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TECHNICAL DATA

Fluke 5322A Electrical Safety Tester Calibrator

The Fluke Calibration 5322A Multifunction Electrical Tester Calibrator, with 5 kV high-resistance sourcing and voltage measurement, can easily calibrate your entire electrical safety tester workload. Available workload ranges from older hand-cranked insulation testers to modern insulation resistance testers, hipot testers, RCD testers, earth ground resistance testers , loop/line impedance testers, ground bond testers, portable appliance testers (PATs) and multi-function installation electrical safety analyzers. The 5322A calibrates them all to exacting international standards such as the 17th Edition (UK, EN/IEC (Europe) and JJG (China).

FLUKE®
Calibration

Flexible choices to calibrate your electrical tester workload

Multiple model choices for the 5322A give you the flexibility to select the features best suited to your lab's workload. The base 5322A model offers 1.5 kV high resistance sourcing. The 5322A/5 offers 5 kV high voltage resistor sourcing. Add to either model active loop compensation and a 600 V precision ac/dc output source for calibrating devices under test (DUTs) with metering capabilities, or a characterized 40 kV probe accessory for precision measurement of very high voltages to 0.5% accueacy.

Included accessories offer additional flexibility. Each 5322A comes with an external R-Multiplier to source resistances of 10 TOhm for testing insulation testers. A RCD PAT adapter is also included for safe secure connections to the 5322A for your specific regional electrical appliance plug and socket type.

Also included is an external 10 kV divider to measure testers with 10 kV outputs, to meet more stringent test accuracy ratios required by some regulations.

This broad range of model options put you in control of selecting the right model to match your workload and your budget.

Optional 5322A-LOAD

An optional 5322A-LOAD 5 kV high resistance load option is available with 5 kV high voltage resistors to allow direct connection to hipots for leakage tests. This 5322A-LOAD is unique in that it not only supports 5 kV but has nine high voltage resistors, ranging from 10 KOhm to 10 MOhm, that can be combined in parallel, within voltage limits, to obtain more precise results.

Calibrate all major types of electrical safety testers with just one calibrator

The 5322A calibrates all major categories of electrical safety testers. The benefits of this calibrator are best described by the key functionality it brings to calibrating the individual workloads below.

Broad workload coverage

The 5320A calibrates a broad range of equipment, including:

- Hipot testers
- Insulation resistance testers (megohm-meters) including older analog testers
- Loop/line impedence testers
- Continuity testers
- Earth resistance testers
- Ground bond testers
- Leakage current testers
- Circuit breaker testers (RCD/GFCI)
- Multifunction installation testers
- Portable appliance testers (PATs)

Key features

- High voltage resistance outputs, continuously variable (1.5 kV or optional 5.5 kV)
- Active Loop Compensation and 600 V source (VLC option)
- 2-wire and 4-wire low resistance sources for precision low current measurements and high current ground bond measurements
- RCD simulation for installation and PAT testers
- Built-in current and voltage meter that measures up to 30 A and 5 kV directly, along with real power and hipot ripple coefficient and THD measurements

Optional 5322A-LOAD high resistance load option

Maximize workload coverage

The Fluke Calibration 5322A Electrical Safety Tester combines many functions into a single instrument, replacing discrete resistors, decade boxes and other custom solutions commonly used to calibrate electrical testers. It's flexible and precise enough to calibrate a wide range of instrumentation.

Insulation resistance testers

The 5322A calibrator sources high-value, high-voltage resistors and measures the high voltage output of megohm meters and other portable and bench insulation testers. When calibrating insulation resistance testers up to 5 kV divider and multiplier access, you can select a wide range of continuously variable resistance values, from 10 kΩ to 100 GΩ with 4.5-digit resolution. When calibrating 10 kV insulation testers, the included R-multiplier extends these ranges to 10 T ohms and 10 kV measurment extends the resistors' range up to 10 TΩ and 10 kV. The 10 kV divider is used to measure testers up to that voltage level with greater precision (than the 40k V probe).

Leakage current testers

Simulate a leakage current for direct/touch, differential and substitute leakage current methods with 4.5-digit resolution from 0.1 mA to 30 mA.

The 5322A lets you choose the method that works best for your test, unlike other calibrators that only offer a single method.

Multifunction installation testers

The 5322A makes quick work of these multifunction installation testers with the flexibility to calibrate insulation resistance, continuity, loop impedance, RCD and earth resistance tester capabilities. This means that calibrations are completed with one instrument

Portable appliance testers (PATs)

The 5322A has all the functionality needed to calibrate PATs, with insulation resistance, ground bond, leakage current RCD, flash voltage and load test capabilities.

Continuity testers and earth (ground) resistance testers

To calibrate these low ohms testers, a calibrator must be able to source precision low ohms. From its low ohms precision resistors, the 5320A calibrator sources resistance values ranging from 100 mΩ to 10 kΩ, with 3.5 digits of resolution. Choose 2-wire or 4-wire modes for maximum flexibility and lower test uncertainty ratios (TURs).

Loop/line impedance testers and ground bond testers

The 5322A calibrator has 16 high-power, high-current resistors it can source to increase the resistance of a loop or line by a known amount. Use Scan mode to automatically determine the resistance of the loop, and use Active Loop Compensation mode (5322A/VLC) to compensate for any residual impedance in the loop or line.

Residual-current device (RCD) or ground fault current interrupter (GFCI) testers

The 5322A simulates a circuit breaker (an RCD/GFCI) to verify and calibrate trip current and trip time, without tripping the installation's current breakers. For most RCD testers, trip times are calculated to an uncertainty of 0.25 ms, to provide better than 4:1 test uncertainty ratios (TUR). Trip current uncertainty is 1 %, which also provides better than 4:1 TURs in most applications. The 5322A also has a special PAT RCD mode to calibrate the RCD function of those testers.

Hipot testers

Electrical safety testing with hipots is an integral part of development and manufacturing of electronic and electrical products, ranging from refrigerators to power supplies. Such testing is often required by government regulations to ensure product safety.

The 5322A provides best-in-class hipot calibration of ac and dc voltage. The built-in meter measures voltage and current for voltages up to 5 kV. For voltages over 5 kV the 10 kV divider or optional characterized 40 kV probe can be used. The 10 kV divider measures voltages to 10 kV with 0.5 % uncertainty. The built-in meter also measures hipot ripple coefficient and distortion (THD).

For calibration of hipot current up to 100 mA, Fluke Calibration offers a load adapter accessory. Use the load adapter in conjunction with the 5322A built-in current meter for full calibration of hipots.

The MET/CAL® software advantage

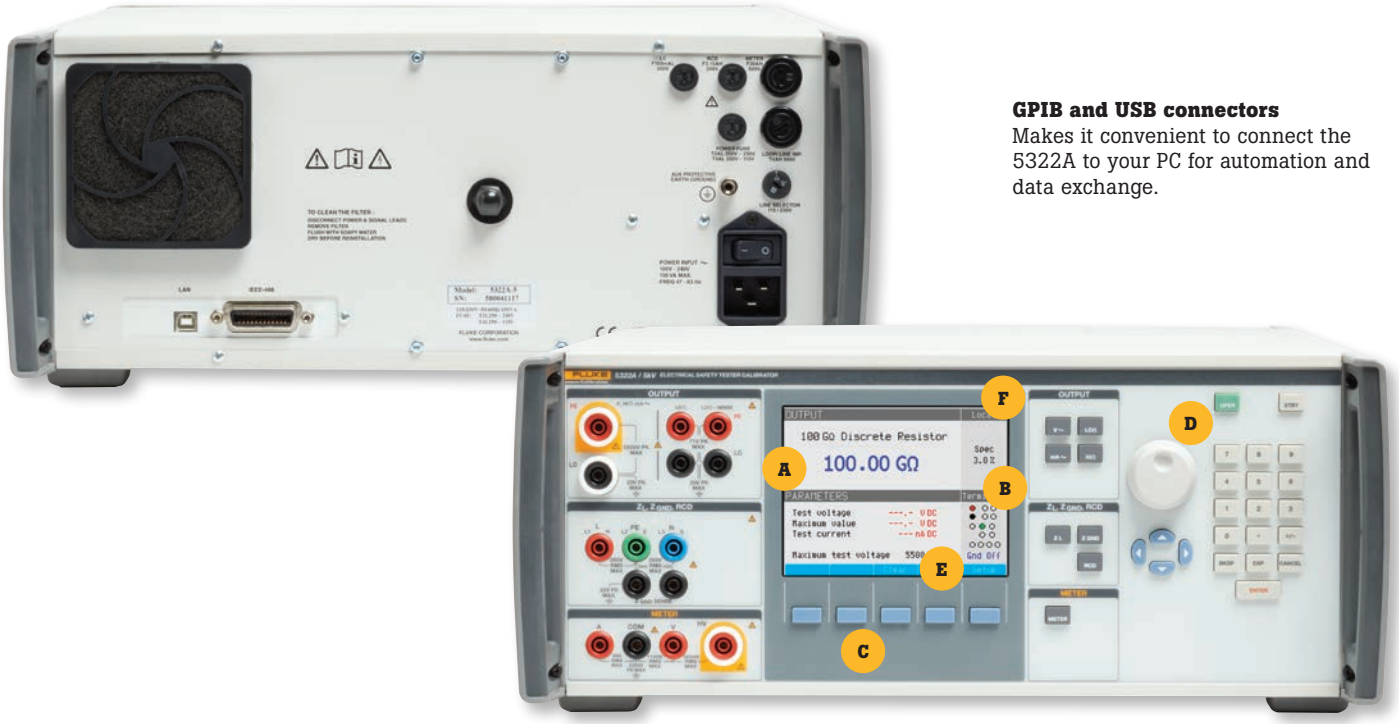
MET/CAL® Calibration Software automates the calibration process, helping you increase throughput and ensure calibrations are performed consistently every time. This powerful software documents calibration procedures, processes and results, for greater ease in complying with ISO 17025 and similar quality standards.

Fluke calibration software includes MET/CAL software—the industry leading software for calibration automation/documentation and MET/TEAM Express—a dedicated system to manage your test and measurement assets. Or choose MET/TEAM standard edition for fully-featured enterprise calibration asset management, with optional modules for on-site calibration, commerce management, and customer web portal.

The 5322A incorporates a 5320A remote emulation mode to allow you to use existing 5320A MET/CAL Calibration Software procedures. MET/CAL works with the 5322A Multifunction Electrical Tester Calibrator to give you the ability to streamline high-volume calibration operations by reducing complex traditional calibration equipment setup and manual operator interactions.

The support you need, when you need it

Fluke calibrators are known for their accuracy and reliability. Fluke operates global calibration and repair facilities to keep your equipment in top working order. Reduce your calibrator downtime and control your cost of ownership with a Priority Gold CarePlan service package. Fluke Calibration offers one-year, three-year and five-year Gold CarePlans, which feature an annual standard or accredited calibration of your 5322A calibrator with guaranteed three-day in-house turnaround, plus free repairs with guaranteed ten-day in-house repair (includes calibration).



GPIB and USB connectors
Makes it convenient to connect the 5322A to your PC for automation and data exchange.

A Large, bright full color display
Large readouts enable you to easily read the primary sourced or measured values. Sourced values are in blue and measured values are in red.

B Active terminal display
Always know which calibrator terminals are active. When a function has been selected, the graphical display shows the active terminals.

C Soft menu keys
Soft menu keys adapt to the active function, so the menu structure is intuitive and easy to learn.

D Output jog wheel, numeric keyboard
To select an output value or measurement range, use the numeric keypad or rotary jog wheel.

E Graphical help guide
Find out what connections to make in an easy-to-understand graphical format. The help guide is available through the Mode softkey.

F Spec readout
The spec readout lets you view the uncertainty of the sourced or measured primary value.

FLUKE®
Calibration

Specifications

Measurement functions

AC/DC voltage measurement

Range of input voltage: 0 to 5000 V ac RMS / 6000 V dc
Resolution: 4.5 digits
Frequency range: DC, 20 Hz to 2 kHz
Reading/second: 2

Ranges	Resolution	Uncertainty (dV) ±(% of Reading + mV)
10 V ac/dc	0.001 V	0.15 % + 5
100 V ac/dc	0.01 V	0.20 % + 50
1100 V ac/dc	0.1 V	0.20 % + 550
5000 V ac / 6000 V dc	1 V	0.30 % + 5500 mV

AC/DC voltage measurement

Range of input current: 0 to 30 A RMS
Resolution: 4.5 digits
Frequency range: DC, 20 to 400 Hz
Reading/second: 2

Range	Resolution	Uncertainty (dI) ±(% of Reading + mV)	Input resistance
300 mA ac/dc	0.1 mA	0.15 % + 0.15	500 mΩ
3 A ac/dc	1 mA	0.15 % + 1.5	75 mΩ
30 A ac/dc	10 mA	0.30 % + 15	25 mΩ

AC power measurement

Range ..... 0 to 33 kVA ac
Voltage range ..... 0 to 1100 V ac
Current ramge ..... 0 to 30 A ac
Frequency range..... 40 – 65 Hz
Type..... appearent, active, reactive
Resolution..... 3.5 digits
Phase indication..... Phase angle (φ), Power Factor (PF)
Phase Uncertainty (dφ).....± 0.1°

DC power

Range ..... 0 to 33 kVA ac
Voltage range ..... 0 to 1100 V ac
Current ramge ..... 0 to 30 A ac
Resolution..... 3.5 digits

5 kV high voltage resistance (insulation resistance test, 5322A/5 versions only)

Total range: 10 kΩ to 100 GΩ
Resolution: 4.5 digits

Range	Resistance source (output)			Test voltage measurement	
	Resolution	Maximum voltage dc	Uncertainty[1,2] (tcal ±5 °C)	Uncertainty ± (% reading + V)	Resolution
10.000 to 19.999 kΩ	1 Ω	65 V	±0.2 %	0.5 % + 2	0.1 V
20.00 to 39.99 kΩ	10 Ω	65 V	±0.2 %	0.5 % + 2	0.1 V
40.00 to 99.99 kΩ	10 Ω	400 V	±0.2 %	0.5 % + 2	0.1 V
100.00 to 199.99 kΩ	10 Ω	800 V	±0.2 %	0.5 % + 10	1 V
200.0 to 999.9 kΩ	100 Ω	1100 V	±0.2 %	0.5 % + 10	1 V
1.000 to 1.999 MΩ	1 kΩ	1575 V	±0.3 %	0.5 % + 10	1 V
2.000 to 9.999 MΩ	1 kΩ	2500 V	±0.3 %	0.5 % + 10	1 V
10.000 to 19.999 MΩ	1 kΩ	5500 V[3]	±0.5 %	0.5 % + 10	1 V
20.00 to 199.99 MΩ	10 kΩ	5500 V[3]	±0.5 %	0.5 % + 10	1 V
200.0 to 999.9 MΩ	100 kΩ	5500 V[3]	±0.5 %	0.5 % + 10	1 V
1.0000 to 1.9999 GΩ	100 kΩ	5500 V[3]	±1.0 %	0.5 % + 10	1 V
2.000 to 9.999 GΩ	1 MΩ	5500 V[3]	±1.0 %	0.5 % + 10	1 V
10.000 to 19.999 GΩ	1 MΩ	5500 V[3]	±3.0 %	0.5 % + 10	1 V
20.00 to 100.00 GΩ	10 MΩ	5500 V[3]	±3.0 %	0.5 % + 10	1 V

[1]Uncertainty is valid to 3000 volts. For test voltages above 3000 V, add 0.1% for each 1000 V above 3000 V in range 10.00 MΩ to 999 MΩ and 0.3% in range 1.000 GΩ to 100.0 GΩ.

[2]Uncertainty is valid for relative humidity RH ≤ 50 %. For operation at ambient RH in the range 50 % to 75 % and resistance output values 100.0 MΩ to 9.99 GΩ, add 0.02 x specified uncertainty/ % RH, and for resistance output values 10.00 GΩ to 100.0 GΩ, add 0.05 x specified uncertainty / % RH.

[3]Maximum test voltage with the supplied banana leads is 5000 Vrms. For higher voltages, use leads rated at 5000 V or above.

Resistance multiplier adapter (x1000 multiplier)

Resistance range..... 350 MΩ to 10 TΩ

Range	Resolution	Maximum voltage DC	Uncertainty (tcal ±5 °C)
350.0 MΩ to 99.99 GΩ	100 kΩ	10000 V	±(1.0 % + R[1])
100.00 GΩ to 999.9 GΩ	10 MΩ	10000 V	±(2.0 % + R[1])
1.0000 TΩ to 10.000 TΩ	100 MΩ	10000 V	±(3.0 % + R[1])

[1] R is the uncertainty of the 5322A resistance value to be multiplied by 1000.

1.5 kV High resistance source (5322A)

Range..... 10 kΩ to 10 GΩ + 100 GΩ single value selection
Resolution..... 4.5 digit (continuously variable for 10 kΩ to 10 GΩ range)

Range	Resistance source (output)			Test voltage measurement	
	Resolution	Maximum voltage dc	Uncertainty[1,2] (tcal ±5 °C)	Uncertainty ± (% reading + V)	Resolution
10.000 to 19.999 kΩ	1 Ω	55 V	0.2 %	0.3 % + 2	0.1V
20.00 to 39.99	10 Ω	55 V	0.2 %	0.3 % + 2	0.1V
40.00 to 99.99 kΩ	10 Ω	400 V	0.2 %	0.3 % + 2	0.1V
100.00 to 199.99 kΩ	10 Ω	800 V	0.2 %	0.3 % + 2	0.1V
200.0 to 999.9 kΩ	100 Ω	1100 V	0.2 %	0.3 % + 2	0.1V
1.000 0 to 1.999 9 MΩ	100 Ω	1150 V	0.3 %	0.5 % + 5	0.1V

2.000 to 9.999 MΩ	1 kΩ	1150 V	0.3 %	0.5 % + 5	0.1V
10.000 to 19.999 MΩ	1 kΩ	1575 V	0.5 %	0.5 % + 5	0.1V
20.00 to 199.99 MΩ	10 kΩ	1575 V[3]	0.5 %	0.5 % + 5	0.1V
200.0 to 999.9 MΩ	100 kΩ	1575 V[3]	0.5 %	0.5 % + 5	0.1V
1.0000 to 1.9000 GΩ	100 kΩ	1575 V[3]	1.0 %	1 % + 5	0.1V
2.000 to 10.000 GΩ	1 MΩ	1575 V[3]	1.0 %	1 % + 5	0.1V
100 GΩ	-	1575 V[3]	3.0 %[4]	1.5 % + 5	0.1V

[1]Uncertainty is valid to 500 volts. For test voltages above 500 V, add 0.1% for each 200 V above 500 V.

[2]Uncertainty is valid for relative humidity RH ≤ 50 %. For operation at ambient RH in the range 50 % to 75 % and resistance output values 100.0 MΩ to 9.99 GΩ, add 0.02 x specified uncertainty/ % RH, and for resistance output values 10.00 GΩ to 100.0 GΩ, add 0.05 x specified ncertainty / % RH.

[3]Maximum test voltage with the supplied banana leads is 1000 Vrms. For higher voltages, use leads rated at 1575 V or above.

[4]Calibrated value uncertainty is specified in the table. Nominal value is ± 15 %.

Low voltage resistance (continuity and earth resistance test)

Total range: 100 mΩ to 10 kΩ
Resolution: 3.5 digits
Range of lead resistance compensation 0 to 2.000 Ω

Range	**Resistance source (output)**			**Test voltage measurement**		
	Resolution	**Maximum AC rms or DC current[1]**	**2-wire uncer-tainty[1] (tcal ±5 °C)**	**2-wire uncer-tainty[1] (tcal ±5 °C)**	**Uncertainty ±(% reading + mA)**	**Resolution**
10 mΩ[3]	-	1000 mA	-	1 % [3]	10 % + 10	10 mA
100 mΩ to 0.199 Ω	0.1 mΩ	700 mA	0.3 % + 50 mΩ	0.3 % + 10 mΩ	10 % + 10	1 mA
0.200 to 0.499 Ω	1 mΩ	700 mA	0.3 % + 50 mΩ	0.3 % + 10 mΩ	10 % + 10	1 mA
0.500 o 1..999 Ω	1 mΩ	700 mA	0.3 % + 50 mΩ	0.3 % + 10 mΩ	2 % + 10	1 mA
2.00 o 4.99 Ω	1 mΩ	700 mA	0.3 % + 50 mΩ	0.3 % + 10 mΩ	1 % + 2	1 mA
5 to 29.9 Ω	0.01 Ω	250 mA	0.2 % + 50 mΩ	0.2 % + 10 mΩ	0.2 % + 1.0	1 mA
30 to 199.9 Ω	0.1 Ω	100 mA	0.2 % + 50 mΩ	0.2 % + 10 mΩ	0.2 % + 0.5	0.1 mA
200 to 499 Ω	1 Ω	45 mA	0.2 %	0.2 %	0.2 % + 0.2	0.1 mA
500 Ω to 1.999 kΩ	1 Ω	25 mA	0.2 %	0.2 %	0.2 % + 0.1	0.1 mA
2 to 4.99 kΩ	10 Ω	10 mA	0.2 %	0.2 %	0.2 % + 0.1	0.1 mA
5 to 10 kΩ	10 Ω	5 mA	0.2 %	0.2 %	0.2 % + 0.1	0.1 mA

[1]Test current can exceed 120 % of maximum current for up to 3 seconds. Terminals automatically disconnect if test current exceeds 120 % of specified maximum current.

[2]Uncertainty is valid to 200 mW. For higher power rating, add 0.1 % per each 300 mW above 200 mW.

[3]Range is 4–wire only, 10mΩ nominal, actual calibrated value is displayed. Calibration value uncertainty is specified in the table.

Ground bond resistance source

Resistance mode

Range: 1 mΩ to 1700 Ω, dc and line frequency (50/60 Hz)

Test current measurement range: 0 to 30 A

2-wire nominal value	4-wire nominal value	Resistance source (output)					Test voltage measurement	
		Deviation from nominal value 4-wire/2-wire	Maximum continuous test current ACrms or DC (Lo, Hi) [1]	2-wire absolute uncertainty of characterized value[2] (tcal ±5 °C	4-wire absolute uncertainty of characterized value[2] (tcal ±5 °C)	Range/resolution (Lo, Hi)	Uncertainty Lo ±(% reading + mA)	Uncertainty Hi ±(% reading + mA)
	1 mΩ	± 20 %	3 A 30 A	--	± 0.2 mΩ	4 A/1 mA, 40 A/10 mA	1 % + 12	1 % + 120
20 mΩ	14mΩ	± 50 %	3 A 30 A	± 12 mΩ	± 0.40 mΩ	4 A/1 mA, 40 A/10 mA	1 % + 12	1 % + 120
50 mΩ	39 mΩ	± 50 %	2.8 A 28 A	± 12 mΩ	± 0.70 mΩ	4 A/1 mA, 4 0A/10 mA	1 % + 12	1 % + 120
100 mΩ	94 mΩ	± 30 %	2.5 A 25 A	± 12 mΩ	± 1.2 mΩ	4 A/1 mA, 40 A/10 mA	1 % + 12	1 % + 120
350 mΩ	340 mΩ	± 20 %	1.4 A 14 A	± 14 mΩ	± 2.0 mΩ	4 A/1 mA, 40 A/10 mA	1 % + 12	1 % + 120
500 mΩ	490 mΩ	± 10 %	1.2 A 12 A	± 15 mΩ	± 2.7 mΩ	4 A/1 mA, 40 A/10 mA	1 % + 12	1 % + 120
960 mΩ	960 mΩ	± 10 %	0.8 A 8 A	± 20 mΩ	± 4.8 mΩ	4 A/1m A, 40 A/10 mA	1 % + 12	1 % + 120
1.7 Ω	1.7 Ω	± 10 %	0.6 A 6 A	± 25 mΩ	± 8.5 mΩ	3 A/1 mA, 30 A/10 mA	0.3 % + 9	0.3 % + 90
4.7 Ω	4.7 v	± 10 %	0.32 A 3.2 A	± 37 mΩ	± 24 mΩ	2.1 A/1 mA, 21 A/10 mA	0.3 % + 7	0.3 % + 70
9 Ω	9 Ω	± 10 %	0.2A 2 A	± 60 mΩ	± 45 mΩ	1.5 A/1 mA, 15 A/10 mA	0.3 % + 4	0.3 % + 40
17 Ω	17 Ω	± 10 %	0.15 A 1.5 A	± 100 mΩ	± 85 mΩ	1 A/1 mA, 10 A/10 mA	0.3 % + 3	0.3 % + 30
47 Ω	47 Ω	± 10 %	0.08 A 0.8 A	± 300 mΩ	± 300 mΩ	0.5 A/0.1 mA, 5 A/1 mA	0.3 % + 1.5	0.3 % + 15
90 Ω	90 Ω	± 10 %	0.05 A 0.5 A	± 500 mΩ	± 500 mΩ	0.3 A/0.1 mA 3 A/1 mA	0.3 % + 1.0	0.3 % + 10
170 Ω	170 Ω	± 10 %	0.025 A 0.25 A	± 1 Ω	± 1 Ω	0.13 A/0.1 mA, 1,35 A/1 mA	0.3 % + 0.5	0.3 % + 5
470 Ω	470 Ω	± 10 %	0.01 A 0.10 A	± 2.5 Ω	± 2.5 Ω	0.6 A/0,01 mA, 0.6 A/0.1 mA	0.3 % + 0.25	0.3 % + 2.5
900 Ω	900 Ω	± 10 %	0.005 A 0.05 A	± 5 Ω	± 5 Ω	0.03 A/0,01 mA 0.3 A/0.1 mA	0.3 % + 0.15	0.3 % + 1.5
1700 Ω	1700 Ω	± 10 %	0.003 A 0.03 A	± 10 Ω	± 10 Ω	0.015 A/0.01 mA, 0.150 A/0.1 mA	0.3 % + 0.07	0.3 % + 0.7

[1]Test currents up to 30 % of maximum continuous test current can be applied to the Calibrator with no time limitation. Test current between 30 % and 100 % of the maximum continuous test current can be applied to the Calibrator for a limited time. The Calibrator calculates the allowed time period and when exceeded, the output connectors are disconnected. Minimum period of full current load is 45 seconds.

[2]Calibrated value uncertainty is specified in the table.

[3]Maximum short term test current is defined as the rms value of halfwave or fullwave test current flowing through the UUT. Maximum time of test is 200 ms. A time interval of 200 ms represents 10 full waves of power line voltage at 50 Hz and 12 full waves at 60 Hz.

Line/loop impedance source

Resistance range .....25 mΩ to 1700 Ω
Current range.....0 to 40 A (ac+ dc) rms
Residual impedance range.....0 to 10 Ω
Correction COMP mode (Active loop compensation) (5322A/VLC only)
Maximum compensated impedance 0 to 2 Ω

Nominal resistance value	Deviation from nominal value	Absolute uncertainty of characterized value (tcal ±5 °C)	Maximum continuous test current AC rms or DC[1]	Maximum short-term test current AC rms or DC[2]	Test current uncertainty ±(% reading + mA)	Test current resolution
20 mΩ	± 50 %	± 12 mΩ	30 A	40 A	1.5 % + 0.7 A	100 mA
50 mΩ	± 50 %	± 12 mΩ	28 A	40 A	1.5 % + 0.5 A	100 mA
90 mΩ	± 30 %	± 12 mΩ	25 A	40 A	1.5 % + 0.35 A	100 mA
350 mΩ	± 20 %	± 14 mΩ	14 A	40 A	1.5 % + 0.3 A	100 mA
500 mΩ	± 10 %	± 15 mΩ	12 A	40 A	1.5 % + 0.2 A	100 mA
0.96 Ω	± 10 %	± 20 mΩ	8 A	40 A	1.5 % + 150 mA	10 mA
1.7 Ω	± 10 %	± 25 mΩ	6 A	30 A	1.5 % + 100 mA	10 mA
5 Ω	± 10 %	± 37 mΩ	3.2 A	21 A	1.5 % + 70 mA	10 mA
9 Ω	± 10 %	± 60 mΩ	2.0 A	15 A	1.5 % + 50 mA	10 mA
17 Ω	± 10 %	± 100 mΩ	1.5 A	10 A	1.5 % + 30 mA	10 mA
50 Ω	± 10 %	± 300 mΩ	0.8 A	5.0 A	1.5 % + 20 mA	1 mA
90 Ω	± 10 %	± 500 mΩ	0.5 A	3.0 A	1.5 % + 10 mA	1 mA
170 Ω	± 10 %	± 1 Ω	0.25 A	1.35 A	1.5 % + 5 mA	1 mA
500 Ω	± 10 %	± 2.5 Ω	0.1 A	0.6 A	1.5 % + 3 mA	1 mA
900 Ω	± 10 %	± 5 Ω	0.05 A	0.3 A	1.5 % + 2 mA	1 mA
1.7 kΩ	± 10 %	± 10 Ω	0.030 A	0.15 A	1.5 % + 2 mA	1 mA

[1]Test currents up to 30 % of maximum continuous test current can be applied to the Calibrator with no time limitation. Test current between 30 % and 100 % of the maximum continuous test current can be applied to the Calibrator for a limited time. Minimum period of full current load is 45 seconds. The Calibrator calculates the allowed time period and when exceeded, the output connectors are disconnected.

[2]Maximum short term test current is defined as the rms value of half wave or full wave test current flowing through the UUT. Maximum time of test is 200 ms. A time interval of 200 ms represents 10 full waves of power line voltage at 50 Hz and 12 full waves at 60 Hz.

Hipot leakage current measurement mode

Range ..... 0 to 300 mA ac rms or dc
Resolution ..... 4 1/2 digits
Frequency range ..... DC, 20 Hz to 400 Hz
Time constant ..... 1.5 s
Readings/second 2

Range	Resolution	Uncertainty ± (% of reading + µA)
300 uA	0.01 µA	0.3 % + 0.21
3 mA	0.1 µA	0.2 % + 1.5
30 mA	1 µA	0.2 % + 15
300 mA	10 µA	0.2 % + 150

Hipot timer measurement mode

Range ..... 0.1 to 999 s
Resolution ..... 1 ms
Uncertainty ..... dc ± (0.02 % reading + 2 ms)
ac ± (0.02 % reading + 20 ms)
Treshold voltage adjustment ..... 10 to 99 % of applied voltage range
Adjustment resolution ..... 1 %

Hipot AC voltage distortion measurement

Frequency range ..... 45 to 65 Hz
Number of harmonics 25
Voltage range ..... 10 V to 5000 V ac
THD range ..... 0 to 10 %
THD resolution ..... 3 1/2 digits
Uncertainty ..... ± 5 % of THD range

Hipot DC voltage ripple quotient measurement

Voltage range ..... 100 V to 6000 V dc
Ripple quotient range ..... 10 %
Resolution ..... 3 1/2 digits
Uncertainty ..... 5 % of Ripple Quotation Range
Note: Ripple Quotient is defined by ratio Vrms/Vdc expressed in % where
Vrms is root mean square of the ac signal contained in test voltage
Vdc is average measured dc value of test voltage

Flash Test voltage measurement

CAT I voltage range ..... 2000 V ac
Uncertainty ..... ± (0.3 % of reading + 6 V)
CAT II voltage range ..... 3000 V ac
Uncertainty ..... ± (1 % of reading value + 6 V)

Output functions

Voltage calibrator (5322A/VLC only)
Range of output voltage: 3 V to 600 V ac or dc
Voltage Resolution: 4 digits
Frequency range: 40 Hz to 400 Hz
Frequency resolution: 3 digit

Range	Resolution	Uncertainty in ac mode (% of reading + mV)	Max. burden current in ac mode	Uncertainty in dc mode (% of reading + mV)	Max. burden current in dc mode
3 V to 29.99 V	1 mV	0.1 % + 9	500 mA	0.1 % + 9	5 mA
30 V to 99.99 V	10 mV	0.1 % + 30	300 mA	0.1 % + 45	5 mA
100 V to 299.99 V	100 mV	0.1 % + 90	150 mA	0.1 % + 180	3 mA
300 V to 600 V	100 mV	0.1 % + 180	50 mA	0.1 % + 180	2 mA

Distortion of ac output signal: 0.2 % + 10 mV
Distortion of ac output signal: 0.2 % + 10 mV
[1] Uncertainty is valid to 200 mΩ. For higher power rating, add 0.1 % per each 300 mΩ above 200 mΩ

Output functions continued

Discrete resistors (Loop and line impedance and ground bond test)
Total range: 25 mΩ to 1.8 kΩ
Resolution: 16 discrete values

Range	Resolution	Uncertainty in ac mode (% of reading + mV)	Max. burden current in ac mode	Uncertainty in dc mode (% of reading + mV)	Max. burden current in dc mode
25 mΩ	50 %	± 5 mΩ	30 A	40 A	1.5 % + 0.7 A
50 mΩ	50 %	± 5 mΩ	28 A	40 A	1.5 % + 0.5 A
100 mΩ	30 %	± 5 mΩ	25 A	40 A	1.5 % + 0.35 A
330 mΩ	20 %	± 7 mΩ	18 A	40 A	1.5 % + 0.3 A
500 mΩ	10 %	± 8mΩ	10 A	40 A	1.5 % + 0.2 A
1 Ω	10 %	± 10 mΩ	8 A	40 A	1.5 % + 0.15 A
1.8 Ω	10 %	± 18 mΩ	6 A	30 A	5 % + 0.1 A
5 Ω	10 %	± 30 mΩ	3.2 A	16 A	1.5 % + 70 mA
10 Ω	10 %	± 60 mΩ	2.0 A	10 A	1.5 % + 50 mA
18 Ω	10 %	± 100 mΩ	1.5 A	7.5 A	1.5 % + 30 mA
50 Ω	10 %	± 300 mΩ	0.8 A	4.0 A	1.5 % + 20 mA
100 Ω	10 %	± 500 mΩ	0.5 A	2.5 A	1.5 % + 10 mA
180 Ω	10 %	± 1 Ω	0.25 A	1.25 A	1.5 % + 5 mA
500 Ω	10 %	± 2.5 Ω	0.1 A	0.5 A	1.5 % + 3 mA
1 kΩ	10 %	± 5 Ω	0.05 A	0.25 A	1.5 % + 2 mA
1.8 kΩ	10 %	± 10 Ω	0.03 A	0.15 A	1.5 % + 2 mA

*Maximum short term test current is defined as RMS value of halfwave or fullwave test current from the UUT. Maximum time of test current is 200 ms (represents 10 full waves of power line voltage at 50 Hz and 12 full waves at 60 Hz).

Leakage current source

Range ..... 0.1 to 30 mA
Resolution:
Passive mode..... 10 µA setting, 1 µA measurement
Differential mode..... 10 µA setting, 1 µA measurement
Substitute mode..... 10 µA
Active mode (5320A/VLC only)[1] ..... 10 µA
Test voltage:
Passive mode..... 60 to 250 V ac rms
Differential mode..... 60 to 250 V ac rms
Substitute mode..... 10 to 250 V ac rms
Active mode (5320A/VLC only)[1] ..... 50 to 100 V ac rms

Leakage current (Direct/touch/contact, differential, substitute leakage current mode)

Leakage current range: 0.1 mA to 30 mA
Uncertainty: 0.3 % + 2 µA (ac+dc) RMS
Resolution: 10 µA
Test voltage: 10 to 250 V ac+dc

RCD (Residual Current Device) in PATs

Trip current range:
0.5 X I and 1 X I Mode ..... 5 to 30 mA in 1 mA steps
1.4 X I and 2 X I Mode..... 14 to 60 mA in 1 mA steps
5 X I Mode ..... 50 to 150 mA in 1 mA steps
Trip current measurement resolution ..... 1 µA bellow 30 mA
10 µA in range from 30 mA to 150 mA

Trip current measurement uncertainty:
Trip current ..... ± 1 % of nominal current (I) setting
Trip time range..... 10 to 5000 ms
Trip time uncertainty ..... (0.02 % setting + 0.25 ms)

RCD (Residual Current Device) in installation testers

Trip Current Range:
0.5 X I and 1 X I Mode .....3 to 3000 mA in 1 mA steps
1.4 X I and 2 X I Mode.....3 to 1500 mA in 1 mA steps
5 X I Mode .....3 to 600 mA in 1 mA steps
Trip Current Measurement Resolution..... 1 µA bellow 30 mA
10 µA in range from 30 mA to 300 mA
00 µA in range from 300 mA to 3 A

Trip Current Measurement Uncertainty:
Trip Current.....± 1 % of nominal current (I) setting
Trip Time Range..... 10 to 5000 ms
Trip Time Uncertainty .....(0.02 % setting + 0.25 ms)
Touch/Line voltage

Touch voltage range:	50 V
Touch voltage setting:	in discrete points depending on setup trip current value
Touch series resistance:	0.020 Ω, 0.05 Ω, 0.1 Ω, 0.33 Ω, 0.5 Ω, 0.96 Ω, 1.8 Ω, 5 Ω, 9 Ω, 18 Ω, 50 Ω, 90 Ω, 180 Ω, 500 Ω, 900 Ω, 1800 Ω

80k-40 high voltage probe

Range: 0 to 40 kV ac peak/dc
Uncertainty: 0.5 % of reading + 10 Vdc
0.5 % of reading + 10 Vac (at 50 or 60 Hz)

General Specifications

Environmental

Operating temperature: 18 °C to 28 °C
Calibration (Tcal): 23 °C
Storage temperature: –20 °C to 70 °C
Temperature Coefficient: Temperature coefficient for temperatures outside of Tcal ± 5 °C between +5 °C and +40 °C is 0.1/ °C
Relative humidity (operating): < 70 % to 28 °C
Altitude (operating): 3,050 meters (10,000 ft) maximum Altitude (non-operating): 12,200 meters (40,000 ft) maximum
Specifications confidence interval: 99 % Electromagnetic compatibility
EMI/RFI: Designed to comply with Class B per EN61326
Safety and protection Safety: Designed to comply with EN61010 Electro static discharge: This instrument meets class 1 for ESD requirements per EN61326

Communication interfaces

Standard interfaces: LAN, IEEE 488 (GPIB)

FLUKE®
Calibration

Dimensions and weights

Dimensions: (D x W x H) 450 mm x 480 mm x 170 mm (17.7 in x 18.9 in x 6.7 in).
Mounts within industry-standard 483 mm (19 in) rack-mount frames when fitted with the rack mounting kit.
Shipping weight: 25 kg, (55 lbs) **Net weight:** 18 kg, (39.7 lbs)

Power

Line voltage: 115/230 V ± 10 %, 50/60 Hz nominal
Line frequency: 47 to 63 Hz
Power consumption: 150 VA maximum

Ordering information

Models *	Description
5322A/5	Multifunction Electrical Tester Calibrator with 5 kV high voltage resistance outputs.
5322A/5/VLC	Calibrator with 5 kV resistance, 600 V source, Voltage loop Compensation
5322A/5/VLC/40	Calibrator with 5 kV resistance, 600 V source, Voltage loop Compensation and 40 kV probe
5322A/5/40	Calibrator with 5 kV resistance, and 40 kV probe
5322A	Multifunction Electrical Tester Calibrator with 1 kV 1.5 kV resistance
5322A/VLC	Calibrator with 5 kV resistance, 600 V source, Voltage loop Compensation
5322A/VLC/40	Calibrator with 1.5kV resistance, 600 V source, Voltage loop Compensation and 40 kV probe
5322A/40	Calibrator with 1.5 kV resistance and 40 kV probe
Accessories	
5322A-LOAD	High Voltage Resistor Load for 5322A
Y5322A	Rack mount kit for 5322A – Sliding
5322A/CASE	Transit Case for 5322A (without 5322A-LOAD)

*All models come with region specific line cord and adaptors, RCD-PAT adaptor, R-Multiplier with coax connector cable, 10 kV Divider, HV test lead set. Probe models include characterized 40 kV probe matched to base model.

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Printed in U.S.A. 8/2018 6011360a-en