



# 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	

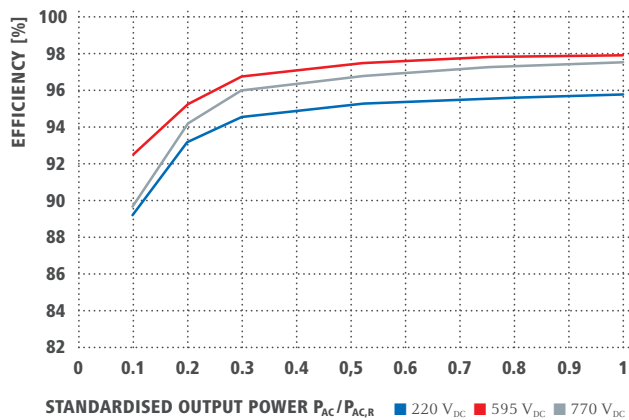
OUTPUT DATA	SYMO HYBRID 3.0-3-S	SYMO HYBRID 4.0-3-S	SYMO HYBRID 5.0-3-S
AC nominal output ( $P_{ac,r}$ )	3,000 W	4,000 W	5,000 W
Max. output power	3,000 VA	4,000 VA	5,000 VA
Max. power from grid to battery	3,000 VA	4,000 VA	5,000 VA
Max. AC output current ( $I_{ac\ max}$ )		8.3 A	
Grid connection (voltage 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) <sup>1)</sup>		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 <sup>2</sup>	
DC battery connection technology		1x DC+ and 1x DC- screw terminals 2.5 - 16 mm <sup>2</sup>	
AC connection technology		5-pin AC screw terminals 2.5 - 16 mm <sup>2</sup>	
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	

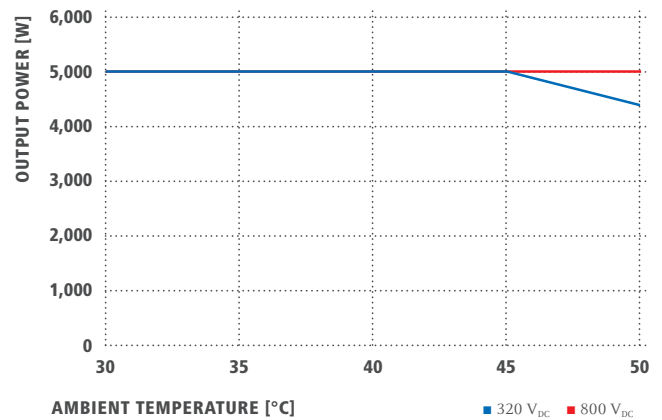
EFFICIENCY	SYMO HYBRID 3.0-3-S	SYMO HYBRID 4.0-3-S	SYMO HYBRID 5.0-3-S
Max. efficiency (PV - grid)	97.7 %	97.9 %	
Max. efficiency (PV - battery - grid)	> 90.0 %	> 90.0 %	> 90.0 %
Europ. efficiency (PV - grid)	95.2 %	95.7 %	96.0 %
MPP adaptation efficiency		> 99.9 %	

<sup>1)</sup> 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](http://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 <sup>1)</sup>
Nominal voltage		400 - 415 V
Maximum current	3 x 63 A	3 x 50,000 A
Input Terminal capacity	1 - 16 mm <sup>2</sup>	0.05 - 4 mm <sup>2</sup>
Communication and Neutral line Terminal capacity		0.05 - 4 mm <sup>2</sup>
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 <sub>max</sub> / 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

<sup>1)</sup> Delivered without current sensors. Further information about selecting suitable current sensors can be found at [www.fronius.com](http://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 <sup>1)</sup>	3.6 kWh	4.8 kWh	6.0 kWh	7.2 kWh	8.4 kWh	9.6 kWh
Cycle stability	8,000 <sup>1)</sup>					
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					

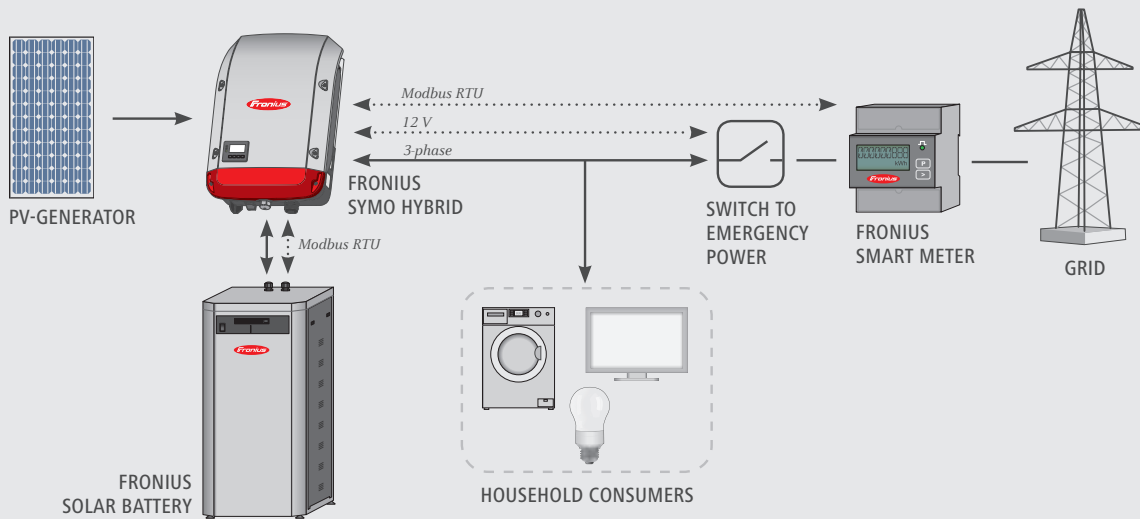
GENERAL DATA	BATTERY 4.5	BATTERY 6.0	BATTERY 7.5	BATTERY 9.0	BATTERY 10.5	BATTERY 12.0
Battery technology	LiFePO4					
Dimensions (height x width x depth)	955 x 570 x 611 mm					
Weight	91 kg	108 kg	125 kg	142 kg	159 kg	176 kg
Degree of protection	IP 20					
Protection class	1					
Installation type	Indoor installation					
Ambient temperature range	5 - 35°C					
Permitted humidity	0 - 95 %					
DC connection technology	Screw terminals 2.5 - 16 mm <sup>2</sup>					
Calendar service life	> 20 Years <sup>2)</sup>					
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)					

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

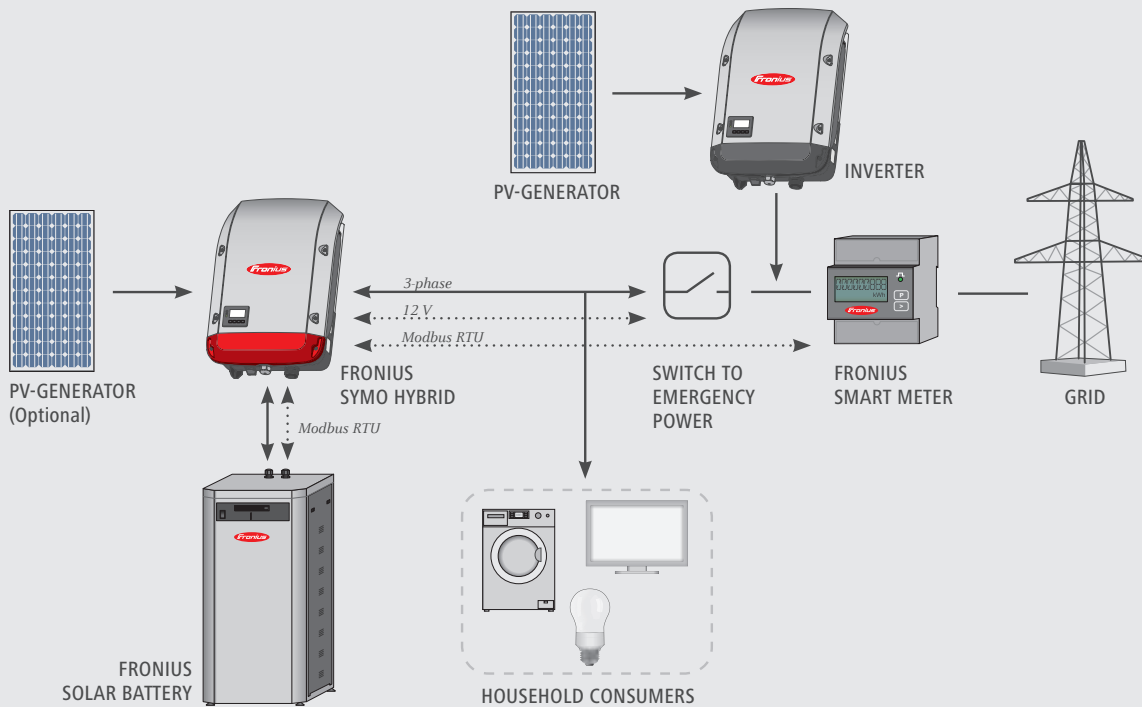
<sup>2)</sup> At 23°C ambient temperature.

## 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](http://www.fronius.com)

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