



FRONIUS SYMO HYBRID

/ The personal storage solution for 24H Sun.



/ PC board replacement process



/ SnapINverter technology



/ Integrated data communication



/ Dynamic Peak Manager



/ Smart Grid Ready



/ Ready for Storage



/"24H sun" is the Fronius vision of how energy will be supplied in the coming decades. The Fronius Symo Hybrid is the heart of the 24H Sun storage solution. Boasting power categories ranging from 3.0 to 5.0 kW, the transformerless inverter allows unused energy from a photovoltaic system to be stored in a battery. The result: maximum self-consumption of the available power and maximum energy independence. Excess solar power can thus be used at times when generating conditions are poor or impossible. With the emergency power function, the household can enjoy an optimum electricity supply even during power outages. Perfect system configuration and visualisation are provided by the built-in web server with graphical interface, WLAN and Ethernet. In addition, the DC coupling on the battery guarantees maximum efficiency of the overall system.

MODULAR

- / Emergency power function and battery can be retrofitted
- / Range of different storage capacities available (4.5 - 12.0 kWh)

EFFICIENT

- / DC-coupled system
- / No multiple conversions between AC and DC
- / High-performance lithium technology

THREE-PHASE

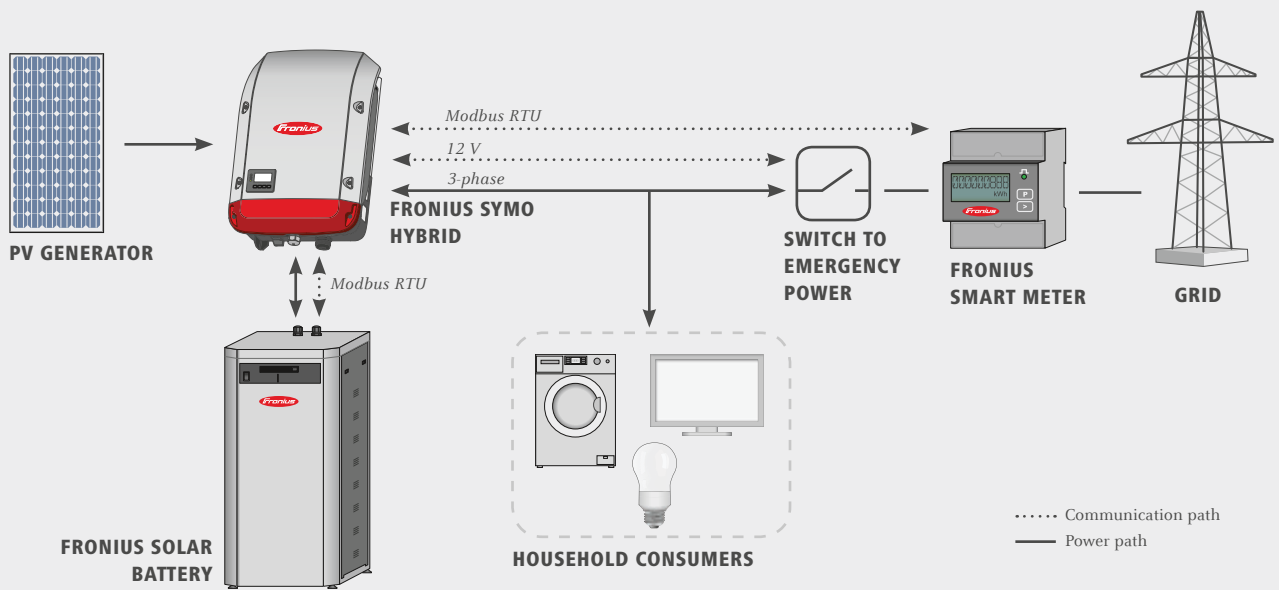
- / Maximisation of self-consumption
- / Three-phase emergency power supply

REVOLUTIONARY

- / User-friendly interface
- / Integrated WLAN and Ethernet
- / Commissioning wizard for straightforward configuration



CONFIGURATION DIAGRAM



AVAILABLE FROM THE END OF 2014

TECHNICAL DATA FRONIUS SYMO HYBRID¹⁾

/ The Fronius Symo Hybrid is the heart of the 24H Sun storage solution. From a simple inverter one minute, the battery and emergency power function can be added in no time. The result: sun by day, sun by night and sun during power outages.



| INPUT DATA | SYMO HYBRID 3.0-3-S | SYMO HYBRID 4.0-3-S | SYMO HYBRID 5.0-3-S |
|---|---------------------|---------------------|---------------------|
| PV input power | 5.0 kW | 6.5 kW | 8.0 kW |
| Max. input current ($I_{dc\ max}$) | 1 x 16 A | 1 x 16 A | 1 x 16 A |
| Max. short circuit current, module array | | 24 A | |
| Min. input voltage ($U_{dc\ min}$) | | 150 V | |
| Feed-in start voltage ($U_{dc\ start}$) | | 200 V | |
| Nominal input voltage ($U_{dc,r}$) | | 595 V | |
| Max. input voltage ($U_{dc\ max}$) | | 1000 V | |
| MPP voltage range ($U_{mpp\ min} - U_{mpp\ max}$) | 200 - 800 V | 255 - 800 V | 320 - 800 V |
| Number of MPP trackers | | 1 | |
| Number of DC connections | | 2 | |

| BATTERY INPUT | SYMO HYBRID 3.0-3-S | SYMO HYBRID 4.0-3-S | SYMO HYBRID 5.0-3-S |
|----------------------------------|---------------------|---------------------|---------------------|
| Maximum output power to battery | 3,000 W | 4,000 W | 5,000 W |
| Maximum input power from battery | 3,000 W | 4,000 W | 5,000 W |

| OUTPUT DATA | SYMO HYBRID 3.0-3-S | SYMO HYBRID 4.0-3-S | SYMO HYBRID 5.0-3-S |
|--|--|---------------------|---------------------|
| AC nominal output ($P_{ac,r}$) | 3,000 W | 4,000 W | 5,000 W |
| Max. output power | 3,000 VA | 4,000 VA | 5,000 VA |
| Max. output current ($I_{ac\ max}$) | 4.5 A | 6.0 A | 7.6 A |
| Grid connection (voltage range) | 3-NPE 400 V / 230 V or 3-NPE 380 V / 220 V (+20 % / -30 %) | | |
| Frequency (frequency range) | 50 Hz / 60 Hz (45 - 65 Hz) | | |
| Total harmonic distortion | < 3 % | | |
| Power factor ($\cos \varphi_{ac,r}$) | 0.85 - 1 ind. / cap. | | |

¹⁾ Preliminary data.

TECHNICAL DATA FRONIUS SYMO HYBRID¹⁾

| GENERAL DATA | SYMO HYBRID 3.0-3-S | SYMO HYBRID 4.0-3-S | SYMO HYBRID 5.0-3-S |
|--|---|---------------------|---------------------|
| Dimensions (height x width x depth) | 645 x 431 x 204 mm | | |
| Weight | 22 kg | | |
| Degree of protection | IP 65 | | |
| Protection class | 1 | | |
| Overvoltage category (DC / AC) ²⁾ | 3 / 2 | | |
| Inverter design | Transformerless | | |
| Cooling | Regulated air cooling | | |
| Installation | Indoor and outdoor installation | | |
| Ambient temperature range | -25 - +60°C | | |
| Permitted humidity | 0 - 100 % | | |
| Max. altitude | 2,000 m (unrestricted voltage range) | | |
| DC PV connection technology | 2x DC+ and 2x DC- screw terminals 2.5 - 16 mm ² | | |
| DC battery connection technology | 1x DC+ and 1x DC- screw terminals 2.5 - 16 mm ² | | |
| AC connection technology | 5-pin AC screw terminals 2.5 - 16 mm ² | | |
| Certificates and compliance with standards | VDE AR N 4105, ÖVE / ÖNORM E 8001-4-712, DIN V VDE 0126-1-1 | | |
| Stand-alone | Yes | | |
| Emergency power function switchover time | 5 sec. | | |
| EFFICIENCY | SYMO HYBRID 3.0-3-S | SYMO HYBRID 4.0-3-S | SYMO HYBRID 5.0-3-S |
| Max. efficiency (PV - grid) | 97.5 % | 97.6 % | |
| Max. efficiency (PV - battery - grid) | > 85.0 % | > 85.0 % | > 85.0 % |
| Europ. efficiency (PV - grid) | 95.2 % | 95.7 % | 96.0 % |
| PROTECTION DEVICES | SYMO HYBRID 3.0-3-S | SYMO HYBRID 4.0-3-S | SYMO HYBRID 5.0-3-S |
| DC disconnect | Included | | |
| Overload behaviour | Operating point shift, power limitation | | |
| DC insulation measurement | Included | | |
| Integral RCMU | Yes | | |
| INTERFACES | SYMO HYBRID 3.0-3-S | SYMO HYBRID 4.0-3-S | SYMO HYBRID 5.0-3-S |
| WLAN / Ethernet | Fronius Solar.web | | |
| Datalogger and web server | Included | | |
| Interface to battery and meter | Modbus RTU SunSpec (RS485) | | |

¹⁾ Preliminary data.

²⁾ Testing to IEC 62109-1.

TECHNICAL DATA FRONIUS SOLAR BATTERY¹⁾

/ The Fronius Solar Battery is a perfect example of high-performance lithium technology. A long service life, short charging times and high depth of discharge are therefore guaranteed. The storage capacity of the Fronius Solar Battery can be adapted to meet individual customer needs.



| ELECTRICAL PARAMETERS | BATTERY 4.5 | BATTERY 6.0 | BATTERY 7.5 | BATTERY 9.0 | BATTERY 10.5 | BATTERY 12.0 |
|------------------------------|-------------|-------------|-------------|-------------|--------------|--------------|
| Nominal capacity | 4.5 kWh | 6.0 kWh | 7.5 kWh | 9.0 kWh | 10.5 kWh | 12.0 kWh |
| Usable capacity (80% DoD) | 3.6 kWh | 4.8 kWh | 6.0 kWh | 7.2 kWh | 8.4 kWh | 9.6 kWh |
| Cycle stability (80% DoD) | 6,000 | | | | | |
| Voltage range | 120 - 170 V | 160 - 230 V | 200 - 290 V | 240 - 345 V | 280 - 400 V | 320 - 460 V |
| Max. nominal charging power | 2,400 W | 3,200 W | 4,000 W | 4,800 W | 5,600 W | 6,400 W |
| Max. nominal discharge power | 2,400 W | 3,200 W | 4,000 W | 4,800 W | 5,600 W | 6,400 W |
| Max. charging current | 16 A | | | | | |
| Max. discharge current | 16 A | | | | | |

| GENERAL DATA | BATTERY 4.5 | BATTERY 6.0 | BATTERY 7.5 | BATTERY 9.0 | BATTERY 10.5 | BATTERY 12.0 |
|--|---|-------------|-------------|-------------|--------------|--------------|
| Battery technology | LiFePO4 | | | | | |
| Dimensions (height x width x depth) | 955 x 570 x 611 mm | | | | | |
| Weight | 91 kg | 108 kg | 125 kg | 142 kg | 159 kg | 176 kg |
| Degree of protection | IP 20 | | | | | |
| Protection class | 1 | | | | | |
| Installation type | Indoor installation | | | | | |
| Ambient temperature range | 5 - 35°C | | | | | |
| Permitted humidity | 0 - 100 % | | | | | |
| DC connection technology | Screw terminals 2.5 - 16 mm ² | | | | | |
| Certificates and compliance with standards | IEC/EN 62133; EN 61000-6-2:2005, EN 61000-6-3:2007 + A1:2011, EN 62311:2008, FCC Part 15 Subpart B:2012 ClassB, UN 38.3 | | | | | |

| INTERFACES | BATTERY 4.5 | BATTERY 6.0 | BATTERY 7.5 | BATTERY 9.0 | BATTERY 10.5 | BATTERY 12.0 |
|------------------------|----------------------------|-------------|-------------|-------------|--------------|--------------|
| Connection to inverter | Modbus RTU SunSpec (RS485) | | | | | |

¹⁾ Preliminary data.

TECHNICAL DATA FRONIUS SMART METER¹⁾

/ The Fronius Smart Meter is a bidirectional meter which optimises self-consumption and records the household's load curve. In conjunction with the Fronius Solar.web online portal, the Fronius Smart Meter provides a clear overview of a user's own power consumption.



| GENERAL DATA | FRONIUS SMART METER |
|------------------------------------|----------------------------|
| Nominal voltage | 400 - 415 V |
| Max. current | 3 x 63 A |
| Cable cross-section, power path | 1 - 16 mm ² |
| Cable cross-section, communication | 0.05 - 4 mm ² |
| Installation | DIN rail |
| Housing | 4 modules DIN 43880 |
| Accuracy class | 1 |
| Interface to inverter | Modbus RTU SunSpec (RS485) |
| Display | 8-digit LCD |

¹⁾ Preliminary data.



WE HAVE THREE DIVISIONS AND ONE PASSION: SHIFTING THE LIMITS OF POSSIBILITY.

/ What Günter Fronius started in 1945 in Pettenbach, Austria, has now become a modern day success story. Today, the company has around 3,000 employees worldwide and owns more than 850 active patents. Our goal has remained constant throughout: to be the innovation leader. We shift the limits of what's possible. While others progress step by step, we innovate in leaps and bounds. The responsible use of our resources forms the basis of our corporate policy.

PERFECT WELDING

/ We develop products and complete systems - both manual and automated - as well as the corresponding services for our customers in the global welding technology market. We have made it our goal to decode the "DNA of the arc".

SOLAR ENERGY

/ The challenge is to make the leap to a regenerative energy supply. Our vision is to use renewable energy to achieve energy independence. With our services, inverters and energy-storage systems for optimising energy yields, we are one of the leading suppliers in the photovoltaics sector.

PERFECT CHARGING

/ As know-how leaders in the world of battery charging, we deliver exceptional solutions to create the maximum benefit for our customers. For the intralogistics sector, we are committed to energy flow optimisation for electric forklift trucks and are constantly striving for the next innovation. Our powerful charging systems for vehicle workshops guarantee safe and reliable processes.

Further information about all Fronius products and our global sales partners and representatives can be found at www.fronius.com

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