

Project Name: Sport Ireland - NIA - Final
Offer no.: National Indoor Arena

07/05/2026

Documentation- National Indoor Arena

Customer Details

Company	Sport Ireland
Customer Number	
Contact person	
Address	Sport Ireland Campus, Snugborough Rd, Blanchardstown, Dublin 15, D15 EPN4
Phone	
Fax	
E-Mail	

Project Data

Project Name	Sport Ireland - NIA - Final
Offer no.	National Indoor Arena
Project Designer	
Address	Sport Ireland Campus, Snugborough Rd, Blanchardstown, Dublin 15, D15 EPN4



Project Description:
MIC 960kVA

Project Overview

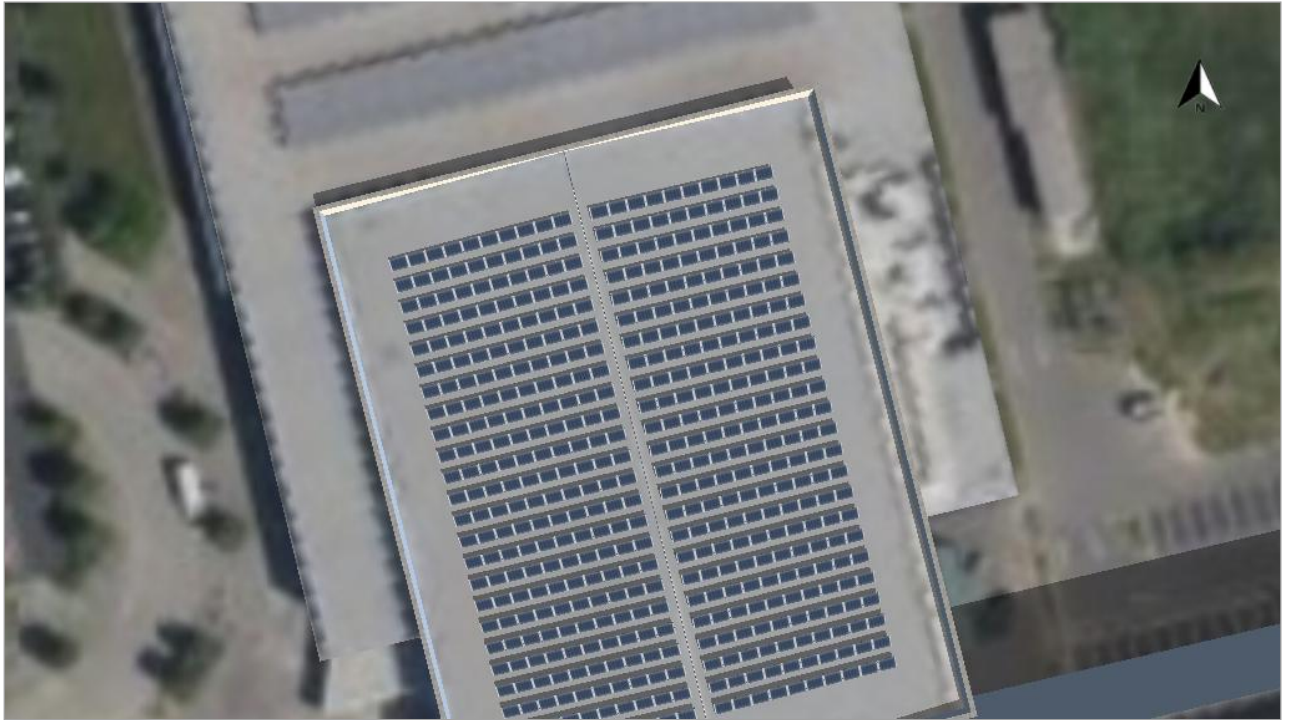


Figure: Overview Image, 3D Design

PV System

3D, Grid-connected PV System with Electrical Appliances

Climate Data	Dublin Airport, IRL (2001 - 2020)
Values source	Meteonorm 9.0
PV Generator Output	211.2 kWp
PV Generator Surface	959.1 m ²
Number of PV Modules	480
Number of Inverters	2

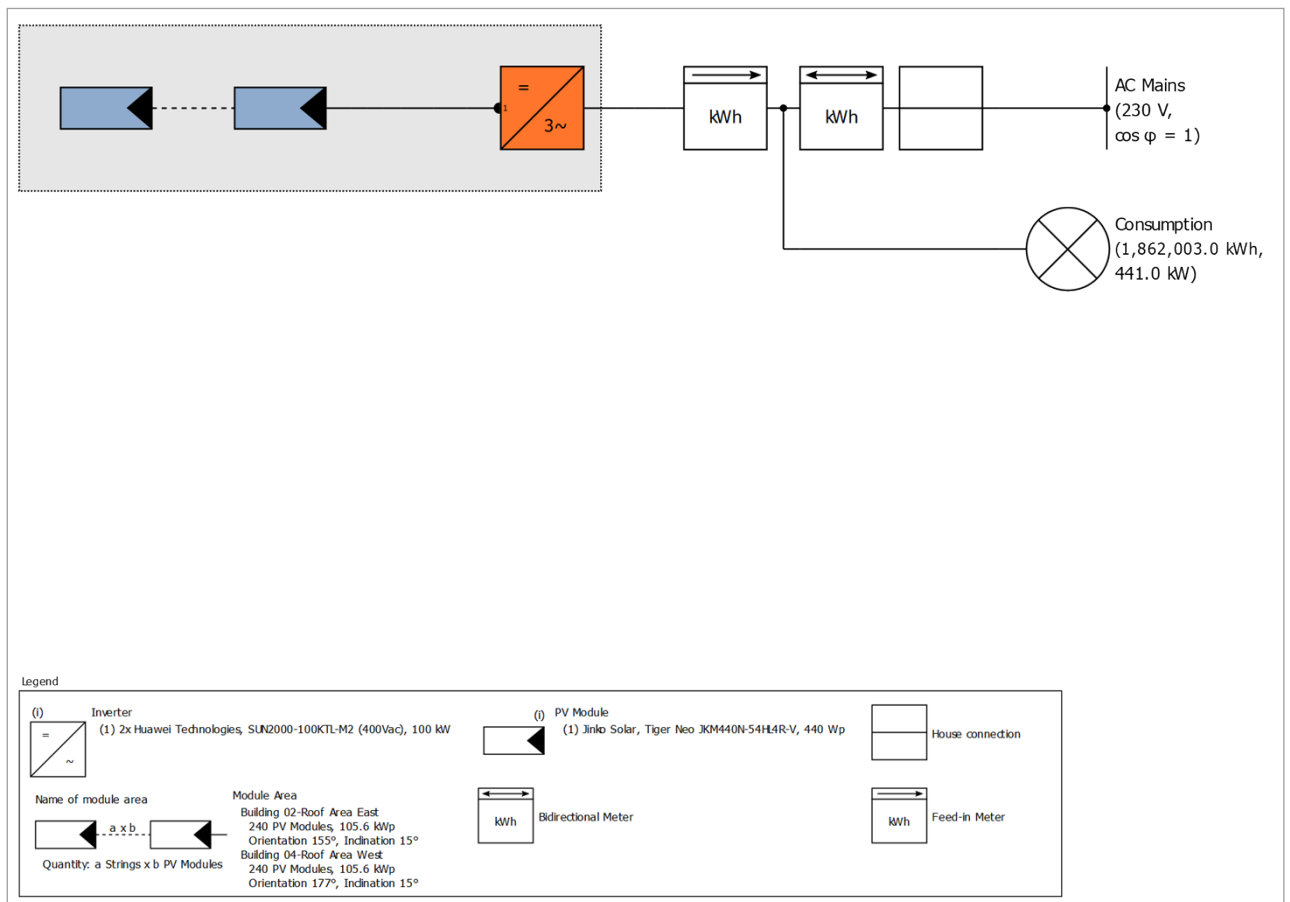


Figure: Schematic diagram

Production Forecast

Production Forecast

PV Generator Output	211.20 kWp
Spec. Annual Yield	957.11 kWh/kWp
Performance Ratio (PR)	88.84 %
Yield Reduction due to Shading	2.9 %
PV Generator Energy (AC grid)	202,172 kWh/Year
Own Consumption	202,171 kWh/Year
Grid Export	1 kWh/Year
Own Power Consumption	100.0 %
CO ₂ Emissions avoided	76,814 kg / year
Level of Self-sufficiency	10.9 %

The results have been calculated with a mathematical model calculation from Valentin Software GmbH (PV*SOL algorithms). The actual yields from the solar power system may differ as a result of weather variations, the efficiency of the modules and inverter, and other factors.

Set-up of the System

Overview

System Data

Type of System	3D, Grid-connected PV System with Electrical Appliances
Start of Operation	01/05/2026

Climate Data

Location	Dublin Airport, IRL (2001 - 2020)
Values source	Meteonorm 9.0
Data resolution	1 h
Simulation models used:	
- Diffuse Irradiation onto Horizontal Plane	Hofmann
- Irradiance onto tilted surface	Hay & Davies

Consumption

Total Consumption	1862003 kWh
10306327495 - NIA csv	1862003 kWh
Load Peak	441 kW

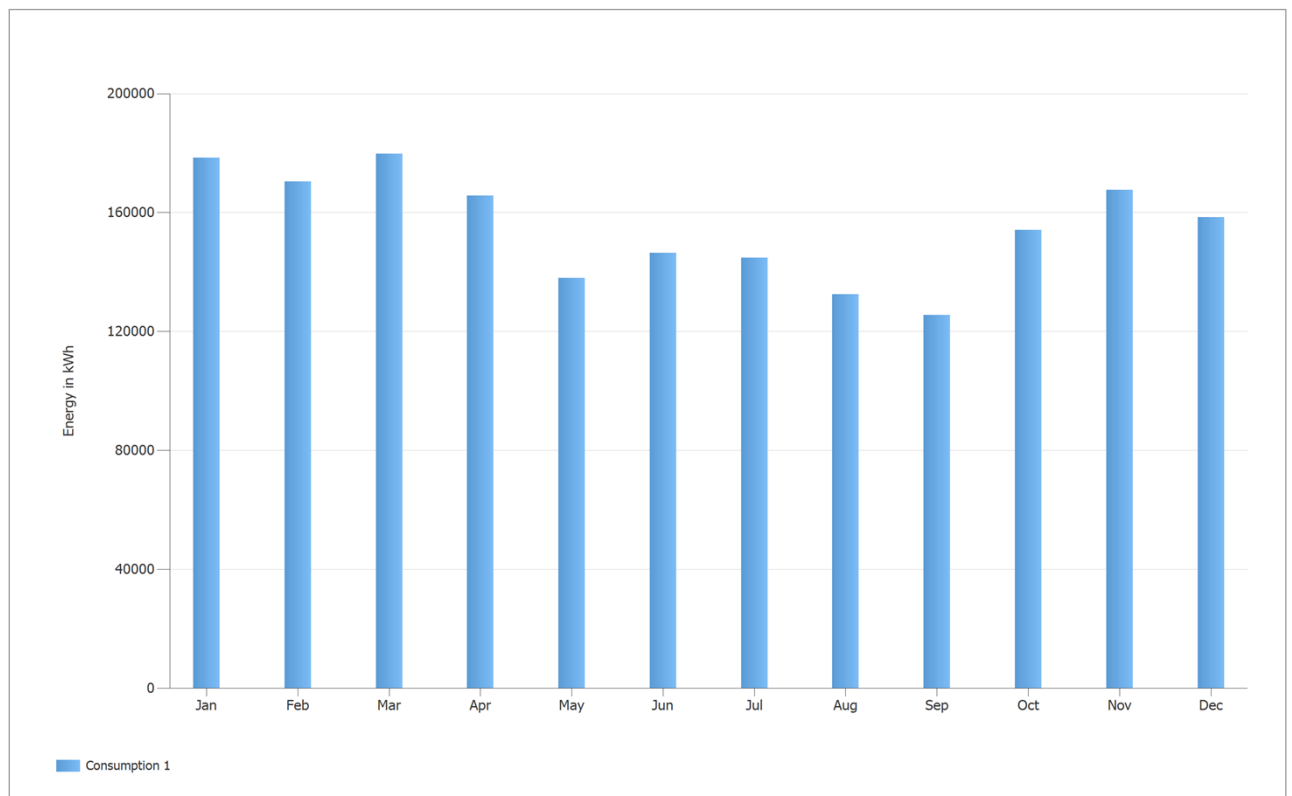


Figure: Consumption

Module Areas

1. Module Area - Building 02-Roof Area East

PV Generator, 1. Module Area - Building 02-Roof Area East

Name	Building 02-Roof Area East
PV Modules	240 x Tiger Neo JKM440N-54HL4R-V (v3)
Manufacturer	Jinko Solar
Inclination	15 °
Orientation	Southeast 155 °
Installation Type	Mounted - Roof
PV Generator Surface	479.5 m ²

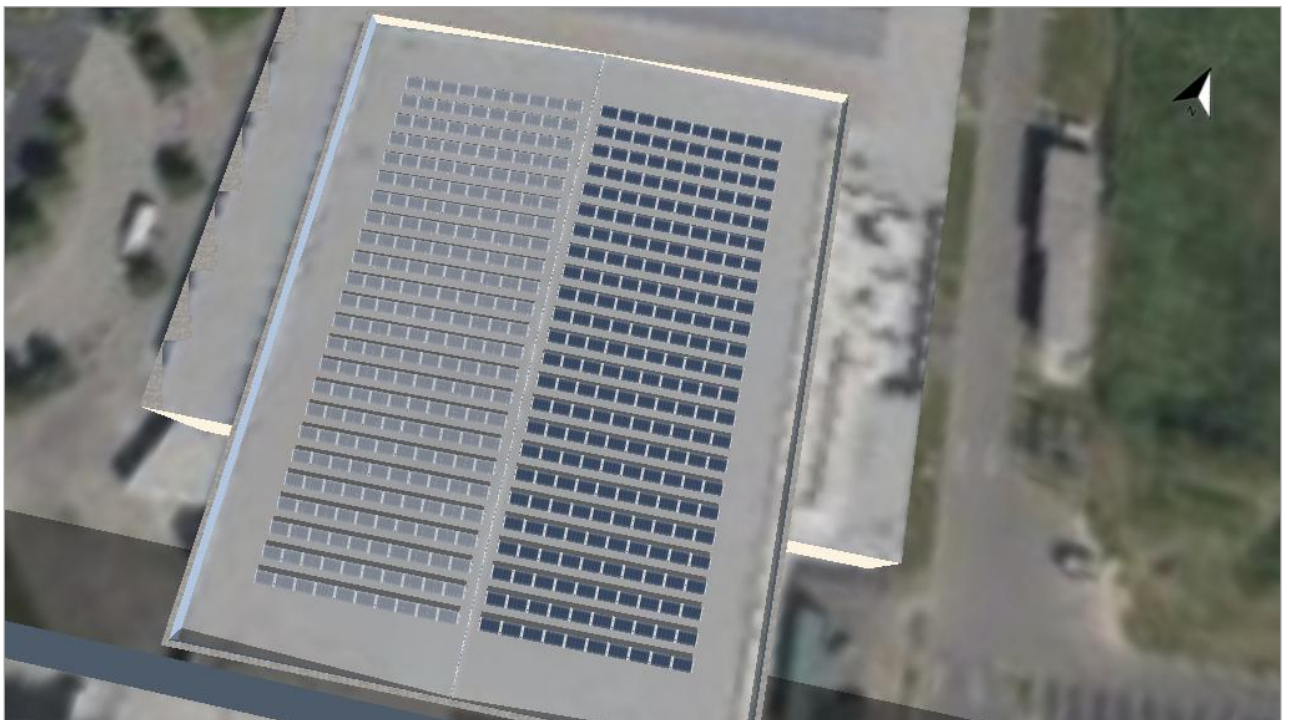


Figure: 1. Module Area - Building 02-Roof Area East

2. Module Area - Building 04-Roof Area West

PV Generator, 2. Module Area - Building 04-Roof Area West

Name	Building 04-Roof Area West
PV Modules	240 x Tiger Neo JKM440N-54HL4R-V (v3)
Manufacturer	Jinko Solar
Inclination	15 °
Orientation	South 177 °
Installation Type	Mounted - Roof
PV Generator Surface	479.5 m²

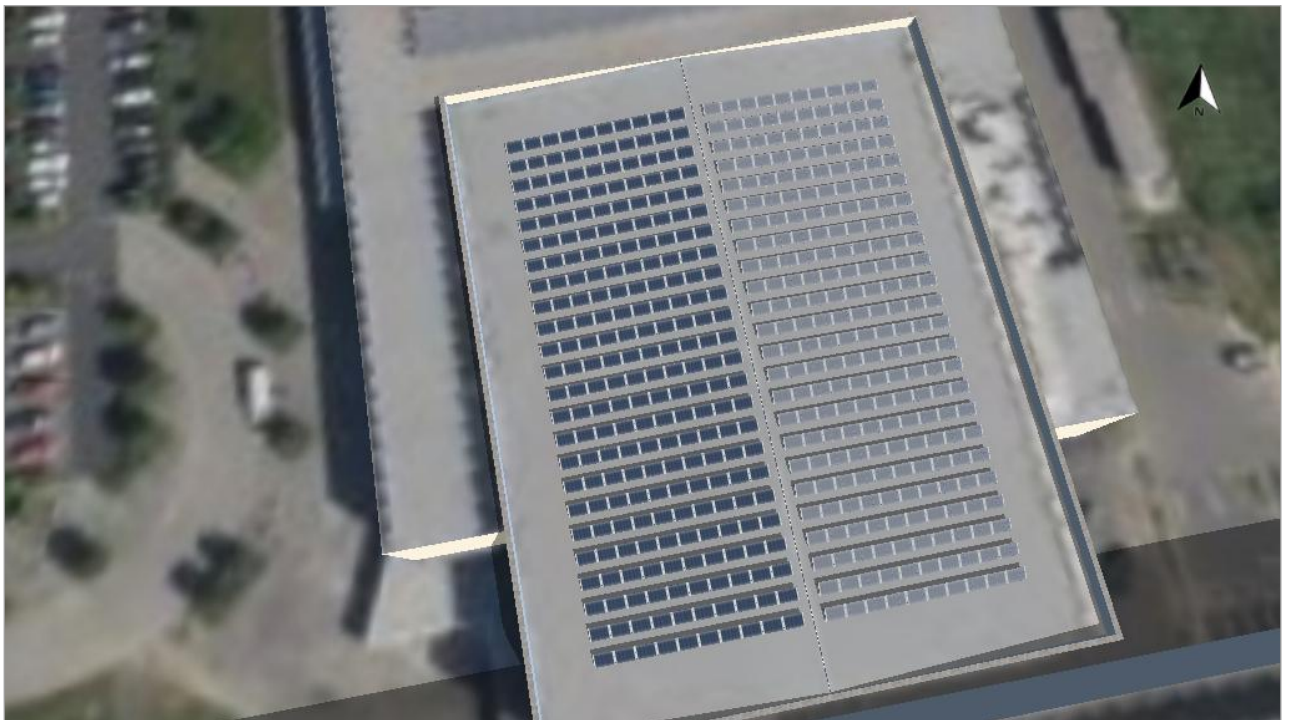


Figure: 2. Module Area - Building 04-Roof Area West

Inverter configuration

Configuration 1

Module Area	Building 02-Roof Area East
Inverter 1	
Model	SUN2000-100KTL-M2 (400Vac) (v1)
Manufacturer	Huawei Technologies
Quantity	1
Sizing Factor	105.6 %
Configuration	MPP 1: 2 x 12
	MPP 2: 2 x 12
	MPP 3: 2 x 12
	MPP 4: 2 x 12
	MPP 5: 2 x 12
	MPP 6: 2 x 12
	MPP 7: 2 x 12
	MPP 8: 2 x 12
	MPP 9: 2 x 12
	MPP 10: 2 x 12

Configuration 2

Module Area	Building 04-Roof Area West
Inverter 1	
Model	SUN2000-100KTL-M2 (400Vac) (v1)
Manufacturer	Huawei Technologies
Quantity	1
Sizing Factor	105.6 %
Configuration	MPP 1: 2 x 12
	MPP 2: 2 x 12
	MPP 3: 2 x 12
	MPP 4: 2 x 12
	MPP 5: 2 x 12
	MPP 6: 2 x 12
	MPP 7: 2 x 12
	MPP 8: 2 x 12
	MPP 9: 2 x 12
	MPP 10: 2 x 12

AC Mains

AC Mains

Number of Phases	3
Mains voltage between phase and neutral	230 V
Displacement Power Factor (cos phi)	+/- 1

Simulation Results

Results Total System

PV System

PV Generator Output	211.20 kWp
Spec. Annual Yield	957.11 kWh/kWp
Performance Ratio (PR)	88.84 %
Yield Reduction due to Shading	2.9 %
PV Generator Energy (AC grid)	202,172 kWh/Year
Own Consumption	202,171 kWh/Year
Grid Export	1 kWh/Year
Own Power Consumption	100.0 %
CO ₂ Emissions avoided	76,814 kg / year

PV Generator Energy (AC grid)

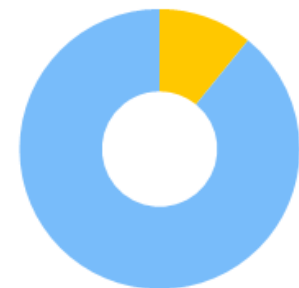


Own Consumption Grid Export

Appliances

Appliances	1,862,003 kWh/Year
Standby Consumption (Inverter)	31 kWh/Year
Total Consumption	1,862,034 kWh/Year
covered by PV power	202,171 kWh/Year
covered by grid	1,659,863 kWh/Year
Solar Fraction	10.9 %

Total Consumption



covered by PV power covered by grid

Level of Self-sufficiency

Total Consumption	1,862,034 kWh/Year
covered by grid	1,659,863 kWh/Year
Level of Self-sufficiency	10.9 %

Results per Module Area

Building 02-Roof Area East

PV Generator Output	105.60 kWp
PV Generator Surface	479.55 m ²
Global Radiation at the Module	1071.83 kWh/m ²
Global Radiation on Module without reflection	1071.83 kWh/m ²
Performance Ratio (PR)	88.85 %
PV Generator Energy (AC grid)	100523.24 kWh/Year
Spec. Annual Yield	951.92 kWh/kWp

Sport Ireland - NIA - Final

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Building 04-Roof Area West

PV Generator Output	105.60 kWp
PV Generator Surface	479.55 m ²
Global Radiation at the Module	1083.64 kWh/m ²
Global Radiation on Module without reflection	1083.64 kWh/m ²
Performance Ratio (PR)	88.87 %
PV Generator Energy (AC grid)	101648.42 kWh/Year
Spec. Annual Yield	962.58 kWh/kWp

PV System Energy Balance

PV System Energy Balance

Global radiation - horizontal	983.40 kWh/m²	
Deviation from standard spectrum	-9.83 kWh/m ²	-1.00 %
Ground Reflection (Albedo)	3.32 kWh/m ²	0.34 %
Orientation and inclination of the module surface	100.86 kWh/m ²	10.32 %
Module-independent shading	0.00 kWh/m ²	0.00 %
Reflection on the Module Surface	0.00 kWh/m ²	0.00 %
Global Radiation at the Module	1,077.73 kWh/m²	
	1,077.73 kWh/m ²	
	x 959.092 m ²	
	= 1,033,646.52 kWh	
Global PV Radiation	1,033,646.52 kWh	
Soiling	0.00 kWh	0.00 %
STC Conversion (Rated Efficiency of Module 22.01 %)	-806,123.09 kWh	-77.99 %
Rated PV Energy	227,523.44 kWh	
Module-specific Partial Shading	-5,429.33 kWh	-2.39 %
Low-light performance	-2,950.93 kWh	-1.33 %
Deviation from the nominal module temperature	-742.27 kWh	-0.34 %
Diodes	-318.35 kWh	-0.15 %
Mismatch (Manufacturer Information)	-4,361.65 kWh	-2.00 %
Mismatch (Configuration/Shading)	-425.57 kWh	-0.20 %
PV Energy (DC) without inverter clipping	213,295.33 kWh	
Failing to reach the DC start output	-21.24 kWh	-0.01 %
Clipping on account of the MPP Voltage Range	-141.15 kWh	-0.07 %
Clipping on account of the max. DC Current	0.00 kWh	0.00 %
Clipping on account of the max. DC Power	0.00 kWh	0.00 %
Clipping on account of the max. AC Power/cos phi	-26.87 kWh	-0.01 %
MPP Matching	-21.31 kWh	-0.01 %
PV energy (DC)	213,084.77 kWh	
Energy at the Inverter Input	213,084.77 kWh	
Input voltage deviates from rated voltage	-644.46 kWh	-0.30 %
DC/AC Conversion	-4,015.92 kWh	-1.89 %
Standby Consumption (Inverter)	-30.84 kWh	-0.01 %
Total Cable Losses	-6,252.73 kWh	-3.00 %
PV energy (AC) minus standby use	202,140.82 kWh	
PV Generator Energy (AC grid)	202,171.66 kWh	

Data Sheets

PV Module Data Sheet

PV Module: Tiger Neo JKM440N-54HL4R-V (v3)

Manufacturer	Jinko Solar
Available	Yes

Electrical Data

Cell Type	Si monocrystalline
Half-cell module	Yes
Cell Count	54
Number of Bypass Diodes	3
Loss voltage per bypass diode	1 V
Integrated power optimizer	No
Only Transformer Inverters suitable	No

I/V Characteristics at STC

MPP Voltage	32.81 V
MPP Current	13.41 A
Open Circuit Voltage	39.38 V
Short-Circuit Current	13.86 A
Increase open circuit voltage before stabilisation	0 %
Nominal output	440 W
Fill Factor	80.58 %
Efficiency	22.01 %

I/V Part Load Characteristics

Values source	Manufacturer/user-created
Irradiance	200 W/m ²
Voltage in MPP at Part Load	32.377 V
Current in MPP at Part Load	2.648 A
Open Circuit Voltage (Part Load)	37.133 V
Short Circuit Current at Part Load	2.772 A

Additional Parameters

Temperature Coefficient of Voc	-98.4 mV/K
Temperature Coefficient of Isc	6.2 mA/K
Temperature Coefficient of Pmpp	-0.29 %/K
Incident Angle Modifier (IAM)	100 %
Maximum System Voltage	1500 V

Mechanical Data

Width	1134 mm
Height	1762 mm
Depth	30 mm
Frame Width	30 mm
Weight	22 kg

Inverter Data Sheet

Inverter: SUN2000-100KTL-M2 (400Vac) (v1)

Manufacturer	Huawei Technologies
Available	Yes
Electrical data - DC	
DC nominal output	101.63 kW
Max. DC Power	122.2 kW
Nom. DC Voltage	600 V
Max. Input Voltage	1100 V
Max. Input Current	300 A
Max. short circuit current	400 A
Number of DC Inlets	20
Electrical data - AC	
AC Power Rating	100 kW
Max. AC Power	110 kVA
Nom. AC Voltage	230 V
Number of Phases	3
With Transformer	No
Electrical data - other	
Change in Efficiency when Input Voltage deviates from Rated Voltage	0.14 %/100V
Min. Feed-in Power	150 W
Standby Consumption	3.5 W
Night Consumption	3.5 W
MPP Tracker	
Output Range < 20% of Power Rating	99.99 %
Output Range > 20% of Power Rating	99.99 %
Count of MPP Trackers	10
MPP Tracker 1-10	
Max. Input Current	30 A
Max. short circuit current	40 A
Max. Input Power	21 kW
Min. MPP Voltage	200 V
Max. MPP Voltage	1000 V

Plans and parts list

Circuit Diagram

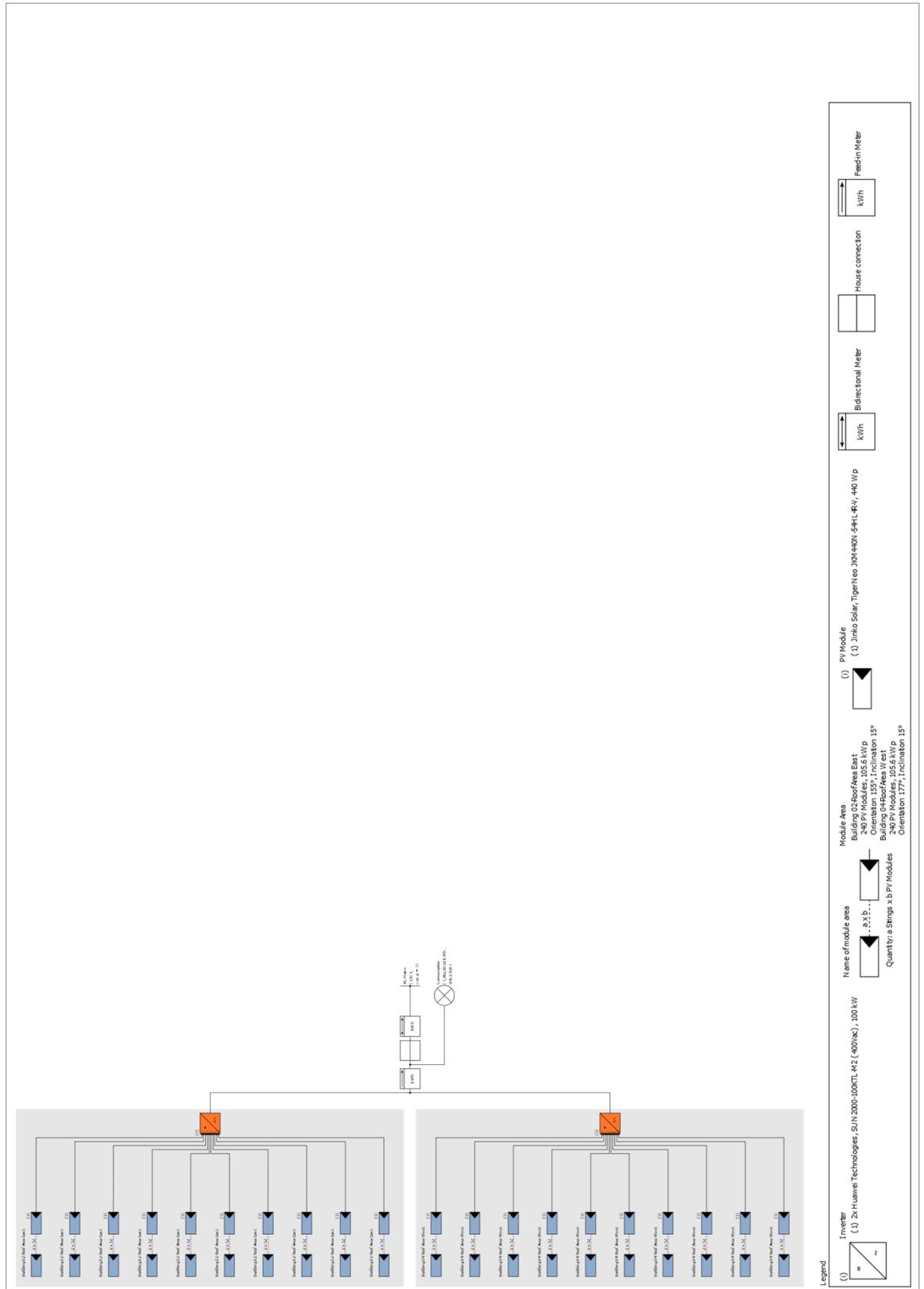


Figure: Circuit Diagram

Overview plan

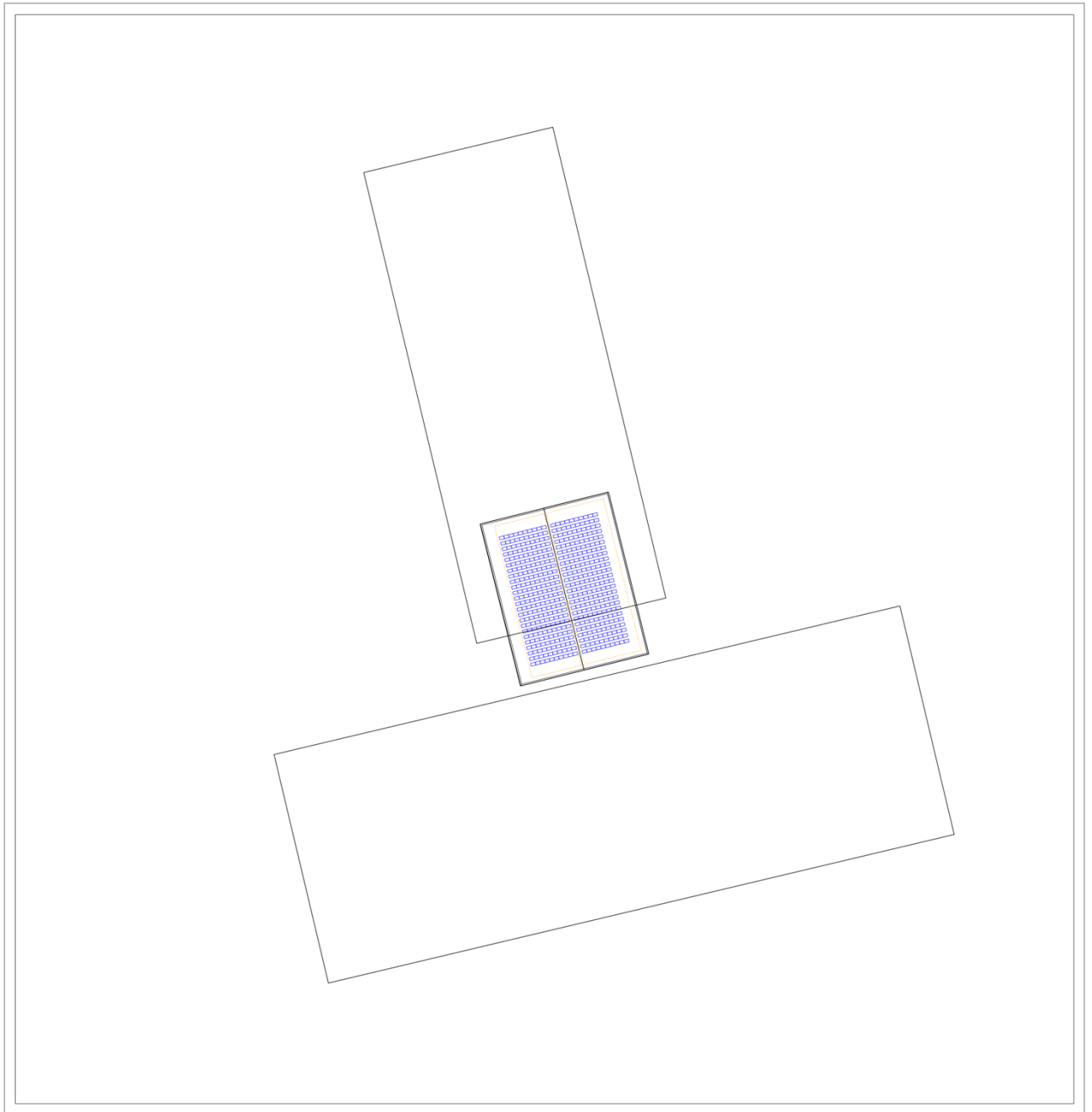


Figure: Overview plan

Dimensioning Plan

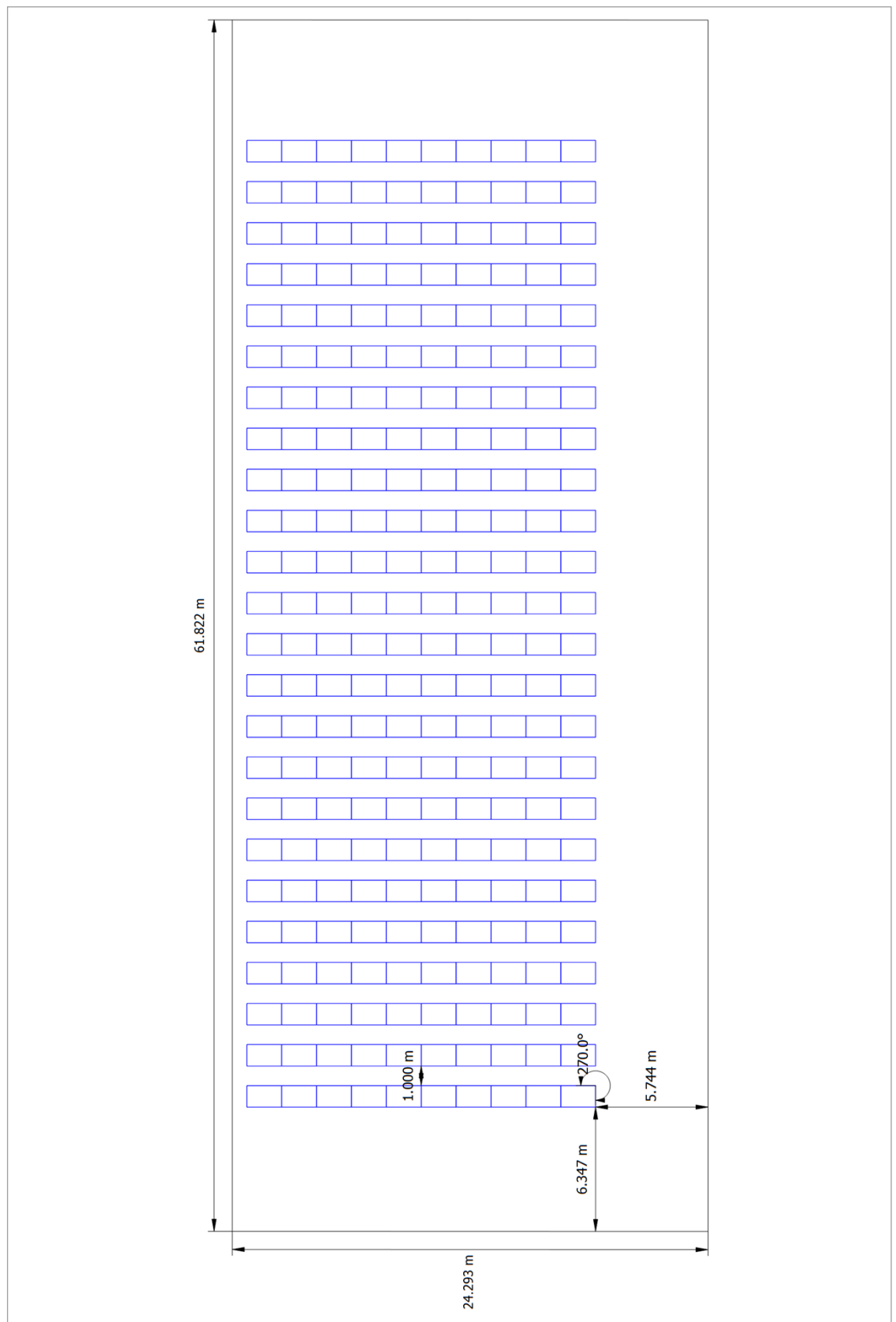


Figure: Building 04 - Roof Area West



Figure: Building 02 - Roof Area East

String Plan

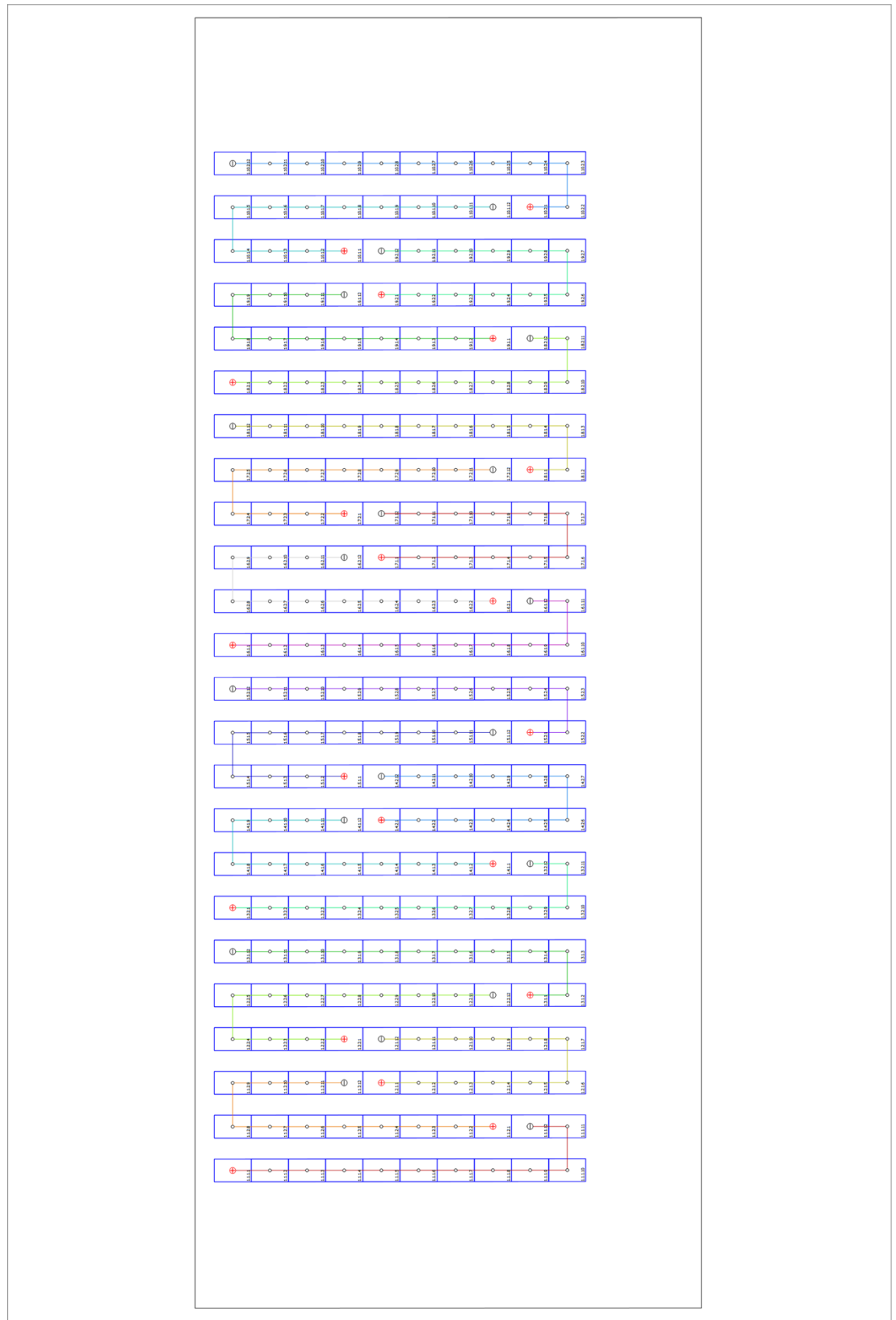


Figure: Building 02 - Roof Area East

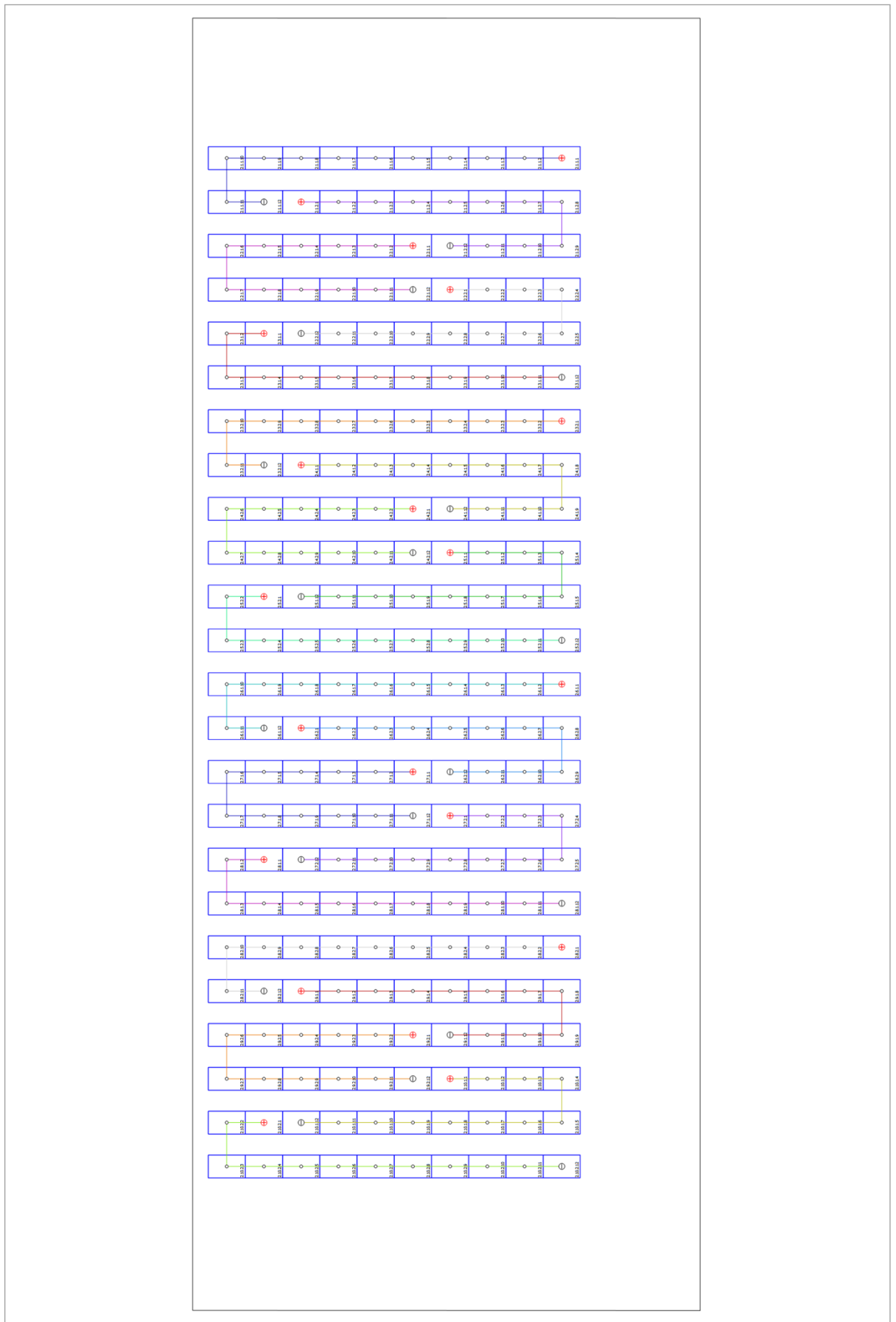


Figure: Building 04 - Roof Area West

Parts list

Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		Jinko Solar	Tiger Neo JKM440N-54HL4R-V	480	Piece
2	Inverter		Huawei Technologies	SUN2000-100KTL-M2 (400Vac)	2	Piece
6	Components			Circuit Breaker AC Isolator	1	Piece
7	Components			Network and System Protection - G10 Relay	1	Piece
8	Components			Energy Flow Sensor	1	Piece
9	Components			Network and System Protection - Fireman Shunt	20	Piece
10	Components			Circuit Breaker DC Isolator	20	Piece