

/ Perfect Welding / Solar Energy / Perfect Charging



SHIFTING THE LIMITS



24 HOURS OF SUN IS POSSIBLE.
NOW THAT WE MAKE RENEWABLE ENERGY
ACCESSIBLE ALL AROUND THE CLOCK.

/ Solar Energy
Services and product programme
2014/15

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. In peak load gas power plants, gas from renewable sources is converted back into electricity. This electrolysis process is also used in the lower power range, e.g. for energy-independent single-family homes or mobile communication base stations.



- 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 - 49.



FUNCTION AND YIELD AT A GLANCE

/ User-friendly and clearly laid-out – just two of the features that make our Fronius DATCOM monitoring system so impressive. For details of the complete system plus accessories, see pages 52 - 61.

SERVICES FOR EVERY SITUATION

/ Flexible services enhance our range of products to meet your requirements. Find out more on pages 62 – 67.

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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 68 – 69.



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.



OVER 60 YEARS OF PROGRESS

/ At Fronius International GmbH, we have been researching new technologies for converting electrical energy since 1945. That is more than sixty years 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 14 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 96% 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

**FRONIUS
SYMO**

**FRONIUS
SYMO
HYBRID**

**FRONIUS
GALVO**

**FRONIUS
PRIMO**

AVAILABLE FROM Q1/2015

**FRONIUS
IG TL**

**FRONIUS
IG PLUS**

**FRONIUS
IG**

**FRONIUS
ECO**

AVAILABLE FROM Q2/2015

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.

A diagram consisting of four overlapping circles with dashed white borders. The circles are arranged in a cluster: one on the left, one at the top center, one on the right, and a larger one at the bottom center. Each circle contains text in white, bold, uppercase letters. The top-center circle is the largest and contains the text 'FRONIUS AGILO TL'. The left circle contains 'FRONIUS AGILO'. The right circle contains 'FRONIUS CL'. The bottom-center circle is the largest and contains 'CENTRAL INVERTERS'.

**FRONIUS
AGILO**

**FRONIUS
AGILO TL**

FRONIUS CL

**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.

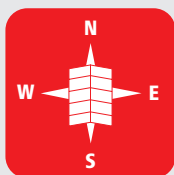


SNAPINVERTER TECHNOLOGY

/ 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.



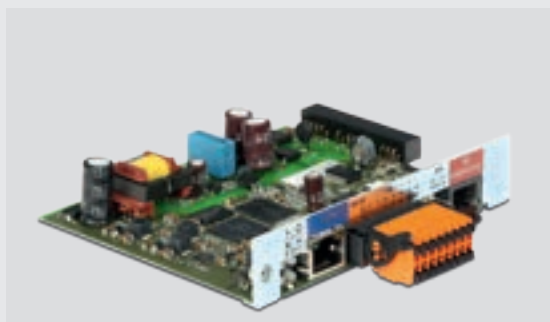
SUPERFLEX DESIGN

/ The Fronius SuperFlex Design combines all the system design requirements into a single inverter form. Two MPP trackers combined with a high system voltage and wide input voltage range guarantee maximum flexibility. Every DC input, and therefore every MPP tracker, is able to accommodate the entire nominal output of the inverter. The result: an inverter for every application. Thanks to the SuperFlex Design, a single inverter can cope with any challenge – including different roof orientations, shading of one or two strings, or the use of residual modules.



INTEGRATED DATA COMMUNICATION

/ We are the first inverter manufacturer to offer a data communication package with fully integrated datalogging, 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.

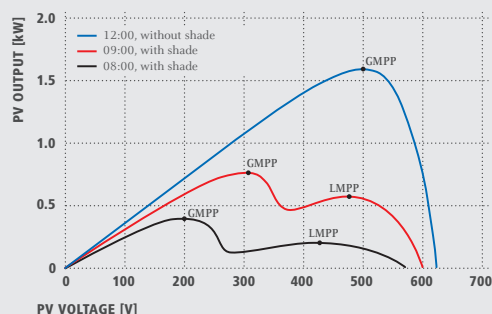


/ The Fronius Datamanager sends system values directly to the Fronius Solar.web online portal via WLAN



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.

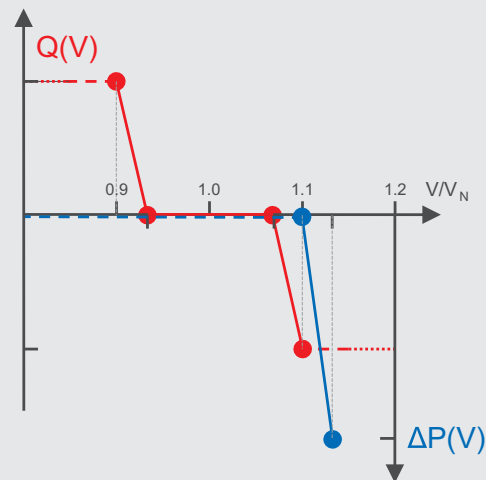


/ With conventional MPP trackers it is difficult to determine the global Maximum Power Point (GMPP). Often the GMPP is not detected because the tracker has wrongly identified the local Maximum Power Point (LMPP) as the maximum for the entire characteristic. The Dynamic Peak Manager always finds the global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



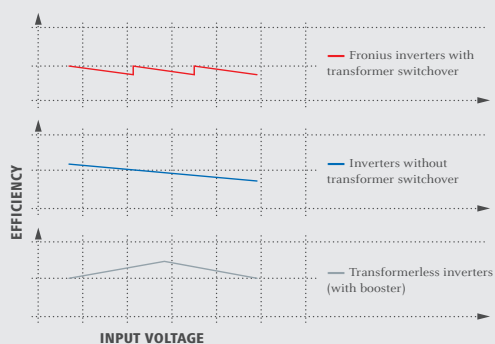
READY FOR STORAGE

/ 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.



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.



UNIQUE PC BOARD REPLACEMENT PROCESS

/ The foundation of the unique PC board replacement process is laid as we develop our inverters, as PC boards can only be replaced locally if the device has been designed accordingly. This enables our Fronius Service Partners to provide the fastest inverter servicing on the market.



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 commissioning 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 – free via the portal or the smartphone app for total access
- / Future requirements can be retrofitted easily thanks to plug-in card technology

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.



/ PC board replacement process



/ 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 1000 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.

/ 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.

/ 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 & 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.

/ 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.

/ 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.

TECHNICAL DATA FRONIUS SYMO

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 ($U_{dc\ start}$)	200 V					
Nominal input voltage ($U_{dc,r}$)	595 V					
Max. input voltage ($U_{dc\ max}$)	1000 V					
MPP voltage range ($U_{mpp\ min} - U_{mpp\ max}$)	200 - 800 V	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
Max. output current ($I_{ac\ max}$)	4.8 A	5.9 A	7.2 A	4.8 A	5.9 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 ($\cos\ \varphi_{ac,r}$)	0.70 - 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					
Installation	Indoor and outdoor installation					
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 mm ²			4x DC+ and 4x DC- screw terminals 2.5 - 16mm ² ³⁾		
AC connection technology	5-pin AC screw terminals 2.5 - 16 mm ²			5-pin AC screw terminals 2.5 - 16 mm ² 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, S1 4777 ¹⁾ , CEI 0-21 ¹⁾					

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.

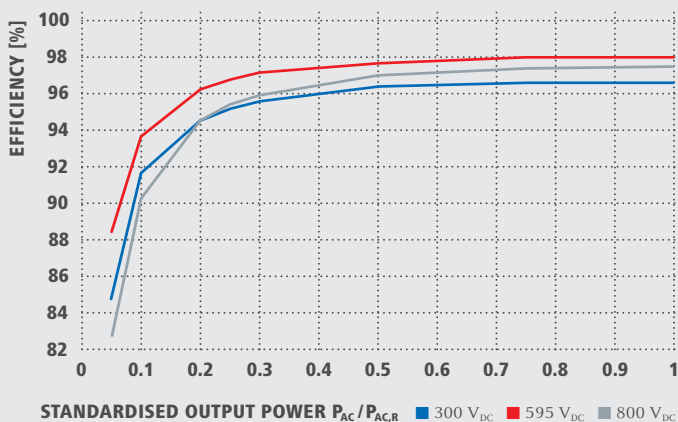
EFFICIENCY	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
Max. efficiency	98.0 %					
Europ. efficiency (η_{EU})	96.2 %	96.7 %	97.0 %	96.5 %	96.9 %	97.2 %
η at 5 % $P_{Ac,r}$ ¹⁾	80.3 / 83.6 / 79.1 %	83.4 / 86.4 / 80.6 %	84.8 / 88.5 / 82.8 %	79.8 / 85.1 / 80.8 %	81.6 / 87.8 / 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 disconnecter	Yes					

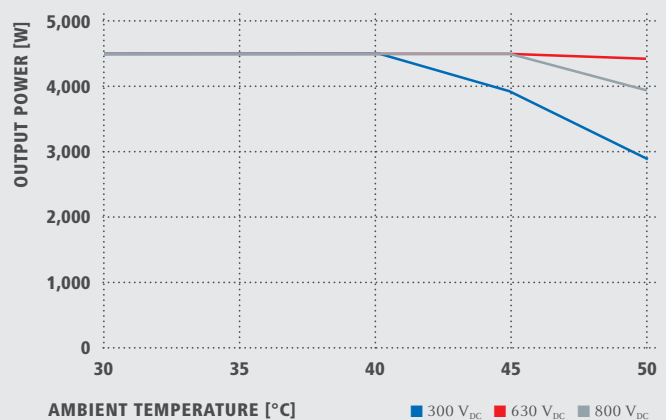
INTERFACES	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)					
6 inputs and 4 digital inputs/ outputs	Interface to ripple control receiver					
USB (type A socket)	Datalogging, inverter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

¹⁾ And at $U_{mpp\ min} / U_{dc,r} / U_{mpp\ max}$ ²⁾ Available from autumn 2014.

FRONIUS SYMO 4.5-3-S EFFICIENCY CURVE



FRONIUS SYMO 4.5-3-S DERATING



TECHNICAL DATA FRONIUS SYMO

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 ($U_{dc \max}$)		1000 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 ($P_{ac \text{ r}}$)	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
Max. output current ($I_{ac \max}$)	8.0 A	9.6 A	11.2 A	13.1 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 ($\cos \varphi_{ac \text{ r}}$)	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			
Installation	Indoor and outdoor installation			
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			

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.

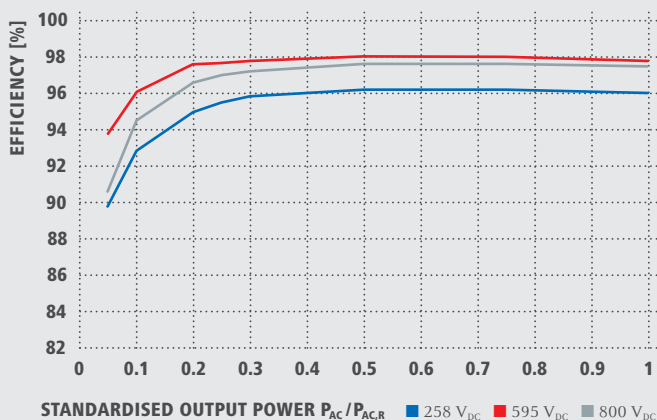
EFFICIENCY	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
Max. efficiency	98.0 %			
Europ. efficiency (η_{EU})	97.3 %	97.5 %	97.6 %	97.7 %
η at 5 % $P_{AC,r}$ ¹⁾	84.9 / 91.2 / 85.9 %	87.8 / 92.6 / 87.8 %	88.7 / 93.1 / 89.0 %	89.8 / 93.8 / 90.6 %
η at 10 % $P_{AC,r}$ ¹⁾	89.9 / 94.6 / 91.7 %	91.3 / 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			

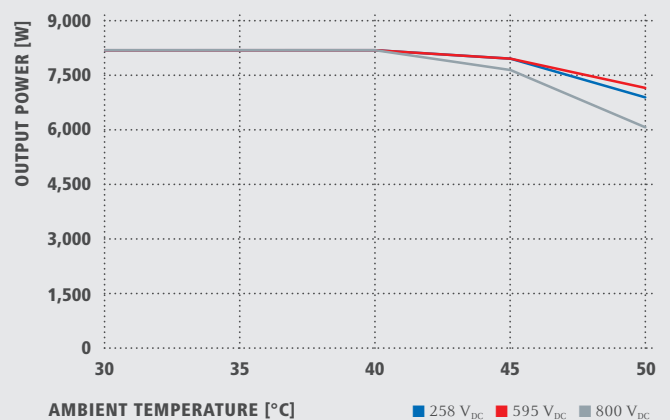
INTERFACES	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)			
6 inputs and 4 digital inputs/outputs	Interface to ripple control receiver			
USB (type A socket)	Datalogging, inverter update via USB flash drive			
2x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

¹⁾ And at $U_{mpp\ min} / U_{dc,r} / U_{mpp\ max}$ ²⁾ Available from autumn 2014.

FRONIUS SYMO 8.2-3-M EFFICIENCY CURVE



FRONIUS SYMO 8.2-3-M DERATING



TECHNICAL DATA FRONIUS SYMO

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. short circuit current, module array (MPP ₁ /MPP ₂)	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 ($U_{dc \max}$)			1000 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		

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
Max. output current ($I_{ac \max}$)	16.0 A	19.9 A	23.9 A	27.9 A	31.9 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	< 2 %				
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				
Installation	Indoor and outdoor installation				
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	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, G83/2, 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.

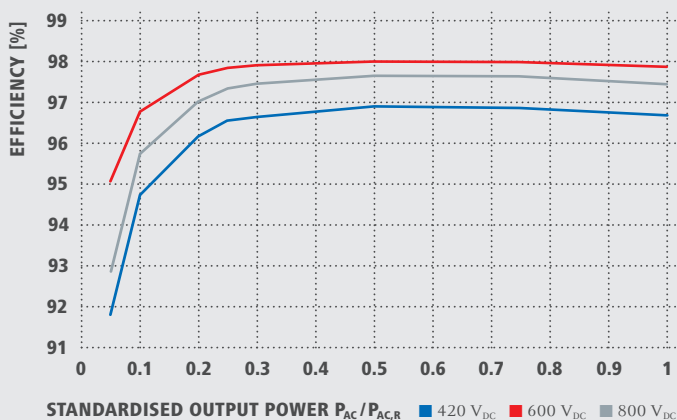
EFFICIENCY	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
Max. efficiency	98.0 %			98.1 %	
Europ. efficiency (η_{EU})	97.4 %	97.6 %	97.8 %	97.8 %	97.9 %
η at 5 % $P_{AC,r}^{1)}$	87.9 / 92.5 / 89.2 %	88.7 / 93.1 / 90.1 %	91.2 / 94.8 / 92.3 %	91.6 / 95.0 / 92.7 %	91.9 / 95.2 / 93.0 %
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		

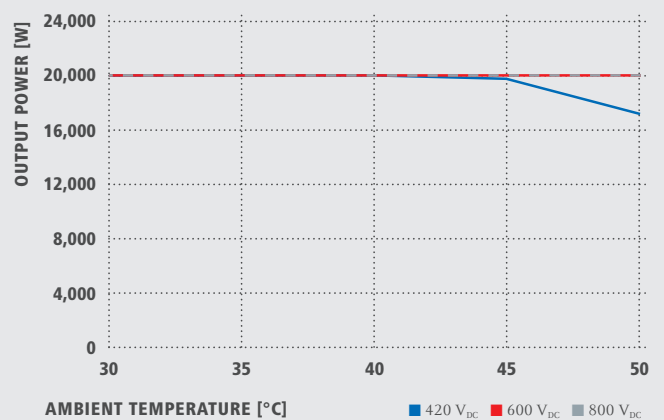
INTERFACES	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
WLAN / Ethernet LAN		Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)			
6 inputs and 4 digital inputs/outputs		Interface to ripple control receiver			
USB (type A socket)		Datalogging, inverter update via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

¹⁾ And at $U_{mpp\ min} / U_{dc,r} / U_{mpp\ max}$ ²⁾ Available from autumn 2014.

FRONIUS SYMO 20.0-3-M EFFICIENCY CURVE



FRONIUS SYMO 20.0-3-M DERATING



FRONIUS ENERGY PACKAGE

/ The personal storage solution for 24H Sun.

AVAILABLE FROM Q1/2015



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 in no time. The result: sun by day, sun by night and sun during power outages. Revolutionary operation and system monitoring thanks to the integrated WLAN and web server complete this storage solution.



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 technology. A long service life, short charging times and high depth of discharge are therefore guaranteed. The result is maximum self-consumption and maximum independence. The storage capacity of the Fronius Solar Battery can be adapted to meet individual customer needs.



/ PC board replacement process



/ SnapINverter technology



/ Integrated data communication



/ Smart Grid Ready



/ Ready for storage



/ Dynamic Peak Manager

MAXIMUM INDEPENDENCE, MODULAR DESIGN & REVOLUTIONARY OPERATING SYSTEM

/ The three-phase Fronius Symo Hybrid in power categories from 3.0 to 5.0 kW allows unused energy from a photovoltaic system to be stored in a battery. The result: maximum self-consumption of the available power and maximum energy independence. Excess solar power can thus be used at times when generating conditions are poor or impossible. With the emergency power function, the household can enjoy an optimum electricity supply even during power outages. Perfect system configuration and visualisation are provided by the built-in web server with graphical interface, WLAN and Ethernet. In addition, the DC coupling on the battery guarantees maximum efficiency of the overall system.

/ Modular 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. The storage 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.

/ 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 commissioning 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 WLAN hot spot, 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.

/ 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.

/ 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.

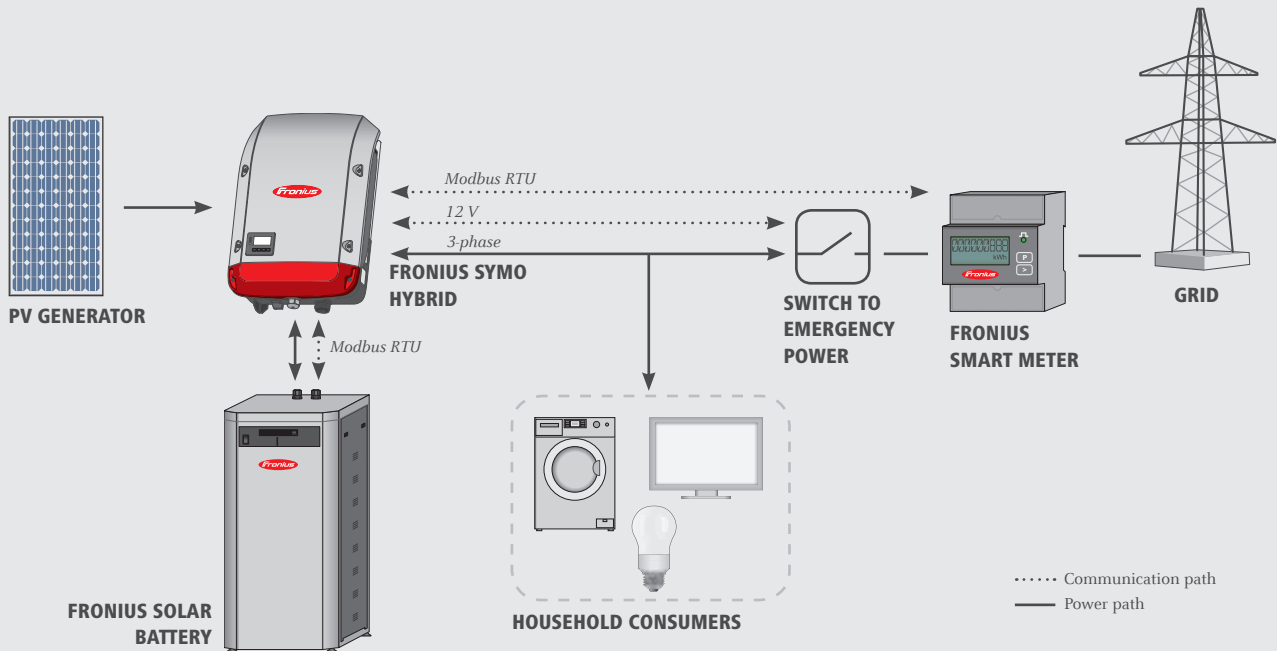
/ Ideal for feed-in limits

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.

/ 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.

CONFIGURATION DIAGRAM



/ Fronius Smart Meter



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 when feed-in limits are imposed is faster and more accurate than with the S0. In conjunction with the Fronius Solar.web online portal, the Fronius Smart Meter provides a clear overview of a user's own power consumption. In the storage solution based on the Fronius Symo Hybrid, the Fronius Smart Meter provides perfectly coordinated management of the various energy flows and optimises overall energy management.

TECHNICAL DATA FRONIUS SYMO HYBRID

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

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

SUITABLE FOR THE GERMAN SOLAR ENERGY STORAGE INCENTIVE PROGRAMME.

TECHNICAL DATA FRONIUS SYMO HYBRID

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	22 kg		
Degree of protection	IP 65		
Protection class	1		
Overtoltage category (DC / AC) ¹⁾	2 / 3		
Inverter design	Transformerless		
Cooling	Regulated air cooling		
Installation	Indoor and outdoor installation		
Ambient temperature range	-25 - +60°C		
Permitted humidity	0 - 100 %		
Max. altitude	2,000 m (unrestricted voltage range)		
DC PV connection technology	2x DC+ and 2x DC- screw terminals 2.5 - 16 mm ²		
DC battery connection technology	1x DC+ and 1x DC- screw terminals 2.5 - 16 mm ²		
AC connection technology	5-pin AC screw terminals 2.5 - 16 mm ²		
Certificates and compliance with standards	VDE AR N 4105, ÖVE / ÖNORM E 8001-4-712, DIN V VDE 0126-1-1		
Stand-alone	Yes		
Emergency power function switchover time	5 sec.		

EFFICIENCY	SYMO HYBRID 3.0-3-S	SYMO HYBRID 4.0-3-S	SYMO HYBRID 5.0-3-S
Max. efficiency (PV - grid)	97.5 %	97.6 %	
Max. efficiency (PV - battery - grid)	> 90.0 %	> 90.0 %	> 90.0 %
Europ. efficiency (PV - grid)	95.2 %	95.7 %	96.0 %

PROTECTION DEVICES	SYMO HYBRID 3.0-3-S	SYMO HYBRID 4.0-3-S	SYMO HYBRID 5.0-3-S
DC 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	Fronius Solar.web		
Datalogger and web server	Included		
Interface to battery and meter	Modbus RTU SunSpec (RS485)		

¹⁾ Testing to IEC 62109-1.

TECHNICAL DATA FRONIUS SOLAR BATTERY

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					
Voltage range	120 - 170 V	160 - 230 V	200 - 290 V	240 - 345 V	280 - 400 V	320 - 460 V
Nominal charging power	2,400 W	3,200 W	4,000 W	4,800 W	5,600 W	6,400 W
Nominal discharge power	2,400 W	3,200 W	4,000 W	4,800 W	5,600 W	6,400 W
Max. charging current	16 A					
Max. discharge current	16 A					

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

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

TECHNICAL DATA FRONIUS SMART METER

GENERAL DATA	FRONIUS SMART METER
Item number	43,0001,1473
Nominal voltage	400 - 415 V
Max. current	3 x 63 A
Cable cross-section, power path	1 - 16 mm ²
Cable cross-section, communication	0.05 - 4 mm ²
Installation	DIN rail
Housing	4 modules DIN 43880
Accuracy class	1
Interface to inverter	Modbus RTU (RS485)
Display	8-digit LCD

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.



/ PC board replacement process



/ 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 self-consumption component. The integral energy management relay can be used to control consumers, thereby further increasing self-consumption. 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 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 & 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.

TECHNICAL DATA FRONIUS GALVO

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 ($U_{dc\ start}$)	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 ($P_{ac,r}$)	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
Max. output current ($I_{ac\ max}$)	7.2 A	9.7 A	12.1 A	14.5 A	15.0 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 ($\cos \varphi_{ac,r}$)	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				
Installation	Indoor and outdoor installation				
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 mm ² - 16 mm ²				
AC connection technology	Screw terminal connection 2.5 mm ² - 16 mm ²				
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				

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				

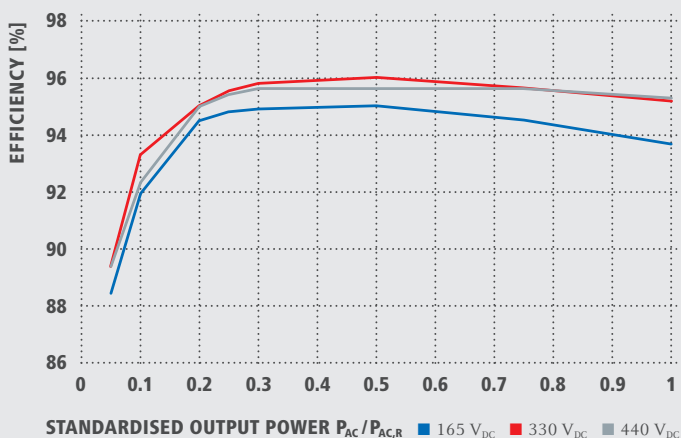
INTERFACES	GALVO 1.5-1	GALVO 2.0-1	GALVO 2.5-1	GALVO 3.0-1 ²⁾	GALVO 3.1-1
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)				
6 inputs and 4 digital inputs/outputs	Interface to ripple control receiver				
USB (type A socket)	Datalogging, inverter update via USB flash drive				
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol				
Signalling output	Energy management (floating relay output)				
Datalogger and web server	Included				
RS485 ³⁾	Modbus RTU SunSpec or meter connection				

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

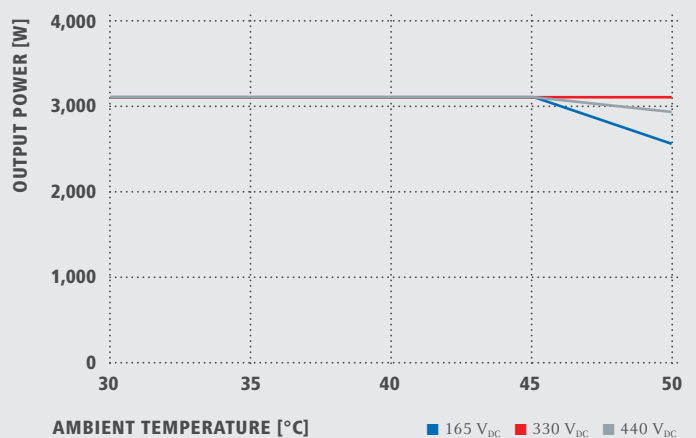
²⁾ Up to 3 kW for countries with relevant support thresholds.

³⁾ Available from autumn 2014.

FRONIUS GALVO 3.1-1 EFFICIENCY CURVE



FRONIUS GALVO 3.1-1 DERATING



A PREVIEW OF FUTURE INNOVATIONS...

/ The SnapINverter generation can be used in all PV systems - from single-family homes to large-scale installations. The Fronius Primo and Fronius Eco will complete the inverter family.

AVAILABLE FROM Q1/2015

FRONIUS PRIMO



FRONIUS PRIMO

/ The communicative inverter for optimised energy management. The Fronius Primo in power categories from 3.6 to 8.2 kW rounds off the new SnapINverter generation to perfection. This single-phase, transformerless inverter is the ideal inverter for private households. The innovative SuperFlex Design provides maximum flexibility in system design, while the SnapINverter mounting system makes installation and maintenance easier than ever before. The communication package included as standard, with WLAN, energy management, many interfaces and much more besides, makes the Fronius Primo a communicative inverter for owner-occupiers.

AVAILABLE FROM Q2/2015

FRONIUS ECO



FRONIUS ECO

/ The compact project inverter for maximum yields. The three-phase Fronius Eco in power categories 24.0 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. And string collection boxes are no longer necessary thanks to the integrated string-fuse holders and the optional available surge protection device (Type 2).

OUR OTHER STRING INVERTERS.

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



FRONIUS IG PLUS

/ The all-rounder with maximum yield.

The Fronius IG Plus generation of inverters represents an evolution of the proven Fronius IG product family. With power categories from 2.6 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: 2.6 kW, 3.0 kW, 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, 6.0 kW, 6.5 kW, 8.0 kW

Three-phase: 5.0 kW, 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 IG

/ The dependable inverter range.

With the Fronius IG product family, Fronius has launched a generation of inverters that is compatible with all solar modules. What makes the inverters so appealing is their intuitive operation and ease of use, together with their highly informative analyses of system values in every situation.

/ Power categories:

1.3 kW, 1.8 kW, 2.5 kW, 3.5 kW, 4.6 kW



FRONIUS CENTRAL INVERTERS

/ Fronius Agilo and Fronius Agilo TL 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



/ Fronius Agilo TL

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 free online portal and the free 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 and 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 and 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.



/ PC board replacement process



/ 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 726 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), 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 launch the software.

TECHNICAL DATA FRONIUS AGILO

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 ($P_{ac \text{ r}}$)	75 kW		100 kW	
Max. output power	75 kVA		100 kVA	
Max. output current ($I_{ac \max}$)	114.4 A		152.6 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 ($\cos \varphi_{ac \text{ r}}$)			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)	1884 x 1100 x 700 mm	1914 x 1204 x 862 mm	1884 x 1100 x 700 mm	1914 x 1204 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			
Installation	Indoor installation	Outdoor installation	Indoor installation	Outdoor installation
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)			
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 Outdoor

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

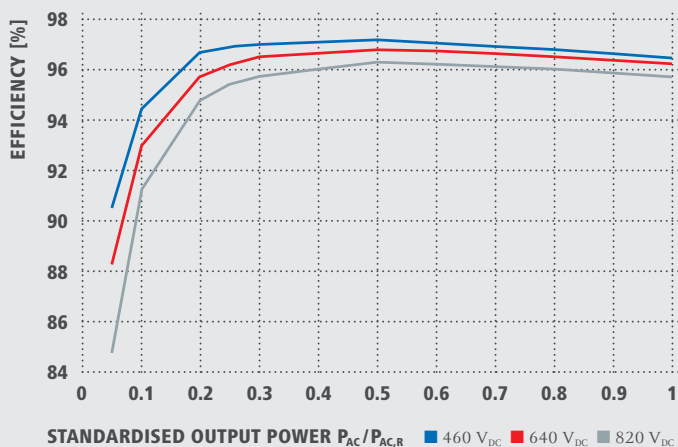
EFFICIENCY	AGILO 75.0-3	AGILO 75.0-3 OUTDOOR	AGILO 100.0-3	AGILO 100.0-3 OUTDOOR
Max. efficiency	97.3 %		97.2 %	
Europ. efficiency (η_{EU})	96.7 %		96.6 %	
η at 5 % $P_{AC,r}^{(1)}$	90.6 / 84.4 %		90.5 / 84.8 %	
η at 10 % $P_{AC,r}^{(1)}$	94.7 / 91.1 %		94.6 / 91.5 %	
η at 20 % $P_{AC,r}^{(1)}$	96.7 / 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			

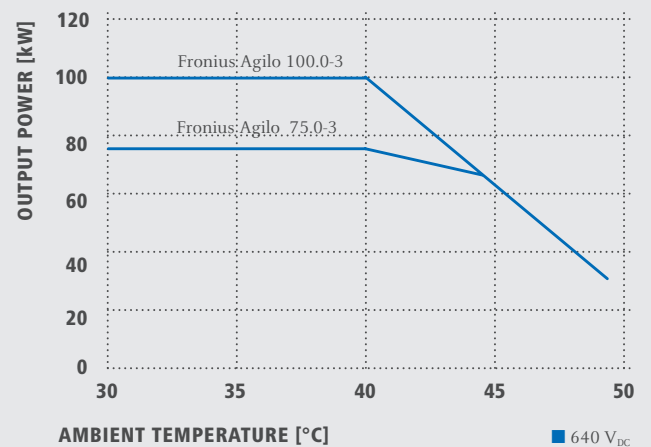
INTERFACES	AGILO 75.0-3	AGILO 75.0-3 OUTDOOR	AGILO 100.0-3	AGILO 100.0-3 OUTDOOR
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol			
Optionally with Fronius Datamanager Box 2.0:				
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)			
6 inputs and 4 digital 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



FRONIUS AGILO TL

/ The compact central inverter for straightforward installation, easy maintenance and maximum yields.



FRONIUS AGILO TL 360.0-3 and 460.0-3

/ The compact central inverter: with its compact dimensions and intelligent transport and installation system, the Fronius Agilo TL delivers impressive cost-efficiency in large-scale installations. Servicing and maintenance can be carried out on site by specialists, saving additional time and money.



FRONIUS AGILO TL 360.0-3 OUTDOOR and 460.0-3 OUTDOOR

/ For outdoor use: central inverters are also available optionally as an outdoor version for unrestricted outdoor use. Thanks to its intelligent cooling system, the Fronius Agilo TL even delivers maximum performance under extreme climate conditions.



/ PC board replacement process



/ Transport technology



/ Smart Grid Ready

EASY TO INSTALL, EASY TO MAINTAIN, MAXIMUM YIELDS

/ The Fronius Agilo TL in the 360 and 460 kVA power categories is a powerful central inverter for large-scale systems. Impressively low transport and operating costs are delivered through the compact dimensions and clever system design inherent to this inverter series. Furthermore, the Fronius Agilo TL is the only inverter series in this power category that can be fully installed and maintained by the installer. Efficient, robust and a long service life - all in one device.

/ Easy installation

No special tools are required for transport or installation. The installation time is further reduced thanks to the V-type terminals on the DC side. 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 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 TL as standard and the optional Fronius Datamanager Box 2.0 meets every communication requirement. The Fronius Agilo TL 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), 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.

/ Unrestricted use out of doors

The outdoor version of the Fronius Agilo TL is perfectly designed for installation in unsheltered outdoor locations. Its corrosion-resistant aluminium housing and intelligent cooling system enable the Fronius Agilo TL to deliver maximum performance at all times, even under extreme climate conditions.

/ Smart Grid Ready

The Fronius Agilo TL already meets the requirements of tomorrow. In order to maximise yields and stabilise the grid, our inverters are equipped with dynamic and static grid back-up functions for reactive power and effective power regulation.

/ Practical transport features

Like the Fronius Agilo, the Fronius Agilo TL is amazingly mobile. Recesses in the base for the lift truck are just the job when transporting the device over longer distances.

/ Support for project design

Fronius also provides support from the initial design of PV systems right through to detailed implementation planning on both the DC and AC sides.

TECHNICAL DATA FRONIUS AGILO TL INDOOR / OUTDOOR

INPUT DATA	AGILO TL 360.0-3	AGILO TL 460.0-3
Max. input current ($I_{dc \max}$)	730 A	782 A
Min. input voltage ($U_{dc \min}$)	505 V	600 V
Max. short circuit current, module array	1095 A	1173 A
Feed-in start voltage ($U_{dc \text{ start}}$)	530 V	625 V
Nominal input voltage ($U_{dc, r}$)	505 V	600 V
Max. input voltage ($U_{dc \max}$)	1000 V	
MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)	505 - 820 V	600 - 820 V
Number of MPP trackers	1	
Number of DC connections	6 (maximum 200 A per DC connection)	

OUTPUT DATA	AGILO TL 360.0-3	AGILO TL 460.0-3
AC nominal output ($P_{ac, r}$)	360 kVA	460 kVA
Max. output power (up to 35 °C ambient temperature)	360 kVA	460 kVA
Max. output current ($I_{ac \max}$)	661 A	697 A
Grid connection (voltage range)	3 - 330 V (+30 % / -15 %)	3 - 400 V (+15 % / -25 %)
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)	
Total harmonic distortion (50 Hz / 60 Hz)	< 1.8 % / < 3 %	
Power factor ($\cos \phi_{ac, r}$)	0.8 - 1 ind./cap. ¹⁾	

GENERAL DATA	AGILO TL 360.0-3	AGILO TL 460.0-3
Item number	4,200,509	4,200,510
Dimensions (height x width x depth)	1970 x 1150 x 775 mm (2230 x 1150 x 1055 mm) ²⁾	
Weight	615 kg (660 kg) ²⁾	
Degree of protection Agilo TL Indoor (electronics compartment)	IP 40 (IP 55)	
Degree of protection Agilo TL Outdoor (electronics compartment)	IP 44 (IP 55)	
Protection class	1	
Overvoltage category (DC / AC) ³⁾	2 / 3	
Overvoltage protection (DC / AC)	Type 1 and Type 2 integrated	
Inverter design	External transformer, AC parallel connection not possible	
Cooling	Regulated air cooling	
Installation	Indoor and outdoor installation	
Ambient temperature range	-20 °C - +50 °C	
Permitted humidity	95 %	
Max. altitude	3000 m (unrestricted voltage range)	
DC connection technology	Direct terminal lug (V-type terminal) (6x 70 - 240 mm ²) ⁴⁾	
AC connection technology	2x max. 240 mm ² cable lugs per phase ⁵⁾	
Certificates and compliance with standards	Depends on local regulations	

¹⁾ Depends on country setup²⁾ Applies to the Fronius Agilo TL Outdoor³⁾ Testing to IEC 61209-1⁴⁾ Copper and aluminium are connectable via V-box terminal clamp and V-shape connection lug⁵⁾ Insulation resistance 1.8 / 3 kVMore information about inverter availability in your country can be found at www.fronius.com.

EFFICIENCY	AGILO TL 360.0-3	AGILO TL 460.0-3
Max. efficiency	98.5 %	98.6 %
Europ. efficiency (η_{EU})	98.3 %	98.4 %
η at 5 % $P_{ac,r}^{(1)}$	96.5 / 92.0 %	96.3 / 94.0 %
η at 10 % $P_{ac,r}^{(1)}$	97.5 / 95.7 %	97.7 / 96.4 %
η at 20 % $P_{ac,r}^{(1)}$	98.3 / 97.2 %	98.4 / 97.7 %
η at 25 % $P_{ac,r}^{(1)}$	98.4 / 97.4 %	98.5 / 97.9 %
η at 30 % $P_{ac,r}^{(1)}$	98.4 / 97.6 %	98.6 / 98.1 %
η at 50 % $P_{ac,r}^{(1)}$	98.5 / 97.9 %	98.6 / 98.2 %
η at 75 % $P_{ac,r}^{(1)}$	98.4 / 97.9 %	98.5 / 98.2 %
η at 100 % $P_{ac,r}^{(1)}$	98.2 / 97.7 %	98.4 / 98.1 %
MPP adaptation efficiency	> 99.9 %	

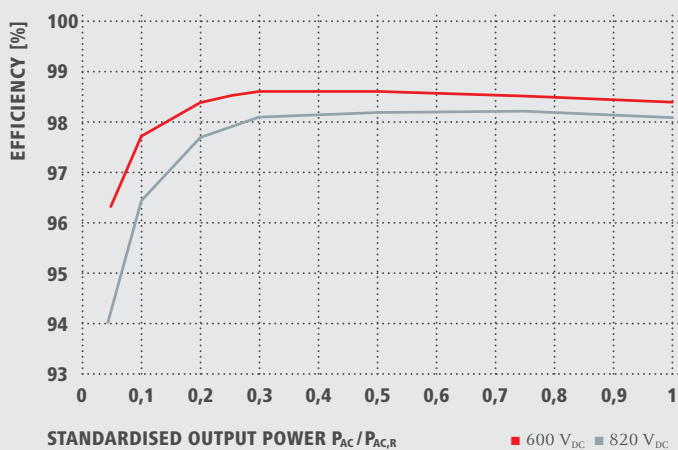
PROTECTION DEVICES	AGILO TL 360.0-3	AGILO TL 460.0-3
DC insulation measurement	Yes, warning or shutdown ²⁾ at $R_{ISO} < 40 \text{ k}\Omega$	
Overload behaviour	Operating point shift, power limitation	
DC disconnecter	Included	
AC switch-disconnector	Included	

INTERFACES	AGILO TL 360.0-3	AGILO TL 460.0-3
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	

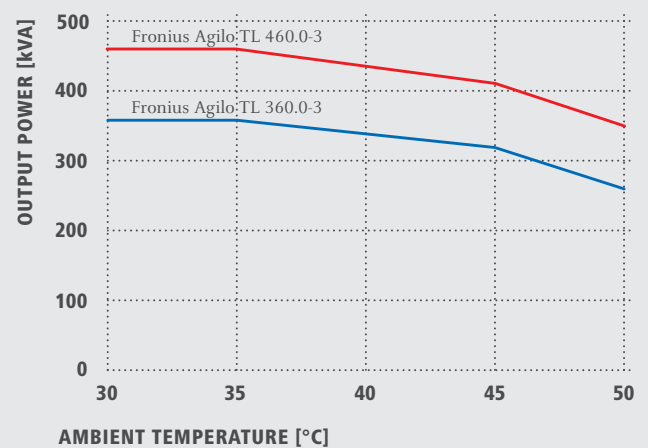
¹⁾ And at $U_{mpp \text{ min}} = U_{dc,r} / U_{mpp \text{ max}}$
²⁾ Depends on country setup

Note: Connection to grounded modules is not possible with the Fronius Agilo TL.

EFFICIENCY CURVE FRONIUS AGILO TL



DERATING FRONIUS AGILO TL



OUR CENTRAL INVERTERS

/ The Fronius CL is the efficient central inverter for systems of up to several hundred kilowatts. All technical data plus further information on the device can be found at www.fronius.com.



FRONIUS CL

/ The central inverter for long-term peak performance

The Fronius CL combines efficient power electronics with a unique modular system design of up to 15 identical power stage sets using Fronius MIX technology. This makes the Fronius CL the perfect central inverter for PV systems of up to several hundred kilowatts.

/ Power categories

36.0 kW, 48.0 kW, 60.0 kW

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 1000 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	1000 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	1000 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.

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!



THE ADVANTAGES AT A GLANCE

/ Online design tool for any type of system

/ Detailed yield forecast and calculations for east/west configurations

/ Site identification by postcode or directly via coordinates

/ Clear report in practical PDF format

SYSTEM MONITORING: FUNCTION AND YIELD AT A GLANCE.

/ The Fronius DATCOM provides data communication solutions for photovoltaic systems, ensuring reliable system monitoring and straightforward 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.



DATA COMMUNICA- TION AND ENERGY MANAGEMENT

/ Datalogging, WLAN, interfaces and energy management included.



SENSORS

/ Reliable measurement of additional values: insolation, ambient temperature, wind speed, and much more.



SYSTEM MAINTENANCE

/ Professional maintenance and fault analysis.

VISUALI- SATION

/ Attractive system data display.



FRONIUS DATCOM

/ The complete solution: capturing, processing, storing, visualising and analysing your data.

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 provide a reliable way to avoid yield losses. Fronius also offers attractive solutions for local data displays.

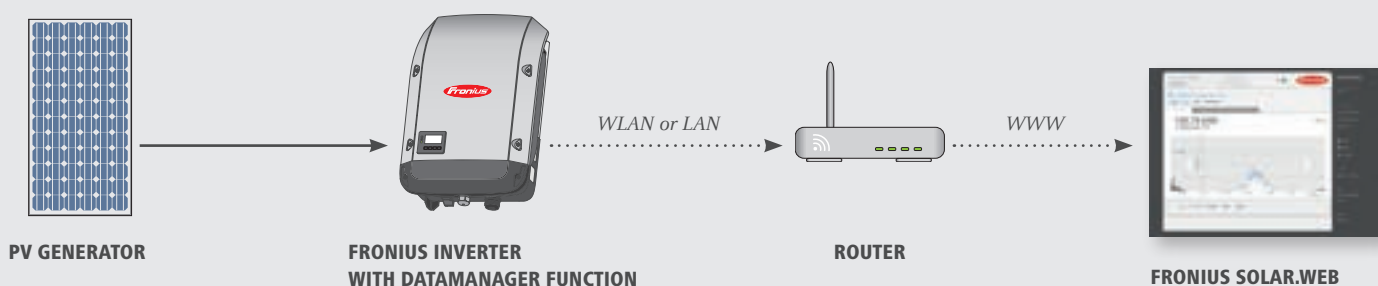


FRONIUS SOLAR.WEB

/ 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 free 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 easy to use, 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, the Fronius Solar.web App for monitoring & visualising while on the go, and Fronius Solar.TV for public displays.

The easy way of accessing the Fronius Solar.web: with WLAN directly in the inverter

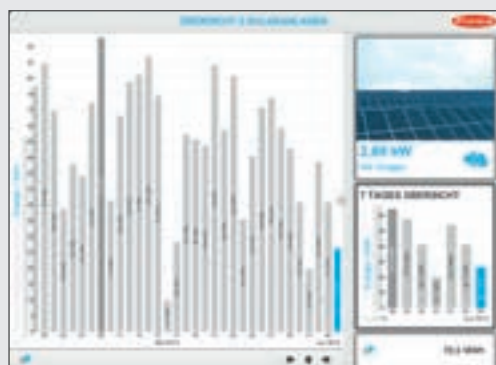




FRONIUS SOLAR.WEB APP

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

The free Fronius Solar.web App is the mobile version of the 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, BlackBerry smartphone or tablet. The Fronius Solar.web Live app is also available for Mac devices, allowing you to conveniently view your system data at a glance.



FRONIUS SOLAR.TV

/ Professional display of system data in public spaces

The free 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 well laid out diagrams provides a quick overview of the PV system.

DATA COMMUNICATION AND ENERGY MANAGEMENT

/ System monitoring from Fronius bundles datalogging, WLAN, energy management and comprehensive interfaces all in 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 and Fronius Galvo 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.

DATA LOGGING

/ System data is captured and stored.

WLAN AND ETHERNET

/ Easily monitor your PV system with Fronius Solar.web.

ENERGY MANAGEMENT

/ Integrated energy management function facilitates efficient self-consumption.

OPEN INTERFACES

/ Straightforward connection to third-party systems, e.g. home automation systems, allows for the easy processing of data.





FRONIUS DATAMANAGER 2.0

/ The integrated WLAN datalogger for all applications

The Fronius Datamanager is the communications centre for Fronius inverters for all applications. Fronius Datamanager 2.0 makes installing and commissioning system monitoring a straightforward process. The commissioning wizard guides you through the configuration process up to and including registration on the Fronius Solar.web online portal. 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. 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/or enables dynamic feed-in management.

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, Fronius Agilo and Fronius Agilo TL – Fronius Datamanager Box 2.0 is best suited for use with these inverters). The Fronius Datamanager is integrated into the Fronius Galvo and Fronius Symo inverters as standard. Fronius Datamanager can be retrofitted to existing inverters whenever required.

TECHNICAL DATA	DATAMANAGER 2.0
Storage capacity	max. 4096 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 Fronius CL: 4,240,035

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 and Fronius Agilo TL 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. 4096 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 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 when feed-in limits are imposed is faster and more accurate than with the S0. Together with Fronius Solar.web, the Fronius Smart Meter presents a clear overview of power consumption within the home. In the storage solution based on the Fronius Symo Hybrid, the Fronius Smart Meter provides perfectly coordinated management of the various energy flows and optimises overall energy management. The Fronius Smart Meter is ideally suited for use with the Symo, Fronius Symo Hybrid, Fronius Galvo inverters and the Fronius Datamanager 2.0.

GENERAL DATA	FRONIUS SMART METER
Item number	43,0001,1473
Nominal voltage	400 - 415 V
Max. current	3 x 63 A
Cable cross-section, power path	1 - 16 mm ²
Cable cross-section, communication	0.05 - 4 mm ²
Installation	DIN rail
Housing	4 modules DIN 43880
Accuracy class	1
Interface to inverter	Modbus RTU (RS485)
Display	8-digit LCD

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 DATCOM system.

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	



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.

FRONIUS UPDATE PACKAGE

/ For straightforward firmware updates

The Fronius Update Package makes updating Fronius inverter firmware easy. It includes the Fronius Com Card, Fronius Converter USB and connection cable.

Area of application: suitable for all Fronius inverters.



TECHNICAL DATA

Fronius Converter USB		
Degree of protection	IP 20	
Temperature range	0 – +40 °C	
Humidity	0 – 95 % non-condensing	
Plug	1 x RJ45 plug connector (permanently integrated terminating plug) 1 x USB plug (can be connected directly to PC)	
Dimensions	85 x 24 x 20 mm	
Fronius Com Card		
Supply voltage	208 V / 220 V / 230 V / 240 V / 277 V (+10 % / –15 %)	
Dimensions	140 x 100 x 28 mm	
INTERFACES	Socket	Designation
RS422 (Fronius Solar Net)	RJ45	"IN"
RS422 (Fronius Solar Net)	RJ45	"OUT"
Item number	4,240,019	

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.

SERVICES



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

WARRANTY EXTENSIONS FOR FRONIUS INVERTERS

/ Fronius offers a five year manufacturer's warranty on all inverters as standard. You also have the option of extending the warranty period to 10, 15 or 20 years. If a claim is made, Fronius bears the cost of original replacement parts, transportation and work undertaken. The extended warranty therefore offers protection for the entire warranty period. In addition, free support is on hand from our expert and easy to reach hotline team for the entire warranty period.

You can find detailed information about the warranty terms at:

WWW.FRONIUS.COM/SOLAR/WARRANTY

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.

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. You really stand out from your competitors while saving time and money. Impress your customers with the speed of your service and your 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.

/ 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.

/ Technical support

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

/ Range of 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

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 inverter for private households 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.

OTHER TRAINING – OPEN TO EVERYONE:

/ Fronius PV Storage Solutions Basic Training

Content: Everything you need to know about PV storage systems and associated components¹⁾

¹⁾ Available in Germany, Switzerland and Austria

FRONIUS ONLINE TRAINING

Content: Current topics

**CURRENT DATES FOR YOUR COUNTRY
AND A REGISTRATION FORM CAN BE
FOUND AT WWW.FRONIUS.COM**



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 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

Country setups¹⁾

AT, AU, BE, BR, CH, CY, CZ, DE, DK, ES, FR, GB, GR, HU, IE, IL, IT, NL, PT, SE, SK, SL, TR, ZA, international 50 Hz

FRONIUS SYMO HYBRID

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 Smart Meter	43,0001,1473

Country setups¹⁾

AT, DE, CH, BE, DK, NL, UK, FR, ES, CZ, CY, GR, SE

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

Country setups¹⁾

AT, AU, BE, CH, CY, CZ, DE, DK, ES, FR, GB, GR, HU, IE, IL, IT, NIE, NL, PT, SE, SK, TR, ZA, international 50 Hz, international 60 Hz

FRONIUS IG PLUS

ITEM DESIGNATION	ITEM NUMBER
Fronius IG Plus 25 V-1	4,210,021
Fronius IG Plus 30 V-1	4,210,019
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-2	4,210,022
Fronius IG Plus 70 V-2	4,210,017
Fronius IG Plus 100 V-2	4,210,013
Fronius IG Plus 55 V-3	4,210,024
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

Country setups¹⁾

AT, AU, BE, BR, CH, CZ, DE, DK, ES, FR, GB, GR, HU, IE, IL, IT, NIE, NL, NO, PT, SE, SK, SL, ZA, international 50 Hz

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

Country setups¹⁾

AT, AU, BE, CH, CZ, DE, DK, ES, FR, GB, GR, HU, IE, IL, NIE, NL, NO, PT, SK, international 50 Hz

FRONIUS IG

ITEM DESIGNATION	ITEM NUMBER
Fronius IG 15	4,200,001
Fronius IG 20	4,200,002
Fronius IG 30	4,200,003
Fronius IG 40	4,200,004
Fronius IG 60 HV	4,200,006

Country setups¹⁾

AU, BR, CH, CZ, GR, IE, NL, NO, SE, SK, ZA, international 50 Hz

Housing options

Outdoor standard with display	44,0240,1005
Outdoor large with display	44,0240,1006

FRONIUS IG

ITEM DESIGNATION	ITEM NUMBER
4 DC plug MC4 no AC plug	44,0240,3044
5 DC plug MC4 no AC plug	44,0240,3045
1 DC plug MC4 and AC plug	44,0240,3046
2 DC plug MC4 and AC plug	44,0240,3047
3 DC plug MC4 and AC plug	44,0240,3048
4 DC plug MC4 and AC plug	44,0240,3049
5 DC plug MC4 and AC plug	44,0240,3050

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

Country setups¹⁾

AT, AU, BE, BR, CH, CZ, DE, DK, ES, FR, GB, GR, IT, NL, SK, ZA, international 50 Hz

Accessories

Fronius String Control 250 / 30	4,240,144
Fronius String Control 250 / 30 DCD DF	4,240,145

FRONIUS AGILO TL

ITEM DESIGNATION	ITEM NUMBER
Fronius Agilo TL 360.0-3	4,200,509
Fronius Agilo TL 460.0-3	4,200,510
Fronius Agilo TL Outdoor kit	42,0201,4549
Fronius Agilo TL Indoor sheet	42,0201,4550

FRONIUS CL

ITEM DESIGNATION	ITEM NUMBER
Fronius CL 36.0	4,210,240
Fronius CL 48.0	4,210,241
Fronius CL 60.0	4,210,242

Country setups¹⁾

AT, AU, BE, CH, CZ, DE, DK, ES, FR, GB, GR, HU, IE, IL, IT, NL, NO, PT, SE, SK, SL, international 50 Hz, international 60 Hz

Accessories

Fronius CL EU base	44,0240,0005
Isolating transformer 50 Hz 61 kVA 90 A	43,0030,0124
Fronius CL DM 315 mm non-return valve	42,0201,3134
Fronius String Control 250/25	4,240,140
Fronius String Control 250/25 DCD DF	4,240,142
Vector surge relay retrofit	4,240,902

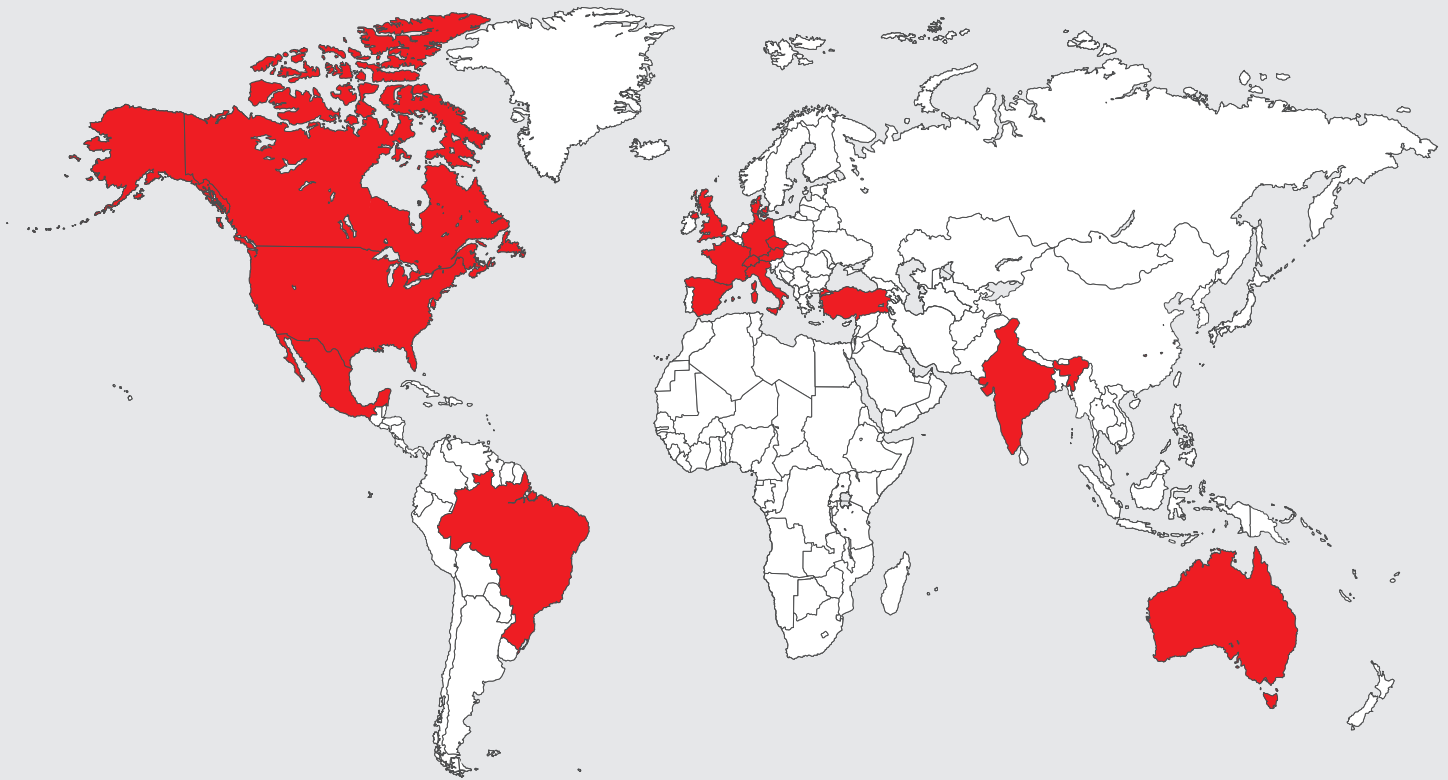
FRONIUS DATCOM SYSTEM MONITORING

ITEM DESIGNATION	ITEM NUMBER
Grounding Kit Fronius CL 2A	4,001,714
Grounding Kit Fronius CL 3A	4,001,715
Fronius Datamanager 2.0 (Fronius CL)	4,240,035
Fronius Datamanager 2.0 (Fronius CL) retrofit	4,240,035,Z
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, Fronius IG, Fronius CL)	4,240,021
Fronius Modbus Card (Fronius IG Plus, Fronius IG, Fronius CL) 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
Retrofit packages	
Package 15 Fronius Com Card retrofit	4,240,201,Z
Package 15 Fronius DL Card easy retrofit	4,240,203,Z
Package 15 Fronius Signal Card retrofit	4,240,212,Z
Displays	
Fronius Personal Display Card	4,240,007
Fronius Personal Display Card retrofit	4,240,007,Z
Fronius Personal Display DL	4,240,132
Fronius Personal Display DL Box	4,240,136
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 1000VDC	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

¹⁾ Up-to-date information about inverter availability in your country can be found at www.fronius.com

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