MODULAR ONLINE UPS · 15 kVA MODULES

RADIANT

15–90 kVA

Online double conversion in 15 kVA hot-swappable power modules, up to six in one 17.4-inch frame with four breakers, for 208/120 V three-phase loads and an external VRLA battery bank.



RADIANT · THE 90 kVA FRAME, DOOR CLOSED

15 kVA
per hot-swappable module

Modular
technology: up to six modules per frame, N+X

95.5 %
efficiency online; 99 % in ECO

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

Product Overview
RADIANT 15–90 kVA

Key features of the RADIANT series.

15 kVA
Power modules, 1 to 6 per frame
One to six 15 kVA modules in a six-slot frame; each holds a rectifier, an inverter and a bidirectional DC/DC charger.

N+X
Redundant modules
A module can be set as redundant and withdrawn with the system running; the screen warns when the redundancy is lost.

95.5 %
Efficiency and input power factor
Up to 95.5 % in double conversion with 15 kVA modules, 99 % in ECO; input power factor 0.99, current THD below 2.2 %.

300 %
Overload and short-circuit current
Short-circuit current limited at 300 % for 200 ms; 170 % neutral current; 100 % non-linear load.

7"
Color touchscreen
Home, Cabinet, Module, Log, Set, Control and Scope; green, yellow and red indicators; EPO key.

4
Breakers in the frame
Input, bypass, output and maintenance bypass breakers in the US frame.

Key data

Power range	15–90 kVA: 1 to 6 × 15 kVA modules
Input · output	3 phases + N + PE · 208 or 220 V L-L
Power factor	1 (kVA = kW)
Efficiency	up to 95.5 % (15 kVA modules) · 99 % in ECO
Battery	external VRLA, 20–24 × 12 V, ±120 to ±144 V DC
Display	7-inch color touchscreen
Parallel	two frames, 1+1
W × D × H	17.4 × 33.1 × 59.4 in
Weight	244.5 lb (15 kVA) to 432 lb (90 kVA)
Standards · warranty	UL 1778 standard · 3 years on the UPS



0.99
input power factor

< 1 %
output THD, linear load

±1 %
output voltage, balanced load

0 ms
inverter ↔ bypass, synchronized

RADIANT · FRONT VIEW

Front View
RADIANT 15–90 kVA

The RADIANT frame from the front, closed and with the upper door open: the touchscreen and EPO on the door, the four breakers behind it, the modules behind the lower door.



DOOR CLOSED



DOOR OPEN

1 Touchscreen
7-inch color, on the upper door.

2 Status colors
Green, yellow and red indicators beside the screen.

3 EPO
Emergency power off, on the front.

4 Upper door
Lockable; behind it the four breakers.

5 Lower door
Perforated: air in, dust filter inside; behind it the bypass module and six module slots.

6 Casters
Four; lock them once in place.

7 Bypass breaker
Feeds the static bypass from the bypass input.

8 Maintenance bypass breaker
Feeds the load from the bypass input during service.

9 Input breaker
The mains to the rectifiers of the modules.

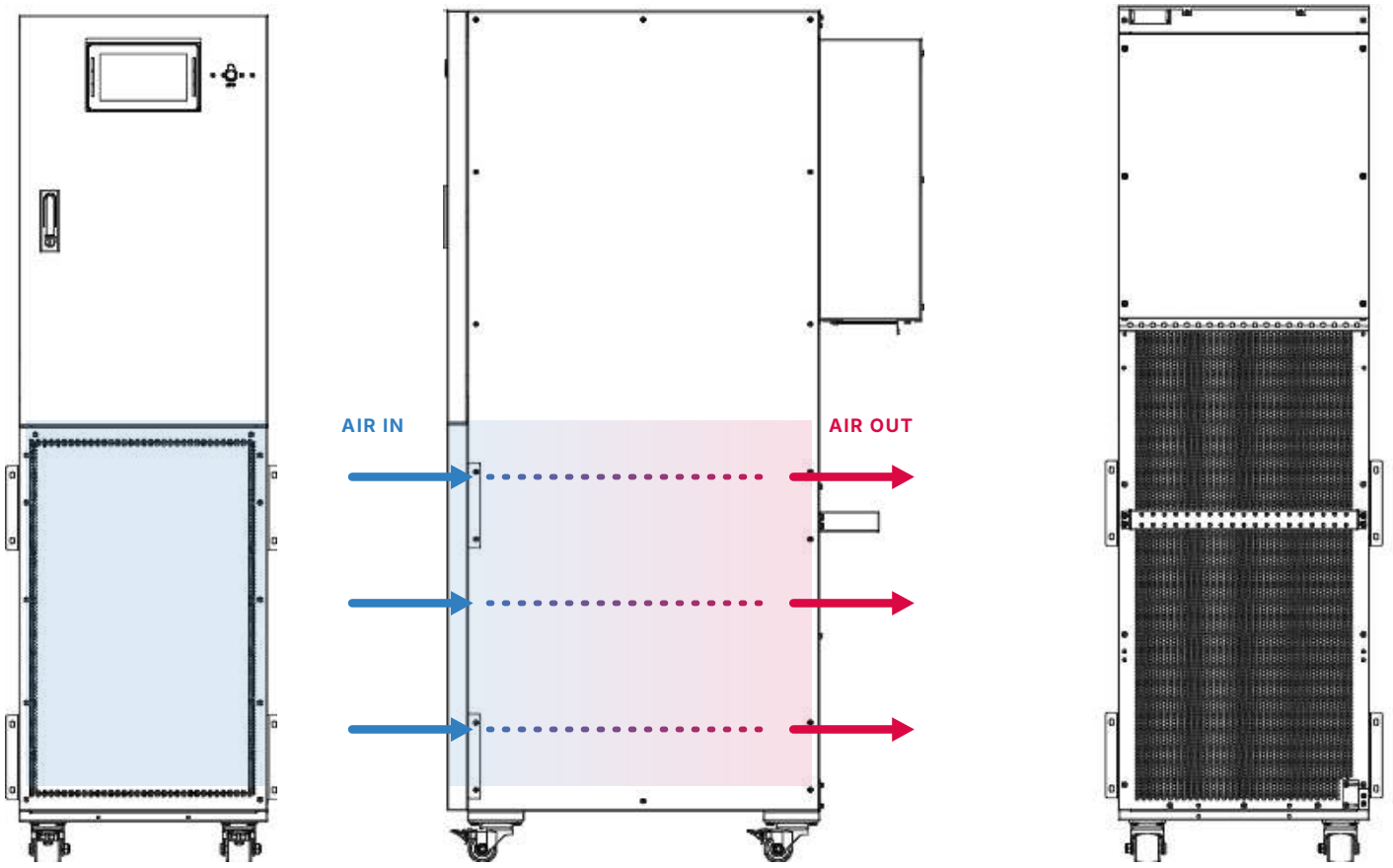
10 Output breaker
From the inverters and the bypass to the load.

11 Door, inside
The back of the display, with its cable.

RADIANT · REAR VIEW AND AIRFLOW

Rear View and Airflow
RADIANT 15–90 kVA

The RADIANT frame in three views at one scale. Cool air in at the front, warm air out at the back.



FRONT · RIGHT SIDE · FRONT AT LEFT · REAR

Cooling, front to back

- Forced convection by internal fans: the air enters at the front grilles, the perforated lower door, and leaves through the grilles at the rear.
- The grilles are on the lower half, in front of and behind the modules; the upper half carries the touchscreen and EPO in front, the terminals at the rear.
- Do not block the ventilation holes: keep the front door and the rear grille clear.
- A dust filter in the removable magnetic lower door, with a service period and a reset on the screen.

What each side carries

Front	touchscreen and EPO on the upper door; the perforated lower door, air in
Right side	26.0 in (661 mm) of cabinet; with the box at the rear, 33.1 in (840 mm)
Rear	the cover over the terminals at the top; the rear grille, air out
Base	four casters; lock them once in place

17.4 in
wide, 442 mm

33.1 in
deep, 840 mm

59.4 in
high, 1,510 mm

244.5–432 lb
lightest to heaviest model

Touchscreen Interface
RADIANT 15–90 kVA

The 7-inch color touchscreen of RADIANT: seven menus, the readings of the cabinet and of every module, the log, the settings behind a login, the commands and the waveforms.



ON THE DOOR

1 Color touchscreen
7-inch, on the upper door: power flow, readings, settings, log and scope.

2 Status colors
Green, yellow and red beside the screen: normal, warning, fault.

3 EPO
Emergency power off, beside the screen.

Login with user permissions for the settings.

Two short beeps and one long: a general alarm; continuous: a serious fault.

Seven menus

Home
power flow, load, battery, alarms

Cabinet
bypass, input, output, load, battery

Module
each module: input, output, DC bus, temperatures

Log
every event with date and time

Set
battery, system, contacts, network, language

Control
on/off, transfers, tests, resets

Scope
output and bypass waveforms

On the screen



1 Control · Function
On and off, manual transfer to inverter or bypass, fault clear and resets.



2 Set · System
Single or parallel mode, bypass window and the number of redundant modules.



3 Set · Network
IP address, subnet mask, gateway and DNS of the SNMP card.



4 Set · Communication
Modbus on RS232 and RS485/USB: protocol, baud rate and address.



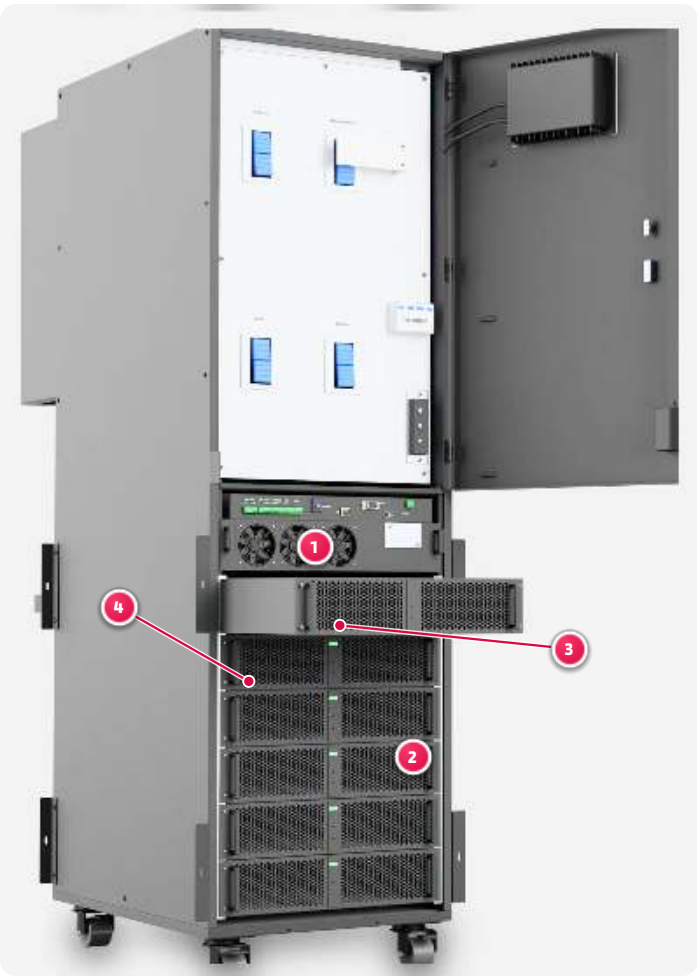
5 Set · Battery
Type, capacity, block count, float and boost charge, end of discharge.



6 Set · Language
Fourteen languages on the screen, Spanish and Portuguese included.

Modular Technology Architecture
RADIANT 15–90 kVA

Each power module is a complete double-conversion UPS of 15 kVA: rectifier, inverter and a bidirectional DC/DC that charges the battery. The modules slide in under the bypass module.



1. **Bypass module**
   One per frame: the static switch; ports and the cold-start button behind the touchscreen.
2. **Power modules**
   One to six 15 kVA modules, 2U each, from the bottom slot up.
3. **Status lamp**
   Green: the module runs.
4. **Handles and screws**
   Two handles to draw it out; the screws hold it in its slot.

The module

Rating	15 kVA
Size	15.7 × 19.5 × 3.4 in (400 × 495 × 86 mm), 2U
Weight	37 lb (16.8 kg)
Inside	rectifier, inverter, bidirectional DC/DC
Per frame	1 to 6
Front	status lamp, OFF key, cold-start button

Hot swap, with the load running

01 **Enable module OFF**
With a redundant module and the bypass normal, enable Module ON/OFF in the Control menu.

02 **Switch it off**
Press the module's OFF key: it leaves the system and the others carry the load.

03 **Pull it out**
Loosen the screws and pull the module out after 5 minutes; its DC bus must be below 60 V.

04 **Push the new one in**
Insert modules one at a time, at least 10 s apart: they join the system by themselves; tighten the screws.

N+X redundancy



With a module set as redundant (N+X), the others carry the load when one stops or is replaced; the screen shows 'Lost N+X Redundant' when the spare is missing. Example: a 75 kW load on six 15 kVA modules, N = 5, X = 1.

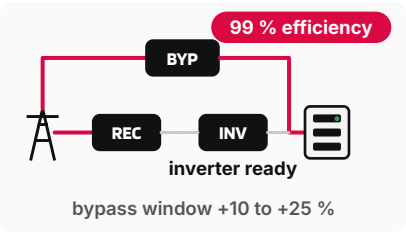
2U	37 lb	1–6	10 s
per 15 kVA module	module weight	modules per frame	at least, between insertions

Smart Functions
RADIANT 15–90 kVA

What each function does for the load and the batteries, and how it is set.

ENERGY

ECO mode, 99 %

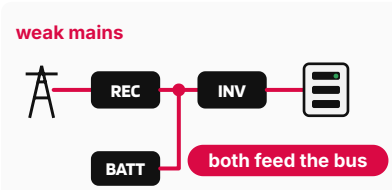


In ECO the load runs on the bypass while it stays in its window, with rectifier and inverter on standby; if the bypass fails the load moves to the battery and inverter in less than 10 ms. Single ECO or parallel ECO, chosen in the system mode.

System mode	**Single ECO · parallel ECO**
ECO → battery	**< 10 ms**

CONTINUITY

Source sharing



When the mains cannot give the rectifier all the power the load needs, each module draws from the mains and the battery at once: the load stays on the inverter without a transfer, and the battery gives only the difference.

Mode	**source-share, automatic**
Sources	**mains + battery together**

SITE

On a generator



Touchscreen · set, dry contact: genset input

A dry-contact input tells the UPS that the site has moved to its generator, and the event goes into the log with its time: the operator and the monitoring software see at once what is feeding the load.

Input	**IP3, generator connected**
Event	**Generator input, logged**

ENERGY

Module sleep at part load

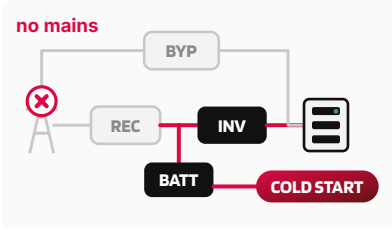


At part load the modules that are not needed go on standby, in turn, according to the load and the setting; the rest carry the load at a better point of their efficiency curve, and wake again as the load grows.

Modules	**stand by in turn**
Set by	**load percent and setting**

START-UP

Battery cold start

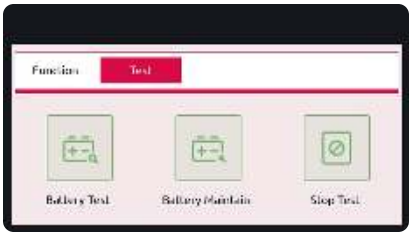


With no mains the UPS can be started from its batteries: the cold-start button on the bypass assembly, behind the touchscreen, then the cold-start button of each power module, one by one.

Button	**cold start, bypass assembly, behind the touchscreen**
Needs	**battery connected, breaker closed**

BATTERY

Battery test and maintenance



Touchscreen · control, test: battery test, battery maintain, stop test

A battery test moves the UPS to battery for 20 seconds; a maintenance discharge runs the string down to 1.1 times the end-of-discharge voltage. Self-tests repeat every 720 to 3,000 hours.

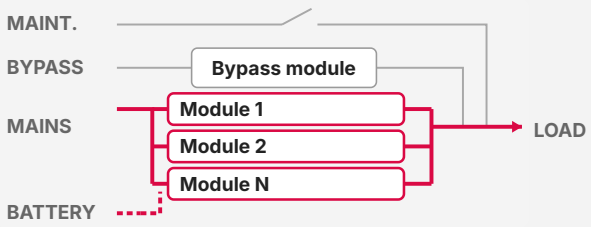
Test	**20 s on battery**
Maintenance	**down to 1.1 × EOD voltage**

Also: Frequency converter · 40–70 Hz in, 50 or 60 Hz out · Service life and wave capture · Automatic restart · after end of discharge · Temperature compensation · −1.7 mV/°F/cell (−3.0 mV/°C/cell) · Bypass window · +10 to +25, −10 to −40 %

Technical Specifications
RADIANT 15–90 kVA

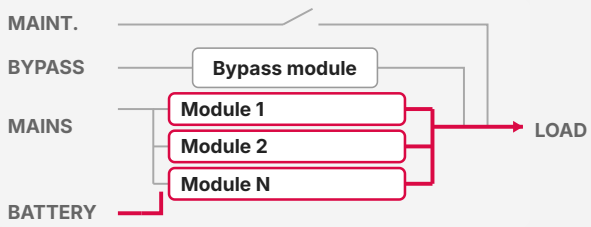
Model	Frame, all ratings
Ratings	15, 30, 45, 60, 75 and 90 kVA: 1 to 6 × 15 kVA modules
INPUT	
Connection · voltage	3 phases + N + PE · 208 or 220 V L-L
Voltage range	167–260 V L-L at full load; 125–167 V derated to 50 %
Frequency · power factor · THD	40–70 Hz · 0.99 · < 2.2 % (linear load)
Bypass	+10/+15/+20/+25 %, −10/−20/−30/−40 % (default +15/−20 %); ±1, 3 or 5 Hz
OUTPUT	
Voltage	208 or 220 V L-L; ±1 % balanced, ±1.5 % fully unbalanced; transient ±5 %
THD	< 1 % linear, < 5 % non-linear
Inverter overload	110 % 1 h · 125 % 10 min · 150 % 1 min · > 150 % 200 ms
Bypass overload	< 110 % long term · 125 % 10 min · 150 % 1 min · > 150 % 1 s
Fault current · neutral	300 % for 200 ms · 170 %
Efficiency	up to 95.5 % (15 kVA modules) · 99 % in ECO
Transfer	0 ms synchronized; < 10 ms from ECO
BATTERY	
Blocks · bus	external VRLA, 20–24 × 12 V · ±120 to ±144 V DC
Charge	float 2.25, boost 2.4 V/cell; charging power up to 50 % of the rating
SYSTEM	
Rated currents, 90 kVA	318 A mains · 252 A bypass and output · 403 A battery, maximum
Module	15 kVA, 2U, 15.7 × 19.5 × 3.4 in (400 × 495 × 86 mm), 37 lb
Display · communication	touchscreen, EPO, indicators · RS232, RS485, USB, dry contacts, SNMP slot
Parallel	two frames, 1+1
Environment	32–104 °F · 0–95 % RH · IP20 · full power to 9,800 ft · 64 dB
W × D × H	17.4 × 33.1 × 59.4 in · 442 × 840 × 1,510 mm
Weight	15 kVA 244.5 lb · 30 kVA 282 lb · 45 kVA 319.5 lb · 60 kVA 357 lb · 75 kVA 394.5 lb · 90 kVA 432 lb
Standards	UL 1778 standard
Warranty	3 years on the UPS

HOW IT WORKS · NORMAL MODE



The rectifier boosts the mains to the DC bus, the bidirectional DC/DC charges the battery, the inverters share the load.

BATTERY MODE



On a mains failure the inverters run from the battery and return to the mains by themselves; a cold start works with no mains.

Ordering Information
RADIANT 15–90 kVA

Every RADIANT is ordered with one code: the frame, then the number of 15 kVA modules. Frames and modules are also sold on their own; the battery bank is sized by AEC.

RAD90 -4X15

frame, 90 kVA — power modules × kVA

The frame first, then its 15 kVA modules: one for every 15 kVA of load and one more for N+1. The battery bank is external, sized by AEC.

EXAMPLES

RAD90-4X15
60 kVA: four 15 kVA modules

RAD90-6X15
90 kVA: six 15 kVA modules

Code	Description
RAD90-1X15	RADIANT 15 kVA: frame with 1 × 15 kVA module, external batteries
RAD90-2X15	RADIANT 30 kVA: frame with 2 × 15 kVA modules, external batteries
RAD90-3X15	RADIANT 45 kVA: frame with 3 × 15 kVA modules, external batteries
RAD90-4X15	RADIANT 60 kVA: frame with 4 × 15 kVA modules, external batteries
RAD90-5X15	RADIANT 75 kVA: frame with 5 × 15 kVA modules, external batteries
RAD90-6X15	RADIANT 90 kVA: frame with 6 × 15 kVA modules, external batteries
RAD90-FRAME	RADIANT frame: six slots, bypass module and four breakers, no modules
RAD-PWR-15	Power module 15 kVA
SNMP-M	SNMP network card
DRYCNT	Dry-contact card



RADIANT frame, 90 kVA, closed



The same frame open: four breakers

× 1–6

Modules per frame

15 kVA each, up to 90 kVA; one more than the load needs for N+1.