SPV1800 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 SPV1800 Grid Tie Inverter	Notes
DC Input Data				
Typical PV Generator Capacity @ 510 Vdc		kWp	1335	1,4
MPPT Range @ 340 Vac		Vdc	510-800	2
Maximum Current		Idc	2100	
Maximum Voltage		Vdc	830 / 1000	3
DC Landing Points		Fuses/ mcbs/ Direct Connection	18 / 27 / 12	4,6
DC Voltage Ripple		%	< 1	
PV Array Grounding Options			Floating, Positive or Negative	5
AC Output Data				
Apparent Power @ 340 Vac		kVA / kW	1060	7
Nominal Output Voltage		Vac	3 x 260, 300, 340, 360, 380, 400 +/-10%	8
Rated Current		Iac	1800	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	29.8	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			6	
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	83	
Communications			Ethernet Modbus TCP/IP RS485 Modbus RTU	
Weight	AC Section	kg	2300	
	DC Section	kg	1500	
	Total	kg	3800	
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
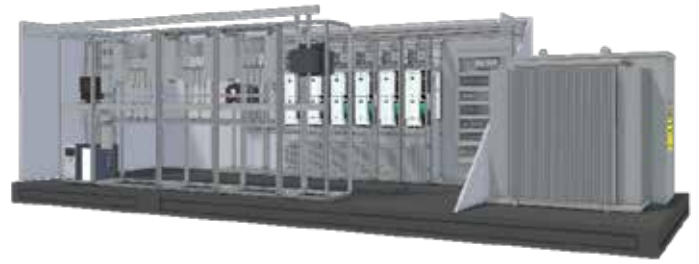
Grid Management Features

Frequency and Contingency Support	Voltage Regulation
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	**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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