



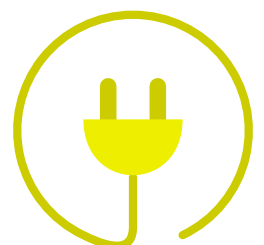
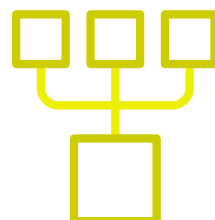
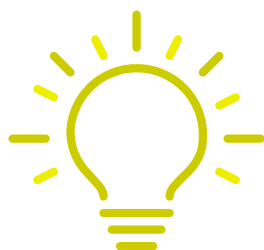
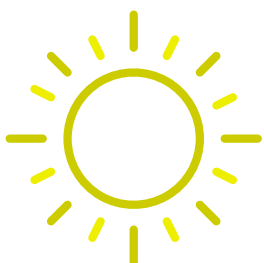
## David Evans

Phone: 7745373467

Address: 16 OLD STREET STOWMARKET , IP143NX

Date Created: 2nd December 2022

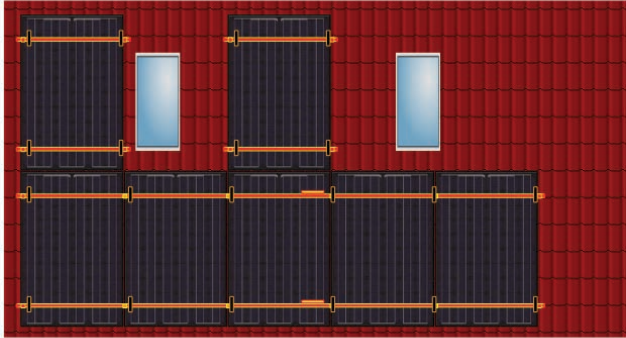
Designer: liam minter



# Roof Layout

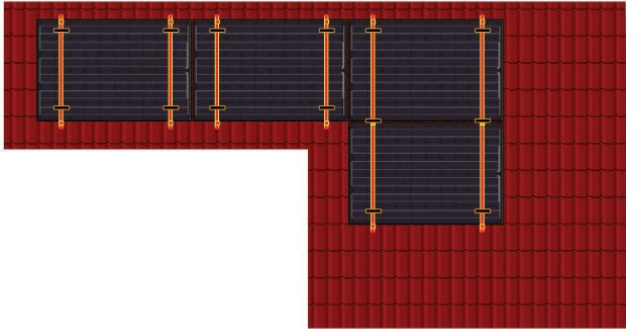
## Garage West

---

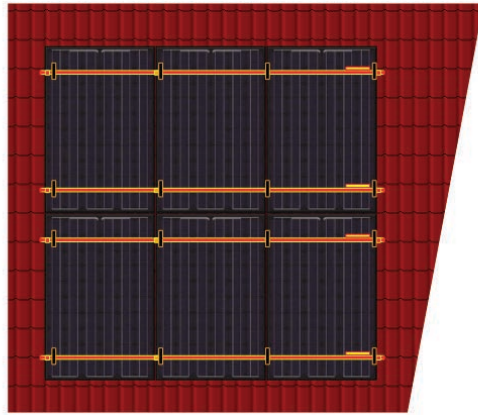


## Garage East











---



# Main South



# Component list

Item	Quantity
 *HIB* Longi HiMo5 400W All Black Mono solar panel	17
 Sofar HYD 5000 hybrid inverter	1
 **NET** Emlite Bi-directional Meter ECA2.nv	1
 Label sheet	1
 iBoost +	1
 Pylon Long DC Cable Pack	1
 Black Bird Deterrent 30m Solar Panel Bird Exclusion Kit	1
 AC isolator - KN 25A 3-pole	2
 Pylon 3.5kwh US3000 C Li-ion Battery	2
 IMO DC isolator 16A 2p 1string	2
Pair of MC4 connectors	4
50m reel of 4mm <sup>2</sup> solar cable	1
Fastensol end clamp (30mm black)	32
Fastensol mid clamp (30mm black)	18
Fastensol black end cap	32

Fastensol portrait concrete tile roof hook	36
Fastensol rail splice	6
Fastensol silver rail 3300mm	15
Fastensol landscape concrete tile roof hook	14



# Inverter checks

## Sofar HYD 5000 hybrid

### Panels

PV power **6800** Rated AC output **5000**

Input 1: 13 \*HIB\* Longi HiMo5 400W All Black Mono solar panels in 1 strings

### Panels

### Inverter

PV power	<b>5200 W</b>		
Open circuit voltage at -10° C	<b>525 V</b>	Max DC voltage	<b>600 V</b>
V <sub>mpp</sub> at 40° C	<b>389 V</b>	V <sub>mpp</sub> lower limit	<b>90 V</b>
V <sub>mpp</sub> at -10° C	<b>444 V</b>	V <sub>mpp</sub> upper limit	<b>580 V</b>
I <sub>mpp</sub> at 40° C	<b>13 A</b>	Max DC input current	<b>15 A</b>

#### Max voltage

The open circuit voltage of the solar panels never exceeds the voltage limit of the inverter.



#### Max power point range

The maximum power point voltage of the solar panels is always above the lower limit of the inverter MPPT tracker. The maximum power point voltage of the solar panels is always below the upper limit of the inverter MPPT tracker.



### Max Current

The maximum power point current of the solar panels is always below the maximum current for the inverter MPPT tracker.



Input 2: 4 \*HIB\* Longi HiMo5 400W All Black Mono solar panels in 1 strings

Panels		Inverter	
PV power	<b>1600 W</b>		
Open circuit voltage at -10° C	<b>161 V</b>	Max DC voltage	<b>600 V</b>
V <sub>mpp</sub> at 40° C	<b>120 V</b>	V <sub>mpp</sub> lower limit	<b>90 V</b>
V <sub>mpp</sub> at -10° C	<b>136 V</b>	V <sub>mpp</sub> upper limit	<b>580 V</b>
I <sub>mpp</sub> at 40° C	<b>13 A</b>	Max DC input current	<b>15 A</b>

### Max voltage

The open circuit voltage of the solar panels never exceeds the voltage limit of the inverter.



### Max power point range

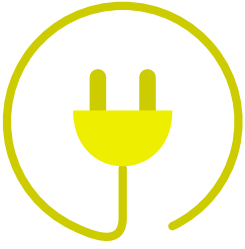
The maximum power point voltage of the solar panels is always above the lower limit of the inverter MPPT tracker. The maximum power point voltage of the solar panels is always below the upper limit of the inverter MPPT tracker.



### Max Current

The maximum power point current of the solar panels is always below the maximum current for the inverter MPPT tracker.





# Electrical

## Sofar HYD 5000 hybrid



### AC Isolator

A AC isolator - KN 25A 3-pole has been specified for this input

#### Current

The rated isolator current (25A) is greater than the rated inverter current (22.8A)



#### Phases

The isolator is suitable for use on a single phase inverter.



## Input 1



### DC Isolator

A IMO DC isolator 16A 2p 1string has been specified for this input

#### Current

The isolator is rated for a current of 16A, which is more than the expected maximum current of 14A.





### Voltage

At 16A the isolator is rated for a voltage of 600V, which is more than the expected maximum voltage of 525V.



## Cable

10m of 4mm<sup>2</sup> solar cable has been specified

### Voltage drop

Voltage drop at maximum power point at 40°C will be around **1.10 V (0.28 percent)**



---

## Input 2



## DC Isolator

A IMO DC isolator 16A 2p 1string has been specified for this input

### Current

The isolator is rated for a current of 16A, which is more than the expected maximum current of 14A.



### Voltage

At 16A the isolator is rated for a voltage of 600V, which is more than the expected maximum voltage of 161V.





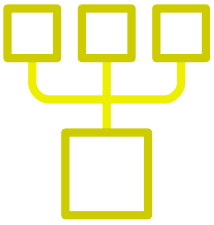
## Cable

10m of 4mm<sup>2</sup> solar cable has been specified

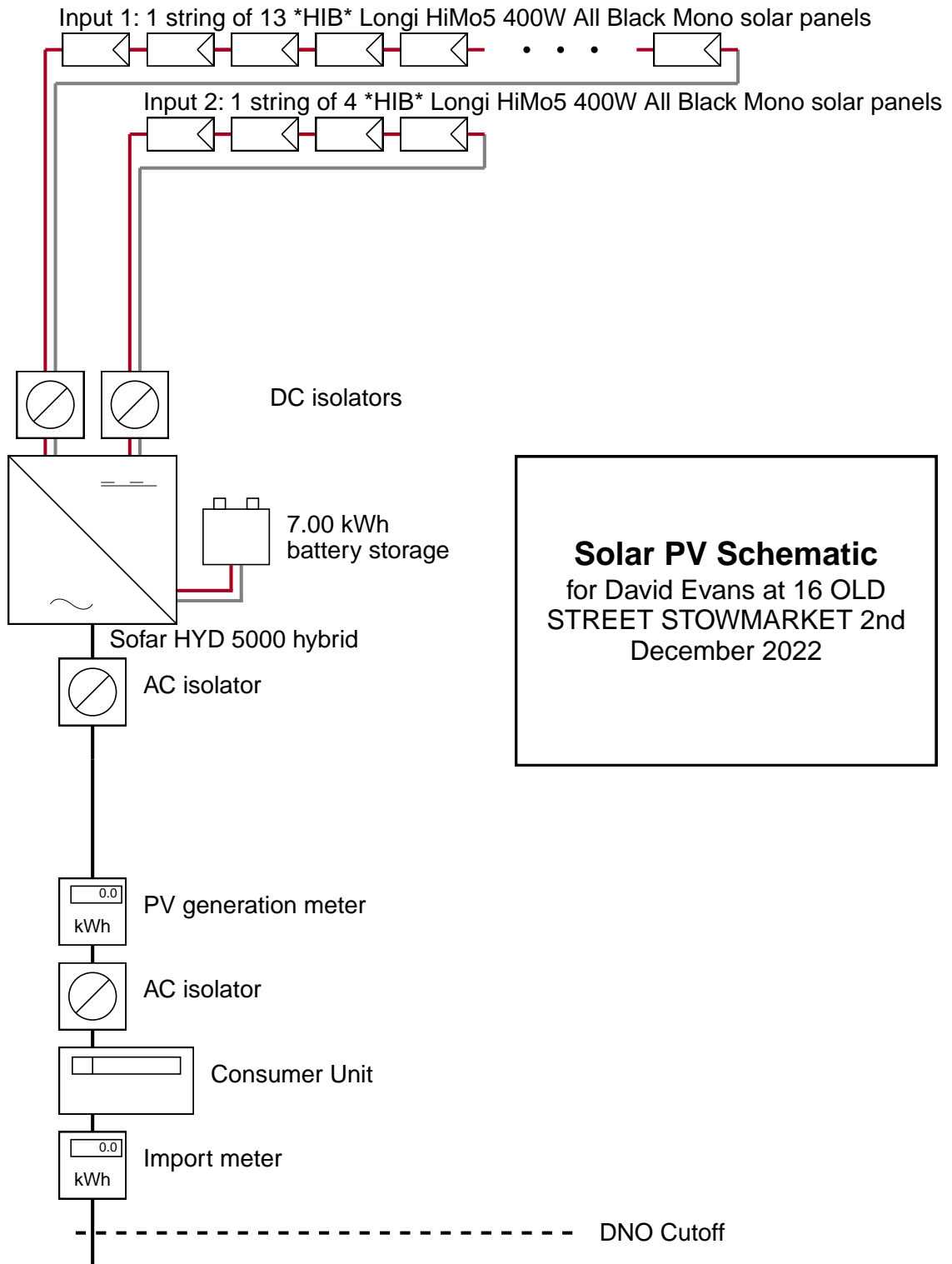
### Voltage drop

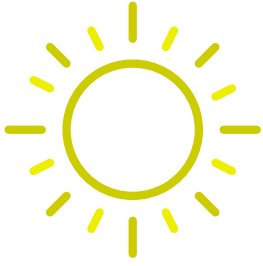
Voltage drop at maximum power point at 40°C will be around  
**1.10 V (0.92 percent)**





# Schematic diagram





# Performance Estimate

## Site details

---

**Client**

David Evans

**Address**

16 OLD STREET STOWMARKET

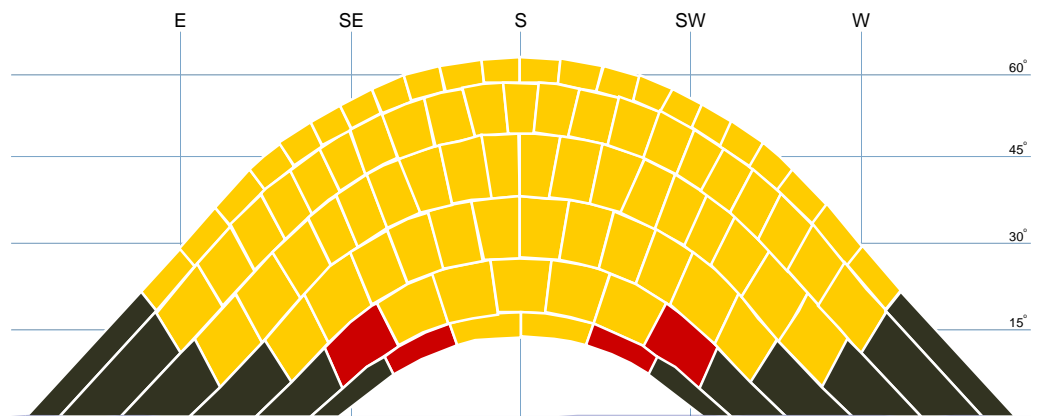
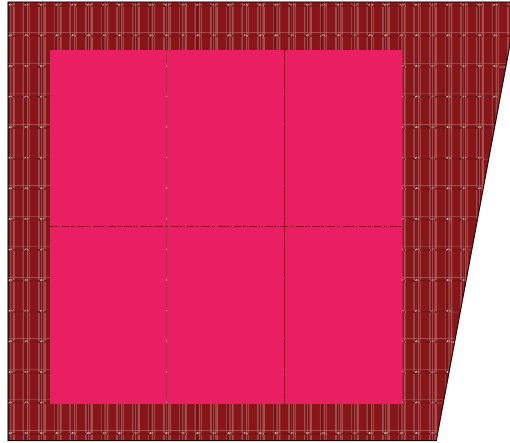
---

The sunpath diagram shows the arcs of the sky that the sun passes through at different times of the day and year as yellow blocks. The shaded area indicates the horizon as seen from the location of the solar array. Where objects on the horizon are within 10m of the array, an added semi-circle is drawn to represent the increased shading. Blocks of the sky that are shaded by objects on the horizon are coloured red, and a shading factor is calculated from the number of red blocks. The performance of the solar array is calculated by multiplying the size of the array (kWp) by the shading factor (sf) and a site correction factor (kk), taken from tables which take account of the geographical location, orientation and inclination of the array.

# Inverter 1

Sofar HYD 5000 hybrid

## Input 1



### A. Installation data

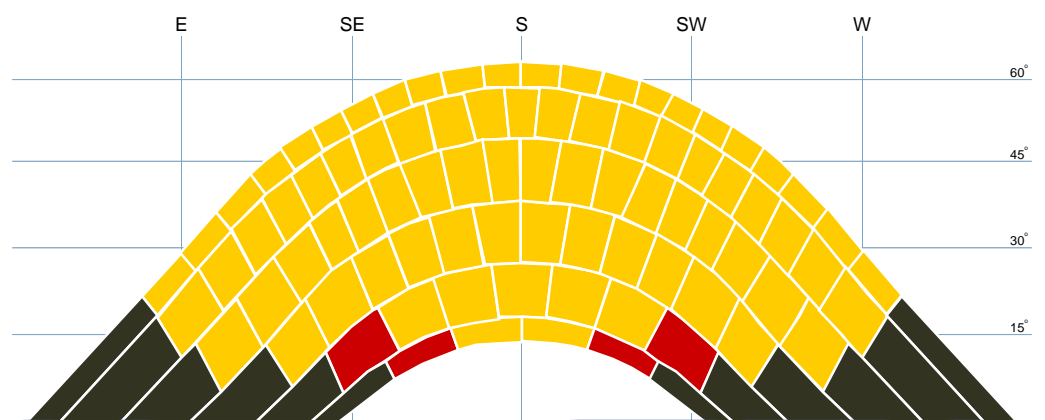
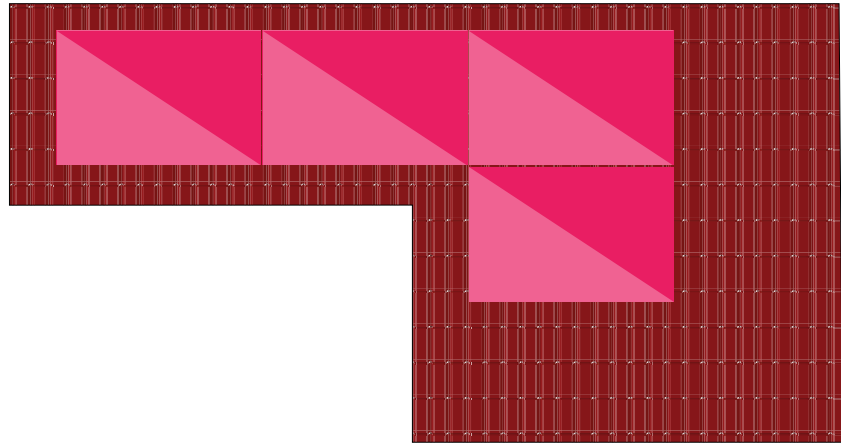
Installed capacity of PV system - kWp (stc)	5.200	kWp
Orientation of the PV system - degrees from South	30	°
Inclination of system - degrees from horizontal	30	°
Postcode region	12	



### B. Performance calculations

kWh/kWp (Kk)	930	kWh/kWp
Shade factor (SF)	0.96	
Estimated output (kWp x Kk x SF)	4643	kWh

## Input 2



### A. Installation data

Installed capacity of PV system - kWp (stc)	1.600	kWp
Orientation of the PV system - degrees from South	-58	°
Inclination of system - degrees from horizontal	30	°
Postcode region	12	



### B. Performance calculations

kWh/kWp (Kk)	867	kWh/kWp
Shade factor (SF)	0.96	
Estimated output (kWp x Kk x SF)	1332	kWh

# Performance Summary

<b>A. Installation data</b>		
Installed capacity of PV system - kWp (stc)	6.800000000000000	kWp
Orientation of the PV system - degrees from South	See individual inputs	
Inclination of system - degrees from horizontal	See individual inputs	
Postcode region	12	
<b>B. Performance calculations</b>		
kWh/kWp (Kk)	See individual inputs	
Shade factor (SF)	See individual inputs	
Estimated output (kWp x Kk x SF)	5975	kWh

**Important Note:** The performance of solar PV systems is impossible to predict with certainty due to the variability in the amount of solar radiation (sunlight) from location to location and from year to year. This estimate is based upon the standard MCS procedure is given as guidance only for the first year of generation. It should not be considered as a guarantee of performance.

Shading will be present on your system that will reduce its output to the factor stated. This factor was calculated using the MCS shading methodology and we believe that this will yield results within 10% of the actual energy estimate stated for most systems.

This system performance calculation has been undertaken using estimated values for array orientation, inclination or shading. Actual performance may be significantly lower or higher if the characteristics of the installed system vary from the estimated values.



# Equipment and Services

## Equipment Costs

Package	£10,213.00
Battery	£5,354.00
Bird Proofing	£600.00
lboost	£550.00
<b>Total equipment cost</b>	<b>£16,717.00</b>

## Services Costs

<b>Total services cost</b>	<b>£0.00</b>
----------------------------	--------------

## Totals

<b>Total before tax</b>	<b>£16,717.00</b>
<b>VAT at undefined%</b>	<b>£0.00</b>
<b>Total including tax</b>	<b>£16,717.00</b>