HITACHI
Inspire the Next

Solar Inverters

HIVERTER - NP201i Series
Available up to 1.43 MW

Over
2.5 GW
Supply in
India

PV Inverter Station

PV Inverter Container

Hitachi Hi-Rel Power Electronics Pvt. Ltd.

Pioneer in Power Electronics
Leading manufacturer of UPS, Drives and Solar Inverters

Hitachi Solar Inverters - HIVERTER NP201i Series

Highly Advanced & Reliable I High Efficiency I High Performance
Available up to 1.43 MW

Hitachi's HIVERTER NP201i Series Solar Inverter is among the best available Grid Tied Solar Inverters that is suitable for multi-megawatt and utility-scale PV power plants. It is a critical balance of system (BOS) component in a solar photovoltaic system, converts DC Power generated by the Photovoltaic (Solar) array to AC Power that is fed to the Utility Power Grid System. It is available from 250 KW to 1.43 MW.

Product Range

- kW Scale: 250 kW, 500 kW, 630 kW, 670 kW, 715 kW
- MW Scale: 1 MW, 1.25 MW, 1.34 MW, 1.43 MW
- Outdoor: 2.5 MW PV Containerized Solution (Plug & Play)

Control Functions

START/STOP FUNCTION (EMERGENCY SWITCH)

Inverter START / STOP switch or contact input signal (Start and stop of the Inverters is carried out by START / STOP switches). Control position can be selected by DIRECT / REMOTE switch.

Direct Control

Direct control of the Inverters is possible by using START / STOP switches.

Remote Control

Remote control of the Inverters can be done by contact input signals (START / STOP Switches) or communication.

OUTPUT POWER LIMITING FUNCTION

When the Hitachi inverters output exceeds its maximum value, the input power drawn will be adjusted to prevent the Inverters from being overloaded

FAULT RIDE THROUGH (FRT) – LOW VOLTAGE RIDE THROUGH (LVRT)

Against sudden changes of amplitude or phase of AC Voltage, Inverters high-speed detection and control capability can prevent AC over current.

With the feature, the Inverters can keep operating even under momentary voltage dip, LVRT feature complying latest amended of CEA guide line.

DC INPUT AND AC OUTPUT PANEL

DC Input Panel
Protection is provided for individual DC input with optional current monitoring feature.

AC Output Panel
AC Output panel with ACB and extended terminals for connecting the cable up to 500 SQMM AL.

EASE OF INSTALLATION AND COMMISSIONING

Low weight and compact footprint saves time and resources at site

MONITORING (INDICATORS)

Inverter status measurement data, fault data, historical records and other information is displayed on the LCD screen.
Status: Inverters Status I Switchgear Status I Grid Status

Measurement

AC Output : I Voltage I Current I Power I Power Factor I Frequency
DC Input : I Voltage I Current I Power
Fault Data : I Inverters Failure I Grid Faults

Historical Records

Operation Record I Grid Trouble Record I Fault Record

MAXIMUM POWER POINT TRACKING (MPPT) CONTROL

Inverter has a function to maximize power generation at a given amount of solar radiation by adjusting DC voltage

PV INPUT CONTROLLED STAND-BY FUNCTION

When the DC input power or voltage reduces due to decrease in solar irradiation or any other causes, the Inverters goes into standby mode with its inverters switching functions turned off automatically. In this case, the DC switchgear will be closed.

Upon recovery of the DC input the Inverters switching operation will be restored automatically.

REACTIVE POWER CONTROL

Three primary types of control methods

- Auto-tuning of power factor based on grid conditions
- Fixed power factor (can be set to unity)
- Fixed amount of reactive power

Can be based on a pre-set value or based on adjustable settings

COMPLIANCE

Safety Testing	IEC 62109-1	PV Inverter general
	IEC 62109-2	PV Inverter safety requirements
	IEC 62116	Islanding system
	UL 1741	Safety
Enclosure Protection	IEC 60529	IP protection
Performance	IEC 61683	Efficiency calculations
	EN 50530	MPPT / reliability standard
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

Technical Specifications

Solar Inverter Rating	1000 kW @ 50°C	1250 kW @ 50°C	1340 kW @ 50°C	1430 kW @ 50°C
DC - AC Conversion System	3 Level High Frequency PWM Inverter			
Control System	MPPT and AC Current Control			
Grid Data				
Power Rating	1000 kW	1250 kW	1340 kW	1430 kW
AC Grid Connection	Three Phase			
Maximum AC Current	2214 A			
Output Waveform THDi	< 3% at Rated Current			
Nominal Output Voltage (Rated Voltage)	300 VAC	350 VAC	370 VAC	400 VAC
Output Voltage Range	300 V ± 10%	350 V ± 10%	370 V ± 10%	400 V ± 10%
Output Frequency Range	50 Hz or 60 Hz ± 5%			
Transformer	Transformer-less Design			
Peak Efficiency	98.6% at Min DC Input Voltage			
Euro Efficiency	98.4% at Min DC Input Voltage			
Power Factor (Adjustable)	0.95 Lead to 0.95 Lag 0.80 Lead to 0.80 Lag (Within Max. kVA Limited at Maximum Ampere Rating)			
PV Side				
Maximum DC Power Loading[1]	1200 kW	1500 kW	1610 kW	1716 kW
MPPT Voltage Range[2]	DC 460 to 900 V	DC 525 to 900 V	DC 550 to 900 V	DC 600 to 900 V
Maximum DC Input Voltage (OC)	1000 V (Heavy Failure Protection Level)			
Minimum DC Input Voltage	460 V	525 V	550 V	600 V
Maximum Input Current DC	2400 A			
No of MPPT Functions	Single			
External Auxiliary Power Supply				
Control Power in Operation	AC 230 V, 1□, 160 W, Inrush Current up to 20 Amp for 2 Cycle			
Control Power in Stand-by Mode	< 100 W			
Cooling Fan Power	AC 415 V 3□, 800 W			
Cooling Control				
Forced Cooling	Two Heavy Duty Fans with High Service Life			
Protections				
Islanding Protection	Yes			
DC Reverse Polarity Protection	Yes			
Temperature Protection	Yes			
Ground Fault Detector	Yes			
Grid Monitoring	Yes			
AC Short Circuit and Over Current	Yes			
AC & DC Over Voltage and Temperature	Yes			
Fault Ride Through (FRT) (Also known as Low Voltage Ride Through (LVRT) as per CEA 2007, amendment 2013)	Yes			
Reactive Power Control	Yes			
Automatic Wake-up and Shut-down	Yes			
Breaker on AC Side	Air Circuit Breaker (ACB) at Output			
Switch on DC Side	Motorized DC Switch at Input			
Negative Grounding	Yes (Optional)			
Night Time Reactive Power Compensation	Yes (Optional)			
Communication				
Visual Display	Colour LCD Display with Touch Screen (5.7 inch)			
SCADA Interface	RS 485 Modbus / Modbus TCP-IP / TCP-IP Over Ethernet			
Data Logging	Yes			
Access Interface / Field Bus Connectivity	RS 485 or TCP-IP (Ethernet)			
Analogue Input / Output	3 (Optional)			
Digital Input / Relay Output	4			
Mechanical				
Dimensions (H x W x D) mm[3]	2082 x 3202 x 1000 (Including DC Input Terminal and AC Termination Panel)			
Weight (kgs)	2200 (Approximate)			
Environmental Limits				
Enclosure Protection[4]	IP 20			
Operating Temperature Range[5]	(-) 0°C to (+) 50°C			
Relative Humidity	15% to 95% (Non Condensing)			
Maximum Noise Level	75 dBA at a Distance of 1 Meter (JIS C 1509 Class 2 - A Characteristic)			
Altitude[6]	0 to 1000 Meters			
Cooling Air Flow	7520 m^3/ hr			

Notes:
(1) Maximum DC power can be loaded up to 140%. Same can be discussed during detail engineering.
(2) EPC /Plant designer should select MPPT voltage range within mentioned DC voltage range.
(3) Dimensions will be depended on final engineering and design. DC IP box with 12 Input at positive side only (350Amp PV fuse).
(4) IP 21 optional.
(5) No de-rating up to 50° C, 1.5% de-rating per degree rise in temperature from 50° C to 60° C.
(6) Optional: 2000 meters.

PV Power Station

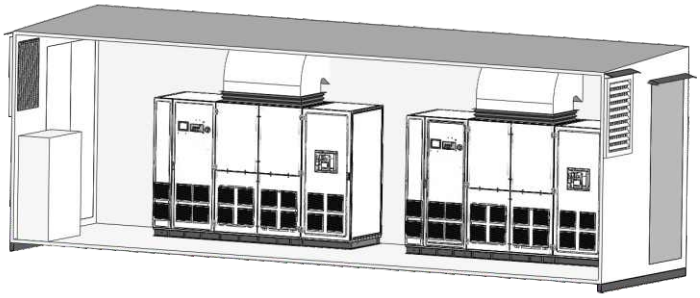
It is an advanced containerized solution for large-scale and commercial PV (Photovoltaic) power plants. It is available up to 2.5 MW with plug and play feature

It contains Solar Inverters and optional equipments for auxiliaries, serves to protect electric equipments from environmental influence.

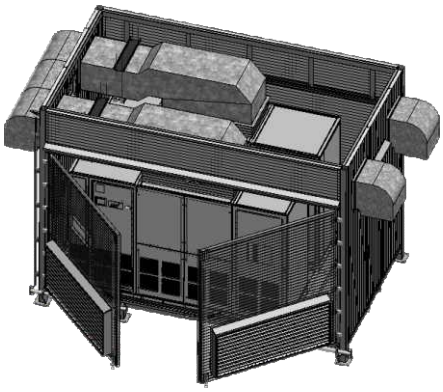
- Standard & robust design
- Easy connectivity to MV station
- Easy to transport
- IP54 protection class mechanism design
- Easy to install

PV Inverter Station

PV Inverter Container



(3D Drawing)



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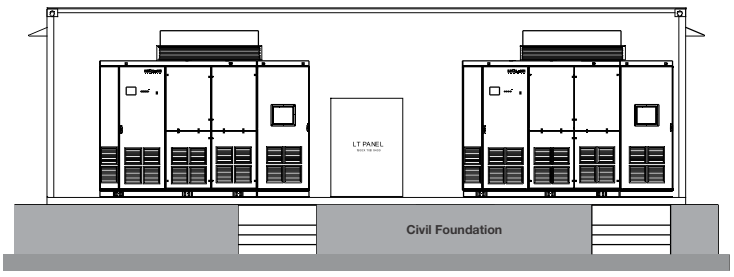

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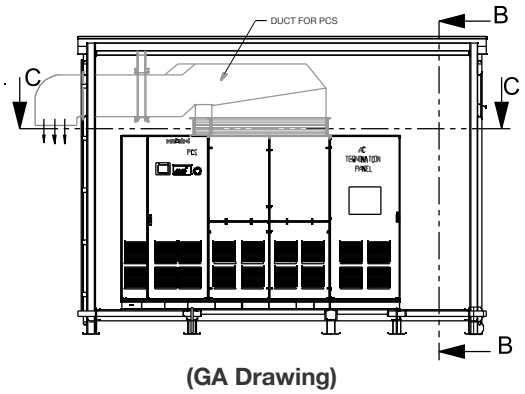

(GA Drawing)

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

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ISO 14001
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Certification

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Ver.1.1/2018/Solar/India I Spotlight