

/ Perfect Welding / Solar Energy / Perfect Charging



SHIFTING THE LIMITS



INDEPENDENCE IS POSSIBLE.
BECAUSE WE MAKE SOLAR POWER
AVAILABLE DAY AND NIGHT.

/ Solar Energy
Services and product programme
2015/16

OUR VISION: 24H SUN. THIS MEANS HAVING RENEWABLE ENERGY ON TAP AT ALL TIMES; DURING THE NIGHT AS WELL AS THE DAY, DURING THE WINTER AS WELL AS THE SUMMER.

/ “24 hours of sun” is the Fronius vision of how energy will be supplied in the coming decades. Every day, we work hard to realise this ideal: to fully exploit renewable energy to promote energy self-sufficiency – while still maximising economic viability. Our technologies and products contribute towards ensuring that all the energy in the future will come from renewable energy sources.



/ An optimum energy supply is founded, firstly, on intelligent energy and load management and, secondly, on electricity storage. Short-term energy storage units transfer the energy generated during the daytime to the evening and night-time period and can provide a single household or an entire residential area with an optimum energy supply by means of a battery. Pumped storage electrical power stations enable large energy reserves to be quickly stored and delivered when needed.

/ Long-term storage units store excess power over long periods, e.g. from summer to winter. Electrolysis or methanisation plants are used to produce hydrogen or, in a second process, methane, which is easy to store and feed in to the existing natural gas network. Hydrogen is an excellent solution for road transport and logistics applications using vehicles fitted with hydrogen fuel cells. This electrolysis process is also used in the lower power range, e.g. for energy-independent single-family homes or mobile communication base stations. In peak load gas power plants, gas from renewable sources is converted back into electricity.



- 1** Photovoltaic power plant
- 2** Wind farm
- 3** Hydroelectric power station
- 4** Energy-independent single-family home
- 5** Communal storage unit
- 6** Pumped storage electrical power station
- 7** Central electrolysis/methanisation plant
- 8** Hydrogen refuelling station
- 9** Gas-fired power station
- 10** Energy-independent mobile communication base station
- 11** Green intralogistics

AT THE HEART OF EVERY PV SYSTEM



/ Fronius inverters produce green energy and are at the heart of every PV system. Find out more on pages 8 - 61.



FUNCTION AND YIELD AT A GLANCE

/ User-friendly and clearly laid-out – just two of the features that make system monitoring from Fronius so impressive. For details of the complete system plus accessories, see pages 68 - 77.

SERVICES FOR EVERY SITUATION

/ Flexible services enhance our range of products to meet your requirements. Find out more on pages 78 - 83.

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INNOVATIVE TECHNOLOGIES

/ What's inside our inverters? Unique technologies which stand the test of time. See pages 10 - 13.

A LUCRATIVE PARTNERSHIP

/ Benefits of the unique Fronius Service Partner programme: find out more on pages 84 - 85.



AS THE INTERNATIONAL QUALITY LEADER, WE AIM TO SURPASS THE GOALS WE SET OURSELVES.

/ Outstanding products and services make us the world quality leader. We combine our flair for innovation with our responsibility towards the environment. We continuously set new standards worldwide with innovative products and new technologies.



70 YEARS OF PROGRESS

/ At Fronius International GmbH, we have been researching new technologies for converting electrical energy since 1945. That amounts to seven decades of experience, progress and continuous innovation.

GLOBAL NETWORK

/ At the Solar Energy Division, we have been involved in photovoltaics since 1992 and sell our products through a global network of sales partners. The Solar Energy Division boasts a high level of expertise and currently has 17 subsidiaries worldwide. Internationalisation is progressing rapidly.



/ Fronius production and logistics site in Sattledt, Austria

PRODUCTION FACILITIES WORLDWIDE

/ As a top global player, Fronius has international production facilities in Austria, the Czech Republic, Canada and the USA. The company exports 89 % of its products, which is another indication of the high degree of internationalisation of the Solar Energy Division.

CORE VALUES

/ As a family-owned company, we place great emphasis on treating our employees, customers and partners with respect. We think long term and act responsibly. Using renewable energy and protecting resources are an important part of our sustainable corporate culture.

WORLDWIDE QUALITY LEADER

/ We develop and sell premium-quality inverters, energy storage systems and services for grid-connected photovoltaic systems from 1 kW. Alongside our solutions for professional PV system monitoring and energy management, we are able to offer our customers and partners throughout the world top quality at all times.



STRING INVERTERS

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graph TD; A((STRING INVERTERS)) -.- B((FRONIUS SYMO)); A -.- C((FRONIUS SYMO HYBRID)); A -.- D((FRONIUS GALVO)); A -.- E((FRONIUS PRIMO)); A -.- F((FRONIUS ECO)); A -.- G((FRONIUS IG PLUS)); H((FRONIUS IG TL))
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**FRONIUS
SYMO**

**FRONIUS
SYMO
HYBRID**

**FRONIUS
GALVO**

**FRONIUS
PRIMO**

**FRONIUS
ECO**

**FRONIUS
IG PLUS**

**FRONIUS
IG TL**

FRONIUS INVERTERS: AT THE HEART OF EVERY PV SYSTEM.

/ Are you familiar with our highly functional grid-connected inverters that work with all standard solar modules? These efficient, reliable, high-power inverters form the essential core of every PV system.



The diagram consists of two large, overlapping circles with dashed outlines. The top circle is smaller and contains the text 'FRONIUS AGILO'. The bottom circle is larger and contains the text 'CENTRAL INVERTERS'. A dashed line connects the bottom of the top circle to the top of the bottom circle, indicating a relationship or connection between the two inverter types.

**FRONIUS
AGILO**

**CENTRAL
INVERTERS**

THE PERFECTION IS IN THE DETAIL: A LOOK INSIDE OUR INVERTERS.

/ With our grid-connected inverters, we are among the leading suppliers worldwide. Our innovative technologies achieve maximum yields. And our mounting system makes installation extremely easy. Other advantages are simple servicing and the highest levels of fault tolerance.



SNAPINVERTER TECHNOLOGY

/ The new SnapINverter generation of inverters features a simple, standardised mounting system, making installation and maintenance easier than ever. The special feature in the design of the device is that the connection area is separate from the power stage set compartment. They are installed separately. The remarkably light connection area and all its cabling is fitted to the wall first. The power stage set is installed afterwards. The innovative hinged system makes installation and servicing extremely user-friendly. The inverter is simply placed in the wall bracket and then secured. This means that it is not necessary to remove the entire inverter for servicing, just the power stage set. All the cabling remains in place.

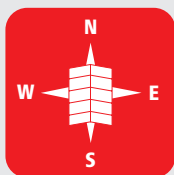


/ The innovative SnapINverter mounting system makes installation and maintenance as simple as possible.



INTEGRATED DATA COMMUNICATION

/ We are the first inverter manufacturer to offer a data communication package with fully integrated data logging, WLAN, Ethernet, energy management, web server and a range of interfaces. The inverter is connected to the internet by network cable or WLAN - without additional cabling - and grants you the perfect overview of how the PV system is operating. Connection to third-party components is provided by means of interfaces such as Modbus TCP SunSpec, Modbus RTU SunSpec or Fronius Solar API (JSON). The open interfaces can also be operated in parallel to the Fronius Solar.web.



SUPERFLEX DESIGN

/ The Fronius SuperFlex Design is an ingenious combination of technical performance attributes that make designing your PV system not only extremely simple, but also incredibly flexible. The key performance factors of the SuperFlex Design are two MPP trackers in conjunction with a high system voltage and wide DC input voltage range. Every DC input, and therefore every MPP tracker, is able to accommodate the entire nominal output of the inverter. A Fronius inverter with integrated SuperFlex Design will satisfy every conceivable operational PV system planning scenario using just a single inverter model, including different roof orientations, shading of one or two strings, or the use of residual modules.

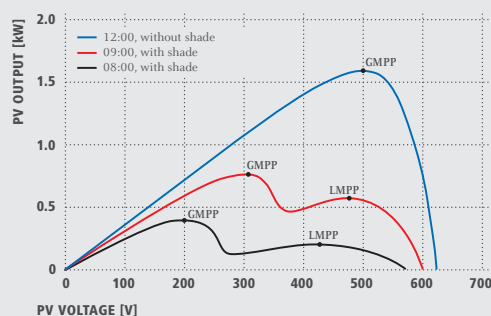


/ Flexibility is a matter of design. Enjoy complete planning flexibility whatever the power category thanks to SuperFlex Design. See for yourself at www.fronius.com/superflex



DYNAMIC PEAK MANAGER

/ The Dynamic Peak Manager is a new MPP tracking algorithm that dynamically adapts its behaviour when searching for the optimal operating point. The special feature is that the Dynamic Peak Manager automatically checks the entire characteristic curve on a regular basis and finds the global Maximum Power Point (GMPP), even in partial shade.

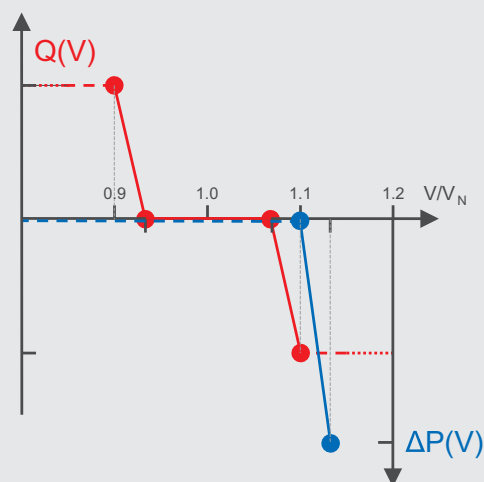


/ With conventional MPP trackers it is difficult to determine the global Maximum Power Point (GMPP). Often the GMPP is not detected because the tracker has wrongly identified the local Maximum Power Point (LMPP) as the maximum for the entire characteristic. The Dynamic Peak Manager always finds the global maximum because it regularly checks the entire characteristic.



SMART GRID READY

/ Fronius inverters are ready for the Smart Grid of tomorrow. The inverters are optimally equipped to meet the technical requirements of grids in the future. A series of smart functions, known as Advanced Grid Features, are built into the devices. These include a number of control functions for optimum feed-in of reactive power and effective power. These functions are designed to enable stable grid operation even when the PV system density is very high and to prevent unwanted interruptions to feed-in and associated yield losses if grid parameters exceed the thresholds. Fronius inverters therefore help to guarantee the yield of a PV system. Furthermore, where feed-in limits are imposed, Fronius inverters can provide dynamic feed-in control with self-consumption taken into account. Just connect the meter and set the feed-in limit!



/ The Advanced Grid Features regulate reactive power and effective power. This maximises the yield and stabilises the grid.

Q Reactive power
 ΔP Change in effective power
 V Voltage
 V_N Nominal voltage



READY FOR STORAGE

/ The storage solution from Fronius is a compact system which can be adapted to individual requirements thanks to its modular design. All the functions are built into the inverter so that it can be expanded into a comprehensive storage solution at any time. The device can be used simply as an inverter with emergency power function and no battery, or as the full version with a battery and emergency power function. The result: sun by day, sun by night and sun during power outages.



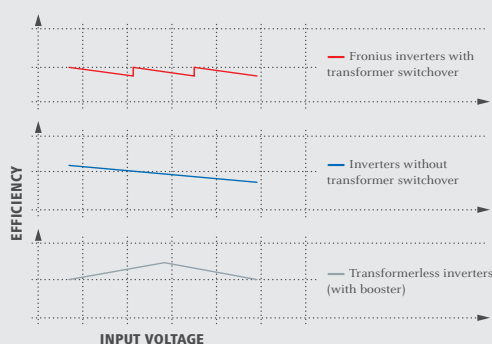
MULTI FLOW TECHNOLOGY

/ Using Multi Flow Technology, different DC and AC energy flows are possible in parallel. On the one hand, this allows energy from the modules and from the battery to be made available for domestic use at the same time. However, it is also possible for the energy from the modules to be simultaneously fed into the battery and the in-house network. Furthermore, not only can the battery be charged from the DC side, but also from the AC side (for example from existing PV systems or other energy sources, such as a wind turbine). This means the inverter is also suitable for AC-coupled retrofitting. The inverter manages these energy flows in such a way that the highest possible degree of self-sufficiency is achieved.



AUTOMATIC HF TRANSFORMER SWITCHOVER

/ Fronius transformer inverters use a high-frequency (HF) transformer. The automatic transformer switchover facility produces three efficiency peaks. The result is a consistently high level of efficiency across the entire input voltage range, which produces higher yields. Other advantages of HF transformer technology are the compact, lightweight design and safety as a result of the electrical isolation.



/ With the automatic transformer switchover facility, Fronius transformer inverters achieve consistently high efficiency across the entire input voltage range.



USER-FRIENDLY TRANSPORT TECHNOLOGY

/ In developing our inverters, we set great store on making them as easy as possible to transport. Our central inverters have recesses in the base to enable them to be moved easily using a counterbalanced lift truck or forklift, and are also equipped with lifting eyes. User-friendly and safe transport guaranteed!

THE FRONIUS SNAPINVERTER GENERATION

/ SnapINverter is the new generation of inverters from Fronius, featuring a simple, standardised mounting system. From single-family homes to large-scale installations – these inverters can be used anywhere and increase productivity many times over.



/ Fronius Symo



/ Fronius Symo Hybrid



/ Fronius Primo



/ Fronius Eco



/ Fronius Galvo

EASY TO INSTALL AND SERVICE

- / Simple installation thanks to the unique hinged system, the Fronius SnapINverter mounting system
- / Exceptional reliability and minimum servicing costs: SnapINverter technology guarantees rapid power stage set replacement directly at the system location

STANDARDISED INSTALLATION EXPERIENCE

- / Every model in the SnapINverter generation of inverters is installed and commissioned in the same intuitive way
- / Standardised setup wizard for all SnapINverters

FOR UNIVERSAL USE

- / SnapINverters can be used anywhere and fit perfectly into every PV system - from single-family homes to large-scale installations

FUTURE-PROOF & USER-FRIENDLY

- / Keep an eye on everything with Fronius Solar.web: extremely straightforward monitoring of all systems – via the portal or the smartphone app when on the move
- / Future requirements can be retrofitted easily thanks to plug-in card technology

FRONIUS ENERGY PACKAGE

/ The personal storage solution for 24H Sun.



FRONIUS SYMO HYBRID 3.0-3-S / 4.0-3-S / 5.0-3-S

/ The independent inverter: 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 with ease to create a comprehensive storage solution. The result: sun by day, sun by night and sun during power outages.

FRONIUS SOLAR BATTERY 4.5 / 6.0 / 7.5 / 9.0 / 10.5 / 12.0

/ 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. The result: maximum self-consumption and maximum independence.

FRONIUS SMART METER

/ The Fronius Smart Meter is a bidirectional meter which optimises self-consumption and records the household's load curve. The result: perfectly coordinated management of the various energy flows.



/ SnapINverter technology



/ Integrated data communication



/ Smart Grid Ready



/ Ready for storage



/ Dynamic Peak Manager



/ Multi Flow Technology

MAXIMUM INDEPENDENCE, MODULAR DESIGN & REVOLUTIONARY OPERATING SYSTEM

/ The Fronius Energy Package allows any unused energy produced by a photovoltaic system to be temporarily stored in a battery. As a result, maximum self-consumption of the available power and maximum energy independence are achieved. 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 design

Despite its simplicity, this storage solution is so flexible that it can be adapted to the needs of individual customers. The device can be used simply as an inverter with emergency power function and no battery, or as the full version with a battery and emergency power function. From a simple inverter one minute, a battery can be added in no time at all.

/ Individually adaptable

The storage capacity of the Fronius Solar Battery can be adapted to suit an individual household and can also be expanded retrospectively. Furthermore, the storage unit location can be freely selected; in particular, the Fronius Symo Hybrid and the Fronius Solar Battery do not have to be installed in the same services room.

/ A high degree of self-consumption thanks to Multi Flow Technology

The storage solution is characterised by its ability to handle different DC and AC energy flows in parallel. Energy from the modules and from the battery can be made available at the same time. It is also possible for the energy from the modules to be simultaneously fed into the battery and the in-house network. The result is maximum self-sufficiency for the household.

/ Recording power consumption in the home

In conjunction with the Fronius Solar.web online portal, the Fronius Smart Meter provides a clear overview of a user's own power consumption. The Fronius Smart Meter is a bidirectional meter which optimises self-consumption and records the household's load curve. Thanks to highly accurate measurements and rapid communication via the Modbus RTU interface, dynamic feed-in control is faster and more accurate when feed-in limits are imposed than with the S0. With the storage solution, the meter manages the various energy flows in a perfectly coordinated way, optimising the overall energy management.



/ Ideal for feed-in limits

Overdimensioning of the PV input power enables optimum fine-tuning of the system to meet the 60 % feed-in limit imposed by the German storage incentive programme. Excess PV energy can then be stored in the battery.

/ Integrated WLAN and web server

Both WLAN and a dedicated web server are permanently built into the Fronius Symo Hybrid. As a result, the inverter can easily be connected to a smartphone, tablet or notebook, and the setup wizard ensures that configuring the PV system is straightforward and intuitive. The user-friendly graphical interface on the integrated web server also makes system monitoring impressively simple. In short: whether you are using a Wireless Access Point, web interface, meter connection or interfaces to the power supply company, the Fronius Symo Hybrid offers all the communication functions you will need now and in the future.

/ Maximum efficiency

The Fronius Solar Battery is connected on the DC side, making multiple conversion between DC and AC unnecessary. The result is a maximum total efficiency standard as conversion losses are extremely low. Low currents due to the high battery voltage also bring further advantages: lower losses on the DC side and the option of using standard solar cables with small cross-sections.

/ Highest safety standards

The Fronius storage solution uses lithium iron phosphate, which is one of the safest storage technologies. The battery has a very high intrinsic safety level and no special ventilation arrangements are needed in the services room. Naturally, the Fronius Symo Hybrid meets all the current standards.

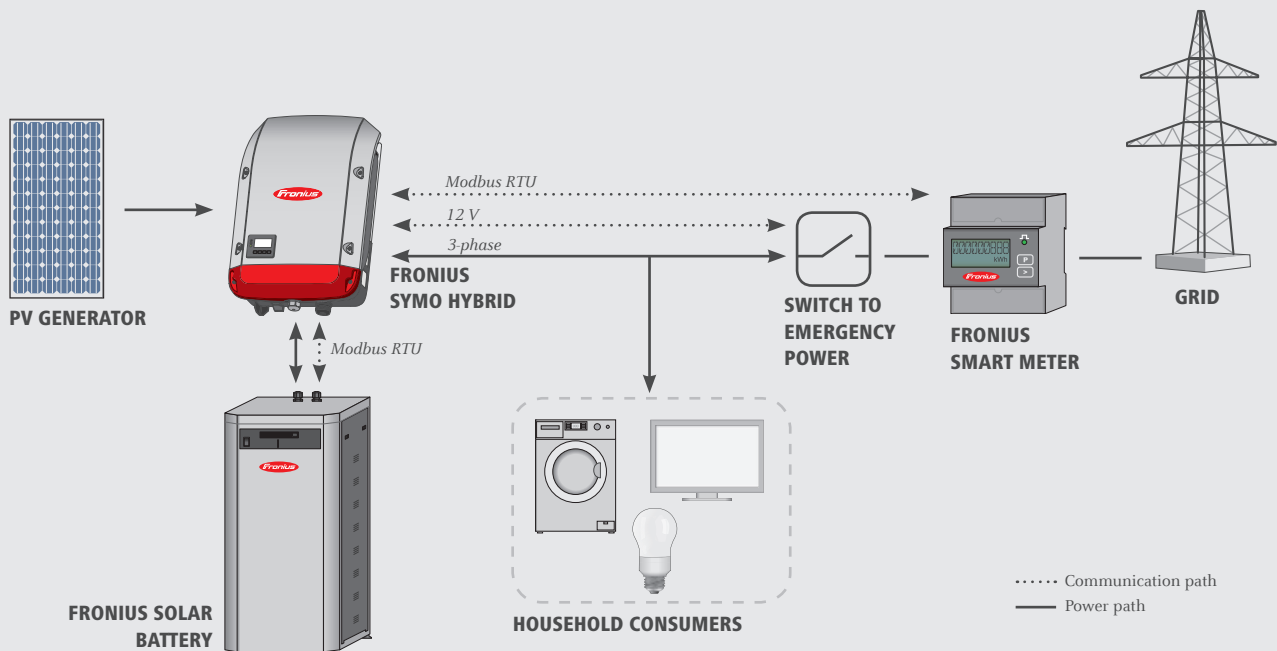
/ Long service life, short charging times, high depth of discharge

The Fronius Solar Battery is characterised by a long service life, short charging times and a high depth of discharge. The battery can be fully charged in 1.5 hours provided there is sufficient PV power.

/ Safe, three-phase emergency power function

Even during a power outage, electrical devices can still be provided with an optimum power supply. The transfer switch ensures the safe isolation from - and reconnection to - the grid. As power is provided on all three-phases and asymmetrically, the Fronius storage solution means that the entire household - and not just one phase - is supplied with electricity. Retrofitting of the emergency power function is possible from mid 2016, using a software update.

CONFIGURATION DIAGRAM



FRONIUS SYMO HYBRID TECHNICAL DATA

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	
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 ($U_{dc\ max}$)		1,000 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 (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. grid power demand	3,000 VA	4,000 VA	5,000 VA
AC output current ($I_{ac\ nom}$)	4.3 A	5.8 A	7.2 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.		

GENERAL DATA	SYMO HYBRID 3.0-3-S	SYMO HYBRID 4.0-3-S	SYMO HYBRID 5.0-3-S
Item number	4,210,070	4,210,071	4,210,072
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	
Mounting		Indoors and outdoors	
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.	

¹⁾ Testing to IEC 62109-1.More information about inverter availability in your country can be found at www.fronius.com.

**SUITABLE FOR THE GERMAN SOLAR ENERGY
STORAGE INCENTIVE PROGRAMME.**

FRONIUS SYMO HYBRID TECHNICAL DATA

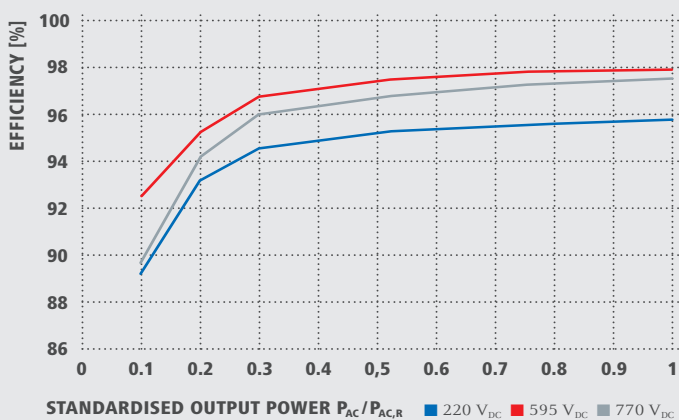
EFFICIENCY	SYMO HYBRID 3.0-3-S	SYMO HYBRID 4.0-3-S	SYMO HYBRID 5.0-3-S
Max. efficiency (PV - grid)	97.7 %	97.9 %	
Max. efficiency (PV - battery - grid)	> 90.0 %		
Europ. efficiency (PV - grid)	95.2 %	95.7 %	96.0 %
η at 5 % $P_{AC,r^{(1)}}$	78.5 % / 77.3 % / 66.9 %	80.1 % / 79.5 % / 70.1 %	81.6 % / 81.6 % / 73.4 %
η at 10 % $P_{AC,r^{(1)}}$	83.1 % / 83.8 % / 76.6 %	86.2 % / 88.1 % / 83.2 %	89.2 % / 92.5 % / 89.7 %
η at 20 % $P_{AC,r^{(1)}}$	90.0 % / 93.0 % / 90.6 %	91.6 % / 94.2 % / 92.4 %	93.2 % / 95.3 % / 94.2 %
η at 25 % $P_{AC,r^{(1)}}$	91.2 % / 93.9 % / 91.9 %	93.2 % / 95.3 % / 94.2 %	94.0 % / 96.5 % / 95.3 %
η at 30 % $P_{AC,r^{(1)}}$	92.4 % / 94.7 % / 93.3 %	93.9 % / 96.2 % / 95.1 %	94.5 % / 96.7 % / 96.0 %
η at 50 % $P_{AC,r^{(1)}}$	94.5 % / 96.7 % / 96.0 %	94.9 % / 97.1 % / 96.4 %	95.3 % / 97.5 % / 96.8 %
η at 75 % $P_{AC,r^{(1)}}$	95.1 % / 97.3 % / 96.6 %	95.4 % / 97.7 % / 97.0 %	95.6 % / 97.9 % / 97.3 %
η at 100 % $P_{AC,r^{(1)}}$	95.4 % / 97.7 % / 97.0 %	95.6 % / 97.9 % / 97.3 %	95.8 % / 97.9 % / 97.5 %
MPP adaptation efficiency	> 99.9 %		

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

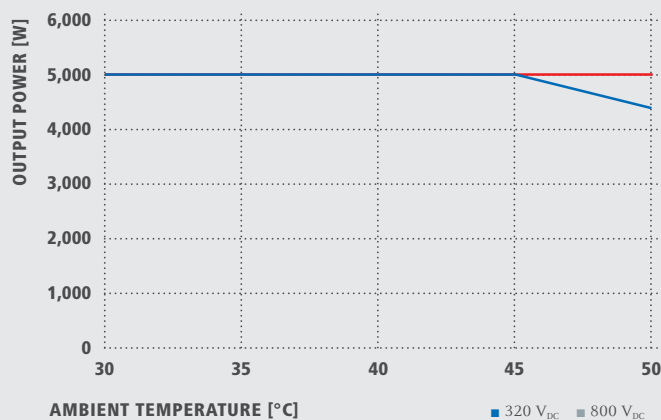
INTERFACES	SYMO HYBRID 3.0-3-S	SYMO HYBRID 4.0-3-S	SYMO HYBRID 5.0-3-S
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)		
Datalogger and web server	Included		
Interface to battery and meter	Modbus RTU (RS485)		

¹⁾ And at $U_{mpp \min} / U_{dc,r} / U_{mpp \max}$

FRONIUS SYMO HYBRID 5.0-3-S EFFICIENCY CURVE



FRONIUS SYMO HYBRID 5.0-3-S DERATING



FRONIUS SOLAR BATTERY TECHNICAL DATA

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)	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
Item number	4,220,110	4,220,111	4,220,112	4,220,113	4,220,114	4,220,115
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 ¹⁾					
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⁾ At 23°C ambient temperature.

FRONIUS SMART METER TECHNICAL DATA

GENERAL DATA	SMART METER 63A-3	SMART METER 50kA-3 ¹⁾
Item number	43,0001,1473	43,0001,1478
Nominal voltage	400 - 415 V	
Operating range	340 - 460 V	210 - 440 V
Maximum current	3 x 63 A	3 x 50,000 A
Cable cross-section, power path	1 - 16 mm ²	0.05 - 4 mm ²
Cable cross-section, communication	0.05 - 4 mm ²	
Mounting	DIN rail	
Housing	4 solar modules DIN 43880	
Dimensions (height x width x depth)	89.0 x 71.2 x 65.6 mm	
Accuracy class	1	
Interface to inverter	Modbus RTU (RS485)	
Display	8-digit LCD	
Voltage transformation ratio (adjustable)	–	1 - 500
Current transformation ratio (adjustable)	–	1 - 9,999
Pulse output	No	Yes

¹⁾ Delivered without current sensors, secondary current 1 A and 5 A. The Fronius Smart Meter 50kA-3 is available by the end of 2015.

FRONIUS SYMO

/ Maximum flexibility for the applications of tomorrow.



**FRONIUS SYMO 3.0-3-S / 3.7-3-S / 4.5-3-S / 3.0-3-M /
3.7-3-M / 4.5-3-M / 5.0-3-M / 6.0-3-M / 7.0-3-M / 8.2-3-M**

/ The flexible inverter for smaller PV systems: the three-phase Fronius Symo provides optimum, symmetrical infeed and impressive system design flexibility thanks to SuperFlex Design. Many standard interfaces and straightforward system integration into the Fronius Solar.web by WLAN make the Fronius Symo one of the most communicative inverters on the market.

**FRONIUS SYMO 10.0-3-M / 12.5-3-M / 15.0-3-M /
17.5-3-M / 20.0-3-M**

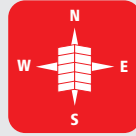
/ The flexible inverter for commercial and industrial systems: the high system voltage and innovative SuperFlex Design promise maximum flexibility in system design. With protection class IP 66, it also sets new standards on the market and is ideal for outdoor use.



/ SnapINverter technology



/ Integrated data communication



/ SuperFlex Design



/ Dynamic Peak Manager



/ Smart Grid Ready

THREE-PHASE, COMMUNICATIVE AND TOTALLY FLEXIBLE

/ Boasting power categories ranging from 3.0 to 20.0 kW, the transformerless Fronius Symo is the three-phase inverter for every size of installation. With a high system voltage, wide input voltage range and two MPP trackers, it guarantees maximum flexibility in system design. A WLAN or Ethernet internet connection as standard plus easy integration of third-party components make the Fronius Symo one of the most communicative inverters on the market.

/ Maximum flexibility with the SuperFlex Design

With a high system voltage of 1,000 V, wide MPP voltage range and two MPP trackers, the PV system can be flexibly adapted to any roof configuration. From systems on roofs with differing orientations with and without shade or in conjunction with residual modules, the Fronius Symo meets all demands. See for yourself at www.fronius.com/superflex.

/ Comprehensive data communication built-in

The Fronius Symo meets every data communication need: the datalogger is permanently integrated and the inverter can be easily connected to the internet (Fronius Solar.web) by WLAN or Ethernet. The Modbus TCP SunSpec, Modbus RTU SunSpec and Fronius Solar API (JSON) open interfaces allow simple integration of third-party components in parallel to the Fronius Solar.web. Simple commissioning is guaranteed thanks to the built-in wizard.

/ Optimisation of self-consumption

The Fronius Symo comes as standard with an energy management relay to optimise self-consumption of self-generated power. In addition, an energy meter can be connected to the device for visualisation of self-consumption in Fronius Solar.web.

/ Future-proof with plug-in cards

The innovative plug-in card technology allows flexible retrofitting of future functions - making the Fronius Symo fit for the future.

/ Smart Grid Ready

The three-phase Fronius Symo already meets the requirements of tomorrow. In order to maximise yields and stabilise the grid, our inverters are equipped with dynamic and static grid backup functions for reactive power and effective power regulation. Dynamic feed-in control is also possible with the Fronius Symo.

/ SnapINverter technology

The innovative hinged system makes inverter installation and servicing very straightforward. After fitting the wall bracket and cabling for the device, the inverter is placed in the wall bracket before being swivelled into position and secured.

/ Dynamic Peak Manager for maximum yields

The Fronius Symo uses a new MPP tracking algorithm which dynamically adapts its behaviour when searching for the optimal operating point. This allows the inverter to deliver the maximum output in all circumstances. A particularly impressive feature of the Dynamic Peak Manager is that it automatically checks the entire characteristic at regular intervals to ensure it can always find the maximum operating point, even when partially shaded.

/ Options and accessories

The inverters can be conveniently fitted and ordered with various options such as overvoltage protection, a DC connector kit or an MC4 cable.

FRONIUS SYMO TECHNICAL DATA

INPUT DATA	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
Max. input current ($I_{dc \max 1} / I_{dc \max 2}^{1)}$)	16.0 A / 16.0 A					
Max. short circuit current, module array ($MPP_1/MPP_2^{1)}$)	24.0 A / 24.0 A					
Min. input voltage ($U_{dc \min}$)	150 V					
Feed-in start voltage ($U_{dc \text{ start}}$)	200 V					
Nominal input voltage ($U_{dc, r}$)	595 V					
Max. input voltage ($U_{dc \max}$)	1,000 V					
MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)	200 - 800 V	250 - 800 V	300 - 800 V	150 - 800 V		
Number of MPP trackers	1			2		
Number of DC connections	3			2+2		

OUTPUT DATA	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
AC nominal output ($P_{ac, r}$)	3,000 W	3,700 W	4,500 W	3,000 W	3,700 W	4,500 W
Max. output power	3,000 VA	3,700 VA	4,500 VA	3,000 VA	3,700 VA	4,500 VA
AC output current ($I_{ac \text{ nom}}$)	4.3 A	5.3 A	6.5 A	4.3 A	5.3 A	6.5 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 ($\cos \varphi_{ac, r}$)	0.70 - 1 ind. / cap.			0.85 - 1 ind. / cap.		

GENERAL DATA	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
Item number	4,210,030	4,210,031	4,210,032	4,210,036	4,210,038	4,210,033
Dimensions (height x width x depth)	645 x 431 x 204 mm					
Weight	16.0 kg			19.9 kg		
Degree of protection	IP 65					
Protection class	1					
Overvoltage category (DC / AC) ²⁾	2 / 3					
Night-time consumption	< 1 W					
Inverter design	Transformerless					
Cooling	Regulated air cooling					
Mounting	Indoors and outdoors					
Ambient temperature range	-25 - +60 °C					
Permitted humidity	0 - 100 %					
Max. altitude	2,000 m / 3,400 m (unrestricted / restricted voltage range)					
DC connection technology	3x DC+ and 3x DC- screw terminals 2.5 - 16 mm²			4x DC+ and 4x DC- screw terminals 2.5 - 16mm² ³⁾		
AC connection technology	5-pin AC screw terminals 2.5 - 16 mm²			5-pin AC screw terminals 2.5 - 16 mm² ³⁾		
Certificates and compliance with standards	ÖVE / ÖNORM E 8001-4-712, DIN V VDE 0126-1-1/A1, VDE AR N 4105, IEC 62109-1/-2, IEC 62116, IEC 61727, AS 3100, AS 4777-2, AS 4777-3, CER 06-190, G83/2, UNE 206007-1, SI 4777 ¹⁾ , CEI 0-21 ¹⁾ , CEI 0-21 ¹⁾ , NRS 097					

¹⁾ Applies to Fronius Symo 3.0-3-M, 3.7-3-M and 4.5-3-M.²⁾ Testing to IEC 62109-1.³⁾ 16 mm² without ferrules.More information about inverter availability in your country can be found at www.fronius.com.

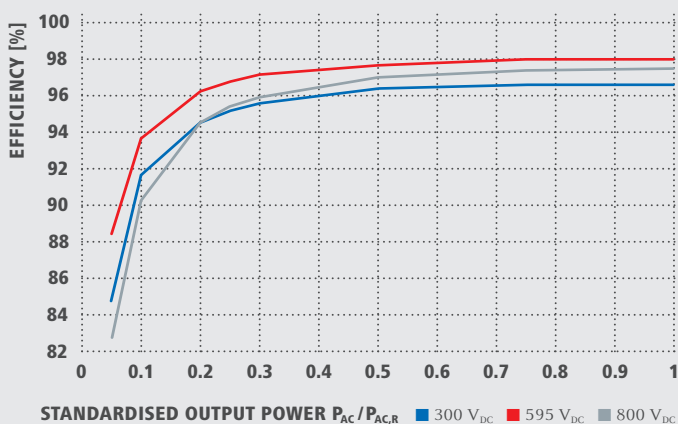
EFFICIENCY	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
Max. efficiency	98.0 %					
Europ. efficiency (η_{EU})	96.2 %	96.7 %	97.0 %	96.5 %	96.9 %	97.2 %
η at 5 % $P_{AC,r}$ ¹⁾	80.3 / 83.6 / 79.1 %	83.4 / 86.4 / 80.6 %	84.8 / 88.5 / 82.8 %	79.8 / 85.1 / 80.8 %	81.6 / 87.8 / 82.8 %	83.4 / 90.3 / 85.0 %
η at 10 % $P_{AC,r}$ ¹⁾	87.8 / 91.0 / 86.2 %	90.1 / 92.5 / 88.7 %	91.7 / 93.7 / 90.3 %	86.5 / 91.6 / 87.7 %	87.9 / 93.6 / 90.5 %	89.2 / 94.1 / 91.2 %
η at 20 % $P_{AC,r}$ ¹⁾	92.6 / 95.0 / 92.6 %	93.7 / 95.7 / 93.6 %	94.6 / 96.3 / 94.5 %	90.8 / 95.3 / 93.0 %	91.9 / 96.0 / 94.1 %	92.8 / 96.5 / 95.1 %
η at 25 % $P_{AC,r}$ ¹⁾	93.4 / 95.6 / 93.8 %	94.5 / 96.4 / 94.7 %	95.2 / 96.8 / 95.4 %	91.9 / 96.0 / 94.2 %	92.9 / 96.6 / 95.2 %	93.5 / 97.0 / 95.8 %
η at 30 % $P_{AC,r}$ ¹⁾	94.0 / 96.3 / 94.5 %	95.0 / 96.7 / 95.4 %	95.6 / 97.2 / 95.9 %	92.8 / 96.5 / 95.1 %	93.5 / 97.0 / 95.8 %	94.2 / 97.3 / 96.3 %
η at 50 % $P_{AC,r}$ ¹⁾	95.2 / 97.3 / 96.3 %	96.9 / 97.6 / 96.7 %	96.4 / 97.7 / 97.0 %	94.3 / 97.5 / 96.5 %	94.6 / 97.7 / 96.8 %	94.9 / 97.8 / 97.2 %
η at 75 % $P_{AC,r}$ ¹⁾	95.6 / 97.7 / 97.0 %	96.2 / 97.8 / 97.3 %	96.6 / 98.0 / 97.4 %	94.9 / 97.8 / 97.2 %	95.0 / 97.9 / 97.4 %	95.1 / 98.0 / 97.5 %
η at 100 % $P_{AC,r}$ ¹⁾	95.6 / 97.9 / 97.3 %	96.2 / 98.0 / 97.5 %	96.6 / 98.0 / 97.5 %	95.0 / 98.0 / 97.4 %	95.1 / 98.0 / 97.5 %	95.0 / 98.0 / 97.6 %
MPP adaptation efficiency	> 99.9 %					

PROTECTION DEVICES	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
DC insulation measurement	Yes					
Overload behaviour	Operating point shift, power limitation					
DC disconnect	Yes					

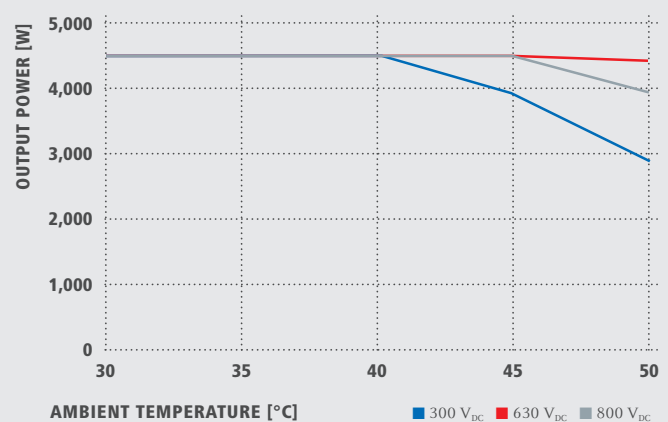
INTERFACES	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)					
6 inputs and 4 digital inputs/ outputs	Interface to ripple control receiver					
USB (type A socket)	Data logging, inverter update via USB flash drive					
2x RS422 (RJ45 socket)	Fronius Solar Net					
Signalling output	Energy management (floating relay output)					
Datalogger and web server	Included					
External input	S0 meter connection / Evaluation of overvoltage protection					
RS485	Modbus RTU SunSpec or meter connection					

¹⁾ And at $U_{mpp \min} / U_{dc,r} / U_{mpp \max}$

FRONIUS SYMO 4.5-3-S EFFICIENCY CURVE



FRONIUS SYMO 4.5-3-S DERATING



FRONIUS SYMO TECHNICAL DATA

INPUT DATA	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
Max. input current ($I_{dc \max 1} / I_{dc \max 2}$)	16.0 A / 16.0 A			
Max. short circuit current, module array (MPP ₁ /MPP ₂)	24.0 A / 24.0 A			
Min. input voltage ($U_{dc \min}$)	150 V			
Feed-in start voltage ($U_{dc \text{ start}}$)	200 V			
Nominal input voltage ($U_{dc \text{ r}}$)	595 V			
Max. input voltage ($U_{dc \max}$)	1,000 V			
MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)	163 – 800 V	195 - 800 V	228 – 800 V	267 – 800 V
Number of MPP trackers	2			
Number of DC connections	2 + 2			

OUTPUT DATA	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
AC nominal output ($P_{ac,r}$)	5,000 W	6,000 W	7,000 W	8,200 W
Max. output power	5,000 VA	6,000 VA	7,000 VA	8,200 VA
AC output current ($I_{ac \text{ nom}}$)	7.2 A	8.7 A	10.1 A	11.8 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.			

GENERAL DATA	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
Item number	4,210,034	4,210,040	4,210,041	4,210,039
Dimensions (height x width x depth)	645 x 431 x 204 mm			
Weight	19.9 kg		21.9 kg	
Degree of protection	IP 65			
Protection class	1			
Overvoltage category (DC / AC) ¹⁾	2 / 3			
Night-time consumption	< 1 W			
Inverter design	Transformerless			
Cooling	Regulated air cooling			
Mounting	Indoors and outdoors			
Ambient temperature range	-25 - +60 °C			
Permitted humidity	0 - 100 %			
Max. altitude	2,000 m / 3,400 m (unrestricted / restricted voltage range)			
DC connection technology	4x DC+ and 4x DC- screw terminals 2.5 - 16 mm ^{2 2)}			
AC connection technology	5-pin AC screw terminals 2.5 - 16mm ^{2 2)}			
Certificates and compliance with standards	ÖVE / ÖNORM E 8001-4-712, DIN V VDE 0126-1-1/A1, VDE AR N 4105, IEC 62109-1/-2, IEC 62116, IEC 61727, AS 3100, AS 4777-2, AS 4777-3, CER 06-190, G83/2, UNE 206007-1, SI 4777, CEI 0-21, NRS 097			

¹⁾ Testing to IEC 62109-1.²⁾ 16 mm² without ferrules.More information about inverter availability in your country can be found at www.fronius.com.

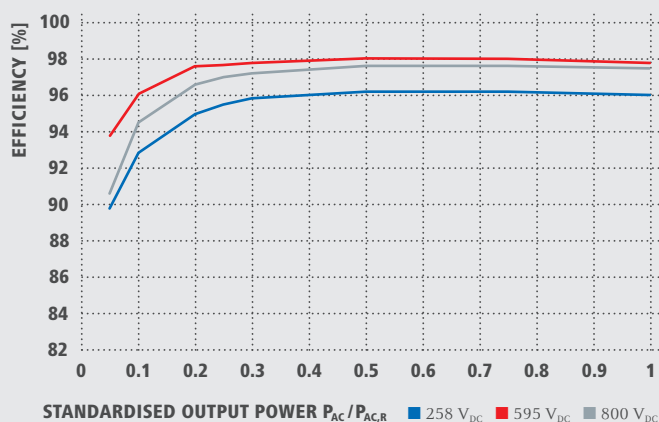
EFFICIENCY	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
Max. efficiency	98.0 %			
Europ. efficiency (η_{EU})	97.3 %	97.5 %	97.6 %	97.7 %
η at 5 % $P_{AC,r}$ ¹⁾	84.9 / 91.2 / 85.9 %	87.8 / 92.6 / 87.8 %	88.7 / 93.1 / 89.0 %	89.8 / 93.8 / 90.6 %
η at 10 % $P_{AC,r}$ ¹⁾	89.9 / 94.6 / 91.7 %	91.3 / 95.6 / 93.0 %	92.0 / 95.9 / 94.7 %	92.8 / 96.1 / 94.5 %
η at 20 % $P_{AC,r}$ ¹⁾	93.2 / 96.7 / 95.4 %	94.1 / 97.1 / 95.9 %	94.5 / 97.3 / 96.3 %	95.0 / 97.6 / 96.6 %
η at 25 % $P_{AC,r}$ ¹⁾	93.9 / 97.2 / 96.0 %	94.7 / 97.5 / 96.5 %	95.1 / 97.6 / 96.7 %	95.5 / 97.7 / 97.0 %
η at 30 % $P_{AC,r}$ ¹⁾	94.5 / 97.4 / 96.5 %	95.1 / 97.7 / 96.8 %	95.4 / 97.7 / 97.0 %	95.8 / 97.8 / 97.2 %
η at 50 % $P_{AC,r}$ ¹⁾	95.2 / 97.9 / 97.3 %	95.7 / 98.0 / 97.5 %	95.9 / 98.0 / 97.5 %	96.2 / 98.0 / 97.6 %
η at 75 % $P_{AC,r}$ ¹⁾	95.3 / 98.0 / 97.5 %	95.7 / 98.0 / 97.6 %	95.9 / 98.0 / 97.6 %	96.2 / 98.0 / 97.6 %
η at 100 % $P_{AC,r}$ ¹⁾	95.2 / 98.0 / 97.6 %	95.7 / 97.9 / 97.6 %	95.8 / 97.9 / 97.5 %	96.0 / 97.8 / 97.5 %
MPP adaptation efficiency	> 99.9 %			

PROTECTION DEVICES	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
DC insulation measurement	Yes			
Overload behaviour	Operating point shift, power limitation			
DC disconnecter	Yes			

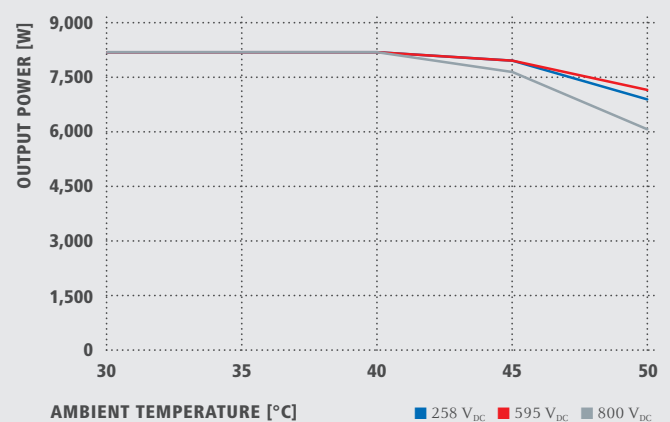
INTERFACES	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)			
6 inputs and 4 digital inputs/outputs	Interface to ripple control receiver			
USB (type A socket)	Data logging, inverter update via USB flash drive			
2x RS422 (RJ45 socket)	Fronius Solar Net			
Signalling output	Energy management (floating relay output)			
Datalogger and web server	Included			
External input	S0 meter connection / Evaluation of overvoltage protection			
RS485	Modbus RTU SunSpec or meter connection			

¹⁾ And at $U_{mpp \min} / U_{dc,r} / U_{mpp \max}$

FRONIUS SYMO 8.2-3-M EFFICIENCY CURVE



FRONIUS SYMO 8.2-3-M DERATING



FRONIUS SYMO TECHNICAL DATA

INPUT DATA	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
Max. input current ($I_{dc \max 1} / I_{dc \max 2}$)	27.0 A / 16.5 A		33.0 A / 27.0 A		
Max. usable input current total ($I_{dc \max 1} + I_{dc \max 2}$)	43.5 A		51.0 A		
Max. short circuit current, module array (MPP1/MPP2)	40.5 A / 24.8 A		49.5 A / 40.5 A		
Min. input voltage ($U_{dc \min}$)	200 V				
Feed-in start voltage ($U_{dc \text{ start}}$)	200 V				
Nominal input voltage ($U_{dc,r}$)	600 V				
Max. input voltage ($U_{dc \max}$)	1,000 V				
MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)	270 - 800 V	320 - 800 V		370 - 800 V	420 - 800 V
Number of MPP trackers	2				
Number of DC connections	3+3				
Max. PV generator output ($P_{dc \max}$)	15.0 kW _{peak}	18.8 kW _{peak}	22.5 kW _{peak}	26.3 kW _{peak}	30.0 kW _{peak}

OUTPUT DATA	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
AC nominal output ($P_{ac,r}$)	10,000 W	12,500 W	15,000 W	17,500 W	20,000 W
Max. output power	10,000 VA	12,500 VA	15,000 VA	17,500 VA	20,000 VA
AC output current ($I_{ac \text{ nom}}$)	14.4 A	18.0 A	21.7 A	25.3 A	28.9 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	1.8 %	2.0 %	1.5 %	1.5 %	1.3 %
Power factor ($\cos \varphi_{ac,r}$)	0 - 1 ind. / cap.				

GENERAL DATA	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
Item number	4,210,050	4,210,051	4,210,052	4,210,053	4,210,054
Dimensions (height x width x depth)	725 x 510 x 225 mm				
Weight	34.8 kg		43.4 kg		
Degree of protection	IP 66				
Protection class	1				
Overvoltage category (DC / AC) ¹⁾	2 / 3				
Night-time consumption	< 1 W				
Inverter design	Transformerless				
Cooling	Regulated air cooling				
Mounting	Indoors and outdoors				
Ambient temperature range	-40 - +60 °C				
Permitted humidity	0 - 100 %				
Max. altitude	2,000 m / 3,400 m (unrestricted / restricted voltage range)				
DC connection technology	6x DC+ and 6x DC- screw terminals 2.5 - 16 mm²				
AC connection technology	5-pin AC screw terminals 2.5 - 16 mm²				
Certificates and compliance with standards	ÖVE / ÖNORM E 8001-4-712, DIN V VDE 0126-1-1/A1, VDE AR N 4105, IEC 62109-1/2, IEC 62116, IEC 61727, AS 3100, AS 4777-2, AS 4777-3, CER 06-190, G83/2, UNE 206007-1, SI 4777, CEI 0-16, CEI 0-21, NRS 097				

¹⁾ Testing to IEC 62109-1. DIN rail for optional type 2 overvoltage protection fitted.

More information about inverter availability in your country can be found at www.fronius.com.

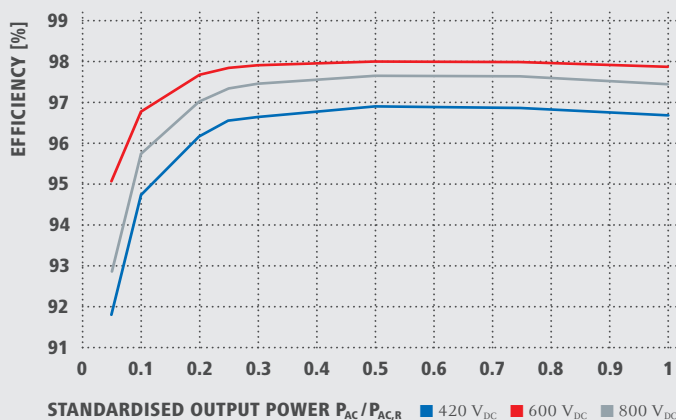
EFFICIENCY	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
Max. efficiency	98.0 %		98.1 %		
Europ. efficiency (η_{EU})	97.4 %	97.6 %	97.8 %	97.8 %	97.9 %
η at 5 % $P_{AC,r}^{1)}$	87.9 / 92.5 / 89.2 %	88.7 / 93.1 / 90.1 %	91.2 / 94.8 / 92.3 %	91.6 / 95.0 / 92.7 %	91.9 / 95.2 / 93.0 %
η at 10 % $P_{AC,r}^{1)}$	91.2 / 94.9 / 92.8 %	92.9 / 96.1 / 94.6 %	93.4 / 96.0 / 94.4 %	94.0 / 96.4 / 95.0 %	94.8 / 96.9 / 95.8 %
η at 20 % $P_{AC,r}^{1)}$	94.6 / 97.1 / 96.1 %	95.4 / 97.3 / 96.6 %	95.9 / 97.4 / 96.7 %	96.1 / 97.6 / 96.9 %	96.3 / 97.8 / 97.1 %
η at 25 % $P_{AC,r}^{1)}$	95.4 / 97.3 / 96.6 %	95.6 / 97.6 / 97.0 %	96.2 / 97.6 / 97.0 %	96.4 / 97.8 / 97.2 %	96.7 / 97.9 / 97.4 %
η at 30 % $P_{AC,r}^{1)}$	95.6 / 97.5 / 96.9 %	95.9 / 97.7 / 97.2 %	96.5 / 97.8 / 97.3 %	96.6 / 97.9 / 97.4 %	96.8 / 98.0 / 97.6 %
η at 50 % $P_{AC,r}^{1)}$	96.3 / 97.9 / 97.4 %	96.4 / 98.0 / 97.5 %	96.9 / 98.1 / 97.7 %	97.0 / 98.1 / 97.7 %	97.0 / 98.1 / 97.8 %
η at 75 % $P_{AC,r}^{1)}$	96.5 / 98.0 / 97.6 %	96.5 / 98.0 / 97.6 %	97.0 / 98.1 / 97.8 %	97.0 / 98.1 / 97.8 %	97.0 / 98.1 / 97.7 %
η at 100 % $P_{AC,r}^{1)}$	96.5 / 98.0 / 97.6 %	96.5 / 97.8 / 97.6 %	97.0 / 98.1 / 97.7 %	96.9 / 98.1 / 97.6 %	96.8 / 98.0 / 97.6 %
MPP adaptation efficiency	> 99.9 %				

PROTECTION DEVICES	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
DC insulation measurement	Yes				
Overload behaviour	Operating point shift, power limitation				
DC disconnecter	Yes				

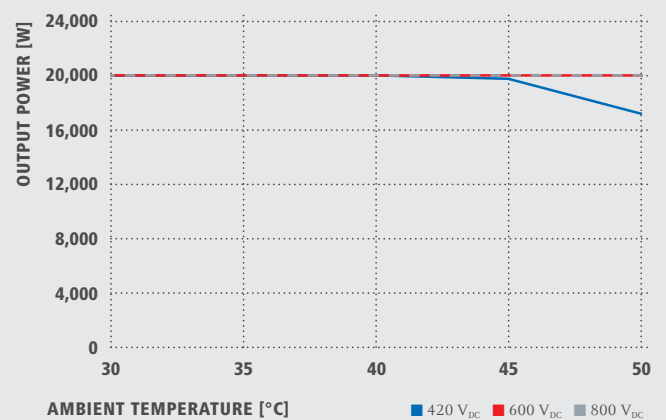
INTERFACES	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)				
6 inputs and 4 digital inputs/outputs	Interface to ripple control receiver				
USB (type A socket)	Data logging, inverter update via USB flash drive				
2x RS422 (RJ45 socket)	Fronius Solar Net				
Signalling output	Energy management (floating relay output)				
Datalogger and web server	Included				
External input	S0 meter connection / Evaluation of overvoltage protection				
RS485	Modbus RTU SunSpec or meter connection				

¹⁾ And at $U_{mpp \min}$ / $U_{dc,r}$ / $U_{mpp \max}$

FRONIUS SYMO 20.0-3-M EFFICIENCY CURVE



FRONIUS SYMO 20.0-3-M DERATING



FRONIUS PRIMO

/ The communicative inverter for optimised energy management.



FRONIUS PRIMO 3.0-1 / 3.5-1 / 3.6-1 / 4.0-1 / 4.6-1 / 5.0-1 / 6.0-1 / 8.2-1

/ The communicative inverter: the single-phase Fronius Primo boasts an extensive data communication package, including data logging, energy management and several interfaces. The system data can be sent via WLAN or Ethernet directly to the online portal Fronius Solar.web, where it can be analysed. In this way, the Fronius Primo ensures maximum self-consumption in the home for both new and existing PV systems.



/ SnapINverter technology



/ Integrated data communication



/ SuperFlex Design



/ Dynamic Peak Manager



/ Smart Grid Ready

SINGLE-PHASE, COMMUNICATIVE AND TOTALLY FLEXIBLE

/ The Fronius Primo in power categories from 3.0 to 8.2 kW perfectly completes the new SnapINverter generation. This single-phase, transformerless device is the ideal inverter for private households. Its innovative SuperFlex Design provides maximum flexibility in system design, while the SnapINverter mounting system makes installation and maintenance as easy as possible. The communication package included as standard, with WLAN, energy management, several interfaces and much more besides, makes the Fronius Primo a communicative inverter for home owners.

/ Comprehensive data communication built-in

The Fronius Primo meets every data communication need: the datalogger is permanently integrated and the inverter can be easily connected to the internet (Fronius Solar.web) by WLAN or Ethernet. The Modbus TCP SunSpec, Modbus RTU SunSpec and Fronius Solar API (JSON) open interfaces allow simple integration of third-party components in parallel with the Fronius Solar.web. Simple commissioning is guaranteed thanks to the built-in wizard.

/ Optimisation of self-consumption

The Fronius Primo comes with an energy management relay as standard to optimise self-consumption of the self-generated power. The inverter also has a built-in digital energy management output, which operates independently of the energy management relay. An energy meter can be connected to the device to visualise the self-consumption data in Fronius Solar.web.

/ Maximum flexibility with the SuperFlex Design

With a high system voltage of 1,000 V, the wide MPP voltage range and two MPP trackers, the PV system can be flexibly adapted to any roof configuration. From systems on roofs with differing orientations with and without shade or in conjunction with residual modules, the Fronius Primo meets all demands. See for yourself at www.fronius.com/superflex.

/ Smart Grid Ready

The single-phase Fronius Primo already meets the requirements of tomorrow. In order to maximise yields and stabilise the grid, our inverters are equipped with dynamic and static grid backup functions for reactive power and effective power regulation. Dynamic feed-in control is also possible with the inverters.

/ SnapINverter technology

The innovative hinged system makes inverter mounting and servicing extremely straightforward. After fitting the wall bracket and cabling for the device, the inverter is placed in the wall bracket before being swivelled into position and secured.

/ Future-proof with plug-in cards

The innovative plug-in card technology allows flexible retrofitting of future functions, making the Fronius Primo fit for the future.

/ Dynamic Peak Manager for maximum yields

The Fronius Primo uses a new MPP solar tracking algorithm which dynamically adapts its behaviour when searching for the optimal operating point. This allows the inverter to deliver the maximum output in all circumstances. A particularly impressive feature of the Dynamic Peak Manager is that it automatically checks the entire characteristic at regular intervals to ensure it can always find the maximum operating point, even when partially shaded.

FRONIUS PRIMO TECHNICAL DATA (3.0-1, 3.5-1, 3.6-1, 4.0-1, 4.6-1)

INPUT DATA	PRIMO 3.0-1	PRIMO 3.5-1	PRIMO 3.6-1	PRIMO 4.0-1	PRIMO 4.6-1
Max. input current ($I_{dc \text{ max } 1} / I_{dc \text{ max } 2}$)	12.0 A / 12.0 A				
Max. short circuit current, module array (MPP ₁ /MPP ₂)	18.0 A / 18.0 A				
Min. input voltage ($U_{dc \text{ min}}$)	80 V				
Feed-in start voltage ($U_{dc \text{ start}}$)	80 V				
Nominal input voltage ($U_{dc \text{ n}}$)	710 V				
Max. input voltage ($U_{dc \text{ max}}$)	1,000 V				
MPP voltage range ($U_{mpp \text{ min}} - U_{mpp \text{ max}}$)	200 - 800 V			210 - 800 V	240 - 800 V
Number of MPP trackers	2				
Number of DC connections	2 + 2				

OUTPUT DATA	PRIMO 3.0-1	PRIMO 3.5-1	PRIMO 3.6-1	PRIMO 4.0-1	PRIMO 4.6-1
AC nominal output ($P_{ac \text{ n}}$)	3,000 W	3,500 W	3,680 W	4,000 W	4,600 W
Max. output power	3,000 VA	3,500 VA	3,680 VA	4,000 VA	4,600 VA
AC output current ($I_{ac \text{ nom}}$)	13.0 A	15.2 A	16.0 A	17.4 A	20.0 A
Grid connection (voltage range)	1 - NPE 220 V / 230 V (180 V - 270 V)				
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)				
Total harmonic distortion	< 5 %				
Power factor ($\cos \varphi_{ac \text{ r}}$)	0.85 - 1 ind. / cap.				

GENERAL DATA	PRIMO 3.0-1	PRIMO 3.5-1	PRIMO 3.6-1	PRIMO 4.0-1	PRIMO 4.6-1
Item number	4,210,069	4,210,068	4,210,067	4,210,066	4,210,065
Dimensions (height x width x depth)	645 x 431 x 204 mm				
Weight	21.5 kg				
Degree of protection	IP 65				
Protection class	1				
Overvoltage category (DC / AC) ¹⁾	2 / 3				
Night-time consumption	< 1 W				
Inverter design	Transformerless				
Cooling	Regulated air cooling				
Mounting	Indoors and outdoors				
Ambient temperature range	-40 - +55 °C				
Permitted humidity	0 - 100 %				
Max. altitude	4,000 m				
DC connection technology	2x DC+1, 2x DC+2 and 4x DC- screw terminals 2.5 - 16 mm ²				
AC connection technology	3-pin AC screw terminals 2.5 - 16 mm ²				
Certificates and compliance with standards	DIN V VDE 0126-1-1/A1, IEC 62109-1/-2, IEC 62116, IEC 61727, AS 4777-2, AS 4777-3, G83/2, G59/3, CEI 0-21				

¹⁾ Testing to IEC 62109-1.More information about inverter availability in your country can be found at www.fronius.com.

EFFICIENCY	PRIMO 3.0-1	PRIMO 3.5-1	PRIMO 3.6-1	PRIMO 4.0-1	PRIMO 4.6-1
Max. efficiency	97.9 %	98.0 %	98.0 %	98.0 %	98.0 %
Europ. efficiency (η_{EU})	96.1 %	96.8 %	96.8 %	97.0 %	97.0 %
η at 5 % $P_{\text{ac,r}}^{1)}$	80.8 / 82.5 / 82.5 %	80.8 / 82.5 / 82.5 %	80.8 / 82.5 / 82.5 %	80.8 / 82.5 / 82.5 %	80.8 / 82.5 / 82.5 %
η at 10 % $P_{\text{ac,r}}^{1)}$	84.1 / 86.5 / 86.1 %	86.3 / 93.6 / 91.8 %	86.3 / 93.6 / 91.8 %	86.6 / 93.9 / 92.2 %	88.9 / 94.4 / 92.9 %
η at 20 % $P_{\text{ac,r}}^{1)}$	90.3 / 95.5 / 94.8 %	91.6 / 96.2 / 95.2 %	91.6 / 96.2 / 95.2 %	92.2 / 96.7 / 95.6 %	93.0 / 97.0 / 95.9 %
η at 25 % $P_{\text{ac,r}}^{1)}$	91.8 / 96.4 / 95.1 %	92.7 / 96.9 / 95.8 %	92.7 / 96.9 / 95.8 %	93.2 / 97.2 / 96.1 %	93.9 / 97.2 / 96.6 %
η at 30 % $P_{\text{ac,r}}^{1)}$	92.7 / 96.9 / 96.0 %	93.5 / 97.2 / 96.3 %	93.5 / 97.2 / 96.3 %	94.0 / 97.2 / 96.8 %	94.5 / 97.3 / 96.9 %
η at 50 % $P_{\text{ac,r}}^{1)}$	94.5 / 97.4 / 97.0 %	95.0 / 97.7 / 97.3 %	95.0 / 97.7 / 97.3 %	95.2 / 97.8 / 97.4 %	95.6 / 97.9 / 97.6 %
η at 75 % $P_{\text{ac,r}}^{1)}$	95.4 / 97.9 / 97.7 %	95.6 / 97.8 / 97.8 %	95.6 / 97.8 / 97.8 %	95.8 / 97.9 / 97.8 %	96.0 / 97.9 / 97.8 %
η at 100 % $P_{\text{ac,r}}^{1)}$	95.7 / 97.9 / 97.8 %	95.8 / 98.0 / 97.8 %	95.8 / 98.0 / 97.8 %	95.9 / 98.0 / 97.9 %	96.2 / 97.9 / 98.0 %
MPP adaptation efficiency	> 99.9 %				

PROTECTION DEVICES	PRIMO 3.0-1	PRIMO 3.5-1	PRIMO 3.6-1	PRIMO 4.0-1	PRIMO 4.6-1
DC insulation measurement	Yes				
Overload behaviour	Operating point shift, power limitation				
DC disconnecter	Yes				

INTERFACES	PRIMO 3.0-1	PRIMO 3.5-1	PRIMO 3.6-1	PRIMO 4.0-1	PRIMO 4.6-1
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)				
6 inputs and 4 digital inputs/outputs	Interface to ripple control receiver				
USB (type A socket)	Data logging, inverter update via USB flash drive				
2x RS422 (RJ45 socket)	Fronius Solar Net				
Signalling output	Energy management (floating relay output)				
Datalogger and web server	Integrated				
External input	S0 meter connection / Evaluation of overvoltage protection				
RS485	Modbus RTU SunSpec or meter connection				

¹⁾ And at $U_{\text{mpp min}} / U_{\text{dc,r}} / U_{\text{mpp max}}$

FRONIUS PRIMO TECHNICAL DATA (5.0-1, 5.0-1 AUS, 6.0-1, 8.2-1)

INPUT DATA	PRIMO 5.0-1	PRIMO 5.0-1 AUS	PRIMO 6.0-1	PRIMO 8.2-1
Max. input current ($I_{dc \max 1} / I_{dc \max 2}$)	12.0 A / 12.0 A	18.0 A / 18.0 A		
Max. short circuit current, module array (MPP_1/MPP_2)	18.0 A / 18.0 A	27.0 A / 27.0 A		
Min. input voltage ($U_{dc \min}$)	80 V			
Feed-in start voltage ($U_{dc \text{ start}}$)	80 V			
Nominal input voltage ($U_{dc, n}$)	710 V			
Max. input voltage ($U_{dc \max}$)	1,000 V			
MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)	240 - 800 V			270 - 800 V
Number of MPP trackers	2			
Number of DC connections	2 + 2			

OUTPUT DATA	PRIMO 5.0-1	PRIMO 5.0-1 AUS	PRIMO 6.0-1	PRIMO 8.2-1
AC nominal output ($P_{ac, n}$)	5,000 W	4,600 W	6,000 W	8,200 W
Max. output power	5,000 VA	5,000 VA	6,000 VA	8,200 VA
AC output current ($I_{ac \text{ nom}}$)	21.7 A	21.7 A	26.1 A	35.7 A
Grid connection (voltage range)	1 - NPE 220 V / 230 V (180 V - 270 V)			
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)			
Total harmonic distortion	< 5 %			
Power factor ($\cos \varphi_{ac, r}$)	0.85 - 1 ind. / cap.			

GENERAL DATA	PRIMO 5.0-1	PRIMO 5.0-1 AUS	PRIMO 6.0-1	PRIMO 8.2-1
Item number	4,210,063	4,210,663	4,210,062	4,210,060
Dimensions (height x width x depth)	645 x 431 x 204 mm			
Weight	21.5 kg			
Degree of protection	IP 65			
Protection class	1			
Overvoltage category (DC / AC) ¹⁾	2 / 3			
Night-time consumption	< 1 W			
Inverter design	Transformerless			
Cooling	Regulated air cooling			
Mounting	Indoors and outdoors			
Ambient temperature range	-40 - +55 °C			
Permitted humidity	0 - 100 %			
Max. altitude	4,000 m			
DC connection technology	2x DC+1, 2x DC+2 and 4x DC- screw terminals 2.5 - 16 mm ²			
AC connection technology	3-pin AC screw terminals 2.5 - 16 mm ²			
Certificates and compliance with standards	DIN V VDE 0126-1-1/A1, IEC 62109-1/-2, IEC 62116, IEC 61727, AS 4777-2, AS 4777-3, G83/2, G59/3, CEI 0-21			

¹⁾ Testing to IEC 62109-1.More information about inverter availability in your country can be found at www.fronius.com.

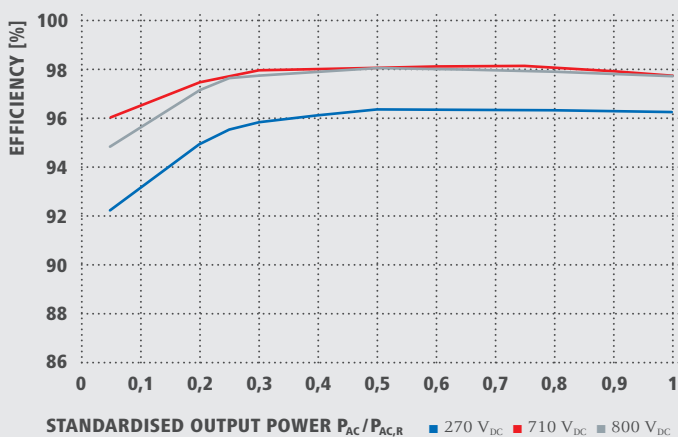
EFFICIENCY	PRIMO 5.0-1	PRIMO 5.0-1 AUS	PRIMO 6.0-1	PRIMO 8.2-1
Max. efficiency	98.0 %	98.0 %	98.0 %	98.1 %
Europ. efficiency (η_{EU})	97.1 %	97.1 %	97.3 %	97.5 %
η at 5 % $P_{AC,R}^{1)}$	80.8 / 82.5 / 82.5 %	80.8 / 82.5 / 82.5 %	84.6 / 86.5 / 86.0 %	85.5 / 89.6 / 88.5 %
η at 10 % $P_{AC,R}^{1)}$	89.6 / 94.8 / 93.1 %	89.6 / 94.8 / 93.1 %	90.5 / 95.5 / 94.6 %	92.2 / 96.0 / 94.8 %
η at 20 % $P_{AC,R}^{1)}$	93.4 / 97.2 / 96.2 %	93.4 / 97.2 / 96.2 %	94.0 / 97.2 / 96.8 %	94.9 / 97.4 / 97.2 %
η at 25 % $P_{AC,R}^{1)}$	94.1 / 97.3 / 96.8 %	94.1 / 97.3 / 96.8 %	94.7 / 97.4 / 97.0 %	95.5 / 97.7 / 97.6 %
η at 30 % $P_{AC,R}^{1)}$	94.7 / 97.4 / 97.0 %	94.7 / 97.4 / 97.0 %	95.1 / 97.6 / 97.3 %	95.8 / 97.9 / 97.7 %
η at 50 % $P_{AC,R}^{1)}$	95.8 / 97.9 / 97.7 %	95.8 / 97.9 / 97.7 %	96.0 / 97.9 / 97.8 %	96.3 / 98.0 / 98.0 %
η at 75 % $P_{AC,R}^{1)}$	96.1 / 98.0 / 97.9 %	96.1 / 98.0 / 97.9 %	96.2 / 98.0 / 98.0 %	96.3 / 98.1 / 97.9 %
η at 100 % $P_{AC,R}^{1)}$	96.2 / 97.9 / 97.9 %	96.2 / 97.9 / 97.9 %	96.2 / 98.0 / 97.9 %	96.2 / 97.7 / 97.7 %
MPP adaptation efficiency	> 99.9 %			

PROTECTION DEVICES	PRIMO 5.0-1	PRIMO 5.0-1 AUS	PRIMO 6.0-1	PRIMO 8.2-1
DC insulation measurement	Yes			
Overload behaviour	Operating point shift, power limitation			
DC disconnecter	Yes			

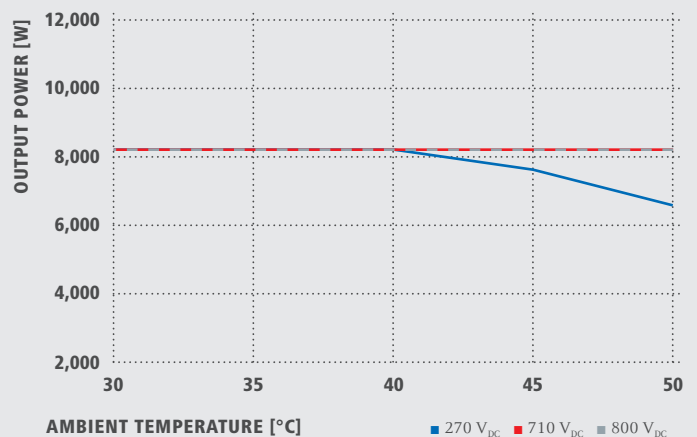
INTERFACES	PRIMO 5.0-1	PRIMO 5.0-1 AUS	PRIMO 6.0-1	PRIMO 8.2-1
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)			
6 inputs and 4 digital inputs/outputs	Interface to ripple control receiver			
USB (type A socket)	Data logging, inverter update via USB flash drive			
2x RS422 (RJ45 socket)	Fronius Solar Net			
Signalling output	Energy management (floating relay output)			
Datalogger and web server	Integrated			
External input	S0 meter connection / Evaluation of overvoltage protection			
RS485	Modbus RTU SunSpec or meter connection			

¹⁾ And at $U_{mpp \min} / U_{dc,r} / U_{mpp \max}$

FRONIUS PRIMO 8.2-1 EFFICIENCY CURVE



FRONIUS PRIMO 8.2-1 DERATING



FRONIUS GALVO

/ The future-proof inverter for small self-consumption systems.



FRONIUS GALVO 1.5-1 / 2.0-1 / 2.5-1 / 3.0-1 / 3.1-1

/ The self-consumption professional: low power categories and the integral energy management relay enable the Fronius Galvo to maximise the self-consumption component, enabling the producer to use most of the self-generated power. A host of other smart features make the Fronius Galvo one of the most future-proof inverters in its class: for example, simple connection to the internet by WLAN, or the plug-in card technology which makes it very easy to retrofit additional functions.



/ SnapINverter
technology



/ HF transformer
switchover



/ Integrated data
communication



/ Smart Grid
Ready

OPTIMISED FOR SELF-CONSUMPTION, FUTURE-PROOF AND COMMUNICATIVE

/ The Fronius Galvo is the perfect, single-phase HF transformer inverter for private households – and is especially suitable for self-consumption systems. With power categories from 1.5 to 3.1 kW and electrical isolation, it is also a future-proof inverter for existing PV systems. The Fronius Galvo combines maximum flexibility, innovative technologies and the highest levels of safety in a single device. An inverter of proven Fronius quality that is sure to impress you.

/ Optimisation of self-consumption

With its low power categories and single-phase design, the Fronius Galvo makes it possible to achieve a high rate of self-consumption. The integral energy management relay can be used to control consumers, thereby further increasing self-consumption. The inverter also has a built-in digital energy management output, which operates independently of the energy management relay. An energy meter can be connected to the device to visualise the self-consumption data in Fronius Solar.web.

/ Future-proof with plug-in cards

The innovative plug-in card technology allows flexible retrofitting of future functions - making the Fronius Galvo fit for the future. The single-phase inverters already offer static and dynamic grid backup through reactive power provision even in the lowest power categories.

/ Highly versatile and flexible system design

The single-phase, electrically isolated Fronius Galvo is suitable for all module technologies and grids and promises maximum flexibility. With its wide input voltage range, it can also be used in any type of system and allows flexible design.

/ Comprehensive data communication built-in

The Fronius Galvo meets every data communication need: the datalogger is permanently integrated and the inverter can be easily connected to the internet (Fronius Solar.web) by WLAN or Ethernet. The Modbus TCP SunSpec, Modbus RTU SunSpec and Fronius Solar API (JSON) open interfaces allow simple integration of third-party components in parallel to the Fronius Solar.web. Simple commissioning is guaranteed thanks to the built-in wizard.

/ Smart Grid Ready

The Fronius Galvo is already equipped to meet the technical requirements of grids in the future. In order to maximise yields and stabilise the grid, our inverters are equipped with dynamic and static grid backup functions for reactive power and effective power regulation. Dynamic feed-in control is also possible with the Fronius Galvo.

/ SnapINverter technology

The innovative hinged system makes inverter installation and servicing very straightforward. After fitting the wall bracket and cabling for the device, the inverter is placed in the wall bracket before being swivelled into position and secured.

FRONIUS GALVO TECHNICAL DATA

INPUT DATA	GALVO 1.5-1	GALVO 2.0-1	GALVO 2.5-1	GALVO 3.0-1 ¹⁾	GALVO 3.1-1
Max. input current ($I_{dc \max}$)	13.3 A	17.8 A	16.6 A	19.8 A	20.7 A
Max. short circuit current, module array	20.0 A	26.8 A	24.8 A	29.6 A	31.0 A
Min. input voltage ($U_{dc \min}$)	120 V			165 V	
Feed-in start voltage ($U_{dc \text{ start}}$)	140 V			185 V	
Nominal input voltage ($U_{dc,r}$)	260 V			330 V	
Max. input voltage ($U_{dc \max}$)	420 V			550 V	
MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)	120 - 335 V			165 - 440 V	
Number of MPP trackers	1				
Number of DC connections	3				

OUTPUT DATA	GALVO 1.5-1	GALVO 2.0-1	GALVO 2.5-1	GALVO 3.0-1 ¹⁾	GALVO 3.1-1
AC nominal output ($P_{ac \text{ r}}$)	1,500 W	2,000 W	2,500 W	3,000 W	3,100 W
Max. output power	1,500 VA	2,000 VA	2,500 VA	3,000 VA	3,100 VA
AC output current ($I_{ac \text{ nom}}$)	6.5 A	8.7 A	10.9 A	13.0 A	13.5 A
Grid connection (voltage range)	1-NPE 230 V (+17 % / -20 %)				
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)				
Total harmonic distortion	< 4 %				
Power factor ($\cos \varphi_{ac \text{ r}}$)	0.85 - 1 ind. / cap.				

GENERAL DATA	GALVO 1.5-1	GALVO 2.0-1	GALVO 2.5-1	GALVO 3.0-1 ¹⁾	GALVO 3.1-1
Item number	4,200,011	4,200,012	4,200,013	4,200,014	4,200,015
Dimensions (height x width x depth)	645 x 431 x 204 mm				
Weight	16.4 kg		16.8 kg		
Degree of protection	IP 65				
Protection class	1				
Overvoltage category (DC / AC) ²⁾	2 / 3				
Night-time consumption	< 1 W				
Inverter design	HF transformer				
Cooling	Regulated air cooling				
Mounting	Indoors and outdoors				
Ambient temperature range	-25 - +50 °C				
Permitted humidity	0 to 100 %				
Max. altitude	2,000 m / 3,500 m (unrestricted / restricted voltage range)				
DC connection technology	Screw terminal connection 2.5 mm² - 16 mm²				
AC connection technology	Screw terminal connection 2.5 mm² - 16 mm²				
Certificates and compliance with standards	ÖVE / ÖNORM E 8001-4-712, AS 4777-2, AS 4777-3, AS3100, DIN V VDE 0126-1-1/A1, VDE AR N 4105, IEC 62109-1-2, IEC 62116, IEC 61727, CER 06-190, CEI 0-21, EN 50438, G83, G59, NRS 097				

¹⁾ Up to 3 kW for countries with relevant support thresholds.²⁾ Testing to IEC 62109-1.More information about inverter availability in your country can be found at www.fronius.com.

EFFICIENCY	GALVO 1.5-1	GALVO 2.0-1	GALVO 2.5-1	GALVO 3.0-1 ²⁾	GALVO 3.1-1
Max. efficiency	95.9 %	96.0 %		96.1 %	
Europ. efficiency (η_{EU})	94.5 %	94.9 %	95.2 %	95.4 %	95.4 %
η at 5 % $P_{AC,r}$ ¹⁾	84.5 / 86.0 / 86.0 %	84.2 / 86.1 / 85.9 %	88.6 / 89.6 / 89.4 %	88.2 / 89.2 / 89.1 %	88.4 / 89.4 / 89.4 %
η at 10 % $P_{AC,r}$ ¹⁾	87.5 / 89.7 / 89.6 %	89.6 / 91.4 / 91.3 %	91.2 / 92.3 / 91.4 %	91.8 / 93.1 / 92.1 %	91.9 / 93.3 / 92.3 %
η at 20 % $P_{AC,r}$ ¹⁾	91.3 / 93.3 / 93.1 %	92.6 / 94.3 / 93.9 %	94.0 / 94.8 / 94.5 %	94.4 / 95.0 / 94.9 %	94.5 / 95.0 / 95.0 %
η at 25 % $P_{AC,r}$ ¹⁾	92.4 / 94.1 / 93.9 %	93.3 / 94.9 / 94.5 %	94.5 / 95.1 / 95.0 %	94.8 / 95.5 / 95.3 %	94.8 / 95.5 / 95.4 %
η at 30 % $P_{AC,r}$ ¹⁾	93.0 / 94.6 / 94.3 %	93.6 / 95.2 / 94.9 %	94.8 / 95.5 / 95.3 %	94.8 / 95.7 / 95.6 %	94.9 / 95.8 / 95.6 %
η at 50 % $P_{AC,r}$ ¹⁾	93.9 / 95.5 / 95.2 %	94.3 / 95.8 / 95.2 %	95.0 / 95.7 / 95.2 %	95.0 / 96.0 / 95.5 %	95.0 / 96.1 / 95.6 %
η at 75 % $P_{AC,r}$ ¹⁾	94.2 / 95.6 / 95.4 %	94.0 / 95.9 / 95.6 %	94.8 / 95.9 / 95.6 %	94.6 / 95.8 / 95.6 %	94.5 / 95.6 / 95.6 %
η at 100 % $P_{AC,r}$ ¹⁾	94.0 / 95.9 / 95.6 %	93.5 / 95.6 / 95.5 %	94.4 / 95.7 / 95.5 %	93.9 / 95.4 / 95.3 %	93.7 / 95.2 / 95.3 %
MPP adaptation efficiency	> 99.9 %				

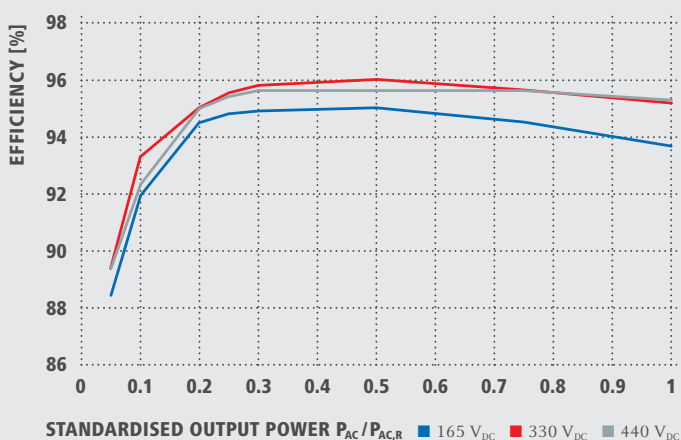
PROTECTION DEVICES	GALVO 1.5-1	GALVO 2.0-1	GALVO 2.5-1	GALVO 3.0-1 ²⁾	GALVO 3.1-1
DC insulation measurement	Warning / shutdown (depending on country setup) at $R_{ISO} < 600 \text{ k}\Omega$				
Overload behaviour	Operating point shift, power limitation				
DC disconnecter	Included				

INTERFACES	GALVO 1.5-1	GALVO 2.0-1	GALVO 2.5-1	GALVO 3.0-1 ²⁾	GALVO 3.1-1
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)				
6 inputs and 4 digital inputs/outputs	Interface to ripple control receiver				
USB (type A socket)	Data logging, inverter update via USB flash drive				
2x RS422 (RJ45 socket)	Fronius Solar Net				
Signalling output	Energy management (floating relay output)				
Datalogger and web server	Included				
External input	S0 meter connection / Evaluation of overvoltage protection				
RS485	Modbus RTU SunSpec or meter connection				

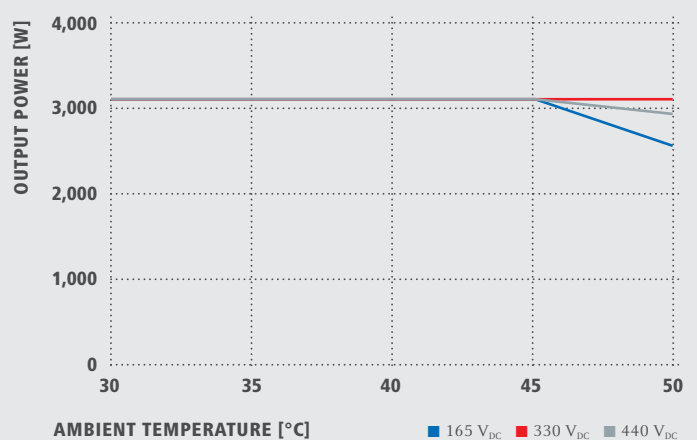
¹⁾ And at $U_{mpp \text{ min}} / U_{dc,r} / U_{mpp \text{ max}}$.

²⁾ Up to 3 kW for countries with relevant support thresholds.

FRONIUS GALVO 3.1-1 EFFICIENCY CURVE



FRONIUS GALVO 3.1-1 DERATING



FRONIUS ECO

/ The compact project inverter for maximum yields.



FRONIUS ECO 25.0-3-S / 27.0-3-S

/ The project inverter for large-scale systems. The Fronius Eco is adapted like no other string inverter to meet the requirements of large-scale systems, even those in the megawatt range. The compact dimensions and the proven SnapINverter mounting system make installation even easier. Furthermore, the device boasts an IP 66 protection class for unrestricted outdoor use.



/ SnapINverter
technology



/ Integrated data
communication



/ Smart Grid
Ready



/ Dynamic Peak
Manager

COMPACT, EFFICIENT AND SUITABLE FOR OUTDOOR USE

/ The three-phase Fronius Eco in power categories 25.0 and 27.0 kW perfectly meets all the requirements of large-scale installations. Thanks to its light weight and SnapINverter mounting system, this transformerless device can be installed quickly and easily either indoors or outdoors. This inverter range sets new standards with its IP 66 protection class. Furthermore, thanks to its integrated double fuse holders and optional overvoltage protection, string collection boxes are no longer necessary.

/ Compact design

Thanks to the slight dimensions and weight under 40 kg, installation is as easy as can be. The Fronius Eco has the highest average power density of its power category.

/ Unrestricted use outdoors

With its IP 66 protection class, the inverter is ideally suited to mounting both indoors and in unsheltered outdoor locations. The Fronius Eco is completely dust tight and protected against strong jets of water from any angle. Thanks to the aluminium heat sink on the rear of the device and two speed-controlled fans, the Fronius Eco delivers maximum yields even under extreme climate conditions.

/ Comprehensive data communication built-in

In addition to system monitoring using Fronius Solar.web, the Fronius Eco also has several open interfaces - Modbus TCP SunSpec, Modbus RTU SunSpec or Fronius Solar API (JSON) - allowing third-party components to be connected with ease. The major advantage is that the open interfaces can be used in parallel with Fronius Solar.web. Thanks to the Fronius Push Service, the system data can be sent not only to the Fronius Solar.web server, but to any server. Simple commissioning is guaranteed thanks to the built-in wizard.

/ Future-proof with plug-in cards

The innovative plug-in card technology allows flexible retrofitting of future functions, such as the Fronius Sensor Card, making the Fronius Eco fit for the future.

/ SnapINverter technology

The innovative hinged system makes inverter mounting and servicing extremely straightforward. After fitting the wall bracket and cabling for the device, the inverter is placed in the wall bracket before being swivelled into position and secured.

/ Smart Grid Ready

The Fronius Eco already meets the requirements of tomorrow. In order to maximise yields and stabilise the grid, our inverters are equipped with dynamic and static grid backup functions for reactive power and effective power regulation. Dynamic feed-in control is also possible with the inverters.

/ Options and accessories

The inverters can be conveniently fitted and ordered with various options such as string fuses, overvoltage protection, a DC connector kit or an MC4 cable.

FRONIUS ECO TECHNICAL DATA

INPUT DATA	ECO 25.0-3-S	ECO 27.0-3-S
Max. input current ($I_{dc \max}$)	44.2 A	47.7 A
Max. short circuit current, module array	71.6 A	
Min. input voltage ($U_{dc \min}$)	580 V	
Feed-in start voltage ($U_{dc \text{ start}}$)	650 V	
Nominal input voltage ($U_{dc, n}$)	580 V	
Max. input voltage ($U_{dc \max}$)	1,000 V	
MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)	580 - 850 V	
Number of MPP trackers	1	
Number of DC connections	6	
Max. PV generator output ($P_{dc \max}$)	35.7 kW _{peak}	

OUTPUT DATA	ECO 25.0-3-S	ECO 27.0-3-S
AC nominal output ($P_{ac, n}$)	25,000 W	27,000 W
Max. output power	25,000 VA	27,000 VA
AC output current ($I_{ac \text{ nom}}$)	36.1 A	39.0 A
Grid connection (voltage range)	3-NPE 380 V / 220 V or 3-NPE 400 V / 230 V (+20 % / - 30 %)	
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)	
Total harmonic distortion	< 2.0 %	
Power factor ($\cos \varphi_{ac, r}$)	0 - 1 ind. / cap.	

GENERAL DATA	ECO 25.0-3-S	ECO 27.0-3-S
Item number	4,210,056,040	4,210,057,040
Dimensions (height x width x depth)	725 x 510 x 225 mm	
Weight	35.7 kg	
Degree of protection	IP 66	
Protection class	1	
Overvoltage category (DC / AC) ¹⁾	2 / 3	
Night-time consumption	< 1 W	
Inverter design	Transformerless	
Cooling	Regulated air cooling	
Mounting	Indoors and outdoors	
Ambient temperature range	-25 - +60 °C	
Permitted humidity	0 - 100 %	
Max. altitude	2,000 m	
DC connection technology	6x DC+ and 6x 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	ÖVE / ÖNORM E 8001-4-712, DIN V VDE 0126-1-1/A1, VDE AR N 4105, IEC 62109-1/-2, IEC 62116, IEC 61727, AS 3100, AS 4777-2, AS 4777-3, CER 06-190, G59/3, UNE 206007-1, SI 4777, CEI 0-16, CEI 0-21	

¹⁾ Testing to IEC 62109-1. DIN rail for optional type 2 overvoltage protection fitted.

More information about inverter availability in your country can be found at www.fronius.com.

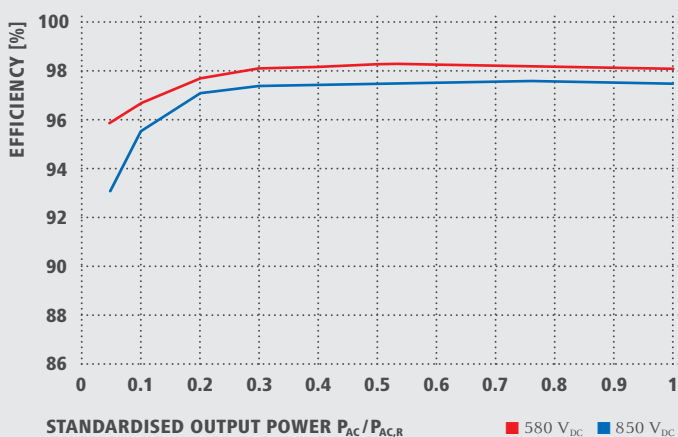
EFFICIENCY	ECO 25.0-3-S	ECO 27.0-3-S
Max. efficiency	98.2 %	98.3 %
Europ. efficiency (η_{EU})	98.0 %	98.0 %
η at 5 % $P_{AC,r}^{1)}$	95.1 / 91.5 %	95.9 / 93.1 %
η at 10 % $P_{AC,r}^{1)}$	97.0 / 95.2 %	96.8 / 95.7 %
η at 20 % $P_{AC,r}^{1)}$	97.8 / 96.9 %	97.7 / 97.1 %
η at 25 % $P_{AC,r}^{1)}$	98.0 / 97.0 %	98.1 / 97.3 %
η at 30 % $P_{AC,r}^{1)}$	98.1 / 97.2 %	98.1 / 97.4 %
η at 50 % $P_{AC,r}^{1)}$	98.2 / 97.5 %	98.3 / 97.5 %
η at 75 % $P_{AC,r}^{1)}$	98.2 / 97.5 %	98.2 / 97.6 %
η at 100 % $P_{AC,r}^{1)}$	98.2 / 97.5 %	98.1 / 97.5 %
MPP adaptation efficiency	> 99.9 %	

PROTECTION DEVICES	ECO 25.0-3-S	ECO 27.0-3-S
DC insulation measurement	Yes	
Overload behaviour	Operating point shift, power limitation	
DC disconnecter	Yes	
Integrated string fuse holders ²⁾	Yes	

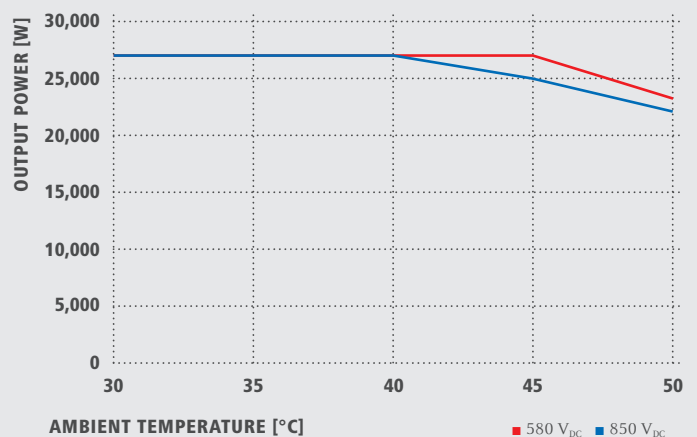
INTERFACES	ECO 25.0-3-S	ECO 27.0-3-S
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)	
6 inputs and 4 digital inputs/outputs	Interface to ripple control receiver	
USB (type A socket)	Data logging, inverter update via USB flash drive	
2x RS422 (RJ45 socket)	Fronius Solar Net	
Signalling output	Energy management (floating relay output)	
Datalogger and web server	Integrated	
External input	S0 meter connection / Evaluation of overvoltage protection	
RS485	Modbus RTU SunSpec or meter connection	

¹⁾ And at $U_{mpp\ min} = U_{dc,r} / U_{mpp\ max}$. ²⁾ Optionally fitted with 6 fuses 15 A / 1,000 V on the plus side

FRONIUS ECO 27.0-3-S EFFICIENCY CURVE



FRONIUS ECO 27.0-3-S DERATING



FRONIUS POWER PACKAGE

/ The system solution from a single source.



FRONIUS POWER PACKAGE

/ The compact system solution. The Fronius Power Package consists of the Fronius inverters, the Fronius AC Combiner and pre-fabricated cables. From planning right through to maintenance of the PV system, the impressive solution requires minimal effort and delivers maximum flexibility.

STRAIGHTFORWARD PLANNING, EASY INSTALLATION, SIMPLE MAINTENANCE

/ With the Fronius Power Package you can take full advantage of the benefits offered by Fronius string inverters for projects on a small and large scale – from planning through to maintenance of the PV system. Maximum flexibility in the design of the PV system, the pre-installed inverter cabling and the supplied Fronius AC Combiner significantly reduce the planning work. Failure rates during initial installation and the installation time are therefore minimised. The Fronius Power Package also helps to reduce the need for maintenance and consequently to achieve lower project costs.

/ Easy to install

The Fronius Power Package is made up of three components: the Fronius inverters (3 to 6 Fronius Symo, 2 to 4 Fronius Eco or 3 Fronius Eco & 1 Fronius Symo per Fronius Power Package), the Fronius AC Combiner and pre-fabricated cables. The inverters and the Fronius AC Combiner are supplied with pre-installed cabling. This means that during installation, the pre-fabricated individual parts simply have to be connected, minimising the installation time and installation errors.

/ SnapINverter technology

The innovative hinged system makes inverter mounting and servicing extremely straightforward. After fitting the wall bracket and cabling for the device, the inverter is placed in the wall bracket before being swivelled into position and secured.

/ Flexible system design

The Fronius Power Package offers numerous options in terms of PV system design. From selecting the DC inputs, through to choosing the power categories and deciding between different DC connection technologies, the system solution can be tailored to the specific PV system. The Fronius Symo & Fronius Eco combi version promises even more flexibility. The combination of the flexible Fronius Symo and the cost-effective Fronius Eco enables customers to reap the full advantages of both inverters. This makes the Fronius Power Package the ideal solution for the widest possible variety of applications.

/ Flexible data communication

In addition to its own monitoring portal, Fronius Solar.web, the Fronius Power Package boasts various open interfaces, such as Modbus (TCP or RTU), to enable easy connection to external dataloggers, park regulators or energy management systems. The open interfaces can be used in parallel with Fronius Solar.web. Thanks to parallel operation, it is possible for Fronius to access the system remotely, thereby providing the best possible technical support. Equally, parallel operation allows Fronius Solar.web to be used alongside a local controller with third-party components.

/ Customised warranty services

The complete package, comprising the inverters, Fronius AC Combiner and pre-fabricated cables, is covered as standard by the five-year Fronius Warranty Plus. The system owner benefits from claims being handled directly by Fronius, and thanks to the global service network a replacement device is received within the shortest possible time. In addition to the manufacturer's warranty, it is possible to extend the warranty period to 10 years from the date of commissioning.



FRONIUS AC COMBINER

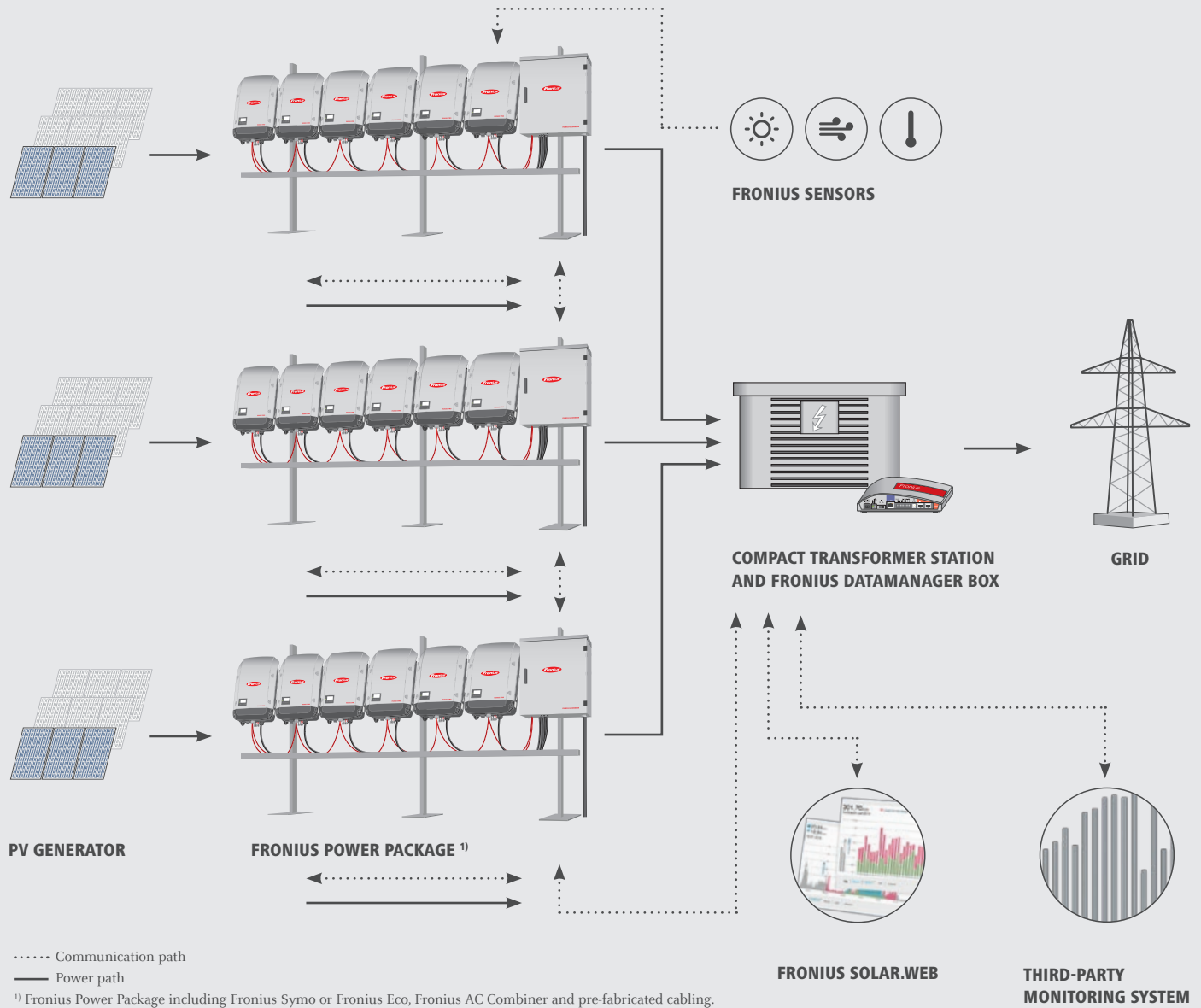
/ Developed for the Fronius Symo and Fronius Eco inverter ranges, the Fronius AC Combiner provides the optimal interface between inverter and grid in decentralised energy generation plants. Offering a range of options, such as internal overvoltage protection, pre-fabricated AC connection cables and a service socket, the Fronius AC Combiner is a bespoke solution for your individual PV project. Compliance with the most common industry standards and tests and use of the highest-quality materials guarantee maximum availability throughout the life of the PV system.

TECHNICAL DATA	AC COMBINER SYMO	AC COMBINER ECO
Rated current	200 A	
Rated short-circuit current	38 kA (250 A gG back-up fuse)	
Ambient temperature range	-25 – 45 °C	
Grid topology	TN (universal: TN-C, TN-S and TT grids)	
Overvoltage protection ¹⁾	Type 1+2+3 incl. 80 A back-up fuse	
Residual current device ¹⁾	-	4P-63A-100mA-A-type
AC input/output	3PN 400 / 230 V	
Frequency	50 Hz / 60 Hz	
AC inputs	3 - 6 x max. 20 kVA / input, fused 3P 50A NH000	2 - 4 x max. 27 kVA / input, fused 3P 63A NH000
Max. output power	120 kVA	108 kVA
AC connection ^{1) 2)}	H07RN-F 5G10mm ²	E-YY-J 5x16mm ²
Data communication connection ^{1) 2)}	Patch cable, 2m, shielded, RJ45, UV-resistant	
Service socket ¹⁾	1PN 230V/16A/30mA, CEE	-
Dimensions (height x width x depth)	750 x 700 x 300 mm	
Weight (without connection cables)	38.5 kg	
Housing	Open air wall-mounted housing ALU 99.5HH powder coated RAL 7004 (incl. rain canopy & wall mounting strap)	
Degree of protection	IP 54	
Compliance with standards	EN 61439-2	

¹⁾ Available as an option

²⁾ Pre-fabricated cable

CONFIGURATION DIAGRAM



OUR OTHER STRING INVERTERS.

/ Our tried-and-tested string inverters are naturally still available. Full details of the Fronius IG Plus and Fronius IG TL can be found at www.fronius.com



FRONIUS IG PLUS

/ The all-rounder with maximum yield.

With power categories from 3.5 to 12.0 kW, the Fronius IG Plus is ideal for systems of every conceivable size and is compatible with practically every module configuration and technology.

/ Power categories:

Single-phase: 3.5 kW, 4.0 kW, 5.0 kW, 6.0 kW, 6.5 kW (optional), 8.0 kW (optional)

Two-phase: 5.0 kW

Three-phase: 6.0 kW, 7.0 kW, 8.0 kW, 10.0 kW, 12.0 kW



FRONIUS IG TL

/ The inverter series with system monitoring as standard.

The Fronius IG TL combines all the benefits of a transformerless inverter with the high level of innovation and quality expected of Fronius. For systems ranging in size from those suitable for single-family homes to ones used on agricultural or commercial premises.

/ Power categories:

3.0 kW, 3.6 kW, 4.0 kW, 4.6 kW, 5.0 kW



FRONIUS CENTRAL INVERTERS

/ Fronius Agilo inverters are ideal for all commercial and industrial PV systems. Our central inverters are the only inverters in their power category that can be fully fitted and maintained by the installer.

CENTRAL INVERTERS



/ Fronius Agilo

SIMPLE SERVICING

- / Servicing and maintenance are carried out on site by the Fronius Service Partner
- / Components can be replaced at the system location, saving time and money

MAXIMUM COST-EFFECTIVENESS

- / Fewer system components while still delivering maximum system power
- / The compact design minimises transport and installation costs

YIELD AT A GLANCE

- / Yield monitoring with the online portal and the Fronius Solar.web App
- / Multiple interfaces for straightforward connection to third-party systems

OUTDOOR USE

- / Outdoor versions are designed for installation in unsheltered outdoor locations

FRONIUS AGILO

/ The central inverter with the revolutionary transport and installation system.



FRONIUS AGILO 75.0-3 / 100.0-3

/ By professionals for professionals: the Fronius Agilo has been adapted to meet the needs of installers like no other central inverter on the market. From transport and installation through to maintenance, the specialist can do everything himself. An optional range of services provides additional security – from commissioning support through to the service contract.



FRONIUS AGILO 75.0-3 OUTDOOR / 100.0-3 OUTDOOR

/ Robust: Fronius Agilo central inverters are also available as an outdoor version for external use. These inverters are optimised for field installations and can be used in exposed outdoor situations.



/ Transport
technology



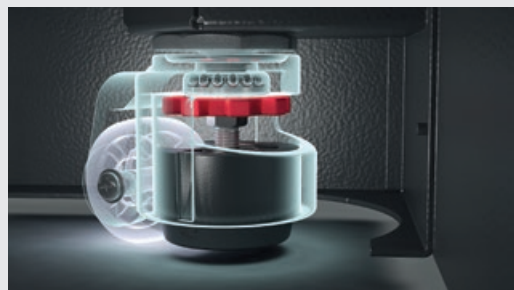
/ Smart Grid
Ready

EASY TO TRANSPORT, EASY TO INSTALL, EASY TO MAINTAIN

/ As the first central inverter in its power category that can be completely installed and maintained by the installer, the Fronius Agilo sets new standards. Special heavy-duty castors, its compact design and the ability to replace components on the customer's premises make the Fronius Agilo unique. With a maximum output power of 75 or 100 kVA, the Fronius Agilo is particularly suitable for industrial or commercial systems.

/ Practical transport features

The Fronius Agilo is amazingly mobile. Recesses in the base for the lift truck are just the job when transporting the device over longer distances. Adjustable feet guarantee a high level of stability in the long term, even on uneven floors. The Fronius Agilo Indoor has heavy-duty castors for flexible mobility on smooth surfaces over short distances.



/ Compact design

The Fronius Agilo is compact and light, weighing from only 732 kg. It can therefore be transported in a normal passenger lift. And as it is delivered on a Euro industrial pallet, storage requirements can be planned in advance and transport costs kept down.

/ Dust-proof electronics compartment

The electronics compartment is separated from the connection compartment. Sensitive components are located in a dedicated dust-proof area to protect them from dirt, resulting in reliable, long-term inverter operation.

/ Easy installation

No special tools are required for transport or installation. The V-type terminals on the AC and DC connections even make cable lugs superfluous. The spacious connection area makes electrical installation particularly easy.

/ Maintenance and servicing by the installer

Maintenance and servicing can be carried out by the trained installer. Even the power stage set can be replaced in just a couple of minutes on the customer's premises. With the exception of the transformer and chokes, all inverter components can be replaced during customer service visits.

/ Data communication with the Fronius Datamanager Box

The Fronius Com Card and Fronius Signal Card are integrated in the Fronius Agilo as standard and the optional Fronius Datamanager Box 2.0 meets every communication requirement. The Fronius Agilo can easily be connected to the internet (Fronius Solar.web) by WLAN. A range of interfaces, such as Modbus TCP SunSpec, Modbus RTU SunSpec and Fronius Solar API (JSON), allow third-party system monitoring components to be connected without problems. The Fronius Datamanager Box can also be mounted on a DIN rail in the inverter itself.

/ Integrated grounding option

Grounding the solar modules to the negative pole is a straightforward matter with the Fronius Agilo. Simply insert the fuse in the fuse holder and enable it via the display.

FRONIUS AGILO TECHNICAL DATA

INPUT DATA	AGILO 75.0-3	AGILO 75.0-3 OUTDOOR	AGILO 100.0-3	AGILO 100.0-3 OUTDOOR
Max. input current ($I_{dc \max}$)	170.0 A		227.0 A	
Max. short circuit current, module array	255 A		340.5 A	
Min. input voltage ($U_{dc \min}$)			460 V	
Feed-in start voltage ($U_{dc \text{ start}}$)			475 V	
Nominal input voltage ($U_{dc \text{ r}}$)			460 V	
Max. input voltage ($U_{dc \max}$)			950 V	
MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)			460 V - 820 V	
Number of MPP trackers			1	
Number of DC connections			4	

OUTPUT DATA	AGILO 75.0-3	AGILO 75.0-3 OUTDOOR	AGILO 100.0-3	AGILO 100.0-3 OUTDOOR
AC nominal output ($P_{ac,r}$)	75 kW		100 kW	
Max. output power	75 kVA		100 kVA	
AC output current ($I_{ac,nom}$)	108.3 A		144.3 A	
Grid connection (voltage range)	3-NPE 400 V / 230 V (+17 % / -25 %)			
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)			
Total harmonic distortion	< 3 %			
Power factor ($\cos \varphi_{ac,r}$)	0.8 – 1 ind. / cap.			

GENERAL DATA	AGILO 75.0-3	AGILO 75.0-3 OUTDOOR	AGILO 100.0-3	AGILO 100.0-3 OUTDOOR
Item number	4,200,506	4,200,607	4,200,505	4,200,606
Dimensions (height x width x depth)	1,884 x 1,100 x 700 mm	1,914 x 1,204 x 862 mm	1,884 x 1,100 x 700 mm	1,914 x 1,204 x 862 mm
Weight	760 kg	732 kg	834 kg	806 kg
Degree of protection (electronics compartment)	IP 30 (IP 54)	IP 44 (IP 55)	IP 30 (IP 54)	IP 44 (IP 55)
Protection class	1			
Overvoltage category (DC / AC)	DC 2 / AC 3			
Night-time consumption	< 36 W			
Inverter design	50 Hz transformer			
Cooling	Regulated air cooling			
Mounting	Indoors	Outdoors	Indoors	Outdoors
Ambient temperature range	-20 – +50 °C	-25 – +55 °C	-20 – +50 °C	-25 – +55 °C
Permitted humidity	0 % to 95 %			
Max. altitude	2,000 m (unrestricted voltage range)			
DC connection technology	Direct terminal lug (V-type terminal) (70 - 240 mm ²)			
AC connection technology Agilo Indoor	Direct terminal lug (V-type terminal) (35 - 95 mm ²)			
AC connection technology Agilo Outdoor	Direct terminal lug (V-type terminal) (35 - 240 mm ²)			
Emission class	A			
Certificates and compliance with standards	IEC 62109-1, IEC 62109-2, VDE AR N 4105, Generating systems on the medium-voltage grid (BDEW) ¹⁾ , G59, Grid connection conditions in Denmark (>75A), ÖVE / ÖNORM E 8001-4-712			

¹⁾ Applies to Fronius Agilo 100.0-3 and Fronius Agilo 100.0-3 OutdoorMore information about inverter availability in your country can be found at www.fronius.com.

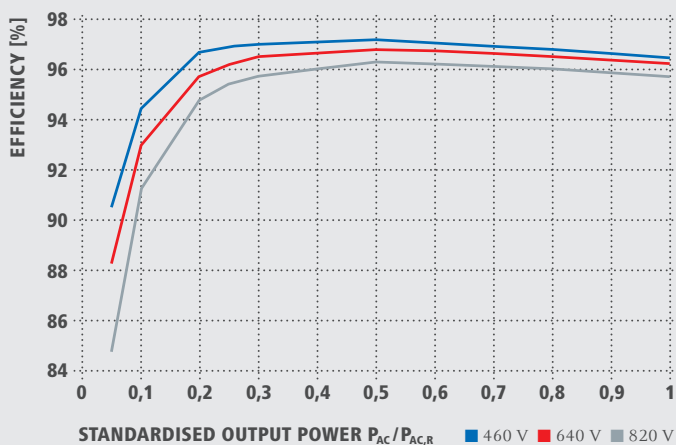
EFFICIENCY	AGILO 75.0-3	AGILO 75.0-3 OUTDOOR	AGILO 100.0-3	AGILO 100.0-3 OUTDOOR
Max. efficiency	97.3 %		97.2 %	
Europ. efficiency (η_{EU})	96.7 %		96.6 %	
η at 5 % $P_{ac,r}^{1)}$	90.6 / 84.4 %		90.5 / 84.8 %	
η at 10 % $P_{ac,r}^{1)}$	94.7 / 91.1 %		94.6 / 91.5 %	
η at 20 % $P_{ac,r}^{1)}$	96.7 / 94.7 %		96.6 / 94.7 %	
η at 25 % $P_{ac,r}^{1)}$	97.0 / 95.3 %		96.9 / 95.4 %	
η at 30 % $P_{ac,r}^{1)}$	97.1 / 95.7 %		97.0 / 95.7 %	
η at 50 % $P_{ac,r}^{1)}$	97.3 / 96.3 %		97.2 / 96.3 %	
η at 75 % $P_{ac,r}^{1)}$	97.1 / 96.2 %		96.9 / 96.1 %	
η at 100 % $P_{ac,r}^{1)}$	96.7 / 96.0 %		96.5 / 95.7 %	
MPP adaptation efficiency	> 99.9 %			

PROTECTION DEVICES	AGILO 75.0-3	AGILO 75.0-3 OUTDOOR	AGILO 100.0-3	AGILO 100.0-3 OUTDOOR
DC insulation measurement	Warning / shutdown limit adjustable			
Overload behaviour	Operating point shift, power limitation			
DC disconnecter	Included			

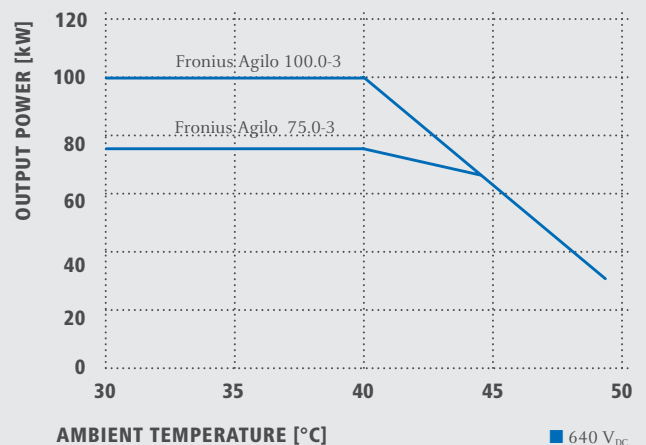
INTERFACES	AGILO 75.0-3	AGILO 75.0-3 OUTDOOR	AGILO 100.0-3	AGILO 100.0-3 OUTDOOR
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol			
Optionally with Fronius Datamanager Box 2.0:				
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)			
6 inputs and 4 digital inputs/outputs	Interface to ripple control receiver			
Datalogger and web server	Included			
RS-485	Modbus RTU SunSpec or meter connection			

¹⁾ And at $U_{mpp \min} = U_{dc,r} / U_{mpp \max}$

FRONIUS AGILO 100.0-3 EFFICIENCY CURVE



FRONIUS AGILO DERATING



ACCESSORIES FOR INVERTERS

/ Our accessories complement all PV systems, simplify installation and ensure that the system meets the required safety standards.



FRONIUS STRING CONTROL 250/30

/ Professional monitoring of up to 30 strings

The Fronius String Control 250/30 has been specifically developed to meet the requirements of central inverters. With a current carrying capacity of 250 A and maximum input voltage of 1,000 V, the Fronius String Control 250/30 is the ideal device for the monitoring and recording of up to 30 strings when using Fronius Agilo inverters. Integrated string fuses protect the module array, providing effective protection for the solar modules.

Area of application: Ideally suited to Fronius Agilo inverters.

Optional: DIN rail power pack, base for outdoor installation.

TECHNICAL DATA

Max. number of strings	30
Max. input current	250 A
Max. input current per string	20 A
Max. input voltage	1,000 V
Max. current per measuring channel	50 A
Number of measuring channels	5
Connections (DC in)	Terminals, 2.5 – 25 mm ² (with max. cable diameter of 7.5 mm) ¹⁾
Connections (DC out)	Direct terminal lug (V terminal, no cable lug required), max. 240 mm ²
2x RS422 (RJ45 socket)	Fronius Solar Net
Ambient temperature range	–25 – +55 °C
Degree of protection	IP 55
Power supply	12 V DC (optional)
Size (height x width x depth)	580 x 720 x 200 mm
Weight	16.3 kg

BASE

Size (height x width x depth)	900 x 760 x 240 mm
Weight	11 kg
Item number	4,240,144

¹⁾ Depends on cable type. Please refer to the information in the operating instructions regarding correct installation.



FRONIUS STRING CONTROL 250/30 DCD DF

/ Professional string monitoring and all-pole string fuse protection

The current of up to 30 module strings can be professionally monitored and compared using the Fronius String Control 250/30 DCD DF. The integrated, external DC disconnecter ensures safe isolation of the PV generator and inverter. The all-pole fuse protection of the strings on the DC side fully complies with UK, French and Australian standards.

Area of application: Ideally suited to Fronius Agilo inverters.

Optional: DIN rail power pack, base for outdoor installation.

TECHNICAL DATA	
Max. number of strings	30
Max. input current	250 A
Max. input current per string	20 A
Max. input voltage	1,000 V
Max. current per measuring channel	50 A
Number of measuring channels	5
Connections (DC in)	Terminals, 2.5 – 25 mm ² (with max. cable diameter of 7.5 mm) ¹⁾
Connections (DC out)	Direct terminal lug (V terminal, no cable lug required), max. 240 mm ²
2x RS422 (RJ45 socket)	Fronius Solar Net
Ambient temperature range	–25 – +55 °C
Degree of protection	IP 55
Power supply	12 V DC (optional)
Size (height x width x depth)	741 x 750 x 246 mm
Weight	25.2 kg
Item number	4,240,145

¹⁾ Depends on cable type. Please refer to the information in the operating instructions regarding correct installation.

OFF-GRID AND BACKUP SYSTEMS

/ In remote areas or regions with unstable public grids, a continuous supply of electricity - independent of the public grid - is required. As it makes complete financial and ecological sense to integrate photovoltaics into off-grid or backup systems of this kind, Fronius offers perfectly coordinated solutions for these applications. We differentiate between microgrids, which are typically operated by inverter chargers, and grids that are made up of diesel generators (gensets). Both systems are most effective with AC-coupled inverters.

OFF-GRID AND BACKUP SYSTEMS

FRONIUS PV-GENSET SOLUTION

/ Save fuel with Fronius
PV-Genset systems

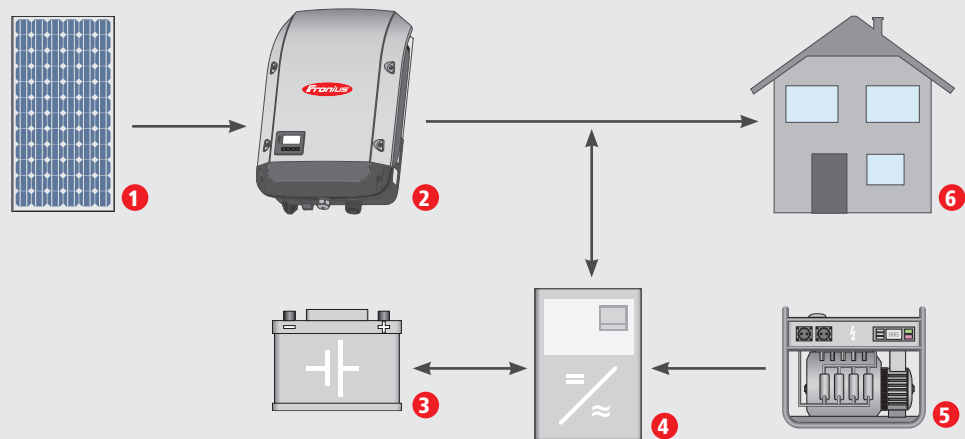
FRONIUS MICROGRID SOLUTION

/ Photovoltaics combined with an
inverter charger

FRONIUS MICROGRID SOLUTION

PHOTOVOLTAICS COMBINED WITH AN INVERTER CHARGER

/ Microgrids in remote regions are often supplied by inverter chargers (inverters with batteries). PV systems with Fronius inverters can be easily integrated into microgrids of this kind. Fronius inverters have a special microgrid setup for this purpose with various functions to ensure stable microgrid operation. All the functions can be extensively customised to achieve the optimal combination of photovoltaics and inverter charger.



/ Microgrid system with PV

- ❶ PV generator
- ❷ Fronius inverter
- ❸ Battery
- ❹ Inverter charger
- ❺ Backup generator
- ❻ Consumer

PRODUCTS FOR THE FRONIUS MICROGRID SOLUTION

/ Any Fronius inverter.

/ In conjunction with inverter chargers tested with Fronius inverters:

/ Studer Xtender

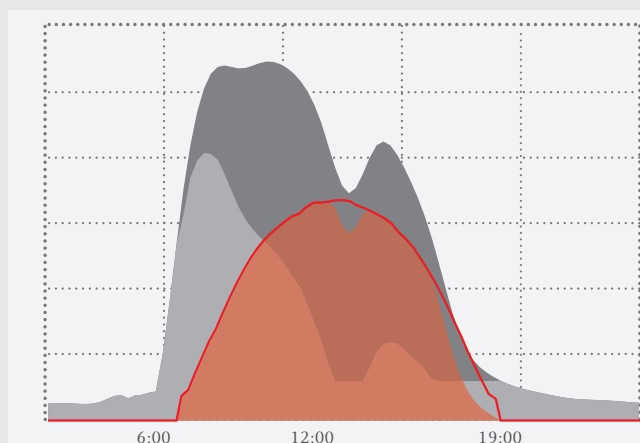
/ Victron MultiPlus and Quattro

FRONIUS PV-GENSET SOLUTION

SAVE FUEL WITH FRONIUS PV-GENSET SYSTEMS

/ Diesel generators and photovoltaic technology can be combined in perfect harmony. Although these technologies have rarely been in demand by the same users in the past, initial applications show that bringing the two generation systems together is extremely beneficial from a technical, ecological and especially economic perspective. The entire system is controlled effortlessly by the new Fronius PV system controller. Fronius also provides support in planning the PV-Genset solution.

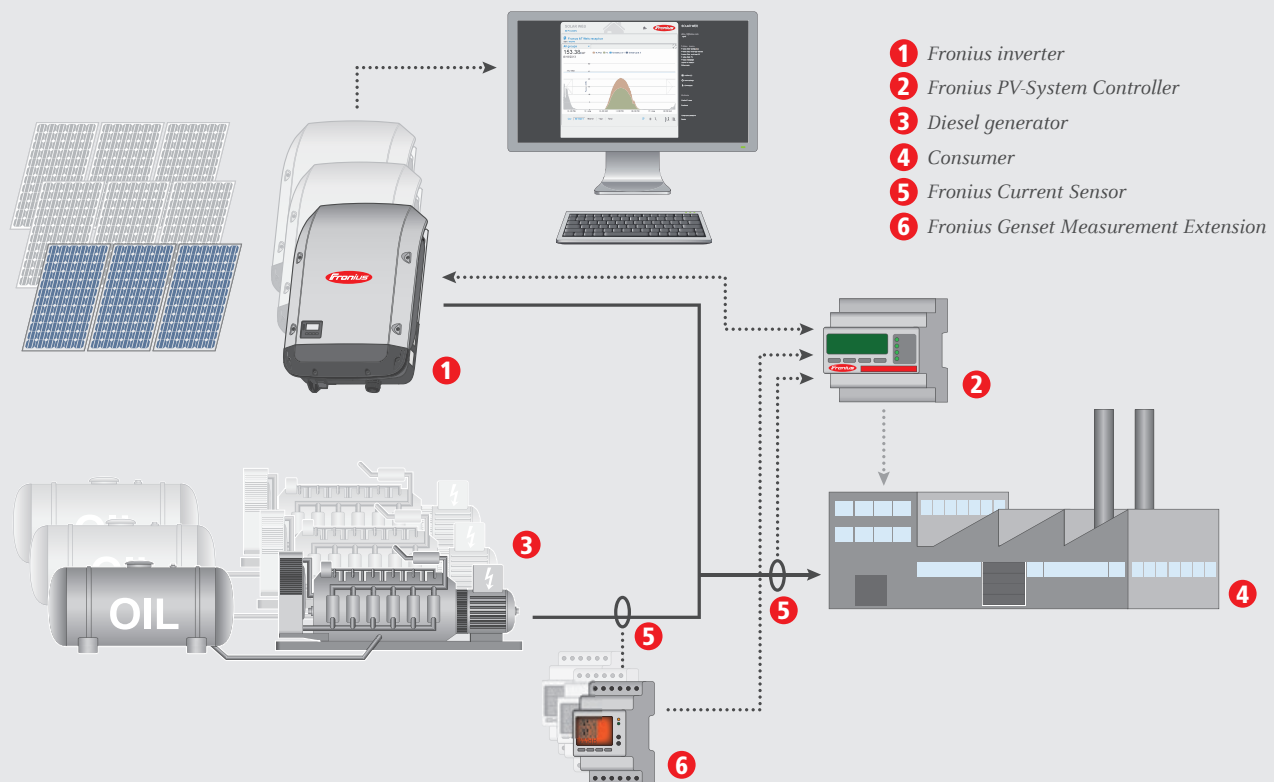
/ In remote areas or regions where the electricity supply is patchy or extremely expensive, grids powered by diesel generators are an absolute must. The cost per kilowatt hour of electricity from a diesel generator is largely derived from fuel and other variable costs. Only a small proportion of the cost is fixed. The price trend in the photovoltaics sector is much more positive in comparison. Over the past few years the costs per kWh from PV systems have dropped dramatically around the globe. For this reason there is a clear financial justification for integrating a Fronius PV-Genset solution into almost every diesel-powered system.



- The load profile of an example load
- The red area represents power from PV and therefore the saving in expensive diesel
- The difference between load and PV is still met by the diesel generator

/ A stable PV-Genset system is the highest priority. Using photovoltaics must not result in diesel generators being operated at unfavourable or prohibited operating points, where an increased load causes accelerated degradation. As a result it is absolutely essential that the inverters (and, where necessary, the diesel generators too) in systems above a certain size are subject to an intelligent control mechanism.

/ Solutions using the Fronius PV system controller are ideal for low-voltage applications. Thanks to close collaboration with well-known manufacturers of generator control systems, multiple Genset applications and medium-voltage systems with power categories in the megawatt range are also possible.



FRONIUS PV SYSTEM CONTROLLER

/ Integrating photovoltaic systems into diesel generator-powered grids requires quick and reliable control of the entire system. The Fronius PV system controller measures all power flows in the system, enabling it to control the PV power in the most optimum manner.



FRONIUS MEASURING EXTENSION

/ To provide additional protection for the generator, the Fronius measuring extension can be used as a quick reverse-power protection measure to perform an emergency shutdown.



FRONIUS CURRENT SENSORS

/ The right current transformer choice for maximum accuracy, ideally suited to the Fronius PV-Genset solution.

SYSTEM DESIGN

/ Dimension PV systems correctly: determine the number of solar modules and how they are connected or the best type of inverter.

FRONIUS SOLAR. CONFIGURATOR

/ The online tool for optimum system design.

FRONIUS SOLAR.CONFIGURATOR: FOR A CORRECTLY DIMENSIONED SYSTEM.

/ With the Fronius Solar.configurator, correctly dimensioning even complex PV systems is a straightforward matter. The various configuration options and yield forecasts are quick and easy to obtain. Clear presentation and intuitive functions included!

FRONIUS SOLAR.CONFIGURATOR

/ The Fronius Solar.configurator online tool supports the precise dimensioning of PV systems. It calculates the ideal combination of solar modules and Fronius inverters.

Using the online design tool means that the latest solar module and inverter data is always available when you configure a system - there is no need to carry out an update.

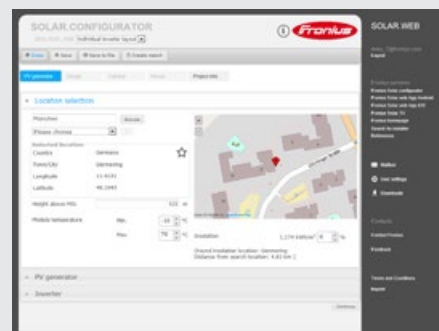
**JUST GO TO
HTTP://SOLARCONFIGURATOR.SOLARWEB.COM**

DESIGN OPTIONS WITH THE FRONIUS SOLAR.CONFIGURATOR

The Fronius Solar.configurator offers two methods of calculating the optimum system design:

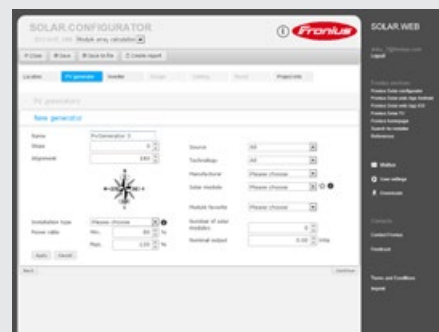
1. Module array calculation

/ Enter either the desired system power or the number of solar modules and the module types. The ideal inverter type will then be calculated automatically.



2. Stand-alone inverter configuration

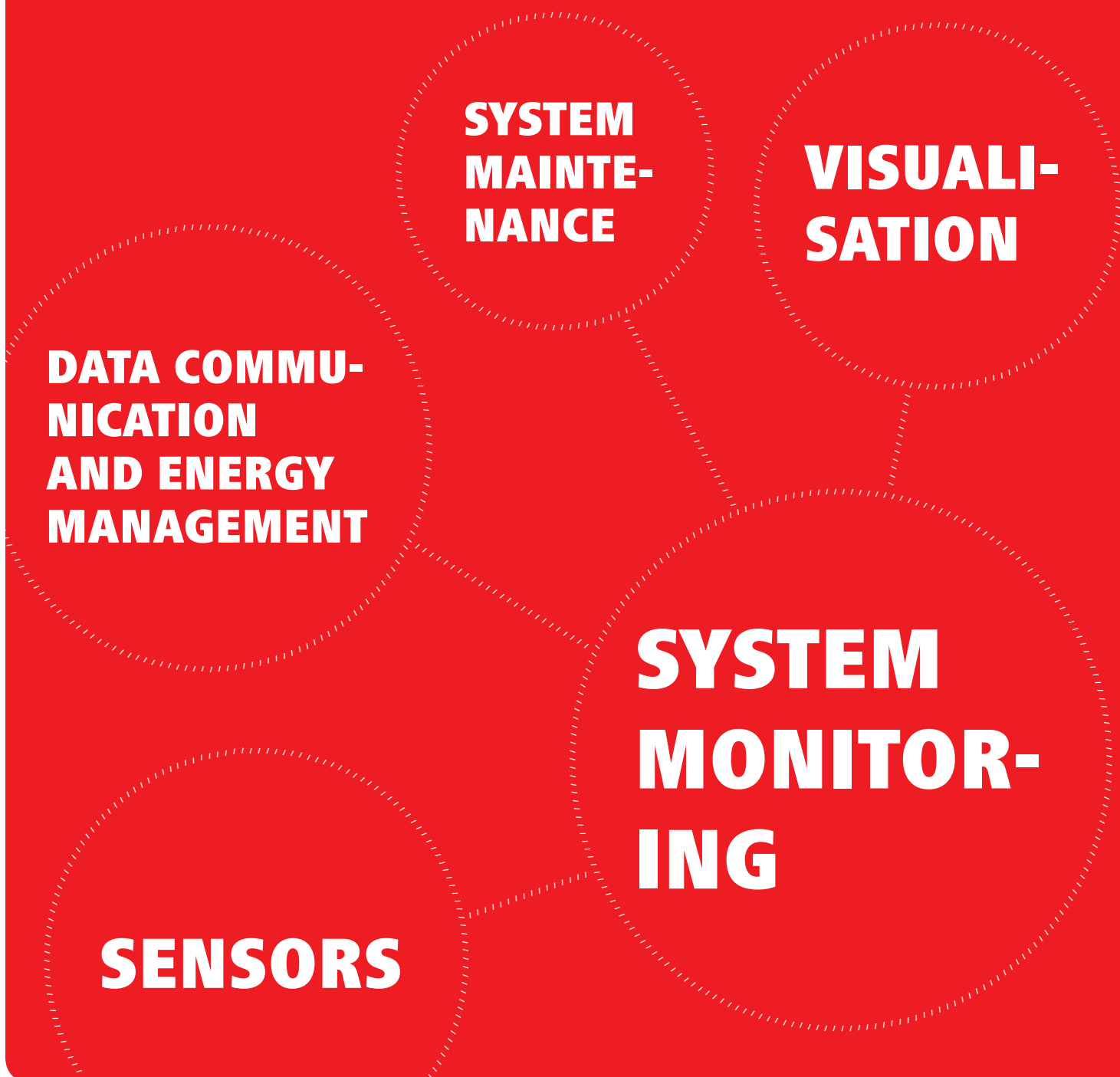
/ Simply enter the inverter and solar module types. The number of solar modules required and their connections will appear. That's it!



/ Alternatively, the offline version of the Fronius Solar.configurator provides the best possible support for the precise configuration of photovoltaic systems. After simple installation on a PC, even complex PV systems, systems with two MPP trackers or storage systems can be dimensioned with ease.

SYSTEM MONITORING: FUNCTION AND YIELD AT A GLANCE.

/ Fronius system monitoring covers data communication solutions for photovoltaic systems, enabling reliable system monitoring and simple integration into other systems. The hardware is quick to install and the software is intuitive to use. The solutions can be adapted to individual needs and extended at any time.





VISUALISATION: DISPLAYING, ANALYSING AND ARCHIVING PV SYSTEM DATA.

/ With the online monitoring tools from Fronius, the system data is available in an engaging format at any time, whether on your computer at the office, on your smartphone when you're out and about, or on your tablet at home. Intelligent analysis functions ensure that yield losses are reliably avoided.

FRONIUS SOLAR.WEB

/ The all-in-one internet portal for configuring, monitoring, analysing and visualising photovoltaic systems

PV systems can be monitored, analysed and compared quickly and easily using the Fronius Solar.web online portal. Up-to-date system data can be accessed at any time and is clearly presented: the portal is very user-friendly and a comprehensive range of analysis functions is included. Fronius Solar.web also features a variety of tools and functionalities, such as the Fronius Solar.configurator for system design, the Fronius Solar.web Apps for monitoring and visualising while on the go, and Fronius Solar.TV for public displays.



FRONIUS SOLAR.WEB CLASSIC

/ The free Fronius Solar.web Classic provides the system owner with all the familiar functions for daily monitoring – from automatic yield comparisons across several inverters or time periods, to a simple self-consumption display and visualisation of storage systems.



FRONIUS SOLAR.WEB PREMIUM

/ The fee-based Fronius Solar.web Premium boasts impressive new features, including a comprehensive self-consumption analysis, a permanent overview of power consumption costs for practical cost control, plus the visualisation and analysis of energy-storage systems (current and archive data) and much more.



FRONIUS SOLAR.WEB APP

/ The convenient app for the simple visualisation of PV system data

The Fronius Solar.web App is the mobile version of the Fronius Solar.web online service. You can always keep an eye on the energy yield of your PV systems by simply installing the app on your iPhone, iPod touch, iPad, Android smartphone or tablet. The Fronius Solar.web Live App is also available for Mac devices and Windows 7, allowing you to conveniently view your system data at a glance.



FRONIUS SOLAR.WEB LIVE

/ Everything at a glance – the free Fronius Solar.web Live App provides you with a quick and simple overview of the latest data from your PV system.



FRONIUS SOLAR.WEB PRO

/ Available to purchase for a one-off fee, the Fronius Solar.web Pro App also allows mobile access to up-to-date and historical data. Since several systems can be registered, you can view them all at any time using a single login.



FRONIUS SOLAR.TV

/ Professional display of system data in public spaces

The Fronius Solar.TV online portal enables various PV system values such as energy yield and CO₂ savings to be transmitted onto a standard commercial display and effectively presented in public spaces. A series of clearly laid out diagrams provides a quick overview of the PV system.

DATA COMMUNICATION AND ENERGY MANAGEMENT

/ System monitoring from Fronius bundles data logging, WLAN, energy management and comprehensive interfaces all into one package. The inverter is simply connected to the internet by WLAN, giving you a clear overview of how the PV system is operating. A range of interfaces for connecting to third-party systems and intelligent energy management complete the package. Data communication is included as standard on the Fronius Symo, Fronius Symo Hybrid, Fronius Primo, Fronius Galvo and Fronius Eco inverters. These functions can be retrofitted on other inverters and existing systems at any time with the Fronius Datamanager 2.0 or the Fronius Datamanager Box 2.0.



FRONIUS DATAMANAGER 2.0

/ The integrated WLAN datalogger for all applications

The Fronius Datamanager is the communications centre for Fronius inverters for all applications. Whenever it is connected to the internet via LAN or WLAN, the Fronius Datamanager sends the PV system values directly to the Fronius Solar.web online portal. This provides you with an overview of how the system is operating at all times. The Fronius Datamanager enables inverters to be connected directly to the internet via WLAN.

Straightforward start-up thanks to the integrated web server

With the Fronius Datamanager, installation and commissioning of the system monitoring function is extremely easy thanks to the dedicated website on the integrated web server. The setup wizard guides you through the configuration process up to and including registration on the Fronius Solar.web online portal.

Open interfaces

The integrated Modbus RTU SunSpec, Modbus TCP SunSpec and Fronius Solar API (JSON) interfaces allow Fronius inverters to be seamlessly linked to third-party systems and run in parallel with Fronius Solar.web. A ripple control receiver can also be connected via the digital inputs and outputs so that the power and reactive power can be controlled remotely in accordance with power supply company requirements.

Energy management

The integrated energy management function helps to maximise self-consumption. If the energy management function on the inverter is deactivated, the generated solar energy is fed into the public grid. If the inverter produces more than the predefined power level, the digital output switches and the generated power is supplied to the specified electrical consumers. The interface to the Fronius Smart Meter allows self-consumption to be visualised on Fronius Solar.web and enables dynamic feed-in management.

/ Push Service

Using the Fronius Push Service, system data can be sent directly from any Fronius SnapINverter or Fronius Datamanager to any server to be used as you desire. Various different data formats are available (for example, XML and JSON). Supported protocols: HTTP POST and FTP upload.

Only one inverter in 100 needs to be fitted with the Fronius Datamanager. The other inverters need a Com Card function (integrated or with a Fronius Com Card). Fronius Datamanager 2.0 is compatible with all Fronius inverters (excluding the Fronius IG TL and Fronius Agilo, Fronius Datamanager Box 2.0 is best suited for use with these inverters). The Fronius Datamanager is integrated into the Fronius Symo, Fronius Primo, Fronius Galvo and Fronius Eco inverters as standard. It can also be retrofitted to existing inverters whenever required.

TECHNICAL DATA	DATAMANAGER 2.0
Storage capacity	max. 4,096 days
Supply voltage	12 V DC Power supplied by inverter
Energy consumption	< 2.0 W
Protection class	-
Dimensions	132 x 103 x 22 mm
Operating temperature range	-20 - +65°C
Item number	Fronius IG Plus: 4,240,036
INTERFACES	DATAMANAGER 2.0
Ethernet (RJ45 socket)	LAN, 10/100 MB/Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)
RS422 (RJ45 socket)	Fronius Solar.Net IN
RS422 (RJ45 socket)	-
WLAN	Wireless standard 802.11 b/g/n / Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)
6 digital inputs	Interface to ripple control receiver
4 digital inputs/outputs	Interface to ripple control receiver, load management
RS485	Modbus RTU SunSpec or meter connection



FRONIUS DATAMANAGER BOX 2.0

/ The compact datalogger for comprehensive communication

The Fronius Datamanager Box brings together the benefits of the Fronius Datamanager in one compact box, making it ideally suited for use with the Fronius Agilo central inverters.

Just one Fronius Datamanager Box is required for up to 100 inverters. The other inverters need a Com Card function (integrated or with a Fronius Com Card).

TECHNICAL DATA	DATAMANAGER BOX 2.0
Storage capacity	max. 4,096 days
Supply voltage	12 V DC Power is supplied by the Fronius Solar.Net ring or an external plug-in power supply (not included in the scope of supply)
Energy consumption	< 2.0 W
Protection class	IP 20
Dimensions	190 x 114 x 53 mm
Operating temperature range	-20 - +65°C
Item number	4,240,125

INTERFACES	DATAMANAGER BOX 2.0
Ethernet (RJ45 socket)	LAN, 10/100 MB/Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)
RS422 (RJ45 socket)	Fronius Solar.Net IN
RS422 (RJ45 socket)	Fronius Solar.Net OUT
WLAN	Wireless standard 802.11 b/g/n / Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)
6 digital inputs	Interface to ripple control receiver
4 digital inputs/outputs	Interface to ripple control receiver, load management
RS485	Modbus RTU SunSpec or meter connection



FRONIUS SMART METER

/ The bidirectional meter for recording power consumption in the home

The Fronius Smart Meter has a highly accurate measuring capability in two directions and provides fast communication via the Modbus RTU interface. It is ideally suited for use with the Fronius Symo, Fronius Symo Hybrid, Fronius Galvo, Fronius Primo and Fronius Eco inverters, as well as the Fronius Datamanager 2.0.

Recording load curves and displaying them in Fronius Solar.web

The Fronius Smart Meter records the household's load curves and clearly presents self-consumption in Fronius Solar.web.



Optimisation of self-consumption

In the event of feed-in limitations, self-consumption in the home should be taken into account before starting to reduce the inverter power. Thanks to the highly accurate measurements and rapid communication via the Modbus RTU interface, dynamic feed-in control is faster and more accurate than with S0. With the Fronius Energy Package storage solution, the Fronius Smart Meter manages the various energy flows in a perfectly coordinated way, optimising the overall energy management.

Three variants

The Fronius Smart Meter is available in three variants. The three-phase Fronius Smart Meter 63A-3 is ideal for three-phase grid systems in the home. With the single-phase Fronius Smart Meter 63A-1, an extremely compact meter for single-phase grids is at your disposal. The Fronius Smart Meter 50kA-3 is designed for measuring higher power levels or for upgrading systems, if the existing current path is not to be disconnected. The 50kA-3 version measures power via a transformer and is compatible with all standard current transformers.

GENERAL DATA	SMART METER 63A-3	SMART METER 50kA-3 ¹⁾	SMART METER 63A-1
Item number	43,0001,1473	43,0001,1478	43,0001,1477
Nominal voltage	400 - 415 V		230 - 240 V
Operating range	340 - 460 V	210 - 440 V	196 - 264 V
Maximum current	3 x 63 A	3 x 50,000 A	1 x 63 A
Cable cross-section, power path	1 - 16 mm ²	0.05 - 4 mm ²	1 - 16 mm ²
Cable cross-section, communication	0.05 - 4 mm ²		
Mounting	DIN rail		
Housing	4 solar modules DIN 43880		
Dimensions (Height x Width x Depth)	89,0 x 71,2 x 65,6 mm	89,0 x 71,2 x 65,6 mm	89,0 x 35,0 x 65,6 mm
Accuracy class	1		
Interface to inverter	Modbus RTU (RS485)		
Display	8-digit LCD		6-digit LCD
Voltage transformation ratio (adjustable)	—	1 - 500	—
Current transformation ratio (adjustable)	—	1 - 9,999	—
Pulse output	No	Yes	No

¹⁾ Delivered without current sensors. Further information about selecting suitable current sensors can be found at www.fronius.com.
The Fronius Smart Meter 50kA-3 is available by the end of 2015.

SENSORS: PRECISE MEASUREMENT OF ADDITIONAL VALUES.

/ Integrating sensors into a PV system enables additional measured values to be recorded, such as insolation, ambient temperature, and much more besides.



FRONIUS SENSOR CARD/BOX

/ For integrating a range of sensors

With the Fronius Sensor Card/Box, sensors for measuring insolation, ambient temperature, module temperature, wind speed, etc. can be integrated into the Fronius system monitoring.¹⁾

TECHNICAL DATA		
Supply voltage	12 V DC	
Energy consumption		
– Fronius Sensor Card	1.1 W	
– Fronius Sensor Box	1.3 W	
Degree of protection (Box)	IP 20	
Dimensions (length x width x height)		
– Fronius Sensor Card	140 x 100 x 26 mm	
– Fronius Sensor Box	197 x 110 x 57 mm	
Interfaces (Fronius Sensor Box only)	Socket:	Designation:
– RS422 (Fronius Solar Net)	RJ45	"IN"
– RS422 (Fronius Solar Net)	RJ45	"OUT"
T1, T2 channels		
– Sensors	PT1000	
– Measuring range	–25 – +75 °C	
– Accuracy	0.5 °C	
– Resolution	1 °C	
Insolation channel		
– Measuring ranges	0 – 100 mV	
	0 – 200 mV	
	0 – 1 V	
– Accuracy	3 %	
D1, D2 channels		
– Max. voltage level	5.5 V	
– Max. frequency	2,500 Hz	
– Min. pulse duration	250 µs	
– Operating point "OFF" ("LOW")	0 – 0.5 V	
– Operating point "ON" ("HIGH")	3 – 5.5 V	
Current input channel		
– Measuring ranges	0 – 20 mA	
	4 – 20 mA	
– Accuracy	5 %	
Fronius Sensor Card item number	4,240,004	
Fronius Sensor Box item number	4,240,104	

¹⁾ The Fronius Sensor Card/Box is compatible with all Fronius inverters (except the Fronius Symo Hybrid).



FRONIUS INSOLATION SENSOR

/ For measuring the radiated energy.

Item number: 43,0001,1189



FRONIUS AMBIENT TEMPERATURE SENSOR

/ For measuring the ambient temperature.

Item number: 43,0001,1188



FRONIUS MODULE TEMPERATURE SENSOR

/ For measuring the module temperature.

Item number: 43,0001,1190



FRONIUS WIND SPEED SENSOR

/ For measuring the wind speed.

Item number: 42,0411,0027

SYSTEM MAINTENANCE: PROFESSIONAL MAINTENANCE AND FAULT ANALYSIS.

/ Simple, convenient maintenance of PV systems: the system status of all Fronius components is visible at a glance and many inverter settings can be adjusted with the Fronius Solar.Service software.



FRONIUS SOLAR.SERVICE

/ Free software for analysis, configuration and servicing

The free Fronius Solar.Service software simplifies system maintenance and fault analysis even further and provides a clear overview of the status of the PV system. If a fault occurs, it is visible straight away. Fronius Solar.Service can also be used to configure the inverter. The fact that all the features are also available remotely makes servicing of the inverter even more convenient.

THE ADVANTAGES AT A GLANCE:

/ Saves time and money

The system status of all components can be seen at a glance, while remote maintenance saves time and money.

/ Efficient

Component faults can be identified and rectified more quickly. The result: shorter downtimes and higher yields.

/ Convenient

All system data can be easily displayed on your PC or notebook.

FLEXIBLE SERVICES FOR SYSTEMS OF EVERY SIZE

/ Comprehensive support for your inverter goes hand in hand with long-term peak performance. As a system owner or operator, you can choose services that are tailored to your individual needs, from reinsurance to full on-site support. Don't leave your yields to chance – draw on our experience.

FRONIUS SERVICE PACKAGES

/ Choose from three service packages.

COMMISSIONING SUPPORT

/ On-site support from Fronius engineers.

WARRANTY EXTENSIONS

/ Extend your warranty period to 10, 15 or 20 years.

/ Two warranty levels for maximum flexibility.

SERVICES



FRONIUS WARRANTIES

/ Reliability and flexibility are more important than ever before in the dynamic photovoltaics market. For this reason, at Fronius we have taken a crucial step and tailored our warranty system to the current needs of the market.

Further details can be found at www.fronius.com/solar/warranty.

Following a short registration process at www.solarweb.com, from January 1st 2015 owners of a Fronius string inverter can select an attractive warranty model, depending on their region, that perfectly matches their individual needs.

Registering each individual Fronius inverter offers significant advantages for the system owner:

/ Updates to compatible devices and domestic control systems for the relevant inverter model. System owners are provided with more detailed information on new functions and usage possibilities for their Fronius product.

/ More warranties (differ depending on the country).

/ If a Fronius Datamanager is part of the owner's PV system, they will benefit from the top-quality monitoring platform Fronius Solar.web. Fronius Solar.web Classic provides an overview of the latest PV system performance data and does not cost a penny.

/ Data gathered from devices is processed anonymously by our development department and is regularly used to optimise our products. You will also benefit from the results, as they enable us to respond more precisely to market-relevant customer requirements in the future.



FRONIUS WARRANTY EXTENSIONS

/ For peace of mind beyond the duration of the standard Fronius warranty there is the option of extending the warranty period to 10, 15 or 20 years at an additional cost. Fronius offers two warranty levels, giving you maximum flexibility:

FRONIUS WARRANTY EXTENSIONS

FRONIUS WARRANTY EXTENSION

/ The cost-effective path to peace of mind. If a claim is made, Fronius bears the material costs.

FRONIUS WARRANTY EXTENSION PLUS

/ For increased peace of mind. If a claim is made, in addition to the material costs, Fronius covers the transportation costs and a service fee.

OTHER ADVANTAGES OF THE WARRANTY EXTENSION:

SIMPLE

Claims are handled directly by the installation engineer and Fronius. No advance payments are necessary. The premium payment is a one-off.

TRANSPARENT

The extended warranty is assigned to the device with a unique serial number and an individual warranty certificate with all the relevant details is issued. The warranty automatically covers original replacement parts and replacement devices.

FLEXIBLE

The length of the warranty period can be adapted to suit individual requirements: extended warranties for 10, 15 and 20 years are possible.

You can find detailed information about the warranty terms at:
WWW.FRONIUS.COM/SOLAR/WARRANTY

FRONIUS SERVICE PACKAGES

/ Exclusively for the Fronius Agilo central inverter, Fronius offers three complementary Service packages to meet your individual needs. In addition to the inverter assistance provided by your Fronius Service Partner, you now also benefit from on-site support by our experienced engineers. Our services are flexible and can be adapted to your requirements.

FRONIUS SERVICE BASIC

WHAT WE OFFER

/ Annual extension of warranty period (up to 20 years)

YOUR BENEFITS

/ Total reassurance for system operators
/ Simple, convenient processing of warranty claims
/ Transparent handling with unique serial numbers

FRONIUS SERVICE COMFORT

WHAT WE OFFER

/ Comprehensive annual servicing and maintenance work by Fronius engineers
/ Annual extension (up to 20 years)

YOUR BENEFITS

/ Maximum reliability over the long term
/ Avoid system downtime
/ Expert servicing and maintenance by experienced Fronius engineers

FRONIUS SERVICE UPTIME

WHAT WE OFFER

/ 99 % availability guarantee
/ Comprehensive annual servicing and maintenance work by Fronius engineers
/ Annual extension (up to 20 years)

YOUR BENEFITS

/ Maximum yields
/ Expert servicing and maintenance by experienced Fronius engineers
/ Reliable yields as compensation is provided for downtime resulting from an inverter failure

COMMISSIONING SUPPORT

/ Count on the support of our experienced engineers when commissioning your PV system. We will be glad to pass on to you our wealth of knowledge about our inverters and system monitoring components. Work together with our experts to install the Fronius inverters correctly and carry out function tests. In addition, you will have access to plenty of support during the commissioning of your Fronius data communication system.



THE ADVANTAGES OF COMMISSIONING SUPPORT IN DETAIL:

PRACTICE-ORIENTED

Experts provide valuable advice when commissioning your PV system. Working directly on the inverter and with the data communication system gives you the opportunity to obtain detailed information at first hand.

PEACE OF MIND

We jointly carry out a range of in-depth function tests on the system. This gives you the peace of mind that comes with knowing that all Fronius components are configured and connected correctly. An essential prerequisite to guarantee a long service life and dependable yield.

TIME-SAVING

Our engineers know Fronius components right down to the tiniest detail. Their technical expertise means they will be able to answer any questions you may have during commissioning, meaning you waste no time and can commission the PV system more quickly.

CONVENIENT

The Fronius engineers visit your installation site and explain in detail how our components work. This makes commissioning very straightforward and saves you time and money.

CHOOSE THE FASTEST SERVICE PLAN ON THE MARKET.

/ You install perfect photovoltaic systems. What happens next? Give your customers even more - a world-class after-sales service with the Fronius Service Partner programme and the fastest service plan on the market.

**TECHNICAL
KNOW-HOW**

**PC BOARD
REPLACEMENT
PROCESS**

**THE BEST
SUPPORT**

**EXCLUSIVE
SERVICES**

**FRONIUS
SERVICE
PARTNER
PROGRAMME**



WHAT MAKES THE FRONIUS SERVICE PARTNERSHIP SO UNIQUE?

/ Only Fronius Service Partners are permitted to replace PC boards in inverters during a service visit. This means you really stand out from your competitors while saving time and money, as well as impressing your customers with your speed and service expertise.

/ Fronius Service Box

The Fronius Service Box contains replacement PC boards and components. Inverters can therefore be attended to immediately on-site.

/ Training

Attend our training courses and qualify as a Fronius Service Partner. With practical training, we provide you with the necessary technical and service expertise to impress your customers.

/ Technical support

Our technical hotline supports you with troubleshooting during service visits. Together, we decide on the action that needs to be taken.

/ PC board replacement process

We lay the foundations of the Fronius PC board replacement process as we develop our inverters. After all, PC boards can only be replaced if the device has been designed accordingly. The result: a unique and efficient service plan that enables our Fronius Service Partners to provide the fastest inverter servicing on the market.

/ Range of additional offers

As a Fronius Service Partner, you can choose from a varied range of offers. These support you in your day-to-day business and give you an additional competitive edge.



FRONIUS TRAINING COURSES PROVIDE TECHNICAL AND PRACTICAL EXPERTISE

/ To qualify as a Fronius Service Partner you must first attend the qualification course. In-depth training courses can then be booked. Our other training courses are open to everyone.



OVERVIEW OF OUR TRAINING PROGRAMME

/ Impress your customers with your technical and service expertise. Our training packages and online training courses adopt an entertaining and practical approach towards sharing Fronius know-how.

FRONIUS SERVICE PARTNER QUALIFICATION TRAINING

/ Focused on the SnapINverter Generation

Content: Basic knowledge about the latest Fronius inverters and system monitoring components, the board replacement process and the Fronius Service Partner programme. Once an engineer has attended the course, his or her company can become a Fronius Service Partner.

IN-DEPTH TRAINING - CAN BE BOOKED ONCE THE QUALIFICATION COURSE HAS BEEN COMPLETED

/ Fronius Symo Service Training

Content: Technical information relating to the three-phase transformerless inverters for systems in private homes to large-scale systems.

/ Fronius Galvo Service Training

Content: Technical information relating to single-phase HF transformer inverters for self-consumption systems.

/ Fronius IG Plus Service Training

Content: Replacing PC boards and servicing Fronius IG Plus inverters.

/ Fronius Agilo Service Training

Content: Technical details about the Fronius Agilo central inverter and servicing on the inverter itself.

/ Fronius Agilo TL Service Training

Content: Servicing and maintenance of the compact central inverter for large-scale systems.

OTHER TRAINING – OPEN TO EVERYONE:

/ Fronius PV Storage Solution Training

Content: Technical information relating to the Fronius Energy Package.

FRONIUS ONLINE WORLD OF KNOWLEDGE:

/ Fronius Online Training Courses

Content: Current topics.

/ Fronius e-learning

Content: Current topics.

**CURRENT DATES FOR YOUR COUNTRY AND
A REGISTRATION FORM CAN BE FOUND AT
WWW.FRONIUS.COM/EN/PV-TRAININGS**



AT A GLANCE: ITEM NUMBERS.

/ The item numbers are listed on the next few pages to provide a quick, clear overview of our products.

FRONIUS ENERGY PACKAGE

ITEM DESIGNATION	ITEM NUMBER
Fronius Symo Hybrid 3.0-3-S	4,210,070
Fronius Symo Hybrid 4.0-3-S	4,210,071
Fronius Symo Hybrid 5.0-3-S	4,210,072
Fronius Solar Battery 4.5	4,220,110
Fronius Solar Battery 6.0	4,220,111
Fronius Solar Battery 7.5	4,220,112
Fronius Solar Battery 9.0	4,220,113
Fronius Solar Battery 10.5	4,220,114
Fronius Solar Battery 12.0	4,220,115
Fronius Smart Meter 50kA-3	43,0001,1478
Fronius Smart Meter 63A-3	43,0001,1473

FRONIUS SYMO

ITEM DESIGNATION	ITEM NUMBER
Fronius Symo 3.0-3-S	4,210,030
Fronius Symo 3.7-3-S	4,210,031
Fronius Symo 4.5-3-S	4,210,032
Fronius Symo 3.0-3-M	4,210,036
Fronius Symo 3.7-3-M	4,210,038
Fronius Symo 4.5-3-M	4,210,033
Fronius Symo 5.0-3-M	4,210,034
Fronius Symo 6.0-3-M	4,210,040
Fronius Symo 7.0-3-M	4,210,041
Fronius Symo 8.2-3-M	4,210,039
Fronius Symo 10.0-3-M	4,210,050
Fronius Symo 12.5-3-M	4,210,051
Fronius Symo 15.0-3-M	4,210,052
Fronius Symo 17.5-3-M	4,210,053
Fronius Symo 20.0-3-M	4,210,054
Accessories	
DC connector kit Symo 10 - 20 kVA	4,251,015
Option DC OVP Type 2 - S	4,251,019
Option DC OVP Type 2 - M	4,251,020
Option 1 DC-plug + pair MC4	4,251,021

FRONIUS PRIMO

ITEM DESIGNATION	ITEM NUMBER
Fronius Primo 3.0-1	4,210,069
Fronius Primo 3.5-1	4,210,068
Fronius Primo 3.6-1	4,210,067
Fronius Primo 4.0-1	4,210,066
Fronius Primo 4.6-1	4,210,065
Fronius Primo 5.0-1	4,210,063
Fronius Primo 5.0-1 AUS	4,210,663
Fronius Primo 6.0-1	4,210,062
Fronius Primo 8.2-1	4,210,060

FRONIUS GALVO

ITEM DESIGNATION	ITEM NUMBER
Fronius Galvo 1.5-1	4,200,011
Fronius Galvo 2.0-1	4,200,012
Fronius Galvo 2.5-1	4,200,013
Fronius Galvo 3.0-1	4,200,014
Fronius Galvo 3.1-1	4,200,015

FRONIUS ECO

ITEM DESIGNATION	ITEM NUMBER
Fronius Eco 25.0-3	4,210,056,040
Fronius Eco 27.0-3	4,210,057,040
Accessories	
DC connector kit Symo 10 - 20 kVA	4,251,015
Option DC OVP Type 2 - S	4,251,019
Option DC OVP Type 2 - M	4,251,020
Option 1 DC-plug + pair MC4	4,251,021
Option fuses 6x15A DC+	4,251,022
Option 6xbolts DC+	4,251,023

FRONIUS POWER PACKAGE

ITEM DESIGNATION	ITEM NUMBER
Fronius AC Combiner Symo, left	4,240,149
Fronius AC Combiner Symo, right	4,240,150

FRONIUS IG PLUS

ITEM DESIGNATION	ITEM NUMBER
Fronius IG Plus 35 V-1	4,210,015
Fronius IG Plus 50 V-1	4,210,011
Fronius IG Plus 55 V-1	4,210,027
Fronius IG Plus 60 V-1	4,210,023
Fronius IG Plus 70 V-1	4,210,016
Fronius IG Plus 100 V-1	4,210,012
Fronius IG Plus 55 V-2	4,210,028
Fronius IG Plus 60 V-3	4,210,025
Fronius IG Plus 80 V-3	4,210,026
Fronius IG Plus 100 V-3	4,210,020
Fronius IG Plus 120 V-3	4,210,018
Fronius IG Plus 150 V-3	4,210,014
Accessories	
DC connector Kit IG Plus	4,001,687
Fronius DC Box 60/12	42,0300,2872
Fronius String Control 100/12	4,240,143

FRONIUS IG TL

ITEM DESIGNATION	ITEM NUMBER
Fronius IG TL 3.0	4,210,219
Fronius IG TL 3.6	4,210,220
Fronius IG TL 4.0	4,210,221
Fronius IG TL 4.6	4,210,223
Fronius IG TL 5.0	4,210,222

FRONIUS AGILO

ITEM DESIGNATION	ITEM NUMBER
Fronius Agilo 75.0-3	4,200,506
Fronius Agilo 75.0-3 Outdoor	4,200,607
Fronius Agilo 100.0-3	4,200,505
Fronius Agilo 100.0-3 Outdoor	4,200,606
Accessories	
Fronius String Control 250/30	4,240,144
Fronius String Control 250/30 DCD DF	4,240,145

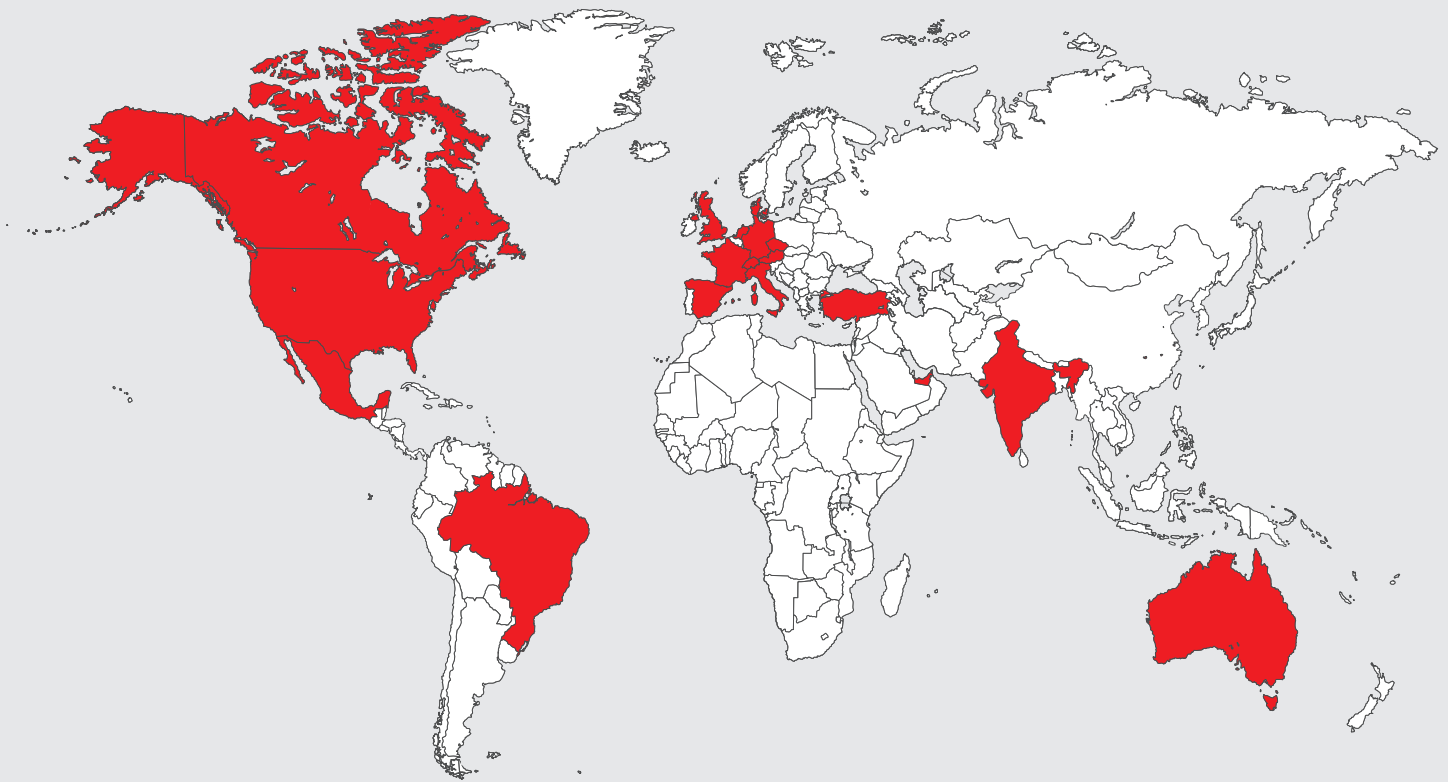
FRONIUS SYSTEM MONITORING

ITEM DESIGNATION	ITEM NUMBER
Fronius Datamanager 2.0 (Fronius IG Plus)	4,240,036
Fronius Datamanager 2.0 (Fronius IG Plus) retrofit	4,240,036,Z
Fronius Datamanager Box 2.0	4,240,125
Fronius Sensor Card	4,240,004
Fronius Sensor Card retrofit	4,240,004,Z
Fronius Sensor Box	4,240,104
Fronius Modbus Card (Fronius IG Plus)	4,240,021
Fronius Modbus Card (Fronius IG Plus) retrofit	4,240,021,Z
Fronius Update Package	4,240,019
Grid and system protection	43,0008,0188
Fronius Com Card	4,240,001
Fronius Com Card retrofit	4,240,001,Z
Fronius Smart Meter 50kA-3	43,0001,1478
Fronius Smart Meter 63A-3	43,0001,1473
Fronius Smart Meter 63A-1	43,0001,1477
Retrofit packages	
Package 15 Fronius Com Card retrofit	4,240,201,Z
Sensors	
Ambient temperature sensor	43,0001,1188
Module temperature sensor	43,0001,1190
Insolation sensor	43,0001,1189
Wind sensor	42,0411,0027
Cables and accessories	
Fuse 1A F 600 V DC	41,0007,0187
Fuse 5A F 600 V DC	41,0007,0205
Fuse 8A F 600 V DC	41,0007,0223
Fuse 10A F 600 V DC	41,0007,0207
Fuse 15A F 600 V DC	41,0007,0217
Fuse 20A F 600 V DC	41,0007,0200
Fuse 1A F 1000 V DC	41,0007,0231
Fuse 3A F 1000 V DC	41,0007,0234
Fuse 5A F 1000 V DC	41,0007,0235
Fuse 8A F 1000 V DC	41,0007,0236
Fuse 10A F 1000 V DC	41,0007,0229
Fuse 15A F 1000 V DC	41,0007,0230
Fuse 20A F 1000 V DC	41,0007,0233
Fuse 30A F 1000 V DC	41,0007,0241
DATCOM power supply 12 V	43,0001,1194
Power supply for demo devices	43,0001,1214

Up-to-date information about inverter availability in your country can be found at www.fronius.com

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/ We have a global network of 17 subsidiaries, giving us an international presence and ensuring we are close to our customers wherever they are in the world.



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

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v05 May 2015 EN

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