ISMG, ISMGT

Технические характеристики

По вопросам продаж и поддержки обращайтесь:

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Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
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Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
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Ярославль (4852)69-52-93

Россия (495)268-04-70
Киргизия (996)312-96-26-47
Казахстан (7172)727-132

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ISMG
Solar Inverter

ISMG 1 60

- **High PV input voltage range (suitable for voltage between 100 VDC to 450VDC) and efficient MPP Tracking**
- **Up to 2 / 3 independent MPP Tracking controlled by an exclusive Smart MPPT Technology**
- **Transformerless (equipped with electronical RCMU device for galvanic insulation)**
- **Integrated security and filtering system according to relevant EMC standards**
- **RS232/RS485 serial communication for local/remote control**
- **Integrated data display (2 x 16 LCD) and LEDs for monitoring of the operational status and signalling of failures**
- **Active anti-islanding protection for grid monitoring able to ensure high safety level for qualified installers and end users**
- **Integrated interface protection device for monitoring the grid according to the national standards**
- **High reliability, light weight, easy to install and start up, large cost saving**
- **IP 65 protection degree (can be installed outdoors or indoors)**

General Description

The Carlo Gavazzi ISMG 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 grid. The integrated security and monitoring system guarantees an high disturbance immunity according to relevant electromagnetic compatibility standards and enable the highest levels of efficiency. The exclusive Smart MPPT technology allows to control up to 2/3 independent strings of PV panels and it ensures the increase of energy up to 20%, thanks to the fully functional PV string control software. The maximum capacity utilization of the solar energy plant is guaranteed even in case of a misty and clouded over sky. The high input voltage range of the solar inverter enables to use PV modules from different manufacturers.
Integrated data display ensures an immediate monitoring of the inverter operational status and failure messages. The internal temperature control protects the device against too high temperatures in the interior of the solar inverter. In case of high ambient temperatures, the external cooling fans switch them on. The solar inverter is functional in grid parallel operation exclusively. The automatically-acting isolation point, guarantees secure disconnection in case of circuit isolation or interruptions in power supply and it avoids isolated operation.

Ordering Key

ISMG 1 45 EN PL3

- **Model**
- **Grid connection**
- **Max. DC power**
- **Country**
- **Nil = Standard**

Type Selection

Grid connection	
Single Phase	**1**
Rated Output Power	
2.99kW	**45 PL3**
3.8kW	**45**
4.4kW	**50**
5.1kW	**60**
Country	
EN	**Europe**
ES	**Spain**
IT	**Italy**
DE	**Germany**
FR	**France**
UK	**Great Britain**
GR	**Greece**

Approvals

CE RoHS COMPLIANT

RD 1663/2000 RD 661/2007	[1]
DK5940 Ed. 2.2 April 2007	[2]
VDE0126-1-1	[3]

Notes:
[1] Spanish Recommendation
[2] Italian Recommendation
[3] this Recommendation is currently adopted by: Germany, Austria, Belgium, France, Greece, Holland, UK (with G83 in addition), Czech Republic, Poland, Portugal

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Photovoltaic DC Input Data

Model	ISMG 1 45 PL3	ISMG 1 45	ISMG 1 50	ISMG 1 60
Nominal DC power	3.15kW	3.48kW	4.0kW	4.85kW
Max. DC power	3.6kW	4.0kW	4.64kW	5.38kW
Nominal voltage	450V			
Max. DC voltage	500V			
Min. DC voltage (P_{nom})	150V			
MPP voltage range	100...450V			
Full MPP range	300...400V			
Max. DC current per each string	10A			
DC current range per each string	0...10A			
Number of MPP trackers	1~2			1~3
Max. No. of parallel strings for MPP	2			3
Overvoltage protection	Yes			
Ground fault monitoring	Yes			
Polarity safeguard	Short circuit diode			
Surge absorption	MOV varistor			

AC Output Data

Model	ISMG 1 45 PL3	ISMG 1 45	ISMG 1 50	ISMG 1 60
Rated Output AC power	2.99kW	3.8kW	4.4kW	5.1kW (4.6kW)*
Max. AC power	2.99kW	3.8kW	4.4kW	5.1kW (5.0kW)*
Power factor	> 0.99			
Distortion factor (THD)	< 3%			
Grid connection	Single phase; True sine-wave			
AC voltage range	ES: 196...253V ($VAC_{nom.}$: 230V) - IT: 184...276V ($VAC_{nom.}$: 230V) - FR, EN, DE: 184...264V ($VAC_{nom.}$: 230V)			
AC nominal current	13A	14.34A	16.52A	20A
Max. AC current	13A	16.52A	19.13A	22A
Frequency range	ES: 49...51Hz ($f_{nom.}$: 50Hz) - IT: 49.7...50.3Hz ($f_{nom.}$: 50Hz) - FR, EN, DE: 47.5...50.2Hz ($f_{nom.}$: 50Hz)			
Safety class	I			
All Pole sensitive RCMU	Yes			

* Only for DE version according to VDEW

General Features

Model	ISMG 1 45 PL3	ISMG 1 45	ISMG 1 50	ISMG 1 60
Max. efficiency	96.3% @ 350VDC		96.3% @ 350VDC	96.2% @ 350VDC
EU efficiency	95.1% @ 350VDC		95.1% @ 350VDC	95.4% @ 350VDC
Stand-by consumption	< 10W			
Night consumption	0.5W			
Protection device	Grid monitoring system			
Anti-islanding monitoring	Yes			
Grid monitoring	Integrated interface protection (ES: according to RD 1663/2000; RD 661/2007) (IT: according to DK5940 Ed. 2.2 April 2007) (FR, EN, DE: according to VDE0126-1-1)			

Environmental Data

Model	ISMG 1 45 PL3	ISMG 1 45	ISMG 1 50	ISMG 1 60
Operating temperature @ 350VDC	-10°C...+60°C / 14°F...140°F without derating; Shut-down at 75°C/167°F		-10°C...+55°C / 14°F...131°F without derating; Shut-down at 75°C/167°F	
Max. acceptable temperature @ P_{nom}	+55°C / 131°F			
Storage temperature	-25°C...+80°C / -13°F..176°F			
Humidity	0...95% (without condensation)			
Temperature control	Automatic temperature control by software			
Cooling	Forced ventilation (2 x IP54 external fans)			
Protection degree	IP 65 (according to DIN EN60529)			
Installation location	Outdoor / Indoor			
Noise level	< 40dB			

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Mechanical Data

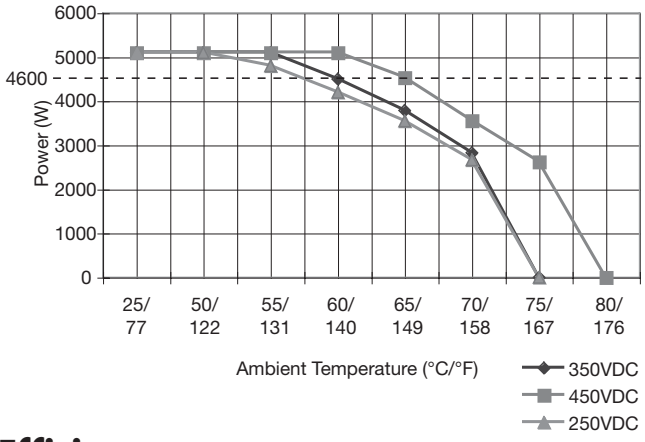
Model	ISMG 1 45 PL3	ISMG 1 45	ISMG 1 50	ISMG 1 60
User interface	2 x 16 LCD Data display and 3 monitoring LEDs			
AC connectors	1 x Wieland			
DC connectors	2 x 2 Multicontact (MC4 series)			3 x 2 Multicontact (MC4 series)
Serial interface connectors	2 x RJ45			
Housing material	Powder coated aluminium			
Weight	22.5kg/49.60lb			23.0kg/50.70lb

Standard Norms and Certifications

Model	ISMG 1 45 PL3	ISMG 1 45	ISMG 1 50	ISMG 1 60
Safety Standard	EN50178			
EMC capability	EN61000-3-2, EN61000-3-3 EN61000-3-11, EN61000-3-12 EN61000-6-2, EN61000-6-3			
Grid monitoring	ES: according to RD 1663/2000; RD 661/2007 IT: according to DK5940 Ed. 2.2 April 2007 FR, EN, DE: according to VDE0126-1-1			

Temperature range

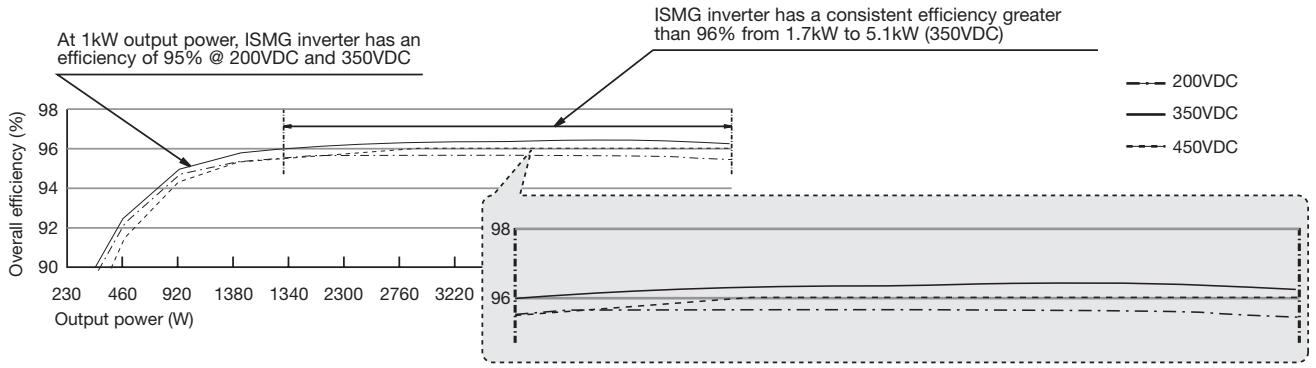
ISMG 1 60 Derating curve



Cooling FAN controll

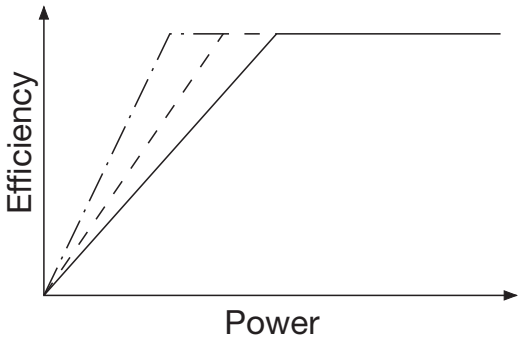
Command	Heat-sink temperature (°C/°F)
FAN start	50/122
FAN stop	45/113
Derating temperature	72/161.6
Inverter shut-down temperature	80/176

Efficiency



Model	ISMG 1 45 PL3	ISMG 1 45	ISMG 1 50	ISMG 1 60
Efficiency 5% P_{nom}	84.42%	84.42%	85.70%	87.65%
Efficiency 10% P_{nom}	91.19%	91.19%	90.94%	92.04%
Efficiency 20% P_{nom}	94.27%	94.27%	94.43%	94.86%
Efficiency 30% P_{nom}	95.37%	95.37%	95.36%	95.62%
Efficiency 50% P_{nom}	96.04%	96.04%	95.58%	96.11%
Efficiency 100% P_{nom}	96.28%	96.28%	96.07%	96.10%

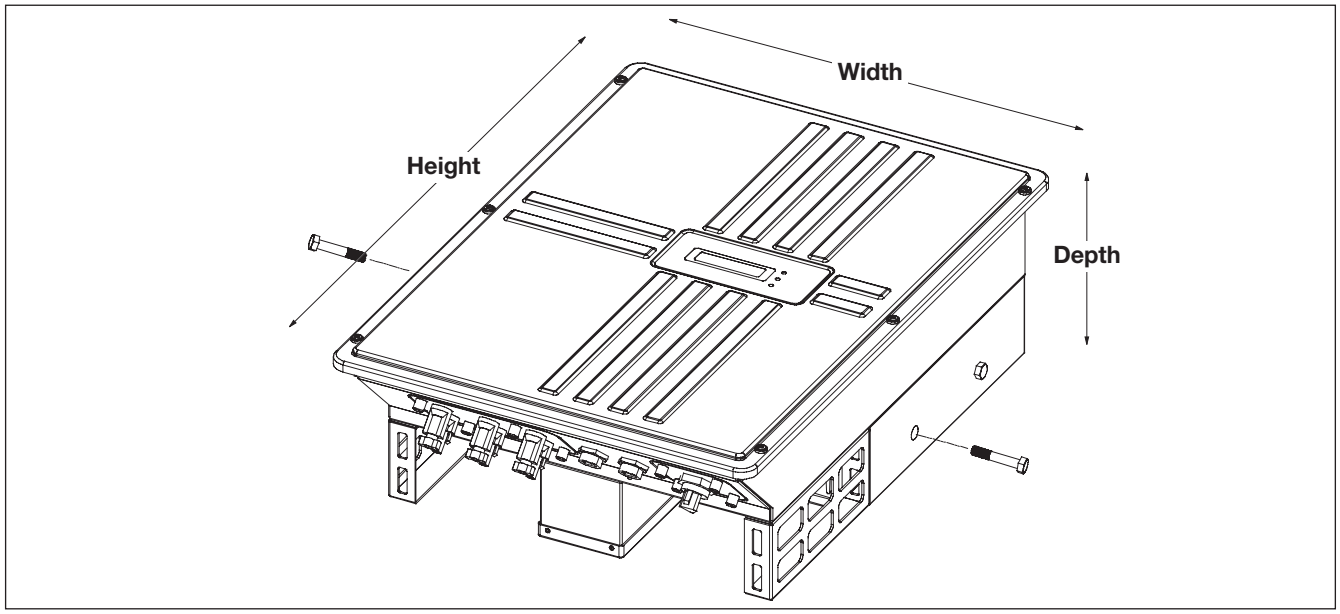
Multiple/Single Panel String mode



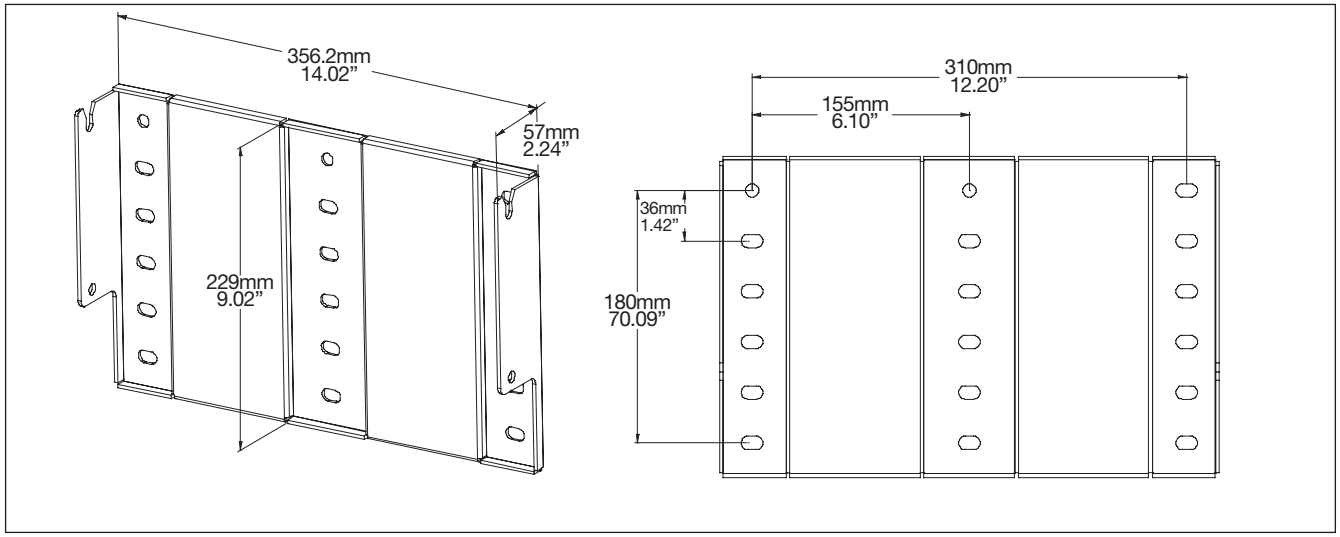
Multiple/Indipendent mode (String A + String B, String C)
Indipendent mode (String A, String B, String C)
Multiple mode (String A + String B + String C)

Dimensions

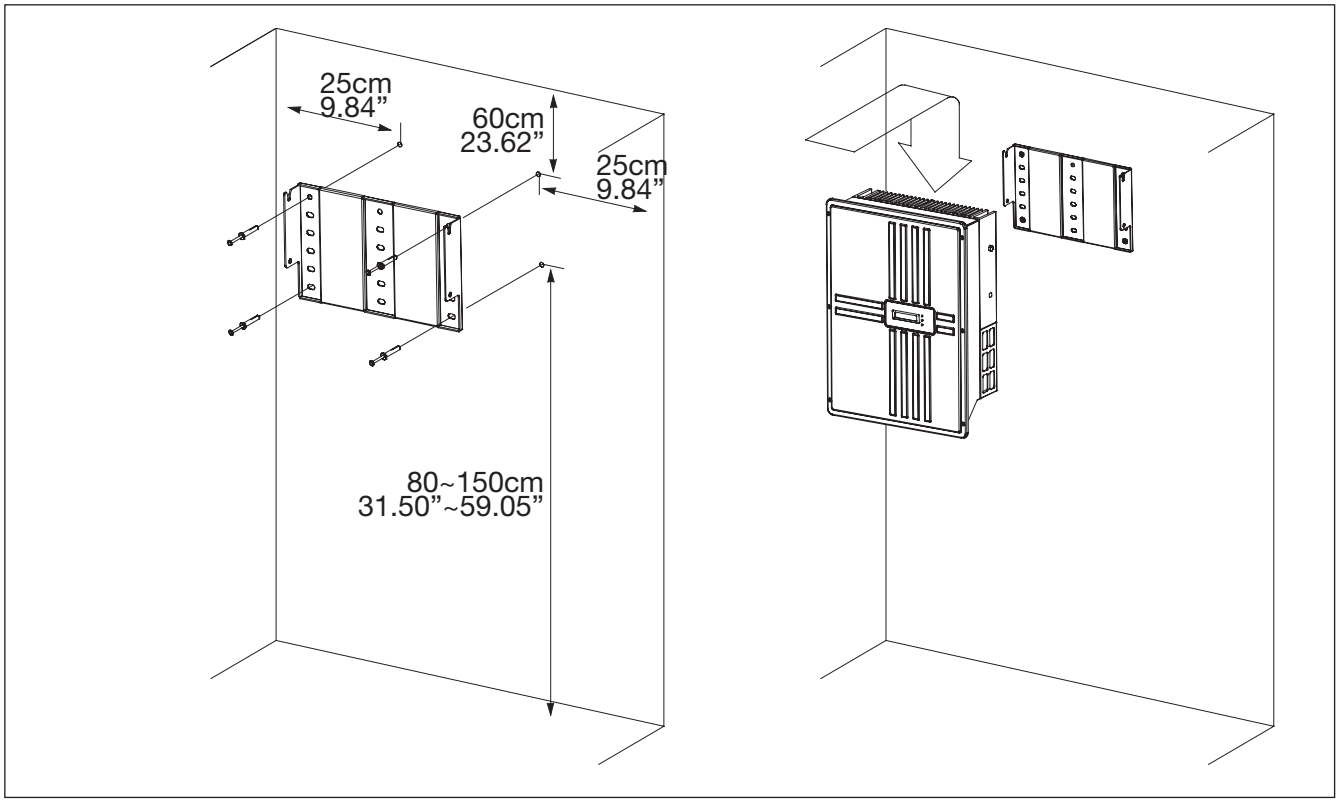
Model	ISMG 1 45 PL3	ISMG 1 45	ISMG 1 50	ISMG 1 60
H x W x D mm inches	580 x 422 x 182 (+6.5 mounting support) 22.83” x 16.61” x 7.17” (+0.26” mounting support)			

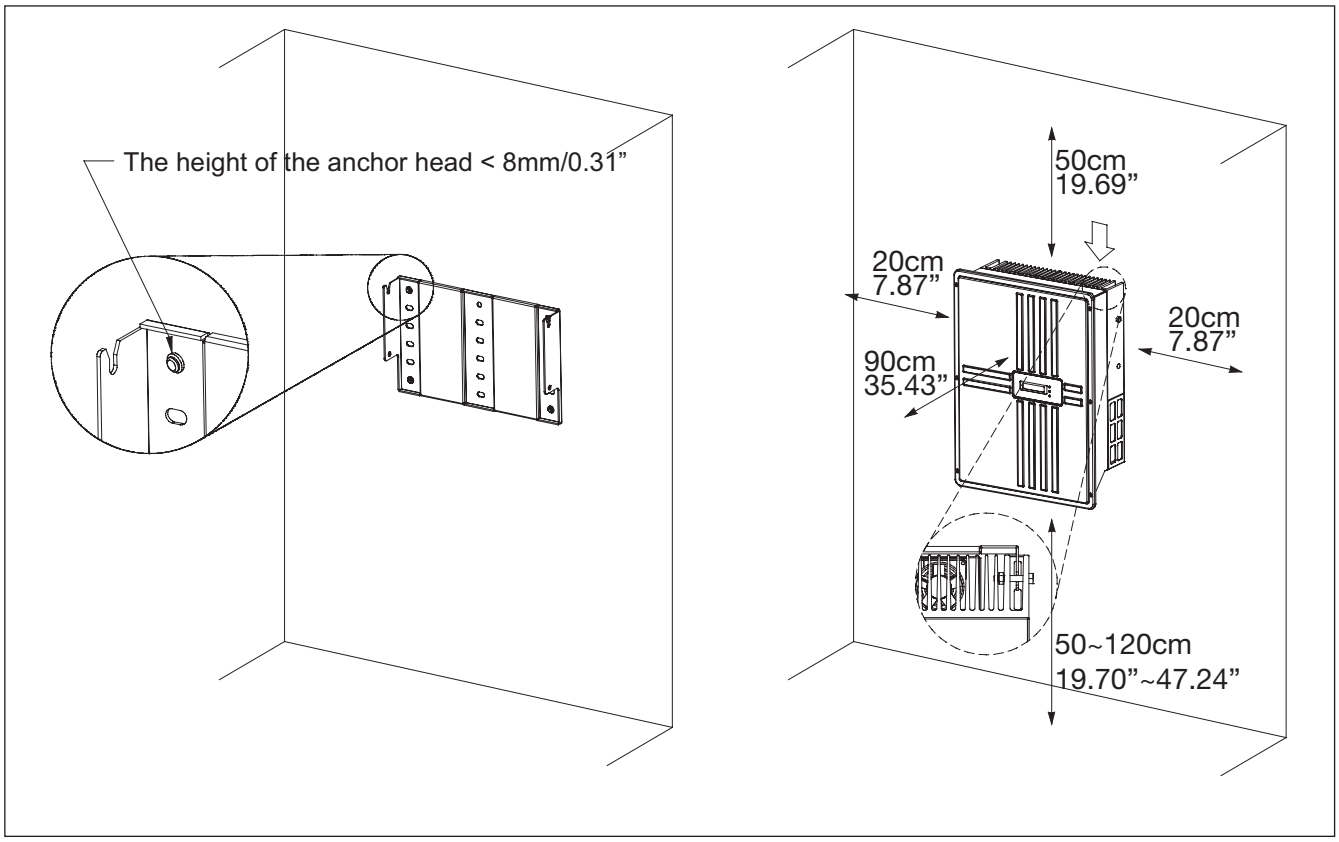


Mounting Plate

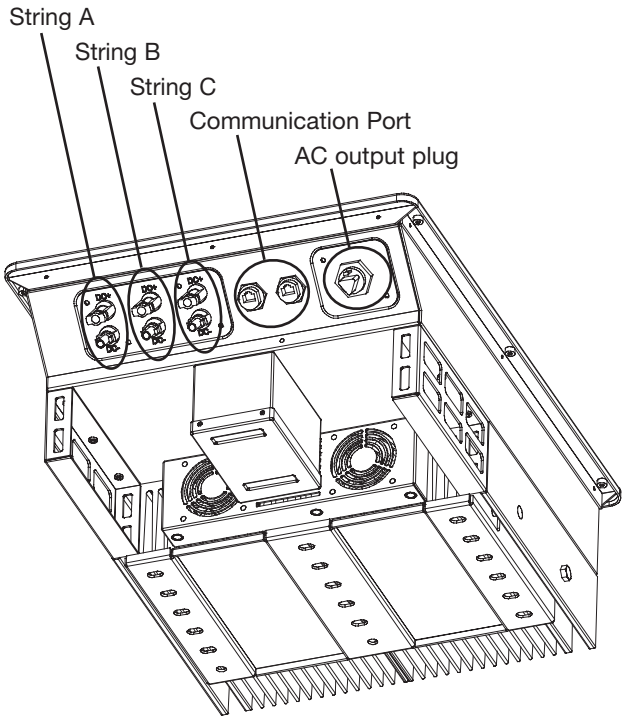


Drilling Plan (mm/inches)

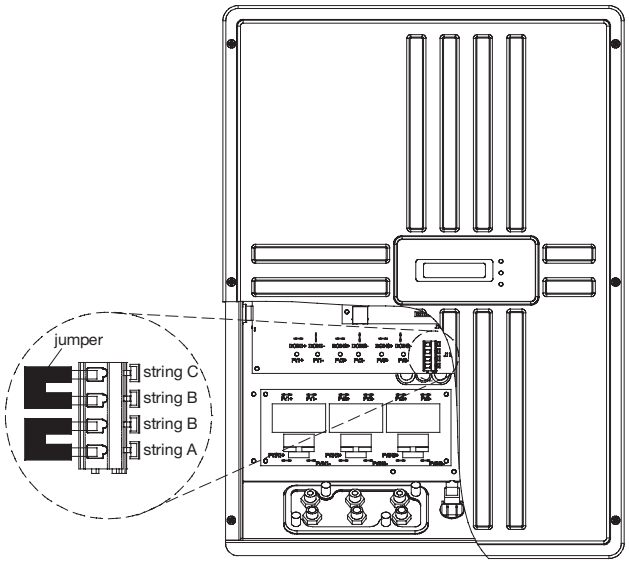




Connectors



Smart MPPTs Configuration

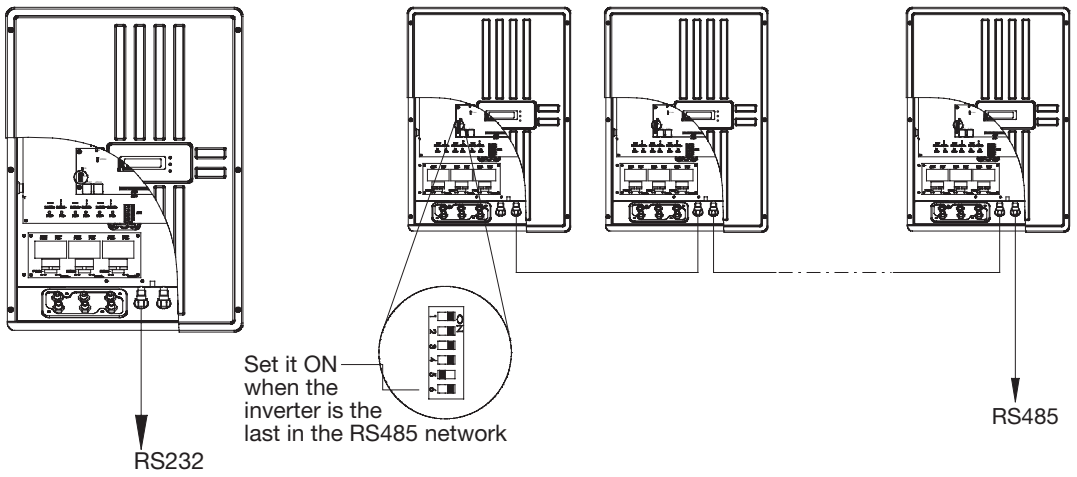


• Connect the jumpers between “String A” and “String B” makes String A and B in parallel.
• Connect the jumpers between “String A” and “String B” as well as “String B” and “String C” makes the all 3 strings in parallel.

Serial Communication RS232 / RS485

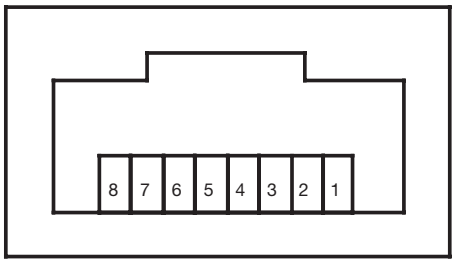
RS232 Serial Communication

RS485 Serial Communication



Serial Communication Pin View

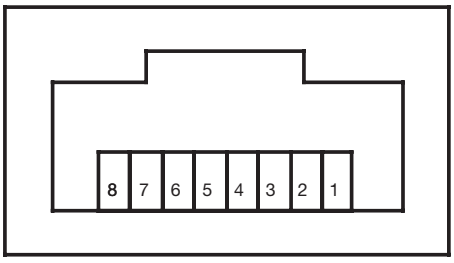
RJ45 - Left port



Top view

Pin	
1	TXD (RS232)
2	RXD (RS232)
3	Not used
4	GND
5	GND
6	Not used
7	TXA (RS485)
8	RXB (RS485)

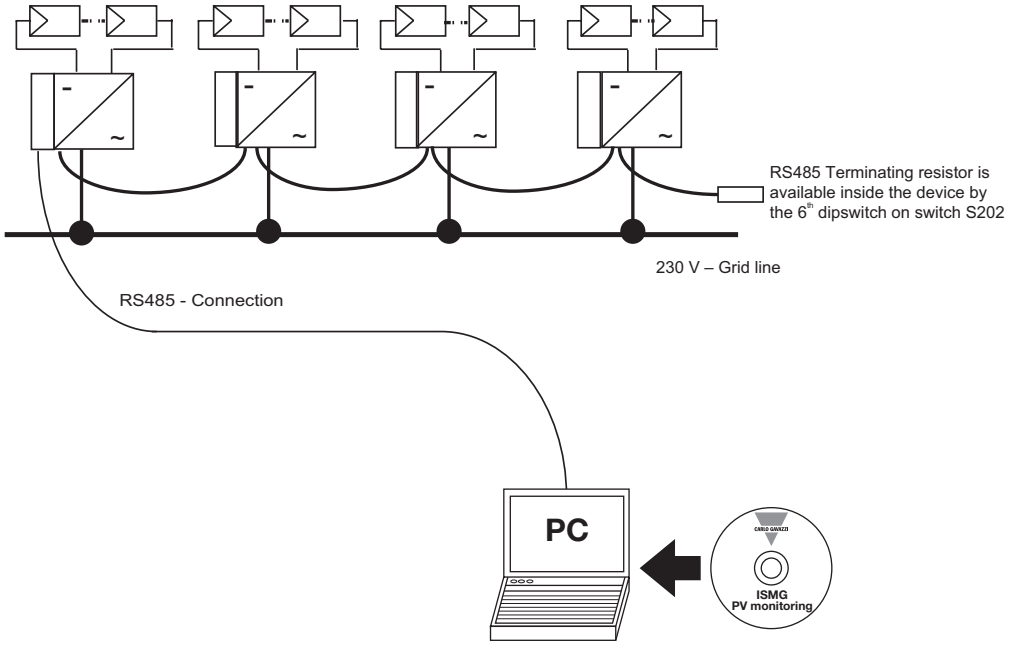
RJ45 - Right port



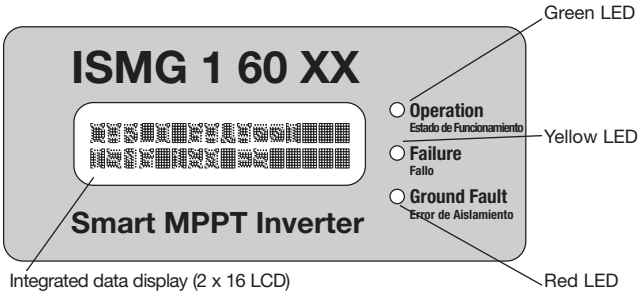
Top view

Pin	
1	Not used
2	Not used
3	Not used
4	GND
5	GND
6	Not used
7	TXA (RS485)
8	RXB (RS485)

Serial Communication Flow-chart



Display and LEDs



Inverter Software Tools

Monitoring system software	ISMG PV monitoring
PV panel configurator	Carlo Gavazzi PV Generator Design
Auto-test software	ISMG Smart MPPT Inverter Auto Test (available only for Italian Market, according to DK5940 Ed. 2.2 April 2007)

ISMGT1
Solar Inverter with HF Transformer

CARLO GAVAZZI

ISMGT1

- High Frequency Coupling Transformer
- 3 or 4 Connectable Strings
- 100% Power up to 55°C
- Connectable to Single Phase Grid Without Neutral (PE)
- Integrated AC and DC Disconnection Switch
- Replaceable ground fuse
- Built in Communication
- Remote Monitoring SW
- 5+5 Year Warranty
- National Recommendations
  According to VDE0126, RD1663/2000, RD 661/2007, DK5940, G83

General Description

ISMGT1 Series Inverters are equipped with internal HF Transformer. The main advantage of this feature is that they can be used with "thin film" PV cells, which normally have positive ground polarisation. The Smart MPPT Technology provides high efficiency, up to 95,8% even at 20% of rated power. It is equipped with built-in switch in order to easily disconnect the DC input, and the inverter from the grid, in case of emergency or when service to system is required. The interface protection with anti-islanding can be set according to mayor european reccomendations, or with custom settings. Built in serial communication, RS232/RS485, with modbus protocol, together with Carlo GAVAZZI free monitoring software offer the possibility of controlling the production, and log data from remote. The inverter is equipped with up to 4 DC inputs in order to enhance flexibility during installation. The external fuse helder for ground fusing. ISMGT1 inverters can also feed phase/phase (without neutral) grids providing the VAC is within specified limits.

Ordering Key

ISMGT 1 28 DEN

- Model
- Grid connection
- Max. AC power
- Options
- Country

Options:
D = Switch (Standard Model)

Type Selection

Grid connection	
1	**Single Phase**
Max. AC power	
28	**2.8kW**
38	**3.8kW**
40	**4.0kW**
50	**5.0kW**
Country	
EN	**Europe**
ES	**Spain**
IT	**Italy**
DE	**Germany**
FR	**France**
UK	**Great Britain**

Approvals

CE RoHS COMPLIANT

RD 1663/2000 RD 661/2007 [1]

DK5940 Ed. 2.2 April 2007 [2]

G.83 [4]

VDE0126-1-1 [3]

Notes:
(1) Spanish Recommendation
(2) Italian Recommendation
(3) This Recommendation is currently adopted by: Germany, Austria, Belgium, France, Greece, Holland, Czech Republic, Poland, Portugal
(4) UK Recommendation

CARLO GAVAZZI

Photovoltaic DC Input Data

Model	ISMGT 128	ISMGT 138	ISMGT 140	ISMGT 150
Nominal DC power	3.0kW	4.0kW	4.2kW	5.2kW
Max. DC power	3.1kW	4.1kW	4.3kW	5.3kW
Nominal voltage	550VDC			
Max. DC voltage	600VDC			
Min. DC voltage (P_{nom})	235VDC			
MPP voltage range	200-550VDC			
Max. DC current per each string	15A			
DC current range per each string	0 ÷ 15A			
Number of MPP trackers	1			
Max. No. of parallel strings for MPP	3	4		
Overvoltage protection	Yes			
Ground fault monitoring	Yes, with led indication			
Polarity safeguard	Diode + transformer insulation			
Surge absorption	Mov Varistor			

AC Output Data

Model	ISMGT 128	ISMGT 138	ISMGT 140	ISMGT 150
Nominal AC power	2.8kW	3.8kW	4.0kW	5.0kW
Max. AC power	2.8kW	3.8kW	4.0kW	5.0kW
Power factor	> 0.99 @ nominal power			
Distortion factor (THD)	< 3%			
Grid connection	Single phase, 230VAC			
AC voltage range	Depending upon setting 230VAC nominal			
AC nominal current	12.2A	16.6A	17.4A	21.8A
Max. AC current	12.2A	16.6A	17.4A	21.8A
Frequency range	Depending upon setting 50Hz Nominal			
Safety class	I			

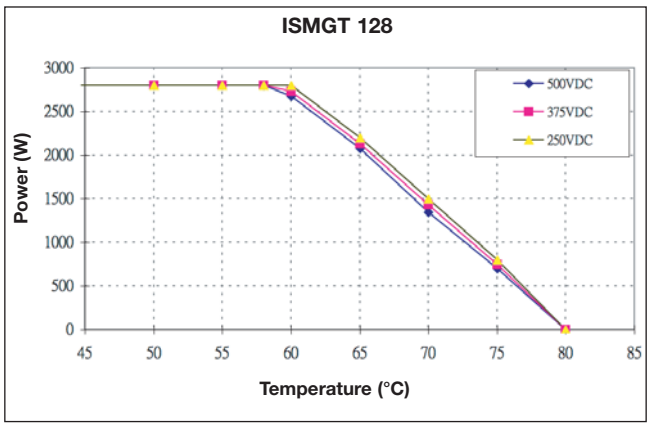
General Features

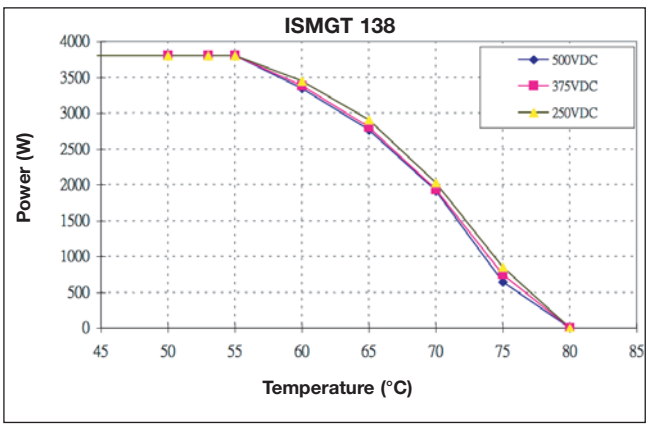
Model	ISMGT 128	ISMGT 138	ISMGT 140	ISMGT 150
Max. efficiency	96.4%		96.5%	
EU efficiency	95.4%	95.7%	95.8%	
Stand-by consumption				
Night consumption	0.5W			
Protection device	Grid monitoring system			
Anti-islanding monitoring	Yes			
Grid monitoring	Integrated interface protection (ES: according to RD 1663/2000; RD 661/2007) (IT: according to DK5940 Ed. 2.2 April 2007) (FR, EN, DE: according to VDE0126-1-1) (UK Recommendation G.83)			

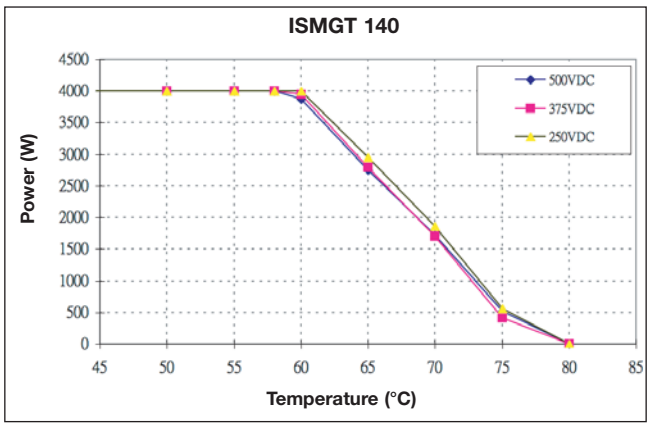
Environmental Data

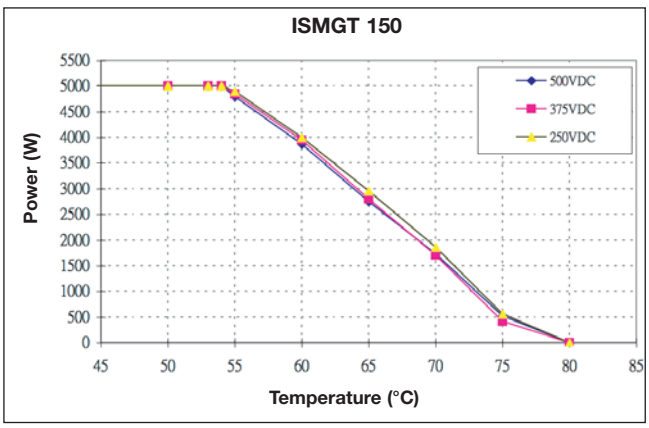
Model	ISMGT 128	ISMGT 138	ISMGT 140	ISMGT 150
Operating temperature range	-25°C...+65°C / -13°F..149°F			
Max. full power operating temperature without derating	+58°C / 136°F	+55°C / 131°F	+58°C / 136°F	+54°C / 129°F
Humidity	Max. 95%			
Temperature control	Automatic controlled by software			
Cooling	Convection	Controlled forced ventilation		
Protection degree	IP44			
Installation location	Indoor / Outdoor protected			

Derating

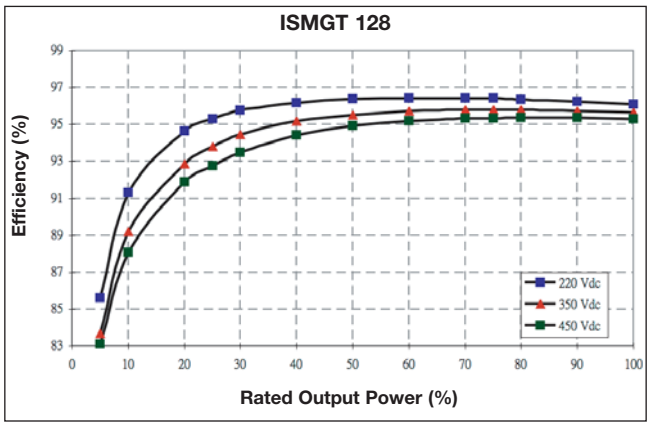


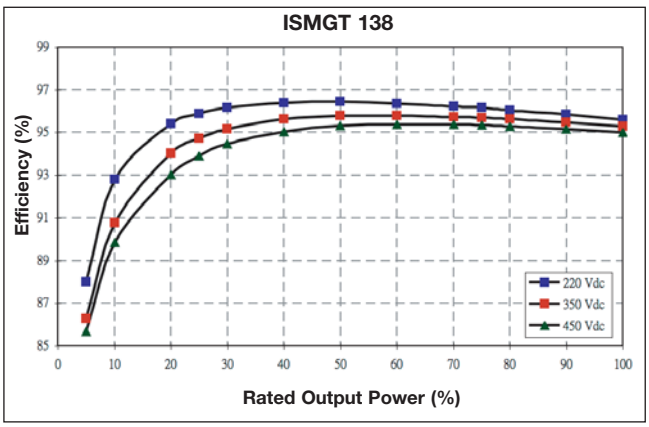


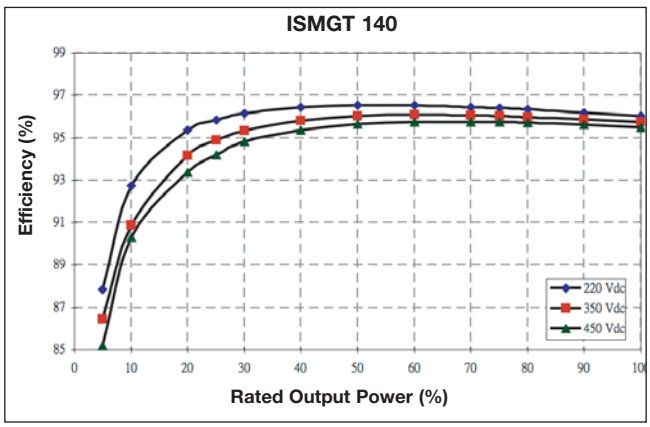


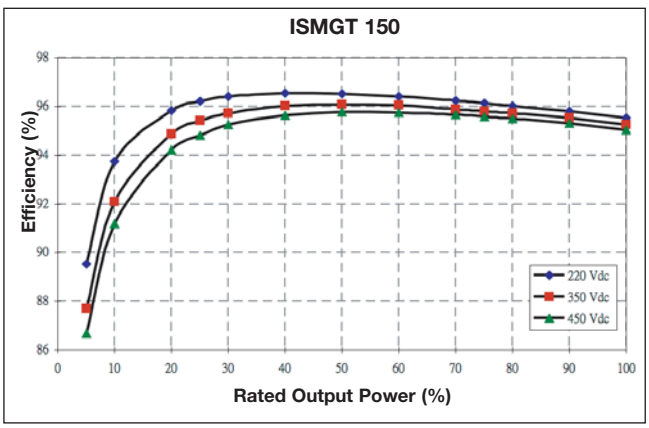


Efficiency







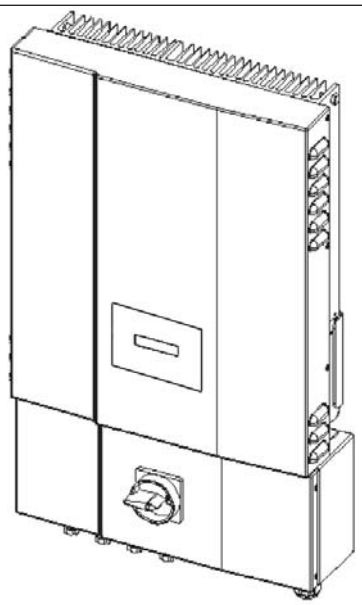


Mechanical Data

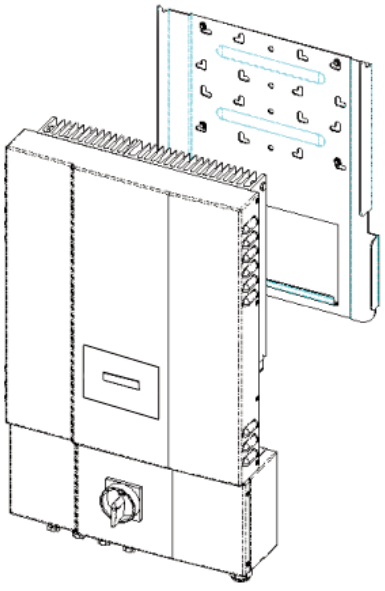
Model	ISMGT 128	ISMGT 138	ISMGT 140	ISMGT 150
Inverter Weight	23kg		28kg	
Shipping Weight	27kg		32kg	

Dimensions

Model	ISMGT 128	ISMGT 138	ISMGT 140	ISMGT 150
Inverter H x W x D mm inches	768x454x175 (+6.5 mounting supp.) 30.2”x17.9”x6.9” (+0.26” mounting supp.)		768x454x210 (+6.5 mounting supp.) 30.2”x17.9”x8.3” (+0.26” mounting supp.)	
Shipping H x W x D mm inches	840.5x540x275 (+6.5 mounting supp.) 33”x21.2”x10.8” (+0.26” mounting supp.)		840.5x548x275 (+6.5 mounting supp.) 33”x21.5”x12” (+0.26” mounting supp.)	



Mounting Plate



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