Envy Duo 21 Inverter

HIGH-CAPACITY HYBRID INVERTER ENGINEERED FOR LARGER SOLAR + STORAGE SYSTEMS

OVERVIEW

Maximum Power. Dual-Purpose Design.

The Fortress Power Envy Duo 21 is a powerful 48V hybrid inverter designed to handle demanding residential and light commercial energy needs. With a maximum PV input of 25kW and dual-phase compatibility (240V split-phase and 208V three-phase), it delivers 12kW of continuous output power across both configurations, with peak outputs of 16kW (240V) and 13.8kW (208V). Perfectly matched with Fortress Power's 48V battery systems, the Envy Duo 21 supports multiple applications. Its integrated AC/DC breakers, rapid shutdown transmitter, and parallel scalability up to 120kW make it a versatile, future-ready solution.

FEATURES

High Performance. Built for Growth.

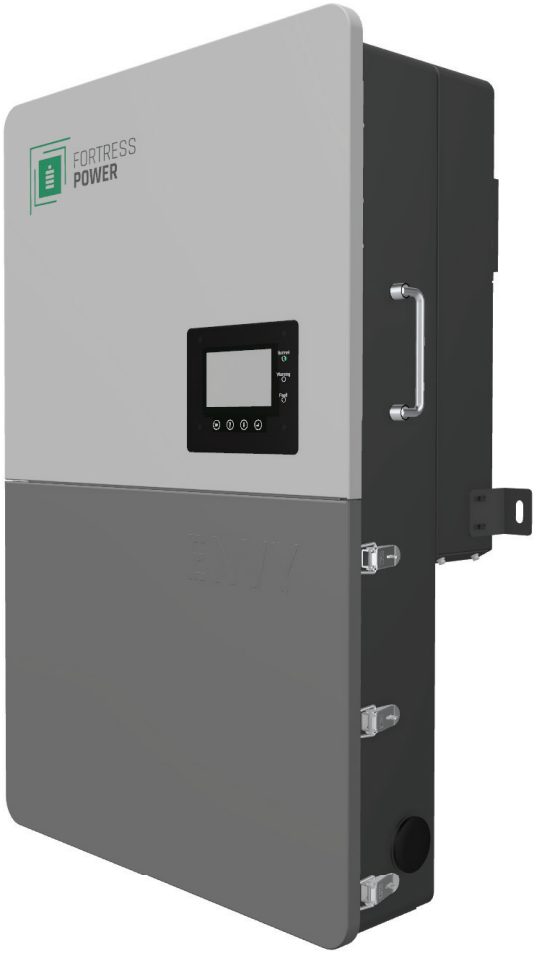
Accepts up to 25kW of PV input—ideal for large residential or small commercial solar arrays seeking maximum generation potential.

Supports both 240V split-phase and 208V three-phase applications, making it flexible for a wide range of grid configurations.

Parallel up to 10 units for a total output of 120kW, expanding as energy demands grow without the need for complete system redesign.

Includes built-in AC/DC breakers and an integrated rapid shutdown transmitter for faster, code-compliant installations.

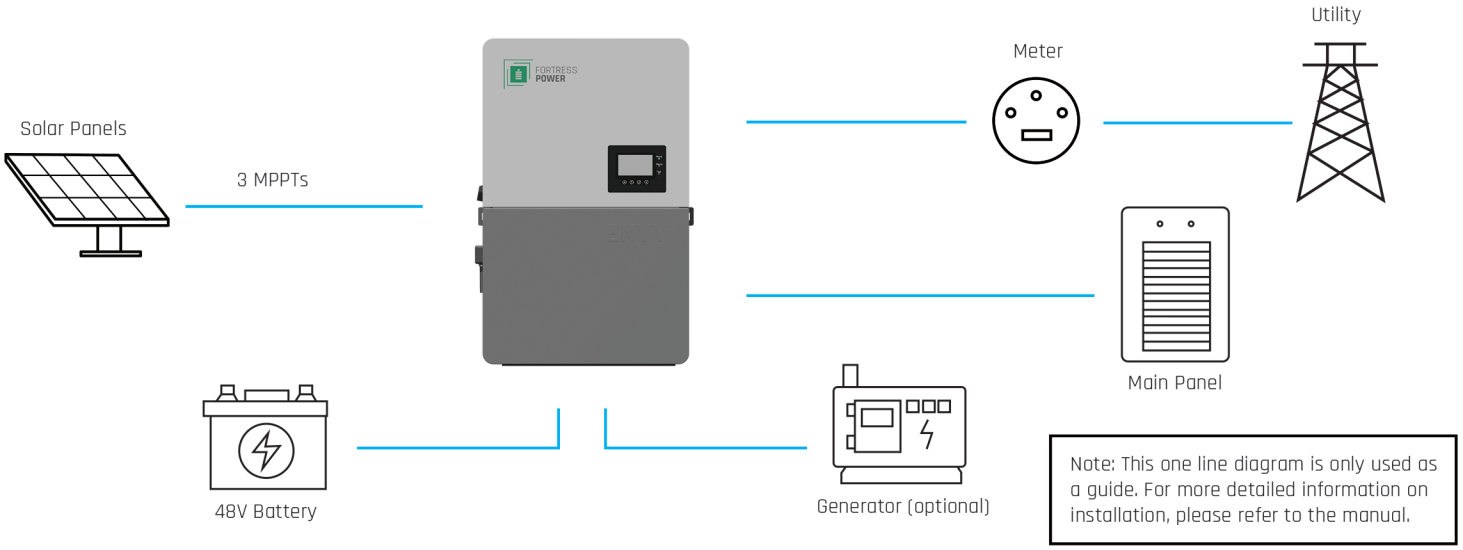
Pairs with Fortress Power 48V batteries to deliver 12kW of continuous power and up to 16kW peak, ensuring stable, whole-home or light commercial backup.



Applications

Backup	Off-Grid	Zero Export
Time-of-Use	Virtual Power Plant	Peak Shaving
Net Metering	Smart Load	Microgrid

Whole Home Backup Line Diagram



Note: This one line diagram is only used as a guide. For more detailed information on installation, please refer to the manual.

TECHNICAL DATA

Precision-Engineered Specifications for Optimal Performance

PV OUTPUT DATA

Number of MPPT	3
Inputs per MPPT	2:2:1
Max. usable input current (A)	26/26/15
Max. short circuit input current (A)	31/31/19
Start input voltage (V)	100
MPPT DC nominal voltage (V)	360
DC voltage range (V)	100-550
MPPt operating voltage range (V)	120-440
Max. Power (W)	21000
Max. PV ARRAY POWER (W)	25000

BACKUP OUTPUT DATA

Nominal output current (A)	50@240V, 57.7@208V
Nominal output voltage (V)	(120/240), (120/208)
Continuous output power (VA)	12000@240V, 12000@208V
Operating frequency (Hz)	60
Peak power (VA)	2xPn, 0.5s
THDV	<3%
Switching Time (ms)	<20

GENERAL DATA

Paralleling Capabiliy	Up to 10 units (120kW)
Dimensions	22.3 x 35.2 x 11.2 in (566 x 893 x 285 mm)
Weight	125.71 lbs (57 kg)
Degree of protection	NEMA4X / IP66
Cooling concept	Smart Cooling Fans
Topology	High Frequency Transformer-less
Relative humidity	0-100%
Altitude (m)	<6561ft. (<2000m)
Operating Temperature Range (ºC)	-25~60>40 Derating
Noise emission (dB)	<67
Idle Consumption AVG (W)	60
Display	Touch color screen
Communication interface	Rs485/ Wi-Fi/ CAN

AC GRID OUTPUT DATA

Max. Output Current with pv (A)	66.7
Max. Output Power with pv (W)	16000@240V 13800@208V
Continuous power output with battery only (W)	12000@240V, 12000@208V
Rated voltage (V)	120/240, 120/208
Operating voltage range (V)	180-270
Operating frequency (Hz)	50/60
Operating frequency range (Hz)	55-65
Power Factor	0.99@full load
Reactive power adjust range	-0.8~+0.8 leadingAdjustable
THDI	<3%
Sync inrush current (A)	35

EFFICIENCY

Max. EFFICIENCY PV to grid	97.50%
Max. EFFICIENCY battery to grid	94%
CEC Efficiency	96.9%

BATTERY DATA

Type	Lithium battery/ No Battery
Max. charge current (A)	250
Max. discharge current (A)	250
Nominal voltage (V)	48
Voltage range (V)	40-60

MISCELLANEOUS

Altitude Limitation Performance	0-2000M	12kW
	2000-3000M	10.2kW
	3000-4000M	8.4kW
	>4000M	Not Allowable

** Altitude Limitation performance include max charging, discharging, active power and backup output kW.*

SAFETY STANDARDS AND CERTIFICATIONS

Safety	PV Reverse polarity protection; DC switch for each MPPT; Output over-voltage protection varistor; Output over current protection; PV Ground fault monitoring; Grid monitoring; Pole sensitive leakage current Monitoring unit; AFCI; RSD; SURGE PROTECTION DEVICE (SPD): TYPE III DC PV , TYPE II AC
Certifications	RULE 21 PHASE I, II, III; HAWAII RULE 14H & HECO SRD-IEEE-1547.1:2020 Ed.2; IEEE 1547.1: 2020; IEEE 1547: 2018, IEEE2030.5; LUMA PR; UL1741SA, UL1741SB; UL1741: 2021 ED3 PCS CRD; UL9540 (eFlex, eVault Max); CSA C22.2#107.1; CSA C22.2#330; FCC PART 15, CLASS B
Warranty	10 Years / Lead Acid, Lithium Batteries or Fortress Lithium Batteries