## <u>Exhibit F</u>

Project Equipment List

# TDP<sup>™</sup> 2.0 TURNKEY SOLAR TRACKER With BalanceTrac

TDP is a trademark of Solar FlexRack

Tough, Reliable Tracker & Team of Experts at Your Service

Solar FlexRack's new TDP 2.0 Turnkey Solar Tracker with complete project support services for commercial and utility-scale solar installations introduces an advanced design featuring new *BalanceTrac*. This next-generation technology enables solar power plants to increase energy yield while significantly reducing project risks. That translates to smart installation cost-savings across your project budget.



#### The Only Tracker Solution with:

- Full Design
- Installation
- Commissioning Services

#### Increased Energy Yield

TDP 2.0 with new *BalanceTrac* is efficiently designed to support more modules per row, a rotational range of up to 110°, and is compatible with 1,000 and 1500V modules. These key features enable significant energy production gains in solar power plants.

# Greater Adjustability To Maximize Performance

TDP 2.0 Tracker has up to a 10% slope tolerance that can eliminate the need to level land. Independently driven rows provide easy access for mowing, cleaning and maintenance. Autonomous tables increase design flexibility to maximize ground coverage on irregular and non-adjacent lots. Programmable granular backtracking, snow shedding and new wind damper technology mitigate inclement climatic events and reduce risk of tracker damage. All of these features compound to increase system performance.

#### Installations Fly with Solar FlexRack

No special equipment or additional steps are required to square your racking. The proprietary design allows modules to easily slide into place, accelerating the process, and reducing installation time.

#### Complete Support Services Reduce Project Risks And Costs

A tracker solution that comes with all the critical associated support services and an unmatched team of experts that will significantly reduce your risks and project costs. Project management is simplified. redundancies are eliminated, and you have one highly-experienced supplier-instead of many.



#### Increased Yield & Reduced Costs

- More modules per row (up to 90)
- Rotational range of up to 110° (±55°)
- Optimized for 1,000 & 1,500V modules
- Lower per-unit fixed costs for balance of system savings
- Allows shorter piles
- Programmable technology to mitigate inclement climatic conditions
- installations fly with no prying, adjusting or special tools
- Built to last, the robust design reduces amount of tracker components and wear
- Autonomous tables increase design flexibility to maximize land use
- Smart backtracking reduces row shading to optimize energy production
- Independently driven rows provide easy access for mowing, cleaning and other maintenance

# TDP $^{\text{TDP}}$ 2.0 Turnkey Solar Tracker with BalanceTrac

#### TESTING

Rain, wind, sleet, snow, heat – every day and everywhere, our products are battling the elements.

We perform ongoing extensive testing in these key areas: wind tunnel, structural load, electrical bonding, and life cycle.

Solar FlexRack trackers also undergo wind tunnel testing performed by RWDI, per American Society Of Civil Engineers Standard ASCE 7.

#### UL COMPLIANCE

All Solar FlexRack systems have gone through UL testing.

Each component-connection point within the system conforms to NEC codes for electrically bonded and conductive systems.

Testing is performed by TUV Rheinland in accordance with UL 2703.

Certification covers both United States and Canada.

Find out more about Solar FlexRack product reliability and testing at <u>http://solarflexrack.com/prod</u> <u>ucts/testing</u>



Learn more about our Preferred Installer Program: http://solarflexrack.com/resources /preferred-installer-program/

TRACKING	
Tracking method	Single-axis horizontal, distributed drive
Backtracking	Smart backtracking - customized to terrain for maximum production
Tracking range	Up to 110° (± 55°)
Ground coverage ratio (GCR)	Configurable (0.33 to 0.50)
Tracking accuracy	2°
Stow Angle	Configurable

ARRAY CONFIGURATION			
Panels per tracker	Up to 90		
Trackers per controller	1		
String voltage	Up to 1,500 Volts		
Panel configurations	1 in portrait (crystalline)		
	2 in landscape (crystalline)		
	4 in landscape (thin film)		
Drive type	Slew		
	24 Volts dc		

OPERATIONS & MAINTENANCE		
Scheduled maintenance	None	
Warranty	10 Years: Structural and Controllers 5 Years: Drives and Electrical	
Certifications	UL 2703	
Dynamic load management	Limited progressive damping technology	
Snow management	Programmable snow shedding	

INSTALLATION & TOLERANCES				
North-south slope Up to 10%				
tolerance				
North-south post spacing	± 1.5 inches			
East-west post alignment ± 0.625 inches				
Post height	± 1 inch			
Post plumb	±1°			
Post twist	± 2°			
Tube twist	± 2°			

CONSTRUCTION	
Structural materials	Hot dip galvanized steel
Bearings	UV-rated engineering plastic, no lubrication needed
Mechanical connections	Bolted - no welding, drilling or cutting required

CONTROL SYSTEM	
Data feed	Ethernet, Zigbee, SCADA
Power consumption	31 kWh per tracker per year

ENVIRONMENTAL	
Operating temperature	-30 °C to +60 °C
Wind Stow	105 mph (Up to 130 mph) 35 mph
Snow load	10 psf (standard)
	Higher snow load available upon request



TDP 2.0 TURNKEY SOLAR TRACKER With *BalanceTrac* 

#### Support Services

- ✓ Geotechnical Services
- Structural Analysis
- ✓ Layout & Design
- ✓ Foundation Design Services
- ✓ Post Driving
- Pull Testing
- Tracking System Installation
- ✓ Visual Inspection of Trackers
- Preferred Installer Network
- Post, Rack & Module Installation
- Configuration of Tracker Controls
- ✓ Configuration of Network Controls
- Project Management
- PE Stamp
- Onsite Training
- Commissioning
- ✓ Remote Data Monitoring & Reporting

## Over 2.0 Gigawatts of Solar FlexRack Installed

Solar FlexRack, a division of Northern States Metals, is an integrated solar company that offers customdesigned, 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.

> For more information on Solar FlexRack visit: www.solarflexrack.com



#### PRODUCT: TSM-DEG19C.20

21.0%

MAXIMUM EFFICIENCY

PRODUCT RANGE: 525-550W

550W+

#### MAXIMUM POWER OUTPUT

# 0~+5W

POSITIVE POWER TOLERANCE



#### **High customer value**

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance of System) cost, shorter payback time
- Lowest guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- High return on Investment



- Up to 21.0% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection

#### **High reliability**

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load

#### High energy yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions
- Lower temperature coefficient (-0.34%) and operating temperature
- $\bullet$  Up to 25% additional power gain from back side depending on albedo

#### Trina Solar's Vertex Bifacial Dual Glass Performance Warranty







#### **Comprehensive Products and System Certificates**



IEC61215/IEC61730/IEC61701/IEC62716/UL61730 ISO 9001: Quality Management System ISO 14001: Environmental Management System ISO14064: Greenhouse Gases Emissions Verification ISO45001: Occupational Health and Safety Management System



#### **DIMENSIONS OF PV MODULE(mm)**

35



#### I-V CURVES OF PV MODULE (540 W)



#### P-V CURVES OF PV MODULE(540 W)



#### ELECTRICAL DATA (STC)

Peak Power Watts-PMAX (Wp)*	525	530	535	540	545	550
Power Tolerance-PMAX (W)	0 ~ +5					
Maximum Power Voltage-VMPP (V)	30.8	31.0	31.2	31.4	31.6	31.8
Maximum Power Current-Impp (A)	17.04	17.11	17.16	17.21	17.24	17.29
Open Circuit Voltage-Voc (V)	37.1	37.3	37.5	37.7	37.9	38.1
Short Circuit Current-Isc (A)	18.14	18.19	18.24	18.30	18.35	18.39
Module Efficiency n m (%)	20.1	20.3	20.5	20.7	20.9	21.0
STC: Irrdiance 1000W/m2, Cell Temperature 25°C, Air Mass AM1.5. *Measuring tolerance: ±3%.						
Electrical characteristics with dif	ferent pov	wer bin (re	eference t	o 10% Irr	adiance r	atio)**
Total Equivalent power -PMAX (Wp)	562	567	573	578	583	589

Total Equivalent power -1 MAX (Wp)	202	507	5/5	5/0	202	505	
Maximum Power Voltage-VMPP (V)	30.8	31.0	31.2	31.4	31.6	31.8	
Maximum Power Current-Impp (A)	18.23	18.31	18.36	18.41	18.45	18.50	
Open Circuit Voltage-Voc (V)	37.1	37.3	37.5	37.7	37.9	38.1	
Short Circuit Current-Isc (A)	19.41	19.46	19.52	19.58	19.63	19.68	
Irradiance ratio (rear/front)			10	%			

Power Bifaciality:70±5%

#### **ELECTRICAL DATA (NOCT)**

Maximum Power-PMAX (Wp)	398	401	405	409	413	416
Maximum Power Voltage-VMPP (V)	28.6	28.8	29.0	29.2	29.4	29.5
Maximum Power Current-Impp (A)	13.88	13.93	13.97	14.02	14.08	14.10
Open Circuit Voltage-Voc (V)	35.0	35.1	35.3	35.5	35.7	35.9
Short Circuit Current-Isc (A)	14.62	14.66	14.70	14.75	14.79	14.82

NOCT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s

#### MECHANICAL DATA

Solar Cells	Monocrystalline 210mm PERC
No. of cells	110 cells
Module Dimensions	2384×1096×35 mm (93.86×43.15×1.38 inches)
Weight	32.6 kg (71.9 lb)
Front Glass	2.0 mm (0.08 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	EVA/POE
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	35mm (1.38 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm² (0.006 inches²), Portrait: 280/280 mm (11.02/11.02 inches) Landscape: 1400/1400 mm (55.12/55.12 inches)
Connector	Trina TS4*/MC4 EV02
*Please specifiy connector on your order	

#### **TEMPERATURE RATINGS**

30 year Power Warranty

2% first year degradation

WARRANTY

NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of PMAX	- 0.34%/°C
Temperature Coefficient of Voc	- 0.25%/°C
Temperature Coefficient of Isc	0.04%/°C

12 year Product Workmanship Warranty

Operational Temperature Maximum System Voltage

MAXIMUMRATINGS

## Max Series Fuse Rating

PACKAGING CONFIGURATION Modules per box: 31 pieces

-40~+85°C

1500V DC (IEC)

1500V DC (UL)

35A

Modules per 40' container: 527 pieces

0.45% Annual Power Attenuation (Please refer to product warranty for details)

\*\* Back-side power gain varies depending upon the specific project albedo



CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT. © 2021 Trina Solar Limited, All rights reserved, Specifications included in this datasheet are subject to change without notice. Version number: TSM\_DE19C\_2021\_A www.trinasolar.com

# SOLECTRIA<sup>TM</sup> XGI 1500

### PREMIUM 3-PHASE TRANSFORMERLESS UTILITY-SCALE INVERTERS

#### FEATURES

- Made in the USA with global components
- Buy American Act (BAA) compliant
- Four models:
- 125kW/125kVA,
- 125kW/150kVA,
- 150kW/166kVA,
- 166kW/166kVA
- 99.0% peak efficiency
- Flexible solution for distributed and centralized system architecture
- Advanced grid-support functionality Rule 21/UL1741SA
- Robust, dependable and built to last
- Lowest O&M and installation costs
- Access all inverters on site via WiFi from one location
- Remote diagnostics and firmware upgrades
- SunSpec Modbus Certified
- Tested compatible with the TESLA PowerPack Microgrid System
- app for system visibility

#### OPTIONS

- String combiners for distributed and centralized systems
- Web-based monitoring
- Extended warranty

#### MADE IN THE USA





VASKAWA VASKAWA VASKAWA NEW! Expanded Dc/AC Ratios

Yaskawa Solectria Solar's XGI 1500 utility-scale string inverters are designed for high reliability and built of the highest quality components that were selected, tested and proven to last beyond their warranty.

XGI 1500 inverters provide advanced grid-support functionality and meet the latest IEEE 1547 and UL 1741 standards for safety. They are the most powerful 1500 VDC string inverters in the PV market and have been engineered for both distributed and centralized system architecture.

Designed and engineered in Lawrence, MA, XGI inverters are assembled and tested at Yaskawa America's facilities in Buffalo Grove, IL. They are Made in the USA with global components and are compliant with the Buy American Act.

#### **SPECIFICATIONS**

SOLECTRIA XGI 1500 Model		XGI 1500-125/125	XGI 1500-125/150	XGI 1500-150/166	XGI 1500-166/166
DC Input	Absolute Maximum Input Voltage	1500 VDC	1500 VDC	1500 VDC	1500 VDC
	Maximum Power Input	860-1250 VDC	860-1250 VDC	860-1250 VDC	860-1250 VDC
	Voltage Range (MPPT)	800-1230 VDC	800-1230 VDC	800-1250 VDC	800-1250 VDC
	Operating Voltage Range (MPPT)	860-1450 VDC	860-1450 VDC	860-1450 VDC	860-1450 VDC
	Number of MPP Trackers	1 MPPT	1 MPPT	1 MPPT	1 MPPT
	Maximum Operating Input Current	148.3 A	148.3 A	178.0 A	197.7 A
	Maximum Operating PV Power	128 KW	128 KW	153 KW	170 KW
	PV Power	2.6   332 kW	2.6   332 kW	2.2   332 kW	2.0   332 kW
	Max Rated PV Short-Circuit Current (∑Isc x 1.25)	500 A	500 A	500 A	500 A
AC Output	Nominal Output Voltage	600 VAC, 3-Ph	600 VAC, 3-Ph	600 VAC, 3-Ph	600 VAC, 3-Ph
	AC Voltage Range	-12% to +10%	-12% to +10%	-12% to +10%	-12% to +10%
	Continuous Real Output Power	125 kW	125 kW	150 kW	166 kW
	Continuous Apparent Output Power	125 kVA	150 kVA	166 kVA	166 kVA
	Maximum Output Current	120 A	144 A	160 A	160 A
	Nominal Output Frequency	60 Hz	60 Hz	60 Hz	60 Hz
	Power Factor (Unity default)	+/- 0.80	+/- 0.80	+/- 0.80	+/- 0.80
		Adjustable	Adjustable	Adjustable	Adjustable
	Total Harmonic Distortion (THD) @ Rated Load	<3%	<3%	<3%	<3%
	Grid Connection Type	3-Ph + N/GND	3-Ph + N/GND	3-Ph + N/GND	3-Ph + N/GND
	Fault Current Contribution (1 cycle		477 4	100.1	100.1
	RMS)	144 A	1/3 A	192 A	192 A
Efficiency	Peak Efficiency	98.9%	98.9%	99.0%	99.0%
	CEC Average Efficiency	98.5%	98.5%	98.5%	98.5%
	Tare Loss	<1 W	<1 W	<1 W	<1 W
Temperature	Ambient Temperature Range	-40°F to 140°F (-40C to 60C) -40°F to 140°F (-40C to 60C)			
	De-Rating Temperature	122°F (50C) 113°F (45C)		(45C)	
	Storage Temperature Range	-40°F to 167°F	- (-40C to 75C)	-40°F to 167°F (-40C to 75C)	
	Relative Humidity (non-condensing)	U -	95%	U = 95%	
	Advanced Graphical User Interface	Full Power up to 9,840 ft (5.0 km); De-Rate to 70% of Full Power at 15,123 ft (4.0 km)			
Communications	Communication Interface	Ethernet			
	Third-Party Monitoring Protocol	SunSpec Modbus TCP/IP			
	Web-Based Monitoring	Optional			
	Firmware Updates	Remote and Local			
Testing & Certifications	Safety Listings & Certifications	UL 1741, IEEE 1547, UL 1998			
	Advanced Grid Support Function-				
	ality				
	Testing Agency	ETL			
	FCC Compliance	FCC Part 15 (Subpart B, Class A)			
Warranty	Standard and Options	5 Years Standard; Option for 10 Years			
Enclosure	Acoustic Noise Rating	73 dBA @ 1 m ; 67dBA @ 3 m			
	Mounting Angle	Vertical only			
	Dimensions	Verticul Urily Height: 29.5 in (750 mm)   Width: 39.4 in (1000 mm)   Depth: 15.1 in (390 mm)			
	Weight	270 lbs (122 ka)			
	Enclosure Rating and Finish	Type 4X, Polyester Powder-Coated Aluminum			





Yaskawa Solectria Solar 1-978-683-9700 | Email: inverters@solectria.com | solectria.com Document No. FL.XGI1500.01 | 05/03/2021 | © 2021 Yaskawa America, Inc.

IT'S PERSONAL