Elgar

mini-Solar Array Simulator

High Performance Solar Array Simulation Power Supply

1-Channels x 840W
60V, 80V, 150V
14A, 10.5A, 5.6A

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

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.

Specifications

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.

Remote Control Digital Interface	
LAN	Ethernet 10BASE-T and 100BASE-T over twisted-pair cables compliant with IEEE 802.3; Connector: 8P8C modular jack.
Firmware Upgrade	Firmware can be upgraded through the LAN interface.

Unit Protection	
Output Overvoltage Protection (OVP)	User Programmable to 110% of Voc.
Output Overcurrent Protection (OCP)	Fixed to 150% of Isc.
AC Input Overcurrent Protection	Internal fuses for fault isolation; not user replaceable.
Overtemperature Protection (OTP)	Internal temperature monitors on the linear regulator cause shutdown of output if temperature exceeded 75°C.

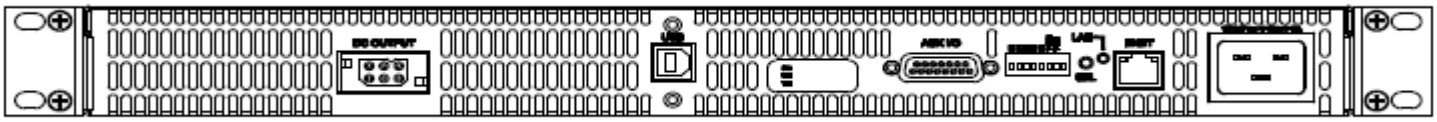
Output Isolation and Leakage	
Output terminal Positive (+Ve) and Negative (-Ve)	±1000 Vpk, maximum, with respect to chassis ground.
Leakage Output to chassis ground, DC	> 100MΩ
Leakage Output to chassis ground, AC	0.045μF typical

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

Environmental Specifications	
Operating Temp	0° to +40° C (+32° to +104° F)
Storage Temp	-25° to +65 °C (-13° to +149° F)
Operating Humidity	20-95 %, non-condensing
Storage Humidity	10-95 %, non-condensing
Altitude	1500 m (5,000 ft), derate 10% of full power for every 1,000 feet higher
Cooling	Force-air inlet, rear exhaust. Temperature controlled variable speed fans. Units may be stacked without spacing

Regulatory Agency Compliance	
EMC	CE marked for EMC Directive per EN61326-1:2006
Safety	CSA 22.2 No. 61010-1, 60950-1-07 and UL61010-1, UL60950-1-(2nd Ed) 12 . Marked with cCSAus, CE for EMC & low voltage directive
Pollution degree	Pollution Degree: 2; Class II equipment; indoor use only
RoHS	CE marked for compliance with RoHS3 EU Directive 2015/863/EU for Restriction of Hazardous Substances in Electrical and Electronic Equipment

Rear Panel Connectors

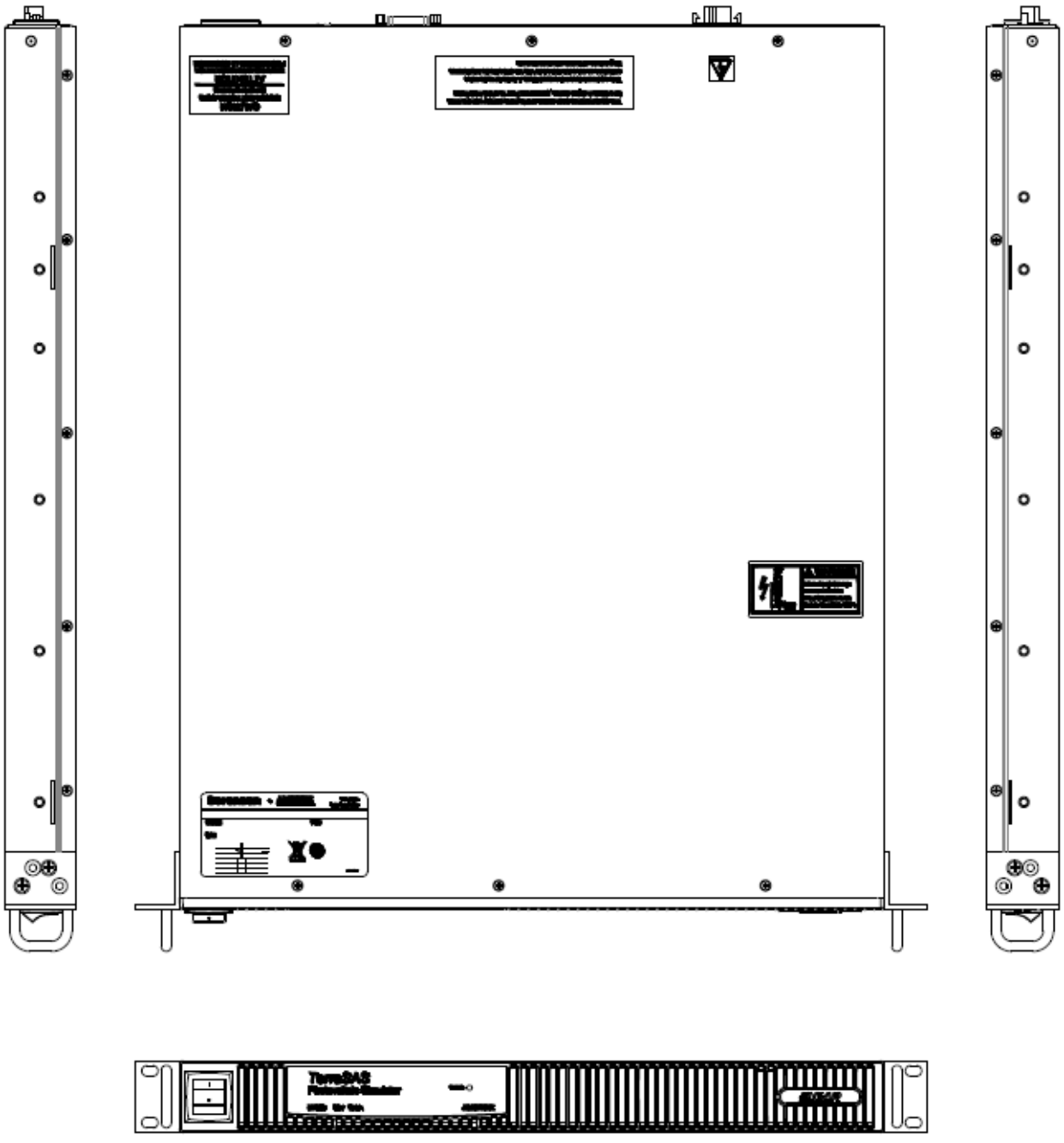


CH1 OUTPUT + SENSE USB AUX I/O LAN AC INPUT

Rear Panel Connectors	
AC Input	IEC C20, 1-Phase AC input: connector terminals L, N and G
CH1 DC Output and Sense	Unit side connector: Positronic P/N PLB06F4B0A1/AA Mating Connector: Positronic P/N PLB06M0050/AA
LAN Interface	Ethernet 10BASE-T and 100BASE-T; safety isolation SELV-rated, referenced to chassis; connector: 8P8C modular jack.
USB	Reserved
AUX I/O	15 pin D-SUB

Mechanical Specifications	
Dimensions	H, 1.75” (44.45 mm); W (front panel), 19.0” (483 mm); D, 22.6” (574 mm) H, 1.75” (44.45 mm); W (chassis), 16.9” (429 mm); D, 22.6” (574 mm)
Unit Weight	21 lbs. (9.5 kg)
Shipping Weight	26 lbs. (11.8 kg)
Chassis Material	Steel with plastic front panel
Chassis Finish	Galvanized Zinc, G90
Installation	Rackmount as per ANSI-EIA-310-D, with front panel mounting flange brackets and chassis provisions for mounting rack slides.

Chassis Drawings (1U)



Part Numbers: **EMS VVVXAAA C - PVF**

Warranty Statement:

AMETEK Programmable Power Inc. warrants its products to be free from defects in material and workmanship. The warranty period is from the date of original shipment of the product to the original purchaser (see website for warranty periods by product). m-SAS comes with a **ONE (1)** year warranty. Extended warranties available.

Note: All specifications subject to change without notice.