# Keysight Technologies
# 66000A 1200 W DC Modular Power System,GPIB

Speed and accuracy for test optimization

- 8-slot mainframe accepts up to 8 DC power modules
- 1200 W total DC power output, up to 150 W per module
- Reconfigure fast with easily swappable modules
- Fast, low-noise outputs
- LIST mode and advance triggering system
- Optional isolation and polarity reversal relays
- Built-in measurements and advanced programmable features
- Protection features to ensure DUT safety

Data Sheet



KEYSIGHT TECHNOLOGIES

## 66000 modular power system

Keysight Technologies, Inc. 66000 modular power system simplifies test-system assembly, cabling, programming, debugging and operation. It is ideal for ATE and production test environments, where it can supply bias power and stimulus to subassemblies and final products. The modular power system saves rack space, the 7-inch-high (4-EIA units) mainframe can accommodate up to eight DC power modules.

### Key features

- GPIB-programmable voltage and current
- Programmable over-voltage and over-current protection
- Self-test initiated at power-up or from GPIB command
- Electronic calibration over GPIB or from keyboard
- Over-temperature protection
- Discrete fault indicator/remote inhibit (DFI/RI)
- Five nonvolatile store-recall states per output
- User-definable power-on state

### Multiple mainframes at One GPIB address

The Keysight serial link feature will allow you to control up to 16 outputs at one GPIB address by connecting an auxiliary mainframe. The serial link cable comes standard with the 66000 MPS mainframe. For applications with a broader range of power requirements, one 66000 mainframe can be connected with up to eight of the 6640, 6650, 6670, 6680, 6690 or 6030 series of system power supplies. This solution provides power ranges from 150 watts to 5000 watts at one primary GPIB address.

### Output connections

System assembly is simplified thanks to a quick-disconnect connector assembly on each module. Once your wires are connected to the load, the connector design permits the modules to be removed from the front of the mainframe without disconnecting cabling or removing the mainframe from the rack. One connector assembly is shipped with each module.

### Output sequencing

Increase test throughput by using the output sequencing feature of the 66000 MPS. This powerful feature allows you to download up to 20 voltage, current, and dwell-time parameter sets per output. This sequence can be paced by the programmed dwell times. As an alternative, triggers can be used to step through the output list. The output sequences can be executed without controller intervention, thereby increasing overall test system throughput.

# Specifications

| **Specifications** (at 0 ° to 55 °C unless otherwise specified) | | **66101A** | **66102A** | **66103A** | **66104A** | **66105A** | **66106A** |
|---|---|---|---|---|---|---|---|
| **Output ratings** at 40°C | | | | | | | |
| Output voltage | | 0 to 8 V | 0 to 20 V | 0 to 35 V | 0 to 60 V | 0 to 120 V | 0 to 200 V |
| Output current | | 0 to 16 A | 0 to 7.5 A | 0 to 4.5 A | 0 to 2.5 A | 0 to 1.25 A | 0 to 0.75 A |
| Maximum power | | 128 W | 150 W | 150 W | 150 W | 150 W | 150 W |
| **Programming accuracy** (at 25 °C ± 5 °C) | | | | | | | |
| Voltage | 0.03% + | 3 mV | 8 mV | 13 mV | 27 mV | 54 mV | 90 mV |
| Current | 0.03% + | 6 mA | 3 mA | 12 mA | 1.2 mA | 0.6 mA | 0.4 mA |
| **Readback accuracy** (via GPIB or keyboard display at 25 °C ± 5 °C) | | | | | | | |
| Voltage | 0.02% + | 2 mV | 5 mV | 8 mV | 16 mV | 32 mV | 54 mV |
| Current | 0.02% + | 6 mA | 3 mA | 2 mA | 1 mA | 0.6 mA | 0.3 mA |
| **Ripple and noise** from 20 Hz to 20 MHz | | | | | | | |
| Constant voltage | rms | 2 mV | 3 mV | 5 mV | 9 mV | 18 mV | 30 mV |
| | peak-to-peak | 5 mV | 7 mV | 10 mV | 15 mV | 25 mV | 50 mV |
| Constant current | rms | 8 mA | 4 mA | 2 mA | 1 mA | 1 mA | 1 mA |
| **Line regulation** | | | | | | | |
| Voltage | | 0.5 mV | 0.5 mV | 1 mV | 2 mV | 3 mV | 5 mV |
| Current | | 0.75 mA | 0.5 mA | 0.2 mA | 0.1 mA | 50 µA | 30 µA |
| **Load regulation** | | | | | | | |
| Voltage | | 1 mV | 1 mV | 1 mV | 2 mV | 4 mV | 7 mV |
| Current | | 0.5 mA | 0.2 mA | 0.2 mA | 0.1 mA | 50 µA | 30 µA |
| **Transient response time** | | Less than 1 ms for the output voltage to recover within 100 mV of its previous level following any step change in load current up to 10 percent of the power module rated output current | | | | | |

| **Supplemental Characteristics** (Non-warranted characteristics determined by design and useful in applying the product) | **66101A** | **66102A** | **66103A** | **66104A** | **66105A** | **66106A** |
|---|---|---|---|---|---|---|
| **Average programming resolution** | | | | | | |
| Voltage | 2.4 mV | 5.9 mV | 10.4 mV | 18.0 mV | 36.0 mV | 60.0 mV |
| Current | 4.6 mA | 2.3 mA | 1.4 mA | 0.75 mA | 0.39 mA | 0.23 mA |
| Over voltage protection(OVP) | 50 mV | 120 mV | 200 mV | 375 mV | 750 mV | 1.25 mV |
| **OVP accuracy** | 250 mV | 500 mV | 800 mV | 1 V | 1.5 V | 2.5 V |

# Specifications, continued

| **Specifications** (at 0 ° to 55 °C unless otherwise specified) | | **66101-J03** Special order option | **66101-J05** Special order option | **66101-J05** Special order option | **66103-J01** Special order option | **66103A-J02** Special order option |
|---|---|---|---|---|---|---|
| **Output ratings** at 40°C | | | | | | |
| Output voltage | | 5.7 V | 12 V | 15 V | 37 V | 40 V |
| Output current | | 20 A | 12 A | 10 A | 4.5 A | 3.6 A |
| Maximum power | | 114 W | 144 W | 150 W | 167 W | 144 W |
| **Programming accuracy** (at 25 °C ± 5 °C) | | | | | | |
| Voltage | 0.03% + | 2.5 mV | 5 mV | 8 mV | 13 mV | 15 mV |
| Current | 0.03% + | 8 mA | 6 mA | 4 mA | 2 mA | 2 mA |
| **Readback accuracy** (via GPIB or keyboard display at 25 °C ± 5 °C) | | | | | | |
| Voltage | 0.02% + | 2 mV | 3 mV | 5 mV | 8 mV | 9.2 mV |
| Current | 0.02% + | 8 mA | 6 mA | 4 mA | 2 mA | 2 mA |
| **Ripple and noise** from 20 Hz to 20 MHz | | | | | | |
| Voltage | rms | 2 mV | 3 mV | 3 mV | 5.3 mV | 6 mV |
| | peak-to-peak | 5 mV | 7 mV | 7 mV | 10.6 mV | 11.5 mV |
| Current | rms | 10 mA | 8 mA | 6 mA | 2 mA | 2 mA |
| **Line regulation** | | | | | | |
| Voltage | | 0.5 mV | 0.5 mV | 0.5 mV | 1 mV | 1 mV |
| Current | | 0.5 mA | 0.75 mA | 0.5 mA | 0.3 mA | 0.3 mA |
| **Load regulation** | | | | | | |
| Voltage | | 1 mV | 1 mV | 1 mV | 1 mV | 1 mV |
| Current | | 1 mA | 0.5 mA | 0.3 mA | 0.2 mA | 0.2 mA |
| **Transient response time** | | Less than 1 ms for the output voltage to recover within 100 mV of its previous level following any step change in load current up to 10 percent of the power module rated output current | | | | |

| **Supplemental Characteristics** (Non-warranted characteristics determined by design and useful in applying the product) | **66101-J03** Special order option | **66101-J05** Special order option | **66101-J05** Special order option | **66103-J01** Special order option | **66103A-J02** Special order option |
|---|---|---|---|---|---|
| **Average programming resolution** | | | | | |
| Voltage | 2 mV | 3,6 mV | 4.5 mV | 11 mV | 12 mV |
| Current | 6 mA | 4.6 mA | 31 mA | 1.4 mA | 1.2 mA |
| OVP | 45 mV | 75 mV | 90 mV | 200 mV | 230 mV |
| **OVP accuracy** | 250 mV | 375 mV | 375 mV | 850 mV | 920 mV |

# Specifications, continued

| **Specifications** (at 0 ° to 55 °C unless otherwise specified) | | **66103A-J09** Special order option | **66103A-J12** Special order option | **66104A-J09** Special order option | **66105A-J01** Special order option |
|---|---|---|---|---|---|
| **Output ratings** at 40°C | | | | | |
| Output voltage | | 28.5 V | 24 V | 55 V | 35 V |
| Output current | | 5.5 A | 6 A | 3 A | 1.25 A |
| Maximum power | | 157 W | 144 W | 165 W | 44 W |
| **Programming accuracy** at 25 °C ± 5 °C | | | | | |
| Voltage | 0.03% + | 13 mV | 13 mV | 25 mV | 15 mV |
| Current | 0.03% + | 3 mA | 3 mA | 1.5 mA | 11 mA |
| **Readback accuracy** (via GPIB or keyboard display at 25 °C ± 5 °C) | | | | | |
| Voltage | 0.02% + | 8 mV | 8 mV | 15 mV | 9 mV |
| Current | 0.02% + | 3 mA | 3 mA | 1.2 mA | 0.6 mA |
| **Ripple and noise** from 20 Hz to 20 MHz | | | | | |
| Constant voltage | rms | 5 mV | 5 mV | 9 mV | 6 mV |
| | peak-to-peak | 10 mV | 10 mV | 15 mV | 11.5 mV |
| Constant current | rms | 4 mA | 4 mA | 1.2 mA | 1 mA |
| **Line regulation** | | | | | |
| Voltage | | 1 mV | 1 mV | 2 mV | 1 mV |
| Current | | 0.3 mA | 0.3 mA | 0.1 mA | 50 µA |
| **Load regulation** | | | | | |
| Voltage | | 1 mV | 1 mV | 2 mV | 1 mV |
| Current | | 0.2 mA | 0.2 mA | 0.1 mA | 50 µA |
| **Transient response time** | | Less than 1 ms for the output voltage to recover within 100 mV of its previous level following any step change in load current up to 10 percent of the power module rated output current | | | |

| **Supplemental Characteristics** (Non-warranted characteristics determined by design and useful in applying the product) | **66103A-J09** Special order option | **66103A-J12** Special order option | **66104A-J09** Special order option | **66105A-J01** Special order option |
|---|---|---|---|---|
| **Average programming resolution** | | | | |
| Voltage | 10.4 mV | 8 mV | 16.5 mV | 2 mV |
| Current | 2 mA | 2 mA | 0.9 mA | 1.2 mA |
| OVP | 200 mV | 150 mV | 350 mV | 230 mV |
| **Output accuracy** | 800 mV | 600 mV | 950 mV | 920 mV |

## Supplemental characteristics for all model numbers

DC floating voltage: Output terminals can be floated up to ± 240 VDC from chassis ground

Remote sensing: Up to half the rated output voltage can be dropped across each load lead. Add 2 mV to the voltage load regulation specification for each 1 V change in the negative output lead caused by a load current change.

Command processing time: The average time for the output voltage to change after getting an GPIB command is 20 ms.

Output programming response time (with full resistive load): The rise and fall time (10% to 90% and 90% to 10%) of the output voltage is less than 20 ms. The output voltage change settles within 0.1% of the final value in less than 120 ms.

Down programming: An active down programmer sinks approximately 10% of the rated output current

Calibration interval: One year

AC input of system mainframe:

| Voltage | 100 VAC | 120 VAC | 200 VAC | 220 VAC | 230 VAC | 240 VAC |
|---|---|---|---|---|---|---|
| Max. current | 29 A | 25 A | 16 A | 16 A | 15 A | 15 A |

Input power of system mainframe: 3200 VA (max.), 1800 W (max.), 1600 W (typ.)

GPIB interface capabilities: SH1, AH1, TE6, LE4, SR1, RL1, PP0, DC1, DT1, E1, and C0, and a command set compatible with IEEE-488.2 and SCPI

Software driver: VXIplug&play

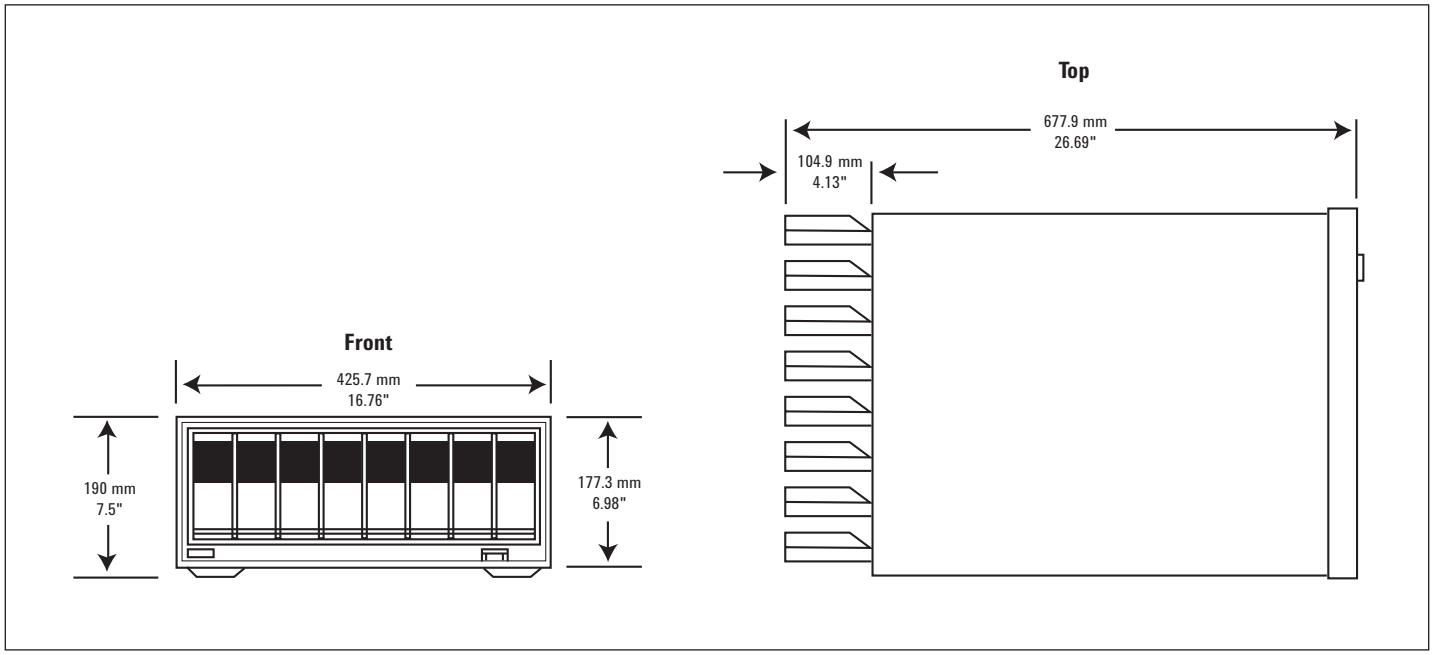
Regulatory compliance: Listed to UL 1244; certified to CSA 22.2 No. 231; conforms to IEC 61010-1

Size: 66000A: 425.7 mm W x 192 mm H x 677.93 mm D (16.76 in x 7.28 in x 26.69 in), including feet and rear connectors

Weight: Net, 66000A, 15 kg (33 lb); 66001A, 1.05 kg (2.3 lb); 66101-66106A, 2.8 kg (6 lb). Shipping, 66000A, 19 kg (42 lb); 66001A, 1.34 kg (2.95 lb); 66101–66106A, 4.1 kg (9 lb)

Warranty: One year

Keysight Models: 66000A



## Ordering information

66000A MPS mainframe
The 66000A comes with full documentation on CD-ROM. The CD-ROM includes user's guide, installation guide, programming guide, service manual, quick start guide, and application notes.

Opt 0L1 Printed programming and installation guides.
Opt 0B3 Printed service manual

Opt 831 Power cord, no plug, Americas
Opt 833 Power cord, no plug, Europe
Opt 834 Power cord, no plug, USA
Opt 841 Power cord, Americas, Japan, NEMA 6-20P, 20 A, 250 V plug
Opt 845 Power cord, Scandinavia, IEC 309, 16 A, 220 V plug
Opt 846 Power cord, North America, NEMA L5-30P, 30 A, 120 V plug
Opt 847 Power cord, Europe, CEE 7/7, 16 A, 220 V plug
Opt 848 Power cord, S. Africa, India, BS 546, 15 A, 240 V

## Module options

Each module comes with full documentation on CD-ROM

Opt 760 Adds isolation/polarity relays
Opt J17 External monitor
Opt 0L1 Printed installation sheet and user's guide
Opt 0B3 Printed service manual

## Accessories

1CM023A* Rack mount flange kit 177.0 mm H (4U) – two flange brackets
1CP013A* Rack mount flange and handle kit 177.0 mm H (4U) – two brackets and front handles
E3663AC Support rails for Keysight rack cabinets

66001A MPS keyboard includes 2 m (6 ft) cables
66002A Rack kit for 66001A keyboard

p/n 5060-3351 Field-installable relay kit
p/n 5060-3386 Standard connector assembly
p/n 5060-3387 Standard connector assembly with installed relays (Option 760)

## Application notes

*66000 Modular Power System Product Note,* 5988-2800EN

*10 Practical Tips You Need to Know About Your Power Products*, 5965-8239E

*10 Hints for Using Your Power Supply to Decrease Test Time*, 5968-6359E

*Keysight DC Power Supplies for Base Station Testing,* 5988-2386EN

*Support rails required

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