



FRONIUS ENERGY PACKAGE

The personal storage solution for 24 hours of sun



SnapInverter technology



Integrated data communication



Dynamic Peak Manager



Smart Grid Ready



Zero feed-in



Multi Flow Technology

The Fronius Symo Hybrid is the heart of the 24 hours of sun storage solution - the Fronius Energy Package. With power categories from 3.0 to 5.0 kW, the three-phase inverter allows surplus energy from a photovoltaic system to be stored in the Fronius Solar Battery.

The result is maximum self-consumption and maximum independence. With the emergency power function, the household can enjoy an 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. The Fronius Symo Hybrid permits both DC and AC coupling for storage systems, whereby an AC coupling also allows an additional PV generator to be connected to the Fronius Symo Hybrid. This makes the Fronius Energy Package the ideal solution for both new installations and for retrofitting to existing PV systems.

FLEXIBLE

- / Simultaneous DC and AC coupling
- / Emergency power function and battery can be retrofitted
- / Range of different storage capacities available

THREE-PHASE

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

EFFICIENT

- / High-performance lithium iron phosphate technology
- / High system efficiency

REVOLUTIONARY

- / User-friendly interface
- / Integrated WLAN and Ethernet
- / Unlimited usage options thanks to Multi Flow Technology

TECHNICAL DATA FRONIUS SYMO HYBRID

The Fronius Symo Hybrid is the heart of the storage solution for 24 hours of sun - the Fronius Energy Package. With power categories from 3.0 to 5.0 kW, the three-phase inverter allows surplus energy from a photovoltaic system to be temporarily stored in the Fronius Solar Battery. Through intelligent energy flow management, the integrated Multi Flow Technology allows both the AC and the DC coupling of storage systems.



| INPUT DATA | SYMO HYBRID 3.0-3-S | SYMO HYBRID 4.0-3-S | SYMO HYBRID 5.0-3-S |
|--|---------------------|---------------------|---------------------|
| Number of MPP trackers | | 1 | |
| Max. PV input power | 5.0 kW | 6.5 kW | 8.0 kW |
| Max. input current ($I_{dc\ max}$) | | 1 x 16 A | |
| Max. short circuit current, module array | | 24 A | |
| DC input voltage range ($U_{dc\ min} - U_{dc\ max}$) | | 150 - 1000 V | |
| Feed-in start voltage ($U_{dc\ start}$) | | 200 V | |
| Usable MPP voltage range | | 150 - 800 V | |
| Number of DC connections (PV) | | 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 | | Depends on connected Fronius Solar Battery | |
| Maximum input power from battery | | Depends on connected Fronius Solar Battery | |

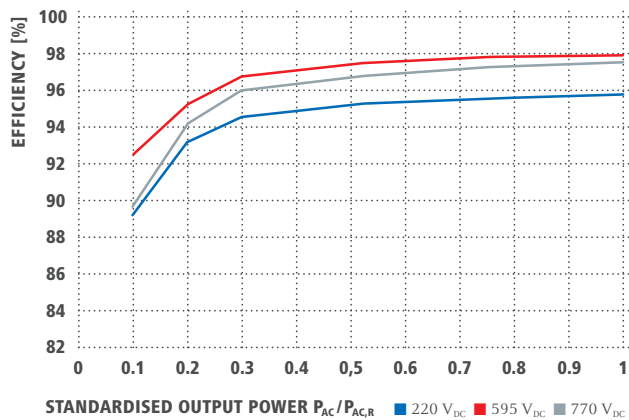
| OUTPUT DATA | SYMO HYBRID 3.0-3-S | SYMO HYBRID 4.0-3-S | SYMO HYBRID 5.0-3-S |
|--|---------------------|--|---------------------|
| AC nominal output ($P_{ac,r}$) | 3,000 W | 4,000 W | 5,000 W |
| Max. output power | 3,000 VA | 4,000 VA | 5,000 VA |
| Max. power from grid to battery | 3,000 VA | 4,000 VA | 5,000 VA |
| Max. AC output current ($I_{ac\ max}$) | | 8.3 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 ($\cos \phi_{ac,r}$) | | 0.85 - 1 ind. / cap. | |

| 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 | | 19.9 kg | |
| Degree of protection | | IP 65 | |
| Protection class | | 1 | |
| Overvoltage category (DC / AC) ¹⁾ | | 2 / 3 | |
| 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 | |
| Emergency power function | | Yes | |

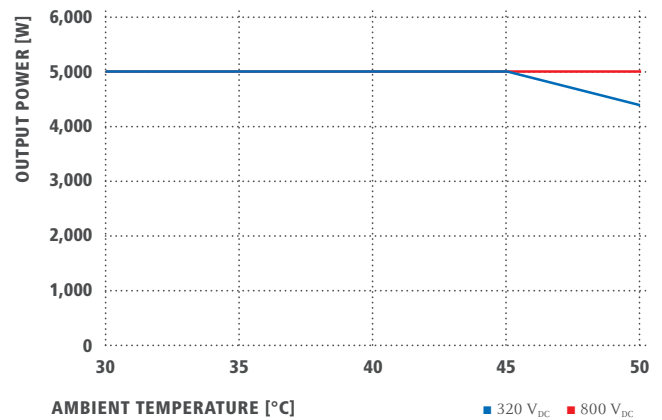
| EFFICIENCY | SYMO HYBRID 3.0-3-S | SYMO HYBRID 4.0-3-S | SYMO HYBRID 5.0-3-S |
|---------------------------------------|---------------------|---------------------|---------------------|
| Max. efficiency (PV - grid) | 97.7 % | 97.9 % | |
| Max. efficiency (PV - battery - grid) | > 90.0 % | > 90.0 % | > 90.0 % |
| Europ. efficiency (PV - grid) | 95.2 % | 95.7 % | 96.0 % |
| MPP adaptation efficiency | | > 99.9 % | |

¹⁾ Testing to IEC 62109-1.

FRONIUS SYMO HYBRID 5.0-3-S EFFICIENCY CURVE



FRONIUS SYMO HYBRID 5.0-3-S TEMPERATURE DERATING



TECHNICAL DATA FRONIUS SYMO HYBRID

| PROTECTION DEVICES | SYMO HYBRID 3.0-3-S | SYMO HYBRID 4.0-3-S | SYMO HYBRID 5.0-3-S |
|-----------------------------|---------------------|---|---------------------|
| DC disconnector | | Included | |
| Overload behaviour | | Operating point shift, power limitation | |
| DC insulation measurement | | Included | |
| Integral RCMU | | Yes | |
| Reverse polarity protection | | Yes | |

| INTERFACES | SYMO HYBRID 3.0-3-S | SYMO HYBRID 4.0-3-S | SYMO HYBRID 5.0-3-S |
|--------------------------------|---------------------|---|---------------------|
| WLAN / Ethernet LAN | | Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON) | |
| Datalogger and Webserver | | Included | |
| Interface to battery and meter | | Modbus RTU (RS485) | |

Further information and technical data can be found at www.fronius.com.

TECHNICAL DATA FRONIUS SMART METER

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.



| TECHNICAL DATA | FRONIUS SMART METER 63A-3 | FRONIUS SMART METER 50kA-3 ¹⁾ |
|--|---------------------------|--|
| Nominal voltage | | 400 - 415 V |
| Maximum current | 3 x 63 A | 3 x 50,000 A |
| Input Terminal capacity | 1 - 16 mm ² | 0.05 - 4 mm ² |
| Communication and Neutral line Terminal capacity | | 0.05 - 4 mm ² |
| Power consumption | 1.5 W | 2.5 W |
| Starting current | | 40 mA |
| Accuracy class | | 1 |
| Active Energy Accuracy | | Class B (EN50470) |
| Reactive Energy Accuracy | | Class 2 (EN/IEC 62053-23) |
| Short-time overcurrent | | 30 x I _{max} / 0.5 s |
| Mounting | | Indoors (DIN rail) |
| Housing | | 4 modules DIN 43880 |
| Degree of protection | | IP 51 (front frame), IP 20 (terminals) |
| Specified operating range | | -25 - +55°C |
| Dimensions (Height x Width x Depth) | | 89.0 x 71.2 x 65.6 mm |
| Interface to inverter | | Modbus RTU (RS485) |
| Display | | 8-digit LCD |

¹⁾ Delivered without current sensors. Further information about selecting suitable current sensors can be found at www.fronius.com.

TECHNICAL DATA FRONIUS SOLAR BATTERY

The Fronius Solar Battery is a perfect example of high-performance lithium iron phosphate technology. A long service life, short charging times and high depth of discharge are therefore guaranteed.



| ELECTRICAL PARAMETERS | BATTERY 4.5 | BATTERY 6.0 | BATTERY 7.5 | BATTERY 9.0 | BATTERY 10.5 | BATTERY 12.0 |
|-------------------------------|---------------------|-------------|-------------|-------------|--------------|--------------|
| Usable capacity ¹⁾ | 3.6 kWh | 4.8 kWh | 6.0 kWh | 7.2 kWh | 8.4 kWh | 9.6 kWh |
| Cycle stability | 8,000 ¹⁾ | | | | | |
| Voltage range | 120 - 170 V | 160 - 230 V | 200 - 290 V | 240 - 345 V | 280 - 400 V | 320 - 460 V |
| Nominal charging power | 2,400 W | 3,200 W | 4,000 W | 4,800 W | 5,600 W | 6,400 W |
| 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 | | | | | |

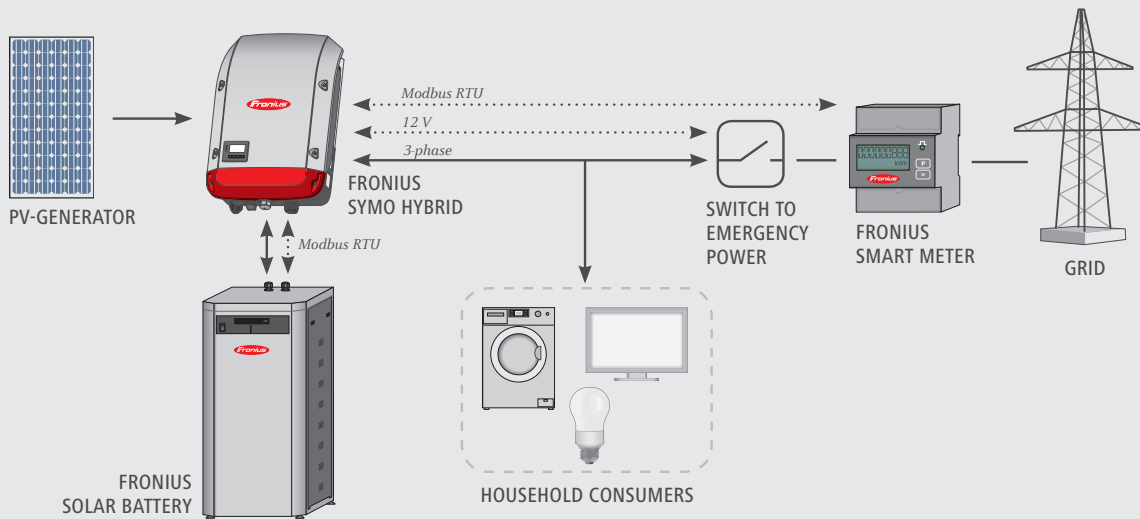
| GENERAL DATA | BATTERY 4.5 | BATTERY 6.0 | BATTERY 7.5 | BATTERY 9.0 | BATTERY 10.5 | BATTERY 12.0 |
|--|---|-------------|-------------|-------------|--------------|--------------|
| Battery technology | LiFePO4 | | | | | |
| Dimensions (height x width x depth) | 955 x 570 x 611 mm | | | | | |
| Weight | 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 - 95 % | | | | | |
| DC connection technology | Screw terminals 2.5 - 16 mm ² | | | | | |
| Calendar service life | > 20 Years 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 (RS485) | | | | | |

¹⁾ Up to 7% of the capacity are allocated for protecting the battery against deep discharge.

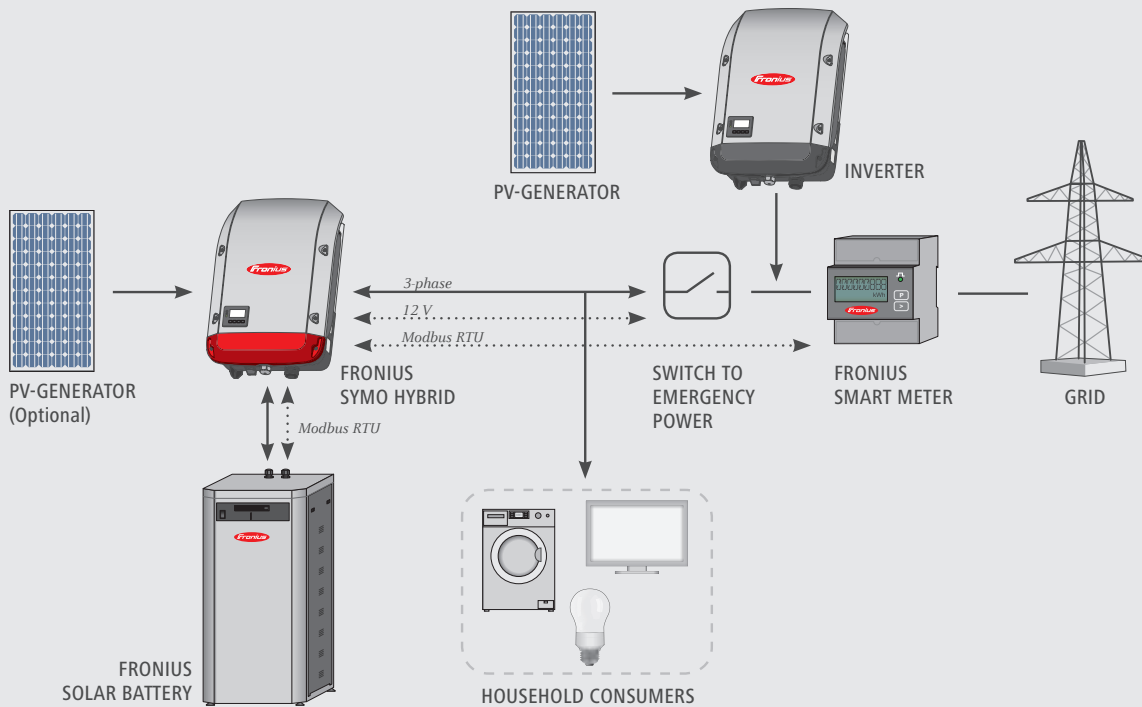
²⁾ At 23°C ambient temperature.

CONFIGURATION DIAGRAM DC-COUPLING



..... Communication path
 — Power path

CONFIGURATION DIAGRAM DC- & AC-COUPLING



..... Communication path
 — Power path

THREE BUSINESS UNITS, ONE GOAL: TO SET THE STANDARD THROUGH TECHNOLOGICAL ADVANCEMENT.

What began in 1945 as a one-man operation now sets technological standards in the fields of welding technology, photovoltaics and battery charging. Today, the company has around 3,800 employees worldwide and 1,242 patents for product development show the innovative spirit within the company. Sustainable development means for us to implement environmentally relevant and social aspects equally with economic factors. Our goal has remained constant throughout: to be the innovation leader.

PERFECT WELDING

Our mission is Perfect Welding; a task we have approached with passion and skill for decades in order that our customers can join materials with the perfect weld seam. With our outstanding technologies and services and together with our customer's applications, not only do we solve their specific welding technology problems, but we also make a substantial contribution to increasing their productivity.

SOLAR ENERGY

Our mission is to achieve 24 hours of sun. Day after day we are hard at work turning this vision of a future in which 100% of the world's energy needs are covered by renewable sources into a reality. We are therefore concentrating on solutions to intelligently, efficiently and economically generate, store, distribute and consume solar energy.

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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