/ SHP FLEX-US-21

Sunny Highpower PEAK3 FLEX-US

A superior distributed generation solution for repowering large-scale power plants

25 YEAR DESIGN LIFE | SMA OptiCool | SMA Smart Connected | c UL us

Maximum flexibility for repowering

- First device with UL approved nominal AC voltage range from 200V up to 660V
- No additional field inspection necessary
- IT-Grid support up to 500Vac max
- Repowering possibilities for plants with DC voltages from 600V up to 1500V

Simple install, commissioning

- Ergonomic handling and simple connections enable quick installation
- Centralized commissioning and control with SMA Data Manager

Highly innovative

- SMA Smart Connected reduces O&M costs and simplifies field-service
- Powered by award winning ennexOS cross sector energy management platform

The Sunny Highpower PEAK3 FLEX inverter offers best-in-class flexibility in a modular architecture that achieves a universal solution for repowering large-scale PV plants.

With fast, simple installation and commissioning without the need of an additional UL field inspection, the PEAK3 FLEX brings repowering to a new level. SMA has also brought its field-proven Smart Connected technology to the PEAK3, when paired with the SMA Data Manager, simplifying operations and maintenance while significantly reducing service costs over the project's timeline. The PEAK3 distributed generation power plant solution is powered by the ennexOS cross sector energy management platform, 2018 winner of the Intersolar smarter E AWARD.

Technical Data	Sunny Highpower PEAK3 FLEX-US-21
Input (DC)	
Maximum array power [1]	344 kWp
Maximum system voltage	1500 Vdc
Rated MPP voltage range	880...1450 V [3]
MPPT operating voltage range	298 V [3]...1500 V
MPP trackers	1
Maximum operating input current	180 A
Maximum input short-circuit current	325 A
Output (AC)	
Nominal AC power	52...172 kVA [3]
Maximum apparent power	172 kVA
Output phases / line connections	3 / 3-PE
Nominal AC voltage	200 V...660 V
Compatible transformer winding configuration	Wye-grounded / Wye (500 Vmax) / Delta (500 Vmax)
Maximum output current	151 A
Rated grid frequency	60 Hz
Grid frequency / range	50 Hz, 60 Hz / -6 Hz...+6 Hz
Power factor at rated power / adjustable displacement	1 / 0.8 leading...0.8 lagging
Harmonics (THD)	< 3%
Efficiency	
CEC efficiency	99.0% [2]
Protection and safety features	
Ground fault monitoring: Riso / Differential current	● / ●
DC reverse polarity protection	●
AC short circuit protection	●
Monitored surge protection (Type 2): DC / AC	● / ●
Protection class / overvoltage category (as per UL 840)	I / IV
General data	
Device dimensions (W / H / D)	770 / 830 / 462 mm (30.3 / 32.7 / 18.2 in)
Device weight	99 kg (218 lbs)
Operating temperature range	-25°C...+60°C (-13°F...+140°F)
Storage temperature range	-40°C...+70°C (-40°F...+158°F)
Audible noise emission (full power @ 1m and 25°C)	69 dB(A)
Internal consumption at night	< 5 W
Topology	Transformerless
Cooling concept	OptiCool™ (forced convection, variable speed fans)
Enclosure protection rating (UL 50E)	Type 4X
Maximum permissible relative humidity (non-condensing)	100%
Additional information	
Mounting	Rack mount
DC connection	Terminal lug (up to 600 kcmil CU/AL)
AC connection	Screw terminal (up to 300 kcmil CU/AL)
LED indicators (Status/Fault/Communication)	●
SMA Speedwire (Ethernet network interface)	● (2 x RJ45 ports)
Data protocols: SMA Modbus / SunSpec Modbus	● / ●
Integrated Plant Control / Q on Demand 24/7	● / ●
Off-grid capable / SMA Hybrid Controller compatible	– / ●
Monitoring	
SMA Sunny Portal (monitoring portal)	No cost for the lifetime of the system
SMA Smart Connected (monitoring and remote O&M service)	No cost on inverters under warranty
Supported protocols for outbound data	SMA external API, Modbus, FTP
Certifications	
Certifications and approvals	UL 62109, UL 1998, CAN/CSA-C22.2 No.62109
Manufacturer's Declaration of Design Life	25 years
FCC compliance	FCC Part 15, Class A
Grid interconnection standards	IEEE 1547:2018, UL 1741-SA - CA Rule 21, HECO Rule 14H, UL 1741-SB
Advanced grid support capabilities	L/HFRT, L/HVRT, Volt-VAr, Volt-Watt, Frequency-Watt, Ramp Rate Control, Fixed Power Factor
Warranty	
Standard	5 years
Optional extensions (total warranty coverage cannot exceed 25 years)	+5 / +10 / +15 / +20 years

1) Higher DC array power permitted via site inverter load modeling in SMA Sunny Design 2) At 600Vac 3) Dependent on AC voltage

Type designation	SHP FLEX-US-21

● Standard features ○ Optional features – Not available Last revised: 05/2025

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