

Aerospace / Commercial Aerospace Full-Scenario Testing Solution





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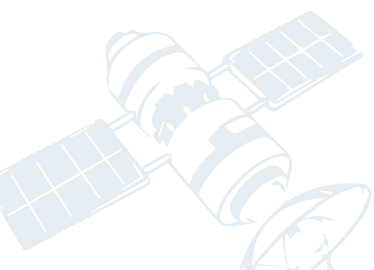


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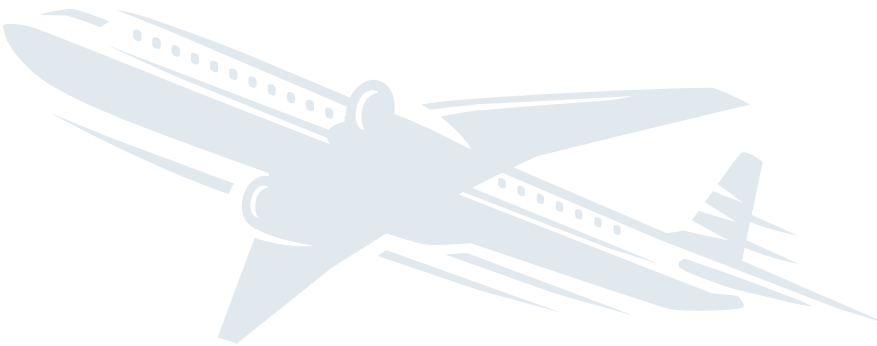
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CONTENTS

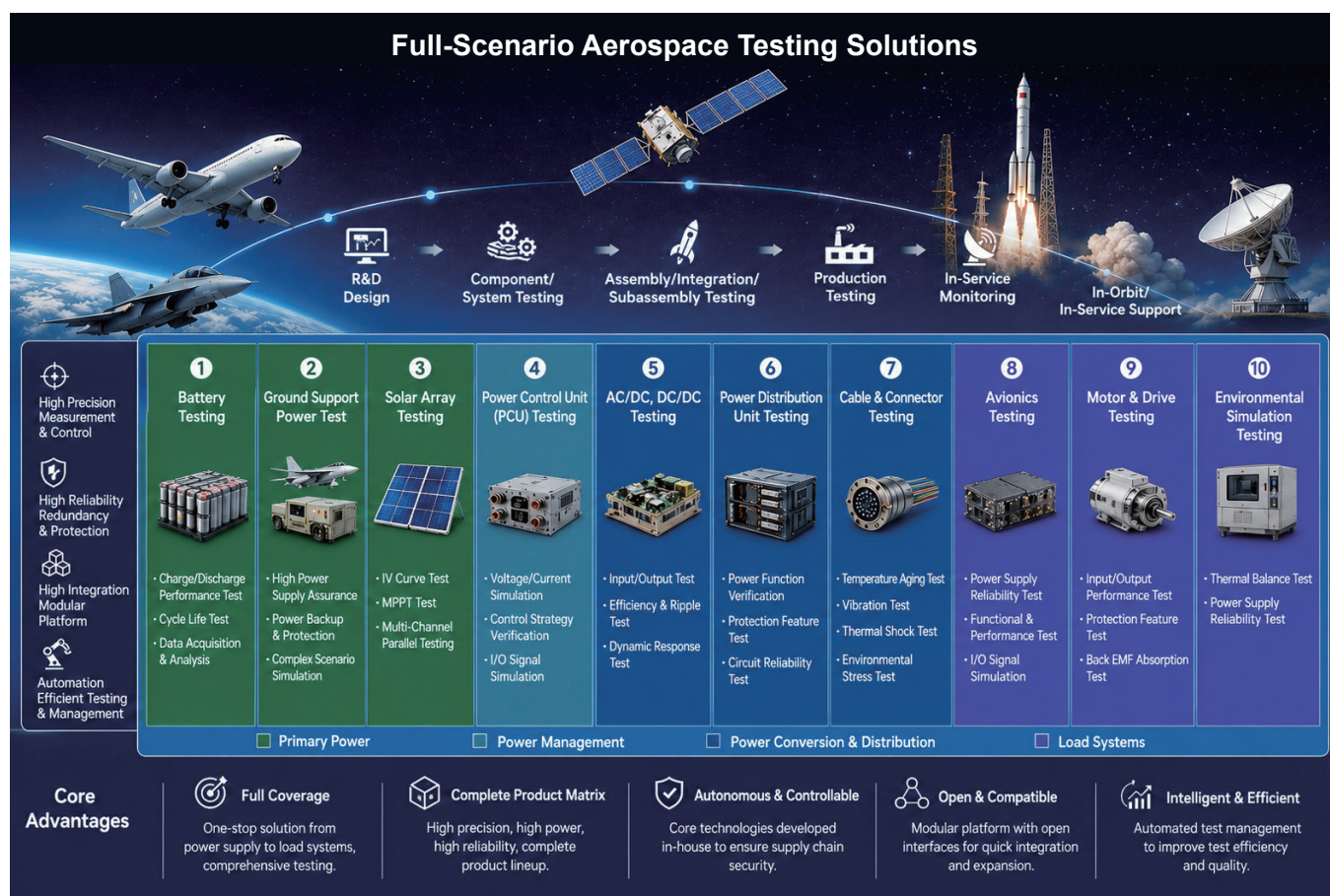
- Introduction 01
- Battery Testing 03
- Ground Flight Test Support 05
- Solar Cell Testing 06
- Power Control Unit (PCU) Testing 08
- AC/DC & DC/DC Power Module Testing 09
- Power Distribution Unit (PDU) Testing 10
- Wire Harness & Connector Testing 11
- Airborne/Spaceborne Electronic Equipment Testing 13
- Servo Motor / Motor Control Unit (MCU) Testing 16
- Space Environment Ground Simulation 17



Introduction

Aerospace and commercial aerospace have become strategic high grounds in global competition. Their development level directly impacts national security, technological sovereignty, and the competitiveness of future industries. Currently, major countries worldwide are continuously increasing policy guidance and resource investment. China has also designated commercial aerospace as a strategic emerging industry, driving the sector into a new development phase characterized by high reliability, high integration, and high efficiency. Whether it is the stringent verification requirements for airborne equipment, flight control systems, avionics platforms, and ground support systems in the aviation field, or the continuous pursuit of improved test efficiency and consistency in commercial aerospace segments such as satellite manufacturing, launch vehicle development, launch support, and ground tracking, telemetry, and command (TT&C), higher demands are placed on power supply systems, power chains, and electronic device testing. From individual components and subsystems to the verification of complete systems, entire satellites, and full launch vehicles, test objects are becoming increasingly complex, test conditions are diversifying, and test platforms are rapidly evolving towards high precision, high integration, and automation.

NGI has deeply cultivated the aerospace and commercial aerospace industry for many years, developing an **end-to-end chain** testing solution covering **primary power supplies, power management, power conversion and distribution, and load systems**. This solution can be widely applied to various scenarios including R&D design, component testing, subsystem integration, complete system/satellite testing, production line testing, and in-orbit/in-service support, helping customers improve test efficiency, shorten verification cycles.



- **Primary Power Supply Testing:** Leveraging high-performance, high-power grid simulators, AC power supplies, and high-power DC power supplies, NGI addresses the requirements for AC/DC input condition simulation, high-stability power supply, and complex operating condition verification for ground power systems and various equipment.

- **Power Management Testing:** Utilizing high-precision modular battery simulators, bidirectional power supplies, and the NXI modular platform, NGI delivers accurate simulation of voltage, current, temperature, and I/O signals for cells, modules/PACKs, and associated control units—providing reliable support for control strategy validation and algorithm verification of power controllers.
- **Power Conversion & Distribution Testing:** NGI provides multi-channel source-load systems, AC power supplies, and modular test platforms to satisfy input/output performance testing and integrated commissioning verification of critical components, including AC/DC converters, DC/DC converters, power distribution units, bus bars, and wire harness connectors.
- **Load System Testing:** Supported by a comprehensive portfolio of wide-range, full-power-coverage power supplies and electronic loads, NGI delivers stable, efficient, and scalable power supply and load testing capabilities for airborne, spaceborne, and launch vehicle electronic equipment and subsystems—covering typical application scenarios in control, navigation, communication, measurement, and monitoring.

NGI remains committed to independent R&D and continuous technological innovation, dedicated to building more precise, efficient, and reliable test platforms for aerospace customers—empowering the industry to achieve comprehensive upgrades from R&D validation to mass delivery, and from ground testing to mission assurance.

Application Scenarios & Adapted Solutions Overview

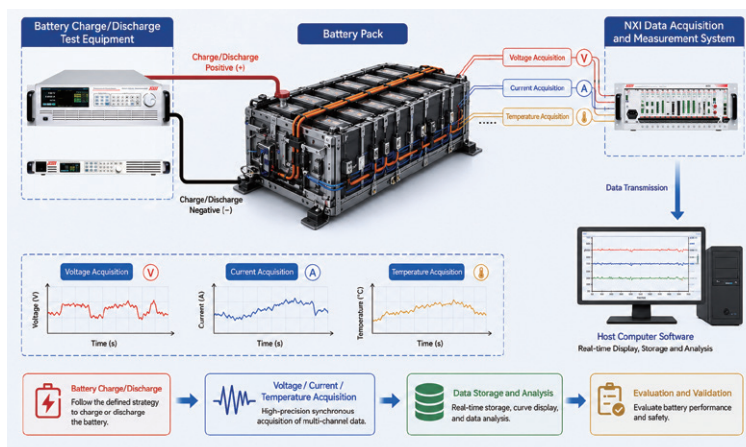
No.	Category	Application Scenarios	Recommended Solutions
1	Category	Battery Test	N35500 Series High-Power Bidirectional DC Power Supply N35100 Series Bidirectional DC Power Supply Battery Charge/Discharge Cycle Test Software NXI Data Acquisition and Measurement System
2		Ground Flight Test Support	N75500 Series High-Performance Grid Simulator N35500 Series High-Power Bidirectional DC Power Supply N38300 Series High-Power Programmable DC Power Supply
3		Solar Cell Test	N6180 Series Multi-Channel Electronic Load N61100 Series Multi-Channel Electronic Load
4	Power Management	Power Control Unit (PCU) Test	N35500 Series High-Power Bidirectional DC Power Supply N9000 Series Multi-Channel Modular Measurement and Control Platform NXI Series Modular Instruments
5	Power Conversion & Distribution	AC/DC, DC/DC Power Module Test	N75500 Series High-Performance Grid Simulator N38300 Series High-Power Programmable DC Power Supply N35100 Series Bidirectional DC Power Supply N69200 Series High-Performance DC Electronic Load N61100 Series Multi-Channel DC Electronic Load
6		Power Distribution Unit (PDU) Test	N75500 Series High-Performance Grid Simulator N35500 Series High-Power Bidirectional DC Power Supply N69200 Series High-Performance DC Electronic Load
7		Wiring Harness & Connector Test	High-Current Aging Temperature Rise Test System Multi-Channel Transient Measurement System Transient Short-Circuit Test System
8	Load System	Airborne/Spaceborne Electronic Equipment Test	N36200 Series Programmable DC Power Supply N39400 Series Multi-Channel DC Power Supply N36100 Series Programmable DC Power Supply NXI Series Modular Instruments
9		Servo Motor & Motor Control Test	N35500 Series High-Power Bidirectional DC Power Supply N35100 Series Bidirectional DC Power Supply
10	Space Environment Ground Simulation	Thermal Balance Test	N39400 Series Multi-Channel DC Power Supply N36200 Series Programmable DC Power Supply
11		Power Supply Reliability Test	N36100 Series Programmable DC Power Supply

Battery Testing

The primary power system serves as the core energy supply unit of a spacecraft, typically comprising three major components: **solar arrays**, **battery packs**, and the **Power Control Unit (PCU)**.

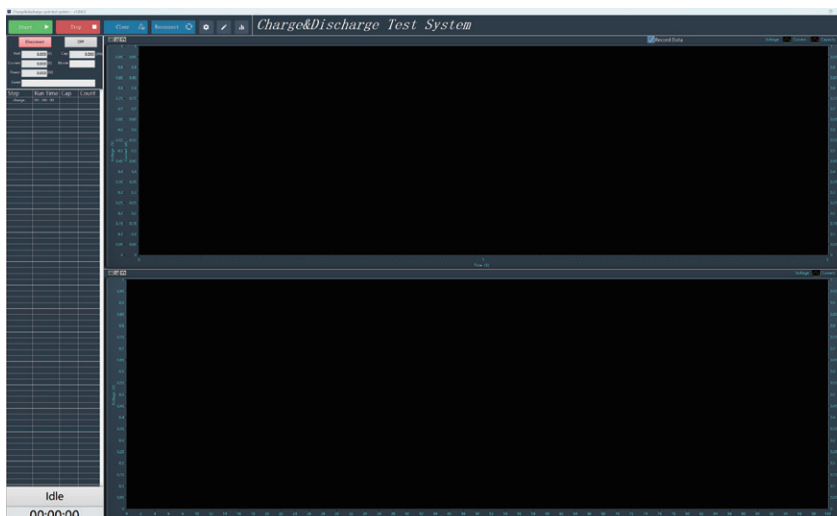
The solar arrays convert solar energy into electrical power, the battery packs store and release electrical energy, and the PCU performs unified control of charge/discharge management, bus voltage regulation, and power distribution.

As a critical component of the primary power system, the battery pack undertakes essential functions including energy storage, peak-valley load regulation, and bus voltage support. To ensure the safety and reliability of battery packs under on-orbit operating conditions, ground testing must focus on verifying key parameters such as charge/discharge characteristics and cycle life—providing critical data support for PCU control strategy optimization and overall spacecraft energy system design.



[Scenario 1: Battery Pack Charge/Discharge Cycling Test]

NGI's charge/discharge cycling test software is specifically designed to meet the requirements of continuous battery cycling tests, delivering an efficient, flexible, and reliable testing experience. The software supports user-defined editing of various test steps, including charging, discharging, and other operating conditions. The software automatically calculates charge/discharge capacity and provides real-time tracking of key performance indicators.



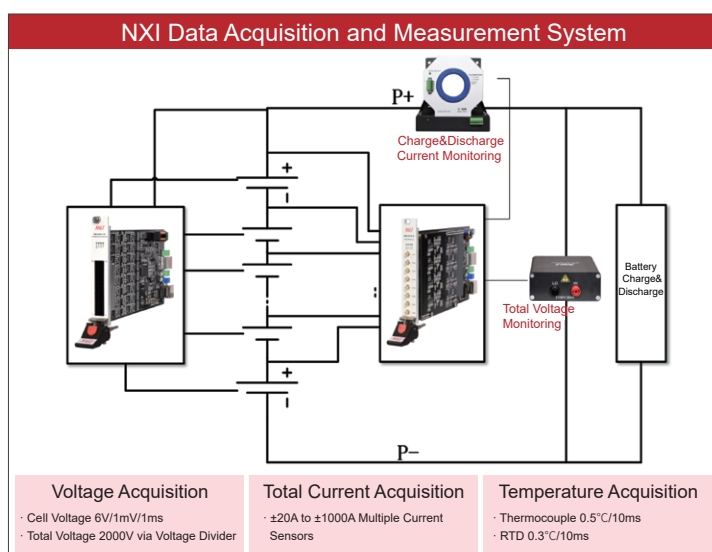
Recommended Products

Recommended Products	Product Applications & Customer Value
N35500 Series High-Performance High-Power Bidirectional Programmable DC Power Supply 	Product Applications: Battery Pack Charge/Discharge Testing. Customer Value: Specifications: 0~2250V/0~±240A/0~±42kW, supports parallel operation for power expansion. ① Source-Load Integration: Supports one-click switching to regenerative load mode with up to 95% energy recovery efficiency, reducing electricity and cooling costs ② High Power Density: 3U/42kW, minimizing test bench footprint.

N35100 Series High-Performance Bidirectional Programmable DC Power Supply 	Product Applications: Battery Pack Charge/Discharge Testing. Customer Value: Specifications: 0~80V / 0~±300A / 0~±7.5kW, supporting parallel operation for power expansion. ①Source-Load Integration: Supports one-click switching to regenerative load mode with up to 90% energy recovery efficiency, reducing electricity and cooling costs. ②High Power Density: 1U/7.5kW, minimizing test bench footprint.
NP301 Protection Module 	Product Applications: Battery Pack Charge/Discharge Testing. Customer Value: ①Equipped with reverse polarity protection, reverse current blocking and arc prevention, ensuring safety of both the device under test (DUT) and operating personnel.

[Scenario 2: Battery Data Acquisition Testing]

NGI's data acquisition and measurement system enables high-speed, high-precision acquisition of **voltage, current, temperature, and other critical parameters for battery cells and battery packs**—addressing the full-industry-chain testing requirements of battery manufacturers and third-party inspection agencies.



Recommended Products

Recommended Products	Product Applications & Customer Value
NXI Data Acquisition and Measurement System 	Product Applications: Battery Cell/Module/PACK Voltage & Current & Temperature Acquisition. Customer Value: ①High-Speed Synchronization: Signal acquisition up to 100kS/s with multi-channel synchronized clock at 10 μs. ②Real-Time Recording: Millisecond-level data recording intervals with detailed logging of millions of data rows. ③Flexible Computation: Integrated upper/lower limit, maximum, minimum, average, and other common data processing functions.
NXI-6110-8 High-accuracy Analog Input Module 	Product Applications: Battery Cell/Module/PACK Voltage & Current Acquisition. Customer Value: ①Range: ±60V, ±10V, ±6V, ±1V, ±200mV. ②Maximum Measurement Voltage: 2000V; Maximum Measurement Current: ±1000A. ③Trigger Function Support: Multi-channel synchronized acquisition with single-channel rate up to 100kS/s.
NXI-6501-16 Thermocouple Temperature Acquisition Module 	Product Applications: Battery Cell/Module/PACK Temperature Acquisition. Customer Value: ①16-channel parallel thermocouple temperature acquisition. ②Support for K, J, E, S, T, and other thermocouple types. ③Maximum Sampling Rate: 100S/s.

✈ Ground Flight Test Support

In the development process of aerospace vehicles, the flight test phase is of paramount importance. It not only verifies vehicle performance under real-world environmental conditions and precisely identifies potential issues in the design and manufacturing process, but also serves as a critical basis for subsequent optimization and improvement—directly impacting the quality of aerospace products.



Typical Test Items

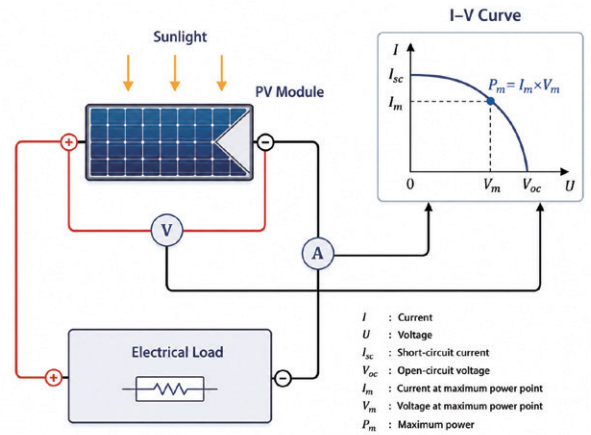
Test Items	
High Power Supply Capacity	System normal operation relies on stable power supply, with independent power capacity reaching 100kW-class and supporting power expansion to meet future higher-specification scenario requirements.
High Supply Voltage	Matching customer on-site DC 270VDC/540VDC and AC 115VAC/235VAC power supply requirements.
Power Supply Redundancy Backup	System must feature redundant power supply capability; even if a single module fails unexpectedly, the system shall continue to meet power demands and ensure test operation continuity.
Safety & Reliability	Power supply equipment must incorporate over-voltage, over-current, over-power, and over-temperature protection functions, ensuring rapid output shutdown when parameters exceed normal ranges.

Recommended Products

Recommended Products	Product Applications & Customer Value
N75500 Series High-Performance Regenerative Grid Simulator 	Product Applications: Grid simulation for aerospace vehicle AC power supply and related applications. Customer Value: Specifications: 0~350VAC/0~25kVA/DC, 1~500Hz, supporting parallel operation for power expansion. ①High Power Density: 3U/25 kVA, minimizing test bench footprint. ②Multi-Function: Supports islanding simulation, grid simulation, and other functions—adapting to multi-scenario verification requirements.
N35500 Series High-Performance High-Power Bidirectional Programmable DC Power Supply 	Product Applications: Aerospace vehicle DC power supply applications. Customer Value: Specifications: 0~2250V/0~±240A/0~±42kW, supporting parallel operation for power expansion. ①High Power Density: 3U/42kW, minimizing test bench footprint. ②Multi-Function: Supports battery simulation function, enabling simulation of different battery pack SOC operating conditions. ③N+1 Redundancy Backup Support: Ensuring stable power output.
N38300 Series Wide-Range High-Power Programmable DC Power Supply 	Product Applications: Aerospace vehicle DC power supply applications. Customer Value: Specifications: 0~2250V / 0~5100A / 0~180kW, supporting parallel operation for power expansion. ①High Power Density: 3U/18 kW, minimizing test bench footprint. ②Multi-Function: Supports CV/CC priority and SEQ mode, enabling simulation of power supply variation operating conditions.

Solar Cell Testing

A solar cell is essentially a semiconductor device based on the photovoltaic effect, capable of converting solar energy directly into electrical energy. Solar arrays, composed of numerous solar cells connected in series-parallel configurations, serve as the core power generation unit of the satellite primary power system—providing continuous and stable electrical supply for spacecraft. To ensure the high reliability and energy conversion efficiency of solar arrays during on-orbit operation, ground testing must focus on verifying their I-V characteristics, providing critical data support for the design and validation of primary power systems.

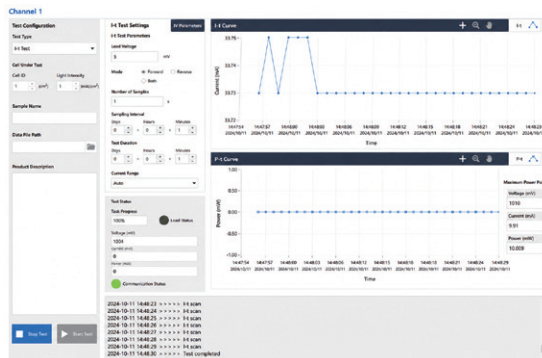


Typical Test Items

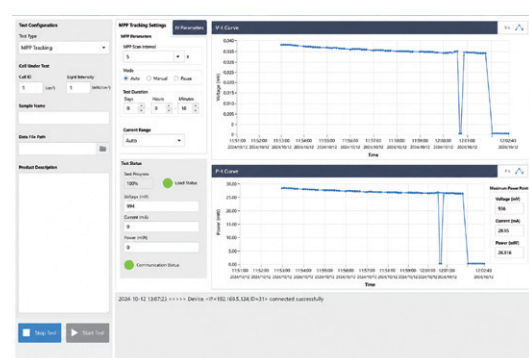
Test Items	
I-V Characteristic Curve	High-Low Temperature Cycling Test
Photoelectric Conversion Efficiency	MPPT Testing

[Solutions]

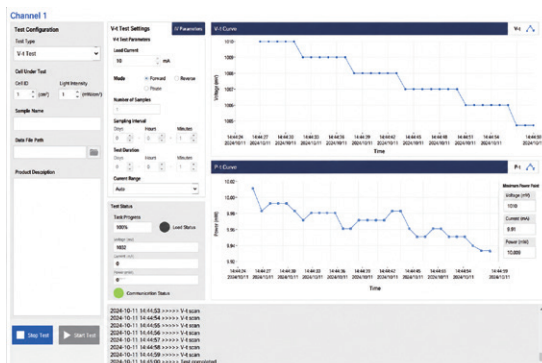
The NS92000 solar cell test software is designed for solar cell testing applications, providing multi-channel parallel testing capabilities. The software comprises four primary test interfaces: I-V Test, MPP Tracking, V-t Test, and I-t Test. Through forward and reverse I-V scanning, with manual input of cell illumination area and optical power density, the software calculates key parameters including V_{OC} , I_{SC} , FF, and P_{CE} .



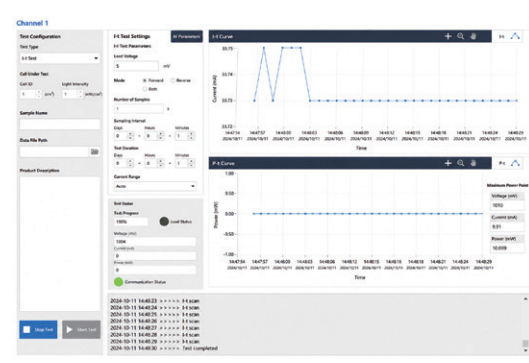
▲ I-V Test Interface



▲ MPPT Test Interface



▲ V-t Test Interface



▲ I-t Test Interface

Recommended Products

Recommended Products	Product Applications & Customer Value
N6180 Multi-Channel Micropower DC Electronic Load 	Product Applications: Single Solar Cell I-V Curve Testing. Customer Value: Specifications: 0~100V/0~10A/0~50W. ①High Integration: 3U chassis integrates 10/19 channels, minimizing test bench footprint. ②Multi-Function: Supports CC, CV, CP, CR, CCD modes—enabling simulation of complex loading conditions. ③Integrated Solution: Paired with NS92000 solar cell test software to achieve I-V/MPPT/V-t/I-t testing and data export analysis for optimal cell characterization.
N61100 Multi-Channel High-Performance DC Electronic Load 	Product Applications: Solar Cell Module I-V Curve Testing. Customer Value: ①High Integration: Single unit supports up to 12 channels, minimizing test bench footprint. ②Multi-Function: Supports SEQ mode, OCP/OVP/OPP testing—enabling simulation of complex loading conditions.

Power Control Unit (PCU) Testing

The satellite Power Control Unit (PCU) serves as the "brain" of the satellite power system, responsible for intelligent management and precise control of the entire power system to ensure stable output and efficient utilization of electrical power. Its primary functions include: energy management for solar arrays and batteries; stable, isolated, and distributed delivery of bus power to subsystems and payloads; power-on/power-off control, protection, and telemetry; and ensuring power continuity and safety for the satellite under abnormal operating conditions.



Typical Test Items

Test Items	
Input Characteristic Test	Power-On/Power-Off Sequence Test
Output Characteristic Test	Fault Detection & Protection Test
Efficiency Test	Remote Switch Signal Test
Startup Performance Test	Redundancy Switching Logic Test

Recommended Products

Recommended Products	Product Applications & Customer Value
N35500 Series High-Performance High-Power Bidirectional Programmable DC Power Supply 	Product Applications: Battery Pack Simulation for PCU Performance Testing. Customer Value: Specifications: 0~2250V/0~±240A/0~±42kW, supporting parallel operation for power expansion ①High Power Density: 3U/42kW, minimizing test bench footprint. ②Multi-Function: Supports battery simulation function, enabling simulation of different battery pack SOC operating conditions. ③Source-Load Integration: Supports one-click switching to regenerative load mode with up to 95% energy recovery efficiency, reducing electricity and cooling costs.
N9000 Series Multi-Channel Modular Measurement & Control Platform 	Product Applications: Battery Cell Simulation for PCU Performance Testing. Customer Value: Specifications: 0~6V/0~±5A/0~36 channels, supporting multi-channel series connection. ①High Integration: 36CH battery simulation + 36CH temperature simulation + 36CH fault simulation in a single unit—multi-purpose design minimizing test space. ②High Precision: Voltage accuracy 0.1mV / 0.5mV optional, matching ultra-high-precision cell simulation requirements. ③High-Speed Stability: Command response time ≤1ms, matching HIL high-speed simulation testing.
NXI Series Modular Instruments 	Product Applications: Simulates IO signals, AO signals, and relay signals for signal testin. NXI-4101-32/0 Input & Output Module NXI-4102-8/8 Programmable Multi-Channel High-Voltage I/O Module NXI-6201-4/16 Analog Output Module NXI-6200-4/16 Analog Output Module NXI-4200 Series Relay Module

AC/DC & DC/DC Power Module Testing

AC/DC and DC/DC power modules are critical devices in aerospace vehicles used to convert high-voltage AC output from generators or high-voltage DC output from batteries into low-voltage DC power directly usable by load equipment. These modules integrate multiple protection functions including input over/under-voltage, output over/under-voltage, short-circuit, and over-temperature protection—enabling timely output shutdown during system anomalies to protect vehicle electrical equipment. Therefore, verification of power supply dynamic response, efficiency, and protection functions constitutes the core element of power system testing.



Typical Test Items

Test Items	
Efficiency Test	Static Current
Rated Power	Input Over/Under-Voltage Protection
Voltage/Current Control Error	Output Over/Under-Voltage Protection
Overshoot and Recovery Time	Output Short-Circuit Protection
Frequency Modulation	Short Interruption
Harmonic Distortion	Voltage Surge

Recommended Products

Recommended Products	Product Applications & Customer Value
N75500 Series High-Performance Regenerative Grid Simulator 	Product Applications: Grid simulation for AC/DC input characteristic testing and related applications. Customer Value: Specifications: 0~350VAC/0~25kVA/DC, 1~500Hz, supporting parallel operation for power expansion. ①High Power Density: 3U/25kVA, minimizing test bench footprint. ②Multi-Function: Supports islanding simulation, grid simulation, and other functions—adapting to multi-scenario verification requirements.
N38300 Series Wide-Range High-Power Programmable DC Power Supply 	Product Applications: Battery pack simulation for DC/DC input characteristic testing and related applications. Customer Value: Specifications: 0~2250V/0~5100A/0~180kW. ①High Power Density: 3U/18 kW, minimizing test bench footprint. ②Multi-Function: Supports CV/CC priority and SEQ mode, enabling simulation of battery pack cycling variation operating conditions.
N35100 Series High-Performance Bidirectional Programmable DC Power Supply 	Product Applications: Battery pack / electrical load simulation for aging testing and related applications. Customer Value: Specifications: 0~80V/0~±300A/0~±7.5kW. ①Source-Load Integration: Supports one-click switching to regenerative load mode with up to 90% energy recovery efficiency, reducing electricity and cooling costs. ②High Power Density: 1U/7.5kW, minimizing test bench footprint.

N69200 Series High-Performance High-Power Programmable DC Electronic Load 	Product Applications: Electrical load simulation for AC/DC and DC/DC output characteristic testing and related applications. Customer Value: Specifications: 0~2400V/0~2500A/0~60kW. ①High Power Density: 3U/6kW loading capacity, minimizing test bench footprint. ②High Precision: Three-range high-precision design for more accurate and reliable test data. ③Multi-Function: Supports sequence mode, OCP, and OPP testing—meeting diverse test condition requirements.
N61100 Multi-Channel High-Performance DC Electronic Load 	Product Applications: Electrical load simulation for AC/DC and DC/DC output characteristic testing and related applications. Customer Value: Specifications: 0~600V/0~120A/0~900W. ①High Integration: Single unit supports up to 12 channels, minimizing test bench footprint. ②Multi-Function: Supports SEQ mode, OCP/OVP/OPP testing—enabling simulation of complex loading conditions.

Power Distribution Unit (PDU) Testing

The power distribution unit is a critical component in aerospace vehicle power systems responsible for electrical energy distribution, control, and protection functions. This includes bus bars, protective devices (fuses, circuit breakers), and distribution modules (relays, contactors)—ensuring safe, stable, and reliable delivery of power to subsystems and payloads according to operational requirements, and serving as an essential foundation for guaranteeing normal operation of the entire vehicle.



Typical Test Items

Test Items	
Input Voltage/Current/Power Range	Multi-Channel Loading Test
Input Start/Stop Test	Step Load On/Off Test
Custom Sequence Step	Extended Duration Cyclic Loading Test
Short-Circuit Protection	Over-Voltage/Over-Current Protection

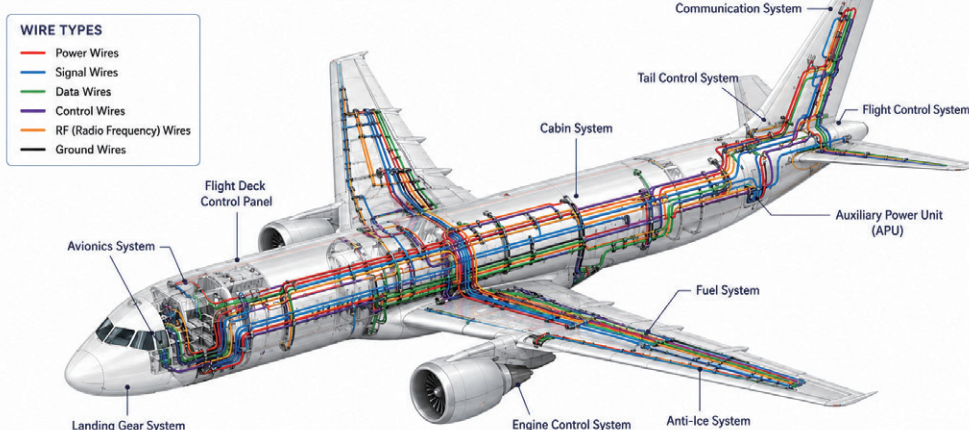
Recommended Products

Recommended Products	Product Applications & Customer Value
N75500 Series High-Performance Regenerative Grid Simulator 	Product Applications: Grid simulation for AC/DC input characteristic testing and related applications. Customer Value: Specifications: 0~350VAC/0~25kVA/DC, 1~500Hz, supporting parallel operation for power expansion. ①High Power Density: 3U/25kVA, minimizing test bench footprint. ②Multi-Function: Supports islanding simulation, grid simulation, and other functions—adapting to multi-scenario verification requirements.
N35500 Series High-Performance High-Power Bidirectional Programmable DC Power Supply 	Product Applications: Battery pack simulation for PDU input performance testing. Customer Value: Specifications: 0~2250V/0~±240A/0~±42kW, supporting parallel operation for power expansion. ①High Power Density: 3U/42 kW, minimizing test bench footprint. ②Multi-Function: Supports battery simulation function, enabling simulation of different battery pack SOC operating conditions. ③Source-Load Integration: Supports one-click switching to regenerative load mode with up to 95% energy recovery efficiency, reducing electricity and cooling costs.
N69200 Series High-Performance High-Power Programmable DC Electronic Load 	Product Applications: Electrical load simulation for PDU loading characteristic testing and related applications. Customer Value: Specifications: 0~2400V/0~2500A/0~60kW. ①High Power Density: 3U/6kW loading capacity, minimizing test bench footprint. ②High Precision: Three-range high-precision design for more accurate and reliable test data. ③Multi-Function: Supports sequence mode, OCP, and OPP testing, meeting diverse test condition requirements.
N61100 Multi-Channel High-Performance DC Electronic Load 	Product Applications: Electrical load simulation for PDU loading characteristic testing and related applications. Customer Value: Specifications: 0~600V/0~120A/0~900W ①High Integration: Single unit supports up to 12 channels, minimizing test bench footprint. ②Multi-Function: Supports SEQ mode, OCP/OVP/OPP testing, enabling simulation of complex loading conditions.

Wire Harness & Connector Testing

Wire harnesses serve as the "vascular system" and "nervous system" of aerospace vehicles, performing energy and information transmission functions. The quality of wire harnesses directly impacts overall vehicle performance. Wire harness manufacturers, satellite integrators, and related organizations typically conduct electrical performance, physical performance, and environmental adaptability testing during R&D design, production manufacturing, and incoming material inspection phases.

AIRCRAFT WIRING SYSTEM DIAGRAM



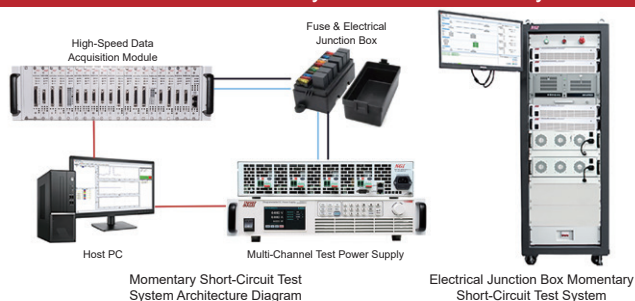
[Solutions]

Multi-Channel Momentary Disconnection Measurement System



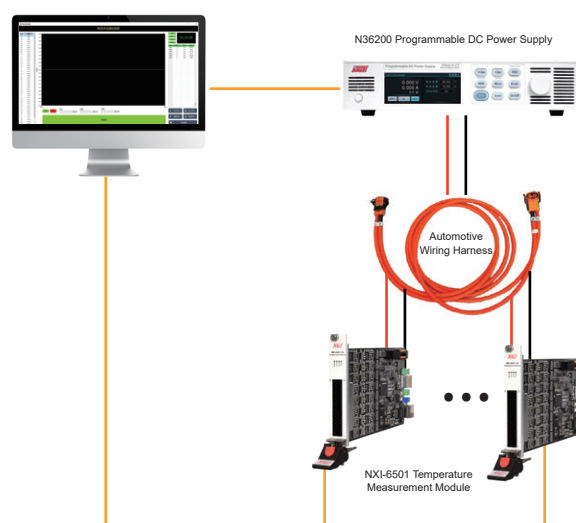
- **High integration:** 3U 19CH, requiring only half the space of traditional testers for the same channel count
- **High-speed sampling:** Maximum sampling rate of 10MS/s
- **Efficient testing:** Equipped with dedicated host software, supporting real-time resistance curve display and data storage

Electrical Box Momentary Short Circuit Test System



- **Efficient testing:** Supports a total input sampling rate of 1.25MS/s
- **High integration:** 24CH in a 19-inch 2U rack space
- **Effective testing:** Supports custom settings for channel voltage, test duration, and judgment conditions, with test data and report export

High-Current Aging & Temperature Rise Test System



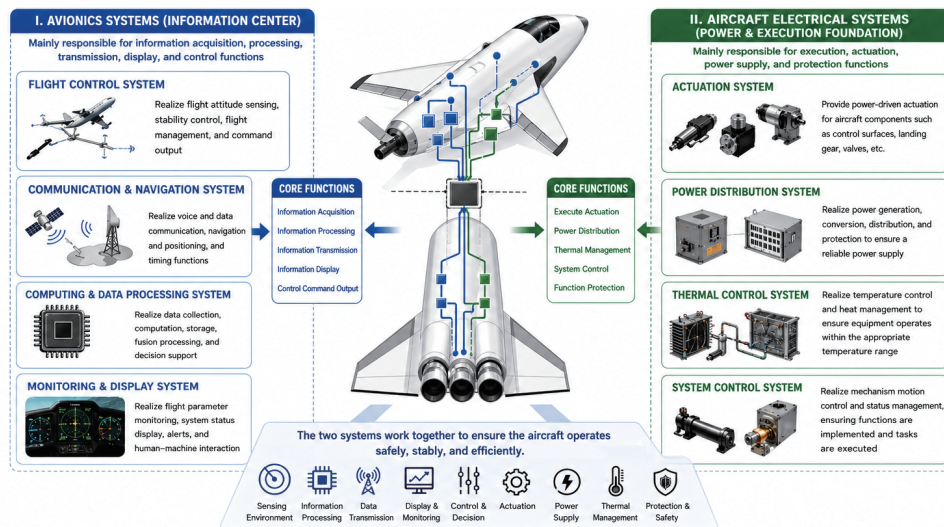
- **Fast response:** 500A/10ms
- **Intelligent:** Supports custom I-t sequence import and export of current, temperature, and time data
- **Modular:** Power supplies support parallel operation, meeting test requirements for higher-current wiring harnesses

Recommended Products

Recommended Products	Product Applications & Customer Value
N8150A Moment Disconnection Measurement Module 	Product Applications: Wire harness and connector transient open-circuit testing. Customer Value: ①High Integration: Paired with N8000 chassis achieves 3U/19CH configuration, minimizing test bench footprint. ②High-Speed Sampling: Sampling speed of 10MS/s with 0.1μs time resolution.
NXI-6100-32/12 High-speed Data Acquisition Module 	Product Applications: Wire harness and connector transient short-circuit testing. Customer Value: ①Analog Input: $\pm 10V/\pm 5V/\pm 1V/\pm 200mV$. ②High Integration: 32-channel analog input, configurable as 16-channel differential input. ③High-speed sampling: Total input sampling rate of 1.25MS/s.
N36200 Series Wide Range Programmable DC Power Supply 	Product Applications: Automotive wire harness current surge and aging load testing. Customer Value: Specifications: 0~1500V/0~1100A/0~10kW. ①Compact Size: 2U/1100A current output, minimizing test bench footprint. ②High-Speed Dynamic Response: 10 ms/1100 A current output, matching current surge test requirements. ③Multi-Function: Supports sequence mode with user-defined I-t sequence programming, meeting cyclic operating condition test requirements.
NXI-6501-16 Thermocouple Temperature Acquisition Module 	Product Applications: Automotive wire harness temperature rise testing. Customer Value: ①High Integration: 16-channel parallel thermocouple temperature acquisition. ②High Compatibility: Supports K, J, E, S, T, and other thermocouple types. ③High-speed sampling: Maximum sampling rate of 100S/s.

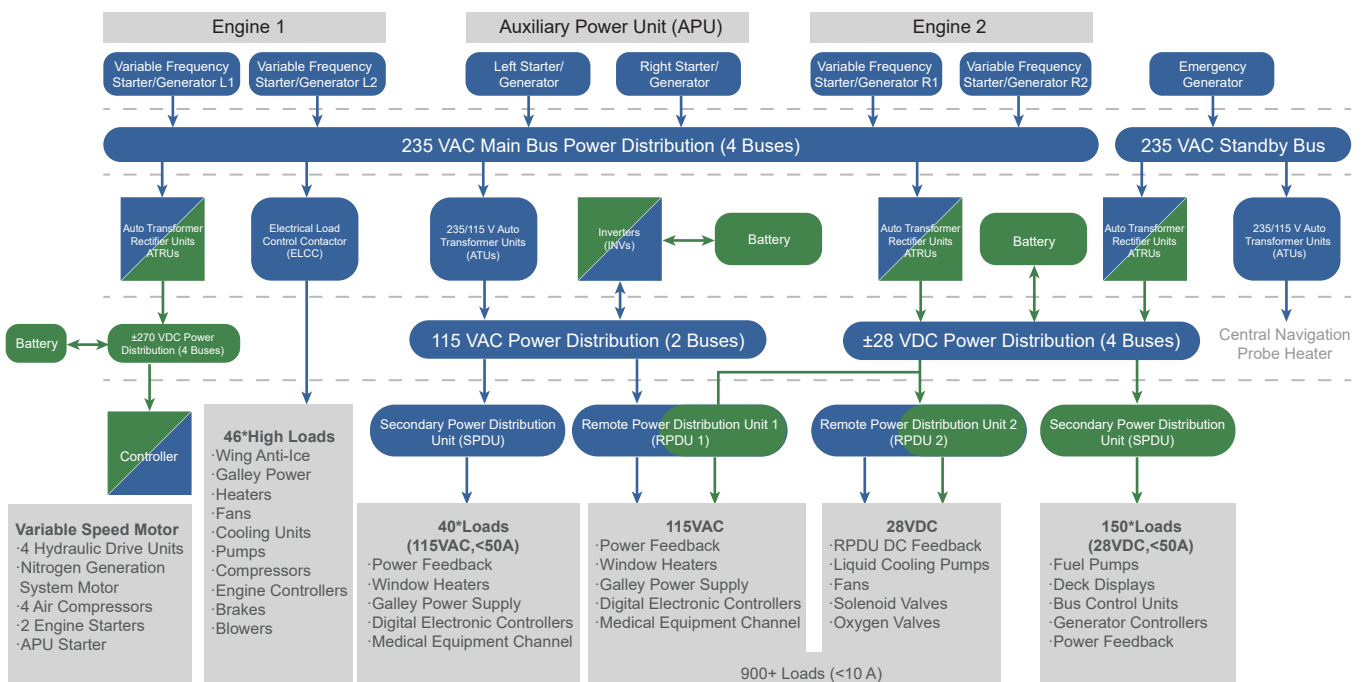
Airborne/Spaceborne Electronic Equipment Testing

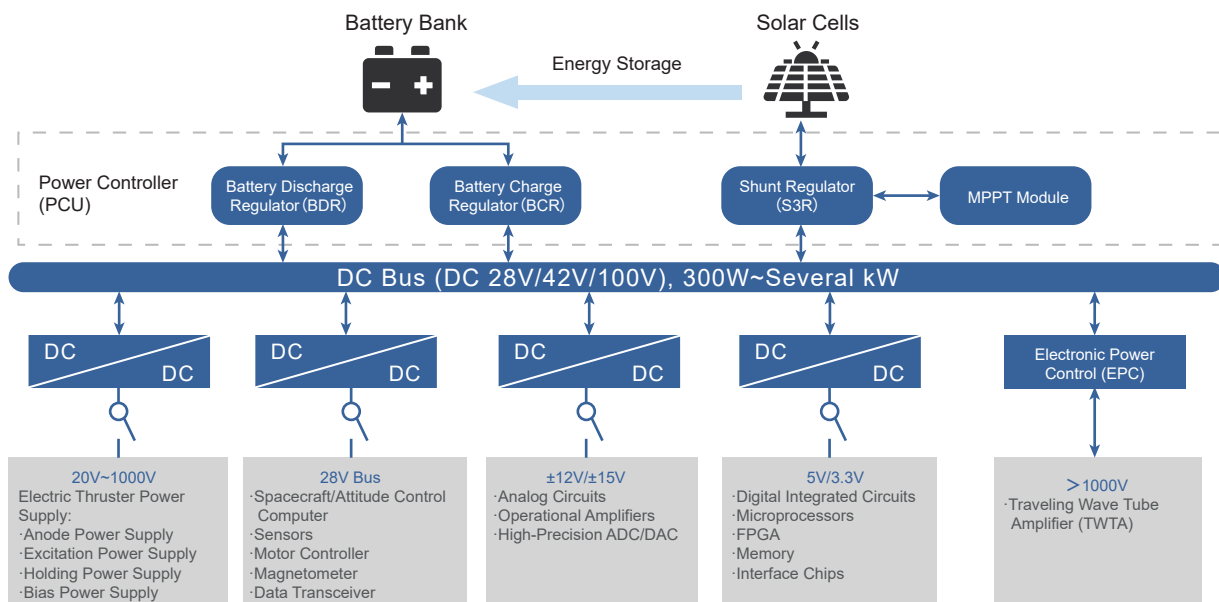
In the aerospace domain, electronic equipment is categorized into two major functional classes: **avionics systems** and **electromechanical systems**. Avionics systems encompass flight control, communication and navigation, computing and data processing, as well as telemetry, tracking, and display functions—responsible for information acquisition, processing, transmission, display, and control, serving as the "information hub" of the vehicle. Electromechanical systems include actuation, power distribution, thermal control, and mechanism control functions—responsible for execution, drive, power supply, and support, serving as the "power and actuation foundation" of the vehicle.



[Scenario 1: Avionics/Electromechanical System Testing]

NGI's N75500 series high-performance grid simulators, N35500 series high-power bidirectional DC power supplies, and N36200 series wide-range programmable DC power supplies cover standard aircraft voltage levels including 235 VAC, 28 VDC, 270 VDC, and 540 VDC, as well as standard satellite voltage levels of 28 V/42 V/100 V, meeting power supply requirements from hundreds of watts to megawatt-class.



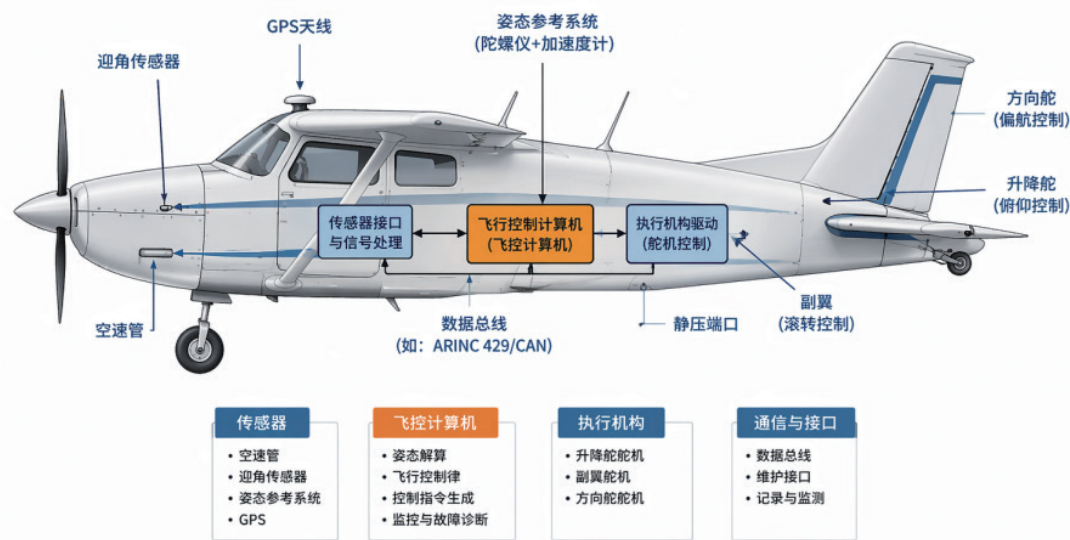


Recommended Products

Recommended Products	Product Applications & Customer Value
N75500 Series High-Performance Regenerative Grid Simulator 	Product Applications: Grid simulation for AC power supply applications. Customer Value: Specifications: 0~350VAC/0~25kVA/DC, 1~500Hz, supporting parallel operation for power expansion. ① High Power Density: 3U/25kVA, minimizing test bench footprint. ② Multi-Function: Supports islanding simulation, grid simulation, and other functions, adapting to multi-scenario verification requirements.
N35500 Series High-Performance High-Power Bidirectional Programmable DC Power Supply 	Product Applications: Battery pack simulation for high-power DC power supply testing. Customer Value: Specifications: 0~2250V/0~±240A/0~±42kW, supporting parallel operation for power expansion. ① High Power Density: 3U/42kW, minimizing test bench footprint. ② Multi-Function: Supports battery simulation function, enabling simulation of different battery pack SOC operating conditions. ③ Source-Load Integration: Supports one-click switching to regenerative load mode with up to 95% energy recovery efficiency, reducing electricity and cooling costs.
N39400 Series High-accuracy Multi-channel Programmable DC Power Supply 	Product Applications: Multi-channel electronic equipment power supply. Customer Value: Specifications: 0~150V/0~15A/0~600W. ① High Integration: 2U/4CH, one unit replacing four, minimizing test bench footprint. ② Multi-Function: Supports SEQ sequence simulation, enabling simulation of power supply condition variations.
N36200 Series Wide-Range Programmable DC Power Supply 	Product Applications: Electronic equipment power supply. Customer Value: Specifications: 0~1500V/0~1100A/0~10kW, supporting parallel operation for power expansion. ① Compact Form Factor: 1U&2U slim rack-mount design, minimizing test bench footprint. ② Low Ripple: Current output Irms ≤0.1%, delivering pure and interference-free output. ③ Multi-Function: Supports SEQ sequence simulation, enabling simulation of power supply condition variations.
N61100 Multi-Channel High-Performance DC Electronic Load 	Product Applications: Electrical load simulation for solenoid valve, controller testing, and related applications. Customer Value: Specifications: 0~600V/0~120A/0~900W. ① High Integration: Single unit supports up to 12 channels, minimizing test bench footprint. ② Multi-Function: Supports SEQ mode, OCP/OVP/OPP testing—enabling simulation of complex loading conditions.

[Scenario 2: Control Module Testing]

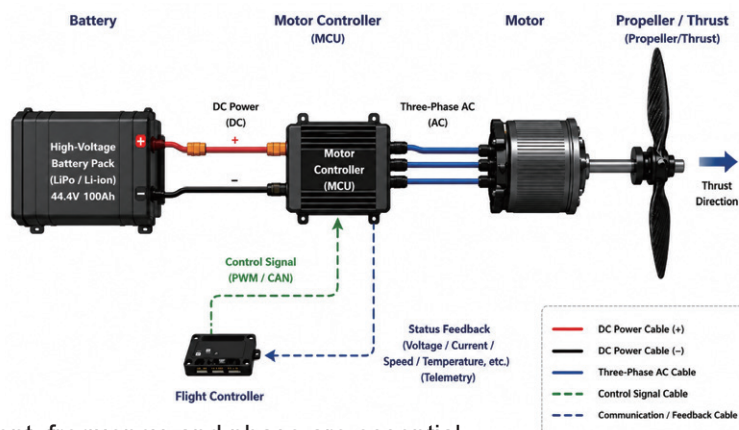
NGI NXI modular instruments support simulation of power supply, discrete I/O, analog input, and CAN communication modules, with comprehensive hardware coverage, complete drivers, demos, and protocols. These instruments satisfy control signal testing requirements for satellite integrators, component manufacturers, and third-party inspection agencies.



NXI Modular Devices, Various Signal Simulation and Testing						
Data Acquisition & Measurement	NXI-6400 DC Voltage and Current Measurement Module	NXI-6700 DC Voltage Measurement Module	NXI-6100 12-bit DAQ Module	NXI-6102/6103 High Voltage Analog Input Module	NXI-6105 16-bit DAQ Module	NXI-6200 NXI-6201 Analog Output Module
	NXI-6500 Temperature Acquisition Module					
Digital I/O Category	NXI-4101 High-speed Digital I/O Module	NXI-4102 Programmable Multi-channel High voltage I/O Module	NXI-4200 NXI-4201 Universal Relay Control Module	NXI-4301 Multiplexer Switch Module	NXI-4501 Matrix Switch Module	
Power Category	NXI-3106 Series Programmable Power Supply Module	NXI-3201 Series Electronic Load Module				
Simulation Category	NXI-5100 Series Programmable Resistance Module	NXI-5102 Programmable Resistance Module				

Servo Motor / Motor Control Unit (MCU) Testing

Motors serve as critical actuation units in aerospace vehicles, while motor control testing drives their precise operation as the "control center." In application scenarios such as flight control, mechanism drive, attitude adjustment, and energy management, the synergistic capability between motors and their controllers directly determines equipment control accuracy, response efficiency, and operational reliability. To address the high-standard testing requirements of the aerospace industry, high-speed and high-precision control and acquisition of key parameters including voltage, current, frequency, and phase are essential, providing robust data assurance for product performance optimization and reliability validation.

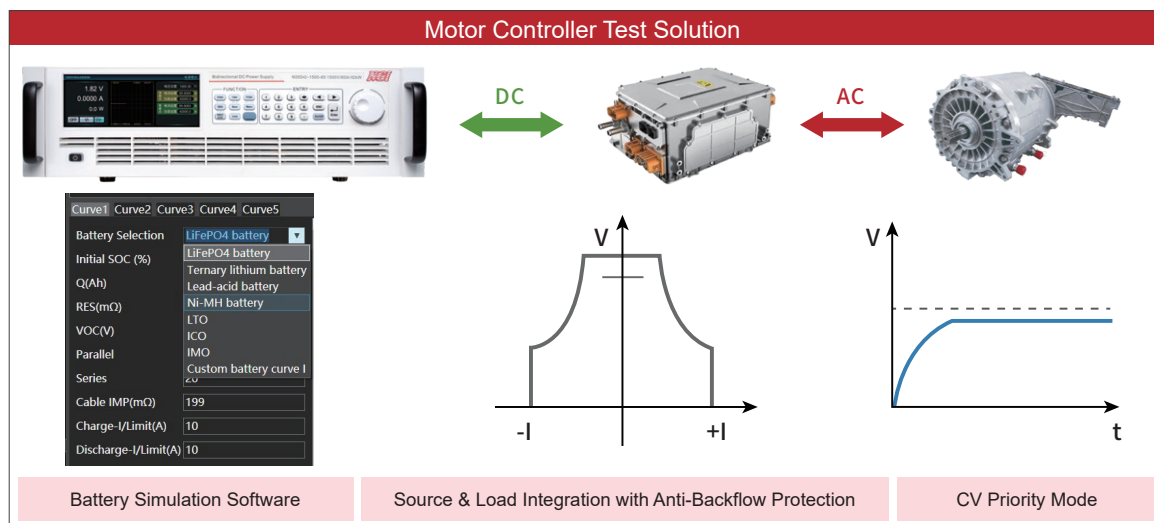


Typical Test Items

Test Items	
Performance Testing	Motor controllers exhibit varying performance under different battery types and SOC conditions; manufacturers must verify controller adaptability to diverse battery characteristics.
Energy Regeneration	Motors generate back-EMF during braking, deceleration, and power-off transients; inadequate protection leads to equipment damage in the circuit, requiring the test system to absorb and dissipate regenerative energy.
High Inrush Current	Motor startup current surges can cause power supply output instability and startup failure, requiring the test system to maintain stable voltage output during inrush conditions.

NGI introduces the N35500 and N35100 series bidirectional programmable DC power supplies, equipped with the NS81000 battery simulation software as standard, delivering the following capabilities:

1. Standard NS81000 Battery Simulation Software: Features seven standard battery models including Lithium Iron Phosphate (LFP), Ternary Lithium (NMC), and Nickel-Metal Hydride (NiMH); supports user-defined battery curve import and data export.
2. Source-Load Integration for Anti-Regeneration Protection: The N35500 and N35100 series power supplies feature integrated source-load architecture; when motors generate regenerative energy, the system rapidly switches to regenerative load mode, returning energy to the grid and ensuring circuit equipment safety.
3. CV Priority Mode: Supports CV/CC priority function, enabling voltage loop stabilization priority based on actual operational requirements—ensuring stable voltage output during motor startup inrush transients.



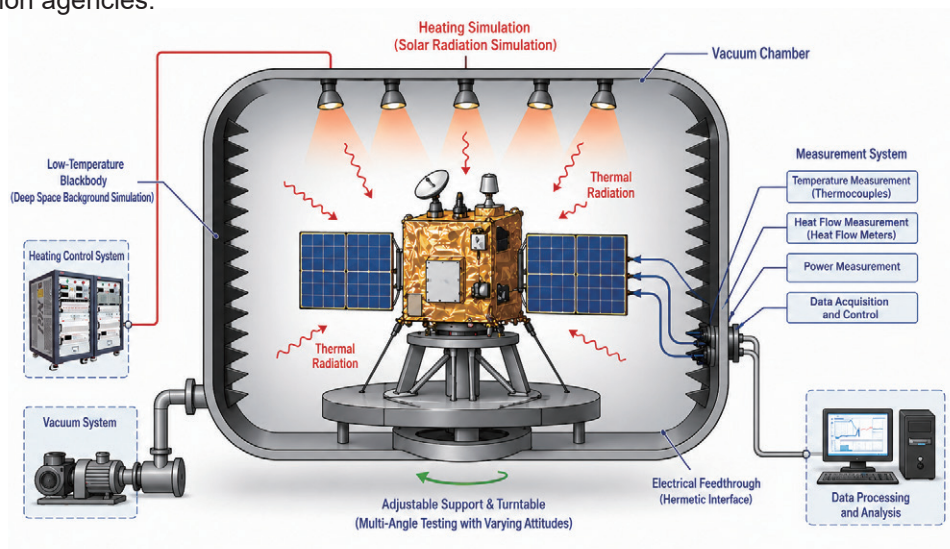
🕒 Space Environment Ground Simulation

Space environment ground simulation testing is a systematic test methodology that reproduces and validates critical environmental factors encountered by satellites during launch, orbit insertion, and on-orbit operation through ground-based test facilities. It is employed to comprehensively evaluate the environmental adaptability and mission reliability of satellite structures, thermal control systems, electronic equipment, materials, and critical mechanisms.



[Scenario 1: Thermal Balance Test Power Supply]

NGI NXI modular instruments support simulation of power supply, discrete I/O, analog input, and CAN communication modules—with comprehensive hardware coverage, complete drivers, demos, and protocols. These instruments satisfy control signal testing requirements for satellite integrators, component manufacturers, and third-party inspection agencies.



Typical Test Items

Test Items	
High Channel Count	A single vacuum chamber typically requires tens to hundreds of heater power supply channels; for a $\Phi=3\text{m}$ diameter vacuum chamber, up to 120+ channels may be required.
Extended Test Duration	A single validation test requires 10+ days, demanding stable and continuous equipment output.
Integrated Control	Equipment must feature remote control capability with support for standard communication protocols such as SCPI.

Recommended Products

Recommended Products	Product Applications & Customer Value
N39400 Series High-Precision Multi-Channel Programmable DC Power Supply 	Product Applications: DC power supply for heating lamps and thermal shrouds. Customer Value: Specifications: 0~150V/0~15A/0~600W. ① High Integration: 2U/4CH—one unit replacing four, minimizing test bench footprint. ② Multi-Function: Supports CC/CV priority function with stable and smooth current output, protecting the device under test (DUT).

N36200 Series Wide-Range Programmable DC Power Supply 	Product Applications: DC power supply for heating lamps and thermal shrouds. Customer Value: Specifications: 0~1500V/0~1100A/0~10kW. ① Compact Form Factor: 1U & 2U slim rack-mount design, minimizing test bench footprint. ② Low Ripple: Current output Irms ≤0.1%, delivering pure and interference-free output. ③ Multi-Function: Supports CC/CV priority function with stable and smooth current output, protecting the DUT.
N36100 Series Wide-Range Programmable DC Power Supply 	Product Applications: DC power supply for heating lamps and thermal shrouds. Customer Value: Specifications: 0~300V/0~100A/0~900W. ① Compact Size: 1U half-rack design, minimizing test bench footprint. ② Multi-Function: Supports CC/CV priority function with stable and smooth current output, protecting the DUT.
NXI-6501-16 Thermocouple Temperature Acquisition Module 	Product Applications: Real-time temperature acquisition at measurement points. Customer Value: ① 16-channel parallel thermocouple temperature acquisition. ② Support for K, J, E, S, T, and other thermocouple types. ③ Maximum Sampling Rate: 100S/s.

[Scenario 2: Satellite/System-Level Power Supply Reliability Testing]

NGI's N39400, N36200, N36100, and other wide-range programmable DC power supplies are widely applied in satellite space environment ground simulation testing—providing stable, continuous, and reliable power assurance for satellite-level and subsystem-level platforms. The capability for long-term stable and reliable power supply is directly related to the integrity of satellite functional verification, the authenticity of test data, and the accuracy of on-orbit mission reliability assessment results. It serves as a critical foundation for conducting satellite environmental adaptability validation and system risk identification.

Recommended Products

Recommended Products	Product Applications & Customer Value
N39400 Series High-Precision Multi-Channel Programmable DC Power Supply 	Product Applications: DC power supply for satellite subsystem power supply. Customer Value: Specifications: 0~150V/0~15A/0~600 W. ① High Integration: 2U/4CH—one unit replacing four, minimizing test bench footprint. ② Multi-Function: Supports CC/CV priority function with stable and smooth current output, protecting the DUT.
N36200 Series Wide-Range Programmable DC Power Supply 	Product Applications: DC power supply for satellite-level and subsystem-level power supply. Customer Value: Specifications: 0~1500V/0~1100A/0~10kW. ① Compact Form Factor: 1U & 2U slim rack-mount design, minimizing test bench footprint. ② Low Ripple: Current output Irms ≤0.1%, delivering pure and interference-free output. ③ Multi-Function: Supports CC/CV priority function with stable and smooth current output, protecting the DUT.
N36100 Series Wide-Range Programmable DC Power Supply 	Product Applications: DC power supply for satellite subsystem power supply. Customer Value: Specifications: 0~300V/0~100A/0~900W. ① Compact Size: 1U half-rack design, minimizing test bench footprint. ② Multi-Function: Supports CC/CV priority function with stable and smooth current output, protecting the DUT.

Cooperation

ET System electronic and NGI

Driving innovation, quality, and service – together

With over 30 years of experience in developing and manufacturing AC/DC power supplies, electronic loads, and battery simulators, ET System is a well-established provider of high-performance power solutions in Germany. Through our strategic partnership with Next Generation Instrumental (NGI) – a leading manufacturer with over 18 years of expertise in DC loads, bidirectional power supplies, and battery cell simulators – we are combining our strengths to offer an even broader and more powerful product portfolio.

This partnership enables:

- Centralized service and technical support in Germany for all NGI cooperation products
- Direct personal contact – from your initial inquiry to after-sales service, via our local team
- Demo equipment stock in Germany – ensuring quick availability for evaluation across Europe
- Local spare parts and selected device inventory – for fast response in service and urgent needs
- Premium quality and reliability from a single source – thanks to seamless integration of NGI products into ET System solutions



Our customers benefit from a unique combination of local engineering expertise, tailored system integration, and a comprehensive product offering – all from one trusted source.

Please note: Our existing product lines will continue to be manufactured in Germany and remain fully available without change.

From initial consultation to system implementation and ongoing support, our headquarters in Altlußheim (Germany) serves as the central competence center for both our own technologies and the entire NGI portfolio throughout Europe.

Need assistance or have any questions?

We're here to help – contact us.



Call us at:

+49 (0)6205 - 3948-0



Send us an email:

info@et-system.de



We are available from

Mon. to Thurs.: 8 AM to 5 PM
Fri.: 8 AM to 3 PM