BT5300 Series

Battery Tester

Safety Information

To register your product, visit www.fluke.com.

To view, print, or download the latest manual or manual supplement, visit www.fluke.com/us-en/support/manuals.

A **Warning** identifies hazardous conditions and procedures that are dangerous to the user.

⚠⚠ Warning

To prevent possible electrical shock, fire, or personal injury and for safe operation of the Product:

- **Read all safety information before you use the Product.**
- **Carefully read all instructions.**
- **Do not alter the Product and use only as specified, or the protection supplied by the Product can be compromised.**
- **Examine the case before you use the Product. Look for cracks or missing plastic. Carefully look at the insulation around the terminals.**
- **Do not use the Product around explosive gas, vapor, or in damp or wet environments.**

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- **Do not use the Product if it operates incorrectly.**
- **Disable the Product if it is damaged.**
- **Do not use the Product if it is altered or damaged.**
- **Use only the mains power cord and connector approved for the voltage and plug configuration in your country and rated for the Product.**
- **Replace the mains power cord if the insulation is damaged or if the insulation shows signs of wear.**
- **Disconnect the mains power cord before you remove the Product covers.**
- **Make sure the ground conductor in the mains power cord is connected to a protective earth ground. Disruption of the protective earth could put voltage on the chassis that could cause death.**
- **Do not put the Product where access to the mains power cord is blocked.**
- **Measure a known voltage first to make sure that the Product operates correctly.**
- **Use the correct terminals, function, and range for measurements.**
- **Use only cables with correct voltage ratings.**
- **Do not use test leads if they are damaged. Examine the test leads for damaged insulation and measure a known voltage.**
- **Do not make connections on hazardous live conductors in damp or wet environments.**
- **Do not operate the Product with covers removed or the case open. Hazardous voltage exposure is possible.**
- **Keep fingers behind the finger guards on the probes.**
- **Do not apply more than the rated voltage, between the terminals or between each terminal and earth ground.**

- **Do not touch voltages >30 V ac rms, 42 V ac peak, or 60 V dc.**
- **Use only specified replacement fuses.**
- **Have an approved technician repair the Product.**
- **Use this Product indoors only.**

Symbols

The table below lists the symbols that can be used on the Product or in this document.

Symbols	Description
⚠	WARNING. RISK OF DANGER.
	WARNING. HAZARDOUS VOLTAGE. Risk of electric shock.
	Consult user documentation.
	Fuse.
~	AC (Alternating Current).
⏚	Earth.
CE	Conforms to European Union directives.
	This product complies with the WEEE Directive marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste. Product Category: With reference to the equipment types in the WEEE Directive Annex I, this product is classed as category 9 "Monitoring and Control Instrumentation" product. Do not dispose of this product as unsorted municipal waste.

Specifications

BT5300 Battery Tester

Measurement Items

Measurement items	ACR, VDC, enclosure potential contact voltage
Measurement method	AC 4-wire method (1KHz)
Rated input	DC ±11 V
Input impedance	10 MΩ or High Z (>10 GΩ）
Loop R supported	3 mΩ range: ≤10 Ω Other ranges: ≤20 Ω
Trigger	Internal/external
Trigger delay	ON/OFF, Delay time: 0 to 9.999 s
Average	ON/OFF, Average count: 2 to 16
Measurement storage	Up to 512 sets
Channel extension	Internal: Up to 2x SW9010 multiplexer cards can extend to 64 channels [1] External: Up to 256 channels by using SW1080 switch mainframe
External interface	RS-232C, Ethernet
Other functions	Enclosure potential contact check

[1] BT5311 and BT5321 only

Sampling Time

Sampling speed (ACR and DCV simultaneously)	Sample time (50Hz/60Hz)
Ex-Fast	10 ms / 8.3 ms
Fast	20 ms / 16.7 ms
Medium	100 ms / 83.3 ms
Slow	200 ms / 166.7 ms

Range and Accuracy

ACR measurement

Range	3 mΩ	30 mΩ	300 mΩ	3 Ω	10 Ω
Max. indication value	5.0000 mΩ	50.000 mΩ	500.00 mΩ	5.0000 Ω	15.000 Ω
Resolution	0.1 μΩ	1 μΩ	10 μΩ	100 μΩ	1 mΩ
Test current[1]	100mA/ 200mA/ 300 mA	100 mA	10 mA	1 mA	1 mA
Test current frequency	1 kHz ± 1 Hz				
Accuracy[2,3]	0.2 % * rdg + 6 dgt				
Temperature Coefficient (>28 °C or <18 °C）	(0.05 % * rdg + 0.005 % * F.S.)/°C				
Response Time (Resistance only, Typical)	<20 ms				

[1] Test current error ±10%

[2] For 3mΩ range, slow sampling rate, the accuracy for different test current:

100mA 0.5 % * rdg + 20 dgt
200mA 0.3 % * rdg + 12 dgt
300mA 0.2 %* rdg + 6 dgt

[3] Add extra error with these different sampling speeds:

3 mΩ range Ex-fast: ±30 dgt; Fast: ±10 dgt; Medium: ±5 dgt
30 mΩ to 10 Ω range Ex-fast: ±3 dgt; Fast: ±2 dgt; Medium: ±2 dgt

DCV measurement

	BT5310/BT5311	BT5320/BT5321
Digit	6.5 digit	7.5 digit
Range	10V	
Max. indication value	11.00000 V	11.000000 V
Resolution	10 μV	1 μV
Accuracy[1]	25 ppm * rdg + 50 μV	18 ppm * rdg + 25 μV
Response time (Typical)	<20 ms	<20 ms
Temperature Coefficient (>28 °C or <18 °C)	(5 ppm * rdg + 1 ppm * F.S.)/°C	(1 ppm *rdg + 1 ppm * F.S.)/°C

[1] Add extra error with these different sampling speeds:
BT5310/BT5311: Ex-fast: ±50 μV; Fast: ±30 μV; Medium :±10 μV
BT5320/BT5321: Ex-fast: ±50 μV; Fast: ±20 μV; Medium: ±5 μV

SW1080 Switch Mainframe

Number of slots	8
Card support	SW9010 multiplexer card
Max. input Voltage	DC ±11 V
Power supply and control	Powered and controlled by BT5300 Series Battery Tester

SW9010 Multiplexer Card

Wiring	4-wire connection
Number of channels	32 channels
On/Off time	3 ms, typical
Channel switching	Open to close

Maximum allowed voltage	DC ±10 V
Maximum allowed current	750 mA
Loop resistance	1.5 Ω, typical
Electrostatic capacity	300 pF, typical
Relay life cycle	>10 million times with load
Short protection fuse (Self-recovery)	Each channel Rated current: 750 mA; Fusing current 1.5 A
Connector	D-sub 68-pin, Female, compatible with buckle or screw UNC #2-56

General Specifications

Dimensions (H x W x L)	BT5300: 216 mm x133 mm x 383 mm SW1080: 430 mm x 128 mm x 260 mm SW9010: 202 mm x 26 mm x 222 mm
Weight	BT5300: 7.3 kg (without SW9010) SW1080: 9.0 kg (without SW9010) SW9010: 495 g
Display	4.3 in TFT LCD, resolution 480x272
Operation temperature	0 °C to +50 °C
Storage temperature	-10 °C to +60 °C
Operation temperature	Non-condensing (<10°C)
	≤90 % RH (10 °C to 30 °C)
	≤75 % RH (30 °C to 40 °C)
	≤45 % RH (40 °C to 50 °C)
Altitude	3000 m
Storage altitude	12 000 m
Rated voltage	AC 100V to 120 V / 220 V to 240V (Auto selection)

Rated freq.	50/60 Hz
Rated power	35 W
Fuse	1 A, 250 V, 5x20 mm, Slow
Safety	IEC 61010-1: overvoltage category II, pollution degree 2
Electromagnetic Compatibility (EMC)	
International	IEC 61326-1: Industrial Electromagnetic Environment CISPR 11: Group 1, Class A *Group 1: Equipment has intentionally generated and/or use conductively coupled radio-frequency energy which is necessary for the internal functioning of the equipment itself.* *Class A: Equipment is suitable for use in all establishments other than domestic and those directly connected to a low voltage power supply network which supplies buildings used for domestic purposes. There may be potential difficulties in ensuring electromagnetic compatibility in other environments, due to conducted and radiated disturbances.* *Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.* *Emissions that exceed the levels required by CISPR 11 can occur when the equipment is connected to a test object.*
Korea (KCC)	Class A Equipment (Industrial Broadcasting & Communication Equipment) *Class A: Equipment meets requirements for industrial electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in* business environments and not to be used in homes.
Warranty	
BT5300 Series	3 years
SW1080	3 years
SW9010	1 year
	Note: Relays, fuses, and connectors are not covered by warranty.

LIMITED WARRANTY AND LIMITATION OF LIABILITY

This Fluke product will be free from defects in material and workmanship for 3 years for BT5300 Series and SW1080, 1 year for SW9010 from the date of purchase. This warranty does not cover fuses, disposable batteries, or damage from accident, neglect, misuse, alteration, contamination, or abnormal conditions of operation or handling. Resellers are not authorized to extend any other warranty on Fluke's behalf. To obtain service during the warranty period, contact your nearest Fluke authorized service center to obtain return authorization information, then send the product to that Service Center with a description of the problem.

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