m-SAS
mini-Solar Array Simulator
High Performance Solar Array Simulation Power Supply

ELGAR ™

> **1 Channel x 840W**
> **60V, 80V, 150V**
> **14A, 10.5A, 5.6A**

Performance. Reliance. Brilliance.

The Elgar™ mini-Solar Array Simulator is the second addition to the NEXSIM family of space power simulation related products. For small satellite test applications, the m-SAS are specifically designed to emulate the dynamic electrical behavior of a solar array. They offer low output capacitance and high closed loop bandwidth to keep up with the advanced Maximum Power Point Tracking (MPPT) algorithms used in today's small satellites.

- **Maximize rack space utilization with leading SAS power density in a 1U chassis**
- **Fastest Maximum Power Point Tracking speed on the market**
- **Highest resolution IV curves for accurate modeling**

Control Via AMETEK m-SAS Software and Via SCPI Commands Over Ethernet

The m-SAS is Digital Signal Processor (DSP) controlled and can be operated using AMETEK's m-SAS software GUI or by sending SCPI commands via the Ethernet through the m-SAS software.

Applications

The m-SAS Series is designed for testing today's complex small satellites with MPPT regulation topology.

ECLIPSE irradiance profiles: The Elgar m-SAS irradiance profile allows you to simulate any eclipse scenario. It can be controlled to a very fine degree and real profiles can be entered and run from actual speed to 100 times actual speed for accelerated tests.

Advanced Features

▶ **High-resolution IV curve simulates static and dynamic conditions**

▶ **Designed for high-speed Maximum Power Point Tracking (MPPT)**

▶ **250HZ PP tracking speed**

▶ **Low output capacitance**

▶ **Active power factor correction (PFC)**

▶ **Standard LAN interface**

▶ **Full remote control via AMETEK m-SAS software and via SCPI commands**

ELGAR™ mSAS mini-Solar Array Simulator

DC Output Specifications

Rated Output Voltages Voc	V	0-60	0-80	0-150
Rated Output Currents Isc	A	0-14	0-10.5	0-5.6
Rated Output Power	W	840	840	840
Line Regulation	V	0.005% of rated output voltage +2mV		
	A	0.01% of rated output current +2mA		
Voltage Noise p-p [1] (20Hz-20MHz)	V	< 0.35	< 0.35	< 0.60
Current Noise p-p [2] (20Hz-650kHz)	A	< 0.06	< 0.06	< 0.06
Remote Sense Compensation	V	2	2	2

[1] Voltage noise PK-PK is measured directly across the output terminals (ungrounded, or either terminal grounded) with 1μF capacitor at the end of a 1.8m (6ft) line at full load.

[2] Current noise PK-PK is measured at maximum output current.

Programming & Readback

Voltage Output Programming Accuracy	+/- 0.2% of Vocmax
Current Output Programming Accuracy	+/- 0.5% of Iscmax
Overvoltage Programming Accuracy	± 0.2% of Vocmax
Overvoltage Programming Resolution	0.002% of Vocmax
Voltage Output Readback Accuracy	+/- 0.2% of Vocmax
Current Output Readback Accuracy	+/- 0.5% of Iscmax
Curve Resolution	1,024 points. Each point represents a single voltage / current point on the IV curve. The PV simulator interpolates the 1,024 points in its curve memory with 16-bit resolution, delivering an actual curve resolution of 65,536 points.

Output Transient Specifications

MPPT Tracking Speed [3]	250Hz

[3] Sweep amplitude 3% of Isc, triangle wave.

AC Input Specifications   2X 600 W per Channel, or 1X 1200 W per channel. Total 1200 W in a Chassis.

Input Voltage, Nominal Rating	Nominal Rating for 1 phase, 2 wire+ Gnd, Nominal Range: 100 – 240 VAC
Input Voltage, Operating Range	1 phase, 2 wire + Gnd, Operating Range 85V-264 VAC
Input Current, Maximum RMS	6 A at 200 VAC 11.5 A at 100 VAC
Efficiency @ MPP	66% typical with 100 VAC input 69% typical with 200 VAC input
Inrush Current, Typical	≤25A
Input Frequency, Nominal Rating	50 Hz, 60 Hz
Input Frequency Range	47 Hz - 63 Hz
Power Factor, Typical	0.99; active PFC
Isolation Voltage	1500 VAC Input to Ground