

SMi2000FE

ULTRA HIGH EFFICIENCY RECTIFIER

DC output rating
2000 W, 48 VDC



In a highly competitive business environment and with concerns on global warming, telecom OEMs and Communications Service Providers are looking ever closer at their operating costs.

To help CSPs to remain competitive, AEG PS introduces class-leading power conversion efficiency. With a typical flat efficiency feature higher than 96 % achieved within 30 – 70 % of load and higher than 95.5 % achieved within 25 – 90 % of load, OPEX is reduced. The ability to operate at high temperature, without de-rating, reduces or eliminates the need for expensive air conditioning with its heavy CO₂ burden and high OPEX.

Finally, our all-digital DSP architecture achieves very high levels of circuit integration attaining the very best in reliability. The result? – less frequent need for service calls and maintenance trips, reducing CO₂ (up to 80 % in some cases) throughout the product's life time and lowering OPEX even further.

Key features

- » Plug & Play, fully compatible with previous installed systems
- » High efficiency: 96 % typical over large load bandwidth / 96.5 % peak
- » Standby power consumption: <2 W
- » Wide temperature range: -40 °C to 75 °C
- » Robust; wide input range: 85 – 300 VAC
- » Embedded neutral opening protection
- » Designed for high reliability
- » Engineered for low environmental impact with massive reduction in CO₂ emissions

Description

The SMi2000FE, using the new Full Efficiency platform, is a ultra-high efficiency 48 VDC rectifier, fully plug & play with backwards compatibility with installed systems using rectifiers from the previous generation (SMi2000HD).

This offers the ability to achieve immediate savings on energy consumption by enhancing the efficiency of deployed MPi-Series & MPTi systems, replacing the SMi2000HD with SMi2000FE. This allows the protection of your original capital investment while reducing operating expense by means of higher efficiency. SMi2000FE is optimized for a wide range of system sizes. Digital communication over CAN bus with our controller ACMi1000HD (as well as ACMi1000e) simplifies system design and enhances flexibility.

Applications

Data centers and telecommunications networks, for wireless, fiber and fixed line communication. With world class efficiency, excellent reliability, and its sleep mode for power management during periods of low traffic, the SMi2000FE really delivers low OPEX.

Increasing network speed demands flexible and expandable DC power solutions. SMi2000FE is the key building block for your future needs.

AC INPUT

Nominal voltage	220 / 230 / 240 VAC	
Voltage range	85 to 300 VAC	
Power	184 to 290 VAC	$P_o = 2000 \text{ W}$
	90 to 140 VAC	$P_o = 1000 \text{ W}$
Frequency range	45 to 66 Hz	
Power factor	>0.98 typical	$P_o = 1000 \text{ W to } 2000 \text{ W}$
Maximum input current	12 A	

PROTECTION

Input voltage	Auto shutdown; auto restart when input voltage is within valid range >290 VAC shutdown (with galvanic auto-disconnect by relay) 80 to 90 VAC shutdown	
Input current	Electronic current limiting HRC fuses in-line and neutral conductors	
Inrush current	<40 A at 230 VAC	
Efficiency	96 % typical / 96.5 % peak	

QUIESCENT POWER CONSUMPTION

Output OFF	<2 W	$P_o = 0 \text{ W}, V_o = 0 \text{ V}$
Output ON	15 W typical	$P_o = 0 \text{ W}, V_o = 52.5 \text{ V}$

GALVANIC ISOLATION

Input to output	3000 VAC
Input to chassis (ground)	1500 VAC
Output to chassis (ground)	500 VAC

DC OUTPUT

Nominal voltage	48 VDC	
Voltage range	42 to 58 VDC	
Output power rating	2000 W input	$\geq 184 \text{ VAC} \leq 290 \text{ VAC}$
	1000 W input	$\geq 90 \text{ VAC} \leq 140 \text{ VAC}$
	Automatic linear de-rating from 184 VAC to 90 VAC	
Output current rating	41.7 A at 48 VDC	
	Constant power characteristic from 58 VDC to 48 VDC	
Hold up time	>10 ms	$P_o = 2000 \text{ W}$

TURN ON

Start up delay	<3 s
Rise time	<500 ms
Walk in	5 to 10 s

VOLTAGE REGULATION

Set point accuracy	<1 %
Total regulation	<2 % (line, load & temperature)

RIPPLE AND NOISE

Psophometric	<2.0 mV weighted
---------------------	------------------

PROTECTION

Power limit	2000 W @ 48 V to 58 V
Current limit	42 A typical, with automatic recovery, programmable
Hot plugging	Automatic current surge limiting
Over voltage	Shutdown, with auto-restart, programmable, latched after 2 nd fault
Over temperature	Automatic power de-rating and excessive temperature shutdown

CONTROL AND MONITORING

Alarms and signaling	Reported via CAN-Bus to system controller
Visual indicators	Green LED = normal operation, output voltage >42 VDC
	Green LED "slow blinking" = rectifier in sleep mode
	Yellow LED "blinking" = CAN bus communication failure
	Yellow LED = minor alarms
	Green LED "off" + red LED = major alarm, no power at output

MECHANICAL

Dimensions (H x W x D) (mm)	41.5 (1 U) x 109 x 325
Weight (kg)	2
Connections	Rear mounted

ENVIRONMENTAL

IP rating	IP20	
Operating temperature	-40 °C to +75 °C	Automatic de-rating above 55 °C
Storage temperature	-50 °C to +85 °C	
Humidity	5% to 95% (non-condensing)	
Acoustic noise	<55 dB(A)	Full load
RoHS	2002 / 95 / EC	
WEEE	2002 / 96 / EC, 2003 / 108 / EC	
Altitude	Up to 2500 m without de-rating	

RELIABILITY

MTBF	>350,000 hours Telcordia SR-332
-------------	---------------------------------

REGULATORY STANDARDS

SAFETY

International	EN60950-1
North America	UL / CSA 60950-1
Safety approvals	CE / UL(*) / TÜV / cTUVus
Electro-magnetic compatibility (EMC)	Installed in system
Emissions, conducted	EN55022, Class B
Emissions, radiated	EN55022, Class B

IMMUNITY

ESD	IEC/EN 61000-4-2
Radiated "E" field	IEC/EN 61000-4-3
Fast transient burst	IEC/EN 61000-4-4
Surge	IEC/EN 61000-4-5
Conducted RF	IEC/EN 61000-4-6
Radiated "H" field	IEC/EN 61000-4-8
Power line dips	IEC/EN 61000-4-11
"ANSI" surge	IEEE C62.41
Telecom networks	EN300-132-2, EN300-386-2

(*) Pending



Services

With over 60 years of expertise in power systems and solutions, AEG Power Solutions is renowned for its unparalleled services and technical support in critical application environments. As a world class systems provider, you can rely on a global network of 20 services centers supported by over 150 field engineers and more than 100 certified service partners around the world. From the power solution selection to your process installation and commissioning, our certified experts go beyond your expectations by offering service excellence that will ensure the lowest operational cost for your

mission-critical equipment. The reliability of your installed power solution is supported by a global service team renowned for its short response time and trouble shooting efficiency. Choosing one of the Pro Care™ preventive maintenance options gives you the ultimate peace of mind reassuring complete cost control, security and uninterrupted power supply in utmost critical situations.

You can also benefit from a full range of professional services that will protect and ensure the durability of your investment and will take over when you need it most:

- » Pro Care™ preventive maintenance options
- » Turnkey solutions
- » Installation and commissioning
- » Maintenance services
- » E-Service/remote monitoring
- » 24/7 hotline
- » Onsite training
- » Hot swapping
- » Onsite battery replacement
- » Battery monitoring
- » Facility and equipment management
- » 24/7 global onsite contracts
- » Power quality assessment
- » Load bank and site capacity analysis
- » Trouble shooting and repair

AEG Power Solutions

Approach your local AEG Power Solutions representative for further support. Contact details can be found on:

www.aegps.com