

Keysight Technologies

N6700 Modular Power System Family

Low-Profile Mainframes for ATE: N6700B, N6701A, N6702A

DC Power Analyzer Mainframe for R&D: N6705B

DC Power Modules: N6731B – N6784A

Software for DC Power: 14585A

Data Sheet



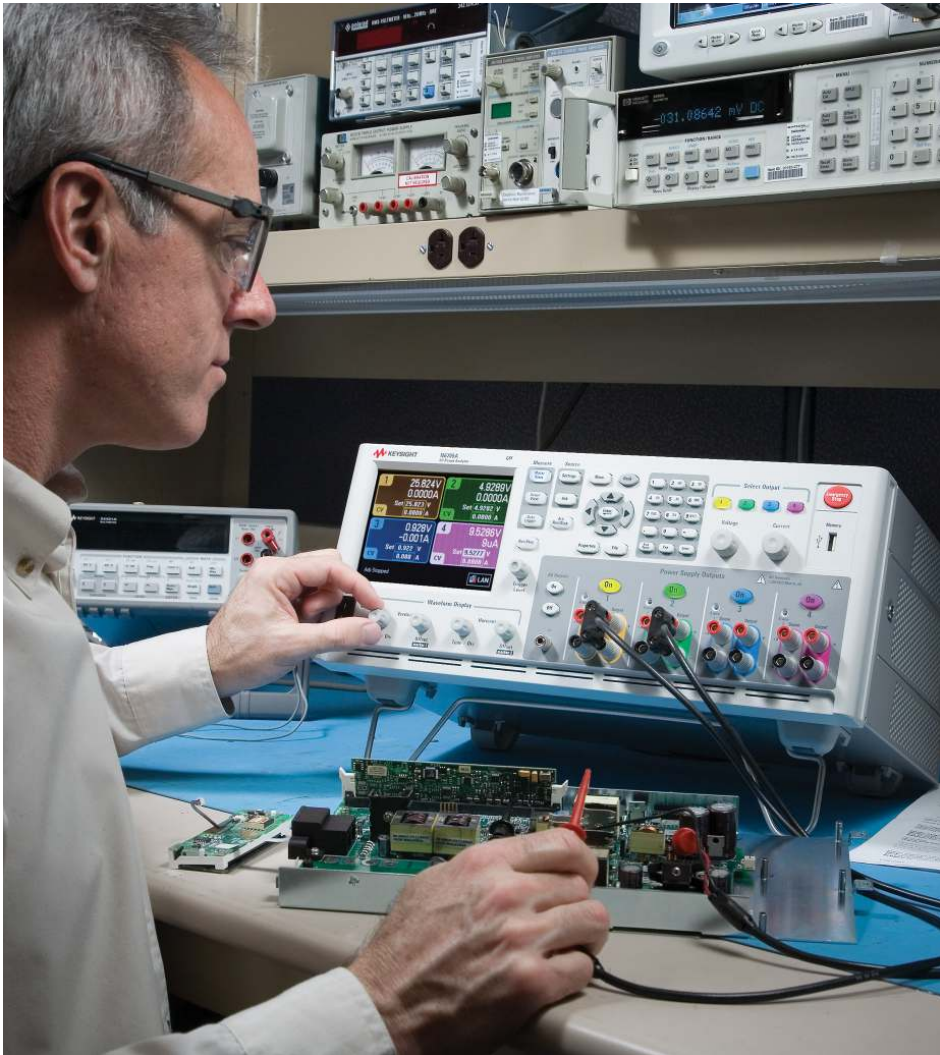
N6700 Modular Power System Family Overview

Create a power system that fits your unique needs

Whether you are an R&D engineer under time pressure or a manufacturing test engineer trying to cut costs or increase throughput, there is a N6700 mainframe and set of DC power modules that will suit your needs. The family includes 4 mainframes and over 30 DC power modules.

Choose from 4 mainframes: 3 for automated test systems, 1 for the R&D bench

The N6700 MPS family has two categories of mainframes to choose from: low-profile and DC power analyzer. The environment that the power system will be used in will dictate the choice between the two categories of mainframes. If it is an automated-test environment (ATE), the low-profile mainframes should be used. If it is an R&D bench environment, the DC power analyzer mainframe should be used. Each of the mainframes provides features that are tuned to the environment they are used in.



149.96v 2.0033a	6.0002v 1.2467a	20.000v 34.988a	
1 CV	2 CV	3 CV	Double

** NOTE: This is an overview of the N6700 Modular Power System Family. For full specifications and characteristics, please see the *Keysight N6700 Modular Power System Family Specifications Guide*, literature number N6700-90001.

N6700 Modular Power System Family Overview

Low-Profile Module Power System Mainframes

- Ideal for ATE systems in R&D, design validation, and manufacturing
- Small size: up to 4 outputs in 1U of rack space
- Fast command processing times to improve throughput



LXI

DC Power Analyzer Mainframe

- Ideal for R&D testing and design validation
- Designed for R&D: large display, control knobs, all functions available from front panel—no programming required
- Integrated instrument: Combines from 1 to 4 DC power supplies with DMM, oscilloscope, arbitrary waveform generator, and data logger capabilities
- Eliminates need to gather and configure multiple instruments



LXI

DC Power Modules

- Use modules in any of the N6700 mainframes
- Flexible, modular system: four tiers of module performance—mix and match power and performance levels to optimize the system for your unique needs
- High-end modules for critical test requirements
- Basic modules for general DC power requirements
- Source and measure DC voltage and current into your device under test
- Connect via GPIB, LAN, or USB
- Fully compliant to LXI Class C specification

LXI



N6700 Low-Profile MPS Mainframes (N6700B, N6701A, N6702A)

For automated test system environments

Key Features

- Designed for automated test environments
- Three 1U high (1.75"/44 mm) mainframes fit easily into a test rack
- From 1 to 4 DC power modules per mainframe
- Choose from any of the over 30 DC power modules (see pages 6-11)
- Fast output response times (module dependent) and fast command processing (<1 ms) for high throughput
- Advanced features: output sequencing, flexible triggering and digital I/O, LIST mode for user-defined arbitrary waveforms up to 512 points (module dependent)
- GPIB, USB and LAN (LXI Class-C compliant) standard on all models



Small, Flexible, and Fast.
These 1U-high mainframes simplify test system assembly, programming, debugging, and operation and increase throughput with industry-leading < 1 ms command processing time and fast output response times (module dependent).

Mainframe	Max Power
N6700B	400 W
N6701A	600 W
N6702A	1200 W

(See Chapter 7 of the *Specifications Guide*** and *N6700 Data Sheet*, 5989-1411EN, for more information)

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N6705B DC Power Analyzer Mainframe and 14585A Control & Analysis Software

For R&D bench use

Key Features

- Designed for R&D
- No programming required, all functionality available via front panel controls
- 14585A software enhances control even further
- From 1 to 4 DC power supplies, plus DMM, scope-like display, data logger, and arbitrary waveform generator all in one instrument
- Choose from any of the over 30 DC Power modules (see pages 6-11)
- Advanced features: output sequencing, flexible triggering and digital I/O, constant-dwell arb mode for user-defined arbitrary waveforms up to 64k points

Get insight into your device's power consumption—In minutes, not hours—without writing a single line of code



Mainframe	Max Power
N6705B	600 W

(See Chapter 7 of the *Specifications Guide*** and *N6700 Data Sheet*, 5989-1411EN, for more information)

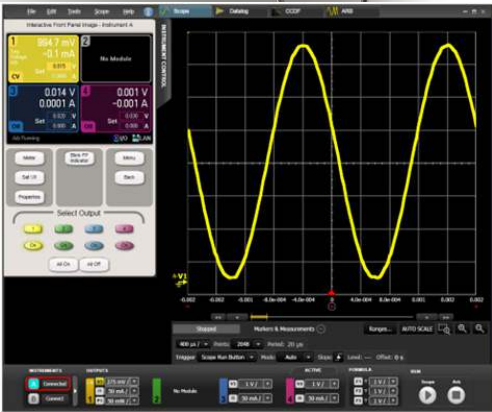
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14585A Control and Analysis Software

Enhances the bench-top experience

Key Features

- Compliments the N6705A/B DC power analyzer's front panel controls.
- Control and analyze data from up to four N6705A/B DC power analyzer mainframes and any installed modules at once—that's up to 16 power supplies simultaneously.
- Easily create complex waveforms to stimulate or load down a DUT by inputting a formula, choosing from built-in, or importing waveform data.
- Enhanced control and analysis of data with familiar PC controls and large display.
- Data log measurements directly to a PC.



Model	Description
14585A	Control & Analysis Software
N6705B-056	14585A license ordered as option to new N6705B
N6705U-056	14585A license for already-owned N6705A or N6705B

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(See DC Power Analyzer Data Sheet for more information, 5989-6319EN)

Choose from over 30 DC power modules with different power and performance levels

After choosing the mainframe based on your environment, there are over 30 DC power modules to choose from. Each of these modules has been designed for different applications, from basic to advanced. The N6700 family offers five categories of modules: basic, high-performance, precision, application-specific, and source/measure unit. The modules can be used in any of the four mainframes in any combination.



Basic DC Power Modules: N673xB, N674xB, N677xA

For basic DC applications

The Keysight N6730, N6740 and N6770 series of DC power modules provide programmable voltage and current, measurement and protection features at a very economical price. There are 17 models to choose from offering up to 150 V, up to 20 A, and up to 300 W. In ATE, these modules are suitable to power the DUT or to provide power for ATE system resources such as fixture control. In R&D, they are suitable for tasks such as DC biasing. Option 054,* high-speed test extensions, enables the built-in digitizer for scope-like measurements and LIST mode for arbitrary waveforms.

Key Features

- Low noise, stable operation
- High-speed test extensions for digitized measurements and arbitrary waveforms (Option 054*)

Key Specifications

(Module dependent; best spec shown)

Power	50 W, 100 W, 300 W
Voltage	Up to 150 V
Current	Up to 20 A
Voltmeter accuracy	0.1% + 20 mV
Ammeter accuracy	0.15% + 2 mA
Advanced features	Waveforms up to 260 Hz, digitized measurement with Option 054*

(See Chapter 2 of the *Specifications Guide*** for more information)

* When used in the N6705B DC Power Analyzer mainframe option 054 is not needed.

Model	Voltage	Current	Power
N6731B	5 V	10 A	50 W
N6732B	8 V	6.25 A	50 W
N6733B	20 V	2.5 A	50 W
N6734B	35 V	1.5 A	50 W
N6735B	60 V	0.8 A	50 W
N6736B	100 V	0.5 A	50 W
N6741B	5 V	20 A	100 W
N6742B	8 V	12.5 A	100 W
N6743B	20 V	5 A	100 W
N6744B	35 V	3 A	100 W
N6745B	60 V	1.6 A	100 W
N6746B	100 V	1 A	100 W
N6773A	20 V	15 A	300 W
N6774A	35 V	8.5 A	300 W
N6775A	60 V	5 A	300 W
N6776A	100 V	3 A	300 W
N6777A	150 V	2 A	300 W

** NOTE: This is an overview of the N6700 Modular Power System family. For full specifications and characteristics, please see the *Keysight N6700 Modular Power System Family Specifications Guide*, literature number N6700-90001.

High-Performance, Auto-Ranging DC Power Modules: N675xA

For applications where the power supply plays a critical role

The Keysight N6750 series of high-performance, auto-ranging DC power modules provides low noise, high accuracy and programming speeds that are up to 10 to 50 times faster than other programmable power supplies. In addition, high-speed test extensions (option 054*) offers an oscilloscope-like digitizer that simplifies system configuration and increases measurement accuracy when viewing high-speed transient or pulse events within the device-under-test (DUT). In addition, auto-ranging output capabilities enable one power supply to do the job of several traditional power supplies.

Key Features

- Auto-ranging outputs; acts like many power supplies in one
- Low noise, high-accuracy sourcing and measurement
- High-speed test extensions for digitized measurements and arbitrary waveforms (Option 054*)

Key Specifications

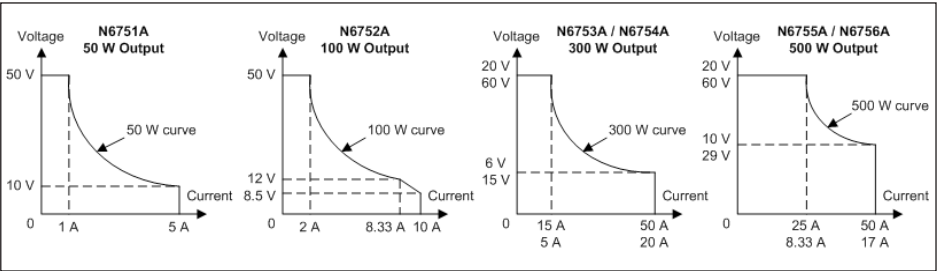
(Module dependent; best spec shown)

Power	50 W, 100 W, 300 W, 500 W
Voltage	Up to 60 V
Current	Up to 50 A
Voltmeter Accuracy	0.05% + 10 mV
Ammeter Accuracy	0.1% + 4 mA
Advanced Features	Waveforms up to 4 kHz, digitized measurement with Option 054*

(See Chapter 3 of the *Specifications Guide*** for more information)

* When used in the N6705B DC Power Analyzer mainframe option 054 is not needed.

Model	Voltage	Current	Power
N6751A	50 V	5 A	50 W
N6752A	50 V	10 A	100 W
N6753A	20 V	50 A	300 W
N6754A	60 V	20 A	300 W
N6755A	20 V	50 A	500 W
N6756A	60 V	17 A	500 W



** NOTE: This is an overview of the N6700 Modular Power System family. For full specifications and characteristics, please see the *Keysight N6700 Modular Power System Family Specifications Guide*, literature number N6700-90001.

Precision DC Power Modules: N676xA

For applications where precision is required

The Keysight N6760 series of precision DC power modules provides precise control and measurements in the milliampere and microampere region with the ability to simultaneously digitize voltage and current since it has two built-in digitizers, and capture those measurements in an oscilloscope-like data buffer.

Key Features

- Auto-ranging outputs; acts like many power supplies in one
- Low noise, precision sourcing and measurement
- High-speed test extensions standard; dual-digitizers for simultaneous V & I measurement
- Microamp measurement with option 2UA

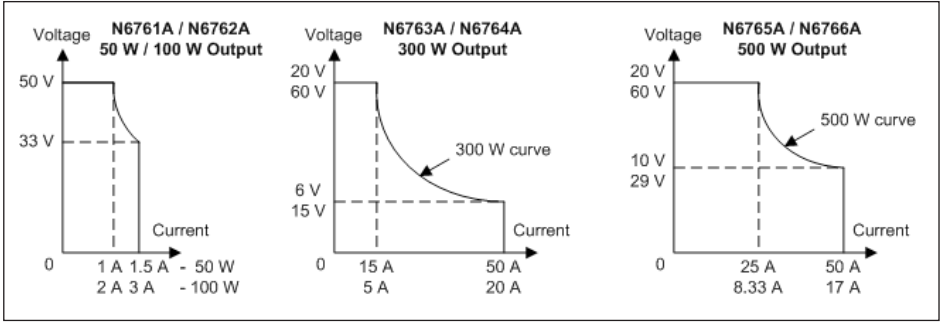
Key Specifications

(Module dependent; best spec shown)

Power	50 W, 100 W, 300 W, 500 W
Voltage	Up to 60 V
Current	Up to 50 A
Voltmeter Accuracy	0.016% + 1.5 mV
Ammeter Accuracy	0.05% + 100 nA (with Option 2UA)
Advanced Features	Waveforms up to 4.5 kHz, dual digitized measurements

(See Chapter 4 of the *Specifications Guide*** for more information)

Model	Voltage	Current	Power
N6761A	50 V	1.5 A	50 W
N6762A	50 V	3 A	100 W
N6763A	20 V	50 A	300 W
N6764A	60 V	20 A	300 W
N6765A	20 V	50 A	500 W
N6766A	60 V	17 A	500 W



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Application-Specific Modules: N6783A

For specific applications

The Keysight N6783A application-specific modules have been design to meet the test challenges of specific applications. The Keysight N6783A-MFG Mobile Communications DC Power Module offers advanced features specifically for testing battery-powered (mobile) devices in manufacturing. The Keysight N6783A-BAT Battery Charge/Discharge Module is a basic, 2-quadrant module designed to be used by battery-powered (mobile) device designers to test the batteries they will use in their products.

Key Features

(Apply to all modules unless otherwise noted)

- Designed to perform a specific task
- Excellent voltage transient response to ensure a stable output (N6783A-MFG)
- Basic 2-quadrant operation to act an electronic load to discharge a battery (N6783A-BAT)

Key Specifications

(Module dependent; best spec shown)

Power	24 W
Voltage	Up to 8 V
Current	–2 to +3 A
Voltmeter Accuracy	0.05% + 5 mV
Ammeter Accuracy	0.1% + 75 μ A
Advanced Features	Basic 2-quadrant operation

(See Chapter 6 of the Specifications Guide** and N6783A-MFG Data Sheet, 5990-8643EN, or N6783A-BAT Data Sheet, 5990-8662EN, for more information.)

Model	Description	Voltage/Current	Power
N6783A-BAT	Battery Charge/Discharge Module	0 to 8 V/ –2 to 3 A	24 W
N6783A-MFG	Mobile Communications DC Power Module	0 to 6 V/ –2 A, 0-3 A	18 W

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Source/Measure Unit (SMU) Modules: N6781A, N6782A, N6784A

For advanced, high-precision control and measurement requirements

The Keysight N6781A, N6782A, and N6784A source/measure units provide advanced features and precise control and measurements of voltage and current down to the microampere and nanoampere regions. They provide stable, glitch-free output voltage and current during high-speed load changes, fast output modulation, and high-speed measurements of both voltage and current simultaneously. They are the most advanced power supplies that Keysight makes.

Key Features

(Apply to all modules unless otherwise noted)

- Seamless, dynamic measurements to nA and μV (N6781A and N6782A only)
- Glitch-free operation—change sourcing ranges or measurement ranges without any glitches
- Four current programming ranges—precisely source current down to μA (N6784A only)
- Excellent transient response for stable output voltage with dynamic loads
- 2-quadrant operation—use as an advanced power supply or electronic load (N6781A and N6782A only)
- 4-quadrant operation—use as an advanced bipolar power supply or bipolar electronic load (N6784A only)
- Stable operation with capacitive loads up to 150 μF
- High-speed output can slew at 10 V per μs into a resistive load
- Fast modulation of DC output—create arbitrary waveforms up to 100 kHz (sine) into a resistive load
- High-speed digitized measurements—capture/view the power consumption of the DUT up to every 5 μs with built-in 200 kHz digitizer
- Auxiliary voltage measurement input for battery run down test (N6781A only)
- Programmable output resistance from $-40\text{ m}\Omega$ to $+1\text{ }\Omega$ to simulate internal resistance of a battery (N6781A only)

Key Specifications

(Module dependent; best spec shown)

Power	20 W
Voltage	$\pm 20\text{ V}$
Current	$\pm 3\text{ A}$
Voltmeter accuracy	$0.025\% + 50\text{ }\mu\text{V}$
Ammeter accuracy	$0.025\% + 8\text{ nA}$
Advanced features	Waveforms up to 100 kHz, digitized measurements up to 200 kHz, seamless measurement (N6781A and N6782A only)

(See Chapter 5 of the Specifications Guide** and N6780 SMU Data Sheet, 5990-5829EN, for more information.)

Model	Description	Voltage/Current	Power
N6781A	Source/Measure Unit for Battery Drain Analysis, 2-quadrant	20 V/ $\pm 1\text{ A}$ or 6 V/ $\pm 3\text{ A}$	20 W
N6782A	Source/Measure Unit for Functional Test, 2-quadrant	20 V/ $\pm 1\text{ A}$ or 6 V/ $\pm 3\text{ A}$	20 W
N6784A	Source/Measure Unit, General Purpose, 4-quadrant	$\pm 20\text{ V}/\pm 1\text{ A}$ or $\pm 6\text{ V}/\pm 3\text{ A}$	20 W

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