EMERSON™

SPV2700 Solar Inverter

The key to better investment performance

Energy yield is more than just efficiency. It is also about availability. Emerson PV inverter solutions enable investors to exceed their asset performance expectations through high yield inverter systems. These are designed and manufactured by our world-class power conversion engineers and controlled through dedicated project management teams to meet your required timescales and ensure project readiness.

Reliable

Based on a proven design, our inverter modules are mass produced for both industrial and PV applications.

Efficient

The Multi-Master architecture enhances system yield by dynamically re-sizing the inverter to match generated power at low irradiance levels.

Grid-Ready

Emerson's dedicated global team is there to support the integration of distributed power systems in all parts of the world.

Bankable

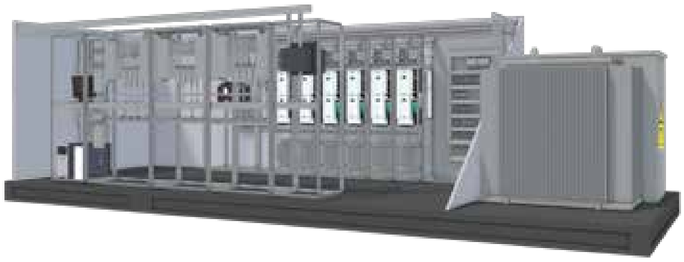
As a perennial Fortune500 global company with 55 consecutive years of increased annual dividends to our shareholders, we know that our Bankability is securing your investment future.

Model		Emerson SPV2700 Grid Tie Inverter	Notes
DC Input Data			
Typical PV Generator Capacity @ 510 Vdc	kWp	2000	1,4
MPPT Range @ 340 Vac	Vdc	510-800	2
Maximum Current	Idc	3150	
Maximum Voltage	Vdc	830 / 1000	3
DC Landing Points	Fuses/ mcbs/ Direct Connection	27 / 40 / 18	4,6
DC Voltage Ripple	%	< 1	
PV Array Grounding Options		Floating, Positive or Negative	5
AC Output Data			
Apparent Power @ 340 Vac	kVA / kW	1590	7
Nominal Output Voltage	Vac	3 x 260, 300, 340, 360, 380, 400 +/-10%	8
Rated Current	Iac	2700	9
Current Distortsion (THID)	%	2.3	
Grid Nominal Frequency	Hz	50/60	
Powerfactor		Fully controllable in 0.1% steps	10
Grid feed-in threshold	kW	<1	
Grid Short Circuit Capacity	kA	<100	
Supply Type / Typical Transformer Vector Group / Supply Impedance		IT (Ungrounded) / Dy5, Dy11,Yd5, Yd11 / 4.5 to 6.5%	
System Data			
Inverter Topology		Multimaster with fault tolerance	
Maximum Losses at 340 Vac/600 Vdc	kW	45	4,1
Night time power consumption	kW	<0.1	
AC Auxiliary Supply		Internally derived or External 3 Phase 400V	
Unintterruptable Power Supply		Supplied with Ride Through / Grid Support models only	
Maximum Power Point Trackers		1	
Quantity of Inverter sections		9	
Inverter Ambient Temperature	°C	0-50	4,12
Altitude	m	1000	13
Relative Humidity (non condensing)	%	5-95	
Safety		CE, EN50274 (IP20 variant)	
Lightning Protection		IEC 61643-11 class II	
Overvoltage Protection (AC / DC terminals)		Category III according to IEC 60664-1	
Grid Behaviour Overview		Anti Island / Low Voltage Ride Through. Active and reactive (day and night) power control. Sag / surge control	14
Connection Conformity		BDEW, Arrêté du 23 avril 2008, ERDF-NOI-RES 13E Version 2, CEI – 016, RD1663, RD661, G59/2, VDE0126-1-1, PO 12.3, PEA (2012), IEEE1547, FERC 661	
Audible Noise (Sound Pressure Level)	dBa @ 1m	85	
Communications		Ethernet Modbus TCP/IP RS485 Modbus RTU	
Weight – AC Section	kg	3350	
Weight – DC Section	kg	1950	
Weight – Total	kg	5300	
Color		RAL7035 (Grey)	

Notes

1. With a DC:AC ratio of 1.26:1 and an AC voltage of 340 V.
2. Optionally Vdc may be as low as 400 V, however, there is a corresponding decrease in Vac and Power. See note 8
3. 1000 Vdc with extended voltage option. This option effects inverter overall dimensions
4. Consult Emerson for further guidance
5. Ungrounded arrays are protected by a GFDI fused at 4 A as standard
6. Mcb DC landing point protection only available on systems with grounded arrays
7. As $P_{dc} \rightarrow P_{dc}$max, the SPV increases Vdc to limit power. Vdc must remain below 800 Vdc otherwise a trip will result.
8. AC output voltage is a function of minimum DC voltage. Calculate Vac=SQRT(Vdcmin-30) and select AC voltage from the next highest from those listed
9. As Iac→Imax, the SPV increases Vdc to limit Idc. Vdc must remain below 800 Vdc otherwise the SPV will trip
10. Provision of day time reactive power without sacrificing active power is subject to spare AC current capacity
11. RMS / maximum losses can be calculated if a suitable meteo file is available. Data quoted is at unity power factor and symetrical supply voltage
12. De-rate by 1%/°C above 45°C to 50°C. IP20 product subject to different de-rating
13. Above 1000 m consult Emerson
14. Reactive power demand takes precedence over real power

The Emerson SPV Medium Voltage (MV) Station



Photovoltaic inverters are part of the wider PV system which includes the string connection boxes, transformers and MV/HV switchgear. Emerson can supply the complete turnkey solution through our global engineering network located in 31 countries. We are able to work with approved local suppliers to minimize time and the costs associated with transporting equipment. Alternatively, SPV inverters can be supplied individually and engineered to work with third party supplied equipment.

The SPV Medium Voltage Station provides a configurable solution to meet the needs of your plant, as well as satisfying network and country specific safety and integration requirements. Emerson's global engineering network across 31 countries means there is the expertise available locally, wherever your plant may be.

Configuration Features and Options:

- Concrete or steel construction
- Integrated transformer and LV and MV/HV disconnection devices
- Integrated DC/AC low-voltage disconnection devices
- LV Auxiliary cabinet, which may include:
    - SCADA equipment OVATION
    - Array tracker controls
    - HVAC control
- Emerson UPS system for power backup
- Anti-condensation heaters
- Meteorological instrumentation
- Security Equipment

Grid Management Features

Frequency and Contingency Support

Active Power Control: Dispatch/ Curtailment

Real power can be curtailed to reduce grid congestion through inverter & supervisory control:

Defined response

- Match a defined set point (plant rating or curtailed MW)
- Adjustable rates of change of power (ramp rate control)

Dynamic response

- Immediate, automatic decrease/increase supports system frequency restoration
- Frequency ride-through capability

Voltage Regulation

Reactive Power Control:

Reactive load and transmission impedance compensation through provision of lagging or leading reactive power from the plant inverters, day and night*:

Defined response

- Control to a reactive power set-point schedule
- Control to a power factor set-point schedule
- Vary reactive as a function of apparent power (kVA)
- Vary reactive in response to plant-wide voltage set-point error; Automatic Voltage Regulation (AVR)

Dynamic response

- Individual inverter reactive current injection in response to balanced and unbalanced voltage fluctuations.
- Inverter low voltage ride-through (LVRT) capability maintains reactive support through grid-fault conditions

*Provision of day time reactive power without sacrificing active power is subject to spare inverter capacity and the supply voltage remaining within design parameters.

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