





PROJECT BASIC INFORMATION	
Project Name	3. KONINGSPLEIN
Location	CURAZAO
Coordinates	
Altitude	11
Roof Quantity	17
Legal Time	UT-6
Meteo Data	SOLARGIS 1999-2019

TECHNICAL SUMMARY	
MODULE	
Manufacturer / Type	JINKO SOLAR
Model / Type	JKM330P-72 / POLYCRYSTALLINE
Nominal Power (Wp)	330
Total Quantity	20460
Plant Total DC Power (Wp)	6,817,800
STRINGS	
Total Strings	1033
Module x String	20
INVERTER	
Manufacturer / Type	HUAWEI / SUN2000-33KTL
Power x Inverter (kVA)	33
Power x Inverter (kVA)	30
Total Quantity	176
String x Inverter	167 str x 6 str = 2.1kv x 4 str 1.1kv x 5 str = 6.1kv x 3 str
STRUCTURE	
Manufacturer / Type	TO BE DECIDED
Configuration	1V (1 PORT RAIT)
PRCH	2.8 m
TIR	10°
Azimuth	-
POTENCIA PLANTA SOLAR FV	
Total P _{dc} (kW)	5280
Total P _{ac} (Wp)	6,817,800
Ratio DC/AC	1.29



SLK SOLAR CONSULTING
1100 Roseville Pkwy., # 732
Roseville, CA 95678

Drawn by: **NR** Reviewed by: **KB**

Comments:

Rev. No.	Description	Date	BY
1	Layout	08/04/18	

PROFESSIONAL SEAL:

PROJECT INFORMATION:

Project Name:
**Koningsplein
6,8 MWdc**

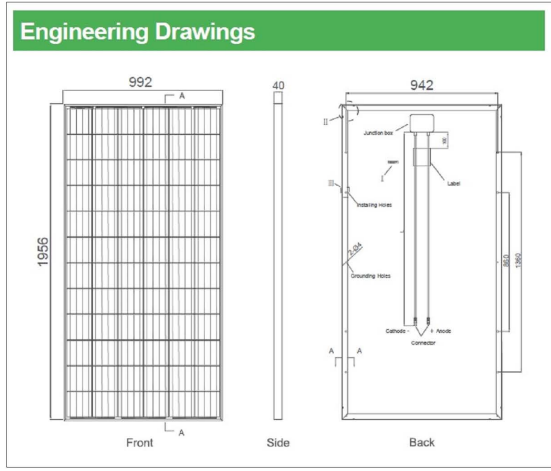
Client:
ET SOLAR

Project Site:
Curacao, Netherland Antilles

Project Phase:
Basic Engineering

Drawing Title:
Preliminary Layout

Drawing No:
L-3



Mechanical Characteristics

Cell Type	Poly-crystalline 156×156mm (6 inch)
No. of cells	72 (6×12)
Dimensions	1956×992×40mm (77.01×39.05×1.57 inch)
Weight	26.5 kg (58.4 lbs.)
Front Glass	4.0mm, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP67 Rated
Output Cables	TUV 1×4.0mm ² , Length: 900mm or Customized Length

SPECIFICATIONS

Module Type	JKM110P	JKM150P	JKM210P	JKM250P	JKM330P
STC: P _{max} (Wp)	110	150	210	250	330
STC: I _{sc} (A)	3.10	4.15	5.75	7.00	9.00
STC: V _{oc} (V)	37.2	37.2	37.2	37.2	37.2
STC: P _{mp} (Wp)	110	150	210	250	330
STC: I _{mp} (A)	3.10	4.15	5.75	7.00	9.00
STC: V _{mp} (V)	35.5	35.5	35.5	35.5	35.5
Maximum Power Voltage (Vmp)	37.0V	34.6V	37.2V	34.7V	37.6V
Maximum Power Current (Imp)	9.26A	8.68A	8.68A	8.74A	8.68A
Open-circuit Voltage (Voc)	43.9V	42.3V	42.3V	42.4V	43.0V
Short-circuit Current (Isc)	8.86A	7.28A	8.01A	7.28A	8.16A
Module Efficiency STC (%)	15.98%	16.22%	16.49%	16.75%	17.01%
Operating Temperature (°C)	-40°C~+85°C				
Maximum system voltage	1000VDC (IEC)				
Maximum series fuse rating	15A				
Power tolerance	0~+3%				
Temperature coefficient of P _{max}	-0.45%/°C				
Temperature coefficient of Voc	-0.31%/°C				
Temperature coefficient of Isc	0.05%/°C				
Nominal operating cell temperature (NOCT)	45±2°C				

String Inverter (SUN2000-33KTL)

Smart

- Maximum of 3 MPPT for versatile adaption to different module types or quantities built up with different alignments
- 6 strings intelligent monitoring and 80% time saving for fault detection
- Power Line Communication (PLC) supported
- Adaptive Edge MPPT for fast tracking

Efficient

- Max. efficiency 98.6%, European efficiency 98.3%
- Easy to install with the weight of 50kg

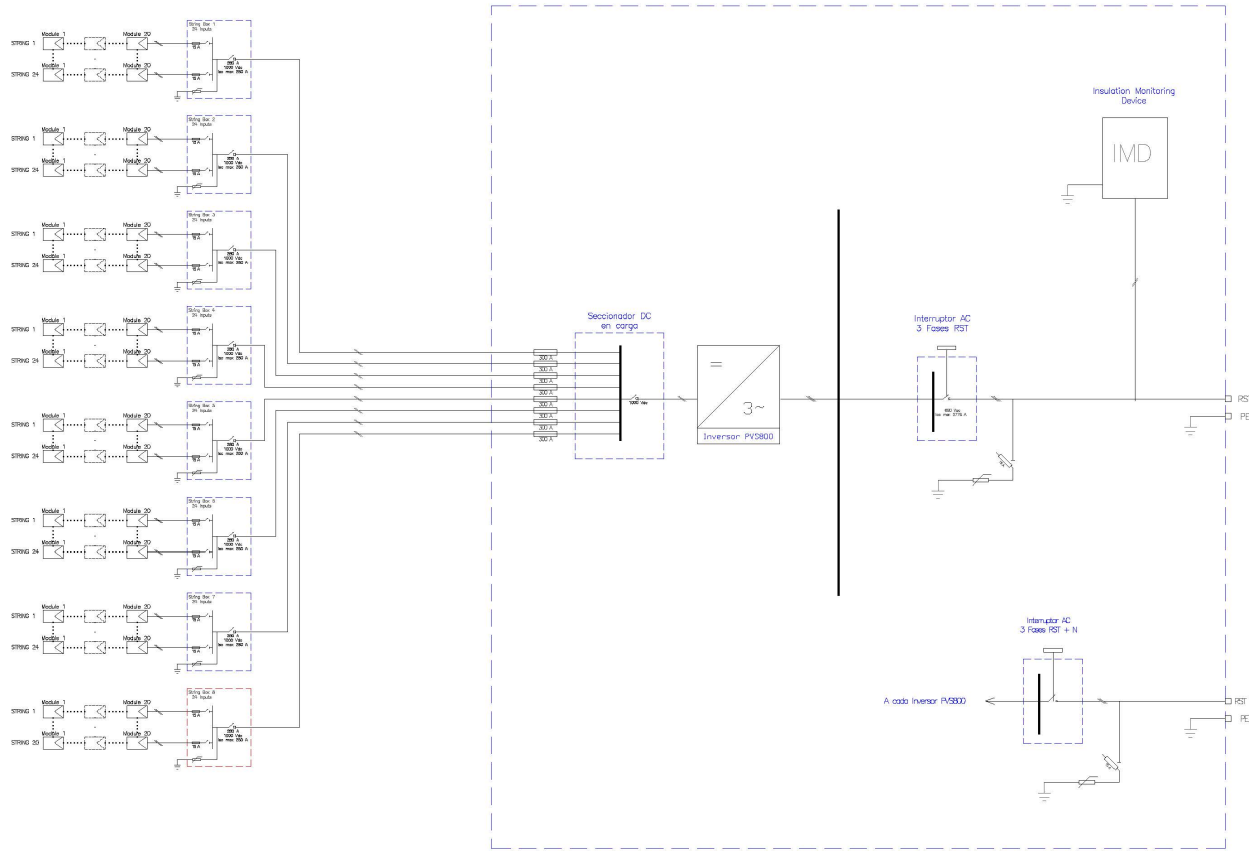
Safe

- DC disconnect integrated, safe and convenient for maintenance
- Type II surge arresters for both DC and AC
- Ground fault protection
- Residual Current Detection (RCD) protection

Reliable

- No need for external fans with natural cooling technology
- Protection rating of IP65

INVERSOR ABB PVS800-1.000 kW



VER UNIFILAR:
AC-MT Plano N°: UAC1

DIAGRAMA OPERACIONAL INVERSOR

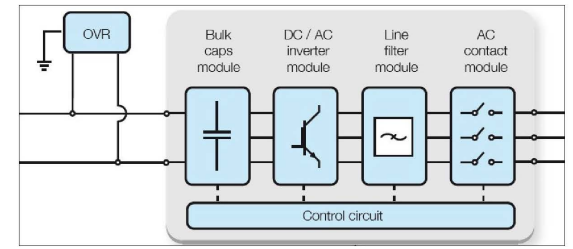
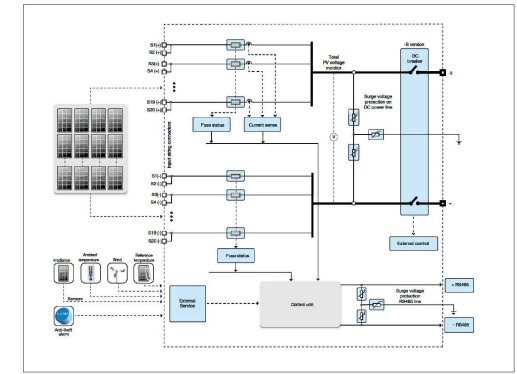


DIAGRAMA OPERACIONAL - STRING BOX



Comentario:
La configuración de Strings y String Boxes, es idéntica para cada Inversor de 1.000 kW.
Para cada inversor son 8 String Boxes de 24 entradas en uso, siendo el string de 20 módulos.

RESUMEN TÉCNICO PLANTA FOTOVOLTAICA	
MÓDULO	Fabricante: JINKO SOLAR
	Modelo / Tipo: JK0451SPP72
	Potencia unitaria (Wp): 315
	Cantidad Total: 33.840
	Total Potencia DC (Wp): 10.659.600
STRINGS	
	Número de Strings Total: 1.692
	Módulos x String: 20

MÓDULO		
Pmax (W)	Pmax	315
Eficiencia del módulo	Eff%	16,23
Tensión a la máxima potencia	Vmp	37,2
Intensidad a la máxima potencia	Imp	8,48
Tensión de circuito abierto	Voc	46,2
Corriente de cortocircuito	Isc	9,01
Tolerancia		0±3%
Tensión máxima del sistema		1000V
Temperatura normal de célula	NOCT	45 ± 2°C
Int. máxima del fusible por serie		15

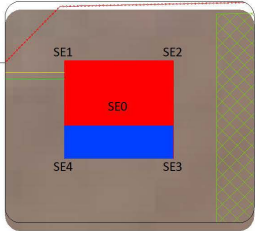
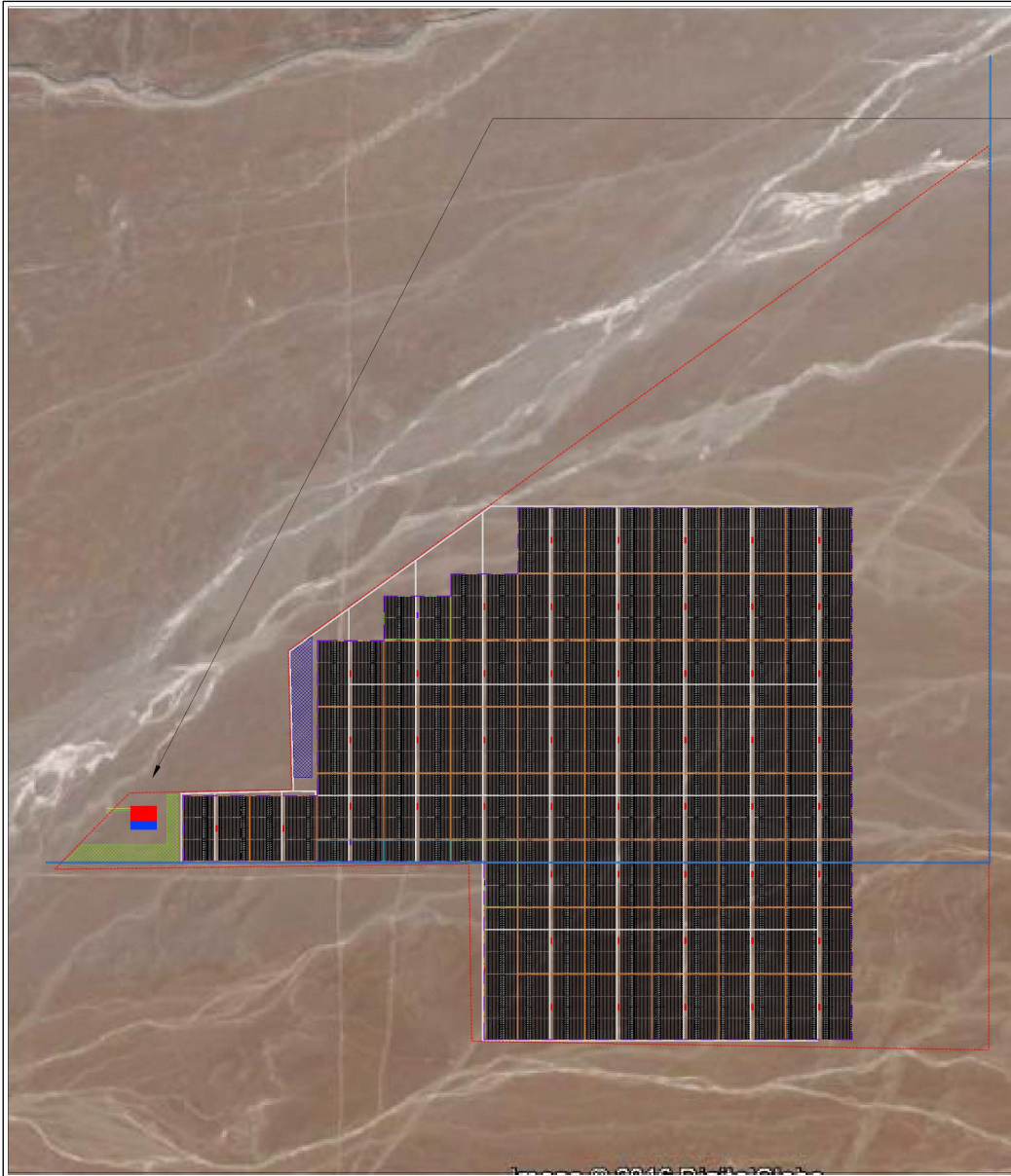
Comentario:

Por inversor, corresponde 188 strings, por lo que necesitaríamos mínimo 8 String Boxes por cada mppt del inversor, sin embargo, por las limitaciones de salida máxima de la DCBox, son necesarias 8 DCBoxes (7x24 inputs + 1x20 inputs).

En total son necesarias para toda la planta fotovoltaica, un total de 72 SBoxes de 24 entradas de string en CC cada una. Los fusibles de String deberán ser de 15 Amperios para proteger los módulos de las corrientes inversas.

STRINGS Y STRING BOXES				
Modelo: ABB o similar 300 Amp 24 Inputs / 12 Canales 24 Inputs usados	Imax	Voc	Isc	Fusibles
Valores calculados x string	8,48	924	9,01	15
String Box (Sb1..Sb8 x Inversor PVS800)	204	924	216,24	285
Valores permitidos		1000		300
Módulos por string	20			
Strings por String Box Sb1..Sb8	24			8 Sboxes x Inverter= (7x24 inputs) + (1x20 inputs)

Dibujado por: NR	Fecha: 11.04.16	Título: Unifilar DC - Inversor de 1.000 kW	Plano n°: UDC1	Cliente: ECOSOLAR
Revisado por: KB	Fecha: 11.04.16	Estado de proyecto: Ingeniería básica		
SLK INGENIERIA FOTOVOLTAICA Address: c/Carol Urzúa 7030 dpto. 1006-B Las Condes Santiago CHILE RUT: 762690079	Escala: N/A	Comentarios: Para revisión por Cliente		Proyecto: Parque Solar ANDES CHILENOS, 9MW Ubicación: Codegua (CHILE)



COORDINATES OF ELEVATION SUBSTATION

PUNTO	ESTE	NORTE
Vértice SE1	404996	7091880
Vértice SE2	405096	7091880
Vértice SE3	405096	7091790
Vértice SE4	404996	7091790
Centro SE0	405046	7091835

UTM WGS84 / USD 155

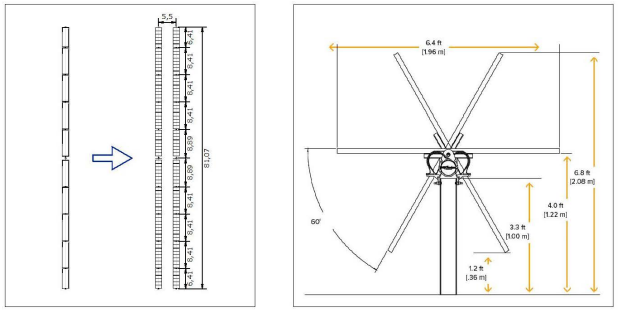
INFORMACION BASICA DEL PROYECTO	
Nombre	Diego Solar (Etapa de Almagro)
Referencia	PAUTON LINEA IV
Capacidad	165 MW
Configuración	Mod JINKO 320 Wp
Ubicación	Diego de Almagro, CHILE
Coordenadas	26.36 / 70.09°W
Altitud	1000 m
Horiz. Legit	DT-3
Fecha Actual	UNIVERSIDAD DE CHILE
RESUMEN TÉCNICO PLANTA FOTOVOLTAICA	
MODULO	Fabricante / Modelo: JINKO 320 Wp
Modelo	JMK320WV72
Potencia nominal (Wp)	320
Capacidad Total	961,200
Total Potencia DC (Wp)	102,614,400
STRINGS	Número de Strings Totales: 31,680
Modelos a String	19
INVERSER	Fabricante / Modelo: ABB PV800
Potencia a Inverter (kW)	1,000
Potencia Activa a Inverter (kW)	165
Capacidad Total	165
Strings a Inverter	192
MEDIUM VOLTAGE STATIONS	TYPE 1
POTENCIA a MVSt (kW)	3,000
Potencia a MVSt (kW)	3,000
Nivel de Medio Tension (kV)	25,0
MEDIUM VOLTAGE STATIONS	TYPE 2
POTENCIA a MVSt (kW)	2,200
Potencia a MVSt (kW)	2,200
Nivel de Medio Tension (kV)	3,0
SUBSTACION Y LINEA AT	500 (o alternativa de 220)
Nivel de Tension SVL (kV)	2,0 km (o alternativa de 6,4 km)
ESTRUCTURA	Modelo / Tipo: 1 Axis HZ Tracker
Configuración	1V (Portab)
Alto entre mesas	5,5 m
Ancho mesa	2 m
Tipo mesa	IV x 19 x 4 strings
Capacidad Total (mesas)	2,520
POTENCIA PLANTA SOLAR IV	Total Pac. (kW): 165,000
Total Pac. (Wp): 102,614,400	
Area (m²): 1,167	

Módulos JINKO 305-320 W

SPECIFICATIONS

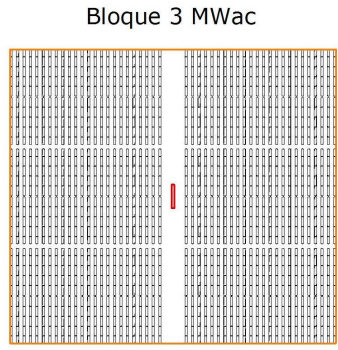
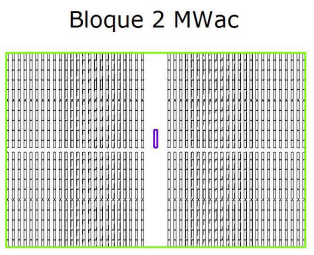
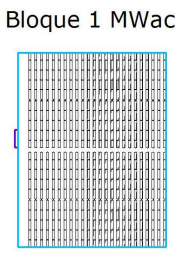
Module Type	JMK305P1	JMK315P1	JMK315P1	JMK320P1	
STC	NDCC1	STC	NDCC1	STC	NDCC1
Maximum Power (Pmax)	305Wp	309Wp	310Wp	315Wp	320Wp
Maximum Power Voltage (Vmpp)	38.6V	38.6V	37.0V	38.6V	37.0V
Maximum Power Current (Imp)	8.30A	8.25A	8.36A	8.16A	8.36A
Open-circuit Voltage (Voc)	46.9V	46.9V	46.9V	46.9V	46.9V
Short-circuit Current (Isc)	8.81A	7.30A	8.86A	7.36A	8.86A
Module Efficiency STC (%)	15.72%	15.84%	16.22%	16.46%	
Operating Temperature (°C)	-40°C ~ +85°C				
Maximum system voltage	1000VDC (IEC)				
Maximum series fuse rating	60A				
Power tolerance	±0.5%				
Temperature coefficient of Pmax	-0.40%/°C				
Temperature coefficient of Voc	-0.30%/°C				
Temperature coefficient of Isc	0.02%/°C				
Normal operating cell temperature (NOCT)	45±2°C				

Nota: Se ha realizado el Layout y el Diseño eléctrico para el módulo de 320 Wp, considerando características mecánicas equivalentes para el rango 305 - 330 Wp



LEYENDA

- Límite del terreno
- Camino
- ▭ Estación Inversora MT - ABB 3MW
- Línea 220 kV
- Línea 500 kV
- ⊕ Entradas
- Área subestación
- Área instalaciones SE
- Instalación de Faenas y Acopio Materiales
- Gestión de Residuos
- Etapa I - 165 MW
- Canal de drenaje



Dibujado por: NR	Fecha: 12.05.16	Título: Layout preliminar 165 MW	Plano nº: LP1	Ciente: PATTERN DEVELOPMENT
Revisado por: KB	Fecha: 12.05.16	Estado de proyecto: Ingeniería básica		Dir.: Rosario Norte 407, Of. 1102 - Las Condes, Santiago de Chile, CHILE
SAROEN GLOBAL Dir.: Pedro de Valdivia, 555 – Of. 401 Santiago de Chile, CHILE http://www.saroenglobal.com	Escala: N/A	Comentarios: Para revisión por Cliente		www.patternenergy.com
SAROEN GLOBAL Advisory Services				Proyecto: Diego Solar, etapa I, 165 MW
				Ubicación: Diego de Almagro, CHILE





Aqualectra large scale solar project

Drawn by: RN Reviewed by: KB

Comments:

Rev. No.	Description	Date	BY
1	Layout	09/04/18	KB

PROFESSIONAL SEAL:



SLK SOLAR CONSULTING
1100 Roseville Pkwy., # 732
Roseville, CA 95678

PROJECT INFORMATION:

Project Name:
Freezone Airport Hato
1,39 MWdc

Client: **ET** Towards Excellence

ET SOLAR
Cerro Colorado #5240;
Torres II · Piso 18,
Las Condes, Santiago, Chile

Project Site:
Curacao, Netherland Antilles

Project Phase:
Basic Engineering

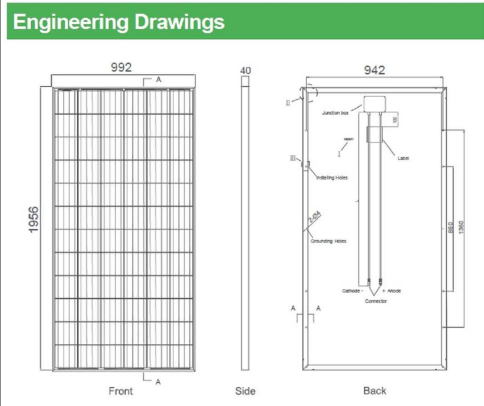
Drawing Title:
Preliminary Layout

Drawing No:
L-3

PROJECT BASIC INFORMATION	
Project Name	1. FREEZONE AIRPORT HATO
Location	CURAZAO
Coordinates	11
Roof Quantity	4
Legal Time	UT-4
Meteo Data	SOLARGIS 1999-2017
TECHNICAL SUMMARY	
MODULE	Manufacturer: JINKO SOLAR Model / Type: JKM310P-72 / POLYCRYSTALLINE Nominal Power (Wp): 330 Total Quantity: 4,240 Plant Total DC Power (Wp): 1,399,200
STRINGS	Total Strings: 212 Module x String: 20
INVERTER	Manufacturer / Type: HUAWEI / SUN2000-33KTL Power x Inverter (KVA): 33 Power x Inverter (KVA): 30 Total Quantity: 36 String x Inverter: 34 Inv x 6 Str = 1 Inv x 5 Str 1 Inv x 3 Str
STRUCTURE	Manufacturer / Type: TO BE DECIDED Configuration: 1V (1 PORTALITY) Pitch: 2,0 m Tilt: 10° Azimuth: -
POTENCIA PLANTA SOLAR PV	Total P _{dc} (kW): 1,680 Total P _{dc} (Wp): 1,399,200 Ratio DC/AC: 1.30

LEGEND

	FV module
	Roof perimeter
	Skylight
	Air ventilation
	Air ventilation
	Electrical LV panel board



Mechanical Characteristics

Cell Type	Poly-crystalline 156x156mm (6 inch)
No. of cells	72 (6x12)
Dimensions	1956x992x40mm (77.01x39.05x1.57 inch)
Weight	26.5 kg (58.4 lbs.)
Front Glass	4.0mm, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP67 Rated
Output Cables	TUV 1x4.0mm ² , Length: 900mm or Customized Length

SPECIFICATIONS

Module Type	JMK310P	JMK510P	JMK610P	JMK710P	JMK810P
Power (Wp)	330	360	405	450	495
Maximum Power (P _{max})	310Wp	339Wp	378Wp	417Wp	456Wp
Maximum Power Voltage (V _{mp})	37.0V	34.6V	32.2V	29.7V	27.3V
Maximum Power Current (I _{mp})	8.36A	9.84A	11.32A	12.80A	14.28A
Open circuit Voltage (V _{oc})	45.9V	42.7V	40.2V	37.6V	35.1V
Short circuit Current (I _{sc})	8.96A	9.91A	10.86A	11.81A	12.76A
Module Efficiency (STC)	19.24%	19.24%	19.24%	19.24%	19.24%
Operating Temperature (T _o)	-40°C~+85°C				
Maximum system voltage	1000VDC (IEC)				
Maximum system line voltage	15kV				
AC/DC Isolation	0~15kV				
Temperature coefficient of Power	-0.41%/°C				
Temperature coefficient of V _{oc}	-2.37%/°C				
Temperature coefficient of I _{sc}	0.06%/°C				
Nominal operating cell temperature (NOCT)	45±2°C				

String Inverter (SUN2000-33KTL)

Smart

- Maximum of 3 MPPT for versatile adaption to different module types or quantities built up with different alignments
- 6 strings intelligent monitoring and 80% time saving for fault detection
- Power Line Communication (PLC) supported
- Adaptive Edge MPPT for fast tracking

Efficient

- Max. efficiency 98.6%, European efficiency 98.3%
- Easy to install with the weight of 50kg

Safe

- DC disconnect integrated, safe and convenient for maintenance
- Type II surge arresters for both DC and AC
- Ground fault protection
- Residual Current Detection (RCD) protection

Reliable

- No need for external fans with natural cooling technology
- Protection rating of IP65

CE

