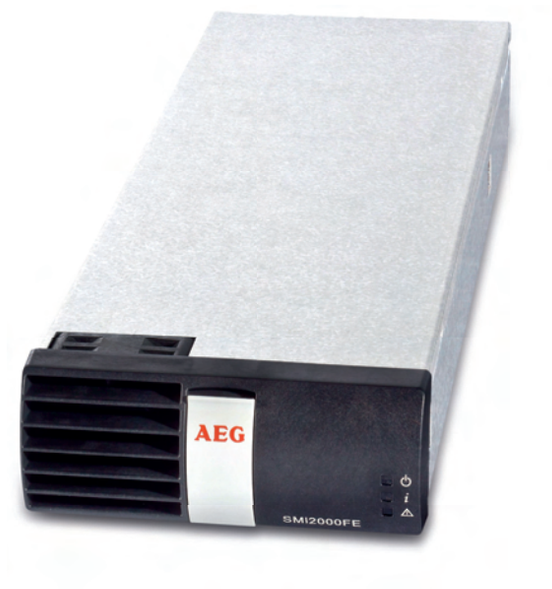
# SMi2000FE

## 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 $CO_2$ 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 $CO_2$ (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 $CO_2$ 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.

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## AC INPUT

| | | |
|---|---|---|
| **Nominal voltage** | 220 / 230 / 240 VAC | |
| **Voltage range** | 85 to 300 VAC | |
| **Power** | 184 to 290 VAC | $P_o$ = 2000 W |
| | 90 to 140 VAC | $P_o$ = 1000 W |
| **Frequency range** | 45 to 66 Hz | |
| **Power factor** | >0.98 typical | $P_o$ = 1000 W to 2000 W |
| **Maximum input current** | 12 A | |
| PROTECTION | | |
| **Input voltage** | Auto shutdown; auto restart when input voltage is within valid range<br>>290 VAC shutdown (with galvanic auto-disconnect by relay)<br>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 W, $V_o$ = 0 V |
| **Output ON** | 15 W typical | $P_o$ = 0 W, $V_o$ = 52.5 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 | ≥184 VAC ≤290 VAC |
| | 1000 W input | ≥90 VAC ≤140 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 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 2nd fault | |
| **Over temperature** | Automatic power de-rating and excessive temperature shutdown | |

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## 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

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## 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



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