



INVERTER FOR PHOTOVOLTAIC PLANTS

SOLARGATE5000



An Ansaldo Sistemi Industriali S.p.A. Company



SOLARGATE conversion.



Energy moves the world. Power moves the community.

The demand for energy is increasing throughout the world.

Power must be given alternative values: environmental compatibility, renewable energy sources, future sustainability.

Solargate converts the direct current generated by photovoltaic panels into alternating current.

Solargate injects the right quality and quantity of power into the grid system needed to satisfy demands from industry and community.

SOLARGATE Inverter.

Introduction.

Answer Drives studied the Solargate inverter family for large-scale grid-connected photovoltaic power plants.

The Solargate inverter family was designed and developed for installation in:

- photovoltaic power plants distributing power for the grid system
- industries equipped with a photovoltaic plant to produce power using the system of on-the-spot trading with the grid system.

The Solargate inverter family comprises 4 classes of inverters. Each Solargate inverter class is subdivided into 2 versions.

Classes.

Solargate inverters are divided into 4 classes by the voltage range, by the maximum voltage of photovoltaic field and by the grid connection voltage.

Class	Voltage range	Maximum voltage	Output voltage
	MPPT	$U_{DC} \text{ max}^*$	AC (U_{ac}) Trifase
PV5	200 - 400Vdc	800V	125V
PV7	320 - 630Vdc	800V	202V
PV8	430 - 760Vdc	900V	270V
PV9	540 - 950Vdc	1100V	337V

* must not exceed

Versions.

Each Solargate inverter class is available in two versions depending on the destination: the grid voltage where the power produced by the inverter is injected.

Version L	Net-metering	Low voltage	400V
Version M	Commercial	Medium voltage	15/20KV

Plus.

Reliability.

Answer Drives offers its experience in producing inverters for heavy industrial applications. Solargate technology guarantees high MTBF levels for the Energy Account to work continually over the years.

Efficiency.

The Solargate inverter is designed to guarantee maximum conversion of the power from the photovoltaic generator and ensure rapid returns on investments.

Complete solution.

Solargate is a complete product. Answer Drives is able to supply all the technology in support of the Solargate inverter. The Solargate system can be assembled with:

- Inverter Solargate
- String box with sensors and weather station data logs
- Transformers
- Cabins and containers with medium voltage cells
- Complete remote control system for the plant

Technical details.

Voltage ripple CC	$U_{pp} < 3\%$
Input overvoltage protection	Integrated
Maximum efficiency	0,98
Grid frequency	Hz 50/60
AC current distortion	$THD_{Lca} < 3\%$
Power factor	$\cos\varphi \geq 0,99 @Pac$
Overvoltage protection AC EN 60529 side	optional
Protection degree	IP33 standard (IP43 opzionale)
Operating temperature	$-10 \div +40^\circ\text{C}$ $T > 40^\circ\text{C}$ (derating by 1% per $^\circ\text{C}$, max 50°C)
Altitude above sea level	-Up to 1000 m. (Over 1000 m derating 1% for every 100 m, max 3000 m)
Relative humidity	$< 95\%$ (without condensation)
User interface	Backlit graphic display, 3 led, 20 keys
EMC certification	EN61000-6-3, EN61000-6-4
CE conformity	Yes
Grid-connection	CEI 0-16; Real Decreto RD1663/2000
Grounding kit	optional

Vdc 490V	Efficiency															
	PV7M027	PV7L033	PV7L041	PV7M052		PV7M066	PV7M076	PV7M090	PV7M100	PV7M130	PV7M150	PV7M180 PV7M360	PV7M220 PV7M430	PV7M260 PV7M520	PV7M290 PV7M580	
PV7M SOLARGATE Inverter.	η	η	η	η		η	η	η	η	η	η	η	η	η	η	η
	94,84%	95,05%	94,85%	95,05%		95,07%	94,88%	95,03%	95,22%	94,87%	94,88%	94,89%	95,36%	95,40%	95,64%	
	97,30%	97,31%	97,24%	97,31%		97,33%	97,27%	97,33%	97,35%	96,76%	96,75%	96,77%	97,32%	97,32%	97,50%	
Inverter and Clean Powder efficiency measured at 490Vdc without control loss.	97,68%	97,68%	97,68%	97,64%		97,70%	97,71%	97,70%	97,71%	97,03%	96,99%	97,02%	97,63%	97,61%	97,77%	
	97,79%	97,79%	97,80%	97,74%		97,80%	97,82%	97,81%	97,80%	97,07%	97,00%	97,03%	97,70%	97,66%	97,81%	
Efficiency of transformer supplied by Answer Drives at rated power > = 99%.	97,81%	97,77%	97,80%	97,73%		97,77%	97,84%	97,80%	97,76%	96,98%	96,88%	96,92%	97,68%	97,61%	97,74%	
	97,18%	97,20%	97,17%	97,18%		97,23%	97,21%	97,22%	97,24%	96,62%	96,58%	96,61%	97,21%	97,22%	97,36%	

Vdc 650V	Efficiency															
	PV8M037	PV8M043	PV8M054	PV8M070		PV8M090	PV8M100	PV8M120	PV8M140	PV8M170	PV8M205	PV8M240 PV8M480	PV8M290 PV8M580	PV8M350 PV8M700	PV8M390 PV8M770	
PV8M SOLARGATE Inverter.	η	η	η	η		η	η	η	η	η	η	η	η	η	η	η
	95,04%	95,22%	95,03%	95,22%		95,24%	95,09%	95,21%	95,29%	95,11%	95,16%	95,21%	95,55%	95,00%	95,82%	
	97,43%	97,54%	97,45%	97,52%		97,55%	97,48%	97,52%	97,37%	97,10%	97,08%	97,10%	97,53%	97,54%	97,72%	
Inverter and Clean Powder efficiency measured at 650Vdc without control loss.	97,89%	97,91%	97,90%	97,90%		97,93%	97,91%	97,93%	97,92%	97,39%	97,37%	97,38%	97,87%	97,85%	98,02%	
	98,01%	98,02%	98,02%	97,99%		98,03%	98,05%	98,05%	98,03%	97,46%	97,41%	97,43%	97,96%	97,93%	98,08%	
Efficiency of transformer supplied by Answer Drives at rated power > = 99%.	98,08%	98,04%	98,04%	98,00%		98,04%	98,09%	98,06%	98,04%	97,42%	97,35%	97,36%	97,96%	97,91%	98,05%	
	97,39%	97,43%	97,37%	97,42%		97,45%	97,41%	97,44%	97,44%	96,83%	96,96%	96,97%	97,45%	97,40%	97,62%	

Vdc 812V	Efficiency															
	PV9M060	PV9M075	PV9M100	PV9M120			PV9M160	PV9M190	PV9M230	PV9M280	PV9M310	PV9M380	PV9M470	PV9M560	PV9M620	
PV9M SOLARGATE Inverter.	η	η	η	η			η	η	η	η	η	η	η	η	η	η
	93,57%	93,94%	94,24%	94,50%			94,50%	94,69%	93,70%	93,93%	93,49%	94,69%	93,70%	93,93%	93,49%	
	96,35%	96,46%	96,55%	96,60%			96,60%	96,75%	96,41%	96,48%	96,70%	96,75%	96,41%	96,48%	96,70%	
Inverter and Clean Powder efficiency measured at 812Vdc without control loss.	96,88%	96,91%	96,95%	96,93%			96,93%	97,07%	96,89%	96,92%	97,31%	97,07%	96,89%	96,92%	97,31%	
	97,05%	97,07%	97,07%	97,00%			97,00%	97,13%	97,05%	97,05%	97,53%	97,13%	97,05%	97,05%	97,53%	
Efficiency of transformer supplied by Answer Drives at rated power > = 99%.	97,14%	97,13%	97,08%	96,95%			96,95%	97,09%	97,09%	97,06%	97,63%	97,09%	97,09%	97,06%	97,63%	
	96,31%	96,39%	96,46%	96,48%			96,48%	96,63%	96,33%	96,39%	96,65%	96,63%	96,33%	96,39%	96,65%	

SOLARGATE MultiPower Inverter.

Answer Drives designed a modular version of the Solargate inverter. MultiPower is configured with independent conversion units to be able to personalize the photovoltaic plant, rendering its performance more flexible.



Solargate
MultiPower
Inverter.

Plus.

- Minimized power loss if a module breaks down.
- Increased production should the photovoltaic field become partly shaded.
- Possibility for each single MPPT to use different modules.
- Saving on maintenance costs thanks to installing one single kit of converter spares.

Technical details.

- Each module is equipped with its own MPPT to maximize the produced voltage.
- Module configuration based on size of plant and number of panels.
- Standard configuration: modules from 50kW AC to 100kW AC.
- Rapid module installation and removal.

PV voltage range	U _{DC} 320-630/430-760/540-950Vdc	
Maximum DC voltage	U _{DC} '' max 800/900/1100V	
DC voltage ripple	U _{PP} < 3%	
Input overvoltage protection	Yes integrated	
Efficiency	0,98	
Grid frequency	Hz 50/60	
AC current distorsion	THD _{Lca} < 3%	
Power factor	cosφ ≥ 0,99 @Pac	
Overvoltage protection CA side	Optional	
Degree of protection	EN 60529 IP23	
Service temperature	-10 ÷ +40°C > 40°C derating by 1% per °C max 50°C)	
Relative humidity	< 95% (without condensation)	
User interface	Backlit graphic display, 3 led, 20 keys	
Certification	Low voltage Directive	2006/95
	EMC	CEM CEE 93/31 EN61000-6-3, EN61000-6-4
	Grid-connection	CEI 0-16

Configuration examples.

		Output data			Input data		
		Rated current	Rated power	Maximum power	Rated current	Rated Power	Recommended maximum power
Size	Drive	I _{ac}	P _{ac}	P _{m_{ac}}	I _{dc}	P _{dc}	P _{PV}
PVMP7M082NN	2xGT066FEP	192	66	72	202	68	82
PVMP8M405NN	3xGT066FEP	720	336	369	756	345	405
PVMP9M1K1NN	4xGT480KEP	1600	932	1028	1680	956	1128

Custom Configuration on request with several inverter sizes.

String control box.

A number of strings may be connected in parallel with the string controlled distribution box. The box is in polycarbonate resistant to UV rays. The box is available for 8 and 16 string models.

Plus.

- Monitoring and string fault detection.
- Inverter protected from input overvoltages.
- Faulty strings isolated from the entire photovoltaic field.
- Fuses both on negative and positive side.
- Easier maintenance by the output.
- Multicontact

Technical details.

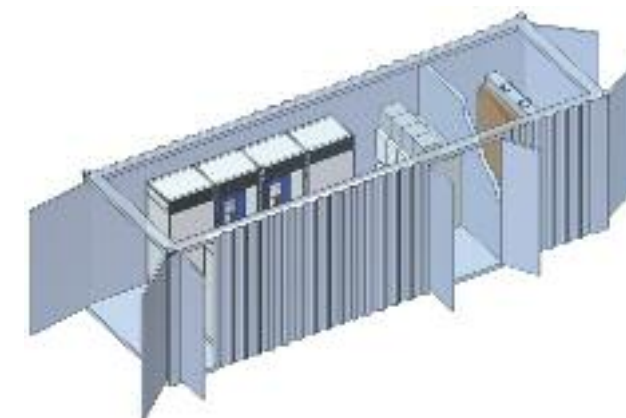
String fuses	10A (900/1000V _{DC})
Max. input current. (IPV, max)	8A (>8A on request)
String cable sections	1,5 - 10 mm ²
Maximum output cable section	up to 2x35 -120 mm ²
Earth cable section	25 - 35 mm ²
Anti-reverse current diodes	optional
Powewr Supply	55V _{DC} (-15, +30) 750mA
Status of surge arrester (output contact)	NC [1,5 mm ²]
Circuit breaker status contact output	NC [1,5 mm ²]
Multi-contact connectors	standard (doubled optional)
DC overvoltage protection (surge arresters)	yes
Protection degree	IP 65
Operating temperature	- 25°C +50°C
Relative humidity from	from 0 to 95%
Altitude	1000 m above sea level
Anti-theft alarm	optional
Data communication	Modbus RTU
Digital and Analog Input	0÷10V/4-20mA/PT100/programmable

Configurations: with section switch and Multi-Contact connectors.

Size	Number of string (parallel)	PV voltage range	Max voltage (U _{cc} , max)	Output current max. (OPV, max)	Dimensions (mm)		
					L	A	P
PVS 7S 08NN	8	0-740 V	740 V	64 A	920	388	202
PVS 7S 16NN	16	0-740 V	740 V	128 A	1523	388	202
PVS 9S 08NN	8	0-950 V	1000 V	64 A	920	388	202
PVS 9S 16NN	16	0-950 V	1000 V	128 A	1523	388	202

Containers and constructions.

Answer Drives supplies standard containers and constructions at request, to reduce Solargate inverter installation and activation time. Answer Drives can supply cabins up to 2MW. The cabins comprise the inverter, medium voltage transformer and cell.



3-dimension technical drawing of container.



Technical details.

Monobloc prefabricated electrical cabins

MV/LV electrical board compartment
Lighting system with switches and sockets
Internal earthing system made with copper earth strap
Ventilation grids

Container to install electrical boards

Double doors on short side and two doors at the side for access to the medium voltage and transformer electrical board (doors with a panic big handle)

Air cooling intakes with sand trap lourves

Power supply lines connected by customer to electrical board:
- 400Vac +N for supply of conditioning system
- 230Vac (light socket and lighting)

Insulated wall sandwich panels

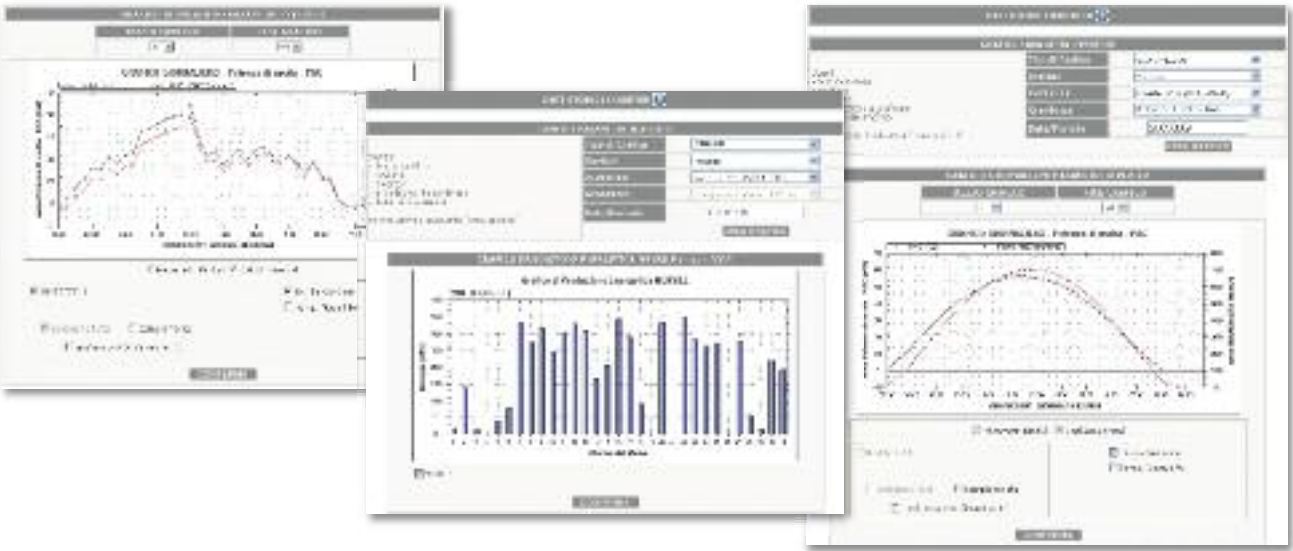
Mixed mode cooling system (conditioning or free-cooling) of low voltage room

Air forced cooling system in transformer room

Low voltage room with floating floor, platform for transformer installation

ADLog remote control.

ADLog is a terminal operator with data logging functions.
ADLog is designed to control medium to large sized photovoltaic power plants.
ADLog acquires data, analyzes results and diagnoses linked devices.
ADLog is also available in IP65 version.



- Plus.**
- Acquires data from analog sensors.
 - Connection to the plant inverter network and to that of the string boxes.
 - Digital/analog output control for alarm signals or external devices management.
 - Number of entrances/exits and communicating doors satisfying the plants' requirements.

Technical details.

- Multidrop control (RS485) collecting information on status and production of each inverter.
- Multidrop control (RS485) local string connector boxes, acquiring process variables (voltage and current) and service condition.
- Plant information visualized on large sized LCD graphic display.
- Browsing and accessibility to data with keyboard with 12 keys, plus 4 configurable function keys.
- Plant monitoring with alarms from inverter or string control circuit boards.
- Controlled external equipment and analog/digital probes.
- Local connection to plant network through Ethernet 10/1000 Mbps portal.
- Remote connection through GSM/GPRS to send plant data to remote control system.
- Email and SMS message transmission.
- Internal Web Server, HTML pages, browsing from PC with an Internet browser for information on the plant's service conditions and status of the inverter.

Configuration.

Digital Opto-Isolated inputs	8 (places for calculation up to 100 KHz)
Configurable analog inputs	8 (0÷1V, 0÷5V, 0÷10V, PT100, PT1000)
Open Collector digital outputs (500mA @ 24Vdc)	8
Configurable analog outputs (0÷5V, 0÷10V)	2
Expansion slot	yes
RS485	for inverter communication
RS485	for communication with other devices
RS232	yes
GPRS modem	integrated
Ethernet	100Mbit/s
LCD display	graphic (128X 64 pixels) + function keyboard
Basic SW	RTOS + file system + TCP/IP + dedicated tasks
CPU	CMOS RISC Motorola MCF5272
Memory	512 Kbytes Lithium buffer static RAM 2 Bytes Flash memory 8 Bytes dynamic RAM SD (32 MB) type memory (optional)
Service conditions	From 20° to +50°C room temperature
Power supply	110/220VAC or else 18-36 Vdc
External peripheral power supply	20-36 Vdc@100 mA
Dimensions	200 mm x 120 mm x 36 mm
Assembly	on wall or on DIN bars



High Efficiency MV Transformers.

Answer Drives supplies medium voltage transformers in resin powered up to 2000kVA.
The transformers are available in one, two or three secondaries.
The voltage to the secondary is the same as the inverter output voltage: 125V, 202V, 270V and 337V.
Other voltages are supplied at request.

Technical details.

Primary voltage	15-20KV
Frequency	50Hz
Vector group	Dyn11
Primary insulation class	24/50/95KV
Secondary insulation class	1.1/3KV
Dc voltage at 75°C (AN)	(AN) 6.0%
MV output	n. 3 brass M12 end caps
Low voltage output	with plate
Winding temperature probe	N. 3 PT100
Output insulators, MV side	yes
Primary regulation range	+/-2x2.5%
Insulation material class	F/F
Environment class (EN 60076)	E2
Climate class (EN 60076)	C2
Partial discharge level	< 10 pC
Earthing plates	2
Fire behaviour (EN 60076)	F1
K ANSI/IEEE 57.110 factor	1
Room temperature	-25 ÷ +40 °C
Humidity	80%
Installation	≤1000 a.s.l.
Degree of protection	IP00 (inter. instal.)
Trucks	2
Wheels movable obliquely	4
Hoisting eyebolts	4

Optional electronic control device to control and visualize alarm set and release temperature and configuration.
Output contact to signal probe failure and configurable contact for coolant fan control.



Size	Size	Output data			Input data			Dimensions		
Solargate	Converter	Rated current	Rated power	Maximum power	Rated current	Rated power	Raccomanded max. PV power	L	H	P
		I _{ac}	P _{ac}	PM _{ac}	I _{dc}	P _{dc}	P _{PV}			
		A	KW	KW	A	KW	KW	mm	mm	mm
PVM5		Medium voltage version								
PV5M015NN	PV5M015NN	65	14	15	68	14	17	1200	2050	600
PV5M020NN	PV5M020NN	77	17	18	81	17	20	1200	2050	600
PV5M025NN	PV5M025NN	96	21	23	101	21	25	1200	2050	600
PV5M032NN	PV5M032NN	124	27	30	130	28	32	1200	2050	600
PV5M041NN	PV5M041NN	156	34	37	164	35	41	1200	2050	600
PV5M045NN	PV5M045NN	180	39	43	189	40	47	1200	2050	600
PV5M055NN	PV5M055NN	210	45	50	221	47	55	1200	2050	600
PV5M063NN	PV5M063NN	240	52	57	252	53	63	1200	2050	600
PV5M080NN	PV5M080NN	302	65	72	317	67	79	1800	2050	600
PV5M094NN	PV5M094NN	361	78	86	379	80	94	1800	2050	600
PV5M110NN	PV5M110NN	420	91	100	441	93	110	1800	2050	600
PV5M130NN	PV5M130NN	510	110	121	536	113	133	1800	2050	600
PV5M160NN	PV5M160NN	610	132	145	641	135	159	2000	2050	600
PV5M180NN	PV5M180NN	680	147	162	714	151	178	2000	2050	600
PV5M210NN	PV5M210NN	800	173	191	840	178	209	3000	2050	600
PV5M220NN	PV5M220NN	840	182	200	882	187	219	3000	2050	600
PV5M250NN	PV5M250NN	1020	221	243	1071	226	266	3000	2050	600
PV5M320NN	PV5M320NN	1220	264	291	1281	271	319	3000	2050	600
PV5M360NN	PV5M360NN	1360	294	324	1428	302	355	3000	2050	600
PV5L		Low voltage version								
PV7L027NN	GT045FEP	17	22	24	68	23	27	1200	2050	600
PV7L033NN	GT053FEP	20	26	29	81	28	33	1200	2050	600
PV7L041NN	GT066FEP	24	33	36	101	34	41	1200	2050	600
PV7L052NN	GT086FEP	32	42	47	130	44	52	1200	2050	800
PV7L066NN	GT108FEP	40	53	59	164	56	66	1200	2050	800
PV7L076NN	GT125FEP	46	61	68	189	65	76	1400	2050	800
PV7L090NN	GT150FEP	54	72	79	221	75	89	1400	2050	800
PV7L100NN	GT166FEP	61	82	90	252	86	101	1400	2050	800
PV7L130NN	GT200FEP	77	103	113	317	108	127	1800	2050	600
PV7L150NN	GT250FEP	92	123	135	379	130	152	1800	2050	600
PV7L180NN	GT292FEP	107	143	158	441	151	177	1800	2050	600
PV7L220NN	GT340FEP	130	174	191	536	183	215	1800	2050	600
PV7L260NN	GT420FEP	156	208	229	641	219	258	2000	2050	600
PV7L290NN	GT470FEP	173	232	255	714	244	287	2000	2050	600
PV7L340NN	GT520FEP	204	273	300	840	287	338	3200	2050	600
PV7L360NN	GT580FEP	214	287	315	882	301	355	3200	2050	600
PV7L430NN	GT670FEP	260	348	383	1071	366	431	3200	2050	600
PV7L520NN	GT780FEP	311	416	458	1281	438	515	3200	2050	600
PV7L580NN	GT940FEP	347	464	510	1428	488	574	3200	2050	600

Rated output current of the low voltage version @ 400V

PV7M e PV7L SOLARGATE Inverter.

Size	Size	Output data			Input data			Dimensions		
Solargate	Converter	Rated current	Rated power	Maximum power	Rated current	Rated power	Raccomand max. PV power	L	H	P
		I _{ac}	P _{ac}	PM _{ac}	I _{dc}	P _{dc}	P _{PV}			
		A	KW	KW	A	KW	KW	mm	mm	mm
PV7M		Medium voltage version								
PV7M027NN	GT045FEP	65	23	25	68	23	27	1200	2050	600
PV7M033NN	GT053FEP	77	27	30	81	28	33	1200	2050	600
PV7M041NN	GT066FEP	96	34	37	101	34	41	1200	2050	600
PV7M052NN	GT086FEP	124	43	48	130	44	52	1200	2050	600
PV7M066NN	GT108FEP	156	55	60	164	56	66	1200	2050	600
PV7M076NN	GT125FEP	180	63	69	189	65	76	1200	2050	600
PV7M090NN	GT150FEP	210	73	81	221	75	89	1200	2050	600
PV7M100NN	GT166FEP	240	84	92	252	86	101	1200	2050	600
PV7M130NN	GT200FEP	302	106	116	317	108	127	1800	2050	600
PV7M150NN	GT250FEP	361	126	139	379	130	152	1800	2050	600
PV7M180NN	GT292FEP	420	147	162	441	151	177	1800	2050	600
PV7M220NN	GT340FEP	510	178	196	536	183	215	1800	2050	600
PV7M260NN	GT420FEP	610	213	235	641	219	258	2000	2050	600
PV7M290NN	GT470FEP	680	238	262	714	244	287	2000	2050	600
PV7M340NN	GT520FEP	800	280	308	840	287	338	3200	2050	600
PV7M360NN	GT580FEP	840	294	323	882	301	355	3200	2050	600
PV7M430NN	GT670FEP	1020	357	393	1071	366	431	3200	2050	600
PV7M520NN	GT780FEP	1220	427	470	1281	438	515	3200	2050	600
PV7M580NN	GT940FEP	1360	476	523	1428	488	574	3200	2050	600
PV7M650NN	GT1K0FEP	1530	535	589	1607	549	646	4000	2050	600
PV7M770NN	GT1K2FEP	1830	640	704	1922	657	773	4000	2050	600
PV7M860NN	GT1K4FEP	2040	714	785	2142	732	861	4000	2050	600
PV7L		Low voltage version								
PV7L027NN	GT045FEP	17	22	24	68	23	27	1200	2050	600
PV7L033NN	GT053FEP	20	26	29	81	28	33	1200	2050	600
PV7L041NN	GT066FEP	24	33	36	101	34	41	1200	2050	600
PV7L052NN	GT086FEP	32	42	47	130	44	52	1200	2050	800
PV7L066NN	GT108FEP	40	53	59	164	56	66	1200	2050	800
PV7L076NN	GT125FEP	46	61	68	189	65	76	1400	2050	800
PV7L090NN	GT150FEP	54	72	79	221	75	89	1400	2050	800
PV7L100NN	GT166FEP	61	82	90	252	86	101	1400	2050	800
PV7L130NN	GT200FEP	77	103	113	317	108	127	1800	2050	600
PV7L150NN	GT250FEP	92	123	135	379	130	152	1800	2050	600
PV7L180NN	GT292FEP	107	143	158	441	151	177	1800	2050	600
PV7L220NN	GT340FEP	130	174	191	536	183	215	1800	2050	600
PV7L260NN	GT420FEP	156	208	229	641	219	258	2000	2050	600
PV7L290NN	GT470FEP	173	232	255	714	244	287	2000	2050	600
PV7L340NN	GT520FEP	204	273	300	840	287	338	3200	2050	600
PV7L360NN	GT580FEP	214	287	315	882	301	355	3200	2050	600
PV7L430NN	GT670FEP	260	348	383	1071	366	431	3200	2050	600
PV7L520NN	GT780FEP	311	416	458	1281	438	515	3200	2050	600
PV7L580NN	GT940FEP	347	464	510	1428	488	574	3200	2050	600

Rated output current of the low voltage version @ 400V

PV8M e PV8L SOLARGATE Inverter.



Size	Size	Output data			Input data			Dimensions		
Solargate	Converter	Rated current	Rated power	Maximum power	Rated current	Rated power	Raccomand max. PV power	L	H	P
		I _{ac}	P _{ac}	PM _{ac}	I _{dc}	P _{dc}	P _{PV}			
		A	KW	KW	A	KW	KW	mm	mm	mm
PV8M		Medium voltage version								
PV8M037NN	GT045GEP	65	30	33	68,3	31	37	1200	2050	600
PV8M043NN	GT053GEP	77	36	40	80,9	37	43	1200	2050	600
PV8M054NN	GT066GEP	96	45	49	100,8	46	54	1200	2050	600
PV8M070NN	GT086GEP	124	58	64	130,2	59	70	1200	2050	600
PV8M090NN	GT108GEP	156	73	80	164	75	88	1200	2050	600
PV8M100NN	GT125GEP	180	84	93	189	86	102	1200	2050	600
PV8M120NN	GT150GEP	210	98	108	221	101	119	1200	2050	600
PV8M140NN	GT166GEP	240	112	123	252	115	135	1200	2050	600
PV8M170NN	GT200GEP	302	141	155	317	145	170	1800	2050	600
PV8M205NN	GT250GEP	361	169	186	379	173	204	1800	2050	600
PV8M240NN	GT292GEP	420	196	216	441	201	237	1800	2050	600
PV8M290NN	GT340GEP	510	239	262	536	245	288	1800	2050	600
PV8M350NN	GT420GEP	610	285	314	641	293	344	2000	2050	600
PV8M390NN	GT470GEP	680	318	350	714	326	384	2000	2050	600
PV8M460NN	GT520GEP	800	374	412	840	384	451	3200	2050	600
PV8M480NN	GT580GEP	840	393	432	882	403	474	3200	2050	600
PV8M580NN	GT670GEP	1020	477	525	1071	489	576	3200	2050	600
PV8M700NN	GT780GEP	1220	571	628	1281	585	688	3200	2050	600
PV8M770NN	GT940GEP	1360	636	700	1428	652	767	3200	2050	600
PV8M860NN	GT1K0GEP	1530	716	787	1607	734	863	4000	2050	600
PV8M1K0NN	GT1K2GEP	1830	856	941	1922	878	1033	4000	2050	600
PV8M1K1NN	GT1K4GEP	2040	954	1049	2142	978	1151	4000	2050	600
PV8L		Low voltage version								
PV8L037NN	GT045GEP	30	30	33	68,3	31	37	1200	2050	600
PV8L043NN	GT053GEP	35	35	39	80,9	37	43	1200	2050	600
PV8L054NN	GT066GEP	44	44	48	100,8	46	54	1200	2050	600
PV8L070NN	GT086GEP	56	57	62	130,2	59	70	1200	2050	800
PV8L090NN	GT108GEP	71	71	78	164	75	88	1400	2050	800
PV8L100NN	GT125GEP	82	82	90	189	86	102	1400	2050	800
PV8L120NN	GT150GEP	96	96	105	221	101	119	1400	2050	800
PV8L140NN	GT166GEP	109	109	120	252	115	135	1400	2050	800
PV8L170NN	GT200GEP	138	138	151	317	145	170	1800	2050	600
PV8L205NN	GT250GEP	164	165	181	379	173	204	1800	2050	600
PV8L240NN	GT292GEP	191	192	211	441	201	237	1800	2050	600
PV8L290NN	GT340GEP	232	233	256	536	245	288	1800	2050	600
PV8L350NN	GT420GEP	278	278	306	641	293	344	2000	2050	600
PV8L390NN	GT470GEP	310	310	341	714	326	384	2000	2050	600
PV8L460NN	GT520GEP	365	365	401	840	384	451	3200	2050	600
PV8L480NN	GT580GEP	383	383	421	882	403	474	3200	2050	600
PV8L580NN	GT670GEP	465	465	512	1071	489	576	3200	2050	600
PV8L700NN	GT780GEP	556	556	612	1281	585	688	3200	2050	600
PV8L770NN	GT940GEP	620	620	682	1428	652	767	3200	2050	600

Rated output current of the low voltage version @ 400V

PV9M e PV9L SOLARGATE Inverter.

Size	Size	Output data			Input data			Dimensions		
Salorgate	Converter	Rated current	Rated power	Maximum power	Rated current	Rated power	Raccomanded max. PV power	L	H	P
		I _{ac}	P _{ac}	P _{M_{ac}}	I _{dc}	P _{dc}	PPV			
		A	KW	KW	A	KW	KW	mm	mm	mm
PV9M	PV9M	Medium voltage version								
PV9M060NN	GT105KEP	88	51	57	92,4	53	62	1200	2050	600
PV9M075NN	GT130KEP	105	61	67	110,3	63	74	1200	2050	600
PV9M100NN	GT170KEP	143	83	92	150,2	86	101	1200	2050	600
PV9M120NN	GT200KEP	170	99	109	178,5	102	120	1800	2050	600
PV9M160NN	GT260KEP	220	128	141	231	132	155	1800	2050	600
PV9M190NN	GT320KEP	270	158	173	283,5	162	190	1800	2050	600
PV9M230NN	GT390KEP	330	193	212	346,5	198	232	1800	2050	600
PV9M280NN	GT480KEP	400	233	257	420	239	282	2000	2050	600
PV9M310NN	GT521KEP	440	257	283	462	263	310	2000	2050	600
PV9M380NN	GT640KEP	540	315	347	567	323	380	3200	2050	600
PV9M470NN	GT780KEP	660	385	424	693	395	465	3200	2050	600
PV9M560NN	GT960KEP	800	467	514	840	479	563	3200	2050	600
PV9M620NN	GT1K0KEP	880	514	565	924	527	620	3200	2050	600
PV9L	PV9L	Low voltage version								
PV9L060NN	GT105KEP	62	50	55	92,4	53	62	1400	2050	600
PV9L075NN	GT130KEP	75	60	66	110,3	63	74	1400	2050	600
PV9L100NN	GT170KEP	102	81	90	150,2	86	101	1400	2050	600
PV9L120NN	GT200KEP	121	97	106	178,5	102	120	1800	2050	600
PV9L160NN	GT260KEP	156	125	138	231	132	155	1800	2050	600
PV9L190NN	GT320KEP	192	154	169	283,5	162	190	1800	2050	600
PV9L230NN	GT390KEP	234	188	207	346,5	198	232	1800	2050	600
PV9L280NN	GT480KEP	284	228	250	420	239	282	2000	2050	600
PV9L310NN	GT521KEP	312	250	275	462	263	310	2000	2050	600
PV9L380NN	GT640KEP	383	307	338	567	323	380	3200	2050	600
PV9L470NN	GT780KEP	468	376	413	693	395	465	3200	2050	600
PV9L560NN	GT960KEP	568	455	501	840	479	563	3200	2050	600

Rated output current of the low voltage version @ 400V

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