

REFU^{sol} 24K-UL/48K-UL

The new generation

- Lightweight and compact
- Natural convection cooling
- SunSpec compliant

Based on the line of innovative and efficient REFU^{sol} 08 ... 23K and REFU^{sol} 40/46K inverters, we developed our REFU^{sol} 24K-UL and REFU^{sol} 48K-UL specifically for the Americas.

Flexible: One SKU for different applications, due to our unique, single DC input. Whether a large rooftop, or centralized ground mount applications, optimize your installed costs without compromise.

Easy: Reduce your labor and operational costs through integrated temp/irradiance inputs, simplified commissioning, remote diagnostics and firmware upgrades, SunSpec MODBUS, and a free monitoring portal!

Efficient: Accelerate payback! The unique UltraEta[®] topology broadens the peak operational efficiency range, producing more kW-hours of energy.

Extremely reliable: German engineering, minimized parts count, natural convection cooling, and 20 year design life maximize uptime!

Maintenance-free: The natural convection cooling virtually eliminates periodic maintenance needs, reducing your lifetime costs!



TECHNICAL DATA

Art. No. (without AFCI)
Art. No. (with AFCI)

REFUsoL 24K-UL
874P024.000
876P024.000

REFUsoL 48K-UL
843P048.000
844P048.000

DC DATA

Feed-in voltage range (V)	200 ... 950	
MPPT voltage range at rated power (V)	570 ... 890	580 ... 850
Nominal DC voltage (V)	720	
Max. DC voltage (V)	1,000	
Max. operating DC current (A)	44	84
Maximum DC short circuit current (A)	80	160
Number of DC inputs	1	
MPP trackers	1	
DC input fuses	external	
Admissible conductor size (AWG)	10 ... 4, Cu or Al	7 ... 1/0, Cu or Al

AC DATA

Rated AC power (kVA)	24	48
Maximum output current (A)	29	59
Short circuit fault current (A)	29	59
Total harmonic distortion (%)	< 1.8	< 3
Nominal AC voltage / AC voltage range (V)	480, 3+N+PE / 423 ... 528	
Nominal frequency / Frequency range (Hz)	50, 60 / 45 ... 65	
Power factor at rated power / Power factor range	1.0 / 0.8 leading ... 0.8 lagging	
Peak efficiency / CEC efficiency (%)	98.2 / 98.0	98.3 / 98.0
Night time self-consumption (W)	< 0.5	
Admissible conductor size (AWG)	12 ... 4, Cu or Al	7 ... 1/0, Cu or Al

AMBIENT CONDITIONS

Operating temperature (°C / °F)	-25 ... 60 / -13 ... 140	
Temperature (standby and storage) (°C / °F)	-40 ... 60 / -40 ... 140	
Operating altitude (m/ft)	3,800 / 12,500	4,000 / 13,000
Humidity (%)	0 ... 100	
Degree of protection	NEMA 4	
Audible noise (dBA)	< 45	
Climatic category (per IEC 60721-3-4)	4K4H	

SAFETY AND PROTECTION

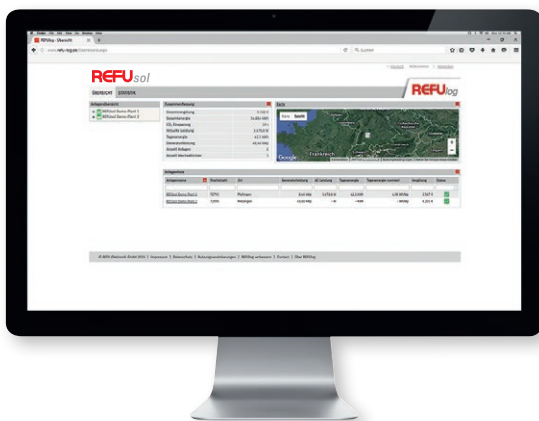
DC/AC overvoltage protection	Varistors	
DC switch	integrated	
DC Arc-fault protection	integrated (Art. No. 876P024.000)	integrated (Art. No. 844P048.000)
Isolation monitoring	yes	
Residual current monitoring (RCD)	yes	
DC reverse polarity protection	yes	

GENERAL DATA

Dimensions W x H x D (inches/mm)	21 x 24 x 11/530 x 600 x 270	30 x 32 x 12/760 x 820 x 300
Weight (lbs/kg)	88/40	166/76
Color	RAL 7035 (Light Grey)	
Standard Warranty/Available (years)	5/10,15,20	
Standards compliance	UL 1741, UL 1998, CSA C22.2 No. 107.1-01 Ed. 3, UL 1699B, IEEE 1547/1547a, CA Rule 21, FCC 47 Part 15 B, Class A	

GENERAL DATA FUNCTIONS

Topology	Transformerless, UltraEta® 5-Level Topology	
Cooling	Natural convection	
Communications interfaces	Ethernet, RS485	
Protocols	SunSpec (Modbus RTU, TCP), USS (RS485, Ethernet)	
Sensor input	Irradiation/temperature	
Display	LCD 128 x 64 (monochrome, backlight)	
Smart grid functions	L/HVRT, L/HFRT, Volt-VAR, Freq-Watt, Volt-Watt, P/Q remote control	
Internal datalogger	yes	
Web portal	REFUlog Monitoring portal	
Remote firmware upgrades/diagnosis	with REFUlog	



Each REFU sol inverter has an integrated data logger and can be connected to a local network or the Internet quickly and easily via plug&play. This allows you to access information about the productivity of your system at any time via our cloud monitoring portal REFUlog or the REFUlog app.

SYSTEM PLANNING WITH THE REFU_{sol} 24K-UL/48K-UL

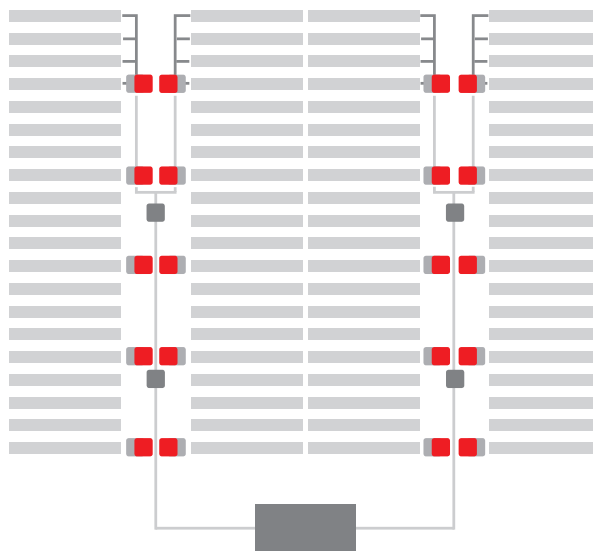
MODULAR LARGE SYSTEM ARCHITECTURE

The REFU_{sol} string inverters with its highly precise MPP-tracker and central string input gives maximum flexibility for the system planning. The devices can be placed close to the module strings or grouped centrally close to the transformer – an outdoor positioning is no problem thanks to NEMA4 protection class.

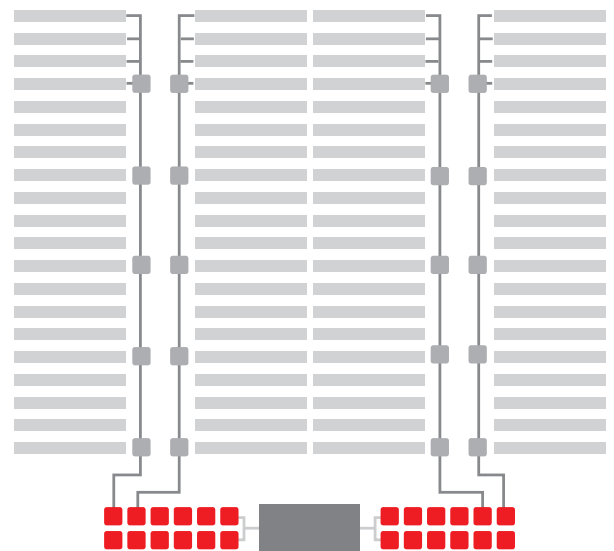
CENTRALIZED STRING CONCEPT

The centralized positioning of the inverters close to the transformer provides several benefits. Besides lower system losses and less costs due to reduced AC cabling, it also simplifies the ethernet connection needed for monitoring.

GROUND MOUNTED SYSTEMS

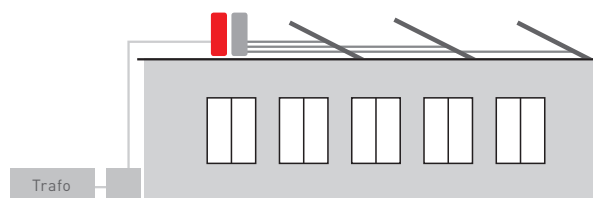


Decentralized system

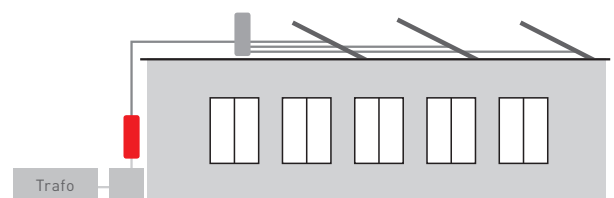


Centralized system

ROOFTOP SYSTEMS



Decentralized system



Centralized system

- REFU_{sol} inverter
- DC combiner box
- AC combiner
- DC cable
- AC cable