

REFU*sol* 40K / 46K

String inverters for large systems

High return on investment

Lightweight

Robust construction

Performance and reliability are what counts in large PV systems. The new string inverter REFU*sol* 40K/46K offers both. It is available in two performance classes: With 40 kW for 400 V AC voltage and with 46 kW for 460 V AC voltage. The REFU*sol* complies with protection class IP65, is passively cooled and as such requires no maintenance – a reliable partner for decentralized outdoor concepts.

Both versions are equipped with Ultra-Eta topology. Even with partial loads, the efficiency of the REFU*sol* is over 98%. This speeds up the return on investment. 4-channel string monitoring and the integrated data logger allow you to keep track of yields at all times.

DC string fuses are already integrated in the DC connection box and the devices are light and handy despite their hefty advantages. This makes installation and operation very simple. You can also optionally fit the inverter with a DC over-voltage protection.



Technical Data	REFUsoL 40K	REFUsoL 46K-MV	
Art.No.	840P040.010	840P046.010	
DC-DATA			
Max. recommended PV power (kWp)	48	55,2	55,2
MPPT Range at nominal power (V)	490 ... 850	575 ... 850	
max. voltage DC (V)	1000		
DC start voltage (V)	350		
Max. operational current DC (A)	84,0	82,0	
Max. short circuit current ISC of PV system (A)	160		
MPP trackers	1		
No. DC inputs	4 x Plus, 4 x Minus Phoenix Sunclix®		
String Monitoring	4 measurement channels integrated		

AC-DATA			
AC Nominal power (kW)	40,00	46,00	
Max. apparent power (kVA)	40,00	46,00	
AC grid connection / Feed-in phases	L1, L2, L3, N, PE		
Nominal Power Factor / Range	1 / 0,8i ... 0,8c		
Nominal voltage AC (V)	400	460	
Voltage range AC (V)	320 ... 480	368 ... 529	
Nominal Frequency / Frequency Range (Hz)	50, 60 / 45...65		
Max. AC current (A)	3 x 59		
Max. THD (%)	< 3%		
Max. Efficiency (%)	98,2%	98,3%	
European Efficiency (%)	97,8%	98,1%	
Feed-in from (W)	40		
Self consumption night (W)	< 0,5		

AMBIENT CONDITIONS	
Cooling	natural convection
Ambient Temperature (°C)	-25 ... +55
Rel. Air humidity (%)	4% ... 100%
Max. Elevation (m above sea level)	4000*
Noise (dBA)	< 45
Environment classification (IEC 721-3-4)	4K4H
Pollution degree (IEC 62109-6-3)	3
Type of protection (IEC 60529)	IP65

No responsibility is taken for the correctness of this information. Subject to modification.

SAFETY AND PROTECTION FUNCTIONS

DC circuit breaker	in REFUsol ConnectionBox
Isolation monitoring	yes
String Fuses	in REFUsol ConnectionBox
Grid monitoring	Voltage, Frequency, Anti Islanding, DC injection
Grid separation	Redundant Grid Relay according to VDE 0126-1-1
Residual Current Monitoring (RCD)	yes
Internal Overvoltage Protection (EN 61643-11)	Type 3 (Type 2 module optional in REFUsol ConnectionBox)
Protection Class (IEC 62103)	I
Overvoltage Category (EN 60664-1)	DC: II, AC: III

GENERAL DATA

Interfaces	Ethernet, RS485, Irradiation and Temperature Sensor, Auxiliary equipment power supply, external stop signal
Communication Protocols	Sunspec (Modbus TCP, Modbus RTU), USS (Ethernet, RS485)
Dimensions W x H x D (mm)	760 x 820 x 300
Weight (kg)	74,0
Certification	VDE V 0126-1-1, IEC 62109-1, IEC 62109-2, IEC 62116, IEC 61727, IEC 61683, IEC 60364-7-712, BDEW, AR-N 4105, G59/3, CEI 0-21, CEI 0-16, EN 50438, AS 4777 (latest certificates you find at www.refu-sol.com)

REFUSOL CONNECTION BOX

Art. No.	934P210.1850
Dimensions W x H x D (mm)	410 x 310 x 130
Connection to Inverter	4 x Plus, 4 x Minus Phoenix Sunclix®
Number of String connections	12 x Plus, 12 x Minus
Max. DC current per 3 strings (A)	32
DC connection type	Phoenix Sunclix®
DC connector area (mm ²)	2,5 ... 6,0
String fuses	15 A (Plus)
Optional DC Overvoltage Protection	Type 2 module optional
Weight (kg)	4,5

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THE REFUSOL 40K/46K INVERTER IN THE SYSTEM

MODULAR LARGE SYSTEM ARCHITECTURE

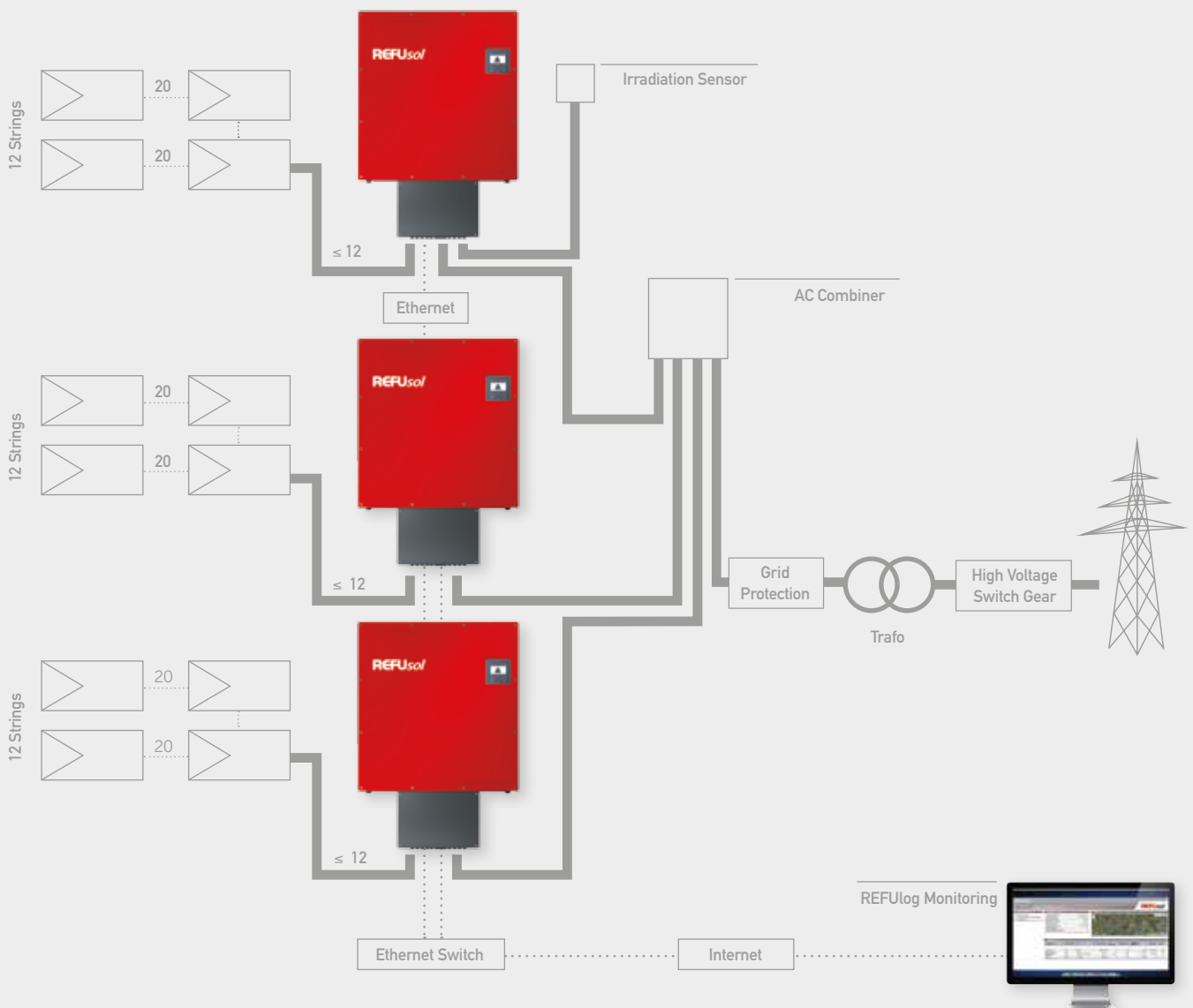
Thanks to its compact dimensions, the REFUSol inverter can be flexibly employed in large PV systems. The system designer can decide whether to place it as close as possible to the solar modules or grouped as centrally as possible. The communication can be via Ethernet or RS485 – both already built in. Even the connection box is as flexible as the different standards.

Stay flexible with the REFUSol 40K/46K string inverter.

SYSTEM PLANNING

For optimal system planning, you can also make convenient use of our online planning tool REFUdesign, which lets you calculate your energy yield and energy balance in the blink of an eye. Efficient, fast, and reliable. In addition, our Utility Competence Center is always available to you for optimization suggestions in system planning, recommendations for components and the compilation of complete plans.

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