

FT9350 series

Multi-channel comprehensive battery simulator



Sketch

The FT9350 series battery comprehensive simulator is a high-precision, multi-channel battery simulator composed of a battery simulator and various modules. The FT9350 series adopts a modular, multi-in-one design, capable of simulating the characteristics of single cells and battery packs, as well as supporting fault simulation, 36-channel thermistor temperature simulation, and hybrid signal simulation of battery pack total voltage and current.

The FT9350 series battery comprehensive simulator module boasts a voltage accuracy of up to 0.01% F.S., supports μ A-level current measurement, and features up to 39 independent channels with mutual isolation for convenient multi-channel series operation. The temperature simulation module supports a maximum of 36 channels, with a resistance range of 0 Ω to 16M Ω and a programming accuracy of up to 0.1%.

The FT9350 series features a standard 19-inch chassis with a 4U height, equipped with LAN, RS485, and CAN communication interfaces, facilitating integration into R&D and automated testing platforms while allowing standalone operation.

Modular, all-in-one, and easily scalable.

The FT9350 series serves as a comprehensive battery simulation platform capable of supporting various types of functional modules. A single unit can integrate battery simulator modules (with fault simulation), temperature simulator modules, voltage simulation modules, and total current signal simulation modules. Housed in a standard 4U/19-inch chassis, it enables 33-channel individual cell simulation (with fault simulation), 36-channel temperature simulation, 1-channel voltage simulation, and 1-channel total current signal simulation, significantly saving space for test equipment.

Features

- Modular, highly integrated all-in-one design supporting up to 4U/39 channels;
- Supports integration of temperature and battery pack simulation (occupying one battery simulation card slot, reducing total battery channels to 33) to save rack space;
- Battery simulation voltage range: 6V;
- Current ranges: 1A, 5A, ± 1 A, ± 5 A;
- Voltage accuracy up to 0.01% F.S.;
- Three current ranges with automatic switching;
- μ A-level measurement capability for static power consumption testing;
- Unique fault simulation functions (e.g., battery disconnection, short circuit, reverse polarity);
- Channel-to-channel isolation; supports multi-channel series connection;
- Equipped with LAN, RS485, and CAN control interfaces;
- Supports SCPI and Modbus protocols;
- USB interface supports file import/export and screenshot functions;
- 4.3-inch HD LCD screen; supports local and remote control.

Ordering information

Product(1) Integrated Cell Simulator

Name	Number of Channels	Model		Description
		Unidirectional	Bidirectional	
Integrated Cell Simulator	12CH	FT9350112A-6-1	FT935212A-6-1	Unidirectional: 6 V / 1 A; Bidirectional: 6 V / ± 1 A
		FT9350112A-6-5	FT9350212A-6-5	Unidirectional: 6 V / 5 A; Bidirectional: 6 V / ± 5 A
	18CH	FT9350118A-6-1	FT9350218A-6-1	Unidirectional: 6 V / 1 A; Bidirectional: 6 V / ± 1 A
		FT9350118A-6-5	FT9350218A-6-5	Unidirectional: 6 V / 5 A; Bidirectional: 6 V / ± 5 A
	24CH	FT9350124A-6-1	FT9350224A-6-1	Unidirectional: 6 V / 1 A; Bidirectional: 6 V / ± 1 A
		FT9350124A-6-5	FT9350224A-6-5	Unidirectional: 6 V / 5 A; Bidirectional: 6 V / ± 5 A
	33CH	FT9350133A-6-1	FT9350233A-6-1	Unidirectional: 6 V / 1 A; Bidirectional: 6 V / ± 1 A
		FT9350133A-6-5	FT9350233A-6-5	Unidirectional: 6 V / 5 A; Bidirectional: 6 V / ± 5 A
	36CH	FT9350136A-6-1	FT9350236A-6-1	Unidirectional: 6 V / 1 A; Bidirectional: 6 V / ± 1 A
		FT9350136A-6-5	FT9350236A-6-5	Unidirectional: 6 V / 5 A; Bidirectional: 6 V / ± 5 A

Product(2) Temperature Simulator

Name	Number of Channels	Model	Description
Temperature Simulator	18CH	FT93508A-18	1 Ω ~ 16M Ω , Resolution: 1 Ω
	36CH	FT93508A-36	1 Ω ~ 16M Ω , Resolution: 1 Ω

Product(3) Total Voltage & Total Current Mixed Simulator

Name	Model	Number of Channels	Description
Total Voltage & Total Current Mixed Simulator	FT93505A-1500	1CH Voltage/1CH Current Signal	Voltage Range: ± 1500 V / 100 mA; Current Sensor Signal Simulation Range: ± 5 V / ± 200 mV / ± 200 mA
	FT93505A-2500	1CH Voltage/1CH Current Signal	Voltage Range: ± 2500 V / 60 mA; Current Sensor Signal Simulation Range: ± 5 V / ± 200 mV / ± 200 mA

Optional information

Name	Model	Description
Test Cable	FT9350-TL05A	5A Test Cable/1.5 m in Length
	FT9350-18-TL02A	18CH/2m in Length. 1 piece (for 18CH) / 2 pieces (for 36CH)

Specification Table

Integrated Cell Simulator Specification Table-1

Model		FT9350133A-6-1	FT9350133A-6-5	FT9350233A-6-1	FT9350233A-6-5
Current Direction		Unidirectional		Bidirectional	
Number of Channels		33CH		33CH	
Voltage		±6V		±6V	
Current		±1A	±5A	±1A	±5A
Power		6W	30W	6W	30W
Input Impedance		≥3GΩ		≥3GΩ	
Absorbed Energy		NO		Not Exceeding the Maximum Power	
Maximum Series Connection		The maximum series output voltage shall not exceed 1000V, and the main units can be connected in series with each other.			
Voltage Specifications	Output Range	0~6.12V		0~6.12V	
	Output Accuracy (23±5℃)	0.5mV		0.5mV	
	Resolution	0.1mV		0.1mV	
	Measurement Accuracy (23±5℃)	0.5mV		0.5mV	
	Rise Time	0.1mV		0.1mV	
	Output Range	≤1ms		≤1ms	
	Temperature Coefficient	25ppm/℃		25ppm/℃	
Current Specifications (3 Ranges)					
Range1	Output Range	-1~1A	-5~5A	-1~1A	-5~5A
	Output Accuracy (23±5℃)	0.05%+0.5mA	0.05%+2.5mA	0.05%+0.5mA	0.05%+2.5mA
	Resolution	0.1mA	0.5mA	0.1mA	0.5mA
Range2	Output Range	-100~100mA		-100~100mA	
	Output Accuracy (23±5℃)	0.05%+500uA		0.05%+500uA	
	Resolution	10uA		10uA	
Range3	Output Range	-1~1mA		-1~1mA	
	Output Accuracy (23±5℃)	0.05%+0.5uA		0.05%+0.5uA	
	Resolution	0.1uA		0.1uA	
Temperature Coefficient		50ppm/℃		50ppm/℃	
Wiring Method		PCB Solder Terminal/Four-wire		PCB Solder Terminal/Four-wire	
Sampling Frequency		20Hz		20Hz	
Fault Simulation		Positive Open Circuit, Negative Open Circuit, Output Short Circuit, Reverse Polarity Connection			
Other Features					
Communication Interface		LAN、RS485、CAN			
Communication Protocol		SCPI、Modbus、CANOPEN			
Transmission Protocol		TCP/IP			
Input Voltage		Single-phase , 200~240Vac , 50/60Hz			
Operating Temperature		0~40℃			
Storage Temperature		-25℃~60℃			
Operating Humidity		20% rh~ 85% rh (No Condensation)			
Storage Humidity		< 90% rh (No Condensation)			
Operating Environment		Altitude ≤ 2000 m, Indoor Use			
Mechanical dimensions (W * H * D)		436 (W) *604 (D) *177 (H) mm			
Weight		20kg			

Specification Table

Temperature Simulator Specification Table-2

Model	FT93508A-18	FT93508A-36
Number of Channels per Module	18CH	36CH
Resolution	1Ω	1Ω
Resistance Range	1Ω ~16MΩ	1Ω ~16MΩ
Other Features		
Resistance Accuracy	1Ω ~1MΩ	0. 1%±1Ω
	1MΩ ~10MΩ	0. 2%±1Ω
	10MΩ and above	1%±1Ω
Power per Resistor	0. 25W	
Resistance Temperature Drift	50ppm	
Configuration Mode	23°C ±5°C	
Configuration Mode	On-demand Single-point Writing	
Configuration Time per Channel	10ms	

*Note: The channel accuracy is derived from the sum of the inherent accuracy of the resistor, the on-path resistance of the relay, the trace resistance inside the channel, and the temperature offset resistance.

Specification Table for Total Pressure and Total Flow Hybrid Simulator-3

Model	FT93505A-1500	FT93505A-2500
Voltage	-1500V~1500V	-2500V~2500V
Current	-100mA~100mA	-60mA~60mA
Power	150W	150W
Voltage Setting Resolution	100mV	
Voltage Setting Accuracy (23±5°C)	0. 05F. S.	
Voltage Readback Resolution	10mV	
Voltage Readback Accuracy (23±5°C)	0. 05F. S.	
Voltage Ripple (20 Hz - 20 MHz)	1. 2Vp-p	2. 5Vp-p
Current Setting Resolution	10uA	
Current Setting Accuracy (23±5°C)	0. 1%+0. 1%F. S.	
Current Readback Resolution	10uA	
Current Readback Accuracy (23±5°C)	0. 1%+0. 1%F. S.	
Current Ripple (20 Hz - 20 MHz)	≤500uArms	
Source Regulation	Voltage	≤0. 01%
	Current	≤0. 05%
Load Regulation	Voltage	≤0. 05%
	Current	≤0. 05%
Voltage Rise Time (No Load)	≤100ms	
Voltage Rise Time (Full Load)	≤200ms	
Voltage Fall Time (No Load)	≤200ms	
Voltage Fall Time (Full Load)	≤100ms	
Dielectric Withstand Voltage	AC 1500 V to Ground	
Test Terminal	2-Pin Banana Terminal	
Current Simulation Channel Performance Specification		
Voltage	Range	±200mV/±5V
	Resolution	0. 01mV/0. 01mV
	Accuracy	±0. 1mV/±2. 5mV
Current	Range	±200mA
	Resolution	0. 01mA
	Accuracy	±0. 1mA
Sampling Rate	Single Channel: Maximum Sampling Rate is 20 Sps	
Channel Scan Mode	Asynchronous Cyclic Scanning	
Acquisition Modes	On-demand Single-point Sampling, Finite-point Sampling, Multi-point Continuous Sampling	
Test Terminal	2-Pin Terminal, 5.08 mm Pitch	