

Solar Ware Ninja™

TMEiC
We drive industry

Multiple Configurations for Maximum Flexibility

TMEiC's Solar Ware Ninja is the latest evolution of the highly successful Solar Ware family of inverters, joining over 20GW of TMEiC's globally installed photovoltaic inverters. Continuing the legacy of high efficiency, cutting-edge features, and unmatched reliability, the new Ninja modular inverter system is the culmination of input from utilities, developers, and technicians.

The Ninja is a global product, performing the duties of both generation and energy storage. The modular system introduces multiple layers of flexibility to allow designers an almost unlimited number of options for every project. The advanced controls system is packed with features to meet not only today's smart inverter requirements, but also new requirements as they are introduced. Like the award-winning Samurai series of inverters, the Ninja utilizes the same highly reliable IGBT based power conversion system.



Customizable Block

Up to 6 Ninja units on the same skid. Able to combine PV and ESS inverters in the same lineup. A skid controller will manage output of the Ninja power station.

- Fully Modular design means:
 - Completely independent inverters for increased availability
 - Individual MPPT for greater energy yield
 - Latest generation of Smart Inverter controls platform
 - Multiple output options with various MPPT ranges
- DC Zone monitoring is standard
- UL or IEC certified global design
- PV or Energy Storage (bi-directional)
- Outdoor rated enclosure

TMEiC is Bankable

- Stable, with multi billion \$USD revenue
- Diversified, with decades of power electronics experience in a variety of heavy industries, including metals, oil & gas, mining, and container cranes industries
- Manufacturing in the US and several other locations

TMEiC is Reliable

- Over 20GW of PV and ESS inverters globally
- Own exclusive use of Mitsubishi Electric's 3 level NPS technology
- Industry leading fleet availability

TMEiC is Support

- Award winning service
- 24/7 US based hot line
- Over 30 years PV inverter manufacturing and R&D experience
- Comprehensive customer training programs
- Authorized Service Provider program available

		PV-PCS			ESS-PCS		
Type		PVU-L0800GR	PVU-L0840GR	PVU-L0880GR	BSU-L0640GR	BSU-L0800GR	BSU-L0840GR
Output side (AC)	Rated Power@25°C	800kW	840kW	880kW	640kW	800kW	840kW
	Rated Power@50°C	730kW	765kW	800kW	550kW	730kW	765kW
	Rated Voltage	600V +10%, -12%	630V +10%, -12%	660V +10%, -12%	480VAC	600VAC	630VAC
	Rated Frequency	50Hz / 60Hz (+0.5Hz, -0.7Hz)					
	Rated Power Factor	>0.99					
	Reactive Capability	±421 kVAR	±442 kVAR	±464 kVAR	±448 kVAR	±560 kVAR	±588 kVAR
	Rated Current	702 Arms @50 °C					
	Maxium Current	770 Arms @25 °C					
	Maximum Efficiency	98.72%*	98.72%	98.72%*	98.72%*	98.72%*	98.72%*
	CEC Efficiency	98%*	98%	98%*	98%*	98%*	98%*
Input side (DC)	Maximum Voltage	1500 Vdc					
	MPPT Operation Range	875-1300VDC	915-1300VDC	960-1300VDC	710-1100VDC	875-1300VDC	915-1300VDC
Environ. Conditions	Ingress Protection Ratings	IP54 / NEMA3R					
	Installation	Outdoor					
	Ambient Temperature Range	-25° to 50°C					
	Maximum Altitude	>2000 m power derating (Max. 4000m)					
Protective Functions	Input (DC) Side	DC Protection: Input Fuses, Ground Fault Detection, DC Reverse Current, Over Voltage, Over Current					
	Grid (AC) Side	AC Protection: Disconnect Switch and Fuse, Anti-islanding, Over/Under Voltage, Over/Under Frequency, Over Current					
	Grid Assistance	Reactive/Active Power Control, Power Factor Control, Fault Ride Through (optional)					
Harmonic Distortion of AC Current	≤ 3% THD (at rated power)			≤ 5% THD (at rated power)			
Communication	Modbus/TCP						
Fault Analysis	Fault Event Log, Waveform Acquisition via memory card						
Compliance	UL1741, UL174SA / IEE1547 / NEC2017 / IEC62109-1,2 / IEC61000-6-2,4 / IEC61727, IEC62116 / IEC61400, BDEW / IEC61683 / IEC60068						
Cooling Method	Heat Pipes and Forced Air Cooling						
Number of Inputs	Standard 6 inputs for PV (maximum 8 per inverter)			1 per Inverter			
Standard Control Power Supply	Control Power Supply from Inverter output and Capacitor backup circuit (3 sec. compensation)						
Short Circuit Withstand Current	AC side – 65kA; DC side – 30kA			AC side – 65kA; DC side – 100kA			
Weight	<1000kgs						
Dimensions (H x W x D)	1100 X 1100 X 1900 mm (L x W x H)						
Floor Space	1875.5 sq. in. (1.21 m ²)						
Color	Cabinet: Munsell N7.0, Roof: Munsell N4.5						

Note: Standard configuration not limited configuration. Contact TMEIC for detailed information.

*Preliminary specification

WWW.TMEIC.COM

Bifacial HC 72M 520-540 Watt

MONOCRYSTALLINE MODULE

Positive power tolerance of 0~+3%

ISO9001:2015, ISO14001:2015, ISO45001:2018 certified factory.

IEC61215, IEC61730, certified products.

TIGER Pro



KEY FEATURES



Multi Busbar Solar Cell

MBB solar cell adopts new technology to improve the efficiency of modules, offers a better aesthetic appearance, making it perfect for rooftop installation.



PID Resistance

Excellent Anti-PID performance guarantee limited power degradation for mass production.



Higher Lifetime Power Yield:

0.45% annual power degradation
30 year linear power warranty



Light-weight design:

Light-weight design using transparent backsheets for easy installation and low BOS cost.



Higher power output:

Module power increases 5-25% generally (per different reflective condition)
lower LCOE and higher IRR



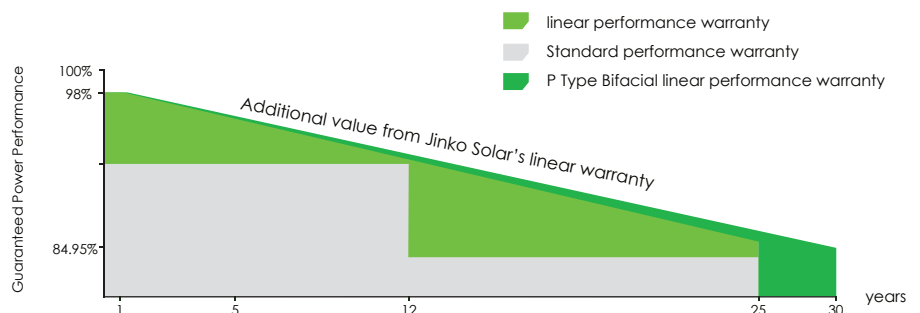
Better low-light performance:

Excellent performance in low-light environments (e.g. early morning, dusk, and cloud, etc.)

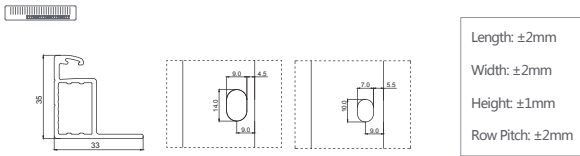
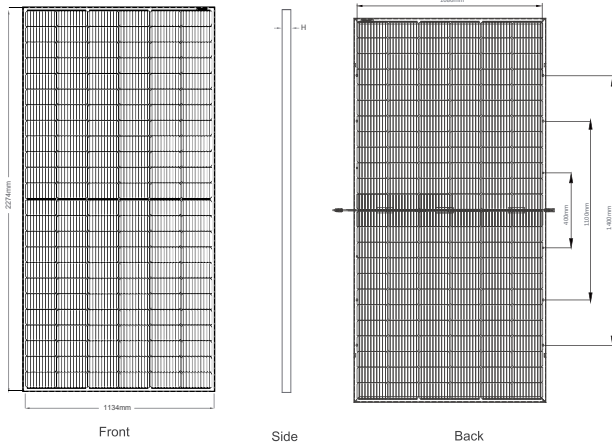


LINEAR PERFORMANCE WARRANTY

12 Year Product Warranty • 30 Year Linear Power Warranty
0.45% Annual Degradation Over 30 years



Engineering Drawings

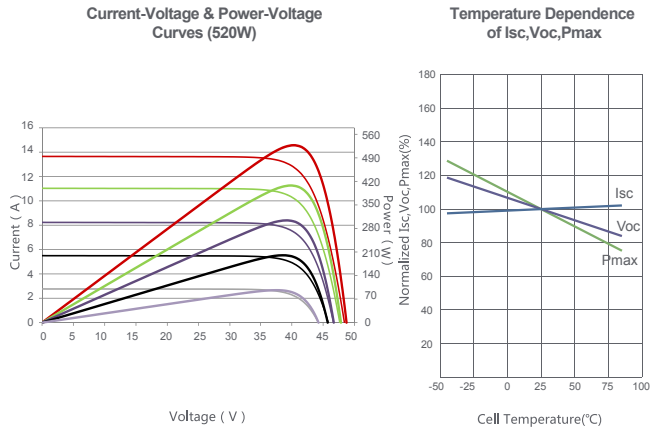


Packaging Configuration

(Two pallets = One stack)

31pcs/pallets, 62pcs/stack, 620pcs/ 40'HQ Container

Electrical Performance & Temperature Dependence



Mechanical Characteristics

Cell Type	P type Mono-crystalline
No. of cells	144 (6×24)
Dimensions	2274×1134×35mm (89.53×44.65×1.38 inch)
Weight	29.4 kg (64.6 lbs)
Front Glass	3.2mm, Anti-Reflection Coating, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68 Rated
Output Cables	TUV 1×4.0mm ² (+): 290mm, (-): 145 mm or Customized Length

SPECIFICATIONS

Module Type	JKM520M-72HL4-TV		JKM525M-72HL4-TV		JKM530M-72HL4-TV		JKM535M-72HL4-TV		JKM540M-72HL4-TV	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	520Wp	387Wp	525Wp	391Wp	530Wp	394Wp	535Wp	398Wp	540Wp	402Wp
Maximum Power Voltage (Vmp)	40.22V	37.42V	40.36V	37.56V	40.49V	37.70V	40.63V	37.84V	40.76V	37.97V
Maximum Power Current (Imp)	12.93A	10.34A	13.01A	10.40A	13.09A	10.46A	13.17A	10.52A	13.25A	10.58A
Open-circuit Voltage (Voc)	48.72V	45.99V	48.86V	46.12V	48.99V	46.24V	49.13V	46.37V	49.26V	46.50V
Short-circuit Current (Isc)	13.61A	10.99A	13.69A	11.06A	13.77A	11.12A	13.85A	11.19A	13.93A	11.25A
Module Efficiency STC (%)	20.17%		20.36%		20.55%		20.75%		20.94%	
Operating Temperature(°C)	-40°C~+85°C									
Maximum system voltage	1500VDC (IEC)									
Maximum series fuse rating	25A									
Power tolerance	0~+3%									
Temperature coefficients of Pmax	-0.35%/°C									
Temperature coefficients of Voc	-0.28%/°C									
Temperature coefficients of Isc	0.048%/°C									
Nominal operating cell temperature (NOCT)	45±2°C									
Refer. Bifacial Factor	70±5%									

BIFACIAL OUTPUT-REARSIDE POWER GAIN

		546Wp	551Wp	557Wp	562Wp	567Wp
5%	Maximum Power (Pmax)	546Wp	551Wp	557Wp	562Wp	567Wp
	Module Efficiency STC (%)	21.17%	21.38%	21.58%	21.78%	21.99%
15%	Maximum Power (Pmax)	598Wp	604Wp	610Wp	615Wp	621Wp
	Module Efficiency STC (%)	23.19%	23.41%	23.64%	23.86%	24.08%
25%	Maximum Power (Pmax)	650Wp	656Wp	663Wp	669Wp	675Wp
	Module Efficiency STC (%)	25.21%	25.45%	25.69%	25.93%	26.18%

* STC: Irradiance 1000W/m² Cell Temperature 25°C

AM=1.5

NOCT: Irradiance 800W/m² Ambient Temperature 20°C

AM=1.5

Wind Speed 1m/s

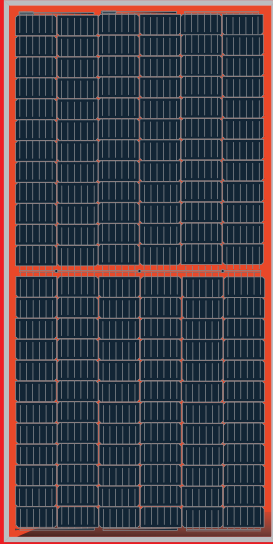
* Power measurement tolerance: ± 3%

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Specifications included in this datasheet are subject to change without notice.

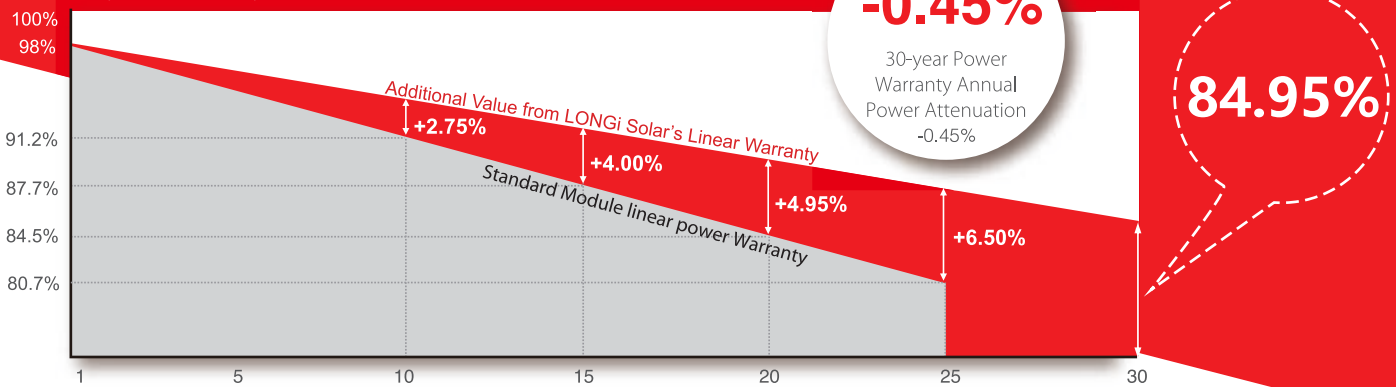
JKM520-540M-72HL4-TV-A1-EN

LR6-72HBD 360~385M



**High Efficiency
Low LID Bifacial PERC with
Half-cut Technology**

10-year Warranty for Materials and Processing;
30-year Warranty for Extra Linear Power Output



Complete System and Product Certifications

IEC 61215, IEC61730, UL1703
ISO 9001:2008: ISO Quality Management System
ISO 14001: 2004: ISO Environment Management System
TS62941: Guideline for module design qualification and type approval
OHSAS 18001: 2007 Occupational Health and Safety



* Specifications subject to technical changes and tests. LONGi Solar reserves the right of interpretation.

Front side performance equivalent to conventional low LID mono PERC:

- High module conversion efficiency (up to 19.1%)
- Better energy yield with excellent low irradiance performance and temperature coefficient
- First year power degradation <2%

Bifacial technology enables additional energy harvesting from rear side (up to 25%)

Glass/glass lamination ensures 30 year product lifetime, with annual power degradation < 0.45%, 1500V compatible to reduce BOS cost

30mm frame design enables easy installation and robust mechanical strength

Solid PID resistance ensured by solar cell process optimization and careful module BOM selection

Reduced resistive loss with lower operating current

Higher energy yield with lower operating temperature

Reduced hot spot risk with optimized electrical design and lower operating current

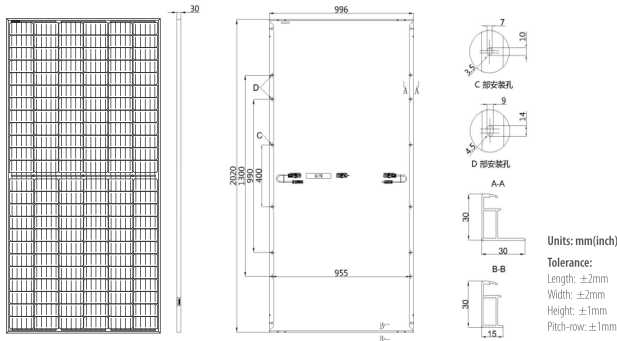
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Note: Due to continuous technical innovation, R&D and improvement, technical data above mentioned may be of modification accordingly. LONGi Solar have the sole right to make such modification at anytime without further notice; Demanding party shall request for the latest datasheet for such as contract need, and make it a consisting and binding part of lawful documentation duly signed by both parties.

LR6-72HBD 360~385M

Design (mm)



Mechanical Parameters

Cell Orientation: 144 (6×24)
 Junction Box: IP67, three diodes
 Output Cable: 4mm², 300mm in length,
 length can be customized
 Glass: Dual glass
 2.0mm tempered glass
 Frame: Anodized aluminum alloy frame
 Weight: 25.5kg
 Dimension: 2020×996×30mm
 Packaging: 35pcs per pallet
 175pcs per 20'GP
 770pcs per 40'HC

Operating Parameters

Operational Temperature: -40℃ ~ +85℃
 Power Output Tolerance: 0 ~ +5 W
 Voc and Isc Tolerance: ±3%
 Maximum System Voltage: DC1500V (IEC/UL)
 Maximum Series Fuse Rating: 20A
 Nominal Operating Cell Temperature: 45±2℃
 Safety Class: Class II
 Fire Rating: UL type 6
 Bifaciality: Coating≥75%
 Glazing≥70%

Electrical Characteristics

Test uncertainty for Pmax: ±3%

Model Number	LR6-72HBD-360M		LR6-72HBD-365M		LR6-72HBD-370M		LR6-72HBD-375M		LR6-72HBD-380M		LR6-72HBD-385M	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	360	267.7	365	271.4	370	275.1	375	278.8	380	282.6	385	286.3
Open Circuit Voltage (Voc/V)	47.7	44.4	47.9	44.6	48.1	44.8	48.3	45.0	48.5	45.2	48.7	45.4
Short Circuit Current (Isc/A)	9.64	7.80	9.72	7.87	9.80	7.93	9.87	7.99	9.97	8.07	10.03	8.12
Voltage at Maximum Power (Vmp/V)	39.4	36.6	39.6	36.8	39.8	36.9	40.0	37.1	40.2	37.3	40.4	37.5
Current at Maximum Power (Imp/A)	9.14	7.32	9.22	7.38	9.30	7.45	9.38	7.51	9.47	7.59	9.53	7.63
Module Efficiency(%)	17.9		18.1		18.4		18.6		18.9		19.1	

STC (Standard Testing Conditions): Irradiance 1000W/m², Cell Temperature 25℃, Spectra at AM1.5

NOCT (Nominal Operating Cell Temperature): Irradiance 800W/m², Ambient Temperature 20℃, Spectra at AM1.5, Wind at 1m/s

Electrical characteristics with different rear side power gain (reference to 370W front)

Pmax /W	Voc/V	Isc /A	Vmp/V	Imp /A	Pmax gain
389	48.1	10.29	39.8	9.76	5%
407	48.1	10.77	39.8	10.23	10%
426	48.2	11.26	39.9	10.69	15%
444	48.2	11.75	39.9	11.16	20%
463	48.2	12.24	39.9	11.62	25%

Temperature Ratings (STC)

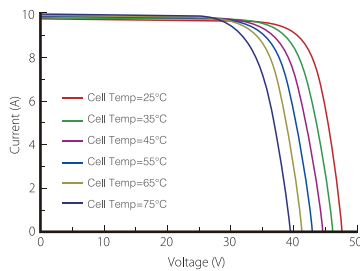
Temperature Coefficient of Isc: +0.060%/℃
 Temperature Coefficient of Voc: -0.300%/℃
 Temperature Coefficient of Pmax: -0.370%/℃

Mechanical Loading

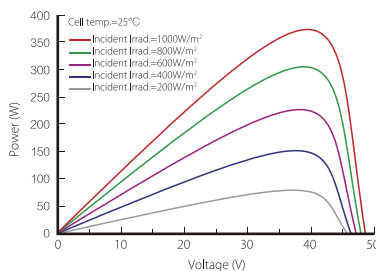
Front Side Maximum Static Loading: 5400Pa
 Rear Side Maximum Static Loading: 2400Pa
 Hailstone Test: 25mm Hailstone at the speed of 23m/s

I-V Curve

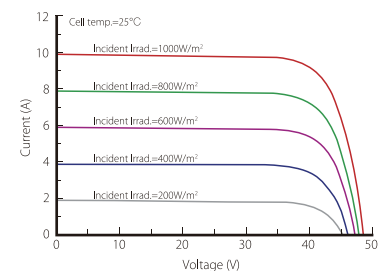
Current-Voltage Curve (LR6-72HBD-370M)



Power-Voltage Curve (LR6-72HBD-370M)



Current-Voltage Curve (LR6-72HBD-370M)



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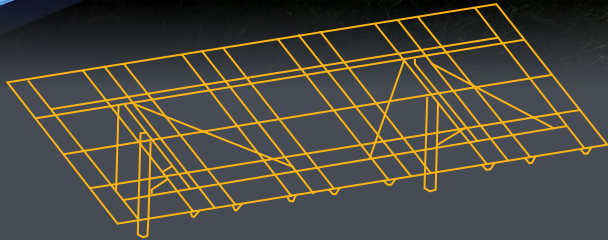
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THE FLEXRACK SERIES G3-X



156 FlexRack Series G3P-X racks
1.9MW Nixon Farms Project | West Friendship, MD



+ TURN-KEY SERVICES

We're here for you because we care about your projects. From engineering to installation, you can also leverage our expert turn-key services on any job from start to finish.

Contact us to see how our team of project engineers, field techs, geologists and other specialists can help make sure your next project is a success.

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Pick your preference

Solar Developers and EPCs demand choices and continued innovation to maintain their leadership position. The Field Assembled G3-X Ground Rack joins our flagship Pre-assembled G3L and G2P series as the latest advancement in our ongoing quest to provide products which meet project-specific needs. Solar FlexRack stands alone as the only racking company able to provide you with these options.

Easy assembly

The G3-X system is easily staged on the jobsite, can be assembled in the field by crews of nearly any skill level, and has been third-party verified for speed of installation by The Industrial Time Study Institute, Inc. Multiple pre-drilled holes, slot to slot connections, and generous construction tolerances make the G3-X an efficient and adaptable model on the jobsite.

Seamless flexibility

The G3-X, available in both Portrait and Landscape orientations, leverages the knowledge gained in delivering nearly 1 GW of pre-assembled ground mounts into a racking system which is assembled in the field. This product is a perfect fit for projects where labor costs are low and field assembly is preferred.

Intelligent design

The series G3-X is value-engineered by our professional team of best-in-class engineers to optimize materials and limit components to create a cost-effective solution. Our field engineering team will work with you personally to ensure that whatever system you choose will be the most cost effective solution for your project needs.

Bankability

Solar FlexRack is a product of Northern States Metals, a full service manufacturer with over 40 years of experience. With close to 1 GW of installed capacity Solar FlexRack has the experience and sustainability to be a reliable partner for your next successful solar project. The G3-X series also comes standard with a 20 year warranty.

MATERIALS	
Hardware	Mounting hardware is Magni 560 coated standard. Stainless available upon request.
Racking Structure	G 90 galvanized steel standard. Higher coatings available for high corrosion areas
Foundations	Hot Dipped Galvanized
DESIGN	
Orientation	Landscape or Portrait
Tilt Angle	5° - 45° (custom tilts can be accommodated)
Adjustability	20% E/W Landscape, 20% E/W Portrait
Wind Speed	Any
Snow Load	Any
Module Accommodation	Any 60 or 72 cell framed module along with any frameless module
Module Mounting Type	Direct bolt to vertical rails (bonded connection)
Foundation Accommodation	W-Section, SmartPost, Round Post, Helical Pier, Ballast
Warranty	20 Years
CERTIFICATIONS AND TESTING	
UL Compliance	UL 2703 (Issue 2) compliant.
Wind Tunnel Testing	CPP third party testing laboratory
Structural Connection Testing	Accutek Testing Laboratory
Code Compliance	Racks are designed using local environmental loads (wind, snow, and seismic) per the governing and/or local building codes
Finite Element Modeling	Risa 3D
Engineering	PE stamped drawings and calculations
SERVICES	
Geotechnical Engineering	Field investigation and engineering, laboratory testing, engineering analysis, push/pull tests, foundation design
Structural/Civil Engineering	Preliminary investigation, engineering, layout
Installation	Foundation, racking, module, and module pre-wiring

Solar FlexRack, a division of Northern States Metals, is an integrated solar company that offers custom-designed, fixed tilt ground mount and single-axis solar tracking systems in the commercial, community solar and utility-scale solar mounting industries. Solar FlexRack offers full turnkey packages including engineering, geotechnical, pullout testing, field, layout, and installation services to address the actual site conditions of an installation and provide a full scope of services from design to delivery and installation. Solar FlexRack has completed over 2 GW of solar racking installations in 40 states across America and five countries globally.

NX Horizon

Smart Solar Tracking System

Serving as the backbone on over 35 gigawatts of solar power plants around the world, the NX Horizon™ smart solar tracker system combines best-in-class hardware and software to help EPCs and asset owners maximize performance and minimize operational costs.

Flexible and Resilient by Design

With its self-aligning module rails and vibration-proof fasteners, NX Horizon can be easily and rapidly installed. The self-powered, decentralized architecture allows each row to be commissioned in advance of site power, and is designed to withstand high winds and other adverse weather conditions. On a recent 838 megawatt project in Villanueva, Mexico, these design features allowed for the project to go online nine months ahead of schedule.

TrueCapture and Bifacial Enabled

Incorporating the most promising innovations in utility scale solar, NX Horizon with TrueCapture™ smart control system can add additional energy production by up to six percent. Further unlocking the advantages of independent-row architecture and the data collected from thousands of sensors across its built-in wireless network, the software continuously optimizes the tracking algorithm of each row in response to site terrain and changing weather conditions. NX Horizon can also be paired with bifacial PV module technology, which can provide even more energy harvest and performance. With bifacial technology, NX Horizon outperforms conventional tracking systems with over 1% more annual energy.

Quality and Reliability from Day One

Quality and reliability are designed and tested into every NX Horizon component and system across our supply chain and manufacturing operations. NextTracker is the leader in dynamic wind analysis and safety stowing, delivering major benefits in uptime and long-term durability. NX Horizon is certified to UL 2703 and UL 3703 standards, underscoring NextTracker's commitment to safety, reliability and quality.

Features and Benefits

5 years in a row

Global Market Share Leader (2015-18)

35 GW

Delivered on 5 Continents

Best-in Class

Software Ecosystem and
Global Services

Up to 6%

Using TrueCapture Smart
Control System



GENERAL AND MECHANICAL

Tracking type	Horizontal single-axis, independent row.
String voltage	1,500 V _{DC} or 1,000 V _{DC}
Typical row size	78-90 modules, depending on module string length.
Drive type	Non-backdriving, high accuracy slew gear.
Motor type	24 V brushless DC motor
Array height	Rotation axis elevation 1.3 to 1.8 m / 4'3" to 5'10"
Ground coverage ratio (GCR)	Configurable. Typical range 28-50%.
Modules supported	Mounting options available for virtually all utility-scale crystalline modules, First Solar Series 6 and First Solar Series 4.
Bifacial features	High-rise mounting rails, bearing + driveline gaps and round torque tube.
Tracking range of motion	Options for ±60° or ±50°
Operating temperature range	SELF POWERED: -30°C to 55°C (-22°F to 131°F) AC POWERED: -40°C to 55°C (-40°F to 131°F)
Module configuration	1 in portrait. 3 x 1,500 V or 4 x 1,000 V strings per standard tracker. Partial length trackers available.
Module attachment	Self-grounding, electric tool-actuated fasteners.
Materials	Galvanized steel
Allowable wind speed	Configurable up to 225 kph (140 mph) 3-second gust
Wind protection	Intelligent wind stowing with symmetric dampers for maximum array stability in all wind conditions
Foundations	Standard W6 section foundation posts

ELECTRONICS AND CONTROLS

Solar tracking method	Astronomical algorithm with backtracking. TrueCapture™ upgrades available for terrain adaptive backtracking and diffuse tracking mode
Control electronics	NX tracker controller with inbuilt inclinometer and backup battery
Communications	Zigbee wireless communications to all tracker rows and weather stations via network control units (NCUs)
Nighttime stow	Yes
Power supply	SELF POWERED: NX provided 30 or 60W Smart Panel AC POWERED: Customer-provided 120-240 V _{AC} circuit

INSTALLATION, OPERATIONS AND SERVICE

PE stamped structural calculations and drawings	Included
Onsite training and system commissioning	Included
Installation requirements	Simple assembly using swaged fasteners and bolted connections. No field cutting, drilling or welding.
Monitoring	NX Data Hub™ centralized data aggregation and monitoring
Module cleaning compatibility	Compatible with NX qualified cleaning systems
Warranty	10-year structural, 5-year drive and control components.
Codes and standards	UL 3703 / UL 2703 / IEC 62817