HITACHI
Inspire the Next

Solar Inverters

HIVERTER - NP215i Series
1500 VDC - 2.5 MW Outdoor Inverter

NEXT GENERATION
PRODUCT from HITACHI
after experience of

2 GW+ Installations

in India

Hitachi Hi-Rel Power Electronics Pvt. Ltd.
Pioneer in Power Electronics
Leading manufacturer of UPS, Drives and Solar Inverters

Hitachi Solar Inverters - HIVERTER NP215i Series

Highly Advanced & Reliable I High Efficiency I High Performance
1500 VDC - 2.5 MW Outdoor Inverter

Hitachi's HIVERTER NP215i Series Solar Inverter is among the best available Grid Tied Solar Inverters that is suitable for multimegawatt and utility-scale PV power plants. It is a critical balance of system (BOS) component in a solar photovoltaic system. It converts DC Power generated by the Photovoltaic (Solar) array to AC Power that is fed to the Utility Power Grid System. It is available in 2.5 MW.

Product Highlights

- Rated output power 2.5 MW @ 50°C
- Outdoor IP54 unit: Savings on outdoor civil construction or containerized solution
- 3 level PWM technology to achieve maximum efficiency @ 98.8 % considering similar outdoor category
- 3 level PWM technology to achieve highest output efficiency
- 3 individual MPPT controllers
- Redundancy in power feeding by hot swapping during fault condition (modular concept design)
- Latest LVRT/ FRT guideline compliance in line with upcoming CEA guideline due to flexibility in software
- Easy to install & maintain
- Low auxiliary power consumption due to variable fan speed control according to power feeding
- DC over power loading up to 150%

Compliance

Safety Testing	IEC 62109-1	Safety of power converters to use in photovoltaic power systems
	IEC 62109-2	Safety of power converters to use in photovoltaic power systems
	IEC 62116	Utility-interconnected photovoltaic inverters - Test procedure of islanding prevention
Enclosure Protection	IEC 60529	IP protection
Performance	IEC 61683	Power conditioners: Procedure for efficiency measurements.
EMC	IEC 61000-6-2	Emission requirements
	IEC 61000-6-4	Immunity requirements
Environmental Testing	60068-2-1	Cold test
	60068-2-2	Dry heat test
	60068-2-14	Change of temperature
	60068-2-30	Damp heat cyclic test
Electroacoustic	IEC 61672-1	Sound level meters part-1
LVRT	IEC 62910-2015	LVRT
Harmonics Control	IEEE-519	Recommended practice and requirements for harmonic control in electrical power system
Indian Grid Connectivity	CEA	Technical standard for the connectivity to the grid - for India only (Hitachi PCS can follow the updated CEA guidelines with the available flexible features to meet future grid protection demand)
	JEC-2140	For solar
	ISO	For screws and other hardware
Insulation Distance	JEM1103	Standard for creepage and clearance
Japanese Grid Code	JEAC9701	Standard for LVRT for Japan only

Control Functions

RUN/STOP FUNCTION

- PCS RUN switch / STOP switch or contact input signal to PCS: PCS runs or stops by making a contact input signal to the RUN/STOP switch.
- Operating spot is selected by “Direct/Remote switch” in PCS. Direct control: PCS can be controlled by using RUN and STOP switches

  Remote control: PCS can be remotely controlled by using contact input signal as RUN/STOP switch.

ACTIVE/REACTIVE POWER ADJUSTING FUNCTION

- PCS can limit the active power generation of inverter through external command from the control system.
- PCS can adjust the reactive power generation of inverter through internal command from the control system and external signal of SCADA system.
- PCS can adjust the power factor of inverter through internal command from the control system and external signal of SCADA system.

Protection Functions

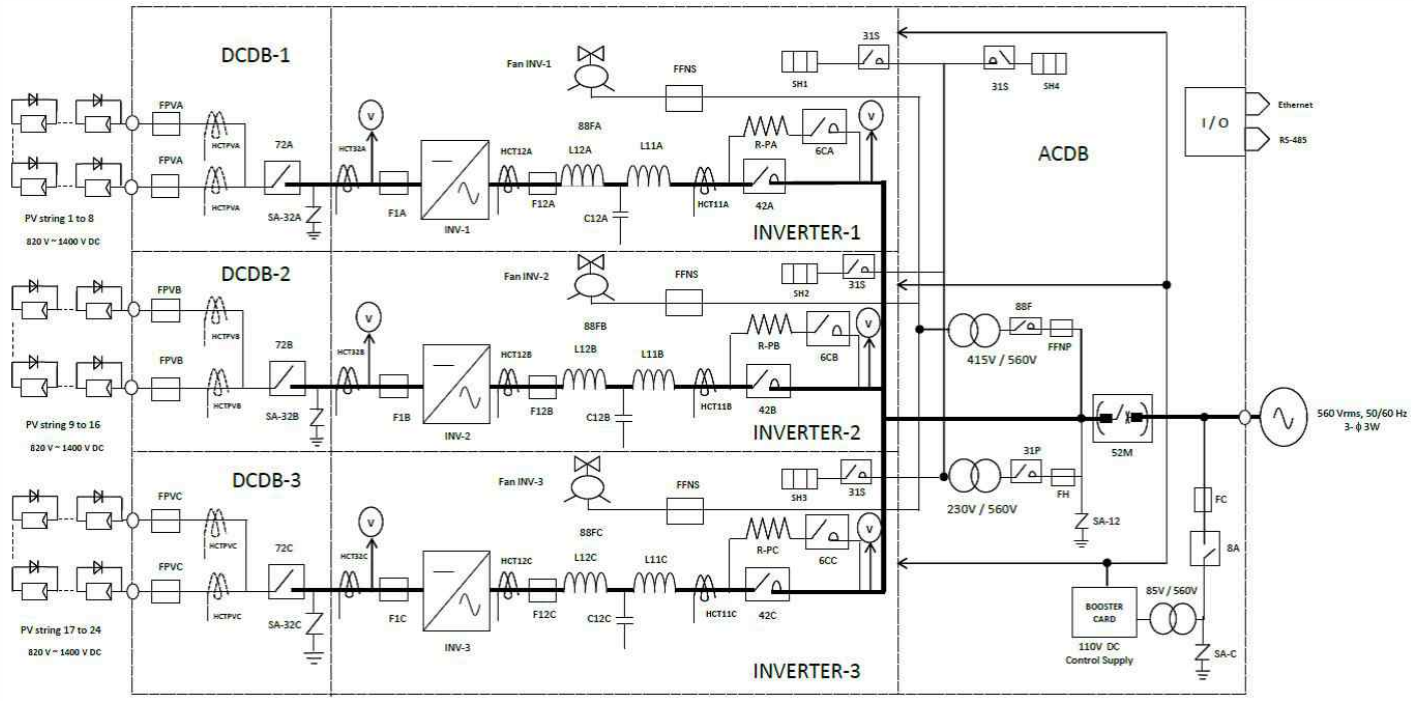
FUNCTIONS FOR CIRCUIT PROTECTION

- In case the PCS keeps an operating, warning alarms ring, light failure occurs, messages will get displayed and will be written in the system log file.
- In case of heavy failure which requires the PCS to stop, the PCS will get turns off and the DC disconnecting switches (72) and AC contactor (42) gets open.
- Once the failure gets remedied, push “FAILURE RESET” and “START” buttons on PCS.

GRID CONNECTION PROTECTION

- Hitachi PCS can follow the updated CEA guidelines with the available flexible features to meet future grid protection demand.
- In case PCS detects an abnormal behaviour like over/under voltage, over/under frequency in the power grid, PCS will get turned off. The detection level and detection time can be set as per the local grid requirement.
- When the normal behaviour in the power grid gets restored for one second, the PCS restarts automatically.
- If the normal behaviour continues for more than one second, the AC contactor (42) also will get opened.
- Recovery and restart are as follows.
  - After recovery from abnormal behaviour in the power grid, start the PCS manually by pushing the SYSTEM ABNORMAL RESET button and START button.
  - ABNORMAL RESET” button and “START” button. After the confirmation time (1 sec ~ 3H) from an abnormal behaviour in the power grid, the PCS restarts automatically

Single Line Diagram



Technical Specifications

Item		Specifications	Remarks
Rated Capacity		2500 kVA / 2500 kW	AC Output
AC/DC Conversion System		3-Level NPC-1 High-Frequency PWM Inverter	
AC/DC Isolation System		No Isolation (Transformer Less Type)	External Isolation Transformer Based on Given Specification
Inverter Control		AC Active/Reactive Power Control based on AC Current Control	
AC Output	Rated Voltage	AC 560 V, ± 10 %	De-rating at Voltage Less than 560 V
	Maximum Current	AC 2578 A	
	Rated Frequency	50/60 Hz, ± 2 %	50 Hz / 60 Hz Set at Factory
	Phases / Wires	3 Phases - 3 Wires	
	Power Factor	Above 0.8	
	Current Harmonics	Total Harmonics < 3%.	At Rated AC Current
DC Input	Rated Voltage	DC 820 V	
	MPPT Voltage Range	DC 820 V ~ 1400 V	Min DC Voltage at Rated Voltage
	Maximum Current	DC 3111 A	(Considering 98% Efficiency at 100% Load)
	DC Inputs	Standard - 8 nos per Inverter, Total 24 nos. Optional - 16 nos per Inverter, Total 48 nos.	Optional - String Current Monitoring
	No of MPPT	3 nos.	
Efficiency (Estimated)		Maximum η = 98.8 %, Euro η = 98.4%	TBD
Auxiliary Power	Control Power (for Main Use)	Internally for the Grid Supply. With Backup for 5 sec to Perform LVRT Function Power Consumption : 700 W During Operation 250 W During Standby	Optional :- External Power Supply of 110 VAC, 1Phase
	Cooling Fan Power	415 VAC (L-L), 3-Phase Internally from the Main Circuit. Power Consumption :- TBD	Optional:- External Power Supply of 208 VAC (L-L), 3 Phase
AC Output Terminals Size		Max 500 sq.mm Cable x 6 nos for Each Phase	TBD
DC Input Terminals Size		Max 300 sq.mm Cable per Input	

Note: TBD (To be discussed during engineering)

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In the spirit of continuous improvement, specifications are subject to change without notice.

ISO 9001 ISO 14001 OHSAS 18001 BUREAU VERITAS Certification

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Ver.1.0/2018/Solar NP215I/India I Spotlight