

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 VAC voltage and with 46 kW for 460 VAC 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 overvoltage protection.



| Technical Data | REFU _{sol} 40K | REFU _{sol} 46K-MV |
|---|------------------------------------|----------------------------|
| Art.No. | 840P040.010 | 840P046.010 |
| DC-DATA | | |
| Max. recommended PV power (kWp) | 60.0 | 70.0 |
| 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 | 4x Plus, 4x Minus Phoenix Sunclix® | |
| String Monitoring | 4 measurement channels integrated | |

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|--|--------------------|-------------|
| 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

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|---|--|
| 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

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|---------------------------|--|
| 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

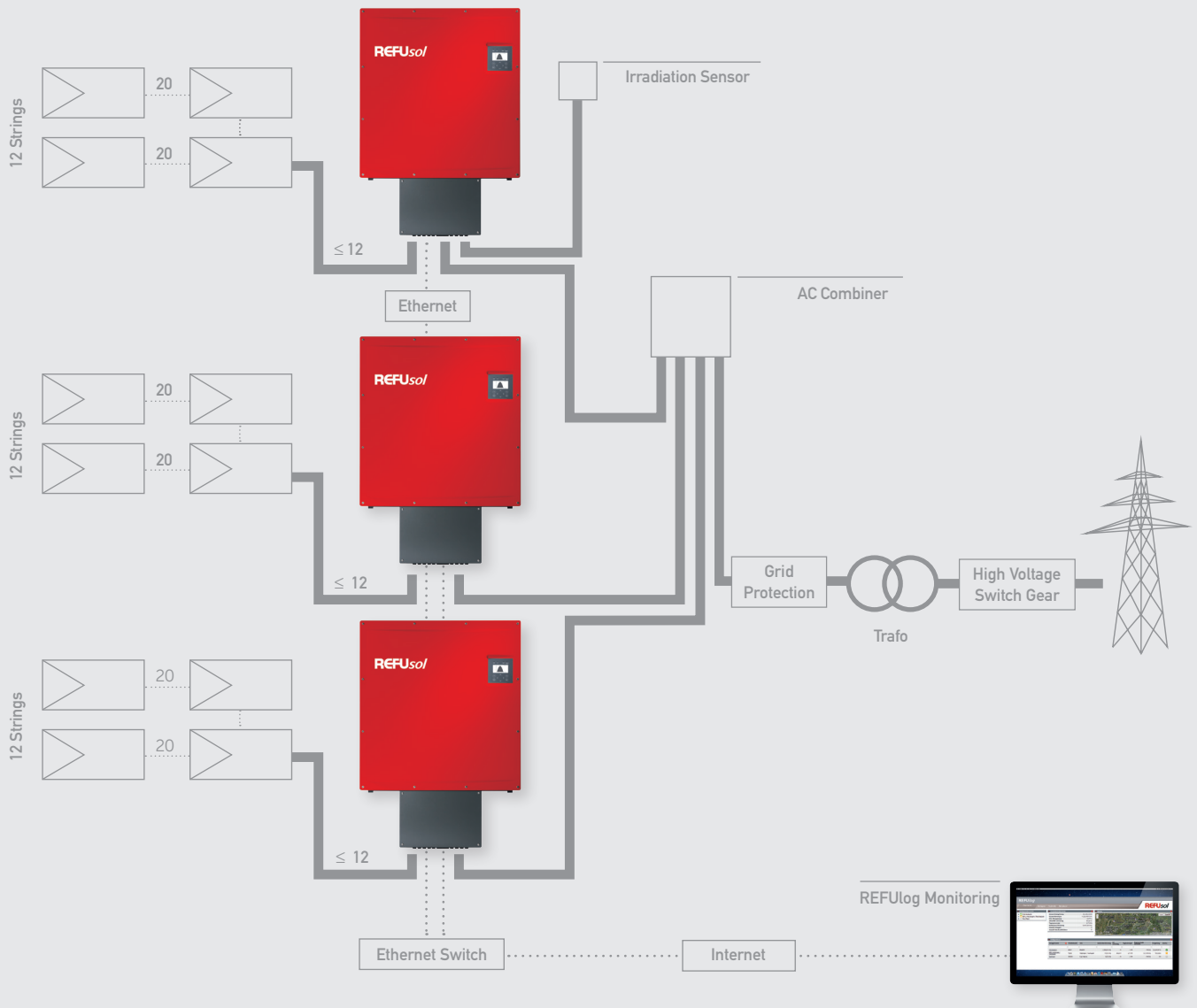
Thanks to its compact dimensions, the REFUSol inverter can be flexibly employed in large PV systems. The system designer can decide whether to place it as close as possible to the solar modules or grouped as centrally as possible. The communication can be via Ethernet or RS485 – both already built in.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

Contact UCC on: +49 7121 4332-300



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