

Fluke 1625-2 Earth Ground Resistance Tester Kit

Tech Specs

General Specifications	
Memory	Internal memory storage up to 1500 records accessible via USB port
Measuring function	Interference voltage and frequency, earthing resistance 3- and 4-pole with/without clip-on current transformer, resistance 2-pole with AC, 2- and 4-pole with DC
Display	4 digit (2999 Digit) - 7 segment liquid crystal display, with improved visibility
Operation	Central rotary switch and function keys
Temperature Range	
Operating temperature	-10°C to 50°C (14°F to 122°F)
Storage temperature	-30°C to 60°C (-22°F to 140°F)
Temperature coefficient	±0.1% of reading/°C < 18°C > 28°C
Type of protection	IP56 for case, IP40 for battery door according to EN60529
Max voltage	Warning – socket "clamp" to socket E, ES, S or H Urms = 0 V
	Sockets E, ES, S or H to each other in any combination, max. Urms = 250 V (pertains to misuse)
Safety	Protection by double and/or reinforced insulation. Max. 50 V to earth per IEC61010-1. 300V CAT II, Pollution degree 2
Quality standard	Developed, designed and manufactured to comply with DIN ISO 9001
External field influence	Complies with DIN 43780 (8/76)
Auxiliary power	6 x 1.5 V alkaline (IEC LR6 or type AA)
Battery life span	With IEC LR6/type AA: typ. 3,000 measurements (RE+RH ≤ 1 kΩ) With IEC LR6/type AA: typ. 6,000 measurements (RE + RH > 10 kΩ)
Dimensions (W x H x D)	250 x 133 x 187 mm (9.75 x 5.25 x 7.35 in)
Weight	≤ 1.1 kg (2.43 lb) without accessories 7.6 kg (16.8 lb) incl. accessories and batteries in carrying case
Case material	Polyester
Measurement of Interference Voltage DC + AC (U _{ST})	
Measuring limits of error:	
method	Full wave rectification
Measuring range	1 V to 50 V
Display range	0.0 V to 50 V
Resolution	0.1 V
Frequency range	DC/AC 45 Hz to 400 Hz sine
Accuracy	±(5% of rdg + 5 digit)
Measuring sequence	Approx. 4 measurements/s
Internal resistance	Approx. 1.5 MΩ
Max. overload	Urms = 250 V
Measurement of Interference Frequency (F)	
Measuring limits of error:	
method	Measurement of oscillation period of the interference voltage

Measuring range	6.0 Hz to 400 Hz
Display range	16.0 Hz to 299.9 Hz to 999 Hz
Resolution	0.1 Hz to 1 Hz
Range	1 V to 50 V
Accuracy	$\pm(1\% \text{ of rdg} + 2 \text{ digit})$

Earthing Resistance (RE)

Measuring method	Current and voltage measurement with probe as IEC61557-5
Open circuit voltage	20/48 V, AC
Short circuit current	250 mA AC
Measuring frequency	94, 105, 111, 128 Hz selected manually or automatic. (AFC) 55 Hz in function R1
Noise rejection	120 dB (16 2/3 , 50 , 60, 400 Hz)
Max. overload	Urms = 250 V

Electrical Measurement Specifications

Intrinsic Error or Influence Quantity	Reference Conditions or Specified Operating Range	Designation Code	Requirements or Test in Accordance with the Relevant Parts of IEC 1557	Type of Test
Intrinsic error	Reference conditions	A	Part 5, 6.1	R
Position	Reference position $\pm 90^\circ$	E1	Part 1, 4.2	R
Supply voltage	At the limits stated by the manufacturer	E2	Part 1, 4.2, 4.3	R
Temperature	0°C and 35°C	E3	Part 1, 4.2	T
Series interference voltage	See 4.2 and 4.3	E4	Part 5, 4.2, 4.3	T
Resistance of the probes and auxiliary earth electrodes	0 to 100 x RA but $\leq 50 \text{ k}\Omega$	E5	Part 5, 4.3	T
System frequency	99% to 101% of the nominal frequency	E7	Part 5, 4.3	T
System voltage	85% to 110% of the nominal voltage	E8	Part 5, 4.3	T
Operating error	$B = \pm(A + 1,15 \sqrt{E_{21} E_{22} E_{23} E_{24} E_{25} E_{26}})$ $B[\%] = \pm B/\text{fiducial value} \times 100\%$ A = intrinsic error En = variations R = routine test T = type test		Part 5, 4.3	R
Measuring range	0.020 Ω to 300 k Ω			
Display range	0.001 Ω to 2.999 Ω			
	3.00 Ω to 29.99 Ω			
	30.0 Ω to 299.9 Ω			
	0.300 k Ω to 2.999 k Ω			

	3.00 k Ω to 29.99 k Ω
	30.0 k Ω to 299.9 k Ω
Resolution	0.001 Ω
	0.01 Ω
	0.1 Ω
	1 Ω
	10 Ω
	100 Ω
Accuracy	$\pm(2\% \text{ of rdg} + 2 \text{ digit})$
Operating error	$\pm(5\% \text{ of rdg} + 5 \text{ digit})$
Measuring time	Typical 8 seconds with a fixed frequency 30 sec. max. with AFC and complete cycle of all measuring frequencies
Additional error because of probe-and auxiliary earth electrode resistance	$R_H(R_S + 2000 \Omega)/R_E \times 1.25 \times 10^{-6}\% + 5 \text{ digits}$
Measuring error of R_H and R_S	Typ. 10% of $R_E + R_S + R_H$
Max. probe resistance	$\leq 1 \text{ M}\Omega$
Max. auxiliary earth electrode resistance	$\leq 1 \text{ M}\Omega$

Automatic check if error is kept within the limits required by IEC61557-5.

If after a measurement of probe-, auxiliary earth electrode- and earthing resistance, a measurement error of higher than 30% is assumed because of the influencing conditions, the display shows a warning symbol and a notice that R_S or R_H are too high.

Automatic Switchover of Measuring Resolution in Dependence to Auxiliary Earth Electrode Resistance R_H

RH with $U_{\text{meas}} = 48 \text{ V}$	$< 300 \Omega$
	$< 6 \Omega$
	$< 60 \Omega$
	$< 600 \Omega$
RH with $U_{\text{meas}} = 20 \text{ V}$	$< 250 \Omega$
	$< 2.5 \text{ k}\Omega$
	$< 25 \text{ k}\Omega$
	$< 250 \text{ k}\Omega$
Resolution	1 m Ω
	10 m Ω
	100 m Ω
	1 Ω

Selective Measurement of the Earthing Resistance (R_E Clamp)

Measuring method	Current and voltage measurement with probe as per EN61557-5 and current measurement in the individual branch with additional current transformer (patent applied for).
Open circuit voltage	20/48 V AC
Short circuit current	250 mA AC

Measuring frequency	94, 105, 111, 128 Hz selected manually or automatically (AFC), 55 Hz (R1)	
Noise rejection	120 dB (162/3, 50, 60, 400 Hz)	
Max. overload	Max. Urms = 250 V (measurement will not be started)	
Measuring range	0.020 Ω to 300 k Ω	
Display range	0.001 Ω to 2.999 Ω	
	3.00 Ω to 29.99 Ω	
	30.0 Ω to 299.9 Ω	
	0.300 k Ω to 2.999 k Ω	
	3.00 k Ω to 29.99 k Ω	
Resolution	0.001 Ω	
	0.01 Ω	
	0.1 Ω	
	1 Ω	
	10 Ω	
Accuracy	$\pm(7\% \text{ of rdg} + 2 \text{ digit})$	
Operating error	$\pm(10\% \text{ of rdg} + 5 \text{ digit})$	
Additional error because of probe- and auxiliary earth typ. electrode resistance	$R_H(R_S + 2000 \Omega)/R_{ETOTAL} \times 1.25 \times 10^{-6}\% + 5 \text{ digits}$	
Measuring error of R_H and R_S	Typ. of $10\% \text{ of } R_{ETOTAL} + R_S + R_H$	
Measuring time	Typ. 8 sec. with a fixed frequency 30 sec. max. with AFC and complete cycle of all measuring frequencies.	
Minimal current in single branch to be measured	0.5 mA	With transformer (1000:1)
	0.1 mA	With transformer (200:1)
Max. interference current through transformer	3 A	With transformer (1000:1)

1. With recommended current clamps/transformers.

Resistance Measurement (R~)

Measuring method	Current and voltage measurement	
Measuring voltage	20 V AC, square pulse	
Short circuit current	> 250 mA AC	
Measuring frequency	94, 105, 111, 128 Hz selected manually or automatically (AFC)	
Measuring range	0.020 Ω to 300 k Ω	
Display range	0.001 Ω to 2.999 Ω	
	3.00 Ω to 29.99 Ω	
	30.0 Ω to 299.9 Ω	
	300 Ω to 2999 Ω	
	3.00 k Ω to 29.99 k Ω	
	30.0 k Ω to 299.9 k Ω	
Resolution	0.001 Ω	
	0.01 Ω	

	0.1 Ω
	1 Ω
	10 Ω
	100 Ω
Accuracy	$\pm(2\% \text{ of rdg} + 2 \text{ digit})$
Operating error	$\pm(5\% \text{ of rdg} + 5 \text{ digit})$
Measuring time	Typical 6 seconds
Max. interference voltage	24 V, with higher voltages measurement will not be started
Max overload	Urms max. = 250 V
Resistance Measurement (R DC)	
Measuring method	Current- voltage measurement as per IEC61557-4 possible
Measuring voltage	20 V DC
Short circuit current	250 mA DC
Formation of measured value	With 4-pole measurement wires on H, S, ES can be extended without additional error. Resistances > 1 Ω in wire E can cause additional error of 5m Ω/Ω .
Measuring range	0.020 Ω to 300 k Ω
Display range	0.001 Ω to 2.999 Ω
	3.00 Ω to 29.99 Ω
	30.0 Ω to 299.9 Ω
	300 Ω to 2999 Ω
	3.0 k Ω to 29.99 k Ω
	30.0 k Ω to 299.9 k Ω
Resolution	0.001 Ω
	0.01 Ω
	0.1 Ω
	1 Ω
	10 Ω
	100 Ω
Accuracy	$\pm(2\% \text{ of rdg} + 2 \text{ digit})$
Operating error	$\pm(5\% \text{ of rdg} + 5 \text{ digit})$
Measuring sequence	Approx. 2 measurements/s
Measuring time	Typical 4 second including reversal of polarity (2-pole or 4-pole)
Maximum interference voltage	$\leq 3 \text{ V AC or DC}$, with higher voltages measurement will not be started
Maximum inductivity	2 Henry
Maximum overload	Urms = 250 V
Compensation of Lead Resistance (R_K)	
Compensation of lead resistance (RK) can be switched on in functions RE 3-pole, RE 4-pole (clamp), R AC, and R DC 2-pole	
Formation of measured value	$R_{\text{display}} = R_{\text{measured}} - R_{\text{compensated2}}$

2. Value of setpoint entry RK = 0.000 Ω , variable from 0.000 to 29.99 Ω by means of measuring adjustment.

Stakeless Ground Loop Measurement (Two Clamp Stakeless)

Switch position	RA 4-pole (two clamp Stakeless)
Resolution	0.001 Ω to 0.1 Ω
Measuring range	0.02 Ω to 199.9 Ω
Accuracy	$\pm(7\% \text{ rdg} + 3 \text{ digit})$
Operating error	$\pm(10\% \text{ rdg} + 5 \text{ digit})$
Measuring voltage	$V_m = 48 \text{ V AC (primary)}$
Measuring frequency	128 Hz
Noise current (IEXT)	Max. IEXT = 10 A (AC) (RA < 20 Ω) Max. IEXT = 2 A (AC) (RA > 20 Ω)

Measuring principle: Stakeless measurement of resistance in closed loops using two current transformers.

Automatic range selection.

The information regarding stakeless ground loop measurements is only valid when used in conjunction with the recommended current clamps at the minimum distance specified.