Clenergy
Innovating renewable energy

PV-ezRack PostMount 1-A with ECO Rail

Code-Compliant Planning and Installation Guide V2.0
Complying with AS/NZS1170.2：2011 ADMT 4-2016

Introduction

1. Introduction

Clenergy PV-ezRack PostMount 1-A is a ground mounting system suitable for large scale commercial and utility scale installations. PV-ezRack PostMount 1-A has been developed to fit any PV module in the outdoors and uneven ground areas. PV-ezRack PostMount 1-A have good compatibility for the different region via the angle adjustment (10°~60°). Using high quality engineered components PostMount 1-A saves developers and installers, time and money when delivering large scale projects.

Please review this manual thoroughly before installing PostMount 1-A. This manual provides the following contents:
(1) Installation planning;
(2) Installation instructions.

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The PV-ezRack PostMount 1-A parts, when installed in accordance with this guide, will be structurally adequate and meet the AS/NZS1170.2:2011 Admt 4-2016 standard. During installation, and especially when working on the ground, please comply with the appropriate occupational health and safety regulations. Please also pay attention to other relevant regulations in your local region. Please check that you are using the latest version of the installation manual by contacting Clenergy via email on www.clenergy.com.cn.or contacting your local distributor.

The installer is solely responsible for:

- Complying with all applicable local or national building codes, including any updates that may supersede this manual;
- Ensuring that PV-ezRack and other products are appropriate for the particular installation and the installation environment;
- Using only PV-ezRack parts and installer supplied parts as specified by PV-ezRack project plan (substitution of parts may void the warranty and invalidate the letter of certification);
- Recycling: Recycle: according to the local relative statute;
- Ensuring that there are no less than two professionals working on panel installation;
- Ensuring the installation of related electrical equipment is performed by licenced electricians;
- Ensuring safe installation of all electrical aspects of the PV array, including providing adequate earth bonding of the PV array and PV-ezRack® PostMount components as required in AS/NZS 5033-2014 ADMT 2 2-2018.

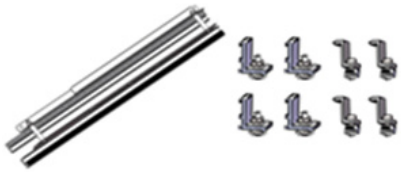
Unit 1, 10 Duerdin St, Clayton VIC 3168, Australia
Tel: +61 3 9239 8088 Fax: +61 3 9239 8024
E-mail: tech@clenergy.com.au www.clenergy.com.au

2. Tools & Components

2.1 Tools

Tools			
			
Allen Key 6 mm	Spanner	Torque Wrench	5m Tape

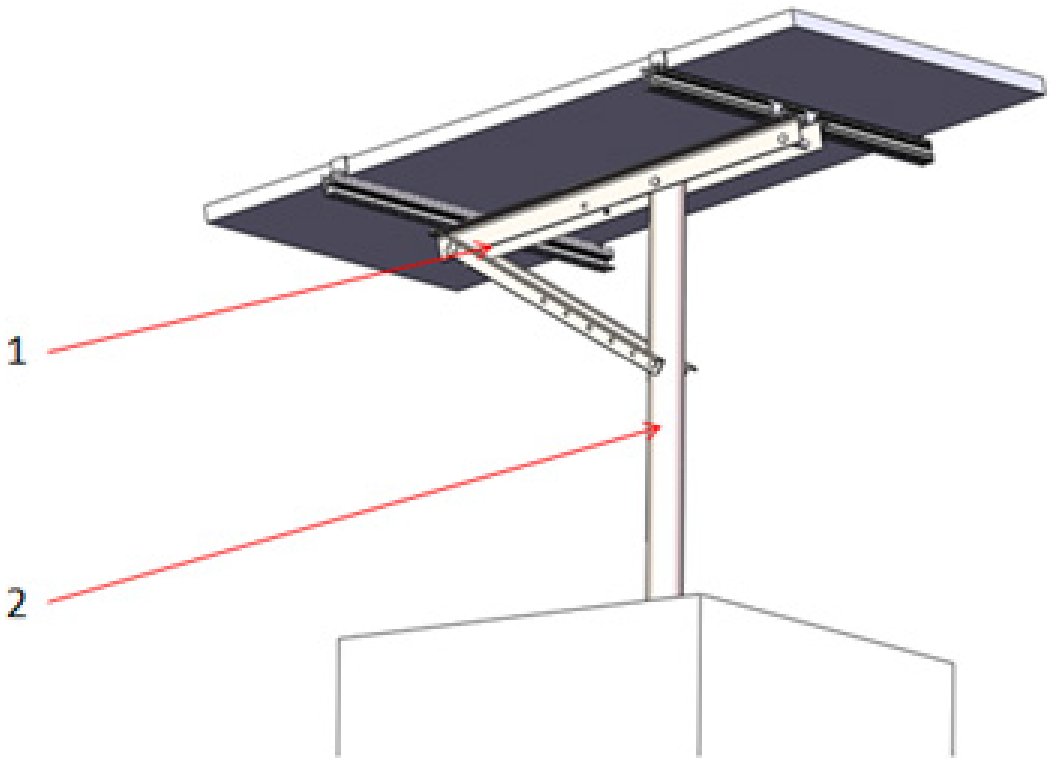
2.2 Components

Components	
	
PM1-A Components Pack×1	**Pole for PostMount 1-A** 83x2400mm×1

Unit 1, 10 Duerdin St, Clayton VIC 3168, Australia
Tel: +61 3 9239 8088 Fax: +61 3 9239 8024
E-mail: tech@clenergy.com.au www.clenergy.com.au

3. System Overview

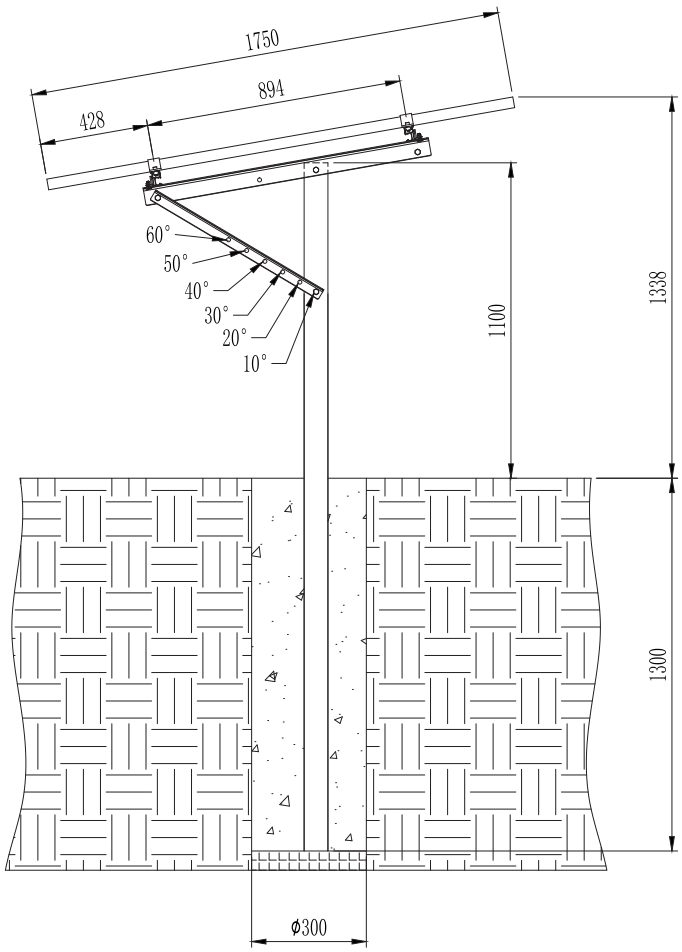
3.1 Overview of PV-ezRack PostMount 1-A



① PM1-A Components Pack
② PM1-A Pole, Ø83x2400mm

Side view drawing of PV-ezRack PostMount 1-A is shown below. The panels tilt angle and embedment depth below are for reference only. Please refer to Certificate Letter to obatin the certified max panels tilt angle and min embedment depth for different wind regions and different soil types.

Unit 1, 10 Duerdin St, Clayton VIC 3168, Australia
Tel: +61 3 9239 8088 Fax: +61 3 9239 8024
E-mail: tech@clenergy.com.au www.clenergy.com.au



3.2 Precautionary Measures for Stainless-Steel Fastener Installation

Improper operation may lead to the deadlock of bolts and nuts. Follow the steps below to reduce this risk.

3.2.1 Reduce the friction coefficient

(1) Ensure that the thread surface is clean (no dirt or contaminant).

(2) Apply lubricant (grease or 40# engine oil) to fasteners prior to tightening to avoid galling or seizing in the threads.

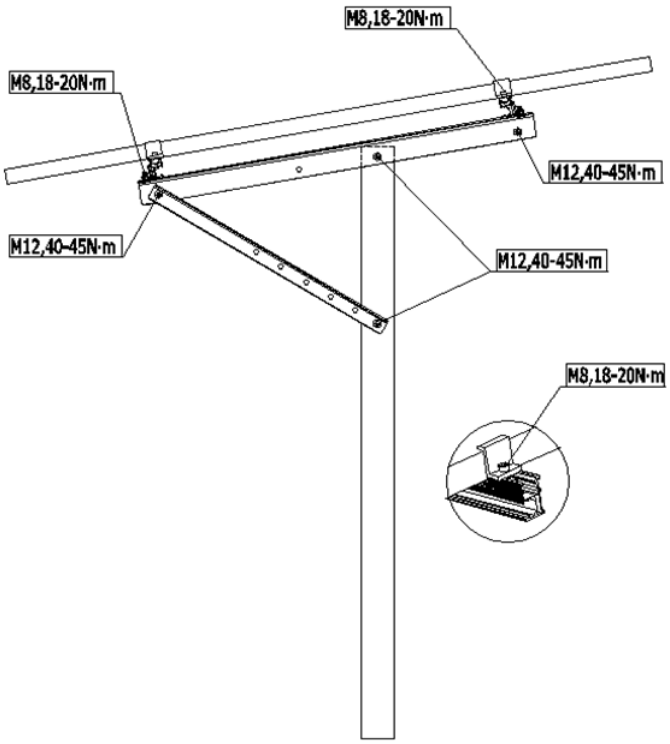
Unit 1, 10 Duerdin St, Clayton VIC 3168, Australia
Tel: +61 3 9239 8088 Fax: +61 3 9239 8024
E-mail: tech@clenergy.com.au www.clenergy.com.au

3.2.2 General installation instructions

(1) Apply force to fasteners in the direction of thread.
(2) Apply force uniformly to maintain required torque.
(3) Professional tools and tool belts are recommended.
(4) Avoid using electric tools for final tightening.
(5) Avoid working at high temperatures.

3.2.3 Safe Torques

Please refer to safe torques defined in this guide as shown in the figure below. If power tools are required, Clenergy recommends the use of low speed only. High speed and impact drivers increase the risk of bolt galling (deadlock). If deadlock occurs and you need to cut fasteners, please make sure that there is no load on the fastener before you cut it. Avoid damaging the anodized or galvanized surfaces.



3.3 Installation Dimensions

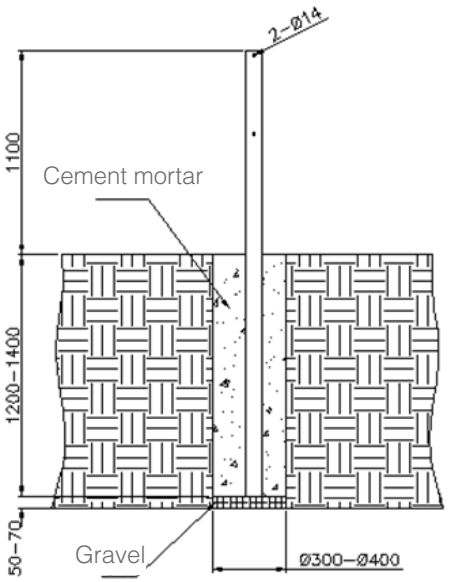
All drawings and dimensions in this installation guide are for generic reference. The PV-ezRack PostMount 1-A is to be optimized to suit specific conditions for each project and documented in engineering drawings. As a result, major components of the PV-ezRack PostMount 1-A may be provided in sectional sizes and lengths that vary from those shown in this guide. The installation operations detailed in this instruction guide remain the same regardless of the component size. In case you need to do any on-site modifications or alteration of the system in a way that would be different from engineering drawings, please provide marked up drawings/sketches for Clenergy's review prior to modification for comment and approval.

Unit 1, 10 Duerdin St, Clayton VIC 3168, Australia
Tel: +61 3 9239 8088 Fax: +61 3 9239 8024
E-mail: tech@clenergy.com.au www.clenergy.com.au

4. Installation Instruction

4.1 Pole 83*2400 Installation

Dig a hole to the diameter 300-400mm and depth 1200-1400mm highlighted in the PM1-A engineering letter. Cover the bottom of the hole with 50-70mm gravel.



Place the pole into the middle of the hole and fill it with concrete. Maintain the position of the post. The allowed vertical tolerance is ±2°.Keep the axle of the 2- Ø14 holes parallel to East-West;keep the vertical angle deviation within ±5°.For more than one system on one site maintain all the axles of 2-Ø14 holes aligned.

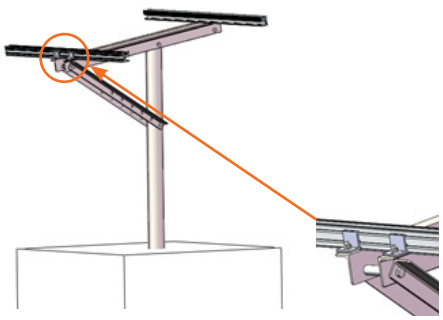
4.2 PostMount 1-A Kit Installation

4.2.1 As show in figure on the right, with M12 * 120 hex bolts and nuts to lock Angle Steel 63*40*1010 on the Pole. And then use M12 * 120 hex bolts and nuts to lock supporting rod 40 * 40 * 682 on the Pole.

Note: supporting rod around multiple holes which can be adjusted by adjusting the mounting, adjustable angle of 10 °, 20 °, 30 °, 40 °, 50 ° and 60 °.

Recommended torque for M12 bolts is 40~45 N·m

4.2.2 As show in figure on the right, place the ECO Rail on Angle Steel. Use the Cross Connection Clamp, Cup head square neck bolts M8*25, Hexagon nut with flange M8 to lock on the Angle Steel 63 * 40 * 1010**.**



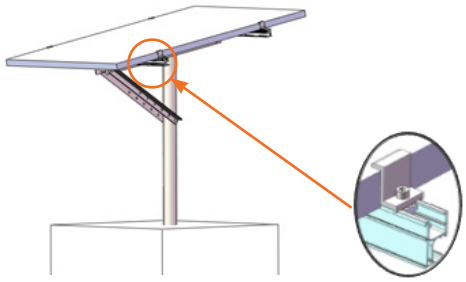
Recommended torque for M8 bolts is 18~20 N·m

Unit 1, 10 Duerdin St, Clayton VIC 3168, Australia
Tel: +61 3 9239 8088 Fax: +61 3 9239 8024
E-mail: tech@clenergy.com.au www.clenergy.com.au

Installation Instruction

4.2.3 Position the PV Panel landscape by aligning the centre line with the ECO Rail. And fix the PV Panel to the Rails by using End Clamps.

Recommended torque for M8 bolts is 18~20 N·m



Unit 1, 10 Duerdin St, Clayton VIC 3168, Australia
Tel: +61 3 9239 8088 Fax: +61 3 9239 8024
E-mail: tech@clenergy.com.au www.clenergy.com.au

Certification Letter

Unit 1, 10 Duerdin St, Clayton VIC 3168, Australia
Tel: +61 3 9239 8088 Fax: +61 3 9239 8024
E-mail: tech@clenergy.com.au www.clenergy.com.au

gamcorp
Relationships built on trust

Gamcorp (Melbourne) Pty Ltd A.C.N 141 076 904 A.B.N 73 015 060 240
www.gamcorp.com.au melbourne@gamcorp.com.au
Suite 4, 346 Ferntree Gully Rd, Notting Hill VIC 3168 Tel: 03 9543 2211

Our Ref: 8762-PM1A/AA
31 August 2020

CLENERGY AUSTRALIA
1/10 Duerdin St
Clayton VIC 3168

Array Frame Engineering Certificate

RE: Postmount PM1-A Installation – PV panel 1750mmx1010mm

Gamcorp (Melbourne) Pty Ltd, being Structural Engineers within the meaning of Australian Regulations, have carried out a structural design check of the PV-ezRack Postmount PM1-A for installation in four general soil types within Australia and New Zealand. The design check has been based on the drawings of the system and its components, and other documents and information, provided by CLENERGY AUSTRALIA.

Part No.	Part Name	Description
13-11011-004	ER-EC-ST	PV-ezRack Standard End clamps
	ER-R-ECO	PV-ezRack ECO Rail 1100mm
13-16041-001		Left and right supporting beam, angle steel 63*40*1010
13-16041-002		Left and right supporting rod, angle steel 40*40*682
13-15010-054	ER-P-83/2400	PV-ezRakc, Pipe ø83*2400mm (PM1-A)

We find the Postmount PM1-A to be structurally sufficient for the proposed installation, based on the following conditions:

- Wind Loads according to AS/NZ1170.2:2011 (R2016):
  - Wind Terrain Category 2;
  - Wind average recurrence interval of 100 years for ultimate state and 25 years for serviceability;
  - Wind region A, B, C & D;
  - Md=1, Ms=1 & Mt=1;
- Max. Solar Panel length 1750mmx1010mm;
- Steel members to be **Q235B**;
- Aluminium members to be **AL6005-T5**;
- Bolts to be **SUS304**;
- The certification **excludes** assessment of PV panels
- Refer to **Table 1** for maximum tilt angle and footing options;
- Dimensions as shown here on the picture;

Gamcorp (Melbourne) Pty Ltd A.C.N 141 076 904 A.B.N 73 015 060 240
www.gamcorp.com.au melbourne@gamcorp.com.au
Suite 4, 346 Ferntree Gully Rd, Notting Hill VIC 3168 Tel: 03 9543 2211

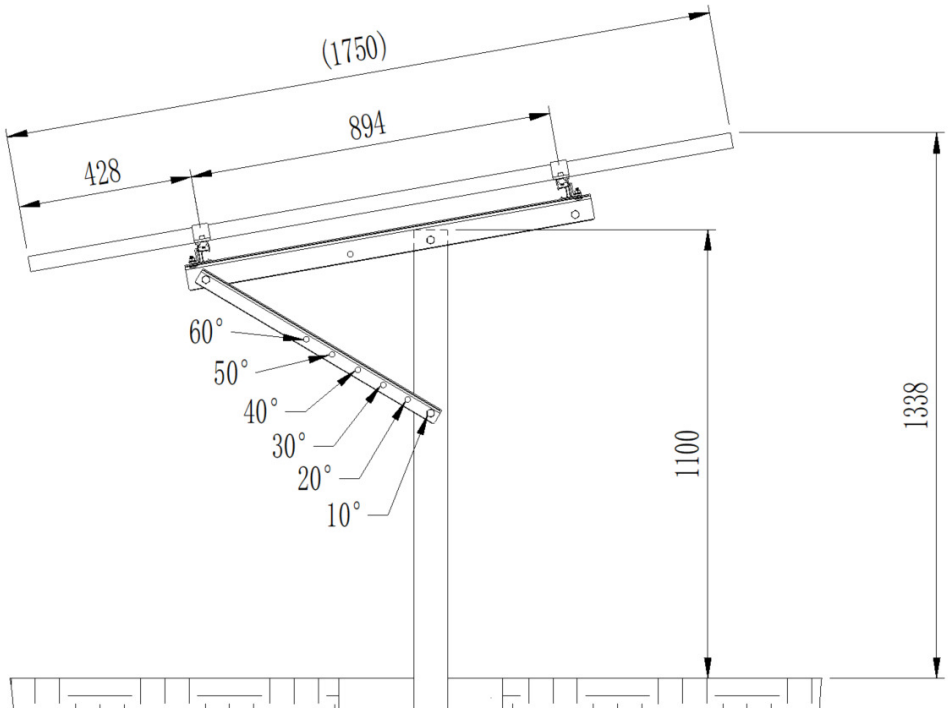


Table 1 – Maximum Tilt Angle and Footing Options

	Wind Region			
	Region A	**Region B**	**Region C**	**Region D**
Wind speed (m/s)	41	48	59	73
Maximum tilt angle (°)	60	60	50	20
Soil Type	**Post embedded in concrete pier: 300 mm diameter concrete piers minimum depth (m)**			
Hard class soil *[Gravels; dry (hard) clays]*	0.80	0.90	1.00	0.80
Very Firm class soil *[Dry (stiff) clays; clayey sands; coarse sands; compact sands]*	0.85	0.95	1.10	0.85
Firm class soil *[Damp clays; sandy clays; damp sands]*	0.95	1.05	1.20	0.95
Soft class soil *[Wet clays; silty loams; wet or loose sands]*	1.15	1.25	1.40	1.15

Gamcorp (Melbourne) Pty Ltd A.C.N 141 076 904 A.B.N 73 015 060 240
www.gamcorp.com.au melbourne@gamcorp.com.au
Suite 4, 346 Ferntree Gully Rd, Notting Hill VIC 3168 Tel: 03 9543 2211

Notes:

1. **This certification is applicable for the Postmount PM1-A with dimensions as shown in this letter.**
2. **Other piers dimensions are possible, contact Gamcorp, if required.**
3. **Panel weight calculated: 20kg.**
4. **Embedment depth is relevant for soils, having adhesion capacity from 300mm of the ground level; in other cases contact Gamcorp.**
5. **For concrete piers foundation, use 25 MPa strength concrete (minimum). It is recommended to insert N12 bar 200mm long at the bottom of the post into the concrete piers.**
6. **If any of the above conditions cannot be met, the structural engineer must be notified immediately.**

Construction is to be carried out strictly in accordance with the manufacturers instructions and site soil report recommendations. This work was designed by **Ali Askari** in accordance with the provisions of relevant Regulations and in accordance with sound, widely accepted engineering principles.

Yours faithfully,
Gamcorp (Melbourne) Pty Ltd

L. van Spaandonk
Principal Engineer
FIEAust Cpeng NER

Clenergy Australia
1/10 Duerdin Street, Clayton VIC 3168 Australia
Tel: +61 3 9239 8088 Fax: +61 3 9239 8024
E-mail: sales@clenergy.com.au
www.clenergy.com.au

Clenergy China
999-1009 Min'an Rd, Huoju Hi-tech Ind. Dev. Zone
Xiang'an District 361101, Xiamen, Fujian, China
Tel: +86 592 311 0088 Fax: +86 592 599 5028
E-mail: sales@clenergy.com.cn
www.clenergy.com.cn

Clenergy EMEA
Esplanade 41, 20354 Hamburg, Germany
Tel: +49 (0) 40 3562 389 00
E-mail: sales.emea@clenergy.com

Clenergy Japan
Nittochi Yamashita Building 5th Floor
23 Yamashita-cho, Yokohama, 231-0023 Japan
Tel: +81 45 228 8226 Fax: +81 45 228 8316
E-mail: sales@clenergy.co.jp
www.clenergy.jp

Clenergy Philippines
145 Yakal St., San Antonio village, Makati City, Philippines
Tel: +63 977 8407240
E-mail: sales_ph@clenergy.com
www.clenergy.ph

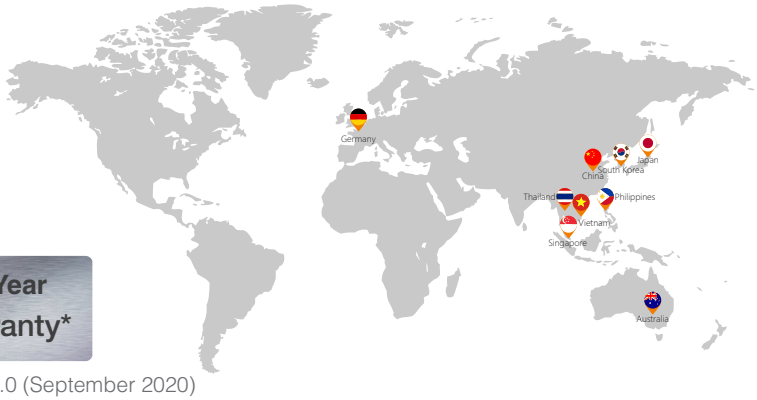
Clenergy Thailand
9/2, 5th Floor, Vorasin Building, Soi Yasoob 2, Viphavadee-Rungsit Road, Chomphon Sub-district, Chatuchak District, Bangkok 10900
Tel: +66 (0) 2 277 5201, +66 (0) 6 3228-0200
E-mail: sales_th@clenergy.com, support_th@clenergy.com
www.clenergythailand.com

Clenergy Singapore
24 Raffles Place #28-01 Clifford Centre Singapore 048621
Tel: +65 9743 1425
E-mail: vincent.chan@clenergy.com

Clenergy Malaysia
Tel: +86 18750231005
E-mail: sales_em@clenergy.com

Clenergy Vietnam
Tel: +86 592 3110095
E-mail: sales_vietnam@clenergy.com;
susie.chen@clenergy.com

Worldwide Network



10 Year Warranty*