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LAMPIRAN

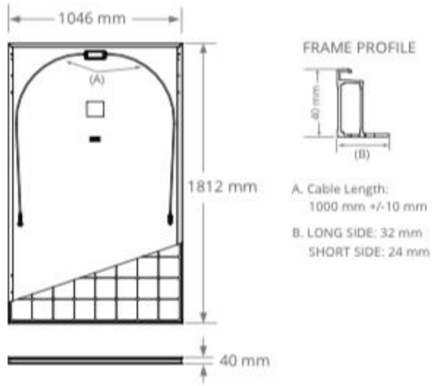
Lampiran 1 *Datasheet* Panel Surya 430W

MAXEON 3 POWER: 415–430 W | EFFICIENCY: Up to 22.7%

Electrical Data			
	SPR-MAX3-430	SPR-MAX3-425	SPR-MAX3-415
Nominal Power (Pnom) [2]	430 W	425 W	415 W
Power Tolerance	+5/0%	+5/0%	+5/0%
Panel Efficiency	22.7%	22.4%	21.9%
Rated Voltage (Vmpp)	70.4 V	70.0 V	69.2 V
Rated Current (Impp)	6.11 A	6.07 A	6.00 A
Open-Circuit Voltage (Voc)	81.4 V	81.3 V	81.2 V
Short-Circuit Current (Isc)	6.57 A	6.57 A	6.55 A
Max. System Voltage	1000 V IEC		
Maximum Series Fuse	20 A		
Power Temp Coef.	−0.27% / °C		
Voltage Temp Coef.	−0.236% / °C		
Current Temp Coef.	0.058% / °C		

Warranties, Certifications and Compliance	
Standard Tests [3]	IEC 61215, IEC 61730
Quality Management Certs	ISO 9001:2015, ISO 14001:2015
Ammonia Test	IEC 62716
Desert Test	IEC 60068-2-68, MIL-STD-810G
Salt Spray Test	IEC 61701 (maximum severity)
PID Test	1000 V: IEC 62804
Available Listings	TUV
IFLI Declare Label	First solar panel labeled for ingredient transparency and LBC-compliance. [4]
Cradle to Cradle Certified™ Bronze	First solar panel line certified for material health, water stewardship, material reutilization, renewable energy & carbon management, and social fairness. [5]
Green Building Certification Contribution	Panels can contribute additional points toward LEED and BREEAM certifications.
EHS Compliance	RoHS, OHSAS 18001:2007, Recycle Scheme, REACH SVHC-163

Operating Condition And Mechanical Data	
Temperature	−40°C to +85°C
Impact Resistance	25 mm diameter hail at 23 m/s
Solar Cells	112 Monocrystalline Maxeon Gen 3
Tempered Glass	High-transmission tempered anti-reflective
Junction Box	IP-68, Stäubli (MC4), 3 bypass diodes
Weight	21.2 kg
Max. Load [6]	Wind: 2400 Pa, 244 kg/m² front & back Snow: 5400 Pa, 550 kg/m² front
Frame	Class 1 black anodized (highest AAMA rating)



Please read the safety and installation instructions. Visit www.sunpower.maxeon.com/int/PVInstallGuideIEC. Paper version can be requested through techsupport.ROW@maxeon.com.

1 40-year warranty is not available in all countries or all installations and requires registration, otherwise our 25-year warranty applies. Service availability varies by country and installation provider.
2 Standard Test Conditions (1000 W/m² irradiance, AM 1.5, 25° C). NREL calibration Standard: SOMS current, LACCS FF and Voltage.
3 Class C fire rating per IEC 61730.
4 Maxeon DC panels first received the International Living Future Institute Declare Label in 2016.
5 Maxeon DC panels are Cradle to Cradle Cradle Certified™ Bronze Bronze - www.c2ccertified.org/products/scorecard/e-series_xseries_solar_panels_-_sunpower_corporation. Cradle to Cradle Certified™ is a certification mark licensed by the Cradle to Cradle Products Innovation Institute.

6 Safety factor 1.5 included.

Made in Philippines (Cells)
Malaysia (Module)
included in this datasheet are subject to change without notice.
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, patent and trademark information at maxeon.com/legal.

SUNPOWER
FROM MAXEON SOLAR TECHNOLOGIES

544455 REV A / A4_EN
Publication Date: March 2022

Lampiran 2 *Datasheet* Inverter 150 kW (GROWATT)

Primary Specification

Datasheet	MAX 124KTL3-X MV	MAX 125KTL3-X MV	MAX 136KTL3-X MV	MAX 150KTL3-X MV
Input data (DC)				
Max. recommended PV power (for module STC)	186000W	187500W	204000W	204000W
Max. DC voltage	1100V			
Start voltage	195V			
Nominal voltage	720V			
MPP voltage range	180V-1000V			
No. of MPP trackers	10			
No. of PV strings per MPP tracker	2			
Max. input current per MPP tracker	32A			
Max. short-circuit current per MPP tracker	40A			
Output data (AC)				
AC nominal power	124000W	125000W	136000W	1500000W
Max. AC apparent power	136400VA	137500VA	150000VA	165000VA
Nominal AC voltage(range*)	277V/480V 422-528VAC			
AC grid frequency (range*)	50/60 Hz (45-55Hz/59.5-60.5 Hz)			
Max. output current	164.1A	165.4A	179.9A	198.5A
Adjustable power factor	0.8leading ...0.8lagging			
THDi	<3%			
AC grid connection type	3W/N/PE			
Efficiency				
Max.efficiency	99.00%			
European efficiency	98.50%			
MPPT efficiency	99.90%			
Protection devices				
DC reverse polarity protection	Yes			
DC switch	Yes			
AC/DC surge protection	Type II / Type II			
Insulation resistance monitoring	Yes			
AC short-circuit protection	Yes			
Ground fault monitoring	Yes			
String detection	Yes			
Anti PID function	Opt			
Arc fault detection (AFCI)	Opt			
General data				
Dimensions (W / H / D)	970/640/345mm			
Weight	84kg			
Operating temperature range	-30°C ... +60°C			
Nighttime power consumption	< 1W			
Topology	Transformerless			
Cooling	Smart Cooling			
Protection degree	IP66			
Relative humidity	0~100%			
Altitude	4000m			
DC connection	H4/MC4			
AC connection	OT Terminal connectors (Max. 240mm²)			
Display	LED/WIFI+APP			
Interfaces: RS485 / USB /PLC	Yes/Yes /Optional			
Warranty: 5 years / 10 years	Yes /Optional			
	CE, IEC62116, IEC61727, ROHS, UL1741, IEEE1547			

* The AC voltage range and frequency range may vary depending on specific country grid standard.
All specifications are subject to change without notice.

Lampiran 3 *Datasheet* Inverter 200 kW (Huawei SUN2000)

SUN2000-215KTL-H0

Technical Specifications

Efficiency	
Max. Efficiency	99.00%
European Efficiency	98.80%
Input	
Max. Input Voltage	1,500 V
Max. Current per MPPT	30 A
Max. Short Circuit Current per MPPT	50 A
Start Voltage	550 V
MPPT Operating Voltage Range	500 V ~ 1,500 V
Nominal Input Voltage	1,080 V
Number of Inputs	18
Number of MPP Trackers	9
Output	
Nominal AC Active Power	200,000 W
Max. AC Apparent Power	215,000 VA
Max. AC Active Power (cosϕ=1)	215,000 W
Nominal Output Voltage	800 V, 3W + PE
Rated AC Grid Frequency	50 Hz / 60 Hz
Nominal Output Current	144.4 A
Max. Output Current	155.2 A
Adjustable Power Factor Range	0.8 LG ... 0.8 LD
Max. Total Harmonic Distortion	< 3%
Protection	
Input-side Disconnection Device	Yes
Anti-islanding Protection	Yes
AC Overcurrent Protection	Yes
DC Reverse-polarity Protection	Yes
PV-array String Fault Monitoring	Yes
DC Surge Arrester	Type II
AC Surge Arrester	Type II
DC Insulation Resistance Detection	Yes
Residual Current Monitoring Unit	Yes
Communication	
Display	LED Indicators, WLAN + APP
USB	Yes
MBUS	Yes
RS485	Yes
General	
Dimensions (W x H x D)	1,035 x 700 x 365 mm (40.7 x 27.6 x 14.4 inch)
Weight (with mounting plate)	≤86 kg (189.6 lb.)
Operating Temperature Range	-25°C ~ 60°C (-13°F ~ 140°F)
Cooling Method	Smart Air Cooling
Max. Operating Altitude without Derating	4,000 m (13,123 ft.)
Relative Humidity	0 ~ 100%
DC Connector	Staubli MC4 EVO2
AC Connector	Waterproof Connector + OT/DT Terminal
Protection Degree	IP66
Topology	Transformerless

Lampiran 4 *Datasheet* Inverter 225 kW (GOODWE)

HT Series

GOODWE

Technical Data	GW225K-HT	GW250K-HT	GW225KN-HT	GW250KN-HT
Input				
Max. Input Voltage (V)	1500	1500	1500	1500
MPPT Operating Voltage Range (V)	500 ~ 1500	500 ~ 1500	500 ~ 1500	500 ~ 1500
Start-up Voltage (V)	550	550	550	550
Nominal Input Voltage (V)	1160	1160	1160	1160
Max. Input Current per MPPT (A)	30	30	60	60
Max. Short Circuit Current per MPPT (A)	50	50	90	90
Number of MPP Trackers	12	12	6	6
Number of Strings per MPPT	2	2	3	3
Output				
Nominal Output Power (kW)	225	250	225	250
Nominal Output Apparent Power (kVA)	225	250	225	250
Max. AC Active Power (kW)	247.5	250	247.5	250
Max. AC Apparent Power (kVA)	247.5	250	247.5	250
Nominal Output Voltage (V)	800, 3L / PE	800, 3L / PE	800, 3L / PE	800, 3L / PE
Nominal AC Grid Frequency (Hz)	50 / 60	50 / 60	50 / 60	50 / 60
Max. Output Current (A)	178.7	180.5	178.7	180.5
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)			
Max. Total Harmonic Distortion	<3%	<3%	<3%	<3%
Efficiency				
Max. Efficiency	99.0%	99.0%	99.0%	99.0%
European Efficiency	98.5%	98.5%	98.7%	98.7%
Protection				
PV String Current Monitoring	Integrated	Integrated	Integrated	Integrated
PV Insulation Resistance Detection	Integrated	Integrated	Integrated	Integrated
Residual Current Monitoring	Integrated	Integrated	Integrated	Integrated
PV Reverse Polarity Protection	Integrated	Integrated	Integrated	Integrated
Anti-islanding Protection	Integrated	Integrated	Integrated	Integrated
AC Overcurrent Protection	Integrated	Integrated	Integrated	Integrated
AC Short Circuit Protection	Integrated	Integrated	Integrated	Integrated
AC Overvoltage Protection	Integrated	Integrated	Integrated	Integrated
DC Switch	Integrated	Integrated	Integrated	Integrated
DC Surge Protection	Type II	Type II	Type II	Type II
AC Surge Protection	Type II	Type II	Type II	Type II
Emergency Power Off	Optional	Optional	Optional	Optional
Remote Shutdown	Optional	Optional	Optional	Optional
Anti-PID	Optional	Optional	Optional	Optional
General Data				
Operating Temperature Range (°C)	-30 ~ +60	-30 ~ +60	-30 ~ +60	-30 ~ +60
Relative Humidity	0 ~ 100%	0 ~ 100%	0 ~ 100%	0 ~ 100%
Max. Operating Altitude (m)	5000 (>4000 derating)	5000 (>4000 derating)	5000 (>4000 derating)	5000 (>4000 derating)
Cooling Method	Smart Fan Cooling	Smart Fan Cooling	Smart Fan Cooling	Smart Fan Cooling
User Interface	LED (LCD optional), Bluetooth + APP			
Communication	RS485 or PLC	RS485 or PLC	RS485 or PLC	RS485 or PLC
Communication Protocols	Modbus RTU	Modbus RTU	Modbus RTU	Modbus RTU
Weight (kg)	111	111	111	111
Dimension (W × H × D mm)	1091 × 678 × 341	1091 × 678 × 341	1091 × 678 × 341	1091 × 678 × 341
Topology	Non-isolated	Non-isolated	Non-isolated	Non-isolated
Self-consumption at Night (W)	<18	<18	<18	<18
Ingress Protection Rating	IP66	IP66	IP66	IP66
DC Connector	MC4-Evo2 (4 ~ 6mm²)	MC4-Evo2 (4 ~ 6mm²)	MC4-Evo2 (4 ~ 6mm²)	MC4-Evo2 (4 ~ 6mm²)
AC Connector	OT / DT terminal (Max. 300mm²)			

*: Please visit GoodWe website for the latest certificates.
*: The product appearance shown is GW225KN-HT / GW250KN-HT. The appearance may vary for GW225K-HT / GW250K-HT.

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Lampiran 5 *Datasheet* Baterai (LUNA2000)

LUNA2000-2.0MWH Series
Smart String ESS

More Energy | Optimal Investment | Simple O&M | Safe & Reliable

Battery Container			
Model	LUNA2000-2.0MWH-1H0	LUNA2000-2.0MWH-1H1	LUNA2000-2.0MWH-2H1
DC Rated Voltage	1,200 V	1,250 V	1,250 V
DC Max. Voltage	1,500 V	1,500 V	1,500 V
Nominal Energy Capacity	2,064 kWh	2,032 kWh	2,032 kWh
Charge & Discharge Rate	≤ 1 C	≤ 1 C	≤ 0.5 C
Rated Power	2,064 kW	2,032 kW	1,016 kW
Container Configuration (W x H x D)	6,058 x 2,896 x 2,438 mm	6,058 x 2,896 x 2,438 mm	6,058 x 2,896 x 2,438 mm
Container Weight	≤ 30 t	≤ 30 t	≤ 30 t
Operation Temperature Range	-30°C ~ 55°C	-30°C ~ 55°C	-30°C ~ 55°C
Storage Temperature Range	-40°C ~ 60°C	-40°C ~ 60°C	-40°C ~ 60°C
Relative Humidity	0 ~ 100% (Non-condensing)	0 ~ 100% (Non-condensing)	0 ~ 100% (Non-condensing)
Max. Operating Altitude	4,000 m	4,000 m	4,000 m
Cooling Method	Smart Air Cooling	Smart Air Cooling	Smart Air Cooling
Configuration of HVAC	8 HVACs [1]	8 or 6 HVACs [1]	6 or 4 HVACs [1]
Fire Suppression Agent	FM-200	FM-200 / Novec 1230™	FM-200 / Novec 1230™
Communication Interface	Ethernet / SFP	Ethernet / SFP	Ethernet / SFP
Communication Protocol	Modbus TCP / IEC 104	Modbus TCP / IEC 104	Modbus TCP / IEC 104
Protection Degree	IP55	IP55	IP55
Anti-corrosion Degree	C5-Medium	C5-Medium	C5-Medium
Black Start	-	Optional	Optional
Standards Compliance			
RoHS, IEC62477-1, IEC62040-1, IEC61000-6-2, EN55011, UL9540A, IEC62619, UN3536, etc.			

1 - The quantity of HVACs depends on C rate and application scenario