



Enphase Solar. Maximum reliability.

Enphase microinverters shine in all kinds of weather. Enphase Solar is IP67 rated, meaning it can endure just about anything Mother Nature sends its way.



Solar inverters heat up from the inside out

There is a common misconception that inverters heat up from the outside in rather than the inside out. Solar inverters typically run at around 97% efficiency, which means that 3% of the power is converted to heat.



Thermal transfer: microinverters vs string inverters

For a string inverter running at 5000W, 150W of heat must be dissipated to avoid thermal runaway. In contrast, for a microinverter running at 300W only 9W of heat needs to be dissipated.



Enphase microinverters shine in extreme conditions

Due to low heat dissipation to surface area ratio, along with elegant mechanical design and distributed architecture, Enphase microinverters can withstand up to 65°C ambient temperature and 85°C internal operating temperature.



No heat-related failures

For solar inverters that use cooling fans for internal temperature control, extreme heat introduces service disruption and failure risks. Microinverters are different, as long as world heat records don't get broken, they will consistently deliver high performance.



Enphase microinverters have world record heat covered

According to the World Meteorological Organization, the highest temperature ever recorded was 56.7°C on 10 July 1913 in Death Valley, California, USA. Still a long way short of the 65°C that Enphase microinverters are engineered to withstand.



Fully potted with no moving parts

In addition to standout thermal transfer, Enphase microinverters are protected by a double-insulated, corrosion resistant enclosure made of Noryl V0150B, a modified polymeric resin that meets the same performance standards as a genuine Multi Contact MC4 solar connector.



One million hours of reliability testing

The highest level of environmental resilience is made possible because Enphase microinverter design incorporates more than one million hours of performance testing, and 15-years of applied reliability lessons learned from more than 34 million shipments.

Evidence from the field

We leveraged data from the Bureau of Meteorology and our Enlighten servers to identify both the hottest days in Australian capital cities in 2020¹ and the corresponding maximum internal temperature of Enphase microinverters² in those locations.

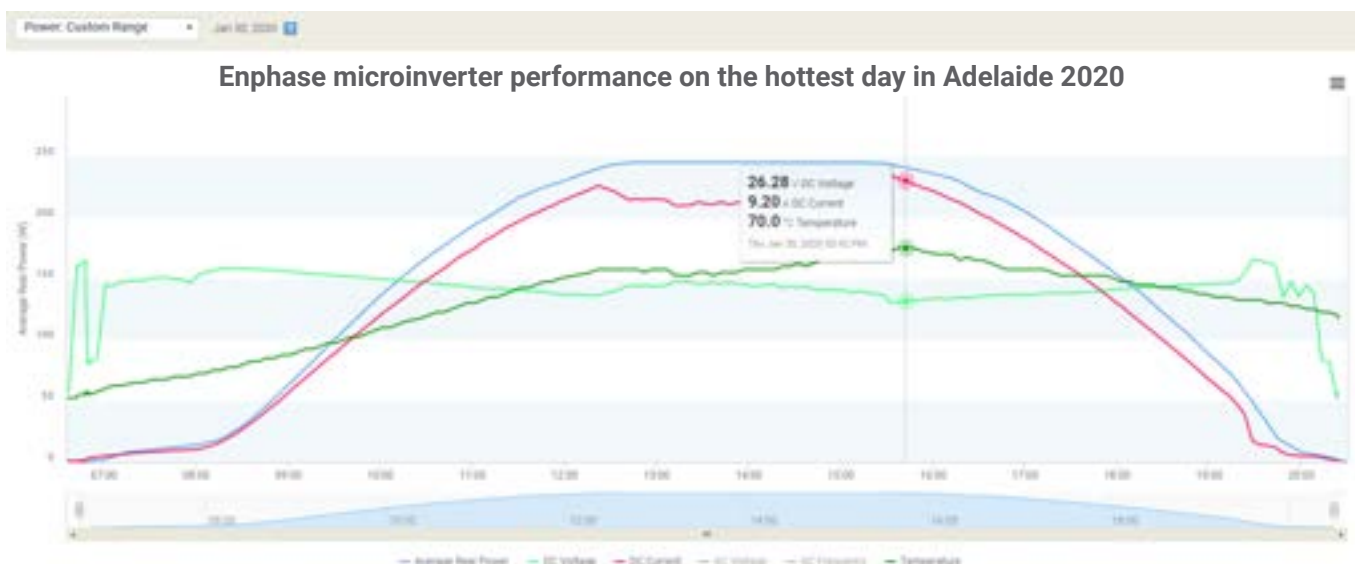
Date	Location	Max ambient temp ¹	Max microinverter temp ²
4 Jan 2020	Penrith	48.9°C	63°C
31 Jan 2020	Melbourne	42.9°C	64°C
30 Jan 2020	Adelaide	43.9°C	70°C
4 Feb 2020	Perth	42.7°C	68°C
6 Dec 2020	Brisbane	43.5°C	52°C

What the data shows

Hot ambient temperatures have less influence on the internal operating temperature of microinverters than cloud cover and wind speed. Hot days are often cloudy and windy, which means less power generation, better cooling, and lower internal temperatures. Sunny and still days have the biggest impact.

The above is best evidenced in Adelaide, where the hottest day in 2020 happened to have clear skies:

- You can see in the graph below that the internal temperature is more sensitive to the power being generated (internal heat) than the ambient temperature (external heat). This is particularly noticeable between 12:00 and 14:00, where the internal temperature actually decreases.
- The decrease in internal temperature is because the inverter is “clipping” and therefore operates at a lower DC current (higher DC voltage), which results in less heat being generated internally.



Exceeding environmental testing requirements



Power

NEMA¹ | IP²

0% power on



Thermal cycling

No thermal cycling



Submersion time

30 mins of submersion

Enphase

100% power on

Cycling between
-30°C and +65°C

21 days of submersion

¹NEMA is a USA rating system that signifies a fixed enclosure's ability to withstand certain environmental conditions.

²IP is an international standard that classifies and rates the degree of protection provided by electrical enclosures.

Global research and development in New Zealand



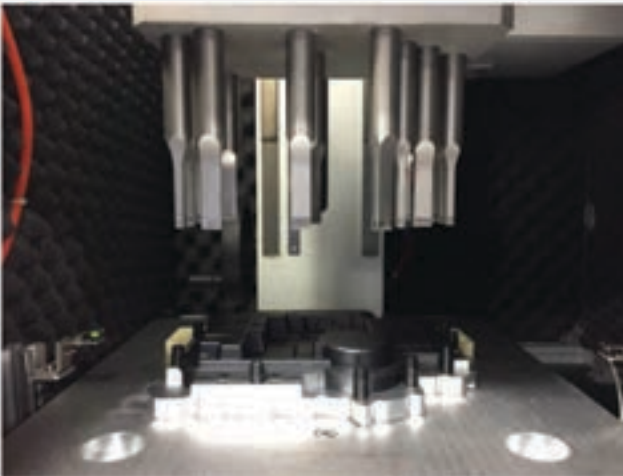
Based in Christchurch, New Zealand, our global R&D Centre has a team of 80+ engineers and support staff all focused on maximising the performance and reliability of Enphase solar and storage technology.

Designing, building, and testing for quality



Approved vendor list control

We source materials directly from the best suppliers – creating the best output for our customers around the world.



Testing for a perfect score

All our products must score a 100% on in-circuit, functional, hipot, and burn-in tests to leave the factory.



Ongoing reliability testing

Tests include thermal cycling (between -45°C and +90°C for over 1000 hours) and damp heat testing (in +85°C and 85% relative humidity for 400 cycles).



Enphase microinverter advantage

No fans. No moving parts. No high-voltage DC. Solid state solar.

Defect rate is just 0.05%, meaning only one microinverter will need to be replaced out of a batch of 2,000.

IP67 certified, microinverters can endure just about anything Mother Nature sends their way.

Meet even the strictest government safety requirements. Commonly chosen for daycares and schools, public spaces, and fire stations.

Get more with Enphase



Less than one minute wait time

We know how valuable your time is – that's why our technical support teams measure wait times in seconds – not minutes or hours.



Self-service warranty claims

Save time and get reimbursed faster with self-service warranty claims and quick labour reimbursement payments.



Engineering design review

Our engineers are readily available to assist you at the design stage to ensure a smooth installation and commissioning process.



Additional sales and marketing resources

For the full Enphase Sales Playbook Series and a range of other marketing and sales resources, visit go.enphase.com/winthethejob

We are here to help

Whatever your need, from technical or service assistance to sales and marketing strategy, Team Enphase is here to help where we can. Speak with your Regional Sales Manager to be connected with the rest of the Team.

Alternatively, feel free to reach out to marketing_au@enphaseenergy.com
New to Enphase? Learn more at enphase.com/au





IQ8 Series Microinverters

The high-powered, smart grid ready IQ8 Series Microinverters are designed to match the latest generation high output PV modules. The IQ8 Series Microinverters has the highest energy production and reliability standards in the industry and with rapid shutdown functionality it meets the highest safety standards. The brain of the semiconductor-based microinverter is our proprietary, application specific integrated circuit (ASIC) which enables the microinverter to operate in a grid-connected mode.



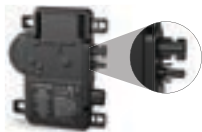
IQ Gateway

Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the IQ Battery, IQ Gateway, and the Enphase App monitoring and analysis software.



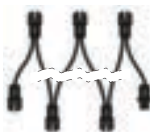
IQ Relay single-phase and multi-phase

Production and storage circuit, integrated Neutral Sensing-protection device with PLC-Phase coupler (multi-phase) and DC current injection monitoring.



IQ8 Series with Integrated MC4 connectors

Connect PV modules quickly and easily to the IQ8 Series Microinverters that have integrated MC4 connectors.



IQ Cabling

Install microinverters quickly and safely with IQ Cabling. With multi-phase IQ Cabling, the installed capacity is automatically distributed evenly across all three phases.



IQ8 Series Microinverters redefine reliability standards with more than 1 million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 15 years, extendable to 20 and 25 years.*

*15-year warranty is valid provided an internet connected IQ Gateway is installed.

Compatible with latest generation high output PV modules

- Supports latest high-current PV modules
- IQ8 Series Microinverters support all common PV module powers and cell architectures

Easy to install and commission

- Lightweight and compact with integrated Stäubli MC4 connectors for easy installation
- Fast installation with simple AC cabling
- New integrated circuit technology enables faster firmware upgrades

High energy production, reliability, and safety

- More than 1 million power-on hours of reliability testing
- Patented Burst Mode technology provides increased energy production
- Low-voltage DC and rapid shutdown for the ultimate fire safety

Note:

- (i) Commissioning of IQ8 Series Microinverter systems requires Enphase Installer App version 3.28.0 or higher.
- (ii) IQ8 Series Microinverters cannot be mixed together with previous generations of Enphase microinverters (IQ7 Series, IQ6 Series, etc) on the same IQ Gateway.

IQ8 Series Microinverters

INPUT DATA (DC)		UNITS	IQ8AC-72-M-INT		IQ8HC-72-M-INT	
Typical module compatibility			54-cell/108 half-cell, 60-cell/120 half-cell, 66-cell/132 half-cell, 72-cell/144 half-cell No enforced DC/AC ratio and maximum input power. Modules can be paired as long as the maximum input voltage is not exceeded and maximum input current of the inverter at the lowest and highest temperatures are respected. See the module compatibility calculator at: https://enphase.com/en-au/installers/microinverters/calculator . ¹			
Minimum/maximum input voltage	U_{dcmin}/U_{dcmax}	V	18/60			
Start-up input voltage	$U_{dcstart}$	V	22			
Rated input voltage	$U_{dc,r}$	V	36.5	37.0		
Minimum/maximum MPP voltage	U_{mppmin}/U_{mppmax}	V	28/45	29.5/45		
Minimum/maximum operating voltage	U_{opmin}/U_{opmax}	V	18/49			
Maximum input current	I_{dcmax}	A	14			
Maximum short-circuit DC input current	I_{scmax}	A	25 Maximum short circuit current for modules (I_{sc}) allowed to be paired with IQ8 Series Microinverters: 20 A (calculated with 1.25 safety factor as per IEC 62548).			
Maximum input power ^{1,2}	P_{dcmax}	W	480	505		
OUTPUT DATA (AC)		UNITS	IQ8AC-72-M-INT		IQ8HC-72-M-INT	
Maximum apparent power	$S_{ac,max}$	VA	366	384		
Rated power	$P_{ac,r}$	W	360	380		
Nominal grid voltage	U_{acnom}	V	230			
Minimum/maximum grid voltage	U_{acmin}/U_{acmax}	V	184/276			
Maximum output current	I_{acmax}	A	1.59	1.67		
Nominal frequency	f_{nom}	Hz	50			
Minimum/maximum frequency	f_{min}/f_{max}	Hz	45/55			
Maximum units per single-phase 20 A circuit			11 (L+N) Single-phase	39 (3L+N) Multi-phase	10 (L+N) Single-phase	36 (3L+N) Multi-phase
Maximum units per multi-phase 25 A circuit			For IQ Cable with 2.5 mm ² stranded conductors and using a 1.20 safety factor. Safety factor applied may vary based on local regulation or best practice, also upon the characteristic the OCPD selected.			
Recommended maximum units per single/multi-phase IQ Cable section to reduce voltage rise in IQ Cable			8 (L+N) Single-phase	18 (3L+N) Multi-phase	8 (L+N) Single-phase	18 (3L+N) Multi-phase
			It is recommended to centre feed IQ Cable within microinverter branch circuits to minimize the voltage rise. These design limits should ensure voltage rise and line conductor resistance on the IQ Cable are maintained within acceptable limits. In locations with risk of high grid voltage at the point of connection, it may be necessary to decrease the maximum number of microinverters on the IQ Cable section by as much as 50%.			
Protective class (all ports)			II			
Total harmonic distortion		%	< 5			
Power factor setting			1.0			
Power factor range	$\cos\phi$		0.8 leading – 0.8 lagging			
Inverter maximum efficiency	η_{max}	%	97.3	97.4		
European weighted efficiency	η_{EU}	%	96.6	96.8		
Inverter topology			Isolated (HF Transformer)			
Night-time power loss		mW	50			
MECHANICAL DATA			IQ8AC-72-M-INT		IQ8HC-72-M-INT	
Ambient air temperature range			-40°C to 65°C (-40°F to 149°F)			
Relative humidity range			4% to 100% (condensing)			
Overvoltage class AC port			III			

(1) Installer should not exceed small-scale technology certificate (STC) limit on PV module wattage for claiming the STC.

(2) Pairing PV modules with wattage above the limit may result in additional clipping losses. See the compatibility calculator at <https://enphase.com/en-au/installers/microinverters/calculator>.

MECHANICAL DATA

IQ8AC-72-M-INT

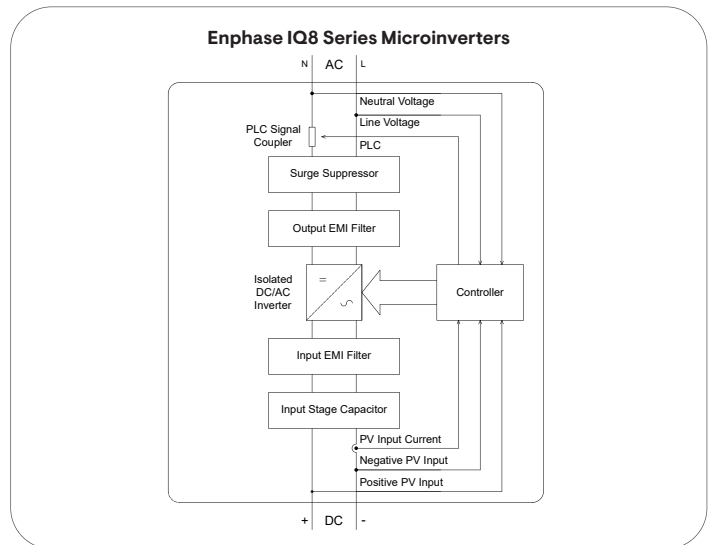
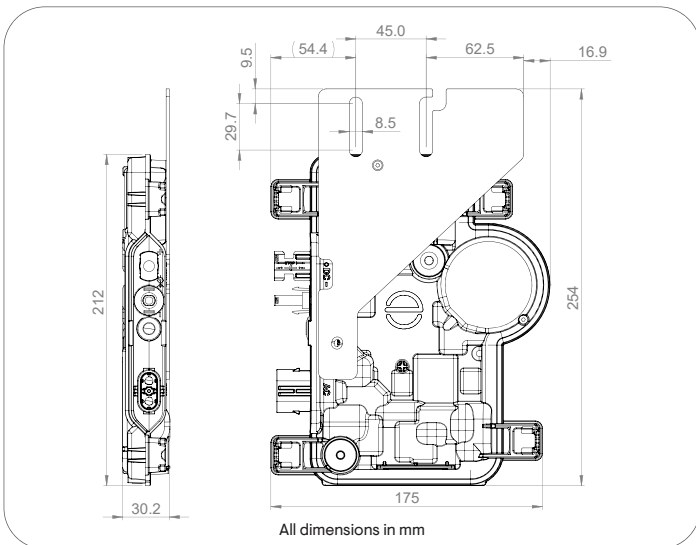
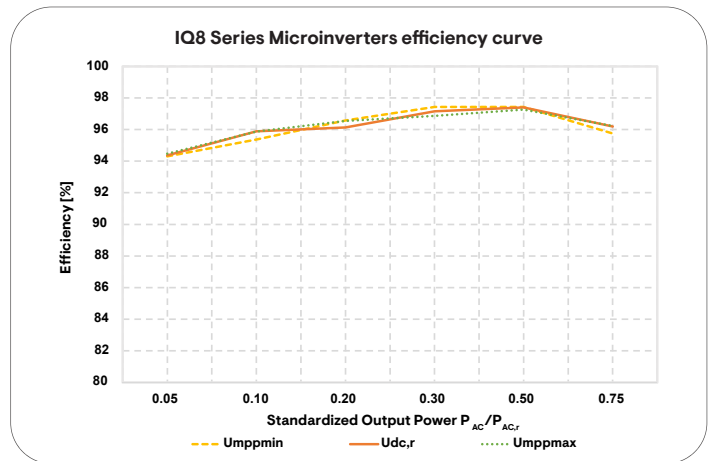
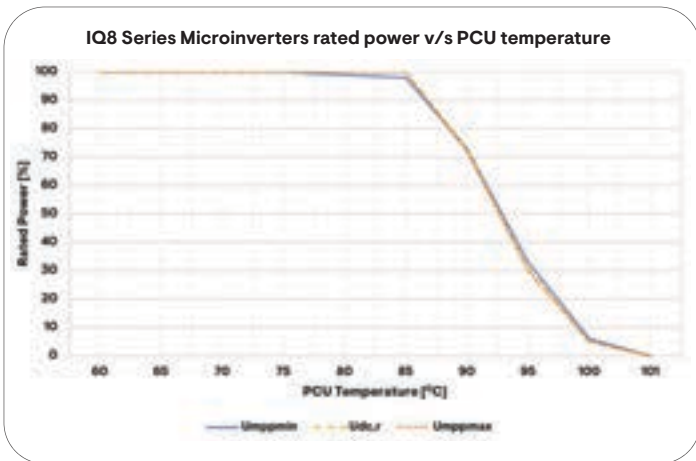
IQ8HC-72-M-INT

Number of input DC connectors (pairs) per single MPP-tracker	1
AC connector type	IQ Cabling (refer to separate datasheet for cable and accessories)
DC connector type	Stäubli MC4
Dimensions (H x W x D)	212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2") (without mounting brackets)
Weight (with mounting plate)	1.1 kg (2.4 lbs)
Cooling	Natural convection – no fans
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure
IP rating	Outdoor - IP67
Altitude	< 2,600 m
Calorific value	37.5 MJ/unit

STANDARDS	IQ8AC-72-M-INT	IQ8HC-72-M-INT
Grid compliance (with IQ Relay) (pending)	AS/NZS 4777-2:2020	
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 ³	
Product labelling	CE, RCM, BIS	
Advanced grid functions ⁴	Power export limiting (PEL), Phase imbalance management (PIM), Loss of phase detection (LOP), Power factor control Q (U), cos (phi) (P)	
Microinverter communication	Powerline communication (PLC) 110 – 120 kHz (Class B), Narrow band 200 Hz	

(3) At STC within MPP range.

(4) Some of these functions require IQ Gateway Metered with current transformers and/or IQ Relay installed.



Assembled in China, India, or Romania

Manufacturer: Enphase Energy, Inc. 47281 Bayside Pkwy, Fremont, CA 94538, United States, PH: +1 707 763 4784

Importer: Enphase Energy Aust. Pty/Ltd., 88 Market St., South Melbourne VIC 3205, PH: +61 3 86691679

IQ8SE-14A-DS-0075-01-EN-ANZ-2023-03-09