



CONTRACTOR

VSG POWER

PHONE: 716-777-3015
ADDRESS: 73 EUCLID AVENUE, BUFFALO, NY 14211

LIC. NO.:
HIC. NO.:
ELE. NO.:

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NEW PV SYSTEM:
10.790 KWP DC / 9.074 KWP AC

WINKOWSKI RESIDENCE

6628 SHEETRAM ROAD,
LOCKPORT, NY 14094
APN: 151.00-1-8.42

ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

RESOURCE DOCUMENT

DATE: 10.04.2025

DESIGN BY: M.S.

CHECKED BY: M.M.

REVISIONS

R-003.00

X-IQ-AMI-240-5
X-IQ-AMI-240-5C

IQ Combiner 5/5C

The IQ Combiner 5/5C consolidates interconnection equipment into a single enclosure and streamlines IQ Series Microinverters and IQ Gateway installation by providing a consistent, pre-wired solution for residential applications. IQ Combiner 5/5C uses wired control communication and is compatible with IQ System Controller 3/3G and IQ Battery 5P.

The IQ Combiner 5/5C, along with IQ Series Microinverters, IQ System Controller 3/3G, and IQ Battery 5P provides you with a complete grid-agnostic Enphase Energy System.

IQ Series Microinverters
The high-powered smart grid-ready IQ Series Microinverters (IQ6, IQ7, and IQ8 Series) dramatically simplify the installation process.

IQ System Controller 3/3G
Provides microgrid interconnection device (MID) functionality by automatically detecting grid failures and seamlessly transitioning the home energy system from grid power to backup power.

IQ Battery 5P
Fully integrated AC battery system. Includes six field-replaceable IQBD-BAT Microinverters.

IQ Load Controller
Helps prioritize essential appliances during a grid outage to optimize energy consumption and prolong battery life.

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IQ-C-5-SC-05H-00007-2.0-EN-US-2023-08-27

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IQ Combiner 5/5C

MODEL NUMBER	
IQ Combiner 5 (X-IQ-AMI-240-5)	IQ Combiner 5 with IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 ±0.5%), consumption monitoring (±2.5%) and IQ Battery monitoring (±2.5%). Includes a silver solar shield to deflect heat.
IQ Combiner 5C (X-IQ-AMI-240-5C)	IQ Combiner 5C with IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 ±0.5%), consumption monitoring (±2.5%) and IQ Battery monitoring (±2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-MI-06-SP-05). Includes a silver solar shield to deflect heat.

WHAT'S IN THE BOX	
IQ Gateway printed circuit board	IQ Gateway is the platform for total energy management for comprehensive, remote maintenance and management of the Enphase IQ System.
Busbar	125A busbar with support for 1x IQ Gateway breaker and 4 x 20A breaker for installing IQ Series Microinverters and IQ Battery 5P.
IQ Gateway breaker	Circuit breaker, 2-pole, 10 A/15 A.
Production CT	Prewired revenue-grade solid core CT, accurate up to 0.8%.
Consumption CT	Two consumption metering clamp CTs, shipped with the box, accurate up to 2.5%.
IQ Battery CT	One battery metering clamp CT, shipped with the box, accurate up to 2.5%.
CTRL board	Control board for wired communication with IQ System Controller 3/3G and the IQ Battery 5P.
Enphase Mobile Connect (only with IQ Combiner 5C)	4G-based LTE-M cellular modem (CELLMODEM-MI-06-SP-05) with a 5-year T-Mobile data plan.
Accessories kit	Spare control headers for CTRL board.

ACCESSORIES AND REPLACEMENT PARTS (NOT INCLUDED, ORDER SEPARATELY)	
CELLMODEM-MI-06-SP-05	4G-based LTE-M cellular modem with a 5-year T-Mobile data plan.
CELLMODEM-MI-06-AT-05	4G-based LTE-M cellular modem with a 5-year AT&T data plan.
Circuit breakers (off-the-shelf)	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Supports Eaton BR220B, BR230B, and BR240B circuit breakers compatible with hold-down kit.
Circuit breakers (provided by Enphase)	BRK-10A-2-240V, BRK-15A-2-240V, BRK-20A-2P-240V, BRK-15A-2P-240V-B, and BRK-20A-2P-240V-B (More details in "Accessories" section).
XA-SOLARSIELD-ES	Replacement solar shield for IQ Combiner 5/5C.
XA-ENV2-PCBA-5	IQ Gateway replacement printed circuit board (PCB) for Combiner 5/5C.
X-IQ-NA-HD-125A	Hold-down kit compatible with Eaton BR-B series circuit breakers (with screws).

ELECTRICAL SPECIFICATIONS	
Rating	80 A
System voltage	120/240 VAC, 60 Hz
Busbar rating	125 A
Fault current rating	10 kAIC
Maximum continuous current rating (input from PV/storage)	84 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series distributed generation (DG) breakers only (not included).
Maximum total branch circuit breaker rating (input)	80 A of distributed generation/95 A with IQ Gateway breaker included.
IQ Gateway breaker	10 A or 15 A rating GE/Siemens/Eaton included.
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway.
Consumption monitoring CT (CT-200-CLAMP)	A pair of 200 A clamp-style current transformers is included with the box.
IQ Battery metering CT	200 A clamp-style current transformer for IQ Battery metering, included with the box.

*A plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.)

MECHANICAL DATA	
Dimensions (WxHxD)	37.5 cm x 49.5 cm x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.3 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40°C to 48°C (-40°F to 115°F)
Cooling	Natural convection, plus heat shield.
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction. <ul style="list-style-type: none"> 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors 60 A breaker branch input: 4 to 1/0 AWG copper conductors Main lug combined output: 10 to 2/0 AWG copper conductors Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Wire sizes	
Communication (in-primis connectivity)	Built-in CTRL board for wired communication with IQ Battery 5P and IQ System Controller 3/3G. Integrated Power Line Communication for IQ Series Microinverters.
Altitude	Up to 2,600 meters (8,530 feet).
COMMUNICATION INTERFACES	
Integrated Wi-Fi	802.11b/g/n (dual band 2.4 GHz/5 GHz), for connecting the Enphase cloud via the internet.
Wi-Fi range (recommended)	10 m.
Bluetooth	BLE4.2, 10 m range to configure Wi-Fi SSID.
Ethernet	Optional, 802.3, Cat5E for Cat 5 UTP Ethernet cable (not included), for connecting to the Enphase Cloud via the internet.
Mobile Connect	CELLMODEM-MI-06-SP-05 or CELLMODEM-MI-06-AT-05 (included with IQ Combiner 5C).
Digital I/O	Digital input/output for grid operator control.
USB 2.0	For Mobile Connect.
Access point (AP) mode	For connection between the IQ Gateway and a mobile device running the Enphase Installer App.
Metering ports	Up to two Consumption CTs, one IQ Battery CT, and one Production CT.
Power line communication	90-110 kHz.
Web API	Refer to https://devcenter.us.enphase.com .
Local API	Refer to guide for local API .
COMPLIANCE	
IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, Title 47 CFR, Part 15, Class B, ICES 003.
IQ Gateway	UL 60601-1/CANCSA 22.2 No. 01010-1, IEEE 1547:2018 (UL 1741-SB, 3rd Ed.) IEEE 2030.5/C93P Compliant. Production metering: ANSI C12.20 accuracy class 0.5 (PV production).
COMPATIBILITY	
IQ System Controller 3/3G	SC200011C240US01, SC200611C240US01
IQ Battery 5P	IQBATTERY-5P-IP-NA
Microinverter	IQ6, IQ7, and IQ8 Series Microinverters.



IQ8M and IQ8A Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has superfast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.



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



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



Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.



IQ8 Series Microinverters are UL listed as PV Rapid Shutdown Equipment and conform with various regulations, when installed according to manufacturer's instructions.

*Only when installed with IQ System Controller 2, meets UL 1741. **IQ8M and IQ8A support split-phase, 240V installations only.

DATA SHEET

IQ8M and IQ8A Microinverters

INPUT DATA (DC)		IQ8M-72-2-US	IQ8A-72-2-US
Commonly used module pairings ¹	W	260 - 460	295 - 500
Module compatibility		54-cell / 108 half-cell, 60-cell / 120 half-cell, 66-cell / 132 half-cell and 72-cell / 144 half-cell	
MPPT voltage range	V	30 - 45	32 - 45
Operating range	V		16 - 58
Min. / Max. start voltage	V		22 / 58
Max. input DC voltage	V		60
Max. continuous input DC current	A		12
Max. input DC short-circuit current	A		25
Max. module I _{sc}	A		20
Overvoltage class DC port			II
DC port backfeed current	mA		0
PV array configuration		1 x 1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)		IQ8M-72-2-US	IQ8A-72-2-US
Peak output power	VA	330	366
Max. continuous output power	VA	325	349
Nominal (L-L) voltage / range ²	V		240 / 211 - 264
Max. continuous output current	A	1.35	1.45
Nominal frequency	Hz		60
Extended frequency range	Hz		47 - 68
AC short circuit fault current over 3 cycles	Arms		2
Max. units per 20 A (L-L) branch circuit ³			11
Total harmonic distortion			<5%
Overvoltage class AC port			III
AC port backfeed current	mA		30
Power factor setting			1.0
Grid-tied power factor (adjustable)			0.85 leading - 0.85 lagging
Peak efficiency	%	97.8	97.7
CEC weighted efficiency	%	97.5	97
Night-time power consumption	mW		60
MECHANICAL DATA			
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)	
Relative humidity range		4% to 100% (condensing)	
DC Connector type		MC4	
Dimensions (H x W x D)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")	
Weight		1.08 kg (2.38 lbs)	
Cooling		Natural convection - no fans	
Approved for wet locations		Yes	
Pollution degree		PD3	
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure	
Environ. category / UV exposure rating		NEMA Type 6 / outdoor	
COMPLIANCE			
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, IEEE 1547:2018 (UL 1741-SB 3 rd Ed.), FCC Part 15 Class B, ICES-0003 Class B, CAN / CSA-C22.2 NO. 10 This product is UL Listed as PV Rapid Shutdown Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.2 2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.	

(1) Pairing PV modules with wattage above the limit may result in additional clipping losses. See the compatibility calculator at <https://link.enphase.com/module-compatibility>. (2) Nominal voltage range can be extended beyond nominal if required by the utility. (3) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Complies with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) and IEEE 1547:2018 (UL 1741-SB 3rd Ed.)

Note:

IQ8 Microinverters cannot be mixed together with previous generations of Enphase microinverters (IQ7 Series, IQ6 Series, etc) in the same system.



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REVISIONS

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LG NeON[®]2

425W | 420W | 415W | 410W

The LG NeON[®] 2 is LG's best selling solar module, and is one of the most powerful and versatile modules on the market today. Featuring LG's Cello Technology, the LG NeON[®] 2 increases power output. New updates include an extended performance warranty to 90.08% to give customers a greater sense of reliability and peace of mind.



Feature

Enhanced Performance Warranty
 LG NeON[®] 2 has an enhanced performance warranty. After 25 years, LG NeON[®] 2 is guaranteed to perform at minimum 90.08% of initial performance.

Enhanced Product warranty
 LG has extended the warranty of the NeON[®] 2 to 25 years, which is among the top of industry standards.

Better Performance on a Sunny Day
 LG NeON[®] 2 now performs better on sunny days, thanks to its improved temperature coefficient.

BOS (Balance Of System) Saving
 LG NeON[®] 2 can reduce the total number of strings due to its high module efficiency resulting in a more cost effective and efficient solar power system.

About LG Electronics

LG Electronics is a global big player, committed to expanding its operations with the solar market. The company first embarked on a solar energy source research program in 1985, supported by LG Group's vast experience in the semi-conductor, LCD, chemistry and materials industries. In 2010, LG Solar successfully released its first MonoX[®] series to the market, which is now available in 32 countries. The NeON[®] (previous MonoX[®] NeON), NeON[®]2, NeON[®]2 Bifacial won the "Intersolar AWARD" in 2013, 2015 and 2016, which demonstrates LG Solar's lead, innovation and commitment to the industry.



LG NeON[®]2

LG425N2W-V5 | LG420N2W-V5 | LG415N2W-V5 | LG410N2W-V5

General Data

Cell Properties(Material / Type)	Monocrystalline / N-type
Cell Maker	LG
Cell Configuration	72 Cells (6 x 12)
Number of Busbars	12EA
Module Dimensions (L x W x H)	2,024mm x 1,024mm x 40 mm
Weight	20.3 kg
Glass(Material)	Tempered Glass with AR Coating
Backsheet(Color)	White
Frame(Material)	Anodized Aluminium
Junction Box(Protection Degree)	IP 6B
Cables(Length)	1,200 mm x 2EA
Connector(Type / Maker)	MC4 Compatible

Certifications and Warranty

Certifications	IEC 61215-1/-1-1/2:2016, IEC 61730-1/2:2016, UL 1703, ISO 9001, ISO 14001, ISO 50001, OHSAS 18001
Salt Mist Corrosion Test	IEC 61701 : 2012 Severity 6
Ammonia Corrosion Test	IEC 62716 : 2013
Module Fire Performance	Type 1 (UL 1703)
Fire Rating	Class C (UL 790, UL/ORD C 1703)
Solar Module Product Warranty	25 Years
Solar Module Output Warranty	Linear Warranty*

* 1) First year : 98% 2) After 1st year : 0.33% annual degradation 3) 90.08% for 25 years

Temperature Characteristics

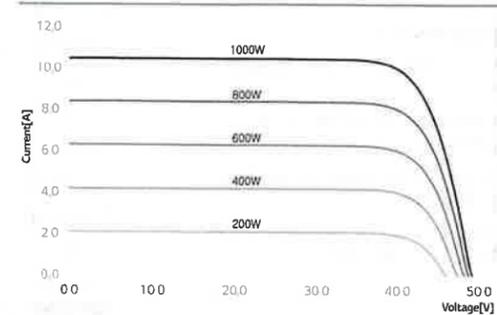
NMOT	[°C]	42 ± 3
Pmax	[%/°C]	-0.36
Voc	[%/°C]	-0.26
Isc	[%/°C]	0.03

* NMOT (Nominal Module Operating Temperature): Irradiance 800 W/m², Ambient temperature 20 °C, Wind speed 1 m/s, Spectrum AM 1.5

Electrical Properties (NMOT)

Model	LG425N2W-V5	LG420N2W-V5	LG415N2W-V5	LG410N2W-V5	
Maximum Power (Pmax)	[W]	319	315	311	307
MPP Voltage (Vmpp)	[V]	39.9	39.6	39.3	38.9
MPP Current (Impp)	[A]	7.97	7.95	7.92	7.89
Open Circuit Voltage (Voc)	[V]	47.0	46.9	46.8	46.7
Short Circuit Current (Isc)	[A]	8.58	8.55	8.52	8.48

I-V Curves



Electrical Properties (STC*)

Model	LG425N2W-V5	LG420N2W-V5	LG415N2W-V5	LG410N2W-V5	
Maximum Power (Pmax)	[W]	425	420	415	410
MPP Voltage (Vmpp)	[V]	42.5	42.1	41.8	41.4
MPP Current (Impp)	[A]	10.01	9.98	9.94	9.91
Open Circuit Voltage (Voc, ±5%)	[V]	49.8	49.7	49.6	49.5
Short Circuit Current (Isc, ±5%)	[A]	10.67	10.63	10.59	10.55
Module Efficiency	[%]	20.5	20.3	20.0	19.8
Power Tolerance	[%]	0 ~ +3			

* STC (Standard Test Condition): Irradiance 1000 W/m², Cell temperature 25 °C, AM 1.5

** Measure Tolerance of Pmax : ±3%

Operating Conditions

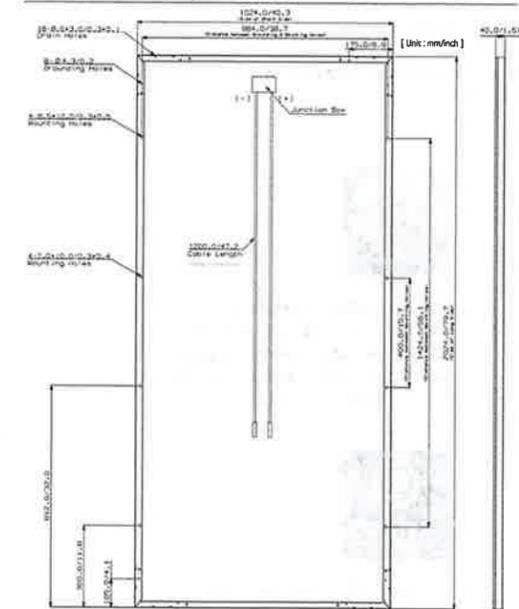
Operating Temperature	[°C]	-40 ~ +90
Maximum System Voltage	[V]	1,500(UL), 1000(IEC)
Maximum Series Fuse Rating	[A]	20
Mechanical Test Load (Front)	[Pa / psf]	5,400 / 113
Mechanical Test Load (Rear)	[Pa / psf]	3,000 / 63

** Mechanical Test Load 5,400Pa / 3,000Pa based on IEC 61215-2:2016 (Test Load = Design Load x Safety Factor(1.5))

Packaging Configuration

Number of Modules per Pallet	[EA]	25
Number of Modules per 40ft HQ Container	[EA]	550
Packaging Box Dimensions (L x W x H)	[mm]	2,080 x 1,120 x 1,226
Packaging Box Gross Weight	[kg]	551

Dimensions (mm / inch)



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LG Electronics Inc.
 Solar Business Division
 LG Twin Towers, 128 Yeouui-daero, Yeongdeungpo-gu, Seoul 07336, Korea
 www.lg-solar.com

Product specifications are subject to change without notice.
 DS-V5-72-W-G-F-EN-90806

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R-001.00