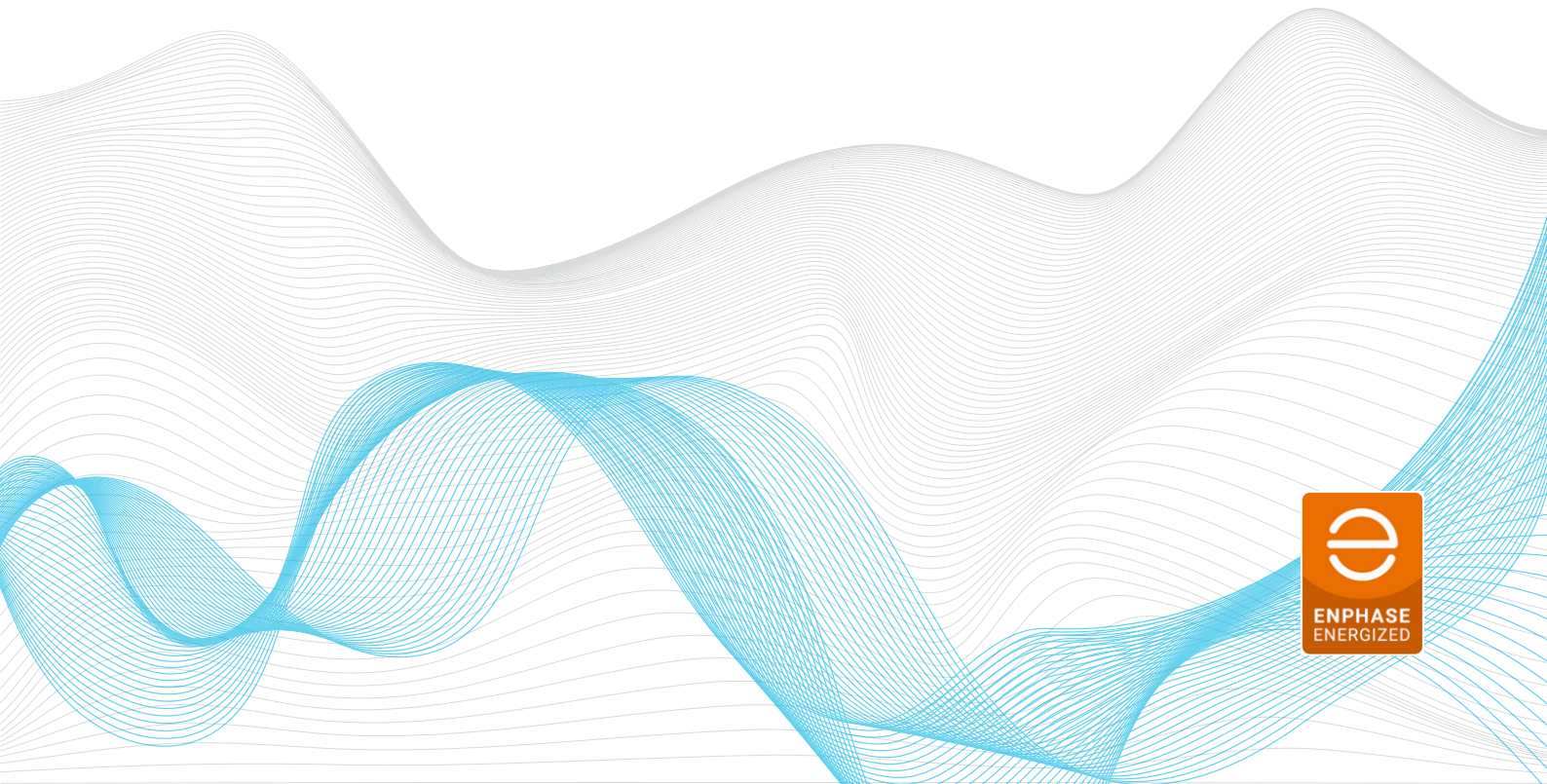
REA POWER™

INSTALLATION MANUAL

AC MODULES

2025



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INTRODUCTION TO USER MANUAL

This manual contains relevant information about the installation methods and safe operation of photovoltaic modules (hereinafter referred to as "modules") of REA Power Pty Ltd (hereinafter referred to as "REA"). Now includes the standard double glass modules REA-HD96R, REA-HDN-96R-DSN, REA-HSN-96R-DSB, REA-HD108N, REA-HDN108RS, REA-HSN108RSB, REA-HDN210B132, REA-HD210B132 (see table below), if new standard modules are added, they will be updated. Failure to comply with these safety guidelines may result in loss of life or damage to property.

Cell Quantity	Module Model	Dimensions of module (mm)
96 solar cell	REA-HD96R	1762*1134*30
	REA-HDN-96R-DSN	
	REA-HSN-96R-DSB	
108 solar cell	REA-HD108N	1722*1134*30
	REA-HDN108RS	1960*1134*30
	REA-HSN108RSB	
132 solar cell	REA-HDN210B132	2384*1303*33
	REA-HD210B132	

Installers must read and understand this guide before installing. If you have any questions, please contact our customer service department or our local representative for more detailed information. The installer must comply with all safety precautions, local requirements and requirements of the law or authorized agency as described in this guide. Before installing the PV module, the installer shall be familiar with its mechanical and electrical requirements.

The operation of PV modules requires relevant professional knowledge, and system installation and maintenance must be carried out by qualified personnel with professional knowledge.

Please store this guide in a safe place for future reference (maintenance and upkeep) and use when selling or handling modules. REA has passed the test of global testing and certification authority. Please use it at ease, under the premise of following the requirements of this manual.

The module installer must inform the end customer (or consumer) accordingly of the above.

DISCLAIMER

REA reserves the right to change this installation manual without prior notice. REA makes no warranties of any kind with respect to any express or implied information contained herein. If the customer fails to comply with the requirements listed in this manual during the installation of the module, the limited warranty provided to the customer will be invalidated.

SCOPE OF RESPONSIBILITY

REA shall not be liable for any form of injury or loss, including, but not limited to, physical injury or property loss resulting from the operation of the modules, system installation errors, or failure to comply with the instructions in this manual.

SAFETY MEASURES

WARNING

Read and understand all security details before installing, wiring, operating, or maintaining modules. Photovoltaic modules generate electricity when exposed to a light source, and a photovoltaic array of modules can pose a lethal shock or burn hazard, personnel without authorization and relevant training should not touch PV modules and terminals.

UNIVERSAL SECURITY

The installer must comply with all safety precautions, local requirements and requirements of the law or authorized agency as described in this guide. The operation of PV system requires relevant professional knowledge, which must be installed and maintained by qualified personnel with professional knowledge. Personnel without authorization and relevant training shall not touch the PV modules and shall not approach the installation area or the module storage area.

Do not use broken glass modules, broken modules shall not be repaired, contact with the surface of modules may lead to electric shock hazard. Do Not Disassemble the assembly or remove any part of the assembly. Do not concentrate sunlight artificially on these solar modules.

Do not connect the positive terminal of a single PV module from the positive terminal of the cable. Make sure that the polarity of each module or module string is not the opposite of that of other modules or module strings. Please ensure that there are no gaps between the individual gaskets of the joint and that any gaps between the gaskets may cause fire and / or electric shock risk.

According to the National Electrical Code, the maximum system voltage shall not exceed 1500V. Do not install or operate modules during wet or windy weather.

REA module electric shock protection Class II.

- The installation elevation of the REA module assembly shall not be higher than 2000m.

The light on the back of the module should not exceed 300W/m2, if it's bifacial module.

OPERATIONAL SAFETY

To avoid damage to modules, please do not scratch and impact modules, please do not use on the front and back of the glass modules of paint or adhesives. Avoid scratching, cutting cables and connectors, or exposing them to long-term sunlight, to prevent reduced insulation. Do not drop modules or cause objects to fall on modules. Do not place any heavy or sharp objects on the module.

Please do not use water to extinguish the fire while the power is still on. Only work in dry environment, and only use dry tools. Do not work in a humid environment without wearing any protective measures. In the sun, regardless of whether the PV module is connected to the system, please do not touch the module's junction box, connectors, cables and other live parts without any protection.

Do not climb, step, stand, walk or jump directly on the package or modules.

FIRE SAFETY

Please consult local laws and regulations before installing modules, which should comply with the building fire protection requirements.

When the modules are installed on the roof, the roof must be covered with a layer of fire-proof material suitable for the corresponding fire rating. Adequate ventilation shall be ensured between the module and the mounting surface.

Different roof structure and installation will affect the fire safety of the building. There may be a fire if the module is not installed properly.

To ensure the fire rating of the module on the roof, the minimum distance between the module and the roof surface is 10 cm.

Please use appropriate module parts such as fuse, circuit breaker, earth connector according to local regulations.

Do not use modules if exposed flammable gas is present nearby.

UNLOAD, TRANSPORT & STORE

Precautions and general safety rules:

Modules should be stored in the original packing box before installation. Please protect the packing from damage. Transport the module and open the module package according to the recommended mode of transport and unpacking steps. In order to avoid damage to modules, please do not scratch, impact modules. When transporting, do not apply direct pressure to the module. Improper transportation or installation may damage the module and invalidate the warranty. Do not step on or stand on the top of the package box and modules.

Only work in a dry environment. Make sure all modules and electrical contacts are clean and dry before installation. Store uninstalled modules outdoors for a period of time, the assembly shall be covered at all times with glass facing down and on a soft surface to prevent water build-up within the assembly and damage to the connectors.

When unpacking shall be unpacked by two or more persons at the same time, do not grab the assembly box or lead wire to lift the assembly, use both hands to move the assembly, do not overlap the assembly, do not place the assembly in an environment without reliable support or fixed; Do not place any heavy or sharp objects on the module.

PACKING INSTRUCTIONS

Prohibit discarding modules randomly, special recycling is needed

Protect modules from rain or moisture

Modules in carton are fragile, shall be handled with care

The package should be vertically up during transportation

Do not step on or stand above package or module

Stack no more than 2 layers

POINTS TO NOTE WHEN UNLOADING GOODS

When the Assembly is unloaded from the Transport Vehicle, a reasonable lifting fixture shall be used to lift up to 2 supporting assemblies at a time. Before hoisting, you should confirm whether the tray and the carton have the breakage, askew as well as hoisting the rope whether strong or firm. Lifting fast landing, two people on the side of the paper boxes gently placed on the project in a relatively flat position. Or use a forklift to remove the assembly from the truck and place the unloaded assembly on the horizontal floor. The depth of forklift forks into the pallet shall not be less than 3/4 of the pallet length.

When the modules are temporarily stored in the project, the modules should be placed in a ventilated and dry place. It is forbidden to stack the modules on the project site, and the modules should be covered with a tarpaulin, and the tarpaulin should be reinforced with a curtain or mesh belt to prevent the modules from getting wet.

SECONDARY TRANSPORT NOTES

Do not remove the original packaging if the module requires secondary long-distance transportation or long-term storage. The finished products of the package can be transported by land, sea or air. During transportation, stacking up should be less than two layers, it is forbidden to cut the packaging belts of packages. There shall be no gap between pallets or between pallets and truck supports. If there is a gap, it must be filled with fillers (inflatable bags, etc.) to prevent modules from tilting and shaking during transportation.

The original packing is not allowed to be removed during shipment on site, only one layer is allowed during transportation. During transportation, please fix the packing box on the transportation platform to ensure that the packing will not roll over. Do not use tricycles to transport modules, do not use ropes to bind or carry modules, do not carry modules on one person, do not move or drag modules through the wires or junction boxes of the modules.

STORAGE

Do not expose the assembly to rain or moisture. If the uninstalled assembly is to be stored outdoors for a period of time, always cover the assembly and keep the glass face down and on a soft surface to prevent water and connector damage inside the assembly.

Do not remove the original packaging of a module if it requires long-distance transportation or long-term storage.

Please store the modules in a dry and ventilated environment and place the modules on a relatively flat ground to avoid package damage or dumping due to ground deformation or collapse. Storage requirements: Humidity <85%, temperature range -40 °C ~ + 50 °C.

INSTRUCTIONS FOR UNPACKING

SAFE UNPACKING

- When unpacking in the open air, do not work in the rain. Because the box will become soft after the rain, the PV modules inside will be out of the damage caused by modules or injured people. If the site is windy, you need to pay special attention to safety, especially in high winds. It is recommended not to move the modules, and properly fixed the package that has been opened.
- The working floor shall be such that the packing case can be placed horizontally and stably. When removing the carton, use a supporting disassembly tool to prevent the modules from side-tipping.
- Please wear protective gloves during unpacking to avoid hand injury and fingerprints on the glass surface.
- The Outer Packaging can query the module information, please read it carefully before unpacking.
- Do not grab the terminal box or lead wire to lift the assembly. Use both hands to move the assembly. Do Not Place the assembly on top of each other.
- The unpacked modules must be fully assembled and not allowed to be stacked at the project site.

UNPACKING STEPS

- Before unpacking, please check the product name and serial number on the A4 paper of the outer box. Custom unpacking method is forbidden.
- When unpacking, cut all vertical packing belts with a knife or scissors, first cut the long side packing belt, then cut the short side packing belt; remove the top cover of the carton, and take out two or three upper lifting brackets.
- When taking modules out of the packing box, two people should stand on both sides of the box and hold the modules simultaneously. One Hand should hold the corner of the module, the other hand should hold the short side, and the modules should be taken out. If the package is unpacked on the horizontal ground, the modules are taken out from one side of the package to the other side in turn, and then two people carry them. If the packing is on non-horizontal ground, use a supporting disassembly tool when disassembling the carton to prevent the modules from tipping over.
- Modules removed from the packaging box shall not be allowed to lean against the mounting post or be placed in an environment without reliable support or fixation.

INSTALLATION

REA series modules can be installed and used for more than 30 years under proper conditions. After-life PV modules need to be disposed of reasonably according to local laws and regulations. In addition to the required IEC certification, REA products have been tested for their suitability for installation in humid (coastal) areas and sand and dust storm prone areas.

INSTALLATION SECURITY

- REA photovoltaic solar modules can be installed horizontally or vertically, but the use of horizontal installation can be used to minimize the impact of dust on the solar modules shading.
- Do not remove the modules before installation. Leave the modules in the carton.
- When installing modules, only work in a dry environment, and only dry tools can be used. Do not work in a humid environment without wearing any protective measures. Do not install assemblies in the rain, snow, or high winds. Please keep the connector dry and clean when installing the module to avoid the risk of electric shock. If the terminal of the module is damp, no work can be done to avoid electric shock. Please install immediately after unpacking.
- Do not wear metal rings, wristwatches, earrings, nose rings, lip rings, or other metal materials when installing or repairing PV systems.
- During Assembly and wiring, use opaque material to completely cover the assembly to prevent power loss. Do not open the electrical connection or pull out the connector when the circuit is loaded. Do not touch modules unnecessarily during installation; glass surfaces and brackets may generate high temperatures; burn and shock hazards may occur.
- During Assembly, do not damage the rear glass of the Assembly while fastening it to the bracket by bolts. If you need to replace a module, do not damage the surrounding module or installation structure.
- When installing modules, do not work alone, and always work as a team of two or more people.
- The cable should be fixed or tied up after assembly installation, so that it will not be exposed to direct sunlight after installation, which can prevent cable aging. Low hanging cables can cause problems such as electrical leakage and fire in stagnant water.
- The application level of REA module is class A, different color series modules avoid installation in the same array or roof.
- The application level of REA module is class A, different color series modules avoid installation in the same array or roof.
- Selection of installation Angle: Module Angle: the angle between the surface of the module and the horizontal plane. When the module is facing sunlight, the module gains maximum power output. When installed in the northern hemisphere, modules should face south. When installed in the southern hemisphere, modules should face north. For detailed installation angles, follow the standard module installation guide or advice from an experienced module installer.

REA recommends that the installation angle should be no less than 10 degrees when the module is installed, so that the surface dust of the module is easily taken away by the rain when it rains, thereby reducing the number of module cleaning. At the same time, it is conducive to the flow of the accumulated water on the surface of the module, and avoids the long-term large amount of accumulated water leaving marks on the glass, thereby affecting the appearance and performance of the module.

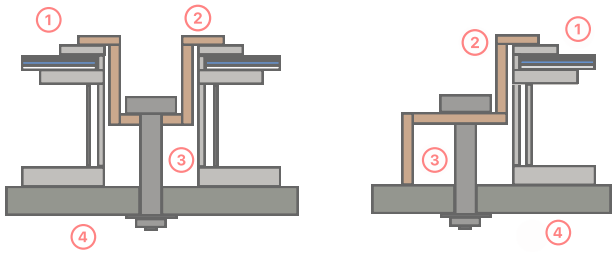
INSTALLATION PROCEDURES

Mechanical installation and points for attention

- Module and bracket system connections can be mounted with clamps or bolts. Modules Installation must be carried out according to the following examples and recommendations. If the installation method is different from the REA public notice, please consult REA local technical support or after-sale, and get REA consent, failure to do so will damage the module and result in a warranty failure.
- The mechanical load (including snow and wind load) capability of the modules depends on the way in which the modules are installed, and the mechanical load should be calculated by a professional system designer in accordance with the actual situation and environmental conditions. And will not bear the support structure thermal expansion generated by the excessive force.

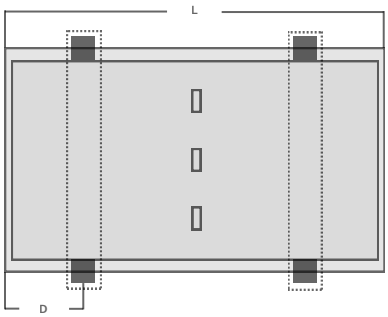
Installation of modules (installation with clamps)

(Mid & Side Clamps)



1: Frame 2: Clamp 3: M8 Bolt 4: Mounting Rail

Clamps installation Method



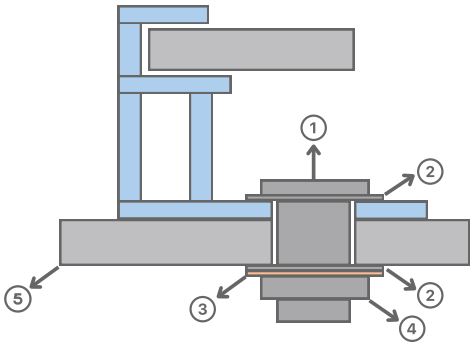
Four point long side installation The C-shaped steel perpendicular to the long side		
Module type	The installation method corresponds to the load	
	D≤200mm	1/5L≤D≤1/4L
REA-HD96R	+2400 -2400	+5400 -2400
REA-HDN-96R-DSN		
REA-HSN-96R-DSB		
REA-HD108N	/	+5400 -2400
REA-HDN108RS		
REA-HSN108RSB		
REA-HDN210B132	/	+5400 -2400
REA-HD210B132		

Note: The above installation methods are used in the standard clamps, please refer to the details of the standard clamps drawings.

Installation with bolts:

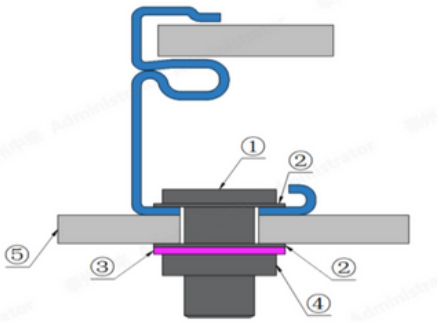
- The module should be installed on the support structure using stainless steel bolts through the mounting holes on the back of the frame, Stainless steel bolts for aluminum frame and carbon steel bolts for steel frame (Class 8.8 or above in GB/T 3098.1).
- Each module needs to be tightened by at least four points on two opposite sides.
- Aluminum frame module: M6 stainless steel bolts and nuts should be used for M7*10 holes, and the parts in contact with the frame should be M6 stainless steel flat washers with an outer diameter of 12 mm and a minimum thickness of 1.6 mm. M8 stainless steel bolts and nuts should be used for other holes, and M8 stainless steel flat washers with an outer diameter of 16mm and a minimum thickness of 1.6 mm should be used for parts in contact with the border.
- Steel frame module:M6 stainless steel bolts and nuts should be used for M7*10 holes , the parts in contact with the frame should be carbon steel flat gaskets of M6 with an outer diameter of 12mm and a minimum thickness of 1.6mm. M8 carbon steel bolts and nuts should be used for other holes, and M8 carbon steel flat gaskets with an outer diameter of 16mm and a minimum thickness of 1.6mm should be used for parts in contact with the frame.
- All bolt lengths are defined according to the C-shaped steel construction.
- The torque applied by all bolts and nuts is recommended to be 16~20 N • m.

Aluminum frame bolt



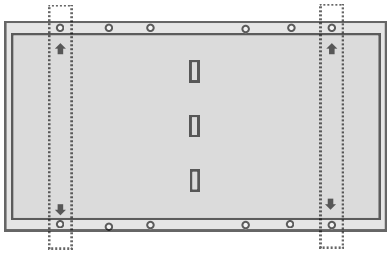
1 - M8 Screw 2 - Flat Washer 3 - Spring Washer
4 - Nut 5 - Mounting Rail

Steel frame bolt



1 - M8 Screw 2 - Flat Washer 3 - Spring Washer
4 - Nut 5 - Mounting Rail

Bolt Installation Method



Four point long side installation The C-shaped steel perpendicular to the long frame	
Module type	Maximum load
REA-HD96R	Front≤5400Pa Back≤2400Pa
REA-HDN-96R-DSN	
REA-HSN-96R-DSB	
REA-HD108N	Front≤5400Pa Back≤2400Pa
REA-HDN108RS	
REA-HSN108RSB	
REA-HDN210B132	Front≤5400Pa Back≤2400Pa
REA-HD210B132	

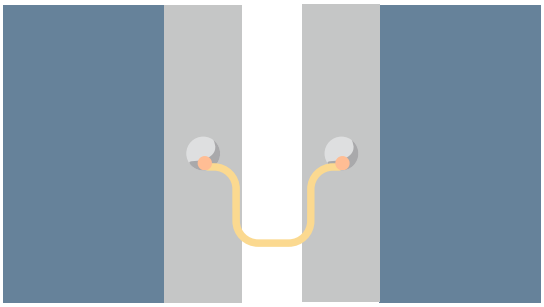
Grounding:

- All module frames and mounting brackets must be properly grounded in accordance with the applicable National Electrical Code. Proper grounding is achieved by continuously connecting the module border to all metal structural elements using suitable ground conductors. A ground conductor or ground wire may be copper, copper alloy, or other material used as an electrical conductor in accordance with the corresponding national electrical code. The ground conductor must be connected to the earth by a suitable grounding methods.

Equipotential Bonding Symbol

Warning Label attached on Cable

- The frame module may be earthed to the metal border of the module using a grounding device listed by a third party. The equipment shall be installed in accordance with the specifications specified by the grounding equipment manufacturer.
- Please visit the http://www.reapower.com.au to see the "product catalog" link for details of the grounding hole location and size.
- The electrical contact point is formed by passing through the anodized coating of the aluminum frame and tightening the ground screw (together with the star Washer) to the appropriate torque of the 25 lbf.In. The appropriate size of ground wire (solid bare copper wire from USG 6 to 12) shall be selected and installed under the connecting bolt. Put the toothed Washer, the gasket, the ground wire in turn, screw the screw into the ground hole, and connect the two adjacent modules.



Electrical Installation:

All wiring shall be performed by professionally trained and qualified installers in accordance with local regulations and procedures. To ensure a reliable electrical connection and to prevent possible ingress of moisture, when two MC4 or EVO2 connectors are mated, they must be locked until a click is heard. The modules can be connected in series to increase the operating voltage by inserting the positive plug of one module into the negative socket of the next. Always ensure that contacts are free of corrosion, clean, and dry before connecting modules. If one array is connected to another with opposite polarity, irreparable damage to the product is caused.

Be sure to check the voltage and polarity of each column before proceeding in parallel. If the measurements show opposite polarity between columns or a voltage difference greater than 10V, check the configuration before joining.

All cables and connectors used to connect the DC system must have similar (or higher) level. It is suggested that all cables should run in proper cable ducts and should be located away from the water-prone area.

Each module has two standard 90°C shading output cables with a plug-and-play connector on each terminal. REA Power modules are equipped with a DC copper cable with a cross-sectional area of 4mm2, system voltage 1500V DC, insulation layer maximum work temperature up to 90°C, also UV-resistant. All cables used to connect the DC system must have similar or high level. It is required that all wiring and electrical connections should be comply with the appropriate National Electrical Code

the maximum voltage borne by the system, and factors such as the lowest expected temperature shall be considered. It is recommended to calculate according to the following formula:

Maximum system voltage ≥ N x Voc x [1+ (Tcvoc x (Tmin-25)]

Of which:

N represents the number of modules; Voc represents the open circuit voltage of the component; Tcvoc represents the temperature coefficient of the component open circuit voltage; Tmin represents the minimum ambient temperature. If a reverse current exceeding the maximum fuse current of the module is likely to pass through the module, the module must be protected by an overcurrent protection of the same specification. If the number of parallel modules is greater than or equal to 2 series, there must be an overcurrent protection on each series of modules. The specific electrical performance parameters of the components are as follows:

Wiring

To ensure proper operation of the system, observe to ensure proper polarity of cable connection when connecting modules or loads (Such as frequency converter, battery, etc.) (figures 1 and 2). The bypass diode may be damaged if the module is not connected properly. The modules can be connected in series to increase the voltage.

A series connection is one that connects a wire from the positive terminal of one module to the negative terminal of the next module. Figure 1 shows how the modules are connected in series. Modules can be connected in parallel to increase current (figure 2).

A parallel connection is one that connects a wire from the positive terminal of one module to the positive terminal of the next module. The number of modules in series and parallel connection should be designed according to the system configuration. All the above specifications must be complied with to meet the photoelectricity warranty conditions.

Figure 1

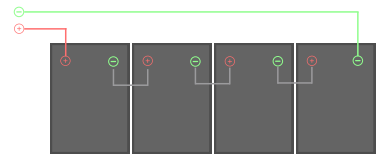
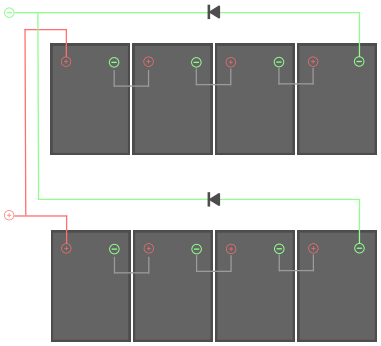


Figure 2



Fuse

The fuse shall be installed with a maximum DC voltage rated and connected to each non-grounded electrode of the array (in other words, the fuse shall be connected to the positive and negative electrodes if the system is not grounded).

The maximum rating of the fuse in series connection with the array is normally 30A, but the actual module-specific ratings are available in the product label and product data sheet. The fuse rating also corresponds to the maximum reverse current that the assembly can withstand (when one array is masked, the array is loaded into other parallel assembly arrays to generate current), this will therefore have an impact on the number of parallel connected arrays.

Do not connect two or more series to parallel before connecting the fuse.

Connector

Keep the connector dry and clean, and make sure the connector nuts are tightened before connecting. Do not connect the connector if it is wet, dirty, or otherwise. Avoid connectors from direct sunlight and soaking in water. Avoid connectors landing on the ground or roof. The wrong connection may produce an electric arc and an electric shock. Please check that all electrical connections are secure. Ensure that all connectors with locks are fully locked.

Bypass Diode

The junction box of the module contains a by-pass diode and is connected in parallel to the battery string in the module. When the hot spot occurs locally in the module, the diode will work, so that the main current will no longer flow over the hot spot cell, thus limiting the module heating and performance loss. Note that by-pass diodes are not overcurrent protection devices. If you know or suspect that the diode is out of order, the installer or system maintainer should contact the company. Do not attempt to open the junction box of the module by yourself.

MAINTENANCE OF MODULE

VISUAL INSPECTION AND REPLACEMENT OF MODULES

Modules in the PV array should be regularly inspected for damage. If damage is found, the same type of modules should be replaced, such as broken glass, broken cables, damaged junction boxes and other factors leading to functional and safety failure of modules.

Well-designed solar systems rarely require maintenance, but there are simple steps you can take to improve system performance and reliability.

- It shall be maintained at least once a year by trained personnel; when the maximum operating voltage is not less than 1500V DC, maintenance personnel shall wear rubber gloves and insulating boots at all times during the course of their work to remove any vegetation that may obscure the solar array and thus affect its performance.
- Check that the installed hardware is secured in place.
- Check that all the array fuses in each non-grounded pole are working properly.
- If the module is damaged (broken glass or a scratch on the back glass) . it needs to be replaced. Modules must be replaced with the same type. Do not touch the live parts of cables and connectors when replacing modules. Appropriate Safety Devices (insulating tools, insulating gloves, insulating boots, etc.) shall be used when handling modules.
- To repair, an opaque material is applied to the front surface of the module. Modules exposed to sunlight generate high voltage and are extremely dangerous.
- The PV module junction box of medium-to-power has by-pass diodes to minimize heating and current losses.

CONNECTOR AND CABLE INSPECTION

Check all cables to verify that they are securely connected; REA recommends that all cables be run in proper piping and located away from easy catchment areas. It is recommended that electrical, ground and mechanical connections be checked every six months to ensure that they are clean, safe, free of damage and rust; that the fittings are properly tightened; and that all cables are checked to ensure that the joints are secured.

CLEANING

The amount of electricity generated by the solar module is proportional to the amount of light falling on it. The cells that are shielded generate relatively little power, so it's important to keep them clean.

The PV module should be cleaned under irradiance below 200W/m2 to avoid a large difference between the water temperature used for cleaning and the air temperature, which may cause splinters; hard water should be softened and the module cleaned and the remaining water on the glass surface dried.

It is prohibited to clean the PV module under weather conditions with wind force greater than 4, heavy rain or snow.

The water pressure on the glass surface during pressure flow cleaning shall not exceed 700 Kpa (14619.80 lb/ft 2). Any additional force on the module shall be prohibited.

During the cleaning work of PV module, it is strictly forbidden to step on the module, splash the water to the back of the module and the cable, to ensure that the connector is clean and dry, to prevent electric shock and fire hazard; Soft cloth, mild detergent and water should be used. Do not put modules directly into water. Care should be taken to avoid serious thermal shock that may damage the module.

The PV module surface may have oil and other hard to clean substances. Non-friction neutral liquid cleaner, non-Alkali, acid, or organic solvent are good for cleaning the modules. Do not use corrosive solvents or wipe photovoltaic modules with hard objects.

If you are not sure whether you want to clear an array or a cross section, select a particularly dirty array to begin with. If the percentage improvement is less than 5%, cleaning is usually not required. The above verification should only be carried out under the condition of constant sunshine rate (Sunny Day, strong sunshine, cloudless).

The back of the assembly usually does not need to be cleaned; when cleaning the back of the Assembly, care should be taken to prevent the cleaning solution from seeping into the bottom of the material.

Vegetation should be regularly cut to avoid shading the PV modules.

Water quality requirements：

PH: 5 ~7；
Turbidity：0-30 NTU
Electrical conductivity：1500~3000 μs/cm
total dissolved solids：≤1000 mg/L
Water hardness：0-40 mg/L
Must use non-alkaline water, the use of softened water when the conditions.

Module inspection after cleaning: The overall appearance of the visual modules should be clean, bright, no stains; sampling inspection of the surface of the modules for the presence of Ash; the surface of the modules without obvious scratch marks; the surface of the modules without artificial rupture.

After cleaning, inspect whether the module bracket is inclined or bent, whether the module terminal is falling off, etc.

After PV module cleaning, complete PV module cleaning record.

Troubleshooting: If it does not work properly after installation, please notify the installer immediately.

TECHNICAL PROBLEMS OR CLAIMS

If there are any technical or claim issues, please contact the installer.

Please log on to www.reapower.com.au or call REA POWER PTY LTD at 1300 360 047, or send an email to engineering@reapower.com.au to contact the adjuster team.

Please submit the customer form via the website. Our Technical Service representative will contact you within 5 working days. The required user name and password will be sent via the customer service link.

Download the specification or data sheet for modules from www.reapower.com.au

BIPV Installation Standards

All installations of Building Integrated Photovoltaic (BIPV) modules must comply with the requirements outlined in the National Construction Code (NCC).

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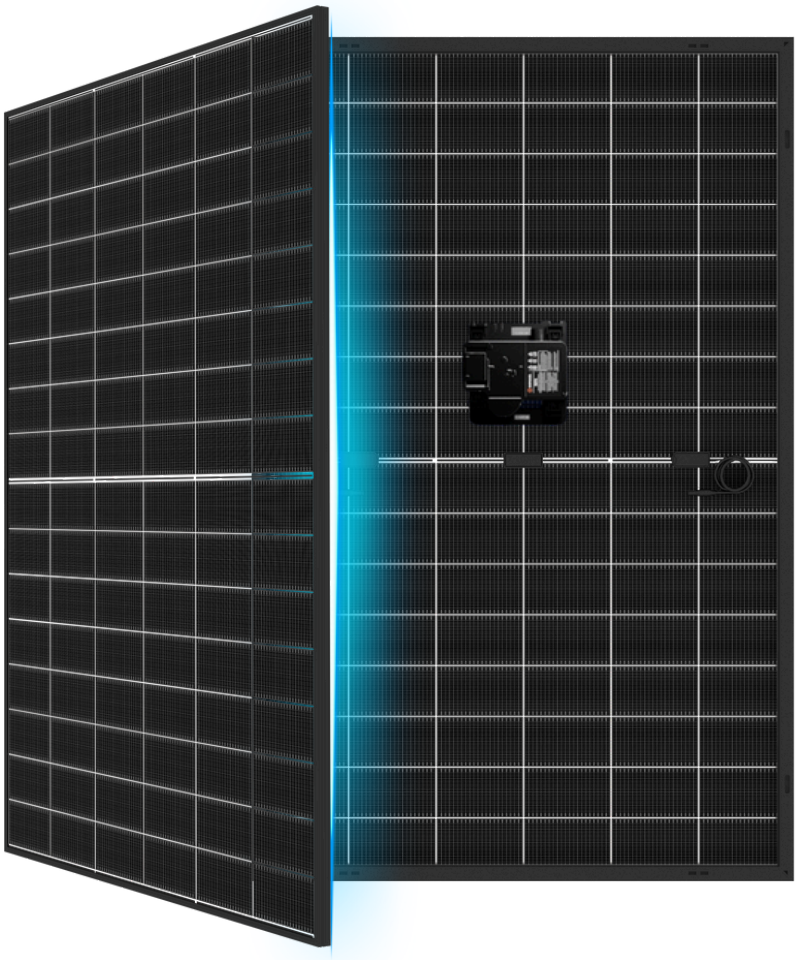
ENPHASE IQ8HC AC MODULE INSTALLATION MANUAL



ACM INSTALLATION MANUAL CHECKLIST

CATEGORY	ACM INSTALLATION MANUAL
Connector - visual inspection	Visually check that the AC branch circuit connections (Enphase Q Cable and AC connections) are properly seated. Reseat if necessary. Check also for damage, such as rodent damage.
Connector - connector type	Only use interconnect connectors of the same type and manufacturer. Enphase male and female connectors must only be mated with the matching male/female connector.
Connector - proper engaging	Cover any unused connectors with Enphase Sealing Caps. Listen for a click as the connectors engage.
Cable bend radius	Ensure that the cabling is not under mechanical stress (Comply with bending radius of ≥ 2.36 in (60 mm)).
Protect MI from Rain or other events	The microinverter housing is designed for outdoor installation and complies with the NEMA 250, type 6 environmental enclosure rating standard: NOTE! NEMA 6 Rating Definition: Indoor or outdoor use primarily to provide a degree of protection against hose-directed water, the entry of water during occasional temporary submersion at a limited depth, and damage from external ice formation. Enphase further requires that the microinverters and DC connections be installed under the PV module to avoid direct exposure to rain, UV, and other harmful weather events.
Protect moisture trapped in cabling systems	The Enphase Microinverter is not protected from damage due to moisture trapped in cabling systems. Never mate microinverters to cables that have been left disconnected and exposed to wet conditions. This will void Enphase's warranty.
Sealing cap	Place sealing caps on unused connectors and terminate the unused end of the Enphase Q Cable. Do not leave AC connectors on the Q Cable uncovered for an extended period. You must cover any unused connector with a sealing cap. Make sure protective sealing caps have been installed on all unused AC connectors. Unused AC connectors are live when the system is energized. Install sealing caps on all unused AC connectors as these connectors become live when the system is energized. Sealing caps are required for protection against moisture ingress.
Surge protection	Plan your AC branch circuits to meet the following limits for maximum number of microinverters per branch when protected with a 20 amp (maximum) over current protection device (OCPD). Do not exceed the maximum number of microinverters in an AC branch circuit as listed in the manual. You must protect each microinverter AC branch circuit with a 20 A maximum breaker or fuse as appropriate. Enphase Microinverters have integral surge protection greater than most traditional inverters. However, if the surge has sufficient energy, the protection built into the microinverter can be exceeded, and the equipment can be damaged. For this reason, Enphase recommends that you protect your system with a lightning and/or surge suppression device. In addition to having some level of surge suppression, it is also important to have insurance that protects against lightning and electrical surges. Protection against lightning and resulting voltage surge must be in accordance with local standards. Damage caused by lightning or electrical surges is not covered under Enphase limited warranty.
Q-cable loop radius	When looping the Enphase Q Cable, do not form loops smaller than 4.75" (12 cm) in diameter.
Using disconnect tool	If you need to remove a sealing cap, you must use the Enphase disconnect tool. Enphase AC connectors are tool-removable only. To disconnect the microinverter from the Enphase Q Cable, insert the disconnect tool and remove the connector.
Pop out MI	Before installing the AC module, the microinverters must be lifted from the shipping position. On the ground, turn the AC Module so that the microinverter faces you. Using both hands, lift the microinverter up. You will hear four clicks as the microinverter locks into the installation position. Ensure the four latches are locked, and the microinverter is not tilted.
Orientation	Vertical Mounting of ACMs is not allowed and it voids ENPH warranty

IMPORTANT SAFETY INFORMATION

READ THIS FIRST

This manual contains important instructions for use during the installation and maintenance of IQ8HC Microinverter.

IMPORTANT: The IQ8HC Microinverter listed in this manual requires an IQ Cable. An IQ gateway is required to monitor microinverter performance and, where required, provides control of the microinverters.

PODUCT LABEL


WARNING: Hot Surface


DANGER: Refer to safety instruction


DANGER: Risks of electric shock


Refer to manual


Double insulated

SAFETY AND ADVISORY SYMBOLS

To reduce the risk of electric shock, and to ensure the safe installation and operation of the 108MC Microinverter system, the following safety symbols appear throughout this document to indicate dangerous conditions and important safety instructions.


DANGER: This indicates a hazardous situation, which if not avoided, will result in death or serious injury.


WARNING: This indicates a situation where failure to follow instructions may be a safety hazard or cause equipment malfunction.


WARNING: This indicates a situation where failure to follow instructions may result in a burn injury.


NOTE: This indicates information that is very important for optimal system operation.
Follow instructions closely.

IQ8HC AC MODULE SAFETY INSTRUCTIONS

General Safety


DANGER: Risk of electric shock. Risk of fire.

Only use electric system components approved for wet locations.

Only component personnel should install, troubleshoot, or replace Enphase microinverters or IQ Cables and accesories.

Ensure that all AC and DC wiring is correct, and that none of the AC or DC cables are pinched, shorted, or damaged. Ensure that all AC junction boxes are properly closed.

Do not exceed the maximum number of microinverters in an AC branch circuit as listed in the manual. You must protect each microinverter AC branch circuit with a breaker or fuse of 20 A or 25 A for single -phase and three-phase systems. Note that single -phase IQ Relays are rated for 20 A, whereas three-phase IQ Relays are rated 25 A.


DANGER: Risk of electric shock. Risk of fire.

Do not use Enphase equipment in a manner not specified by the manufacturer. Doing so may cause death or injury to persons or damage to equipment.

Be aware that installation of this equipment includes the risks of electric shock.

The DC conductors of this photovoltaic system are ungrounded and may be energized.

For shutting down the system, always de-energize the AC branch circuit breaker. Never disconnect the DC or AC connectors under load.


WARNINGS:

Before installing or using Enphase microinverters, read all instructions and cautionary markings in the technical descriptions of the Enphase equipment and the photovoltaic (PV) equipment.

Do not connect Enphase microinverters to the grid or energize AC circuit(s) until you have completed all the installation procedures and have received approval from the electrical network operator.

When the PV array is exposed to light, DC voltage is supplied to the power conversion equipment (PCE).

Risk of equipment damage. Enphase male and female connectors must only be mated with the identical type and brand of male and female connector.

NOTES:

To ensure optimal reliability and to meet warranty requirements, install the Enphase equipment according to the instructions in this manual.

The AC and DC connectors on the cabling are rated as a disconnect only when used with an Enphase microinverter.

Protection against lightning and resulting voltage surge must be in accordance with local electrical codes and standards.

Perform all electrical installations in accordance with all applicable local electrical codes and standards.

Microinverter safety

WARNING: Risk of skin burn.

The chassis of an Enphase microinverter is the heat sink. Under normal operating conditions, the temperature could be 20°C above ambient temperature of 90°C. To reduce the risk of burns, use caution when working with microinverters.

DANGER: Risk of fire.

The DC conductors of PV modules must be labelled **PV Wire** or **PV Cable** when paired with Enphase microinverters.

DANGER: Risk of electric shock. Risk of fire.

Only competent personnel may connect Enphase microinverters to the electric grid.

Do not attempt to repair Enphase microinverters; they contain no user-serviceable parts and do not require any regular maintenance. If one fails, contact Enphase Support to obtain a return merchandise authorization (MA) number and start the replacement process. Tampering with or opening an Enphase microinverter will void its warranty.

WARNING: Risk of equipment damage.

Install the microinverter under the PV module to avoid direct exposure to rain, UV, and other harmful weather events. Always install the microinverter bracket side up. Do not mount the microinverter upside down. Do not expose the AC or DC connectors (on the IQ Cable, PV module, or microinverter) to rain or condensation before the connectors are mated.

The maximum open circuit voltage of the PV module must not exceed the specified maximum input DC voltage of the microinverter. Refer to the Enphase compatibility calculator to verify PV module electrical compatibility with the microinverter. Use IQ8HC Microinverter only with compatible PV modules as per the Enphase compatibility calculator. Using an electrically incompatible PV module will void the microinverter's warranty.

WARNING: Risk of equipment damage.

You must match the DC operating voltage range of the PV module with the allowable input voltage range of the microinverter.

The microinverter is not protected from damage due to moisture trapped in cabling systems. Never mate microinverters to cables that have been left disconnected and exposed to wet conditions. This voids the microinverters' warranty.

WARNING: Risk of equipment damage.

The microinverter functions only with a standard, compatible PV module with appropriate fill factor, voltage, and current ratings. Unsupported devices include smart PV modules, fuel cells, wind or water turbines, DC generators, non-Enphase batteries, etc. These devices do not behave like standard PV modules, so operation and compliance are not guaranteed. These devices may also damage the microinverter by exceeding its electrical rating, making the system potentially unsafe.

NOTES:

The microinverter has field-adjustable voltage and frequency trip points that may need to be set, depending upon local requirements. Only a competent authorized installer with the permission from local electrical authorities should make adjustments.

NOTES: Installers must check the manufacturing date of the |Q8MC Microinverter to ensure that the installation date is within one year of the manufactured date of the products. Contact your local distributor to validate the date code.

IQ Cable safety

DANGER: Risk of electric shock. Do not install the IQ Terminator while the power is connected.

DANGER: Risk of electric shock. Risk of fire When stripping the sheath from an IQ' Cable, make sure the conductors are not damaged. If the exposed conductors are damaged, the system may not function properly.

Do not leave AC connectors on an IQ Cable uncovered for an extended period. You must cover any unused connector with an IQ Sealing Cap.

Ensure that protective IQ Sealing Caps have been installed on all unused AC connectors. Unused AC connectors are live when the system is energized.

WARNING: Use an IQ Terminator only once. If you open an IQ Terminator following installation, the latching mechanism will be destroyed. If the latching mechanism is defective, do not use the IQ Terminator. Do not circumvent or manipulate the latching mechanism.

When installing an IQ Cable, secure any loose cable to avoid the risk of cable insulation abrasion against the roof surface.

NOTES: When looping an IQ Cable, do not form loops smaller than 120 mm in diameter.

Provide support for an IQ Cable every 300 mm.

If you need to remove an IQ Sealing Cap, you must use an IQ Disconnect Tool.

When installing an IQ Cable and accessories, adhere to the following:
• Do not expose the IQ Terminator cap or cable connections to directed, pressurized liquid (water jets, and so on).
• Do not expose the IQ Terminator or IQ Cable to continuous immersion.
• Do not expose the IQ Terminator or IQ Cable connections to continuous tension (for example, tension due to pulling or bending the cable near the connection).
• Use only compatible IQ connectors.
• Do not allow contamination or debris in the connectors.
• Use the IQ Terminator and cable connections only when all parts are present and intact.
• Do not install or use in potentially explosive environments.
• Do not allow the IQ Terminator to come into contact with an open flame.
• Fit the IQ Terminator using only the prescribed tools and in the prescribed manner.
• Use only the IQ Terminator to seal the conductor end of the IQ Cable; no other method is allowed.

DC Cable safety

NOTES:
• Ensure proper routing of PV module DC cable using the clips to prevent the leads from resting on the roof. Do not wrap excess DC cable around the microinverter.
• Avoid direct exposure to sunlight.
• Avoid sharp edges on racking.
• Avoid cable contacting rough surfaces or moving parts within the racking system.
• Avoid overly tight bending radii. The minimum bend radii for the DC cable is eight times the cable's outer diameter.
• Avoid overly tight-sized cable clips for routing.

ENPHASE ENERGY SYSTEM

Enphase Energy System includes:
• **IQ8 Series AC Module:** The AC Module uses a smart grid-ready IQ Series Microinverter that converts the DC output of the PV module into grid-compliant AC power.

• **IQ Gateway:** An IQ Gateway (model ENV-S-WM-230, or ENV-S-WB-230) is required to monitor solar production, propagate a grid profile to the microinverters, and provide microinverter control at sites where power export limitation (PEL) and/or phase imbalance management (PIM) is required through advanced grid functionalities. The IQ Gateway is a communication device that provides network access to the PV array. The IQ Gateway collects production and performance data from the IQ8 Series Microinverters over on-site AC power lines and transmits the data to the Enphase App through a broadband or cellular connection. The IQ Gateway can monitor up to 300 IQ8 Series Microinverter.

• **Enphase Installer Portal:** Web-based monitoring and management software. Installers can use the Enphase Installer Portal to view detailed performance data, manage multiple PV systems, and remotely resolve issues that might impact system performance. Find out more at https://enphase.com/en-au/installers/apps.

• **Enphase Installer App:** A mobile app for iOS or Android devices. It allows installers to configure a system while on-site, eliminating the need for a laptop and improving installation efficiency. You can use the app to:

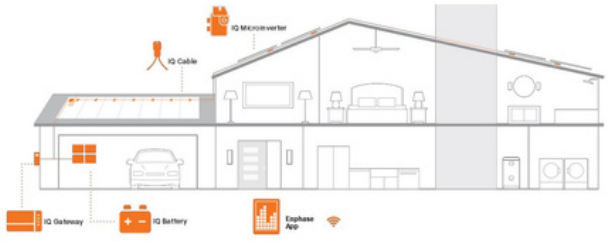
- Connect to the IQ Gateway over a wireless network for faster system setup and verification.
- View and email a summary report that confirms a successful installation.
- Scan device serial numbers and sync system information with the Enphase Installer Portal.

This manual describes the safe installation and operation of the IQ8 Series Microinverter.

NOTES: To ensure optimal reliability and to meet warranty requirements, the IQ8 Series Microinverter must be installed according to the instructions in this manual.

HOW DOES THE IQ8 SERIES MICROINVERTER WORK

The microinverters maximize energy production by using a sophisticated maximum power point tracking (MPPT) algorithm. Each microinverter individually connects to one PV module in your array. This configuration enables an individual MPPT to control each PV module, ensuring that the maximum power available from each PV module is produced regardless of the performance of the other PV modules in the array. While an individual PV module in the array may be affected by shading, soiling, orientation, or PV module mismatch, each microinverter ensures top performance for its associated PV module.



System monitoring
Once you install the IQ Gateway and provide an internet connection through a broadband router or modem, the IQ8 Series Microinverters automatically begin reporting to the Enphase Installer Platform. The Enphase Installer Platform presents current and historical system performance trends and informs you of PV system status.

Optimal reliability
Microinverter systems are inherently more reliable than conventional string inverters. The distributed nature of a microinverter system ensures that there is no single point of system failure. IQ8 Series Microinverters are designed to operate at full power at ambient temperature.

Ease of design
PV systems using Enphase microinverters are very simple to design and install. You can install individual PV modules in any combination of PV module quantity, type, age, and orientation. Each microinverter quickly mounts on the PV racking beneath each PV module.

PLANNING FOR AC MODULE INSTALLATION

IQ8 Series Microinverters support PV modules with 54-cell/108-half-cell, 60-cell/120-half-cell, 66-cell/132-half-cell, and 72-cell/144-half-cell configurations. Modules can be paired if the maximum input voltage is not exceeded and the maximum input current of the inverters at the lowest and highest temperatures is respected. Installers should not exceed the small-scale technology certificate (STC) limit on PV module wattage for claiming the STC. See the compatibility calculator at https://enphase.com/en-au/installers/microinverters/calculator.

The microinverter housing is designed for outdoor installation and complies with the IP67 environmental enclosure rating standard.

IP67 rating definition: Indoor or outdoor use primarily to provide a degree of protection against hose-directed water, the entry of water during occasional temporary submersion at a limited depth, and damage from external ice formation.

IQ Cables are available with connector spacing options to accommodate the installation of PV modules in portrait or landscape orientation. For IQ Cable ordering information, refer to IQ Cable planning and ordering.

COMPATIBILITY

The IQ8 Series Microinverter is electrically compatible with PV modules, as listed in the following table. For specifications, see Technical Data in this manual. You can refer to the Enphase compatibility calculator at https://enphase.com/en-au/installers/microinverters/calculator to verify PV module electrical compatibility. To ensure mechanical compatibility, a microinverter's male and female connectors must only be mated with the identical type and brand of the male and female connector.

IMPORTANT: IQ8 Series Microinverter includes both AC and DC connectors integrated into the bulkhead.

The AC port connects to the IQ Cable or the IQ Field Wireable Connector. The DC port has been evaluated by TUV for intermate ability with Stäubli-made MC4 connectors, whose cable coupler models are **PV-KST4/...-UR, PV-KBT4/...-UR, PV-KBT4-EVO2/...-UR, and PV-KST4-EVO2/...-UR.** The DC port of the inverter must be mated with Stäubli-made MC4 connectors.

MICROINVERTER MODEL	CONNECTOR TYPE	PV MODULE CELL COUNT
IQ8HC-72-M-ACM-INT	Stäubli MC4	Pair with 54-cell/108-half-cell, 60-cell/120-half-cell, 66-cell/132-half-cell, 72-cell/144-half-cell

NOTES: The IQ8 Series Microinverter will not begin producing power until the IQ Gateway is installed and all the microinverters at the site have been detected. The grid profile must be configured, and the IQ Gateway must have propagated these settings to the microinverters.

EARTHING CONSIDERATIONS

The microinverter has a Class II double-insulated rating, which includes ground fault protection (GFP). Refer to local electrical codes and standards for earthing requirements of PV arrays and racking.

BRANCH CIRCUIT CAPACITY

Plan your AC branch circuits to meet the following limits for the maximum number of microinverters per branch circuit.

MAXIMUM* IQ8HC MICROINVERTER PER AC BRANCH CIRCUIT	
Breaker	**IQ8HC**
20 A Single=phase (single-phase IQ Relay	10
25 A Three -phase (three=phase IQ Relay)	36 (12 per phase)

*Refer to local regulations for overcurrent protection device (OCPD) sizing and define the number of microinverters per branch in your area.

NOTES: A minimum of two IQ8 Series Microinverters is required in systems installed in Australia and New Zealand to meet AS/NZS 4777.2:2020 requirements.

ELECTRICITY NETWORK REQUIREMENTS

The IQ8 Series Microinverter works with single-phase or three-phase grid connections. Measure AC line voltage at the point of connection to confirm that it is within the ranges shown:

SINGLE-PHASE SERVICE		THREE-PHASE SERVICE	
L1 to N	184 to 276 VAC	L1 to L2 to L3	319 to 478 VAC
		L1, L2, L3 to N	184 to 276 VAC

CONDUCTOR LENGTHS AND VOLTAGE RISE

When planning a system, select the appropriate AC conductor size to minimize voltage rise. Select the correct conductor size based on the distance from the junction with the microinverter AC branch circuit to the circuit breaker in the electrical panel. Enphase recommends a voltage rise total of less than 2% from the start of IQ Cable to the point of supply.

Best practice: Centre-feed the branch circuit to minimize voltage rise in a fully populated branch. This practice substantially reduces the voltage rise as compared with an end-fed branch. To centre-feed a branch, divide the circuit into two sub-branch circuits protected by a single OCPD.

LIGHTNING AND SURGE SUPPRESSION

IQ8 Series Microinverters have integral surge protection, greater than most conventional inverters. However, if a surge has sufficient energy, the protection built into the microinverter can be exceeded, and the equipment can be damaged. For this reason, Enphase recommends that you protect your system with a lightning and/or surge suppression device. In addition to having some level of surge suppression, it is also important to have insurance that protects against lightning and electrical surges. For more details, refer to https://support.enphase.com/s/article/Surge-Protection-for-Enphase-Microinverter-Systems.

NOTE: Protection against lightning and resulting voltage surges must be in accordance with local electrical codes and standards.

PARTS AND TOOLS REQUIRED

In addition to the microinverters, PV modules, and racking, you will need the following:

ENPHASE EQUIPMENT

• **IQ Gateway:** Required to monitor production.
• **Enphase Installer App:** Download the Enphase Installer App, open it, and log in to your Enphase Account. Use it later to scan the microinverter serial numbers and connect to the IQ Gateway to track system installation progress. To download, go to https://enphase.com/en-au/installers/apps or scan the QR code at the right.

• **IQ Relay:** Single-phase (Q-RELAY-1P-INT) or three-phase (Q-RELAY-3P-INT).

NOTE: The three-phase IQ Relay also provides phase coupling, allowing microinverters on all phases to communicate with the IQ Gateway. Use a Legrand phase coupler (LPC-01) for the three-phase system for phase coupling if an IQ Relay is not installed in a three-phase system.

• **Tie wraps or IQ Cable Clip** (ET-CLIP-100): Works with both single-phase and three-phase IQ Cable.
• **IQ Sealing Caps** (Q-SEAL-10): For any unused connectors on the IQ Cable.
• **IQ Terminator** (Q-TERM-R-10 for single-phase or Q-TERM-3P-10 for three-phase): Enphase recommends one terminator for each AC cable segment end; typically, two are needed per branch circuit.
• **IQ Disconnect Tool** (Q-DISC-10).
• **IQ Field Wireable Connectors** (male and female single-phase: Q-CONN-R-10M and Q-CONN-R-10F; male and female three-phase: Q-CONN-3P-10M and Q-CONN-3P-10F).
• **IQ Cable:**

CABLE MODEL	CONNECTOR SPACING	PV MODULE ORIENTATION	CONNECTOR COUNT PER BOX
Single-phase			
Q-25-10-240	1.3 m	Portrait	240
Q-25-17-240	2.0 m	Landscape (60-cell)	240
Q-25-20-200	2.3 m	Landscape (72-cell)	200
Three-phase			
Q-25-10-3P-200	1.3 m	Portrait	200
Q-25-17-3P-160	2.0 m	Landscape (60-cell)	160
Q-25-20-3P-160	2.3 m	Landscape (72-cell)	160

• **IQ Raw Cable** (Q-25-RAW-300 for single-phase, Q-25-RAW-3P-300 for three-phase): Length 300 m. Raw cable with no connectors.

Other items
• AC junction box
• Screwdrivers
• Wire cutters, clamp meter
• Torque wrench, sockets, and wrenches for mounting hardware

ENPHASE AC MODULE INSTALLATION

Installing the AC Module involves the following 11 key steps. Each step listed here is detailed in the following pages.

Step 1: Install the Rooftop AC Isolator or AC Junction Box.
Step 2: Position the IQ Cable.
Step 3: Terminate the unused end of the IQ Cable.
Step 4: Prepare the AC Modules.
Step 5: Create the installation map.
Step 6: Mount the AC Modules.
Step 7: Connect the AC Modules.
Step 8: Manage the cabling.
Step 9: Ground the PV Module support frames.
Step 10: Energize the system.
Step 11: Set up and activate monitoring.

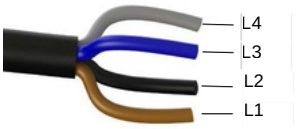
STEP 1: INSTALL A JUNCTION BOX

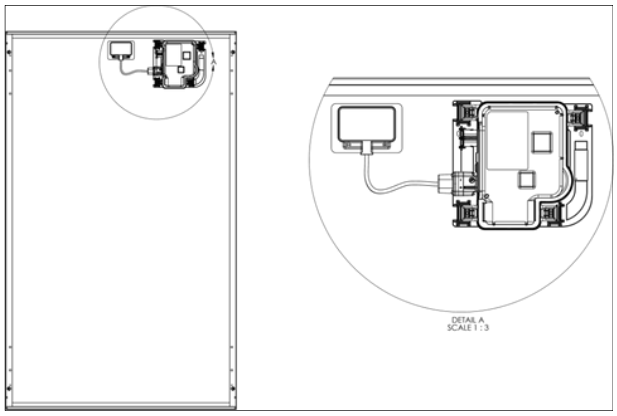
A. Verify that the AC voltage at the site is within range.

SINGLE-PHASE SERVICE		THREE-PHASE SERVICE	
L1 to N	184 to 276 VAC	L1 to L2 to L3	319 to 478 VAC
		L1, L2, L3 to N	184 to 276 VAC

B. Install a junction box/AC isolator at a suitable location on the racking.
C. Provide an AC connection from the junction box/AC isolator back to the electricity network using equipment and practices as required by local jurisdictions.
D. For single-phase installation, verify IQ Cable wiring colour codes are correctly terminated: L1-Brown, N-Blue
For multi-phase installations, verify the IQ Cable wiring colour codes are correctly terminated: L1-Brown, L2-Black, L3-Grey, N-Blue.

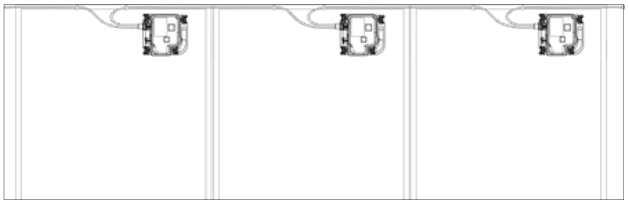
WARNING: The blue conductor in IQ Cable should be used only for neutral connection. Incorrect termination may irrecoverably damage any connected microinverters.





STEP 2: POSITION THE IQ CABLE

A. Plan each cable segment to allow drop connectors on the IQ Cable to align with each AC Module. Allow extra length for slack, cable turns, and any obstructions.
B. Mark the approximate centers of each PV module on the PV racking.
C. Lay out the cabling loosely on the roof for the AC branch circuit. Ensure that the cable is positioned in a way that allows you to connect it to each of the microinverters.



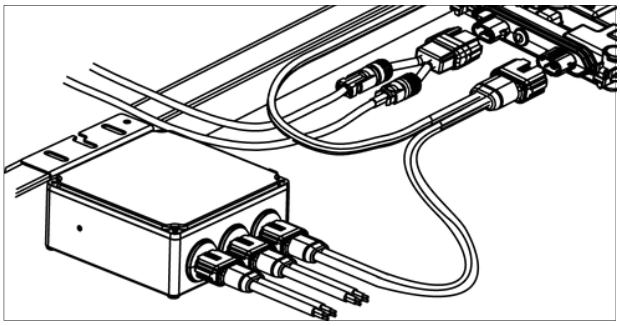
D. Cut each segment of cable to meet your planned needs.

WARNING: Do not install the modules in a way that creates continuous tension on the IQ Cable.

E. Connect the IQ Cable to the AC junction box. For single-phase installation, verify IQ Cable wiring colour codes are correctly terminated: L1-Brown, N-Blue. For multi-phase installations, verify the IQ Cable wiring colour codes are correctly terminated: L1-Brown, L2-Black, L3-Grey, N-Blue.

STEP 3: TERMINATE THE UNUSED END OF THE IQ CABLE

Place sealing caps on unused connectors and terminate the unused end of the IQ Cable as follows.

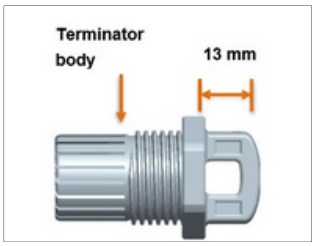


A. Cover any unused connectors with IQ Sealing Caps. Listen for a click as the connectors engage.

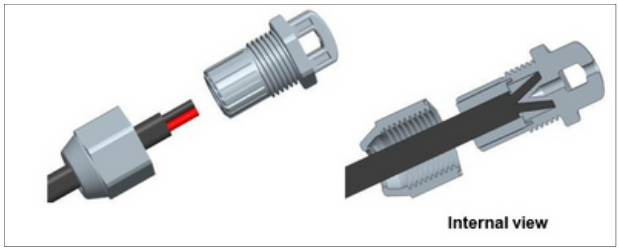
WARNING: Risk of electric shock. Risk of fire. Install sealing caps on all unused AC connectors, as these connectors become live when the system is energized. IQ Sealing Caps are required for protection against moisture ingress.

NOTE: If you need to remove a sealing cap, use an IQ Disconnect Tool. For more information, refer to the Removing and replacing a microinverter.

B. Remove 13 mm (½ in) of the cable sheath from the conductors. Use the terminator loop to measure 13 mm.



C. Slide the hex nut onto the cable.
D. Insert the cable into the terminator body so that each of the two wires lands on opposite sides of the internal separator. There is a grommet inside the hex nut that should remain in place.

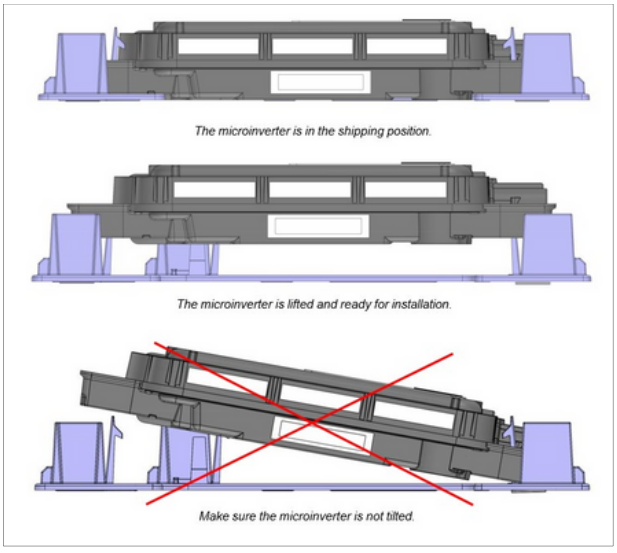


E. Insert a screwdriver into the slot on the top of the terminator to hold it in place, and torque the nut to 7 N m.
F. Hold the terminator body stationary with the screwdriver and turn only the hex nut to prevent conductors from twisting out of the separator.
G. Attach the terminated cable end to the PV racking with a cable clip or tie wrap so that the cable and terminator do not touch the roof.

WARNING: The terminator cannot be reused. If you unscrew the nut, you must discard the terminator.

STEP 4: PREPARE THE AC MODULE

A. The microinverters must be lifted from the shipping position before installing the AC Module. On the ground, turn the AC Module so that the microinverter faces you. Using both hands, lift the microinverter. You will hear four clicks as the microinverter locks into the installation position. Ensure that the four latches are locked, and the microinverter is not tilted.



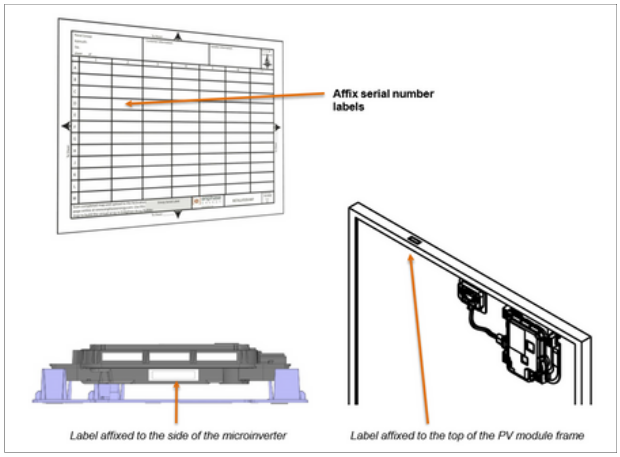
NOTE: If you need to move the module, you can return the microinverter to the shipping position using an IQ Disconnect Tool. Use the tool to depress the four locking mechanisms on each corner of the microinverter to return it to the shipping position.

B. Position the AC Modules on the rail as planned.

STEP 5: USE THE SERIAL NUMBER LABELS TO CREATE THE INSTALLATION MAP

The Enphase installation map is a diagram of the physical location of each module in your PV installation. Copy or use the blank map to record module placement for the system or provide your own layout if you require a larger or more intricate installation map. Each AC Module, IQ Gateway, and IQ Battery has a removable serial number label. Build the installation map by peeling the serial number labels from the modules and placing the labels on the map. You would also place the IQ Gateway (required) and IQ Battery (optional) serial numbers on the map after installation. After creating the installation map, use the Enphase Installer App to record serial numbers and configure the system. For more information, refer to **Detect the Microinverters** in the help topics of the Enphase Installer App.

A. Remove the label from each module before passing it to the roof. Apply the label to the proper position on the installation map.
B. Peel the label from the IQ Gateway (and IQ Battery, if installed) and affix it to the installation map.
C. Always keep a copy of the installation map for your records.



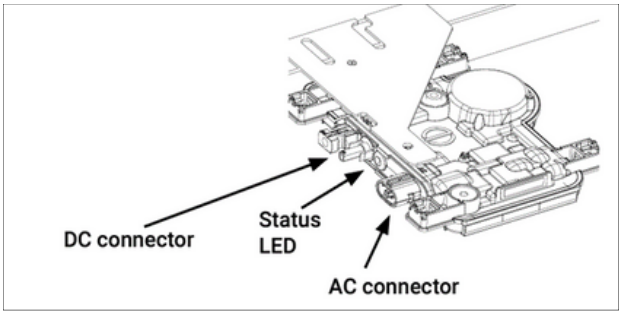
STEP 6: MOUNT THE AC MODULE

A. Install the AC Module with a clearance of at least 10 cm (4 in) from the roof. Also, ensure that the microinverter on the underside of the AC Module is at least 19 mm (0.75 in) away from the roof or installation surface.
B. Do not place the AC Modules in such a way that places pressure on the microinverters. The minimum distance from the top edge of the module to the rail should be about 30 cm (12 in).
C. Ensure that the minimum gap between modules is 10 mm (0.4 in) or greater.
D. Check that rails and clamps are clear of the microinverters by at least 3.8 cm (1.5 in). Do not obstruct module drain holes.

STEP 7: CONNECT THE MICROINVERTERS AS YOU INSTALL THE AC MODULES

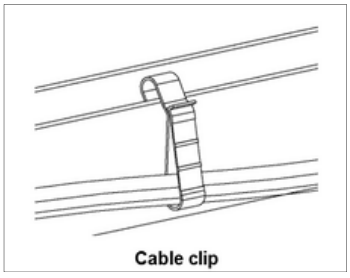
A. Check again that the AC Modules are not placing pressure on the microinverters. The minimum distance from the top edge of the module to the rail should be about 30 cm (12 in).
B. As you install each AC Module, connect the IQ Cable to the microinverter. Listen for a click as the connectors engage.
C. Cover any unused connectors on the AC cable with IQ Sealing Caps. Listen for a click as the sealing caps engage.

WARNING: Risk of electric shock. Risk of fire. Install sealing caps on all unused AC connectors, as these connectors become live when the system is energized. Sealing caps are required for protection against moisture ingress.



STEP 8: MANAGE THE CABLING

Use cable clips to attach the cable to the module frame. Leave no more than 1.8 m (6 feet) between cable clips.



Dress any excess cabling in loops so that it does not contact the roof. Do not form loops smaller than 12 cm (4¾ inch) in diameter.

WARNING: Loose cables can become a tripping hazard. Dress the IQ Cable to minimize this potential.

NOTE: Some modules do not include framing on their shortest side. Cable clips cannot attach to the frameless side for cable management. Plan to use the longer, framed side for cable management when this is the case.

STEP 9. GROUND THE PV MODULE SUPPORT FRAMES

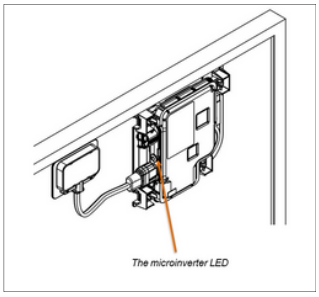
Ground the PV Module support frames per manufacturer's instructions.

STEP 10: ENERGIZE THE SYSTEM

A. Turn on the AC disconnect or circuit breaker for the branch circuit.
B. Turn on the main utility grid AC circuit breaker. Your system will start producing power after a five-minute wait time.
C. Check the LED on the connector side of the microinverter.

LED COLOUR	INDICATES
Flashing green	Normal operation. AC grid function is normal and there is communication with the IQ Gateway. The microinverter's LED will be flashing green only after provisioning.
Flashing orange	The AC grid is normal, but there is no communication with the IQ Gateway.
Flashing Red	The AC grid is either not present or not within the specification.
Solid Red	There is an active **DC Resistance Low, Power Off** condition. If the problem persists, measure resistance between PV+ to EARTH, PV- to EARTH on the PV module, and then inverter. Anything less than 7 kΩ approximately will trigger the **DC Resistance Low - Power Off** condition. Usually, the value is in MΩ on the inverter or PV module. Swap out faulty PV module or microinverter.

NOTE: For shutting down the system, always de-energize the AC branch circuit breaker. Never disconnect the DC or AC connectors under load.



STEP 11: SET UP AND ACTIVATE MONITORING

This guide leads you through the following:

- Connecting the Gateway
- Detecting devices and scanning the installation map
- Connecting to the Enphase Installer Portal
- Registering the system
- Building the virtual array

NOTE: When the utility requires a profile other than the profile resident on the microinverter, you must select an appropriate grid profile for your installation. You can set the grid profile through the Enphase App, during system registration, or through the Enphase Installer App at any time. You must have an IQ Gateway to set or change the grid profile.

TROUBLESHOOTING

Follow all safety measures described in this manual. Competent personnel can use the following troubleshooting steps if the PV system does not operate correctly.

WARNING: Risk of electric shock. Do not attempt to repair Enphase microinverters, as they contain no user-serviceable parts. If one fails, contact Enphase Support to obtain a return merchandise authorization (RMA) number and start the replacement process.

STATUS LED INDICATIONS AND ERROR REPORTING

The following section describes LED indications.

LED operation

LED COLOUR	INDICATES
Flashing green	Normal operation. AC grid function is normal and there is communication with the IQ Gateway. The microinverter's LED will be flashing green only after provisioning.
Flashing orange	The AC grid is normal, but there is no communication with the IQ Gateway.
Flashing Red	The AC grid is either not present or not within the specification.
Solid Red	There is an active **DC Resistance Low, Power Off** condition. If the problem persists, measure resistance between PV+ to EARTH, PV- to EARTH on the PV module, and then inverter. Anything less than 7 kΩ approximately will trigger the **DC Resistance Low - Power Off** condition. Usually, the value is in MΩ on the inverter or PV module. Swap out faulty PV module or microinverter.

The status LED on each microinverter lights green about six seconds after DC power is applied. It remains lit solid for two minutes, followed by six green flashes. After that, red blinks indicate that no grid is present if the system is not yet energized.

Any short red blinks after DC power is first applied to the microinverter indicate a failure during microinverter startup.

DC Resistance Low – Power Off condition

For all IQ8 Series Microinverters, a solid red status LED when DC power has been cycled indicates the microinverter has detected a DC Resistance Low – Power Off event. The LED will remain red, and the fault will continue to be reported by the gateway until the error has been cleared.

An insulation resistance (IR) sensor in the microinverter measures the resistance between the positive and negative PV inputs to the ground. If either resistance drops below a threshold of 7 kΩ, the microinverter stops power production and raises this condition. This may indicate defective module insulation, defective wiring or connectors, moisture ingress, or a similar problem. Although the cause may be temporary, this microinverter condition persists until the sensor is manually reset.

An IQ Gateway is required to clear this condition. The condition clears on operator command unless its cause is still present.

If a microinverter registers a **DC Resistance Low - Power Off** condition, you can attempt to clear this condition. If the condition does not clear after performing the following procedure, contact Enphase Support at https://enphase.com/contact/support.

Follow the steps below to send a **clear** message to the microinverter. Note that the condition will not clear after the sensor reset if the cause of the failure is still present. If the condition persists, contact Enphase Support.

Method: Clear this error using the Enphase Installer Portal

1. Log in to the Enphase Installer Portal and access the system.
2. Click the **Events** tab. The next screen shows the system's current **DC Resistance Low - Power Off** condition.
3. Click **DC Resistance Low - Power Off**.
4. Click the serial number of the affected microinverter.
5. Click **Tasks and Clear GFI** to clear the event.

Other faults

All other faults are reported to the gateway.

TROUBLESHOOTING A NON-FUNCTIONAL MICROINVERTER

To troubleshoot a non-functional microinverter, follow the steps in the order shown:

WARNING: Risk of electric shock. Always de-energize the AC branch circuit before servicing. Never disconnect the DC or AC connectors under load.

WARNING: The Enphase microinverters are powered by DC power from the PV modules. Ensure that you disconnect the DC connections, reconnect the DC power, and then watch for the solid green for about six seconds after connection to DC power.

A. Ensure that AC circuit breakers and isolator switches are closed.
B. Check the connection to the grid and verify that the grid voltage is within allowable ranges.
C. Verify that AC line voltages at all PV circuit breakers at the electrical panel and sub-panels are within the ranges shown in the following table.
D. Verify that the AC line voltage at the junction box for each AC branch circuit is within the ranges shown in the following table.

SINGLE-PHASE SERVICE		THREE-PHASE SERVICE	
L1 to N	184 to 276 VAC*	L1 to L2 to L3	319 to 478 VAC*
		L1, L2, L3 to N	184 to 276 VAC*

*The nominal voltage range can be extended beyond the nominal range if required by the electricity network operator.

E. Using an IQ Disconnect Tool, disconnect the AC cable from the IQ Cable for the microinverter in question.
F. Verify that the grid is present at the microinverter by measuring line-to-line voltage and line-to-ground voltage at the IQ Cable connector.
G. Check that the AC branch circuit connections (IQ Cable and AC connections) are properly seated. Reset if necessary. Check for any damage, such as rodent damage.
H. Ensure that any upstream AC disconnects and the dedicated circuit breakers for each AC branch circuit are functioning correctly and are closed.
I. Disconnect and reconnect the DC PV module connectors. The status LED of each microinverter will light solid green for a few seconds after connection to DC power and then flash green six times to indicate normal start-up operation about two minutes after connecting to DC power. The LED subsequently resumes normal operation if the grid is present. Refer to LED operation.
J. Connect a clamp meter (set to DC mode) to one of the conductors of the DC cables from the PV module to measure microinverter current. This will be under 1 A if the AC is disconnected.
K. Verify that the PV module DC voltage is within the allowable range shown in Specifications. Refer to the Enphase compatibility calculator at https://enphase.com/en-au/installers/microinverters/calculator to verify PV module electrical compatibility with the microinverter.
L. Swap DC leads with a known good, adjacent PV module. After checking the Enphase Installer Portal periodically (this may take up to 30 minutes), the problem moves to the adjacent module. This indicates that the PV module is not functioning correctly. If it stays in place, the problem is with the original microinverter. Contact Enphase Support for help in reading the microinverter data and obtaining a replacement microinverter if needed.
M. Check the DC connections between the microinverter and the PV module. The connection may need to be tightened or reseated. If the connection is worn or damaged, it may need replacement.
N. Verify with your electricity network operator or with a multi-meter measuring frequency at the point of supply that the line frequency is within range. If the problem persists, contact Enphase Support at https://enphase.com/contact/support.

DISCONNECTING AN AC MODULE

If problems remain after following the troubleshooting steps listed previously, contact Enphase Support at https://enphase.com/contact/support. If Enphase authorizes a replacement, follow the steps below. To ensure that the microinverter is not disconnected from the PV modules under load, follow the disconnection steps in the order shown:

A. De-energize the AC branch circuit breaker.
B. IQ Cable AC connectors are tool-removable only. To disconnect the microinverter from the IQ Cable, insert an IQ Disconnect Tool and remove the connector.
C. Cover the PV module with an opaque cover.
Using a clamp meter set to DC mode, verify that no current flows in the DC cables between the PV module and the microinverter. If the current is still flowing, check that you have completed steps A, B, and C above.

NOTE: Take care when measuring DC current. Most clamp meters must be zeroed first, as they drift with time.

D. Disconnect the PV module DC cable connectors from the microinverter using an IQ Disconnect Tool.
E. If present, loosen and remove any bonding hardware.
F. Remove the microinverter from the PV racking.

WARNING: Risk of electric shock. Risk of fire. Do not leave any connectors on the PV system disconnected for an extended period. If you do not plan to replace the microinverter immediately, you must cover any unused connector with an IQ Sealing Cap.

REMOVING AND REPLACING AN AC MODULE

If problems remain after following the troubleshooting steps listed previously, contact Enphase Support at https://enphase.com/contact/support. If Enphase authorizes a replacement, ensure that the microinverter is not disconnected from the PV modules under load and follow the disconnection steps in the order shown:

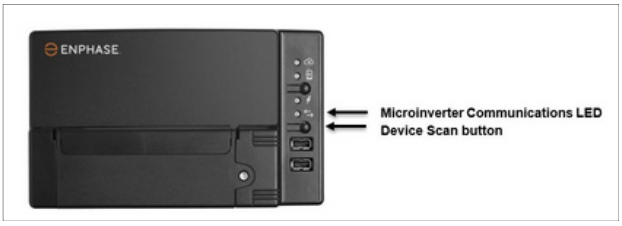
A. De-energize the AC branch circuit breaker.
B. AC connectors are tool-removable only. To disconnect the microinverter from the IQ Cable, insert the IQ Disconnect Tool and remove the connector.
C. Remove the AC Module from the roof per the manufacturer's instructions.
D. Once on the ground, disconnect the PV module DC connector from the microinverter using the IQ Disconnect Tool.

E. Press each of the four clips to free the microinverter.
F. Snap a new replacement microinverter into place.
G. Connect the PV module DC connectors to the microinverter.
H. Scan the new serial number.

NOTE: The serial number of the replacement microinverter will differ from the serial number on the AC Module frame.

I. Bring the AC Module back onto the roof or other mounting location.
J. Connect the IQ Cable to the AC Module's AC and DC connectors.
K. Energize the AC branch circuit breaker and verify the operation of the replacement microinverter by checking the **Status LED** on the connector side of the microinverter.
L. Use the Enphase Installer App to retrieve the old microinverter serial number from the IQ Gateway database. In the Enphase Installer App, once connected to the IQ Gateway:

a. Tap **Devices & Array** > **IQ Microinverters & Array** > **IQ Microinverter Serial Number**
b. Tap **RETIRE** to retire the old microinverter serial number from the IQ Gateway database.
c. Add the new microinverter serial number to the gateway database by scanning the barcode using the Enphase Installer App and your device camera.
d. Tap **Devices & Array** > **IQ Microinverters & Array** > **ADD DEVICES**. Scan the IQ8 Series Microinverter's barcode and assign it to the array.
or
Go to **Service** > **Request return and install replacement** > **Install Replacement**. Enter the original device serial number and replacement device serial number and submit.



M. Start the provisioning process for the newly added microinverter using the Enphase Installer App and by connecting the Enphase Installer App to IQ Gateway in AP mode. You can then **Start Provisioning Devices** through the Enphase Installer App.
N. Ship the old microinverter to Enphase using the supplied return shipping label.

IQ CABLE PLANNING AND ORDERING

The IQ Cable is a continuous length of double-insulated, outdoor-rated cable with integrated connectors for microinverters. These connectors are preinstalled along the IQ Cable at intervals to accommodate varying PV module widths. The microinverters plug directly into the cable connectors.

CONNECTOR SPACING OPTIONS

IQ Cables are available in three connector spacing options. The gap between connectors on the cable can be 1.3 m, 2.0 m, or 2.3 m. The 1.3 m spacing is best suited for connecting PV modules installed in portrait orientation, while the 2.0 m and 2.3 m spacing allow you to install in landscape orientation for PV modules with 54-cell/108-half-cell, 60-cell/120-half-cell, 66-cell/132-half-cell, 72-cell/144-half-cell configurations.

IQ CABLE OPTIONS

The following are the IQ Cable ordering options:

CABLE MODEL	CONNECTOR SPACING	PV MODULE ORIENTATION	CONNECTOR COUNT PER BOX
Single-phase			
Q-25-10-240	1.3 m	Portrait	240
Q-25-17-240	2.0 m	Landscape (60-cell)	240
Q-25-20-200	2.3 m	Landscape (72-cell)	200
Three-phase			
Q-25-10-3P-200	1.3 m	Portrait	200
Q-25-17-3P-160	2.0 m	Landscape (60-cell)	160
Q-25-20-3P-160	2.3 m	Landscape (72-cell)	160

The cabling system is flexible enough to adapt to almost any solar design. To determine the cable type you need, apply the following considerations:

• When mixing PV modules in portrait and landscape orientation, you may need to transition between cable types. See the preceding table for available cable types.
• To transition between cable types, install an IQ Field Wireable Connector pair.
• In situations where portrait modules are widely spaced, you may need to use landscape-spaced cables for the portrait-oriented PV modules and create loops of excess cable, if required.

WARNING: Do not form loops smaller than 120 mm in diameter.

IQ CABLE ACCESSORIES

IQ Cables are available with several accessory options for ease of installation, including:

• **IQ Raw Cable** (Q-25-RAW-300 for single-phase, Q-25-RAW-3P-300 for three-phase): Length 300 m. Raw cable with no connectors (optional).
• **IQ Field Wireable Connectors** (male and female; single-phase: Q-CONN-R-10M and Q-CONN-R-10F; male and female; three-phase: Q-CONN-3P-10M and Q-CONN-3P-10F).
• **IQ Cable Clip** (ET-CLIP-100): Used to fasten cabling to the racking or to secure looped cabling.
• **IQ Disconnect Tool** (Q-DISC-10): Disconnect tool for IQ Cable connectors, DC connectors, and AC Module mounts.
• **IQ Sealing Caps** (female) (Q-SEAL-10): One is needed to cover each unused connector on the cabling.
• **IQ Terminator** (Q-TERM-R-10 for single-phase or Q-TERM-3P-10 for three-phase): One for each AC cable segment end; typically, two are needed per branch circuit.
• **IQ Relay:** Single-phase (Q-RELAY-1P-INT) or three-phase (Q-RELAY-3P-INT).

  • The three-phase IQ Relay also provides phase coupling, allowing microinverters on all phases to communicate with the IQ Gateway. Use a Legrand phase coupler (LPC-01) in a three-phase system for phase coupling support if IQ Relay is not installed in the system.

TECHNICAL DATA

TECHNICAL CONSIDERATIONS

Be sure to apply the following when installing the Enphase IQ8 Series Microinverter system:

WARNING: Risk of equipment damage. You must match the DC operating voltage range of the PV module with the allowable input voltage range of the Enphase microinverter.

WARNING: Risk of equipment damage. The maximum open circuit voltage of the PV modules must not exceed the specified maximum input voltage of the microinverters.

  • Verify that the voltage and current specifications of the PV modules match those of the microinverters.
  • The PV modules' maximum short circuit current rating must be equal to or less than the microinverters' maximum input DC short circuit current rating.

The output voltage and current of the PV modules depend on the PV cells' quantity, size, and temperature, and the insulation on each cell. The highest PV module output voltage occurs when the temperature of the cells is the lowest and the PV module is at an open circuit (not operating).

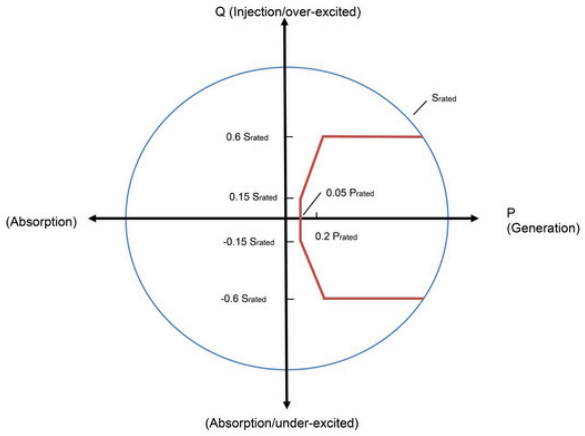
BIFACIAL MODULES

IQ8 Series Microinverter is compatible with bifacial PV modules if the temperature-adjusted electrical parameters (maximum power, voltage, and current) of the modules, considering the electrical parameters, including the bifacial gain, are within the allowable microinverter input parameters range. In evaluating the amount of bifacial gain, follow the recommendations of the module manufacturers.

ANTI-ISLANDING

IQ8 Series Microinverter complies with anti-islanding requirements as per AS4777.2, and the method used is VAR injection with frequency bias.

PQ CAPABILITY CURVE



SPECIFICATIONS

Refer to the following table for specifications of the IQ8 Series Microinverter:
• IQ8HC-72-M-ACM-INT

IQ8HC-72-M-INT MICROINVERTER SPECIFICATIONS

IQ8HC-72-M-ACM-INT Microinverter parameters				
Topic	**Unit**	**Min.**	**Typical**	**Max.**
DC parameters				
Maximum input power[1,2]	W		505	
Minimum/Maximum MPP voltage	V	29.5	—	45
Minimum/Maximum operating voltage	V	18	—	49
Minimum/Maximum input voltage	V	18	—	60
Start-up input voltage	V	22	—	—
Maximum input current (I_{dcmax})	A	—	—	14
Maximum short-circuit DC input current (I_{scmax})	A	—	—	25[3]
Protective class (all ports)	—	—	II	—
PV array configuration	1 × 1 ungrounded array; no additional DC side protection required; AC side protection requires a maximum of 20 A (single-phase or multi-phase).			
AC parameters				
Rated apparent power	VA		380	
Maximum apparent power	VA		384	
Power factor range	—		0.8 leading ... 0.8 lagging	
Minimum/Nominal/Maximum grid voltage[4]	V_{rms}	184	230	276
Rated/Maximum output current	A_{rms}	—	1.65	1.67
Nominal frequency	Hz	—	50	—
Minimum/Maximum frequency	Hz	45	—	55
Maximum AC output overcurrent protection device	A		20 A single-phase and 25 A multi-phase	
High AC voltage trip limit accuracy	%	±1.0	—	—
Low AC voltage trip limit accuracy	%	±1.0	—	—
Frequency trip limit accuracy	Hz	±0.1	—	—
Trip time accuracy (for trip times or delays < 5 sec.)	±ms	—	—	33
Trip time accuracy (for trip times or delays ≥ 5 sec.)	%	—	—	1
Overvoltage class AC port/DC port	—	—	III/II	—
Power factor setting	—	—	1.0	—
Miscellaneous parameters				
Maximum[5] microinverters per 20 A (maximum) AC branch circuit 230 VAC (single-phase)/400 VAC (multi-phase)	—		10 (L+N)/36 (3L+N)	
European weighted efficiency	%		96.8	
Total harmonic distortion	%	—	—	<5
Ambient air temperature range	°C	-40	—	60
Nighttime power loss	mW	—	—	50
Storage temperature range	°C	-40	—	85

1. No enforced DC/AC ratio. See the compatibility calculator at https://enphase.com/en-au/installers/microinverters/calculator
2. The installer should not exceed the small-scale technology certificate (STC) limit on PV module wattage for claiming the STC.
3. Maximum short circuit current for modules (Isc) allowed to be paired with IQ8 Series Microinverters: 20 A (calculated with 1.25 safety factor as per IEC 62548).
4. The nominal voltage range can be extended beyond the nominal range if required by the electricity network operator.
5. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8HC-72-M-ACM-INT Microinverter parameters	
Features and specifications	
Compatibility	54-cell/108-half-cell, 60-cell/120-half-cell, 66-cell/132-half-cell, 72-cell/144-half-cell
Dimensions (without mounting brackets)	212 mm (8.3 in) × 175 mm (6.9 in) × 30.2 mm (1.2 in)
DC connector type	Stäubli MC4
Weight	1.1 kg
IP Rating	Outdoor - IP67
Torque specifications for fasteners (Do not over-torque)	• 6 mm mounting hardware: 5 N m • 8 mm mounting hardware: 9 N m
Cooling	Natural convection - No fans
Relative humidity range	4% to 100% (condensing)
Approved for wet locations	Yes
Altitude	<2600 m
Pollution degree	PD3
Standard warranty terms	http://enphase.com/warranty
IQ8HC-72-M-ACM-INT Microinverter parameters	
Compliance	**With IQ Relay:** AS/NZS 4777-2:2020[6] **Safety:** EN IEC 62109-1, EN IEC 62109-2 **EMC:** EN IEC 61000-3-2, 61000-3-3, 61000-6-2, 61000-6-3, EN IEC 50065-1, 50065-2-1 EN55011 (At STC within MPP range)
Earthing	The DC circuit meets the requirements for ungrounded PV arrays. Ground fault protection (GFP) is integrated into the Class II double-insulated microinverter.
Monitoring	Enphase Installer Portal and Enphase App monitoring options. Both options require an IQ Gateway
Communication	Power line communication (PLC)

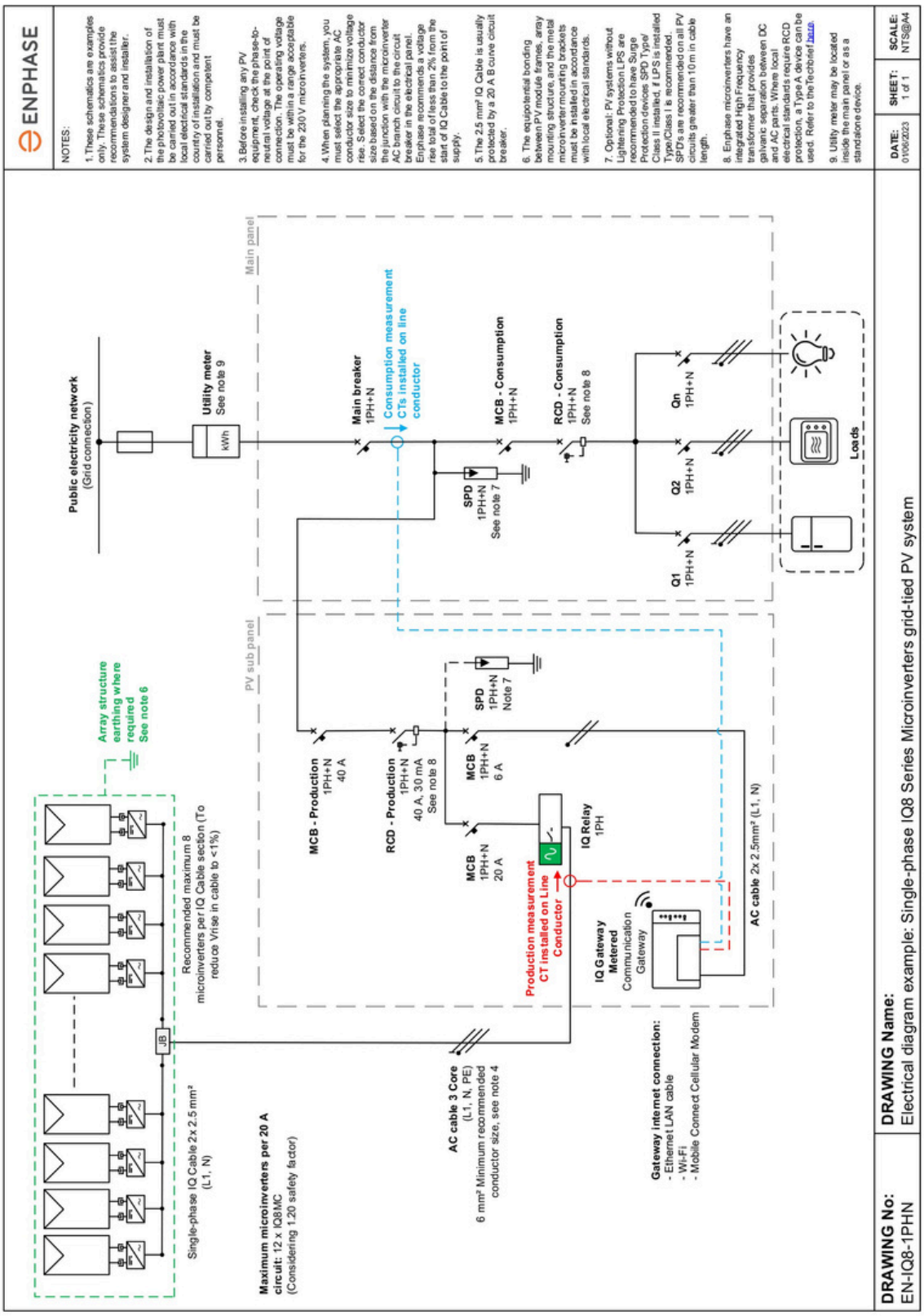
6. A minimum of two IQ8 Series Microinverters are required in the system.

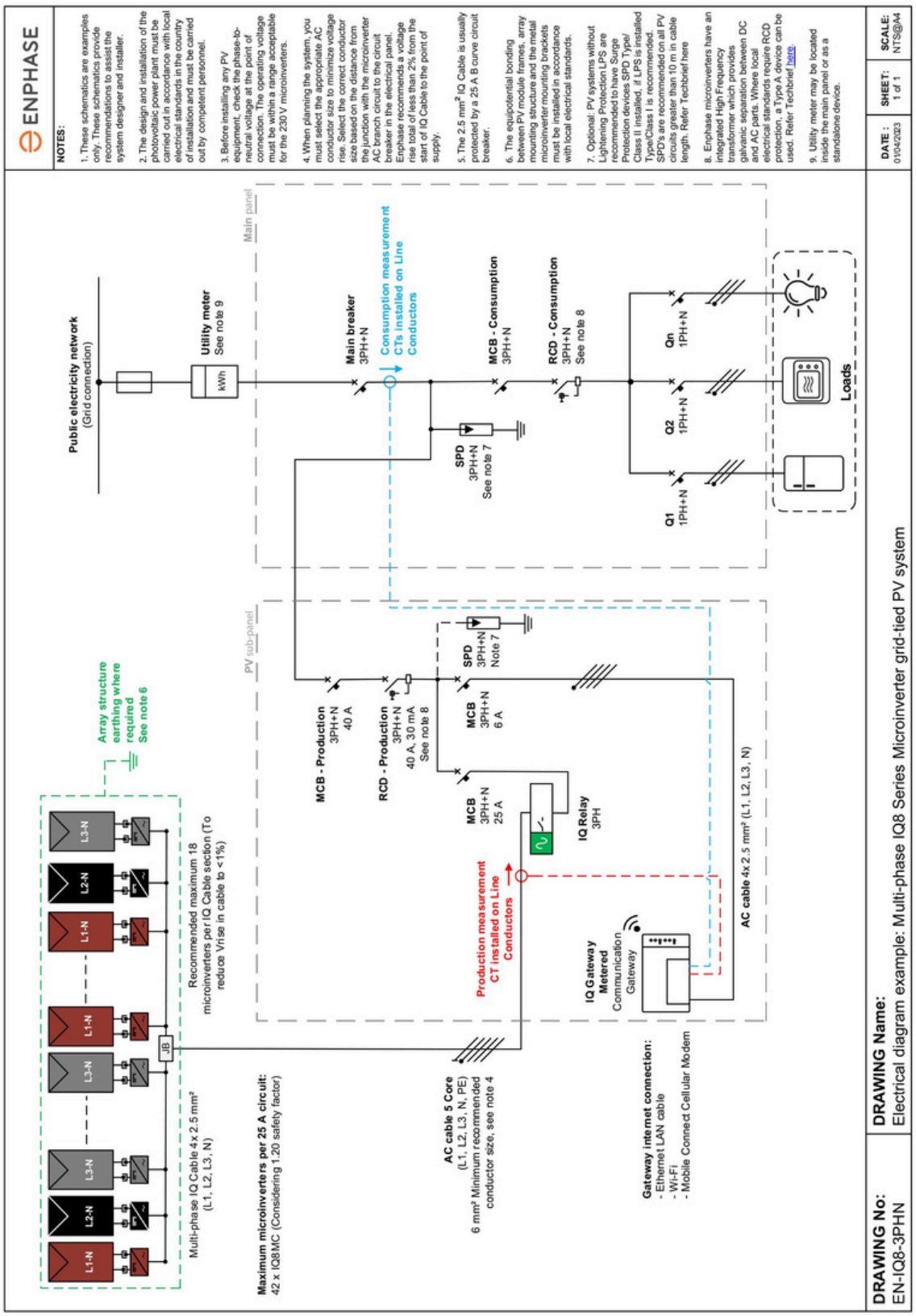
Panel Group: Azimuth Tilt: Sheet ____ / ____	Client:	Installer:	N S E W 

	1	2	3	4	5	6	7
A							
B							
C							
D							
E							
F							
G							
H							
J							
K							

REA Power Pty. Ltd. 6/19 Lennox St, Redland Bay QLD 4165 1300 360 047 www.reapower.com.au

ENPHASE WIRING DIAGRAM




ENPHASE
NOTES:
1. These schematics are examples only. These schematics provide recommendations to assist the system designer and installer.
2. The design and installation of the photovoltaic power plant must be carried out in accordance with local electrical standards in the country of installation and must be carried out by competent personnel.
3. Before installing any PV equipment, check the phase-to-neutral voltage at the point of connection. The operating voltage must be within a range acceptable for the 230 V microinverters.
4. When planning the system, you must select the appropriate AC conductor size to minimize voltage rise. Select the correct conductor size based on the distance from the junction with the microinverter AC branch circuit to the circuit breaker in the electrical panel. Enphase recommends a voltage rise total of less than 2% from the start of IQ Cable to the point of supply.
5. The 2.5 mm² IQ Cable is usually protected by a 25 A B curve circuit breaker.
6. The equipotential bonding between PV module frames, array mounting structure and the metal microinverter mounting brackets must be installed in accordance with local electrical standards.
7. Optional: PV systems without Lightening Protection LPS are recommended to have Surge Protection devices SPD Type/ Class II installed, if LPS is installed Type/Class I is recommended. SPD's are recommended on all PV circuits greater than 10 m in cable length. Refer Techbrief here
8. Enphase microinverters have an integrated High Frequency transformer which provides galvanic separation between DC and AC parts. Where local electrical standards require RCD protection, a Type A device can be used. Refer Techbrief here
9. Utility meter may be located inside the main panel or as a standalone device.
DATE : 01042023
SHEET: 1 of 1
SCALE: NTS@A4
Public electricity network
(Grid connection)
Utility meter
See note 9
kWh
Main panel
Main breaker
3PH+N
Consumption measurement
CTs installed on Line
Conductors
MCB - Consumption
3PH+N
RCD - Consumption
3PH+N
See note 8
SPD
3PH+N
See note 7
Qn
1PH+N
Q2
1PH+N
Q1
1PH+N
Loads
PV sub-panel
MCB - Production
3PH+N
40 A
RCD - Production
3PH+N
40 A, 30 mA
See note 8
SPD
3PH+N
Note 7
MCB
3PH+N
6 A
MCB
3PH+N
25 A
IQ Relay
3PH
Production measurement
CT installed on Line
Conductors
IQ Gateway
Metered
Communication
Gateway
AC cable 4x 2.5 mm² (L1, L2, L3, N)
Array structure
earthing where
required
See note 6
Recommended maximum 18
microinverters per IQ Cable section (To
reduce Vrise in cable to <1%)
Multi-phase IQ Cable 4 x 2.5 mm²
(L1, L2, L3, N)
JB
L1-N
L2-N
L3-N
Maximum microinverters per 25 A circuit:
42 x IQ8MC (Considering 1.20 safety factor)
AC cable 5 Core
(L1, L2, L3, N, PE)
6 mm² Minimum recommended
conductor size, see note 4
Gateway internet connection:
- Ethernet LAN cable
- Wi-Fi
- Mobile Connect Cellular Modem
DRAWING No:
EN-IQ8-3PHN
DRAWING Name:
Electrical diagram example: Multi-phase IQ8 Series Microinverter grid-tied PV system