



NORTHERN ELECTRIC

Micro Inverter Product Catalog

Northern Electric and Power Inc

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NEP Micro Inverter Inc:
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Web portal:
<http://www.micro-inverter.jp>
<http://www.nep-japan.com>
<http://www.northernep.com>

Monitoring website:
<http://www.nepviewer.com>

Address(Austria):
Viktor Adlerstrasse 2 A-2435 Ebergassing, Austria

Address(Philippine):
100 Silliman Avenue Dumaguete City 6200, the Philippines

<http://www.roisolar.ph>

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No.1 Anhe Road, Qingdao Export Processing Zone, Chengyang District, Qingdao, China

COMPANY PROFILE

Northern Electric and Power Corporation (NEP) was founded in 2009 in the United States by a group of engineers from Xantrex, GE Global Research and Motorola Research. Prior to that, several founders of NEP located in Silicon Valley and Fukuoka, Japan were working together on level-3 battery chargers and battery management systems for electric forklifts and electric vehicles. This company, headquartered in Fukuoka, Japan with an R&D group in Mountain View California focuses on solar central inverters and micro inverters. At the end of 2015, the company was split into two: NEP Japan focusing on central and string inverters, and NEP Micro Inverter Inc focusing on micro inverters only.

Because of the advanced technology and high reliability, NEP micro inverter is the ONLY certified micro inverter in Japan market.

The technology founders of NEP are well-known experts in the fields of power electronics, automation control, signal processing, and communications. Each of the founders has many U.S. and global patents in their specialty areas. They received their Ph.D. degrees from the top universities in North America and Japan, and each of them has more than 10 years engineering and management experiences in leading U.S. and Japan companies.

Our mission is CARE, Clean, Affordable, Reliable and Efficient.

1) NEP

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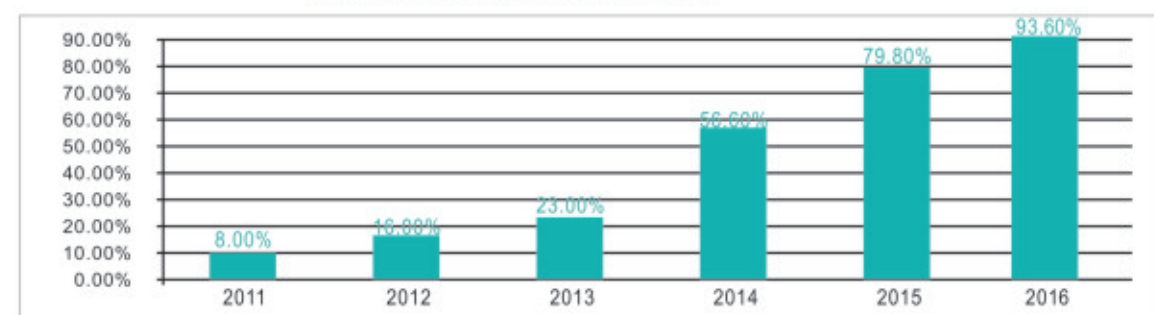
2) NEP Micro Inverter

Phone: +81(92) 433-3252

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Address: Fujii-Building 1F, 3-10-24 Hakataekimae, Hakata-ku, Fukuoka-City, Fukuoka Prefecture, Japan

Annual Sales Growth Rate



Floating Solar Farm in Fukuoka, JAPAN

A floating solar farm was built in a reservoir in Fukuoka prefecture, JAPAN and NEP micro inverters were selected as the inverter to transfer the dc energy into ac energy. The 301kW floating solar systems use 1200 NEP micro inverters. Due to the large size of floating solar farm, this project draws a great attention from entire Japan.

NEP micro inverter has high NEMA ratings (NEMA-4X and NEMA-6P) and very high reliability track record in Japan residential and commercial markets. These advantages make NEP micro inverter a perfect candidate for pond or reservoir floating solar farm application. In addition to this project, NEP micro inverter has another 16 floating solar farm projects in pipeline in reservoir or pond application with the range between

There are multiple benefits using floating solar farms with NEP micro inverters on water reservoirs or ponds. Besides saving land for ground mount PV systems, it saves water evaporation and the PV panels are naturally cooled by closing to water and thus higher efficiency.

NEP micro inverter systems comply with NEC 2014 and NEC 2017 690.12 article for Rapid Shutdown. The highest DC voltage in the system is less than 60Vdc. This makes NEP micro inverters most suitable for roof mount commercial and residential PV systems.

BDM-250



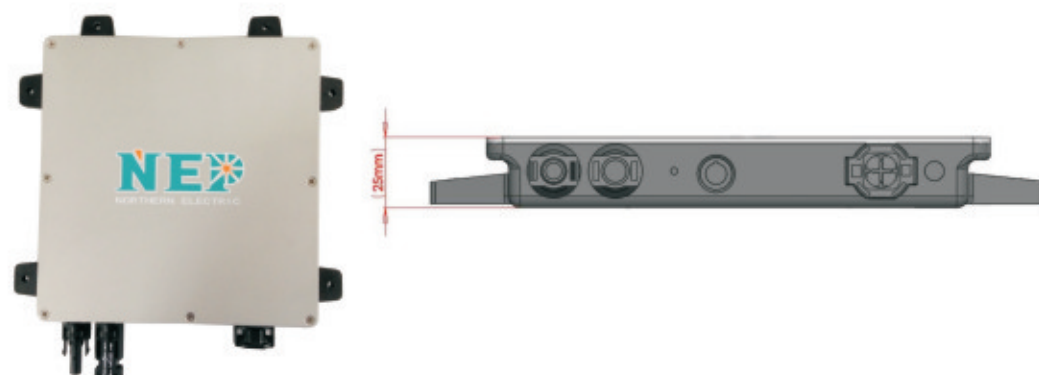
Features

- Designed to connect individual PV module up to 335 W
- Peak Efficiency at 96.3%, CEC Efficiency 95.0%
- Global certified by both IEC and UL standard
- NEMA-4X enclosure rating provide the industry best protection for humidity
- Built-in cable connection, design for plug-and-play installation



MODEL		BDM-250-240A	BDM-250-208A
INPUT(DC)	Max Recommended PV Power (Wp)	335	
	Max DC Open Circuit Voltage (Vdc)	60	
	Max DC Input Current (Adc)	12	
	MPPT Tracking Accuracy	>99.5%	
	MPPT Tracking Range (Vdc)	22-55	
	Isc PV (absolute maximum) (Adc)	14	
Maximum Inverter Backfeed Current to the Array (Adc)		0	
OUTPUT(AC)	Peak AC Output Power (Wp)	250	
	Rated AC Output Power (Wp)	220	
	Nominal Power Grid Voltage (Vac)	240	208
	Allowable Power Grid Voltage (Vac)	211-264*	183-229*
	Allowable Power Grid Frequency (Hz)	59.3-60.5*	
	THD	<3% (at rated power)	
	Power Factor (cos phi, fixed)	>0.99% (at rated power)	
	Rated Output Current (Aac)	0.92	1.06
	Current (inrush) (Peak and Duration)	12A, 15us	
	Nominal Frequency (Hz)	60	
	Maximum Output Fault Current (Aac)	2.2A peak	
	Maximum Output Overcurrent Protection (Aac)	6.3	
	Maximum Number of Units Per Branch (15A) (All NEC adjustment factors have been considered)	13	11
SYSTEM EFFICIENCY	Weighted Averaged Efficiency (CEC)	95%	
	Night Time Tare Loss (Wp)	0.17	
PROTECTION FUNCTIONS	Over/Under Voltage Protection	Yes	
	Over/Under Frequency Protection	Yes	
	Anti-Islanding Protection	Yes	
	Over Current Protection	Yes	
	Reverse DC Polarity Protection	Yes	
	Overload Protection	Yes	
	Protection Degree	NEMA-6 /IP-66/IP-67	
	Ambient Temperature	-40°F to +149°F (-40°C to +65°C)	
	Operating Temperature	-40°F to +185°F (-40°C to +85°C)	
	Display	LED LIGHT	
	Communications	Power Line	
	Dimension (W-H-D mm)	9.06'x5.43'x1.38' (230x138x35 mm)	
	Weight (including AC cable)	4.4 lbs. (2.0 kg)	
	Environment Category	Indoor and outdoor	
	Wet Location	SUITABLE	
	Pollution Degree	PD 3	
	Overvoltage Category	II(PV), III (AC MAINS)	
Product Safety Compliance	UL 1741 CSA C22.2 No. 107.1		
Grid Code Compliance* (Refer to the label for the detailed grid code compliance)	IEEE 1547		
<ul style="list-style-type: none"> ● Grid parameters are configurable through a BDG-256 or BDG-256P3 gateway ● NEC 2014 Section 690.11 DC Arc-Fault Circuit Protection ● NEC 2014 Section 690.12 Rapid Shutdown of PV Systems on Buildings ● NEC 2014 Section 705.12 Point of Connection (AC Arc-Fault Protection) 			

BDM-300



Features

- Global certified by both IEC and UL, comply to Hawaii electric TrOV-2 & voltage ride-through requirement
- Designed to connect individual PV module up to 400 W
- CEC Efficiency at 95.5%, improve overall solar system output
- Thinnest micro inverter in the world with 25mm thickness, best for both frame mounted and rail mounted solution
- NEMA-4X and NEMA-6P enclosure rating provide the industry best protection for humidity
- Integrated grounding and flexible cable option (trunk cable & daisy chain) make installation easier



MODEL		BDM-300	
INPUT(DC)	Recommended Max PV Power (Wp)	400	
	Max DC Open Circuit Voltage (Vdc)	60	
	Max DC Input Current (Adc)	12	
	MPPT Tracking Accuracy	>99.5%	
	MPPT Tracking Range (Vdc)	22-55	
	Isc PV (absolute maximum) (Adc)	14	
	Maximum Inverter Backfeed Current to the Array (Adc)	0	
OUTPUT(AC)	Peak AC Output Power (Wp)	300	
	Rated AC Output Power (Wp)	250	
	Nominal Power Grid Voltage (Vac)	240	208
	Allowable Power Grid Voltage (Vac)	211-264*	183-229*
	Allowable Power Grid Frequency (Hz)	59.3-60.5*	
	THD	<3% (at rated power)	
	Power Factor (cos phi, fixed)	>0.99 (at rated power)	
	Rated Output Current (Aac)	1.04	1.20
	Current (inrush) (Peak and Duration)	12A, 15us	
	Nominal Frequency (Hz)	60	
	Maximum Output Fault Current (Aac)	2.2A peak	
	Maximum Output Overcurrent Protection (Aac)	6.3	
	Maximum Number of Units Per Branch (20A) (All NEC adjustment factors have been considered)	15	13
	SYSTEM EFFICIENCY	Weighted Averaged Efficiency (CEC)	95.5%
Night Time Tare Loss (Wp)		0.08	0.06
PROTECTION FUNCTIONS	Over/Under Voltage Protection	Yes	
	Over/Under Frequency Protection	Yes	
	Anti-Islanding Protection	Yes	
	Over Current Protection	Yes	
	Reverse DC Polarity Protection	Yes	
	Overload Protection	Yes	
	Protection Degree	NEMA-6 /IP-66/IP-67	
	Ambient Temperature	-40°F to +149°F (-40°C to +65°C)	
	Operating Temperature	-40°F to +185°F (-40°C to +85°C)	
	Display	LED LIGHT	
	Communications	Power Line	
	Dimension (W-H-D mm)	7.09' x7.32' x 0.98' (180x186x25 mm)	
	Weight (including AC cable)	3.3 lbs. (1.5 kg)	
	Environment Category	Indoor and outdoor	
	Wet Location	Suitable	
	Pollution Degree	PD 3	
	Overvoltage Category	II(PV), III (AC MAINS)	
Product Safety Compliance	UL 1741 CSA C22.2 No. 107.1		
Grid Code Compliance* (Refer to the label for the detailed grid code compliance)	IEEE 1547		
<ul style="list-style-type: none"> ● Grid parameters are configurable through a BDG 256 or BDG 256P3 gateway ● NEC 2014 Section 690.11 DC Arc-Fault Circuit Protection ● NEC 2014 Section 690.12 Rapid Shutdown of PV Systems on Buildings ● NEC 2014 Section 705.12 Point of Connection (AC Arc-Fault Protection) 			

BDM-600



Features

- Global certified by both IEC and UL, comply to Hawaii electric TrOV-2 & voltage ride-through requirement
- Designed to connect two PV modules with individual MPPT control
- CEC Efficiency at 95.5%, improve overall solar system output
- NEMA-4X and NEMA-6P enclosure rating provide the industry best protection for humidity
- Integrated grounding and flexible cable option (trunk cable & daisy chain) make installation easier for installer
- Half of the installation point and the inverters for any solar system will reduce installation cost and improve the system reliability



MODEL		BDM-600		
INPUT(DC)	Max Recommended PV Power (Wp)	375 x 2		
	Max DC Open Circuit Voltage (Vdc)	60		
	Max DC Input Current (Adc)	24		
	MPPT Tracking Accuracy	>99.5%		
	MPPT Tracking Range (Vdc)	22-55		
	Isc PV (absolute maximum) (Adc)	14 x 2		
	Maximum Inverter Backfeed Current to the Array (Adc)	0		
OUTPUT(AC)	Peak AC Output Power (Wp)	550		
	Rated AC Output Power (Wp)	500		
	Nominal Power Grid Voltage (Vac)	240	208	
	Allowable Power Grid Voltage (Vac)	211-264*	183-229*	
	Allowable Power Grid Frequency (Hz)	59.3-60.5*		
	THD	<3% (at rated power)		
	Power Factor (cos phi, fixed)	>0.99%(at rated power)		
	Rated Output Current (Aac)	2.08	2.40	
	Current (inrush) (Peak and Duration)	24A, 15us		
	Nominal Frequency (Hz)	60		
	Maximum Output Fault Current (Aac)	4.4A peak		
	Maximum Output Overcurrent Protection (Aac)	10		
	Maximum Number of Units Per Branch (20A) (All NEC adjustment factors have been considered)	7	6	
SYSTEM EFFICIENCY	Weighted Averaged Efficiency (CEC)	95.5%		
	Night Time Tare Loss (Wp)	0.11		
PROTECTION FUNCTIONS	Over/Under Voltage Protection	Yes		
	Over/Under Frequency Protection	Yes		
	Anti-Islanding Protection	Yes		
	Over Current Protection	Yes		
	Reverse DC Polarity Protection	Yes		
	Overload Protection	Yes		
	Protection Degree	NEMA-6 / IP-66/IP-67		
	Ambient Temperature	-40°F to +149°F (-40°C to +65°C)		
	Operating Temperature	-40°F to +185°F (-40°C to +85°C)		
	Display	LED LIGHT		
	Communications	Power Line		
	Dimension (W-H-D mm)	10.91'x5.20'x1.97' (277x132x50 mm)		
	Weight	6.4 lbs. (2.9 kg)		
	Environment Category	Indoor and outdoor		
	Wet Location	Suitable		
Pollution Degree	PD 3			
Overvoltage Category	II(PV), III (AC MAINS)			
Product Safety Compliance	UL 1741 CSA C22.2 No. 107.1			
Grid Code Compliance* (Refer to the label for the detailed grid code compliance)	IEEE 1547			
<ul style="list-style-type: none"> ● Grid parameters are configurable through a BDG-256 or BDG-256P3 gateway ● NEC 2014 Section 690.11 DC Arc-Fault Circuit Protection ● NEC 2014 Section 690.12 Rapid Shutdown of PV Systems on Buildings ● NEC 2014 Section 705.12 Point of Connection (AC Arc-Fault Protection) 				

BDG-256



Single phase gateway



Three phase gateway

Features

- Global certified by both IEC and UL
- Smart gateway with bi-directional communication, full scale monitoring and remote trouble shooting capability
- Robust communication capability can support inverters up to 256 without sacrificing data quality
- Customer can track their solar generation, monitor system health, and showcase their data with friends through simple, mobile-friendly interface (support both Apple and Android systems)
- Support both local and remote monitoring modes
- Touch screen is designed with user friendly interface, can also provide instant reading during trouble shooting
- Support USB interfaced bard code scanner, good for quick installation

Communications Interface	
Communication with Micro Inverter	Power Line Communication
Ethernet	10/100 auto-sensing, auto-negotiation
USB	USB 2.0 interface, auto-sensing, auto-negotiation
Wi-Fi	Support (accessory required)
Mobile data networks (3G/4G)	Support (accessory required)
Monitoring capacity	255 micro inverters (depending on interference on power grid)
Human Interface	
Display	LCD touch screen
Power Requirements	
AC inlet	100 - 240 Vac, 50/60 Hz
Power consumption	3.5 watts maximum
Mechanical Data	
Dimensions (W x H x D)	6.69" x 4.33" x 1.46" (170 mm x 110mm x 37mm)
Weight	5.29 oz (150g)
Ambient temperature range	-40°C to +55°C (-40° to 131°F)
Cooling	Natural convection no fans
Enclosure environmental rating	Indoor - NEMA 1
Compliance	
<ul style="list-style-type: none"> UL 60950-1 2nd Edition Rev Dec 19, 2011 CSA C22.2 2nd Edition Rev Dec 19, 2011 FCC Part 15 Class B AS/NZS 60950.1:2011 Inc A1 AS/NZS CISPR 22: 2009+A1:2010 EN 60950-1:2006+A11:2009+A1:2010+A12:2011 EN 55022:2010 EN 61000-3-2:2006+A1:2009+A2:2009 EN 61000-3-3:2008 EN 55024:2010 	



Project Reference Overview



Osaka, Japan
Inverter Model:
BDM-300 (micro inverter)
Installed :2014



Fukuoka, Japan
Inverter Model:
BDM-600 (micro inverter)
Installed:2015



Fukuoka, Japan
Inverter Model:
BDM-300(micro inverter)
Installed:2015



Fukuoka, Japan
Inverter Model:
BDM-300 (micro inverter)
Installed:2016



Kumamoto, Japan
Inverter Model:
BDM-300 (micro inverter)
Installed:2014



Fukuoka, Japan
Inverter Model:
BDM- 250 (micro inverter)
Installed:2016



Fukuoka, Japan
Inverter Model:
BDM-300 (micro inverter)
Installed:2016



Kumamoto, Japan
Inverter Model:
BDM-300 (micro inverter)
Installed:2014



Okinawa, Japan
Inverter Model:
BDM-600 (micro inverter)
Installed:2016



Okinawa, Japan
Inverter Model:
BDM-300 (micro inverter)
Installed:2014

Project Reference Overview



Nevada, USA
Inverter Model:
BDM-250 (micro inverter)
Installed:2012



California, USA
Inverter Model:
BDM-600 (micro inverter)
Installed:2014



California, USA
Inverter Model:
BDM-250(micro inverter)
Installed:2013



Arizona, USA
Inverter Model:
BDM-300 (micro inverter)
Installed:2015



Texas, USA
Inverter Model:
BDM-300 (micro inverter)
Installed:2014



Missouri, USA
Inverter Model:
BDM-300 (micro inverter)
Installed:2015



California, USA
Inverter Model:
BDM-300 (micro inverter)
Installed:2015



California, USA
Inverter Model:
BDM-250 (micro inverter)
Installed:2013



California, USA
Inverter Model:
BDM-250 (micro inverter)
Installed:2014



California, USA
Inverter Model:
BDM-250 (micro inverter)
Installed:2015

NEP Micro Inverter System

● Micro Inverter

Thinnest micro inverter can be mounted on a panel or a rail.



● Communication Gateway

Provides panel-level monitoring and configuration of micro inverters. Features touch screen LCD and user friendly interface.



● NEPVIEWER SystemGateway

NEPVIEWER provides panel-level monitoring from anywhere in the world through PC or smart phone.

