



N. rev	Nota di revisione	Data	Firma	Controllo
A01	Emissione	15/06/2023		

Oggetto:
 PROVVEDIMENTO AUTORIZZATORIO VIA (art. 23 del Dlgs 152/2006 ssmi) + AUR
 Comune di Sassari (SS) - "Località Tanca Beca"
 Progetto di un Impianto Fotovoltaico a Terra Potenza Nominale 143,87 MWp e Sistema di
 Accumulo Elettrochimico della Potenza Nominale di 70MW/560MWh connesso alla rete RTN

Titolo del disegno:
SCHEDA TECNICHE

Società Proponente:
 e-Solar 5 srl
 Via Augusto Gargana, 34 - Viterbo
 Tel.Fax.: +39 0761 972329; Mob.: +39 338 6316126;



Progettazione :
 Ing. Vincenzo CHIRICOTTO
 Strada Fastello, 65 - Viterbo
 Tel.Fax.: +39 0761 972329; Mob.: +39 338 6316126;
 Email: vincenzo@chiricotto.it;



R20

Data: 15/06/2023

SCHEDE TECNICHE MODULI

Modulo **M.D.0003**

DATI GENERALI

Marca	3SUN
Modello	3SHB655G+GGF
Tipo materiale	Si monocristallino
Prezzo	€ 200.00

CARATTERISTICHE ELETTRICHE IN CONDIZIONI STC

Potenza di picco	655.0 W
Im	18.15 A
Isc	19.29 A
Efficienza	23.14 %
Vm	36.08 V
Voc	43.65 V

ALTRE CARATTERISTICHE ELETTRICHE

Coeff. Termico Voc	0.2000 %/°C
Coeff. Termico Isc	0.044 %/°C
NOCT	45.0 °C
Vmax	1 500.00 V

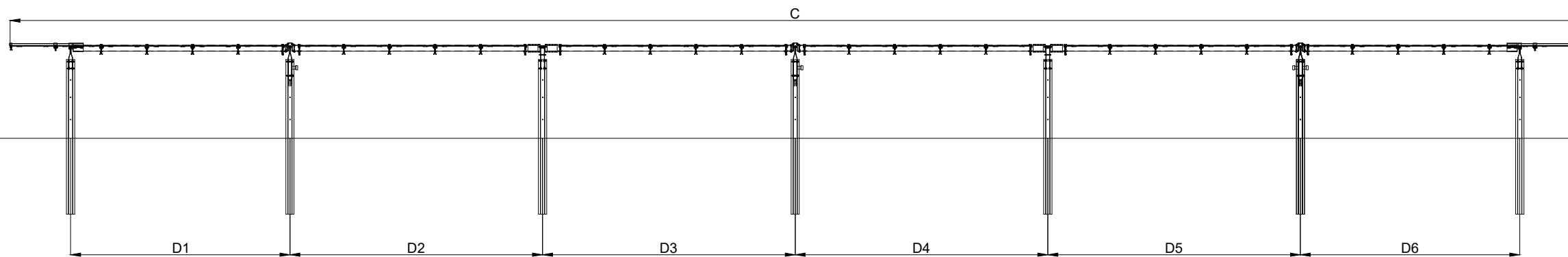
CARATTERISTICHE MECCANICHE

Lunghezza	2 172.00 mm
Larghezza	1 303.00 mm
Superficie	2.830 m²
Spessore	25.00 mm
Peso	36.00 kg
Numero celle	60

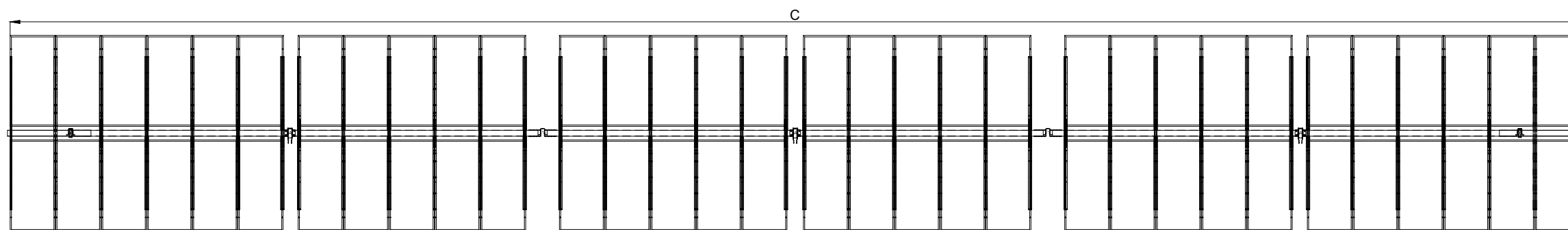
NOTE

Note	Bifacial Output-Rearside Power Gain
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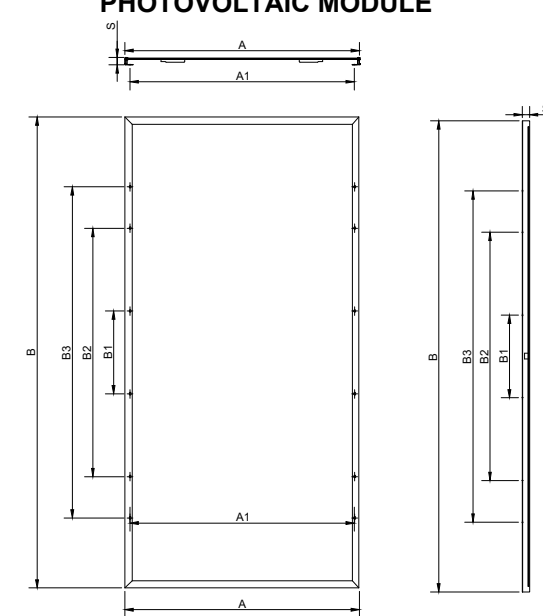
TRJHT64PDP-BF
FRONT VIEW @ 0°



TRJHT64PDP-BF
TOP VIEW @ 0°



PHOTOVOLTAIC MODULE

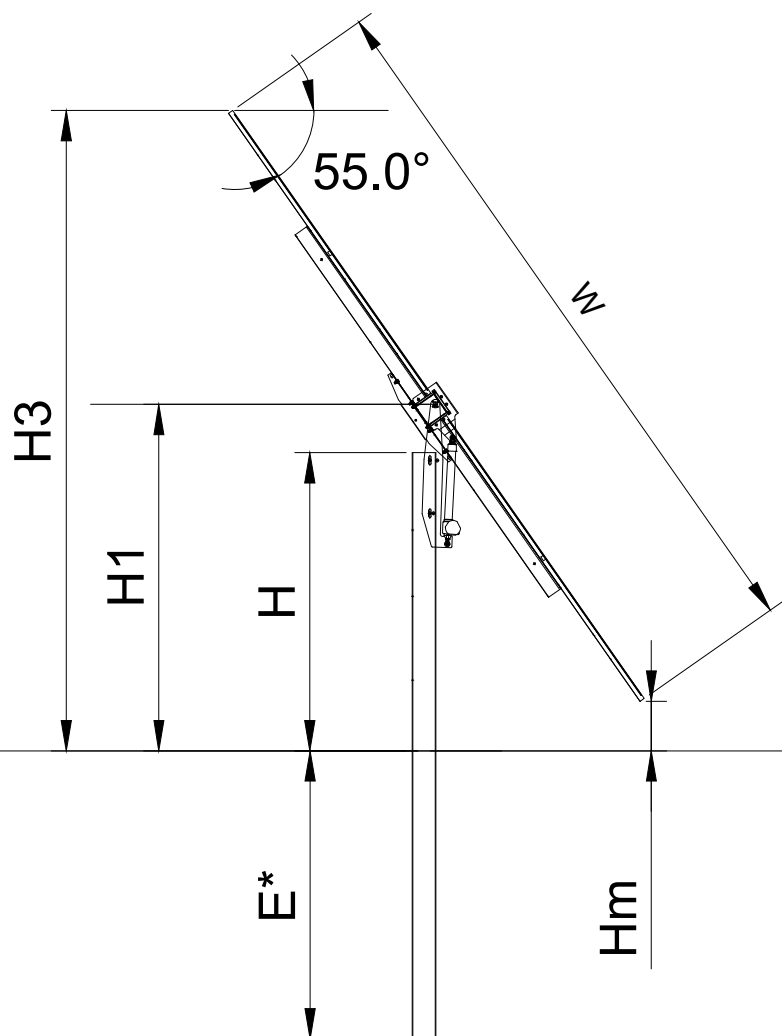


APPROXIMATE DIMENSIONS [mm]

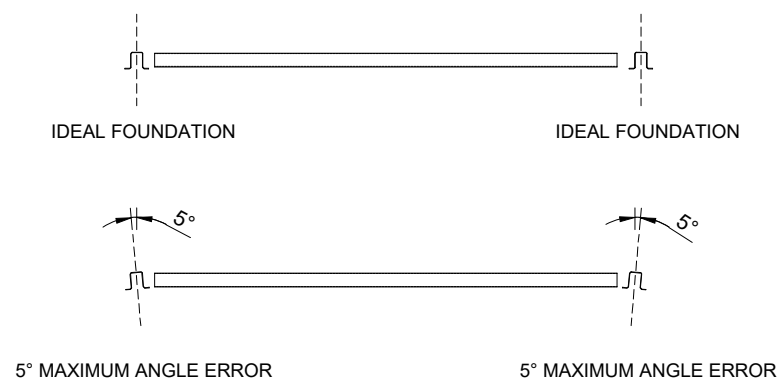
A	1303	H	2155
A1	-	H1	2475
A2	-	H2	2505
B	2384	H3	4551
B1	400	Hm	500
B2	1400	W	5068
B3	-	D1/D6	6300
S	35	D2/D3	6600
C	43500	D4/D5	6600
E*	1800	-	-

*Check with POT and Geotechnical report

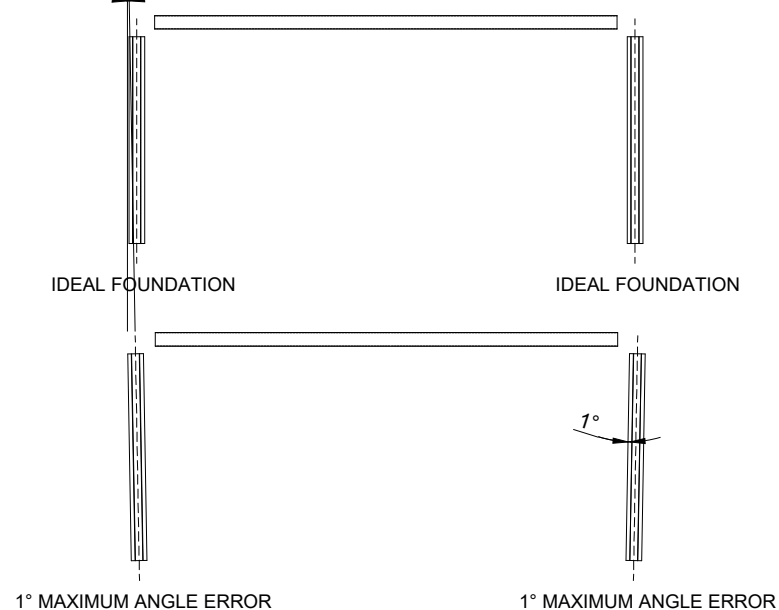
TRJHT64PDP-BF
SIDE VIEW @ 55°



FOUNDATION TWIST ERROR RECOVERY

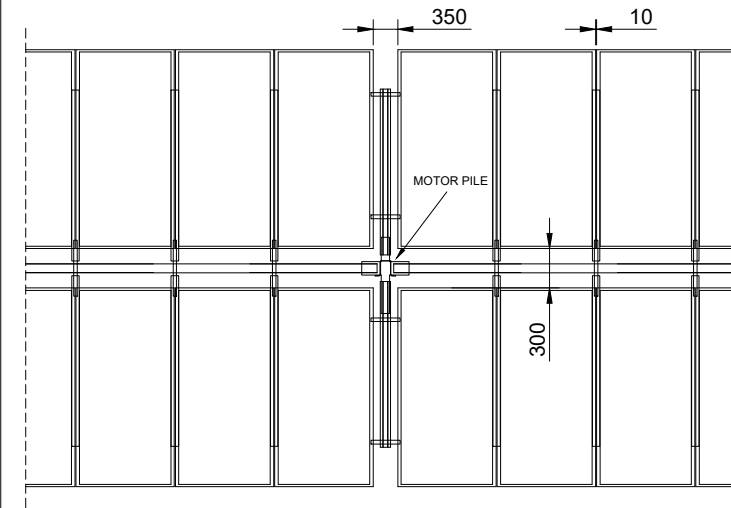


FOUNDATION ANGLE ERROR RECOVERY



PRELIMINARY PV TABLES SPACING

NOMINAL VALUE - IT MAY CHANGE DUE TO MOUNTING TOLERANCES



MATERIAL CHARACTERISTICS

STEEL
Structural steel - at least S235JR - yield strength and thickness in accordance with structural calculations.

SPHERICAL BEARINGS
Bronze / Stainless steel.

SPACERS
Stainless Steel.

SCREWS, NUTS and WASHERS
All steel parts will be galvanized according to environmental conditions of the site to have a design lifetime of 25 years

GALVANIZATION
Basic Option:
All steel parts will be galvanized according to environmental conditions of the site to have a design lifetime of 25 years

CONVERT ITALIA SpA

PROJECT DESCRIPTION

TRJHT64PDP-BF

CLIENT

STATE PROJECT

Preliminary Drawing

REPRESENTATION

Annex 1
General Assembly Drawing

REFERENCE DRAWING

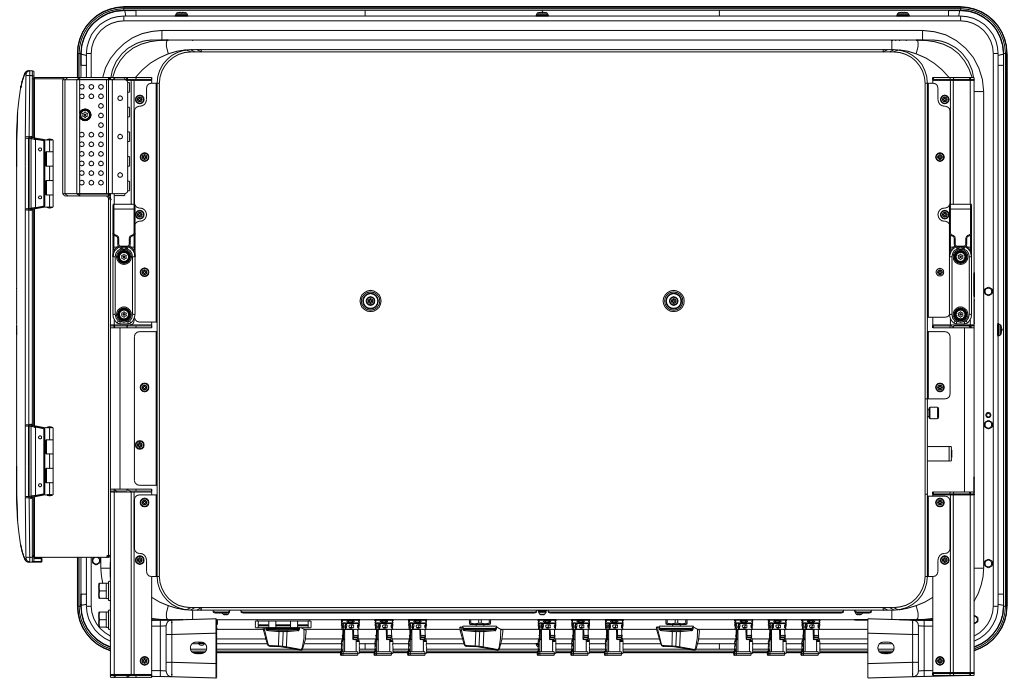
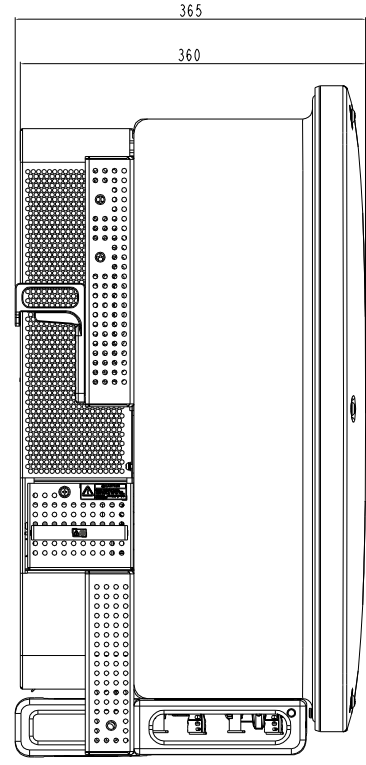
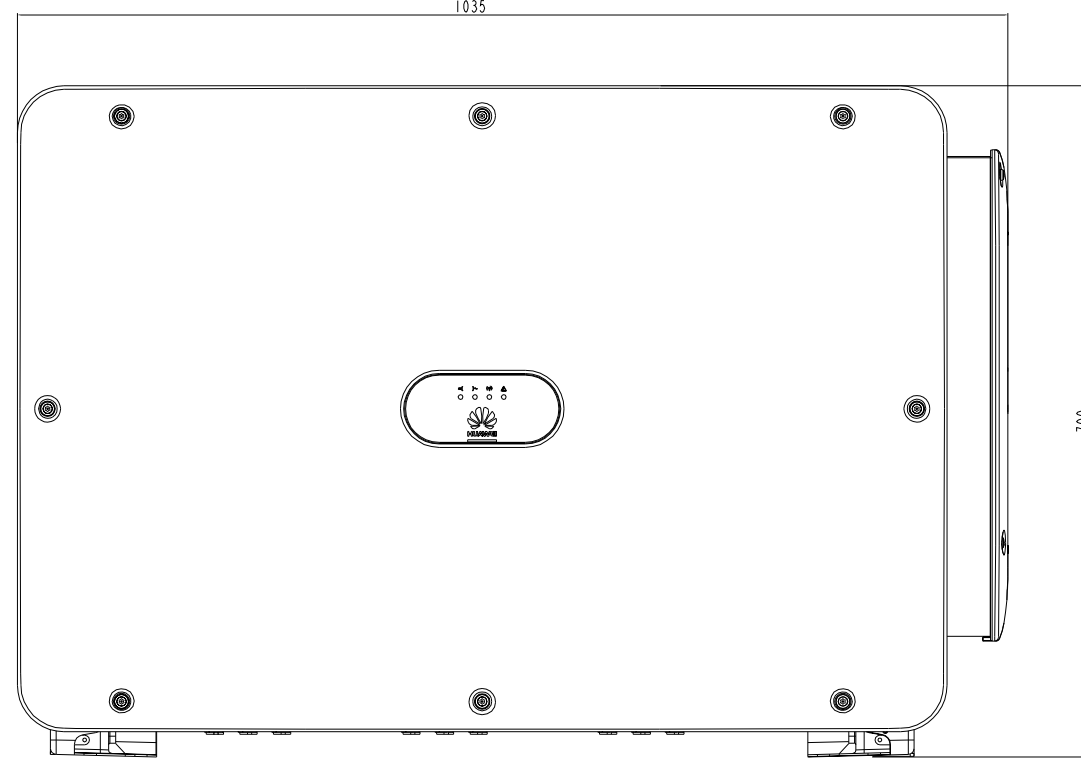
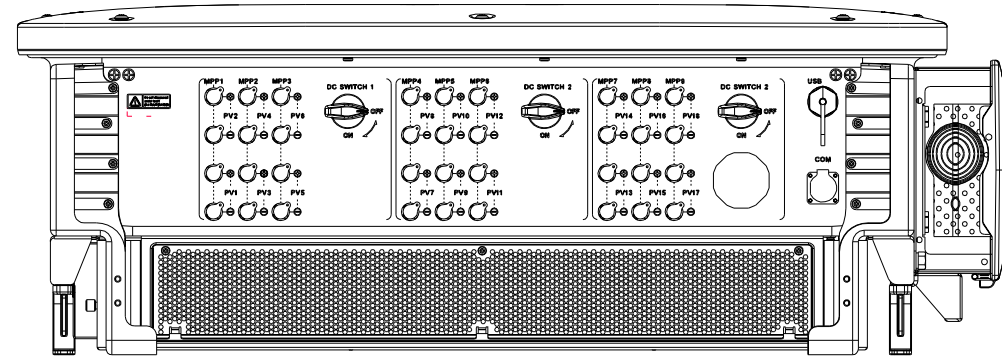
NUMBER PROJECT	DATE EMISSION	FORMAT DRAWING
	SCALE:	SCALE DWG:

REV.	DATE	DESCRIPTION	DESIGNED	CHECKED	APPROVED

DESIGN



REV.	ECO No.	DESCRIPTION



RELEASE LEVEL: _____
 FILE NAME: _____

No.	PART No.	DESCRIPTION	PART/FAI No.	QTY	REMARKS
×					TITLE
XX					
XXX	ANG	DRAW	DATE:	UNIT'S:	DWG NO.
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		STAD	DATE:	MASS(Kg):	
		APPD	DATE:	SCALE 1:1	A
		PRODUCT		SHEET: OF	MAT'L

Technical Specifications

Efficiency	
Max. Efficiency	99.00%
European Efficiency	98.60%
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 ($\cos\phi=1$)	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

STS-3000K-H1

Smart Transformer Station



Simple

Prefabricated and Pre-tested, No Internal Cabling Needed Onsite
Compact 20' HC Container Design for Easy Transportation



Efficient

High Efficiency Transformer for Higher Yields
Lower Self-consumption for Higher Yields



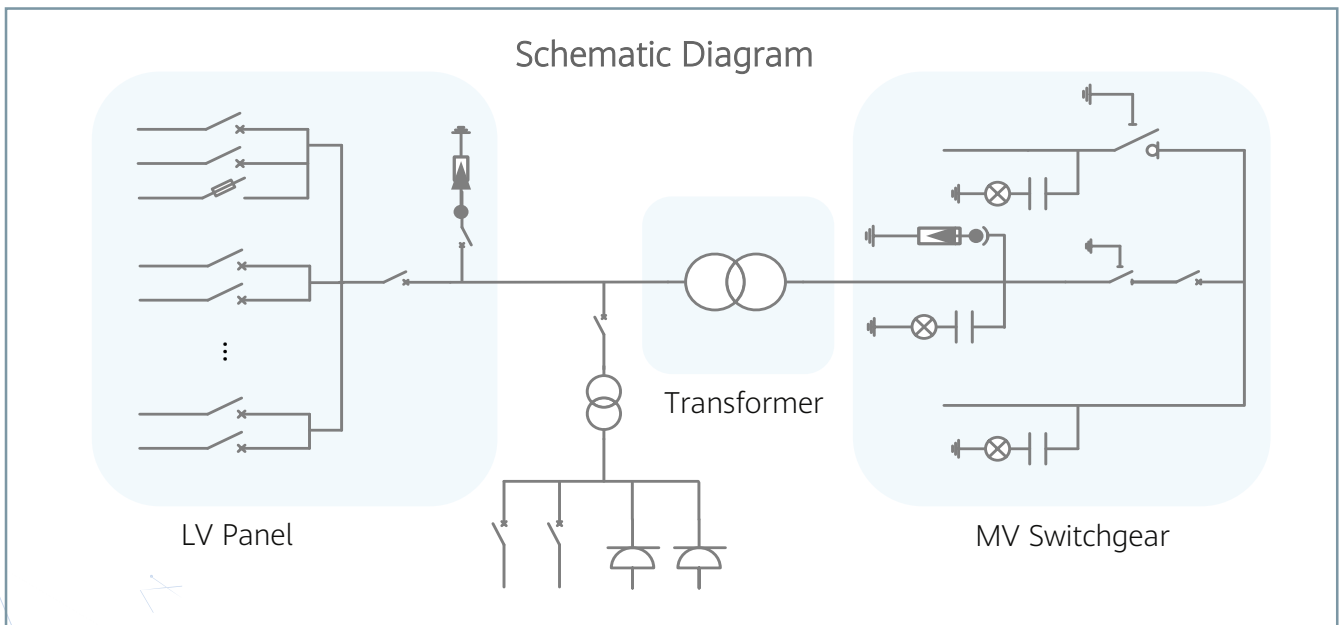
Smart

Real-time Monitoring of Transformer, LV Panel and MV Switchgear
0.2% High Precision Sensor of LV Electricity Parameters
Remote Control of ACB and MV Circuit Breaker



Reliable

Robust Design against Harsh Environments
Optimal Cooling Design for High Availability and Easy O&M
Comprehensive Tests from Components, Device to Solution



Technical Specifications

Input		
Available Inverters	SUN2000-200KTL-H2 / SUN2000-215KTL-H0	
AC Power	3,250 kVA @40°C / 2,960 kVA @50°C ¹	
Max. Inverters Quantity	16	
Rated Input Voltage	800 V	
Max. Input Current at Nominal Voltage	2,482.7 A	
LV Main Switches	ACB (2900 A / 800 V / 3P, 1 pcs), MCCB (250 A / 800 V / 3P, 16 pcs)	
Output		
Rated Output Voltage	10 kV, 11 kV, 15 kV, 20 kV, 22 kV, 23 kV, 30 kV, 33 kV, 35 kV ²	13.8 kV, 34.5 kV ²
Frequency	50 Hz	60 Hz
Transformer Type	Oil-immersed, Conservator Type	
Transformer Tappings	± 2 x 2.5%	
Transformer Oil Type	Mineral Oil (PCB Free)	
Transformer Vector Group	Dy11	
Transformer Min. Peak Efficiency Index	In accordance with EN 50588-1	
Transformer Load Losses	30.1 kW	
Transformer No-load Losses	2.51 kW	
Impedance (HV-LV1, LV2)	7% (0 ~ +10%) @3,250 kVA	
MV Switchgear Type	SF6 Gas Insulated, 3 Units	
MV Switchgear Configuration	1 Transformer Unit with Circuit Breaker 1 Cable Unit with Load Breaker Switch 1 Cable Direct Connection Unit	
Auxiliary Transformer	Dry Type Transformer, 5 kVA, Dyn11	
Output Voltage of Auxiliary Transformer	400 / 230 Vac	220 / 127 Vac
Protection		
Transformer Monitoring & Protection	Oil Level, Oil Temperature, Oil Pressure and Buchholz	
Protection Degree of MV & LV Room	IP 54	
Internal Arcing Fault MV Switchgear	IAC A 20 kA 1s	
MV Relay Protection	50/51, 50N/51N	
MV Surge Arrester for MV Circuit Breaker	Equipped	
LV Overvoltage Protection	Type I+II	
General		
Dimensions (W x H x D)	6,058 x 2,896 x 2,438 mm (20' HC Container)	
Weight	< 15 t (33,069 lb.)	
Operating Temperature Range	-25°C ~ 60°C ³ (-13°F ~ 140°F)	
Relative Humidity	0% ~ 95%	
Max. Operating Altitude	2,000 m (6,562 ft.)	2,500 m (8,202 ft.)
Enclosure Color	RAL 9003	
Communication	Modbus-RTU, Preconfigured with Smartlogger3000B	
Applicable Standards	IEC 62271-202, EN 50588-1, IEC 60076, IEC 62271-200, IEC 61439-1	
Features		
Auxiliary Transformer (50 kVA, Dyn11)	Optional ⁴	
1.5 kVA UPS	Optional ⁴	
MV Switchgear Updated to: 1 transformer unit with circuit breaker 2 cable units with load breaker switch	Optional ⁴	
Updated to 25kA 1s MV Switchgear	Optional ⁴	
IMD	Optional ⁴	
STS Interlocking	Optional ⁴	

- 1 - More detailed AC power of STS, please refer to the de-rating curve.
2 - Rated output voltage from 10 kV to 35 kV, more available upon request
3 - When ambient temperature $\geq 55^{\circ}\text{C}$, awning shall be equipped for STS on site by customer.
4 - Extra expense needed for optional features which standard product doesn't contain.