

C5286

First Street Manchester

Technical Submittal : TS-093 Photovoltaic

0250-HES-ZZ-ZZ-SB-ME-50-093

Revision - P01



Client

Main Contractor



Rev	Status	Date	Author	Checked	Approved	Summary of Changes
P01	S4	5.3.24	JH	AL	JH	1st Issue

**C5286****First Street Manchester****Technical Submittal : TS-093 Photovoltaic****0250-HES-ZZ-ZZ-SB-ME-50-093****Revision - P01****Technical Submission Details**

Sub Contractor:	HE Simm
Package No :	N/A
Equipment:	PV equipment
Proposed Manufacturer:	Feed it Green
Model No :	AS Attached
Colour :	N/A
Dimensions :	N/A

Specification/Specification Clauses**Specification :**

L1382-ABA-Z1-ZZ-SPC-E-(60)-0001-T1 Block AB Electrical Spec-Contract 16-12-21
L1382-ABA-ZD-ZZ-SPC-E-(60)-0001-T2 Block D Electrical Spec-Contract 10-12-21

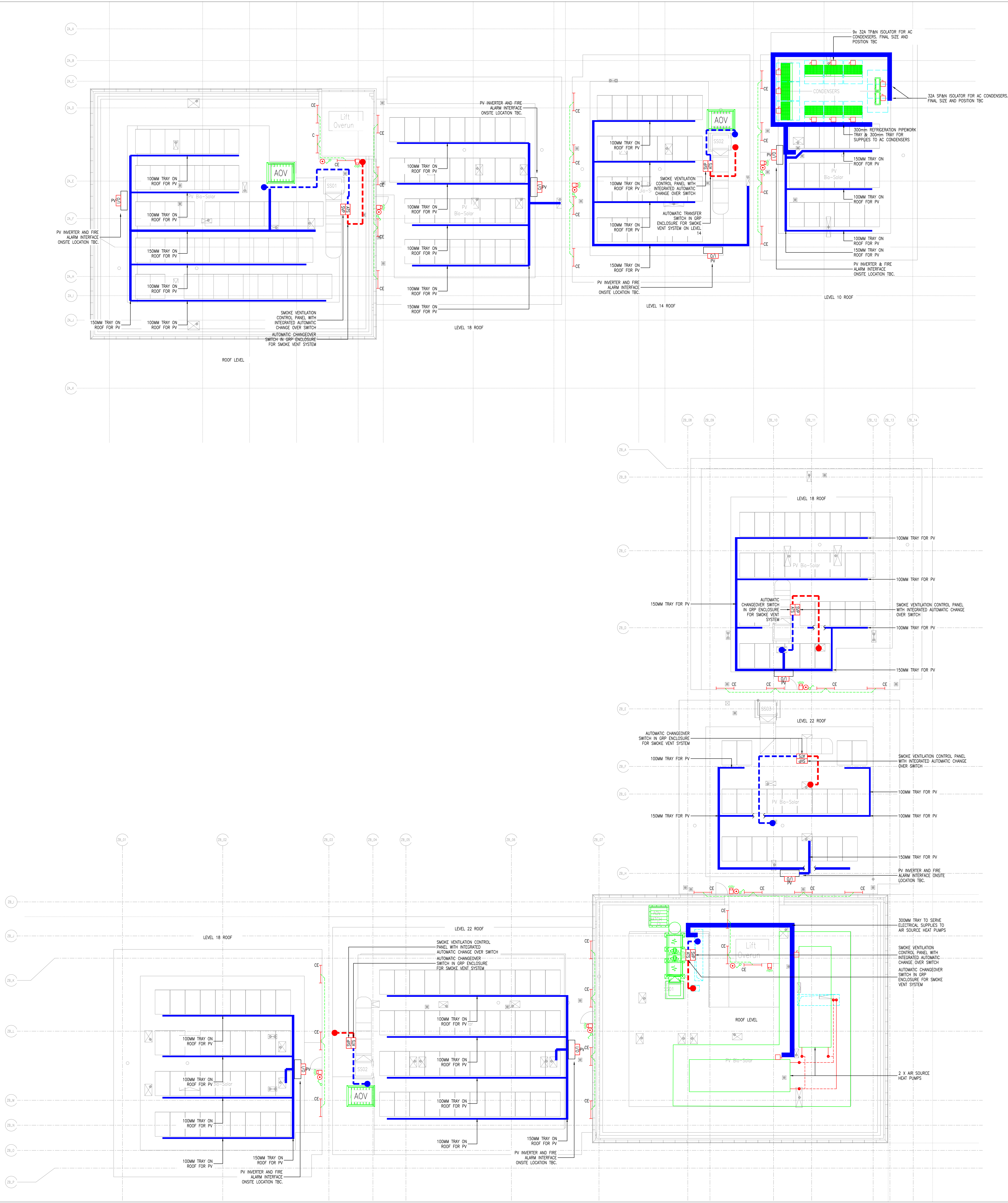
Page No's :**Compliance Statement****Fully Compliant with Specification****Not Compliant with Specification due to the following:****Sign Off / Approval**

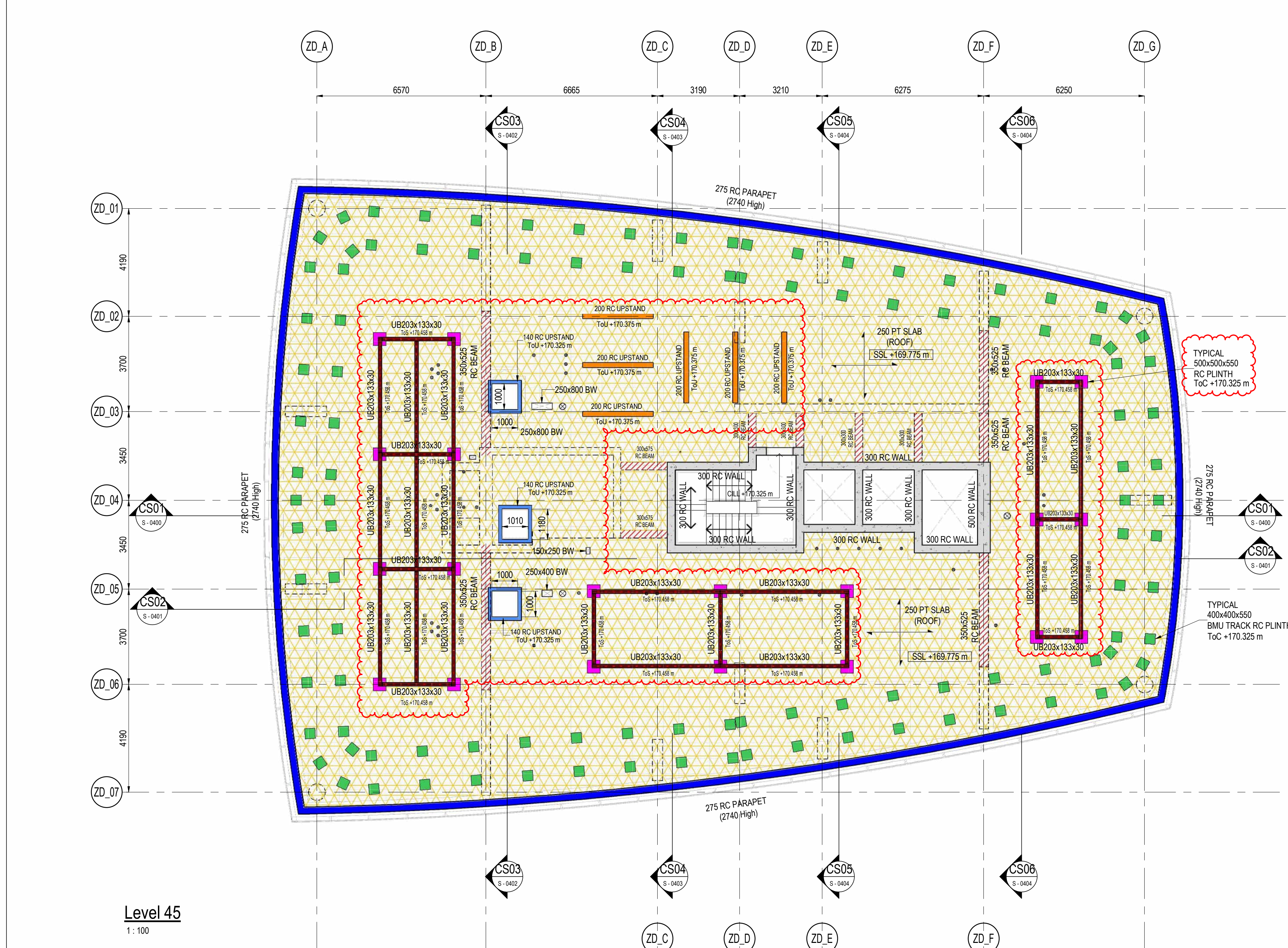
Reviewed Position		Signed		Date	
Status					
	A		B		C

Comments

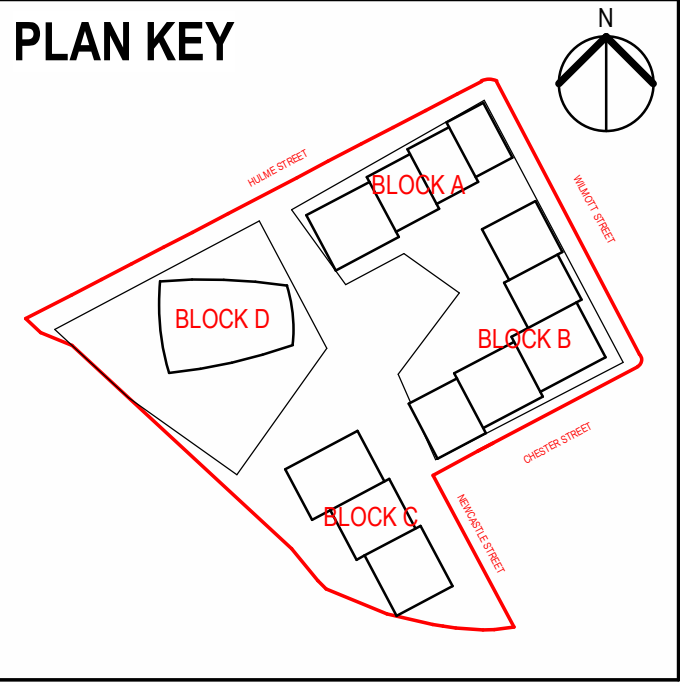
C5286 First Street Manchester	
Technical Submittal : TS-093 Photovoltaic	
0250-HES-ZZ-ZZ-SB-ME-50-093	Revision - P01
Section 1	

Overview
Please find attached the layout and technical information for the PV system proposed for each blocks blocks AB should be 12000 KW/H per annum and block D 62500 KW/H per annum as per Abacus stage 3 specification.





Column Schedule		
Column Ref	Size	Type
C01	1600x400	RC COLUMN
C03	300x400	RC COLUMN
C04	300x700	RC COLUMN
C05	6500	RC COLUMN
C06	7500	RC COLUMN
C07	8500	RC COLUMN
C08	10500	RC COLUMN
C09	3500	RC COLUMN



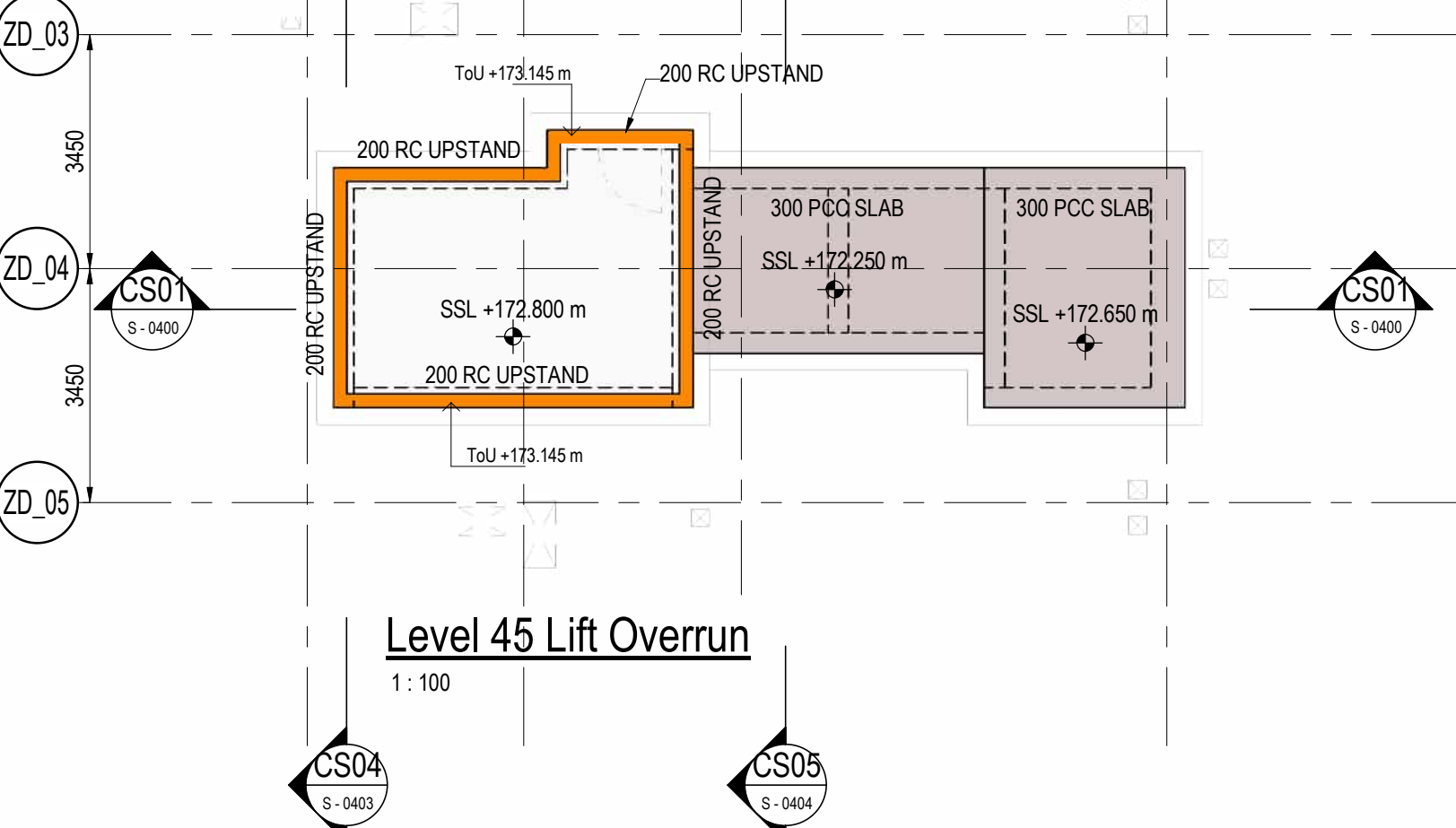
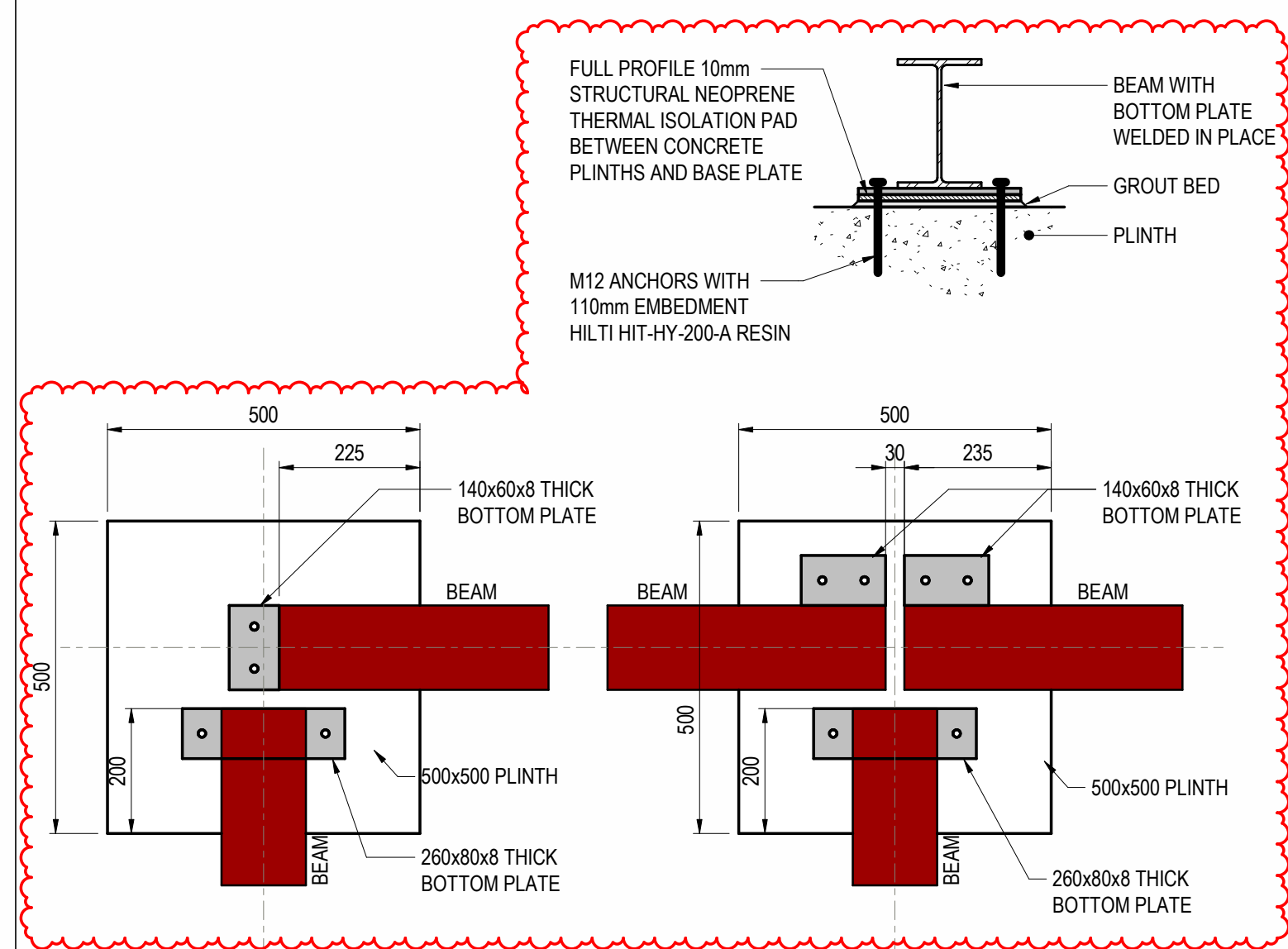
- GENERAL NOTES**
- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS, ARCHITECTS AND SPECIALISTS DRAWINGS AND SPECIFICATIONS.
 - ALL RELEVANT DIMENSIONS TO BE OBTAINED/CHECKED AGAINST ARCHITECT'S DRAWINGS AND BY SITE MEASUREMENT PRIOR TO THE COMMENCEMENT OF WORKS OR ORDERING OF MATERIALS. DISCREPANCIES BETWEEN THE DRAWINGS AND SITE CONDITIONS TO BE NOTIFIED TO THE ENGINEER.
 - DO NOT SCALE FROM THIS DRAWING.
 - ALL STRUCTURAL WORKS TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH THE DETAILS GIVEN BY THE ALAN JOHNSTON PARTNERSHIP LLP. THE ENGINEER IS TO BE ADVISED OF ANY SIGNIFICANT VARIATION PRIOR TO ITS IMPLEMENTATION.
 - SETTING-OUT OF WALLS TO BE IN ACCORDANCE WITH LATEST RELEVANT ARCHITECT'S DRAWING.
 - MATERIALS OR WORKMANSHIP NOT COMPLYING WITH THE ENGINEERS DRAWINGS AND SPECIFICATION SHALL BE DEEMED UNACCEPTABLE AND REMOVED FROM SITE AND REPLACED WITH WORK CORRECTLY MANUFACTURED, DELIVERED AND ERECTED.
 - THE SYMBOLS REPRESENTED ON THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH BS 8541-2.

ACCESS AND MAINTENANCE STRATEGY NOTE

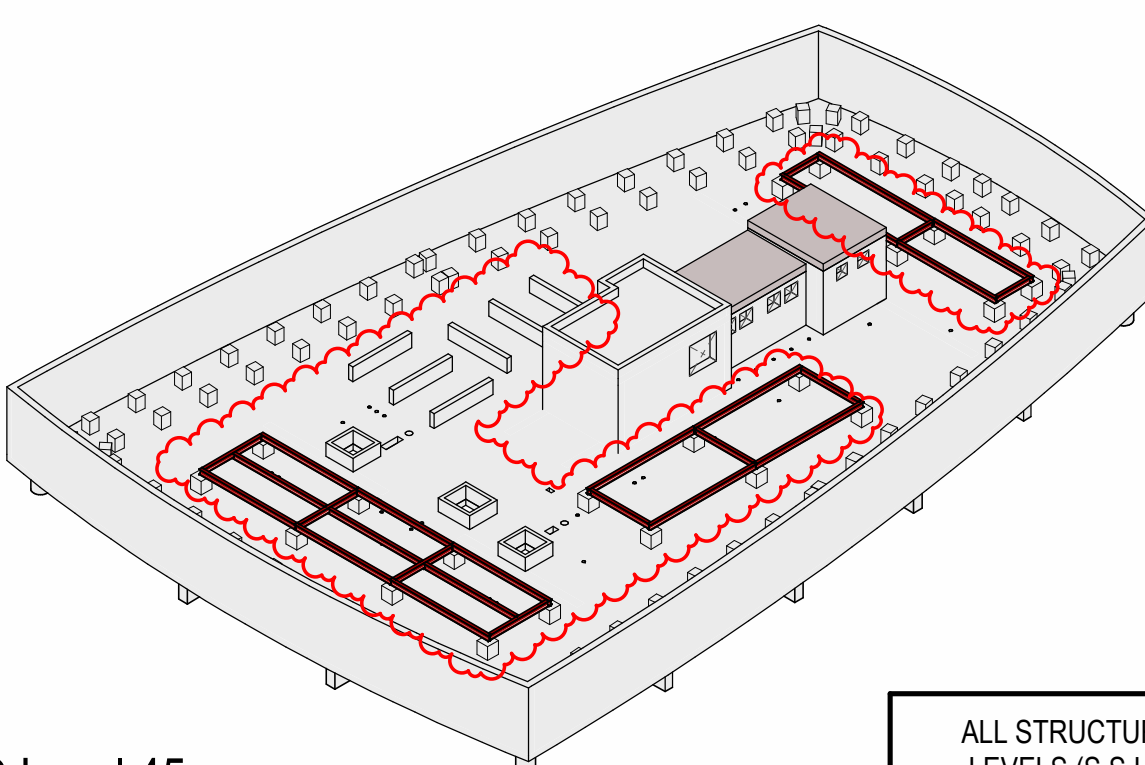
ACCESS AND MAINTENANCE STRATEGY TO BE CONFIRMED TO DEFINE LOADS TO BE APPLIED TO ROOF SLAB, ALL IN ABEYANCE UNTIL THIS IS AVAILABLE

- LEGEND**
- DENOTES EXTENT OF 225dp P.T. SLAB
 - DENOTES EXTENT OF 250dp R.C. SLAB TO CORE LANDINGS
 - DENOTES EXTENT OF 250dp P.T. EXTERNAL ROOF SLAB
 - DENOTES EXTENT OF RC TRANSFER BEAMS
 - DENOTES EXTENT OF RC TRANSFER BEAMS
 - DENOTES 140 WIDE R.C. UPSTAND
 - DENOTES 200 WIDE R.C. UPSTAND
 - DENOTES 275 WIDE R.C. PARAPET
 - DENOTES SPAN OF P.C. STAIR FLIGHT
 - DENOTES SPAN OF SLAB
 - DENOTES 500x500x550mm PLINTH ToC +170.325m
 - DENOTES 400x400x550mm HIGH BMU TRACK PLINTH ToC +170.325m
 - TAPERED EDGE PLYWOOD PLACED ON SLAB FORMWORK TO DESIGNATE EXTENT OF DESIGNED SERVICES SOFT SPOT
 - SACRIFICIAL ZONE. NO REINFORCEMENT WITHIN THE TOP 25mm OF THE SLAB

Level 45
1: 100



3D Level 45



ALL STRUCTURAL SLAB LEVELS (S.L.) TO BE:
+169.775m
UNLESS NOTED OTHERWISE

P12	12.02.2024	PV Panel support and upstands added	CW	DJS	DJS
P11	18.01.2024	BMU Track RC Plinth added	CW	DJS	DJS
P10	08.11.2023	L41 to L44 internal layout revision instruction update	CW	DJS	DJS
P09	06.07.2023	Parapet repositioned	CW	DJS	DJS
P08	05.07.2023	Parapet increased to 275mm, piers removed	CW	DJS	DJS
P07	16.02.2023	Soft Spots updated	CW	DJS	DJS
P06	20.09.2022	Sacrificial zone added, Soft Spots Amended	CW	DJS	DJS
P05	30.08.2022	Shear walls along ZD_B & F amended	CW	DJS	DJS
P04	01.07.2022	Drawing update issue	CW	DJS	DJS
P03	28.01.2022	Issued for design team coordination	CW	DJS	DJS
P02	05.06.2020	RIBA Stage 3 (Design Development)	CW	DJS	DJS
P01	12.12.2019	RIBA Stage 2 (Concept Design)	CW	DJS	DJS
REV	DATE	DESCRIPTION	BY	CHK	APP

DRAWING STATUS:

PRELIMINARY

CLIENT: DOWNING

ARCHITECT: SIMPSON HAUGH & PARTNERS

PROJECT: FIRST STREET SOUTH MANCHESTER

TITLE: LEVEL 45 GENERAL ARRANGMENT BLOCK D

STATUS:	PROJECT No:	PROJECT	ORIGINATOR	VOLU/SYS	LEVEL	TYPE	ROLE	DRAWING No:	REV:
S2	219-215	FSS - AJP - ZD - 45 - DR - S - 0155	P12						

SCALE @ A1: 1:100

DESIGNED: P Layton

DRAWN: C.Webber

CHECKED: D.Sinclair

APPROVED: D.Sinclair

DATE: December 2019

AJP consulting engineers

0151 227 1462 info@ajpltd.co.uk 91 Dale Street, Liverpool, L2 2ET



Contents

First Street, Manchester Technical Submission: 01 03 24	2
Roof A1:	2
Roof A2:	2
Roof A3:	2
Roof A4:	2
Roof B1:	3
Roof B2:	3
Roof B4:	3
Roof B5:	3
Bauder System Details	14



First Street, Manchester Technical Submission: 01 03 24

Roof A1:

Qty	Part No	Description
24	JAM54S-30-415-MR-BF	JA Solar 415W Mono PERC Half-Cell MBB Black Frame
1	SOL-S5-GR3P-8K-DC	Solis 8kW S5 3 Phase Dual MPPT - DC
2	MC4-2M-2	MC4 Pre terminated cable 2m (Pack of 2)
2	MC4-EVO2-CONN86-2-PACK	MC4-Evo2 1500V DC Connector Double Pack 0086/0087 (Kit 2)
1	CABLE4-1-50	4mm2 single-core DC cable 50m - Black
1	BOHAZARD-SET	PV on Roof and Hazard Labels Pack

Roof A2:

Qty	Part No	Description
28	JAM54S-30-415-MR-BF	JA Solar 415W Mono PERC Half-Cell MBB Black Frame
1	SOL-S5-GR3P-8K-DC	Solis 8kW S5 3 Phase Dual MPPT - DC
2	MC4-2M-2	MC4 Pre terminated cable 2m (Pack of 2)
2	MC4-EVO2-CONN86-2-PACK	MC4-Evo2 1500V DC Connector Double Pack 0086/0087 (Kit 2)
1	CABLE4-1-50	4mm2 single-core DC cable 50m - Black
1	BOHAZARD-SET	PV on Roof and Hazard Labels Pack

Roof A3:

Qty	Part No	Description
18	JAM54S-30-415-MR-BF	JA Solar 415W Mono PERC Half-Cell MBB Black Frame
1	SOL-S5-GR3P-8K-DC	Solis 8kW S5 3 Phase Dual MPPT - DC
2	MC4-2M-2	MC4 Pre terminated cable 2m (Pack of 2)
2	MC4-EVO2-CONN86-2-PACK	MC4-Evo2 1500V DC Connector Double Pack 0086/0087 (Kit 2)
1	CABLE4-1-50	4mm2 single-core DC cable 50m - Black
1	BOHAZARD-SET	PV on Roof and Hazard Labels Pack

Roof A4:

Qty	Part No	Description
14	JAM54S-30-415-MR-BF	JA Solar 415W Mono PERC Half-Cell MBB Black Frame
1	SOL-S5-GR3P-6K-DC	Solis 8kW S5 3 Phase Dual MPPT - DC
2	MC4-2M-2	MC4 Pre terminated cable 2m (Pack of 2)
2	MC4-EVO2-CONN86-2-PACK	MC4-Evo2 1500V DC Connector Double Pack 0086/0087 (Kit 2)

The Stables Business Centre, Larkhill Lane, Liverpool L13 9BR

Tel: 0151 226 6999 / E-mail: info@feeditgreen.com



- | | | |
|---|--------------|---------------------------------------|
| 1 | CABLE4-1-50 | 4mm2 single-core DC cable 50m - Black |
| 1 | BOHAZARD-SET | PV on Roof and Hazard Labels Pack |

Roof B1:

- | Qty | Part No | Description |
|-----|------------------------|---|
| 18 | JAM54S-30-415-MR-BF | JA Solar 415W Mono PERC Half-Cell MBB Black Frame |
| 1 | SOL-S5-GR3P-8K-DC | Solis 8kW S5 3 Phase Dual MPPT - DC |
| 2 | MC4-2M-2 | MC4 Pre terminated cable 2m (Pack of 2) |
| 2 | MC4-EVO2-CONN86-2-PACK | MC4-Evo2 1500V DC Connector Double Pack 0086/0087 (Kit 2) |
| 1 | CABLE4-1-50 | 4mm2 single-core DC cable 50m - Black |
| 1 | BOHAZARD-SET | PV on Roof and Hazard Labels Pack |

Roof B2:

- | Qty | Part No | Description |
|-----|------------------------|---|
| 16 | JAM54S-30-415-MR-BF | JA Solar 415W Mono PERC Half-Cell MBB Black Frame |
| 1 | SOL-S5-GR3P-8K-DC | Solis 8kW S5 3 Phase Dual MPPT - DC |
| 2 | MC4-2M-2 | MC4 Pre terminated cable 2m (Pack of 2) |
| 2 | MC4-EVO2-CONN86-2-PACK | MC4-Evo2 1500V DC Connector Double Pack 0086/0087 (Kit 2) |
| 1 | CABLE4-1-50 | 4mm2 single-core DC cable 50m - Black |
| 1 | BOHAZARD-SET | PV on Roof and Hazard Labels Pack |

Roof B4:

- | Qty | Part No | Description |
|-----|------------------------|---|
| 14 | JAM54S-30-415-MR-BF | JA Solar 415W Mono PERC Half-Cell MBB Black Frame |
| 1 | SOL-S5-GR3P-6K-DC | Solis 8kW S5 3 Phase Dual MPPT - DC |
| 2 | MC4-2M-2 | MC4 Pre terminated cable 2m (Pack of 2) |
| 2 | MC4-EVO2-CONN86-2-PACK | MC4-Evo2 1500V DC Connector Double Pack 0086/0087 (Kit 2) |
| 1 | CABLE4-1-50 | 4mm2 single-core DC cable 50m - Black |
| 1 | BOHAZARD-SET | PV on Roof and Hazard Labels Pack |

Roof B5:

- | Qty | Part No | Description |
|-----|---------------------|---|
| 28 | JAM54S-30-415-MR-BF | JA Solar 415W Mono PERC Half-Cell MBB Black Frame |
| 1 | SOL-S5-GR3P-10K-DC | Solis 8kW S5 3 Phase Dual MPPT - DC |
| 2 | MC4-2M-2 | MC4 Pre terminated cable 2m (Pack of 2) |

The Stables Business Centre, Larkhill Lane, Liverpool L13 9BR

Tel: 0151 226 6999 / E-mail: info@feeditgreen.com



- 2 MC4-EVO2-CONN86-2-PACK MC4-Evo2 1500V DC Connector Double Pack 0086/0087 (Kit 2)
- 1 CABLE4-1-50 4mm2 single-core DC cable 50m - Black
- 1 BOHAZARD-SET PV on Roof and Hazard Labels Pack



AC Switch Disconnectors - Single & Three Phase AC-21A 25 - 40A



Switch - Disconnector 3 & 4 pole.

- IP66/67 Protection.
- red/yellow padlockable handle.
- insulated enclosure, grey, RAL7035.
- earth terminal included.
- switch interlocked with lid to prevent opening in 'ON' position.

AC Switch Disconnectors - for Single Phase

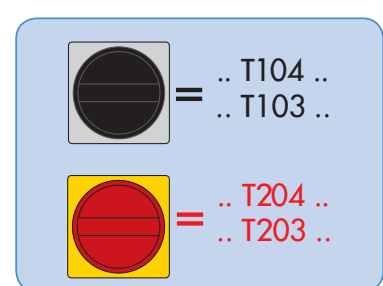
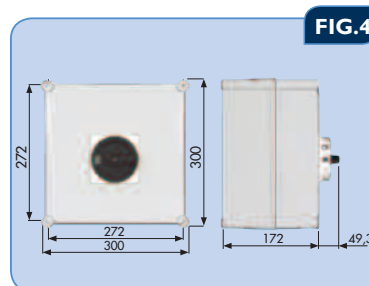
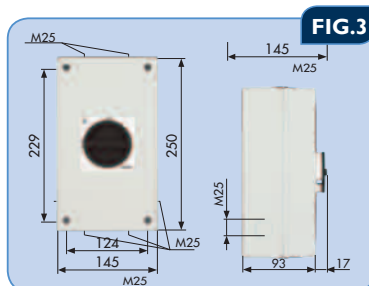
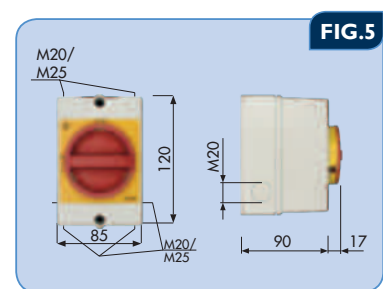
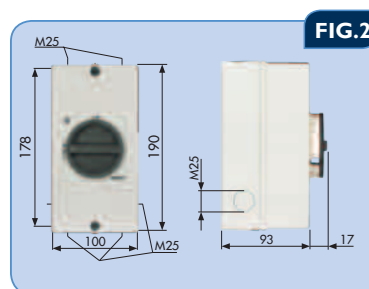
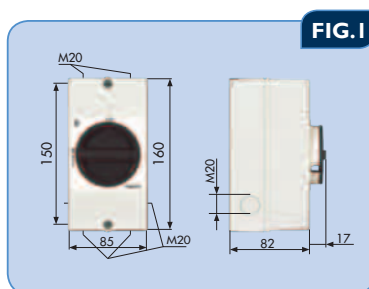
Current Rating AC-21A (per contact)	Order Code No.	FIG.	
25A	KG20 T203/GBA270*KS1V	5	
25A	KG20 T203/GBA294*KL ¹⁾	1	
32A	KG32 T203/GBA294*KL ¹⁾	1	
40A	KG41 T203/GBA270*KL1V	2	

AC Switch Disconnectors - for Three Phase (3ph + Sw N²⁾)

Current Rating AC-21A (per contact)	Order Code No.	FIG.	
25A	KG20 T204/GBA290*KS1V	5	
25A	KG20 T204/GBA486 KL51V ¹⁾	1	
32A	KG32 T204/GBA486 KL51V ¹⁾	1	
40A	KG41 T204/GBA290*KL1V	2	

¹⁾ Larger enclosure to match KG20/32 T104 DC enclosure

²⁾ Switched neutral pole is early make / late break.



H1Z2Z2-K

Solar cables

material: XLPE tipology: SINGLECORE



Applications: Photovoltaic Cables

Conditions of employment

The single core H1Z2Z2-K cable represents a right solution to link the solar cellars between them or to wire with frequency converters and terminal boards. The H1Z2Z2-K cable guarantees good resistance to UV-rays and various weather conditions. The wide working temperature range allows the use also in extreme conditions, avoiding deterioration caused by heat and permitting a right use of the fotovoltaic panel in every season.

Type of electrical conductor: Flexible tinned copper

Main rule: EN 50618

Conductor: EN 60228; IEC 60228

Self-extinguishing: EN 60332-1-2; IEC 60332-1-2

Ozone resistance: EN 50396 8.1.3

Description

Low smoke halogen-free, flexible, single-core power cables with cross-linked insulation and sheath.

Technical Specifications

Review number	n. 3 - 18/2/2019
Nominal tension	1,0/1,0 kVca - 1,5 kVdc
Type of insulation	Compound conforming to EN 50618
Type of outer sheath	Compound conforming to EN 50618
Color of the outer sheath	Black, blue, red
Operating temperature	-40° C +90° C
Short circuit temperature	Max 250° C 5 sec °C
Test voltage	6500 Vac - 15000 Vdc
Cable marking	ELETTRO BRESCIA H1Z2Z2-K (I/II)* 1xsect. mm ² TÜV Rheinland Reg. Nr. R (60109330/60108022)* Dca- s2,d2,a1 max 1,8KVdc
Minimum radius of curvature	4 times the cable diameter for fixed and mobile laying.
Insulation tolerance	± 0,1
Sheath tolerance	± 0,2

Documents::

[Certificate](#)

[Certificate](#)

[DoP00001 H1Z2Z2-K](#)

[DoP00015 H1Z2Z2-K](#)

Sections

Nominal section	Max wire diameter	Conductor diameter	Insulation thickness	Average sheath thickness	Average diameter $\pm 0,1$	Copper electric resistance 20°C	Indicative weight	CU Factor
($N \times \text{mm}^2$)	(mm)	(mm)	(mm)	(mm)	(mm)	(ohm/km)	(kg/km)	(kg/km)
1x2,50	0,25	0,000	0,75	0,80	5.1	8,21	47	24
1x4,00	0,30	0,000	0,72	0,80	5.4	5,09	58	38,4
1x6,00	0,30	0,000	0,74	0,80	6.0	3,39	78	57,6
1x10,00	0,40	0,000	0,73	0,80	7.0	1,95	125	96
1x16,00	0,40	0,000	0,74	0,90	8.2	1,24	184	153,6

Note:

The manufacturer reserves the right to modify all or part of the data shown in this catalog

Refer to the CEI EN 50565 standard series as a guide to the use of cables with rated voltage not exceeding 450/750 V (U₀ / U) and to the CEI 20-92 standard as a guide for handling and storing wooden cable reels electric.

Elettro Brescia S.p.A. - Via Bulloni, 58 - 25050 Camignone di Passirano (BS)

Tel. +39 0306850663 - Fax +39 030 6850444 - email
info@elettrobrescia.it

Solis Three Phase Inverters

» S5-GR3P(3-20)K



360 degree

Efficient

- ▶ Max. efficiency 98.7%
- ▶ String current up to **16A**
- ▶ Wide voltage range and low startup voltage

Smart

- ▶ Supports export power control
- ▶ Supports RS485, WIFI, GPRS
- ▶ Scan to register on SolisCloud, supports remote upgrade and control

Safe

- ▶ IP66
- ▶ AFCI protection, proactively reduces fire risk
- ▶ Automatic voltage stabilization technology in weak grid conditions

Economic

- ▶ Compact design, simple installation and maintenance
- ▶ > 150% DC/AC ratio
- ▶ Supports high power modules for lower installation costs

Model:

S5-GR3P3K	S5-GR3P4K	S5-GR3P5K	S5-GR3P6K	S5-GR3P8K	S5-GR3P9K	S5-GR3P10K
S5-GR3P12K	S5-GR3P13K	S5-GR3P15K	S5-GR3P17K	S5-GR3P20K		

Datasheet

Model Name	SS-GR3P3K	SS-GR3P4K	SS-GR3P5K	SS-GR3P6K	SS-GR3P8K	SS-GR3P9K	SS-GR3P10K	SS-GR3P12K	SS-GR3P13K	SS-GR3P15K	SS-GR3P17K	SS-GR3P20K
------------	-----------	-----------	-----------	-----------	-----------	-----------	------------	------------	------------	------------	------------	------------

Input DC

Recommended max. PV power	4.5 kW	6 kW	7.5 kW	9 kW	12 kW	13.5 kW	15 kW	18 kW	19.5 kW	22.5 kW	25.5 kW	30 kW
Max. input voltage	1100 V											
Rated voltage	600 V											
Start-up voltage	180 V											
MPPT voltage range	160-1000 V											
Max. input current	16 A / 16 A						32 A / 32 A					
Max. short circuit current	20 A / 20 A						40 A / 40 A					
MPPT number/Max. input strings number	2/2						2/4					

Output AC

Rated output power	3 kW	4 kW	5 kW	6 kW	8 kW	9 kW	10 kW	12 kW	13 kW	15 kW	17 kW	20 kW
Max. apparent output power	3.3 kVA	4.4 kVA	5.5 kVA	6.6 kVA	8.8 kVA	9.9 kVA	11 kVA	13.2 kVA	14.3 kVA	16.5 kVA	18.7 kVA	22 kVA
Max. output power	3.3 kW	4.4 kW	5.5 kW	6.6 kW	8.8 kW	9.9 kW	11 kW	13.2 kW	14.3 kW	16.5 kW	18.7 kW	22 kW
Rated grid voltage	3/N/PE, 220 V / 380 V, 230 V / 400 V											
Rated grid frequency	50 Hz / 60 Hz											
Rated grid output current	4.6 A / 4.3 A	6.1 A / 5.8 A	7.6 A / 7.2 A	9.1 A / 8.7 A	12.2 A / 11.5 A	13.7 A / 13.0 A	15.2 A / 14.4 A	18.2 A / 17.3 A	19.8 A / 18.8 A	22.8 A / 21.7 A	25.8 A / 24.6 A	30.4 A / 28.9 A
Max. output current	4.7 A	6.4 A	7.9 A	9.5 A	12.7 A	14.3 A	15.9 A	19.1 A	20.7 A	23.8 A	27 A	31.8 A
Power Factor	>0.99 (0.8 leading - 0.8 lagging)											
THDi	<2%											

Efficiency

Max. efficiency	98.3%			98.5%			98.6%			98.7%		
EU efficiency	97.7%			97.9%			98.0%			98.1%		

Protection

DC reverse-polarity protection	Yes											
Short circuit protection	Yes											
Output over current protection	Yes											
Surge protection	Yes											
Grid monitoring	Yes											
Anti-islanding protection	Yes											
Temperature protection	Yes											
Integrated AFCI (DC arc-fault circuit protection)	Yes ⁽¹⁾											
Integrated DC switch	Optional											

General Data

Dimensions (W*H*D)	310*563*219 mm		
Weight	17.8 kg	18.8 kg	20 kg
Topology	Transformerless		
Self consumption (night)	<1 W		
Operating ambient temperature range	-25 ~ +60°C		
Relative humidity	0-100%		
Ingress protection	IP66		
Cooling concept	Natural convection	Intelligent redundant fan-cooling	
Max. operation altitude	4000 m		
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC 60068, IEC 61683, EN 50530		
Safety/EMC standard	IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-2/-3/-4		

Features

DC connection	MC4 connector											
AC connection	Quick connection plug											
Display	LCD											
Communication	RS485, Optional: Wi-Fi, GPRS											

(1) Activation required.

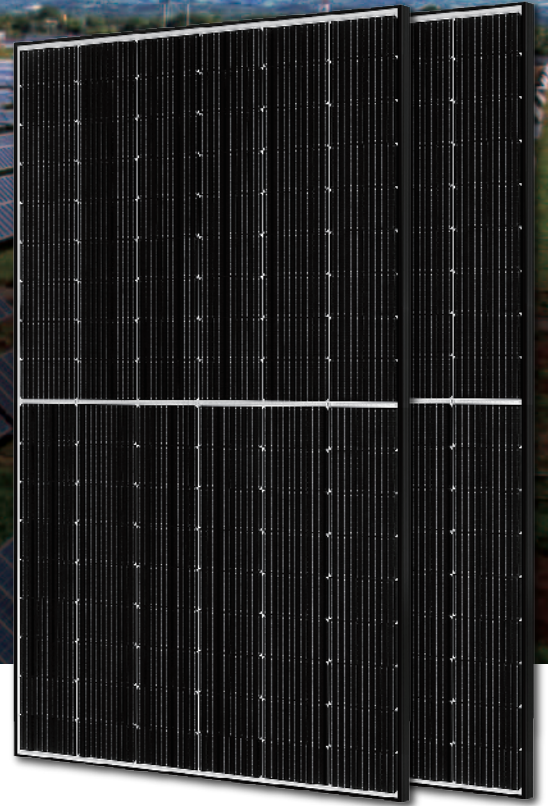
DEEP BLUE 3.0 Pro

Mono

425W MBB Half-cell Module JAM54S30 400-425/GR Series

Introduction

Assembled with 11BB PERC cells and gapless ribbon connection technology, the modules can offer higher output power with improved module efficiency, the reduction of cells gaps brings outstanding module appearance. The half-cell configuration makes less shading effect, lower risk of hot spot, as well as more reliable and stable power generation.



Higher output power



Lower LCOE



Less shading and lower resistive loss

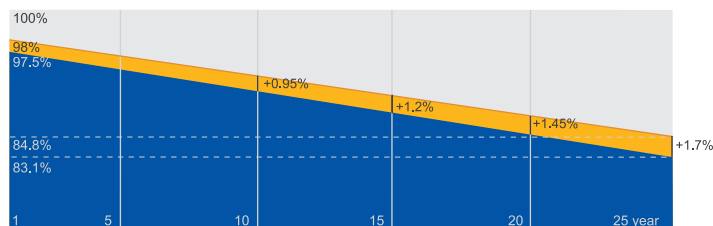


Better mechanical loading tolerance

Superior Warranty

- 15-year product warranty
- 25-year linear power output warranty

0.55% Annual Degradation
Over 25 years



■ New linear power warranty ■ Standard module linear power warranty

*Subject to the terms and conditions contained in the Limited Warranty Statement.
Also this 15-year limited product warranty is available only for products installed and operating on residential rooftops in certain regions.

Comprehensive Certificates

- IEC 61215, IEC 61730, UL 61215, UL 61730
- ISO 9001: 2015 Quality management systems
- ISO 14001: 2015 Environmental management systems
- ISO 45001: 2018 Occupational health and safety management systems
- IEC 62941: 2019 Terrestrial photovoltaic (PV) modules - Quality system for PV module manufacturing



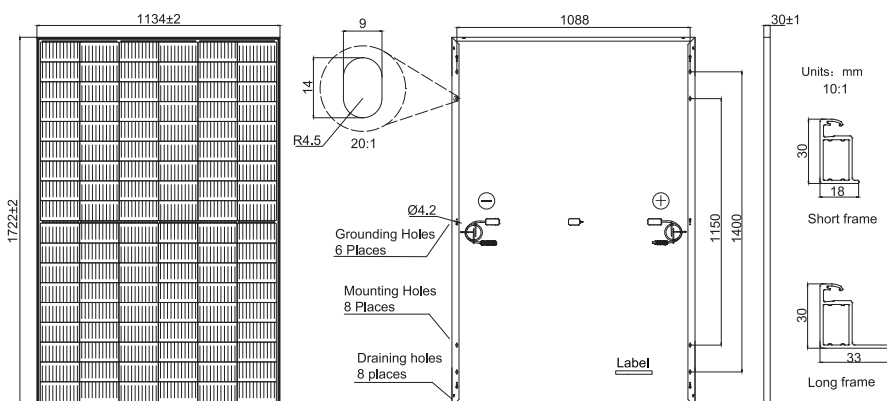
JA SOLAR

www.jasolar.com

Specifications subject to technical changes and tests.
JA Solar reserves the right of final interpretation.



MECHANICAL DIAGRAMS



Remark: customized frame color and cable length available upon request

SPECIFICATIONS

Cell	Mono
Weight	19.5kg
Dimensions	1722±2mm×1134±2mm×30±1mm
Cable Cross Section Size	4mm ² (IEC) , 12 AWG(UL)
No. of cells	108(6×18)
Junction Box	IP68, 3 diodes
Connector	QC 4.10-351/ MC4-EVO2A
Cable Length (Including Connector)	Portrait: 300mm(+)/400mm(-); Landscape: 1100mm(+)/1100mm(-)
Front Glass	2.8mm
Packaging Configuration	36pcs/Pallet 936pcs/40HQ Container

ELECTRICAL PARAMETERS AT STC

TYPE	JAM54S30 -400/GR	JAM54S30 -405/GR	JAM54S30 -410/GR	JAM54S30 -415/GR	JAM54S30 -420/GR	JAM54S30 -425/GR
Rated Maximum Power(P _{max}) [W]	400	405	410	415	420	425
Open Circuit Voltage(V _{oc}) [V]	37.07	37.23	37.32	37.45	37.58	37.72
Maximum Power Voltage(V _{mp}) [V]	31.01	31.21	31.45	31.61	31.80	31.98
Short Circuit Current(I _{sc}) [A]	13.79	13.87	13.95	14.02	14.10	14.18
Maximum Power Current(I _{mp}) [A]	12.90	12.98	13.04	13.13	13.21	13.29
Module Efficiency [%]	20.5	20.7	21.0	21.3	21.5	21.8
Power Tolerance	0~+5W					
Temperature Coefficient of I _{sc} (α _{Isc})	+0.045%/°C					
Temperature Coefficient of V _{oc} (β _{Voc})	-0.275%/°C					
Temperature Coefficient of P _{max} (γ _{Pmp})	-0.350%/°C					
STC	Irradiance 1000W/m ² , cell temperature 25°C, AM1.5G					

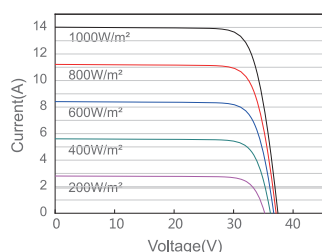
Remark: Electrical data in this catalog do not refer to a single module and they are not part of the offer.They only serve for comparison among different module types.

ELECTRICAL PARAMETERS AT NOCT

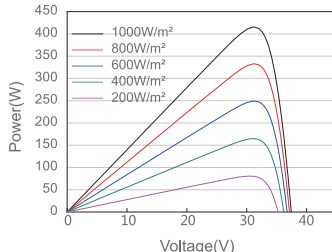
TYPE	JAM54S30 -400/GR	JAM54S30 -405/GR	JAM54S30 -410/GR	JAM54S30 -415/GR	JAM54S30 -420/GR	JAM54S30 -425/GR	OPERATING CONDITIONS	
Rated Max Power(P _{max}) [W]	302	306	310	314	318	322	Maximum System Voltage	1000V/1500V DC
Open Circuit Voltage(V _{oc}) [V]	34.88	35.12	35.23	35.37	35.50	35.64	Operating Temperature	-40 °C ~+85 °C
Max Power Voltage(V _{mp}) [V]	29.26	29.47	29.72	29.89	30.09	30.26	Maximum Series Fuse Rating	25A
Short Circuit Current(I _{sc}) [A]	11.03	11.10	11.16	11.22	11.29	11.36	Maximum Static Load, Front Maximum Static Load, Back	5400Pa(112lb/ft ²) 2400Pa(50lb/ft ²)
Max Power Current(I _{mp}) [A]	10.32	10.38	10.43	10.50	10.57	10.64	NOCT	45±2 °C
NOCT	Irradiance 800W/m ² , ambient temperature 20°C, wind speed 1m/s, AM1.5G						Safety Class	Class II
							Fire Performance	UL Type 1

CHARACTERISTICS

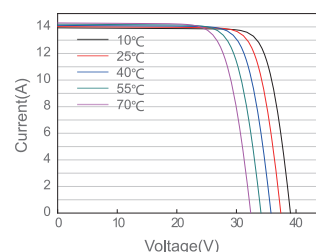
Current-Voltage Curve JAM54S30-415/GR



Power-Voltage Curve JAM54S30-415/GR



Current-Voltage Curve JAM54S30-415/GR



Please see overleaf Bauder System Detail

PRODUCT DATA SHEET

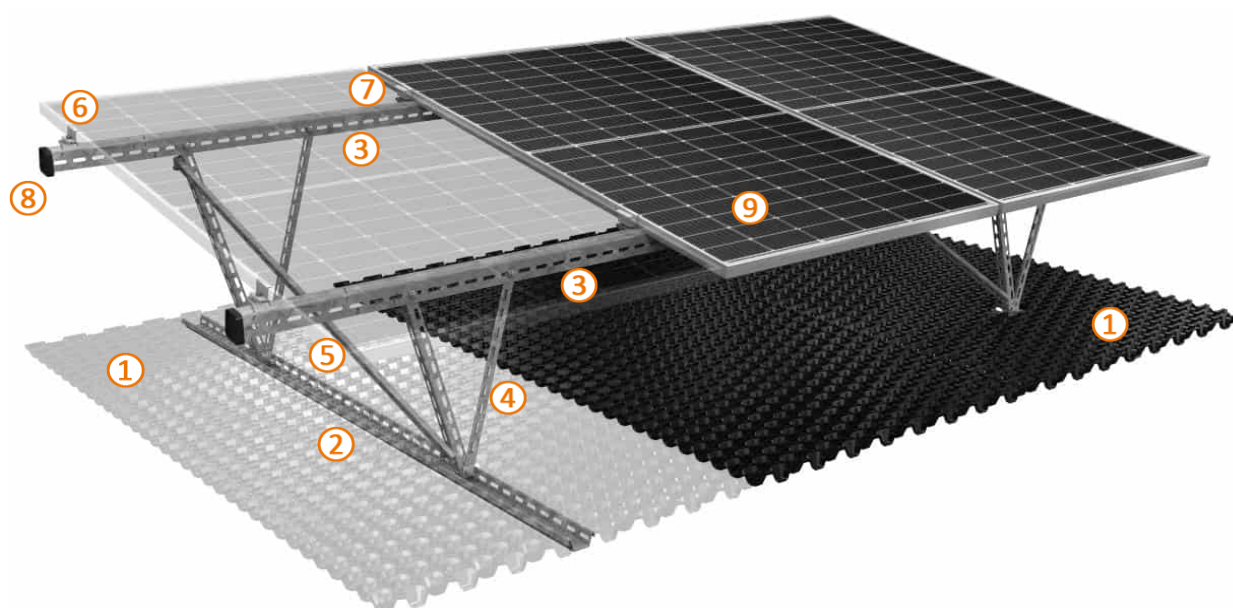
Bauder BioSolar G2 Solar PV Mounting System

Bauder BioSOLAR G2 is an integrated solar PV mounting system specifically for Bauder biodiverse or extensive green roofs.

Intended Use

Bauder BioSOLAR G2 is designed for applications where both a green roof and solar PV solution are required together to meet project requirements. The green roof substrate and vegetation provide the ballast mechanism for the entire solution which removes the need for additional ballast or penetrating the waterproofing to secure the units to the roof and maximises the available area for vegetation.

Bauder Biosolar should be used in conjunction with our BauderFlora 3 seedmix which contains both drought and shade tolerant herb and wildflower species and is suitable for roofs with a fall of up to 5°.



	Part	Unit	Value
1	DSE 40 Anchor Board		Pre-cored Bauder DSE 40 Drainage Board
	Material		HDPE, black
	Weight (dry)	kg/m2	1.8
	Material nominal thickness	mm	1.8
	Depth	mm	40
	Water storage capacity	l/m2	13.5
	Filling capacity (for mineral drain etc)	l/m2	21.0
	Support surface underside	%	42
	Compressive strength	Kpa	80
	Dimensions	mm	1040 x 2030
	Ballast	kg/m2	BS EN 1991 Eurocode 1 + BS EN 1991-1-1/ related load calculation for wind protection

UNITED KINGDOM

Bauder Ltd
70 Landseer Road, Ipswich, Suffolk IP3 0DH
T: +44 (0)1473 257671 E: info@bauder.co.uk W: bauder.co.uk

IRELAND

Bauder Ltd
O'Duffy Centre, Carrickmacross, Co. Monaghan
T: +353 (0)42 9692 333 E: info@bauder.ie W: bauder.ie

	Part	Unit	Value
Profile rails			
2	Base rail		
	Material		Powder coated steel - FVZS420GD+ZM310AC (Zinc Magnesium)
	Dimensions (L x W x H)	mm	3994 (long) or 1994 (short) x 36 x 72.2; Thickness 3
	Weight	kg/unit	13.06/6.52
3	Module carrier rail		
	Material		Powder coated steel - FVZS420GD+ZM310AC (Zinc Magnesium)
	Weight	kg/unit	15.59
	Dimensions (L x W x H)	mm	4700 x 61.9 x 47.5; Thickness 3
4	V-beams		
	Material		L- Profiles: Powder coated steel FVZS250GD+ZM310AC (Zinc-Magnesium), including Adapter + Screw
	Dimensions (Pre-assembled L x W x H)		Long v-beam - 749 x 399 x 54 Short v-beam - 550 x 343 x 54 Thickness 2
	Weight	kg	Long -1.50 Short - 1.15
5	Diagonal profile		
	Material		Powder coated steel - S250GD+ Z275 (Zinc)
	Dimensions (L x W x H)		1245 x 30 x 15; Thickness 1.5
	Weight	kg	0.952
Accessories			
6 & 7	Module Clamp Set	Piece	Module clamping hooks with thread (zincmagnelis- coating) pre-assembled
8	Module carrier rail end cap	Piece	Polypropylene

PRODUCT INFORMATION AND TECHNICAL PERFORMANCE			
Characteristic	Test method	Unit	Value
Weight	EN 1848-1	Kg/m ²	176kg/m ² *

*Includes weight of Bauder BTRS roof system with 160mm PIR insulation and saturated Biodiverse green roof based on a substrate depth of 100mm

UNITED KINGDOM

Bauder Ltd
70 Landseer Road, Ipswich, Suffolk IP3 0DH
T: +44 (0)1473 257671 E: info@bauder.co.uk W: bauder.co.uk

IRELAND

Bauder Ltd
O'Duffy Centre, Carrickmacross, Co. Monaghan
T: +353 (0)42 9692 333 E: info@bauder.ie W: bauder.ie

CERTIFICATION AND ENVIRONMENTAL INFORMATION

International Standards Organisation (ISO)	ISO 9001:2015 Quality Management Certificates EN1271 (UK) and 70499/03-15_e (Germany).
	ISO 14001:2015 Environmental Management Certificates A10552 (UK) and 70499/03-15_d (Germany).
	ISO 50001 :2011 Energy Management Certificate 70499/03-15_c (Germany)

INSTALLATION GUIDANCE

Bauder Biosolar G2 is designed to be installed by a Bauder approved and trained contractor only. Please see Bauder Biosolar installation guidelines for a full breakdown of the system installation methodology.

The number of mounts and fixings required will vary from project to project. Please contact Bauder for a project specific technical report for further information. Windload and snowload calculations will also be provided on a project specific basis and will determine ballast requirements and substrate depths.

Bauder Biosolar G2 can be installed on slopes of up to 5° and is intended to be used with Bauder Biodiverse and substrate based extensive green roofs only.

Specific test standards and results are stated in Bauder product datasheets and our specification service should be used to confirm suitability to each individual project

Bauder reserves the right to amend information and product specifications without prior notice. All reasonable care has been taken to ensure that all data is current at the time of print, however because Bauder pursues a policy of constant development we recommend ensuring that your copy of this information is current by contacting our Technical Department at technical@bauder.co.uk

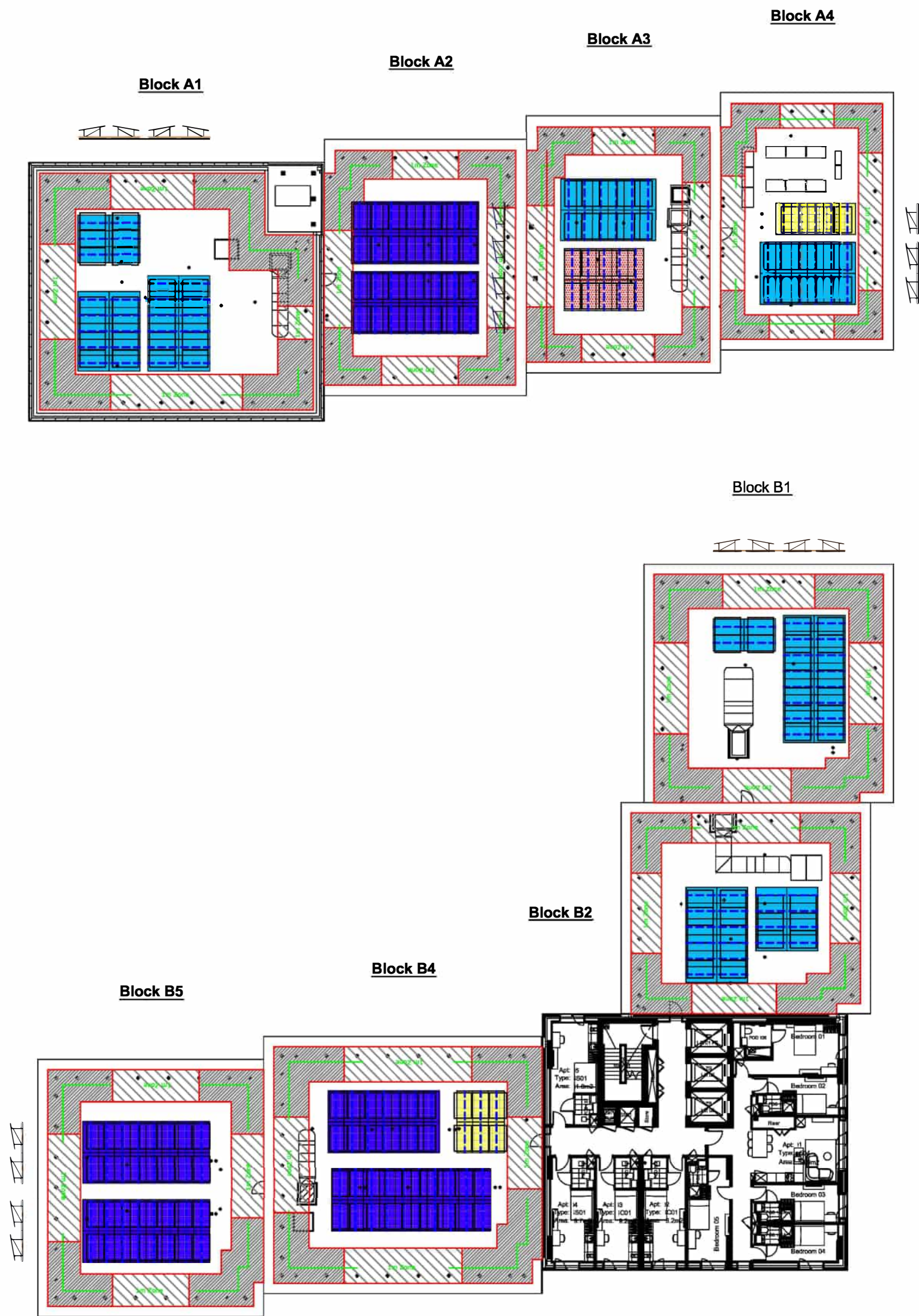
Recommendations for use should be verified as to the suitability and compliance with actual requirements, specifications, installation techniques and any applicable laws and regulations.

UNITED KINGDOM

Bauder Ltd
70 Landseer Road, Ipswich, Suffolk IP3 0DH
T: +44 (0)1473 257671 E: info@bauder.co.uk W: bauder.co.uk

IRELAND

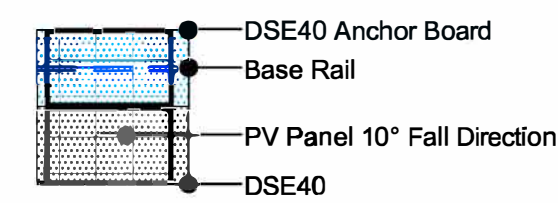
Bauder Ltd
O'Duffy Centre, Carrickmacross, Co. Monaghan
T: +353 (0)42 9692 333 E: info@bauder.ie W: bauder.ie



- Wind loading calculations have been carried out based on site specific data and the building dimensions. Where modules have not been located within **Zones F & G** this is due to the project specific wind loading calculations.
- The **Green Line** identifies a **1000mm** boundary from the inside of the roof perimeter. This is the minimum distance BauderSOLAR PV panels should be installed from the roof edge.
- The **Magenta Line (where illustrated)** identifies an indicative mansafe system, or handrail, **1800mm** from the roof perimeter. Should this not be required please consult Bauder Ltd.
- Minimum **1000mm** has been allowed for around all roof access hatches, AOV's, upstands, mechanical plant etc. for maintenance purposes/access.
- * Numerous site specific factors can influence inverter specification. Inverters and optimisers specified are for guidance purposes only. MCS Accredited PV Contractor to confirm exact specification prior to installation.

Bauder Solar G Light - Solarwatt module

Key:



— = 1M Perimeter Zone

Design Information

Short Mounting Rails:	0
Long Mounting Rails:	103
Module Rails:	120
Type of Optimizer:	TBC By Installing Contractor.
Area of PV Panels:	352.534m2

General Information

Total power DC:	74.62 kWp
BAUDER System type:	Bauder Solar G Light
Module type:	Classic H 2.0 Pure 30 (410wp)
Module amount:	182 Units
Azimuth:	Various

All Dimensions, positions of Rooflights and Outlets/SVP's/mansafe systems are to be checked on site **by the installing contractor** for clashes BEFORE the PV design is ordered.

Rev	Date	Description	Drawn By
6	07.11.23	Panels relocated to avoid clashes.	DAM
5	30.10.23	Panel locations altered.	DAM
3	31.05.23	Inverter spec changed.	DAM
1	09.09.22	Panel type changed to JA 415	DAM
1	21.09.22	Watt PV target reduced.	DAM



UK OFFICE
Bauder Limited
70 Landseer Road, Ipswich,
Suffolk IP3 0DH,
England.
Tel: +44 (0)1473 257671
Fax: +44 (0)1473 230761
Email: technical@bauder.co.uk
bauder.co.uk

IRELAND OFFICE
Bauder Limited
O'Duffy Centre, Cross Lane,
Carrickmacross, Co. Monaghan,
Ireland.
Tel: +353 (0)42 9692 333
Fax: +353 (0)42 9692 839
Email: technical@bauder.ie
bauder.ie

Installing contractor is responsible for checking this scheme against architects drawings/site requirements and to advise Bauder immediately of any discrepancies. Orders placed against this drawing reference assume approval of this scheme. Any materials required over and above the quantities given, will be charged accordingly.

Contract Name:
First Street South
Manchester, M15 6JG

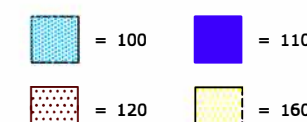
Bauder Solar G Light PV Layout Plan

Contract No:	B193311		
Drawing No:	B193311PV - 20210909		
Designed to Drawing No:	10266-Z0-A-G200-PL-RF-001		
Scale:	N.T.S		
Drawn By:	D.Mitchell	Date:	09.09.21

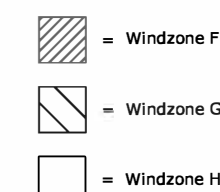
Roof Area Name:	Roof Height:	Membrane Type:	No. Panels:	No. Mounts:	No. Weld Sleeves:	Inverter Type 1: See Note Above *	Inverter Type 2:
Roof Area A1	69.70m	BTGRS	24	28	N/A	Solaredge (TBC)	-
Roof Area A2	55.00m	BTGRS	28	32	N/A	Solaredge (TBC)	-
Roof Area A3	43.20m	BTGRS	18	22	N/A	Solaredge (TBC)	-
Roof Area A4	34.50m	BTGRS	14	17	N/A	Solaredge (TBC)	-
Roof Area B1	57.90m	BTGRS	18	20	N/A	Solaredge (TBC)	-
Roof Area B2	69.60m	BTGRS	16	20	N/A	Solaredge (TBC)	-
Roof Area B4	69.60m	BTGRS	36	40	N/A	Solaredge (TBC)	-
Roof Area B5	57.90m	BTGRS	28	32	N/A	Solaredge (TBC)	-
Total Part Numbers:	-	BTGRS	182	211	N/A		

Important notice: Modules installed in zones F & G will be subject to significantly higher windloads than zone H. Where possible, all modules should be located minimum 1m from any roof plant, upstands or roof openings. Please contact Bauders technical office before re-locating any modules

Required Ballast In Kg/m²:



Windzones Key:



General Maintenance Photovoltaic Arrays

Bauder BioSOLAR System



General maintenance procedures

Bauder BioSOLAR G2 PV System

The Bauder BioSOLAR G2 array should be maintained by trained professionals at fixed intervals and it is recommended that an inspection is carried out annually and the modules cleaned to maintain efficiency, with electrical maintenance occurring a minimum of every three years.

All maintenance ensures the PV array continues to perform, and that any potential problems are identified at an early stage. Any failures of the system resulting from a lack of maintenance may not be covered under the guarantee.

- Ensure safe access can be gained to the roof and that relevant Health and Safety procedures are followed.
- Ensure due care and attention is observed during inspection and maintenance of the array to prevent damage to the waterproofing system.

Inspection should comprise checking:

- Dirt on the modules, the type and levels dirtiness.
- Security of the anchoring system including fixings and ballast.
- Condition of visible cable connectors, electrical connections, isolators and inverter.
- Establishment and condition of vegetation.

Module maintenance

- Please follow module manufacturer's guidelines for specific maintenance requirements. If you are unsure regarding any aspect of maintenance, please contact the Bauder technical office to discuss requirements.

Module cleaning

Cleaning the modules can increase yield. This particularly applies to dirt caused by fallen leaves or bird droppings which can lead to partial shading. Yield decreases due to snow are negligible since these take place during the months of lowest yield.

With the passage of time, dirt and dust may accumulate on the glass surface of the module, reducing the power output of the module. We recommend regular cleaning of modules to ensure maximum power output, especially in low rainfall areas.

- Modules should be cleaned using warm water. All types of soft foam materials, non-woven fabrics, soft sponges and soft brushes may be used.
- Avoid using tools, abrasive materials, abrasive chemicals and cleaning fluids.

Maintaining the electrical system

An annual inspection of isolators and inverters is recommended. A full electrical health check to inspect connectors etc should be undertaken every 2-3 years. As a minimum the following should be carried out:

- Functionality of the electrical connections, isolators and inverters.
- Measurement of string voltage and currents.

Maintaining the mounting system

The BioSOLAR G2 mounting system requires minimal maintenance and a visual inspection should be carried out to ensure the following:

- Bauder extensive substrate has not eroded and the correct depth of substrate is in place.
- All visible fixings are secure and there has been no movement of mounts/modules.
- Any vegetation growing around/through mount fixings is removed.

General maintenance procedures

Bauder BioSOLAR G2 PV System

Green roof maintenance

Maintaining the vegetation - Bio-SOLAR seed mix and wildflower plug plants

The following is a guide to the maintenance necessary to keep a biodiverse green roof in good condition. The information relates to installations that have been completed for one full growing season and where establishment maintenance has been effective.

Establishment maintenance relates to the surface watering and weeding required for the first 10-12 weeks after installation until the planting has rooted into the growing medium, adapted to its location and can be considered established.

What to Expect from a Bauder Biodiverse Green Roof System

There is a common misconception that extensive green roofs and sedum plants in particular, are always green and that from ground level they resemble grass. This is misleading, as they consist mainly of low growing, drought tolerant sedums, wildflowers, grasses, moss, and herbs.

A variation in type and density of vegetation growth is expected beneath the BioSolar modules due to the shading impact of the panels. Our BioSolar planting mix is chosen specifically to allow the vegetation to adapt and thrive in these varying conditions.

For a complete copy of our Biodiverse green roof maintenance guidelines please visit www.bauder.co.uk/technical-centre

General Vegetation Maintenance

The Bauder biodiverse green roofs designed to meet BREEAM requirements will include a species mix selected to provide a balanced plant community on the roof and will require basic maintenance if this is to be sustained in the long term.

Maintenance is best carried out annually, during spring and autumn. Some deposited leaf litter may be considered as contributory to the bio-diverse environment, which is acceptable so long as provision is made to ensure that this has no negative effect on other plants or the PV array.

Note - Specifically designated biodiversity areas should be disturbed as little as possible during maintenance so as not to upset any micro-habitats that may have colonised.

Preliminary Maintenance Procedures

- In the late autumn the vegetation is to be strimmed back to a 50-70mm height and the unwanted waste matter removed and lowered to ground level for composting/disposal. **Care must be taken to ensure that any solar cables are moved out of the way before any strimming/cutting takes place.**
- In the spring apply an 80g/m² dressing of Bauder Slow Release Organic Fertiliser to the vegetated surface.
- We recommend removing unwanted leaf litter that has fallen onto the roof surface in the spring and autumn, to ensure that this does not smother the vegetation beneath.
- Open the lids of all inspection chambers and ensure they are free from blockage and water can flow freely.
- Any vegetation which has encroached into drainage outlets, inspection chambers, walkways and the vegetation barriers (pebbles) should be removed. If movement/settlement of the pebble vegetation barrier has occurred, additional washed stone pebbles similar to the existing should be added.

General maintenance procedures

Bauder BioSOLAR G2 PV System

- Remove any weed growth that will exceed 30 mm in height, is invasive or undesirable (if necessary this can be sprayed with a Glyphosate based herbicide). Any vegetation that shades the modules, however thin **will** have an impact on PV output and must be cropped.
- Damage to the landscaping should be reported to the building owner.

BAUDER GREEN ROOF MAINTENANCE SERVICE

Green roof maintenance service is carried out by Bauder's preferred maintenance providers. These experienced green roof maintenance companies have worked closely with Bauder carrying out maintenance services throughout mainland Britain for several years.

A typical maintenance programme includes:

- **Roof evaluation** - one of our expert team will perform a comprehensive review of your green roof to determine what remedial work, if any, needs to be done.
- **Removal of weeds and unwanted items** - over time a green roof can become congested with leaves, debris and other unwanted vegetation, which can be removed as part of our service.
- **Inspection** - inspection of roof outlets and removal of any encroaching vegetation to enable water to flow freely through rainwater pipes.
- **Application of fertiliser** - to help restore your green roof to its best, an organic slow release granular fertiliser will encourage growth.
- **Testing** - after all work has been performed, the irrigation system will be examined to ensure it works as expected.

This work can be undertaken by the companies below, who directly manage the maintenance of green roofs. This will cover all aspects of the service from quotations through to invoicing. Bauder and our preferred suppliers are committed to the arrangement and will ensure a continued high standard of expert care and advice for our customers.

Green roof maintenance contractors currently recommended to maintain green roof elements for the Bauder BioSOLAR system

Green Maintenance in England and Wales:

The Urban Greening Company

Mr Mike Cottage
105 Ridgeway
Marlow
Buckinghamshire SL7 3LH
07515 887868
greenmaintenance@tugc.co.uk
tugc.co.uk

Green Maintenance in Scotland:

Urban Utopia Landscapes

Mr Gavin Gale
Mayville Gardens East
Edinburgh
Lothian EH5 3DW
0800 061 4353
office@urbanutopialandscapes.com
urbanutopialandscapes.com

If you would like Bauder to forward your details to one of the preferred maintenance companies, please email **c.rodick@bauder.co.uk** giving the details of the green roof and contact information with explicit permission for your detail to be shared with the preferred supplier.

Electrical contractors currently recommended to maintain the array for Bauder BioSOLAR systems

Maintenance can be carried out by any suitably trained contactor/operative. The following list is a non-exhaustive list of recommended contractors:

CJ Electrical

Unit 7 Edison Close,
Ipswich,
Suffolk, IP3 9GU
01473 276688
www.cielectrical.co.uk/

PV Plus

3 Radcliffe Court,
Southampton, SO14 0PH
02380 170215
www.pv-plus.co.uk

Envirolec Smart Energy Solutions

Unit 2 Hope Lane,
Eltham,
London, SE9 3TP
020 8090 0270
www.envirolec-ses.co.uk

Ren Energy

Woodbastwick Road,
Blofield Heath,
Norwich, NR13 4RR
01603 713448
www.renenergy.co.uk

Greenbridge Renewables

27 Kendal Road,
Kirkby,
Liverpool, L33 2ED
0151 345 6739
www.gb-r.co.uk/

Solar Sense

Helios House,
Brockley Lane,
Backwell,
Bristol, BS48 4AH
01275 461800
<http://www.solarsense-uk.com>

Parker Technical Services

Head Office:
Tannochside Business Park,
4 Kilmartin Place,
Uddingston, G71 5PH
01698 381224
www.edwinjamesgroup.co.uk/businesses/ej-parker

Pioneer Contracting

1 The Moorings,
Worsley,
Manchester, M28 2QE
0161 950 2873
www.pioneercontracting.co.uk

Bauder Limited

70 Landseer Road, Ipswich, Suffolk, IP3 0DH
bauder.co.uk

Bauder Limited

O'Duffy Centre, Carrickmacross, Co.Monaghan
bauder.ie



Guarantee Certificate

15 Year - Products Guarantee

BauderSolar & BioSolar PV Mounting Systems

Project:
Project Address:

We certify that the BauderSolar or BioSolar PV mounting system installed on the above 'Project' is guaranteed for the 'Guarantee Period' of 15 Years from the date of supply as registered below, in accordance with the Guarantee Details, Terms and Conditions overleaf.

Guarantee Commencement Date:

Project Reference No:

A handwritten signature in blue ink, appearing to read "N. Blacklock", is written over a faint, diagonal "SAMPLE" watermark.

Signature:
(for and on behalf of Bauder Limited)

The Guarantee covers:

Subject to the terms and conditions below, should any defects occur in the BauderSolar or BioSolar PV mounting system due to defective manufacture, materials or workmanship, within a period of 15 years from the date of purchase, the faulty component will either be replaced or rectified at the discretion of Bauder Ltd (Bauder) without cost, up to the value of the original Bauder PV products.

The guarantee for Bauder PV panels is provided by the panel manufacturer and will be provided by the installing contractor within the O&M pack.

The Guarantee does not cover:-

1. Excessive wear and tear.
2. Misuse and abuse.
3. Discolouring, or any other natural degradation not impairing the mechanical stability of the mounting unit
4. Failure of any electrical components, including wiring, inverters, and control systems.
5. Failure to maintain or utilise the product in accordance with any written instructions provided.
6. Modifications undertaken by persons other than Bauder or its authorised representatives.
7. Cover for defective PV Solar panels beyond the panel manufacturer's guarantee.
8. Any lost generation of solar electricity.

The Bauder Guarantee is subject to the following terms and conditions:

1. The Bauder PV products must be installed by trained installers, authorised by Bauder.
2. Full payment must be made to Bauder and the Installing contractor in accordance with the contract.
3. If defects arise with the Bauder PV products the Building Owner must adhere to the following:
 - 3.1 report any problems to Bauder promptly.
 - 3.2 provide safe access to the roof, and a safe working environment to allow the product to be inspected, repaired or replaced.
 - 3.3 seek written approval from Bauder Limited before commissioning any alterations or repairs to the Bauder PV products or incurring any third-party costs.
4. The full PV installation should be inspected by a competent electrician annually for signs of premature wear & tear.

How to claim:-

In the event of any problems the Building Owner should contact Bauder directly by telephone (01473 257671) followed by confirmation in writing. E-mails to technical@bauder.co.uk with letters being addressed to our Head Office:- The Technical Director, Bauder Limited, 70 Landseer Road, Ipswich, Suffolk, IP3 0DH.

Maintenance Information:

Please visit our website to download the appropriate guidance.

www.bauder.co.uk/technical-centre/maintenance-advice

or scan the QR code on a smart device.

This sample guarantee is correct at time of issue: however Bauder Ltd reserves the right to make changes to the details or terms and conditions of their guarantees at any time without prior notice.





BAUDER BIOSOLAR G2

INSTALLATION GUIDE

Bauder BioSolar G2

Installation guidelines

Table of Contents

1	Symbols Used	2
2	System Overview.....	3
3	Parts List	4
4	Required Tools	6
5	Assembly.....	7
5.1	Levelling and alignment of base rails	7
5.2	Laying the Bauder DSE 40 drainage board.....	8
5.4	Mounting of module support profiles and diagonal support profiles.....	10
5.5	Filling Bauder DSE 40 drainage layers with substrate	11
5.6	Fastening of solar modules with clamping hook sets.....	12
5.7	Manufacture and assemble rail connectors for module carriers	13

Bauder BioSolar G2

Installation guide

1 Symbols Used



CAUTION!

Non-compliance could result in serious property damage, or impairment to operational safety.



TIP!

Useful information for installing the mounting system.

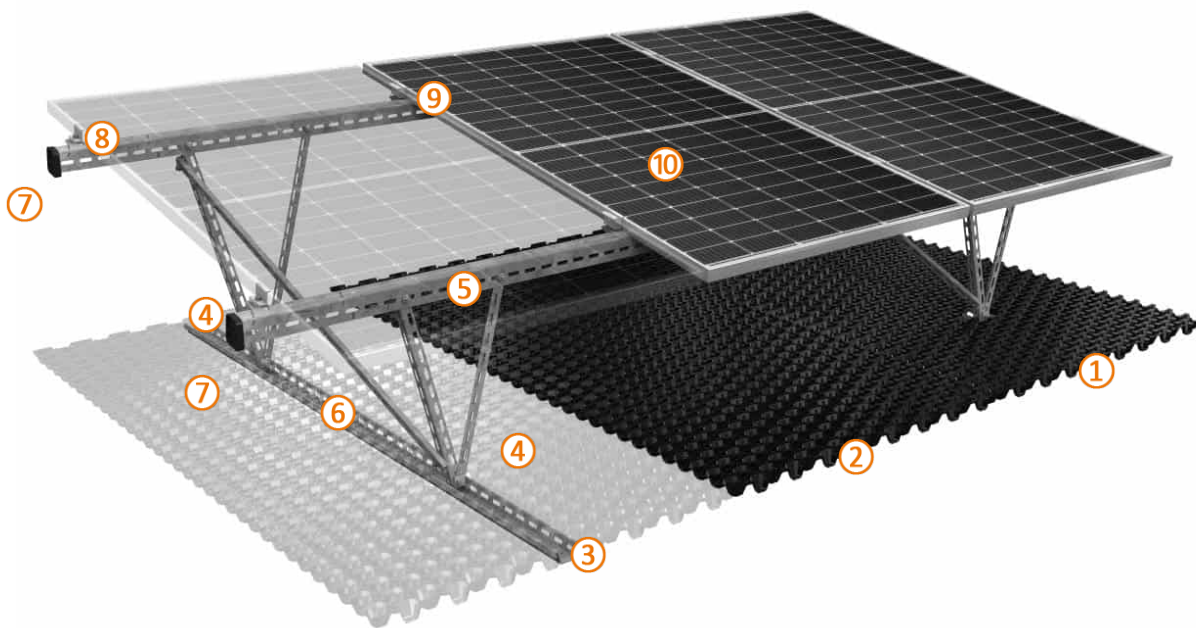
Bauder BioSolar G2

Installation guidelines

2 System Overview

Bauder BioSOLAR G2 is designed for applications where both a green roof and solar PV solution are required together to meet project requirements. The green roof substrate and vegetation provide the ballast mechanism for the entire solution which removes the need for additional ballast or penetrating the waterproofing to secure the units to the roof and maximises the available area for vegetation.

Bauder Biosolar should be used in conjunction with our BauderFlora 3 seedmix which contains both drought and shade tolerant herb and wildflower species and is suitable for roofs with a fall of up to 5°.

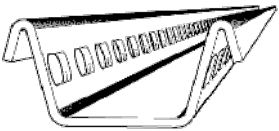
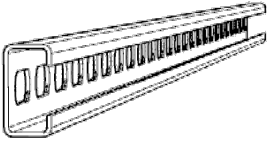
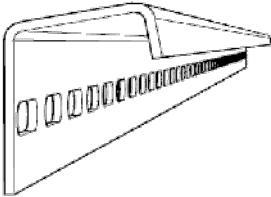


- (1) DSE40 anchor board
- (2) Standard DSE40 drainage board
- (3) Base rail
- (4) Pre-assembled V-beam short & long
- (5) Module carrier rail
- (6) Diagonal support
- (7) Module rail end cap
- (8) Module end clamp
- (9) Module middle clamp
- (10) Photovoltaic module

Bauder BioSolar G2

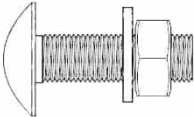
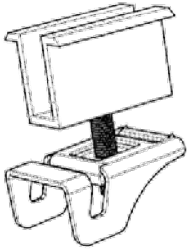
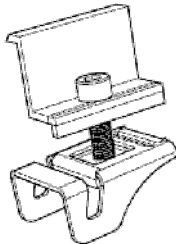
Installation guide

3 Parts List

Image	Part name	Description
	Bauder DSE 40 anchor board	Pressure-resistant drainage and water storage element for green roofs and accessible traffic areas; HDPE; 1.04 x 2.03 x 0.04 m
	Base rail 2 meters or 4 meters	Profile rail 2000 mm or 4000 mm perforated, d = 3 mm, support surface 77 mm, S420GD + ZM310AC
	V-carrier units long and short version pre-assembled	L-profiles 745 mm and 545 mm, 30 mm x 30 mm d = 2 mm perforated, hot-dip coated S250GD, ZM310 - zinc-magnesium alloy with adapter, spring lock washer and screw pre-assembled, can be folded out
	Diagonal support profile	C-profile perforated L = 1.24 m, d = 1.5 mm Hot-dip coated S250GD, Z275 - zinc
	Module carrier rail 6 meters	Profile rail 6000 mm perforated, d = 3 mm, FVZS420GD + ZM310AC (zinc-magnesium)

Bauder BioSolar G2

Installation guidelines

Image	Part name	Description
	Bauder module rail end cap	End cap for module support rail, polypropylene (PP)
	Buttonhead screw M10x20	Carriage bolt with square attachment self-locking in profile perforation, with washer; A2-70
	Buttonhead screw M10x30	Carriage bolt with square attachment self-locking in profile perforation, with washer; A2-70
	Pre-assembled module clamping hook set with middle clamp	Middle clamp M8, L = 70 mm, aluminium, distance 19 mm - module height 35 mm with cylinder screw DIN 912 M8x35 hexagon socket, locking washer and counter holder with thread M8, zinc-magnelis coating with earthing
	Pre-assembled module clamping hook set with end clamp	End clamp M8, L = 70 mm, aluminium, distance 19 mm - module height 35 mm with cylinder screw DIN 912 M8x35 hexagon socket, locking washer and counter holder with thread M8, zinc-magnelis coating with earthing

Bauder BioSolar G2

Installation guide

4 Required Tools

› Measuring and installation tools and accessories



Chalkline



Tape measure › 15 m



Folding rule



Pen / chalk / marker

› Assembly Tools



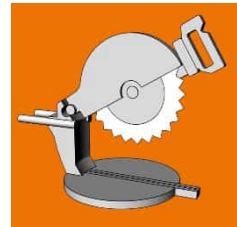
Cordless screwdriver



SW 17
Socket wrench
wrench size 17 (M10)
for cordless
screwdriver



T 40 / 45
Bit Allen screw
6 mm (M8)



Mitre saw



8 - 35 Nm
Torque wrench
torque-setting type



SW 17
Box nut
wrench size 17 (M10)
for torque wrench

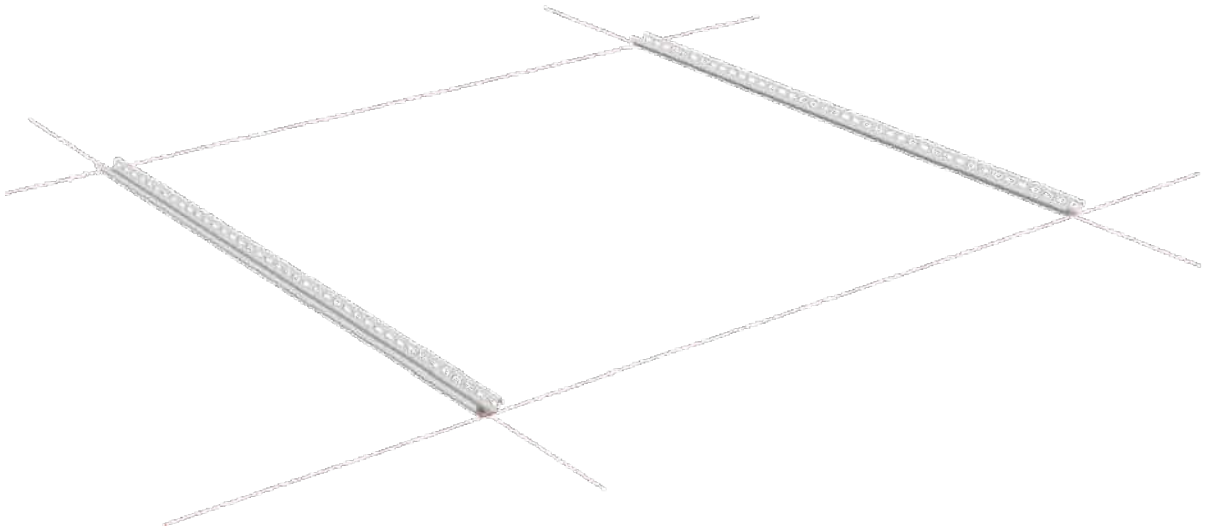
5 Assembly

5.1 Levelling and alignment of base rails

The roof should be clean of debris and coarse materials.

Mark out the installation grid on the roof surface/protection layer using a chalk line and measure the distances to roof edges or existing roof installations.

Align base rails according to the BauderSolar dimensioned roof layout.



TIP! Observe base rail layout plan

The alignment and measurement of the base rails is carried out according to the Bauder base rail plan.

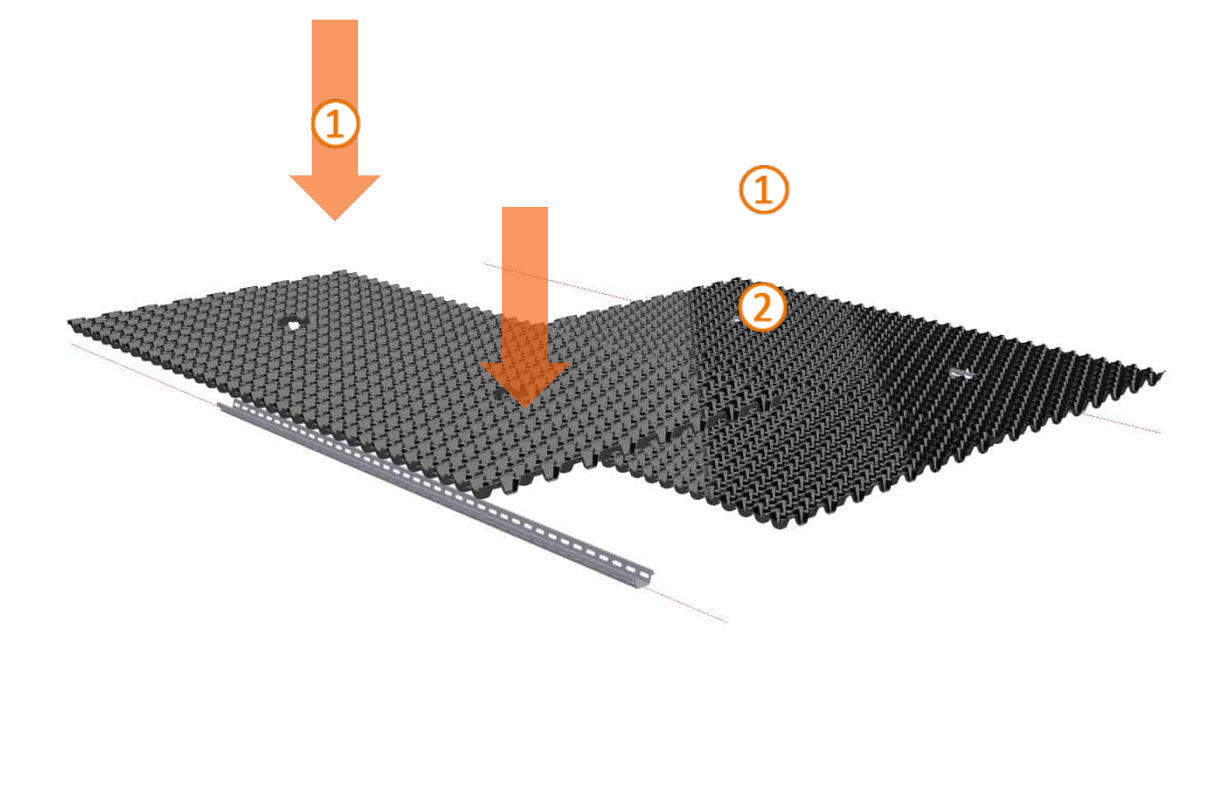
Bauder BioSolar G2

Installation guide

5.2 Laying the Bauder DSE 40 drainage board

Install DSE40 anchor boards over base rails (1) with holes centered over the base rails.

Close the remaining gaps with the unperforated DSE40 boards (2).

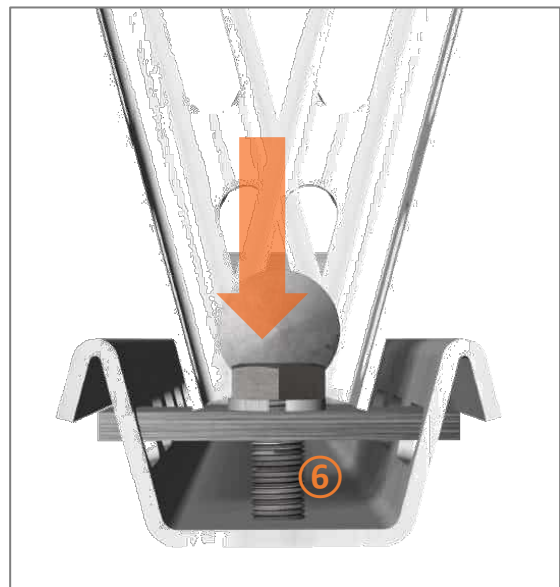
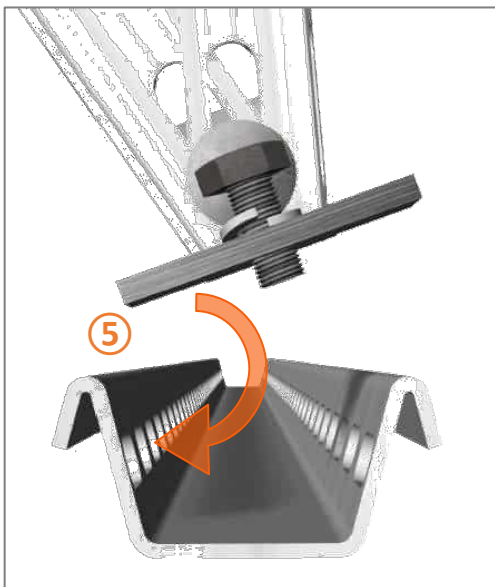
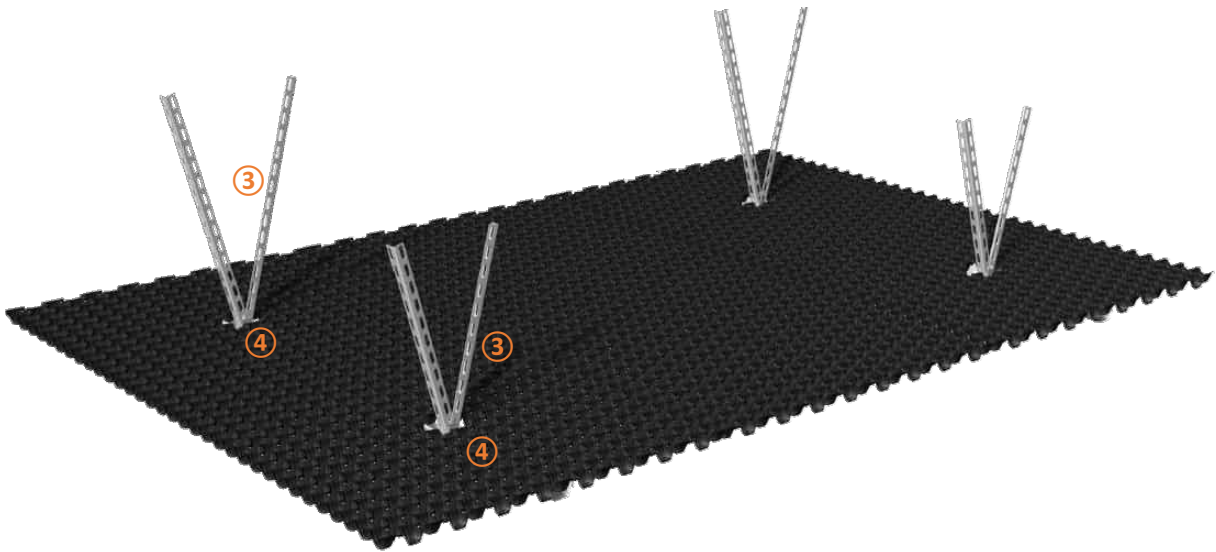


Bauder BioSolar G2

Installation guidelines

5.3 Install V-carrier units into base rails

Guide long and short V-carrier units ③ alternately through the openings of the Bauder DSE 40 anchor boards with perforation ④ sideways into the opposite elongated holes of the base rails ⑤ and tighten with the support screw until you reach final suspension point ⑥



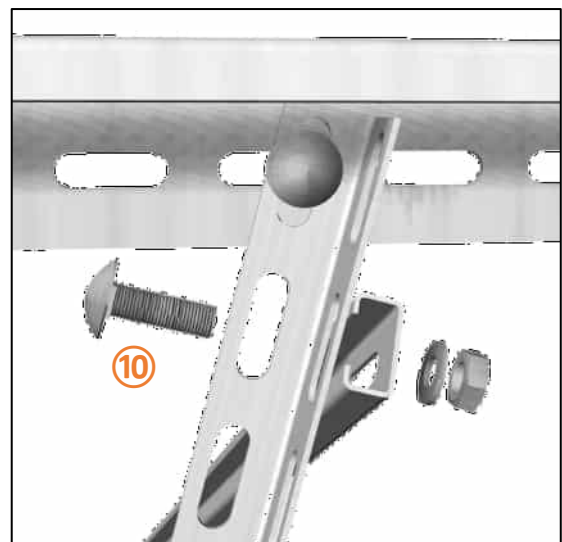
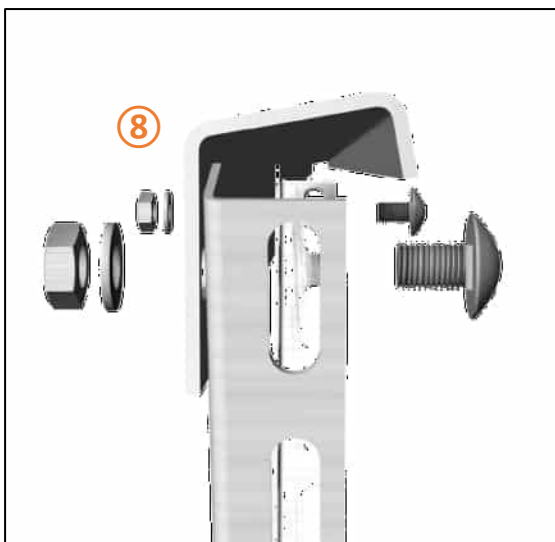
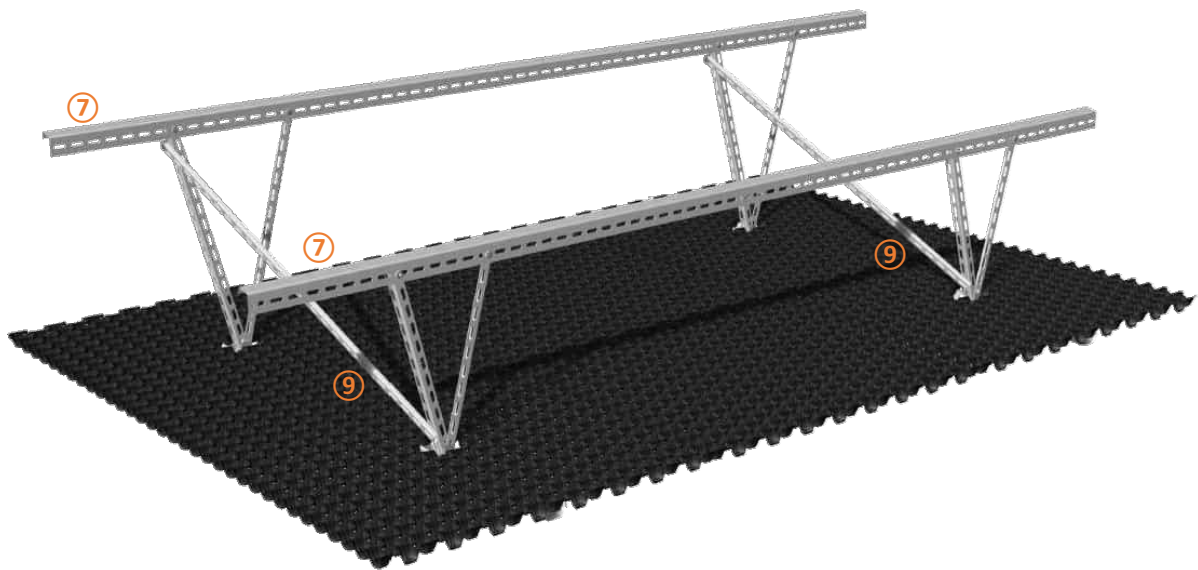
Bauder BioSolar G2

Installation guide

5.4 Mounting of module support profiles and diagonal support profiles

Fasten the diagonal profiles ⑨ as reinforcement of the supporting structure to the short and long V-carrier units with button-head screws, washers and nuts through the overlapping elongated holes ⑩. Tightening torque 35 Nm.

Then fasten the module support profiles ⑦ to the V-carrier units through the overlapping elongated holes with button-head screws with square neck, washers and nuts ⑧. Tightening torque 35 Nm.



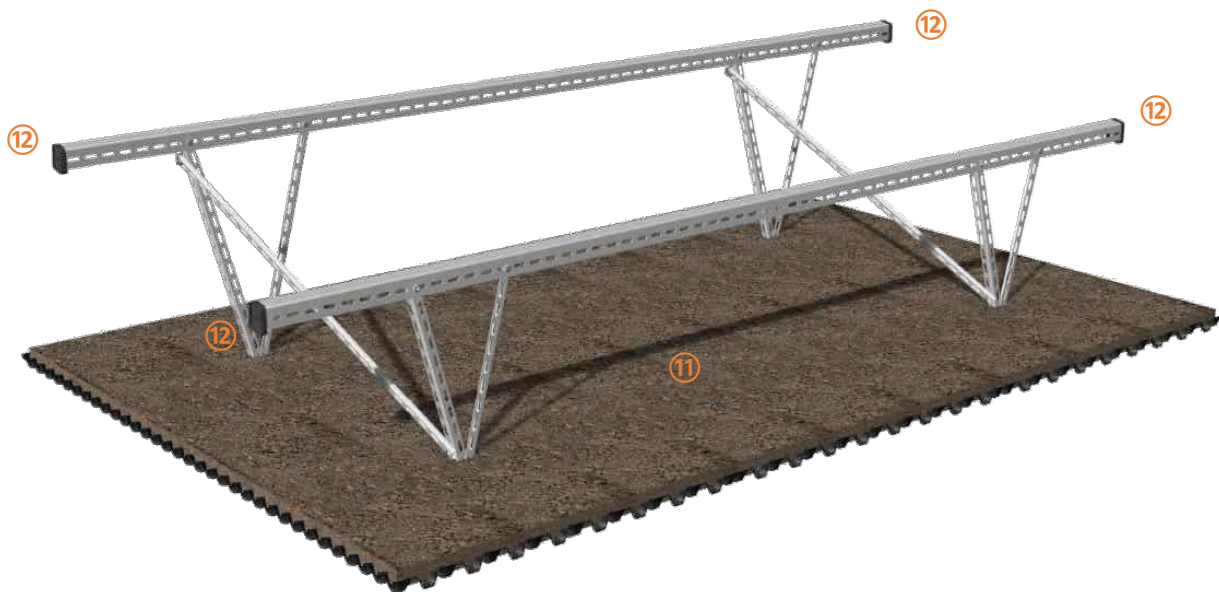
Bauder BioSolar G2

Installation guidelines

5.5 Filling Bauder DSE 40 drainage layers with substrate

Apply the substrate ⑪ evenly over the Bauder DSE 40 mats at the appropriate depth according to the project-specific static ballast calculation.

Attach protective caps ⑫ to the ends of the module support profiles.



CAUTION! Wind uplift and ballast requirements

The volume/thickness of substrate per unit area is project specific and will vary between different wind load zones.

Please refer to the Bauder BioSolar G2 ballast layout plan for confirmation of substrate depths

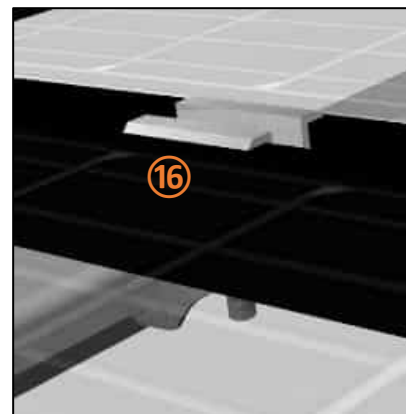
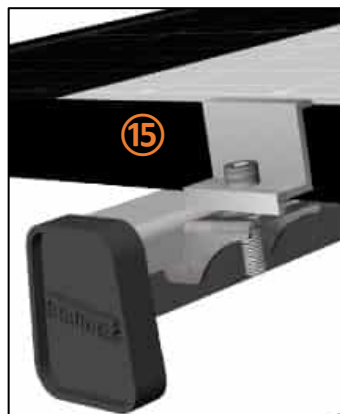
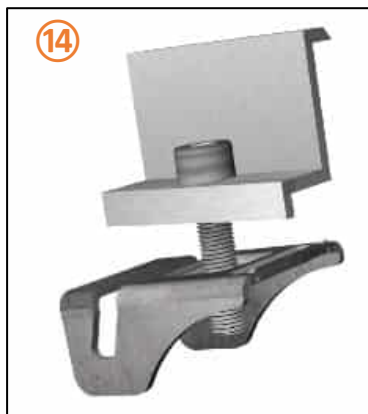
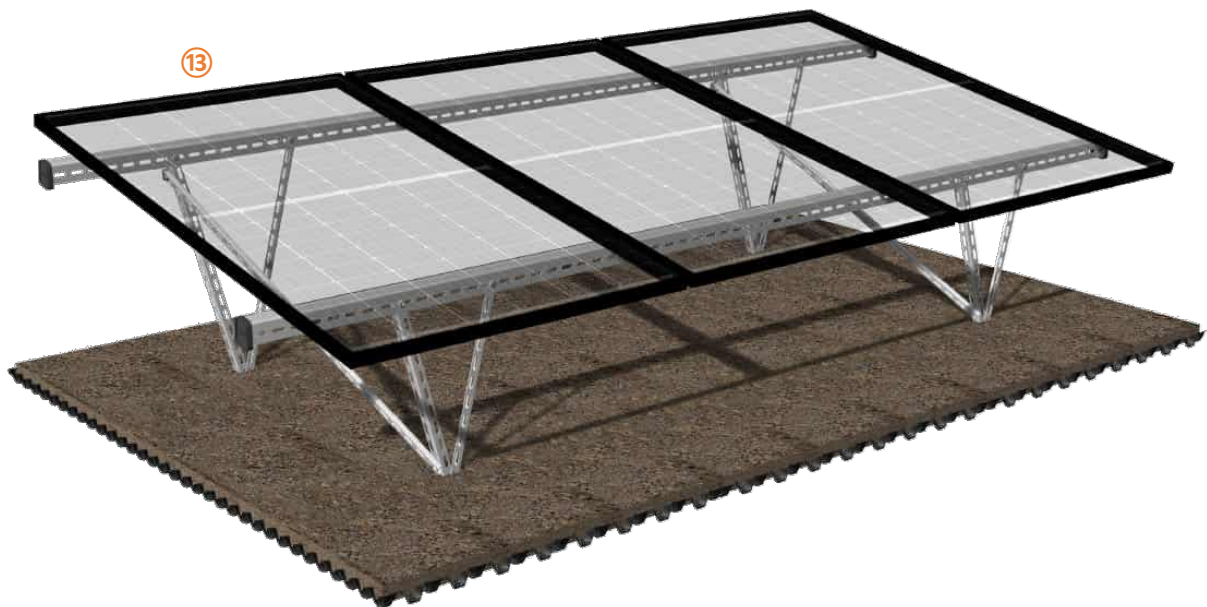
Bauder BioSolar G2

Installation guide

5.6 Fastening of solar modules with clamping hook sets

Fasten the solar modules **13** centred above the module support profiles using the supplied clamping hook sets with **14** end clamps **15** and middle clamps **16** as appropriate.

To do this, guide the notch on the clamping hook in the module support profiles and tighten the module clamp using the screw connector.



CAUTION! Tightening torque of module clamps

When installing the module clamps, the tightening torque specified by the manufacturer of the solar modules should be followed.

Please follow manufacturer guidance for module installation

Bauder BioSolar G2

Installation guidelines

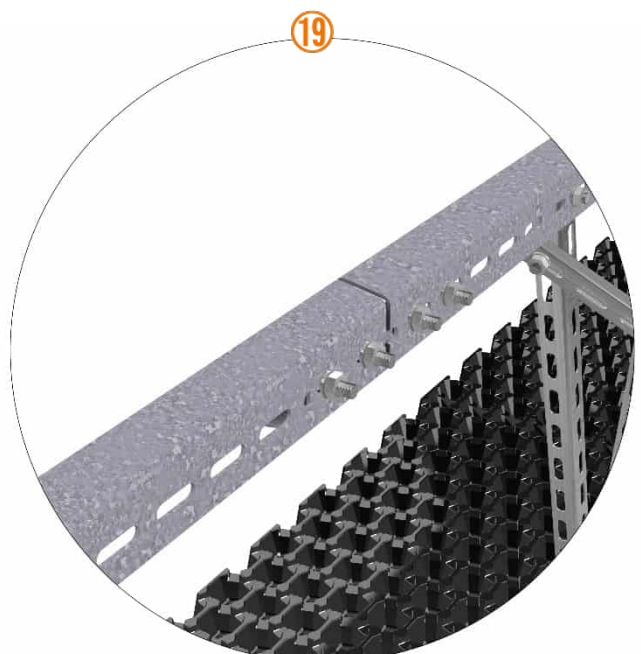
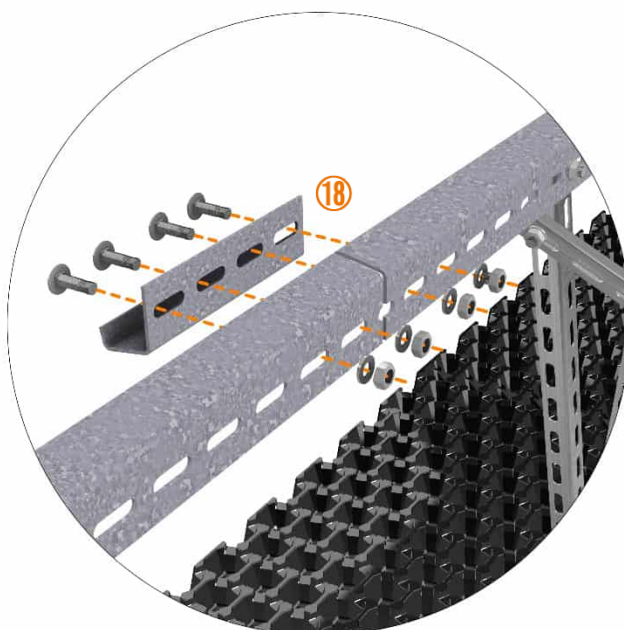
5.7 Manufacture and assemble rail connectors for module carriers

For longer module rows, the module carriers profiles must be connected to each other via a profile connector (17)

For this purpose, 200mm module rail connectors can be cut from the waste module rails. Spray zinc spray on all cut edges for corrosion protection.

The profile connectors then mount the profiles between the module carriers to be connected each via 2 pieces of flat round head screws M10x30 with square attachment, washer and nut (18) (19)

Tightening torque 35 Nm.





UNITED KINGDOM

Bauder Limited

70 Landseer Road, Ipswich, Suffolk IP3 0DH,
England

T: +44 (0)1473 257671 E: info@bauder.co.uk
bauder.co.uk

IRELAND

Bauder Limited

O' Duffy Centre, Carrickmacross, Co. Monaghan,
Ireland

T: +353 (0)42 9692 333 E: info@bauder.ie
bauder.ie

Technical project overview

First Street

Building project	First Street
Date	06.03.2024
In-house project no.	PA_240306_581065
Own project number	CSc_240306_01
Editor	Renusol Europe GmbH
Link to configurator	Open link
Number of modules	34
Rated output	14.11 kWp

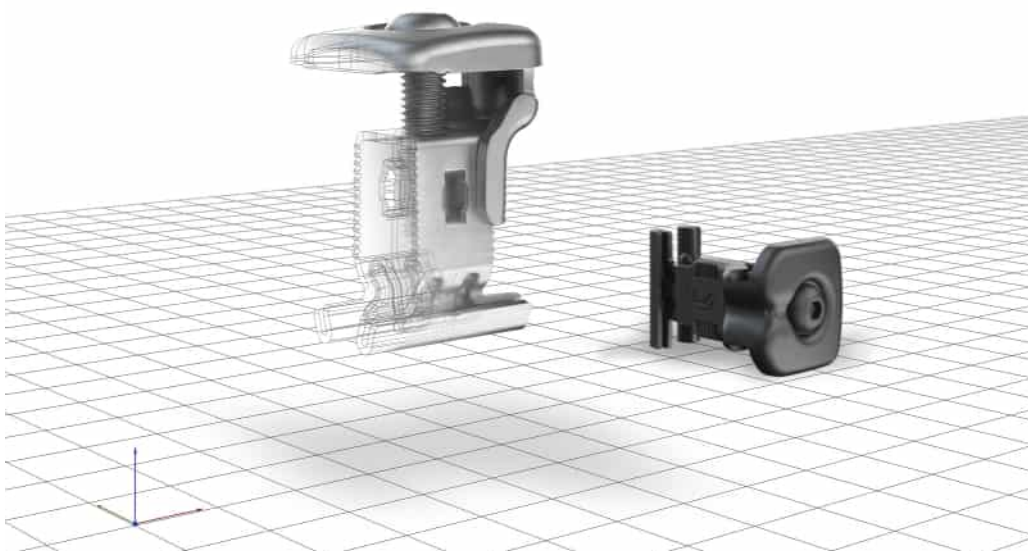


TABLE OF CONTENTS

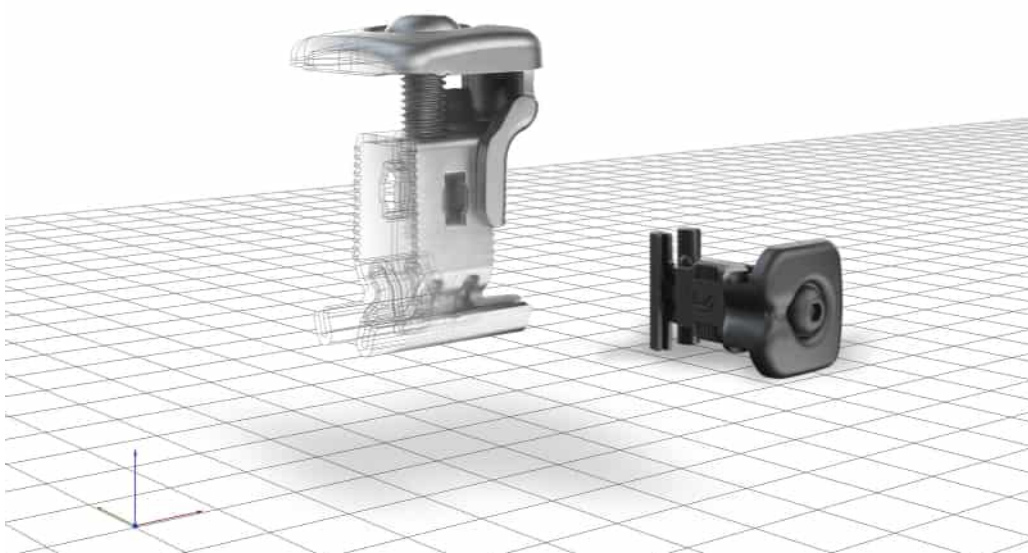
Planned construction Roof 1	4
Specifications	5
Location	5
Surroundings	5
Load calculation result	5
Topography	5
Roof properties	6
Module parameters	6
Fastener parameters	7
System	7
Module rail	7
Clamps	8
Static validation	8
Drawings	9
Assembly plan	10
Module rail position	11
Fastener capacity utilization plan	12
Rails capacity utilization plan	13
Clamp capacity utilization plan	14
Bill of material	15
Planned construction Roof 2	16
Specifications	17
Location	17
Surroundings	17
Load calculation result	17
Topography	17
Roof properties	18
Module parameters	18
Fastener parameters	19
System	19
Module rail	19
Clamps	20
Static validation	20
Drawings	21
Assembly plan	22
Module rail position	23
Fastener capacity utilization plan	24
Rails capacity utilization plan	25

Clamp capacity utilization plan	26
Bill of material	27
Total bill of material	28
Important notes	29

Technical project overview

First Street

Building project	First Street
Address	First Street 3, M15 4FN
Country	United Kingdom
Module Type	Shanghai JA Solar Technology Co. Ltd. - JAM54S30-415/MR (1000V) blackframe
Number of modules	22
Rated output	9.13 kWp
Mounting system	TriSole+
Editor	Renusol Europe GmbH



LOCATION

Street	First Street 3
City	M15 4FN
Country	United Kingdom

SURROUNDINGS

Code	Eurocode NA GB
Terrain height above sealevel	35,00 m
Snow load zone	Zone 3
Terrain category	City
Distance to coast	40,00 km
Distance to edge of city	4,00 km
Surroundings	normal
Service life of PV system	25 years
Failure consequence class	2
Partial safety factor dead load (ballast)	1

LOAD CALCULATION RESULT

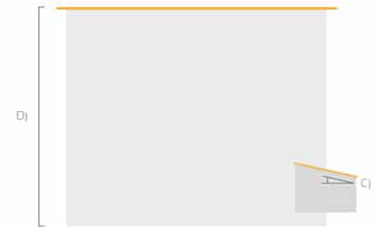
Peak velocity pressure	1,23 kN/m ²
Snow load	0,46 kN/m ²
Snow load on roof	0,37 kN/m ²
Base wind speed ($V_{b,0}$)	22,50 m/s

TOPOGRAPHY

Topography	Not exposed
------------	-------------

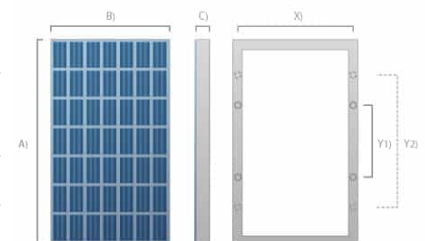
ROOF PROPERTIES

Roof type	Free-form Flat roof
Coverage type	Steel Beam
Spacing x	1425,00 mm
First at x	3375,00 mm
skipXForCalculation	no
Spacing y	1000,00 mm
First at y	0,00 mm
skipYForCalculation	yes
C) Roof pitch	0,00 °
D) Building height	145,00 m
Parapet height	2000,00 mm
Parapet width	500,00 mm



MODULE PARAMETERS

Manufacturer	Shanghai JA Solar Technology Co. Ltd.
Name	JAM54S30-415/MR (1000V) blackframe
Length	1722 mm
Width	1134 mm
Height	30 mm
Weight	19.5 kg
Rated output	415 W _{peak}
Color	black
Datasheet	Open datasheet



Please check the compatibility of clamping positions with module manufacturer advice.

The module data was taken from a database. Please check whether this data corresponds to your actual module order. If necessary, please correct the data using the editing function.

FASTENER PARAMETERS

Name	IFP Bracket
Manufacturer	Renusol
Pressure load capacity	5,00 kN
Tensile load capacity	3,50 kN
Lateral force	2,50 kN
Interaction	Linear

The third party product(s) listed above, is (are) not (a) product of Renusol but, from third party Manufacturer(s) (Manufacturer). The PV-Configurator uses static properties of this fastener provided by this Manufacturer. The Manufacturer is responsible for the accurateness and correctness of the static values provided by him, Renusol does not assume any liability regarding the product of the Manufacturer and its static properties.

SYSTEM

System type	Fixed
System	TriSole+
Mounting angle	10°
Mounting rotation	Eave (0°)
Mounting direction of modules	Landscape
Module rail	Use module rail
Triangle distance	600,00 mm
Fastener type	Custom fastener
Row distance	1550



Please check the entered row distance for an ideal yield calculation with a correct calculation including consideration of the shading.

MODULE RAIL

Fastening rails	Single layer
Mounting rail	50x37 mm
Rail length	3600mm
Maximum cantilever length	300,00 mm
Rail colour	silver
Optimize fasteners	No optimization, define manually
Fasten on substructure	every substructure

CLAMPS

Clamp type	Mid clamps+ / End clamps+
Clamp colour	black
Max value middle clamps	83 %
Max value end clamps	74 %

STATIC VALIDATION

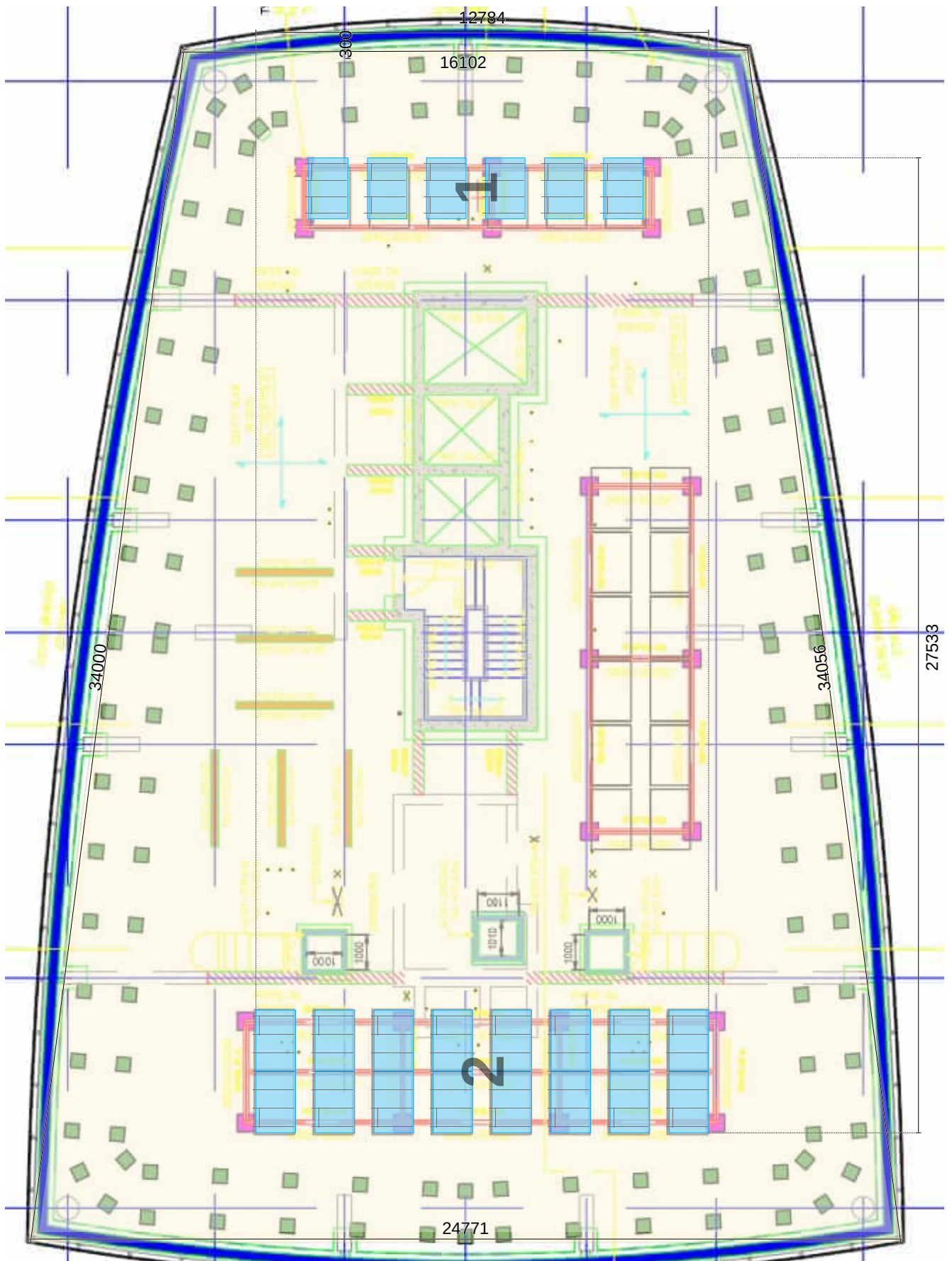
Your project was validated by our statics check successfully.

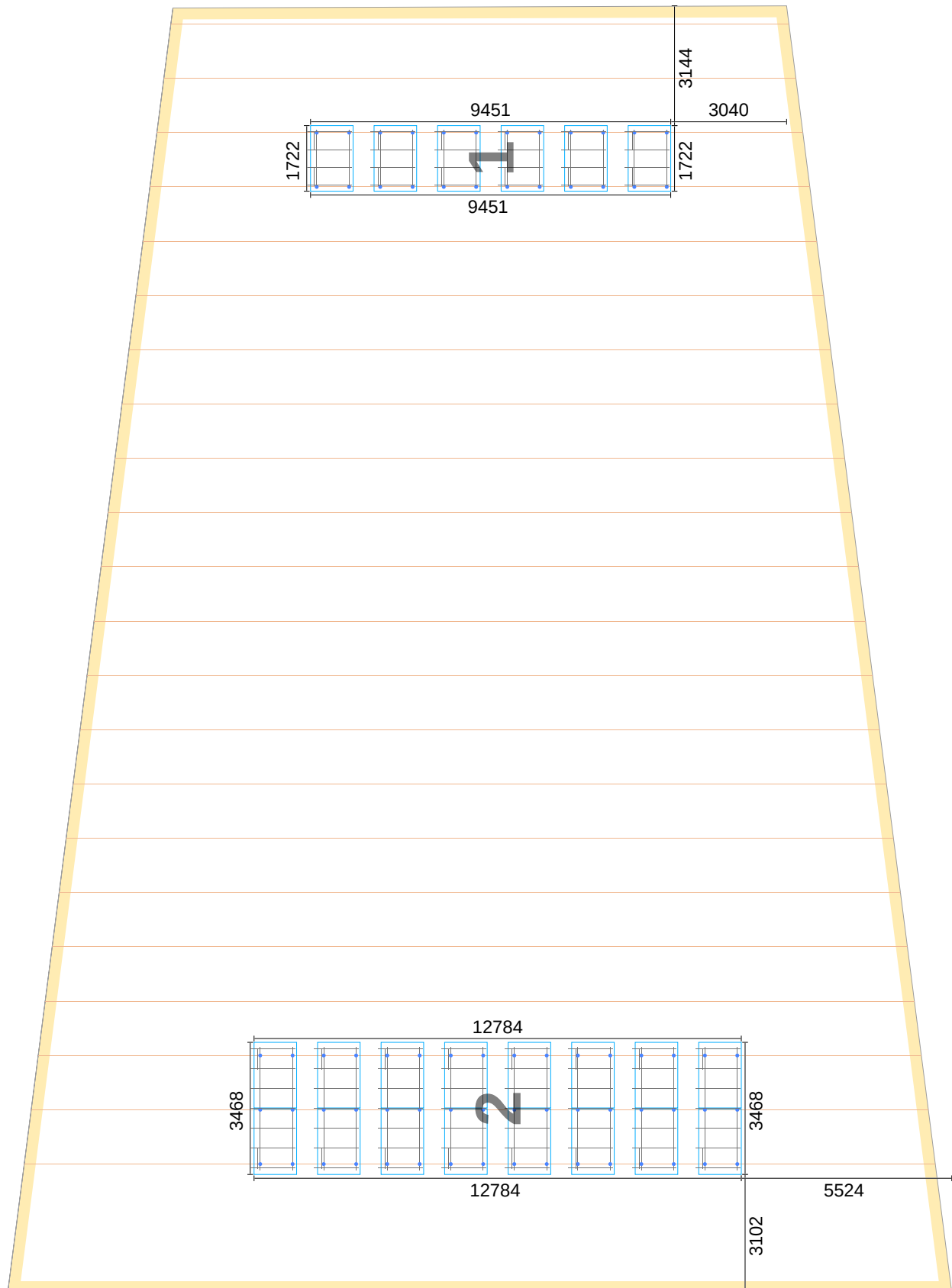
Static utilization factor: 108%

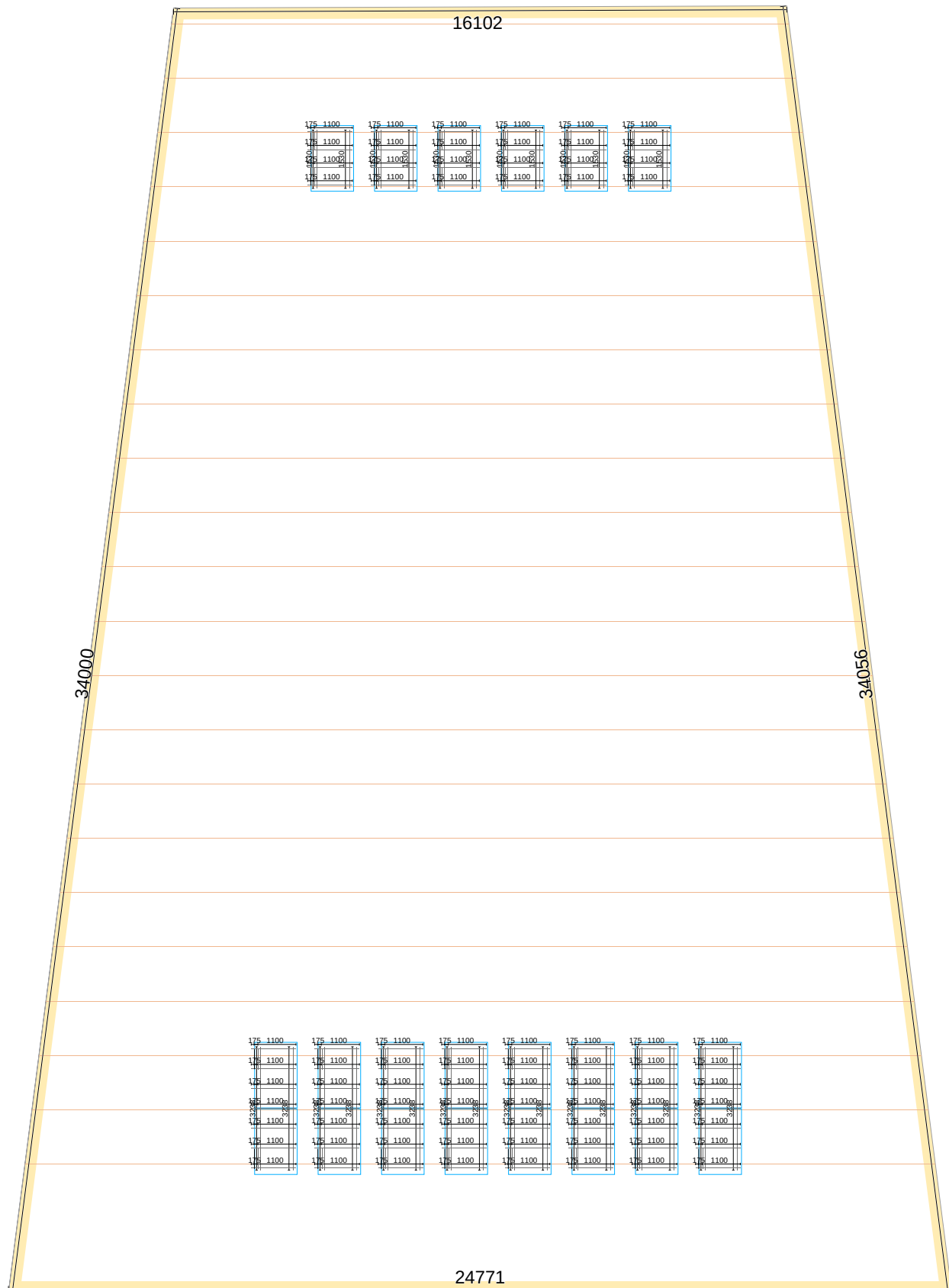
Static utilization fastener: 68%
Static utilization clamp: 83%
Static utilization base rail: 93%
Static utilization TriSole: 108%

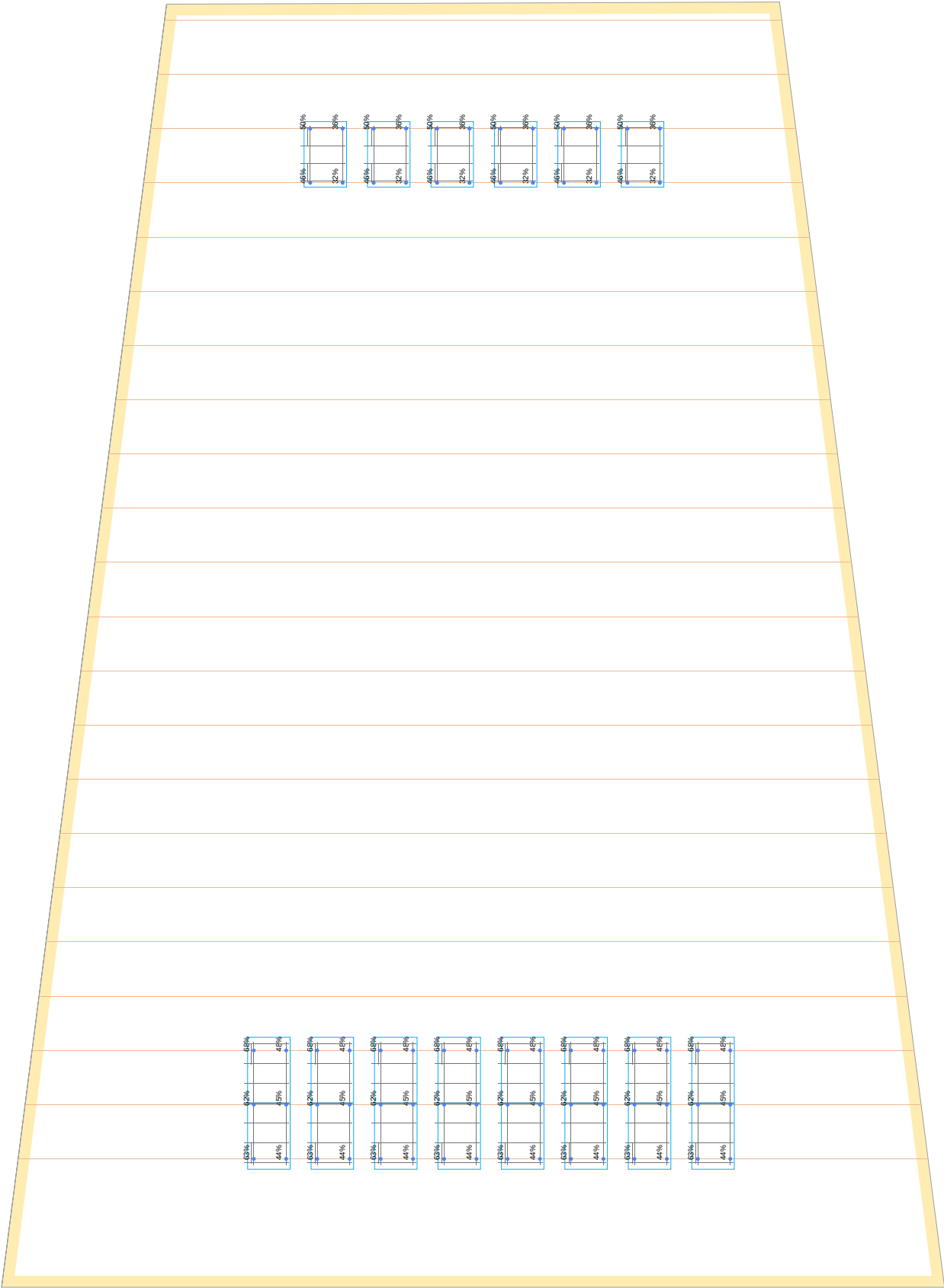
The predefined default values for input fields have to be compared with the conditions of the project. Necessary changes to adapt to local conditions must be carried out. The following relevant input fields contain their default value:

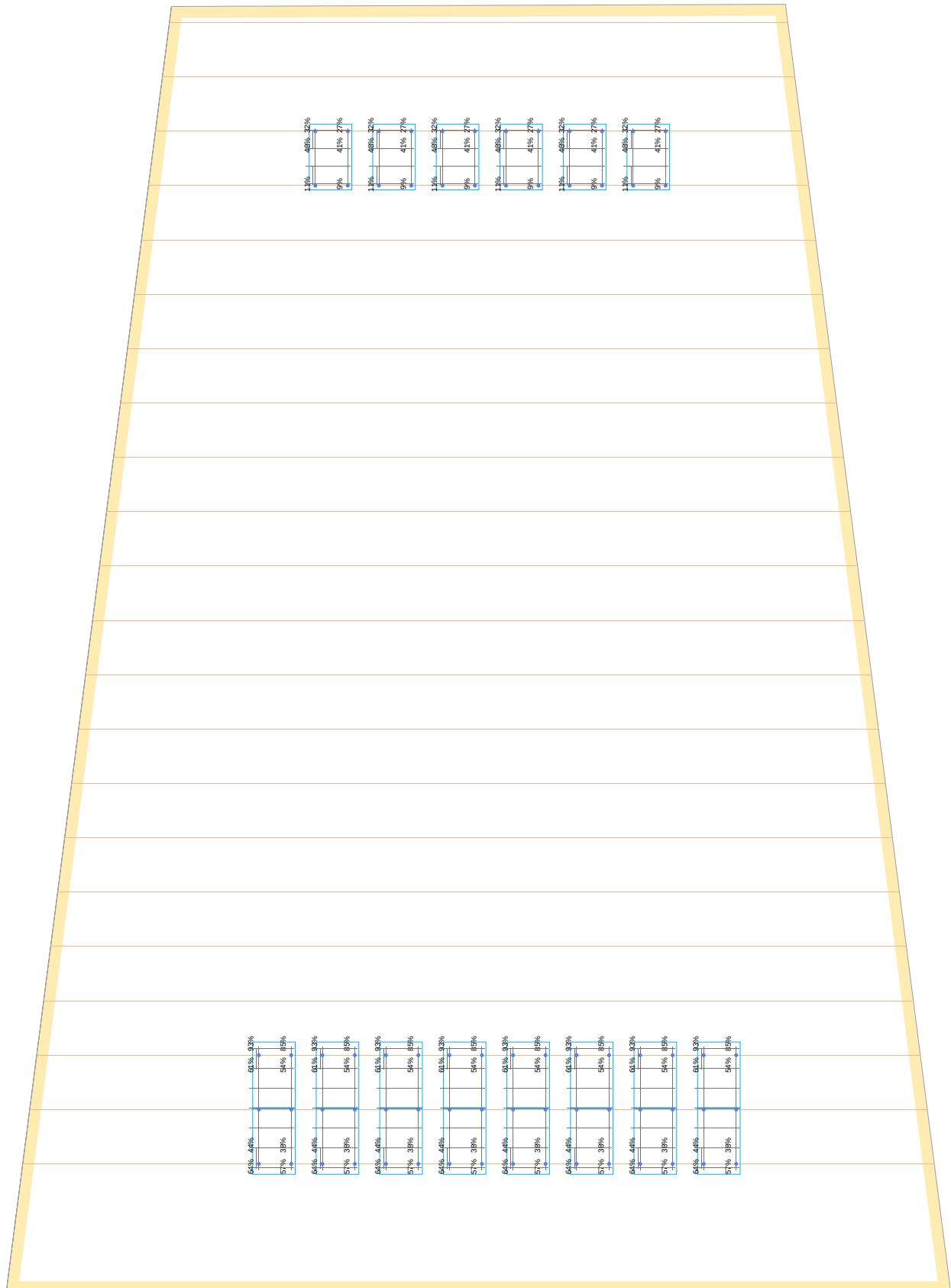
- Service life of PV system: 25 years
- Failure consequence class: 2
- Partial safety factor dead load (ballast): 1

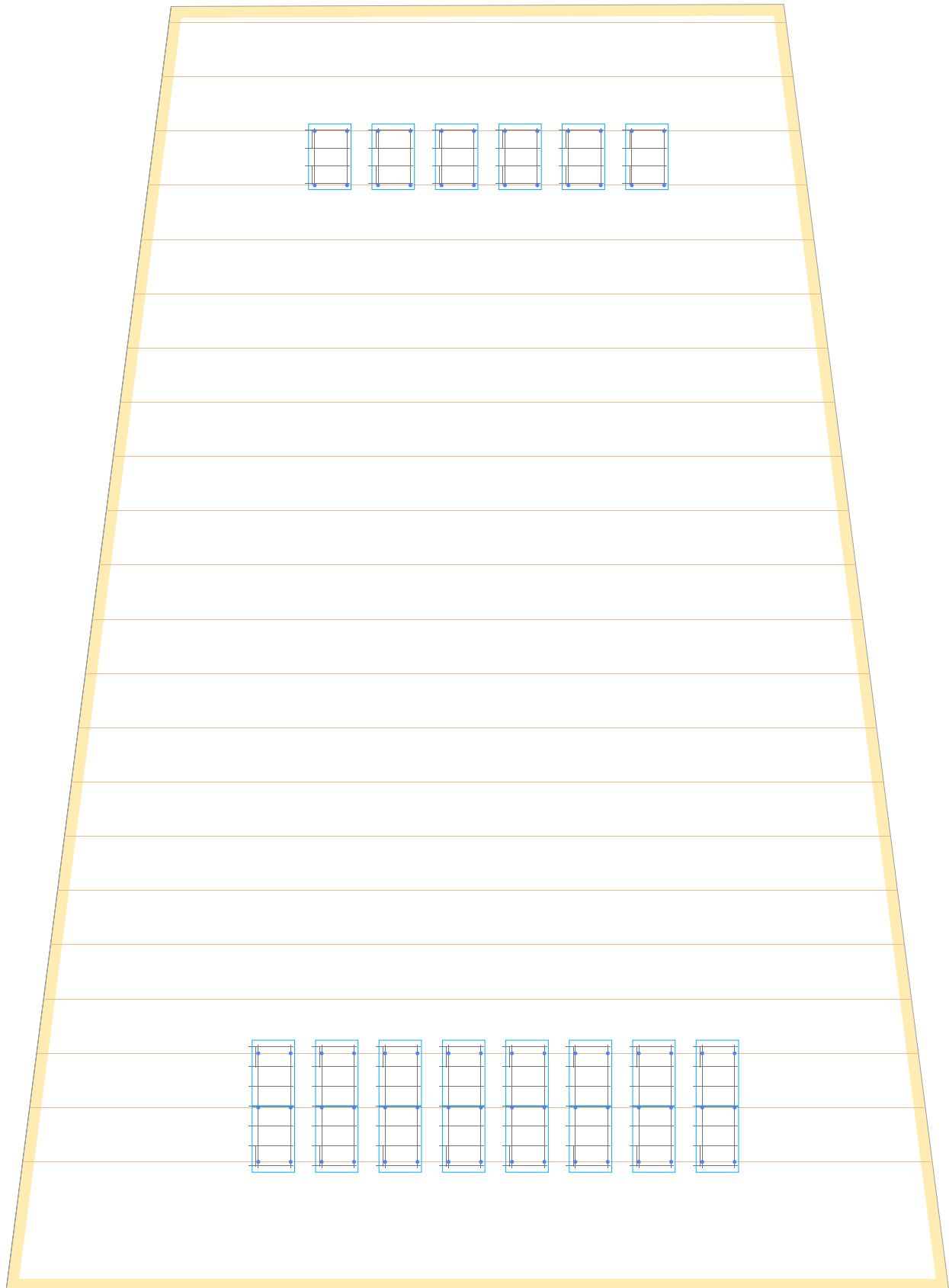












BILL OF MATERIAL

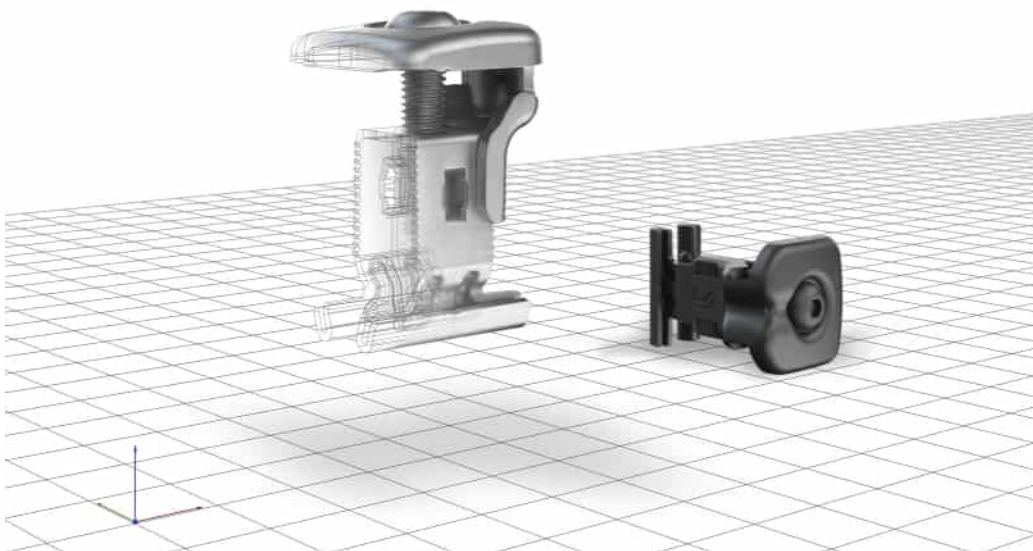
Article No.	Article	Quantity	Ordering Unit	Weight/Piece	Weight
R400552	TS+ Support 10°	80	1	0,099 kg	7,920 kg
R400570	VS+ Mounting rail 50 x 37 x 3600 mm	44	1	9,108 kg	400,752 kg
R420024	Bracket IFP M8/M10, set(1pc.)	72	1	0,090 kg	6,480 kg
R420081-BE	End clamp+ (black)	56	1	0,064 kg	3,584 kg
R420082-BE	Middle clamp+ (black)	16	1	0,063 kg	1,008 kg
R420083	Cross rail connector+	640	1	0,066 kg	42,240 kg
R420550	TS+ V-frame (SET)	80	1	1,456 kg	116,480 kg
R420600	TS+ L-Profile cross striving profile (SET)	28	1	0,488 kg	13,664 kg
R920044	End Cap RIGHT / LEFT (grey) 50x37	56	1	0,015 kg	0,840 kg
Total Weight: 592,968 kg					
Third party parts		Quantity			
IFP Bracket		72			

The third party product(s) listed above, is (are) not (a) product of Renusol but, from third party Manufacturer(s) (Manufacturer). The PV-Configurator uses static properties of this fastener provided by this Manufacturer. The Manufacturer is responsible for the accurateness and correctness of the static values provided by him, Renusol does not assume any liability regarding the product of the Manufacturer and its static properties.

Technical project overview

First Street

Building project	First Street
Address	First Street 3, M15 4FN
Country	United Kingdom
Module Type	Shanghai JA Solar Technology Co. Ltd. - JAM54S30-415/MR (1000V) blackframe
Number of modules	12
Rated output	4.98 kWp
Mounting system	TriSole+
Editor	Renusol Europe GmbH



LOCATION

Street	First Street 3
City	M15 4FN
Country	United Kingdom

SURROUNDINGS

Code	Eurocode NA GB
Terrain height above sealevel	35,00 m
Snow load zone	Zone 3
Terrain category	City
Distance to coast	40,00 km
Distance to edge of city	4,00 km
Surroundings	normal
Service life of PV system	25 years
Failure consequence class	2
Partial safety factor dead load (ballast)	1

LOAD CALCULATION RESULT

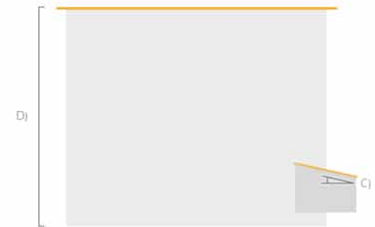
Peak velocity pressure	1,23 kN/m ²
Snow load	0,46 kN/m ²
Snow load on roof	0,37 kN/m ²
Base wind speed ($V_{b,0}$)	22,50 m/s

TOPOGRAPHY

Topography	Not exposed
------------	-------------

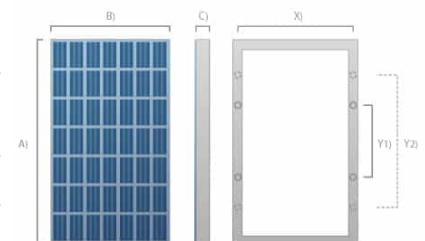
ROOF PROPERTIES

Roof type	Free-form Flat roof
Coverage type	Steel Beam
Spacing x	1425,00 mm
First at x	13150,00 mm
skipXForCalculation	no
Spacing y	1425,00 mm
First at y	13150,00 mm
skipYForCalculation	yes
C) Roof pitch	0,00 °
D) Building height	145,00 m
Parapet height	2000,00 mm
Parapet width	500,00 mm



MODULE PARAMETERS

Manufacturer	Shanghai JA Solar Technology Co. Ltd.
Name	JAM54S30-415/MR (1000V) blackframe
Length	1722 mm
Width	1134 mm
Height	30 mm
Weight	19.5 kg
Rated output	415 W _{peak}
Color	black
Datasheet	Open datasheet



Please check the compatibility of clamping positions with module manufacturer advice.

The module data was taken from a database. Please check whether this data corresponds to your actual module order. If necessary, please correct the data using the editing function.

FASTENER PARAMETERS

Name	IFP Bracket
Manufacturer	Renusol
Pressure load capacity	5,00 kN
Tensile load capacity	3,50 kN
Lateral force	2,50 kN
Interaction	Linear

The third party product(s) listed above, is (are) not (a) product of Renusol but, from third party Manufacturer(s) (Manufacturer). The PV-Configurator uses static properties of this fastener provided by this Manufacturer. The Manufacturer is responsible for the accurateness and correctness of the static values provided by him, Renusol does not assume any liability regarding the product of the Manufacturer and its static properties.

SYSTEM

System type	Fixed
System	TriSole+
Mounting angle	10°
Mounting rotation	Verge right (90°)
Mounting direction of modules	Landscape
Module rail	Use module rail
Triangle distance	1200,00 mm
Fastener type	Custom fastener
Row distance	1550



Please check the entered row distance for an ideal yield calculation with a correct calculation including consideration of the shading.

MODULE RAIL

Fastening rails	Single layer
Mounting rail	50x37 mm
Rail length	3600mm
Maximum cantilever length	300,00 mm
Rail colour	silver
Optimize fasteners	No optimization, define manually
Fasten on substructure	every substructure

CLAMPS

Clamp type	Mid clamps+ / End clamps+
Clamp colour	black
Max value middle clamps	83 %
Max value end clamps	74 %

STATIC VALIDATION

Your project was validated by our statics check successfully.

Static utilization factor: 108%

Static utilization fastener: 106%

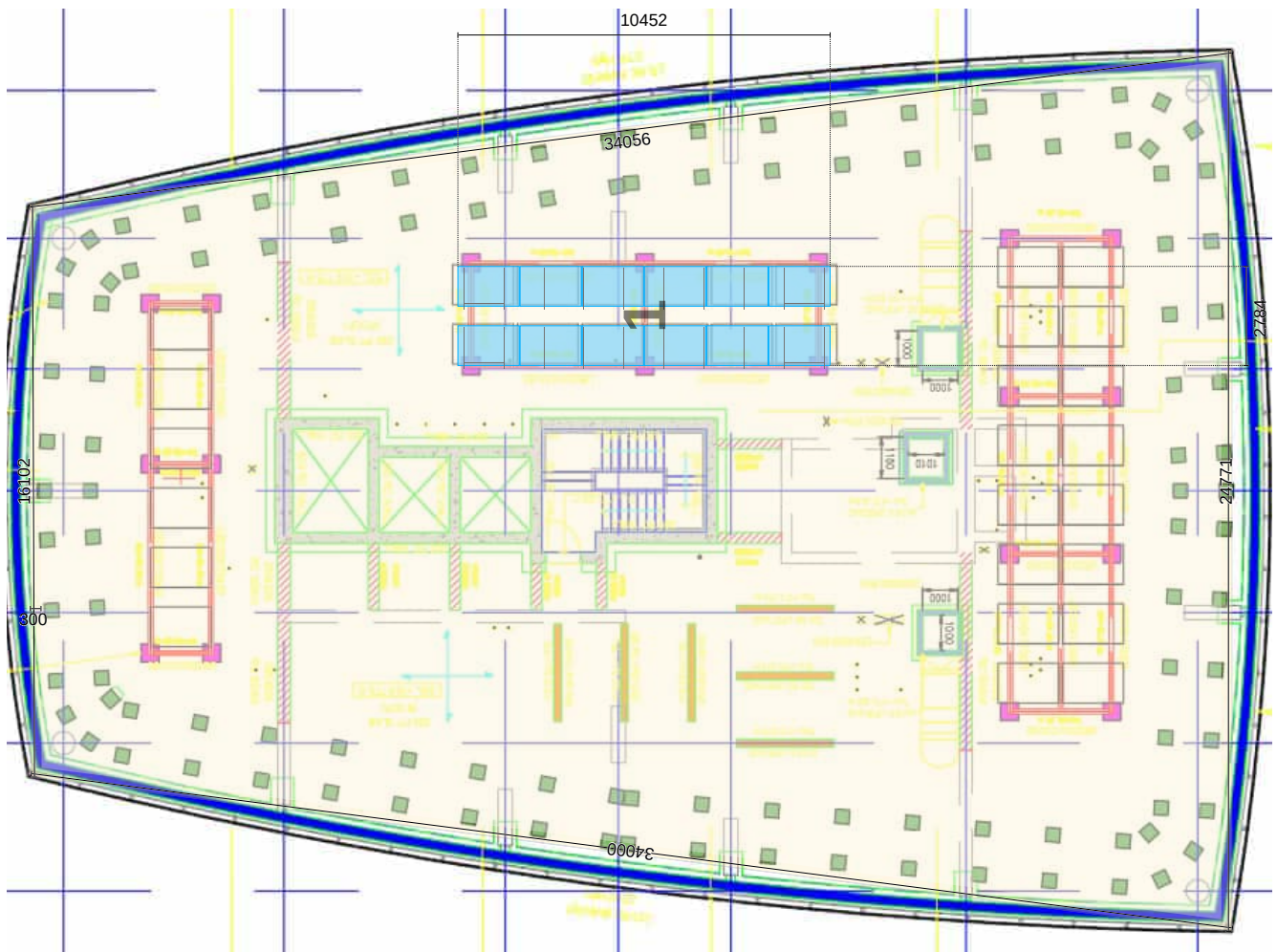
Static utilization clamp: 83%

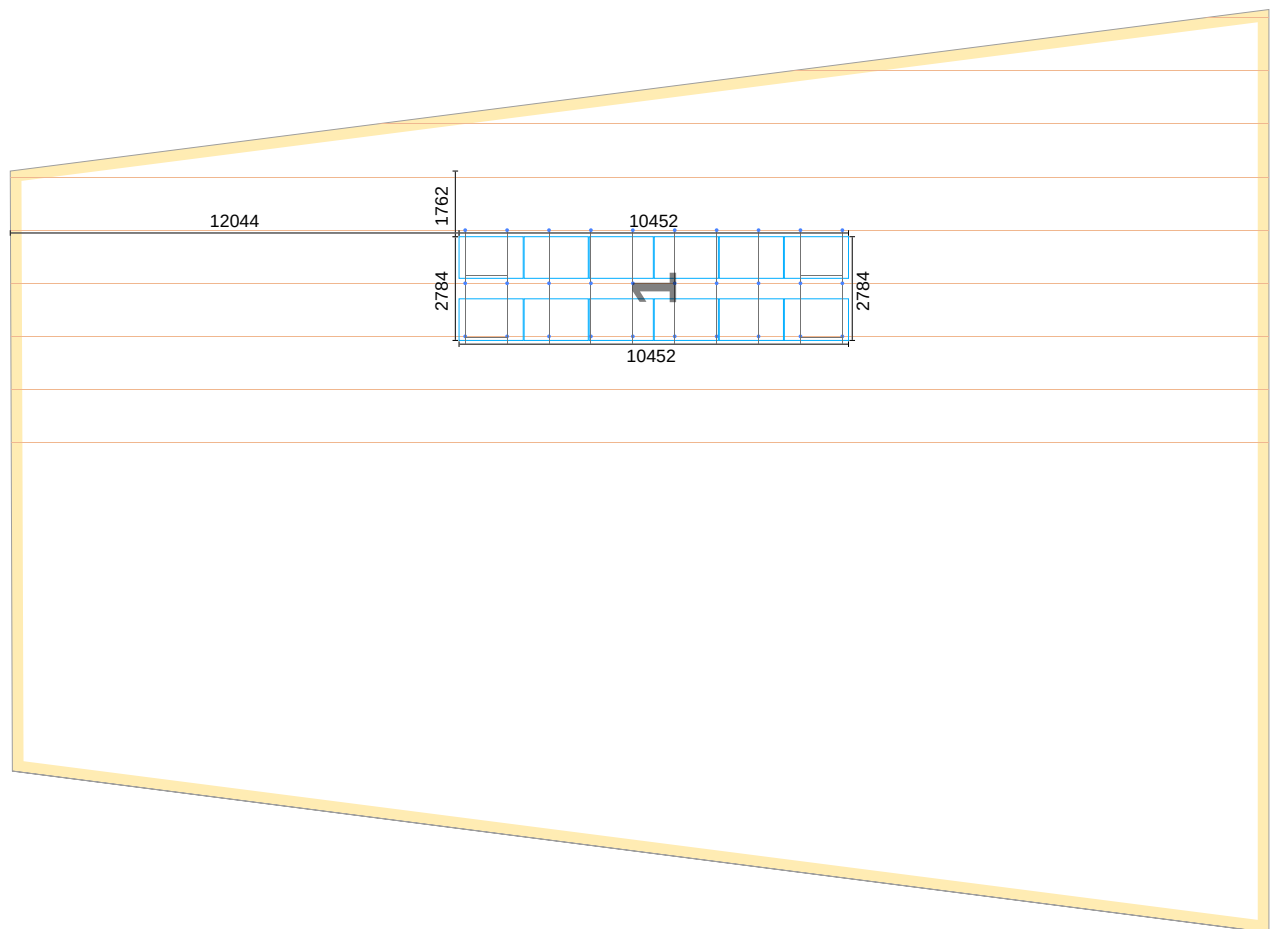
Static utilization base rail: 104%

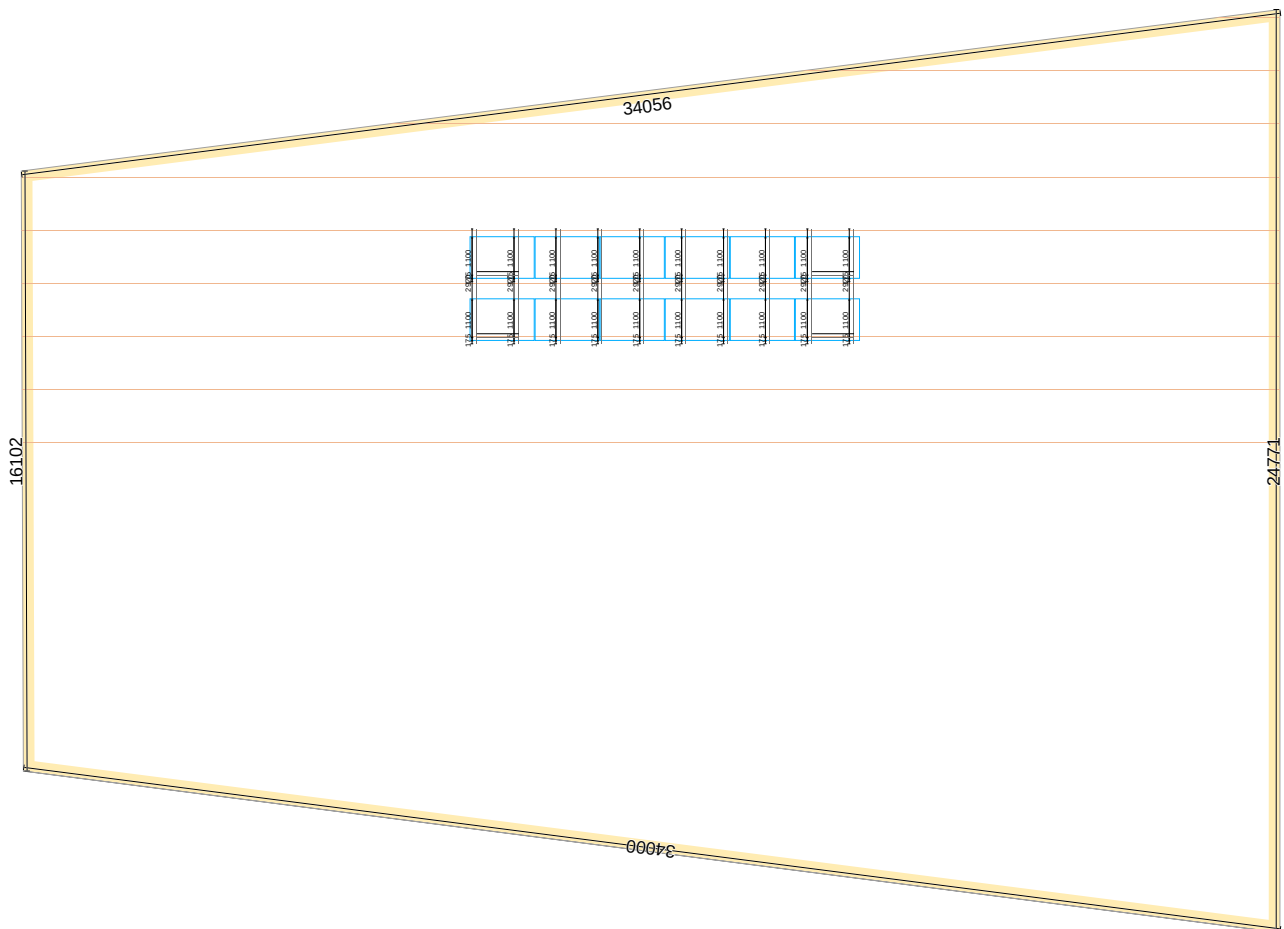
Static utilization TriSole: 108%

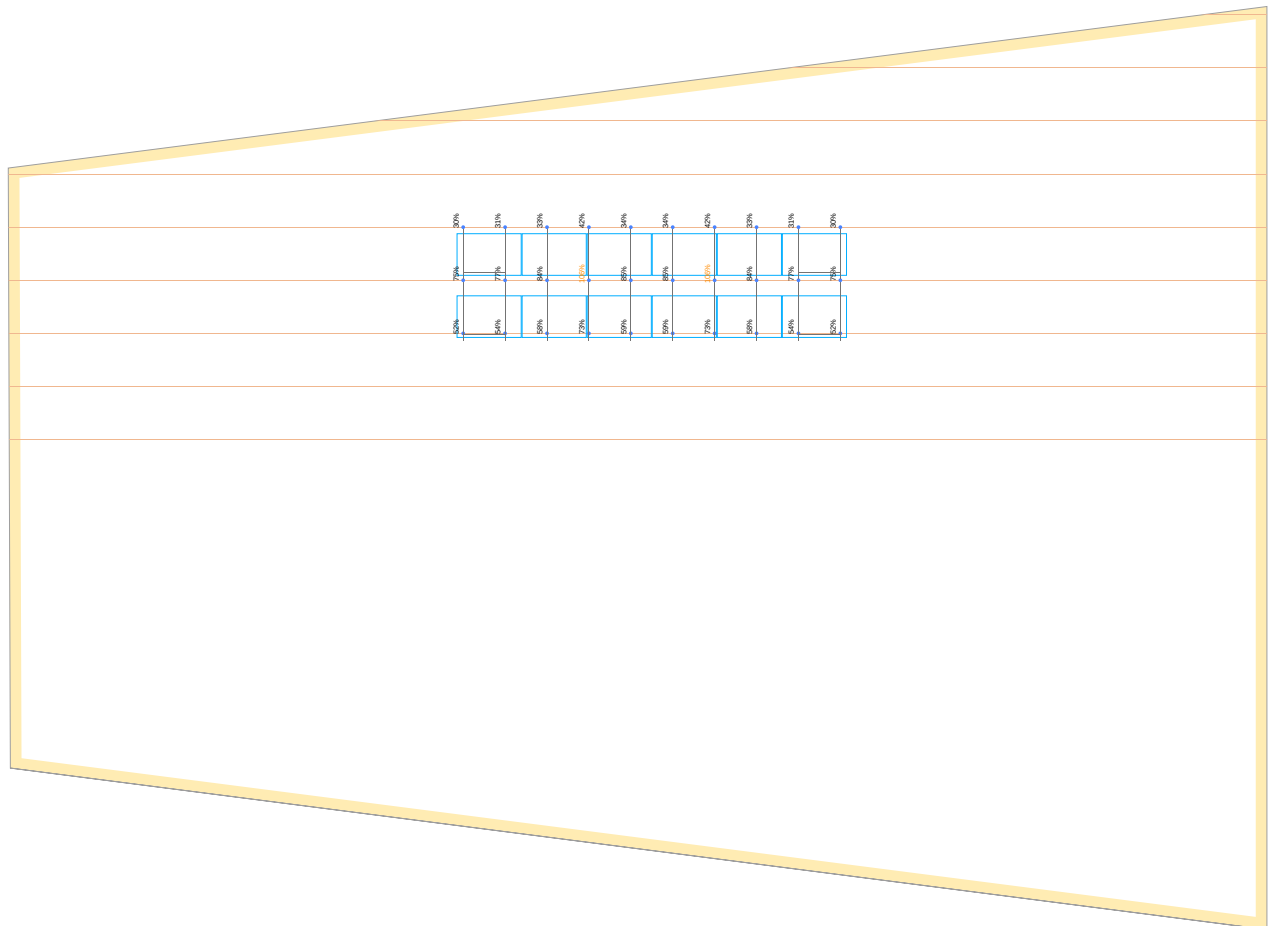
The predefined default values for input fields have to be compared with the conditions of the project. Necessary changes to adapt to local conditions must be carried out. The following relevant input fields contain their default value:

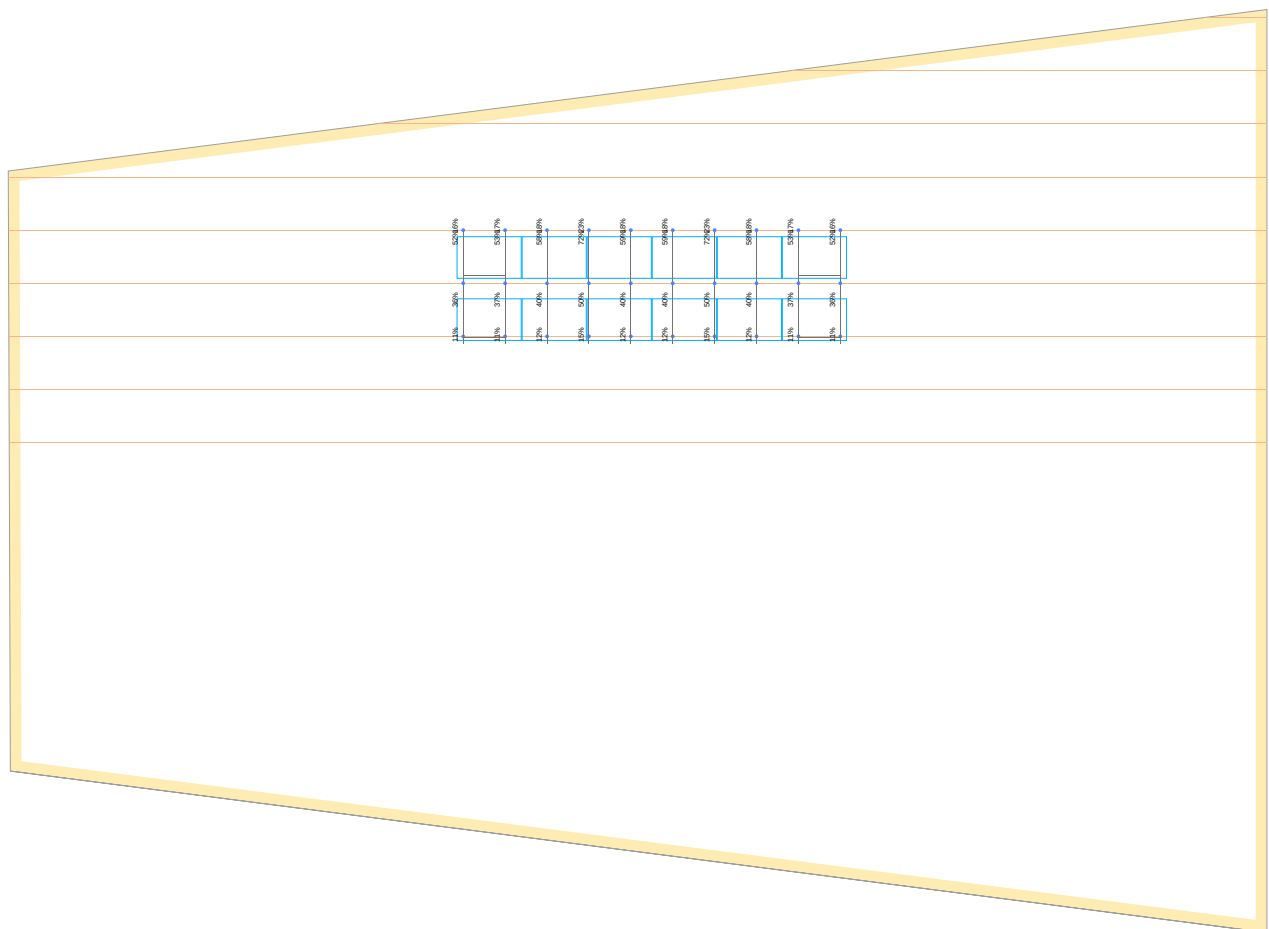
- Service life of PV system: 25 years
- Failure consequence class: 2
- Partial safety factor dead load (ballast): 1

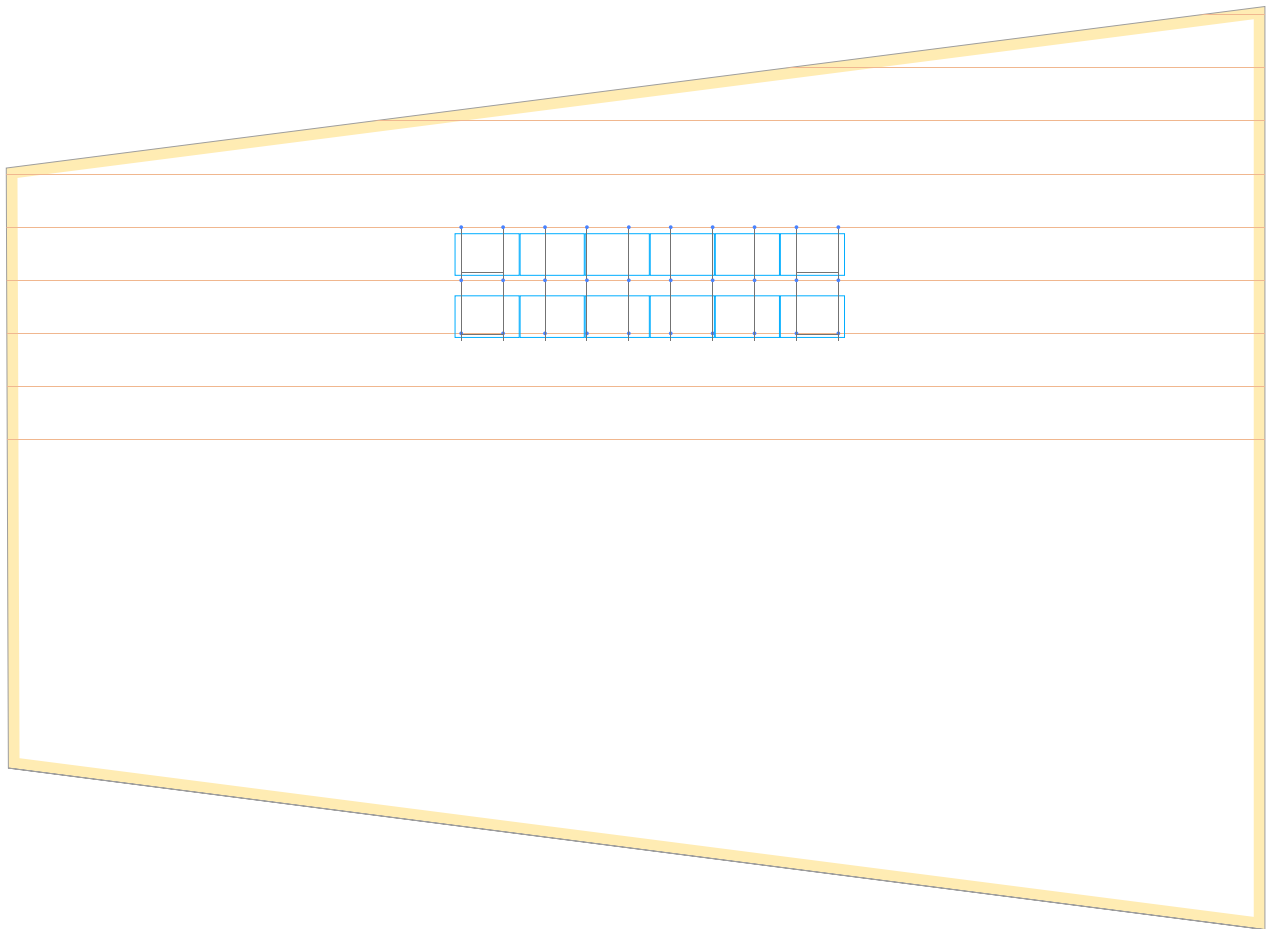












BILL OF MATERIAL

Article No.	Article	Quantity	Ordering Unit	Weight/Piece	Weight
R400532	VS+ Rail connector 50 x 37	8	1	0,193 kg	1,544 kg
R400552	TS+ Support 10°	20	1	0,099 kg	1,980 kg
R400570	VS+ Mounting rail 50 x 37 x 3600 mm	22	1	9,108 kg	200,376 kg
R420024	Bracket IFP M8/M10, set(1pc.)	70	1	0,090 kg	6,300 kg
R420081-BE	End clamp+ (black)	8	1	0,064 kg	0,512 kg
R420082-BE	Middle clamp+ (black)	20	1	0,063 kg	1,260 kg
R420083	Cross rail connector+	80	1	0,066 kg	5,280 kg
R420550	TS+ V-frame (SET)	20	1	1,456 kg	29,120 kg
R420600	TS+ L-Profile cross striving profile (SET)	4	1	0,488 kg	1,952 kg
R900001	Hexagon Nut w. serration M8	1	100	0,009 kg	0,900 kg
R900007	Hammerhead bolt M8 x 25	1	100	0,015 kg	1,500 kg
R920044	End Cap RIGHT / LEFT (grey) 50x37	14	1	0,015 kg	0,210 kg
					Total Weight: 250,934 kg
Third party parts		Quantity			
IFP Bracket		30			

The third party product(s) listed above, is (are) not (a) product of Renusol but, from third party Manufacturer(s) (Manufacturer). The PV-Configurator uses static properties of this fastener provided by this Manufacturer. The Manufacturer is responsible for the accurateness and correctness of the static values provided by him, Renusol does not assume any liability regarding the product of the Manufacturer and its static properties.

TOTAL BILL OF MATERIAL

Article No.	Article	Quantity	Ordering Unit	Weight/Piece	Weight
R400532	VS+ Rail connector 50 x 37	8	1	0,193 kg	1,544 kg
R400552	TS+ Support 10°	100	1	0,099 kg	9,900 kg
R400570	VS+ Mounting rail 50 x 37 x 3600 mm	66	1	9,108 kg	601,128 kg
R420024	Bracket IFP M8/M10, set(1pc.)	142	1	0,090 kg	12,780 kg
R420081-BE	End clamp+ (black)	64	1	0,064 kg	4,096 kg
R420082-BE	Middle clamp+ (black)	36	1	0,063 kg	2,268 kg
R420083	Cross rail connector+	720	1	0,066 kg	47,520 kg
R420550	TS+ V-frame (SET)	100	1	1,456 kg	145,600 kg
R420600	TS+ L-Profile cross striving profile (SET)	32	1	0,488 kg	15,616 kg
R900001	Hexagon Nut w. serration M8	1	100	0,009 kg	0,900 kg
R900007	Hammerhead bolt M8 x 25	1	100	0,015 kg	1,500 kg
R920044	End Cap RIGHT / LEFT (grey) 50x37	70	1	0,015 kg	1,050 kg
					Total Weight: 843,902 kg
Third party parts		Quantity			
IFP Bracket		102			

The third party product(s) listed above, is (are) not (a) product of Renusol but, from third party Manufacturer(s) (Manufacturer). The PV-Configurator uses static properties of this fastener provided by this Manufacturer. The Manufacturer is responsible for the accurateness and correctness of the static values provided by him, Renusol does not assume any liability regarding the product of the Manufacturer and its static properties.

IMPORTANT NOTES

The Project Report is a result of information provided by the Customer ("Customer" means customer of Renusol ordering this Project Report from the technical service of Renusol or user of the PV Configurator creating this Project Report himself). Renusol has neither verified the accurateness nor the completeness of the information and data provided by the Customer, which form the basis of this Project Report. It is the responsibility of the Customer to check and verify all input variables (including but not limited to those input variables which had been pre-set with proposed values) and assumptions used in the Project for their accuracy and correctness.

These verifications shall include but not be limited to the following aspects: (a) Wind and snow loads are proposed by the PV Configurator using respective wind and snow load maps. It should be verified that the local conditions do not deviate from the values used in the Configuration (e.g. location on mountain with higher snow load). (b) The Customer shall check and verify the Failure Consequence Class ("CC"). Typical residential and commercial buildings require CC 2. The Customer shall use higher CC in sensitive local environment (e.g. public building, high frequency of visitors, vicinity with potential for severe damages). (c) The service lifetime of the PV installation shall be verified by the Customer depending on the expectation of the ultimate user of the PV installation as well as the lifetime of the other components used in the installation. If the lifetime is expected beyond the service lifetime used for this Project Report, all relevant structural properties as well as input variables and assumptions shall be re-checked using the then expected service lifetime. (d) For flat roof systems: The Customer shall in any case measure and document the friction coefficient of the PV system on the location-specific roof cover it is placed on. The measurement shall be performed in various, at least three roof areas. (e) For flat roof systems: The PV Configurator proposes a ballast calculation. The ballast forms, together with the weight of the PV mounting system itself and the weight of the module, the total weight of the system. The actual ballast applied may in no case be lower than the values proposed by the PV Configurator. The ballast applied shall furthermore be documented. If the ballast applied cannot be precisely determined, a safety factor increasing the ballast is to be applied.

To the extent values of input variables measured or observed by the Customer differ from values used in this Project Report, the configuration of the PV installation shall be re-iterated using the respective correct values.

To the extent this Project Report includes a data concerning structural properties, it is the responsibility of the Customer to professionally verify (have verified) the structural data with regards to its compliance with the applicable local laws and properties of the location for which the Project Report has been prepared.

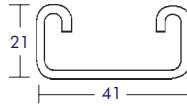
Furthermore the Terms of Use of the Renusol PV Configurator (<https://www.pv-configurator.com/pages/terms>) and the General Terms and Conditions (https://www.renusol.com/files/content/Downloads/Rechtliche%20Dokumente/Renusol_AGB_EN_110406.pdf) apply. The General Installation Guidelines of Renusol as well as the Installation Manuals and Data Sheets of the respective Renusol products, have likewise to be complied to.



Renusol Europe GmbH
Piccoloministraße 2, 51063 Köln, Germany
T +49 221 788707-0
F +49 221 788707-99
info@renusol.com
www.renusol.com

Shallow Channel

Ref.	Length	Finish
UC4121/3	3m	Galvanized to BS EN10346
UC4121/6	6m	Galvanized to BS EN10346
GAUC4121/3	3m	Hot Dipped to BS EN ISO 1461
GAUC4121/6	6m	Hot Dipped to BS EN ISO 1461

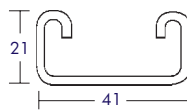


Span m	0.50	0.75	1.00	1.50	2.00	2.50	3.00
Deflection at load*mm	1.70	3.90	6.90	15.60	27.70	43.30	62.30
Safe UDL **kg	259	172	128	84	61	47	38

* Including weight of channel.
** Excluding weight of channel.

Slotted Shallow Channel

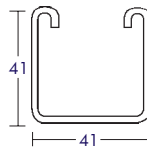
Ref.	Length	Finish
UC412IS/3	3m	Galvanized to BS EN10346
UC412IS/6	6m	Galvanized to BS EN10346
GAUC412IS/3	3m	Hot Dipped to BS EN ISO 1461
GAUC412IS/6	6m	Hot Dipped to BS EN ISO 1461



Span m	0.50	0.75	1.00	1.50	2.00	2.50	3.00
Deflection at load*mm	1.90	4.30	7.70	17.30	30.70	48.00	69.10
Safe UDL **kg	238	158	118	77	56	44	35

Deep Channel

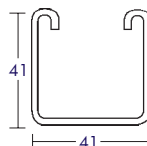
Ref.	Length	Finish
UC4141/3	3m	Galvanized to BS EN10346
UC4141/6	6m	Galvanized to BS EN10346
GAUC4141/3	3m	Hot Dipped to BS EN ISO 1461
GAUC4141/6	6m	Hot Dipped to BS EN ISO 1461



Span m	0.50	0.75	1.00	1.50	2.00	2.50	3.00
Deflection at load*mm	0.90	2.10	3.70	8.20	14.60	22.80	32.90
Safe UDL **kg	837	557	416	275	204	161	132

Slotted Deep Channel

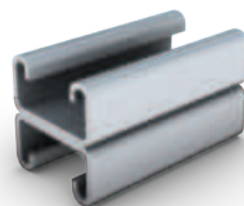
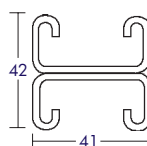
Ref.	Length	Finish
UC414IS/3	3m	Galvanized to BS EN10346
UC414IS/6	6m	Galvanized to BS EN10346
GAUC414IS/3	3m	Hot Dipped to BS EN ISO 1461
GAUC414IS/6	6m	Hot Dipped to BS EN ISO 1461



Span m	0.50	0.75	1.00	1.50	2.00	2.50	3.00
Deflection at load*mm	1.00	2.20	4.00	8.90	15.90	24.80	35.70
Safe UDL **kg	776	516	386	255	189	149	122

Back To Back Shallow Channel

Ref.	Length	Finish
UC4142/3	3m	Galvanized to BS EN10346
UC4142/6	6m	Galvanized to BS EN10346
GAUC4142/3	3m	Hot Dipped to BS EN ISO 1461
GAUC4142/6	6m	Hot Dipped to BS EN ISO 1461



Span m	0.50	0.75	1.00	1.50	2.00	2.50	3.00
Deflection at load*mm	1.00	2.30	4.10	9.20	16.40	25.60	36.80
Safe UDL **kg	736	489	365	240	177	138	112

(Solid Channel in stock, slotted on request)