <b>Range/Resolution:</b> <b>Accuracy:</b>  <b>Auto Discharge:</b> <b>Live Circuit Detection:</b> <b>Maximum Capacitive Load:</b>	250-500-1000V  50 V 1 mA @ 50 kΩ 10 kΩ - 50 MΩ 0.01 MΩ ± (3% + 3 digits)  100 V 1 mA @ 100 kΩ 20 MΩ/0.01 MΩ 100 MΩ/0.1 MΩ ± (3% + 3 digits)  250 V 1 mA @ 250 kΩ 20 MΩ/0.01 MΩ 200 MΩ/0.1 MΩ ± (1.5% + 3 digits)  500 V 1 mA @ 500 kΩ 20 MΩ/0.01 MΩ 200 MΩ/0.1 MΩ ± (1.5% + 3 digits) 500 MΩ/1 MΩ 10%  1000 V 1 mA @ 1 MΩ 20 MΩ/0.01 MΩ 200 MΩ/0.1 MΩ ± (1.5% + 3 digits) 500 MΩ/1 MΩ 10%  Discharge time constant, 0.5 second for C = 1 μF or less Inhibits test if terminal voltage > 30 V prior to initiation of test Operable with the 5 μF load



<b>Loop Impedance Measurement (High Current Mode and Non-Trip Mode)</b>	<b>Range:</b> <b>Input connection:</b> <b>Loop impedance:</b> <b>Line impedance:</b> <b>Limit on consecutive tests:</b>  <b>Max. Test Current, High Current and Non-Trip Modes:</b> <b>Maximum Test Current @ 400 V</b> <b>Maximum Test Current @ 230 V</b>  <b>Range/Resolution:</b> <b>Range/Resolution:</b> <b>Range/Resolution:</b>  <b>Accuracy (no Trip mode):</b> <b>Accuracy (Hi Current mode):</b>	100 - 500 VAC (50/60 Hz) Soft Key selection Phase to earth Phase to neutral Automatic thermal shutdown after 50 consecutive tests at 10 second intervals (typical)  20 A sinusoidal for 10 ms 12 A sinusoidal for 10 ms  20 Ω/0.01 Ω 200 Ω/0.1 Ω 2000 Ω/1 Ω  ± (3% + 6 digits) ± (2% + 4 digits)
<b>PFC, PSC Test</b>	<b>Computation:</b>  <b>Range:</b> <b>Resolution (<math>I_k &lt; 1000</math> A):</b> <b>Resolution (<math>I_k \geq 1000</math> A):</b> <b>Accuracy:</b>	PFC or PSC determined by dividing measured mains voltage by measured loop (L-PE) resistance or line (L-N) resistance 0 - 25 kA 1 A 0.1 kA Determined by accuracy of loop resistance and mains voltage measurements.
<b>RCD Testing <sup>1</sup></b>	<b>G</b> <b>S</b> <b>A</b>  <b>AC</b>	General, no delay Time delay Responds to pulsed signal Responds to AC
<b>Tripping Time Test (<math>\Delta T</math>)</b>	<b>Trip Time Accuracy Multiplier:</b> <b>Current Settings:</b>  <b>Current Accuracy:</b> <b>RCD Type <sup>1</sup>:</b> <b>Measurement Range:</b> <b>RCD Type <sup>1</sup>:</b> <b>Measurement Range:</b>  <b>Multiplier</b> <b>Current Settings:</b>  <b>Current Accuracy:</b> <b>RCD Type <sup>1</sup>:</b> <b>Measurement Range:</b> <b>RCD Type <sup>1</sup>:</b> <b>Measurement Range:</b>	±(1% Reading + 1 digit) x ½ 10, 30, 100, 300, 500, 1000 mA +0% - 10% G 310 ms (Europe), 2000 ms (UK) S 510 ms (Europe), 2000 ms (UK)  x 1 10, 30, 100, 300, 500, 1000 mA +10% - 0% G 310 ms S 510 ms

	<b>Multiplier:</b> x 5 <b>Current Settings:</b> 10, 30 mA <b>Current Accuracy:</b> ±10% <b>RCD Type <sup>1</sup>:</b> G <b>Measurement Range:</b> 50 ms <b>RCD Type <sup>1</sup>:</b> S <b>Measurement Range:</b> 160 ms
<b>Tripping Current (ramp)</b>	<b>Current Range:</b> 50% - 110% of RCD's rated current <b>Step Size:</b> 10% of $I_{\Delta N}$ <b>Dwell time (Type G): <sup>1</sup></b> 300 ms / step <b>Dwell time (Type S): <sup>1</sup></b> 500 ms / step <b>Trip Current Measurement Accuracy:</b> ±5%
<b>Earth Resistance Test (<math>R_E</math>) - Fluke 1653B + 1654B</b>	<b>Range/Resolution:</b> 200 $\Omega$ /0.1 $\Omega$ <b>Accuracy:</b> ±(2% + 5 digits) <b>Range/Resolution:</b> 2000 $\Omega$ /1 $\Omega$ <b>Accuracy:</b> ±(3.5% + 10 digits) <b>Frequency:</b> 128 Hz <b>Compliance Voltage:</b> +25 V
<b>Phase Sequence Indication</b>	<b>Icon:</b> Icon Phase Sequence indicator is active <b>Display of Phase Sequence:</b>  Displays '1-2-3' in digital display field for correct sequence. Displays '3-2-1' for incorrect phase. Dashes in place of a number indicate a valid determination could not be made.

### Environmental Specifications

<b>Operating Temperature</b>	-10 °C to 40 °C
<b>Humidity (Without Condensation)</b>	10 to 30 °C: 95% 30 to 40 °C: 75%

### Safety Specifications

<b>Safety Rating</b>	EN 61010-I CAT III 500V, CAT IV 300V
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### Mechanical & General Specifications

<b>Size</b>	(L x W x H): 10 x 25 x 12.5 cm
<b>Weight</b>	1.3 kg
<b>Batteries</b>	Type AA: 6
<b>Warranty</b>	3 years
<b>Battery type</b>	Alkaline supplied, usable with 1.2V NiCD or NiMH rechargeable batteries

