

N-type Bifacial TOPCon

VE-620~ 650W-60M

620~650W

- 650 W** Module power up to 650 W
Module efficiency up to 23.0 %
- Lower temperature coefficient increases energy yield in hot climate
- Excellent anti-LeTID & anti-PID performance.
Low power degradation, high energy yield

- EXTRA POWER** Up to 85% Power, Bifaciality more power from the back side
- \$** Lower LCOE & system cost
- Minimizes micro-crack impacts
- ***** Heavy snow load up to 5400 Pa, wind load up to 2400 Pa*

WARRANTY

- 12 YEARS** Guarantee on product material and workmanship
- 30 YEARS** Linear power output warranty

CERTIFICATION



- ISO 9001: 2015/quality management system
- ISO 14001: 2015/environmental management system
- ISO 45001: 2018/occupation health safety management system

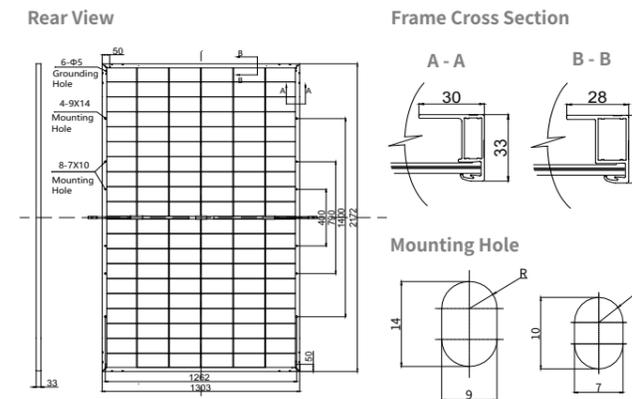
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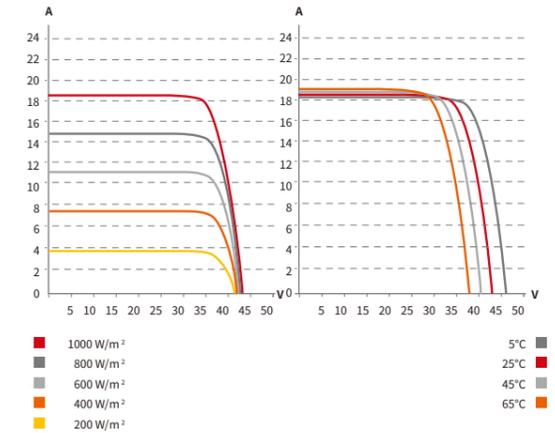
VENUS ENERGY (CAMBODIA) CO., LTD.

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ENGINEERING DRAWING (mm)



I-V CURVES



ELECTRICAL DATA | STC*

	Nominal Max. Power (Pmax)	Opt. Operating Voltage (Vmp)	Opt. Operating Current (Imp)	Open Circuit Voltage (Voc)	Short Circuit Current (Isc)	Module Efficiency
VE-620	620 W	35.7 V	17.37 A	42.9 V	18.31 A	21.9%
Bifacial Gain**	5% 651 W	35.7 V	18.24 A	42.9 V	19.23 A	23.0%
	10% 682 W	35.7 V	19.11 A	42.9 V	20.14 A	24.1%
	20% 744 W	35.7 V	20.84 A	42.9 V	21.97 A	26.3%
VE-625	625 W	35.9 V	17.41 A	43.1 V	18.36 A	22.1%
Bifacial Gain**	5% 656 W	35.9 V	18.28 A	43.1 V	19.28 A	23.2%
	10% 688 W	35.9 V	19.15 A	43.1 V	20.20 A	24.3%
	20% 750 W	35.9 V	20.89 A	43.1 V	22.03 A	26.5%
VE-630	630 W	36.1 V	17.46 A	43.3 V	18.41 A	22.3%
Bifacial Gain**	5% 662 W	36.1 V	18.33 A	43.3 V	19.33 A	23.4%
	10% 693 W	36.1 V	19.21 A	43.3 V	20.25 A	24.5%
	20% 756 W	36.1 V	20.95 A	43.3 V	22.09 A	26.7%
VE-635	635 W	36.3 V	17.50 A	43.5 V	18.46 A	22.4%
Bifacial Gain**	5% 667 W	36.3 V	18.38 A	43.5 V	19.38 A	23.6%
	10% 699 W	36.3 V	19.25 A	43.5 V	20.31 A	24.7%
	20% 762 W	36.3 V	21.00 A	43.5 V	22.15 A	26.9%
VE-640	640 W	36.5 V	17.54 A	43.7 V	18.51 A	22.6%
Bifacial Gain**	5% 672 W	36.5 V	18.42 A	43.7 V	19.44 A	23.7%
	10% 704 W	36.5 V	19.29 A	43.7 V	20.36 A	24.9%
	20% 768 W	36.5 V	21.05 A	43.7 V	22.21 A	27.1%
VE-645	645 W	36.7 V	17.58 A	43.9 V	18.56 A	22.8%
Bifacial Gain**	5% 677 W	36.7 V	18.46 A	43.9 V	19.49 A	23.9%
	10% 710 W	36.7 V	19.34 A	43.9 V	20.42 A	25.1%
	20% 774 W	36.7 V	21.10 A	43.9 V	22.27 A	27.3%
VE-650	650 W	36.9 V	17.62 A	44.1 V	18.61 A	23.0%
Bifacial Gain**	5% 683 W	36.9 V	18.50 A	44.1 V	19.54 A	24.1%
	10% 715 W	36.9 V	19.38 A	44.1 V	20.47 A	25.3%
	20% 780 W	36.9 V	21.14 A	44.1 V	22.33 A	27.6%

* Under Standard Test Conditions (STC) of irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C.
** Bifacial Gain: The additional gain from the back side compared to the power of the front side at the standard test condition. It depends on mounting (structure, height, tilt angle etc.) and albedo of the ground.

ELECTRICAL DATA

Operating Temperature	-40°C ~ +85°C
Max. System Voltage	1500 V (IEC/UL)
Module Fire Performance	TYPE 29 (UL 61730) or CLASS C (IEC61730)
Max. Series Fuse Rating	35 A
Protection Class	Class II
Power Tolerance	0 ~ +10 W
Power Bifaciality*	80 %

* Power Bifaciality = Pmax_{rear} / Pmax_{front}, both Pmax_{rear} and Pmax_{front} are tested under STC, Bifaciality Tolerance: ± 5 %

ELECTRICAL DATA | NMOT*

	Nominal Max. Power (Pmax)	Opt. Operating Voltage (Vmp)	Opt. Operating Current (Imp)	Open Circuit Voltage (Voc)	Short Circuit Current (Isc)
VE-620	469 W	33.8 V	13.89 A	40.6 V	14.77 A
VE-625	473 W	33.9 V	13.93 A	40.8 V	14.81 A
VE-630	476 W	34.1 V	13.96 A	41.0 V	14.85 A
VE-635	480 W	34.3 V	13.99 A	41.2 V	14.89 A
VE-640	484 W	34.5 V	14.03 A	41.4 V	14.93 A
VE-645	488 W	34.7 V	14.06 A	41.6 V	14.97 A
VE-650	492 W	34.9 V	14.09 A	41.8 V	15.01 A

* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m², spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

MECHANICAL DATA

Specification	Data
Cell Type	TOPCon cells
Cell Arrangement	120 [2 x (10 x 6)]
Dimensions	2172 x 1303 x 33 mm (85.5 x 51.3 x 1.30 in)
Weight	34.5 kg (76.1 lbs)
Front Glass	2.0 mm heat strengthened glass with anti-reflective coating
Back Glass	2.0 mm heat strengthened glass
Frame	Anodized aluminium alloy
J-Box	IP68, 3 bypass diodes
Cable	4.0 mm ² (IEC), 12 AWG (UL)
Cable Length (Including Connector)	360 mm (14.2 in) (+) / 200 mm (7.9 in) (-) or customized length*
Connector	T6 or MC4-EVO2 or MC4-EVO2A
Per Pallet	33 pieces
Per Container (40' HQ)	594 pieces or 528 pieces

TEMPERATURE CHARACTERISTICS

Specification	Data
Temperature Coefficient (Pmax)	-0.29 % / °C
Temperature Coefficient (Voc)	-0.25 % / °C
Temperature Coefficient (Isc)	0.05 % / °C
Nominal Module Operating Temperature	41 ± 3°C

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