Agilent Application Specific dc Power Supplies **tailored solutions for specific needs**
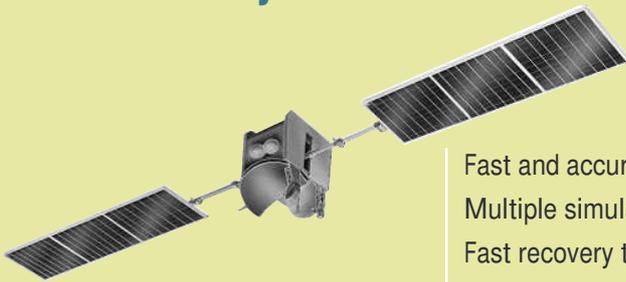
Solar Array Simulators

E4350B, E4351B

Fast and accurate simulation of any type of solar array
Multiple simulation modes
Fast recovery time
Easy to simulate environmental conditions

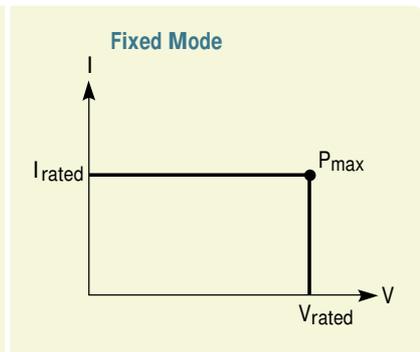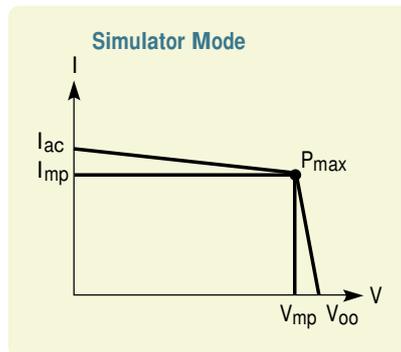The Agilent one-box Solar Array Simulator (SAS) is a dc power source that simulates the output characteristics of a solar array. The SAS is primarily a current source with very low output capacitance and is capable of simulating the I-V curve of different arrays under different conditions (i.e., temperature, age etc.). The I-V curve is programmable over the IEEE-488.2 bus and is conveniently generated within the SAS. The SAS provides three current operating modes:

1. Simulator Mode: An internal algorithm is used to approximate a SAS I-V curve. Four input parameters: Voc (open circuit voltage), Isc (short circuit current), Imp and Vmp (current and voltage at the peak power point on the curve) are needed to establish a curve in this mode.

2. Table Mode: For a fast and accurate I-V simulation, the SAS provides a table mode. The I-V curve is set by a user-defined table of points. A table can have any length up to 4000 points (a point corresponds to a specific value of I and V). As many as 30 tables may be stored in each of the SAS built-in volatile and non-volatile memory.

Specifications (at 0° to 55°C unless otherwise specified)	E4350B	E4351B	E4350B-J01 Special Order Option	E4350B-J02 Special Order Option	
Number of outputs	1	1	1	1	
GPIB	Yes	Yes	Yes	Yes	
Output ratings (Simulator and Table Modes)					
Max. Power	480 W	480 W	480 W	480 W	
Voc. Max.	65 V	130 V	54 V	86.6 V	
Isc. Max.	8 A	4A	9.6 A	6 A	
Output ratings (for mixed mode)					
Max Power	480 W	480 W	480 W	480 W	
V rated	0-60 V	0-120 V	0-50 V	0-80 V	
I rated	0-8 A	0-4 A	0-9.6 A	0-6 A	
Programming accuracy at 25°C ±5°C					
Voltage (Fixed Mode)	0.075% + 10 mV	0.075% + 20 mV	0.075% + 8.5 mV	0.075% + 13.5 mV	
Current (Simulator and Fixed Mode)	0.2% + 20 mA	0.2% + 10 mA	0.2% + 25 mA	0.2% + 15 mA	
Ripple and noise					
from 20 Hz to 20 MHz					
Voltage rms	16 mV	24 mV	16 mV	21 mV	
Voltage p-p	125 mV	195 mV	125 mV	175 mV	
Current rms	4 mA	4 mA	4 mA	4 mA	

Simulator Mode

Fixed Mode

Power Products Catalog 2002-2003   For more detailed specifications see the product manual at **www.agilent.com/find/power**

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Solar Array Simulators (Continued)

Specifications (at 0˚ to 55˚C unless otherwise specified)	E4350B-J03 Special Order Option	E4350B-J04 Special Order Option	E4350B-J06 Special Order Option
Number of outputs	1	1	1
GPIB	Yes	Yes	Yes
Output ratings (Simulator and Table Modes)			
Max. Power	480 W	480 W	480 W
Voc. Max.	52 V	47 V	74 V
Isc. Max.	10 A	11 A	7 A
Output ratings (for mixed mode)			
Max Power	480 W	480 W	480 W
V rated	0 - 48 V	0 - 43.5 V	0 - 68 V
I rated	0.10 A	0 - 10 A	0 - 7 A
Programming accuracy at 25°C ±5°C			
Voltage (Fixed Mode)	0.075% + 8 mV	0.075% + 8 mV	0.075% + 11.5 mV
Current (Simulator and Fixed Mode)	0.2% + 27.5 mA	0.2% + 30.5 mA	0.2% + 17.5 mA
Ripple and noise			
from 20 Hz to 20 MHz			
Voltage rms	16 mV	16 mV	19 mV
Voltage p-p	125 mV	125 mV	150 mV
Current rms	5.5 mA	6.5 mA	4 mA

Non-volatile memory can store a maximum of 3500 points. The tables (I-V curves) are easily stored and recalled with an IEEE-488.2 command. The table(s) stored in this memory will be retained when the power is turned off. Volatile memory greatly increases the flexibility by saving up to 30,000 points. Multiple tables are easily accessed with IEEE-488.2 command. These tables will be erased after power is removed.

In Table Mode, current and voltage offsets can be applied to the selected table to simulate a change in the operating conditions of the solar array.

3. Fixed Mode: This is the default mode when the unit is powered on. The unit has the rectangular I-V characteristics of a standard power supply, when an output capacitor is added in this mode.

Supplemental Characteristics for all model numbers

Load Switching Recovery Time: < 5 µs when switched from short circuit to variable load, to within 1.5 A of an operating point on the I-V curve.

Remote Sensing: Up to 2 V+ (Voc-Vmp). Add 3 mV to the voltage load regulation specification for each 1 volt change in the positive output lead due to load current change.

Analog Programming of Output Current
   Input Signal: 0 to -4.0 V
   Input Impedance: 20 k Ohms nominal

Shunt Regulation: Switching frequency up to 50 kHz

Series Regulation: Switching frequency up to 50 kHz

OVP and OCP: Overvoltage and overcurrent protection triggers in ≤100 us

Capacitive Load: In fixed mode, the maximum load capacitance (without causing instability) is 2000 uF. In simulator and table mode, it is unconditionally stable at all capacitive loads.

Inductive Load: The maximum load inductance (without causing instability) is 200 µH

Regulatory Compliance: Listed to UL3101, certified to CSA 22.2 No. 1010.1, complies with EN 61010-1.

RFI Suppression: Complies with CISPR-11, Group 1, Class A

Size: 425.5 mm W x 132.6 mm H x 497.8 mm D (16.75 in x 5.25 in x 19.6 in) See page 102 for more details.

Weight: Net, 25 kg (54 lb); shipping, 28 kg (61 lb)

Warranty: Three years

Ordering Information

   Opt 100 87 to 106 Vac, 47 to 63 Hz
   Opt 120 104 to 127 Vac, 47 to 63 Hz
   Opt 220 191 to 233 Vac, 47 to 63 Hz
   Opt 240 209 to 250 Vac, 47 to 63 Hz
* **Opt 908** Rackmount Kit, p/n 5062-3977
* **Opt 909** Rackmount Kit with Handles, p/n 5063-9221
   Opt 0L2 Extra Standard Documentation Package
   Opt 0B3 Service Manual
   Opt 0B0 No documentation package
* Support rails required

Accessories
p/n 1252-3698 7-pin Analog Plug
p/n 1252-1488 4-pin Digital Plug
p/n 5080-2148 Serial Link Cable 2 m (6.6 ft)
p/n 1494-0059 Accessory Slide Kit

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