# Keysight N5700 Series System DC Power Supplies Models: N5741A-49A, N5750A-52A, N5761A-69A, N5770A-72A





# Family of Affordable Basic System DC Power Supplies

- 24 models: 750 W and 1500 W output power
- Up to 600 V and up to 180 A
- Small high density 1 U package
- Built-in voltage and current measurement
- Full protection from over-voltage and over-current
- 85-265 Vac universal AC input
- Command compatibility for Sorensen DLM and Xantrex XFR DC supplies
- LAN, USB, and GPIB interfaces standard
- Fully compliant to LXI Class C specification

The Keysight Technologies, Inc. N5700 Series system DC power supplies give you just the right performance — at just the right price in a compact (1 U) package. This family of affordable 750 W and 1500 W single-output programmable DC power supplies consists of 24 models for simple DC power applications. They provide stable output power, built-in voltage and current measurement, and output voltage and current from 6 V to 600 V and 1.3 A to 180 A. These economical supplies offer many system-ready features like multiple standard I/O interfaces to simplify and accelerate test-system development for R&D, design validation, and manufacturing engineers in the aerospace/defense, automotive, component and communications industries.

# Small, high-density package saves you rack space

The N5700 provides up to 1500 W in a small space-saving 1 U-high, 19-inchwide package. Its air vents are in the front, side and rear (not on the top or bottom), so you can stack other instruments directly above or below it to save valuable rack space.

# Easy front-panel operation

You can quickly and easily operate the power supply with its rotary knobs and buttons. Using the frontpanel controls, you can make coarse or fine adjustments of output voltage and current, protection settings, and set power-on states (last setting memory or factory default setting). The output voltage and current are displayed simultaneously, and LED indicators show power supply status and operating modes. You can lock the front panel controls to protect against accidental power-supply parameter changes.

### Extensive device protection

To safeguard your device from damage, the N5700 Series power supplies provide over-temperature, over-current and over-voltage protection (OVP) to shut down the power supply output when a fault condition occurs. They also offer an undervoltage limit (UVL) that prevents adjustment of the output voltage below a certain limit. The combination of UVL and OVP capabilities lets you create a protection window for sensitive load circuitry.

#### Simplify system connections

The N5700 Series power supplies come standard with GPIB, Ethernet/ LAN, and USB 2.0 interfaces giving you the flexibility to use your I/O interface of choice today and in the future. The N5700 is fully compliant with the LXI Class C specification.



Figure 1. Front-panel control knobs and buttons make it easy to use N5700 power supplies.



Figure 2. Built-in Ethernet, USB 2.0, and GPIB interfaces enable easy system connections.

### Remote access and control

The built-in Web server provides remote access and control of the instrument via a standard browser such as Microsoft Internet Explorer. Using the Web browser, you can set up, monitor and operate the N5700 remotely.

# Easy system integration and configuration

To simplify system development, the N5700 comes standard with IVI-COM drivers. The N5700 supports the easy-to-use SCPI (Standard Commands for Programmable Instruments).

# Command compatibility

The N5700 includes a compatibility command set for the Xantrex XFR series power supplies, the Sorensen DLM series power supplies, and the Keysight 603x series power supplies. This simplifies system integration when converting to the N5700. For a comparison of these products, see application notes:

- Side-by-side comparison: Keysight N5700 Series System DC Source and Sorensen DLM DC Power Supply, AN 1502-1, 5989-1628EN
- Side-by-side comparison: Keysight N5700 Series System DC Source and Xantrex XFR AN 1502-2, 5989-1630EN



Figure 3. N5700 series web graphical user interface for remote access and control of the power supply.

# Flexible configuration: connect multiple units in parallel and series

Should you need greater output power, the N5700 series power supplies give you the flexibility to connect in parallel up to four similarly rated units for greater output current and connect two similarly rated units in series for greater output voltage (see output terminal isolation information).

# Analog programming and monitoring

The output voltage and current can be programmed from zero to full scale by either an analog voltage 0 to 5 V or 0 to 10 V or by resistances of 0 to 5 k $\Omega$  or 0 to 10 k $\Omega$ .

# Universal AC input

All N5700 models have universal AC input so they can be automatically operated from any AC mains input voltage worldwide. They can be operated from line voltages of 85 – 265 Vac, 47 to 63 Hz, with no switch to set or fuses to change when you switch from one voltage standard to another. They also provide power factor correction.

# Rack mounting

The rack mount ears and handles are provided standard with every unit. In addition the N5740A rack mount slide kit makes it easy to integrate an N5700 into a test rack by providing all the necessary hardware to rack mount an N5700 series power supply in only 1 U of rack space.

Unless otherwise noted, specifications are warranted over the ambient temperature range of 0 to 40 °C.

			N5741A	N5742A	N5743A	N5744A	N5745A	N5746A
DC output ratings <sup>1</sup>	Voltage		6 V	8 V	12.5 V	20 V	30 V	40 V
	Current		100 A	90 A	60 A	38 A	25 A	19 A
	Power		600 W	720 W	750 W	760 W	750 W	760 W
Output ripple and noise	CV p-p <sup>2</sup>		60 mV	60 mV	60 mV	60 mV	60 mV	60 mV
	CV rms <sup>3</sup>		8 mV	8 mV	8 mV	8 mV	8 mV	8 mV
Load effect	Voltage		2.6 mV	2.8 mV	3.25 mV	4 mV	5 mV	6 mV
(change from 10% to 90%)	Current		25 mA	23 mA	17 mA	12.6 mA	10 mA	8.8 mA
Source effect	Voltage		2.6 mV	2.8 mV	3.25 mV	4 mV	5 mV	6 mV
(change from 85-132 VAC input or 170-265 VAC input)	Current		12 mA	11 mA	8 mA	5.8 mA	4.5 mA	3.9 mA
Programming accuracy <sup>1</sup>	Voltage	0.05%+	3 mV	4 mV	6.25 mV	10 mV	15 mV	20 mV
	Current	0.1%+	100 mA	90 mA	60 mA	38 mA	25 mA	19 mA
Measurement accuracy	Voltage	0.1%+	6 mV	8 mV	12.5 mV	20 mV	30 mV	40 mV
	Current	0.1%+	300 mA	270 mA	180 mA	114 mA	75 mA	57 mA
Load transient recovery time <sup>4</sup>	Time		≤1.5 ms	≤1.5 ms	≤1.5 ms	≤1 ms	≤1 ms	≤1 ms
Supplemental Characteristics Supplemental characteristics are not warranted but are descriptions of typical performance determined either by design or type testing								
Output response time	Up, full lo	ad	0.08 s	0.08 s	0.08 s	0.08 s	0.08 s	0.08 s
(settle to within ±1.0% of the rated output, with a resistive load)	Down, ful	l load	0.05 s	0.05 s	0.05 s	0.05 s	0.08 s	0.08 s
	Down, no	load	0.5 s	0.6 s	0.7 s	0.8 s	0.9 s	1.0 s
Command response time <sup>5</sup>					55 ms			
Data readback transfer time <sup>6</sup>					3 ms			
Remote sense compensation	Volts/loa	d lead	1 V	1 V	1 V	1 V	1.5 V	2 V
Over-voltage protection	Range		0.5–7.5 V	0.5–10 V	1–15 V	1–24 V	2–36 V	2–44 V
	Accuracy		0.06 V	0.08 V	0.125 V	0.20 V	0.30 V	0.40 V
Output ripple and noise <sup>7</sup>	CC rms		200 mA	180 mA	120 mA	76 mA	63 mA	48 mA
Programming resolution	Voltage		0.72 mV	0.96 mV	1.5 mV	2.4 mV	3.6 mV	4.8 mV
measurement resolution	Current		12 mA	10.8 mA	7.2 mA	4.56 mA	3 mA	2.3 mA
Front panel display accuracy	Voltage		0.03 V	0.04 V	0.06 V	0.10 V	0.15 V	0.20 V
(4 digits; ±1 count)	Current		0.50 A	0.45 A	0.30 A	0.19 A	0.13 A	0.10 A

#### Notes:

1 Minimum voltage is guaranteed to a maximum of 0.2% of the rated output voltage.

Minimum current is guaranteed to a maximum of 0.4% of the rated output current.

- 2 Up to 20 MHz
- 3 From 5 Hz 1 MHz
- 4 Time for output voltage to recover within 0.5% of its rated output for a load change from 10 to 90% of its rated output current. Voltage set point from 10% to 100% of rated output
- 5 Add this to the output reponse time to obtain the total programming time
- 6 Time to provide data back to the controller using LAN interface (does not include A/D conversion time)
- 7 From 5 Hz 1 MHz, at 10% to 100% of output voltage at full load (for 6 V units from 33% to 100% of output voltage)

Unless otherwise noted, specifications are warranted over the ambient temperature range of 0 to 40°C.

DC output ratings <sup>1</sup> Voltage         ROFATA         NOFATA				N5747A	N5748A	N5749A	N5750A	N5751A	N5752A
Current         12.5 A         9.5 A         7.5 A         5 A         2.5 A         1.3 A           Power         750 W         760 W         750 W         7	DC output ratings <sup>1</sup>	Voltage							
Power         750 W         760 W         750 W <t< td=""><td>bo output ratings</td><td>Ű</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	bo output ratings	Ű							
Output ripple and noise         CV p-p <sup>2</sup> 60 mV         80 mV         80 mV         10 mV         150 mV         80 mV         80 mV         80 mV         10 mV         150 mV         60 mV         60 mV         80 mV         80 mV         10 mV         150 mV         60 mV         62 mV         60 mV         80 mV         10 mV         150 mV         300 mV         60 mV         80 mV         100 mV         150 mV         300 mV         60 mV									
CV rms³         8 mV         8 mV         8 mV         1 2 mV         20 mV         60 mV           Load effect (change from 10% to 90%)         Current         7.5 mA         6.9 mA         6.5 mA         6 mA         5.5 mA         5.26 mA           Source effect (change from 85-132 VAC input) or 170-265 VAC input)         Voltage         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           Programming accuracy!         Voltage         0.05%+         30 mV         40 mV         50 mV         75 mA         2.5 mA         2.25 mA         2.13 mA           Programming accuracy!         Voltage         0.05%+         30 mV         40 mV         50 mV         75 mV         150 mV         300 mV           Current         0.1%+         12.5 mA         9.5 mA         7.5 mA         5 mA         2.5 mA         1.3 mA           Measurement accuracy         Voltage         0.1%+         30 mV         80 mV         100 mV         150 mV         300 mV         600 mV           Current         0.1%+         37.5 mA         2.8 5 mA         2.2 5 mA         1.5 m         3.9 mA           Load transient recovery time <sup>4</sup> Time         <1 ms<	Output ripple and paice								
$ \begin{array}{ c c c c c c } \mbox{Load effect} & Voltage & 8 mV & 10 mV & 12 mV & 17 mV & 32 mV & 62 mV \\ (change from 10\% to 90\%) & Current & 7.5 mA & 6.9 mA & 6.5 mA & 6 mA & 5.5 mA & 5.26 mA \\ \hline Source effect & Voltage & 8 mV & 10 mV & 12 mV & 17 mV & 32 mV & 62 mV \\ (change from 85-132 VAC input) & Current & 3.25 mA & 2.95 mA & 2.75 mA & 2.5 mA & 2.25 mA & 2.13 mA \\ \hline Programming accuracy^1 & Voltage & 0.05\% + 30 mV & 40 mV & 50 mV & 75 mV & 150 mV & 300 mV \\ \hline Current & 0.1\% + & 12.5 mA & 9.5 mA & 7.5 mA & 5 mA & 2.5 mA & 1.3 mA \\ \hline Measurement accuracy & Voltage & 0.1\% + & 60 mV & 80 mV & 100 mV & 150 mV & 300 mV & 600 mV \\ \hline Current & 0.1\% + & 37.5 mA & 28.5 mA & 22.5 mA & 15 mA & 7.5 mA & 3.9 mA \\ \hline Load transient recovery time^4 & Time & \leq 1 ms & \leq 1 ms & \leq 1 ms & \leq 2 ms & \leq 2 ms \\ \hline Supplemental Characteristics & Supplemental characteristics are not warranted but are descriptions of typical performance determined either by design or type testing \\ \hline Output response time (setting value) & 0.08 s & 0.15 s & 0.15 s & 0.15 s & 0.15 s & 0.30 s \\ \hline Command response time^5 & 5 mS \\ \hline Command response time^5 & 5 mS \\ \hline Command response time^5 & 5 mS & 0.15 s & 0.15 s & 0.15 s & 0.15 s & 0.30 s & 4.0 s \\ \hline Current & 0.1\% & 3.0 mV & 0.80 V & 1 V & 1.5 V & 5 V $	Output ripple and noise								
(change from 10% to 90%)         Current         7.5 mA         6.9 mA         6.5 mA         6 mA         5.5 mA         5.26 mA           Source effect (change from 85-132 VAC input) or 170-265 VAC input)         Voltage         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           Programming accuracy <sup>1</sup> Voltage         0.05%+         30 mV         40 mV         50 mV         75 mA         2.5 mA         2.25 mA         2.13 mA           Programming accuracy <sup>1</sup> Voltage         0.05%+         30 mV         40 mV         50 mV         75 mA         2.5 mA         2.5 mA         1.3 mA           Measurement accuracy         Voltage         0.1%+         12 mV         80 mV         100 mV         150 mV         300 mV         600 mV           Load transient recovery time <sup>4</sup> Time         ≤1 ms         ≤1 ms         ≤1 ms         ≤2 ms         ≤2 ms         ≤2 ms         ≤2 ms           Supplemental Characteristics         supplemental characteristics are not warranted but area descriptorisot pytical performance determine <sup>4</sup> tert by design or type testing         0.15 s         0.15 s         0.15 s         0.15 s         0.3 s         4.0 s           Supplemental Characteristics         mark         1.1 s         1.2 s         1.5 s <td>Lood offeet</td> <td></td> <td></td> <td>-</td> <td>-</td> <td>-</td> <td></td> <td></td> <td></td>	Lood offeet			-	-	-			
Source effect (change from 85-132 VAC input)         Voltage Current $3.25 \text{ mA}$ $0.3 \text{ mA}$ $0.2 \text{ mV}$ $0.0 \text$		Ŭ							
(change from 85-132 VAC input)         Current         3.25 mA         2.95 mA         2.75 mA         2.5 mA         2.25 mA         2.13 mA           Programming accuracy1         Voltage         0.05%+         30 mV         40 mV         50 mV         75 mV         150 mV         300 mV           Measurement accuracy1         Voltage         0.1%+         12.5 mA         9.5 mA         7.5 mA         5 mA         2.5 mA         1.3 mA           Measurement accuracy         Voltage         0.1%+         60 mV         80 mV         100 mV         150 mV         300 mV         600 mV           Load transient recovery time4         Time         ≤1 ms         ≤1 ms         ≤1 ms         ≤2 ms         ≤2 ms         ≤2 ms           Supplemental Characteristics         Supplemental characteristics are not warranted but are descriptors of typical performance determine either by design or type resting         0.15 s         0.15 s         0.15 s         0.15 s         0.25 s           Output response time (settle to within ±1.0% of the rated output, with a resistive load)         0.08 s         0.15 s         0.15 s         0.15 s         0.30 s         4.0 s           Data readback transfer time <sup>6</sup> 3V         4 V         5 V         5 V         5 V         5 V	· · · ·								
or 170-265 VAC input)         Current         3.25 mA         2.35 mA         2.75 mA         300 mV         300 mV           Programming accuracy1         Voltage         0.1%+         60 mV         80 mV         100 mV         150 mV         300 mV         600 mV           Measurement accuracy         Voltage         0.1%+         60 mV         80 mV         100 mV         150 mV         300 mV         600 mV           Load transient recovery time4         Time         ≤1 ms         ≤1 ms         ≤1 ms         ≤2 ms         ≤2 ms         52 ms           Supplemental Characteristics         Supplemental characteristics are not warranted but are descriptions of typical performance determined either by design or type testing         0.15 s         0.15 s         0.15 s         0.25 s           Output response time (settle to within ±1.0% of the rated output, with a resitive load)         0.08 s         0.15 s         0.15 s         0.15 s         0.30 s         0.30 s           Data readback transfer time4									
Current         0.1%+         12.5 mA         9.5 mA         7.5 mA         5 mA         2.5 mA         1.3 mA           Measurement accuracy         Voltage         0.1%+         60 mV         80 mV         100 mV         150 mV         300 mV         600 mV           Current         0.1%+         37.5 mA         28.5 mA         22.5 mA         15 mA         7.5 mA         3.9 mA           Load transient recovery time <sup>4</sup> Time         <1 ms		Current		3.25 mA	2.95 mA	2.75 mA	2.5 mA	2.25 mA	2.13 mA
Measurement accuracy         Voltage         0.1%+         60 mV         80 mV         100 mV         150 mV         300 mV         600 mV           Load transient recovery time <sup>4</sup> Time         ≤1 ms         ≤1 ms         ≤1 ms         ≤2	Programming accuracy <sup>1</sup>	Voltage	0.05%+	30 mV	40 mV	50 mV	75 mV	150 mV	300 mV
Current         0.1%+         37.5 mA         28.5 mA         22.5 mA         15 mA         7.5 mA         3.9 mA           Load transient recovery time4         Time         ≤1 ms         ≤1 ms         ≤1 ms         ≤2 ms		Current	0.1%+	12.5 mA	9.5 mA	7.5 mA	5 mA	2.5 mA	1.3 mA
Load transient recovery time4Time $\leq 1 \text{ ms}$ $\leq 1 \text{ ms}$ $\leq 1 \text{ ms}$ $\leq 2 \text{ ms}$ $\leq 1 \text{ ms}$ $\leq 2 \text{ ms}$ $\leq 1 \text{ ms}$ $\leq 1 \text{ ms}$ $\leq 1 \text{ ms}$ $\leq 1 \text{ ms}$ $\leq 1$	Measurement accuracy	Voltage	0.1%+	60 mV	80 mV	100 mV	150 mV	300 mV	600 mV
Supplemental Characteristics are not warranted but are descriptions of typical performance determined either by design or type testingOutput response time (settle to within ±1.0% of the rated output, with a resistive load)Up, full load0.08 s0.15 s0.15 s0.15 s0.15 s0.15 s0.25 sDown, nu load1.1 s1.2 s1.5 s2.0 s3.0 s4.0 sCommand response time <sup>6</sup> 555555Data readback transfer time <sup>6</sup> 555555Remote sense compensationVolts/load lead3 V4 V5 V5 V5 V5 VOver-voltage protectionRange5–66 V5–88 V5–110 V5–165 V5–330 V5–660 VOutput ripple and noise <sup>7</sup> CC rms38 mA29 mA23 mA18 mA13 mA8 mProgramming resolution measurement resolutionVoltage7.2 mV9.6 mV12 mV18 mV36 mV72 mVVoltage0.3 V0.4 V0.5 V0.75 V1.5 V3 V		Current	0.1%+	37.5 mA	28.5 mA	22.5 mA	15 mA	7.5 mA	3.9 mA
performance determined either by design or type testing           Output response time (settle to within ±1.0% of the rated output, with a resistive load)         Up, full load 0.08 s         0.15 s         0.15 s         0.15 s         0.15 s         0.25 s           Down, full load load)         0.08 s         0.15 s         0.15 s         0.15 s         0.15 s         0.30 s           Down, no load         1.1 s         1.2 s         1.5 s         2.0 s         3.0 s         4.0 s           Command response time <sup>5</sup> S         S         S         S         S         S         S           Data readback transfer time <sup>6</sup> S         5-66 V         5-88 V         5-110 V         5-165 V         5 V         5 V           Over-voltage protection         Range         5-66 V         5-88 V         5-110 V         5-165 V         5-330 V         5-660 V           Output ripple and noise <sup>7</sup> CC rms         38 mA         29 mA         23 mA         18 mA         13 mA         8 m           Programming resolution measurement resolution         Voltage         7.2 mV         9.6 mV         12 mV         18 mV         36 mV         72 mV           Qutput ripple and noise <sup>7</sup> Voltage         0.3 V         0.4 V         0.5 V	Load transient recovery time <sup>4</sup>	Time		≤1 ms	≤1 ms	≤1 ms	≤2 ms	≤2 ms	≤2 ms
Output response time (settle to within ±1.0% of the rated output, with a resistive load)         Up, full load Down, full load Down, no load         0.08 s 1.1 s         0.15 s 0.15 s         0.25 s 0.30 s           Command response time <sup>5</sup> Command response time <sup>6</sup> Command response time <sup>6</sup> State and the sense compensation         Volts/load lead         3 V         4 V         5 V         5 V         5 V         5 V           Remote sense compensation         Volts/load lead         3 V         4 V         5 V         5 V         5 V         5 V           Over-voltage protection         Range         5-66 V         5-88 V         5-110 V         5-165 V         5-330 V         5-660 V           Output ripple and noise <sup>7</sup> CC rms         38 mA         29 mA         23 mA         18 mA         13 mA         8 m           Programming resolution measurement resolution         Voltage         7.2 mV         9.6 mV         12 mV         18 mA         0.3 mA         0.156 mA           Front panel display accuracy         Voltage         0.3 V         0.4 V         0.5 V         0.75 V         1.5 V         3 V									
ValueDown, no load0.00 s0.13 s0.13 s0.13 s0.13 s0.03 s0.03 sDown, no load1.1 s1.2 s1.5 s2.0 s3.0 s4.0 sCommand response time <sup>5</sup> 55 ms55 msData readback transfer time <sup>6</sup> 3 V4 V5 V5 V5 VRemote sense compensationVolts/load lead3 V4 V5 V5 V5 VOver-voltage protectionRange5–66 V5–88 V5–110 V5–165 V5–330 V5–660 VAccuracy0.60 V0.80 V1 V1.5 V3 V6 VOutput ripple and noise <sup>7</sup> CC rms38 mA29 mA23 mA18 mA13 mA8 mProgramming resolution measurement resolutionVoltage7.2 mV9.6 mV12 mV18 mV36 mV72 mVVoltage0.3 V0.4 V0.5 V0.75 V1.5 V3 V	Output response time	Up, full lo					-	0.15 s	0.25 s
load)Down, no load1.1 s1.2 s1.5 s2.0 s3.0 s4.0 sCommand response time555 msData readback transfer time63 V4 V5 V5 V5 VRemote sense compensationVolts/load lead3 V4 V5 V5 V5 V5 VOver-voltage protectionRange5–66 V5–88 V5–110 V5–165 V5–330 V5–660 VAccuracy0.60 V0.80 V1 V1.5 V3 V6 VOutput ripple and noise7CC rms38 mA29 mA23 mA18 mA13 mA8 mProgramming resolution measurement resolutionVoltage7.2 mV9.6 mV12 mV18 mV36 mV72 mVCurrent1.5 mA1.14 mA0.9 mA0.6 mA0.3 mA0.156 mAFront panel display accuracy (d diviter 11 exert)Voltage0.3 V0.4 V0.5 V0.75 V1.5 V3 V	rated output, with a resistive	Down, full load		0.08 s	0.15 s	0.15 s	0.15 s	0.15 s	0.30 s
Command response time555 msData readback transfer time63 V4 V5 V5 V5 V5 VRemote sense compensationVolts/load lead3 V4 V5 V5 V5 V5 V5 VOver-voltage protectionRange5–66 V5–88 V5–110 V5–165 V5–330 V5–660 VOutput ripple and noise7CC rms38 mA29 mA23 mA18 mA13 mA8 mProgramming resolution measurement resolutionVoltage7.2 mV9.6 mV12 mV18 mV36 mV72 mVFront panel display accuracy (A divitor 11 count)Voltage0.3 V0.4 V0.5 V0.75 V1.5 V3 V		Down, no	load	1.1 s	1.2 s	1.5 s	2.0 s	3.0 s	4.0 s
Data readback transfer time63 msRemote sense compensationVolts/load lead3 V4 V5 V5 V5 V5 VOver-voltage protectionRange5–66 V5–88 V5–110 V5–165 V5–330 V5–660 VAccuracy0.60 V0.80 V1 V1.5 V3 V6 VOutput ripple and noise7CC rms38 mA29 mA23 mA18 mA13 mA8 mProgramming resolution measurement resolutionVoltage7.2 mV9.6 mV12 mV18 mV36 mV72 mVFront panel display accuracy (A divisiter 11 examt)Voltage0.3 V0.4 V0.5 V0.75 V1.5 V3 V	,					55 ms			
Over-voltage protection         Range         566 V         588 V         5110 V         5165 V         5330 V         5660 V           Accuracy         0.60 V         0.80 V         1 V         1.5 V         3 V         6 V           Output ripple and noise <sup>7</sup> CC rms         38 mA         29 mA         23 mA         18 mA         13 mA         8 m           Programming resolution measurement resolution         Voltage         7.2 mV         9.6 mV         12 mV         18 mV         36 mV         72 mV           Front panel display accuracy         Voltage         0.3 V         0.4 V         0.5 V         0.75 V         1.5 V         3 V	Data readback transfer time <sup>6</sup>					3 ms			
Accuracy         0.60 V         0.80 V         1 V         1.5 V         3 V         6 V           Output ripple and noise <sup>7</sup> CC rms         38 mA         29 mA         23 mA         18 mA         13 mA         8 m           Programming resolution measurement resolution         Voltage         7.2 mV         9.6 mV         12 mV         18 mV         36 mV         72 mV           Front panel display accuracy         Voltage         0.3 V         0.4 V         0.5 V         0.75 V         1.5 V         3 V	Remote sense compensation	Volts/loa	d lead	3 V	4 V	5 V	5 V	5 V	5 V
Output ripple and noise <sup>7</sup> CC rms         38 mA         29 mA         23 mA         18 mA         13 mA         8 m           Programming resolution measurement resolution         Voltage         7.2 mV         9.6 mV         12 mV         18 mV         36 mV         72 mV           Front panel display accuracy         Voltage         0.3 V         0.4 V         0.5 V         0.75 V         1.5 V         3 V	Over-voltage protection	Range		5–66 V	5–88 V	5–110 V	5–165 V	5–330 V	5–660 V
Programming resolution measurement resolutionVoltage7.2 mV9.6 mV12 mV18 mV36 mV72 mVCurrent1.5 mA1.14 mA0.9 mA0.6 mA0.3 mA0.156 mAFront panel display accuracy (4 digiting 14 count)Voltage0.3 V0.4 V0.5 V0.75 V1.5 V3 V		Accuracy		0.60 V	0.80 V	1 V	1.5 V	3 V	6 V
measurement resolution         Current         1.5 mA         1.14 mA         0.9 mA         0.6 mA         0.3 mA         0.156 mA           Front panel display accuracy         Voltage         0.3 V         0.4 V         0.5 V         0.75 V         1.5 V         3 V	Output ripple and noise <sup>7</sup>	CC rms		38 mA	29 mA	23 mA	18 mA	13 mA	8 m
Front panel display accuracyVoltage0.3 V0.4 V0.5 V0.75 V1.5 V3 V	Programming resolution	Voltage		7.2 mV	9.6 mV	12 mV	18 mV	36 mV	72 mV
	measurement resolution	Current		1.5 mA	1.14 mA	0.9 mA	0.6 mA	0.3 mA	0.156 mA
(4 digits; ±1 count) Current 0.0625 A 0.0475 A 0.0375 A 0.0250 A 0.0125A 0.0065 A	Front panel display accuracy	Voltage		0.3 V	0.4 V	0.5 V	0.75 V	1.5 V	3 V
	(4 digits; ±1 count)	Current		0.0625 A	0.0475 A	0.0375 A	0.0250 A	0.0125A	0.0065 A

#### Notes:

1 Minimum voltage is guaranteed to a maximum of 0.2% of the rated output voltage.

Minimum current is guaranteed to a maximum of 0.4% of the rated output current.

- 2 Up to 20 MHz
- 3 From 5 Hz 1 MHz
- 4 Time for output voltage to recover within 0.5% of its rated output for a load change from 10 to 90% of its rated output current. Voltage set point from 10% to 100% of rated output
- 5 Add this to the output reponse time to obtain the total programming time
- 6 Time to provide data back to the controller using LAN interface (does not include A/D conversion time)
- 7 From 5 Hz 1 MHz, at 10% to 100% of output voltage at full load (for 6 V units from 33% to 100% of output voltage)

Unless otherwise noted, specifications are warranted over the ambient temperature range of 0 to 40°C.

			N5761A	N5762A	N5763A	N5764A	N5765A	N5766A
DC output ratings <sup>1</sup>	Voltage		6 V	8 V	12.5 V	20 V	30 V	40 V
	Current		180 A	165 A	120 A	76 A	50 A	38 A
	Power		1080 W	1320 W	1500 W	1520 W	1500 W	1520 W
Output ripple and noise	CV p-p <sup>2</sup>		60 mV	60 mV	60 mV	60 mV	60 mV	60 mV
	CV rms <sup>3</sup>		8 mV	8 mV	8 mV	8 mV	8 mV	8 mV
Load effect	Voltage		2.6 mV	2.8 mV	3.25 mV	4 mV	5 mV	6 mV
(change from 10% to 90%)	Current		41 mA	38 mA	29 mA	20.2 mA	15 mA	12.6 mA
Source effect	Voltage		2.6 mV	2.8 mV	3.25 mV	4 mV	5 mV	6 mV
(change from 85-132 VAC input or 170-265 VAC input)	Current		20 mA	18.5 mA	14 mA	9.6 mA	7 mA	5.8 mA
Programming accuracy <sup>1</sup>	Voltage	0.05%+	3 mV	4 mV	6.25 mV	10 mV	15 mV	20 mV
	Current	0.1%+	180 mA	165 mA	120 mA	76 mA	50 mA	38 mA
Measurement accuracy	Voltage	0.1%+	6 mV	8 mV	12.5 mV	20 mV	30 mV	40 mV
	Current	0.1%+	540 mA	495 mA	360 mA	228 mA	150 mA	114 mA
Load transient recovery time <sup>4</sup>	Time		≤1.5 ms	≤1.5 ms	≤1.5 ms	≤1 ms	≤1 ms	≤1 ms
Supplemental characteristics Supplemental characteristics are not warranted but are descriptions of typical performance determined either by design or type testing.						al		
Output response time	Up, full lo	ad	0.08 s	0.08 s	0.08 s	0.08 s	0.08 s	0.08 s
(settle to within ±1.0% of the rated output, with a resistive load)	Down, full load		0.05 s	0.05 s	0.05 s	0.05 s	0.08 s	0.08 s
	Down, no	load	0.5 s	0.6 s	0.7 s	0.8 s	0.9 s	1.0 s
Command response time <sup>5</sup>					55 ms			
Data readback transfer time <sup>6</sup>					3 ms			
Remote sense compensation	Volts/loa	d lead	1 V	1 V	1 V	1 V	1.5 V	2 V
Over-voltage protection	Range		0.5–7.5 V	0.5–10 V	1–15 V	1–24 V	2–36 V	2–44 V
	Accuracy		0.06 V	0.08 V	0.125 V	0.20 V	0.30 V	0.40 V
Output ripple and noise <sup>7</sup>	CC rms		360 mA	330 mA	240 mA	152 mA	125 mA	95 mA
Programming resolution	Voltage		0.72 mV	0.96 mV	1.5 mV	2.4 mV	3.6 mV	4.8 mV
measurement resolution	Current		21.6 mA	19.8 mA	14.4 mA	9.12 mA	6 mA	4.6 mA
Front panel display accuracy	Voltage		0.03 V	0.04 V	0.0625 V	0.1 V	0.15 V	0.2 V
(4 digits; ±1 count)	Current		0.90 A	0.825 A	0.60 A	0.38 A	0.25 A	0.19 A

#### Notes:

1 Minimum voltage is guaranteed to a maximum of 0.2% of the rated output voltage.

Minimum current is guaranteed to a maximum of 0.4% of the rated output current.

2 Up to 20 MHz

3 From 5 Hz – 1 MHz

- 4 Time for output voltage to recover within 0.5% of its rated output for a load change from 10 to 90% of its rated output current. Voltage set point from 10% to 100% of rated output
- 5 Add this to the output reponse time to obtain the total programming time
- 6 Time to provide data back to the controller using LAN interface (does not include A/D conversion time)

7 From 5 Hz – 1 MHz, at 10% to 100% of output voltage at full load (for 6 V units from 33% to 100% of output voltage)

Unless otherwise noted, specifications are warranted over the ambient temperature range of 0 to 40°C.

N5767A         N5768A         N5769A         N5770A         N5771A         N5772           DC output ratings <sup>1</sup> Voltage         60 V         80 V         100 V         150 V         300 V         600 V           Current         25 A         19 A         15 A         10 A         5 A         2.6 A           Power         1500 W         1520 W         1500 W         1500 W         1500 W         1500 W         1560 W           Output ripple and noise         CV p-p <sup>2</sup> 60 mV         80 mV         80 mV         100 mV         150 mV         300 mV           Load effect         Voltage         8 mV         8 mV         8 mV         12 mV         20 mV         60 mV           Load effect         Voltage         8 mV         10 mV         12 mV         32 mV         62 mV           (change from 10% to 90%)         Current         10 mA         8.8 mA         8 mA         7 mA         6 mA         5.5 mA           Source effect         Voltage         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           (change from 85-132 VAC input         Voltage         8 mV         3.9 mA         3.5 mA         3 mA         2.5 mA         2.26 mA				
Current         25 A         19 A         15 A         10 A         5 A         2.6 A           Power         1500 W         1520 W         1500 W         1500 W         1500 W         1500 W         1500 W         1500 W         1560 W           Output ripple and noise         CV p-p <sup>2</sup> 60 mV         80 mV         80 mV         100 mV         150 mV         300 mV           CV rms <sup>3</sup> 8 mV         8 mV         8 mV         12 mV         20 mV         60 mV           Load effect (change from 10% to 90%)         Voltage         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           Source effect (change from 85-132 VAC input         Voltage         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           Current         45 mA         3.9 mA         35 mA         3 mA         2.5 mA         2.26 mA				
Power         1500 W         1520 W         1500 W         300 mV         300 mV         300 mV         300 mV         300 mV         1500 W         1500 W         1500 W         300 mV         60 mV         300 mV         60 mV         60 mV         60 mV         60 mV         60 mV         60 mV         62 mV				
Output ripple and noise         CV p-p <sup>2</sup> 60 mV         80 mV         80 mV         100 mV         150 mV         300 mV           CV rms <sup>3</sup> 8 mV         8 mV         8 mV         12 mV         20 mV         60 mV           Load effect         Voltage         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           (change from 10% to 90%)         Current         10 mA         8.8 mA         8 mA         7 mA         6 mA         5.5 mA           Source effect         Voltage         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           (change from 10% to 90%)         Current         10 mA         8.8 mA         8 mA         7 mA         6 mA         5.5 mA           Source effect         Voltage         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           (change from 85-132 VAC input         Current         45 mA         39 mA         35 mA         3 mA         25 mA         2.26 mA				
CV rms <sup>3</sup> 8 mV         8 mV         8 mV         12 mV         20 mV         60 mV           Load effect         Voltage         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           (change from 10% to 90%)         Current         10 mA         8.8 mA         8 mA         7 mA         6 mA         5.5 mA           Source effect         Voltage         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           (change from 85-132 VAC input         Voltage         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           (change from 85-132 VAC input         Current         45 mA         3.9 mA         35 mA         3 mA         2.5 mA         2.26 mA				
Load effect (change from 10% to 90%)         Voltage Current         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           Source effect (change from 85-132 VAC input         Voltage         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           Konne         10 mA         8.8 mA         8 mA         7 mA         6 mA         5.5 mA           Source effect         Voltage         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           (change from 85-132 VAC input         Current         45 mA         3.9 mA         35 mA         3 mA         2.5 mA         2.26 mA				
(change from 10% to 90%)         Current         10 mA         8.8 mA         8 mA         7 mA         6 mA         5.5 mA           Source effect         Voltage         8 mV         10 mV         12 mV         17 mV         32 mV         62 mV           (change from 85-132 VAC input         Current         45 mA         3.9 mA         3.5 mA         3 mA         2.5 mA         2.26 mA				
Source effect     Voltage     8 mV     10 mV     12 mV     17 mV     32 mV     62 mV       (change from 85-132 VAC input     Current     4.5 mA     3.9 mA     3.5 mA     3 mA     2.5 mA     2.26 mA				
(change from 85-132 VAC input Current 4.5 mA 3.9 mA 3.5 mA 3.mA 2.5 mA 2.26 mA				
or 170-265 VAC input)				
Programming accuracy <sup>1</sup> Voltage         0.05%+         30 mV         40 mV         50 mV         75 mV         150 mV         300 mV				
Current 0.1%+ 25 mA 19 mA 15 mA 10 mA 5 mA 2.6 mA				
Measurement accuracy         Voltage         0.1%+         60 mV         80 mV         100 mV         150 mV         300 mV         600 mV				
Current 0.1%+ 75 mA 57 mA 45 mA 30 mA 15 mA 7.8 mA				
Load transient recovery time4Time $\leq 1 \text{ ms}$ $\leq 1 \text{ ms}$ $\leq 2 \text{ ms}$ $\leq 2 \text{ ms}$ $\leq 2 \text{ ms}$				
Supplemental Characteristics Supplemental characteristics are not warranted but are descriptions of typical performance determined either by design or type testing				
Output response time         Up, full load         0.08 s         0.15 s         0.15 s         0.15 s         0.15 s         0.25 s				
(settle to within ±1.0% of the Down, full load 0.08 s 0.15 s 0.15 s 0.15 s 0.15 s 0.30 s				
rated output, with a resistive load)Down, no load1.1 s1.2 s1.5 s2.0 s3.0 s4.0 s				
Command response time <sup>5</sup> 55 ms				
Data readback transfer time <sup>6</sup> 3 ms				
Remote sense compensation         Volts/load lead         3 V         4 V         5 V         5 V         5 V				
Over-voltage protection         Range         5-66 V         5-88 V         5-110 V         5-165 V         5-330 V         5-660 V				
Accuracy 0.60 V 0.80 V 1 V 1.5 V 3 V 6 V				
Output ripple and noise <sup>7</sup> CC rms         75 mA         57 mA         45 mA         35 mA         25 mA         12 m				
Programming resolution         Voltage         7.2 mV         9.6 mV         12 mV         18 mV         36 mV         72 mV				
measurement resolution Current 3 mA 2.28 mA 1.8 mA 1.2 mA 0.6 mA 0.312 mA				
Front panel display accuracy         Voltage         0.3 V         0.4 V         0.5 V         0.75 V         1.5 V         3 V				
(4 digits; ±1 count) Current 0.125 A 0.095 A 0.075 A 0.050 A 0.025 A 0.013 A				

#### Notes:

1 Minimum voltage is guaranteed to a maximum of 0.2% of the rated output voltage.

Minimum current is guaranteed to a maximum of 0.4% of the rated output current.

- 2 Up to 20 MHz
- 3 From 5 Hz 1 MHz
- 4 Time for output voltage to recover within 0.5% of its rated output for a load change from 10 to 90% of its rated output current. Voltage set point from 10% to 100% of rated output
- 5 Add this to the output reponse time to obtain the total programming time
- 6 Time to provide data back to the controller using LAN interface (does not include A/D conversion time)
- 7 From 5 Hz 1 MHz, at 10% to 100% of output voltage at full load (for 6 V units from 33% to 100% of output voltage)

## WARNING Shock Hazard

- For models up to 60 VDC rated output, no point on the output shall be more than  $\pm$  60 VDC above or below chassis ground.
- For models greater than 60 VDC rated output, no point on the Positive output shall be more than ± 600 VDC above or below chassis around.
- For models greater than 60 VDC rated output, no point on the Negative output shall be more than ± 400 VDC above or below chassis ground.

# Supplemental Characteristics for All Model Numbers

# Series and parallel capability

#### **Parallel** operation

Up to 4 units can be connected in master/slave mode

#### **Series operation**

Up to 2 units can be connected in series

# Output terminal isolation

6 V to 60 V units No output terminal may be more than ±60 VDC from any other terminal or chassis ground

80 V to 600 V units No output terminal may be more than ±600 VDC from any other terminal or chassis ground

# Store-recall states

Volatile memory locations: 16

# Analog programming

(of output voltage and current) **Input signal** Selectable; 0 to 5 V / 0 to 10 V full scale **Input impedance** Selectable; 0 to 5 k $\Omega$  / 0 to 10 k $\Omega$  full scale

# Interface capabilities

**GPIB** SCPI – 1993, IEEE 488.2 compliant interface **USB 2.0** Requires Keysight I/O library version L.01.01

#### **10/100 LAN** Requires Keysight I/O library version L.01.01

#### Web server

Built-in Web server requires Internet Explorer 5+ or Netscape 6.2+

# Environmental conditions

Environment Indoor use, installation category II (AC input), pollution degree 2 Operating temperature

0°C to 40°C @ 100% load **Storage temperature** 

-20°C to 70°C

**Operating humidity** 30% to 90% relative humidity (no condensation)

**Storage humidity** 10% to 95% relative humidity (no condensation)

Altitude

- Up to 3000 meters.
   Derate the output current by 2%/100 m above 2000 m.
- Derate the maximum ambient temperature by 1 °C/100 m above 2000 m.

# Regulatory compliance

#### EMC

- European EMC directive 89/336/ EEC for Class A products
- Australian C- Tick mark
- This ISM device complies with Canadian ICES-001.
- Cet appareil ISM est conforme à la norme NMB-001 du Canada.

#### Safety

- European Low Voltage Directive 73/23/EEC
- US and Canadian safety standards
- Any LEDs used in this product are Class 1 as per IEC 825-1

#### Acoustic noise declaration

Emission directive:

- Sound pressure Lp <70 dB(A), At operator position, \*Normal operation, \*According to EN 27779 (Type Test).
- Schalldruckpegel Lp <70 dB(A)</li>
   \*Am Arbeitsplatz, \*Normaler
   Betrieb, \*Nach EN 27779
   (Typprüfung).

# AC input

Nominal input

100 – 240 VAC; 50/60 Hz Input current **750 W** 

10.5 A @ 100 VAC nominal; 5 A @ 200 VAC nominal

Input current 1500 W

21 A @ 100 VAC nominal;

11 A @ 200 VAC nominal Input range

85 – 265 VAC; 47 – 63 Hz.

#### Power factor

0.99 at nominal input and rated output power

### Efficiency

76% – 87% for 750 W units;

77% - 88% for 1500 W units

Inrush current <25 A for 750 W units;

<50 A for 1500 W units

# Dimensions

 (excluding connectors, and handles)

 Height
 43.6 mm (1.72 in)

 Width
 422.8 mm (16.65 in)

 Depth
 432.8 mm (17.04 in)

# Weight

750 W 7 Kg (15.4 lbs.) 1500 W 8.5 Kg (18.7 lbs.)

# Outline Diagram



# Front and Rear Panel Detail



# Ordering Information

## Available models

750 W Models	}	
N5741A	System DC Power Supply	6 V, 100 A, 600 W
N5742A	System DC Power Supply	8 V, 90 A, 720 W
N5743A	System DC Power Supply	12.5 V, 60 A, 750 W
N5744A	System DC Power Supply	20 V, 38 A, 760 W
N5745A	System DC Power Supply	30 V, 25 A, 750 W
N5746A	System DC Power Supply	40 V, 19 A, 760 W
N5747A	System DC Power Supply	60 V, 12.5 A, 750 W
N5748A	System DC Power Supply	80 V, 9.5 A, 760 W
N5749A	System DC Power Supply	100 V, 7.5 A, 750 W
N5750A	System DC Power Supply	150 V, 5 A, 750 W
N5751A	System DC Power Supply	300 V, 2.5 A, 750 W
N5752A	System DC Power Supply	600 V, 1.3 A, 780 W
1500 W Mode	ls	
N5761A	System DC Power Supply	6 V, 180 A, 1080 W
N5762A	System DC Power Supply	8 V, 165 A, 1320 W
N5763A	System DC Power Supply	12.5 V, 120 A, 1500 W
N5764A	System DC Power Supply	20 V, 76 A, 1520 W
N5765A	System DC Power Supply	30 V, 50 A, 1500 W
N5766A	System DC Power Supply	40 V, 38 A, 1520 W
N5767A	System DC Power Supply	60 V, 25 A, 1500 W
N5768A	System DC Power Supply	80 V, 19 A, 1520 W
N5769A	System DC Power Supply	100 V, 15 A, 1500 W
N5770A	System DC Power Supply	150 V, 10 A, 1500 W
N5771A	System DC Power Supply	300 V, 5 A, 1500 W
N5772A	System DC Power Supply	600 V, 2.6 A, 1560 W

### Options

# 750 W Models

Opt 900	Power Cord, United Kingdom
Opt 902	Power Cord, Europe
Opt 903	Power Cord, USA, Canada
Opt 918	Power Cord, Japan
Opt 922	Power Cord, China

## 1500 W Models

- **Opt 861** Unterminated Power Cord, USA, Canada, Japan, China, Other
- **Opt 862** Harmonized Unterminated Power Cord, Europe

# Accessories

N5740A Rack Mount Slide Kit (required for rack mounting; standard system 11 rackmounting hardware will not work)

# **Related Literature**

These application notes will help you compare Keysight system DC sources with power supplies from other manufacturers:

- Side-by-Side Comparison: Keysight N5700 Series System DC Source and Sorensen DLM DC Power Supply, AN 1502-1, 5989-1628EN http://literature.cdn.keysight.com/ 5989-1628EN.pdf
- How to Convert from a Sorensen DLM to an Keysight N5700, AN 1503-1, 5989-1629EN http://literature.cdn.keysight.com/ 5989-1629EN.pdf

- Side-by-Side Comparison: Keysight N5700 Series System DC Source and Xantrex XFR System Power Supplies, AN 1502-2, 5989-1630EN http://literature.cdn.keysight.com/ 5989-1630EN.pdf
- How to Convert from a Xantrex XFR to an Keysight N5700, AN 1503-2, 5989-1631EN http://literature.cdn.keysight.com/ 5989-1631EN.pdf
- Trends in Medium Power (~1 kW) DC Power Supplies, 5989-1331EN http://literature.cdn.keysight.com/ 5989-1331EN.pdf

Keysight's IO Libraries Suite ships with the N5700 to help you quickly establish an error-free connection between your PC and instruments regardless of the vendor. It provides robust instrument control and works with the software development environment you choose.

For additional description of Keysight's IO Libraries Suite features and installation requirements, please go to www.keysight.com/find/iosuitedatasheet

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A personalized view into the information most relevant to you.

#### www.axiestandard.org

AdvancedTCA® Extensions for Instrumentation and Test (AXIe) is an open standard that extends the AdvancedTCA for general purpose and semiconductor test. Keysight is a founding member of the AXIe consortium.

#### www.lxistandard.org

LAN eXtensions for Instruments puts the power of Ethernet and the Web inside your test systems. Keysight is a founding member of the LXI consortium.

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#### www.pxisa.org

PXi



#### Three-Year Warranty www.keysight.com/find/ThreeYearWarranty

Keysight's commitment to superior product quality and lower total cost of ownership. The only test and measurement company with three-year warranty standard on all instruments, worldwide.



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