	Title of Document	Technical Submittal Cover
l Borouah I		Sheet
Engineering Services	Site Forms	Page 1 of 3
Engineering Services	Issue Date: 10th April 2019	Number: IMS-SF-039 – Version 2/1

Project Name:	Bloomsbury Quarter		
Tech Sub No:	BES-E-035	Rev:	C1
		Issue Date:	22/07/2024
Issued to:	Structure I one	Approval Date:	+ 14 Days
Description of Equipment:	Photovoltaic Panel & System kWp Installed - 16.43kWp 31No. 530W Panels 2No. Inverters 2No. Generation Meters		
Locations where Equipment is to be used:	VHS Roof / 21SR Roof		
Manufacturer / Supplier:	Williams Renewables - Supply & Install Panels - Longi Inverter - Solis Framework - Van Der Valk Generation Meters - Emlite		
Specification Clause References and Deviations:	WBS-ZZ-XX-RP-J-00005		
Drawing Details:	Williams Renewables Drawings Attached		
Enclosures / Samples Attached:	N/A		
Additional Information:	Structural Engineer to confirm Weight Loading	is feasible	



### 19-July-2024

8931-PV-Bloomsbury Quarter, London PV Technical Submission

## Bloomsbury Quarter London Photovoltaic Technical Submission





## <u>Appendix 2</u>



## Hi-MO KG Explorer

# LR5-66HTH **520~540M**

- Suitable for Distribution Market
- Simple design embodies modern style
- Better energy generation performance
- High-quality module guarantees long-term reliability



15-year Warranty for Materials and Processing



25-year Warranty for Extra Linear Power Output

#### Complete System and Product Certifications

IEC 61215, IEC 61730, UL 61730 ISO9001:2015: ISO Quality Management System ISO14001: 2015: ISO Environment Management System ISO45001: 2018: Occupational Health and Safety IEC62941: Guideline for module design qualification and type approval





### Hi-MO K6 Explorer

### LR5-66HTH 520~540M



Module Type	LR5-66HTH-520M	LR5-66HTH-525M	LR5-66HTH-530M	LR5-66HTH-535M	LR5-66HTH-540M	
Testing Condition	STC NOCT					
Maximum Power (Pmax/W)	520 388.6	525 392.3	530 396.0	535 399.8	540 403.5	
Open Circuit Voltage (Voc/V)	48.27 45.32	48.42 45.46	48.57 45.60	48.72 45.75	48.87 45.89	
Short Circuit Current (Isc/A)	13.84 11.18	13.93 11.25	14.00 11.31	14.07 11.37	14.15 11.43	
/oltage at Maximum Power (Vmp/V)	39.91 36.42	40.06 36.55	40.22 36.70	40.38 36.85	40.53 36.99	
Current at Maximum Power (Imp/A)	13.03 10.68	13.11 10.74	13.18 10.80	13.25 10.86	13.33 10.92	
Module Efficiency(%)	21.9	22.1	22.3	22.5	22.7	

#### **Operating Parameters**

Operational Temperature	-40°C ~ +85°C	
Power Output Tolerance	0~3%	
Maximum System Voltage	DC1500V (IEC/UL)	
Maximum Series Fuse Rating	25A	
Nominal Operating Cell Temperature	45±2℃	
Protection Class	Class II	
Fire Rating	UL type 1 or 2	
	IEC Class C	

#### **Mechanical Loading**

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm Hailstone at the speed of 23m/s

#### **Temperature Ratings (STC)**

Temperature Coefficient of Isc	+0.050%/°C	
Temperature Coefficient of Voc	-0.230%/°C	
Temperature Coefficient of Pmax	-0.290%/°C	



No.8369 Shangyuan Road, Xi'an Economic And Technological Development Zone, Xi'an, Shaanxi, China. Web: www.longi.com

Specifications included in this datasheet are subject to change without notice. LONGi reserves the right of final interpretation. (20231208V19) DG



## Appendix 4





## Appendix 5







#### ValkPro+

Installing solar panels on buildings of any kind is a logical development, as the roof offers free space and often a surface large enough for a profitable additional function. Van der Valk's solar mounting system for flat roofs was developed while taking roof and wind loads into account and, consequently, complies with the most stringent safety requirements.

Our range for flat roof is characterised by great efficiency and ease of assembly. The three south-oriented basic systems described below enable optimal utilization and maximum energy yield for each flat roof.

#### **Common features**

#### of the ValkPro+ 10° Landscape, ValkPro+ 15° Landscape and the ValkPro+ 10° Portrait:

- ✓ Speed of mounting: 4-5 minutes per panel (east-west or south arrangements)
- $\checkmark$  Metal connectors (no plastic), which prepares the assembly for earthing and lightning protection
- ✓ Standard format applicable up to 25 m height (higher options upon request)
- ✓ Minimum number of articles required
- $\checkmark$  Low ballast, supported by national standards and wind tunnel testing
- ✓ Also suitable for 2 m and 'high power' panels

#### Mounting: south







#### ValkPro+ L10

#### Unique to this system:

- ✓ Landscape mounting
- ✓ 10° tilt angle
- ✓ Standard pitch size south: 1500 mm
- ✓ Standard pitch size east-west: 2300 mm

#### ValkPro+ L15\*

#### Unique to this system:

- ✓ Landscape mounting
- ✓ 15° tilt angle
- ✓ Standard pitch size south: 1500 mm
- ✓ Standard pitch size east-west: 2300 mm

#### ValkPro+ P10\*

#### Unique to this system:

- ✓ Portrait mounting
- ✓ 10° tilt angle
- ✓ Standard pitch size south: 2300 mm
- ✓ Standard pitch size east-west: 3500 mm



Mounting: east - west





\*Available from Q3 - 2018

#### **Foundations Flat roof Systems**

The **ValkPro+ L10°**, the **ValkPro+ L15°** and the **ValkPro+ P10°** utilize various foundations. For example, the systems can be attached using rubber tile carriers, mass blocks or consoles.

**Rubber tile carriers** offer ease of transport and installation due to their low weight and raise the system for maximum drainage.

**Mass blocks** have the advantage that they concurrently provide a significant part of the ballast. They also raise the system even more, which ensures easier mounting for example in a field setting.

**Consoles** provide a fixed mounting to the roof in areas with very high wind loads or to roofs that can't tolerate much weight. The special design guarantees watertight sealing.

	ValkPro+ 10° Landscape	ValkPro+ 15° Landscape	ValkPro+ 10° Portrait
Rubber tile carriers	$\checkmark$	$\checkmark$	$\checkmark$
Mass blocks	$\checkmark$	$\checkmark$	$\checkmark$
Consoles	$\checkmark$	$\checkmark$	$\checkmark$

This specifies which foundation can be applied.

#### **Glass panels**

As well as the standard solar panels with a frame, solar panels without a frame can also be mounted using glass clamps.

#### **Free Software**

With the ValkPVplanner, our free software, a complete calculation, including a list of articles and project-specific installation manual, can be realised in three simple steps.

#### WHY VAN DER VALK SOLAR SYSTEMS?

- Innovative systems developed in compliance with applicable worldwide standards
- Fast and reliable deliveries thanks to modern machinery and large stocks
- System supplier since 1963
- Free use of software for project design and project calculation
- All systems applicable to any type of roof or surface
- Quick assembly thanks to premounting of essential components
- Great flexibility in solutions
- Various systems also available as ready-to-use kits



The mounting systems of Van der Valk Solar Systems are delivered and installed by an extensive network of dealers and installers. We would be happy to help you find your closest point of contact.

For more information (i.e. datasheets, pricelists and manuals) go to the downloads on our website.

### Van der Valk Solar Systems develops and produces solar mounting systems for:









Flat roofs Open fields





PLEASE CONTACT VAN DER VALK SOLAR SYSTEMS OR YOUR DEALER / INSTALLER FOR FULL INFORMATION.

CONTACT DETAILS VALK SOLAR SYSTEMS | DEVELOPER AND PRODUCER OF SOLAR MOUNTING SYSTEMS

#### The Netherlands

Zwartendijk 73, 2681 LP Monster The Netherlands, T +31 (0)174 212223 info@valksolarsystems.nl www.valksolarsystems.nl

#### United Kingdom + Ireland

Innovation House, Discovery Park, Innovation Way, Sandwich CT13 9FF United Kingdom T +44 (0)1304 897658, info@valksolarsystems.co.uk www.valksolarsystems.co.uk International Zwartendijk 73, 2681 LP Monster The Netherlands, T +31 (0)174 212223 info@valksolarsystems.com www.valksolarsystems.com

V04-2018



## Appendix 6





The emlite EMP1 Three phase metering range offers high quality accurate meters that are suitable for direct connected domestic, commercial, Solar PV and light industrial applications.

#### Features -

- Fully MID approved
- 4 quadrant power measurement (Import and Export, Active and Reactive Energy)
- Optional Power Quality Information - Volts, Current, Power etc.
- Optional pulsed outputs
- Optical communications port
- Solid brass terminals



The EMP1.az and EMP1.av are the entry models of the emlite three phase metering range. They are suitable for a host of different applications where basic consumption or generation metering is required. The EMP1.az and EMP1.av variants covered in this information sheet are of solid high quality construction and benefit from features normally found in more expensive metering.

- Accuracy Class A or B (MID) [active energy] and Cl 2 [reactive energy\*]
- 4 quadrant energy measurement
- Optional power quality information\*
- Configurable pulsed outputs\*\*
- Multiple terminal cover options (Short, Extended( Standard), Extended plus)
- Clear easy to read 8 digit LCD with specific symbols for different quantities.
- Solid Brass terminals
- Optional finger guard for main terminals

NB: \* denotes standard setting, \*\* pulse set for kWh import as standard



Supplied by: J W Smart Meters Ltd, 1 Church Lane, Normanton, West Yorkshire, WF6 2DE. Email: sales@smartelectricitymeters.co.uk Tel: 01924 891049 Fax: 01924 220846

#### **EMP1.AV** only

#### **Pulsed Output**

An opto-isolated pulse output can provide data for collection by an energy management system or AMR data logger. These pulses are output via the meter's auxiliary terminals.

The output conforms to IEC 62053-31.



#### **Technical Data - Meter**

Electrical			
	Voltage	Nominal voltage	3 x 230v
		Voltage withstand	400V continuous
	Frequency	Nominal frequency	50Hz, variation
	Current	Basic current (Iref)	5, 10, 15 and 20
		Maximum (Imax)	100A
Metrology	Accuracy	Active energy	Class B, to EN 5
		Reactive energy	Class 2, to IEC 6
Environmental		Temperature Range	-25°C to +55°C
		Ingress protection	IP54, to BS EN 6
Physical		Terminal arrangement	DIN43857-Part 2
			centres of 150±

Main Terminal size **Terminal Construction** 

sly ± 5% 0\* 0470 1-3\* 62053-23 60529 2, fixing 1mm 8.2mmø ± 0.2 Solid brass

#### Dimensions









NB \* denotes standard setting

Supplied by: J W Smart Meters Ltd, 1 Church Lane, Normanton, West Yorkshire, WF6 2DE. Email: sales@smartelectricitymeters.co.uk Tel: 01924 891049 Fax: 01924 220846