INSTALLATION MAP

	To sheet: _			1		
Azim Tilt:			Client:	·	Installer:	
	1	2	3	4	5	6
А						
В						
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← E						
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J						
To sheet:	IQ Gateway serial label number:					

To sheet: _

Compliance with EU Directives

This product complies with the following EU Directives and can be used in the European Union without any restrictions.

• Electro Magnetic Compatibility (EMC) directive 2014/30/EU

Low Voltage Directive (LVD) 2014/35/EU

Restriction of Hazardous Substances (RoHS) 2011/65/EU

The full text of the EU declaration of conformity (DoC) is available at the following internet address: https://enphase.com/en-gb/installers/resources/ documentation.

Manufacturer:

Enphase Energy Inc., 47281 Bayside Pkwy., Fremont, CA, 94538, The United States of America, PH: +1 (707) 763-4784

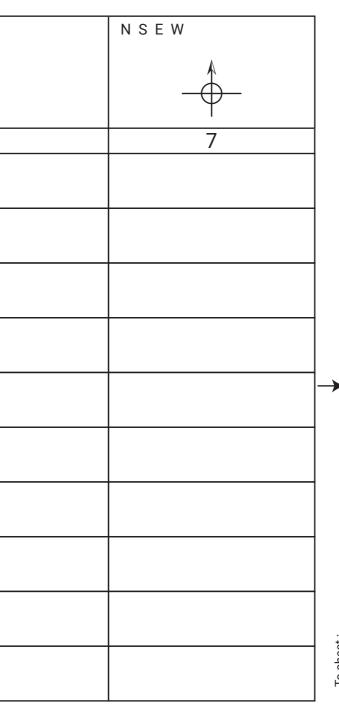
Importer:

Enphase Energy NL B.V., Het Zuiderkruis 65, 5215MV, 's-Hertogenbosch, The Netherlands, PH: +3173 3035859

Revision history

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REVISION	DATE	DESCRIPTION	
140-00161-07	November 2023	 Added European region Quick Install Guide information. Added Turkish QIG. 	
140-00161-06	June 2023	Editorial updates.	
Previous releases			





Install the Enphase IQ7A Microinverter

To install Enphase IQ7A Microinverters, read and follow all warnings and instructions in this guide and the Enphase IQ7A Microinverter Installation and Operation Manual at https://enphase.com/contact/support. Safety warnings are listed at the end of this guide.

The microinverter has a Class II double-insulated rating, which includes ground fault protection (GFP). To support GFP, use only PV modules equipped with DC cables labeled PV wire or PV cable. Refer to local electrical codes and standards for PV array and racking grounding requirements.

IMPORTANT: IQ Microinverters require the IQ Cable and are incompatible with previous Enphase cabling. An IQ Gateway is required to monitor the

performance of the IQ Microinverters. The IQ accessories work only with IQ Microinverters.

NOTE: The installer must check the manufacturing date of the products 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.

PREPARATION



A) Download the Enphase Installer App and open it to log in to your Enphase Installer Platform account. With this app, you can scan microinverter serial numbers and connect to the IQ Gateway to track the system installation progress.

To download, go to https://enphase.com/en-gb/installers/apps or scan the QR code.

B) Refer to the following table and check PV module compatibility at UK: https://enphase.com/en-gb/installers/microinverters/calculator ANZ: https://enphase.com/en-au/installers/microinverters/calculator

Model DC Connector adapter cable		PV module cell count	
IQ7A-72-2- INT	Stäubli MC4	Pair with 60-cell/120-half-cell or 72-cell/144-half-cell	

C) In addition to the Enphase microinverters, PV modules and racking, you will need these Enphase items:

· An IQ Gateway communications gateway is required to monitor solar production and may be required to propagate a grid profile to the microinverters. If you are in the European region, refer to the <u>IQ Gateway Quick Install Guide</u> in IQ Gateway Standard & Line Filter Kit or IQ Gateway Metered & Line Filter Kit; for other regions, refer to the IQ Gateway Quick Install guide in IQ Gateway Standard or IQ Gateway Metered.

NOTE: Depending on your region, IQ Series Microinverters may not produce until an IQ Gateway is installed and configured with the appropriate grid profile. See the IQ Gateway Quick Install Guide for details.

- · IQ Relay, single-phase (Q-RELAY-IP-INT) or IQ Relay, multi-phase (Q-RELAY-3P-INT). For the Italy region, use IQ Relay (Q-RELAY-2-3P-ITA) for both single-phase and multi-phase application
- Tie wraps or cable clips (ET-CLIP-100 works with both multi-phase and single-phase cable)
- The mutli-phase IQ Relay also provides phase coupling to allow microinverters on all phases to communicate with the IQ Gateway. Use a Phase Coupler (LPC-01) for the multi-phase system for phase coupling if IQ Relay is not installed in the multi-phase system.
- 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 multi-
- phase): one for each AC cable segment end.
- IQ Disconnect Tool (Q-DISC-10).
- · IQ Cable for single-phase or multi-phase:

Cable model Connector spacing*		PV module orientation	Connectors per box	
Single-phase				
Q-25-10-240	1.3 m	Portrait (all)	240	

Q-25-17-240	2.0 m	Landscape (60-cell and 96-cell)	240
Q-25-20-200	2.3 m	Landscape (72-cell)	200
Multi-phase			
Q-25-10- 3P-200	1.3 m	Portrait (all)	200
Q-25-17- 3P-160	2.0 m	Landscape (60-cell and 96-cell)	160
Q-25-20- 3P-160	2.3 m	Landscape (72-cell)	160

🕀 ENPHASE.

*Allows for 30 cm of cable slack.

- D) Check that you have these other items:
 - An AC junction box or AC isolator
 - Tools: Screwdrivers, wire cutter, voltmeter, torque wrench, sockets, and wrenches for mounting hardware.
- IQ Field Wireable Connectors (Q-CONN-R-10M and Q-CONN-R-10F for single-phase IQ Cable or Q-CONN-3P-10M and Q-CONN-3P-10F for multi-phase IQ Cable): Optional male and female connectors for single-phase connections.
- E) Protect your system with lightning and/or surge suppression devices. It is also important to have insurance that protects against lightning and electrical surges.

Note for installations in South Africa only: For the warranty to be valid in South Africa, Enphase requires that you protect your system with a lightning and/or surge protection device (SPD) as a part of the installation. We recommend that the SPD meets the following electrical requirements.

Electrical characteristics		Value
Clamping voltage of L-N, L-G, N-G @5 k us)	A (8/20 Up-5 kA	600 V

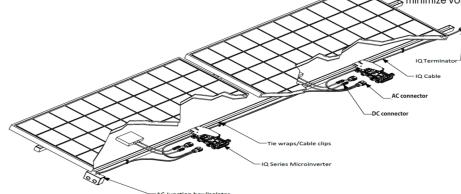
F) Plan your AC branch circuits to meet the following limits for a maximum number of microinverters per branch when protected with a 20 A overcurrent protection device (OCPD). For multiphase installations, use a 3-pole 25 A OCPD.

Maximum* IQ7A Microinverters per AC branch circuit		
Single-phase 10 (20 A OCPD)		
Multi-phase	30 (20 A OCPD) 39 (25 A OCPD only in ANZ)	

* Limits may vary. Refer to the local requirements to define the number of microinverters per branch in your area

G) Size the AC wire gauge to account for voltage rise. Select the correct wire size based on the distance from the beginning of the IQ Cable to the breaker in the load center.

Best practice: Center-feed the branch within the circuit to inimize voltage rise in a fully-populated branch.



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Enphase Support: https://enphase.com/contact/suppor



140-00161-07

INSTALLATION

Position the IQ Cable

- A) Plan each cable segment to allow connectors on the IQ Cable to align with each PV 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 along the installed racking for the AC branch
- D) Cut each segment of cable to meet your planned needs.

VARNING: When transitioning between rows, secure the cable to the rail to prevent cable or connector damage. Do not count on the connector to withstand tension.

2 Position the junction box/AC isolator

A) Verify that AC voltage at the site is within range:

Single-phase service		Three-phase service		
L1 to N	207 to 253	L1 to L2 to L3 360 to 440 VAC		
	VAC	L1, L2, L3 to N	207 to 253 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 connection using equipment and practices as required by local jurisdictions.

3 Mount the microinverters

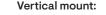
- A) The microinverters can be mounted beneath the modules either in a horizontal or vertical orientation to the module and must be mandatorily protected from direct exposure to rain. UV. and other harmful weather events. Refer to the "Vertical mount" image for clearance requirements during vertical mounting.
- B) Mount the microinverter horizontally, bracket side up or vertical. Always place it under the PV module, protected from direct exposure to rain, sun, and other harmful weather events. Allow a minimum of 1.9 cm (3/4") between the roof and the microinverter. Also, allow 1.3 cm (1/2") between the back of the PV module and the top of the microinverter. For vertical mount, also maintain >300 mm (12") clearance from the edges of the PV module to protect the microinverter from direct exposure to rain, UV, and other harmful weather events.

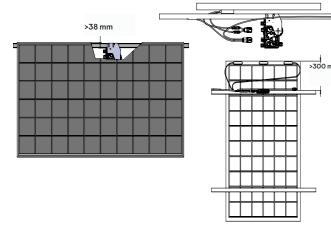
WARNING: Install the microinverter under the PV module to avoid direct exposure to rain, UV, and other harmful weather events. Do not mount the microinverter upside down.

C) Torque the mounting fasteners as follows. Do not over torque.

- 6 mm mounting hardware: 5 N m
- 8 mm mounting hardware: 9 N m
- When using mounting hardware, use the manufacturer's recommended torque value

Horizontal mount:





4 Create an installation map

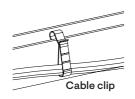
Create a paper installation map to record microinverter serial numbers and position in the array.

- A) Peel the removable serial number label from each microinverter and affix it to the respective location on the paper installation
- B) Peel the label from the IQ Gateway and affix it to the installation
- C) Always keep a copy of the installation map for your records.



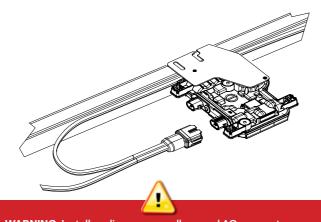
5 Manage the cabling

- A) Use cable clips or tie wraps to attach the cable to the racking. The cable must be supported at least every 300 mm.
- B) Dress any excess cabling in loops so that it does not contact the roof. Do not form loops smaller than 12 cm in diameter.



6 Connect the microinverters

- A) Connect the microinverter. Listen for a click as the connectors engage.
- B) Cover any unused connectors on the AC cable with IQ Sealing Caps. Listen for a click as the sealing caps engage.

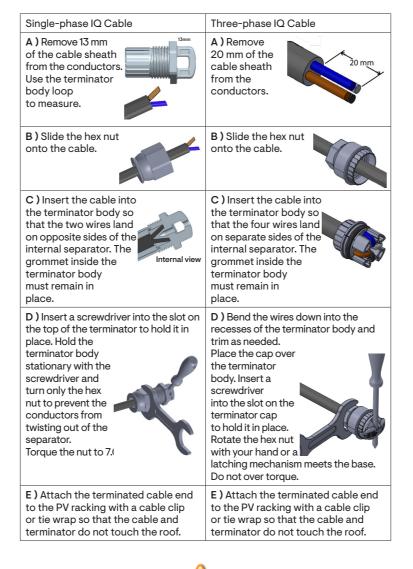


WARNING: Install sealing caps on all unused AC connectors as these connectors become live when the system is energised. Sealing caps are required for protection against moisture ingress

To remove a sealing cap or AC connector, you must use an IQ Disconnect Tool.



7 Terminate the unused end of the cab	le
---------------------------------------	----





8 Complete the junction box/AC isolator installation

- A) Connect the IQ Cable to the junction box/AC isolator.
- B) Note that the IQ Cable uses the following wiring colour code:

Single-phase	Multi-phase	
Brown - L1 active Blue - Neutral	Brown – L1 active Black – L2 active Grey – L3 active Blue – Neutral	

NOTE: The IQ Cable internally rotates L1, L2, and L3 to provide balanced 400 VAC (three-phase), thus alternating phases between microinverters

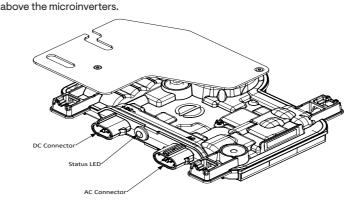
NOTE: Minimise the number of unused IQ Cable connectors with three-phase systems. When cable connectors are left unused on a three-phase system, it creates a phase imbalance on the branch circuit. If multiple cable connectors are skipped over multiple branch circuits, the imbalance can multiply.



9 Connect the PV modules

DANGER! Electric shock hazard. The DC conductors of this PV system are ungrounded and may be energised

- A) Connect the DC leads of each PV module to the DC input connectors of the microinverter
- B) Check the LED on the connector side of the microinverter. The LED flashes six times when DC power is applied.
- C) Mount the PV modules



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 ramp up to full producing power after a six-minute wait time.
- C) Check the LED on the connector side of the microinverter

LED	Indicates
Flashing green	Normal operation. AC grid function is normal and there is communication with the IQ Gateway.
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 specification.
Solid red	There is an active "DC Resistance Low, Power Off" condition. To reset, refer to the IQ Gateway Installation and Operation Manual at <u>https://enphase.com/en-gb/installers/resources/documentation</u> .

ACTIVATE MONITORING AND SELECT THE **GRID PROFILE**

After you have installed the microinverters, follow the procedures in the IQ Gateway Quick Install Guide (corresponding to your region) to activate system monitoring, set up grid management functions, and complete the installation.

- Connect the IQ Gateway
- Detect devices and select the grid profile
- Connect to the Enphase Installer App
- Register the system
- Build the virtual array

Note for installations in South Africa only: For IQ7 Series products used in South Africa, Check the Enphase website (https:// www.enphase.com/southafrica) for the latest user documentation

Note for third party products:

Any third-party manufacturer or importer of product(s)used to install or commission Enphase product(s) shall comply with the applicable EU Directive(s) and requirements in the EEA (European Economic Area). It is the responsibility of the installer to confirm that all such products are labelled correctly and have the required compliant supporting documentation.

-	ETY	\checkmark	NOTE: To ensure optimal reliability and to meet warranty requirements, install the Enphase microinverters and IQ Cable according to the instructions in this guide.	
SAVE 1	RTANT SAFETY INSTRUCTIONS THIS INFORMATION. This guide contains at instructions to follow during the installation of		NOTE: Provide support for the IQ Cable at least every 300 mm.	
	Microinverters.	Gene	eral safety, continued	
	WARNING: Hot surface.	\checkmark	NOTE: Perform all electrical installations in accordance with all applicable local electrical codes.	
$\overline{\mathbb{A}}$	WARNING: Refer to safety instructions.	\checkmark	NOTE: The AC and DC connectors on the cabling are rated as a disconnect only when used with an Enphase microinverter.	
Ŕ	DANGER: Risk of electric shock.	\checkmark	NOTE: Protection against lightning and resulting voltage surge must be in accordance with local	
	Refer to the manual		standards.	
	Double insulated	•	Dinverter safety DANGER: Risk of electric shock. Risk of fire. Do	
		1	not attempt to repair the Enphase microinvert- er; it contains no user-serviceable parts. If it	
Safet	y symbols		fails, contact Enphase customer Support to ob-	
	DANGER: Indicates a hazardous situation, which if not avoided, will result in death or serious injury.		tain an RMA (return merchandise authorisation) number and start the replacement process. Tampering with or opening the Enphase microinverter will void the warranty.	
	WARNING: Indicates a situation where failure to follow instructions may be a safety hazard or cause equipment malfunction. Use extreme caution and follow instructions carefully.	A	DANGER: Risk of fire. The DC conductors of the PV module must be labeled "PV Wire" or "PV Cable" when paired with the Enphase microinverter.	
	WARNING: Indicates a situation where failure to follow instructions may result in burn injury.	A	WARNING: You must match the DC operating	
\checkmark	NOTE: Indicates information particularly important for optimal system operation.		voltage range of the PV module with the allowable input voltage range of the Enphase microinverter.	
Gene	ral safety DANGER: Risk of electric shock. Do not use	\triangle	WARNING: The maximum open circuit voltage of the PV module must not exceed the specified maximum input DC voltage of the Enphase	
1	Enphase equipment in a manner not specified		microinverter.	
	by the manufacturer. Doing so may cause death or injury to persons, or damage to equipment. DANGER: Risk of electric shock. Be aware that		WARNING: Risk of equipment damage. Install the microinverter under the PV module to avoid direct exposure to rain, UV, and other harmful	
	installation of this equipment includes risk of electric shock.		weather events. Always install the microinvert bracket side up. Do not mount the microinvert upside down. Do not expose the AC or DC connectors (on the IQ Cable connection,	
	DANGER: Risk of electric shock. The DC conductors of this photovoltaic system are ungrounded and may be energised.		PV module, or the microinverter) to rain or condensation before mating the connectors.	
	DANGER: Risk of electric shock. Always de-energise the AC branch circuit before servicing. Never disconnect the DC connectors under load.		WARNING: Risk of equipment damage. 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	
	DANGER: Risk of electric shock. Risk of fire. Only use electrical system components approved for wet locations.		to wet conditions. This voids the warranty. WARNING: Risk of equipment damage. The	
	DANGER: Risk of electric shock. Risk of fire. Only qualified personnel should troubleshoot, install, or replace Enphase microinverters or the IQ Cable and accessories.		Enphase microinverter functions only with a star dard, compatible PV module with appropriate fill-factor, voltage, and current ratings. Unsup- ported devices include smart PV modules, fuel cells, wind or water turbines, DC generators, and	
	DANGER: Risk of electric shock. Risk of fire. Ensure that all AC and DC wiring is correct and that none of the AC or DC wires are pinched or damaged. Ensure that all AC junction boxes are properly closed.		non-Enphase batteries, etc. These devices do not behave like standard PV modules, so operation and compliance is not guaranteed. These devices may also damage the Enphase microinverter by exceeding its electrical rating, making the system potentially unsafe.	
A	DANGER: Risk of electric shock. Risk of fire. Do not exceed the maximum number of microin- verters in an AC branch circuit as listed in this guide. You must protect each microinverter AC branch circuit with a 20 A (single-phase) or 25 A (three-phase) maximum breaker or fuse, as appropriate.		WARNING: Risk of skin burn. The chassis of the Enphase microinverter is the heat sink. Under normal operating conditions, the temperature could be 20°C above ambient, but under extreme conditions the microinverter can reach a temperature of 90°C. To reduce risk of burns, use caution when working with microinverters.	
A	DANGER: Risk of electric shock. Risk of fire. Only qualified personnel may connect the Enphase microinverter to the utility grid.	\checkmark	NOTE: The Enphase microinverter has field-adjustable voltage and frequency trip	
\triangle	WARNING: Risk of equipment damage. Enphase male and female connectors must only be mated with the matching male/female connector.		points that may need to be set, depending upon local requirements. Only an authorised installer with the permission and following requirements of the local electrical authorities should make	
	WARNING: Before installing or using the Enphase microinverter, read all instructions and cautionary markings in the technical descrip- tion, on the Enphase microinverter system, and on the photovoltaic (PV) equipment.		adjustments.	
\triangle	WARNING: Do not connect Enphase microin- verters to the grid or energise the AC circuit(s) until you have completed all of the installation			

act Enphase customer Support to ob MA (return merchandise authorisati and start the replacement process ng with or opening the Enphase rter will void the warranty Risk of fire. The DC conductors o odule must be labeled "PV Wire" or e" when paired with the Enphase IG: You must match the DC operating range of the PV module with the e input voltage range of the Enphase G: The maximum open circuit voltage V module must not exceed the specified m input DC voltage of the Enphase IG: Risk of equipment damage. Install pinverter under the PV module to avoid posure to rain, UV, and other harmful events. Always install the microinverte ide up. Do not mount the microinve own. Do not expose the AC or DC ors (on the IQ Cable connection Ile. or the microinverter) to rain or ition before mating the connectors. G: Risk of equipment damage. The microinverter is not protected from due to moisture trapped in cabling Never mate microinverters to cable e been left disconnected and exposed nditions. This voids the warranty. G: Risk of equipment damage. The microinverter functions only with a stan npatible PV module with appropriate voltage, and current ratings. Unsupevices include smart PV modules, fuel d or water turbines, DC generators, and hase batteries, etc. These devices do not e standard PV modules, so operation pliance is not guaranteed. These devices damage the Enphase microinverter by g its electrical rating, making the system G: Risk of skin burn. The chassis of the microinverter is the heat sink. Under perating conditions, the temperature 20°C above ambient, but under conditions the microinverter can reach ature of 90°C. To reduce risk of burns, on when working with microinverters. ne Enphase microinverter has ustable voltage and frequency trip at may need to be set, depending upor uirements. Only an authorised installer permission and following requirements cal electrical authorities should make

IQ Cable safety		
A	DANGER: Risk of electric shock. Do not install the IQ Terminator while power is connected.	
A	DANGER: Risk of electric shock. Risk of fire. When stripping the sheath from the IQ Cable, make sure the conductors are not damaged. If the exposed wires are damaged, the system may not function properly.	
	DANGER: Risk of electric shock. Risk of fire. Do not leave AC connectors on the IQ Cable uncovered for an extended period. You must cover any unused connector with a sealing cap.	
A	DANGER: Risk of electric shock. Risk of fire. Make sure protective sealing cap have been installed on all unused AC connectors. Unused AC connectors are live when the system is energised.	
	WARNING: Use the terminator only once. If you open the terminator following installation, the latching mechanism is destroyed. Do not reuse the terminator. If the latching mechanism is defective, do not use the terminator. Do not circumvent or manipulate the latching mechanism.	
A	WARNING: When installing the IQ Cable,	

- secure any loose cable to minimise tripping hazard
- NOTE: The Enphase microinverter models listed in this auide do not require arounding electrode conductors (GEC), equipment grounding conductors (EGC), or grounded conductor (neutral). The microinverter has a Class II double-insulated rating, which includes ground fault protection (GFP). To support GFP, use only PV modules equipped with DC cables abeled PV Wire or PV Cable. NOTE: When looping the IQ Cable, do not form loops smaller than 12 cm in diameter.
- NOTE: If you need to remove a sealing cap, you must use the IQ Disconnect Tool.
- NOTE: When installing the IQ Cable and accessories, adhere to the following: Do not expose the terminator or cable connections to directed, pressurised liquid (water jets, etc.).
- Do not expose the terminator or cable connections to continuous immersion. Do not expose the terminator or cable
- connections to continuous tension (e.g. tension due to pulling or bending the cable near the connection).
- Use only the connectors and cables provided Do not allow contamination or debris in the
- connectors. Use the 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 terminator to come into contact with open flame.
- Fit the terminator using only the prescribed
- tools and in the prescribed manner. Use the terminator to seal the conductor end
- of the IQ Cable: no other method is allowed.

- from the electrical utility company. WARNING: When the PV array is exposed to
- light, DC voltage is supplied to the PCE. \triangle
- WARNING: Incorrect phase wiring can cause rreversible damage to the microinverter nstallation. Check all wiring before energising.

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