AEC

THREE-PHASE ONLINE UPS · LITHIUM INSIDE

ETHERNO

10–30 kVA

Online double conversion for 208/120 V three-phase loads, with a three-level inverter and up to three 50 Ah **lithium** modules inside one 12.6-inch tower.

LiFePO4 LITHIUM INSIDE

3 × 50 Ah
hot-swappable LiFePO4 modules, the L6 module

41 min
at 10 kW with three modules

12–15 yr
module life



ETHERNO 10–30 KVA · DOOR OPEN, WITH ITS LITHIUM MODULES

208/120 V
three-phase, 4-wire + PE

LiFePO4
50 Ah modules inside, 1 to 3

94 %
efficiency online; 98 % in ECO

Touchscreen
4.3-inch color display: every setting on the screen

Product Overview
ETHERNO 10–30 kVA

An online double-conversion UPS for 208/120 V three-phase loads, 10 to 30 kVA, with one to three hot-swappable 50 Ah **lithium** modules inside the same tower.

LITHIUM INSIDE

UPS and battery in one

No battery cabinet: one to three hot-swappable 50 Ah LiFePO4 modules inside the 12.6 in tower.

- 2.9, 5.8 or 8.6 kWh, 240 V DC bus
- the L6 module: 5,000+ cycles
- UL 1973 listed, UL 9540A tested

REAL POWER

kVA = kW, up to 94 %

Output power factor 1 and a three-level inverter: the full rating is real power.

- 10, 20 and 30 kW
- up to 94 % online, up to 98 % in ECO
- transfer to bypass < 1 ms, synchronized

CLEAN POWER

Online double conversion

The inverter rebuilds the output: sags and spikes never reach the load.

- no break from mains to battery
- input power factor ≥ 0.99
- output distortion ≤ 1 %

208/120 V

Three-phase, 4-wire

3 + N + PE in and out; 120 V L-N, settable 110 to 127 V.

90–155 V

Wide input window

L-N at full load, 39.5–70.5 Hz: brownouts stay on the mains.

Touch

4.3-inch touchscreen

Power flow, settings, tests and records; three password levels.

×4 · N+1

Parallel

Up to four units, for more power or for redundancy.

10–100 %

Self-load test

The UPS tests itself at its rating, with no load bank.

10–200 ms

Short-circuit hold

The faulty branch trips; the other loads keep running.

10,000

Events and waveforms

A built-in scope; records exported to a USB drive.

2 slots

Communication

RS485, dry contacts and EPO; SNMP, relay or protocol card.

Key data

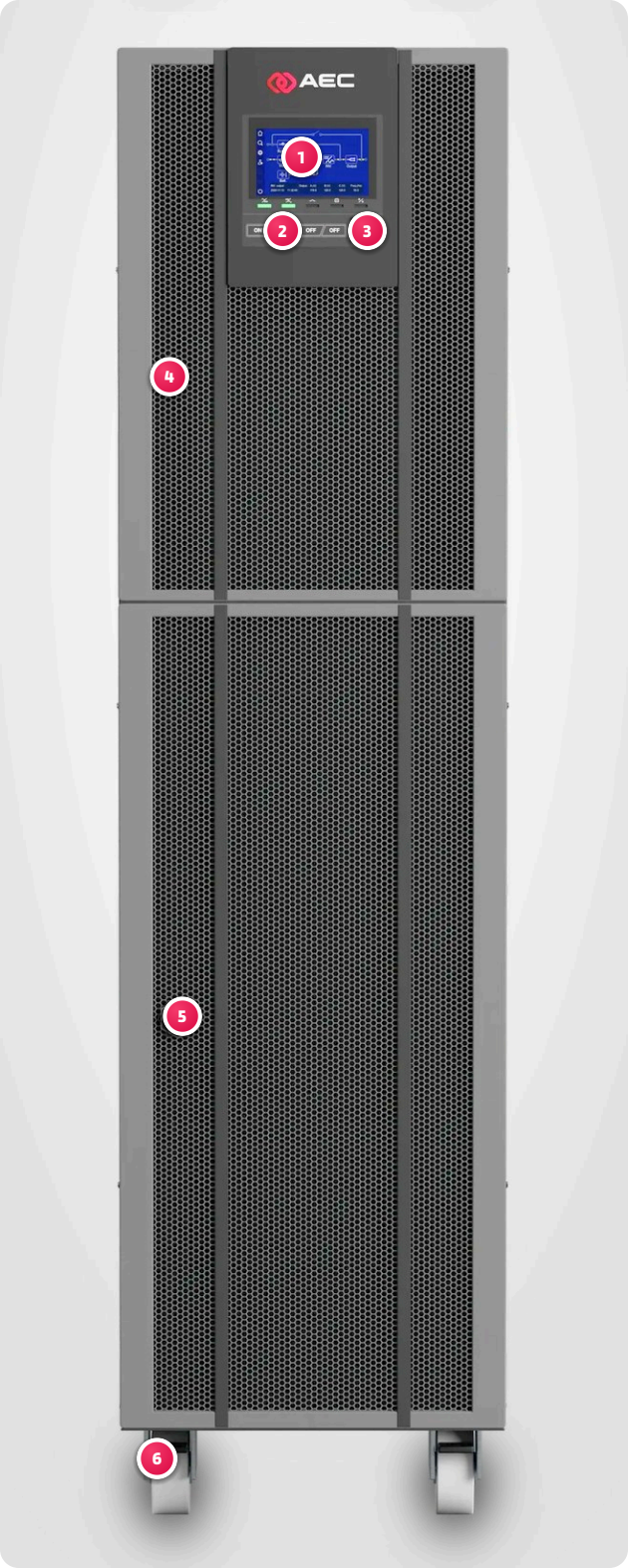
Ratings	10, 20, 30 kVA · kVA = kW
Input	3 + N + PE · 90–155 V L-N · 39.5–70.5 Hz
Output	120 V L-N, 208 V L-L · 60 Hz (or 50)
Efficiency	up to 94 % online · 98 % ECO
Charger	2–40 A settable, 20 A default

Battery	1–3 LiFePO4 modules, 50 Ah, inside
W × D × H	12.6 × 39.1 × 49.2 in, every rating
Weight	297.6–485 lb with the modules
Overload	105–110 % 60 min · 130–150 % 1 min
Standards	UL 1778 listed · warranty 5 years

10 kVA	20 kVA	30 kVA
10,000 W · 1–3 modules inside	20,000 W · 2–3 modules inside	30,000 W · 3 modules inside
up to 41 min at full load	up to 20 min at full load	up to 14 min at full load

ETHERNO · FRONT VIEW

Front View
ETHERNO 10–30 kVA



1 Color touchscreen
4.3-inch: live single-line diagram, readings, settings and records

2 Status lamps and keys
five lamps above the ON and OFF key pairs

3 EPO
emergency power off: the output is cut at once

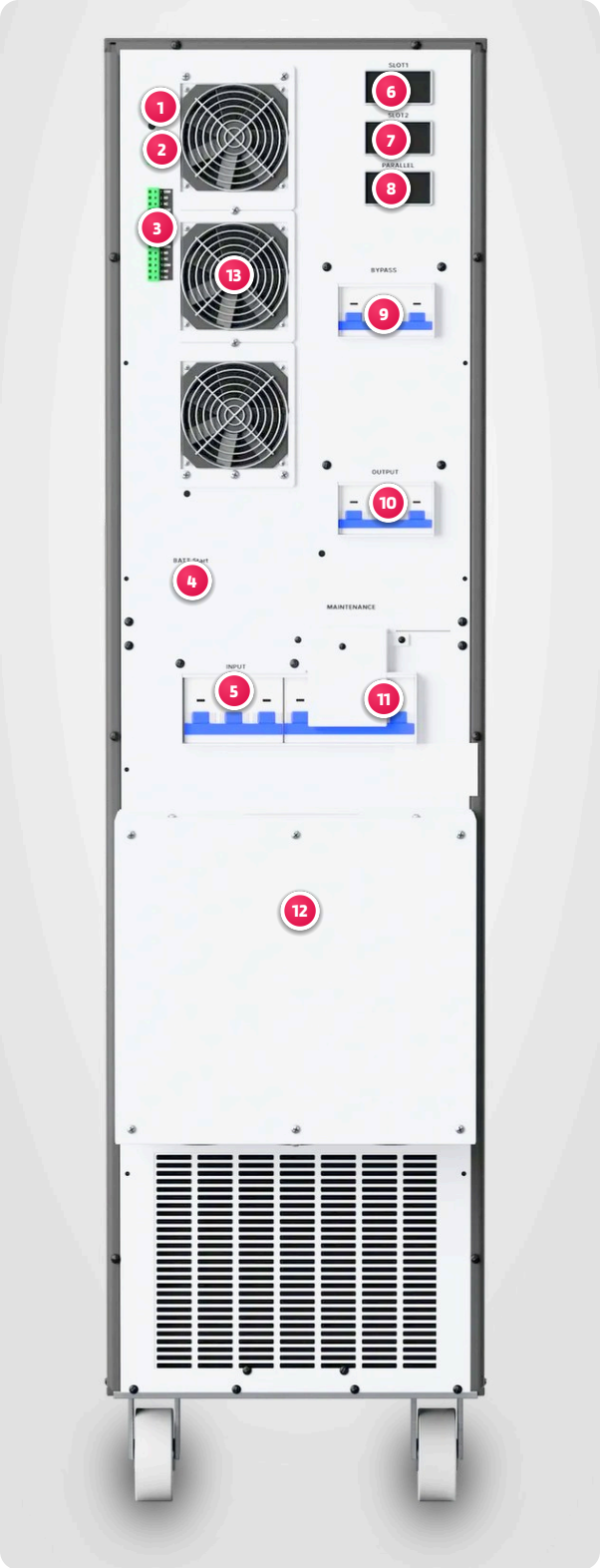
4 Front grille
cooling air in at the front, out through the fans at the rear

5 Front door
lockable; behind it the battery plug-ins and the three slots of the 50 Ah lithium modules

6 Casters
moved upright, then anchored with four M8 bolts and leveled on four feet

12.6 × 39.1 × 49.2 in
W × D × H, every rating · 320 × 993 × 1,250 mm

Rear View
ETHERNO 10–30 kVA



1. **RS485**
   Modbus link to a PC or BMS
2. **EPO + input dry contact**
   EPO loop (closed for normal operation) and input IN.1
3. **Output dry contacts**
   OUT.1 to OUT.5, NO / NC / COM
4. **BATT. Start**
   Starts the UPS from the battery when there is no mains
5. **Input breaker**
   Mains input
6. **Intelligent slot 1**
   SNMP card
7. **Intelligent slot 2**
   Dry-contact card, protocol-transfer card or SNMP card
8. **Parallel port**
   Two parallel cable sockets
9. **Bypass breaker**
   Bypass input
10. **Output breaker**
    UPS output
11. **Maintenance breaker**
    Behind an interlocked cover
12. **Wiring box**
    AC terminals and PE, cables from below
13. **Fans**
    Speed controlled by the load

ETHERNO · INTERNAL VIEW

Internal View
ETHERNO 10–30 kVA



1. **Color touchscreen**
   power flow, settings, records and the data of every module

2. **ON and OFF keys**
   both keys of a pair for 1 s; five status lamps above them

3. **EPO**
   emergency power off: the output is cut at once

4. **Battery plug-ins**
   one per module, unplugged before a module is pulled

5. **Lithium modules**
   three 50 Ah LiFePO4 slots, filled from the bottom up

6. **ON/OFF knob**
   locks the module in; turned on, it starts to deliver

7. **Module lamps**
   run green, alarm yellow, fault red

8. **Front door**
   lockable, opened with the key for module service

9. **Casters**
   four, with leveling feet and M8 anchor holes

Touchscreen Interface
ETHERNO 10–30 kVA



SCREEN

1 Color touchscreen
4.3-inch: the live single-line diagram (here normal mode, the load on the inverter), readings, settings and records. Its left bar carries the menus, the log-in and an ON/OFF icon.

Three password levels
user (reads), administrator (sets) and manufacturer: everything is accessible from the display, without a PC or external software.

STATUS LAMPS

2–6 AC/DC · DC/AC · BYP. · BATT. LOW · OVERLOAD
one lamp for each part of the UPS: green in normal operation, red when that part is abnormal.

KEYS

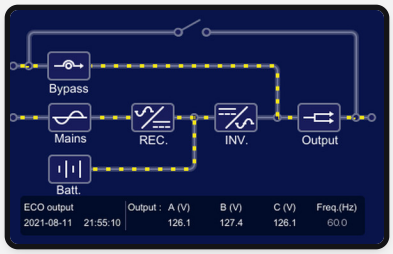
7 ON pair
both ON keys together for 1 s: the UPS powers on.

8 OFF pair
both OFF keys together for 1 s: the UPS powers off.

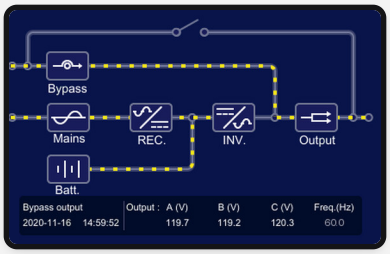
9 EPO
the output is cut at once, bypass and inverter both. The EPO loop on the rear panel does the same from afar.

Screens

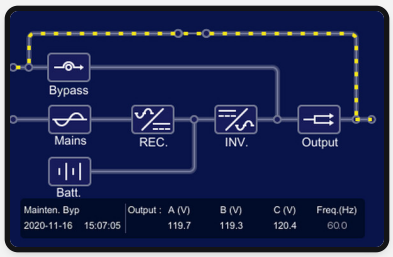
The home page draws the UPS at work, the yellow dots tracing the power, and reads the output phase by phase (L-N; the nameplate gives line voltage). A touch on a block opens its readings.



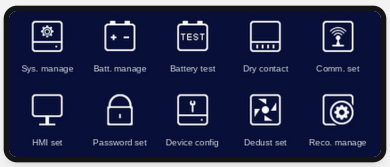
ECO mode
Single unit on a good grid: the load runs on the bypass at up to 98 % efficiency; the inverter waits, ready.



Bypass mode
UPS off, overload or over-temperature: the static switch puts the load on the bypass, traced in yellow.



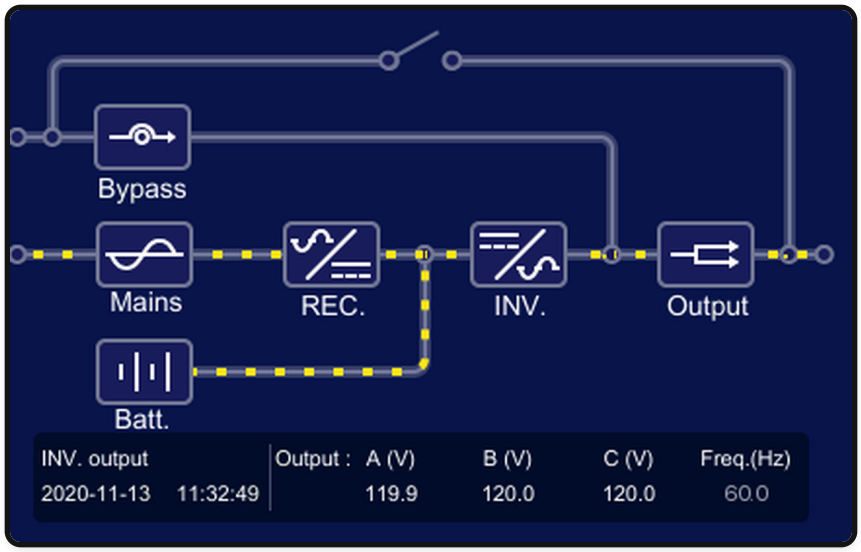
Maintenance bypass
Cover off, breaker on: the load runs on the maintenance bypass while the UPS is serviced.



Settings, behind the log-in
System, battery, tests, dry contacts, communication, screen, password, device, dedust and records.

4.3 in	5	3	5
color touchscreen	status lamps, green or red	password levels, no PC needed	working modes, each drawn live

Touchscreen Screens
ETHERNO 10–30 kVA

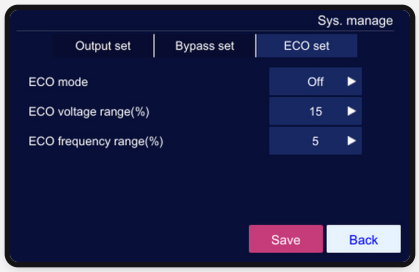


Live single-line diagram

The home page draws the UPS as it runs: yellow dots trace the active power path (here mains, rectifier, inverter, output), a faulty block turns red, and the bottom line reads the output voltage of each phase and the frequency.

Touch any block (bypass, mains, battery, rectifier, inverter, output) to open its page; the bar at the left opens the menus, the log-in and the ON/OFF page.

Settings, behind the log-in



ECO setting
ECO on or off, with its voltage and frequency windows, in percent of nominal.



Bypass setting
The voltage and frequency window in which the static switch may transfer the load.

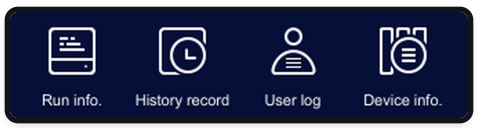


Output dry contacts
Five relays, each with its function: ECO output, battery abnormal, general alarm, bypass output, battery inverter output.

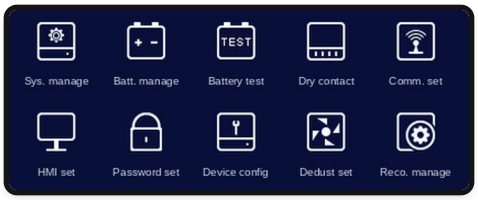


Battery test
Standard, deep or timed test, started from the screen; its status and its conditions shown.

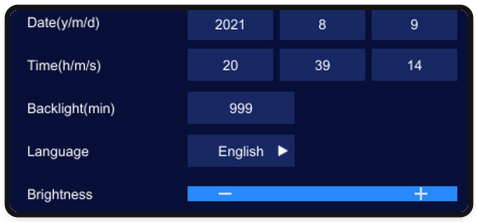
Menus



Information menu
Run info, history record, user log, device information.



Settings menu
System, battery, battery test, dry contacts, communication, screen, password, device, dedust, records.

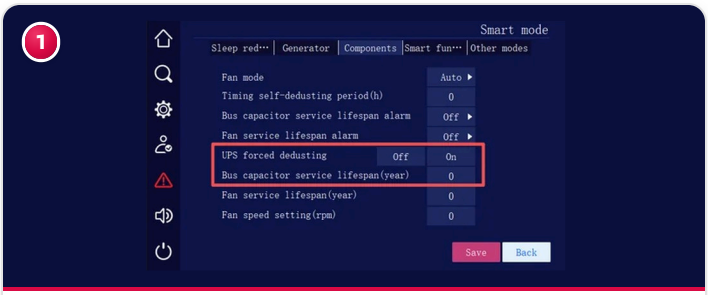


Screen setting
Date and time, backlight, language, brightness and the atmosphere light of the panel.

Smart Functions
ETHERNO 10–30 kVA

Functions built into every ETHERNO, each set and read on its touchscreen with three password levels: no PC, no external software.

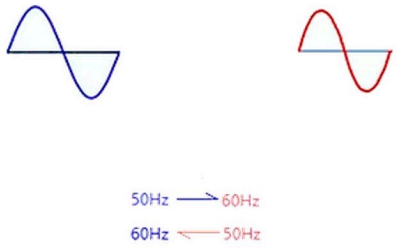
1



Fan self-cleaning — timed · forced

The fans run a dust-cleaning cycle on a timer or on demand (forced dedusting) to keep the air path and the electronics clean; fan and capacitor operating hours are counted on the screen.

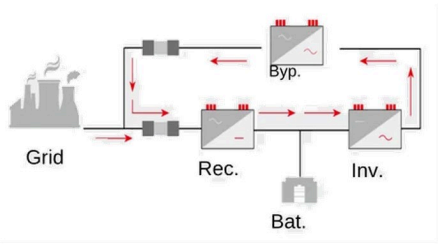
2



Frequency converter — 50 ↔ 60 Hz

Set on the device configuration page: the output runs at a fixed 50 or 60 Hz, whatever the input frequency, for loads built for another grid; the battery-not-connected warning can be disabled.

3



Self-load test — 10–100 %

The UPS tests itself at 10 to 100 % of its rating without a rented load bank: the power circulates through rectifier, inverter and bypass, drawing only about 2.7 % of the rated power.

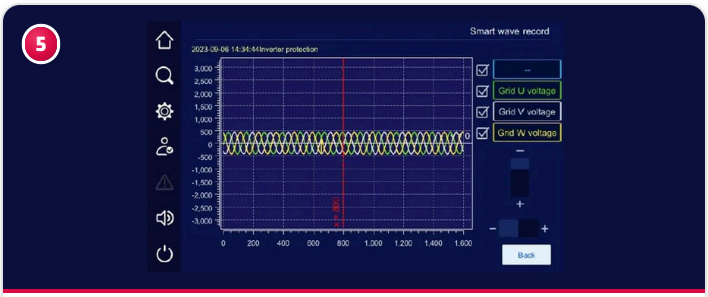
4



Short-circuit capability — 10–200 ms

On an output short circuit the inverter holds the fault for a settable time, so the faulty branch trips and the other loads keep running; the bypass can be set to stay off on a short circuit.

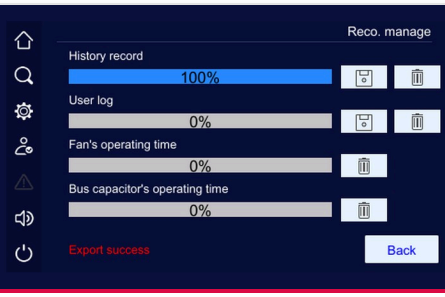
5



Waveform recording — built-in scope

An oscilloscope inside the UPS: the smart wave record captures the grid, rectifier and inverter waveforms around an event, shown on the screen phase by phase and kept for diagnosis.

6



USB port behind the display — all records

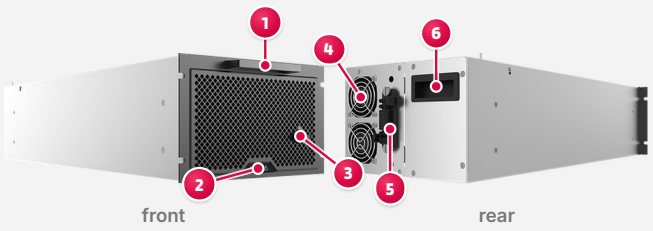
A USB flash drive in the port behind the display takes the memory of the UPS: history record (up to 10,000 events), user log and wave capture, with no PC and no software.

Lithium Battery Technology
ETHERNO 10–30 kVA

Every ETHERNO module is an L6 module: 18 **lithium** iron phosphate cells, its own battery management unit and its own DC/DC converter, in a drawer of 81.6 lb.

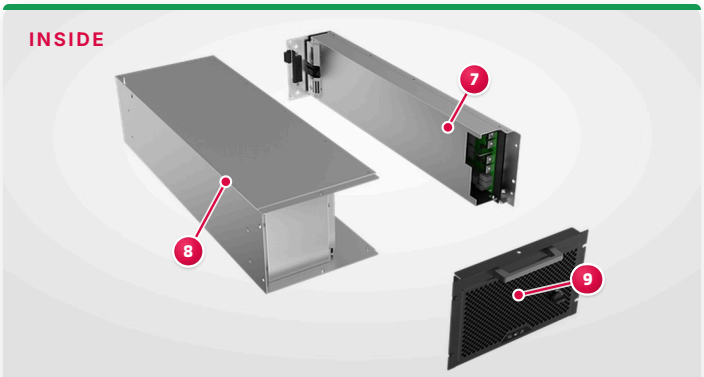
CELL 1	MODULE 2	TOWER 3	SCREEN 4
3.2 V · 50 Ah	**18 cells · 57.6 V**	**1 to 3 modules**	**every module**
LiFePO4, 4C discharge	2.88 kWh · BMS · DC/DC	on the 240 V DC bus	SOC · SOH · cells
2.4 lb	**81.6 lb**	**up to 8.6 kWh**	**4.3-inch touch**

OUTSIDE



1. **Front handle**
2. **Lamps** run, alarm, fault
3. **ON/OFF knob** locks the module in
4. **Fans**
5. **Output connector** to the DC bus
6. **Rear handle**

INSIDE



7. **DC/DC module** the isolated converter: 240 V DC out, 10 kW
8. **Battery cells** 18 LiFePO4 cells, 3.2 V 50 Ah, in the steel case
9. **Sealing plate** the front that closes the case: grille, handle, lamps, knob

The module

Code	ETH-50-LI, the L6-MOD-50LI module
Cells	18 × 3.2 V LiFePO4 · 57.6 V · 50 Ah
Energy	2.88 kWh · DC/DC output 10 kW
Size	8.8 in W × 26.2 in D × 6 in H (224 × 665 × 152 mm)
Weight	81.6 lb (37 kg)
Cycle life	5,000+ cycles
Standards	UL 1973 listed · UL 9540A tested · UN38.3 (T.1–T.8)

18 × Each cell 1.06 × 5.85 × 5.24 in (27 × 148.5 × 133 mm), 2.4 lb, **LiFePO4** 3.2 V 50 Ah: 4C discharge, 1C charge. The module is sealed: neither it nor its cells may be opened on site.

Three lamps

State	Run · green	Alarm · yellow	Fault · red
Charge	on		
Discharge	flashes		
Sleep	on	flashes	
Module alarm		on	
Communication lost		flashes	
Module protection			on
Battery abnormal			flashes

Module safety

Isolated DC/DC. A fault stays inside its module; low voltage inside the module, high voltage only at its output.

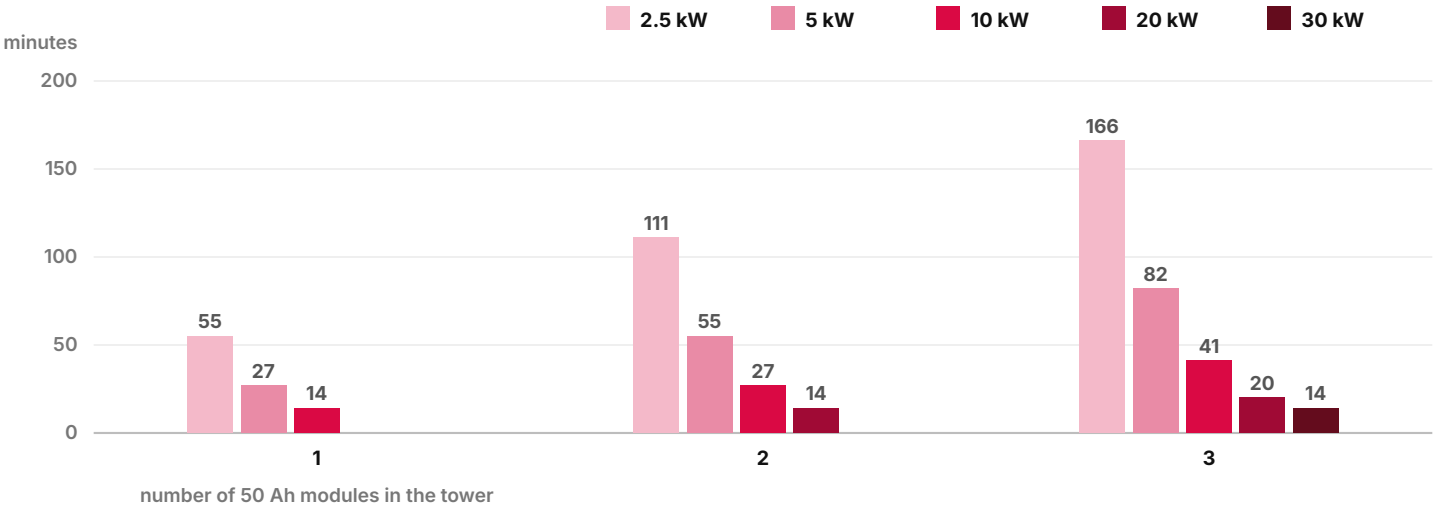
A faulty module drops out. It protects itself and leaves the system; the other modules carry on.

Insulation detection. Set on the battery page: the insulation of the modules is watched while the UPS runs.

Charge kept in hand. Charge current 2–40 A; forced charge on or off; SOC balance between modules.

Battery and Runtime
ETHERNO 10–30 kVA

Every rating, every load, every number of modules: minutes of backup. One to three 50 Ah **lithium** modules in the 10 kVA, two or three in the 20 kVA, three in the 30 kVA.



ETHERNO 10 kVA — 1 to 3 modules · minutes

Load	1	2	3
1 kW · 10 %	133	265	398
2 kW · 20 %	66	133	199
2.5 kW · 25 %	55	111	166
3 kW · 30 %	44	89	133
4 kW · 40 %	33	66	100
5 kW · 50 %	27	55	82
6 kW · 60 %	23	46	68
7 kW · 70 %	18	36	55
7.5 kW · 75 %	17.5	35	53
8 kW · 80 %	17	34	51
9 kW · 90 %	15	30	46
10 kW · 100 %	14	27	41
kWh installed	2.9	5.8	8.6

ETHERNO 20 kVA — 2 or 3 modules · minutes

Load	1	2	3
2 kW · 10 %	–	133	199
4 kW · 20 %	–	66	100
5 kW · 25 %	–	55	84
6 kW · 30 %	–	44	68
8 kW · 40 %	–	33	51
10 kW · 50 %	–	27	41
12 kW · 60 %	–	23	34
14 kW · 70 %	–	18	27
15 kW · 75 %	–	17.5	26.5
16 kW · 80 %	–	17	26
18 kW · 90 %	–	15	23
20 kW · 100 %	–	14	20
kWh installed	–	5.8	8.6

ETHERNO 30 kVA — 3 modules · minutes

Load	1	2	3
3 kW · 10 %	–	–	133
6 kW · 20 %	–	–	66
7.5 kW · 25 %	–	–	55
9 kW · 30 %	–	–	44
12 kW · 40 %	–	–	33
15 kW · 50 %	–	–	27
18 kW · 60 %	–	–	23
21 kW · 70 %	–	–	18
22.5 kW · 75 %	–	–	17.5
24 kW · 80 %	–	–	17
27 kW · 90 %	–	–	15
30 kW · 100 %	–	–	14
kWh installed	–	–	8.6

Load in kW, with the share of the rating. Factory reference values at 77 °F (25 °C) with new modules; AEC sizes every system. –: not offered (the 20 kVA takes two or three modules, the 30 kVA three). Each table is its rating's own runtime table, so one load on the same modules can read a minute or two apart from one rating to the next. Bars: each load on the smallest rating that carries it, 10 kVA up to 10 kW.

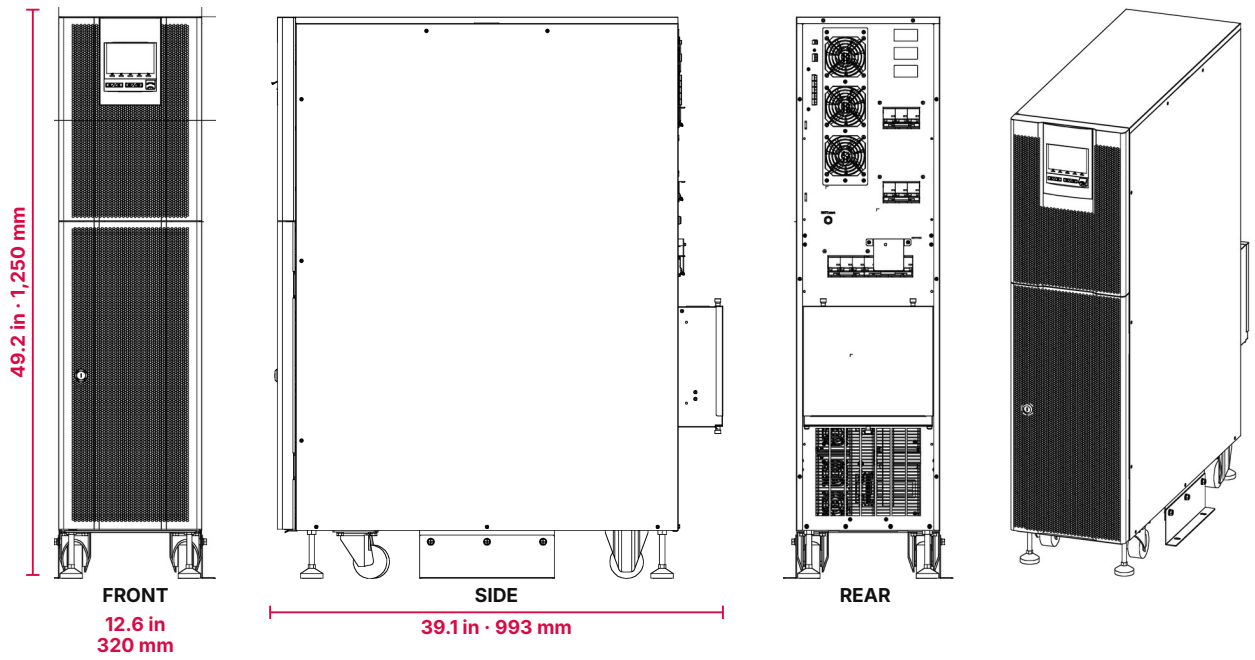
1 → 3
50 Ah modules, added on site one at a time

2.88 kWh
in every module: 18 LiFePO4 cells, 57.6 V

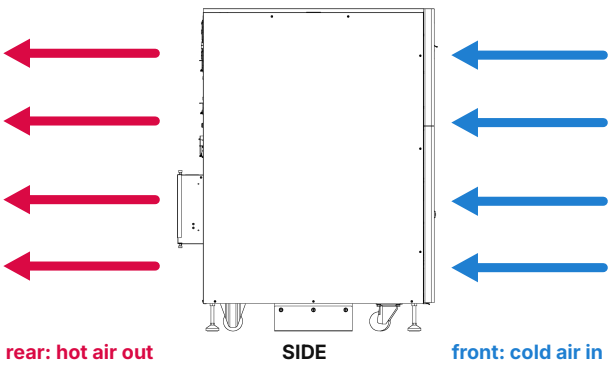
398 min
10 kVA with three modules, at 10 % load

14 min
at full load, every rating with one module per 10 kVA

Installation and Dimensions
ETHERNO 10–30 kVA



Air path



Space, floor and weights

Size, W × D × H	12.6 × 39.1 × 49.2 in · 320 × 993 × 1,250 mm
Weight, frame	10 kVA: 216 lb 20 kVA: 227 lb 30 kVA: 240.2 lb
Weight with batteries	10 kVA: 297.6 lb · 379.2 lb · 460.8 lb 20 kVA: 390.2 lb · 471.8 lb 30 kVA: 485 lb
Clearance	11.8 in (300 mm) behind and on both sides; the front clear for service
Floor	level, under 5° slope; four M8 expansion bolts on concrete, four leveling feet; moved upright by forklift
Environment	32–104 °F (0–40 °C) · 0–95 % RH · IP20 · below 6,562 ft (2,000 m)

12.6 in
wide, 320 mm

39.1 in
deep, 993 mm

49.2 in
high, 1,250 mm

11.8 in
free behind and on both sides

Technical Specifications
ETHERNO 10–30 kVA

Model	10 kVA	20 kVA	30 kVA
Power (VA / W)	10,000 / 10,000	20,000 / 20,000	30,000 / 30,000
INPUT			
Connection	3 phases + N + PE		
Voltage, L-N	90–155 V at full load; 70–90 V with the output derated linearly		
Frequency	39.5–70.5 Hz		
Bypass	window 10, 15 or 20 % (20 % default); synchronizing 50/60 Hz ± 10 %		
Power factor · current distortion	≥ 0.99 · ≤ 3 % resistive, ≤ 5 % non-linear		
Current, max., input · bypass	37.0 · 30.3 A	75.9 · 60.6 A	100.0 · 90.9 A
BATTERY			
Type	LiFePO4 lithium modules, 50 Ah, inside the tower		
DC bus	240 V DC		
Modules	1 · 2 · 3	2 · 3	3
Charge current	2–40 A settable, 20 A default		
Backup at 50 % · 100 %	27 · 14 / 55 · 27 / 82 · 41 min	27 · 14 / 41 · 20 min	27 · 14 min
OUTPUT			
Connection · voltage	3 phases + N + PE · 120 V L-N (110 / 115 / 127 settable), 208 V L-L (190 / 200 / 220)		
Frequency	follows the bypass; 60 ± 0.1 Hz (or 50) on battery		
Distortion · power factor	≤ 1 % resistive, ≤ 4 % non-linear · 1 or 0.9, 1 by default		
Transfer to bypass	< 1 ms synchronized, < 10 ms not		
Overload, inverter	< 105 % continuous · 105–110 % 60 min · 110–130 % 10 min · 130–150 % 1 min · 150–200 % 200 ms		
Overload, bypass	< 130 % continuous · 130–155 % 1 min · > 155 % 200 ms		
Current, max.	30.3 A	60.6 A	90.9 A
Efficiency	up to 94 % · up to 98 % in ECO		
SYSTEM			
Display · communication	touchscreen, 5 lamps · RS485, dry contacts (5 out, 1 in, EPO), 2 slots: SNMP, relay or protocol card		
Parallel	up to 4 units, redundant or expand		
Environment	32–104 °F (0–40 °C) · 0–95 % RH · IP20 · below 6,562 ft (2,000 m)		
Noise at 77 °F	< 63 dB		< 68 dB
W × D × H	12.6 × 39.1 × 49.2 in · 320 × 993 × 1,250 mm		
Weight, frame without batteries	216 lb	227 lb	240.2 lb
Weight with batteries	297.6 lb · 379.2 lb · 460.8 lb	390.2 lb · 471.8 lb	485 lb
Standards	UL 1778 listed · lithium modules UL 1973 listed, UL 9540A tested, UN38.3 tested · performance IEC 62040-3		
Warranty	5 years on the UPS and the lithium modules		

10–30 kVA
kVA = kW, output power factor 1

94 %
online efficiency; 98 % in ECO

UL 1778
listed UPS · modules UL 1973 listed

5 years
warranty: UPS and lithium modules

Ordering Information
ETHERNO 10–30 kVA

Every ETHERNO is ordered with one code: the rating, then the batteries inside. A frame without batteries takes **lithium** modules ordered separately.

ETH 20 -2X50A -LI

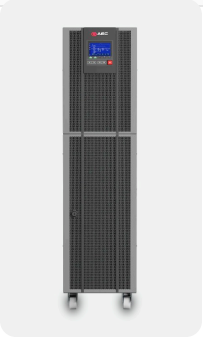
series	rating, kVA	lithium modules × Ah	lithium

EXAMPLES

ETH20
20 kVA frame, modules ordered as ETH-50-LI

ETH30-3X50A-LI
30 kVA with three 50 Ah modules

Code	Description
ETH10	ETHERNO 10 kVA frame, no batteries
ETH10-1X50A-LI	ETHERNO 10 kVA with 1 lithium module · 14 min at full load
ETH10-2X50A-LI	ETHERNO 10 kVA with 2 lithium modules · 27 min at full load
ETH10-3X50A-LI	ETHERNO 10 kVA with 3 lithium modules · 41 min at full load
ETH20	ETHERNO 20 kVA frame, no batteries
ETH20-2X50A-LI	ETHERNO 20 kVA with 2 lithium modules · 14 min at full load
ETH20-3X50A-LI	ETHERNO 20 kVA with 3 lithium modules · 20 min at full load
ETH30	ETHERNO 30 kVA frame, no batteries
ETH30-3X50A-LI	ETHERNO 30 kVA with 3 lithium modules · 14 min at full load
ETH-50-LI	Lithium module, LiFePO4 50 Ah, for ETHERNO
PAR-KIT-ETH	Parallel kit: cables and interface, up to four ETHERNO units
SNMP-L	SNMP-L network card: web pages, SNMP v1/v2c/v3 and Modbus TCP/IP; e-mail alarms; for LUMINA, ETHERNO, AUREON and INFINITE
DRYCNT	Dry-contact relay card: mains failure, battery low, UPS fault, bypass; all AEC UPS series



ETHERNO frame, 10–30 kVA

+



ETH-50-LI lithium module, 50 Ah

1–3

Modules per tower

Fitted at the factory or ordered as ETH-50-LI; they slide in from the front.

ORDER

Sizing by AEC

Tell us the load and the runtime: AEC chooses the code, the battery set-up and the cables.

STOCK

Miami

AEC UPS USA keeps units, modules and spare parts in Miami.

WARRANTY

5 years

5 years on the UPS and the lithium modules.