

Project Name: Sport Ireland - Campus Conference Centre - Final
Offer no.: Campus Conference Centre

07/05/2026

Documentation- Campus Conference Centre

Customer Details

Company	Sport Ireland
Customer Number	
Contact person	
Address	Sport Ireland Campus, Snugborough Road, Blanchardstown, Dublin 15 D15 X8PD
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Project Data

Project Name	Sport Ireland - Campus Conference Centre - Final
Offer no.	Campus Conference Centre
Project Designer	
Address	Sport Ireland Campus, Snugborough Road, Blanchardstown, Dublin 15 D15 X8PD



Project Description:
MIC 47kVA

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	17.6 kWp
PV Generator Surface	79.9 m ²
Number of PV Modules	40
Number of Inverters	1

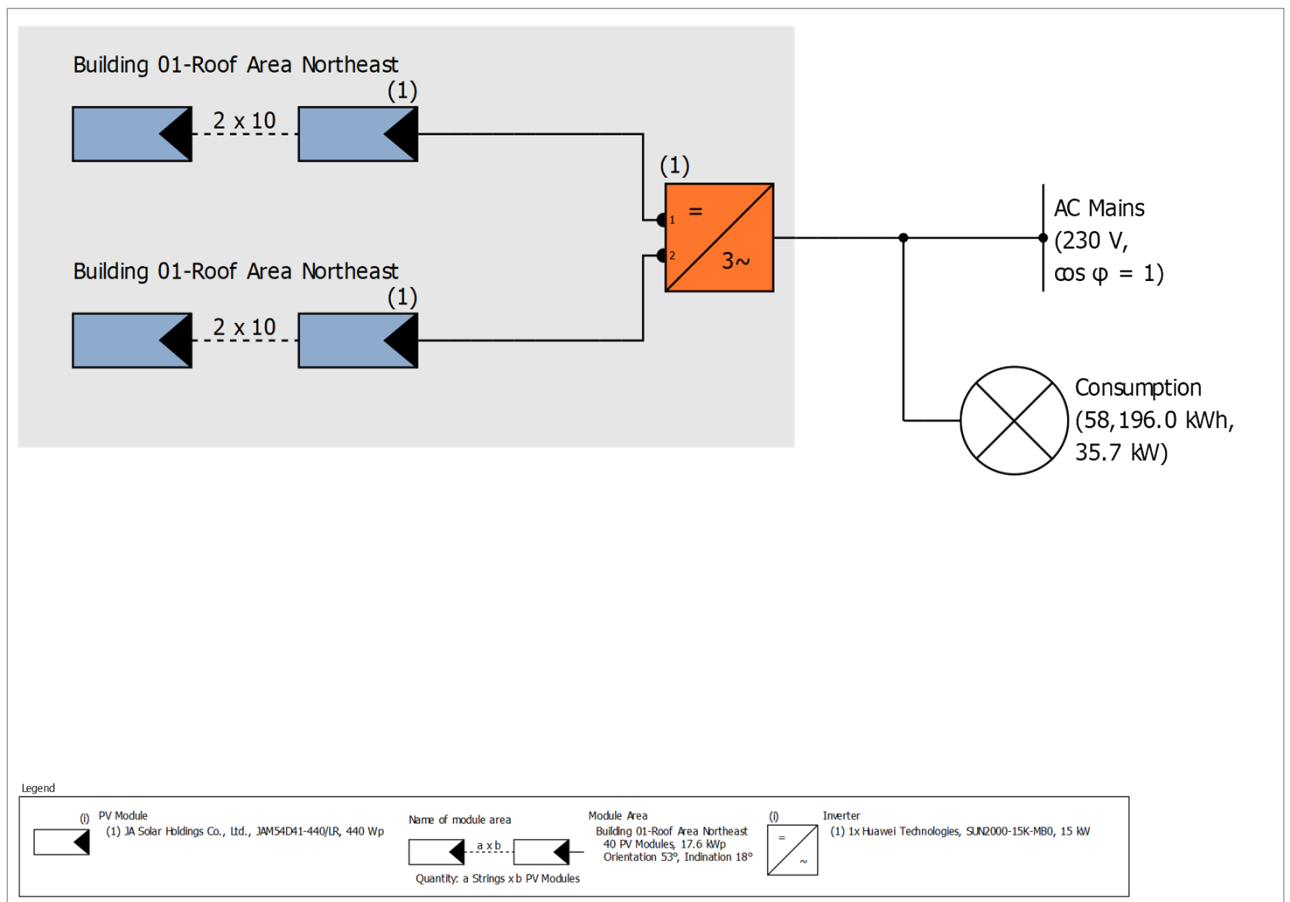


Figure: Schematic diagram

Production Forecast

Production Forecast

PV Generator Output	17.60 kWp
Spec. Annual Yield	703.61 kWh/kWp
Performance Ratio (PR)	82.25 %
Yield Reduction due to Shading	6.1 %
PV Generator Energy (AC grid)	12,408 kWh/Year
Own Consumption	10,756 kWh/Year
Grid Export	1,652 kWh/Year
Own Power Consumption	86.7 %
CO ₂ Emissions avoided	4,706 kg / year
Level of Self-sufficiency	18.5 %

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	12/03/2026

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	58196 kWh
252010- CCC	58196 kWh
Load Peak	35.7 kW

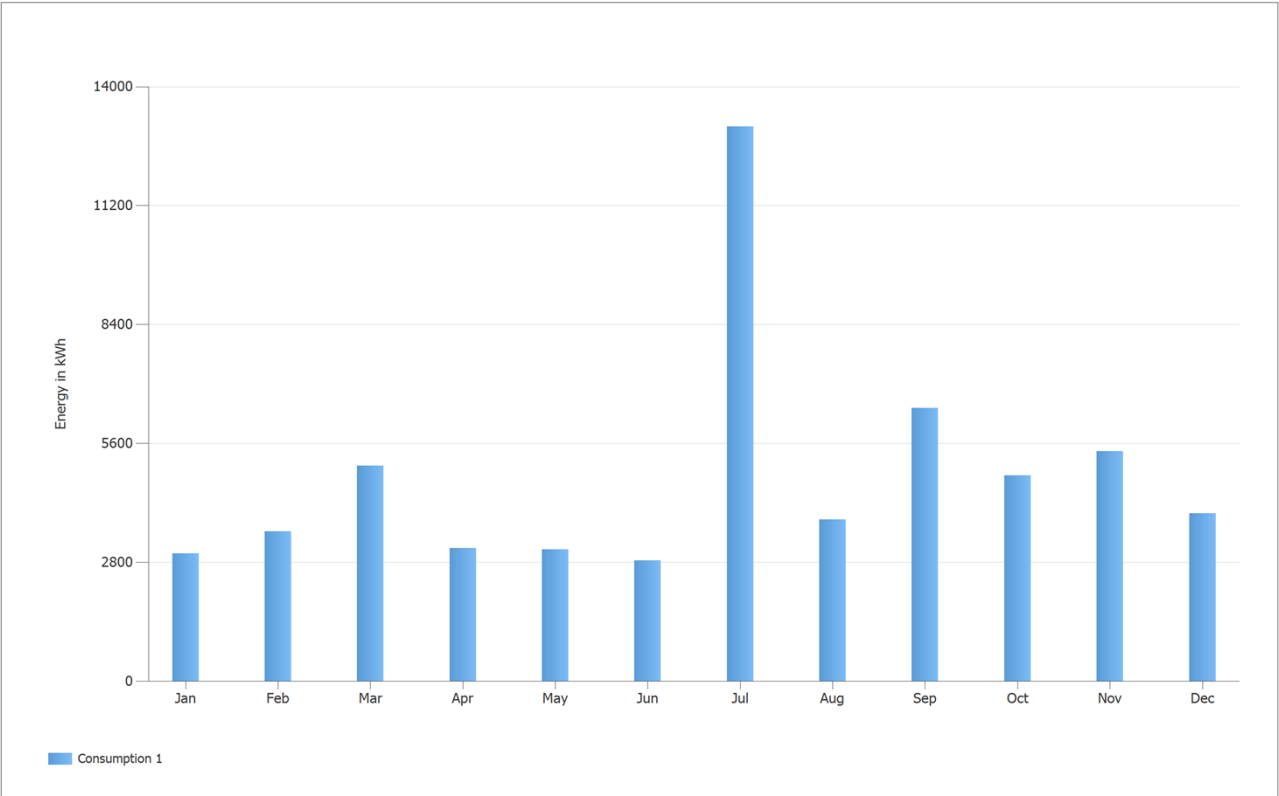


Figure: Consumption

Module Areas

1. Module Area - Building 01-Roof Area Northeast

PV Generator, 1. Module Area - Building 01-Roof Area Northeast

Name	Building 01-Roof Area Northeast
PV Modules	40 x JAM54D41-440/LR (v1)
Manufacturer	JA Solar Holdings Co., Ltd.
Inclination	18 °
Orientation	Northeast 53 °
Installation Type	Mounted - Roof
PV Generator Surface	79.9 m²

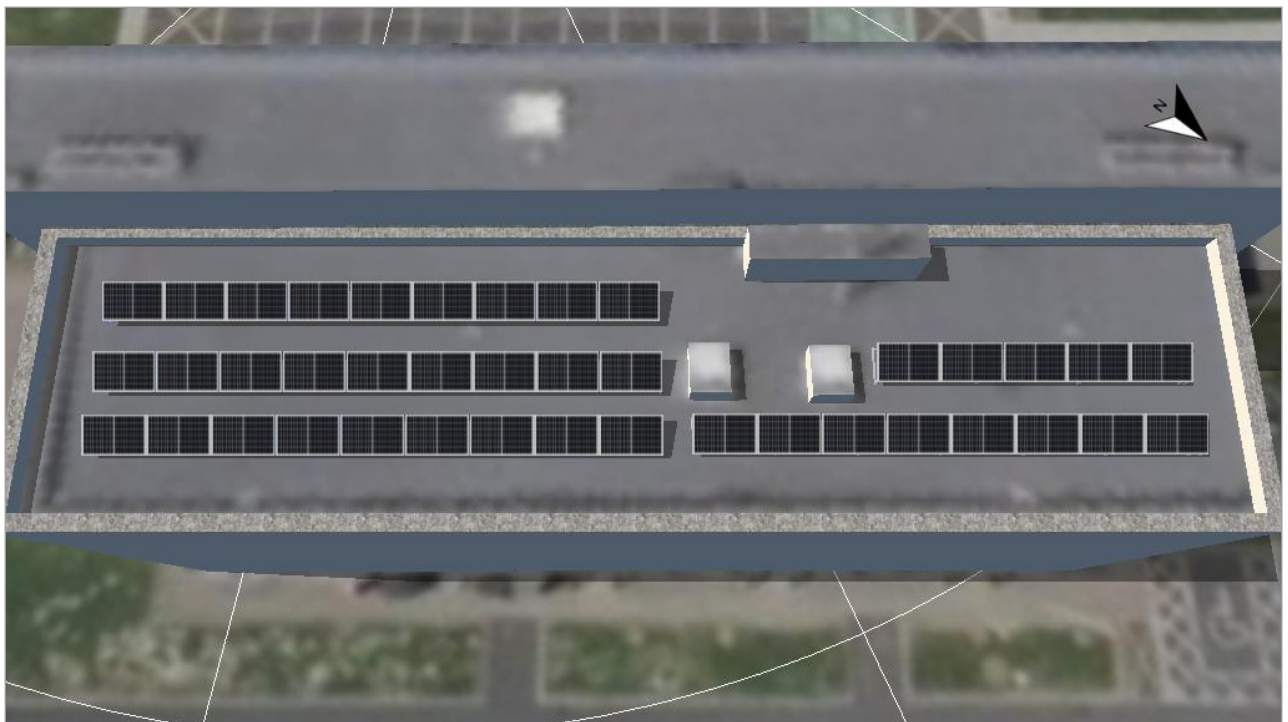


Figure: 1. Module Area - Building 01-Roof Area Northeast

Inverter configuration

Configuration 1

Module Area	Building 01-Roof Area Northeast
Inverter 1	
Model	SUN2000-15K-MB0 (v1)
Manufacturer	Huawei Technologies
Quantity	1
Sizing Factor	117.3 %
Configuration	MPP 1: 2 x 10
	MPP 2: 2 x 10

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AC Mains

AC Mains

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

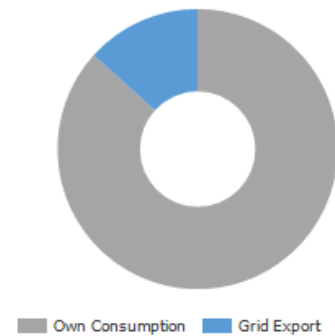
Simulation Results

Results Total System

PV System

PV Generator Output	17.60 kWp
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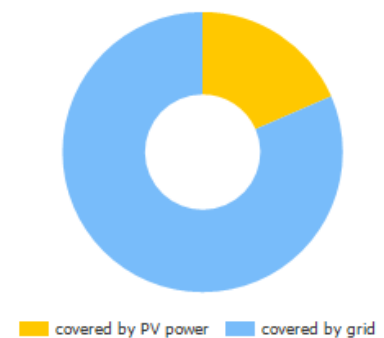
PV Generator Energy (AC grid)



Appliances

Appliances	58,196 kWh/Year
Standby Consumption (Inverter)	24 kWh/Year
Total Consumption	58,220 kWh/Year
covered by PV power	10,756 kWh/Year
covered by grid	47,465 kWh/Year
Solar Fraction	18.5 %

Total Consumption



Level of Self-sufficiency

Total Consumption	58,220 kWh/Year
covered by grid	47,465 kWh/Year
Level of Self-sufficiency	18.5 %

Results per Module Area

Building 01-Roof Area Northeast

PV Generator Output	17.60 kWp
PV Generator Surface	79.92 m ²
Global Radiation at the Module	840.73 kWh/m ²
Global Radiation on Module without reflection	855.47 kWh/m ²
Performance Ratio (PR)	82.41 %
PV Generator Energy (AC grid)	12407.96 kWh/Year
Spec. Annual Yield	705.00 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)	4.76 kWh/m ²	0.49 %
Orientation and inclination of the module surface	-122.86 kWh/m ²	-12.56 %
Module-independent shading	0.00 kWh/m ²	0.00 %
Reflection on the Module Surface	-14.74 kWh/m ²	-1.72 %
Global Radiation at the Module	840.73 kWh/m²	
	840.73 kWh/m ²	
	x 79.924 m ²	
	= 67,194.90 kWh	
Global PV Radiation	67,194.90 kWh	
Soiling	0.00 kWh	0.00 %
STC Conversion (Rated Efficiency of Module 22.02 %)	-52,399.09 kWh	-77.98 %
Rated PV Energy	14,795.82 kWh	
Module-specific Partial Shading	-696.05 kWh	-4.70 %
Low-light performance	-457.45 kWh	-3.24 %
Deviation from the nominal module temperature	55.53 kWh	0.41 %
Diodes	-16.43 kWh	-0.12 %
Mismatch (Manufacturer Information)	-273.63 kWh	-2.00 %
Mismatch (Configuration/Shading)	-153.42 kWh	-1.14 %
PV Energy (DC) without inverter clipping	13,254.37 kWh	
Failing to reach the DC start output	-5.02 kWh	-0.04 %
Clipping on account of the MPP Voltage Range	-2.73 kWh	-0.02 %
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	0.00 kWh	0.00 %
MPP Matching	-13.25 kWh	-0.10 %
PV energy (DC)	13,233.37 kWh	
Energy at the Inverter Input	13,233.37 kWh	
Input voltage deviates from rated voltage	-93.05 kWh	-0.70 %
DC/AC Conversion	-348.61 kWh	-2.65 %
Standby Consumption (Inverter)	-24.46 kWh	-0.19 %
Total Cable Losses	-383.75 kWh	-3.01 %
PV energy (AC) minus standby use	12,383.50 kWh	
PV Generator Energy (AC grid)	12,407.96 kWh	

Data Sheets

PV Module Data Sheet

PV Module: JAM54D41-440/LR (v1)

Manufacturer	JA Solar Holdings Co., Ltd.
Available	Yes

Electrical Data

Cell Type	Si monocrystalline
Half-cell module	Yes
Cell Count	108
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	32.47 V
MPP Current	13.55 A
Open Circuit Voltage	38.9 V
Short-Circuit Current	14.31 A
Increase open circuit voltage before stabilisation	0 %
Nominal output	440 W
Fill Factor	79.04 %
Efficiency	22.02 %

I/V Part Load Characteristics (calculated)

Values source	Standard (Two-diode Model)
Series resistance R_s	1.656e-03 Ω
Parallel Resistance R_p	6.509 Ω
Saturation Current Parameter $Cs1$	296.3 A/K ³
Saturation Current Parameter $Cs2$	-2.435e-13 A/K ^(2.5)
Photo Current Parameter $C1$	1.241e-02 m ² /V
Photo Current Parameter $C2$	6.4e-06 m ² /(V*K)
Photocurrent	14.314 A

Additional Parameters

Temperature Coefficient of V_{oc}	-97.2 mV/K
Temperature Coefficient of I_{sc}	6.4 mA/K
Temperature Coefficient of P_{mpp}	-0.29 %/K
Incident Angle Modifier (IAM)	99 %
Maximum System Voltage	1500 V

Mechanical Data

Width	1134 mm
Height	1762 mm
Depth	30 mm
Frame Width	28 mm
Weight	22 kg

Inverter Data Sheet

Inverter: SUN2000-15K-MB0 (v1)

Manufacturer	Huawei Technologies
Available	Yes
Electrical data - DC	
DC nominal output	15.31 kW
Max. DC Power	22.5 kW
Nom. DC Voltage	600 V
Max. Input Voltage	1100 V
Max. Input Current	60 A
Max. short circuit current	60 A
Number of DC Inlets	4
Electrical data - AC	
AC Power Rating	15 kW
Max. AC Power	16.5 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	0.25 %/100V
Min. Feed-in Power	50 W
Standby Consumption	5.5 W
Night Consumption	5.5 W
MPP Tracker	
Output Range < 20% of Power Rating	99.9 %
Output Range > 20% of Power Rating	99.9 %
Count of MPP Trackers	2
MPP Tracker 1-2	
Max. Input Current	30 A
Max. short circuit current	30 A
Max. Input Power	21.6 kW
Min. MPP Voltage	200 V
Max. MPP Voltage	1000 V

Plans and parts list

Circuit Diagram

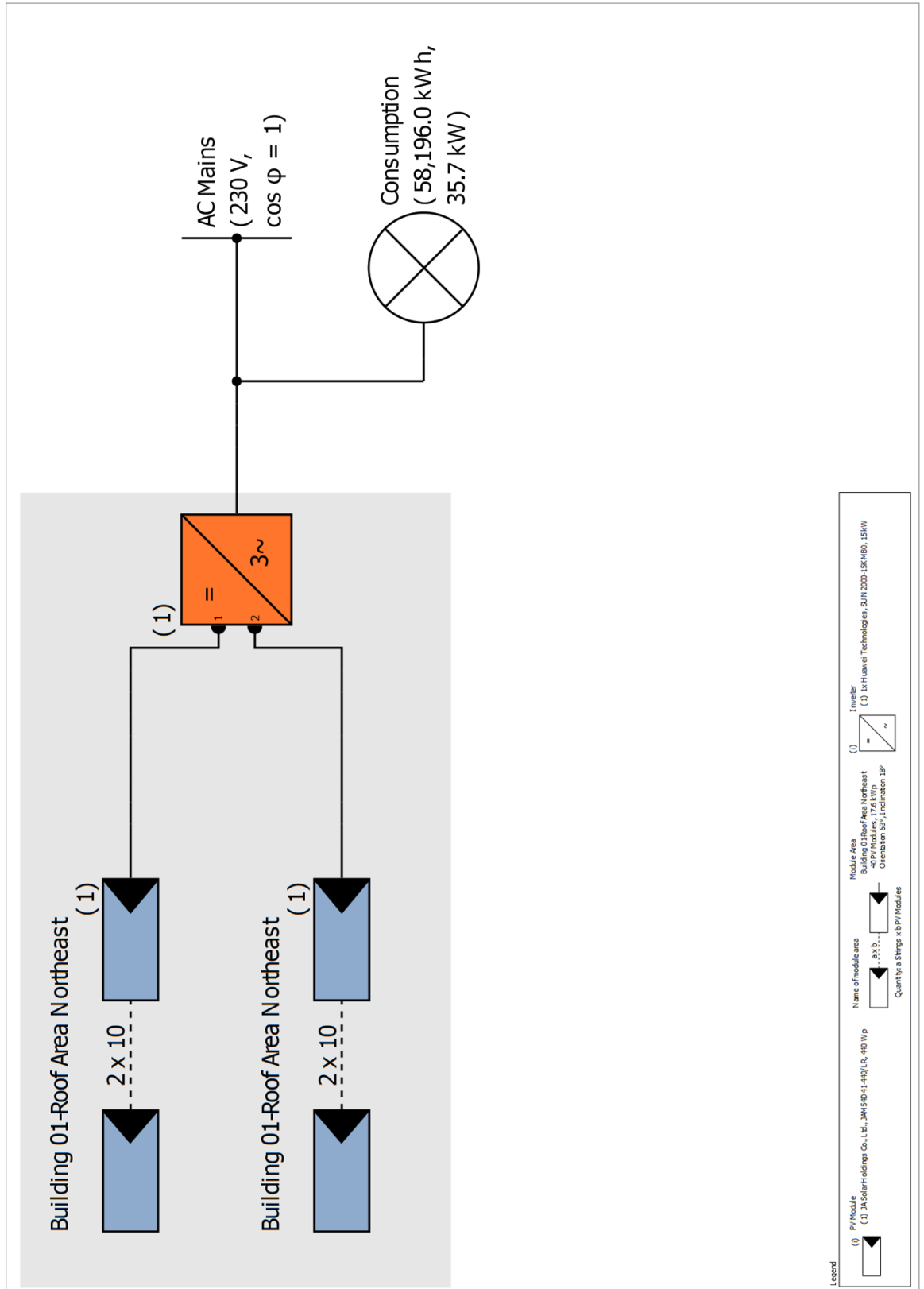


Figure: Circuit Diagram

Overview plan

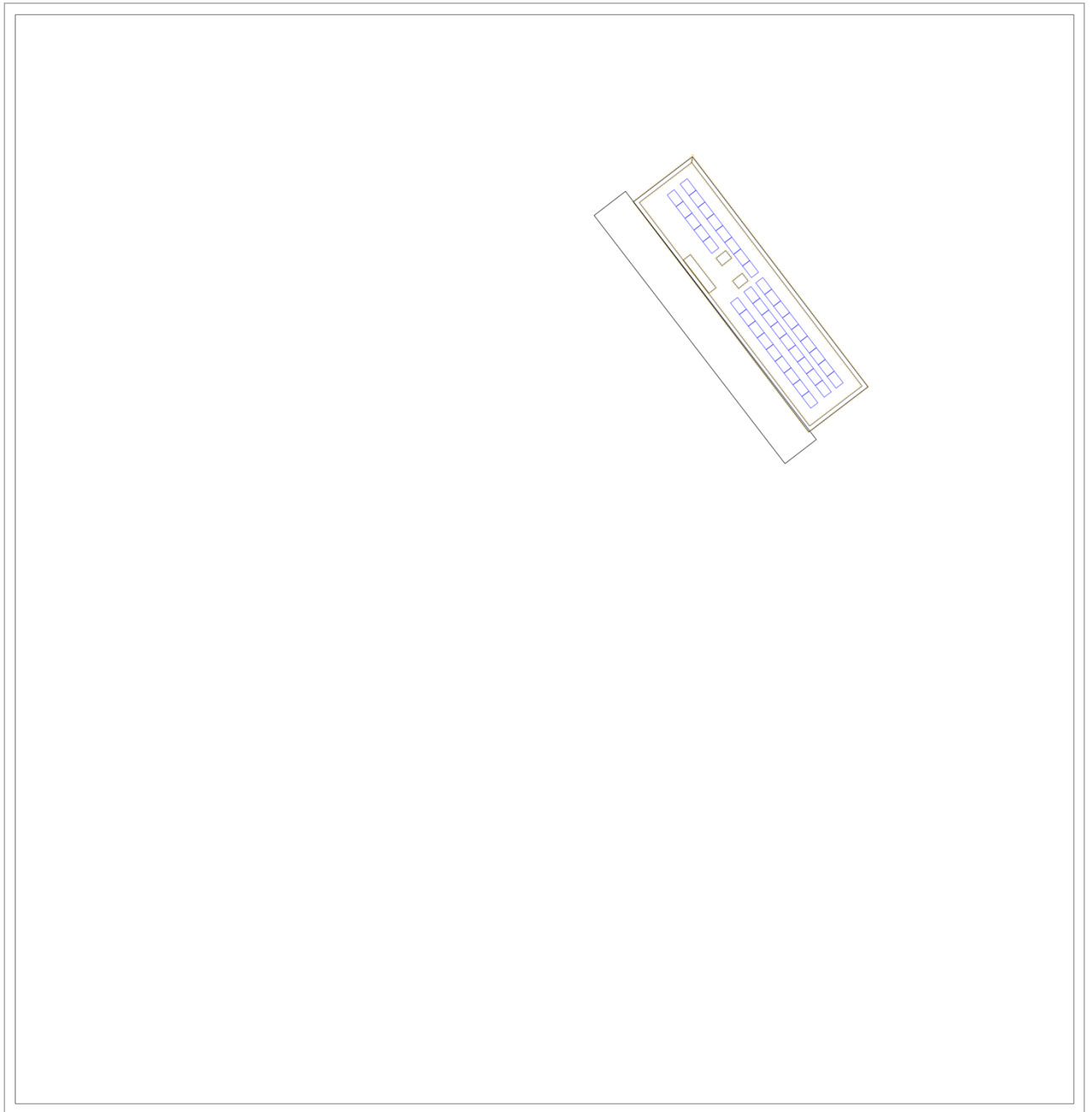


Figure: Overview plan

Dimensioning Plan

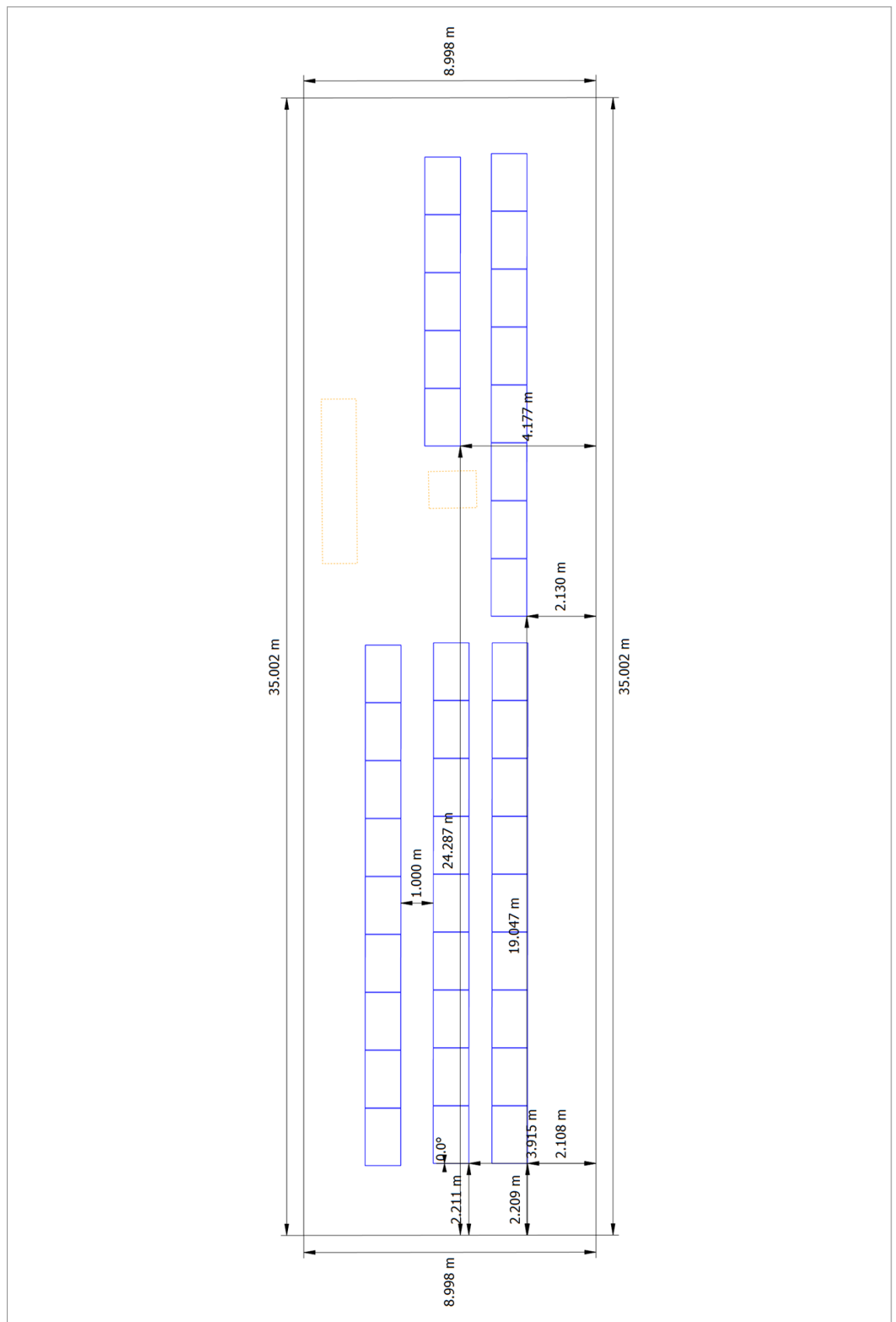


Figure: Building 01 - Roof Area Northeast

String Plan

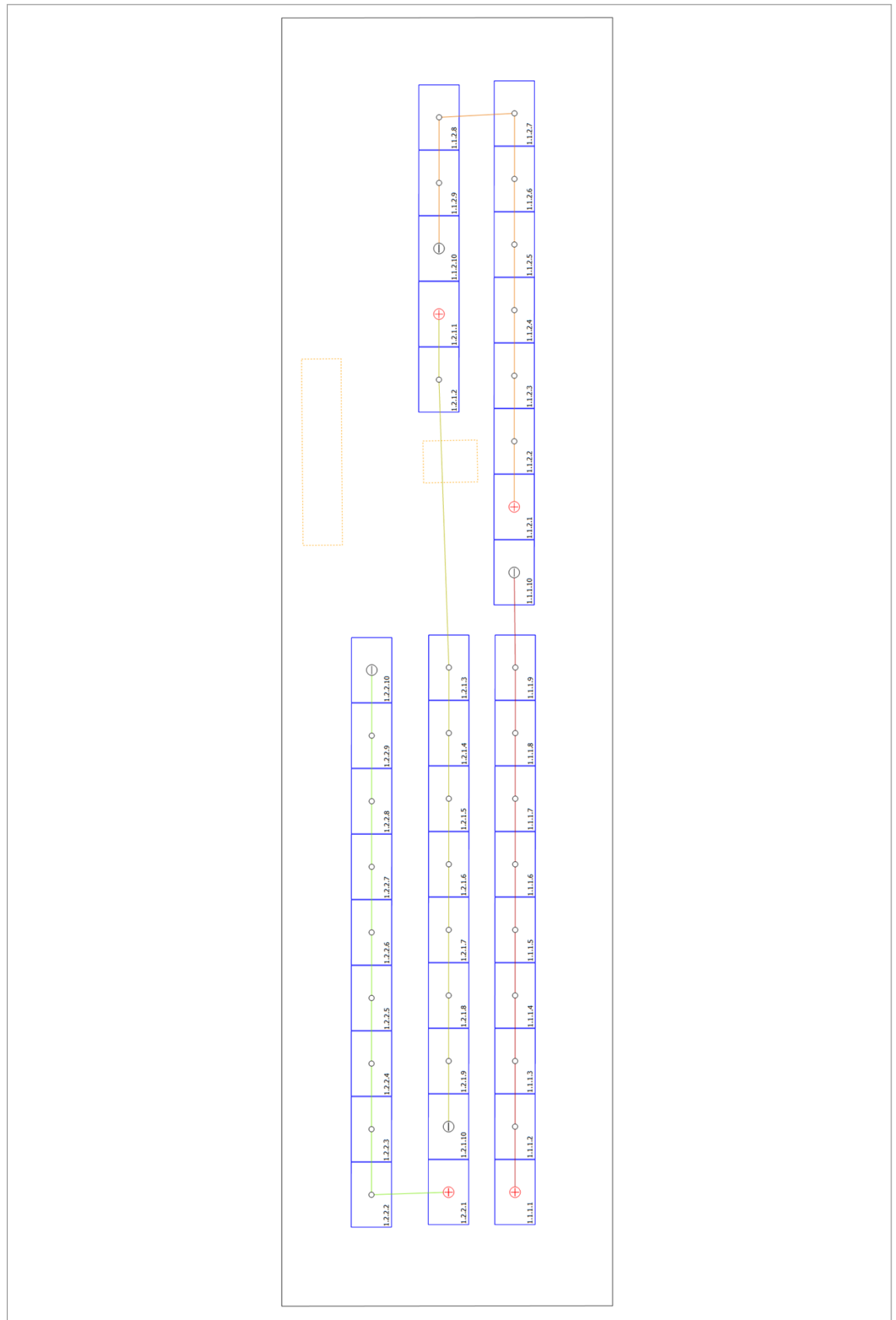


Figure: Building 01 - Roof Area Northeast

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Parts list

Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		JA Solar Holdings Co., Ltd.	JAM54D41-440/LR	40	Piece
2	Inverter		Huawei Technologies	SUN2000-15K-MB0	1	Piece
3	Components			Circuit Breaker AC Isolator	1	Piece
4	Components			Energy Flow Sensor	1	Piece
5	Components			Bidirectional Meter	1	Piece
6	Components			Network and System Protection - Fireman Shunt	2	Piece
7	Components			Circuit Breaker DC Isolator	2	Piece