

# ISG Solar Inverter



- High PV input voltage range (suitable for voltage between 100 VDC to 540VDC) and efficient MPP Tracking
- High frequency insulation transformer
- Integrated security and filtering system according to relevant EMC standards
- RS485 serial communication for remote control
- Integrated data display and LEDs for monitoring of the operational status and signalling of failures
- Two independent and redundant microcontrollers for network monitoring able to ensure high safety level for qualified installers and end users
- Feed-in remuneration setting (€/kWh) available for evaluating produced energy revenue
- IP 65 protection degree (can be installed outdoors or indoors)

## General description

The Onyx Solar ISG PV solar inverter series converts direct current from the solar cells into alternating current. This enables you to feed your self-produced solar energy into the public mains. An integrated security and monitoring system guarantees a high disturbance immunity according to relevant electromagnetic compatibility standards and enable the highest

levels of efficiency. Thanks to efficient MPP tracking, maximum capacity utilization of the solar energy plant is guaranteed even in case of a misty and clouded over sky. The string concept means that PV modules are always connected in series (in a string) and/or that strings with the same voltage are connected in parallel to the solar inverter. An high input voltage range of the

solar inverter enables the utilization of all our OnyxSolar Photovoltaic Glasses.

Integrated data display ensures an immediate monitoring of the inverter operational status and failure messages. An internal temperature control protects the device against too high temperatures in the interior of the solar inverter. In case of high ambient temperatures, the

maximum transferable power is limited. The solar inverter is functional in network parallel operation exclusively. An automatically-acting isolation point, which was accepted by a certification agency, guarantees secure disconnection in case of circuit isolation or interruptions in power supply and avoids isolated operation.

## Ordering key

**ISG 1 40 ES**

Model

Grid connection

Max. DC power

Country

## Type selection

<b>Grid connection</b> Single Phase	<b>1</b>
<b>Max. DC power</b> 2.4kW 3.1kW 4.0kW 6.0kW	<b>24 31 40 60</b>
<b>Country</b> "Nil" ES DE	<b>Italy Spain Germany</b>

## Approvals



RD 1663/2000<sup>1</sup>  
RD 661/2007

DK5940<sup>2</sup>  
Ed. 2.2 April 2007

VDE0126-1-1<sup>3</sup>

Notes: <sup>1)</sup> Spanish Recommendation  
<sup>2)</sup> Italian Recommendation  
<sup>3)</sup> German Recommendation

## Photovoltaic DC input data

Model	ISG 1 24	ISG 1 31	ISG 1 40	ISG 1 60
Nominal DC power	2.10kW	2.75kW	3.63kW	5.50kW
Max. recommended PV power	2.40kW	3.10kW	4.0kW	6.0kW
Nominal DC voltage	270V			
Max. DC voltage	400V	540V		
DC voltage range	100...400V	125...540V		
MPP range	180...350V	150...470V	150...450V	150...470V
Full MPP range	263...350V	150...470V	150...450V	150...470V
Distortion factor	< 3%			
Nominal DC current	7.8A	8.6A	13.0A	18.3A
DC current range	0...8.0A	0...18.3A	0...24.0A	0...18.3A
Number of MPP trackers	1			
Max. No. of parallel strings for MPP	2	3	4	
Polarity safeguard	Short circuit diode			
Overvoltage protection	MOV varistor			
Ground fault monitoring	Yes			

## AC output data

Model	ISG 1 24	ISG 1 31	ISG 1 40	ISG 1 60
Nominal AC power	1.9kW	2.5kW	3.3kW	5.0kW
Max. AC power	1.98kW	2.62kW	3.49kW	5.24kW
Power factor	~1 (load > 50%)			
AC voltage range	Spain: 196...253V (VAC <sub>nom.</sub> : 230V) - Italy: 184...276V (VAC <sub>nom.</sub> : 230V) - Germany: 184...264V (VAC <sub>nom.</sub> : 230V)			
AC nominal current	8.3A	10.9A	14.4A	22.0A
AC current range	9.7A	0...12.8A	0...17.0A	0...27.2A
Frequency range	Spain: 49...51Hz (f <sub>nom.</sub> : 50Hz) - Italy: 49.7...50.3Hz (f <sub>nom.</sub> : 50Hz) - Germany: 47.5...50.2Hz (f <sub>nom.</sub> : 50Hz)			
Protection degree	1 (according to EN61000-4-2)			

## General features

Model	ISG 1 24	ISG 1 31	ISG 1 40	ISG 1 60
Max. efficiency	94.2%	95.3%	96.0%	95.3%
EU efficiency	92.0%	93.2%	94.8%	93.2%
Stand-by consumption	< 4W			
Protection device	Grid monitoring system; HF transformer			
Grid monitoring	Integrated interface protection (Spain: according to RD 1663/2000; RD 661/2007) (Italy: according to DK5940 Ed. 2.2 April 2007) (Germany: according to VDE0126-1-1)			
Diagnostic and network communication	RS485 communication port (always available)			

## Mechanical data

Model	ISG 1 24	ISG 1 31	ISG 1 40	ISG 1 60
User interface	Graphic display and 3 monitoring LEDs			
Keyboard	4 keys programming keyboard			
AC connectors	Binder/Amphenol		Wieland	Phoenix Vario Con
DC connectors	2 Tyco Solarlok-Connectors	3 Tyco Solarlok-Connectors	4 Tyco Solarlok-Connectors	
RS485 connectors	2 Phoenix Contact RJ45			
Housing material	Anodized Aluminium			
Weight	12.0kg / 26.45lb	16.0kg / 35.27lb	21.5kg / 47.40lb	32.0kg / 70.55lb

\* Note: Optional fan for cooling the heat sink

Specifications are subject to change without notice. Pictures are just an example. For special features and/or customization, please ask to our sales network. 250608

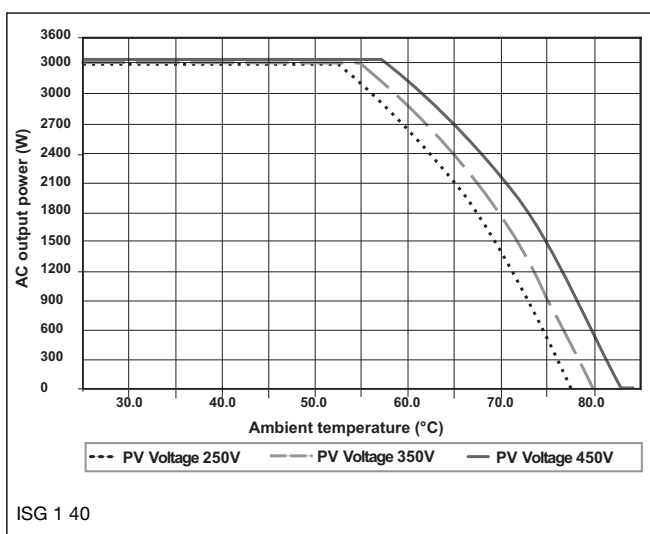
## Environmental data

Model	ISG 1 24	ISG 1 31	ISG 1 40	ISG 1 60
Operating temperature	from -25°C to +60°C* from -13°F to +140°F		from -25°C to +70°C from -13°F to +158°F	from -25°C to +60°C* from -13°F to +140°F
Storage temperature	From -25°C to +80°C from -13°F to +176°F			
Humidity	0...95%		0...98%	
Temperature control	> 60°C / > +140°F (automatic power reduction)		> 70°C / > +158°F (automatic power reduction)	> 60°C / > +140°F (automatic power reduction)
Cooling	> 80°C / > +176°F (inverter switch-off) Natural air convection			
Protection degree	IP 65 (according to EN55011 Classe B)			
Noise level	< 35dB			

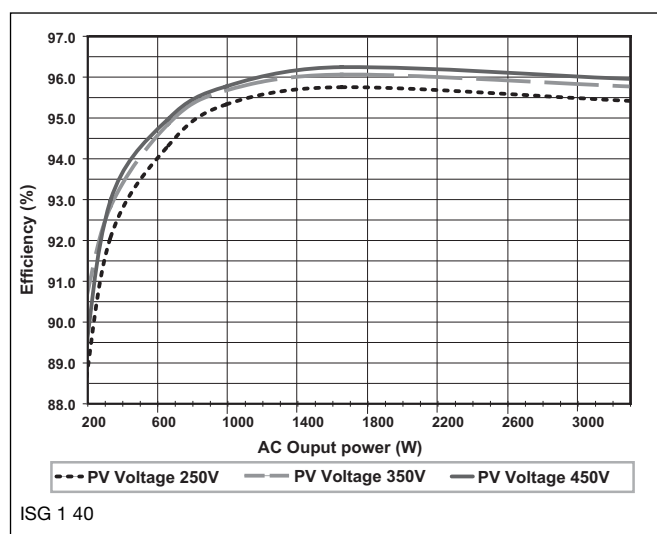
## Standard Norms and Certifications

Model	ISG 1 24	ISG 1 31	ISG 1 40	ISG 1 60
Radiated, radio-frequency, electromagnetic field immunity test	EN61000-4-3			
Electrical fast transient/burst immunity test	EN61000-4-4			
Surge immunity test	EN61000-4-5			
Immunity to conducted disturbances, induced by radio-frequency fields	EN61000-4-6 EN61000-4-8			
Limits for harmonic current emissions	EN61000-3-2			
Grid monitoring	Spain: according to RD 1663/2000; RD 661/2007 Italy: according to DK5940 Ed. 2.2 April 2007 Germany: according to VDE0126-1-1			

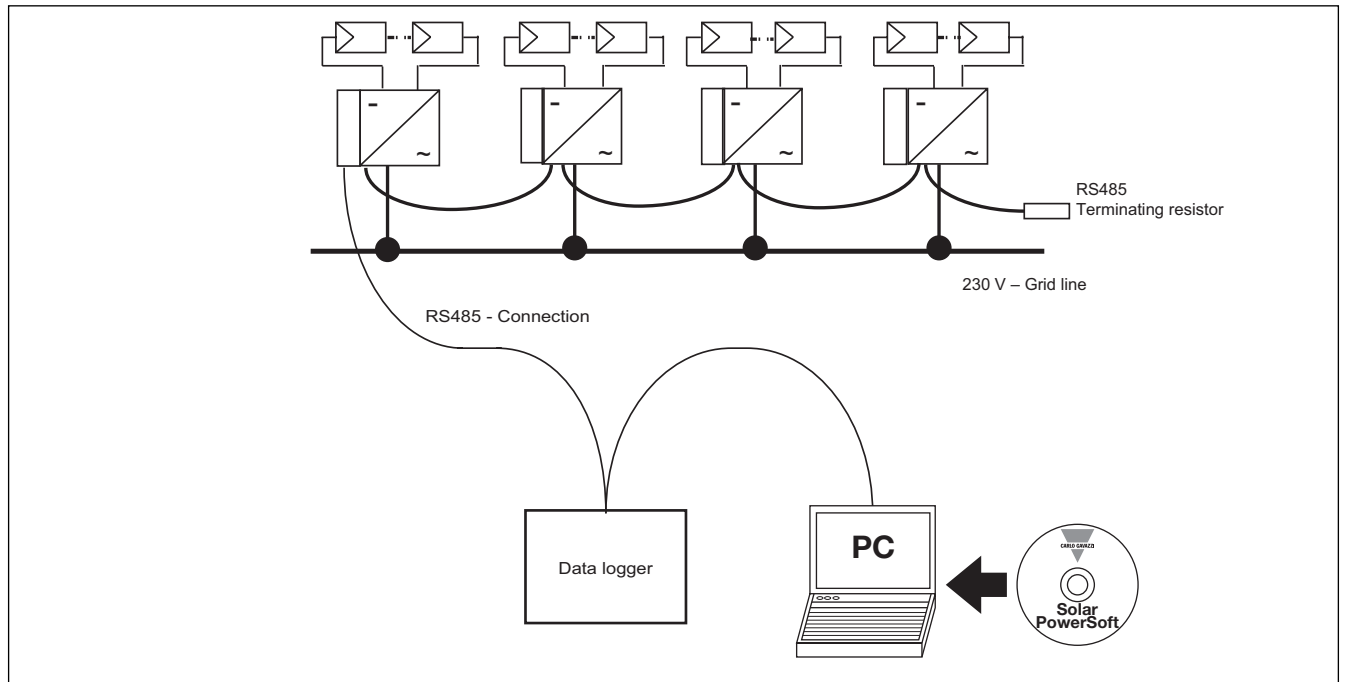
## Temperature range



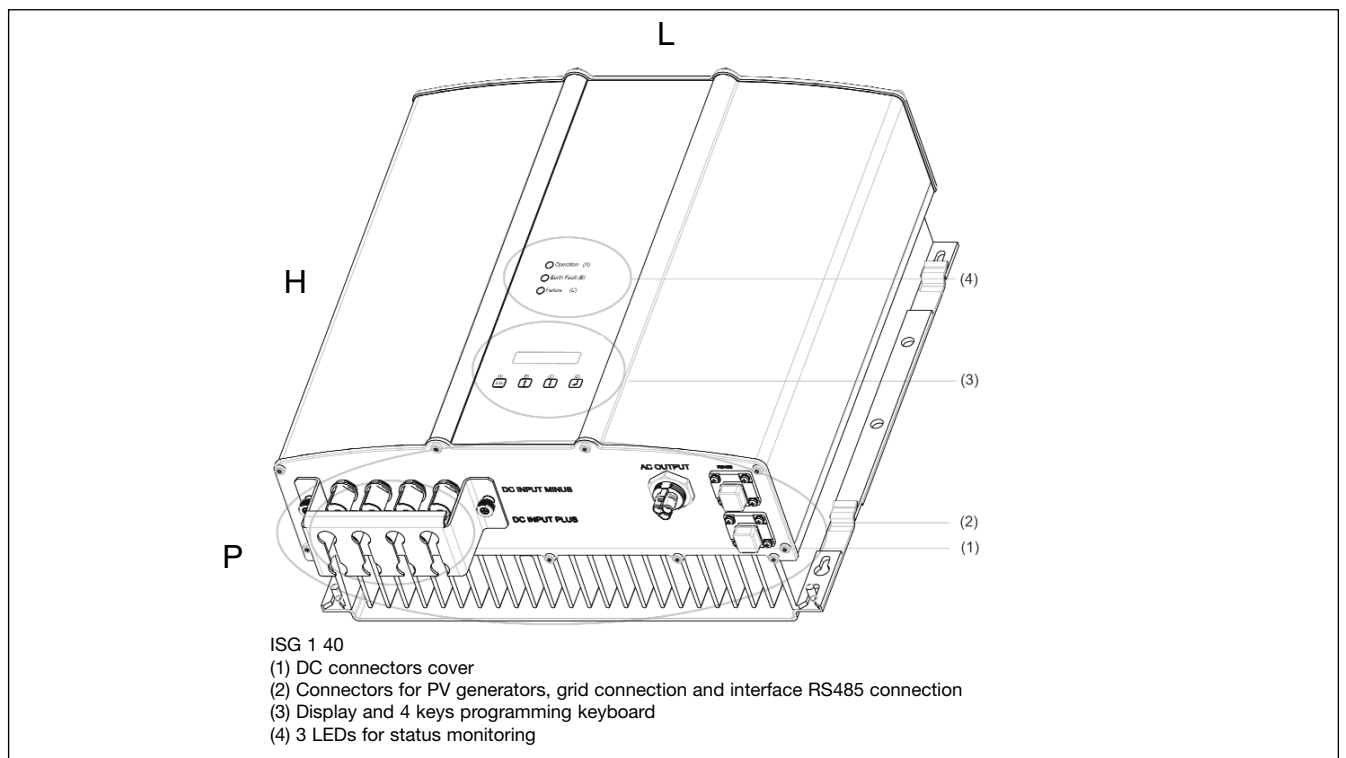
## Efficiency



## Serial communication flow-chart



## Dimensions



Model	ISG 1 24	ISG 1 31	ISG 1 40	ISG 1 60
H x W x D mm	335 x 400 x 150	335 x 443 x 150	410 x 410 x 180	510 x 410 x 180
inches	13.19" x 15.75" x 5.91"	13.19" x 17.44" x 5.91"	16.14" x 16.14" x 7.09"	20.08" x 16.14" x 7.09"

# Drilling plan mm/inches

