



SHIFTING THE LIMITS



**WHY DO WE LOVE A CHALLENGE?
BECAUSE CHALLENGES BREED
INNOVATION!**

/ Solar Electronics. Services and product programme 2013/14





**WE THRIVE ON CHA
SO WE DECIDED TO
LUTIONISE THE ENE
SUPPLY OF OUR PL**

/ As a leading producer of inverters, Fronius is constantly shifting the limits of what's possible by developing innovative solar electronic solutions. Our technologies guarantee first-rate quality and maximum yield all over the world, backed up by a totally unique service strategy.

**CHALLENGES.
REVO-
LUTARY
ANET.**



AT THE HEART OF EVERY PV SYSTEM



/ Fronius inverters produce green energy – with efficiency levels of up to 98 %. Find out more on pages 22 – 55.



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 62 – 73.



CLEAN ENERGY – RELIABLE ENERGY

/ The energy concept of the future: the Fronius Energy Cell. Find out more on pages 82 – 83.

SERVICES FOR EVERY SITUATION

/ Flexible services enhance our range of products to meet your requirements. Find out more on pages 74 – 79.

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WORLDWIDE QUALITY LEADER

/ Fronius is seen throughout the world as the quality leader in solar electronics. Find out more about our values and services on pages 6 – 9.

A LUCRATIVE PARTNERSHIP

/ Benefits of the unique Fronius Service Partner programme:
Find out more on pages 10 – 13.



AS AN 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's more than sixty years of experience, progress and continuous innovation.

GLOBAL NETWORK

/ The Solar Electronics division has been involved in photovoltaics since 1992 and sells its products through a global network of sales partners. We boast a high level of expertise and currently operate with 15 solar electronics 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, Canada and the Czech Republic. The company exports 99% of its products, which is another indication of the high degree of internationalisation of the Solar Electronics 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

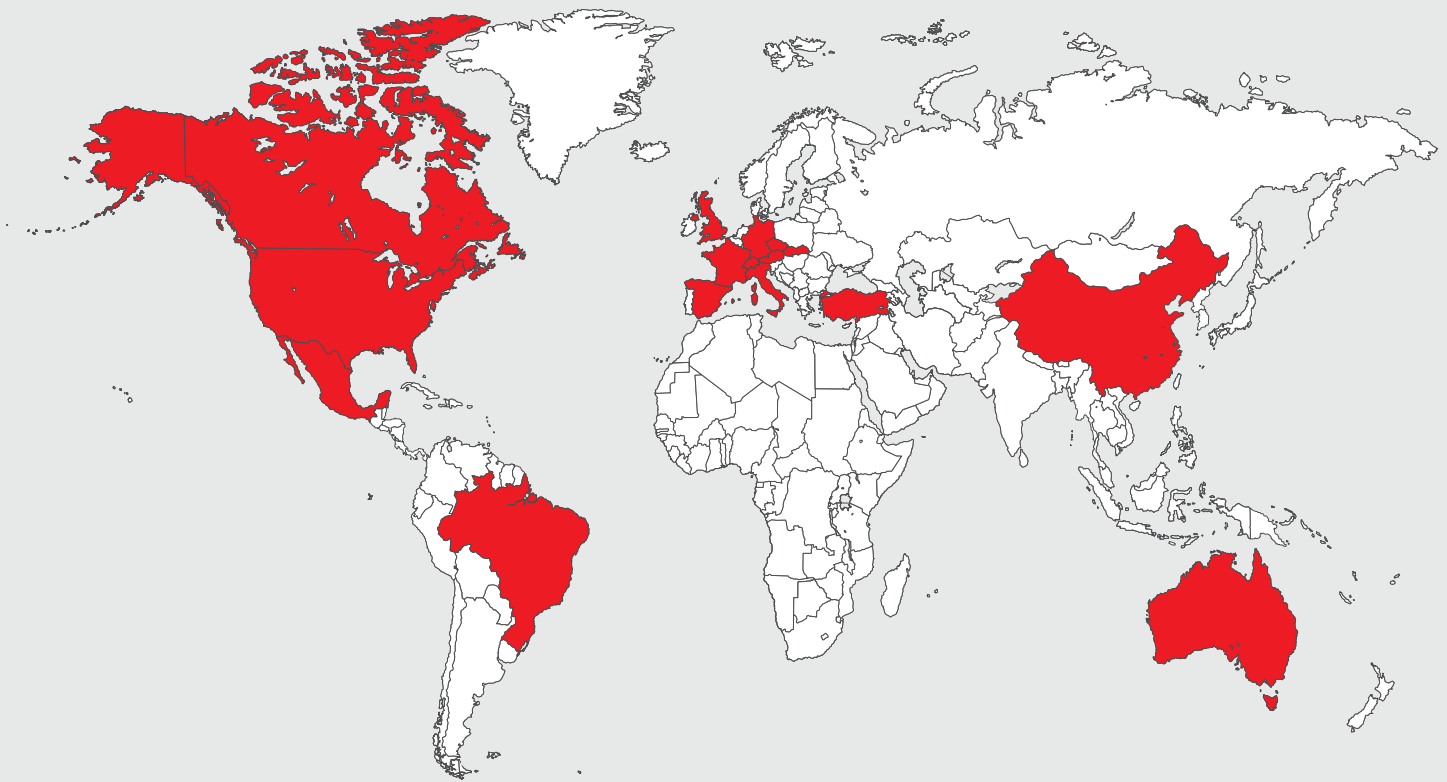
/ We develop and sell high-performance inverters for grid-connected solar power systems from 1 kW upwards. With innovative products, a unique service plan and sophisticated processes, we provide our customers and partners worldwide with the best quality.

**THE ENERGY CONCEPT OF THE FUTURE**

/ We have found the solution with the Fronius Energy Cell. In the future, we will be able to convert surplus energy into hydrogen for storage, converting it back into useful power when needed. We have already realised this vision!

OUR SOLAR ELECTRONICS SUBSIDIARIES CAN BE FOUND ALL OVER THE WORLD, AS PEAK PERFORMANCE REQUIRES SPACE.

/ We are constantly increasing the number of sites we have worldwide to make ourselves more internationally diverse and bring us closer to customers all over the world.



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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.



THE HIGHLIGHTS OF THE FRONIUS SERVICE PARTNER PROGRAMME

/ Technical know-how straight from the manufacturer

We share our enthusiasm for technology with you: from planning and installing a PV system to servicing an inverter.

/ The fastest service plan on the market

Provide your customers with the fastest service using the PC board replacement process. In just one visit, you will have the Fronius inverters at the installation location up and running again in no time.

/ The best support

Our technical hotline will provide you with expert support for every service visit.

/ Exclusive services

Benefit from our professional sales and marketing support, attend regular events and much more. Use the exclusive Fronius Service Partner logo in your advertising.



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. You also save time and money as well as impressing your customers with your speed and service expertise.

FRONIUS SERVICE CASE

.....

/ The Fronius service case 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. 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.

A WIDE CHOICE

/ As a Fronius Service Partner, you can choose between many offers. These support you in your day-to-day business and give you an additional competitive edge.

TECHNICAL AND PRACTICAL EXPERTISE: FRONIUS TRAININGS.

/ Anyone who wants to qualify as a Fronius Service Partner 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 webinars 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 PC 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 households.

/ Fronius Galvo Service Training

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

/ Fronius IG Plus Service Training

Content: PC board replacement and servicing of Fronius IG Plus inverters.

/ Fronius IG TL Service Training

Content: Special features of transformerless inverters, PC board replacement and servicing of Fronius IG TL inverters.

/ Fronius Agilo Service Training

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

/ Fronius CL Service Training

Content: Technical details about the Fronius CL central inverter and servicing directly on the inverter.

/ Fronius System Technology Training

Content: Latest information on the subject of photovoltaics (e.g. PV & fire, east/west facing roof)

OTHER TRAINING - OPEN TO EVERYONE

/ Fronius Energy Cell Training

Content: An insight into the fuel cell technology and application potential of the Fronius Energy Cell.

FRONIUS WEBINARS - TIME-SAVING ONLINE TRAINING

/ Fronius Webinar

Content: Variable topics (e.g. How to plan a PV system)

**THE LATEST SEMINAR DATES
AND A REGISTRATION FORM CAN
BE FOUND AT WWW.FRONIUS.COM**



FOR MAXIMUM YIELDS AND THE BEST POSSIBLE INSTALLATION AND SERVICE.

/ 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.

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

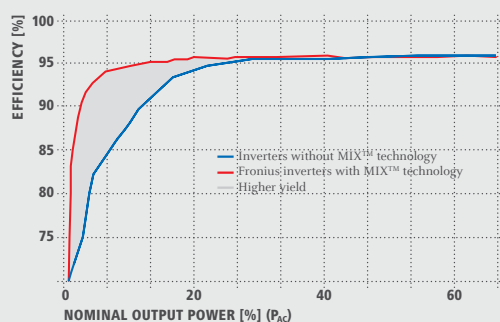


HIGH YIELD FRONIUS MIX™ TECHNOLOGY

/ The cleverly-devised combination of several power stage sets means Fronius inverters always achieve maximum yield, even when in the partial-load range. This is all down to the unique Fronius Master Inverter X-Change system (MIX™), a development of the classic master/slave principle. How it works: all power stage sets are equal. The “master” is allocated alternately, taking into account the operating hours worked. The result is that loads are applied evenly to individual power stage sets and the operating time decreases.

/ Maximum efficiency under partial load

With the MIX™ technology, several power stage sets share the work alternately. Depending on the irradiance level, individual power stage sets are switched on or off completely automatically. This optimises utilisation and ensures maximum yield at all times – even when it is raining, cloudy or at dawn and dusk.



/ The Fronius MIX™ technology: maximum efficiency even when in the partial-load range. The power stage sets are switched on and off depending on irradiance levels, thus always ensuring maximum yield.

/ Unrivalled fault tolerance

The redundant design means that the inverter can continue to operate even if a power stage set is faulty, ensuring that yields are achieved: if one power stage set were to fail, the others would take over the work.

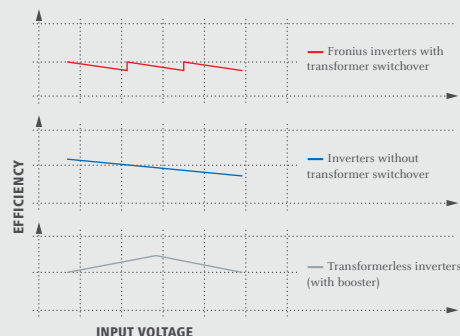
/ Longer service life

The control system uses the relevant operating hours that the power stage sets have worked to calculate automatically which power stage sets to switch on and off under partial load conditions. This ensures that the loads are distributed equally between the PC boards. The operating hours of the individual power stage sets are reduced, increasing the service life of the inverter.



AUTOMATIC HF TRANSFORMER SWITCHOVER

/ Fronius transformer inverters use a high-frequency (HF) transformer. The automatic transformer switchover facility produces three efficiency peaks. The result: a constant level of efficiency across the entire input voltage range, resulting in 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 FRONIUS 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 if the device has been designed accordingly. This enables our Fronius Service Partners to provide the fastest inverter servicing on the market.



SIMPLE MOUNTING SYSTEM

/ The special feature in the design of our devices is that the connection compartment is separate from the power stage set compartment. They are installed separately. The connection area and all its cabling is fitted to the wall first. The power stage set compartment is fitted afterwards. The innovative hinged system makes installation and servicing extremely user-friendly. The inverter is simply placed in the wall bracket and then secured. It is not necessary to remove the entire inverter for servicing, just the power stage set compartment. All the cabling, settings and configurations remain in place.



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



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 lift truck or forklift, and are also equipped with lifting eyes. User-friendly and safe transport guaranteed!



INTEGRATED WLAN INTERFACE

/ Simple, user-friendly system monitoring is very important to Fronius. With the Fronius Datamanager, we are the first inverter manufacturer to offer a WLAN interface in the inverter itself. The inverter is connected to the internet without additional cabling and grants you the perfect overview of how the PV system is operating.



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



OPEN DATA COMMUNICATION

/ It is easy to connect Fronius inverters with components from third party suppliers. The open Modbus TCP SunSpec standard protocol provides a simple way of establishing a data connection to other systems. The protocol is used via the existing Ethernet interface, guaranteeing reliable communication.

SMART GRID READY

/ Fronius inverters already incorporate solutions to the future challenges that will be presented by Smart Grids (intelligent networks). Even now, Fronius inverters meet the requirements that will be placed on PV systems in the future. Grid backup functions help to maximise the yield of PV systems and stabilise the grid. Integration into a Smart Grid also means that inverters will be an integral component not only of the grid, but also of future information infrastructures, resulting in optimum coordination between generation and consumption.

ADVANCED GRID FEATURES

/ Grid backup functions prevent unintended switching off of the inverter and therefore maximise the yield.

COMMUNICATIVE

/ Remote control of all smart functions is available for active grid operation.

FUTURE-PROOF

/ Fronius inverters can be retrofitted easily if requirements change.

SMART GRID READY

SMART GRID READY

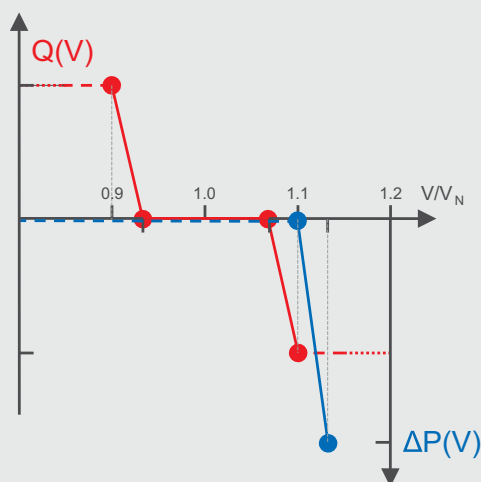
/ Fronius inverters are ready for the Smart Grid of tomorrow. The inverters are optimally equipped to meet the technical requirements of grids in the future. A series of smart functions, known as Advanced Grid Features, are built into the devices. These include a number of control functions for optimum 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. Fronius inverters therefore help to guarantee the yield of a PV system.



ADVANCED GRID FEATURES

/ Grid backup functions prevent the generating system from switching off unintentionally if grid parameters exceed limit values, and therefore maximise yields. The Advanced Grid Features make it possible to control reactive power in a number of ways through the local intelligence of the inverter. With Q(U) control the reactive power Q is regulated in response to the voltage measured at the inverter. This means that unnecessary reactive power is not drawn in situations where it is not needed. However, it can be adjusted in a targeted way at high or low voltage.

/ At high feed-in powers, high voltages may occur briefly in the grid. The relevant connection rules state that generating systems must switch off in such cases. Fronius inverters have an integrated function which specifically prevents them from switching off. The power is reduced and fed into the other phases before the switch-off threshold is exceeded. As a result, the yield is guaranteed and the grid quality also improves.



/ 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

Red = Voltage-dependent reactive power regulation
 Blue = Voltage-dependent effective power regulation

STRING INVERTERS



/ Fronius Symo 3.0-3 / 3.7-3 / 4.5-3



/ Fronius IG TL 3.0 / 3.6 / 4.0 / 4.6 / 5.0



/ Fronius IG 15 / 20 / 30
/ Fronius IG 40 / 60 HV



/ Fronius IG Plus 25 V-1 / 30 V-1 / 35 V-1 / 50 V-1 /
55 V-1 / 60 V-1
/ Fronius IG Plus 55 V-2 / 60 V-2 / 70 V-2 / 100 V-2
/ Fronius IG Plus 55 V-3 / 60 V-3 / 80 V-3 / 100 V-3 /
120 V-3 / 150 V-3



/ Fronius Galvo 1.5-1 / 2.0-1 / 2.5-1 /
3.0-1 / 3.1-1

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. Fronius inverters are also Smart Grid Ready and have a WLAN interface directly in the inverter.



/ Fronius Agilo 75.0-3 /
75.0-3 Outdoor / 100.0-3 /
100.0-3 Outdoor



/ Fronius CL 36.0 / 48.0 / 60.0

CENTRAL INVERTERS

FRONIUS SYMO

/ The compact three-phase inverter for maximum flexibility.



AVAILABLE FROM OCTOBER 2013!

More power categories coming soon –
available with two MPP trackers

FRONIUS SYMO 3.0-3-S / 3.7-3-S / 4.5-3-S

/ Flexibility: the compact, three-phase Fronius Symo provides optimum, symmetrical infeed and impressive flexibility in system 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.



/ PC board replacement process



/ Mounting system



/ WLAN interface



/ Open data communication

COMPACT, THREE-PHASE AND TOTALLY FLEXIBLE

/ Boasting power categories ranging from 3.0 to 4.5 kW, the transformerless Fronius Symo is the compact three-phase inverter for households. The high system voltage, wide input voltage range and unrestricted use indoors and outdoors ensure maximum flexibility in system design. The standard interface to modern communication media, such as the internet or smart phones, and the ease of integration of third-party components make the Fronius Symo a flexible and communicative inverter for owner-occupiers.

/ Maximum flexibility in system design

With a high system voltage of 1000 V, nearly all power categories can be achieved with just one string and the PV system can be adapted flexibly to any roof configuration. The wide MPP voltage range allows many design variants, and the Fronius Symo is suitable for indoor and outdoor use.

/ 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 open Modbus TCP or JSON interfaces make it easy to link with third-party components.

/ Optimisation of self-consumption

The Fronius Symo comes as standard with an energy management relay to optimise self-consumption of self-generated power.

/ 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.

/ Innovative hinged system

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.

TECHNICAL DATA FRONIUS SYMO

INPUT DATA	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S
DC maximum power at $\cos \varphi = 1$	3,125 W	3,850 W	4,690 W
Max. input current ($I_{dc \max}$)		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 ($U_{dc,r}$)		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
Number of DC connections		3	

OUTPUT DATA	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S
AC nominal output ($P_{ac,r}$)	3,000 W	3,700 W	4,500 W
Max. output power	3,000 VA	3,700 VA	4,500 VA
Max. output current ($I_{ac \max}$)		7 A	
Grid connection ($U_{ac,r}$)		3-NPE 400 V / 230 V or 3-NPE 380 V / 220 V	
Min. output voltage ($U_{ac \min}$)		184 V	
Max. output voltage ($U_{ac \max}$)		264 V	
Frequency (f_r)		50 Hz / 60 Hz	
Frequency range ($f_{\min} - f_{\max}$)		46 - 65 Hz	
Total harmonic distortion		< 3 %	
Power factor ($\cos \varphi_{ac,r}$)		0.70 - 1 ind./cap.	

GENERAL DATA	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S
Item number	4,210,030	4,210,031	4,210,032
Dimensions (height x width x depth)	645 x 431 x 204 mm		
Weight	16.0 kg		
Degree of protection	IP 55		
Protection class	1		
Overvoltage category (DC / AC)	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 %		
DC connection technology	Screw terminals 2.5 - 16 mm² 1)		
Grid connection technology	Screw terminals 2.5 - 16 mm² 1)		
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, EN 50438, G83		

¹⁾ 16 mm² without wire end ferrules

Further information regarding the availability of the inverters 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
Max. efficiency		98.0 %	
Europ. efficiency (η_{EU})	96.2 %	96.7 %	97.0 %
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 %
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 %
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 %
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 %
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 %
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 %
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 %
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 %
MPP adaptation efficiency		> 99.9 %	

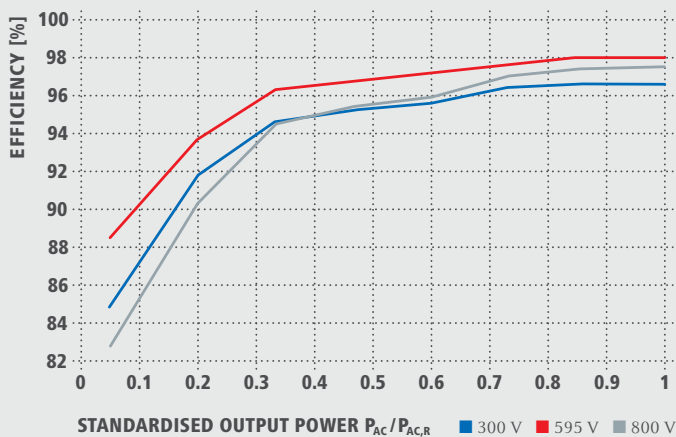
PROTECTION DEVICES	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S
DC insulation measurement		Yes	
Overload behaviour		Operating point shift, power limitation	
DC disconnecter		Yes	

INTERFACES	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S
WLAN / Ethernet LAN		Fronius Solar.web / Fronius Solar.web, Modbus TCP, JSON	
6 inputs or 4 digital inputs/outputs		Interface to ripple control receiver	
USB (type A socket)		For USB sticks	
2x RS422 (RJ45 socket)		Fronius Solar Net, interface protocol	
S0 input / signalling output		Energy management (4-20 mA input / potential-free relay output)	
Datalogger and web server		Included	

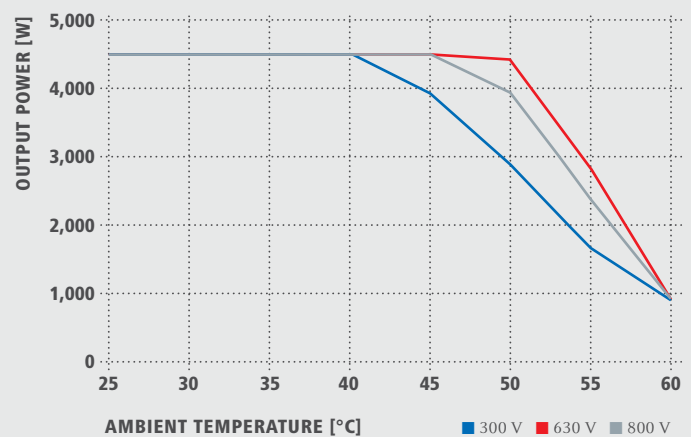
¹⁾ and at $U_{mpp \min}$ / $U_{dc,r}$ / $U_{mpp \max}$.

Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

FRONIUS SYMO 4.5-3-S EFFICIENCY CURVE



FRONIUS SYMO 4.5-3-S TEMPERATURE DERATING



FRONIUS GALVO

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



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

/ The self-consumption professional: low power categories and the integral energy management relay enable the Fronius Galvo to maximise the self-consumption component, enabling the producer to use most of the self-generated power. A host of other smart features make the Fronius Galvo one of the most future-proof inverters in its class: for example, the 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



/ Mounting system



/ HF transformer switchover



/ WLAN interface



/ Open data communication

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.

/ 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 and the S0 input can be used to control a consumer, thereby further increasing self-consumption.

/ 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 self-consumption range, it can also be used in any design variant and allows flexible system 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 open Modbus TCP or JSON interfaces make it easy to link with third-party components.

/ 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.

/ Innovative hinged system

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
DC maximum power at cos φ = 1	1,580 W	2,140 W	2,630 W	3,210 W	3,320 W
Max. input current (I _{dc max})	13.3 A	17.8 A	16.2 A	19.5 A	20.2 A
Max. short circuit current, module array	20.0 A	26.7 A	24.2 A	29.1 A	30.2 A
Min. input voltage (U _{dc min})	120 V		165 V		
Feed-in start voltage (U _{dc start})	120 V		165 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 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 ($I_{ac \max}$)	6.8 A	9.1 A	11.4 A	13.6 A	14.1 A
Grid connection ($U_{ac,r}$)	1-NPE 230 V				
Min. output voltage ($U_{ac \min}$)	180 V				
Max. output voltage ($U_{ac \max}$)	270 V				
Frequency (f_r)	50 Hz / 60 Hz				
Frequency range ($f_{\min} - f_{\max}$)	45 - 65 Hz				
Total harmonic distortion	< 3.5 %				
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	16.8 kg				
Degree of protection	IP 55				
Protection class	1				
Overvoltage category (DC / AC)	2 / 3				
Night-time consumption	< 1 W				
Inverter concept	HF transformer				
Cooling	Regulated air cooling				
Installation	Indoor and outdoor installation				
Ambient temperature range	-25 - +50 °C				
Permitted humidity	0 to 100 %				
DC connection technology	Screw terminal connection 2.5 mm ² - 16 mm ²				
Grid 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⁾ available for countries where 3 kW restrictions apply

Further information regarding the availability of the inverters 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				

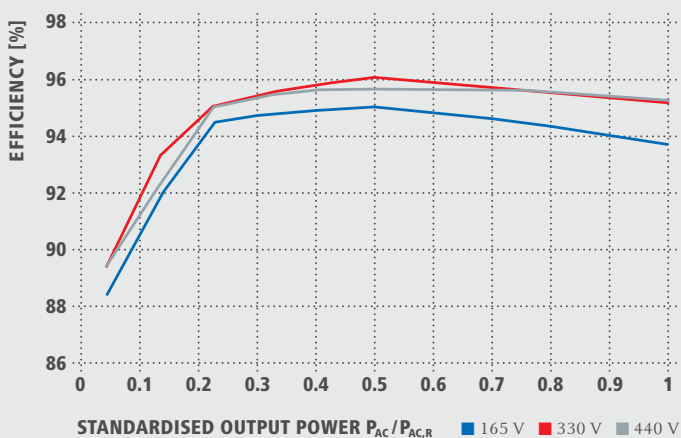
INTERFACES	GALVO 1.5-1	GALVO 2.0-1	GALVO 2.5-1	GALVO 3.0-1 ²⁾	GALVO 3.1-1
WLAN / Ethernet LAN	Fronius Solar.web / Fronius Solar.web, Modbus TCP, JSON				
6 inputs or 4 digital inputs/outputs	Interface to ripple control receiver				
USB (type A socket)	For USB sticks				
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol				
S0 input / signalling output	Energy management (4-20 mA input / potential-free relay output)				
Datalogger and web server	Included				

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

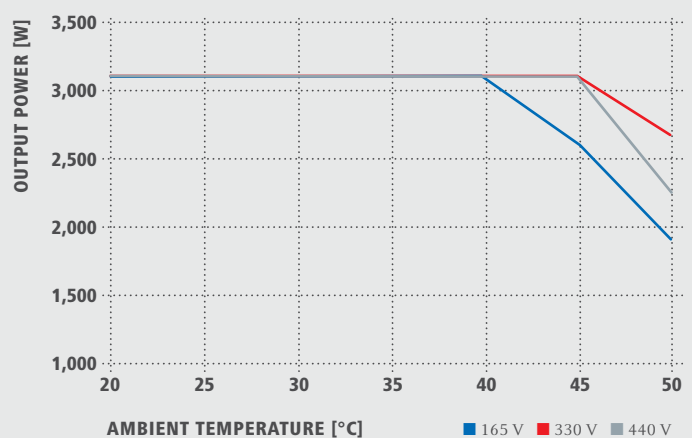
²⁾ up to 3 kW for countries with relevant support thresholds

Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

FRONIUS GALVO 3.1-1 EFFICIENCY CURVE



FRONIUS GALVO 3.1-1 TEMPERATURE DERATING



FRONIUS IG PLUS

/ The allrounder with maximum yield.



FRONIUS IG PLUS

25 V-1 / 30 V-1 / 35 V-1 / 50 V-1

/ Powerful and compact: the single-phase devices rated at 2.6 to 6 kW are suitable, for example, for PV systems in single-family homes.



FRONIUS IG PLUS

**55 V-1 / 60 V-1 / 55 V-2 / 60 V-2 /
70 V-2 / 100 V-2**

/ The big brothers: the two-phase connection ensures a phase load unbalance of less than 4 kVA. Output power levels are 6, 6.5 or 8 kW.



FRONIUS IG PLUS

**55 V-3 / 60 V-3 / 80 V-3 / 100 V-3 /
120 V-3 / 150 V-3**

/ Maximum power: three phases in a single device for PV systems right into the megawatt range – available in a broad power range from 5 to 12 kW.



/ Fronius
MIX™ technology



/ HF transformer
switchover



/ PC board replace-
ment process



/ WLAN interface

DEPENDABLE YIELD, RELIABLE AND COMPLETELY VERSATILE

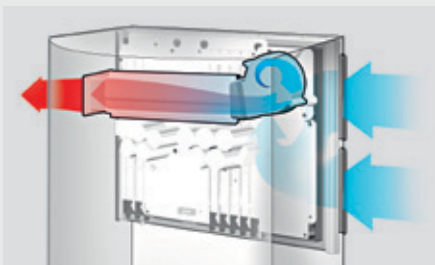
/ The Fronius IG Plus generation of inverters represents an evolution of the proven Fronius IG product family. Power categories from 2.6 to 12 kW promise suitability for every possible system size. With a maximum efficiency of 95.9%, the Fronius IG Plus range achieves one of the highest values for transformer inverters.

/ Compatible with practically all module configurations – and technologies

Works perfectly with every type of module and is particularly suitable for thin-layer modules. The wide input voltage range, electrical isolation and standard integral grounding option means the inverter is extremely flexible in terms of system sizing and planning.

/ Sophisticated ventilation system

The air required for cooling is sucked in through the side panel and fed over the cooling element through a sealed channel. Dust and moisture therefore never come into contact with the PC board and the inverter will operate reliably in the long term.



/ Integrated string collection box with safety monitoring

Simplifies installation. Up to six strings can be connected directly; if a fuse is faulty a message appears instantly on the display.

/ Highly versatile

The inverter series can be used worldwide and is suitable for all grids (whether single-phase or three-phase) and voltages.

/ Power-Plug system

The connection and power stage set compartments are fitted separately. The Power-Plug connects both parts to create a fixed unit. During servicing, the connector remains on the wall – all settings and configurations are thus retained.



/ Smart Grid Ready

The Fronius IG Plus 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.

/ Future-proof with plug-in cards

Plug-in technology means that additional functions can be retrofitted at any time. With the help of the Fronius Data-manager, every Fronius IG Plus can be equipped with comprehensive data communication: datalogging, WLAN, Ethernet with web server and the open Modbus TCP or JSON interfaces can be integrated easily.

TECHNICAL DATA FRONIUS IG PLUS (25 V-1, 30 V-1, 35 V-1, 50 V-1, 55 V-1, 60 V-1)

INPUT DATA	25 V-1	30 V-1	35 V-1	50 V-1	55 V-1	60 V-1
DC maximum power at $\cos \varphi = 1$	2,740 W	3,170 W	3,710 W	4,260 W	5,260 W	6,320 W
Max. input current ($I_{dc \max}$)	11.9 A	13.8 A	16.2 A	18.6 A	22.9 A	27.5 A
Max. array short circuit current	17.9 A	20.7 A	24.3 A	27.9 A	34.4 A	41.3 A
Min. input voltage ($U_{dc \min}$)	230 V					
Feed-in start voltage ($U_{dc \text{ start}}$)	260 V					
Nominal input voltage ($U_{dc \text{ r}}$)	370 V					
Max. input voltage ($U_{dc \max}$)	600 V					
MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)	230 – 500 V					
Number of DC connections	6					

OUTPUT DATA	25 V-1	30 V-1	35 V-1	50 V-1	55 V-1	60 V-1
AC nominal output ($P_{ac \text{ r}}$)	2,600 W	3,000 W	3,500 W	4,000 W	5,000 W	6,000 W
Max. output power	2,600 VA	3,000 VA	3,500 VA	4,000 VA	5,000 VA	6,000 VA
Max. output current ($I_{ac \max}$)	11.3 A	13.0 A	15.2 A	17.4 A	21.7 A	26.1 A
Grid connection ($U_{ac \text{ r}}$)	1-NPE 230 V					
Min. output voltage ($U_{ac \min}$)	180 V					
Max. output voltage ($U_{ac \max}$)	270 V					
Frequency (f_r)	50 Hz / 60 Hz					
Frequency range ($f_{\min} - f_{\max}$)	46 – 65 Hz					
Total harmonic distortion	< 3 %					
Power factor ($\cos \varphi_{ac \text{ r}}$)	0.75 – 1 ind. / cap. ¹⁾					

GENERAL DATA	25 V-1	30 V-1	35 V-1	50 V-1	55 V-1	60 V-1
Item number	4,210,021	4,210,019	4,210,015	4,210,011	4,210,027	4,210,023
Dimensions (height x width x depth)	673 x 434 x 250 mm				968 x 434 x 250 mm	
Weight	23.8 kg				36.9 kg	
Degree of protection	IP 54 ²⁾					
Protection class	1					
Overvoltage category (DC / AC)	2 / 3					
Night-time consumption	approx. 1 W					
Inverter concept	HF transformer					
Cooling	Regulated air cooling					
Installation	Indoor and outdoor installation					
Ambient temperature range	from -20°C to +55°C					
Permitted humidity	0 % to 95 %					
DC connection technology	Screw terminal connection 1.5 mm ² – 16 mm ²					
AC connection technology	Screw terminal connection 2.5 mm ² – 35 mm ²					
Certificates and compliance with standards	DIN V VDE V 0126-1-1, ÖVE / ÖNORM E 8001-4-712, UTE C15-712-1, EN 50438, G83, G59, C 10 / 11, CER 06-190, CEI 0-21, AS 4777-1, AS 4777-2, AS 4777-3, VDE AR N 4105, Generating systems on the medium-voltage network (BDEW)					

Fronius IG Plus 25 V-1, Fronius IG Plus 55 V-1 and Fronius IG Plus 60 V-1 do not comply with the German medium-voltage directive. Fronius IG Plus 55 V-1 and Fronius IG Plus 60 V-1 do not comply with the German low-voltage directive.

Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

¹⁾ Country-specific

²⁾ Please refer to the information in the operating instructions regarding correct installation of the inverter (for example, IP 44 applies in Australia).

EFFICIENCY	25 V-1	30 V-1	35 V-1	50 V-1	55 V-1	60 V-1
Max. efficiency	95.7 %	95.7 %	95.7 %	95.7 %	95.7 %	95.7 %
European efficiency (η_{EU})	94.6 %	94.8 %	95.0 %	95.0 %	94.9 %	95.0 %
η at 5 % $P_{AC,r}^{1)}$	87.5 / 87.3 / 86.8 %	87.9 / 87.6 / 87.2 %	88.2 / 88.1 / 87.4 %	88.7 / 88.6 / 88.2 %	89.7 / 90.3 / 89.6 %	90.2 / 91.0 / 90.0 %
η at 10 % $P_{AC,r}^{1)}$	89.7 / 89.8 / 89.4 %	90.4 / 90.8 / 90.2 %	91.6 / 92.3 / 91.5 %	92.1 / 92.7 / 92.1 %	91.4 / 91.8 / 90.8 %	92.3 / 92.2 / 91.6 %
η at 20 % $P_{AC,r}^{1)}$	93.0 / 93.6 / 92.8 %	93.6 / 94.2 / 93.2 %	94.1 / 94.6 / 93.4 %	94.4 / 94.7 / 93.5 %	93.9 / 94.1 / 92.9 %	94.6 / 94.5 / 93.7 %
η at 25 % $P_{AC,r}^{1)}$	93.8 / 94.3 / 93.3 %	94.3 / 94.6 / 93.5 %	94.6 / 94.8 / 93.7 %	94.8 / 94.9 / 94.0 %	94.4 / 94.6 / 93.6 %	94.8 / 94.9 / 94.2 %
η at 30 % $P_{AC,r}^{1)}$	94.4 / 94.8 / 93.6 %	94.7 / 94.9 / 93.8 %	94.9 / 95.0 / 94.1 %	95.1 / 95.2 / 94.5 %	94.6 / 94.6 / 94.0 %	95.0 / 95.2 / 94.7 %
η at 50 % $P_{AC,r}^{1)}$	95.2 / 95.4 / 94.7 %	95.2 / 95.5 / 94.9 %	95.3 / 95.7 / 95.3 %	95.2 / 95.7 / 95.3 %	94.9 / 95.5 / 94.7 %	95.3 / 95.5 / 94.9 %
η at 75 % $P_{AC,r}^{1)}$	95.2 / 95.7 / 95.3 %	95.1 / 95.7 / 95.4 %	94.9 / 95.6 / 95.4 %	94.7 / 95.5 / 95.4 %	95.0 / 95.6 / 94.9 %	95.1 / 95.7 / 95.3 %
η at 100 % $P_{AC,r}^{1)}$	94.9 / 95.6 / 95.4 %	94.7 / 95.5 / 95.4 %	94.4 / 95.2 / 95.1 %	94.0 / 95.0 / 95.0 %	95.1 / 95.7 / 95.2 %	94.7 / 95.5 / 95.3 %
MPP adaptation efficiency	> 99.9 %					

PROTECTIVE EQUIPMENT	25 V-1	30 V-1	35 V-1	50 V-1	55 V-1	60 V-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 disconnect	Integrated					

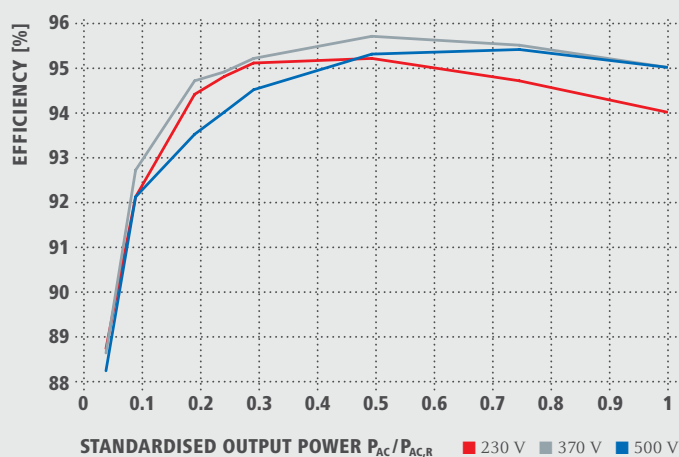
INTERFACES	25 V-1	30 V-1	35 V-1	50 V-1	55 V-1	60 V-1
Optionally with Fronius Datamanager	WLAN, Ethernet, Modbus TCP, 6 digital inputs, 4 digital inputs/outputs, datalogger, web server					

Fronius IG Plus 25 V-1, Fronius IG Plus 55 V-1 and Fronius IG Plus 60 V-1 do not comply with the German medium-voltage directive. Fronius IG Plus 55 V-1 and Fronius IG Plus 60 V-1 do not comply with the German low-voltage directive.

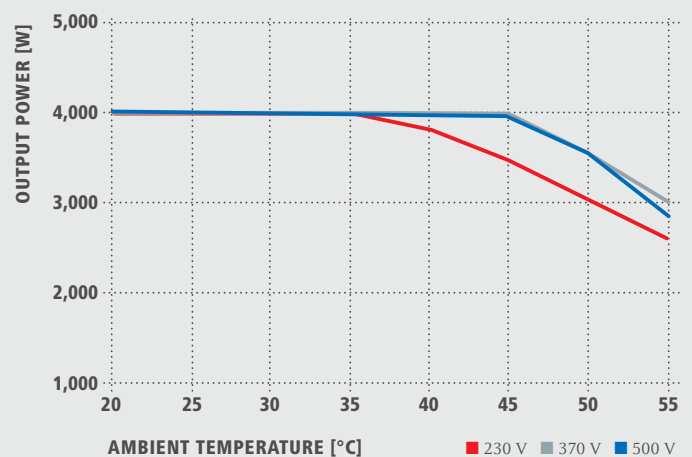
Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

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

FRONIUS IG PLUS 50 V-1 EFFICIENCY CURVE



FRONIUS IG PLUS 50 V-1 TEMPERATURE DERATING



TECHNICAL DATA FRONIUS IG PLUS (55 V-2, 60 V-2, 70 V-2, 100 V-2)

INPUT DATA	55 V-2	60 V-2	70 V-2	100 V-2
DC maximum power at $\cos \varphi = 1$	5,260 W	6,320 W	6,880 W	8,520 W
Max. input current ($I_{dc \max}$)	22.9 A	27.5 A	30.0 A	37.1 A
Max. array short circuit current	34.4 A	41.3 A	45.0 A	55.7 A
Min. input voltage ($U_{dc \min}$)	230 V			
Feed-in start voltage ($U_{dc \text{ start}}$)	260 V			
Nominal input voltage ($U_{dc,r}$)	370 V			
Max. input voltage ($U_{dc \max}$)	600 V			
MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)	230 – 500 V			
Number of DC connections	6			

OUTPUT DATA	55 V-2	60 V-2	70 V-2	100 V-2
AC nominal output (P _{ac,r})	5,000 W	6,000 W	6,500 W	8,000 W
Max. output power	5,000 VA	6,000 VA	6,500 VA	8,000 VA
Max. output current (I _{ac max})	10.9 A	13.0 A	14.1 A (28.3 A) ¹⁾	17.4 A (34.8 A) ¹⁾
Grid connection (U _{ac,r})	2-NPE 400 V / 230 V		2-NPE 400 V / 230 V (1-NPE 230 V) ¹⁾	
Min. output voltage (U _{ac min})	180 V			
Max. output voltage (U _{ac max})	270 V			
Frequency (f _r)	50 Hz / 60 Hz			
Frequency range (f _{min} – f _{max})	46 – 65 Hz			
Total harmonic distortion	< 3 %			
Power factor (cos φ _{ac,r})	0.75 – 1 ind. / cap. ²⁾			

GENERAL DATA	55 V-2	60 V-2	70 V-2	100 V-2
Item number	4,210,028	4,210,022	4,210,017	4,210,013
Dimensions (height x width x depth)	968 x 434 x 250 mm			
Weight	36.9 kg			
Degree of protection	IP 54 ³⁾			
Protection class	1			
Overvoltage category (DC / AC)	2 / 3			
Night-time consumption	approx. 1 W			
Inverter concept	HF transformer			
Cooling	Regulated air cooling			
Installation	Indoor and outdoor installation			
Ambient temperature range	from -20°C to +55°C			
Permitted humidity	0 % to 95 %			
DC connection technology	Screw terminal connection 1.5 mm ² – 16 mm ²			
AC connection technology	Screw terminal connection 2.5 mm ² – 35 mm ²			
Certificates and compliance with standards	DIN V VDE V 0126-1-1, ÖVE / ÖNORM E 8001-4-712, UTE C15-712-1, EN 50438, G83, G59, C 10 / 11, CER 06-190, CEI 0-21, AS 4777-1, AS 4777-2, AS 4777-3, VDE AR N 4105, Generating systems on the medium-voltage network (BDEW)			

Fronius IG Plus 55 V-2 and Fronius IG Plus 60 V-2 devices do not comply with the German medium-voltage directive.

Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

¹⁾ Single-phase (opt.)

²⁾ Country-specific

³⁾ Please refer to the information in the operating instructions regarding correct installation of the inverter (for example, IP 44 applies in Australia).

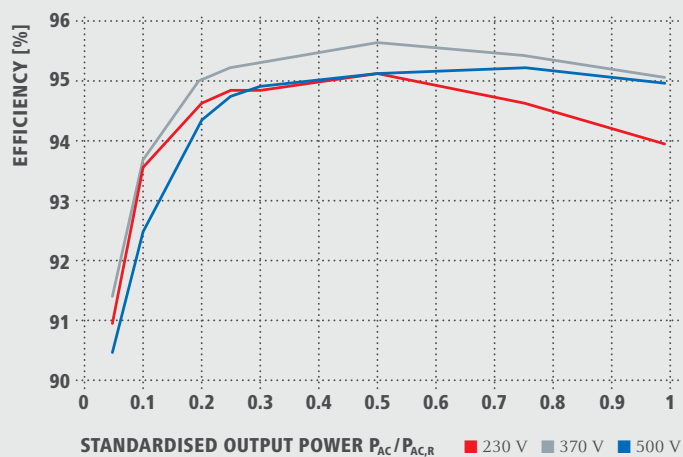
EFFICIENCY	55 V-2	60 V-2	70 V-2	100 V-2
Max. efficiency	95.7 %	95.7 %	95.7 %	95.7 %
European efficiency (η_{EU})	94.9 %	95.0 %	95.1 %	95.2 %
η at 5 % $P_{AC,R}^{1)}$	89.7 / 90.3 / 89.6 %	90.2 / 91.0 / 90.0 %	90.4 / 91.1 / 90.3 %	90.9 / 91.4 / 90.5 %
η at 10 % $P_{AC,R}^{1)}$	91.4 / 91.8 / 90.8 %	92.3 / 92.2 / 91.6 %	93.0 / 93.2 / 92.0 %	93.6 / 93.7 / 92.5 %
η at 20 % $P_{AC,R}^{1)}$	93.9 / 94.1 / 92.9 %	94.6 / 94.5 / 93.7 %	94.7 / 94.7 / 94.0 %	94.7 / 95.1 / 94.4 %
η at 25 % $P_{AC,R}^{1)}$	94.4 / 94.6 / 93.6 %	94.8 / 94.9 / 94.2 %	94.9 / 95.1 / 94.4 %	94.9 / 95.3 / 94.8 %
η at 30 % $P_{AC,R}^{1)}$	94.6 / 94.6 / 94.0 %	95.0 / 95.2 / 94.7 %	95.0 / 95.3 / 94.8 %	94.9 / 95.4 / 95.0 %
η at 50 % $P_{AC,R}^{1)}$	94.9 / 95.5 / 94.7 %	95.3 / 95.5 / 94.9 %	95.3 / 95.5 / 94.9 %	95.2 / 95.7 / 95.2 %
η at 75 % $P_{AC,R}^{1)}$	95.0 / 95.6 / 94.9 %	95.1 / 95.7 / 95.3 %	95.0 / 95.7 / 95.3 %	94.7 / 95.5 / 95.3 %
η at 100 % $P_{AC,R}^{1)}$	95.1 / 95.7 / 95.2 %	94.7 / 95.5 / 95.3 %	94.5 / 95.4 / 95.2 %	94.0 / 95.1 / 95.0 %
MPP adaptation efficiency	> 99.9 %			
PROTECTIVE EQUIPMENT	55 V-2	60 V-2	70 V-2	100 V-2
DC insulation measurement	Warning/shutdown (depending on country setup) at $R_{ISO} < 600 \text{ k}\Omega$			
Overload behaviour	Operating point shift, power limitation			
DC disconnect	Integrated			
INTERFACES	55 V-2	60 V-2	70 V-2	100 V-2
Optionally with Fronius Datamanager	WLAN, Ethernet, Modbus TCP, 6 digital inputs, 4 digital inputs/outputs, datalogger, web server			

Fronius IG Plus 55 V-2 and Fronius IG Plus 60 V-2 devices do not comply with the German medium-voltage directive.

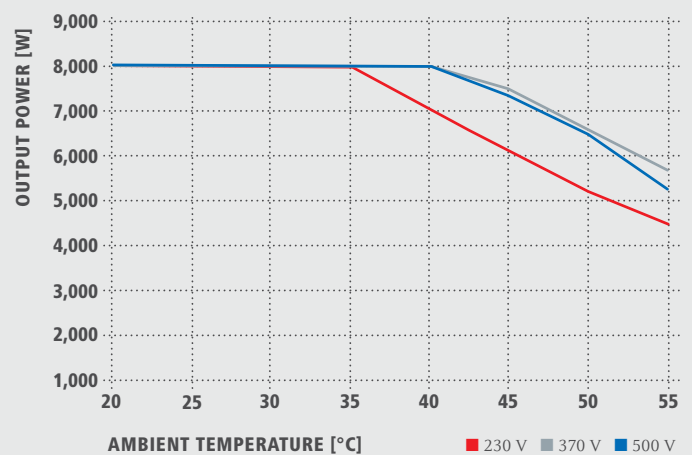
Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

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

FRONIUS IG PLUS 100 V-2 EFFICIENCY CURVE



FRONIUS IG PLUS 100 V-2 TEMPERATURE DERATING



TECHNICAL DATA FRONIUS IG PLUS (55 V-3 / 60 V-3 / 80 V-3 / 100 V-3 / 120 V-3 / 150 V-3)

INPUT DATA	55 V-3	60 V-3	80 V-3	100 V-3	120 V-3	150 V-3
DC maximum power at $\cos \varphi = 1$	5,250 W	6,300 W	7,360 W	8,430 W	10,590 W	12,770 W
Max. input current ($I_{dc \max}$)	22.8 A	27.5 A	32.0 A	36.7 A	46.2 A	55.6 A
Max. array short circuit current	34.2 A	41.3 A	48.0 A	55.1 A	69.3 A	83.4 A
Min. input voltage ($U_{dc \min}$)	230 V					
Feed-in start voltage ($U_{dc \text{ start}}$)	260 V					
Nominal input voltage ($U_{dc,r}$)	370 V					
Max. input voltage ($U_{dc \max}$)	600 V					
MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)	230 - 500 V					
Number of DC connections	6					

OUTPUT DATA	55 V-3	60 V-3	80 V-3	100 V-3	120 V-3	150 V-3
AC nominal output ($P_{ac,r}$)	5,000 W	6,000 W	7,000 W	8,000 W	10,000 W	12,000 W
Max. output power	5,000 VA	6,000 VA	7,000 VA	8,000 VA	10,000 VA	12,000 VA
Max. output current ($I_{ac \max}$)	7.3 A	8.7 A	10.2 A	11.6 A	14.5 A	17.4 A
Grid connection ($U_{ac,r}$)	3-NPE 400 V / 230 V					
Min. output voltage ($U_{ac \min}$)	180 V					
Max. output voltage ($U_{ac \max}$)	270 V					
Frequency (f_r)	50 Hz / 60 Hz					
Frequency range ($f_{\min} - f_{\max}$)	46 - 65 Hz					
Total harmonic distortion	< 3 %					
Power factor ($\cos \varphi_{ac,r}$)	0.75 - 1 ind. / cap. ¹⁾					

GENERAL DATA	55 V-3	60 V-3	80 V-3	100 V-3	120 V-3	150 V-3
Item number	4,210,024	4,210,025	4,210,026	4,210,020	4,210,018	4,210,014
Dimensions (height x width x depth)	1,263 x 434 x 250 mm					
Weight	49.2 kg					
Degree of protection	IP 54 ²⁾					
Protection class	1					
Overvoltage category (DC / AC)	2 / 3					
Night-time consumption	approx. 1 W					
Inverter concept	HF transformer					
Cooling	Regulated air cooling					
Installation	Indoor and outdoor installation					
Ambient temperature range	-20 - +55 °C					
Permitted humidity	0 % to 95 %					
DC connection technology	Screw terminal connection, 1.5 - 16 mm ²					
AC connection technology	Screw terminal connection, 2.5 - 35 mm ²					
Certificates and compliance with standards	DIN V VDE V 0126-1-1, ÖVE / ÖNORM E 8001-4-712, UTE C15-712-1, EN 50438, G83, G59, C 10 / 11, CER 06-190, CEI 0-21, AS 4777-1, AS 4777-2, AS 4777-3, VDE AR N 4105, Generating systems on the medium-voltage network (BDEW)					

Fronius IG Plus 55 V-3, Fronius IG Plus 60 V-3 and Fronius IG Plus 80 V-3 devices do not comply with German medium-voltage directive.

Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

¹⁾ country-specific

²⁾ Please refer to the information in the operating instructions regarding correct installation of the inverter (e.g. IP 44 applies to Australia).

**BROAD 3-PHASE PRODUCT
RANGE FROM 5 TO 12 KW!**

EFFICIENCY	55 V-3	60 V-3	80 V-3	100 V-3	120 V-3	150 V-3
Max. efficiency	95.9 %	95.9 %	95.9 %	95.9 %	95.9 %	95.9 %
European efficiency (η_{EU})	94.9 %	95.0 %	95.1 %	95.3 %	95.4 %	95.4 %
η at 5% $P_{AC,R}^{1)}$	90.5 / 91.6 / 89.9 %	90.7 / 91.6 / 90.1 %	90.8 / 91.8 / 90.2 %	91.7 / 91.9 / 90.3 %	91.5 / 92.2 / 90.7 %	91.8 / 92.5 / 91.1 %
η at 10% $P_{AC,R}^{1)}$	91.5 / 92.2 / 90.8 %	91.8 / 92.5 / 91.1 %	92.1 / 92.8 / 91.5 %	93.1 / 93.1 / 92.0 %	93.4 / 93.7 / 92.6 %	94.0 / 94.3 / 93.2 %
η at 20% $P_{AC,R}^{1)}$	93.4 / 93.6 / 93.3 %	94.1 / 94.3 / 93.2 %	94.2 / 94.5 / 93.6 %	94.3 / 94.9 / 94.2 %	94.6 / 95.2 / 94.5 %	94.7 / 95.1 / 94.6 %
η at 25% $P_{AC,R}^{1)}$	94.1 / 94.2 / 93.3 %	94.4 / 94.7 / 93.8 %	94.6 / 94.9 / 94.3 %	94.6 / 95.2 / 94.5 %	94.7 / 95.3 / 94.7 %	95.1 / 95.3 / 94.7 %
η at 30% $P_{AC,R}^{1)}$	94.4 / 94.5 / 93.8 %	94.5 / 95.0 / 94.4 %	94.6 / 95.2 / 94.6 %	94.7 / 95.2 / 94.5 %	95.0 / 95.4 / 94.7 %	95.1 / 95.3 / 94.9 %
η at 50% $P_{AC,R}^{1)}$	94.7 / 95.4 / 94.7 %	95.1 / 95.4 / 94.6 %	95.1 / 95.5 / 94.9 %	95.3 / 95.8 / 95.0 %	95.3 / 95.9 / 95.1 %	95.3 / 95.9 / 95.3 %
η at 75% $P_{AC,R}^{1)}$	95.2 / 95.7 / 95.0 %	95.3 / 95.7 / 95.0 %	95.3 / 95.9 / 95.1 %	95.3 / 95.9 / 95.3 %	95.0 / 95.5 / 95.4 %	94.7 / 95.6 / 95.4 %
η at 100% $P_{AC,R}^{1)}$	95.3 / 95.9 / 95.2 %	95.3 / 95.9 / 95.3 %	95.1 / 95.7 / 95.4 %	94.9 / 95.7 / 95.4 %	94.6 / 95.5 / 95.3 %	94.0 / 95.2 / 95.1 %
MPP adaptation efficiency	> 99.9 %					

PROTECTIVE EQUIPMENT	55 V-3	60 V-3	80 V-3	100 V-3	120 V-3	150 V-3
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	Integrated					

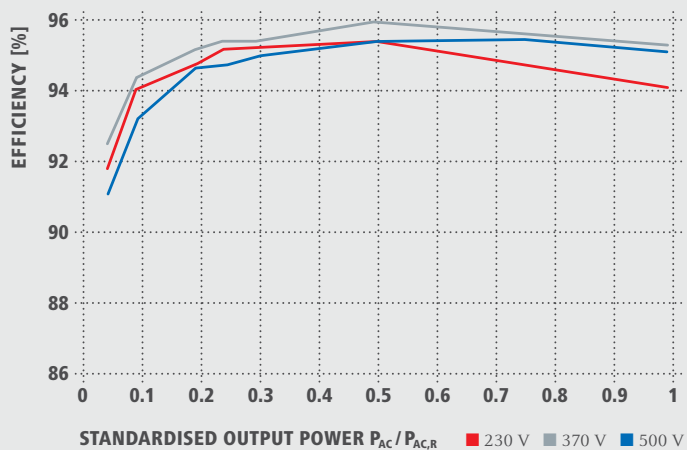
INTERFACES	55 V-3	60 V-3	80 V-3	100 V-3	120 V-3	150 V-3
Optionally with Fronius Datamanager	WLAN, Ethernet, Modbus TCP, 6 digital inputs, 4 digital inputs/outputs, datalogger, web server					

Fronius IG Plus 55 V-3, Fronius IG Plus 60 V-3 and Fronius IG Plus 80 V-3 devices do not comply with the German medium-voltage directive.

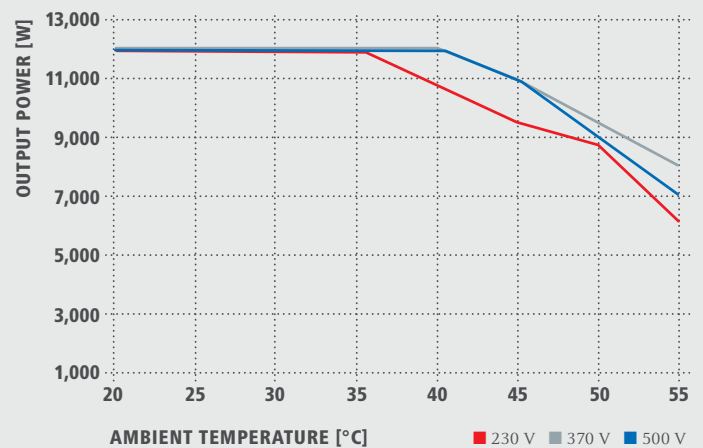
Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

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

FRONIUS IG PLUS 150 V-3 EFFICIENCY CURVE



FRONIUS IG PLUS 150 V-3 TEMPERATURE DERATING



FRONIUS IG TL

/ The inverter series with system monitoring as standard.



FRONIUS IG TL 3.0 / 3.6 / 4.0 / 4.6 / 5.0

/ Safety as standard: with the Status Manager, system monitoring is already integrated as standard in the Fronius IG TL. This means faults anywhere in the system are recorded instantly and PV system yields are locked in for longer. Unique: a standard USB stick ensures constant system monitoring and provides simple inverter updates.



/ PC board
replacement process



/ Mounting system

FUTURE-PROOF, DEPENDABLE YIELD AND CONVENIENT

/ 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. Standard system monitoring makes it the most future-proof transformerless inverter on the market, and the one that will produce the most reliable yield.

/ String failure detection

The inverter continuously compares the string currents of connected strings. This ensures early detection of faults anywhere in the system.

/ Integrated Fronius Solar Net interface

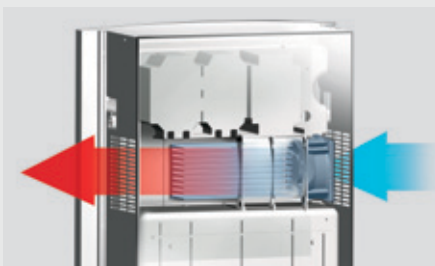
Components for system monitoring (e.g. Fronius Datalogger) can be connected quickly and easily.

/ Convenient data exchange via USB

A USB stick collects data during operation. System data can be transferred to a PC and evaluated and archived using the Fronius Solar.access software.

/ Heat and dust-free ventilation system

The Fronius IG TL device body is hermetically sealed. Only the cooling fins for electronic components are on the outside. These are cooled by a temperature-controlled ventilator, without the sucked-in air coming into contact with the inside of the device.



/ Fronius DATCOM slot

This contains connection options for the USB stick, optional DATCOM components and direct alarm contact. More components can also be connected later.



/ Update via USB

Download software updates directly from the Fronius homepage. Simply connect the USB stick to the inverter to start the updating functions via the inverter display.

/ Service-friendly mounting system

The connection compartment and power stage set are fitted separately. During service visits, the connector remains on the wall and the DATCOM slot remains in situ.



TECHNICAL DATA FRONIUS IG TL

INPUT DATA	IG TL 3.0	IG TL 3.6	IG TL 4.0	IG TL 4.6	IG TL 5.0
DC maximum power at $\cos \varphi = 1$	3,130 W	3,850 W	4,190 W	4,820 W	5,250 W
Max. input current ($I_{dc \max}$)	8.8 A	10.8 A	11.8 A	13.5 A	14.7 A
Max. short circuit current, module array	13.2 A	16.2 A	17.7 A	20.3 A	22.1 A
Min. input voltage ($U_{dc \min}$)	350 V				
Feed-in start voltage ($U_{dc \text{ start}}$)	350 V				
Nominal input voltage ($U_{dc,r}$)	350 V				
Max. input voltage ($U_{dc \max}$)	850 V				
MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)	350 V – 700 V				
Number of DC connections	6				

OUTPUT DATA	IG TL 3.0	IG TL 3.6	IG TL 4.0	IG TL 4.6	IG TL 5.0
AC nominal output ($P_{ac,r}$)	3,000 W	3,680 W	4,000 W	4,600 W	4,600 W ¹⁾ / 5,000 W
Max. output power	3,000 W	3,680 W	4,000 W	4,600 W	5,000 W
Max. output current ($I_{ac \max}$)	13.0 A	16.0 A	17.4 A	20.0 A	21.7 A
Grid connection ($U_{ac,r}$)	1-NPE 230 V				
Min. output voltage ($U_{ac \min}$)	180 V				
Max. output voltage ($U_{ac \max}$)	270 V				
Frequency (f_r)	50 Hz / 60 Hz				
Frequency range ($f_{\min} - f_{\max}$)	46 Hz – 65 Hz				
Total harmonic distortion (50 Hz / 60 Hz)	< 3 % / < 3,5 %				
Power factor ($\cos \varphi_{ac,r}$)	1				

GENERAL DATA	IG TL 3.0	IG TL 3.6	IG TL 4.0	IG TL 4.6	IG TL 5.0
Item number	4,210,219	4,210,220	4,210,221	4,210,223	4,210,222
Dimensions (height x width x depth)	597 x 413 x 195 mm				
Weight	19.1 kg				
Degree of protection	IP 55 ²⁾				
Protection class	1				
Overvoltage category (DC / AC)	2 / 3				
Night-time consumption	approx. 1 W				
Inverter concept	Transformerless				
Cooling	Regulated air cooling				
Installation	Indoor and outdoor installation				
Ambient temperature range	from –20°C to +55°C				
Permitted humidity	0% to 95%				
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	DIN V VDE V 0126-1-1, ÖVE/ÖNORM E 8001-4-712, UTE C15-712-1, EN 50438, G83, G59, C 10 / 11, CER 06-190, AS 4777-1, AS 4777-2, AS 4777-3				

Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

¹⁾ Fronius IG TL 5.0 devices destined for Austria, Belgium and the Czech Republic have an AC nominal output of 4,600 W.

²⁾ Please refer to the information in the operating instructions regarding correct installation of the inverter (e.g. IP 45 applies to Australia).

EFFICIENCY	IG TL 3.0	IG TL 3.6	IG TL 4.0	IG TL 4.6	IG TL 5.0
Max. efficiency	97.7 %	97.7 %	97.7 %	97.7 %	97.7 %
European efficiency (η_{EU})	97.1 %	97.2 %	97.3 %	97.3 %	97.3 %
η at 5% $P_{AC,R}^{1)}$	92.1 / 87.8 %	92.6 / 88.3 %	92.9 / 88.6 %	93.1 / 89.1 %	93.4 / 89.4 %
η at 10% $P_{AC,R}^{1)}$	94.2 / 90.2 %	95.3 / 91.2 %	95.7 / 91.8 %	96.0 / 92.6 %	96.1 / 92.9 %
η at 20% $P_{AC,R}^{1)}$	96.6 / 93.6 %	96.9 / 94.2 %	97.2 / 94.5 %	97.3 / 94.8 %	97.4 / 94.9 %
η at 25% $P_{AC,R}^{1)}$	97.0 / 94.3 %	97.2 / 94.7 %	97.4 / 94.9 %	97.5 / 95.2 %	97.6 / 95.3 %
η at 30% $P_{AC,R}^{1)}$	97.3 / 94.7 %	97.4 / 95.1 %	97.5 / 95.2 %	97.6 / 95.4 %	97.6 / 95.5 %
η at 50% $P_{AC,R}^{1)}$	97.6 / 95.5 %	97.6 / 95.7 %	97.7 / 95.7 %	97.7 / 95.8 %	97.7 / 95.8 %
η at 75% $P_{AC,R}^{1)}$	97.6 / 95.8 %	97.6 / 95.8 %	97.5 / 95.7 %	97.4 / 95.7 %	97.4 / 95.6 %
η at 100% $P_{AC,R}^{1)}$	97.5 / 95.7 %	97.4 / 95.6 %	97.3 / 95.5 %	97.2 / 95.4 %	97.0 / 95.2 %
MPP adaptation efficiency	> 99.9 %				

PROTECTIVE EQUIPMENT	IG TL 3.0	IG TL 3.6	IG TL 4.0	IG TL 4.6	IG TL 5.0
DC insulation measurement	Universal current-sensitive fault monitoring				
Overload behaviour	Operating point shift, power limitation				
DC disconnecter	Integrated				

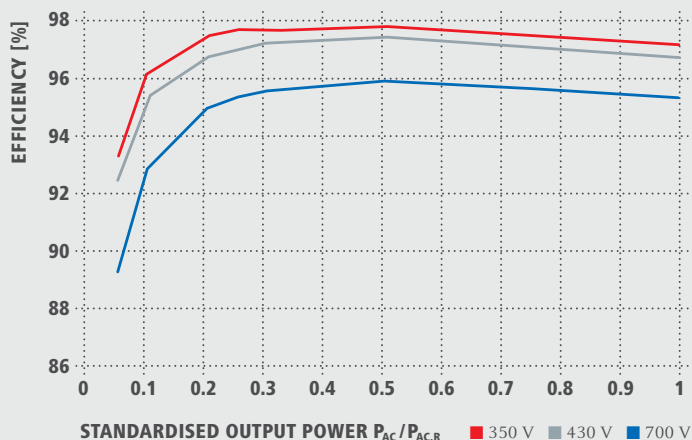
INTERFACES	IG TL 3.0	IG TL 3.6	IG TL 4.0	IG TL 4.6	IG TL 5.0
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol				
Signalling output	2-pin screw terminal, 12 V max, 300 mA				
USB A socket	For USB sticks ²⁾ with max. dimensions of 80 x 33 x 20 mm (l x w x h)				

Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

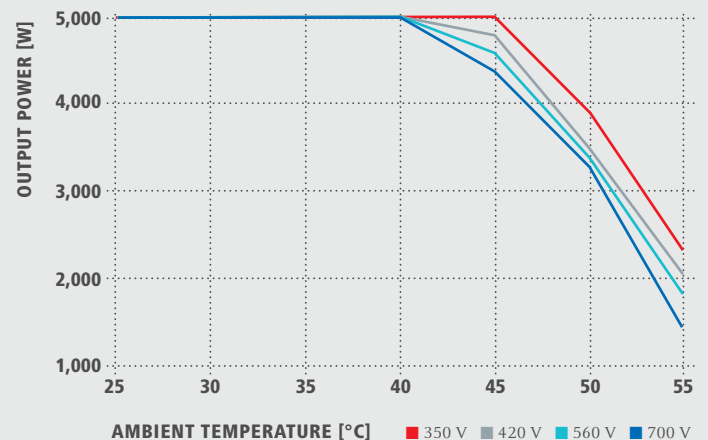
¹⁾ and at $U_{mpp \min}$ / $U_{mpp \max}$.

²⁾ Please refer to the information in the operating instructions regarding the use of USB sticks (temperature range).

FRONIUS IG TL 5.0 EFFICIENCY CURVE



FRONIUS IG TL 5.0 TEMPERATURE DERATING



FRONIUS IG

/ The dependable PV inverter range.



FRONIUS IG 15 / 20 / 30

/ The compact inverters: the Fronius IG range is perfect for smaller systems, such as in single-family homes. The different inverter types can be combined as required. The processor control and HF transformer get the most out of all module types.

FRONIUS IG 40 / 60 HV

/ Work-sharing gives more yield: two power stage sets are combined in a single device. Depending on the level of irradiation, either one power stage set works or they both work together. Our innovative MIX™ technology makes this possible. The advantages include higher yield at partial loads and reduced operating hours.

FRONIUS IG OUTDOOR

/ The weather-resistant inverters: an Outdoor version of the Fronius IG inverter is also available for outdoor use. With their IP 45-tested external housing, the devices are protected against the ingress of solid foreign bodies and water jets.



/ Fronius
MIX™ technology



/ HF transformer
switchover



/ PC board replace-
ment process



/ WLAN interface

USER-FRIENDLY, HIGHLY FUNCTIONAL, RELIABLE

/ With the Fronius IG product family, Fronius has launched a generation of inverters that is compatible with all solar modules. What makes them so appealing is their intuitive operation and ease of use, together with their highly informative analyses of system values for every situation. In short: a PV inverter that any system operator would welcome.

/ Informative inverter display

User-friendly graphical display for meaningful visualisation of system data. Detailed status codes allow rapid, precise system analysis.



/ Quick and easy installation

The low weight and compact dimensions ensure optimum ease of handling.

/ Flexible connection options for system monitoring

The plug-in card system facilitates the installation of a comprehensive monitoring system. All Fronius DATCOM components can also then be connected to the inverter easily using the Plug & Play principle.

/ Future-proof with plug-in cards

Plug-in technology means that additional functions can be retrofitted at any time. With the help of the Fronius Data-manager, every Fronius IG can be equipped with comprehensive data communication: datalogging, WLAN, Ethernet with web server and the open Modbus TCP or JSON interfaces can be integrated easily.

TECHNICAL DATA FRONIUS IG

INPUT DATA	IG 15	IG 20	IG 30	IG 40	IG 60 HV
DC maximum power at $\cos \varphi = 1$	1,610 W	2,150 W	2,850 W	4,410 W	5,380 W
Max. input current ($I_{dc \max}$)	10.8 A	14.3 A	19.0 A	29.4 A	35.8 A
Max. short circuit current, module array	16.2 A	21.5 A	28.5 A	44.1 A	53.7 A
Min. input voltage ($U_{dc \min}$)	150 V				
Feed-in start voltage ($U_{dc \text{ start}}$)	170 V				
Nominal input voltage ($U_{dc,r}$)	280 V				
Max. input voltage ($U_{dc \max}$)	500 V				530 V
MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)	150 V – 400 V				
Number of DC connections	5				

OUTPUT DATA	IG 15	IG 20	IG 30	IG 40	IG 60 HV
AC nominal output ($P_{ac,r}$)	1,300 W	1,800 W	2,500 W	3,500 W	4,600 W
Max. output power	1,500 W	2,000 W	2,650 W	4,100 W	5,000 W
Max. output current ($I_{ac \max}$)	6.5 A	8.7 A	11.5 A	17.8 A	21.7 A
Grid connection ($U_{ac,r}$)	1-NPE 230 V				
Min. output voltage ($U_{ac \min}$)	180 V				
Max. output voltage ($U_{ac \max}$)	270 V				
Frequency (f_r)	50 Hz / 60 Hz				
Frequency range ($f_{\min} - f_{\max}$)	47 Hz – 65 Hz				
Total harmonic distortion	< 3 %				
Power factor ($\cos \varphi_{ac,r}$)	1				

GENERAL DATA	IG 15	IG 20	IG 30	IG 40	IG 60 HV
Item number	4,200,001	4,200,002	4,200,003	4,200,004	4,200,006
Dimensions (height x width x depth)	366 x 344 x 220 mm / 500 x 435 x 225 mm ¹⁾			610 x 344 x 220 mm / 733 x 435 x 225 mm ¹⁾	
Weight	9 kg / 12 kg ¹⁾			16 kg / 20 kg ¹⁾	
Degree of protection	IP 21 / IP 45 ¹⁾				
Protection class	1				
Overvoltage category (DC / AC)	2 / 3				
Night-time consumption	< 1 W				
Inverter concept	HF transformer				
Cooling	Regulated air cooling				
Installation	Indoor and outdoor installation ¹⁾				
Ambient temperature range	from -20°C to +50°C				
Permitted humidity	0% to 95%				
DC connection technology Fronius Indoor	Screw terminal connection 1.5 – 10 mm ² ; DC plug optional ²⁾				
DC connection technology Fronius Outdoor	DC plug ²⁾				
AC connection technology Fronius Indoor	Screw terminal connection 1.5 – 10 mm ² ; plug optional				
AC connection technology Fronius Outdoor	Screw terminal connection 1.5 – 10 mm ²				
Certificates and compliance with standards	DIN V VDE V 0126-1-1, ÖVE/ÖNORM E 8001-4-712, UTE C15-712-1, EN 50438, G83, G59, C 10 / 11, CER 06-190, AS 4777-1, AS 4777-2, AS 4777-3				

Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

¹⁾ This applies to Fronius IG Outdoor

²⁾ MC3, MC4 or Tyco

EFFICIENCY	IG 15	IG 20	IG 30	IG 40	IG 60 HV
Max. efficiency	94.2 %	94.3 %	94.3 %	94.3 %	94.3 %
European efficiency (η_{EU})	91.4 %	92.3 %	92.9 %	93.2 %	93.5 %
η at 5% $P_{AC,r}^{1)}$	75.0 / 76.9 / 71.1 %	77.4 / 80.6 / 71.1 %	81.6 / 83.1 / 81.4 %	82.7 / 83.3 / 80.2 %	85.6 / 85.8 / 83.3 %
η at 10% $P_{AC,r}^{1)}$	81.6 / 83.1 / 81.4 %	84.9 / 86.2 / 83.4 %	87.4 / 88.6 / 85.9 %	88.5 / 89.3 / 85.0 %	90.0 / 90.3 / 87.5 %
η at 20% $P_{AC,r}^{1)}$	87.8 / 89.2 / 85.9 %	89.7 / 90.5 / 87.3 %	91.2 / 91.8 / 89.1 %	91.5 / 92.3 / 89.6 %	92.2 / 93.0 / 90.8 %
η at 25% $P_{AC,r}^{1)}$	89.3 / 89.9 / 86.8 %	90.8 / 91.3 / 88.5 %	91.8 / 92.7 / 90.2 %	92.1 / 92.9 / 90.6 %	92.4 / 93.5 / 91.6 %
η at 30% $P_{AC,r}^{1)}$	90.1 / 90.7 / 87.9 %	91.5 / 92.3 / 89.8 %	92.3 / 93.2 / 90.9 %	92.4 / 93.3 / 91.1 %	92.5 / 93.6 / 92.1 %
η at 50% $P_{AC,r}^{1)}$	92.0 / 92.9 / 90.3 %	92.6 / 93.7 / 91.4 %	92.8 / 94.0 / 92.4 %	92.7 / 93.9 / 91.5 %	92.9 / 94.3 / 92.3 %
η at 75% $P_{AC,r}^{1)}$	92.7 / 93.8 / 91.7 %	92.8 / 94.3 / 92.6 %	92.4 / 94.3 / 92.8 %	92.9 / 94.1 / 92.6 %	92.5 / 94.1 / 92.9 %
η at 100% $P_{AC,r}^{1)}$	92.8 / 94.2 / 92.5 %	92.4 / 94.0 / 92.9 %	92.0 / 93.4 / 92.6 %	92.5 / 94.3 / 92.9 %	92.0 / 93.7 / 92.7 %
MPP adaptation efficiency	> 99.9 %				

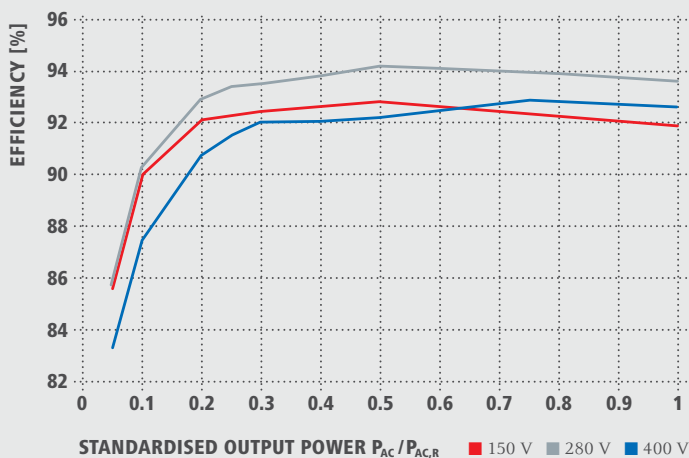
PROTECTIVE EQUIPMENT	IG 15	IG 20	IG 30	IG 40	IG 60 HV
DC insulation measurement	Warning/shutdown (depending on country setup) at $R_{ISO} < 500 \text{ k}\Omega$				
Overload behaviour	Operating point shift, power limitation				
Reverse polarity protection	Integrated				

INTERFACES	IG 15	IG 20	IG 30	IG 40	IG 60 HV
Optionally with Fronius Datamanager	WLAN, Ethernet, Modbus TCP, 6 digital inputs, 4 digital inputs/outputs, datalogger, web server				

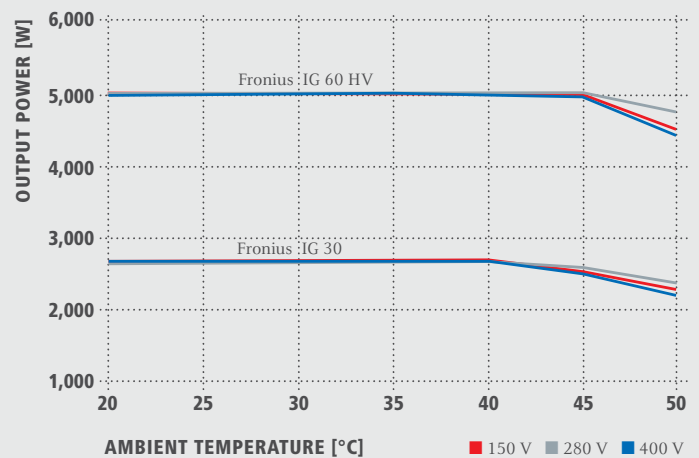
Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

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

FRONIUS IG 60 HV EFFICIENCY CURVE



FRONIUS IG TEMPERATURE DERATING



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 start-up assistance 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.

More power categories coming soon!



/ PC board
replacement process



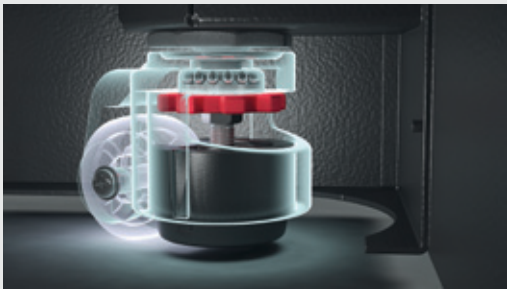
/ Transport
technology

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. For shorter journeys, its heavy-duty castors provide the required degree of mobility on all level surfaces. Adjustable feet guarantee a high level of stability in the long term, even on uneven floors.



/ Compact design

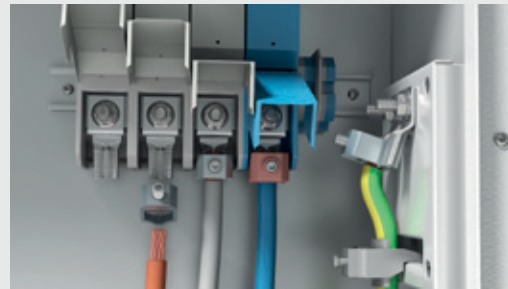
The Fronius Agilo is compact and light, weighing from only 726 kg. It can therefore be transported in a normal passenger lift. And as it is delivered on a Euro industrial pallet, storage requirements can be planned in advance and transport costs kept down.

/ 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-box terminal clamps on the AC and DC connections even make cable lugs superfluous. The spacious connection compartment 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.

/ On-board data communication

The Fronius Com Card, Fronius Signal Card and Interface Card function are integrated in the Fronius Agilo as standard. Third-party system monitoring components can be connected very easily.

/ 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
DC maximum power at $\cos \varphi = 1$	78.1 kW		104.5 kW	
Max. input current ($I_{dc \max}$)	170.0 A		227.0 A	
Max. array short circuit current	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 ($U_{dc,r}$)			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 DC connections			4	

OUTPUT DATA	AGILO 75.0-3	AGILO 75.0-3 OUTDOOR	AGILO 100.0-3	AGILO 100.0-3 OUTDOOR
AC nominal output (P _{ac,r})	75 kW		100 kW	
Max. output power	75 kVA		100 kVA	
Max. output current (I _{ac max})	114.4 A		152.6 A	
Grid connection (U _{ac,r})	3-NPE 400 V / 230 V			
Min. output voltage (U _{ac min})	170 V			
Max. output voltage (U _{ac max})	270 V			
Frequency (f _i)	50 Hz / 60 Hz			
Frequency range (f _{min} – f _{max})	46 – 65 Hz			
Total harmonic distortion	< 3 %			
Power factor (cos φ _{ac,r})	0.8 – 1 ind. / cap.			

GENERAL DATA	AGILO 75.0-3	AGILO 75.0-3 OUTDOOR	AGILO 100.0-3	AGILO 100.0-3 OUTDOOR
Item number	4,200,506	4,200,607	4,200,505	4,200,606
Dimensions (height x width x depth)	1,884 x 1,100 x 700 mm	1,900 x 1,220 x 795 mm	1,884 x 1,100 x 700 mm	1,900 x 1,220 x 795 mm
Weight	760 kg	726 kg	834 kg	806 kg
Degree of protection (electronical parts)	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 concept	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 % - 95 %			
DC connection technology	V-shape connection lug / V-box terminal clamp (70 - 240 mm ²)			
AC connection technology	V-shape connection lug / V-box terminal clamp (35 - 95 mm ²)			
Certificates and compliance with standards	IEC 62109-1, IEC 62109-2, VDE AR N 4105, generating systems on the medium-voltage network (BDEW), G59, grid connection conditions Denmark (>75A), ÖVE / ÖNORM E 8001-4-712			

Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

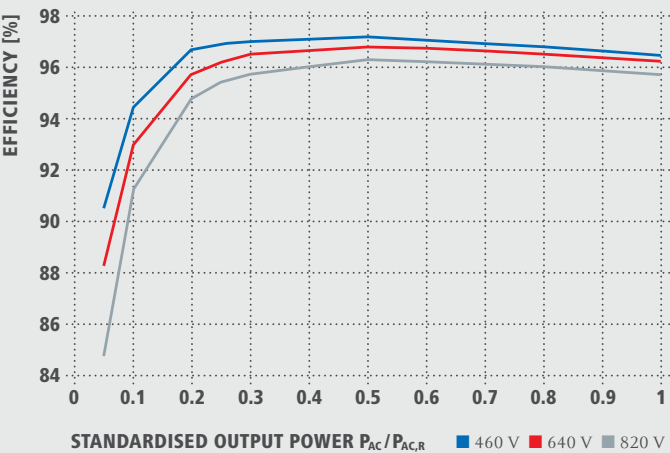
EFFICIENCY	AGILO 75.0-3	AGILO 75.0-3 OUTDOOR	AGILO 100.0-3	AGILO 100.0-3 OUTDOOR
Max. efficiency	97.3 %		97.2 %	
European efficiency (η_{EU})	96.7 %		96.6 %	
η at 5 % $P_{ac,r}$ ¹⁾	90.6 % / 84.8 %		90.5 % / 84.8 %	
η at 10 % $P_{ac,r}$ ¹⁾	94.7 % / 91.1 %		94.6 % / 91.5 %	
η at 20 % $P_{ac,r}$ ¹⁾	96.7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

PROTECTIVE EQUIPMENT	AGILO 75.0-3	AGILO 75.0-3 OUTDOOR	AGILO 100.0-3	AGILO 100.0-3 OUTDOOR
DC insulation measurement	Warning/shutdown adjustable			
Overload behaviour	Operating point shift, power limitation			
DC disconnecter	Integrated			

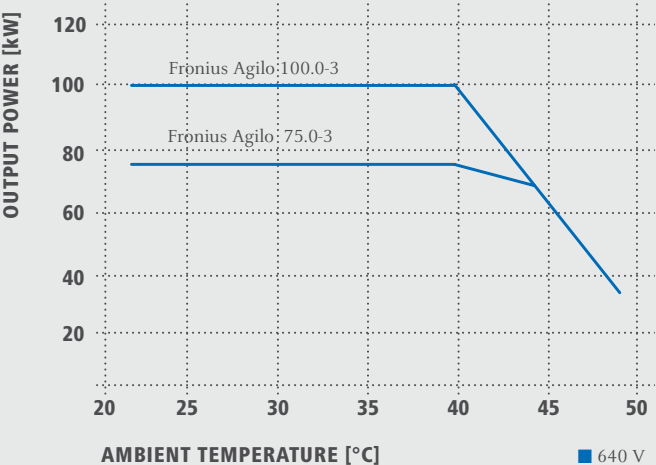
INTERFACES	AGILO 75.0-3	AGILO 75.0-3 OUTDOOR	AGILO 100.0-3	AGILO 100.0-3 OUTDOOR
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol			

¹⁾ and at $U_{mpp\ min} / U_{dc,r} / U_{mpp\ max}$
Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

FRONIUS AGILO 100.0-3 EFFICIENCY CURVE



FRONIUS AGILO TEMPERATURE DERATING



FRONIUS CL

/ The central inverter for long-term peak performance.



FRONIUS CL 36.0 / 48.0 / 60.0

/ Reliability: 9, 12 or 15 power stage sets work together in the Fronius CL to achieve very high performance. The control system calculates which and how many power racks to switch on or off in partial load situations. This ensures that the workload is distributed equally between the PC boards, reducing operating hours for individual power stage sets and increasing the service life of the inverter.



/ Fronius
MIX™ technology



/ HF transformer
switchover



/ PC board
replacement process



/ Transport
technology



/ WLAN interface

MAXIMUM YIELD, UNRIVALLED SYSTEM STABILITY, LONG SERVICE LIFE

/ The Fronius CL combines efficient power electronics with a unique modular design of up to 15 identical power stage sets in the Fronius MIX™ technology. This makes the Fronius CL the perfect central inverter for PV systems of up to several hundred kilowatts. Other advantages: precise maximum power point tracking of the Fronius Module Manager™, automatic transformer switchover, and much more.

/ Low installation weight

The power racks can be removed for installation. This reduces the weight, making it easier to move the housing. Re-insert the racks later – all done!

/ Prompt servicing options

During servicing, power stage sets can easily be pulled out and replaced like drawers on the Plug & Play principle.



/ Integrated grounding option

When grounding modules, whether positive or negative, simply insert the fuse into the fuse holder and activate the software.

/ On-board interface card function

Reading system data in the open data protocol means there is no problem in using third-party components for system monitoring.

/ Built-in Signal Card function

Practical alarm contacts mean, for example, that status changes on the system can be signalled via visual or audible signals, or that additional components such as an external fan can be controlled.

/ Future-proof with plug-in cards

Plug-in technology means that additional functions can be retrofitted at any time. With the help of the Fronius Data-manager, every Fronius CL can be equipped with comprehensive data communication: datalogging, WLAN, Ethernet with web server and the open Modbus TCP or JSON interfaces can be integrated easily.

/ Smart Grid Ready

The Fronius CL 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.

TECHNICAL DATA FRONIUS CL

INPUT DATA	CL 36.0	CL 48.0	CL 60.0
DC maximum power at $\cos \varphi = 1$	38.6 kW	51.4 kW	64.4 kW
Max. input current ($I_{dc \max}$)	167.8 A	223.4 A	280.2 A
Max. short circuit current, module array	251.7 A	335.2 A	420.3 A
Min. input voltage ($U_{dc \min}$)	230 V		
Feed-in start voltage ($U_{dc \text{ start}}$)	260 V		
Nominal input voltage ($U_{dc,r}$)	370 V		
Max. input voltage ($U_{dc \max}$)	600 V		
MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)	230 V – 500 V		
Number of DC connections	3		

OUTPUT DATA	CL 36.0	CL 48.0	CL 60.0
AC nominal output ($P_{ac,r}$)	36 kW	48 kW	60 kW
Max. output power	36 kVA	48 kVA	60 kVA
Max. output current ($I_{ac \max}$)	52.2 A	69.6 A	87.0 A
Grid connection ($U_{ac,r}$)	3-NPE 400 V / 230 V		
Min. output voltage ($U_{ac \min}$)	180 V		
Max. output voltage ($U_{ac \max}$)	270 V		
Frequency (f_r)	50 Hz / 60 Hz		
Frequency range ($f_{\min} - f_{\max}$)	46 Hz – 65 Hz		
Total harmonic distortion	< 3 %		
Power factor ($\cos \varphi_{ac,r}$)	0.85 – 1 ind. / cap.		

GENERAL DATA	CL 36.0	CL 48.0	CL 60.0
Item number	4,210,240	4,210,241	4,210,242
Dimensions (height x width x depth)	1,730 x 1,105 x 722 mm		
Weight	248 kg	276 kg	303 kg
Degree of protection	IP 20		
Protection class	1		
Overvoltage category (DC / AC)	2 / 3		
Night-time consumption	11.4 W	11.6 W	12.2 W
Inverter concept	HF transformer		
Cooling	Regulated air cooling		
Installation	Indoor installation		
Ambient temperature range	from –20°C to +50°C		
Permitted humidity	0 % to 95 %		
DC connection technology	Bolt M10		
AC connection technology	Bolt M10		
Certificates and compliance with standards	VDE V 0126-1-1, ÖVE/ÖNORM E 8001-4-712, UTE C15-712-1, G 59, CER 06-190, CEI 0-21		

Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

EFFICIENCY	CL 36.0	CL 48.0	CL 60.0
Max. efficiency	95.9 %	95.9 %	95.9 %
European efficiency (η_{EU})	95.3 %	95.4 %	95.5 %
η at 5% $P_{AC,R}^{1)}$	89.6 / 90.8 / 91.4 %	90.5 / 90.9 / 91.7 %	91.1 / 93.7 / 91.4 %
η at 10% $P_{AC,R}^{1)}$	93.3 / 94.4 / 94.1 %	93.9 / 94.7 / 94.1 %	93.5 / 95.2 / 93.9 %
η at 20% $P_{AC,R}^{1)}$	94.4 / 95.3 / 95.0 %	94.7 / 95.5 / 94.8 %	94.6 / 95.7 / 94.8 %
η at 25% $P_{AC,R}^{1)}$	94.8 / 95.5 / 95.1 %	95.0 / 95.7 / 95.2 %	94.9 / 95.7 / 94.9 %
η at 30% $P_{AC,R}^{1)}$	95.0 / 95.7 / 95.1 %	95.1 / 95.7 / 95.3 %	94.9 / 95.8 / 95.0 %
η at 50% $P_{AC,R}^{1)}$	95.1 / 95.9 / 95.3 %	95.2 / 95.9 / 95.4 %	95.1 / 95.9 / 95.2 %
η at 75% $P_{AC,R}^{1)}$	94.4 / 95.4 / 95.3 %	94.4 / 95.5 / 95.3 %	94.5 / 95.5 / 95.3 %
η at 100% $P_{AC,R}^{1)}$	93.3 / 94.8 / 94.9 %	93.4 / 94.8 / 94.8 %	93.4 / 94.8 / 94.8 %
MPP adaptation efficiency	> 99.9 %		

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

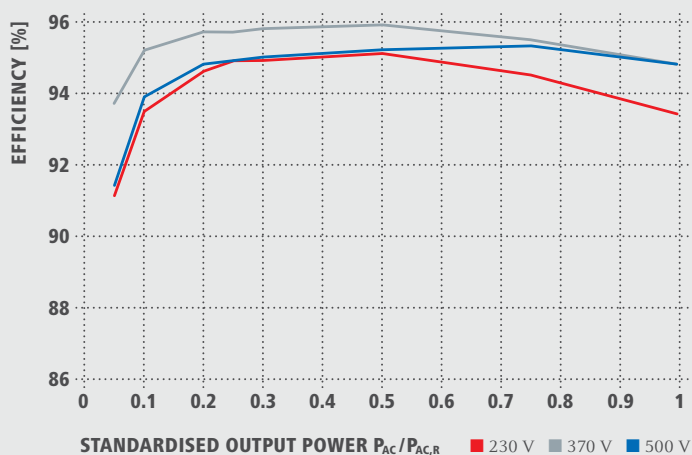
PROTECTIVE EQUIPMENT	CL 36.0	CL 48.0	CL 60.0
DC insulation measurement	Warning/shutdown (depending on country setup) at $R_{iso} < 500 \text{ kOhm}$		
Overload behaviour	Operating point shift, power limitation		
DC disconnect	Integrated		

INTERFACES	CL 36.0	CL 48.0	CL 60.0
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol		
2 signalling outputs	Max. current per output: AC max. 277 V / 10 A, DC max. 24 V / 10 A		
Optionally with Fronius Datamanager	WLAN, Ethernet, Modbus TCP, 6 digital inputs, 4 digital inputs/outputs, datalogger, web server		

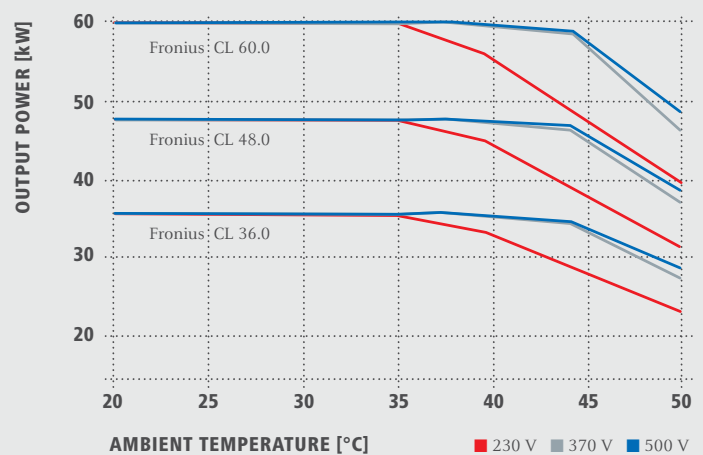
SPECIAL FEATURES	CL 36.0	CL 48.0	CL 60.0
Feed-in from	80 W	95 W	120 W
Fronius CL devices for Germany are only supplied with a manual AC disconnect.			

Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

FRONIUS CL 60.0 EFFICIENCY CURVE



FRONIUS CL TEMPERATURE DERATING



ACCESSORIES FOR INVERTERS

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

FRONIUS STRING CONTROL 100/12

/ Professional monitoring of up to 12 strings

The Fronius String Control 100/12 can be used for the comprehensive monitoring and recording of up to 12 strings at a current carrying capacity of up to 100 A. Continuous comparison of string currents reliably detects even the smallest errors in the entire system.

Area of application: For Fronius IG Plus inverters.



TECHNICAL DATA	
Max. number of strings	12
Max. input current	100 A
Max. input current per string	20 A
Max. input voltage	600 V
Max. current per measuring channel	50 A
Number of measuring channels	2
Connections (DC in)	Terminals, 1.5 – 10 mm ² (with max. cable diameter of 7 mm) ¹⁾
Connections (DC out)	M12 cable lug, max. 95 mm ²
2x RS422 (RJ45 socket)	Fronius Solar Net
Ambient temperature range	-25 – +60 °C
Degree of protection	IP 55
Power supply	12 V DC (optional)
Size (height x width x depth)	330 x 440 x 145 mm
Weight	5 kg
Item number	4,240,143

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

FRONIUS STRING CONTROL 250/25

/ Professional monitoring of up to 25 strings

The Fronius String Control 250/25 can be used for comprehensive monitoring and recording of up to 25 strings with a total current of up to 250 A. Continuous comparison of string currents reliably detects even the smallest errors in the entire system.

Area of application: They are particularly suitable for use with Fronius central inverters.

Optional: DIN rail power pack



TECHNICAL DATA	
Max. number of strings	25
Max. input current	250 A
Max. input current per string	20 A
Max. input voltage	600 V
Max. current per measuring channel	50 A
Number of measuring channels	5
Connections (DC in)	Terminals, 2.5 – 10 mm ² (with max. cable diameter of 7 mm) ¹⁾
Connections (DC out)	M12 cable lug, max. 120 mm ²
2x RS422 (RJ45 socket)	Fronius Solar Net
Ambient temperature range	-25 – +60 °C
Degree of protection	IP 55
Power supply	12 V DC (optional)
Size (height x width x depth) incl. wall bracket	680 x 500 x 170 mm
Weight	10 kg
Item number	4,240,140

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



FRONIUS STRING CONTROL 250/25 DCD DF

/ Professional string monitoring and all-pole string fuse protection

The Fronius String Control 250/25 DCD DF can be used for comprehensive monitoring and recording of up to 25 strings at a current carrying capacity of up to 250 A. The integrated, external DC disconnecter ensures safe isolation of the PV generator and inverter.

Area of application: Suitable for combination with Fronius central inverters.

Optional: DIN rail power pack

TECHNICAL DATA	
Max. number of strings	25
Max. input current	250 A
Max. input current per string	20 A
Max. input voltage	600 V
Max. current per measuring channel	50 A
Number of measuring channels	5
Connections (DC in)	Terminals, 1 – 25 mm ² (with max. cable diameter of 7 mm) ¹⁾
Connections (DC out)	M12 cable lug, max. 120 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) incl. wall bracket	822 x 571 x 216 mm
Weight	18.4 kg
Item number	4,240,142

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

FRONIUS STRING CONTROL 250/30

/ Professional monitoring of up to 30 strings

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

Area of application: Ideally suited to Fronius Agilo inverters.

Optional: DIN rail power pack, base for outdoor installation



TECHNICAL DATA	
Max. number of strings	30
Max. input current	250 A
Max. input current per string	20 A
Max. input voltage	1,000 V
Max. current per measuring channel	50 A
Number of measuring channels	5
Connections (DC in)	Terminals, 2.5 – 25 mm ² (with max. cable diameter of 7.5 mm) ¹⁾
Connections (DC out)	V-shape connection lug (V-box terminal clamp, 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⁾ Depending 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.

Area of application: Ideally suited to Fronius Agilo inverters.

Optional: DIN rail power pack, base for outdoor installation

TECHNICAL DATA	
Max. number of strings	30
Max. input current	250 A
Max. input current per string	20 A
Max. input voltage	1,000 V
Max. current per measuring channel	50 A
Number of measuring channels	5
Connections (DC in)	Terminals, 2.5 – 25 mm ² (with max. cable diameter of 7.5 mm) ¹⁾
Connections (DC out)	Direct lug connection (V terminal, no cable lug required), max. 240 mm ²
2x RS422 (RJ45 socket)	Fronius Solar Net
Ambient temperature range	-25 – +55 °C
Protection class	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⁾ Depending on cable type. Please refer to the information in the operating instructions regarding correct installation.



FRONIUS DC BOX 60/12

/ String collection box for up to 12 module strings

The Fronius DC Box 60/12 can store up to 12 module strings with a total current of up to 60 A max. It can connect a DIN rail-mounted overvoltage protector (type 2 or type 1).

Area of application: Specifically for all three-phase Fronius IG Plus devices. Can also be used with other Fronius inverters.

TECHNICAL DATA	
Max. number of strings	12
Max. input current	60 A
Max. input current per string	20 A
Max. input voltage	850 V
Connections (DC in)	Terminals, 2.5 mm ² – 6 mm ² (with max. cable diameter of 10 mm) ¹⁾
Connections (DC out)	M10 cable lug, max. 95 mm ²
Environmental conditions	-25°C to +55 °C
Degree of protection	IP 65
Size (height x width x depth)	330 x 440 x 145 mm
Weight	3.8 kg
Item number	42,0300,2872

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



FRONIUS IG 15/20/30 DC JUNCTION BOX

/ String collection box for up to 4 module strings with DC isolator

The Fronius IG 15/20/30 DC junction box can record up to 4 module strings. The integrated DC isolator allows both DC main line poles to be connected whilst de-energised during service.

Area of application: Particularly suitable for use with the Fronius IG 15/20/30.

TECHNICAL DATA

Max. number of strings	4
Max. input current	400 V DC 7 A* 150 V DC 20 A*
Max. input voltage	530 V
Connections (DC in)	Terminals, 2.5 mm ² – 6 mm ² (with max. cable diameter of 10 mm)
Connections (DC out)	Terminals, 2.5 mm ² – 16 mm ²
Environmental conditions	–25 °C to +55 °C
Degree of protection	IP 54
Size (height x width x depth)	220 x 168 x 115 mm
Weight	1.4 kg
Item number	42,0300,2438

* To determine input current by linear interpolation.



FRONIUS IG 40/60 HV DC JUNCTION BOX

/ String collection box for up to 8 module strings with DC isolator

The Fronius IG 40/60 HV DC junction box can store up to eight module strings. The integrated DC isolator allows both DC main line poles to be connected whilst de-energised during service.

Area of application: Particularly suitable for use with the Fronius IG 40 and Fronius IG 60 HV.

TECHNICAL DATA

Max. number of strings	8
Max. input current at*	400 V DC 14 A* 150 V DC 37 A*
Max. input voltage	530 V
Connections (DC in)	Terminals, 2.5 mm ² – 6 mm ² (with max. cable diameter of 10 mm)
Connections (DC out)	Terminals, 2.5 mm ² – 25 mm ²
Environmental conditions	–25 °C to +50 °C
Degree of protection	IP 54
Dimensions (height x width x depth)	270 x 225 x 125 mm
Weight	2 kg
Item number	42,0300,2672

* To determine input current by linear interpolation.

SYSTEM DESIGN

/ Dimension PV systems correctly: determine the number of 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, even complex PV systems can be dimensioned problem-free and with optimum results. You receive the various configuration options and yield forecasts quickly and easily. 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.

This online design tool means that you can always use the latest solar module and inverter data for system configuration - without having to carry out an update.

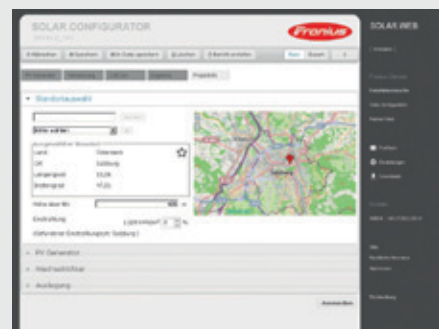
**JUST GO TO
HTTP://SOLARCONFIGURATOR.SOLARWEB.COM**

DESIGN OPTIONS WITH THE FRONIUS SOLAR.CONFIGURATOR

/ The Solar.configurator offers two ways of calculating the optimum system design:

1. Module field 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

/ Includes DATCOM configurator

/ Site identification by postcode or directly via coordinates

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- LOGGING

/ System data is recorded and saved for further processing.

REMOTE CONTROL OF PV SYSTEMS

/ System controlled to grid operator's specifications.



OPEN INTERFACES

Process data easily: integrate third-party components without any problems.

ACCESSORIES

/ Communication accessories
for inverters without
integrated communication.

VISUALI- SATION

/ Attractive system data display.



SYSTEM MAINTENANCE

/ Professional maintenance
and fault analysis

FRONIUS DATCOM

/ The complete solution for data: recording, processing, storing,
displaying and analysing.

SENSORS

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

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 the computer in the office, on your smartphone when you are on the road, or on your tablet at home. Intelligent analysis functions are included as a reliable means of preventing 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 online portal Fronius Solar.web. 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.

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 smartphone or Android tablet PC. The app is available for Apple products on iTunes and for Android smartphones from the Android Market.



FRONIUS SOLAR.TV

/ Professional presentation of system data in public spaces

The free Fronius Solar.TV online portal enables numerous PV system values, such as energy yield and CO₂ savings to be transmitted and displayed in a promotionally effective way on standard displays in public spaces. A series of well laid out diagrams provides a quick overview of the PV system.



FRONIUS PERSONAL DISPLAY DL

/ Read system data easily, from anywhere

The Fronius Personal Display DL delivers PV system performance data. It is easy to install in any room in your house, from where it continuously provides all the up-to-date information – for up to 15 inverters. Data transfer from the inverter is via a wireless connection. That is why it is so easy to install: no tuning, no cable pulling – just Plug & Play. Data from up to 15 inverters can be transferred to a computer quickly and easily via the micro USB port.

TECHNICAL DATA

Frequency band	868 MHz; 915 MHz (USA)
Display	White backlight
Power supply (battery)	2 x 1.5 V NiMH cells
Temperature range	0°C to +50°C
Degree of protection	IP 20
Dimensions (length x width x height)	190,2 x 113,8 x 52,8 mm
Item number	4,240,132

/ Fronius Personal Display DL accessories: Fronius Personal Display Card

Transfers data wirelessly to the Fronius Personal Display DL by inserting the card into the inverter. The accompanying antenna can be fitted either directly to the inverter or close to it.

/ Fronius Personal Display DL accessories: Fronius Personal Display DL Box

Transfers data wirelessly between the Personal Display DL and the inverter. The Fronius Personal Display DL Box has a cache memory, which retains system data, even if the wireless connection is terminated.

FRONIUS SIGNAL CARD

/ Integrate warning elements easily

If there are any status changes on the inverter, the Fronius Signal Card emits an audiovisual signal, either by sounding an alarm or via a warning light. If the inverter indicates a fault, a potential-free contact is switched on and a warning signal sounds.



TECHNICAL DATA

Supply voltage	5 V DC (through solar modules)
Dimensions (length x width x height)	140 x 100 x 26 mm
Maximum relay switching characteristics	
– U (DC)	50 V
– I (DC)	1 A
– U (AC)	250 V
– I (AC)	4 A
Maximum cable cross-section	1.5 mm ² / cable
Recommended connection cable	3-pin 0.75 mm ² sheathed cable
Item number	4,240,012

DATALOGGING: THE INTERFACE BETWEEN INVERTER AND PC.

/ Fronius dataloggers record and save system data so that it can be analysed and viewed. The dataloggers therefore form the interface to the PC or internet.



FRONIUS DATAMANAGER

/ The first integrated datalogger with WLAN

The Fronius Datamanager is a plug-in card and represents the next generation of dataloggers. Whenever it is connected to the internet via a LAN or WLAN, the Fronius Datamanager sends the PV system values directly to the Fronius Solar.web online portal. This provides you with an overview of how the system is operating at all times. The Fronius Datamanager enables inverters to be connected directly to the internet via a WLAN for the first time. Furthermore, optimum system monitoring and configuration of the Datamanager can be carried out via the dedicated website on the Fronius Datamanager's integrated web server. 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.

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).

The Datamanager is compatible with all Fronius inverters (excl. Fronius IG TL and Fronius Agilo). The Fronius Datamanager is integrated into the Fronius Galvo and Fronius Symo inverters as standard. The Fronius Datamanager can be retrofitted to existing inverters whenever required.

TECHNICAL DATA	
Storage capacity	max. 4096 days
Supply voltage	230 V AC (+10 % / -15 %) Power supply via AC in the Fronius inverter
Energy consumption	2.2 W (with WLAN) / 1.4 W (without WLAN)
Dimensions	132 x 103 x 22 mm
Ambient temperature range	-20 - +65°C
Interfaces	LAN, 100 MBit / Fronius Solar.web, Modbus TCP, JSON Fronius Solar.Net IN Wireless standard 802.11 b/g / Fronius Solar.web Interface to ripple control receiver Interface to ripple control receiver
– Ethernet (RJ45 socket)	
– RS422 (RJ45 socket)	
– WLAN	
– 6 digital inputs	Fronius IG Plus and Fronius IG: 4,240,028 Fronius CL: 4,240,026
– 4 digital inputs/outputs	
Item number with WLAN	
Item number without WLAN	Fronius IG Plus, Fronius IG and Fronius CL: 4,240,025



FRONIUS DATALOGGER WEB

/ Datalogger with WLAN functionality

All-rounder: the Fronius Datalogger Web can be easily integrated into existing networks via the Ethernet interface. This can also be done using an optional WLAN stick. Up-to-date information from systems with up to 100 inverters can be read in real time. To use the Fronius Datalogger the inverters need a Com Card function (integrated or with a Fronius Com Card).

TECHNICAL DATA

Storage capacity	16 MB / max. 4,096 days
Supply voltage	12 V DC
Power consumption	Type 1.43 W
Degree of protection	IP 20
Dimensions	190 x 114 x 53 mm
Item number	4,240,123

INTERFACES

Relay output	42 V AC / 6 A 60 V DC / 400 mA 40 V DC / 1 A 30 V DC / 6 A 0.8 – 1.5 mm ² cable cross-section
External supply, terminal	12 V DC / max. 1 A, class 2 0.13 – 1.5 mm ² cable cross-section
RS422 (RJ45 socket)	Fronius Solar.Net IN
RS422 (RJ45 socket)	Fronius Solar.Net OUT
Ethernet (RJ45 socket)	LAN, 100 MBit
WLAN	Via USB WLAN stick*

* Available as an option.



/ Accessories for the Fronius Datalogger Web: WLAN sticks

For integrating the Fronius Datalogger Web into existing networks. The WLAN stick is configured using the Fronius Datalogger Web website. WLAN sticks are available for indoor and outdoor use.

SENSORS: PRECISE MEASUREMENT OF ADDITIONAL VALUES.

/ Integrating sensors into a PV system enables additional measured values, such as irradiation, ambient temperature, etc., to be recorded.



FRONIUS SENSOR CARD/BOX

/ For integrating different sensors

With the Fronius Sensor Card/Box, sensors for measuring irradiation, ambient temperature, module temperature, wind speed, etc. can be integrated into the Fronius DATCOM system.

TECHNICAL DATA		
Supply voltage	12 V DC	
Power consumption		
– Fronius Sensor Card	1.1 W	
– Fronius Sensor Box	1.3 W	
Box degree of protection	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)	RJ 45	»IN«
– RS422 (Fronius Solar Net)	RJ 45	»OUT«
T1 / T2 channels		
– Sensors	PT1000	
– Measuring range	–25°C to +75°C	
– Accuracy	0.5°C	
– Resolution	1°C	
Irradiance 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	
– Minimum 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 %	
Item number Fronius Sensor Card	4,240,004	
Item number Fronius Sensor Box	4,240,104	



FRONIUS IRRADIATION 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

OPEN INTERFACES: STRAIGHTFORWARD DATA PROCESSING.

/ With open interfaces, third-party components can be easily integrated into PV systems. The system can then be incorporated into higher-level energy management systems, for example, and data can be exchanged easily.



FRONIUS MODBUS CARD

/ Integrate third-party components easily using Modbus RTU – SunSpec

Fronius inverters can be easily integrated into third-party systems using the Fronius Modbus Card. All PV system data is output via a standardised Modbus RTU – SunSpec protocol for processing in the next stage of the process. Installation is straightforward, so the Fronius Modbus Card can be used in both new and existing systems. If several inverters are connected in a single system, the Fronius Modbus Card is installed in every Fronius IG, Fronius IG Plus or Fronius CL inverter.

The Fronius Symo and Fronius Galvo inverters have a permanently integrated Modbus TCP interface. Furthermore, with the Fronius Datamanager, Fronius IG Plus, Fronius IG and Fronius CL inverters can also be fitted with a Modbus TCP interface.

TECHNICAL DATA		
Supply voltage	208 V / 240 V / 277 V (+10 % / –15 %) Power supply via AC from the Fronius inverter	
Power consumption	1.6 W	
Dimensions (length x width x height)	5.5 x 3.9 x 1.1 in. (140 x 101 x 28 mm)	
Interfaces	Socket:	Designation:
– RS422 (Fronius Solar Net)	RJ45	»IN«
– RS422 (Fronius Solar Net)	RJ45	»OUT«
– Modbus RTU	6-pin terminal	»C, TXD0, TXD1, RXD1, RXD0, V«
Connection options	Modbus RTU 2 or 4 wire	
LED Indicators		
– Power LED	Green	
– State LED	Red	
– Com LED	Yellow	
Item number	Fronius IG Plus, Fronius IG and Fronius CL: 4,240,021	

REMOTE CONTROL OF PV SYSTEMS.

/ According to the legal requirements, grid operators may stipulate the option of remote control of PV systems.



FRONIUS DATAMANAGER

/ The first integrated datalogger with WLAN

The Fronius Datamanager is not just a datalogger with an internet connection – it is also the perfect interface to the ripple-control receiver. With its digital inputs and outputs, both power and reactive power can be controlled remotely. It is easily configured via the integrated web server.

Further information about the technical data can be found in the Datalogging section.



FRONIUS POWER CONTROL CARD

/ Remote controlled power reduction for Fronius IG Plus, Fronius CL, Fronius Galvo and Fronius Symo inverters.

The Fronius Power Control Card is easy to install in any Fronius IG Plus, Fronius CL, Fronius Galvo or Fronius Symo inverter and easily connected to a ripple-control signal receiver. If there is only one inverter, no further components are needed. If several inverters are connected within a PV system the Power Control Card is installed in just one of the inverters to enable remote control. The other inverters need a Com Card function (integrated or with a Fronius Com Card).

TECHNICAL DATA

Supply voltage	230 V AC (+10% / -15%) Power supply via AC in the Fronius inverter	
Energy consumption	1.6 W	
Dimensions (length x width x height)	140 x 101 x 28 mm	
D1 - D4 channels	Connections for floating contacts	
Interfaces	Socket:	Designation:
– RS422 (Fronius Solar Net)	RJ45	»IN«
– RS422 (Fronius Solar Net)	RJ45	»OUT«
LED indicator		
– Power LED	Green	
– Status LED	Red	
– Power reduction LED	Yellow	
Connection option	2-, 3- and 4-stage ripple-control signal receivers	
Item number	Fronius IG Plus, Fronius IG, Fronius CL: 4,240,020 Fronius Symo and Fronius Galvo: 4,240,040	



FRONIUS POWER CONTROL BOX

/ Power reduction by remote control

The Fronius Power Control Box can be connected to the grid operator's remote control device and Fronius inverters. The Fronius Power Control Box is most likely to be found in PV systems where the distance between the inverter and the ripple-control signal receiver is large. For remote controlled power reduction, a Com Card function (integrated or with a Fronius Com Card) must be installed in each inverter, and one datalogger is required per system.

TECHNICAL DATA

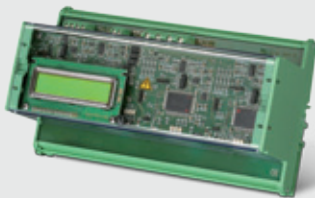
Supply voltage	12 V DC	
Energy consumption	1.3 W	
Degree of protection of box	IP 20	
Dimensions (length x width x height)	197 x 110 x 57 mm	
Ambient temperature range	0 – +50 °C	
D1 / D4 channels	Connections for floating contacts	
Current input channel*	Measuring ranges:	0 to 20 mA / 4 to 20 mA
	Accuracy:	5 %
Irradiation channel*	Measuring ranges:	0 to 100 mV / 0 to 200 mV / 0 to 1 V
	Accuracy:	3 %
Interfaces	Socket:	Designation:
– RS422 (Fronius Solar Net)	RJ45	»IN«
– RS422 (Fronius Solar Net)	RJ45	»OUT«
Connection option	2-, 3- and 4-stage ripple-control signal receivers	
Item number	4,240,120	

*Not yet supported in the latest version. This channel is intended for future upgrades.

GRID AND SYSTEM PROTECTION

/ External grid and system protection for all Fronius inverters

The German standard VDE-AR-N4105 came into force on January 1st 2012; all new PV systems rated at more than 30 kVA must now be equipped with an external grid and system protection mechanism. This mechanism detects overvoltages, undervoltages and frequency deviations at the feed-in point and, if necessary, disconnects the inverter from the grid. The inverter is reconnected automatically when the grid is within the permitted limits again.



TECHNICAL DATA

Switching capacity	Depends on which contactors are assigned
Self-consumption	3.5 W
IP protection	IP 21
Housing	Plastic, for mounting on DIN rail
Dimensions (height x width x depth)	220 x 111 x 80 mm
Ambient temperature range	-20 °C to +40 °C, 10 – 90 % relative humidity, non-condensing
Maximum feed-in current	According to the switching capacity of the contactors

DISCONNECTS THE GRID IN THE FOLLOWING SITUATIONS (corresponds to VDE-AR-N4105 and DIN V VDE 0126-1-1/A1)

Overvoltage	> 264 V (response time 100 ms)
Overvoltage	230 V + 10 % more than 10 minutes
Undervoltage	< 184 V (response time 100 ms)
Frequency deviation	+ 1.5 Hz / 2.5 Hz (response time 100 ms)
Item number	43,0008,0188

ACCESSORIES.

/ Communication accessories for inverters without an integrated interface.



FRONIUS COM CARD

/ Network interface card for data communication

The Fronius Com Card is the network interface card that enables Fronius inverters to communicate. Amongst other things, it provides the power supply for the entire Fronius DATCOM system. The Com Card function is already integrated into the Fronius Galvo, Fronius Symo, Fronius IG TL, Fronius CL and Fronius Agilo inverters. The Fronius IG and Fronius IG Plus inverters can be retrofitted with the Fronius Com Card as required. The Fronius Datamanager also has a Com Card function.

TECHNICAL DATA		
Supply voltage	208 V / 220 V / 230 V / 240 V / 277 V (+10% / -15%)	
Dimensions (length x width x height) – as plug-in card only	140 x 100 x 28 mm	
Interfaces	Socket:	Designation:
– RS422 (Fronius Solar Net)	RJ45	»IN«
– RS422 (Fronius Solar Net)	RJ45	»OUT«
Item number	4,240,001	

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. When 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 down-times and higher yields.

/ Convenient

All system data can be easily displayed on your PC.

FRONIUS UPDATE PACKAGE

/ For uncomplicated firmware updates

The Fronius Update Package makes Fronius inverter firmware updates 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 °C to +40 °C	
Humidity	0% to 95%, non-condensing	
Plug	1 x RJ 45 plug (permanently integrated terminating plug) 1 x USB connector (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 reassurance to full on-site support. Don't leave your yields to chance – draw on our experience.

FRONIUS SERVICE PACKAGES

/ Choose from three service packages.

START-UP ASSISTANCE

/ 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 support provided by the Fronius Service Partner, you can 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

OUR 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

OUR OFFER

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

YOUR BENEFITS

/ Excellent long-term reliability
/ Avoidance of system downtime
/ Expert servicing and maintenance by experienced Fronius engineers

FRONIUS SERVICE UPTIME

OUR 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 through compensation for downtime resulting from an inverter failure

WARRANTY EXTENSIONS FOR FRONIUS INVERTERS

/ Fronius offers a 5-year manufacturer 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 competent and easy to reach hotline team for the entire duration of the 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 installer 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.

START-UP ASSISTANCE

/ 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 START-UP ASSISTANCE 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 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 are familiar with 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.

ENERGY MANAGEMENT

/ Intelligent energy management is becoming increasingly important. In highly dynamic markets in particular, self-consumption of the PV electricity generated has enormous advantages. Instead of feeding into the public grid, the electricity is consumed in the very place where it was produced. This represents a significant step towards energy self-sufficiency and in the long term contributes to the efficient utilisation of solar power.

FRONIUS ENERGY MANAGEMENT RELAY

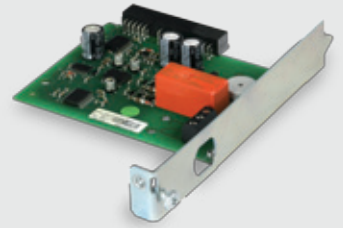
/ Energy management function for
Fronius IG Plus, Fronius IG TL and
Fronius CL inverters.

ENERGY MANAGEMENT

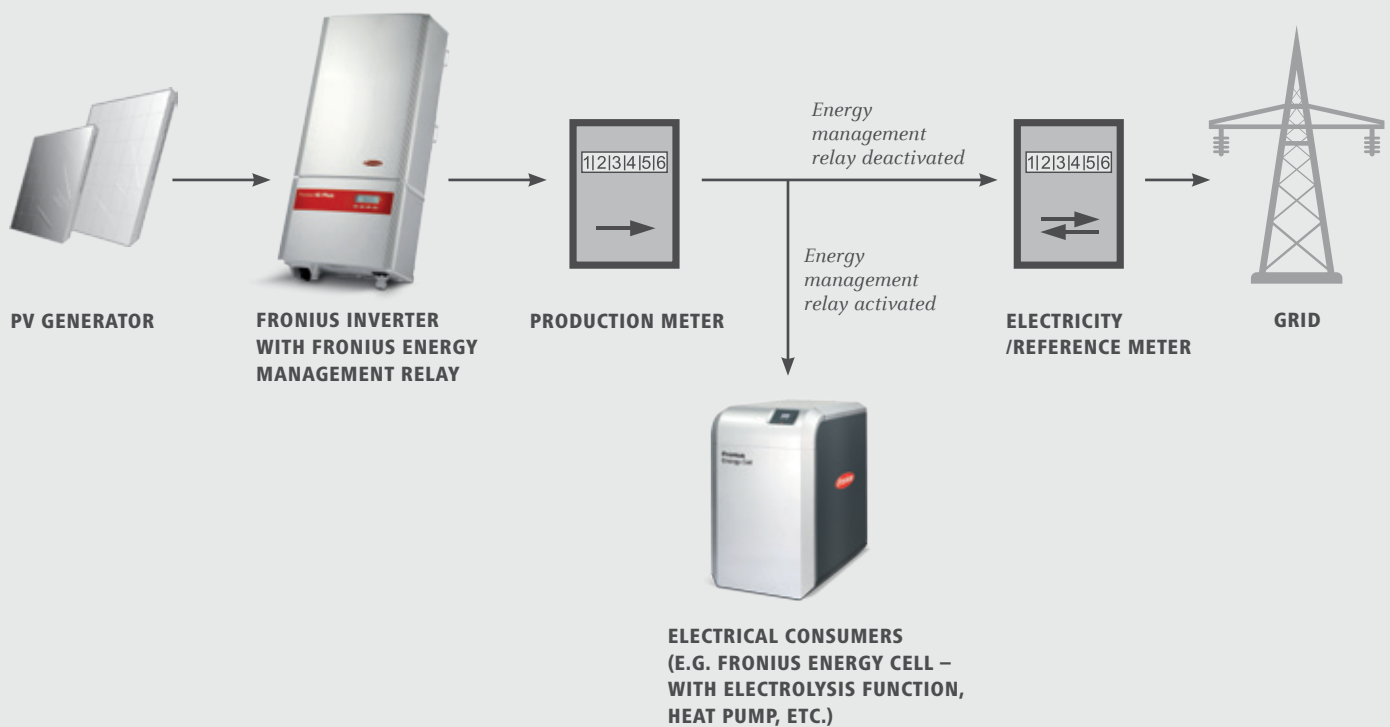
FRONIUS ENERGY MANAGEMENT RELAY

/ The energy management relay is a solution developed by Fronius to optimise self-consumption of the solar power generated. It allows a power hysteresis to be configured for Fronius IG Plus, Fronius IG TL and Fronius CL inverters. This means that on/off thresholds can be set on the inverter as units of power (Watts). If the inverter produces more than the set power (e.g. 2,000 W), a relay output is activated and the solar energy generated is used to operate a consumer, instead of being fed into the public grid. The relay output is deactivated if the energy yield drops below a specified value (e.g. 1,800 W).

The energy management relay is located on the Fronius Signal Card and, in the case of Fronius IG Plus inverters, can be retrofitted as required. The Fronius Signal Card function is included as standard in Fronius Symo, Fronius Galvo, Fronius IG TL and Fronius CL inverters.



CONFIGURATION DIAGRAM



/ The production meter records the energy yield of the PV system. If the energy management relay on the inverter is deactivated, the generated solar energy is fed into the grid. If the inverter produces more than the defined power level, the relay switches and the generated power is supplied to the specified electrical consumers*. Power that is not required continues to be fed into the grid. The level of self-consumption is derived from the difference between the production meter and the electricity meter.

* Depending on the consumer, an external relay circuit may be required.

THE FRONIUS ENERGY CELL: CLEAN ENERGY– RELIABLE ENERGY.

/ The energy strategy of the future: Fronius has set itself the target of making renewable energy sources such as photovoltaics available all year round. The first step in this direction is the Fronius Energy Cell. This involves converting hydrogen into energy extremely efficiently and with no impact on the environment.



**FRONIUS
ENERGY CELL
25F AND 50F**

**ENERGY
CONCEPT
OF THE
FUTURE**



FRONIUS ENERGY CELL 25F / 50F

/ The Fronius Energy Cell is the world's first TÜV SÜD-certified hydrogen-powered fuel cell system to generate emission-free electricity. Applications are mainly in the area of autonomous power supply and emergency power supply.

- / High system efficiency
- / Quiet and smooth operation
- / Comprehensive range of safety features
- / Simple, user-friendly operation
- / Total remote system monitoring
- / Connection system for operation independently of the surrounding air

/ Two steps to the energy strategy of the future:

Step 1: The Fronius Energy Cell fuel cell system is an electrochemical generator. The fuel cell system is fitted with a PEM (Proton Exchange Membrane) stack and converts the energy source - hydrogen - into direct current. This element of the Fronius Energy Cell is already on the market as versions 25F and 50F.

Step 2: Fronius is currently developing a device with an integrated high-pressure electrolysis system. Here, the excess solar power is converted into hydrogen in situ. This product will be ready for the market in the next few years.

SYSTEM DATA	ENERGY CELL 25F	ENERGY CELL 50F
Fuel	Hydrogen 5.0 (other purity grades on request)	
Hydrogen supply pressure	5 – 13.6 bar	
Hydrogen consumption	< 1.7 Nm ³ /h	< 3.3 Nm ³ /h
Cooling air inlet / outlet	700 Nm ³ /h	1400 Nm ³ /h
Venting of hydrogen (H ₂ input pressure relief device)	< 10 Nm ³ /h	
Hydrogen concentration in the exhaust air (average per minute)	< 25 % LEL	
Reaction chamber exhaust air	< 65 Nm ³ /h	
Reaction condensate (pure water, completely desalinated)	< 2 l/h	< 3 l/h

ELECTRICAL DATA	ENERGY CELL 25F	ENERGY CELL 50F
DC continuous output power	2 kW	4 kW
System voltage	24 – 30 V DC	48 – 56 V DC
Maximum output current	82 A	
Degree of system efficiency	Up to 47%	
Data interface	RS485, USB	

GENERAL DATA	ENERGY CELL 25F	ENERGY CELL 50F
Protection class	IP 20	
Mark of conformity	CE, TÜV SÜD fuel cell system	
Standard, fuel cell technologies	EN 62282-5-1:2007	
Dimensions (length x width x height)	850 x 470 x 850 mm	
Weight	125 kg	132 kg
Permissible ambient temperature (at 95 % rel. humidity)	+3 to +40 °C	
Permissible storage temperature (at 95 % rel. humidity)	+3 to +50 °C	
For use at altitudes above sea level	max. 1,600 m	

For further information, the latest news and Fronius Energy Cell reference projects please go to:
WWW.FRONIUS.COM/ENERGYCELL
 If you have any queries about the Fronius Energy Cell, please email us at: energycell@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

Country setups¹⁾

AT, AU, BE, BR, CH, CZ, DE, DK, ES, FR, GR, HU, IE, IL, NL, PT, SI, SK, UK, international 50Hz, international 60Hz

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, BR, CH, CZ, DE, DK, ES, FR, FR overseas, GR, UK, IE, IL, IT, NL, PT, SI, SK, TR, international 60 Hz, international 50 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, CH, CN, CZ, DE, DE MS, DK, ES, EU, FR, FR overseas, FR PRC, FR overseas PRC, GB, GR, IE, IL, IT, KR, NL, PT, SI, SK, TR, TW, international 60 Hz, GR, 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 Power Relay Card retrofit	4,070,993,Z

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, ES, EU, FR, FR overseas, GB, GR, IE, IL, IT, NL, PT, SK, TR, TW, international 60 Hz, 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 50	4,200,007
Fronius IG 60 HV	4,200,006

Country setups¹⁾

With ENS: AT, BE, FR, GR

Without ENS: CH, CZ, ES, FR overseas, GB, IE, KOR, MX 240 V CSA, MX 208 V CSA, NL, PT, SK, TR, TW, Asia 60 Hz, International 50 Hz

Housing options

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

Connection options for Fronius IG 15 – 60 HV indoor

Fronius IG screw terminal	44,0240,3000
1 DC plug MC4 no AC plug	44,0240,3041
2 DC plug MC4 no AC plug	44,0240,3042
3 DC plug MC4 no AC plug	44,0240,3043
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

Connection options for Fronius IG 15 – 60 HV outdoor

1 DC plug MC4 outdoor	44,0240,3051
2 DC plug MC4 outdoor	44,0240,3052
3 DC plug MC4 outdoor	44,0240,3053
4 DC plug MC4 outdoor	44,0240,3054
5 DC plug MC4 outdoor	44,0240,3055

Accessories

Fronius IG 15/20/30 DC Junction Box	42,0300,2438
Fronius IG 40/60 DC Junction Box	42,0300,2672
Grounding Kit Fronius IG	4,001,692

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⁾	
AU, AT, BE, BR, CH, CZ, DE, DE MS, DK, ES, FR, GR, HU, IE, IL, IT, NL, SI, SK, UK, international 60Hz, international 50Hz	
Accessories	
Fronius String Control 250 / 30	4,240,144
Fronius String Control 250 / 30 DCD DF	4,240,145

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, DE MS, ES, FR, GB, GR, IE, IL, IT, NL, PT, SK, TR, TW, international 60 Hz, international 50 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
Grounding Kit Fronius CL 2A	4,001,714
Grounding Kit Fronius CL 3A	4,001,715

FRONIUS DATCOM SYSTEM MONITORING

ITEM DESIGNATION	ITEM NUMBER
Fronius Signal Card	4,240,012
Fronius Signal Card retrofit	4,240,012,Z
Fronius Datamanager with WLAN (Fronius CL)	4,240,026
Fronius Datamanager with WLAN (Fronius CL) retrofit	4,240,026,Z
Fronius Datamanager with WLAN (Fronius IG Plus, Fronius IG)	4,240,028
Fronius Datamanager with WLAN (Fronius IG Plus, Fronius IG) retrofit	4,240,028,Z
Fronius Datamanager without WLAN (Fronius IG Plus, Fronius IG, Fronius CL)	4,240,025
Fronius Datamanager without WLAN (Fronius IG Plus, Fronius IG, Fronius CL) retrofit	4,240,025,Z
Fronius Datalogger Web	4,240,123
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
Fronius Power Control Card (Fronius IG Plus, Fronius IG, Fronius CL)	4,240,020
Fronius Power Control Card (Fronius IG Plus, Fronius IG, Fronius CL) retrofit	4,240,020,Z
Fronius Power Control Card (Fronius Symo, Fronius Galvo)	4,240,040
Fronius Power Control Card (Fronius Symo, Fronius Galvo) retrofit	4,240,040,Z
Fronius Power Control Box	4,240,120
Grid and system protection	43,0008,0188

ITEM DESIGNATION	ITEM NUMBER
Fronius Com Card	4,240,001
Fronius Com Card retrofit	4,240,001,Z
WLAN stick 802.11g Indoor	41,0018,0070
WLAN stick 802.11g Outdoor	41,0018,0071
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
Fronius Personal Display Dummy	4,240,907
Fronius Personal Display Tester	4,240,117
Sensors	
Ambient temperature sensor	43,0001,1188
Module temperature sensor	43,0001,1190
Irradiation sensor	43,0001,1189
Wind sensor	42,0411,0027
Cables and accessories	
Fuse 1A F 600 V DC	41,0007,0187
Fuse 5A F 600 V DC	41,0007,0205
Fuse 8A F 600 V DC	41,0007,0223
Fuse 10A F 600 V DC	41,0007,0207
Fuse 15A F 600 V DC	41,0007,0217
Fuse 20A F 600 V DC	41,0007,0200
Fuse 1A F 1000 V DC	41,0007,0231
Fuse 3A F 1000 V DC	41,0007,0234
Fuse 5A F 1000 V DC	41,0007,0235
Fuse 8A F 1000 V DC	41,0007,0236
Fuse 10A F 1000 V DC	41,0007,0229
Fuse 15A F 1000 V DC	41,0007,0230
Fuse 20A F 1000 V DC	41,0007,0233
Fuse 30A F 1000 V DC	41,0007,0241
DATCOM power supply 12 V	43,0001,1194
Power supply for demo devices	43,0001,1214
Modem types	
USR Courier 56K modem	41,0018,0054

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



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

/ What Günter Fronius started in 1945 in Pettenbach, Austria, has now become a modern day success story. Today, the company has around 3,000 employees worldwide and owns more than 850 active patents. Since the very beginning, our goal has not changed: to be the technology and quality leader. We shift the limits of what's possible. While others progress step by step, we innovate in leaps and bounds.

BATTERY CHARGING SYSTEMS

/ We started a technological revolution with Active Inverter Technology and are now one of the leading suppliers in Europe. We are driven by the aim of providing intelligent energy management systems that ensure mobility stays as economically viable as possible in the twenty-first century.

WELDING TECHNOLOGY

/ We develop welding technologies, such as entire systems for arc and resistance spot welding, and have set ourselves the task of making impossible weld joints possible. Our aim is to decode the »arc welding's DNA«. We are the technology leader worldwide and the market leader in Europe.

SOLAR ELECTRONICS

/ The greatest challenge of our time is to make the leap to a regenerative energy supply. Our vision is to use renewable energy to achieve energy independence. With our mains-connected inverters and products for monitoring photovoltaic systems, we are now one of the leading suppliers in solar electronics.



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