SYMBOLS

CIRCUIT BREAKER 4P CURVE B RATED AS PER GRID-TIED INVERTER CAPACITY

DIFFERENTIAL SWITCH 4P TYPE A OR AC 300 mA RATED AS PER GRID-TIED INVERTER

Surge Arrester SPCT2 460/4 RATED AS PER GRID-TIED INVERTER. Up ≤ 1.75 kV, Imax = 40 kA, In = 20kA

CIRCUIT BREAKER 4P CURVE B RATED AS PER SUM OF GRID-TIED INVERTERS CAPACITY

THREE PHASE BI-DIRECTIONAL POWER ANALYZER

THREE PHASE POWER ANALYZER

Surge Arrester DC SIDE TYPE 2. Up ≤ 4.5 kV, Imax = 25 kA, In = 12.5 kA

DC

AC

COMMUNICATION

GROUND/EARTH

Genset 50 kVA

Genset 300 kVA

EDZ or Couvent

No synchronization

ATS1

Load

MDB Bus Bar 1

S3

~ 150 meters

AC Totalizing

ENERGY MANAGEMENT SYSTEM - HYBRID SYSTEM CONTROLLER

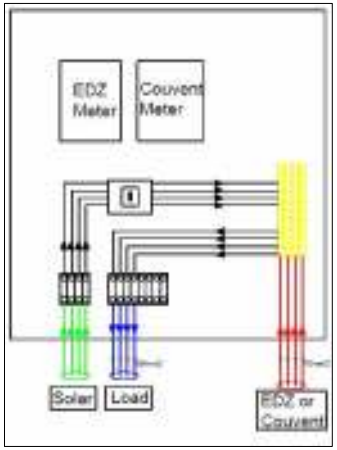
RADIATION SENSOR

MODULE TEMPERATURE SENSOR

AMBIENT TEMPERATURE SENSOR

Note1.2: This connection point serves only as an example.

Note1.1: Additional Type 2 SPDs for the DC strings are required if the distance between the inverters and the PV panels is greater than 10 meters. These SPDs should be installed at a distance less than 10 meters from the PV panels.



Earth Bar

EARTHING OF AC SPD

EARTHING OF AC TOTALIZING PANEL

S2 ~ 20 meters

Grid-tied Inverter Roof 1

Grid-tied Inverter Roof 1

Grid-tied Inverter Roof 2

AC

DC

MPPT 1

MPPT 2

GROUNDING OF INVERTER CABINETS

EARTHING OF DC SPD

S1

15 A Fuse

Arrays of PV panels

GROUNDING OF FRAMES AND MOUNTING STRUCTURE

Maximum Allowable Voltage Drop	
Cable	%ΔU
S1	0.50%
S2 & S3	2.00%

All cables must be UV and water resistant. DC cables shall be of the type Cu Rv-k 0.6/1 kV.

SYSTEM DESCRIPTION

THE SYSTEM IS A HYBRID SOLAR SYSTEM DESIGNED TO DECREASE THE UTILIZATION OF DIESEL AND ENERGY FROM THE GRID.
MAIN COMPONENTS:
PV CAPACITY: 60 KWP
GRID-TIED INVERTER CAPACITY: 3 X 20 KW
SYSTEM ARCHITECTURE: GRID CONNECTED HYBRID SYSTEM

NOTE: CONFIGURATION SERVERS TO BE AN EXAMPLE ONLY

DRAWING: SINGLE LINE DIAGRAM

PROJECT: ARCENCIEL PV SYSTEM

BENEFICIARY: ARCENCIEL

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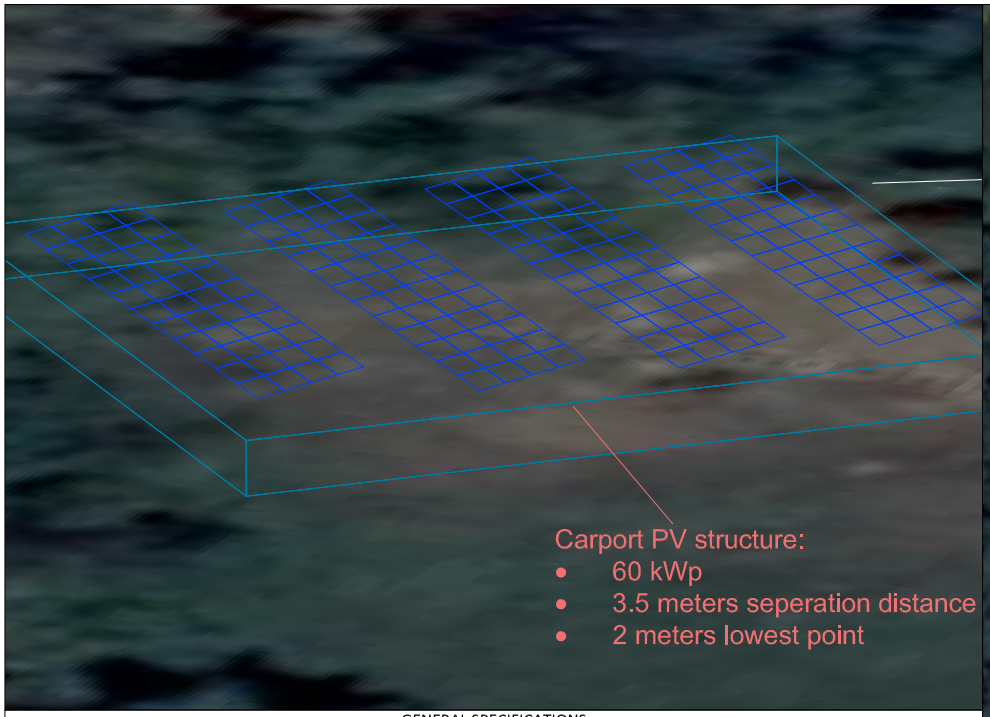

GENERAL SPECIFICATIONS		
Photovoltaic Generator	PV Capacity at STC (Wp)	≥60,000 Wp
	Inclination	10º
	Type of module	Crystalline 72 cells
	Location and Orientation	Carport, 225º
	Standards	EC 61215 edition 2, IEC 61730, IEC 62716, IEC 61701
Grid-Tied Inverter	Location	Outdoor
	Type	Three phase transformerless
	Rated power	≥54,000 W
	Number of MPP tracker	≥ 1
	Protection Class	≥ IP65
	Biggest voltage MPP range	150 V - 800 V
	Maximum DC voltage	1.000 V
	Output AC voltage	3 / N / PE 230, 400 V (adjustable)
	Output AC frequency	50 Hz (adjustable)
	Phi cosine	1
	THD	≤ 3%
	Consumption at night	≤ 3 W
	Maximum efficiency	≥ 98 %
	Euroefficiency	≥ 97 %
	Standards	Harmonic Current (IEC 61000-3-2 and / or IEC61000-3-4), IEC 62109-1/2
	Anti -islanding protection	Yes/ VDE 0126-1-1 or similar
	Comunication	RS485, ethernet, RS232
	Additional requirements	Dynamic compensation of reactive power, inverter automatic reconnection conditions, linear output power control from a third device (read and write capabilities), utility-interactive photovoltaic inverter system.
	Permissible grid characteristics (inverter not to be disconnected)	Vp-n = 230 V ±20%
		Vp-p=400 V ± 20%
		Fq = 50 ± 5 Hz
PV plant controller & data logger	Type	Fuel reduction device
	Communication	RS485, Ethernet and/or RS232 (compatible with Grid-dependent inverter, existing Genset control Unit, environment sensors and electrical meters)
	Inputs	Meters, sensors, inverters, Genset Control Unit, Grid (consumption)
	Outputs	Inverters, Grid (back-feeding)
	Data logger	2 years data logging capacity, monthly evaluation report, calculation of indicators and remote monitoring

SERVICE SPECIFICATIONS		
Output performance	Specific Yield	1,450 kWh/kWp
	Daily final average production (kWh/day)	238 kWh/day
Facility characteristics	Reference annual consumption (kWh/year)	160,000 kWh/year
	Estimated solar fraction	~ 54%

MODE OF OPERATION		
MODE	POWER SOURCE	GRID CONNECTED INVERTER OPERATION
Grid Mode	Grid	Load feeding (normal operation) Injection to the grid if any surplus
Fuel Reduction	Genset	Load feeding according to fuel reduction mode

DRAWING: SYSTEM LAYOUT AND ARCHITECTURE

PROJECT: ARCENCIEL PV SYSTEM

BENEFICIARY: ARCENCIEL

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