CRITICAL POWER · EMEA 2026

UPS

Catalogue 2026

Online UPS from 1 kVA to 1.2 MVA: single-phase, three-phase, modular and lithium, with battery systems, commissioning and service across EMEA.



1968
Founded in Taipei, Taiwan

TWSE:1514
Listed on the Taiwan Stock Exchange since 1994

80+
Countries reached by the AEC network

3 years
Warranty on AEC UPS, 5 years on lithium ranges



THE COMPANY

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AEC AT A GLANCE

58 years of technology behind power

A GLOBAL GROUP

One group, four continents

AEC is the UPS brand of Allis Electric, a group listed on the Taiwan Stock Exchange (TWSE:1514), with factories in Taiwan and sites in Italy, the USA, the UAE, Japan and South Africa.

80+
Countries reached by the AEC network

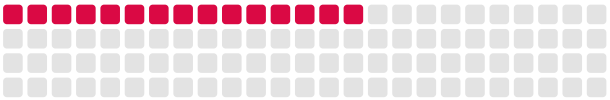
844
Employees in the group

6
Group sites on four continents

58
Years of activity, since 1968

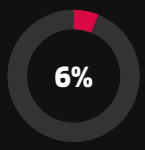
PEOPLE AND KNOW-HOW

130 electronics engineers
out of 844 employees



■ 15% in design and R&D — 1 square = 1% of the workforce

R&D EVERY YEAR



≈$19.5M
reinvested in 2025 (≈ €17.4M)
6% of $325M · €290M revenue

A fixed share of annual revenue goes back into research and development, to raise quality and bring new products to market.

WHY AEC

Group figures as of October 2026

Built to last
1968
Allis Electric group, listed in Taiwan since 1994 (TWSE:1514). ISO 9001 · 14001 · 45001 certified.

Engineering depth
36 kV
Transformers, switchgear, UPS and lithium storage designed by one engineering base.

Proven where it matters
45%+
of group shipments go to semiconductor fabs, followed by the national grid, rail and AI data centres (Jan–Jul 2026).

Support that answers
<30 min
WhatsApp reply, 24/7. 3-year warranty on UPS, 5 years on lithium.

ABOUT AEC

About AEC

AEC is the UPS brand of Allis Electric Co., Ltd., founded in Taipei in 1968 and listed on the Taiwan Stock Exchange (TWSE:1514). Under the AEC UPS brand the group is recognised for uninterruptible power supplies, renewable energy, and lead-acid and lithium-ion storage.

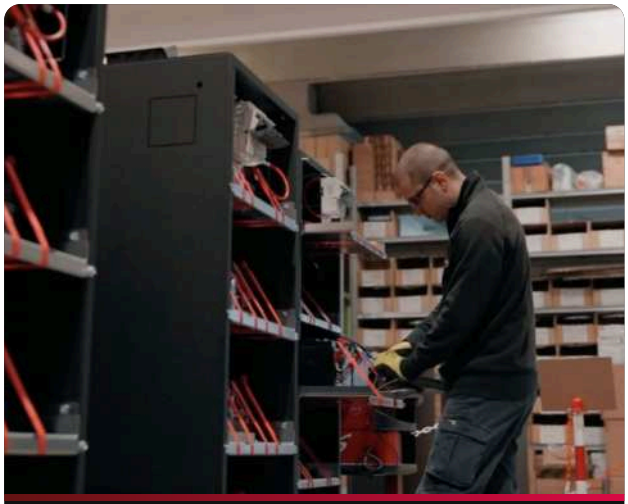
Making everyday life and work safer and more reliable.

OUR VISION

An innovative multinational group at the leading edge of critical power and renewable energy infrastructure.

OUR MISSION

Solutions and increasingly advanced products built to a standard above the market average, grounded in fairness, ethics and integrity among employees, customers and partners.



PEOPLE BEHIND THE BRAND

844 employees **130** electronics engineers

PRODUCT FAMILIES

Six technologies, one engineering base



Online UPS

Single- and three-phase, from 1 kVA to 200 kVA



Modular UPS

Hot-swappable modules up to 1.2 MVA



Lithium storage

LiFePO4 cabinets and modules



VRLA batteries

AGM batteries and steel cabinets



Transformers

Cast resin, oil-immersed, dry type and amorphous core, up to 36 kV and 15,000 kVA



Switchgear

Metal-clad, metal-enclosed and gas-insulated, 3.3 to 24 kV, plus low-voltage panels

WHERE AEC PROTECTS POWER

Data centres & IT | Industry | Telecoms | High-tech facilities | Solar plants | Emergency lighting

OUR HISTORY · 1968–2026

Company history

Allis Electric Corporation was founded on 25 September 1968 in Taipei, building low-voltage switchboards, motor control centres and industrial control equipment, then transformers, switchgear and power electronics. From 1998 the group took its UPS technology to Europe; today AEC serves more than 80 countries.

THE JOURNEY · 1968–2026

TAIPEI · LAINATE · DUBAI · MIAMI



WHERE IT BEGAN

Allis Electric founded: switchboards, then transformers, switchgear and power electronics.



EMEA HUB

AEC UPS Italia, a partnership with Dr. Bruno Carozzi; AEC S.p.A. sells UPS across Europe from 2000.



TECHNOLOGY BEHIND POWER

New AEC identity; the group market cap passes $1 billion (≈ €0.9 billion).

58
Years of activity

1994
Listed in Taiwan · TWSE:1514

6
Sites on four continents

$0.9 billion
Market capitalisation, October 2026 · ≈ €0.8 billion

MILESTONES

1968
Allis Electric founded
Taipei: switchboards, motor control centres, industrial controls.

1994
Listed in Taipei
TWSE:1514. Market cap above $100 million (≈ €89 million), 500+ employees.

1998
AEC UPS Italia
Lainate, Milan: partnership with Dr. Bruno Carozzi.

2000
AEC in Europe
AEC S.p.A. sells UPS and rectifiers across Europe.

2002
AEC South Africa
PHD Powerhouse serves the Republic of South Africa.

2009
Cast-resin transformers
A plant is acquired in Germany; capacity is added in Taiwan.

2015
AEC Nippon
Joint venture in Tokyo for transformers and equipment.

2022
AEC Power
Regional office in Dubai, United Arab Emirates.

2022
AEC USA
Miami, Florida, for the North American market.

2024
Transformer plant 2
The new Yangmei transformer plant is commissioned in Taiwan.

TECHNOLOGY PARTNERS · 1978–1998

Licences and joint ventures that shaped the group

1978 · 1983
Siemens
Air-break switches 69 kV and 161 kV

1981
German transformer maker
Transformers up to 24 kV / 2,500 kVA

1989 · 1991 · 1997
Nissin Electric
Investor, GIS and SF6 capacitors, 25.8 kV GIS

1991
International Power Machines
UPS technology

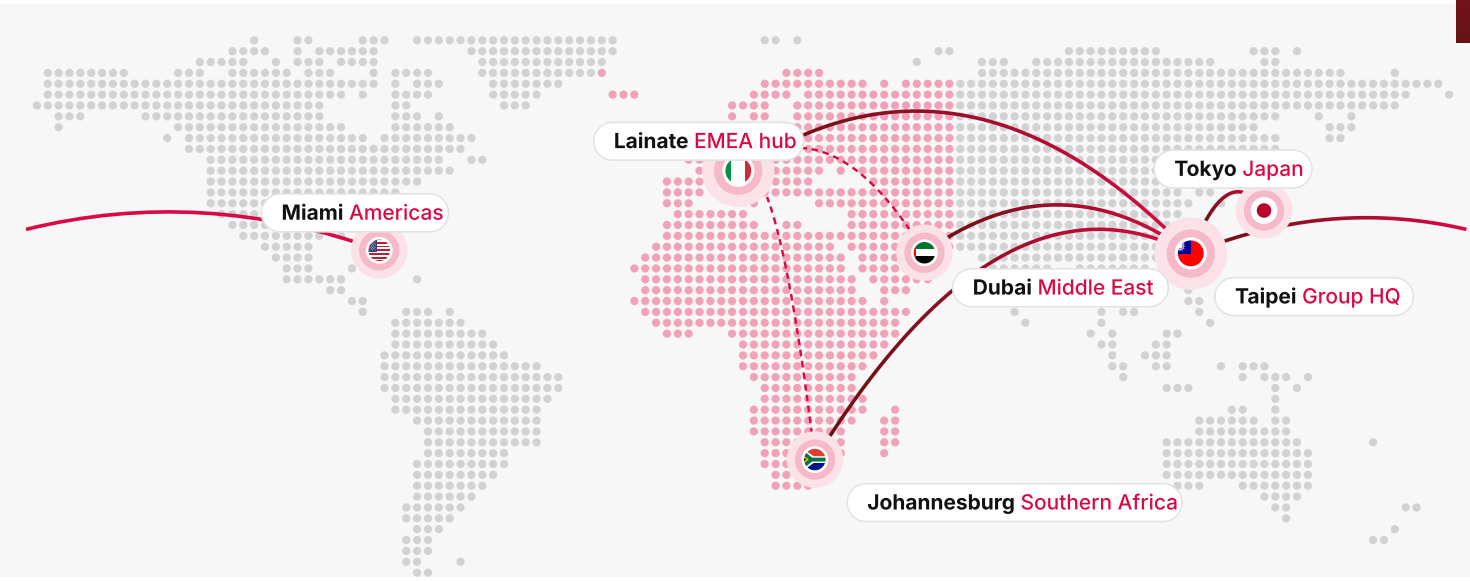
1992
ABB
MNS motor control centres

1998
Italian UPS partner
High-frequency three-phase UPS

GLOBAL PRESENCE

Global presence

AEC works through subsidiaries, branch offices and certified partners, with local stock and field engineers where customers operate. Europe, the Middle East and Africa are served from Lainate.



EMEA · served by AEC International, Lainate — Group network from Taipei — Regional support from Lainate

AEC International Srl
Lainate, Milan
Europe, Middle East and Africa

Allis Electric Co., Ltd.
Taipei
Group headquarters

AEC UPS USA LLC
Miami, Florida
North and Latin America

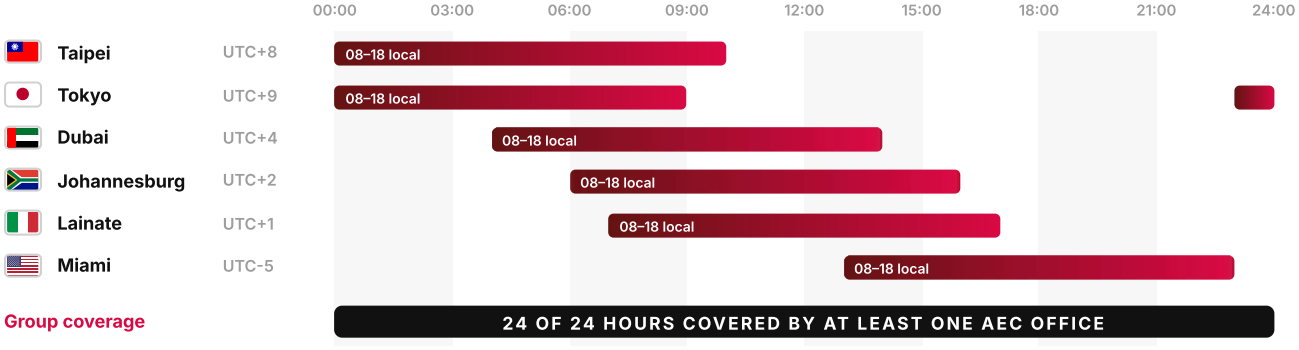
AEC PHD Powerhouse Ltd
Johannesburg
Republic of South Africa

AEC Nippon Co., Ltd.
Tokyo
Transformers and equipment

AEC Power LLC
Dubai
Middle East

FOLLOW THE SUN

Office hours 08:00–18:00 local, standard time, on the UTC clock





6 Group sites

11+ Service centres staffed 24/7

21+ Countries with spare parts in stock

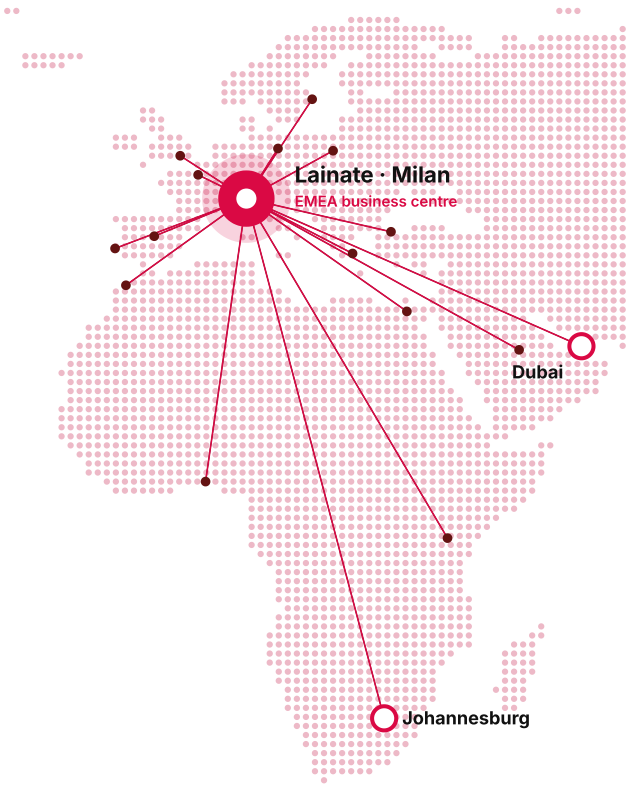
80+ Countries reached by the AEC network

AEC IN EMEA · ITALY

EMEA business centre

AEC International serves Europe, the Middle East and Africa from Lainate, in the Milan business area. UPS and critical power have been its only business since 1998.





EMEA HUB

One hub for three continents

Founded in Lainate through a partnership between Allis Electric and Dr. Bruno Carozzi, AEC International builds on more than 30 years of experience in critical infrastructure. Milan is Italy's business capital, with two international airports and direct flights to most EMEA capitals: the right place to reach customers in Europe, Africa and the Middle East quickly.

Sales and engineering
Sizing, offers and project support for every EMEA market

Stock and logistics
UPS, batteries and spare parts shipped from Lainate

Configuration and testing
Every unit set up for its site, loads and battery autonomy

Service and training
Commissioning, 24/7 assistance and technical courses

11+
Service centres staffed 24/7 in the group

80+
Countries reached by the AEC network

20/20
Italian regions with an AEC agency

24/7
Assistance by phone and WhatsApp

EMEA COVERAGE
from Milan

Europe
Sales, stock and service from Lainate

Middle East
AEC Power (UAE), Dubai

Africa
AEC South Africa, Johannesburg

FINANCIALS

Financial results

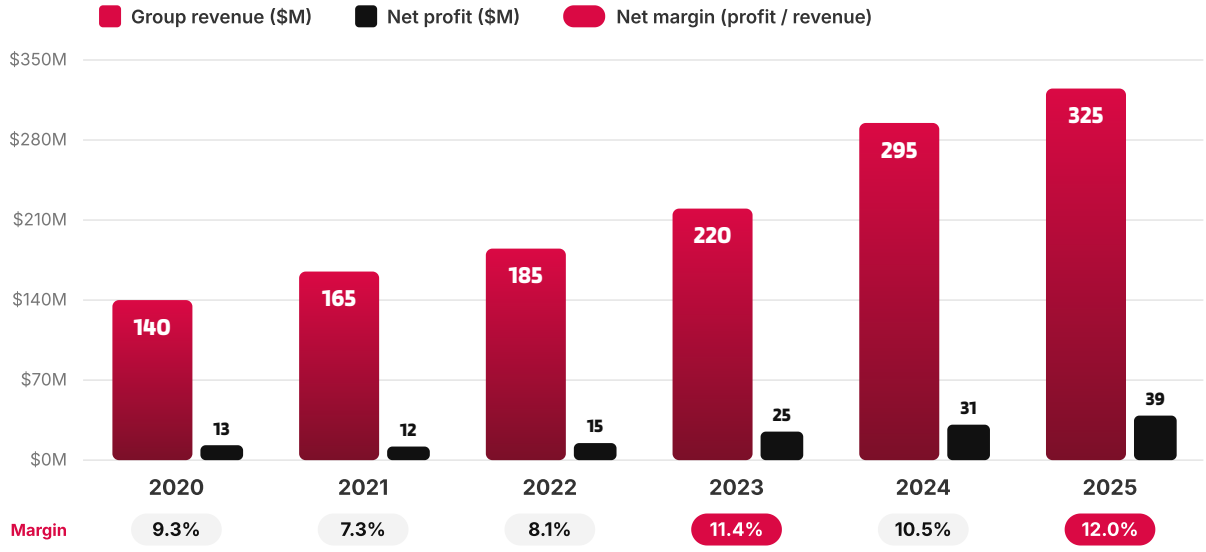
Group figures of Allis Electric Co., Ltd. (TWSE:1514), parent company of the AEC group, in US dollars; euro values at the October 2026 rate.

GROUP REVENUE 2025

$325 million

≈ €290M in euro · **$39M · €35M** net profit · **TWSE:1514** listed since 1994 · **844** employees

Revenue, net profit and net margin, 2020–2025



+18.3%
Revenue growth per year
Compound annual rate, 2020–2025

+24.6%
Net profit growth per year
Compound annual rate, 2020–2025

12%
Net margin 2025
$39M profit on $325M revenue · ≈ €35M on €290M

≈$19.5M
R&D investment
6% of 2025 revenue · ≈ €17.4M

+132%
Revenue 2020–2025
From $140 to $325 million (≈ €125 to €290 million), driven by UPS, lithium storage and PV inverters.

+200%
Net profit 2020–2025
From $13 to $39 million (≈ €12 to €35 million), while 6% of revenue went back into R&D.

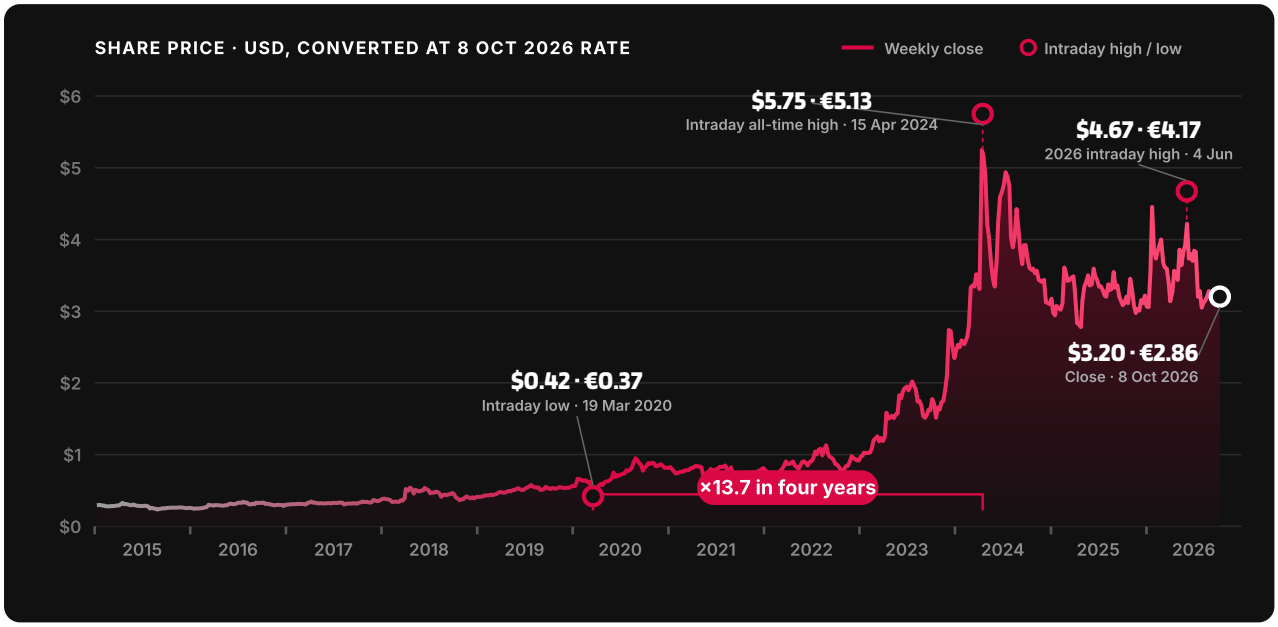
×4.4
Share price in five years
From $0.72 to $3.20 (€0.64 to €2.86), Oct 2021 to Oct 2026, with a dividend every year.

Growth rates and margins calculated from the group figures above. AEC started as an OEM supplier to European manufacturers; today the group sells under the AEC name and has diversified its manufacturing to serve each market directly.

ON THE STOCK EXCHANGE

Stock exchange listing

Allis Electric, the parent company of AEC, has been listed on the Taiwan Stock Exchange since March 1994. Grid investment, semiconductor fabs and AI data centres have taken the share price, the dividend and the order book to records.



×13.7
From the 2020 low to the 2024 high
$0.42 → $5.75 · €0.37 → €5.13

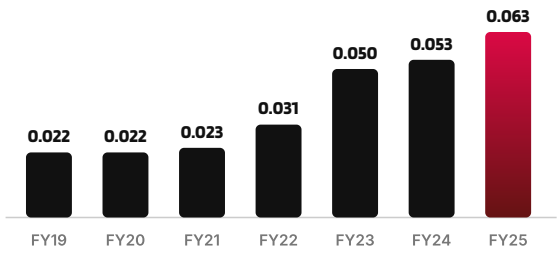
×9.7
Share price in ten years
$0.33 → $3.20 · €0.30 → €2.86, Oct 2016–2026

$894M
Market capitalisation
≈ €798 M, 8 Oct 2026

×2.9
Cash dividend per share
$0.022 → $0.063 · €0.020 → €0.056, FY2019–2025

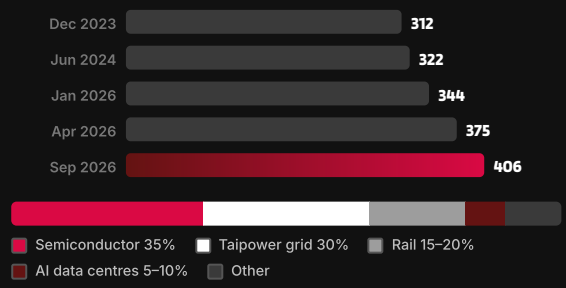
DIVIDEND EVERY YEAR

Cash dividend per share, USD, plus a stock dividend each year



RECORD ORDER BACKLOG

USD million · ≈ €363 M in Sep 2026



Grid resilience
Turnkey substations and smart-grid equipment for Taipower

Semiconductor fabs
Supplier to fabs in Taiwan, the USA, Japan, Singapore and Germany

AI data centres
Orders for AI data centres in Asia and Latin America

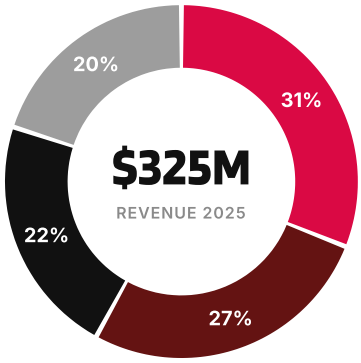
Rail
Third-generation train control for Taiwan Railway, with Nippon Signal

Share prices and dividends converted to USD and EUR at the 8 Oct 2026 exchange rate, not adjusted for stock dividends; Taiwan Stock Exchange. Market data at 8 Oct 2026; backlog as reported by the company and the financial press. The company is held by international index funds for emerging-market small caps and smart-grid infrastructure. Past performance is no guarantee of future results.

THE AEC GROUP

Group businesses

Critical power is the largest division of the group. Transformers and switchgear, where the group began in 1968, complete the portfolio together with engineering projects.



REVENUE BY DIVISION · SHARE OF 2025 GROUP SALES

Critical power (UPS)	$101M
Transformers	$88M
Switchgear	$71M
Engineering projects	$65M



1 kVA – 1.2 MVA

Critical power

UPS and CPSS systems, lead-acid and lithium battery storage.



up to 36 kV · 15,000 kVA

Transformers

Where AEC began in 1968: cast resin, oil-immersed, dry type and amorphous core.



3.3 kV – 24 kV

Switchgear

Metal-clad, metal-enclosed and gas-insulated, plus low-voltage panels.



Data centres · solar plants

Engineering projects

Feasibility studies and design for critical sites, data centres and solar plants.

HOW AEC WORKS

Manufactured by the group, delivered by AEC

Allis Electric Group
Design and manufacturing

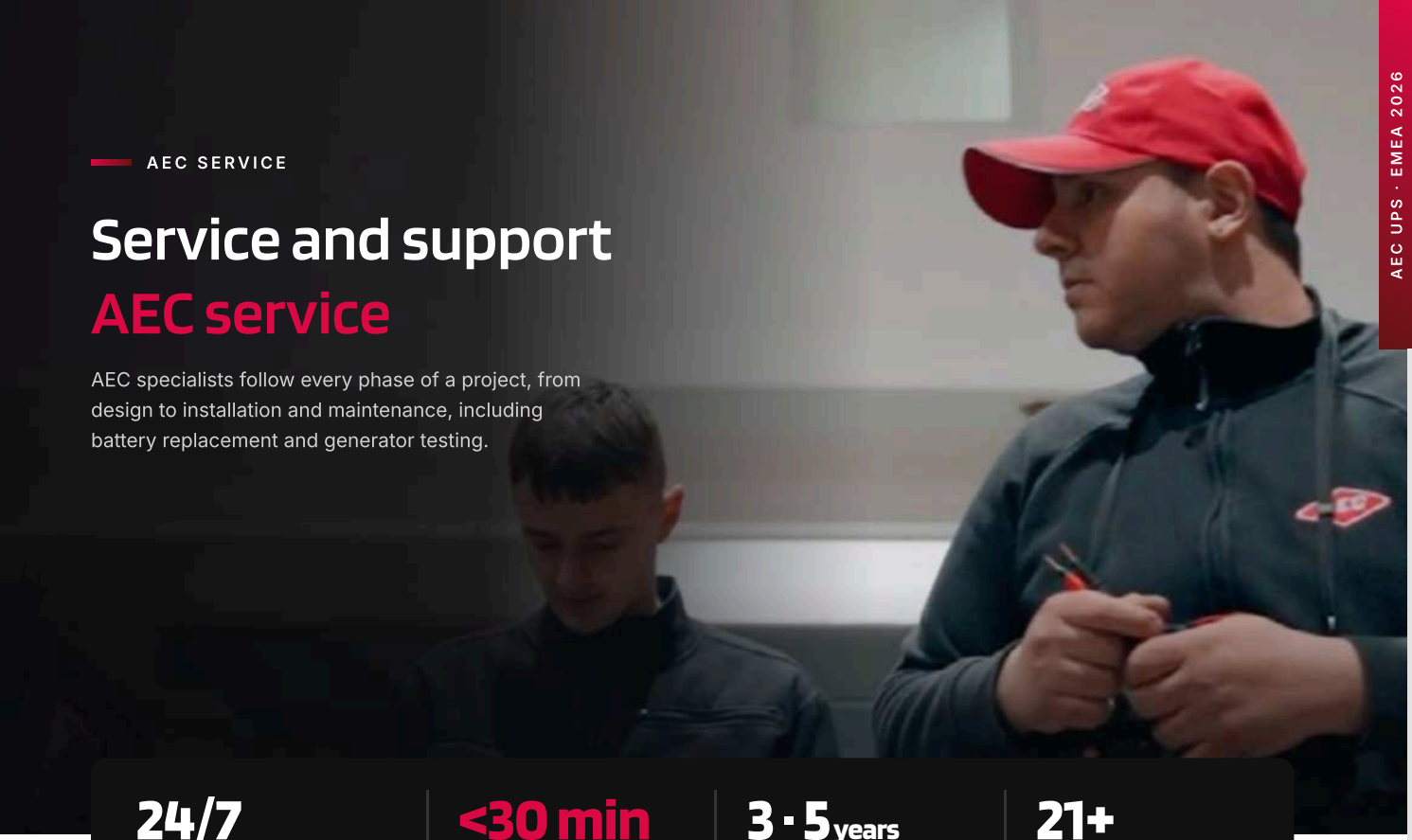
→

AEC International
Sizing · configuration · commissioning · service

→

Your site
Continuity of power

AEC products are designed and manufactured within the Allis Electric Group. In Europe, the Middle East and Africa, AEC International sizes, configures, commissions and services them, with spare parts in stock and field engineers on call.



AEC SERVICE

Service and support

AEC service

AEC specialists follow every phase of a project, from design to installation and maintenance, including battery replacement and generator testing.

24/7	<30 min	3 · 5 years	21+
Assistance, also on non-working days	WhatsApp reply to any question	Warranty UPS · lithium ranges	Countries with spare parts

THE SERVICE CYCLE

One partner for the whole life of the system

01 Consulting
Feasibility studies and design for critical sites, data centres and solar plants.

02 Pre-sales
UPS, battery and parallel systems sized by AEC engineers.

03 Installation
Site survey, positioning and cabling of UPS and battery cabinets.

04 Commissioning
Verification of every value, parameter, access level and dry contact.

05 Assistance 24/7
Phone and WhatsApp around the clock, on-site when needed.

06 Maintenance
Contracts tailored to the site: batteries, tests, generator checks.

A technical or sales question?

We reply on WhatsApp in under 30 minutes, 24 hours a day.

SERVICE · PHONE AND WHATSAPP

+39 393 080 5211

E-MAIL

service@aecups.com

AEC International
Via Nerviano 55, 20045 Lainate (MI), Italy

UPS RANGE

UPS range overview

Twelve UPS and CPSS series by power, form factor and battery technology.



Power axis in logarithmic scale. Modular bars start at one power module and end at the full frame.

ENERGY STORAGE AND OPTIONS



L6 Lithium
LiFePO4 cabinets, hot-swappable modules
165



Battery cabinets
BB1–BB8 and BBJ for 12 V VRLA
180



VRLA OZ Power
AGM 12 V batteries, 9–200 Ah
192

Accessories
Cards, sensors, bypass and parallel kits
204

AEC

ONLINE UPS · DOUBLE CONVERSION

IST3

1–10 kVA

Clean, uninterrupted power for servers, networks and offices, in a compact tower format.

- **DSP control**
  digital signal processor
- **Single-phase in and out**
  L + N + PE connection
- **EMC class A**
  for commercial and industrial sites



STANDARD MODELS
IST3-10 · IST3-3 · IST3-1

PF 1
output power factor: kVA = kW

95.5%
AC/AC efficiency in online double conversion

5 models
1, 2, 3, 6 and 10 kVA

3 years
warranty, extendable with a maintenance contract

WHY IST3

Key features
IST3 1–10 kVA

Five power ratings in one family, with the same LCD panel and the same communication options on every model.

Online

High-frequency double conversion

Pure online design with a pure sine wave output: clean, steady power for servers, networks and other sensitive loads.

120 V

The battery stays full

Down to 120 V of mains (1–3 kVA, load below 50%) the UPS does not touch the battery, so it stays at 100% and lasts longer.

PFC

High input power factor

Active power factor correction eases the load on the power grid: a new generation of green power.

1.0

Output power factor

Output power factor 1: every VA is a usable watt (kVA = kW), more real power from the same kVA rating.

PWM

Compact and efficient

High-frequency PWM conversion: high efficiency, small volume and light weight, with better reliability.

Protected

Full protection

Triple overcurrent protection against grid disturbances.

IST3-10 · STANDARD
on wheels, with maintenance bypass



CONNECTIVITY

Standard ports, optional cards

RS232
monitoring software, remote ON / OFF

USB
standard on every model

SNMP
optional card

EPO
emergency power off

DESIGNED FOR

- Servers & data centres
- Telecom systems
- Finance & stock
- Networks
- Railway
- Postal services

THE RANGE

Models and range
IST3 1–10 kVA

Every rating comes as a standard model with internal batteries or as a long backup model for external battery cabinets.

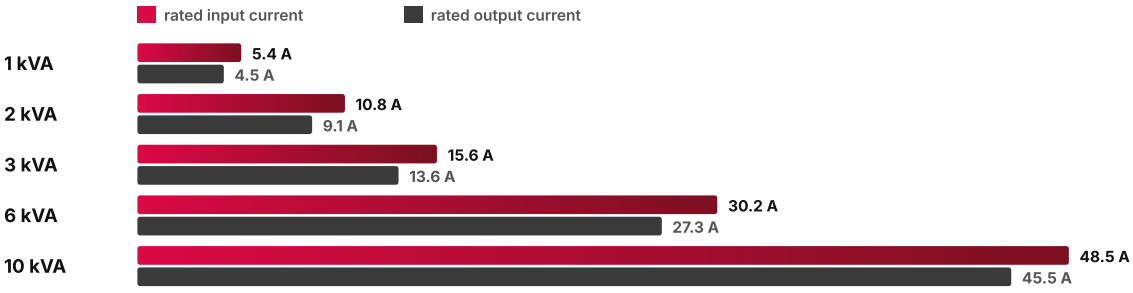


Model	VA / W	Internal batteries	Backup, full / half load	W × D × H (mm)	kg	Long backup: battery	kg
1 kVA	1000 / 1000	2 × 9 Ah · 24 V	3 min	145 × 357 × 226	8.5	36 V	4.6
2 kVA	2000 / 2000	4 × 9 Ah · 48 V	3 min	190 × 397 × 330	17.6	72 V	9.0
3 kVA	3000 / 3000	6 × 9 Ah · 72 V	3 min	190 × 397 × 330	22.5	96 V	9.2
6 kVA	6000 / 6000	16 × 9 Ah · 192 V	5 / 20 min	230 × 524 × 553	54.5	192 V	11.0
10 kVA	10,000 / 10,000	16 × 9 Ah · 192 V	1 / 15 min	230 × 524 × 553	56.2	192 V	12.5

Backup at full load for 1–3 kVA; 6 and 10 kVA full / half load. Long backup 6–10 kVA: 190 × 429 × 337 mm; 1–3 kVA same size as the standard model. 6–10 kVA: 16 to 20 batteries of 12 V settable, 192 V by default.

Rated current per model

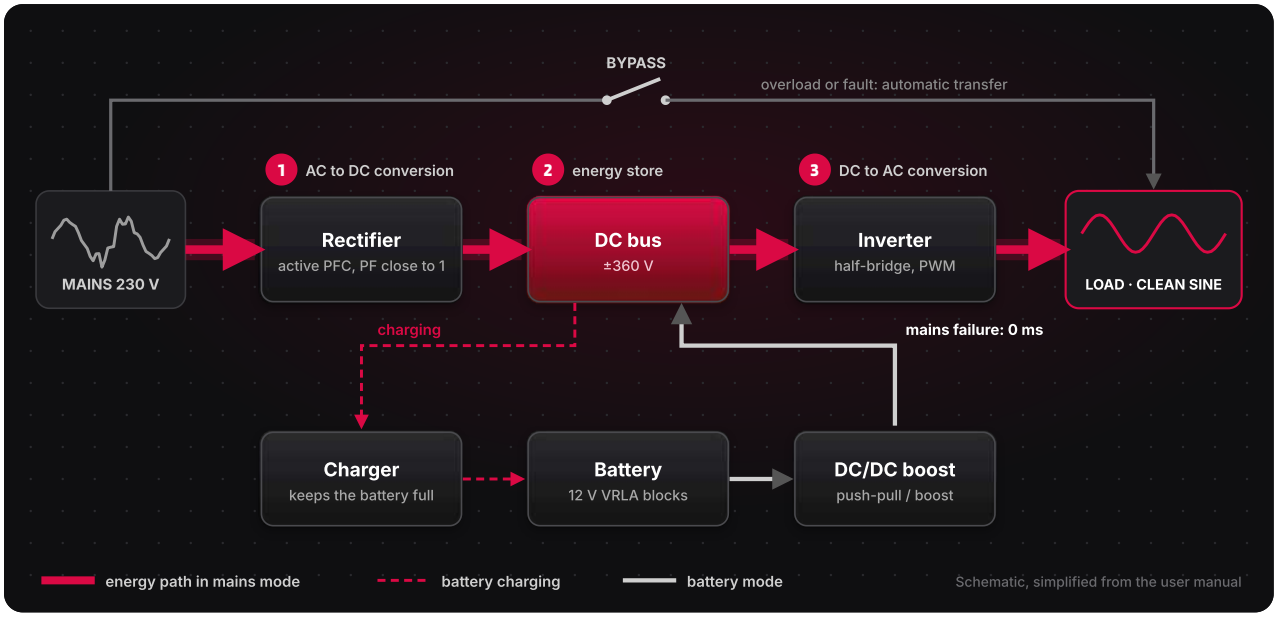
Size the supply line and the input breaker for the model



HOW IT WORKS

Operating principle
IST3 1–10 kVA

High-frequency online double conversion: in mains mode the inverter rebuilds a steady sine wave from the DC bus, and the battery takes over with no break.

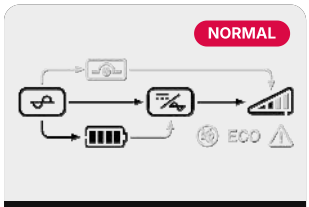


STEP 1
PFC rectifier
With the mains normal, the active PFC turns the input into a steady ±360 V DC bus, with a high input power factor.

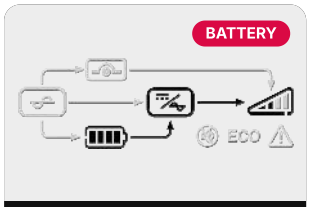
STEP 2
Inverter
A half-bridge DC/AC inverter rebuilds a steady sine wave for the load, while the charger keeps the battery full.

STEP 3
DC/DC boost
With the mains abnormal, a push-pull or boost DC/DC raises the battery voltage to the ±360 V bus: no break at the output.

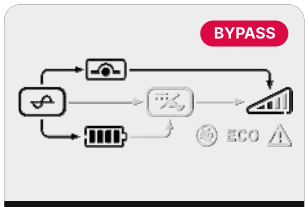
Four operating modes, shown on the LCD



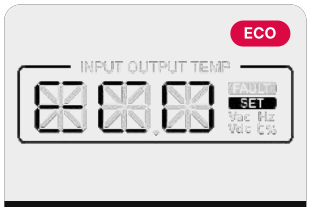
Mains mode
Mains normal: the inverter supplies the load and the battery is charged.



Battery mode
Mains abnormal: the battery is boosted to the DC bus, the inverter keeps running.



Bypass mode
The load is supplied through the bypass while the battery is charged.



ECO mode
Selected on the panel (SELECT 5 s, confirm with ON); the LCD shows ECO.

LCD in each mode, from the user manual (Fig. 2-14, 2-16, 2-15, 2-25).

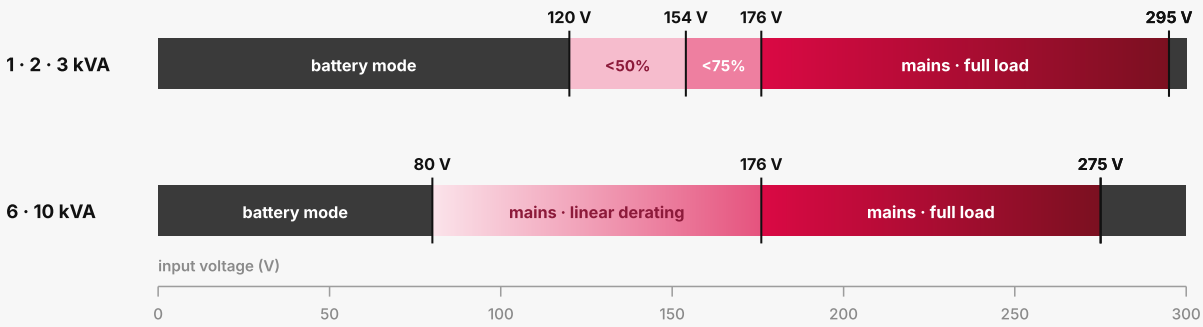
0 ms	±360 V	50 / 60 Hz	±0.2%
transfer time	DC bus	input self-adapting, ±10%	output frequency in battery mode

BATTERY-FRIENDLY

Input range and battery
IST3 1–10 kVA

A wide input window keeps the load on the mains during brownouts, so the battery is saved for real outages and stays charged.

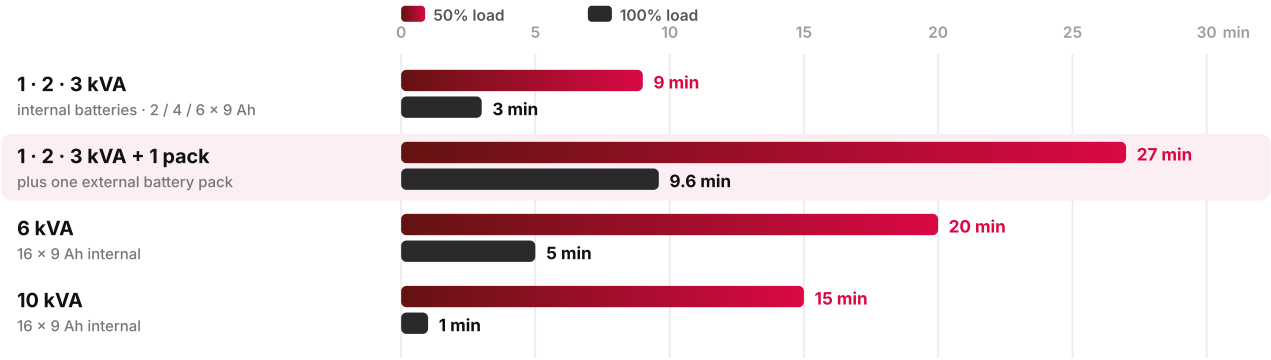
Input voltage window



1–3 kVA: 176–295 V at full load, 154–176 V with load below 75%, 120–154 V with load below 50%. 6–10 kVA: 176–275 V at full load, 80–176 V with linear derating. Input frequency 50 / 60 Hz ± 10%, self-adapting.

How long does the load keep running?

Backup time with the internal batteries, and with one extra battery pack



Typical values at 25 °C with new, fully charged batteries; 50% load = 500 / 1000 / 1500 W on 1 / 2 / 3 kVA. Long backup models: as many battery cabinets as the site needs; AEC calculates the backup time for each project.

Battery care

DAY 1

1

Charge 10 hours

before first use

EVERY 4–6 MONTHS

2

Discharge and recharge

or every 2 months in hot areas

IN STORAGE

3

Recharge > 10 hours

every 3 months

3–5 YEARS

4

Typical battery life

with temperature and use

3 s
battery test from the ON button

< 75%
load: no limit on battery discharge time (1–3 kVA)

0–40 °C
storage, 20–80% RH

6 months
storage limit, then re-check; recharge every 3 months

Front and rear panels
IST3 1–3 kVA

Input and output on sockets: connect the UPS to the wall socket and the loads to the Schuko outputs. The long backup model adds the external battery cable.





1 kVA
rear panel

1. RS232 port
2. EPO connector
3. Rating label
4. USB · intelligent slot (SNMP or RS485 / dry contact)
5. 2 × Schuko output
6. Cooling fan
7. Mains input socket with fuse
8. External battery connector





2 · 3 kVA
rear panel

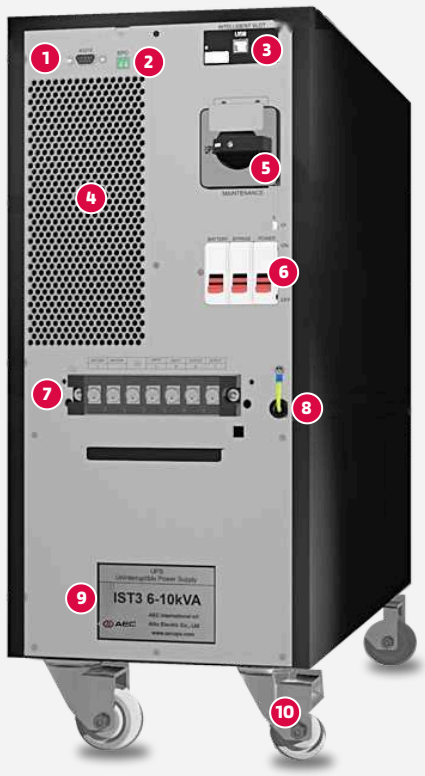
1. RS232 port
2. EPO connector
3. Rating label
4. USB · intelligent slot
5. 3 × Schuko output
6. Cooling fans
7. Overcurrent protector
8. External battery connector
9. Mains input socket

The external battery connector is standard on long backup models and optional on standard models. Load current per output socket: generally not more than 5 A. Rear panels as in the user manual, Fig. 2-7 and 2-8.

DID YOU KNOW?
Not every load suits a UPS: unbalanced, half-wave rectified or inductive loads, such as air conditioners, motors, drills or fluorescent lamps, must not be connected to the IST3.

Front and rear panels
IST3 6–10 kVA

Input, output and battery on a terminal bar. The standard model, on wheels, has its own maintenance bypass switch; the long backup model is compact and connects to external battery cabinets.



Standard model

Internal batteries, maintenance bypass, on wheels; 230 × 524 × 553 mm.

1. RS232 port
2. EPO connector
3. USB · intelligent slot
4. Ventilation grille
5. Maintenance bypass switch
6. Mains, bypass and battery breakers
7. Input, output and battery terminals
8. Ground
9. Rating label
10. Wheels



Long backup model

External battery cabinets; 190 × 429 × 337 mm.

1. RS232 port
2. EPO connector
3. USB · intelligent slot
4. Rating label
5. Ventilation grille
6. Mains and bypass breakers
7. Input, output and battery terminals

Maintenance bypass (standard 6–10 kVA)

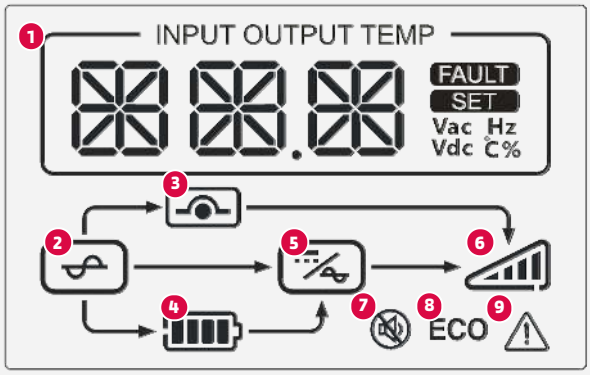
To service the UPS or replace the battery without stopping the load: switch the UPS off so it transfers to bypass, remove the maintenance bypass cover, turn the maintenance bypass switch to bypass, then switch off the mains and bypass breakers. The load is fed through the maintenance bypass; the input, output and filter-board terminals stay live.

PANEL AND DISPLAY

Display and control panel
IST3 1–10 kVA

Three buttons and an LCD show the energy path, battery and load level, fault codes and settings, with no software needed.





LCD icons, user manual Fig. 2-6; numbers as in the manual table.

1. **Display area** · Input / output voltage and frequency, load, temperature, fault code, parameters, mode.
2. **Mains** · On: mains input normal.
3. **Bypass** · On: UPS in bypass mode.
4. **Battery, 4 bars** · Running: charging · all on: full · all flashing: overvoltage · frame flashing: nearly empty.
5. **Inverter** · On: inverter working.
6. **Load, 4 bars** · Load level; all flashing: load too large.
7. **Silence** · On: buzzer silenced.
8. **ECO** · On: UPS in ECO mode.
9. **Alarm** · On: UPS failure.

ON

Hold 1 s: switch on · mains mode, hold 3 s: battery test · battery mode, hold 3 s: silence · hold 1 s: confirm a setting.

OFF

Hold 1 s: switch off.

SELECT

Press: scroll voltages, frequencies, battery, temperature, load and faults · hold 5 s: setting page.

Self-diagnosis: fault codes on the LCD

EPO Long beep Emergency stop: bypass and inverter output closed	**BUS** Long beep DC bus voltage fault, inverter output closed	**TMP** Long beep Over-temperature: check fans and air vents	**FAN** Every 0.2 s Fan alarm (0.2 s beep), then protection (long beep)
OUT Long beep Output short circuit or load too large	**BAT** Long beep Battery voltage too low or too high	**CHG** Every 0.2 s Charger over-temperature or short circuit	**BYP** Every 2 s Bypass voltage or frequency abnormal

Fault symbols and buzzer, user manual Table 4-2. Settings: hold SELECT 5 s, scroll with SELECT, confirm by holding ON 1 s; without confirmation the page closes after 20 s. Settable: ECO or INV mode; output 208 / 220 / 230 / 240 V.

CONNECTIVITY

Communication and connectivity
IST3 1–10 kVA

RS232 and USB on every model; the intelligent slot takes an SNMP card or an RS485 and dry-contact card; the EPO input stops the UPS from a remote switch.



RS485 and dry-contact card

Pin	Signal
1 · 2	Mains abnormal: COM · NC/NO
3 · 4	Battery undervoltage: COM · NC/NO
5 · 6	UPS failure: COM · NC/NO
7 · 8	RS485-A · RS485-B

Outputs normally closed by default; jumpers CN1–CN3 select NC (pins 1–2, default) or NO (pins 2–3). Input signal below 60 V DC or 42 V AC RMS, below 1.25 A.



RS485 and dry-contact card · 8-pin green terminal

Pin definition from the user manual, Fig. 2-12.

RS232 cable to the computer

RS232 port of the UPS	RS232 port of the PC
Pin 9 (3)	Pin 2 · receiving end
Pin 6 (2)	Pin 3 · transmitting end
Pin 7 (5)	Pin 5 · grounding end

Pin relationship from the user manual, Table 2-3.

EPO WIRING

Closed to run, open to stop

The EPO input on the rear board must be closed for the UPS to work: if the function is not used, leave the 2-pin jumper terminal supplied with the UPS in place. To use it, remove the jumper and wire the remote switch.

After an EPO stop the LCD shows the EPO fault: close the contact again, power the UPS off completely and restart it.

TECHNICAL DATA

IST3 1–10 kVA

Model	1 kVA	2 kVA	3 kVA	6 kVA	10 kVA
Power (VA / W)	1000 / 1000	2000 / 2000	3000 / 3000	6000 / 6000	10,000 / 10,000
Technology	high-frequency online double conversion · active PFC rectifier · DC bus ±360 V · DSP control				
INPUT					
Voltage range	176–295 V full load · 154–176 V load < 75% · 120–154 V load < 50%			176–275 V full load · 80–176 V linear derating	
Frequency · connection	50 / 60 Hz ± 10%, self-adapting · single phase, L + N + PE				
Rated input current (A)	5.4	10.8	15.6	30.2	48.5
OUTPUT					
Voltage	220 V ± 2% (default) · 208 / 220 / 230 / 240 V settable from the panel				
Frequency · waveform	50 / 60 Hz ± 0.2% in battery mode · pure sine wave				
Voltage distortion	THD < 3% (linear load)			THD < 1% linear · < 4% non-linear	
Power factor · transfer time	1.0 (kVA = kW) · 0 ms mains to battery				
Overload	100–130% 1 min · 130–150% 1 s · > 150% 200 ms			105–130% 10 min (1 min above 30 °C) · 130–150% 30 s · > 150% 500 ms	
Rated output current (A)	4.5	9.1	13.6	27.3	45.5
Operating modes	online (INV) · ECO · battery · bypass, selected on the panel				
BATTERY					
Internal batteries, standard model	2 × 12 V 9 Ah	4 × 12 V 9 Ah	6 × 12 V 9 Ah	16 × 12 V 9 Ah	16 × 12 V 9 Ah
DC voltage standard / long backup	24 / 36 V	48 / 72 V	72 / 96 V	192 V (16–20 × 12 V)	192 V (16–20 × 12 V)
Backup time, standard model	3 min full load · 9 min half load			5 / 20 min full / half	1 / 15 min full / half
DC current, long backup (A)	29.0	27.8	31.3	30.6	52.0
Charge recovery · battery test	standard model < 10 h · long backup: depends on the battery pack · test from the ON key (3 s)				
COMMUNICATION AND DISPLAY					
Ports	RS232 and USB standard · intelligent slot: SNMP card or RS485 + 3 dry contacts (optional) · EPO, normally closed				
Display · keys	LCD with energy path, load and battery bars, fault codes · ON, OFF, SELECT				
Protections · alarms	battery under-voltage, overload, short circuit, over-temperature, input over-voltage, fan, charger · mains abnormal, battery low, UPS failure				
INSTALLATION AND ENVIRONMENT					
Input · output connection	socket + fuse · sockets	socket + overcurrent protector · sockets		terminal bar (input, output, battery); maintenance bypass on the standard model	
Input breaker (A) · AC cable (mm²)	10 · 1.5	20 · 2.5	32 · 4	50 · 6	100 · 10
Noise	< 50 dB	< 50 dB	< 55 dB	< 55 dB	< 55 dB
Environment	−5 … 40 °C (20–25 °C recommended) · 0–95% RH non-condensing · ≤ 1000 m without derating · EMC class A				
Storage	0–40 °C, 20–80% RH; recharge the batteries every 3 months				
Dimensions W × D × H (mm)	145 × 357 × 226	190 × 397 × 330		230 × 524 × 553 (standard) · 190 × 429 × 337 (L)	
Weight standard / long backup (kg)	8.5 / 4.6	17.6 / 9.0	22.5 / 9.2	54.5 / 11.0	56.2 / 12.5

Backup time at 25 °C, new batteries; half load values from AEC runtime tables. Specifications are subject to change without notice.

AEC

ONLINE UPS · RACK / TOWER

IST3-J

1–10 kVA

2U, 19 inch
every model, 1–10 kVA

Rack or tower
1–3 kVA, set on the panel

8 IEC outlets
some programmable (optional)

Single-phase online UPS for 19-inch racks, 2U high. On 1–3 kVA the LCD switches to tower reading from the panel, and the battery box mounts in the same rack.



PF 1
output power factor: kVA = kW

95.5%
AC/AC efficiency in online double conversion

RCK · TWR
display set for rack or tower (1–3 kVA)

3 years
warranty, extendable with a maintenance contract

WHY IST3-J

Key features
IST3-J 1–10 kVA

Six reasons to choose a 2U online UPS for the rack.

Online

Double conversion

High-frequency online UPS with active PFC: clean, steady sine-wave power for servers and network equipment.

RCK · TWR

Rack or tower

1–3 kVA: the LCD reading is set for rack (default) or tower mounting from the panel.

Hot-plug

Battery packs

On 1–3 kVA the battery packs of the UPS and of the battery box are hot-pluggable, from the front.

Programmable

Outlets that save backup

Optional programmable outlets switch off non-critical loads after a set time on battery, to extend backup.

120 V

The battery stays full

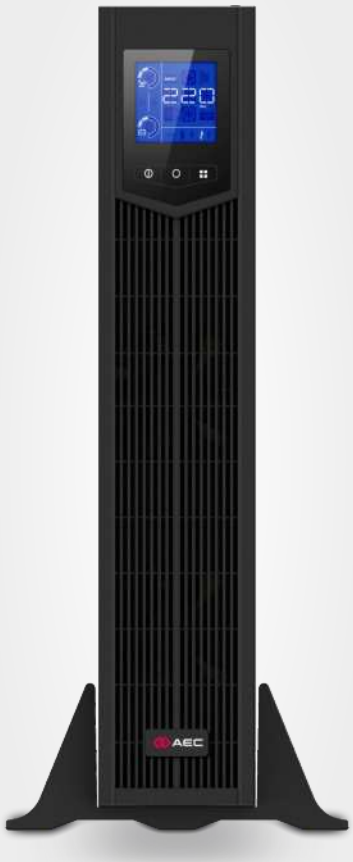
Down to 120 V of mains (1–3 kVA, load below 50%) the battery does not discharge, so it stays at 100%.

IP20

Up to 2000 m

1–3 kVA: IP20 enclosure, rated power up to 2000 m above sea level; above that, the power is reduced.

TOWER MOUNTING
1–3 kVA on its support bases



OUTPUT AND STANDARDS

Clean, quiet power

1.0
output power factor, kVA = kW

< 50 dB
noise level, 1–3 kVA

IEC 62040
safety, EMC and performance

DESIGNED FOR

- Servers & data centres
- Telecom systems
- Finance & stock
- Networks
- Railway
- Postal services

THE RANGE

Models and range
IST3-J 1–10 kVA

Three frames in the same 19-inch, 2U format. On 1–3 kVA the optional battery box has the same footprint as the UPS.



UPS with battery box, rack-mounted

FRONT VIEWS



1 · 2 · 3 kVA



6 · 10 kVA

1 kVA

1000 VA / 1000 W

- 438 × 423 × 86 mm, 14 kg
- Battery 36 V: 3 × 12 V 9 Ah inside
- 8 IEC C13 outlets

2 · 3 kVA

2000 / 3000 VA · 2000 / 3000 W

- 438 × 572 × 86 mm, 20 / 26 kg
- Battery 48 / 72 V: 4 / 6 × 12 V 9 Ah inside
- 8 IEC C13 + 1 IEC C19 outlets

6 · 10 kVA

6000 / 10,000 VA · 6000 / 10,000 W

- 438 × 500 × 86 mm, 10.6 / 12.2 kg
- Long backup: external battery only
- 10 kVA /B: parallel version

AEC rack battery cabinets

BBJ

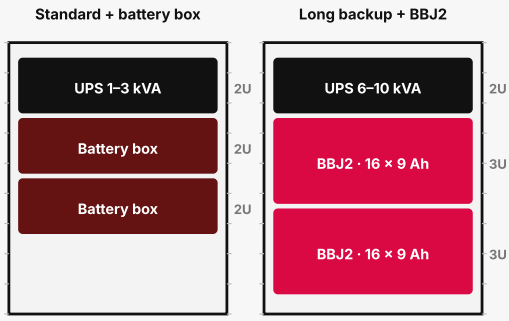
2U battery box for 1–3 kVA

Two battery strings per box. Optional: add one or more boxes for longer backup.

BBJ2

3U battery cabinet for 6–10 kVA

16 × 12 V 9 Ah per cabinet, 438 × 500 mm. Add cabinets for longer backup: AEC sizes the number for the site.



Examples; number of cabinets per UPS: see the ordering codes.

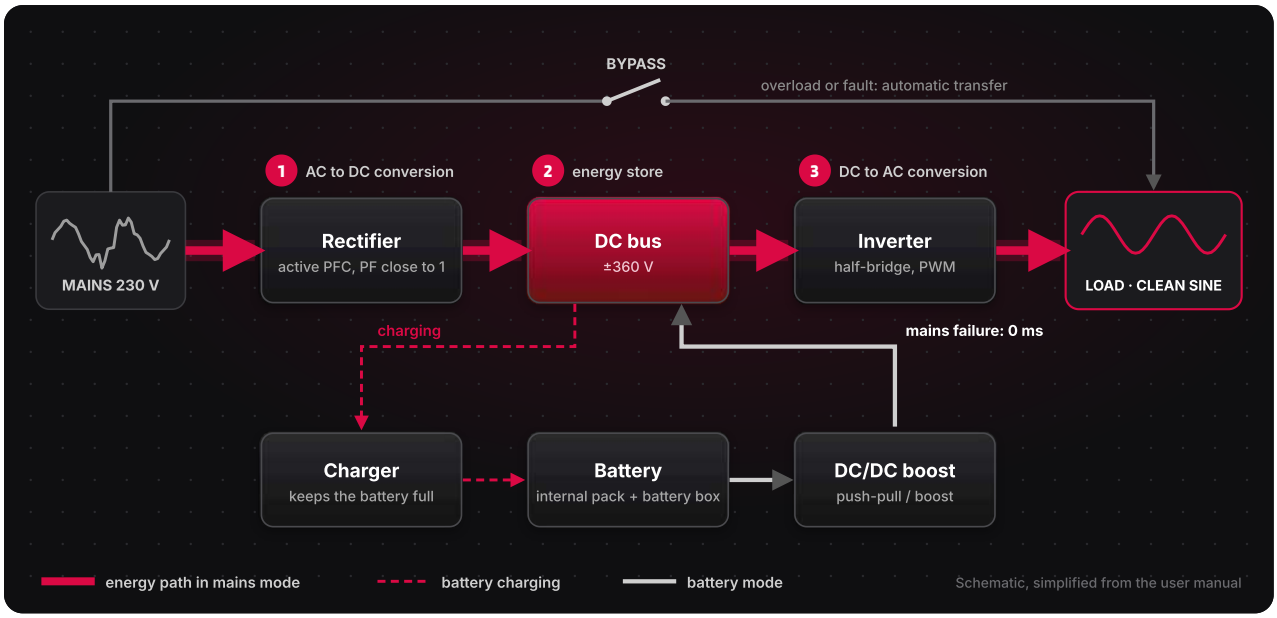
4.8–50 A
rated input current, 1 to 10 kVA

IEC C14 · C20
input inlets, 1–3 kVA

2 × C13
6–10 kVA outlets, ≤ 10 A each, plus wire terminal

HOW IT WORKS

Operating principle
IST3-J 1–10 kVA



STEP 1

Active PFC

With the mains normal, the PFC rectifier turns the input into a steady ±360 V DC bus with a high input power factor.

STEP 2

Half-bridge inverter

The DC/AC inverter rebuilds a steady sine wave for the load while the charger keeps the battery full.

STEP 3

DC/DC boost

With the mains abnormal, the DC/DC raises the battery voltage to the DC bus. On 6–10 kVA the charger is fed from the DC bus and fully isolated.

Rack or tower, same UPS

RCK · RACK



TWR · TOWER



Converter mode · 50 or 60 Hz output (1–3 kVA)

Disabled by default. When it is enabled from the PC, the output frequency is set to 50 Hz or 60 Hz, as the load requires.

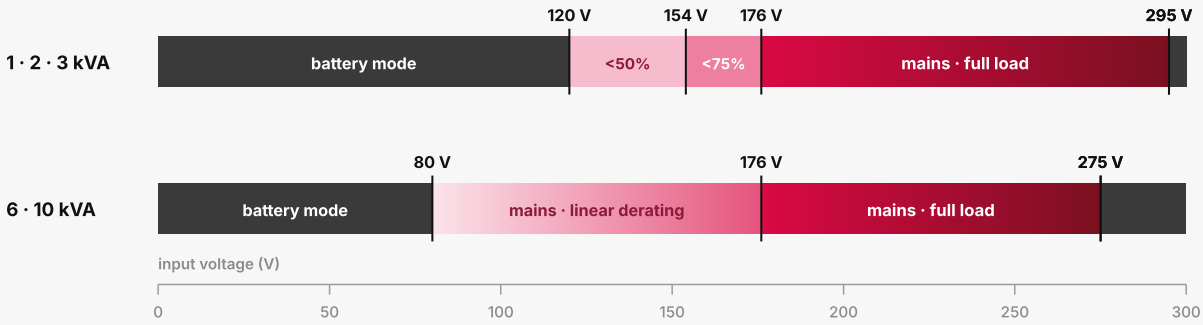
0 ms	±360 V	±0.2%
transfer time	DC bus	output frequency, battery mode

BATTERY-FRIENDLY

Battery and backup time
IST3-J 1–10 kVA

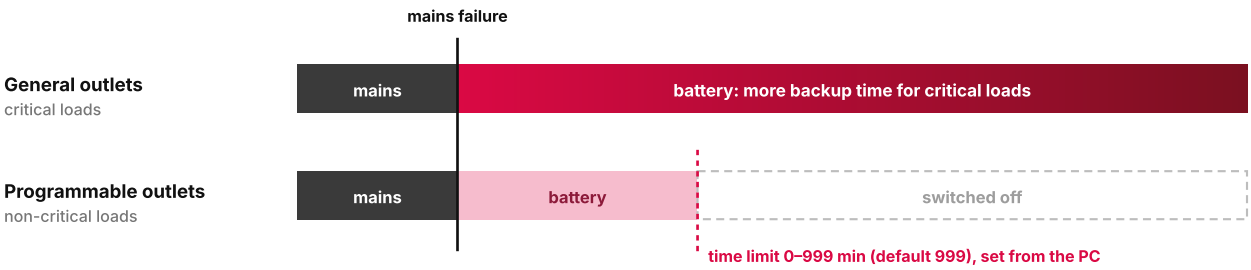
A wide input window saves the battery for real outages; programmable outlets and a settable charger stretch backup and battery life.

Input voltage window



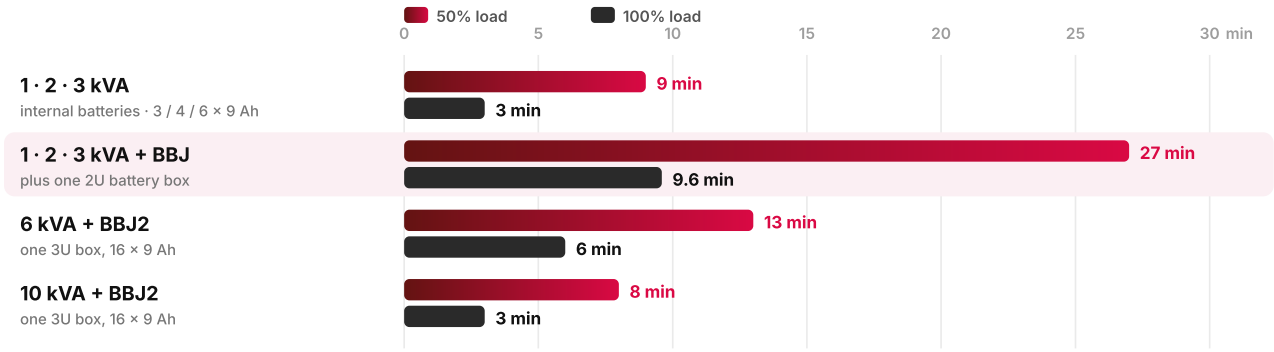
1–3 kVA: 176–295 V above 75% load, 154–176 V at 50–75%, 120–154 V below 50%. 6–10 kVA: full load from 176 to 275 V, linear derating down to 80 V; 50 / 60 Hz ± 10%, self-adapting.

Programmable outlets (optional, 1–3 kVA)



How long does the load keep running?

Backup time, internal batteries and with one battery box



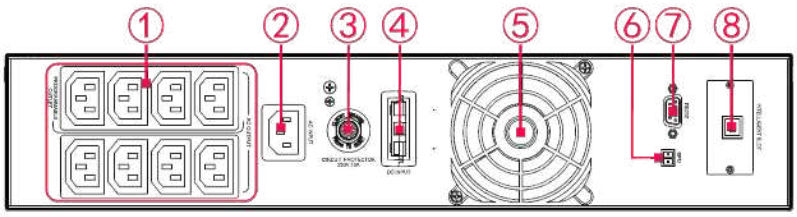
Typical values at 25 °C, new batteries fully charged; AEC runtime tables. Add battery boxes for longer backup: AEC calculates the number for each site.

Rear panels
IST3-J 1–10 kVA

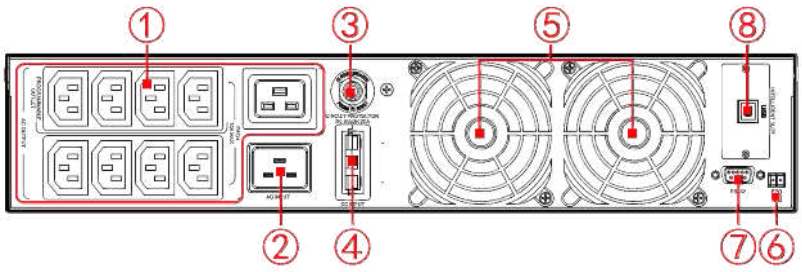
Outlets, mains input, battery port and communication on the back of every 2U chassis: IEC outlets on 1–3 kVA, a terminal block on 6–10 kVA.

1 · 2 · 3 KVA

IST3-J 1 kVA



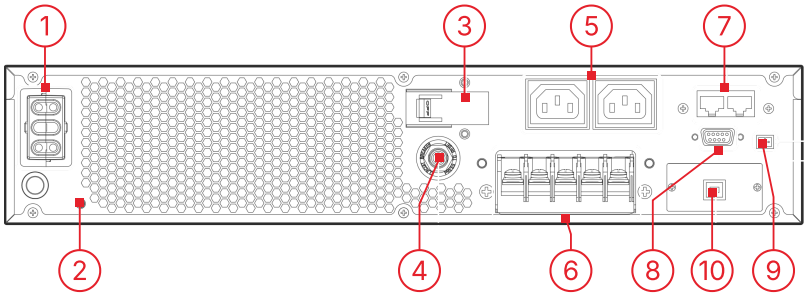
IST3-J 2 · 3 kVA



1. **Output outlets**
   IEC C13 (plus one C19 on 2–3 kVA): general outlets for critical loads; programmable outlets (optional) for non-critical loads.
2. **Input inlet**
   IEC mains input.
3. **Over-current protector**
   Resettable circuit protector on the input.
4. **External battery port**
   DC input for the battery box or the external battery.
5. **Cooling fan**
   One fan on 1 kVA, two on 2–3 kVA.
6. **EPO connector**
   Opening the contact closes the output.
7. **RS232 port**
   For UPS power management software.
8. **Intelligent slot**
   USB as standard; RS485 + dry contact, protocol transfer card or SNMP card as options.

6 · 10 KVA

IST3-J 6 · 10 kVA



1. **Battery expansion port**
   DC input for the BBJ2 battery cabinets.
2. **Surge protection grounding**
   Earth wire of the surge protection.
3. **Input breaker**
   Mains input protection.
4. **Over-current protector**
   Resettable circuit protector.
5. **Output sockets**
   IEC outlets for local loads.
6. **Wire terminal**
   Terminal block for input and output wiring.
7. **Parallel port**
   Only on the /B parallel models.
8. **RS232 port**
   For UPS power management software.
9. **EPO connector**
   Opening the contact closes the output.
10. **Intelligent slot**
    USB as standard; SNMP or RS485 + dry-contact card as options.

Outlets

- 1 kVA: 8 × IEC 320 C13.
- 2–3 kVA: 8 × IEC 320 C13 + 1 × IEC 320 C19.
- 6–10 kVA: IEC outlets plus the terminal block.
- Load current per 10 A outlet: generally not more than 5 A.

Automatic restart

- When the battery runs out, the UPS switches off with battery low-voltage protection.
- When the mains returns, it starts again by itself and recharges the battery.

AEC IST3-J 1–3 kVA IEC outlet version.

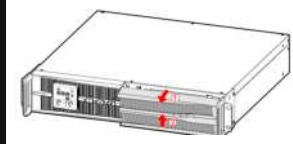
BATTERY EXPANSION · 1–3 kVA

Battery expansion
IST3-J 1–3 kVA

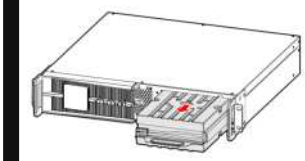
UPS and battery box packs are hot-pluggable from the front: replace them with the load running. For more backup, add 2U battery boxes in the same rack.

HOT-SWAP FROM THE FRONT PANEL

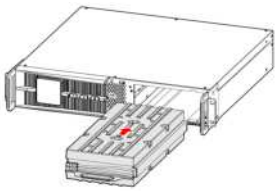
User manual, section 5.3 · same steps for 1, 2 and 3 kVA



1 Open
Remove the right front panel and the battery plate (M4 screws).



2 Pull out
Unplug the battery wire and pull the pack out of the front.



3 Push in
Slide the new pack in and plug the battery wire.



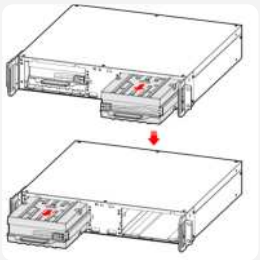
4 Close
Refit plate and panel: the load never stopped.

Stack the backup



Battery box, 1–3 kVA · 2U

UPS	Batteries (2 strings)	W × D × H mm	kg
1 kVA	2 × 3 × 12 V 9 Ah · 36 V	438 × 420 × 87	20
2 kVA	2 × 4 × 12 V 9 Ah · 48 V	438 × 570 × 87	29
3 kVA	2 × 6 × 12 V 9 Ah · 72 V	438 × 570 × 87	40



Two packs per box

Left and right packs slide out of the front of the box after removing the side panels and the battery plate. Hot-pluggable like the UPS pack.

- Same footprint as the UPS: one rack, one depth.
- Each box connects to the external battery port of the UPS.
- Add boxes for more backup: AEC sizes the number for the site.

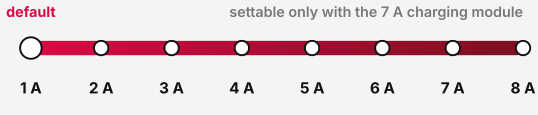
6 · 10 kVA

BBJ2, 3U, 16 × 9 Ah

Long backup models run on external BBJ2 cabinets of 16 × 12 V 9 Ah, connected to the battery expansion port on the rear panel. Add cabinets for more backup.

Charger, 1–3 kVA

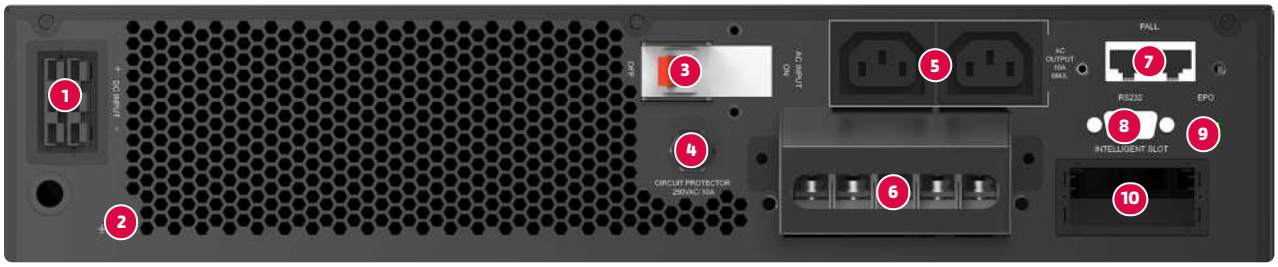
With the 7 A charging module the current is set from 1 to 8 A, to match the total Ah of the boxes.



Recommended: 0.1–0.2 C of the battery capacity

Long backup models
IST3-J 6–10 kVA

The 6 and 10 kVA models are long backup models: no internal batteries, external battery cabinets, and a wire terminal for input and output.



1. **Battery expansion port**
2. **Surge protection grounding**
3. **Input breaker**
4. **Over-current protector**
5. **Output sockets**
6. **Wire terminal**
7. **Parallel port (/B only)**
8. **RS232 port**
9. **EPO connector**
10. **Intelligent slot (USB standard)**

Good grounding

TN system, with less than 5 V AC between neutral and ground. A poor ground connection can halt a computer load when the mains fails, even though the UPS runs normally.

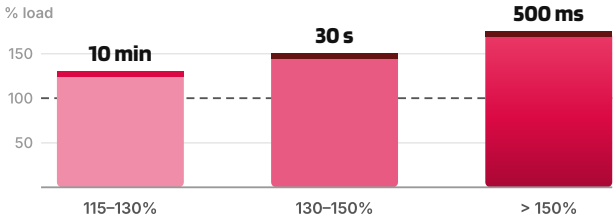
Battery set on site

192 V by default; 12 to 20 batteries of 12 V can be set through communication. Backup time set by the external battery.

Parallel version

The 10 kVA /B model can be used in parallel through its parallel port.

Overload, 6–10 kVA



- Output: 220 V ± 2% default, 208 / 220 / 230 / 240 V settable.
- THD < 1% linear, < 4% non-linear load.
- Recommended upstream input breaker: 50 A (6 kVA), 100 A (10 kVA).
- Noise < 55 dB · −5 ... 40 °C.

DID YOU KNOW?

Stored without batteries, an IST3-J tolerates −25 to 55 °C; once batteries are fitted, the recommended storage range narrows to 0–40 °C.

PANEL AND SETTINGS

Control panel and settings
IST3-J 1–10 kVA

An LCD and three buttons on the front (1–3 kVA). Settings are scrolled with SELECT and confirmed with ON; without confirmation the page closes after 20 s.





RCK · rack reading



TWR · tower

Display area
input / output voltage and frequency, load, temperature, fault code, parameters, mode

Mains mode
UPS working in mains mode

Bypass mode
UPS working in bypass mode

Battery mode
UPS working in battery mode

ECO mode
UPS working in ECO mode

Silence
buzzer silenced

Failure
UPS failure

ON

Hold 1 s: switch on · mains mode, hold 3 s: battery test · battery mode, hold 3 s: silence (again 3 s: cancel) · hold 1 s: confirm.

OFF

Hold 1 s: switch off.

SELECT

Press: scroll voltages, frequencies, battery, temperature, load and faults · hold 5 s: setting page.

Self-diagnosis: fault codes and alarms

EPO Long beep Emergency stop: bypass and inverter output closed	**BUS** Long beep DC bus voltage fault, inverter output closed	**TMP** Long beep Over-temperature: check fans and air vents	**FAN** Every 0.2 s Fan fault: alarm, then protection
OUT Long beep Output short circuit or load too large	**BAT** Long beep Battery voltage too low or too high	**Load bars** Every 0.2 s All flashing: overload, reduce the load	**Battery bars** Every 0.2 s Off, frame flashing: battery nearly empty

Fault symbols and buzzer, 1–3 kVA user manual Table 5-2 (load and battery bars: LCD energy bars).

SETTINGS

Panel and PC

ECO · INV
operating mode

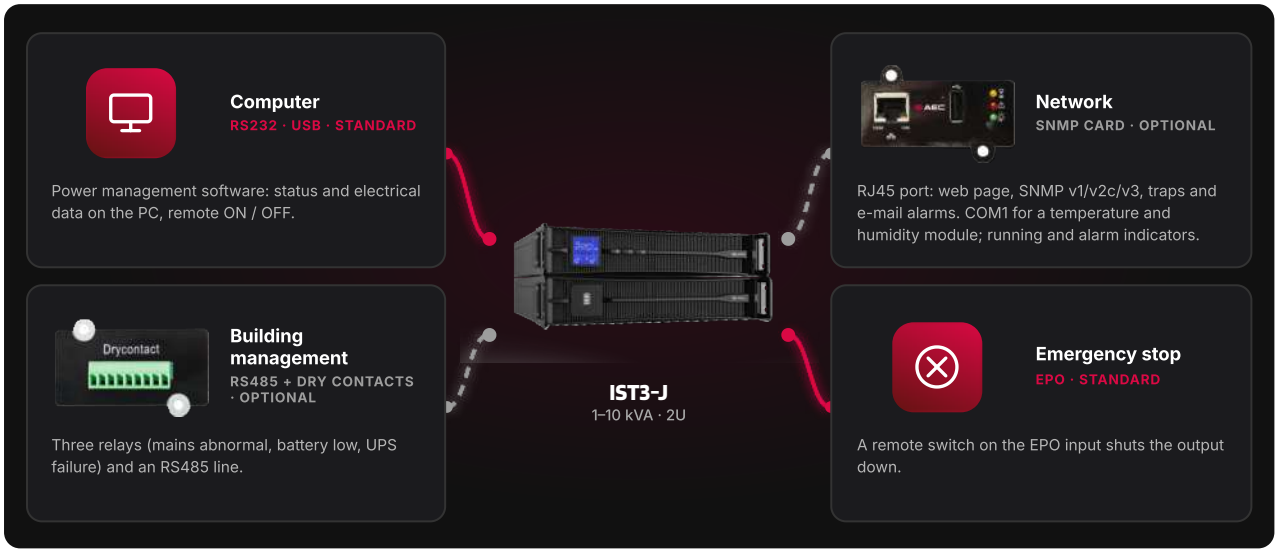
208–240
output, V; default 220

PC
programmable outlets and converter mode

CONNECTIVITY

Communication and connectivity
IST3-J 1–10 kVA

RS232 and USB with power management software as standard; cards for SNMP, RS485 with dry contacts or protocol transfer in the intelligent slot.



STANDARD

RS232 · USB

Power management software: monitoring of status and electrical data, remote ON / OFF, support for an external SNMP adaptor on RS232. USB on every model.

OPTIONAL

Intelligent slot cards

RS485 + dry contact; protocol transfer card (1–3 kVA; RS232 or RS485 on DB9, not both at once; RS485 reserved for lithium battery communication).

RS485 and dry-contact card

Pin	Signal
1 · 2	Mains abnormal: COM · NC/NO
3 · 4	Battery undervoltage: COM · NC/NO
5 · 6	UPS failure: COM · NC/NO
7 · 8	RS485-A · RS485-B

Outputs normally closed by default; jumpers CN1–CN3 select NC (pins 1–2, default) or NO (pins 2–3). Input signal below 60 V DC or 42 V AC RMS, below 1.25 A.



8-pin green terminal

RS232 cable to the computer

RS232 port of the UPS	RS232 port of the PC
Pin 9 (3)	Pin 2 · receiving end
Pin 6 (2)	Pin 3 · transmitting end
Pin 7 (5)	Pin 5 · grounding end

Pin relationship from the user manual (1–3 kVA, Table 2-7).

EPO WIRING

Closed to run, open to stop

Opening the two ports of the EPO connector closes the UPS output, and the LCD shows the EPO fault.

To restore the output, close the two ports again, power the UPS off and restart it.

TECHNICAL DATA

IST3-J 1–10 kVA

Model	1 kVA	2 kVA	3 kVA	6 kVA (L)	10 kVA (/B)
Power (VA / W)	1000 / 1000	2000 / 2000	3000 / 3000	6000 / 6000	10,000 / 10,000
Technology	high-frequency online double conversion · active PFC · DC bus ±360 V · 19-inch rack or tower, 2U				
INPUT					
Voltage range	176–295 V > 75% load · 154–176 V 50–75% · 120–154 V < 50%			176–275 V full load · 80–176 V linear derating	
Frequency · connection	50 / 60 Hz ± 10%, self-adapting · single phase, L + N + PE, TN system				
Input connection · protection	IEC inlet (C14 / C20) · over-current protector			input breaker · wire terminal · 10 A circuit protector	
Rated input current (A)	4.8	9.2	13.6	30 (max. 36)	50 (max. 60)
OUTPUT					
Voltage	208 / 220 / 230 / 240 V ± 1%, settable (default 220 V)			220 V ± 2% default · 208 / 220 / 230 / 240 V	
Frequency · waveform · transfer	50 / 60 Hz ± 0.2% in battery mode · pure sine wave · 0 ms				
Voltage distortion	THD < 2% (linear load)			THD < 1% linear · < 4% non-linear	
Power factor	1.0 (kVA = kW)				
Overload	105–110% 10 min · 110–130% 1 min · 130–150% 1 s · > 150% 200 ms			115–130% 10 min · 130–150% 30 s · > 150% 500 ms	
Output outlets	8 × C13 (1 kVA) · 8 × C13 + 1 × C19 (2–3 kVA); programmable outlets optional			2 × IEC C13 (each ≤ 10 A) + wire terminal	
Operating modes	online · ECO · battery · bypass · converter 50 / 60 Hz (from the PC)			online · ECO · battery · bypass · parallel (/B)	
BATTERY					
Internal batteries	3 × 12 V 9 Ah	4 × 12 V 9 Ah	6 × 12 V 9 Ah	external	external
Battery voltage	36 V	48 V	72 V	192 V default (12–20 × 12 V)	192 V default (12–20 × 12 V)
Backup, internal batteries	3 min full load · 9 min half load			with BBJ2 (16 × 9 Ah): 6 / 13 min (6 kVA), 3 / 8 min (10 kVA)	
Battery box	2U, hot-pluggable packs, same footprint as the UPS			3U BBJ2, 16 × 12 V 9 Ah, below the UPS	
Charger	1 A default · 1–8 A with 7 A charging module · recharge < 10 h			isolated charger, fed from the DC bus	
COMMUNICATION AND DISPLAY					
Ports	RS232 + USB · slot: RS485 + dry contacts, protocol card, SNMP · EPO			RS232 + USB · EPO · slot: RS485 + dry contacts, SNMP · parallel port (/B)	
Display	LCD, rack or tower reading (RCK / TWR) · ON, OFF, SELECT			LCD · 3 keys	
Protections · alarms	battery under-voltage, overload, short circuit, over-temperature, input overvoltage, fan, DC bus · mains abnormal, battery low, UPS fault, overload				
INSTALLATION AND ENVIRONMENT					
Input breaker (A)	10	20	32	50	100
Noise	< 50 dB			< 55 dB	
Environment	−5 … 50 °C (derated 40–50 °C) · 0–95% RH · IP20 · 2000 m · pollution degree II			−5 … 40 °C · 0–95% RH · < 1000 m (derate above)	
Storage	−25 … 55 °C without battery; with battery 0–40 °C, recharge every 3 months				
Dimensions W × D × H (mm)	438 × 423 × 86	438 × 572 × 86	438 × 572 × 86	438 × 500 × 86	438 × 500 × 86
Weight UPS · battery box (kg)	14 · 20	20 · 29	26 · 40	10.6	12.2
Standard	IEC 62040 (safety, EMC, performance)				

6 kVA: long backup model only (L). 10 kVA: long backup, /B parallel version. Backup at 25 °C with new batteries, AEC runtime tables. Specifications are subject to change without notice.

AEC

ONLINE UPS · RACK / TOWER

IST8

1–3 kVA

LITHIUM LFP lithium iron phosphate

Single-phase online double-conversion UPS from 1 to 3 kVA: two rack units in a 19-inch cabinet, or standing as a tower.



LFP
Lithium iron phosphate battery built into the UPS

×3.7
Backup at full load against lead-acid in the same 2U

PF 1
Output power factor: 3 kVA = 3 kW

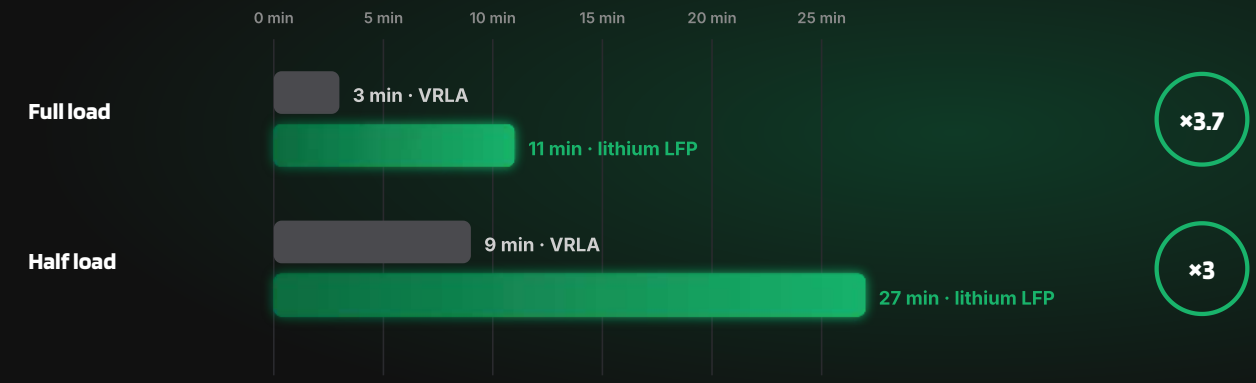
0 ms
Transfer time between mains and battery

LITHIUM VS LEAD-ACID

Key features
IST8 1–3 kVA

IST8 with its built-in lithium iron phosphate battery against an online rack UPS of the same size with lead-acid batteries: AEC runtime tables, user manuals and battery data.

BACKUP TIME, BUILT-IN BATTERY · 1, 2 AND 3 kVA



Typical values at 25 °C with new batteries, AEC runtime tables. Same values for 1, 2 and 3 kVA.

One IST8 replaces a UPS and its battery box

For 27 minutes at half load, a lead-acid rack UPS needs an extra 2U battery box. The IST8 does it alone.

LEAD-ACID · UPS + BATTERY BOX — 4U



4U	49 kg	27 min
rack space	2 kVA + box	half load

LITHIUM LFP · IST8 ALONE — 2U



−50%	−72%	27 min
rack space	weight, 13.6 kg	half load

	IST8 · lithium LFP	Lead-acid rack UPS
Battery chemistry	Lithium iron phosphate (LiFePO4)	Lead-acid AGM (VRLA)
Backup, full / half load	11 / 27 min	3 / 9 min
Design life	up to 10 years	3–5 years
Cycle life	3000 cycles at 50% DoD	about 500 cycles at 50% DoD
Operating temperature	0 … 60 °C	−5 … 50 °C (derated above 40 °C)
Output power, 3 kVA	3000 W (PF 1)	3000 W (PF 1)
Weight, 3 kVA	16.1 kg	26 kg
Transport	UN38.3 tested, UN3480	—

Lead-acid values: IST3-J 1–3 kVA user manual and AEC runtime tables; VRLA cycle life from the 12 V 9 Ah battery data at 25 °C.

THE RANGE

Models and range
IST8 1–3 kVA

The same 19-inch chassis from 1 to 3 kVA, with an LFP battery of 24, 48 or 72 V. Mounted in a rack or standing as a tower.



Tower (top) and rack (bottom) installation.



IST8 in the rack chassis.

1 kVA

1000 VA / 1000 W

- 438 × 423 × 86 mm, 8.9 kg
- Outlets: 6 × IEC C13
- Inlet: IEC C14

2 kVA

2000 VA / 2000 W

- 438 × 570 × 87 mm, 13.6 kg
- Outlets: 6 × IEC C13 + 1 × IEC C19
- Inlet: IEC C20

3 kVA

3000 VA / 3000 W

- 438 × 570 × 87 mm, 16.1 kg
- Outlets: 6 × IEC C13 + 1 × IEC C19
- Inlet: IEC C20

91.5%
AC/AC efficiency, 1 and 2 kVA

93%
AC/AC efficiency, 3 kVA

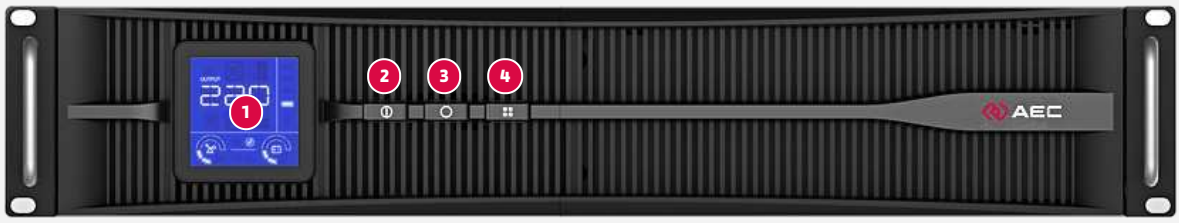
4 A
max. battery charging current

19"
rack mounting, chassis width 438 mm

FRONT PANEL

Front panel and display
IST8 1–3 kVA

Status, measurements and settings on the front of the UPS. Values are scrolled with SELECT and confirmed with ON.



1 LCD
Working status, measurements and settings.

2 ON
Hold 1 s to switch on. In mains mode hold 3 s for a battery test. In battery mode hold 3 s to silence the buzzer, again 3 s to cancel. In the setting page, hold 1 s to confirm.

3 OFF
Hold 1 s to switch the UPS off.

4 SELECT
Press to scroll output and input voltage and frequency, battery voltage, inner temperature, load and faults. Hold 5 s to open the setting page.



RCK · rack reading



TWR · tower reading

What the LCD shows

Input and output voltage and frequency, load, temperature, fault code, parameters and the working mode (mode icons on page 39), plus these status icons:

- **Silence**: buzzer silenced
- **Failure**: UPS failure, with the fault code on the display
- **RCK · TWR**: reading orientation for rack or tower mounting

Settings from the panel

ECO · INV
operating mode

RCK · TWR
rack (default) or tower reading

208 · 220 · 230 · 240 V
output voltage

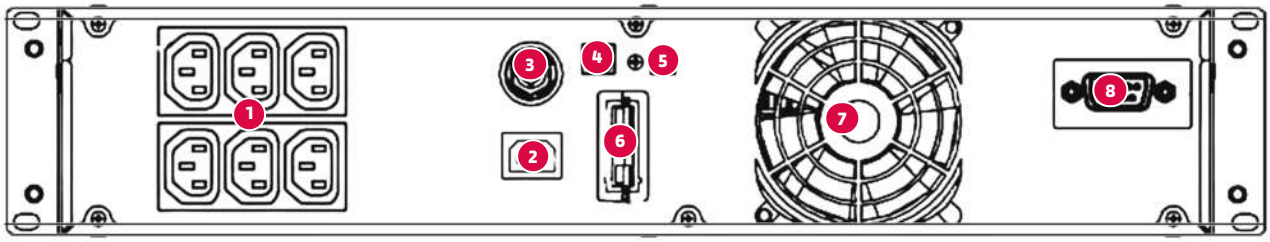
20 s
setting page closes without confirmation

REAR PANEL

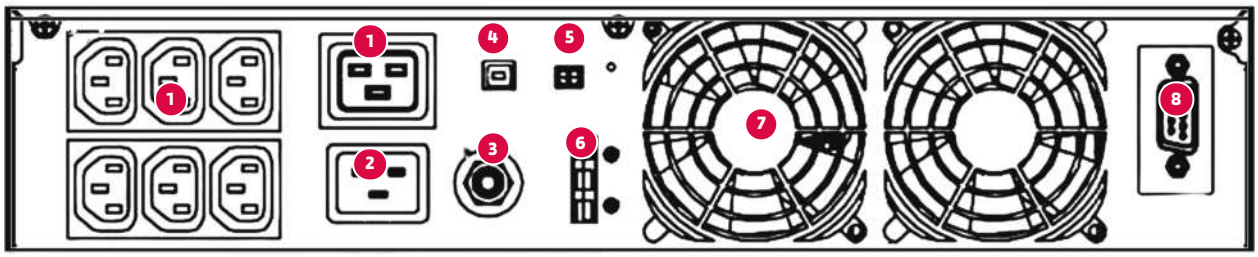
Rear panel
IST8 1–3 kVA

IEC inlet and outlets, battery connector and communication on the back of the 2U chassis.

IST8 1 kVA



IST8 2 · 3 kVA



1 Output sockets
1 kVA: 6 × IEC C13. 2–3 kVA: 6 × IEC C13 + 1 × IEC C19.

2 Input socket
IEC C14 (1 kVA) or C20 (2–3 kVA).

3 Over-current protector
Over-current protection device.

4 USB port
Link to a computer running the power management software.

5 EPO connector
Connecting its two ports closes the UPS output.

6 Battery connector
Plugs the internal battery in after installation.

7 Cooling fan
One fan on 1 kVA, two on 2–3 kVA.

8 Intelligent slot
DB9 port (RS232 + dry contact) as shown; takes an optional card, see below and page 40.

OPTIONS

Intelligent slot: fitting an optional card

1 Remove
Take out the standard slot with the DB9 port.

2 Fit
Fit and fix the optional card: SNMP, or RS485 + dry contact.

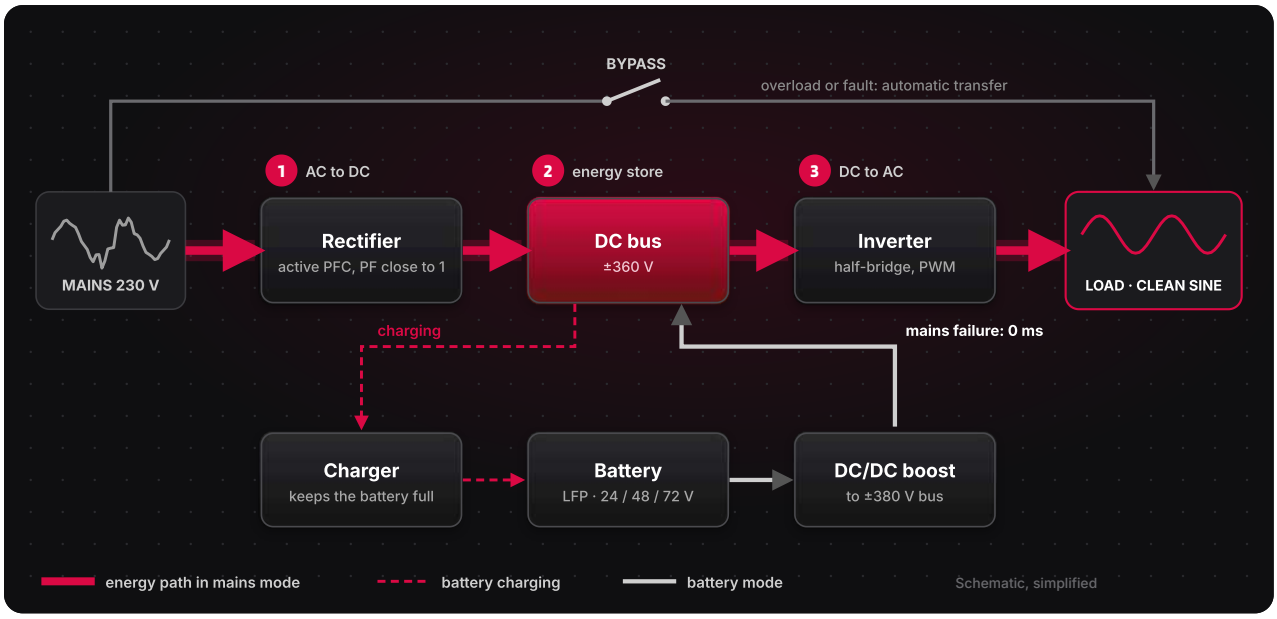
3 Connect
Connect the communication cable to the card.

? DID YOU KNOW?

The IST8 battery is made of prismatic LFP cells with their own protection board: 244.8 Wh in the 1 kVA, 489.6 Wh in the 2 kVA and 734.4 Wh in the 3 kVA.

HOW IT WORKS

Operating modes
IST8 1–3 kVA





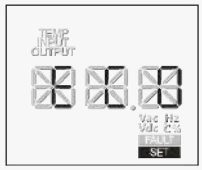
Mains
PFC and inverter feed the load; the battery is charged.



Battery
Mains abnormal: the DC/DC boosts the battery onto the DC bus.



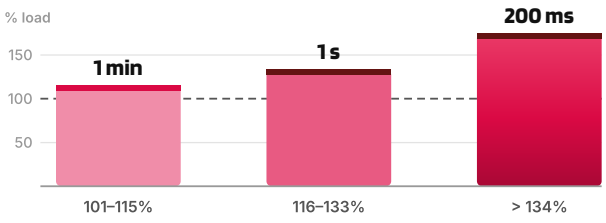
Bypass
Load fed from the mains through the transfer switch, e.g. after a load inrush; it returns automatically.



ECO
Selected from the setting page (ECO / INV).

Mode icons and ECO screen on the LCD.

Overload



Output overload capacity.

Fault codes on the LCD

EPO	Emergency protection: bypass and inverter output closed
BUS	DC bus voltage fault: inverter output closed
TMP	Over-temperature: inverter output closed; check fans and air vents
OUT	Output fault: short circuit or load too large
MIF	More than 5 inverter faults within 5 minutes: UPS stays on bypass
BAT	Battery fault: voltage too low or too high
FAN	Fan fault alarm before protection

±360 V
DC bus from the mains through the PFC

±380 V
DC bus boosted from the battery

120–295 V
input voltage range

50 / 60 Hz
auto-sensing, ± 10%

CONNECTIVITY

Communication and connectivity
IST8 1–3 kVA

USB with power management software as standard; the intelligent slot takes an RS232 + dry contact port, an SNMP card or an RS485 and dry-contact card.



SNMP card



- Web page and SNMP v1 / v2c / v3 monitoring of input, output and load.
- Traps and e-mail alarms, history and event log.
- Remote ON / OFF and battery test from a web browser.
- Port for the temperature and humidity sensor.

RS485 and dry-contact card



8-pin green terminal

Pin	Signal
1 · 2	Mains abnormal: COM · NC/NO
3 · 4	Battery under-voltage: COM · NC/NO
5 · 6	UPS failure: COM · NC/NO
7 · 8	RS485-A · RS485-B

Outputs normally closed by default; jumpers CN1–CN3: NC = 1–2, NO = 2–3. Contacts below 60 V DC or 42 V AC RMS, below 1.25 A.

STANDARD SLOT As delivered, the intelligent slot has a DB9 port with RS232 and a dry contact. Either optional card replaces it: see page 38 for the three fitting steps.

TECHNICAL DATA

IST8 1–3 kVA

Model	IST8-1-LI	IST8-2-LI	IST8-3-LI
Power (VA / W)	1000 / 1000	2000 / 2000	3000 / 3000
Technology	high-frequency online double conversion · active PFC · DC bus ±360 V (±380 V from battery) · 19-inch, 2U		
INPUT			
Voltage range · frequency	120–295 V AC · 50 / 60 Hz ± 10%, auto-sensing		
Power factor · THDi	≥ 0.99 · < 5%		
Input socket · breaker	IEC C14	IEC C20 · 20 A	IEC C20 · 32 A
OUTPUT			
Voltage	208 / 220 / 230 / 240 V ± 1%, settable		
Frequency (battery mode) · waveform	50 / 60 Hz ± 0.1 Hz · pure sine wave		
Power factor · voltage distortion · transfer	1 · THDv < 3% · 0 ms		
AC/AC efficiency	91.5%	91.5%	93%
Overload	101–115% 1 min · 116–133% 1 s · ≥ 134% 200 ms		
Output sockets	6 × IEC C13	6 × IEC C13 + 1 × IEC C19	6 × IEC C13 + 1 × IEC C19
Operating modes	online (INV) · ECO · battery · bypass		
BATTERY · BUILT-IN LITHIUM IRON PHOSPHATE			
Chemistry	LiFePO4 (LFP), prismatic cells, with protection board		
Nominal voltage	24 V	48 V	72 V
Capacity · energy	10.2 Ah · 244.8 Wh	10.2 Ah · 489.6 Wh	10.2 Ah · 734.4 Wh
Backup time	11 min at full load · 27 min at half load		
Max. charging current · life	4 A · designed for up to 10 years, 3000 cycles at 50% DoD		
Transport	UN38.3 tested · UN3480, class 9		
COMMUNICATION AND DISPLAY			
Ports	USB · intelligent slot: DB9 with RS232 + dry contact as standard; optional SNMP card or RS485 + dry-contact card · EPO		
Display	LCD, rack (RCK) or tower (TWR) reading · ON, OFF, SELECT		
Protections	output over-voltage, battery under-voltage, input over-voltage, overload, short circuit, over-temperature		
Fault codes	EPO · BUS · TMP · OUT · MIF · BAT · FAN		
ENVIRONMENT AND MECHANICS			
Noise	< 55 dB		
Environment	0–60 °C (best 0–40 °C; long periods at 40–60 °C may reduce the output power) · 0–95% RH non-condensing · pollution degree II		
Dimensions W × D × H (mm)	438 × 423 × 86 (2U)	438 × 570 × 87 (2U)	438 × 570 × 87 (2U)
Weight (kg)	8.9	13.6	16.1
Standards	CE · EN IEC 62040-1 · EN IEC 62040-2 · EN IEC 63000 (RoHS)		

230 V models. Backup at 25 °C with new batteries, AEC runtime tables. Specifications are subject to change without notice.

AEC

UPS + LITHIUM · ONE CABINET

All-in-One

10–40 kVA

LITHIUM LFP hot-swappable modules inside

A unique system: online double-conversion UPS, distribution switches and hot-swappable lithium modules, factory-built into one cabinet on wheels. Long backup, installed in under an hour.



ALL-IN-ONE · 600 × 1000 × 1110 MM CABINET

1 cabinet
UPS, distribution switches and lithium modules

10–40 kVA
three-phase; 10 kVA also single-phase

10+ years
LFP cells, 5,000 cycles at 50% DoD

up to 200 min
at 6 kW with 8 × 50 Ah modules

WHY ALL-IN-ONE

Key features
All-in-One 10–40 kVA

One cabinet replaces a UPS, a distribution box and a separate battery cabinet: less floor space, faster installation and long backup time in a small footprint.

1 cabinet

Nothing to assemble on site

UPS, distribution breakers (with maintenance bypass on IST9 systems) and lithium modules in one 600 × 1000 mm cabinet on wheels.

0 V

Safe to handle

Zero voltage at the module port: no risk of short-circuit shock when a module is handled.

80 kW

Battery power per cabinet

Up to 80 kW of battery power from one cabinet with 40 or 50 Ah modules, 20 kW with 100 Ah modules.

< 65 dB

Noise at full load

Below 65 dB at full load (factory data).

25–50%

Ready after storage

Modules are stored at 25–50% state of charge and recharged every 3 months.

10 · 20 A

Charge current

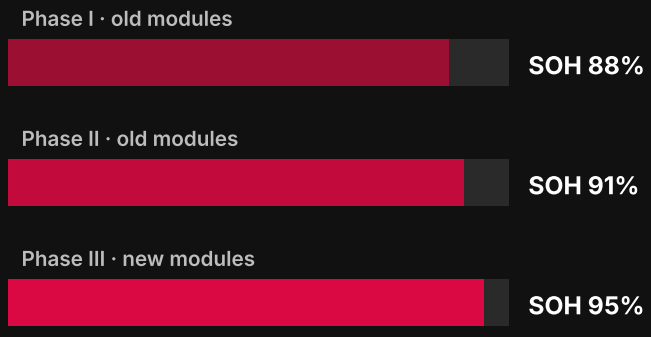
Maximum lithium charge current 10 A on the 10 and 20 kVA systems, 20 A on the 30 and 40 kVA systems.

OLD AND NEW TOGETHER

Grow the battery over the years

Modules added at different times work in the same cabinet: each DC/DC converter balances its own module.

SOH: state of health of the battery modules.



DESIGNED FOR

IT rooms · Offices & finance · Communication · Transport · Security systems · Education & public

THE RANGE

Models and range
All-in-One 10–40 kVA

From 10 to 40 kVA three-phase, plus a 10 kVA single-phase version. The cabinet takes up to eight 40 or 50 Ah modules, or up to four 100 Ah modules for long backup.



FROM THE TOP

- **Touch screen**, tilted, on the door
- **Rack UPS**, 2U or 3U, and **distribution switches**: input, output, bypass, battery; maintenance bypass with IST9
- **Lithium modules**

600 × 1000

mm footprint (W × D)

1110 mm

height on wheels; 1000 mm without wheels

All-in-One cabinet on wheels, front and three-quarter view.

Ratings

Rating	UPS inside	Input / output	UPS height	Number of modules (from backup tables)
10 kVA 1/1	IST3-J 10 kVA	1/1	2U	40 / 50 Ah: 1–8 · 100 Ah: 2–4
10 kVA	IST9 10 kVA	3/3 · 3/1 · 1/1	3U	40 / 50 Ah: 1–8 · 100 Ah: 2–4
20 kVA	IST9 20 kVA	3/3 · 3/1 · 1/1	3U	40 / 50 Ah: 2–8 · 100 Ah: 4
30 kVA	IST9 30 kVA	3/3 · 3/1	3U	40 / 50 Ah: 3–8
40 kVA	IST9 40 kVA	3/3 · 3/1	3U	40 / 50 Ah: 4–8



40 / 50 Ah cabinet

Up to 8 modules of 223 mm width, two per row. Short and medium backup times.



100 Ah cabinet

Up to 4 modules of 440 mm width, one per row. Long backup times.

The module quantity depends on the load and the backup time required: see the backup tables. Configuration by AEC.

INSIDE THE CABINET

Cabinet layout
All-in-One 10–40 kVA

The UPS and the distribution switches sit at the top, the lithium modules underneath, all wired at the factory.



40 / 50 Ah cabinet with 8 modules, door open.

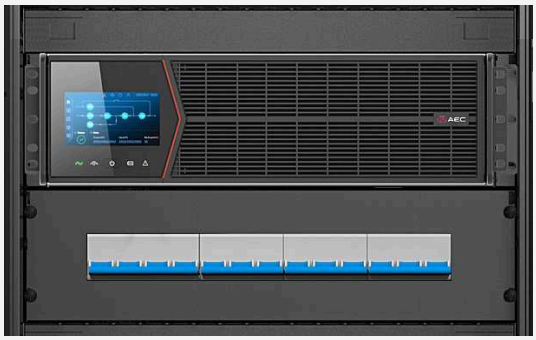
1 Rack UPS
IST9 10–40 kVA (3U) or IST3-J 10 kVA single-phase (2U), online double conversion, with its own display.

2 Distribution switches
Input, output, bypass and battery breakers on one front panel. IST9 systems add the maintenance bypass, its cover monitored by a door switch.

3 Lithium modules
Below the UPS, behind the door: see the next page for the module details.

4 System touch screen
On the door: UPS and battery status down to the cell, records, settings and upgrades, with a 3-colour LED status bar.

UPS and distribution



IST9 UPS and, below it, the distribution switches.

Control electronics

Power supply
Two system power boards feed the control electronics.

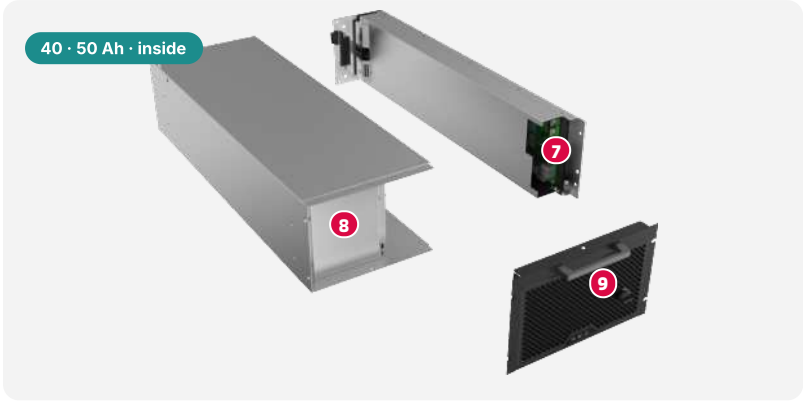
Communication
Communication box for the optional SNMP card; RS485 port.

Module adapters
One adapter board per module for DC power and measurement.

System adapter
EPO input and communication between UPS, modules and touch screen.

Lithium battery modules
All-in-One 10–40 kVA

Lithium iron phosphate modules of 40, 50 or 100 Ah slide into the cabinet like drawers. Each one has its own battery management unit, DC/DC converter, switch and indicators.

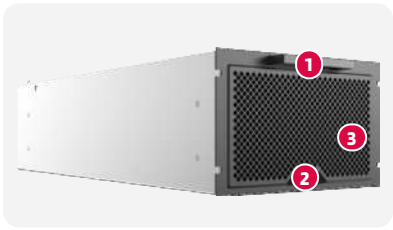


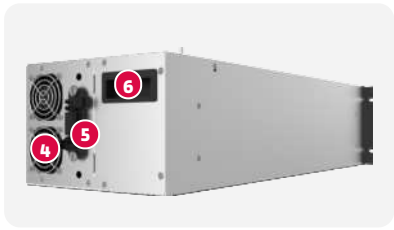
Module	V	kWh	kW	kg	max.
40 Ah	57.6	2.30	10	36 ± 1	8
50 Ah	57.6	2.88	10	37 ± 1	8
100 Ah	57.6	5.76	5	52 ± 1	4

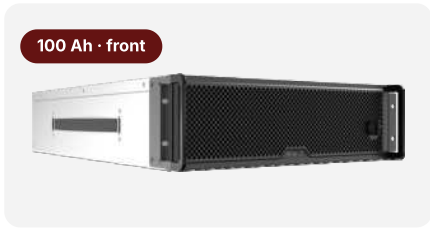
kW: DC/DC rated output per module · max.: modules per cabinet. Size 223 × 665 × 152 mm (40 / 50 Ah), 440 × 665 × 132 mm (100 Ah).

240 / ±240 / 480 V

module rated output voltage







1 front handle · **2** indicators · **3** in-place switch · **4** fans · **5** connector · **6** rear handle · **7** DC/DC module, isolated · **8** LFP cells · **9** sealing plate — 40 / 50 Ah front, rear and inside.

Three indicators

Run (green), alarm (yellow) and fault (red) on every module.

Status	Run (green)	Alarm (yellow)	Fault (red)
Charge	steady		
Discharge	flashing		
Sleep	steady	steady	
Off		steady	
Module alarm		steady	
Communication fault		flashing (3 s)	
Module protection			steady
Battery fault			flashing

Flashing: once per second; (3 s): once every 3 seconds.

Safe by design

- **Fire protection** in the module, also under extreme battery failure.
- **Automatic exit**: a faulty module leaves the system, the others keep working.
- **Less leakage risk** from the battery cells.
- **Preventive alarm** before a failure.

LFP
lithium iron phosphate cells, 3.2 V

6C · 4C · 1C
cell discharge rate: 40 · 50 · 100 Ah modules

≧ 95%
SOC accuracy

0–40 °C
battery working range, 15–30 °C recommended

100 Ah VERSION

100 Ah version
All-in-One 10–40 kVA

The All-in-One also takes 100 Ah lithium modules: one per row, up to four in the cabinet, 23.0 kWh in all. On 10 and 20 kVA systems they give up to 200 minutes at 6 kW in the same footprint.



All-in-One with four 100 Ah modules, door open.

1. **Rack UPS**
   IST9 10 or 20 kVA (3U), or IST3-J 10 kVA single-phase (2U)
2. **Distribution switches**
   input, output, bypass and battery; maintenance bypass on IST9 systems
3. **100 Ah lithium modules**
   up to four, one per row, 440 mm wide
4. **Module indicators**
   run, alarm and fault
5. **In-place switch**
   locks the module and starts its output

23.0 kWh
energy with four modules

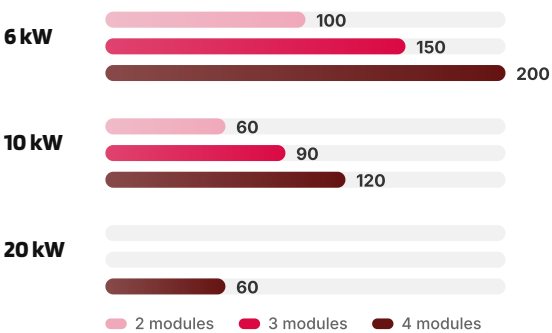
200 min
backup at 6 kW, four modules

5 kW
DC/DC output per module, 20 kW per cabinet

346 kg
complete system, 10 or 20 kVA

Backup time, 100 Ah modules

minutes · factory reference values at 25 °C



40 / 50 Ah or 100 Ah?

	40 / 50 Ah	100 Ah
Modules per cabinet	8, two per row	4, one per row
Module width	223 mm	440 mm
Energy per module	2.30 · 2.88 kWh	5.76 kWh
Battery power per cabinet	up to 80 kW	20 kW
UPS ratings	10–40 kVA	10 and 20 kVA
System weight, 20 kVA	434 kg (8 × 50 Ah)	346 kg (4 × 100 Ah)
Best for	high power, short and medium backup	low and medium loads, long backup

Factory reference values, to be confirmed by measurement; AEC sizes every system.

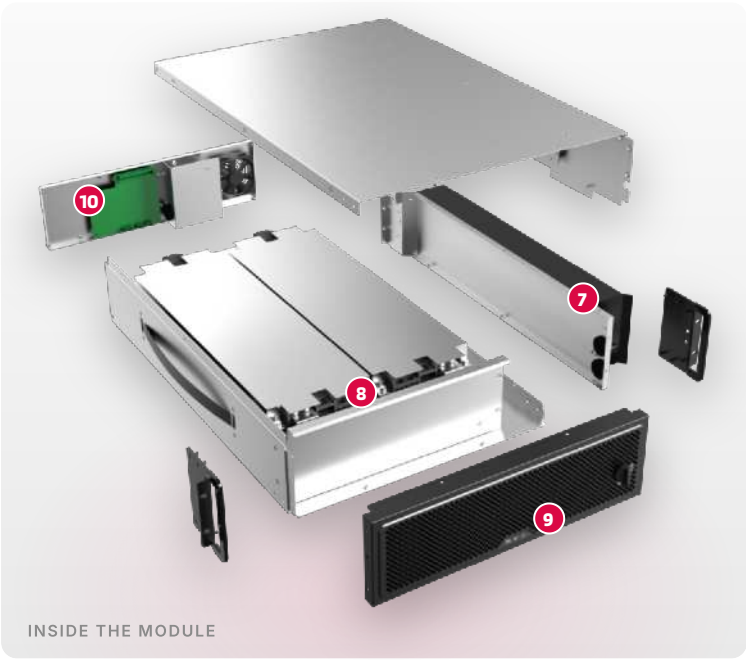
100 Ah MODULE

100 Ah battery module
All-in-One 10–40 kVA

The 100 Ah module uses 1C cells for backup times from one to four hours. It is 440 mm wide, delivers 5 kW through its own DC/DC converter; the All-in-One cabinet takes up to four, one per row.



FRONT REAR



INSIDE THE MODULE

1. **Front handle**
2. **Indicators**: run, alarm, fault
3. **In-place switch**: locks the module and starts its output
4. **Fan**
5. **Connector**: power and signal
6. **Side handle**
7. **DC/DC module**: bidirectional, isolated, 5 kW
8. **Battery cells**: LFP, 3.2 V
9. **Sealing plate**: front
10. **Sealing plate**: rear

100 Ah · 1C

Cells	LFP, 3.2 V · 18 in series · 1C
Module voltage · energy	57.6 V · 5.76 kWh
DC/DC output	240 / ±240 / 480 V · 5 kW
Current unbalance	≤ 3%
All-in-One, 4 modules	23.0 kWh · 200 min at 6 kW
Size (W × D × H)	440 × 665 × 132 mm
Weight · noise	52 ± 1 kg · 58 dB

Which module?

40 Ah — **6C cells** high power, short backup

50 Ah — **4C cells** more energy, short backup

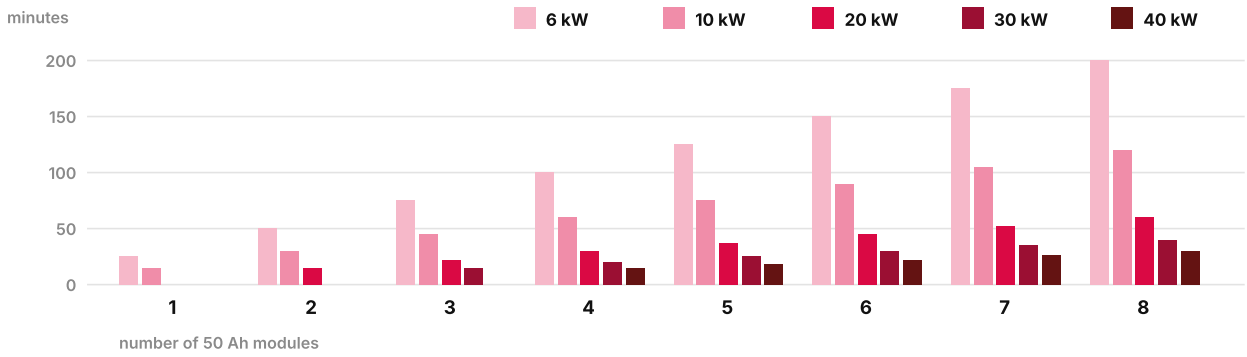
100 Ah — **1C cells** long backup, hours

Backup times for each load: see the tables in this section.

BACKUP TIME

Backup times
All-in-One 10–40 kVA

Minutes of backup from the factory battery tables, by module type, UPS load and number of modules. 40 or 50 Ah modules for short and medium backup, 100 Ah for long backup.



50 Ah modules · 57.6 V · 2.88 kWh each

number of modules in the cabinet · minutes

Load	1	2	3	4	5	6	7	8
6 kW	25	50	75	100	125	150	175	200
10 kW	15	30	45	60	75	90	105	120
20 kW	–	15	22	30	37	45	52	60
30 kW	–	–	15	20	25	30	35	40
40 kW	–	–	–	15	18	22	26	30
kWh installed	2.9	5.8	8.6	11.5	14.4	17.3	20.2	23.0

40 Ah modules · 57.6 V · 2.30 kWh each

number of modules in the cabinet · minutes

Load	1	2	3	4	5	6	7	8
6 kW	18	36	54	72	90	108	126	144
10 kW	10	20	30	40	50	60	70	80
20 kW	–	10	15	*	25	30	35	40
30 kW	–	–	10	*	16	20	23	26
40 kW	–	–	–	10	12	15	17	20
kWh installed	2.3	4.6	6.9	9.2	11.5	13.8	16.1	18.4

100 Ah modules · 57.6 V · 5.76 kWh each

long backup · minutes

Load	1	2	3	4
6 kW	–	100	150	200
10 kW	–	60	90	120
20 kW	–	–	–	60
kWh installed	5.76	11.5	17.3	23.0

Load in kW. Factory reference values at 25 °C, to be confirmed by measurement; AEC sizes every system. – : not possible (each 40 / 50 Ah module delivers up to 10 kW, each 100 Ah module up to 5 kW). * 40 Ah, 4 modules at 20 and 30 kW: value on request.

LITHIUM INSIDE

Battery management
All-in-One 10–40 kVA

Lithium iron phosphate modules against a UPS with a separate VRLA battery cabinet: battery life, service and monitoring compared.

LITHIUM MODULES

Service and monitoring, module by module

5 min

to change a module, with the load supplied

18

LFP cells in series per module: 40, 50 and 100 Ah



ALL-IN-ONE

	All-in-One · lithium LFP	UPS + VRLA battery cabinet
Installation	**1 person, 30–60 min**	2 people, 2–4 h
Battery life	**10+ years · 5,000 cycles at 50% DoD**	3–5 years · about 500 cycles at 50% DoD
Battery service	**one module at a time, load supplied**	whole string, often with downtime
Monitoring	**every cell, module and cabinet**	string voltage only

AEC comparison, indicative values; VRLA cycle life from 12 V 9 Ah battery data at 25 °C.

Two-layer battery management

A battery management unit in every module (CAN) and the system BMS in the touch screen watch the battery at cell, module and system level, and talk to the UPS over RS485.

EQUALISATION

Current and voltage

Intelligent current and voltage equalisation between modules: longer backup time and better use of every module.

OLD + NEW

Mix modules

New modules work together with modules already in service, so capacity can grow over the years.

SOC

Adaptive charge control

Intelligent charge and discharge management avoids over-charge and over-discharge.

TEST

Battery test without outage

Each module is tested separately, without cutting the power supply.

RECORDS

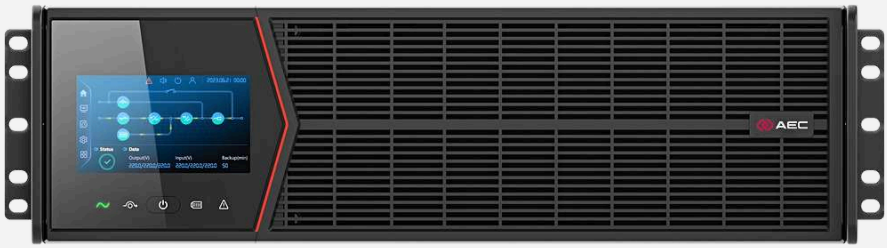
Fault recording

Fault recording and early warning for fast, accurate fault location.

THE UPS INSIDE

UPS and operating modes
All-in-One 10–40 kVA

The All-in-One uses AEC rack UPS: IST9 for 10 to 40 kVA three-phase, IST3-J for the 10 kVA single-phase version. Full details are in the IST3-J and IST9 sections of this catalogue.



IST9 rack UPS, 3U.

3/3 · 3/1 · 1/1
IST9 input / output, 10–20 kVA; 3/3 · 3/1 on 30–40 kVA

96%
IST9 double conversion; 99% in ECO mode

PF 1
IST9 output power factor: kVA = kW

1/1 · 2U
IST3-J 10 kVA single-phase, 95.5%



Normal mode
Rectifier and inverter supply the load; the lithium modules are charged.



Battery mode
Mains abnormal: the modules supply the inverter with no break at the output.



Bypass mode
Load on the static bypass when the UPS is off (if enabled) or on a fault.



Maintenance bypass
IST9 systems, through the distribution switches: the load stays supplied during service.

IST9 · 10–40 kVA

- Phase voltage 176–280 V at full load; 80–176 V with linear derating.
- Input 40–70 Hz; power factor ≥ 0.99; THDi ≤ 3% at resistive full load.
- Output 220 / 230 / 240 V L-N, 380 / 400 / 415 V L-L; THDv ≤ 2%.
- Inverter overload: ≤ 105% continuous · 105–110% 60 min · 110–130% 10 min · 130–155% 1 min · > 155% 200 ms.

IST3-J · 10 kVA single-phase

- Input 176–275 V at full load; 80–176 V with linear derating; 50 / 60 Hz ± 10%.
- Output 208 / 220 / 230 / 240 V; THD < 1% linear, < 4% non-linear load.
- Output power factor 1.0 (kVA = kW).
- Overload: 115–130% 10 min · 130–150% 30 s · > 150% 500 ms.

Operating modes
IST9: generator mode, frequency converter, impact load mode and test load.

Output fine adjustment
IST9: output voltage adjustable by ± 5 V.

10–40 kVA
UPS ratings

2U · 3U
438 mm rack chassis

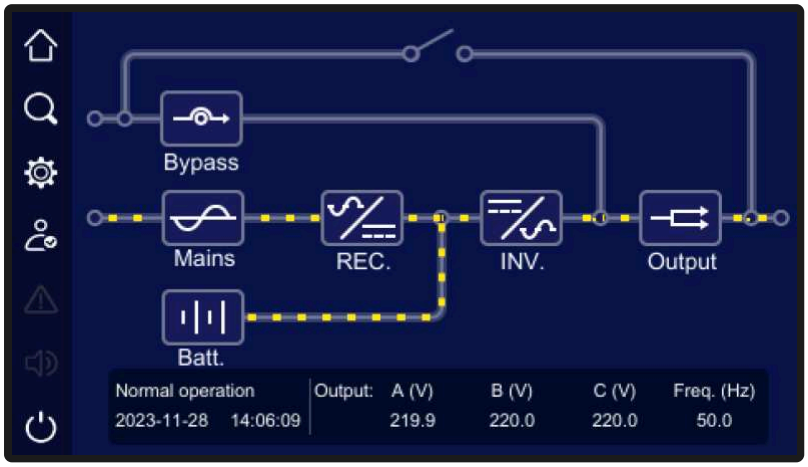
5 modes
normal · battery · bypass · ECO · maintenance

–5…40 °C
UPS working temperature

SYSTEM TOUCH SCREEN

Touch screen display
All-in-One 10–40 kVA

The tilted touch screen on the door shows the whole system: UPS energy flow, battery cabinet, every module and every cell. A 3-colour LED bar shows the state from across the room.



Home page

Live energy flow from mains, bypass and battery to the output, with run status, output voltage per phase and frequency.

Status bar



Normal blue bar

Bypass yellow bar

Fault red bar

- Battery cabinet, module and cell data
- Current fault, history and user log
- Records downloaded to a USB stick
- Touch-screen and battery-system firmware upgraded from USB
- Password levels protect the settings



Battery cabinet

Voltage, current, status, system SOC and SOH, remaining time.



Module data

Pack voltage and temperature, SOC, SOH, current, inner temperature.



Cell voltages

Every cell of every module, page by page.



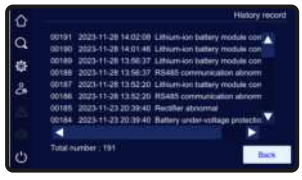
Info manage

Run information, history record, user log and device information.



Run information

Status of mains, bypass, inverter, output, battery, fans and EPO.



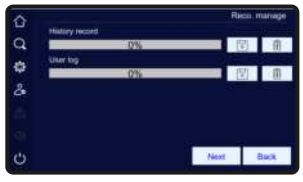
History record

All abnormal events with date and time.



Device manage

Battery manage and test, communication, HMI, passwords, records, upgrade.



Record manage

History and user log exported to USB.

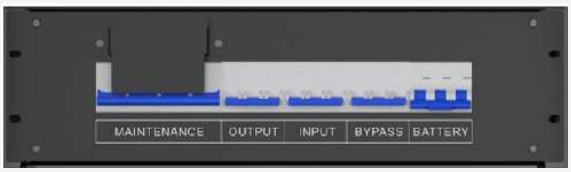
DID YOU KNOW?

The lithium modules of the All-in-One are covered by a 5-year warranty.

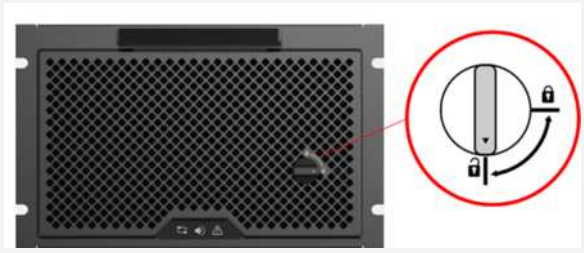
SERVICE

Maintenance and service
All-in-One 10–40 kVA

Maintenance bypass (IST9 systems), live module replacement and USB upgrades keep the load supplied during service.



Distribution switches, IST9 system: maintenance, output, input, bypass and battery.



Module switch: unlock to isolate a module.

To maintenance bypass, without a break · IST9 systems

01

Inverter off

Press ON/OFF on the touch screen: the UPS transfers to bypass.

02

Cover off

Remove the maintenance bypass cover. If step 1 was skipped, the cover switch stops the inverter and transfers to bypass.

03

Maintenance bypass on

Close the maintenance bypass switch: the load is fed by both bypasses.

04

Isolate

Open UPS input, bypass, output and battery breakers and set every module switch to unlock: the load runs on the maintenance bypass.

Back to normal

Close input, bypass, output and battery breakers and lock the modules; when the touch screen shows the bypass voltage, open the maintenance bypass and refit its cover; switch the inverter on from the touch screen (start-up about 30 s).

Start without mains

Lock any one battery module: it powers the system and the touch screen starts automatically.

24/7
AEC technical assistance by phone and WhatsApp

<30 min
WhatsApp reply to technical and commercial questions

3 years
warranty, extendable with a maintenance contract

21+
countries with spare parts across the Allis Electric group

AEC SERVICE service@aecups.com +39 393 080 5211 www.aecups.com

CONNECTIVITY

Communication and connectivity
All-in-One 10–40 kVA

The UPS ports, the touch screen and the battery management talk to each other; options bring the whole cabinet onto the network and the building management system.



INSIDE THE CABINET

RS485 between battery and UPS

Battery and UPS share charge current and alarms over an RS485 line inside the cabinet.

STANDARD

EPO and UPS ports

EPO input and RS232 on the UPS; the system adapter board carries EPO, RS485 and the touch screen.

OPTIONAL

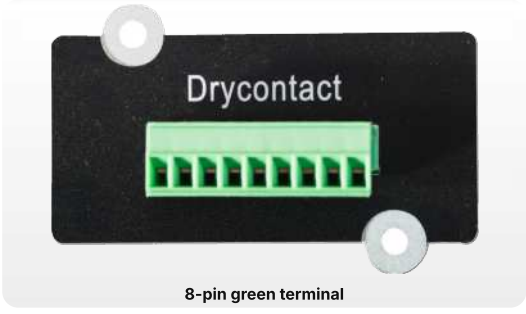
Communication box

The SNMP card fits the communication box of the cabinet and reports UPS and battery data to the network.

RS485 and dry-contact card

Signal	Function
Output 1	Mains status
Output 2	Battery status
Output 3	Inverter status (or bypass output status)
Inputs	Battery temperature · battery breaker status or remote on/off
RS485	A · B

Three-phase systems: IST9 dry-contact card (Y5), as in the IST9 user manual, Table 2-4. All-in-One 10 kVA single-phase: IST3-J card with relays for mains abnormal, battery low and UPS failure.



8-pin green terminal

RS232
UPS, standard

USB
touch screen

SNMP
optional, communication box

RS485
BMS to UPS; optional card

TECHNICAL DATA · SYSTEM

All-in-One 10–40 kVA

All-in-One	10 kVA 1/1	10 kVA	20 kVA	30 kVA	40 kVA
UPS inside	IST3-J 10 (2U)	IST9 10 (3U)	IST9 20 (3U)	IST9 30 (3U)	IST9 40 (3U)
Rated power (kVA / kW)	10 / 10	10 / 10	20 / 20	30 / 30	40 / 40
Input / output	1/1	3/3 · 3/1 · 1/1		3/3 · 3/1	
Technology	online double conversion · IGBT rectifier with PFC · DSP control · battery from isolated DC/DC lithium modules				
INPUT					
Voltage range	176–275 V full load · 80–176 V derating	phase 176–280 V full load · 80–176 V with linear derating			
Frequency	50 / 60 Hz ± 10%	40–70 Hz			
Power factor · THDi	high PF (active PFC)	≥ 0.99 · ≤ 3% resistive, ≤ 5% non-linear full load			
OUTPUT					
Voltage	208 / 220 / 230 / 240 V (220 V default)	220 / 230 / 240 V L-N · 380 / 400 / 415 V L-L · fine adjustment ± 5 V			
Frequency on battery	50 / 60 Hz ± 0.2%	50 / 60 Hz ± 0.1 Hz			
Voltage distortion	< 1% linear · < 4% non-linear	≤ 2% resistive full load			
Power factor	1.0 (kVA = kW)	1.0: kVA = kW			
Transfer time	0 ms mains ↔ battery	inverter ↔ bypass < 1 ms synchronised · < 10 ms not synchronised			
Overload	115–130% 10 min · 130–150% 30 s · > 150% 500 ms	≤ 105% continuous · 105–110% 60 min · 110–130% 10 min · 130–155% 1 min · > 155% 200 ms			
Efficiency (AC/AC)	up to 95.5%	up to 96% · 99% in ECO mode			
Modes	online · ECO · battery · bypass	online · ECO · battery · bypass · generator · frequency converter · impact load · test load			
BATTERY SYSTEM					
Backup time	up to 200 min at 6 kW (8 × 50 Ah or 4 × 100 Ah) · full tables in this section; lithium module data on the next page				
Lithium charge current, max.	set by AEC	10 A (10–20 kVA) · 20 A (30–40 kVA)			
GENERAL					
Communication	RS232 · EPO · USB · slot: SNMP, RS485 + dry contact	RS232 · EPO · options: SNMP, RS485 + dry contact			
System display	tilted touch screen on the door with 3-colour LED status bar · USB for records and upgrades				
Noise	< 65 dB at full load				
Working temperature · humidity	UPS –5 … 40 °C · battery 0–40 °C (15–30 °C recommended) · humidity 5–95%, non-condensing				
UPS size W × D × H (mm)	438 × 500 × 86	438 × 535 × 130	438 × 535 × 130	438 × 720 × 130	438 × 720 × 130
UPS weight (kg)	12.2	18.4	18.4	34.1	34.2

Specifications are subject to change without notice.

Lithium modules and cabinet

Lithium module	40 Ah	50 Ah	100 Ah
Cells	LFP 3.2 V 40 Ah, 18 in series	LFP 3.2 V 50 Ah, 18 in series	LFP 3.2 V 100 Ah, 18 in series
Cell discharge / charge rate	6C / 1C	4C / 1C	1C / 0.5C
Rated voltage (V)	57.6	57.6	57.6
Max. energy (kWh)	2.30	2.88	5.76
DC/DC rated output power (kW)	10	10	5
Rated output voltage (V)	240 / ±240 / 480	240 / ±240 / 480	240 / ±240 / 480
Size W × D × H (mm)	223 × 665 × 152	223 × 665 × 152	440 × 665 × 132
Weight (kg)	> 35	> 38	> 50
Max. modules per cabinet	8	8	4
Max. energy per cabinet	18.4 kWh	23.0 kWh	23.0 kWh
Max. battery power per cabinet	80 kW	80 kW	20 kW
Module indicators	run · alarm · fault LEDs	run · alarm · fault LEDs	run · alarm · fault LEDs
Cycle life	5,000 cell cycles at 50% DoD	5,000 cell cycles at 50% DoD	5,000 cell cycles at 50% DoD
SOC accuracy	≥ 95%	≥ 95%	≥ 95%
Storage	25–50% SOC, recharge every 3 months	25–50% SOC, recharge every 3 months	25–50% SOC, recharge every 3 months

Cabinet and system	All-in-One
Cabinet W × D × H (mm)	600 × 1000 × 1110 on wheels · 600 × 1000 × 1000 without wheels
Cabinet weight	127 kg empty (123 kg for 100 Ah) · 138 kg with the 20 kVA distribution · 144 kg with the 40 kVA one
Breakers	input, output, bypass, battery · maintenance bypass on IST9 systems
Battery management	two layers: BMU in every module (CAN) · system BMS in the touch screen (RS485 to the UPS)
Alarms	low battery, abnormal AC input, UPS failure, overload and more
Protections	low battery, overload, short circuit, over-temperature and more
Black start	any one locked module powers the system and the touch screen
Warranty	lithium modules: 5 years

System data (UPS, display, communication, working temperature): previous page.



40 / 50 Ah cabinet, up to 8 modules.



100 Ah cabinet, up to 4 modules.



Lithium module 40 / 50 Ah.

Lithium module data as in the L6 section of this catalogue. Specifications are subject to change without notice.

AEC

THE FLEXIBLE ONLINE UPS · RACK / TOWER

IST9

10–40 kVA

One UPS for every site: three-phase or single-phase in and out, rack or tower, any battery from 16 to 40 blocks, lead-acid or lithium, and an external maintenance bypass module in the box.



IST9 · TOWER AND RACK INSTALLATION

1.0
output power factor: kVA = kW

≤ 3%
input THDi on resistive load

3U
one height for all four ratings

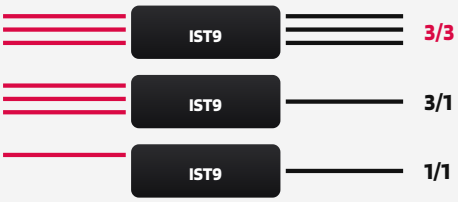
Touch screen
colour display for status and settings

WHY IST9

Key features
IST9 10–40 kVA

Configure the IST9 for the site, not the site for the UPS: phases, mounting, battery and service are all chosen at installation.

01 Input and output
Three-phase or single-phase, set on site



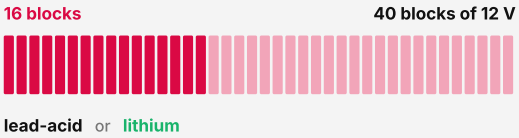
3/3, 3/1, 1/1 set on site (1/1 on 10–20 kVA), with a separate bypass input.

02 Rack or tower
One unit, two installations



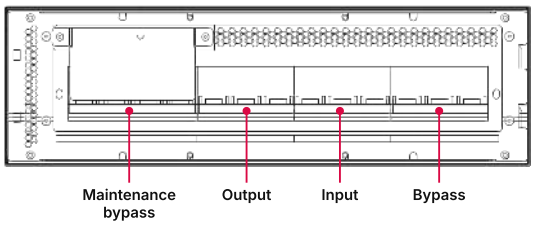
3U in a 19-inch cabinet or upright on its support base. Battery boxes and the bypass module follow the UPS in both layouts.

03 Battery
Any string, any chemistry



16–40 × 12 V, lead-acid or lithium.

04 Service
Maintenance bypass included



The external maintenance bypass module comes with the AEC IST9, in a 19-inch panel above the UPS.

OPERATING COST

Efficiency at 20 kW

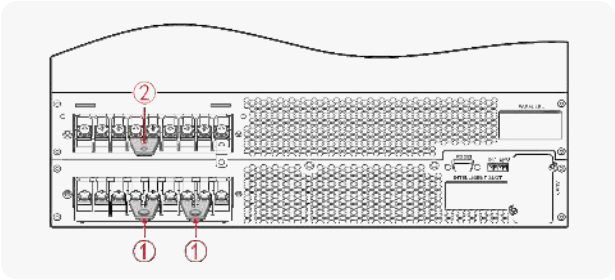
Up to 96% online, 99% in ECO mode.

		ENERGY LOST / YEAR	COST / YEAR
Online double conversion · 96 %	0.83 kW	7,300 kWh	≈ € 1,460
ECO mode · 99 %	0.20 kW	1,770 kWh	≈ € 350

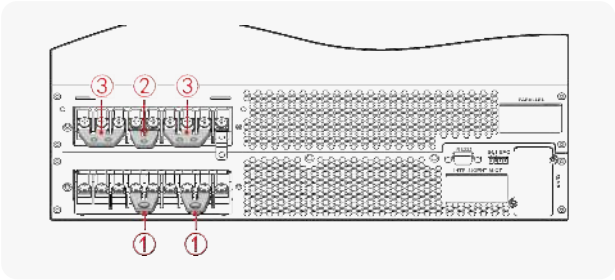
FLEXIBILITY

Input and output configurations
IST9 10–40 kVA

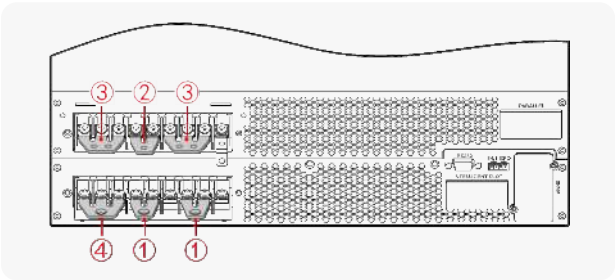
10–20 kVA work in 33, 31 or 11 mode; 30–40 kVA in 33 or 31 mode. The mode is set with connector jumpers on the rear terminals and on the touch screen.



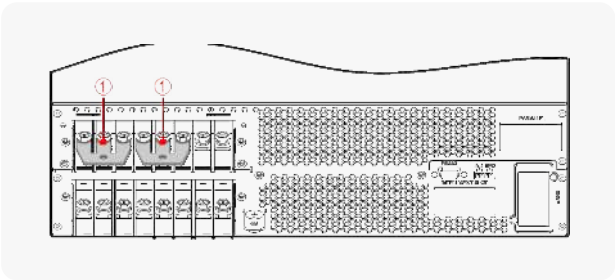
33 mode · 10–20 kVA
three in, three out



31 mode · 10–20 kVA
three in, one out



11 mode · 10–20 kVA
one in, one out



31 mode · 30–40 kVA
three in, one out · ① = 3-pin jumper

Connector jumper positions; circled numbers are the jumper types.

Connector jumpers

10–20 kVA: four jumper types (types 1–2 two-pin, 3–4 three-pin) for 33, 31 or 11 mode. 30–40 kVA: one 3-pin jumper type, used only in 31 mode, short-circuits the three-phase bypass input and the three-phase output terminals.

Set on the screen

Work mode on the System management page. Output 3W + N + PE, settable to 1W + N + PE; input 3W + N + PE (on 10–20 kVA settable to 1W + N + PE).

Output voltage for every grid

220 · 230 · 240 V
Phase voltage, high-voltage mode (380 / 400 / 415 V line), default 220 V

110 · 115 · 120 V
Low-voltage mode (190 / 200 / 208 V line), default 120 V; 20 kVA delivers 10 kVA, 40 kVA delivers 20 kVA

50 / 60 Hz
The UPS monitors the grid frequency and self-adapts

±5 V
output voltage fine adjustment

40–70 Hz
input frequency range

±10%
bypass synchronisation, 50 / 60 Hz

±20%
bypass voltage window

HOW IT WORKS

Operating modes
IST9 10–40 kVA





Normal mode
Rectifier and inverter supply the load; the charger charges the battery.



Battery mode
Mains abnormal: the rectifier switches to the battery input and boosts it onto the DC bus.



Bypass mode
With the bypass in range, the load is fed from the bypass when the UPS is off (if enabled) or on a fault.



ECO mode
Single UPS: the bypass feeds the load while it is normal; the inverter takes over when it is not.



Maintenance bypass
With the distribution module: the load stays supplied while the UPS is serviced.

Auto restart
After a complete outage the UPS shuts down about 1 min after the battery low-voltage point, then restarts by itself in normal mode when the mains returns.

< 1 ms
inverter ↔ bypass, synchronised

< 10 ms
not synchronised

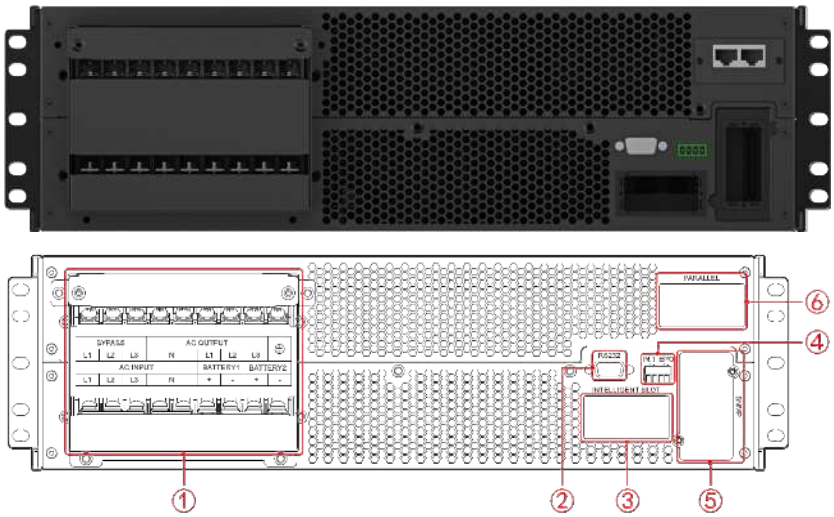
≧ 0.99
input power factor

REAR PANEL

Rear panels and dimensions
IST9 10–40 kVA

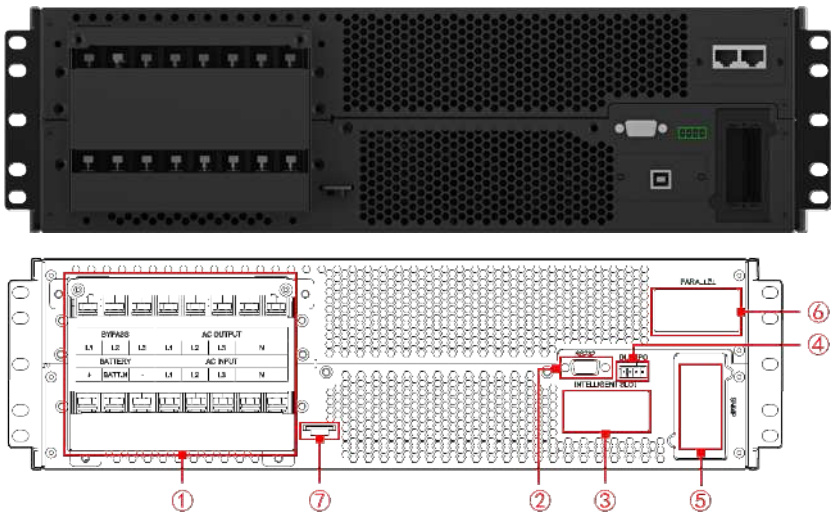
All four ratings share the same front and width; 30–40 kVA has the deeper chassis. Terminals, communication ports and option slots are on the rear.

10–20 kVA · 438 × 535 × 130 mm · 18.4 kg



1. **Wiring terminals**
   bypass, AC output, AC input, battery
2. **RS232**
3. **Intelligent slot**
   SNMP, RS485 + dry contact or lithium protocol card
4. **EPO and input dry contact**
   IN.1, default maintenance bypass detection
5. **SNMP**
   optional
6. **Parallel port**
   optional

30–40 kVA · 438 × 720 × 130 mm · 34.1 / 34.2 kg



1. **Wiring terminals**
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3. **Intelligent slot**
   SNMP, RS485 + dry contact or lithium protocol card
4. **EPO and input dry contact**
   IN.1, default maintenance bypass detection
5. **SNMP**
   optional
6. **Parallel port**
   optional
7. **PE**

Rear panels, 10–20 kVA and 30–40 kVA. Terminal layout differs slightly between 3/3 and 3/1 mode.

≤ 50 dB
noise at half load, 10–20 kVA

≤ 55 dB
noise at half load, 30–40 kVA

RS232
standard on the rear

TOUCH SCREEN

Touch screen display
IST9 10–40 kVA

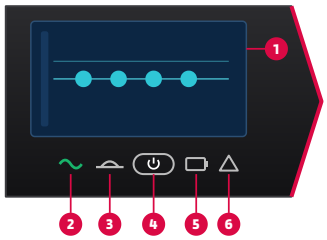
Landscape in the rack, portrait in the tower: the display rotates automatically, or is set by hand. Seven languages, Italian included.



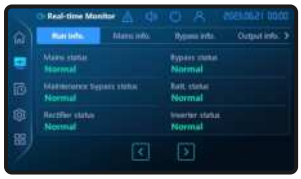
Home page

Live single-line diagram: the active energy path is drawn in yellow, abnormal mains, bypass, battery or output turn red.

Front panel



1. **Touch screen** · Working status and settings.
2. **Mains inverter indicator** · Green in mains mode.
3. **Bypass indicator** · Green when the output is on bypass.
4. **ON / OFF button** · Hold 3 s to switch on or off.
5. **Battery inverter indicator** · Green in battery mode.
6. **Fault indicator** · Red on UPS fault.



Real-time monitor

Run, mains, bypass, output and battery information.



History

Up to 1,000 records, newest first.



Login

User and service access for different settings.



Project management

System, battery, communication, dry contact, calibration, smart management.

What you read

- Mains and bypass: voltage, current, frequency.
- Output: voltage, current, active and apparent power, load, power factor, frequency.
- Battery: group voltages, charge / discharge current, status, remaining capacity and backup time.
- Running status: rectifier, inverter, ECO, fans, temperatures, parallel ID.

Display settings

- Languages: English, Italian, Spanish, French, Portuguese, Russian, Chinese.
- Landscape, portrait or automatic.
- Backlight 10–300 s, brightness 1–100.
- Date and time.

Home
one tap back from any page

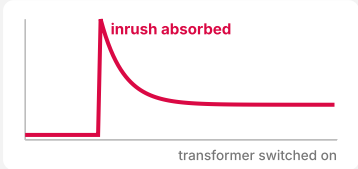
Alarms
current faults with their meaning

Buzzer
controlled from the screen

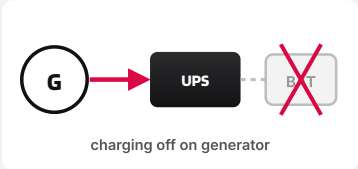
Wiring check
a mode that does not match the wiring is flagged

SMART FUNCTIONS

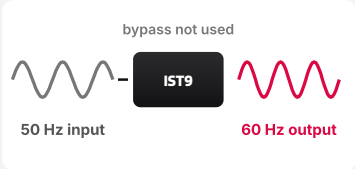
Advanced features and functions
IST9 10–40 kVA



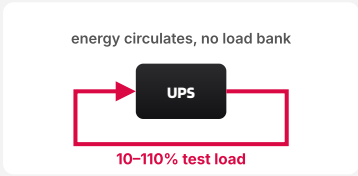
Impact load mode
For loads with high inrush, such as transformers: the UPS limits the excitation current so it cannot damage the inverter. Enabled before the load is started.



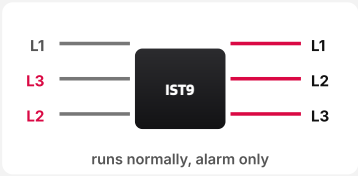
Generator mode
On a generator, battery charging is switched off: the generator only carries the load, and starts more easily.



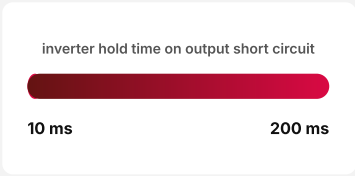
Frequency converter
Output fixed at 50 or 60 Hz whatever the input frequency, for machines built for another grid; the bypass is not used.



Test load
Self-aging at 10–110% of rated load: the system is tested at full power without an external load bank.



Phase sequence calibration
A wrong input phase sequence is tolerated: the output runs normally without derating, and the alarm is still reported.



Short-circuit time
Inverter protection time on output short circuit, settable 10–200 ms, to clear downstream breakers selectively.

Dedust and smart fans

- Fan speed follows the load: longer fan life, less noise.
- **Standard dedust** (load below 50%): fans at full speed for 2.5 s every 2.5 s, for 1 min.
- **Timed dedust**: the same cycle for N minutes (1–60).
- **Regular dedust**: 200 s at full speed every 1–720 h.
- Optional air filter fitted in the right panel.
- Fans reached by removing the right panel.
- Auto-start at power-on: on, off or non-off.
- Bypass on or off when the UPS is off, or forced.

Smart management reminders

Capacitors
electrolytic capacitor use time, 1–84 months

Fans
fan use time, 1–84 months

Battery
replacement reminder, 1–120 months

Dust filter
cleaning reminder, 1–12 months

Three-level
inverter with PFC control

80 V
at light load the battery is not used down to this mains voltage

94%
efficiency in low-voltage mode

TECHNICAL DATA

IST9 10–40 kVA

Model	IST9 10 kVA	IST9 20 kVA	IST9 30 kVA	IST9 40 kVA
Rated power (kVA / kW), high-voltage mode	10 / 10	20 / 20	30 / 30	40 / 40
Rated power (kVA / kW), low-voltage mode	10 / 10	10 / 10	—	20 / 20
Configuration	3/3 · 3/1 · 1/1		3/3 · 3/1	
INPUT				
Connection	3W + N + PE (settable 1W + N + PE)		3W + N + PE	
Voltage range (phase)	high-voltage mode 176–280 V full load, 80–176 V linear derating · low-voltage mode 90–155 V full load, 70–90 V derating			
Frequency · power factor · THDi	40–70 Hz · ≥ 0.99 · ≤ 3% resistive, ≤ 5% non-linear full load			
Bypass	50 / 60 Hz ± 10% · voltage ± 20%			
BATTERY				
Voltage	high-voltage mode ± 96 ... ± 240 V DC (± 48 ... ± 120 cells of 2 V, default ± 96) · low-voltage mode ± 96 ... ± 120 V (± 48 ... ± 60 cells, default ± 60)			
Full-load derating by cells	—		± 48 ... ± 90 cells: 100 × 0.0625 × N / 6 %	
Charging current	1–10 A (default 4 A)		1–20 A (default 15 A)	
OUTPUT				
Voltage	220 / 230 / 240 V L-N, 380 / 400 / 415 V L-L (low-voltage mode 110 / 115 / 120 V); 3W + N + PE, settable 1W + N + PE			
Frequency	tracks the bypass; 50 ± 0.1 or 60 ± 0.1 Hz in battery mode			
Waveform · distortion · power factor	sine wave · ≤ 2% resistive full load · 1.0			
Transfer inverter ↔ bypass	< 1 ms synchronised · < 10 ms not synchronised			
Inverter overload	≤ 105% continuous · 105–110% 60 min · 110–130% 10 min · 130–155% 1 min · > 155% 200 ms · > 200% immediate			
Bypass overload	< 130% continuous · 130–155% 1 min · > 155% 200 ms			
SYSTEM				
Efficiency	up to 96% (high-voltage mode) · 94% (low-voltage mode) · 99% ECO			
Display · cold start	touch screen · battery cold start equipped			
Communication	RS232 · options: SNMP, RS485 + dry contact, protocol card for the approved lithium system, parallel card			
Noise (20–25 °C)	≤ 50 dB half load · ≤ 55 dB 75% and full load		≤ 55 dB half load · ≤ 58 dB 75% · ≤ 60 dB full load	
Environment	−5 ... 40 °C · 0–95% RH non-condensing · ≤ 2000 m			
Dimensions (W × D × H)	438 × 535 × 130 mm (3U)		438 × 720 × 130 mm (3U)	
Weight	18.4 kg	18.4 kg	34.1 kg	34.2 kg

—: not available. Specifications are subject to change without notice.

AEC

ONLINE UPS · DOUBLE CONVERSION

IST7

10–40 kVA

Three-phase online double-conversion UPS with output power factor 1: three-phase or single-phase output, internal or external batteries, touch-screen display.



IST7-30 · 40

IST7-10 · 20

96%

System efficiency up to 96% in double conversion · 99% in ECO mode (single UPS)

PF 1

Output power factor: kVA = kW, settable to 0.9

176–280 V

Full power input window; down to 80 V with linear derating

0.4%

Failure rate over 10,000 units sold in the last 2 years

KEY FEATURES

Key features
IST7 10–40 kVA

Technical values from the IST7 10–40 kVA user manual; failure rate from AEC sales and service records.

0.4%

Field failure rate

Failure rate of 0.4% over more than 10,000 IST7 units sold by AEC in the last two years.

3/3 · 3/1 · 1/1

Three input / output configurations

Three-phase or single-phase output from the same model; 10–20 kVA also single-phase in and out.

±96...240 V

Battery voltage set on site

From 16 (10 kVA) or 24 (20–40 kVA) up to 40 × 12 V blocks per string, set on site (page 68): the battery is matched to the site and the budget.

S + BB

Internal and external batteries

The same model with internal batteries (S) also takes an external battery cabinet for longer autonomy.

4 units

Up to 4 in parallel

With the optional parallel kit, up to four units work as one system, in redundant (N+1) or expand mode.

Touch

Touch-screen display

Every measurement, setting and record on one colour touch screen, with settings protected by an administrator login.

OPERATING COST

Annual losses at 32 kW

Losses are dissipated as heat: they are paid as energy consumption and again as cooling load.

		ENERGY LOST / YEAR	COST / YEAR
Online double conversion · 96 %	1.33 kW	11,680 kWh	≈ € 2,340
ECO mode · 99 %	0.32 kW	2,830 kWh	≈ € 570

IST7-40 at 80% load (32 kW), 8,760 h/year, € 0.20/kWh, cooling excluded; 96% (double conversion) and 99% (ECO, single UPS only). Losses = P × (1/η − 1). Indicative values.

TYPICAL APPLICATIONS

- Servers & data centres
- Telecom systems
- Finance & stock
- Networks
- Railway
- Postal services

RANGE

Models and dimensions
IST7 10–40 kVA

IST7-10 and IST7-20 share the 250 mm cabinet, IST7-30 and IST7-40 the 300 mm cabinet. Display, functions and options are identical; rating, dimensions and wiring differ.



Differences between the two cabinets

Difference	IST7-10 · 20	IST7-30 · 40
Ratings · kVA = kW	**10 · 20**	**30 · 40**
Input / output	**3/3 · 3/1 · 1/1**	**3/3 · 3/1**
Internal batteries (S), 12 V 9 Ah	**16 – 40 blocks (10) · 36 or 40 (20)**	**2 × 36 or 2 × 40 blocks**
Output distortion, resistive load	**≤ 2%**	**≤ 1%**
Max. input current, 3/3	**19.5 A (10) · 35.5 A (20)**	**65.7 A (30) · 81.7 A (40)**
Feet	**castors**	**castors and levelling feet**

Common to both cabinets

Touch-screen display · Output PF 1 · THDi ≤ 3% (≤ 5% non-linear) · Up to 4 in parallel · Dry contacts: 5 out, IN.1, EPO · RS485 + 2 slots · IP20 · < 55 dB · −5 … 40 °C

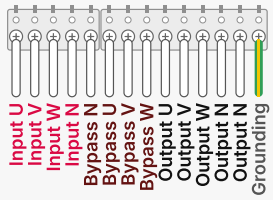
CONFIGURATION

Configurations
IST7 10–40 kVA

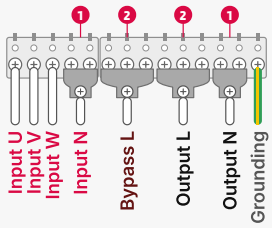
Input/output configuration, battery voltage and battery location are defined at installation: one model covers projects with different loads and autonomy requirements.

1 · Input / output configuration

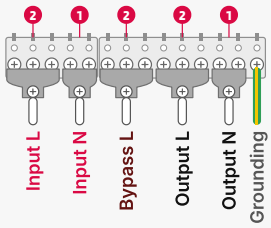
Set through the wiring, the optional connector jumpers, the screen and, on 30–40 kVA, the mode connector. 10–20 kVA terminal wiring from the user manual; circled 1 and 2 are the connector jumper types:



3/3
three-phase in and out
Fig. 3-14



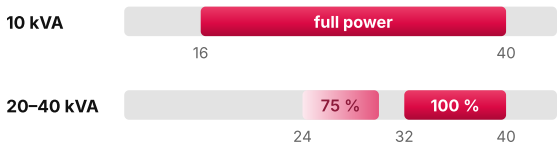
3/1
three-phase in, single-phase out
Fig. 3-16



1/1
single-phase in and out, 10–20 kVA only
Fig. 3-17

2 · Battery voltage set on site

The number of cells is set from the display: ±48 ... ±120 cells on 10 kVA, ±72 ... ±120 on 20–40 kVA, that is ±96 ... ±240 Vdc on 10 kVA and ±144 ... ±240 Vdc on 20–40 kVA. On 20–40 kVA, full power from ±96 cells (32 blocks); with ±72 ... ±90 cells (24–30 blocks) the output is limited to 75% of rating.



12 V blocks per string (± half on each side of N)

3 · Internal and external batteries, same model

A standard model works with an external cabinet; an S model has its batteries inside and grows with a BB4 (a BB5 for the largest 9 Ah totals) for longer back-up time.



Standard + external cabinet

No internal batteries: BB5 to BB8 cabinets, sized for the autonomy needed.

IST7-20-32X40 · BB5, 32 × 12 V 40 Ah



S model, internal batteries

Batteries inside the UPS cabinet: compact, no extra floor space.

IST7-10-32X9 · 32 × 12 V 9 Ah inside



THE STANDARD BUNDLE

S model + BB4

An S model is extended with a BB4 (up to 80 blocks): the same 12 V 9 Ah blocks and string voltage as the internal battery, so the strings work as one. The BB4 cabinet matches the IST7 10–20 kVA style: 255 × 755 × 880 mm, on wheels. For 150–200 blocks, a BB5 (up to 120 × 9 Ah).

CODES IST7-10 / -20-... (* IST7-30 / -40-...) · INTERNAL + BB4

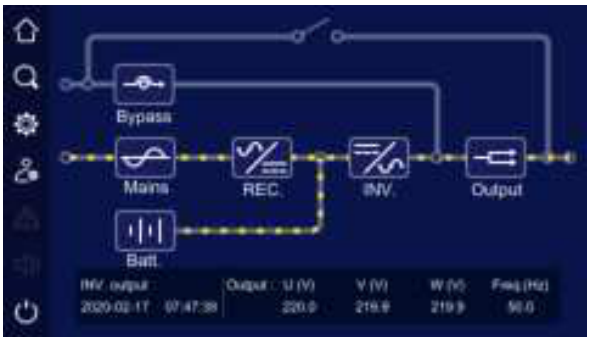
60X9 30 + 30	**64X9** 32 + 32	**72X9** 36 + 36	**80X9** 40 + 40	**96X9** 32 + 64
108X9 36 + 72	**120X9** 40 + 80	**144X9*** 72 + 72	**160X9*** 80 + 80	

Codes from the AEC code list (* IST7-30 and IST7-40). Battery strings with the neutral at the midpoint.

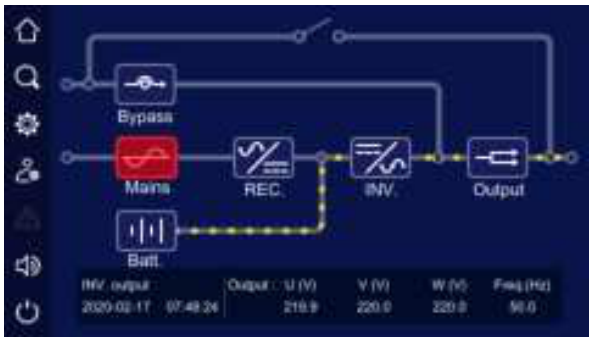
ARCHITECTURE

Operating principle
IST7 10–40 kVA

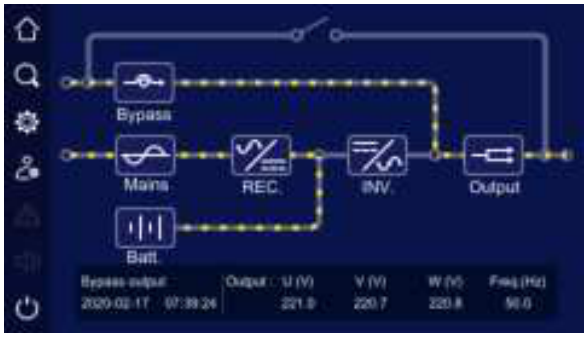
Mains mode



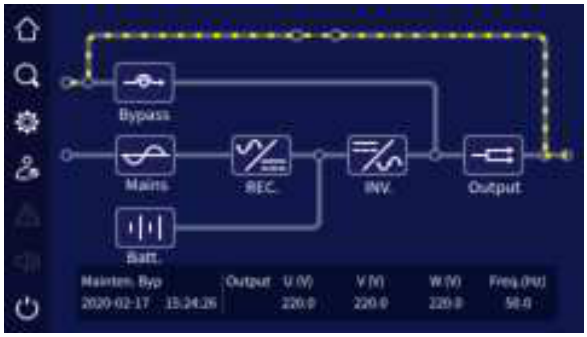
Battery mode



Bypass mode



Maintenance bypass



Mains mode

The rectifier/PFC converts the mains to a DC bus; the inverter rebuilds a pure sine wave for the load. The charger charges the battery at the same time.

Battery mode

When the mains is abnormal the rectifier switches to the battery input and boosts the battery voltage onto the DC bus: the inverter output continues without a break.

Bypass and maintenance

The static switch transfers the load to the bypass on overload or inverter fault. The maintenance bypass supplies the load while the UPS is de-energised.

220 · 230 · 240 V

Output phase voltage set from the screen (380 / 400 / 415 V line), output voltage adjustment −5 … +5 V

50 / 60 Hz

Output frequency, set from the screen

3 + N + PE

Input and output; settable to 1 + N + PE on 10–20 kVA

Four function modules

AC → DC

Rectifier / PFC

Input power factor ≥ 0.99, THDi ≤ 3% at resistive full load. In battery mode it boosts the battery voltage onto the DC bus.

DC → AC

Inverter

Three-level inverter, pure sine wave, output PF 1 (settable 0.9). Voltage distortion ≤ 1% (30–40 kVA) or ≤ 2% (10–20 kVA) at resistive full load.

DC → DC

Charger

Charges the battery while the mains is normal: equalising and floating charge, with the charge current set on site (page 77).

BYPASS

Static switch

Transfers the load to the bypass on overload or fault (transfer times on page 75). Maintenance bypass for service.

DIMENSIONS AND INSTALLATION

Front and rear views
IST7 10–40 kVA

Two cabinets with the same front, display and rear layout: 250 mm wide for 10–20 kVA, 300 mm wide and taller for 30–40 kVA.



10–20 kVA · FRONT · REAR

30–40 kVA · FRONT · REAR

10–20 kVA

250 mm

width
depth 806 mm
height 880 mm
64 kg standard

30–40 kVA

300 mm

width
depth 842 mm
height 1250 mm
102.5 kg standard

Views not to the same scale.

REAR PANEL · 10–20 kVA

- **1–6** **Communication ports** card slots, parallel port, RS485 and dry contacts: see page 78
- **7** **Input breaker**
- **8** **External battery port**
- **9** **Bypass breaker**
- **10** **Battery breaker**
- **11** **Output breaker**
- **12** **Gate-controlled switch** releases when the maintenance breaker cover is removed
- **13** **Maintenance breaker** behind a cover
- **14** **Wiring terminals** input, bypass, output, PE

Numbers as in the user manual, Fig. 2-4. The 30–40 kVA rear has the same functions in the taller cabinet (Fig. 2-6).

Dimensions and weight

Model	Size W × D × H (mm)	Standard	S
IST7-10	250 × 806 × 880	64 kg	95 kg
IST7-20	250 × 806 × 880	64 kg	137.6 kg
IST7-30	300 × 842 × 1250	102.5 kg	249.7 kg
IST7-40	300 × 842 × 1250	102.5 kg	249.7 kg

Standard: without internal battery. S: with internal battery.
IST7-40 T (internal transformer): 222 kg.

Installation

- IP20, on a flat floor without vibration, gradient < 5°
- Operating temperature −5 ... 40 °C (recommended 20–25 °C), humidity 0–95% non-condensing
- Noise < 55 dB (25 °C)
- Up to 2000 m; above, derating to IEC 62040-3

Free space

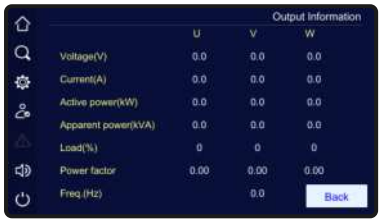
300 mm

minimum from the rear panel to the wall or other equipment; 300–500 mm at the rear and sides for ventilation.

Technology
IST7 10–40 kVA

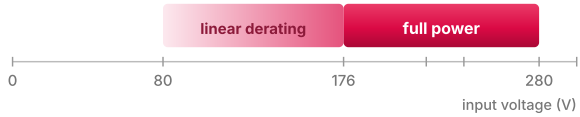
Three-level inverter with PFC rectifier

Three-level inverter technology with PFC control: clean output voltage wave and high system efficiency. The output page shows voltage, current, power, load and frequency live.



Input voltage range

Full power from 176 to 280 V input; from 176 V down to 80 V the rated power decreases linearly. At low load the battery does not discharge while the mains is above 80 V, so it stays fully charged.



≤1%
Output voltage distortion at resistive full load, 30–40 kVA (≤ 2% on 10–20 kVA)

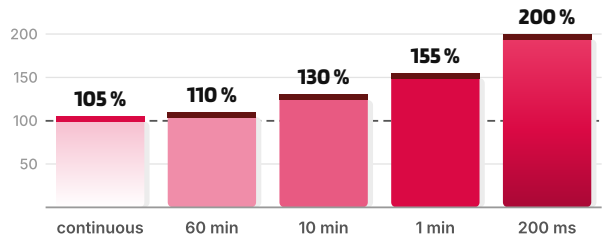
≤4%
Output voltage distortion at non-linear full load, all ratings

±0.1 Hz
Output frequency, 50 or 60 Hz, when the bypass is absent or out of range

Overload capacity

Overload capacity of inverter and bypass from the technical data, with output power factor 1.

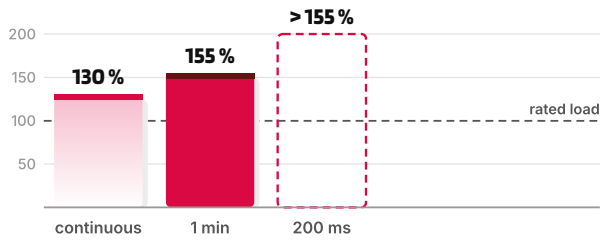
Inverter



> 200 % · immediate protection · output PF 1

With PF 0.9: < 105% continuous · 115–130% 15 min · 130–155% 1 min · 155–200% 200 ms.

Bypass



> 155 % · 200 ms

Input and bypass frequency limits

The rectifier accepts any input frequency from 39.5 to 70.5 Hz: inside this window the load stays on the inverter without using the battery. The bypass has its own, narrower limits, set from the screen: frequency ± 5 or 10%, voltage 10, 15 or 20% (default 20%).

Protections

- Battery under-voltage
- Overload and short-circuit
- Over-temperature
- Input over-voltage
- Communication abnormal

OPERATOR PANEL

Operator panel
IST7 10–40 kVA

Colour touch screen, five status LEDs and paired ON/OFF keys on the front panel. EPO for emergency shutdown and BATT. Start for a start without mains.



1. **Colour touch screen**
   Live topology, measurements, settings and records.
2. **Five status LEDs**
   AC/DC · DC/AC · BYP. · BATT. LOW · OVERLOAD, each with its symbol. Green normal, red abnormal.
3. **ON key pair**
   Press both keys until the beep: the UPS powers on. No accidental switching.
4. **OFF key pair**
   Press both keys for 3 s: the UPS powers off.
5. **EPO**
   Emergency power off: the output is cut at once.
6. **BATT. Start**
   Below the panel. Hold 7 s, then ON: start from the battery without mains.

LED	● green	● red
AC/DC	rectifier normal	rectifier abnormal
DC/AC	inverter normal	inverter abnormal
BYP.	bypass output	bypass abnormal
BATT. LOW	—	battery low voltage
OVERLOAD	—	overload or overload protection

Access, alarms and screen settings



Screen settings
Date, time, language, backlight time and brightness, set on the HMI setting page.



Current fault
The fault icon lights when a fault is active; the page lists the active faults with date and time.



Command confirmation
ON and OFF commands from the screen are executed only after confirmation.

5
status LEDs: AC/DC, DC/AC, BYP., BATT. LOW, OVERLOAD

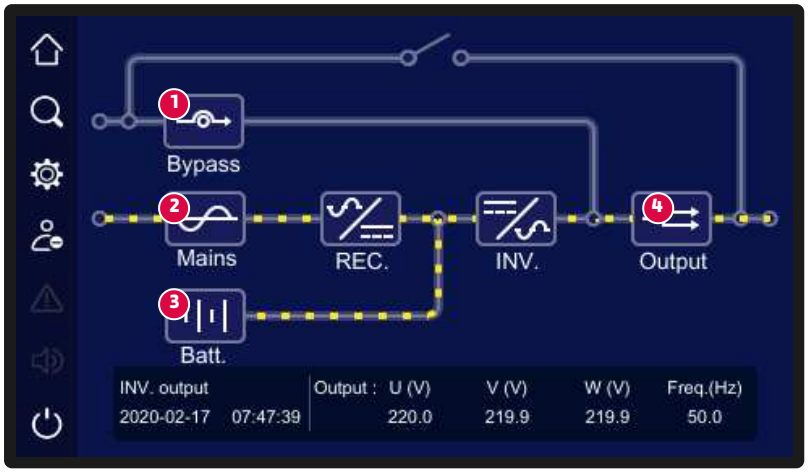
2
key pairs, ON and OFF, to prevent accidental switching

3 s
OFF key pair held to switch the UPS off

7 s
BATT. Start held to start the UPS from the battery

TOUCH SCREEN

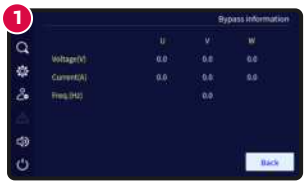
Touch screen display
IST7 10–40 kVA



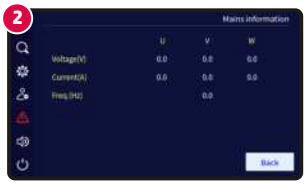
Home page: live single-line diagram

The home page shows the UPS topology in real time. The dotted line traces the active power path; a block turns red when its section is abnormal. The bottom line shows operating mode, date, time, output voltage per phase and frequency.

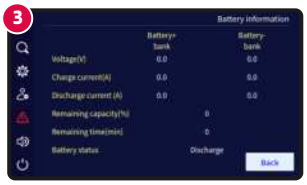
Touch a block to open its information page (1–4 below). The icons on the left open information, settings, current fault, buzzer, login and ON/OFF.



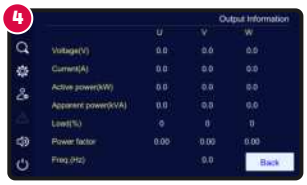
Bypass
Phase voltage, current and frequency of the bypass input



Mains
Phase voltage, current and frequency of the mains input



Battery
Voltage and current of both battery groups, remaining capacity and time, status



Output
Voltage, current, active and apparent power, load, power factor, frequency

Menus



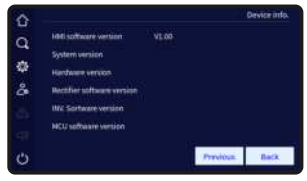
Information menu
Run info, history record, user log, device info



Settings menu
System, battery, battery test, dry contacts, communication, HMI, password, device configuration, dedust, records



Run info
Status of mains, bypass, battery, output, load, rectifier and inverter; work mode



Device info
Model, serial number and software versions of rectifier, inverter, system and HMI

4
touch blocks: bypass, mains, battery, output

6
operating states shown on the home page

10
setting pages, administrator access

2
access levels: user reads, administrator reads and sets

RECORDS

Event records and export
IST7 10–40 kVA

The UPS stores faults, alarms and operator actions with date and time. Records are read on the touch screen and exported to a USB flash drive for service analysis.

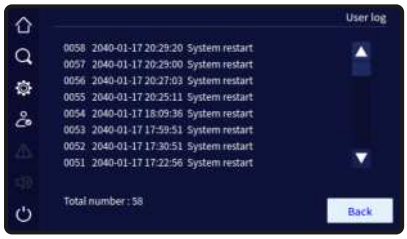


History record

Fault and alarm information listed by time, newest first, with the total number of records at the bottom of the page.

User log

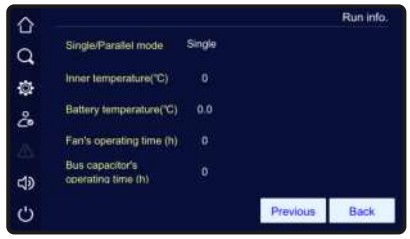
Operations and setting changes, such as ON/OFF commands and mains or bypass voltage range settings, listed by time, newest first.



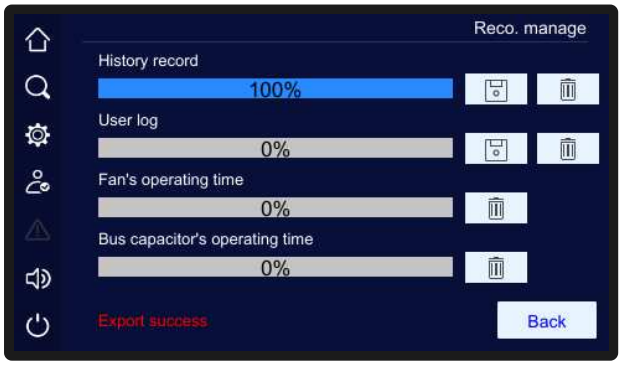
User log
Each operation with date and time.



Current fault
Active faults, opened from the fault icon.



Run info, page 2
Inner and battery temperature, fan and bus-capacitor operating time.



Record management and USB export

On the record management page the administrator exports the history record and the user log to a USB flash drive, or clears them after a confirmation prompt.

- Export of history record and user log to USB
- Clearing only after a confirmation window
- Status line: export success or USB drive not inserted
- Reset of fan and bus-capacitor operating time after replacement

HOW THE RECORDS ARE USED

Fault diagnosis

AEC service reads the history record to identify the cause and sequence of an event.

Traceability

The user log documents which setting was changed and when.

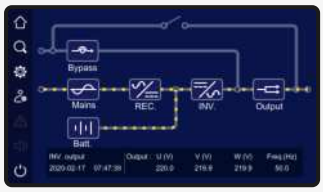
Maintenance planning

Fan and bus-capacitor operating times show when components are due for replacement.

OPERATING MODES

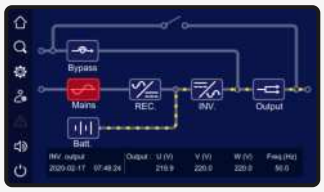
Operating modes and transfer times
IST7 10–40 kVA

The home page shows the active operating mode. Screens of the IST7 10–40 kVA; the dotted line marks the active power path.



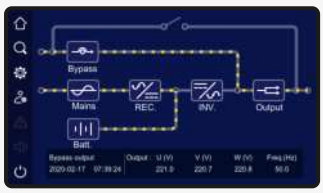
Online double conversion

Normal mode. Rectifier/PFC and inverter supply the load with a regulated sine wave; the charger keeps the battery charged.



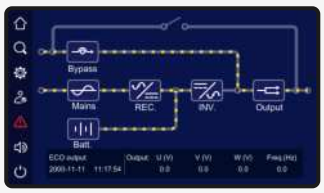
Battery mode

Mains abnormal (mains block in red). The battery supplies the DC bus through the rectifier; the output continues without interruption.



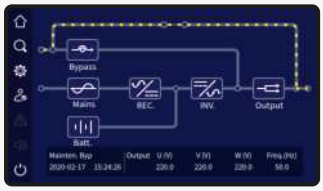
Bypass output

The static switch supplies the load from the bypass line, for example on overload or inverter fault.



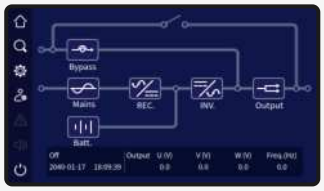
ECO mode

Single UPS only. The load runs on the bypass while voltage and frequency are within the ECO window; efficiency up to 99%.



Maintenance bypass

Maintenance breaker closed: the load is supplied directly from the bypass line while the UPS is de-energised.



UPS off

No energy transmission to the output: state before start-up or after shutdown.

TRANSFERS BETWEEN MODES

0 ms
mains → battery: the rectifier switches to the battery input without interruption

<1 ms
inverter ↔ bypass, synchronised (<10 ms not synchronised)

Auto
return to mains mode when the mains recovers

5×
same inverter fault more than 5 times in a short time: the UPS stays on bypass

Maintenance without interruption

Built-in maintenance bypass with gate-controlled switch: the load stays supplied during service.

01 Remove the cover
Removing the maintenance breaker cover releases the gate-controlled switch.

02 Inverter off
The UPS switches off the inverter and transfers the load to the bypass.

03 Maintenance breaker on
Then input, bypass and output breakers off: no voltage inside the UPS.

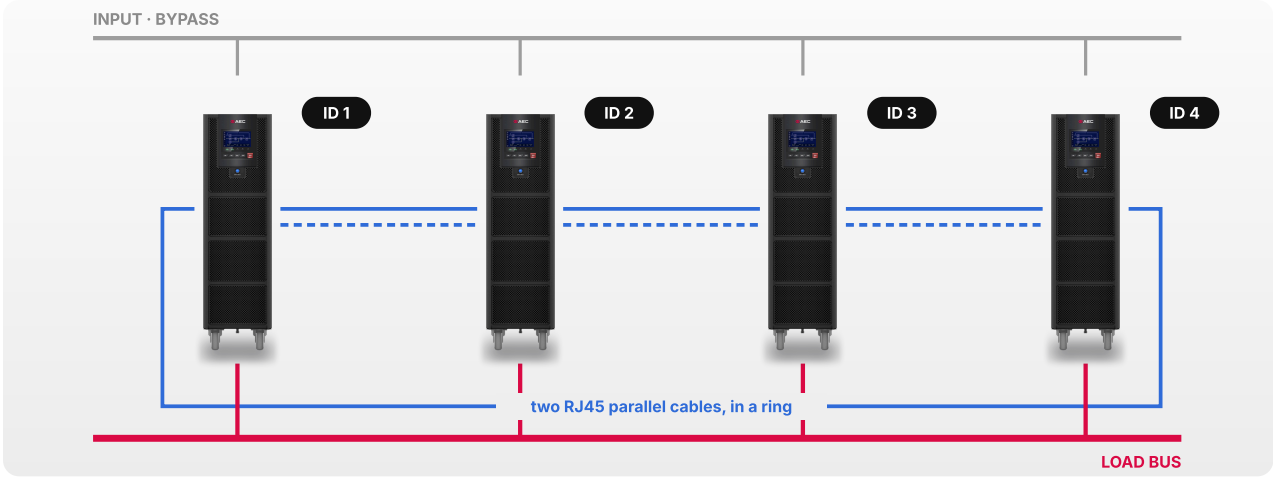
04 Return to normal
Breakers on, maintenance breaker off when the bypass voltage is present, cover refitted, ON.

End of autonomy and restart

Sequence after a mains failure longer than the battery autonomy.

- **Mains lost** — battery mode, no break
- **Alarm** — acoustic and visual
- **Low-voltage point** — the UPS stops the output
- **≈ 1 min** — complete shutdown
- **Mains back** — automatic restart

Parallel operation
IST7 10–40 kVA



From single unit to parallel system

The standard UPS is a single unit. The optional parallel kit is a built-in card for CAN communication between the units: it is installed in the parallel port with the UPS off, then the parallel mode is set from the screen.

Redundant parallel communication

The two RJ45 parallel ports are identical and redundant: they back each other up to increase reliability. The UPS raises an alarm if one of them is not connected.

N+1 redundancy

The total output is kept within N times the rating of one UPS. A faulty unit can leave or rejoin the system without affecting the load. Above that limit each unit raises an alarm: with two units in redundancy, it comes when each unit carries more than 50% of its rating (total load above the rating of one unit).



Run info of a parallel unit: single / parallel mode, redundant.

Settings

Item	Settable value
Parallel mode	Redundant, Single, Expand, BSC
Parallel UPS ID	1–4
Work configuration	3/3, 3/1 (10–20 kVA also 1/1)



Shared battery

Units in parallel can share battery groups; each UPS must have the same battery amount and the same battery parameters.

Same wiring

Wiring and phase sequence must be strictly the same on every unit, so the bypass of the system is in phase.

ECO and parallel

ECO mode is for a single UPS. Start, shutdown and exit of one unit follow the parallel procedures in the manual.

EXAMPLE

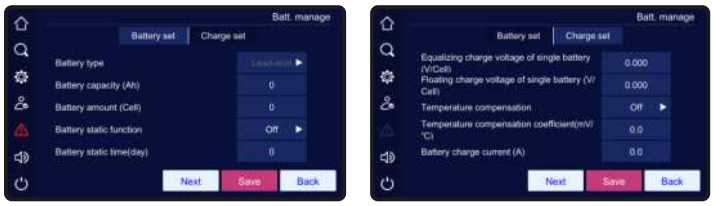
N+1 in practice: four 20 kVA units carry a 60 kVA load with one unit spare, so any unit can stop for service while the load stays protected.

BATTERIES

Battery management
IST7 10–40 kVA

Split battery, neutral at the midpoint

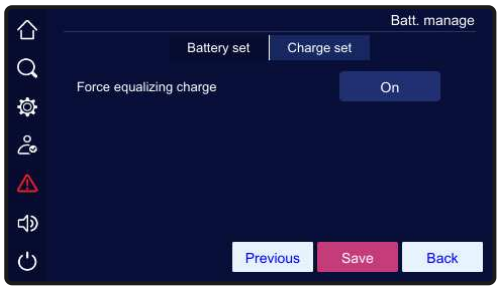
Positive and negative battery groups with the neutral at the midpoint. Default 10 kVA: ±48 cells; 20–40 kVA: ±96 cells. Number of cells, capacity, charge voltages and charge current are set on the battery management pages.



Battery set and charge set pages.

Equalising, floating, forced

The charger runs equalising and floating charge at the voltages set per cell. An equalising charge can also be forced from the charge settings page.



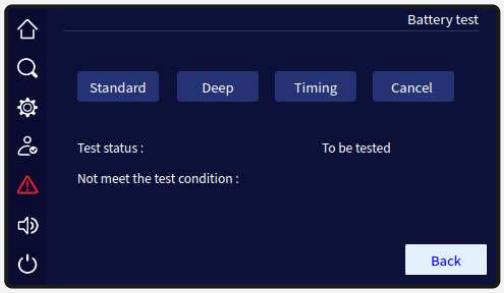
Charge set page: force equalising charge.

Battery management settings

Battery type	**Lead-acid**
Battery capacity	**1–2000 Ah**
Battery amount (2 V cells)	**±48 … ±120 (10 kVA) · ±72 … ±120 (20–40 kVA)**
Equalising charge voltage	**2.083–2.417 V/cell**
Floating charge voltage	**2.083–2.333 V/cell**
Low-voltage protection	**1.667–1.867 V/cell**
Test ending voltage	**1.667–1.867 V/cell**
Temperature compensation	**On / off, 0–5.0 mV/°C**
Charge current	**1–10 A (10–20 kVA) · 1–20 A (30–40 kVA)**

Battery test

Standard test or deep test, started and cancelled from the screen. The page shows test status, battery current, consumed capacity and test time.



Battery test page: standard, deep, timing or cancel.

Battery maintenance intervals

10 h
first charge of internal batteries before use; the UPS can be used meanwhile

4–6 months
one full discharge and recharge (every 2 months in hot areas)

3 months
recharge of more than 10 h if the UPS is not used

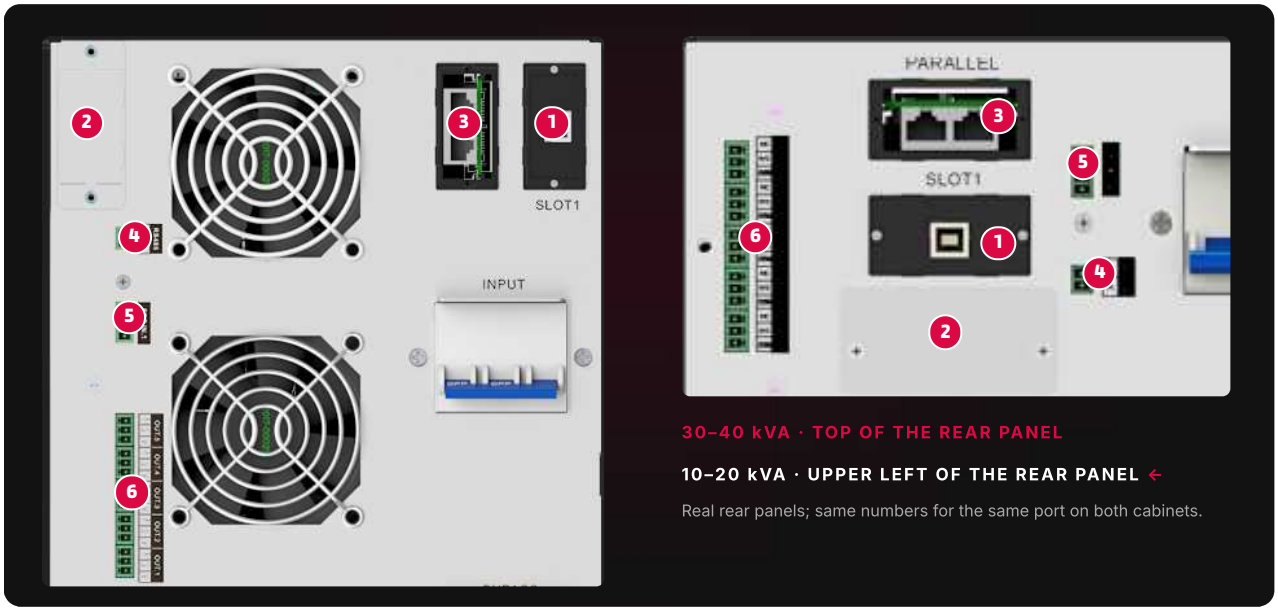
3–5 years
typical battery life, depending on temperature and discharges

Battery replacement by authorised personnel only. Batteries of one string must be of the same type, model and manufacturer.

COMMUNICATION

Communication and connectivity
IST7 10–40 kVA

All communication ports are on the rear, in the same set on both cabinets: two card slots, parallel port, RS485 and two dry-contact blocks.



1 **Intelligent slot 1**
SNMP, dry-contact or protocol card

2 **Intelligent slot 2**
second optional card

3 **Parallel port**
two RJ45, with the parallel kit

4 **RS485**
to a PC or a BMS: A to A(+), B to B(−)

5 **Dry contact 2**
EPO and programmable input IN.1

6 **Dry contact 1**
five relay outputs OUT.1 … OUT.5

The rear RS485 port cannot be used when slot 2 is in use. Manual numbering differs (Fig. 2-4 and 2-6). Optional cards and the parallel kit are available from AEC.

1 input + EPO · 6 functions

IN.1 assigned from the display, NC or NO; default charge forbidden.

- Charge disabled
- External MBB on
- External BB status
- UPS remote ON/OFF
- Batt. ground fault
- Discharge disabled

5 outputs (NO / NC / COM) · 13 functions

NO / NC / COM, each assigned from the display. Defaults: mains, bypass, battery, output abnormal, overload.

- Mains abnormal
- Bypass abnormal
- Battery abnormal
- Output abnormal
- Overload abnormal
- General abnormal
- Normal operation
- Battery operation
- Bypass operation
- UPS ON/OFF status
- Battery low
- ECO mode
- Fan fault

Contacts in detail

Relay rating
277 Vac / 30 Vdc / 10 A per contact; relay coil voltage 12 V.

Output logic
When a signal is valid, NO closes to COM and NC opens. “Battery abnormal” covers low voltage, over-voltage, over-temperature and a disconnected battery.

EPO
Closed for normal operation. Opening it shuts down inverter and bypass output; the EPO fault clears once the UPS is fully off and the contact is closed again.

External MBB on
Signal from an external maintenance bypass breaker: the UPS raises an alarm, turns off the inverter and transfers the load to the bypass.

TECHNICAL DATA

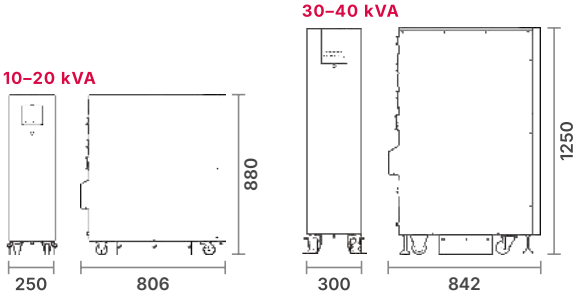
IST7 10–40 kVA

Model	IST7-10	IST7-20	IST7-30	IST7-40
Rated power (kVA / kW)	10 / 10	20 / 20	30 / 30	40 / 40
Input / output configuration	3/3 · 3/1 · 1/1		3/3 · 3/1	
INPUT				
Connection	3 + N + PE (settable 1 + N + PE)		3 + N + PE	
Voltage range	176–280 V at 100% load · 80–176 V with linear derating			
Frequency range	39.5–70.5 Hz			
Bypass synchronisation range · bypass voltage range	50 / 60 Hz ± 10% (self-adapting) · 10 / 15 / 20% (default 20%)			
Power factor · THDi	≥ 0.99 · ≤ 3% resistive full load, ≤ 5% non-linear full load			
BATTERY				
Battery voltage (Vdc)	± 96 … ± 240	± 144 … ± 240	± 144 … ± 240	± 144 … ± 240
Cells (2 V), settable · default	± 48 … ± 120 · ± 48	± 72 … ± 120 · ± 96	± 72 … ± 120 · ± 96	± 72 … ± 120 · ± 96
Charge current (A)	1–10 (default 1)		1–20 (default 2)	
OUTPUT				
Connection	3 + N + PE (settable 1 + N + PE)		3 + N + PE	
Voltage	L-N 220 / 230 / 240 V · L-L 380 / 400 / 415 V			
Frequency	tracks the bypass; with bypass absent or out of range 50 ± 0.1 or 60 ± 0.1 Hz (default 50)			
Waveform · power factor	sine wave · 1 (settable 0.9)			
Voltage distortion (resistive / non-linear)	≤ 2% / ≤ 4%		≤ 1% / ≤ 4%	
Transfer time inverter ↔ bypass	< 1 ms synchronised · < 10 ms not synchronised			
Inverter overload (PF 1)	< 105% continuous · 105–110% 60 min · 110–130% 10 min · 130–155% 1 min · 155–200% 200 ms · > 200% immediate			
Bypass overload	< 130% continuous · 130–155% 1 min · > 155% 200 ms			
SYSTEM				
System efficiency	up to 96% · 99% in ECO mode (single UPS)			
Parallel	up to 4 units with the optional parallel kit			
Display · communication	touch screen · RS485 · dry contacts: EPO, 1 input, 5 outputs · optional cards: SNMP, protocol transfer, dry-contact kit			
DC start · alarms	battery start equipped · battery low voltage, mains abnormal, UPS fault, output overload			
Environment	−5 … 40 °C · 0–95% RH non-condensing · IP20 · noise < 55 dB (25 °C) · up to 2000 m			
Dimensions W × D × H	250 × 806 × 880 mm		300 × 842 × 1250 mm	
Weight standard / S	64 / 95 kg	64 / 137.6 kg	102.5 / 249.7 kg	102.5 / 249.7 kg

20–40 kVA with ±72 … ±90 cells (24–30 blocks): output 75% of rating. S: with internal battery. IST7-40 T (internal transformer): 222 kg. Specifications are subject to change without notice.

Two frames

Outer dimensions in mm, to one scale (user manual Fig. 3-6 and 3-7).



Good to know

- Ratings are kVA = kW at output PF 1; PF 0.9 settable
- 10–20 kVA: single-phase input (1/1) also possible
- Battery voltage and capacity set on the screen at commissioning
- Ordering codes and battery configurations: see the ordering guide

ONLINE UPS · DOUBLE CONVERSION

IST7

60–200 kVA

Three-phase online UPS with three-level inverter, digital DSP control and unity output power factor. Two cabinet sizes cover 60 to 200 kVA; selected models are upgraded on site from the touch screen.



IST7-60…120 · IST7-160…200

96.5%
AC/AC efficiency (peak) in double conversion · 99% in ECO mode

PF 1
Output power factor: kVA = kW

Touch screen
Colour display for status, records and settings

≤3%
Input current THDi at full load, input PF ≥ 0.99

WHY IST7

Key features
IST7 60–200 kVA

Each figure is taken from the IST7 user manual; next to it, what it means on site.

96.5%

Efficiency that lowers losses

Peak AC/AC efficiency in online double conversion; up to 99% in ECO mode, with automatic return to the inverter when the bypass leaves tolerance.

kVA = kW

Full rating as active power

Unity output power factor: a 120 kVA unit delivers 120 kW. Output PF can also be set to 0.9.

80 → 120

Power that follows the load

IST7-80 is upgraded to 100 or 120 kVA, IST7-100 to 120 kVA, IST7-160 to 200 kVA, by setting the capacity from the display. Same hardware, same footprint.

0.38 m²

Up to 120 kVA in 400 mm

The 60–120 kVA cabinet stands on 400 × 960 mm of floor; IST7-160 and IST7-200 need 600 × 1000 mm.

300%

A bypass that clears faults

The static bypass carries 300% for 100 ms and 200% for 1 s, so inrush and fault-clearing currents downstream are handled.

100%

Unbalanced load accepted

The three output phases accept a 100% unbalanced load, with an output phase error of no more than 1°.

OPERATING COST

What efficiency means at 100 kW

Losses are the energy the UPS turns into heat: you pay for it once at the meter and again in the room cooling.

		ENERGY LOST / YEAR	COST / YEAR
Online double conversion · 96.5 %	3.6 kW	31,800 kWh	≈ € 6,350
ECO mode · 99 %	1.0 kW	8,850 kWh	≈ € 1,770

100 kW load, 24/7 operation, € 0.20/kWh, calculated at peak efficiency. Losses = P × (1/η − 1). Indicative values.

DESIGNED FOR

- Network & IT rooms
- Telecommunications
- Finance & insurance
- Transport
- Energy & industry
- Public sector & education

ARCHITECTURE

Cabinet layout
IST7 60–200 kVA



160–200 kVA · 2 power units



60–120 kVA · 1 power unit

1 Power unit
PFC rectifier, three-level inverter and battery booster in one unit, with RUN / ALARM / FAULT LEDs and a limit switch that puts the unit in or out of service.

2 Bypass and control unit
Static bypass, system control card, communication ports and the battery cold-start button.

3 Switchgear
Mains input, bypass input and output switches, accessible behind the lockable door.

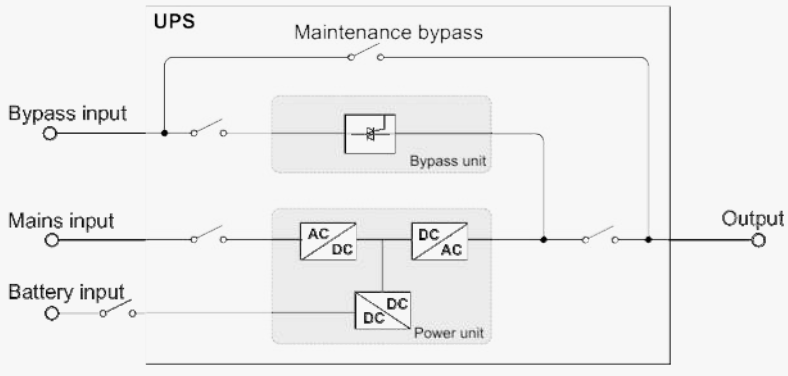
4 Maintenance bypass
Manual bypass switch: the load stays supplied while the UPS is de-energised for service.

5 Surge protection (option)
Class C SPD with its own disconnect switch, for sites exposed to lightning.

How power flows

The rectifier feeds the DC bus and the inverter rebuilds a clean sine wave for the load; each operating state is shown on p. 88.

- Mains input to the rectifier
- Separate bypass input to the static bypass
- Battery input to the DC bus
- One output to the load



Work principle, user manual Fig. 2-2

80 → 100 → 120 kVA · 160 → 200 kVA

IST7-80 uses the same hardware as IST7-100 and is upgraded to 100 or 120 kVA, IST7-100 to 120 kVA, IST7-160 to 200 kVA: the rated capacity is set from the display at engineering level, so the UPS grows with the load inside the same footprint.

Dimensions and installation
IST7 60–200 kVA



FRONT REAR

1 Operation panel
Touch screen, status LEDs and light bar: see p. 85.

2 Perforated front door
Lockable. Cooling air enters from the front.

3 Perforated rear panel
Hot-air outlet: keep the openings on the front and rear free.

4 Cable entry
Input, output, battery and PE cables: from below on all models.

60–120 kVA cabinet
Same layout, 400 mm wide



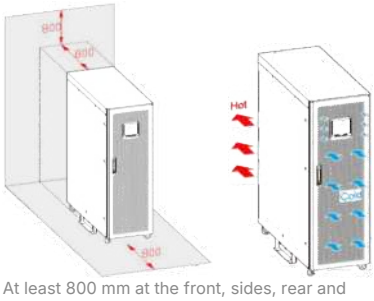
Dimensions and weight

Model	Size W × D × H (mm)	Weight
IST7-60	400 × 960 × 1193	153 kg
IST7-80	400 × 960 × 1193	163 kg
IST7-100	400 × 960 × 1193	165 kg
IST7-120	400 × 960 × 1193	167 kg
IST7-160	600 × 1000 × 1600	294 kg
IST7-200	600 × 1000 × 1600	296 kg

Installation

- Indoor, IP20, forced-air cooling
- Operating temperature −5 … 40 °C, humidity 0–95%
- Noise < 65 dB at 1 m from the front
- 60–120 kVA: castors for positioning, then anchored to the floor; 160–200 kVA: bolted to the floor

Free space



At least 800 mm at the front, sides, rear and above (Fig. 3-2); air in at the front, out at the rear (Fig. 3-3).

DID YOU KNOW?
EMC category C3 means a UPS for commercial and industrial sites: the IST7 is not for residential use without additional measures to prevent electromagnetic disturbances.

Technology
IST7 60–200 kVA

Three voltage levels, one clean sine wave

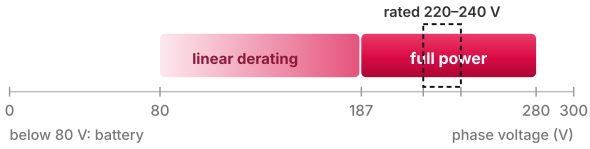
The inverter switches between +Vdc, 0 and −Vdc instead of two levels. Smaller voltage steps give lower switching losses and a cleaner output. A DSP controls inversion, synchronisation and current sharing between parallel units.



Output info screen: phase voltages, current, frequency, energy.

Grid-friendly input

PFC rectifier: input PF ≥ 0.99 and THDi ≤ 3% at full load, 40–70 Hz. Full power down to 187 V phase voltage; from 186 V down to 80 V the rated power decreases linearly. Outside the window the batteries take over.



≤1%
Output THDv with linear load (≤4% non-linear)

≤5%
Voltage transient for a 0–100–0% load step

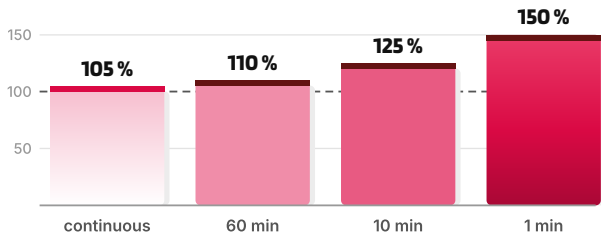
±0.1 Hz
Output frequency accuracy in battery mode

±6 Hz
Bypass synchronisation range around 50 / 60 Hz

Overload capacity

Time the UPS keeps supplying the load before transferring or protecting.

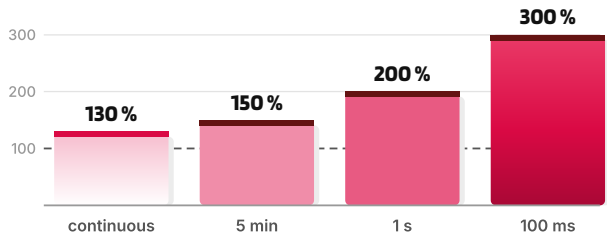
Inverter, linear load



> 150 % · immediate protection

IST7-120: above 125% immediate protection.

Static bypass



> 300 % · immediate protection

Protections

LOAD AND UNITS

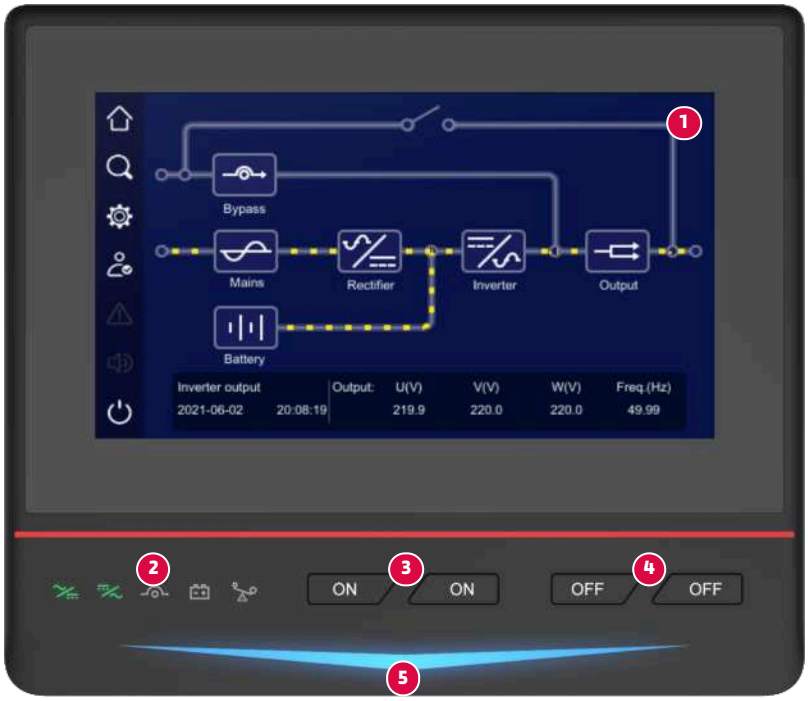
- Output short-circuit, over- and under-voltage
- Overload and over-temperature
- Communication fault between parallel units
- Emergency power off: EPO and EPO2 (NC) inputs

BATTERY AND SITE

- Battery under-voltage, two levels
- Battery grounding abnormal input (dry contact)
- Class C surge protection with its own switch (option)
- EMC to IEC 62040-2:2016

OPERATOR PANEL

Operator panel
IST7 60–200 kVA



1. **Colour touch screen**
   Live single-line diagram, measurements, settings and records.
2. **Five status LEDs**
   AC/DC, DC/AC, bypass, battery, overload: green when active or normal, red when abnormal.
3. **ON keys**
   Press both keys for 3 s to power on. Two keys: no accidental switching.
4. **OFF keys**
   Press both keys for 3 s: the inverter stops and the load moves to bypass.
5. **Ambient light bar**
   Shows the UPS state in colour, also when the display backlight is off.

Ambient light bar

Four states, one colour each: the operator knows how the UPS is doing before reaching the screen.



Blue
Normal operation



Blue, flashing
Battery mode



Yellow
Abnormal, load still supplied



Red
Abnormal, output off

Status LEDs

LED	Green	Red
AC/DC	Rectifier normal	Rectifier abnormal
DC/AC	Inverter normal	Inverter abnormal
BYP.	Bypass output	Bypass abnormal
BATT. LOW	Battery mode	Battery low voltage
OVERLOAD	Output normal	Output overload

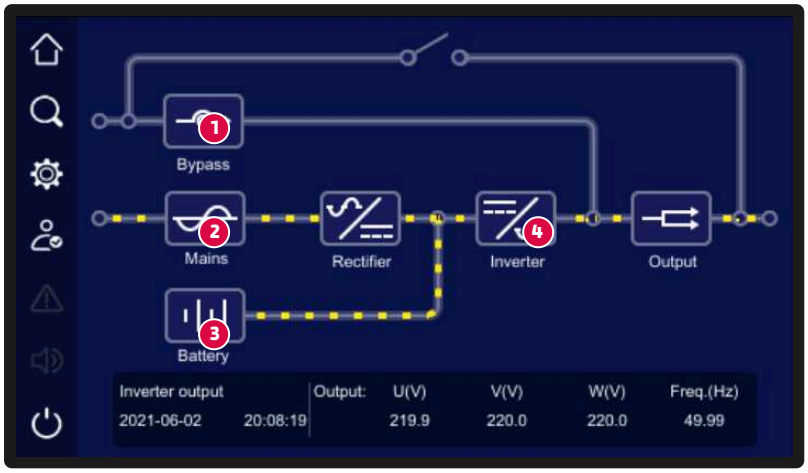
Screen settings



- Ambient light on / off
- Backlight time 1–999 min (default 5)
- Brightness, language, date and time

TOUCH SCREEN

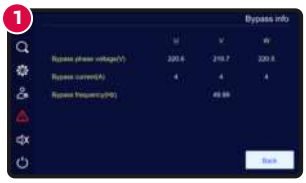
Touch screen display
IST7 60–200 kVA



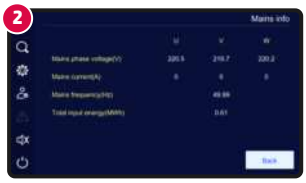
Live single-line diagram

The home page draws the UPS as it runs: yellow dots trace the active power path, faulty blocks turn red, and the bottom line shows output voltage and frequency.

Touch a block to open its page: the four pages below are marked 1–4 on the diagram.



Bypass info
Phase voltage, current and frequency of the bypass input



Mains info
Phase voltage, current and frequency of the mains input



Battery info
Positive and negative battery voltage, charge and discharge current, status



Inverter info
Output phase voltage, current and frequency of the inverter

Menus



Information menu
Running info, history, user log, smart records, device info, wave capture



Settings menu
Cabinet, battery, battery test, output, smart mode, dry contacts, screen, password, communication, records



Running info
Three tabs: UPS info, parameter match, UPS status



Device info
Hardware, software and series version of each unit

3
access levels: user, engineer and factory

6
touch blocks: bypass, mains, battery, rectifier, inverter, output

MWh
total input energy, shown in Running info

Match
tab listing any setting that differs between parallel units

RECORDS

Event records and export
IST7 60–200 kVA



10,000

events in the history record: fault and alarm information of the system and of each unit, newest first.

10,000

entries in the user log. When a record is full, the oldest entry is overwritten.



User log

Every setting change, with date and time.



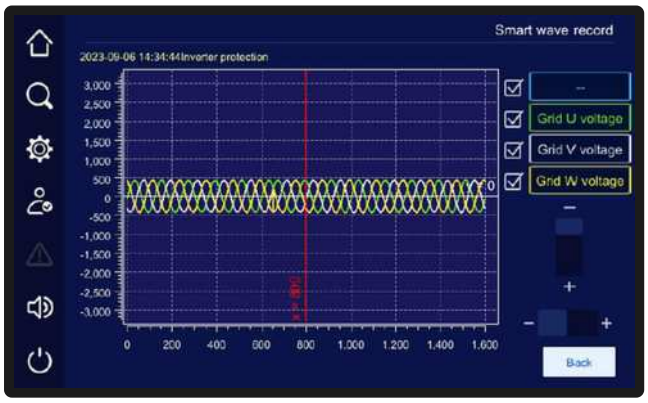
Current alarms

Open from the alarm icon on the home page: active faults, time-stamped.



Smart records

Records linked to the smart-mode settings, such as redundancy.



Smart wave capture

When an abnormal event occurs, the UPS stores the waveforms around it, with date, time and the abnormal information.

- Three sources: rectifier, inverter, system card (total abnormal record)
- Example: record of an inverter protection, grid U, V and W voltages around the event (red cursor)
- Open a record and choose the parameters shown on the four channels
- Export the capture to USB for the service report

Download to USB

Plug a USB stick (FAT32) into the touch screen and export each record from the record manage page.



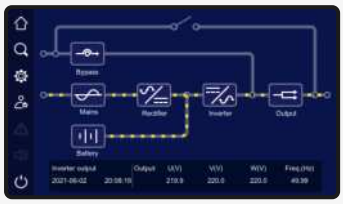
- History record, user log, smart records
- Smart wave capture
- Battery discharge record

Firmware is updated the same way, from a USB stick.

OPERATION

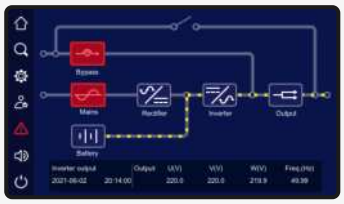
Operating modes
IST7 60–200 kVA

Real screens of the IST7: the yellow dots trace the active power path.



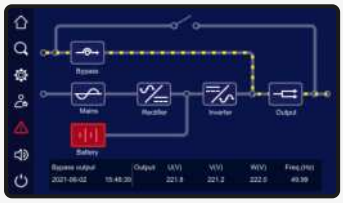
Online double conversion

Mains → rectifier → inverter → load. Batteries kept charged. Load isolated from mains disturbances.



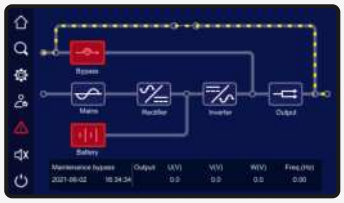
Battery mode

Mains out of limits: the batteries feed the inverter through the booster, with no break at the output.



Static bypass

Overload or inverter fault: the load moves to the bypass and returns to the inverter when the cause is cleared.



Maintenance bypass

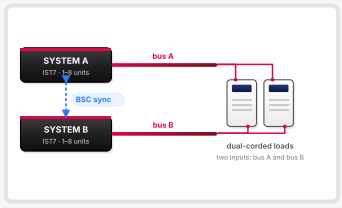
Manual switch: the load is fed directly while the UPS is de-energised for service.





ECO · up to 99%

Load on bypass while the mains is within the window (default ±15% V, ±2% f). The output mode page selects Standard ECO or W-ECO.



Dual bus (BSC)

Two independent UPS systems kept in step, for dual-corded loads on bus A and bus B. Set in Mode manage, p. 90.



Common battery

Common battery setting On: the units of a parallel system share one battery bank. Details on p. 90.

Transfers between states

0 ms
Mains → battery: the DC bus is fed by the booster without interruption

<1 ms
Inverter ↔ bypass, synchronised (<15 ms not synchronised)

Auto
Return from bypass to inverter once overload or fault is cleared

3×
Restart attempts after an output short circuit, then protection

TYPICAL USE

Online
Data centres, healthcare, industry: the load never sees the mains.

ECO
Stable mains and tolerant loads, when the lowest losses matter most.

Dual bus
Dual-corded IT loads: each power input is fed by its own UPS system.

Common battery
Parallel systems where floor space for battery cabinets is limited.

SMART FUNCTIONS

Advanced features and functions
IST7 60–200 kVA

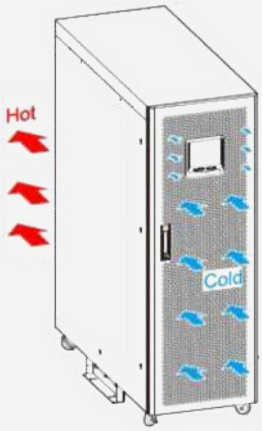
Set from the Smart mode pages of the touch screen: real screens of the IST7.

SELF-CLEANING

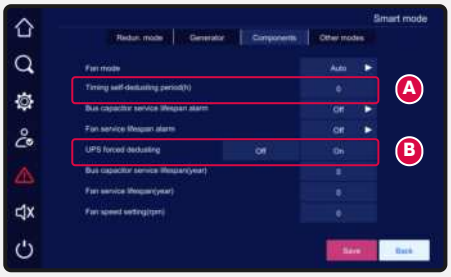
The air path cleans itself

Cooling air enters at the front and leaves at the rear. A timed self-dedusting function keeps the path clear between service visits.

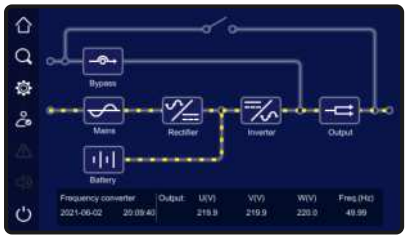
- **Timed:** default every 360 h, period settable
- **Forced:** started on demand from the screen
- **Logged:** “Fan dedusting” event in the records



Airflow, user manual Fig. 3-3



A Timing self-dedusting period (h) · **B** UPS forced dedusting On / Off. Also: fan mode, fan and bus capacitor service-life alarms.



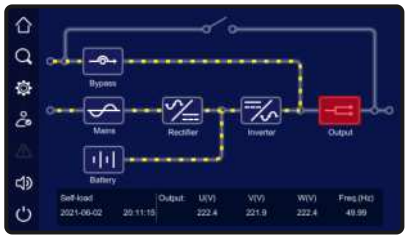
Frequency converter

Supplies 60 Hz loads from a 50 Hz grid or the other way round, e.g. marine, test benches or imported machinery.



Generator mode

Start mode manual or by dry contact from the ATS; generator rated power and charge-power derating set on screen, so the genset is not overloaded.



Self-load test

Output switch open: the power circulates back to the input. Load 1–100%, time 1–1440 h; burn-in without a load bank.

360 h
self-dedusting period, default

10 years
default service life for fan and capacitor alarms

20–200 ms
output short-circuit protection time, default 20 ms

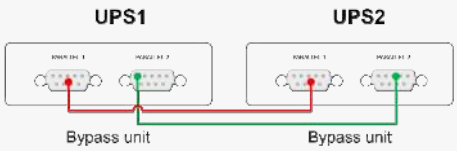
±10 V
output voltage fine-tuning

MORE SETTINGS FOR THE SITE

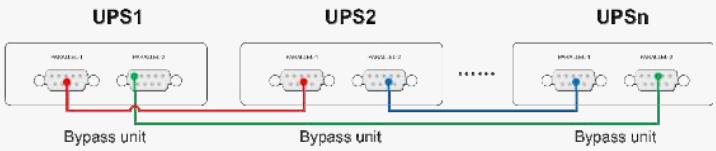
- Fan speed follows the load: quieter at partial load, longer fan life
- Automatic start when the mains returns
- Cold start from the battery, without mains
- Bypass window +10/15/20%, −10/15/20%; frequency range 2–20%

Parallel operation and redundancy
IST7 60–200 kVA

Parallel ports of the bypass units connected in a ring, as in the user manual.



Two UPS, Fig. 2-21



Multiple UPS, Fig. 2-22

One battery bank for the whole system

With the common-battery setting, the units of a parallel system share the same battery bank: fewer cabinets, less floor space and one string to maintain. Each unit can also keep its own batteries.

Up to 8 units on one load bus

Parallel address 1–8 from the display. Units are linked by parallel cables in a ring: N units, N cables, so each unit always has two connections.

Mode manage

Single or parallel mode, parallel address and BSC address.



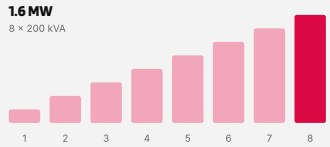
Capacity or N+X redundancy

Basic quantity and redundancy quantity of the parallel system.



Power grows by adding units

Output power with 1 to 8 IST7-200 units.



BSC: two systems, one rhythm

The synchronous BSC output of the dual bus control synchronises the outputs of two independent UPS systems in frequency and phase, so that dual-corded loads and static switches can move between bus A and bus B.

System functions

- Current sharing between units ≤ 5%
- Parameter match page: shows any setting that differs between units
- One command copies the settings to all units
- Staggered start of the units to limit inrush on the source
- Optional EPO linkage: one stop button for all units
- Parallel kit PAR-IST7-60/200

Battery management
IST7 60–200 kVA

Charging in stages

Current-limited charge, equalising, float, then an optional sleep phase that pauses charging and wakes up on voltage or time: less float time, longer battery life.





Battery setting pages: type, capacity, cells, common battery, BMS; float-to-sleep function.

30 A

max. charge current, 60–120 kVA

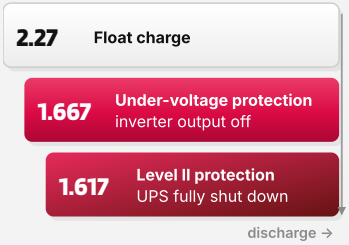
60 A

max. charge current, 160–200 kVA

- Charge current limit 0.2 C lead-acid, 0.5 C lithium (default)
- Optional timed equalising (default interval 720 h)
- Capacity setting 1–2000 Ah
- String 28–48 × 12 V blocks

End-of-discharge protection

Two levels in V/cell, plus a maximum discharge time (default 960 min) and an optional pre-alarm.



Battery test

Standard test (10 min) or deep test to the low-voltage alarm, started from the screen. Runs only when:

- mains is normal
- batteries are fully charged
- UPS has no fault
- load is at least 10%

Temperature

With the optional probe, charge voltage is compensated (default 3 mV/°C/cell) and alarms trip at 50 °C and 0 °C (defaults).

20–30 °C

best battery temperature: below 20 °C autonomy drops, above 30 °C battery life shortens.

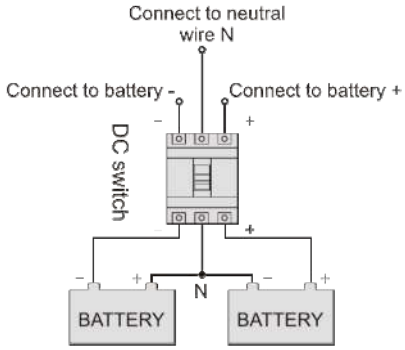
Lithium ready

See p. 92.

Three-pole battery string

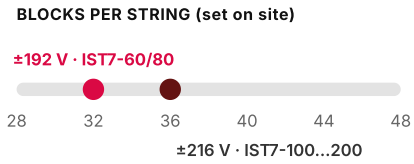
The string is split into two equal halves with the neutral at the midpoint: the UPS gets a positive and a negative DC bus from one set of 12 V blocks. Battery breaker with three poles (+, N, –).

Battery wiring, user manual Fig. 3-32.



Set on site

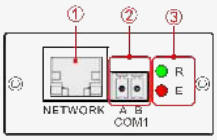
Blocks per string, capacity in Ah and battery type are set from the display at commissioning.



Matching AEC cabinets: next page.

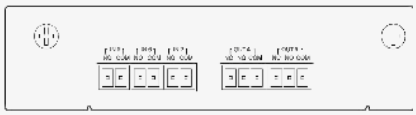
CONNECTIVITY

Communication and connectivity
IST7 60–200 kVA



SNMP card · option

Network port and COM1 (RS485) for a temperature and humidity sensor; web monitoring. Fig. 2-16.



Dry contact expansion card · option

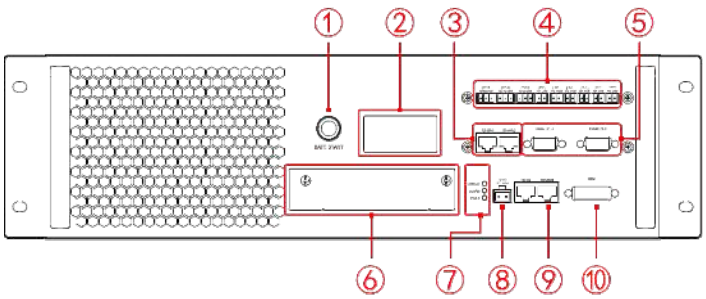
+3 inputs (IN.5–IN.7) and +2 outputs (OUT.4–OUT.5). Fig. 2-18.



BMS expansion card · option

BMS port for lithium batteries, charge- and discharge-disable inputs. Fig. 2-19.

Bypass and control unit: all ports in one place



Bypass unit, user manual Fig. 2-10.

1. Battery cold start
2. SNMP card slot
3. RS485 parallel monitoring
4. Dry contacts, EPO, battery temp.
5. Parallel ports
6. Expansion slot
7. Control card LEDs
8. EPO2 input (NC)
9. Modbus RTU and RS232
10. Touch-screen port

4 inputs · 10 functions

Each input is assigned from the display.

- Battery abnormal
- Battery grounding abnormal
- Battery switch open
- Bypass switch open
- Output switch open
- Battery discharge disable
- Battery charge disable
- Generator mode
- SPD abnormal
- Maintenance bypass start

3 changeover outputs · 18 functions

NO / NC contacts, each assigned from the display. * on request.

- Inverter output
- Bypass output
- Battery trip
- On battery
- Battery low alarm
- Battery low protection
- Overload
- UPS abnormal
- Bypass abnormal
- Mains abnormal
- Start generator
- ECO output
- Inverter abnormal
- Single bypass feedback*
- Parallel bypass feedback*
- UPS on
- Fan abnormal
- UPS alarm

Options

SNMP card
Ethernet, web pages, temp./humidity sensor port

Dry-contact expansion
+3 inputs, +2 outputs

Battery cabinets
BB5–BB8, empty or with batteries

Parallel kit
PAR-IST7-60/200

Battery temperature kit
probe and extension cable

Surge protection
class C SPD with switch

Battery release control
24 Vdc for shunt / UV release

Lithium cabinets
on request

TECHNICAL DATA

IST7 60–200 kVA

Model	IST7-60	IST7-80	IST7-100	IST7-120	IST7-160	IST7-200
Rated power (kVA / kW)	60	80	100	120	160	200
Capacity upgrade	—	→ 100 / 120	→ 120	—	→ 200	—
INPUT						
Connection	3 phases + N + PE					
Rated voltage	220 / 230 / 240 V phase (380 / 400 / 415 V line)					
Voltage range	187–280 V phase at full power · 80–186 V with linear derating					
Frequency · power factor · THDi	40–70 Hz · ≥ 0.99 · ≤ 3% at full load					
Bypass synchronisation range	50 / 60 Hz ± 6 Hz					
BATTERY						
Nominal DC voltage (default)	± 192 V	± 192 V	± 216 V	± 216 V	± 216 V	± 216 V
String length	28 – 48 × 12 V blocks, set on site · VRLA or lithium (BMS card)					
Max. charge current	30 A				60 A	
OUTPUT						
Voltage · frequency	220 / 230 / 240 V phase · 50 / 60 Hz (± 0.1 Hz on battery)					
Power factor · THDv	1 (settable 0.9) · ≤ 1% linear, ≤ 4% non-linear load					
Transient · unbalance · phase error	≤ 5% for 0–100–0% step · 100% unbalanced load · ≤ 1°					
Transfer time inverter ↔ bypass	< 1 ms synchronised · < 15 ms not synchronised					
Inverter overload	≤ 105% continuous · ≤ 110% 60 min · ≤ 125% 10 min · ≤ 150% 1 min (IST7-120: > 125% immediate)					
Bypass overload	≤ 130% continuous · ≤ 150% 5 min · ≤ 200% 1 s · ≤ 300% 100 ms					
SYSTEM						
Efficiency AC/AC	up to 96.5% double conversion · 99% ECO mode					
Parallel	Up to 8 units, capacity or N+X · BSC dual-bus synchronisation					
Communication	RS485 · Modbus RTU · RS232 · 4 IN / 3 OUT dry contacts · EPO · SNMP slot · expansion slot					
Display	Colour touch screen, 5 status LEDs, ambient light bar, 10,000 events and 10,000 user-log entries					
Environment	−5 … 40 °C · 0–95% RH · IP20 · < 65 dB at 1 m · forced-air cooling					
Cable entry	bottom				bottom	
EMC	IEC 62040-2:2016 · category C3 (not for residential use without additional measures)					
Dimensions W × D × H	400 × 960 × 1193 mm				600 × 1000 × 1600 mm	
Weight	153 kg	163 kg	165 kg	167 kg	294 kg	296 kg

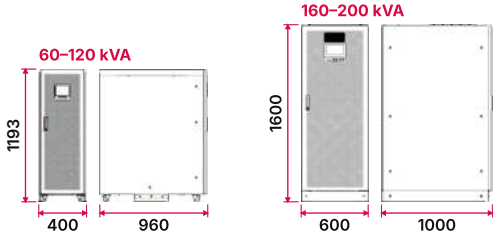
Specifications are subject to change without notice.

Ordering codes

Code	Description	Code	Description
IST7-60	60 kVA / 60 kW	**IST7-160**	160 kVA, upgradable to 200 kVA
IST7-80	80 kVA, upgradable to 100 or 120 kVA	**IST7-200**	200 kVA / 200 kW
IST7-100	100 kVA, upgradable to 120 kVA	**PAR-IST7-60/200**	Parallel kit
IST7-120	120 kVA / 120 kW	**IST7-[kVA]-[n]X[Ah]**	UPS with battery cabinet, n × 12 V [Ah]

Two frames

Front and side views in mm, user manual Fig. 3-9 and 3-16.



AEC

PREMIUM SERIES

ONLINE UPS · Δ/Y ISOLATION TRANSFORMER

IST7-T

20–200 kVA

AEC's premium three-phase UPS. An IGBT rectifier that keeps the grid clean, true double conversion and a Δ/Y output transformer built into every model, with patented battery management and energy-storage functions. For industry, process and critical sites on demanding grids.



IST7T-20…80 · IST7T-100…200

Δ/Y
Output isolation transformer built into every model, 20 to 200 kVA

<5%
Input THDi, PF ≥ 0.99: IGBT rectifier, ±25% input window

100%
Three-phase unbalanced load; full kVA on non-linear load

0 ms
Transfer from mains to battery

WHY IST7-T

Key features
IST7-T 20–200 kVA

The IST7-T is AEC's top three-phase series: transformer-based reliability with the digital control, battery intelligence and energy functions of a new-generation UPS.

Δ/Y

Transformer built in

Δ/Y output transformer on every model: galvanic isolation of the inverter output, full kVA at 100% non-linear load, stronger against short circuit.

±25%

Made for difficult grids

IGBT rectifier with input PF ≥ 0.99 and THDi < 5%. Full load from −20% to +25% of rated voltage.

100%

Unbalanced loads

Withstands a 100% three-phase unbalanced load, on every model from 20 to 200 kVA.

Backfeed to grid

A battery test that saves energy

During the battery test the residual energy is fed back to the grid instead of being wasted.

Peak shift

Energy storage UPS

With lithium batteries the UPS charges off-peak and discharges at peak hours, on a plan curve or under EMS control.

Patented

Smart battery management

Patented smart charging and automatic battery tests, battery hibernation, cell voltage, internal resistance and temperature with the optional BMS.

PREDICTIVE MAINTENANCE

The UPS watches its own health

The UPS checks its own components and warns early, so service can be planned in advance.

Breaker

external battery breaker state detected, with alarm (option)

Capacitors

capacitor health monitored, with early warning

Fans

fan health monitored on 20–80 kVA, fan fault on a dry contact

Self-load

test mode simulates load on the inverter for on-site testing

DESIGNED FOR

Computer rooms · Communications · Finance & insurance · Railways · Medical care · Industry & mining

PREMIUM DETAILS

Design details
IST7-T 20–200 kVA

Beyond the transformer and the battery functions: the details that count when the IST7-T is installed, started and run on site.

Online

Parallel maintenance

A faulty unit leaves the parallel system by itself; units are removed or added online and share the load automatically.

N+x

Redundancy warning

In a parallel system a redundancy (N+x) warning can be enabled, set on the System management page.

Phase check

Input phase sequence

If the mains phases are connected in the wrong order, the phase sequence indicator on the panel goes on and the UPS does not power on normally.

Soft start

Rectifier soft start

At power-on the rectifier starts softly; the inverter output follows once the soft start is complete.

Switchgear

Switches on board

Mains, bypass, maintenance bypass and output disconnect switches inside the cabinet; breaker version on request (20–80 kVA).

Aux. supply

Power for instruments

An auxiliary power supply in the cabinet feeds external low-power instruments.

< 70 dB

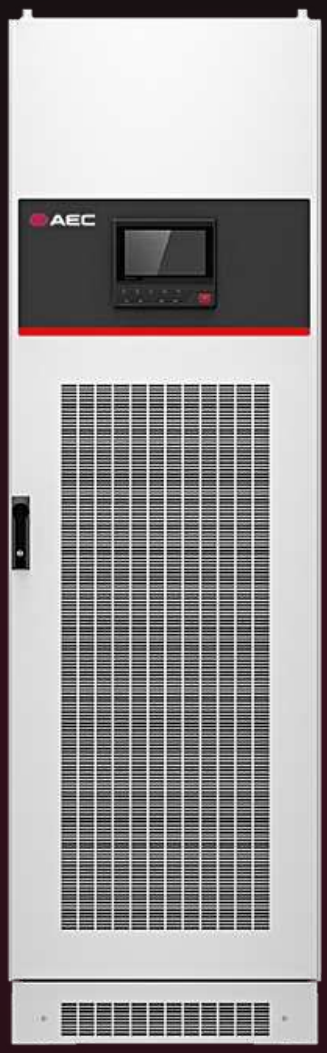
Quiet in operation

Noise below 65 dB on 20–80 kVA and below 70 dB on 100–200 kVA.

–20…55 °C

Storage range

Up to 6 months in storage; below –20 °C the UPS rests at 0 °C for at least 4 h before power-on.



20–200 kVA
seven ratings, two frames

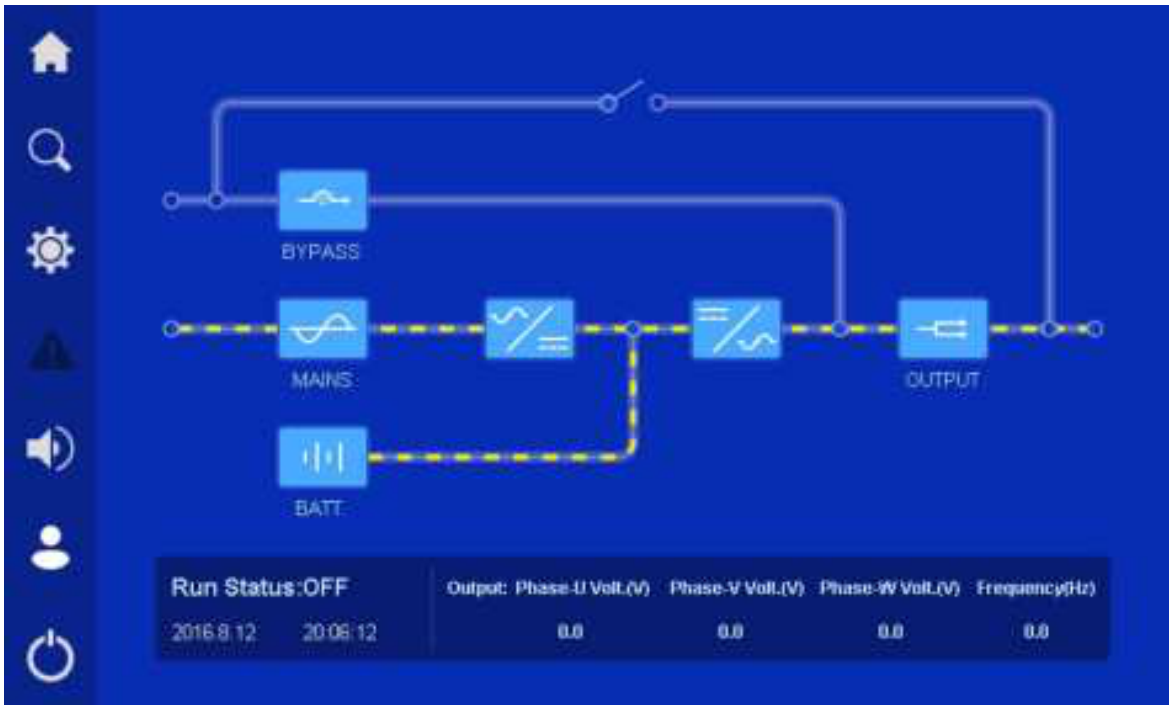
18–40
12 V blocks on one model: 216–480 V

Dual bus
2 or 4 UPS systems

1500 m
altitude without derating, 100–200 kVA

ARCHITECTURE

Operating principle
IST7-T 20–200 kVA



Separate bypass input as standard

Mains and bypass have their own input terminals, so they can come from two different sources. For a single-input installation the two inputs are linked with a jumper.

One converter for the battery

A bidirectional buck/boost DC/DC sits on the DC bus: it charges the battery and, when needed, feeds the DC bus from it. VRLA or lithium batteries.

380 · 400 · 415 V

Rated line voltage, input and bypass; output 220 / 230 / 240 V phase-to-neutral

3W + PE

Rectifier input without neutral; bypass input 3 phases + N + PE (4W + PE)

DSP

Inverter control, phase locking and logic fully controlled by the DSP

Four function blocks

AC → DC

IGBT rectifier

Input EMI filter and input contactor ahead of the three-phase PFC rectifier.

DC → AC

Inverter

High-efficiency IGBT inverter, sine wave with THDv < 1% on linear load. Zero phase-lag synchronisation between output and grid.

ISOLATION

Δ/Y transformer

Built in on every model, see p. 99.

BYPASS

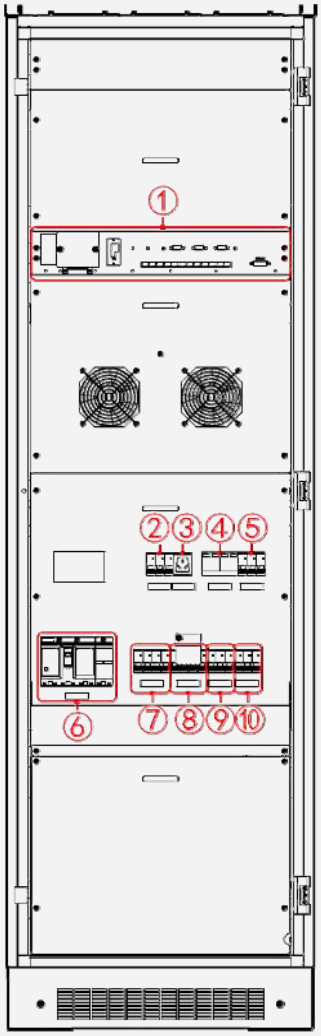
Static switch

1 ms transfer from inverter to bypass. Manual maintenance bypass to service the UPS with the load supplied.

INSIDE THE CABINET

Cabinet layout
IST7-T 20–200 kVA

Mains, bypass, maintenance bypass and output switches and the communication module sit behind the front door; cable terminals are at the bottom, behind a sealing panel.



IST7T 20–80 kVA with door open, user manual Fig. 2-6 (numbers as in the manual). 100–200 kVA: same components in a 1000 mm cabinet, numbered differently in the manual; on 100–120 kVA the communication module sits behind a blanking plate.

1. **Communication module**
   Terminal block, dry contacts, touch-screen interface, optional SNMP card and parallel interface.
2. **Battery cold start switch**
   Optional, for the bus capacitor: starts the UPS from the battery with no mains or bypass.
3. **Auxiliary power supply**
   Supplies external low-power instruments.
4. **Surge protection device**
   Optional class C SPD.
5. **SPD switch**
   Optional overcurrent protection of the SPD circuit.
6. **Battery switch**
   Optional battery connection switch.
7. **Output switch**
   Connects the UPS output to the load.
8. **Maintenance bypass switch**
   Supplies the load directly during service.
9. **Bypass switch**
   Connects the bypass input.
10. **Mains switch**
    Connects the rectifier input.

Front door
switches and communication module behind it

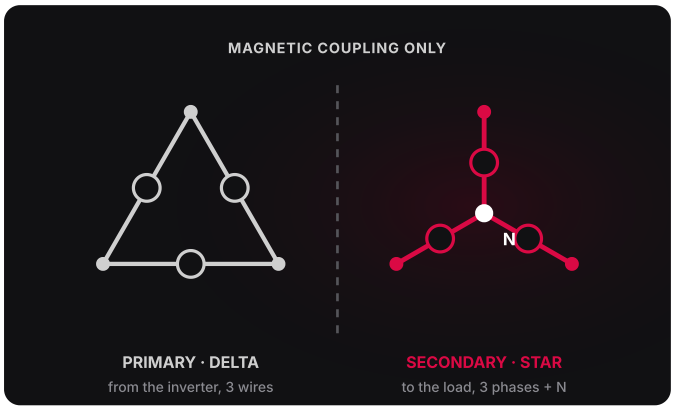
Copper busbar
output connection from 40 kVA; terminal block on 20 kVA

Top entry
cable entry optional up to 120 kVA; bottom entry as standard

IP20
IP21 with the optional waterproof top cover

Isolation transformer
IST7-T 20–200 kVA

The output isolation transformer is built into every IST7-T and matched to the inverter: no external transformer to add, size or install.



Δ/Y vector group: delta primary on the inverter, star secondary with the output neutral (schematic).

Where it sits

- Input EMI filter and contactor → three-phase PFC rectifier → DC bus → three-phase inverter
- **Δ/Y transformer** between the inverter and the output static switch
- Battery on the DC bus through the bidirectional buck/boost converter
- Bypass and maintenance bypass outside the inverter path

Order of the blocks as in the user manual, Fig. 2-14 (Architecture page).

1 **Galvanic isolation of the inverter output**
The transformer separates the load from the inverter and the battery DC circuit: power reaches the load through magnetic coupling only.

2 **Full kVA at 100% non-linear load**
The UPS runs heavily unbalanced loads and supplies its full kVA output capacity with 100% non-linear load.

3 **No inrush on the inverter**
Being matched to the inverter, it removes the effect of the excitation inrush current that an external high-power transformer produces at start-up.

4 **Stronger against short circuit**
Resistance to load short circuit is further improved, and so is the capacity for inductive loads.

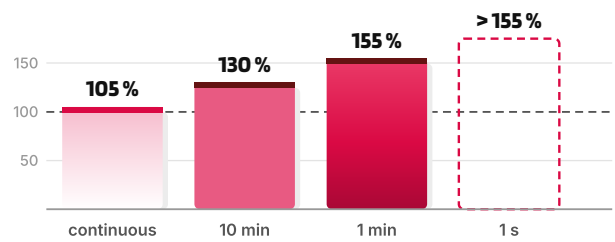
0.9
Output power factor (kW / kVA)

< 1%
Output voltage THD on linear load

±0.2%
Output frequency tolerance in battery mode, 50 Hz

Overload in inverter mode

Above the time limit the UPS transfers the load to the bypass.



then transfer to bypass · % of rated load

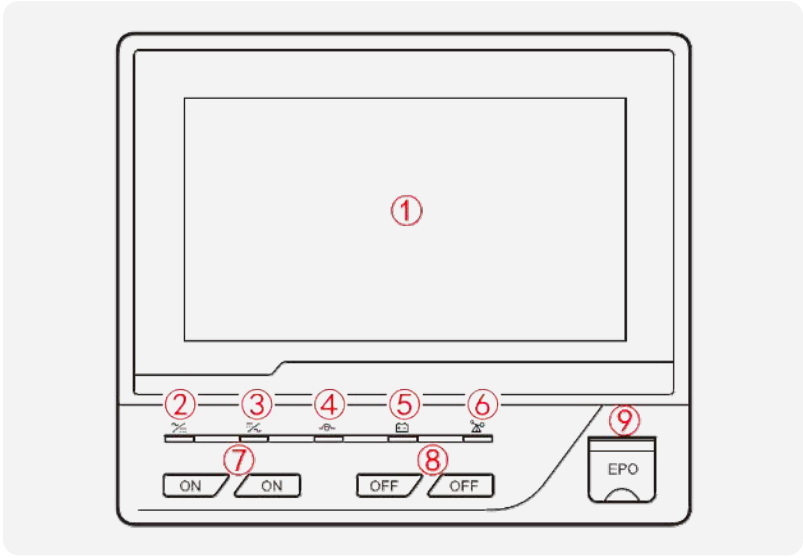
Output

- 220 / 230 / 240 V phase-to-neutral (380 / 400 / 415 V line).
- Sine wave; frequency tracks the bypass in normal mode.
- 1 ms transfer inverter → bypass.
- Zero phase-lag synchronisation between output and grid.
- Output on terminal block (20 kVA) or copper busbar (40–200 kVA).

OPERATING PANEL

Operator panel
IST7-T 20–200 kVA

A touch screen, five status indicators and paired ON / OFF buttons: on the panel, both buttons are pressed together. Power on and off is also available from the touch screen, with confirmation.

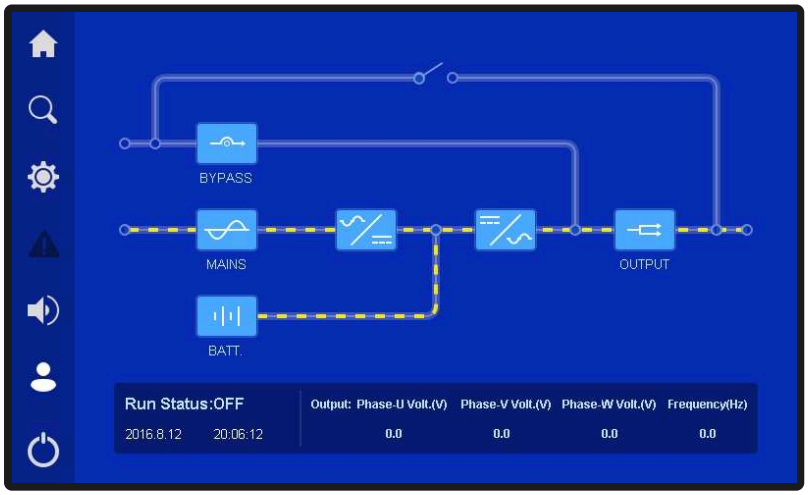


Operating panel, user manual Fig. 2-5 (numbers as in the manual).

1. **Touch-screen display**
   Operating parameters and status: voltage, current, load.
2. **Rectifier indicator**
   Green: running normally · red: abnormal · off: not running.
3. **Inverter indicator**
   Green: running normally · red: abnormal · off: not running.
4. **Bypass indicator**
   Green: bypass output · red: bypass abnormal · off: no bypass output.
5. **Battery indicator**
   Green: discharging normally · red: undervoltage protection · red blinking: battery abnormal · off: normal.
6. **Load indicator**
   Green: load normal · red: output overload · off: no output.
7. **ON**
   Power on: press both buttons together.
8. **OFF**
   Power off: press both buttons together.
9. **EPO**
   Emergency power off under a cover. Reserved function, disabled by default; enabled on request.

Home page

A live single-line diagram: the energy path is drawn in yellow, faulty blocks turn red. Below it, run status and output voltage and frequency per phase.



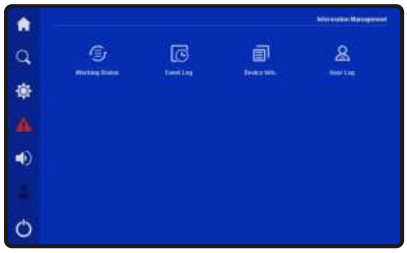
Side bar icons

- Home: system output status
- Information management
- Setting management
- Current fault
- Buzzer on / off
- Privileged login
- Power on / off

TOUCH SCREEN

Touch screen display
IST7-T 20–200 kVA

From the home page every block opens its own page: mains, bypass, battery and output. Settings sit behind the privileged login.



Information management

Working status, event log, device info and user log.



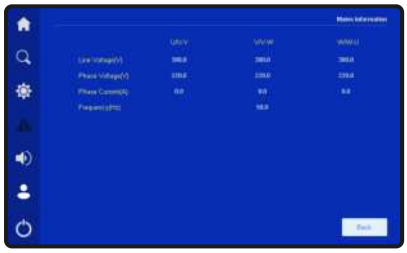
Working status

System, capacitor and fan status; mains, bypass, battery, output, load and loops.



Log management

Event log and user log: export or clear.



Mains

Line and phase voltage, phase current and frequency.



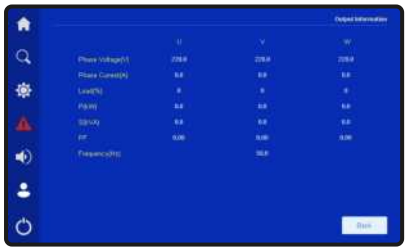
Bypass

Phase voltage and frequency of the bypass input.



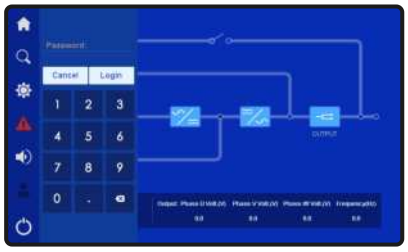
Battery

Voltage, current, temperature, remaining capacity and time, battery status and loop.



Output

Phase voltage and current, load %, kW, kVA, power factor and frequency.



Privileged login

Password keypad: settings are protected from unauthorised changes.



Setting management

System, battery, battery test, logs, communication, screen, password, energy storage.

Live
single-line diagram on the home page

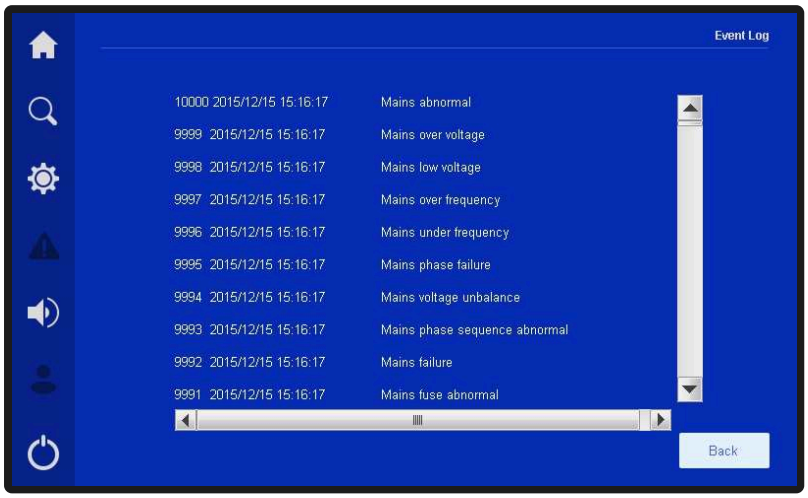
Password
privileged login protects every setting

Language
selected on the Screen setting page

Buzzer
silenced from the side bar

Menu settings and records
IST7-T 20–200 kVA

When the history record is full, the oldest events are overwritten. A separate user log records user actions and setting changes.



10,000

events in the history record, numbered and time-stamped

- Event log: alarms and faults by time
- User log: every parameter change
- Log management: clear or export records



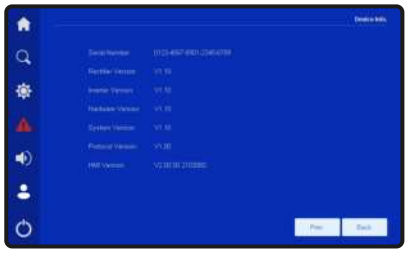
User log

What changed and when: on / off, mains and bypass limits, ECO, N+x warning, reset to default.



Working status

Mains, bypass, battery, output, load, AC/DC and DC/AC status, system mode, parallel address.



Device information

Serial number and rectifier, inverter, hardware, system, protocol and HMI versions.



System management

Mains and bypass voltage limits, bypass frequency range, ECO mode and limits, N+x warning.



Communication

Modbus or SNMP protocol, Modbus address, baud rate, remote timeout.



Screen setting

Date and time, language, screensaver and backlight brightness.

Device info
HMI and protocol versions of the unit

User log
user actions and setting changes

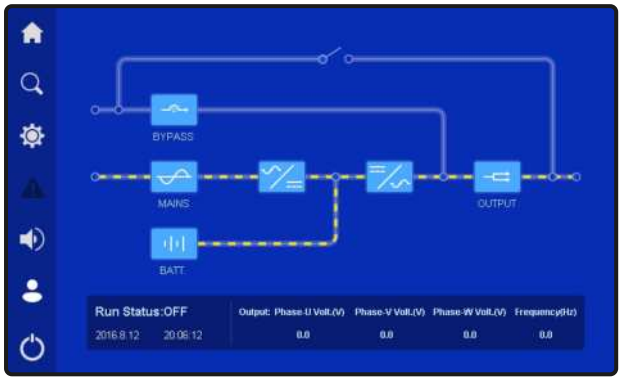
Export
records from Log management

Modbus · SNMP
protocol selected on the screen

OPERATING MODES

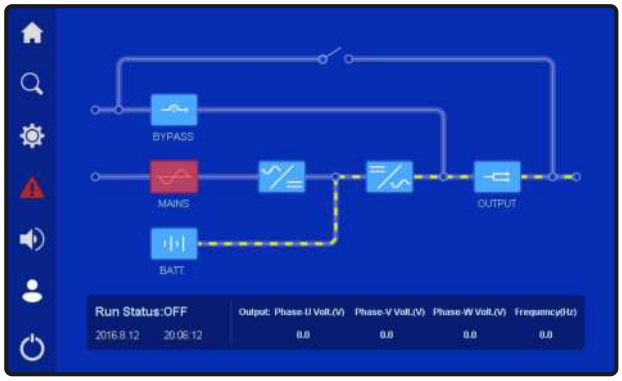
Operating modes
IST7-T 20–200 kVA

Five operating modes: normal, battery, bypass, ECO and maintenance bypass. The home page shows which path is active.



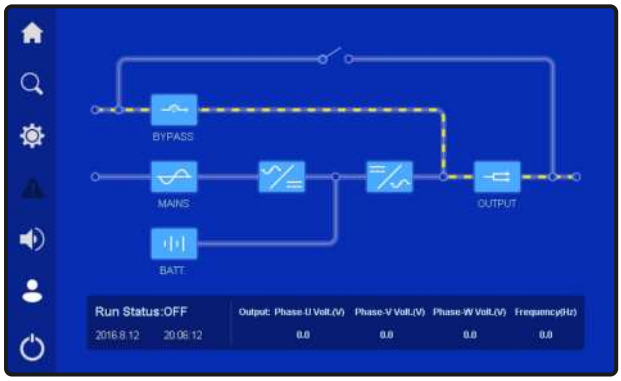
Normal mode

The rectifier feeds the inverter and charges the battery; the load receives clean AC through the transformer.



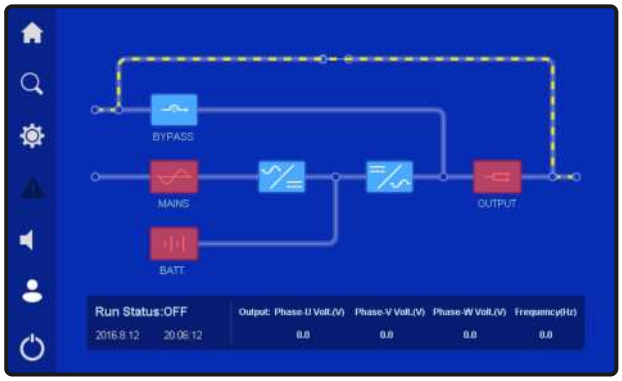
Battery mode

Mains abnormal (red): the battery feeds the inverter through the DC/DC circuit, with no break in the output.



Bypass mode

On over-temperature, short circuit, abnormal output voltage or overload beyond the inverter limit, the static switch transfers the load to the bypass, provided the mains is normal.



Maintenance bypass

For service: the load is fed through the maintenance bypass switch; no residual current inside the UPS except N.

ECO mode

When the bypass voltage and frequency are within the ECO range, the load is fed from the bypass. If the bypass goes out of range, the inverter starts and takes the load. ECO limits are set on the System management page.

Self-load test (function)

Not an operating mode: in test mode the UPS simulates the inverter output under load, so the system can be checked on site before the real load is connected.

0 ms
mains → battery

1 ms
inverter → bypass

5 modes
normal · battery · bypass · ECO · maintenance

ECO
inverter in cold standby while the bypass feeds the load

Energy functions
IST7-T 20–200 kVA

During the battery test the IST7-T feeds the residual energy back to the grid, and with lithium batteries it can shift energy from off-peak to peak hours.



Battery manage page: discharge current, test time and record interval.

Backfeed to grid

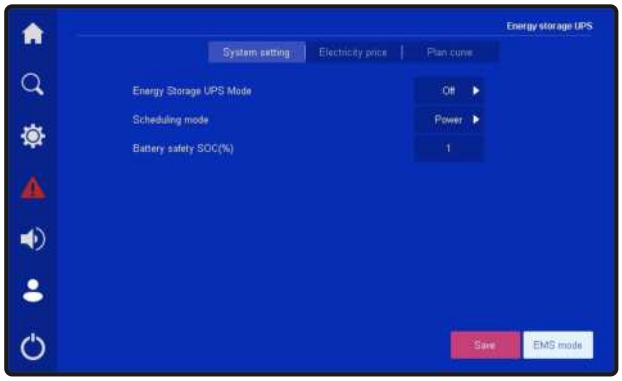
During the battery test the residual energy is fed back to the grid without waste. Three battery tests are available from the screen:

- **Standard test**
- **Depth-of-discharge test**
- **Constant-current discharge test**: discharge current, time and end voltage set on the Battery management page; requires "Backfeed to grid" enabled, the authorisation countdown above 0 days, the UPS powered on and the battery voltage above the end voltage.



Battery test page

Test status, consumed capacity, battery current and test time; conditions that block a test are listed.



Energy storage settings

Mode (plan curve or EMS), scheduling mode (current or power) and battery safety SOC.



Energy storage UPS

With a lithium battery the UPS charges at off-peak hours and discharges at peak hours: peak load shifting, with the yield calculated from the electricity prices set per period.

- **Plan curve**: up to 8 periods with start and end time, charge / discharge power or current.
- **EMS mode**: the upper computer sets mode, power and current over Modbus.
- A safe SOC threshold prevents over-discharge in both modes.

3 tests
standard · depth · constant current

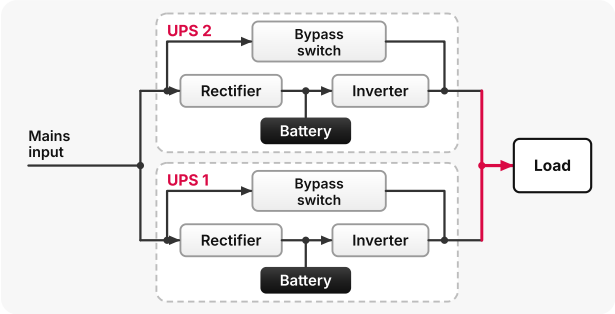
Back to grid
battery test energy fed back

Safe SOC
over-discharge protection

EMS
remote control over Modbus

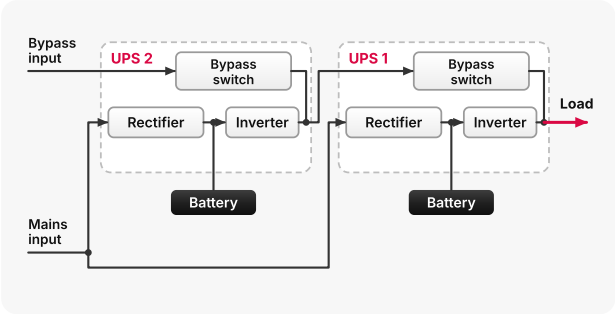
System configurations
IST7-T 20–200 kVA

Parallel, series hot standby and dual-bus systems, with a common battery pack when required.



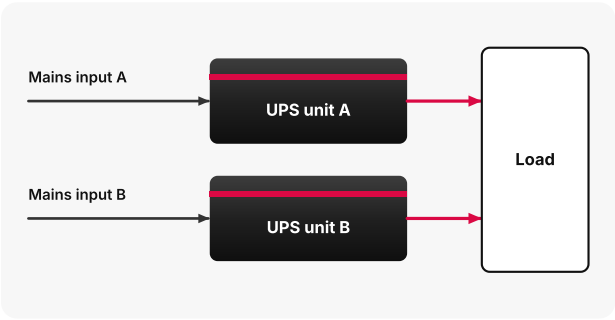
Parallel system

Digital master-slave adaptive parallel technology for redundancy. Units connect through the parallel interfaces PALL.1 and PALL.2 with shielded cables; a parallel redundancy (N+x) alarm can be enabled.



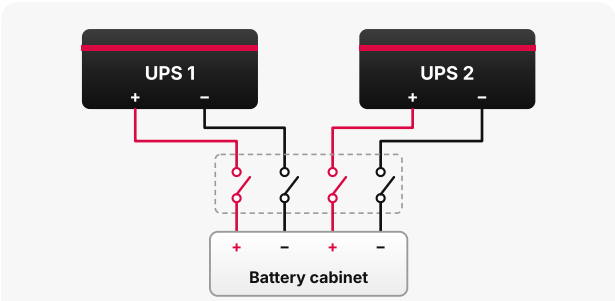
Series hot standby

The output of UPS 2 feeds the bypass input of UPS 1. If UPS 1 fails, the load stays on the inverter of UPS 2; only if both fail is the load fed from the mains.



Dual-bus redundancy (optional)

For loads with two power inputs. Two independent systems A and B, single units or parallel systems (two or four UPS in total), phase- and frequency-synchronised through the LBS interface.



Common battery pack

UPS units in a parallel system can share one battery pack, with dedicated common-battery cabling.

Block diagrams from the user manual: Fig. 2-15 parallel, Fig. 2-16 series hot standby, Fig. 2-17 dual bus, Fig. 3-33 common battery pack.

Parallel
master-slave adaptive

Hot standby
UPS 2 backs up UPS 1

Dual bus
2 or 4 UPS systems

Common battery
one pack for a parallel system

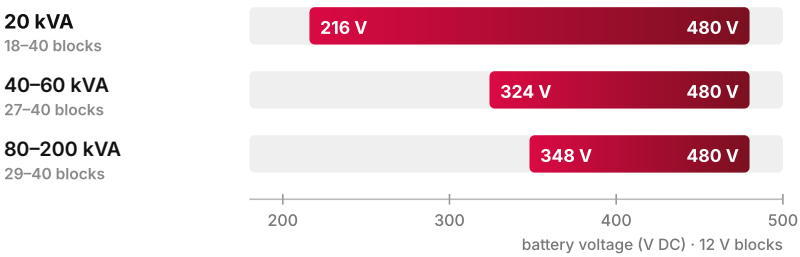
DID YOU KNOW?
In a parallel system the AC inputs of every unit keep exactly the same connection and phase sequence, so that all units see the bypass power with the same phases.

BATTERY

Battery configuration
IST7-T 20–200 kVA

External battery: the number of batteries and the battery voltage are chosen per site within the window of each size.

Battery voltage window



18–40
batteries per string (20 kVA)

29–40
batteries per string (80–200 kVA)

Lithium
lithium battery systems supported

100–200 kVA: 32 batteries by default.



Cell information (optional BMS)
With the battery logger, voltage, internal resistance and temperature of every cell are shown on the UPS screen.



Battery management
Equalising and floating charge voltage, charge current, test end voltage, low-voltage warning and protection, temperature compensation, forced equalising charge.

Battery cold start
Optional cold start switch and battery switch: start the UPS from the battery when mains and bypass are absent.

Battery switch release
Optional: opens the battery switch on battery or bus undervoltage, on EPO or on an external signal.

Breaker detector
Optional detector of the external battery circuit breaker state, with alarm when it is faulty.

Temperature sensor
Optional battery temperature detection on terminal pins 3–4, for charge compensation.

BMS link
Optional battery logger on pins 1–2 (9600 bps, slave address 11).

Best at 20–30 °C
Above 30 °C battery life shortens; below 20 °C backup time shortens.

A bipolar disconnect switch must be installed on the external DC distribution circuit.

TECHNICAL DATA

IST7-T 20–200 kVA

Model	IST7T-20	IST7T-40	IST7T-60	IST7T-80	IST7T-100	IST7T-120	IST7T-200
Rated power (kVA / kW)	20 / 18	40 / 36	60 / 54	80 / 72	100 / 90	120 / 108	200 / 180
RECTIFIER INPUT							
Technology	current-type IGBT rectifier, three-phase PFC · input EMI filter and input contactor						
Rated voltage · range	380 / 400 / 415 V L-L · ± 25% (full load from −20% to +25%; −25 … −20% current-limited)						
Connection · frequency	3Φ3W + PE, no neutral needed · 45–55 or 54–66 Hz						
Power factor · THDi	≥ 0.99 · < 5%						
AC input / output current (A)	30.8	60.9	91	121	180	216	355
BYPASS INPUT							
Rated voltage · connection	380 / 400 / 415 V L-L · 3Φ4W + PE · separate bypass input as standard (jumper for single input)						
Synchronisation range	50 (60) Hz ± 10% (± 5% optional)				50 Hz ± 10% (± 5% optional)		
Static bypass	SCR static switch · manual maintenance bypass built in						
BATTERY							
Battery converter	bidirectional buck / boost DC/DC on the DC bus · VRLA or lithium						
Battery voltage (V DC)	216–480	324–480			348–480		
Number of 12 V batteries	18–40	27–40	27–40	29–40	29–40 (default 32)		
Battery current (A)	49.9	99.7	150	200	278	333	499
Battery management	patented smart charging · equalise / float · temperature compensation · hibernation · standard, depth and constant-current tests · cell data with BMS						
Energy functions	backfeed to grid during the battery test · energy-storage UPS with lithium (plan curve, 8 periods, or EMS over Modbus)						
OUTPUT							
Voltage · power factor	220 / 230 / 240 V L-N (380 / 400 / 415 V L-L) · 0.9 (kW / kVA)						
Waveform · frequency	sine wave, THDv < 1% (linear load) · tracks the bypass in normal mode · 50 Hz ± 0.2% in battery mode						
Isolation	Δ/Y output transformer built in, between inverter and inverter static switch						
Transfer time	0 ms mains → battery · 1 ms inverter → bypass						
Overload (inverter mode)	101–105% alarm, continuous · 106–130% 10 min · 131–155% 1 min · > 155% 1 s, then bypass						
Unbalanced · non-linear load	100% three-phase unbalanced · full kVA at 100% non-linear load						
Operating modes	normal · battery · bypass · ECO (inverter in cold standby) · maintenance bypass · self-load test						
SYSTEM							
Control · display	fully digital DSP · touch screen, power-on password, user and administrator levels · 10,000 events, user log						
Communication	RS232 / RS485 Modbus RTU · 8 output and 4 input dry contacts (24 V DC / 1 A) · SNMP card, serial server TCP/IP optional						
Parallel · systems	master-slave adaptive digital parallel, N+x warning, online exit and add · series hot standby · dual bus with LBS (optional)						
Protections	battery undervoltage, overload, short circuit, over-temperature, input over- and undervoltage						
Standards	CE · EN / IEC 62040-1 (safety) · EN / IEC 62040-2 (EMC), category C3						
MECHANICAL							
Dimensions H × W × D (mm)	2000 × 600 × 800				2000 × 1000 × 800		
Weight (kg, ± 5 %)	345	405	470	505	720	780	1280

Figures from the IST7T user manual (4402-06410, issue 002), appendix A.

AEC

MODULAR ONLINE UPS · DOUBLE CONVERSION

IST6

120 kVA

Start with one 30 kVA power module, grow to 120 kVA in the same cabinet, and add a fifth module in the redundancy slot for N+1. Every power module is hot-swappable from the front.





30 kVA POWER MODULE · 2U · HOT-SWAP

30→120
kVA in 30 kVA steps, in one cabinet

N+1
fifth slot reserved for a redundant module

97%
efficiency in double conversion, 30 kVA module

Hot-swap
Modular technology: power modules replaced online

WHY IST6

Key features
IST6 30–120 kVA

Efficiency, flexibility and continuity in one cabinet, 600 mm wide.

30→120

Pay as you grow

Buy the power you need today. Add 30 kVA modules in the same cabinet when the load grows, with no new footprint.

N+1

Redundancy built in

Room for one module more than the load needs, backed by a centralised, removable bypass module.

Hot-swap

Service without shutdown

Power modules slide in and out from the front while the UPS keeps running: no shutdown for service.

ECO

Efficiency that pays back

ECO mode and redundancy sleep cut losses at light load, both set from the screen. See the operating cost below.

Lead · Li

Battery choice

Lead-acid or lithium with the BMS card; in a parallel system one battery group can be shared.

7"

Easy to run

Colour touch screen with live power-flow topology, module-by-module data and 10,000 event records.

OPERATING COST

What efficiency means at 96 kW

Losses become heat: you pay for them at the meter and again in the room cooling.

		ENERGY LOST / YEAR	COST / YEAR
Online double conversion · 97 %	2.97 kW	26,010 kWh	≈ € 5,200
ECO mode · 99 %	0.97 kW	8,490 kWh	≈ € 1,700

IST6 120 kVA at 80% load (96 kW), 8,760 h/year, € 0.20/kWh, cooling excluded; 97% in double conversion, 99% in ECO mode. Losses = P × (1/η − 1). Indicative values.

DESIGNED FOR

Data centres · Telecom · Banking & finance · Networks & IT rooms · Transport · Public buildings

SCALABILITY

Scalability
IST6 30–120 kVA

The cabinet is the same from the first module to the last: power is added by sliding a 30 kVA module into a free slot.





Add 30 kVA power modules (2U) in the free slots of the same cabinet. Left: IST6-120 with the door open, modules slide in from the front.

Redundancy N+1

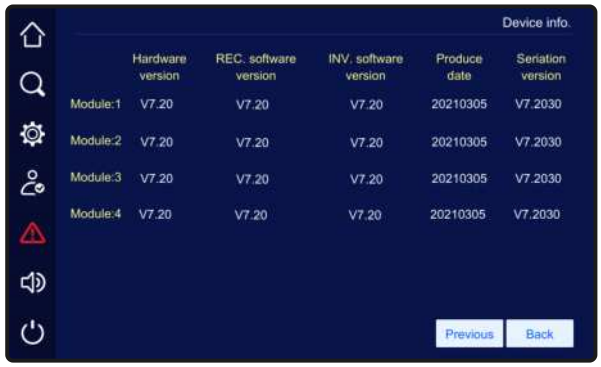
Install one module more than the load needs: if a module stops, the others carry the load without transfer to bypass.

Load up to	Modules (N)	Modules for N+1
30 kVA	1	2
60 kVA	2	3
90 kVA	3	4
120 kVA	4	4 + redundancy slot

The fifth slot, at the top, is the redundancy slot.

Every module identified

Slots are numbered 1 to 5 from bottom to top. Device info lists each installed power module with its hardware and software versions.



Device info page with four power modules installed.

CODE

IST6-120

Modular cabinet for up to 4 × 30 kVA power modules, supplied without modules.

CODE

IST6-30-J

30 kVA / 30 kW power module, 2U, hot-swappable. Order as many as the load needs.

CODE

PAR - IST6

Parallel kit for cabinets in parallel.

SCALE AND SLEEP

Load-based module management
IST6 30–120 kVA

Add 30 kVA modules or whole cabinets as the site grows; set redundancy and redundancy sleep from the screen.

30 kVA

Step size

One 2U module at a time, added online in a free slot.

Cycle · h

Sleep cycle period

Spare modules sleep in rotation; the cycle period is set in hours on the smart mode page.

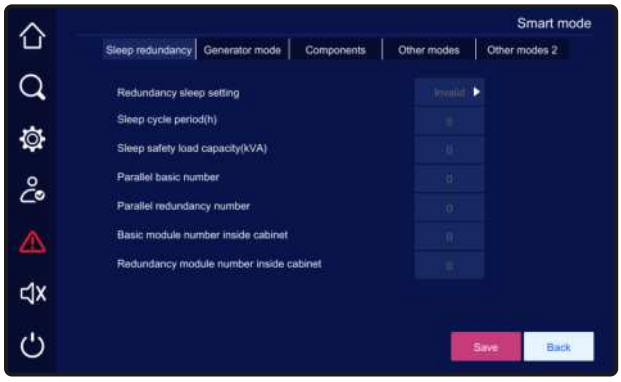
N+X

Two redundancy levels

Basic and redundant modules per cabinet and cabinets per system.

Redundancy sleep

Smart mode › Sleep redundancy: spare modules can sleep at light load, with a sleep cycle period and a sleep safety load capacity set on screen. An alarm warns if the load exceeds the safety load.

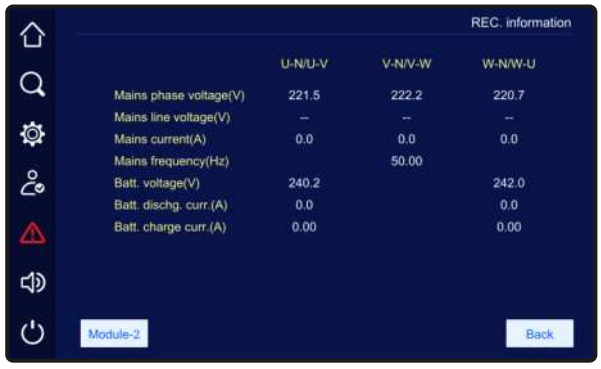


Settings: redundancy sleep on / off, sleep cycle period (h), sleep safety load capacity (kVA), basic and redundant cabinets, basic and redundant modules inside the cabinet.

Checked on screen

Run information shows the parameter match between cabinets and the state of both system cards; module data is shown module by module.





ALARMS

Redundancy watched

Dedicated alarms, shown on the screen:

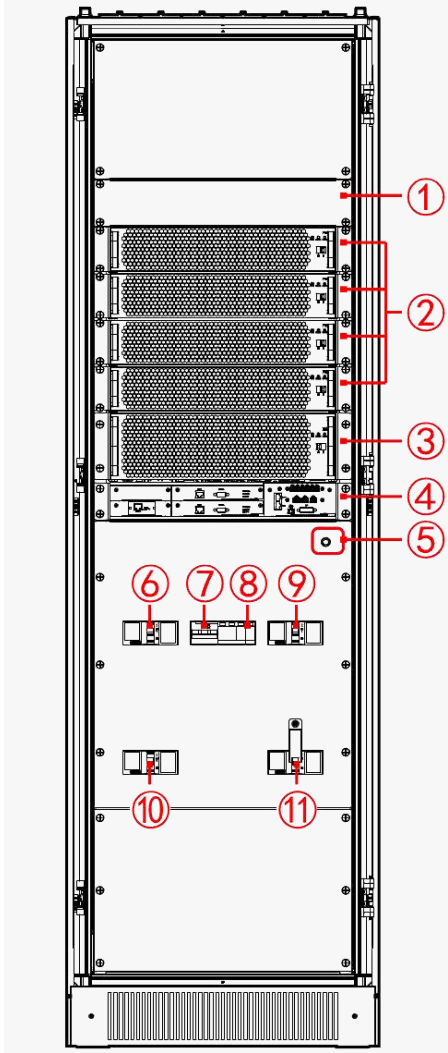
- Cabinet with no redundancy
- Cabinet redundancy insufficient
- System card with no redundancy
- Power module 1 … 5 offline

INSIDE THE CABINET

Cabinet layout
IST6 30–120 kVA



DOOR CLOSED



STRUCTURE LAYOUT · USER MANUAL FIG. 2-5

1. **Redundancy slot**
   Space for the N+1 module.
2. **Power modules 1–4**
   30 kVA each, 2U, hot-swap.
3. **Bypass module**
   Centralised static bypass, 3U, removable.
4. **System control box**
   Two control cards, monitor card, SNMP and expansion slots.
5. **Battery cold start**
6. **Mains switch**
7. **Surge protection switch**
   Optional.
8. **SPD**
   Optional surge protection device.
9. **Output switch**
10. **Bypass switch**
11. **Maintenance bypass switch**
    Manual bypass with no switching time.

POWER MODULE

30 kVA · 2U

86 × 500 × 700 mm (H × W × D, with handles), 24 kg. Rectifier, inverter and battery converter in each module.

BYPASS MODULE

Centralised · 3U

130 × 500 × 635.5 mm, 17 kg. Static bypass for the whole cabinet, with its own ready switch.

CABINET

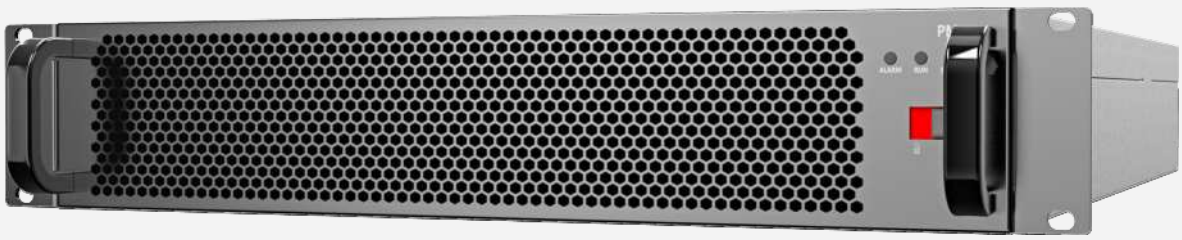
600 × 860 × 2000 mm

Four switches as standard (mains, bypass, output, maintenance bypass); SPD optional. IP20.

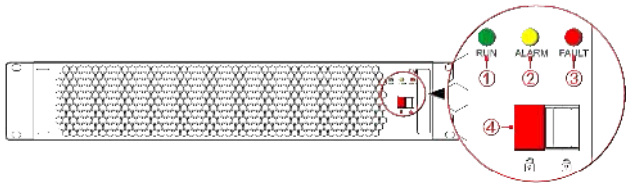
HOT-SWAP

Hot-swap modules
IST6 30–120 kVA

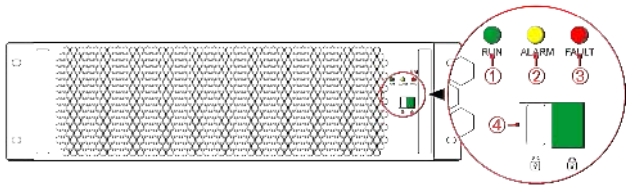
Every power module has a ready switch and three status LEDs: power modules are replaced without shutting down the UPS.



30 kVA power module, front: ventilation grille, RUN / ALARM / FAULT LEDs, ready switch and handles.



Power module, Fig. 2-6: ① RUN ② ALARM ③ FAULT ④ ready switch



Bypass module, Fig. 2-7: same LEDs and ready switch

LED

RUN · ALARM · FAULT

Green: inverter on (flashing: standby). Yellow: input voltage, fan or overload alarm. Red: module fault.

SELF-PROTECTION

A faulty module steps aside

A faulty power module is isolated automatically; normally the system continues on the other modules, with reduced redundancy.

DESIGN

No master, no slave

Modules share the load equally under digital control: any module can be removed or added online.

0

UPS shutdowns to add or replace a power module

Unlock · Lock

ready switch: green, the module can be removed; red, it is locked in

≧ 10 min

wait after removal before opening a module

Replacement by AEC or authorised personnel.

SMART ENERGY

Energy-saving functions
IST6 30–120 kVA

ECO mode

The load runs on the bypass while it is within the set window; outside it, the inverter takes over. Efficiency up to 99%.

Fans follow the load

Fan speed follows the load to extend fan life and reduce noise.



Output set page: bypass range and ECO window, set from the screen.

GENERATOR

Generator mode

Battery charging can be disabled while the UPS runs on generator; the generator is started before the UPS.

BYPASS RANGE

Bypass window on screen

Maximum and minimum bypass voltage and the bypass frequency range are set in Output set (example screen: +10%, −10%, ±10%).

Smart settings from the screen

Page	Setting	What it does
Smart mode	Redundancy sleep · cycle period · safety load	Sleep function for redundant modules
Output set	ECO voltage and frequency range	Window in which the load stays on bypass
Output set	Timing ECO	ECO mode by schedule
Dry contact	Start generator · mains abnormal	Generator start and status signals
Home page	Grid-tied aging	Load test state for commissioning, with its own alarms (self-load switch, time-out)

±5% / ±4%
ECO voltage / frequency window (example screen)

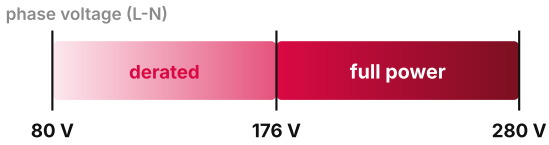
Dedusting
fan dedusting alarm on the screen

PERFORMANCE

Input and output performance
IST6 30–120 kVA

Wide input window

Full power from 176 to 280 V phase voltage; down to 80 V the UPS keeps working from the mains with derated power.



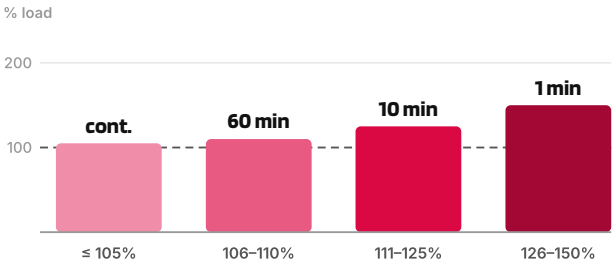
Frequency 40–70 Hz. Linear load: rated power decreases below 176 V, down to 80 V.

Output quality

Voltage	**220 / 230 / 240 V L-N · 380 / 400 / 415 V L-L**
THDv	**≤ 1% linear · ≤ 4% non-linear**
Phase error	**≤ 1° balanced load**
Frequency, no mains	**50 / 60 Hz ± 0.2%**
Load step 0↔100%	**voltage change < 5%**
Unbalanced load	**100%**
Transfer	**0 ms synchronised · < 15 ms not synchronised**

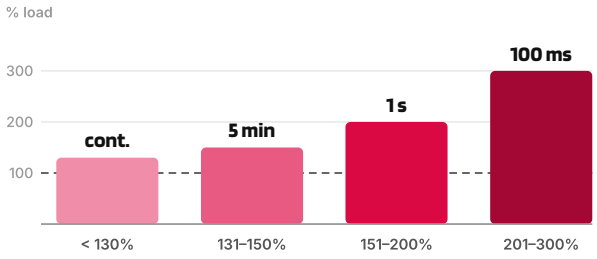
Overload capacity

Inverter · linear load, PF 1

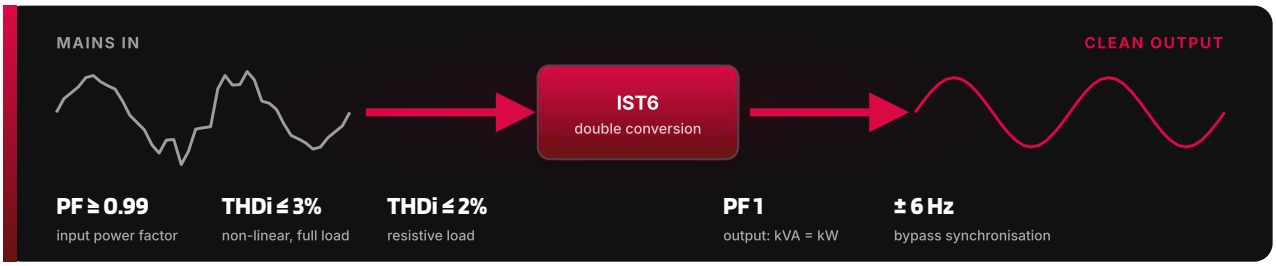


Above 151%: transfer to bypass at once. PF 0.9: 106–110% 60 min, above 110% to bypass at once; PF 0.8: above 105% to bypass.

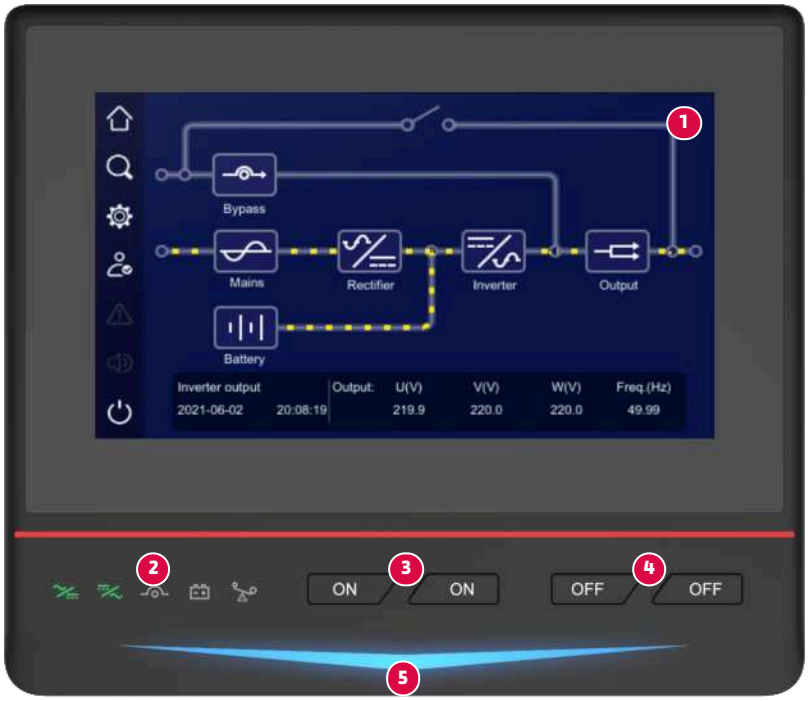
Bypass



Above 300%: immediate protection.



Operator panel
IST6 30–120 kVA



1. **Colour touch screen**
   Seven inches: live power flow, measurements, settings and records.
2. **Five status LEDs**
   AC/DC, DC/AC, bypass, battery, load: green when normal or active, red when abnormal.
3. **ON keys**
   Press both keys for 3 s to power on: no accidental switching.
4. **OFF keys**
   Press both keys for 3 s to power off.
5. **Status light bar**
   Shows the UPS state in colour, also from across the room.

Status light bar

Four states, one colour each: the operator knows how the UPS is doing before reaching the screen. Alarms also light the yellow or red ambient lamp.



Blue
Normal operation



Blue, flashing
Battery mode



Yellow
Abnormal, UPS still running



Red
Abnormal, UPS stopped

Status LEDs

LED	Green	Red
AC/DC	Rectifier normal	Rectifier abnormal
DC/AC	Inverter normal	Inverter abnormal
Bypass	Bypass output	Bypass abnormal
Battery	Battery output	Battery low voltage
Load	Output normal	Output overload

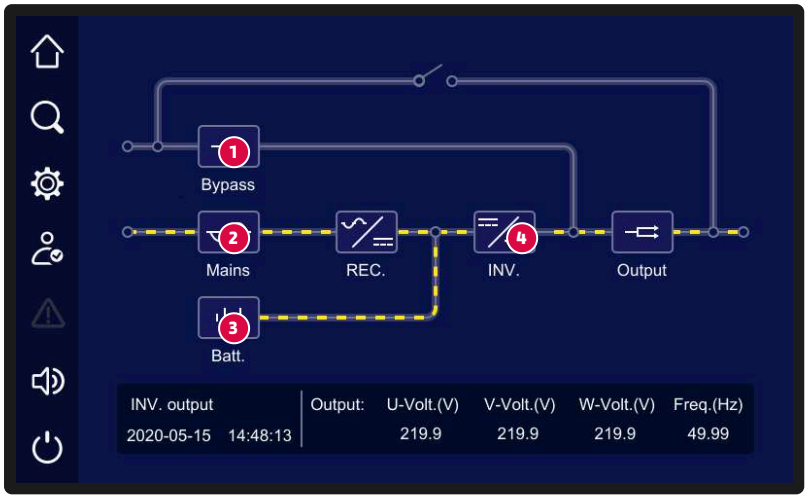
Screen settings



- Date and time
- Backlight time
- Language
- Brightness

TOUCH SCREEN

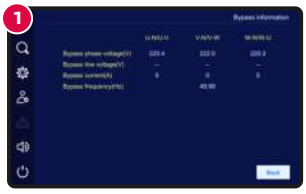
Touch screen display
IST6 30–120 kVA



Live single-line diagram

The home page draws the UPS as it runs: yellow dots trace the active power path, abnormal blocks turn red, and the bottom line shows output voltage and frequency.

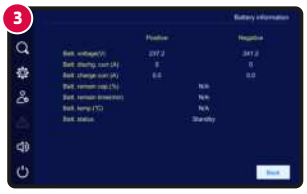
Touch a block (bypass, mains, battery, rectifier, inverter, output) to open its page.



Bypass info
Phase and line voltage, current and frequency of the bypass input.



Mains info
Phase and line voltage, current, frequency and input energy.



Battery info
Voltage, charge and discharge current, remaining capacity and time, temperature, state.



Inverter info
Output voltage, current, power and load of each module.

Menus



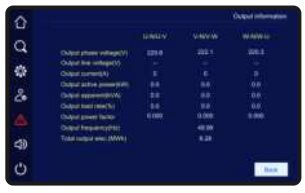
Information menu
Run info, history record, user log, smart record, device info, smart wave record.



Settings menu
Cabinet, battery, battery test, output, smart mode, dry contact, HMI, password, communication, records.



Run information
System info, parameter match, system status, system cards 1 and 2.



Output info
Voltage, current, active and apparent power, load, PF, frequency and output energy.

Settings pages



Cabinet set
System voltage and frequency, output PF.



Battery set
Type, capacity, cells, common battery, BMS.

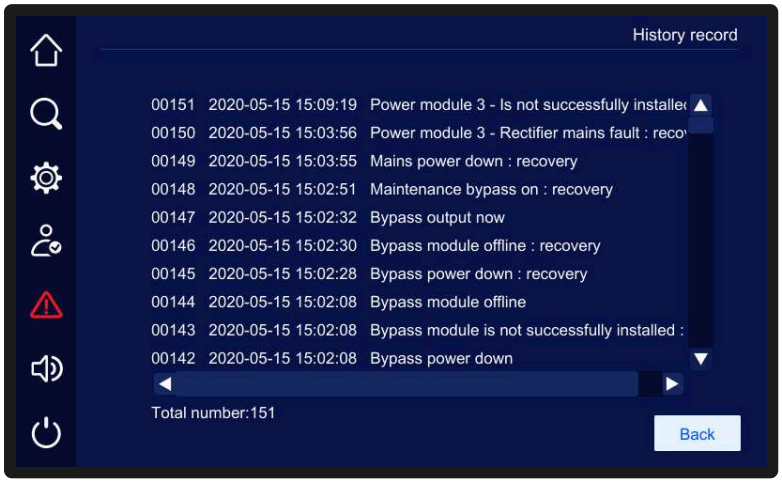


Battery parameters
Cell voltages, charge current, test time.



Dry contact
Inputs 1–7, each assigned to a function.

Event records
IST6 30–120 kVA



10,000

records in the history, newest first. When the record is full, the earliest entry is overwritten.

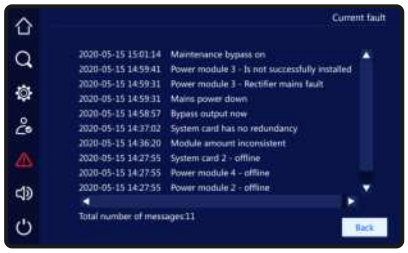
MWh

total input and output energy on the information pages.



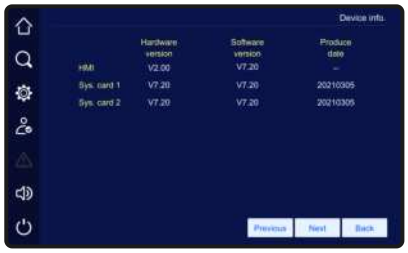
Run information

Parameter match between cabinets and state of both system cards.



Current fault

Active faults, time-stamped, from the alarm icon of the menu bar.



Device info

Hardware and software versions of screen and system cards.



Record management

History record, user log, smart record and smart wave record are kept in the UPS and saved or cleared from the record manage page.

- User log: parameter changes with date and time
- Smart wave record: waveforms of abnormal events



Battery test



Communication set

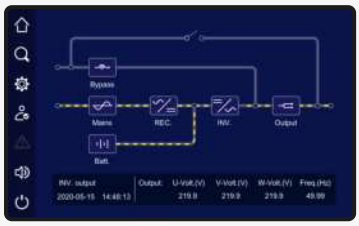


HMI set

OPERATION

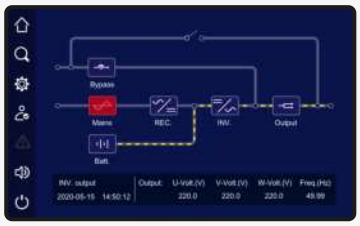
Operating modes
IST6 30–120 kVA

Real screens of the IST6: the yellow dotted line traces the active power path.



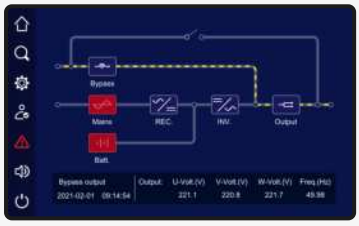
Mains inverter

Normal operation: mains → rectifier → inverter → load, battery charging.



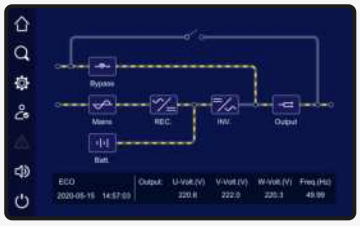
Battery inverter

Mains abnormal: the battery feeds the inverter with no break.



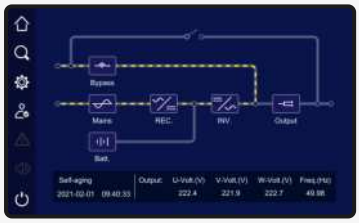
Bypass

Load on the bypass module, e.g. on overload or inverter fault.



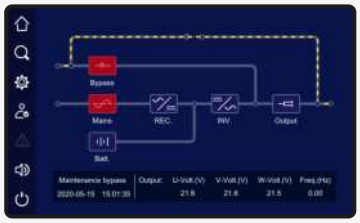
ECO

Load on the bypass within the ECO window; the rectifier keeps the battery charged.



Grid-tied aging

Test state shown live, with its own alarms.



Maintenance bypass

Load on the manual bypass, modules ready for service.

Transfers

No break
mains → battery: the modules move to the battery input

0 ms
inverter ↔ bypass, synchronised

< 15 ms
inverter ↔ bypass, not synchronised

Converter
inverter output in frequency-converter mode

Start from battery

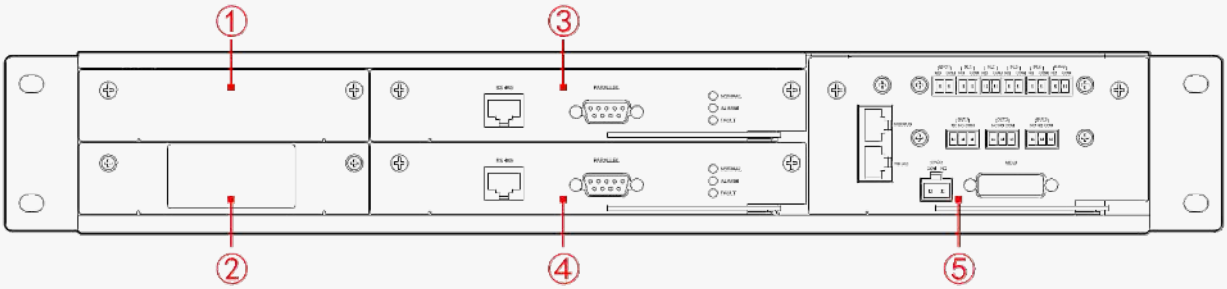
With no mains and no bypass, the battery cold start button starts the UPS from the battery.

Mains outside range

The UPS starts from the mains between 80 and 280 V; outside this range it starts from the battery.

DID YOU KNOW?
After an output short circuit, the IST6 tries to restart up to three times; only then does it stay in fault protection.

Communication and connectivity
IST6 30–120 kVA



System control box, user manual Fig. 2-8: ① expansion card position (optional) ② SNMP card position (optional) ③ control card 1 ④ control card 2 ⑤ system monitor card.

4 inputs (NO) · standard

Each assigned from the screen:

- Battery abnormal
- Battery grounding fault
- Battery switch disconnected
- Bypass switch disconnected
- Mains abnormal (generator start)
- Input SPD abnormal

3 outputs (NO / NC) · standard

Each assigned from the screen:

- Inverter output
- Bypass output
- Battery output
- Battery trip
- Battery under-voltage alarm
- Battery under-voltage protection
- Output overload
- UPS fault
- Bypass abnormal
- Mains abnormal
- Start generator

STANDARD

Modbus

RJ45 port on the monitor card for building management (station number, baud rate from the screen).

STANDARD

RS232 · RS485

RS232 for an external SNMP card; RS485 links the displays of a parallel system.

STANDARD

EPO

EPO1 normally open and EPO2 normally closed inputs.

STANDARD

Battery temperature

B-Temp input for the optional battery temperature sensor.

Options



SNMP card
network; T/H sensor port



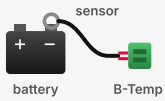
Dry contact expansion
+3 inputs, +2 outputs



BMS expansion card
BMS port, charge / discharge disable



Class C SPD
with surge protection switch



Battery temperature
sensor for charge compensation



Battery tripper
24 V DC trip for the DC breaker

4 + 3
dry-contact inputs + outputs, standard

7 + 5
with the expansion card

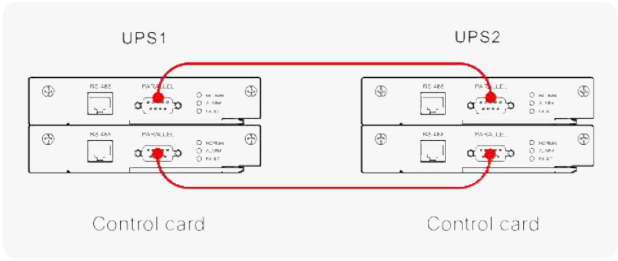
Modbus
RS232 · RS485 · SNMP

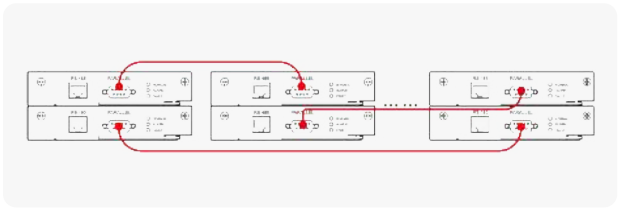
2
EPO inputs (NO and NC)

Parallel and dual-bus systems
IST6 30–120 kVA

Cabinets in parallel

Parallel cables connect the control cards in a ring: N UPS need N cables, at least two per UPS, which improves parallel reliability.





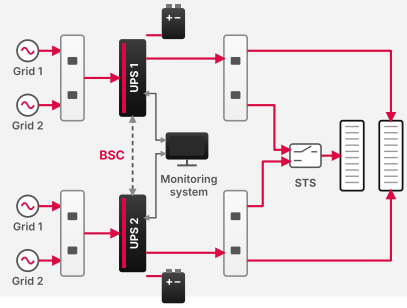
Parallel ports, user manual Fig. 2-21 / 2-22.

Dual bus with BSC

Two independent systems feed dual-input loads; the BSC keeps their outputs synchronised in frequency and phase.

BSC output

The synchronous BSC output of the dual bus control is used in a dual bus system to synchronise the outputs of the two buses in frequency and phase, so that the loads can switch between them.



BATTERY

Common battery group

All cabinets can share one battery group; the UPS checks that battery parameters match.

SAFETY

EPO linkage

With EPO linkage enabled, the EPO of any cabinet stops the whole system; disabled, it stops only that cabinet. The system EPO always stops all cabinets.

INPUTS

Separate mains and bypass

Mains and bypass can come from different sources: the link bars are removed at installation.

Parallel commissioning

< 5 V
phase-voltage difference between UPS before paralleling

± 2 V · ± 0.1 Hz
output of each UPS against its setting

Same
wiring and phase sequence on every cabinet

Ring
parallel cable topology

BSC
dual bus synchronisation

1
shared battery group possible

RS485
one display monitors all UPS

TECHNICAL DATA

IST6 120 kVA

Model	IST6-120 with IST6-30-J power modules
Rated power	30 to 120 kVA / kW in 30 kVA steps (1–4 modules) + 1 redundancy slot
Topology	online double conversion, modular, hot-swap power modules, removable bypass module
INPUT	
Connection · voltage	3 ph + N + PE · 220 / 230 / 240 V L-N
Voltage range	176–280 V full power · 80–176 V derated (linear load)
Frequency · power factor · THDi	40–70 Hz · ≥ 0.99 · ≤ 2% resistive, ≤ 3% non-linear full load
Bypass	220 / 230 / 240 V L-N; synchronisation 50 / 60 Hz ± 6 Hz
BATTERY	
Voltage · blocks	+168 … +276 V DC · ±14 … ±23 × 12 V (default ±16; below ±16 load 80%)
Charging current	10 A × number of modules (max.)
Functions	cold start · standard / deep test · common battery · lithium with BMS card
OUTPUT	
Connection · voltage	3 ph + N + PE · 220 / 230 / 240 V L-N, 380 / 400 / 415 V L-L
Power factor · THDv	1 · ≤ 1% linear, ≤ 4% non-linear
Frequency · phase error	tracks the bypass; 50 / 60 Hz ± 0.2% without mains · ≤ 1° (balanced load)
Transfer · dynamic response	0 ms synchronised, < 15 ms not synchronised · < 5% for 0↔100% step
Inverter overload (PF 1)	≤ 105% continuous · 106–110% 60 min · 111–125% 10 min · 126–150% 1 min · > 151% to bypass
Bypass overload	< 130% continuous · 131–150% 5 min · 151–200% 1 s · 201–300% 100 ms
Unbalanced load	100%
SYSTEM	
Efficiency	97% double conversion · up to 99% ECO
Display · records	7" colour touch screen · 10,000 events · 5 LEDs · EPO button
Communication	Modbus · RS232 · RS485 · 4 dry-contact inputs, 3 outputs · options: SNMP, dry-contact expansion, BMS card
Parallel	with parallel kit, ring cables; BSC dual bus
Environment	−5 … 40 °C · 0–95% RH · ≤ 2000 m · IP20 · < 65 dB · EMC class C3
Dimensions W × D × H	600 × 860 × 2000 mm · cable entry bottom (top with accessory)
Weight	cabinet without modules 180 kg · power module 24 kg · bypass module 17 kg

Data from the IST6 120 kVA user manual. Specifications are subject to change without notice.

Ordering codes

Code	Description
IST6-120	Modular cabinet, max. 4 × 30 kVA power modules, supplied without modules
IST6-30-J	30 kVA / 30 kW power module
PAR - IST6	Parallel kit

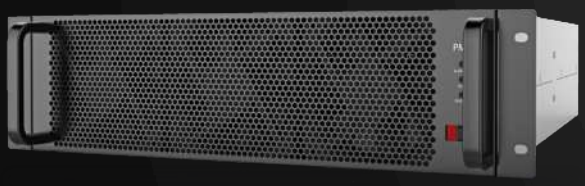
MODULAR ONLINE UPS · DOUBLE CONVERSION

IST6

200–500 kVA

50 kVA power modules in cabinets of 200, 300, 400 and 500 kVA. Up to 98.1% efficiency, THDi ≤ 1.5% and up to eight UPS in parallel for large data centres and critical buildings.





50 kVA POWER MODULE · HOT-SWAP

50→500
kVA in 50 kVA steps

N+1
one extra power module for redundancy

98.1%
efficiency, new-generation 50 kVA module

Hot-swap
Modular technology: power modules replaced online

WHY IST6

Key features
IST6 200–500 kVA

Efficiency, flexibility and advanced functions for critical loads from 200 to 500 kVA per cabinet.

200→500

Sized to the site

Four cabinets with 4, 6, 8 or 10 power modules of 50 kVA; modules added when the load grows.

98.1%

High efficiency

Up to 98.1% in double conversion with the new-generation 50 kVA module, plus ECO and WECO modes and redundancy sleep for spare modules.

≤ 1.5%

Clean for the grid

Input power factor ≥ 0.99 and THDi ≤ 1.5% at full load: smaller upstream cables, transformers and generators.

Hot-swap

Continuity first

Power modules and the bypass module are inserted and removed with the load running, each secured by its ready switch.

30–50

Battery set on site

30 to 50 blocks of 12 V per string, lead-acid or lithium; charging current up to 30 A per power module.

Touch

Easy to run

Touch screen with live power flow, 10,000 events, wave capture of faults and monthly energy records.

OPERATING COST

What 98.1% means at 240 kW

Every point of efficiency is heat that is not paid for at the meter and in the room cooling.

4.6 kW
losses at 98.1% efficiency

24,300
kWh saved per year vs a 97% UPS

≈ € 4,860
saved per year at € 0.20/kWh

Each additional point of efficiency at this load saves about 2.5 kW, that is about 22,100 kWh per year.

IST6 300 kVA at 80% load (240 kW), 8,760 h/year, cooling excluded. Losses = P × (1/η − 1). Indicative values.

DESIGNED FOR

Data centres · Telecom · Banking & finance · Networks & IT rooms · Transport · Public buildings

THE RANGE

Models and range
IST6 200–500 kVA

Single-column cabinets for 200 and 300 kVA, double-column cabinets for 400 and 500 kVA: the same power module, the same display, the same functions.



200 · 300 kVA
single column · 607 mm



400 · 500 kVA
double column · 1203 mm

Cabinet	200 kVA	300 kVA	400 kVA	500 kVA
Power modules (50 kVA)	4	6	8	10
Bypass module	200 kVA · 3U	300 kVA · 3U	400 kVA · 3U	500 kVA · 4.5U
W × D × H (mm)	607 × 860 × 2000	607 × 860 × 2000	1203 × 864 × 2000	1203 × 864 × 2000
Weight without power modules	224 kg	236 kg	459 kg	506 kg
Mains input current	345 A	518 A	690 A	863 A
Cooling air flow (min.)	2420 m³/h	3630 m³/h	4840 m³/h	6050 m³/h

Cabinets 2000 mm high: single column 607 mm, double column 1203 mm wide.

CODE
IST6-200
Cabinet for up to 4 × 50 kVA modules, without modules.

CODE
IST6-300
Cabinet for up to 6 × 50 kVA modules, without modules.

CODE
IST6-400
Cabinet for up to 8 × 50 kVA modules, without modules.

CODE
IST6-50-J
50 kVA / 50 kW power module. 500 kVA cabinet: code on request.

Power and bypass modules
IST6 200–500 kVA

Rectifier, inverter and DC/DC converter in each 3U power module; the bypass module carries the static switch. Power modules and the bypass module are hot-swappable.

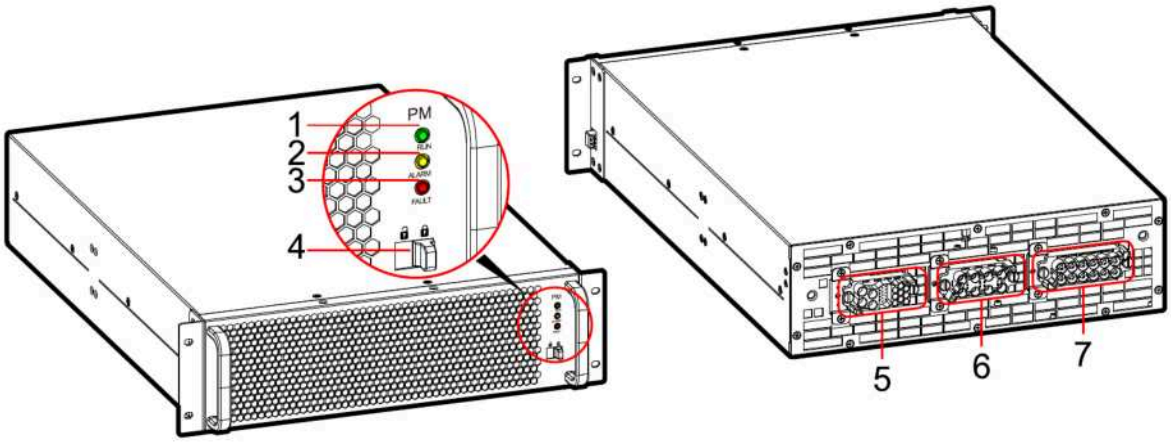


50 kVA power module, front



Bypass module · 3U (200–400 kVA) · 4.5U (500 kVA)

Front and rear · user manual Fig. 2-15



1. **RUN** · green
2. **ALARM** · yellow
3. **FAULT** · red
4. **Ready switch** · green unlocked · red locked
5. **Communication port** · rear
6. **Output port** · rear
7. **Input port** · AC input and DC battery

STEP 1

Unlock

Ready switch to unlocked: indication green, the module can be removed.

STEP 2

Pull out

Remove the fixing screws and pull the module out by its handles onto a lift truck; the other modules keep supplying the load.

STEP 3

Insert and lock

Slide the new module in, fasten the screws and lock: indication red, the module joins the system.

39 kg
power module, 500 × 650 × 130 mm

23–50 kg
bypass module, 200 to 500 kVA cabinet

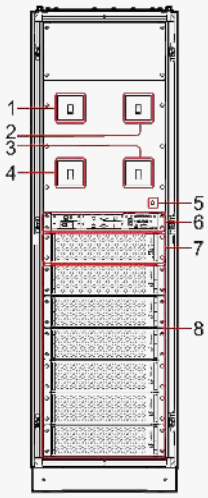
≧ 15 min
wait before opening a removed module

INSIDE THE CABINET

Cabinet layout
IST6 200–500 kVA

300 kVA and 500 kVA with the door open, next to their structure layouts from the user manual.





Module sequence
Bypass module
Power module 1
Power module 2
Power module 3
Power module 4
Power module 5
Power module 6

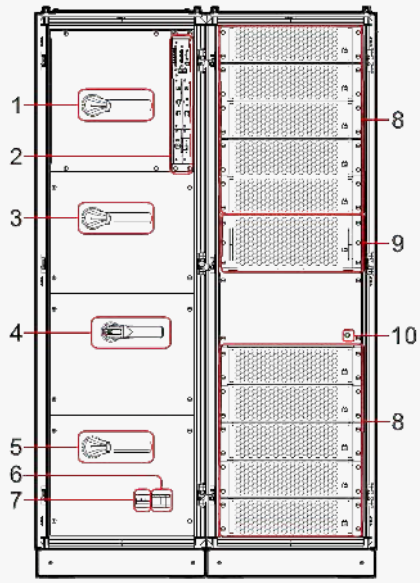
200 / 300 kVA · Fig. 2-11

1. **Bypass switch**
2. **Maintenance bypass switch**
3. **Output switch**
4. **Mains switch**
5. **Battery cold start button**
6. **System control box**
7. **Bypass module**
8. **Power modules** · 1–6

Photo: 300 kVA, door open, numbered as Fig. 2-11. 200 kVA: 4 module slots.



500 kVA · door open, 10 × 50 kVA power modules



500 kVA · user manual Fig. 2-14 · 400 kVA: 8 module slots

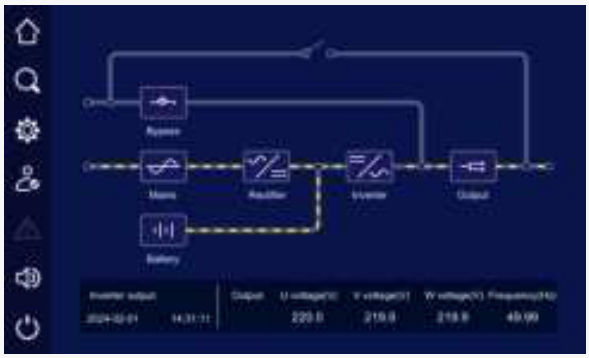
400 / 500 kVA · numbered as Fig. 2-14

1. **Output switch**
2. **System control box**
3. **Maintenance bypass switch**
4. **Bypass switch**
5. **Mains switch**
6. **SPD** · optional
7. **SPD switch** · optional
8. **Power modules** · even above, odd below
9. **Bypass module · 4.5U (3U on 400 kVA)**
10. **Battery cold start button**

ARCHITECTURE

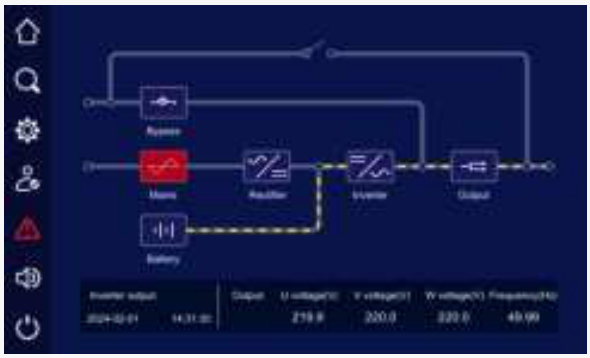
Operating principle
IST6 200–500 kVA

Each operating mode as shown on the touch screen: N power modules in parallel and one bypass module.



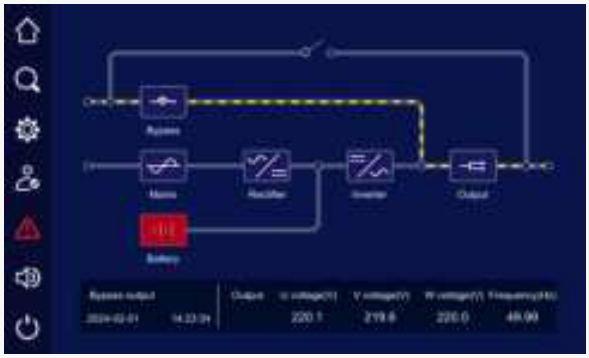
Mains mode

Each module rectifies the mains and the inverter supplies the load; the battery is charged.



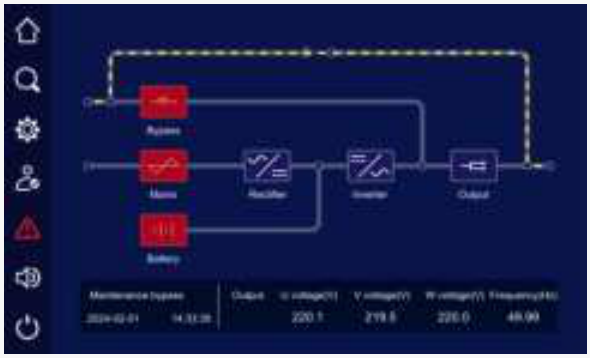
Battery mode

Mains abnormal: the DC/DC converter boosts the battery to the inverters, 0 ms.



Bypass mode

Overload or fault: the bypass module supplies the load.



Maintenance bypass mode

Bypass, mains and output switches open: the load stays on the maintenance bypass for service.

×2

Two control cards

Primary and secondary system control cards, hot-swappable, backing each other up.

CAN

Synchronised modules

CAN communication inside and between cabinets for synchronisation and current sharing.

≤ 5%

Current sharing

Load shared equally between power modules within 5%.

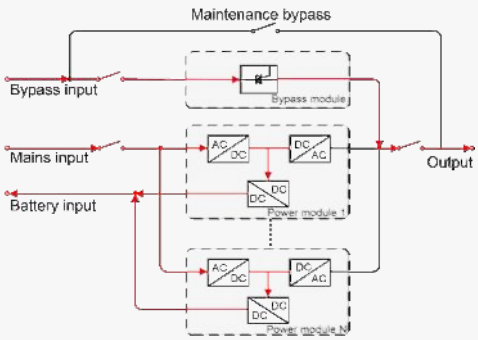
0 ms

No break

Mains ↔ battery transfer time 0 ms; bypass ↔ inverter < 1 ms synchronised.

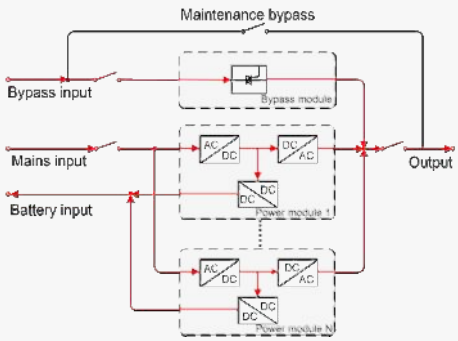
Energy-saving functions
IST6 200–500 kVA

Power flow of each mode as drawn in the user manual.



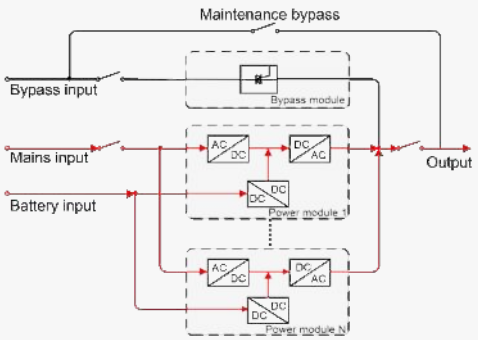
ECO mode · Fig. 2-31

Bypass within the ECO window: the static bypass supplies the load and the inverter is in standby; the rectifier keeps the battery charged.



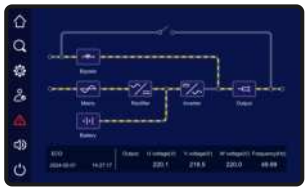
WECO mode · Fig. 2-32

Grid-tied operation on top of ECO: the inverter compensates the harmonics of the input current, raising the power factor and lowering THDi.

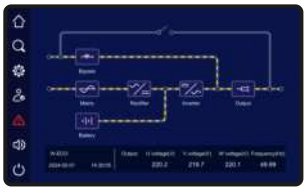


Mains and battery source share · Fig. 2-29

When the mains is too low to support the load, mains and battery supply the power modules together; when the mains recovers, the UPS returns to mains mode and recharges the battery.



ECO, live



WECO, live



ECO window set on screen



Sleep and generator mode

GENERATOR

Generator mode

Start generator output and generator-mode input, set from the dry-contact pages.

COMMISSIONING

Grid-tied self-load

Load test shown live on the home page, with its own alarms (self-load switch, time-out).

OUTPUT

Frequency converter

Frequency converter output state available on the home page.

±5 … ±15%

ECO voltage window, default ±15%

±2 / ±4%

ECO frequency window, default ±2%

Charge off

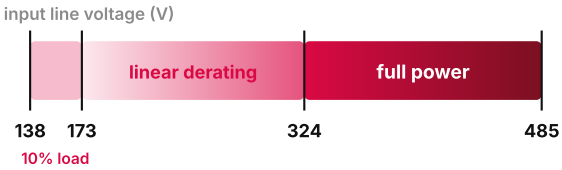
battery charging can be prohibited on generator

PERFORMANCE

Input and output performance
IST6 200–500 kVA

Input window

Full power from 324 to 485 V line voltage; below, the load capacity is derated linearly down to 10% at 173 V, and the UPS still runs down to 138 V.



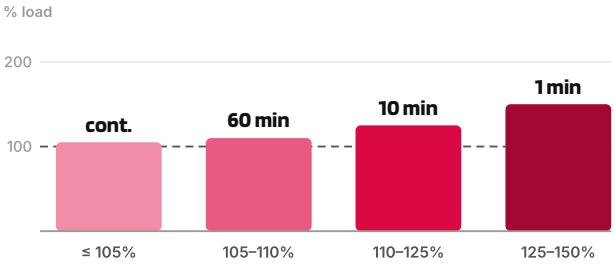
40–70 Hz · PF ≥ 0.99 · THDi ≤ 1.5% at full load · TN-S, TN-C, TN-C-S, TT. RCD breakers upstream not recommended.

Output

Voltage	**380 / 400 / 415 V ± 1%**
Power factor	**settable 0.8–1.0, default 1.0**
THDv	**≤ 1% linear · ≤ 4% non-linear**
Phase error	**≤ 1° balanced · ≤ 3° unbalanced**
Frequency, mains abnormal	**50 / 60 Hz ± 0.1 Hz**
Load step 0↔100%	**< 5%, recovery ≤ 20 ms**
DC component	**−200 … +200 mV**
Transfer bypass ↔ inverter	**< 1 ms synchronised · < 15 ms**
System	**3Ph+N+PE · 3Ph+PE optional**

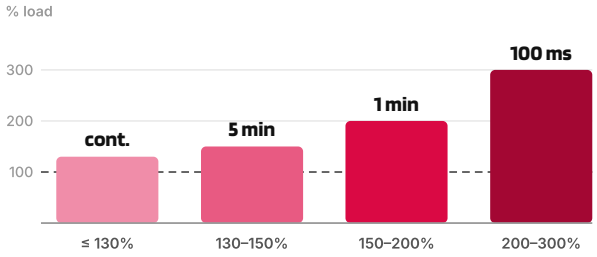
Overload capacity

Inverter · linear load, PF 1



Above 150%: to bypass at once. PF 0.9: 105–110% 60 min, above 110% to bypass; PF 0.8: above 105% to bypass.

Bypass



Above 300%: immediate protection.

LOADS

Suited loads

Resistive, resistive-capacitive and slightly inductive loads; not for regenerative loads or half-wave rectifiers.

OPTION

Output isolation transformer

An isolation transformer of the same capacity is available at the output.

BYPASS

Settable bypass window

Max. +10 … +25% (default +15%), min. −10 … −30% (default −20%), frequency ±2 … ±20%.

138–485 V
input line voltage

≤ 1.5%
THDi, full load

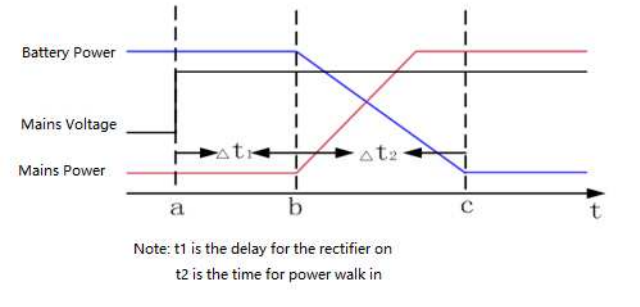
≤ 1%
output voltage accuracy

300%
bypass for 100 ms

ADVANCED PROTECTION

Protection functions
IST6 200–500 kVA

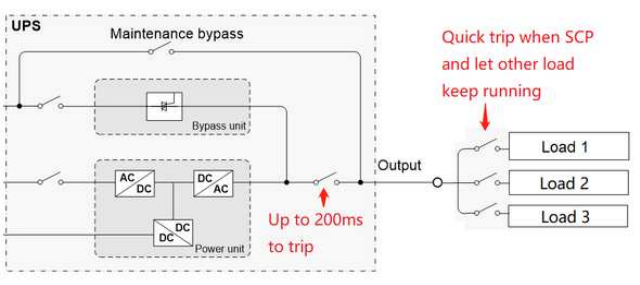
Three functions of the 50 kVA power module that protect the grid, the load and the maintenance staff.



01 · POWER WALK-IN

No step on the mains or the generator

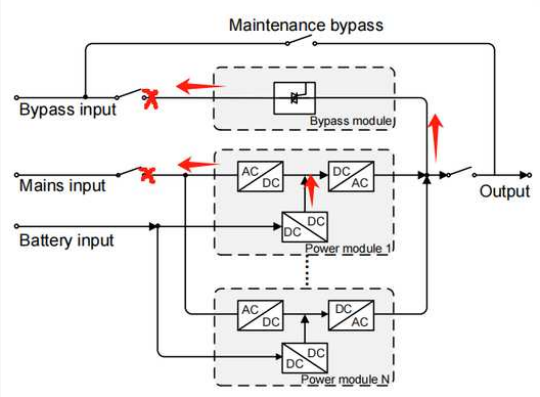
When the mains returns after an outage, the rectifier waits a delay t1, then takes the power over from the battery gradually during t2: a smooth transfer from battery mode to double conversion, with no impact on the input grid or on a generator.



02 · SHORT-CIRCUIT PROTECTION

Settable trip time, up to 200 ms

On an output short circuit the UPS supplies a high current for a set time, from 20 to 200 ms, so that the breaker of the faulty load trips quickly while the other loads keep running.



03 · BACKFEED PROTECTION

Safe upstream maintenance

If the static bypass fails, the UPS detects it and a dry-contact output (bypass SCR abnormal) opens the backfeed device on the bypass input, so no voltage returns towards the upstream switchboard. Enabled from the settings.

t1 + t2
delay and walk-in time

20–200 ms
short-circuit trip time

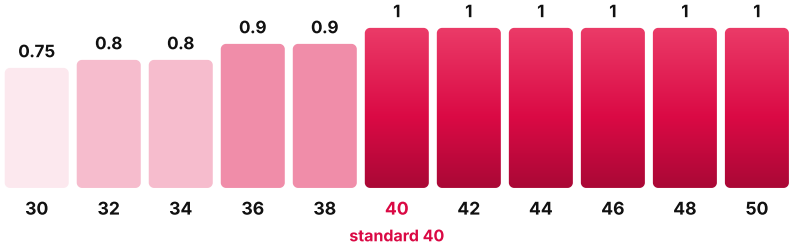
SCR
bypass fault detected

Battery options
IST6 200–500 kVA

String length set on site

Split battery +/N/–, ±240 V DC nominal (40 blocks of 12 V); 30 to 50 blocks accepted, with the output factor below for short strings.

12 V blocks per string (lead-acid) and output factor



30 A

max. charging current per power module (system default 20 A)

±256 V

lithium nominal, 120–200 cells (standard 160), with the BMS card



Battery setting

Cell voltages for protection, alarm, equalising and floating charge, charging current, test time.



Charge management

Charge limit coefficient in C, temperature compensation, timed and forced equalising charge.



Battery test

Standard or depth test with mains normal, battery floating and load ≥ 15%.

SHARED

Common battery

Shared battery pack mode available for parallel systems.

COLD START

Start from battery

Battery cold start button: hold more than 3 s to start the UPS from the battery.

LITHIUM

BMS card

Optional BMS expansion card with charge- and discharge-disable inputs.

OPTIONS

Sensor and trip kit

Battery temperature kit for charge compensation; battery trip kit (24 V DC) for the DC breaker.

0.05–0.5 C
charge limit, lead-acid (default 0.2 C)

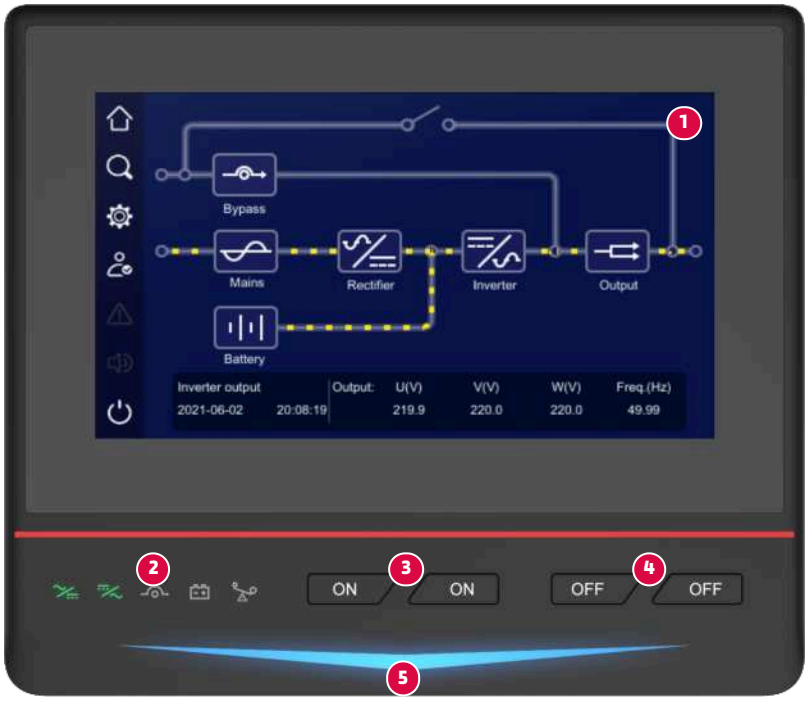
0.05–1 C
charge limit, lithium (default 0.5 C)

20–30 °C
best battery temperature

3 months
recharge interval for stored batteries

OPERATOR PANEL

Operator panel
IST6 200–500 kVA



1. **Colour touch screen**
   Live power flow, measurements, settings and records.
2. **Five status LEDs**
   AC/DC, DC/AC, bypass, battery, load: green when normal or active, red when abnormal.
3. **ON keys**
   Press both keys for 3 s to power on: no accidental switching.
4. **OFF keys**
   Press both keys for 3 s to power off.
5. **Status light bar**
   Shows the UPS state in colour, also from across the room.

Status light bar

Four states, one colour each: the operator knows how the UPS is doing before reaching the screen. Alarms also light the yellow or red ambient lamp.



Blue
Normal operation



Blue, flashing
Battery mode



Yellow
Abnormal, UPS still running



Red
Abnormal, UPS stopped

Status LEDs

LED	Green	Red
AC/DC	Rectifier normal	Rectifier abnormal
DC/AC	Inverter normal	Inverter abnormal
Bypass	Bypass output	Bypass abnormal
Battery	Battery output	Battery low voltage
Load	Output normal	Output overload

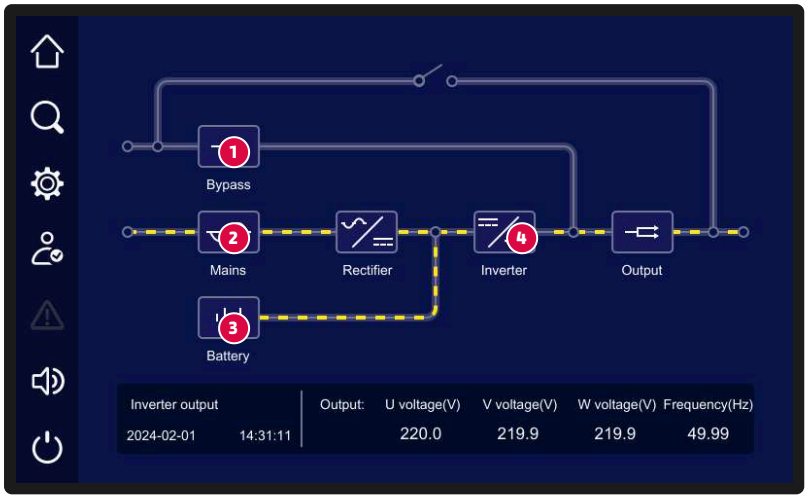
Screen settings



- Date and time
- Backlight time
- Language
- Brightness

TOUCH SCREEN

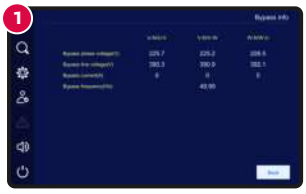
Touch screen display
IST6 200–500 kVA



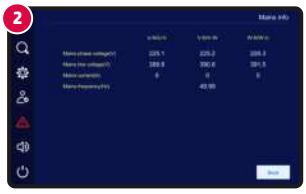
Live single-line diagram

The home page draws the UPS as it runs: yellow dots trace the active power path, abnormal blocks turn red, and the bottom line shows output voltage and frequency.

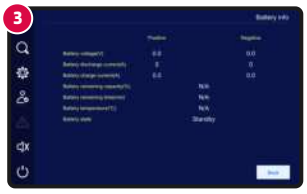
Touch a block (bypass, mains, battery, rectifier, inverter, output) to open its page.



Bypass info
Phase and line voltage, current and frequency of the bypass input.



Mains info
Phase and line voltage, current and frequency of the mains.



Battery info
Voltage, charge and discharge current, remaining capacity and time, temperature, state.



Inverter info
Output voltage, current, power and load of each module.

Menus



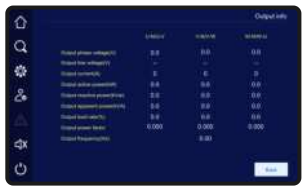
Information menu
Running info, history, user log, smart record, device info, wave capture, energy info.



Settings menu
Cabinet, battery, battery test, output, smart mode, dry contact, screen, password, communication, records.

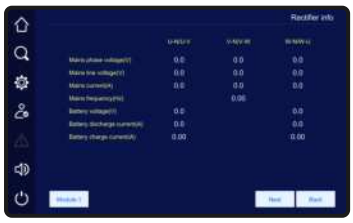


Running info
UPS info, parameter match between UPS, UPS status, system cards 1 and 2.



Output info
Voltage, current, active, reactive and apparent power, load, PF and frequency.

More pages



Rectifier info
Mains and battery voltage and current, module by module.



Dry contact
Inputs and outputs, each assigned to a function.



Communication
Modbus address 1–247, baud rate 2400–19200 bps, SNMP card protocol.

RECORDS

Event records
IST6 200–500 kVA



10,000

records in the history, newest first. When the record is full, the earliest entry is overwritten.

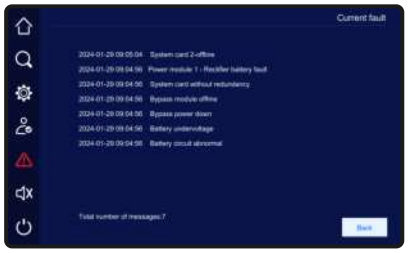
MWh

input and output energy recorded month by month (energy info).



User log

User operations listed with date and time.



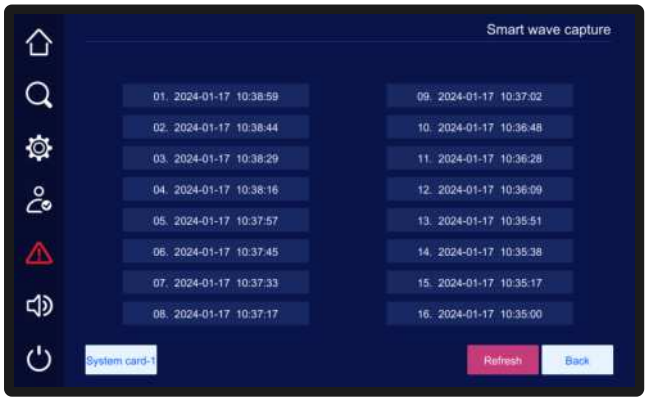
Current fault

Active faults, time-stamped, from the alarm icon of the menu bar.



Smart record

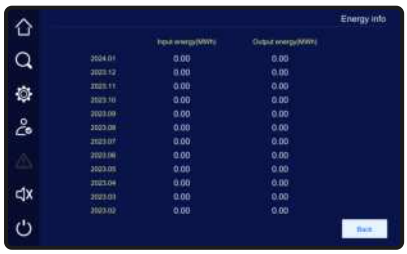
Maintenance actions such as part replacements.



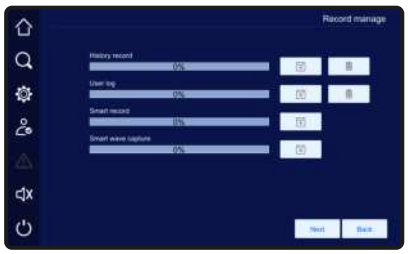
Smart wave capture

When a fault occurs, the UPS stores the voltage and current waveforms of the event, listed with date and time.

- Energy info: input and output energy per month
- Record manage: save or clear history, user log, smart record and wave capture



Energy info



Record manage

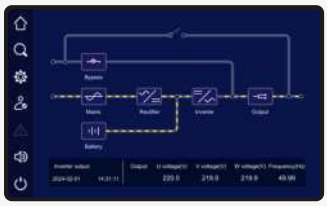


Battery test

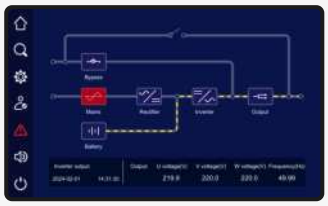
OPERATION

Operating modes
IST6 200–500 kVA

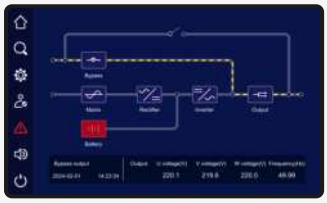
Real screens of the IST6 200–500 kVA: the yellow dotted line traces the active power path.



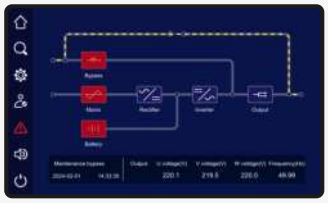
Inverter output



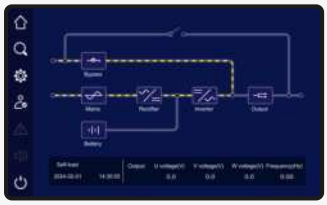
Battery



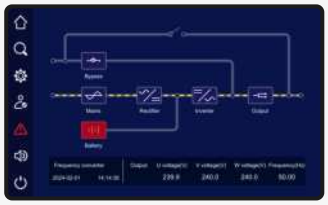
Bypass



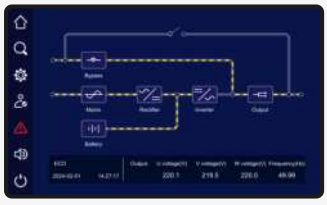
Maintenance bypass



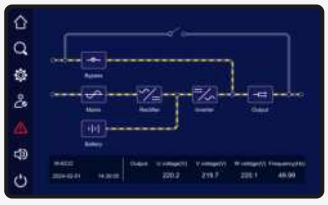
Grid-tied self-load



Frequency converter



ECO



WECO

Transfers

0 ms
mains ↔ battery

< 1 ms
inverter ↔ bypass, synchronised

< 15 ms
inverter ↔ bypass, not synchronised

RESTART

After a long outage

After battery under-voltage protection, the UPS restarts and recharges the battery when the mains returns.

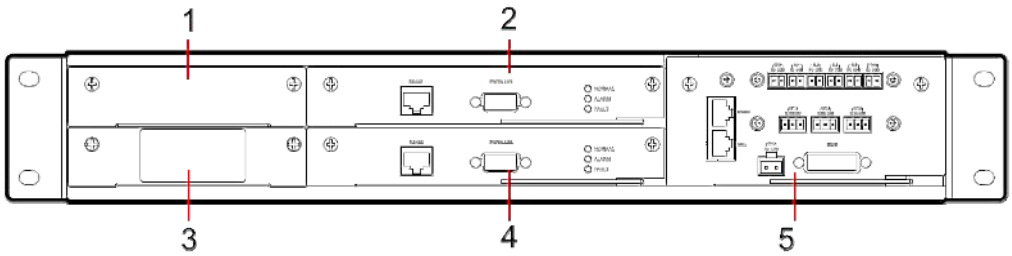
FAULT

A faulty module steps aside

A faulty power module is isolated from the system automatically; the others go on, with reduced redundancy.

Communication and connectivity
IST6 200–500 kVA

System control box, from the user manual: all five cards are hot-swappable.



System control box, user manual Fig. 2-19: ① expansion card position (optional) ② system control card 1 ③ SNMP card position (optional) ④ system control card 2 ⑤ system monitoring card.

4 inputs (NO) · 10 functions

- Battery abnormal
- Battery grounding abnormal
- Battery switch off
- Bypass switch off
- Generator mode
- SPD abnormal
- Maintenance bypass open
- Mains switch off
- Environment smoke abnormal
- Lamp belt switch off

3 outputs (NO / NC, 30 V DC / 2 A) · 17 functions

- Inverter mode
- Bypass mode
- Battery mode
- Battery trip
- Battery under-voltage alarm
- Battery under-voltage protection
- Output overload
- UPS abnormal
- Bypass abnormal
- Mains abnormal
- Start generator
- ECO mode
- Inverter abnormal
- UPS ON
- Fan abnormal
- UPS alarm
- Bypass SCR abnormal

Options



SNMP card
Ethernet, SNMP or Modbus



Dry contact expansion card
+3 inputs, +2 outputs (30 V DC / 2 A)



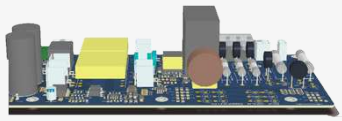
BMS expansion card
BMS port, charge / discharge disable inputs



Class C SPD
with SPD switch, factory fitting recommended



Battery temperature kit
charge voltage compensated by temperature



Battery trip kit
24 V DC trip signal for the battery breaker

4 + 3
inputs + outputs, standard

7 + 5
with the expansion card

Modbus
RS232 · RS485 · SNMP

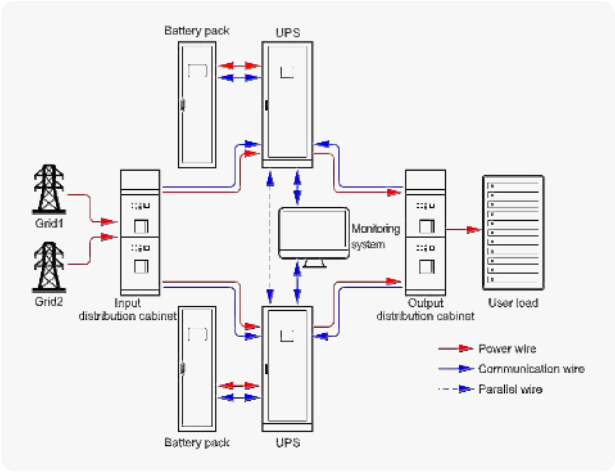
2
EPO inputs (NO and NC)

Parallel and multi-bus systems
IST6 200–500 kVA

System layouts from the user manual.

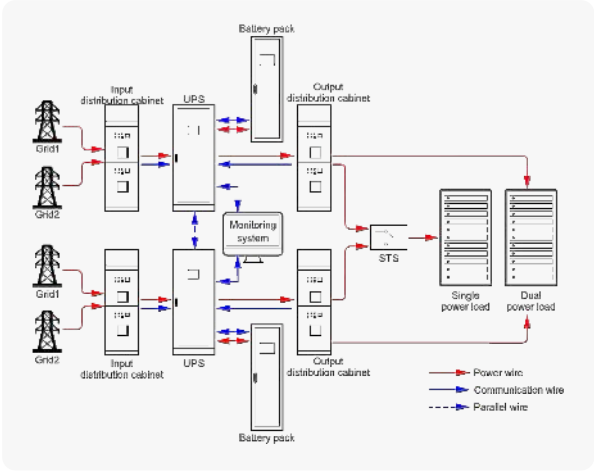
Parallel system · up to 8 UPS

Mains, bypass and AC outputs of the UPS connected in parallel; the control modules keep all UPS synchronised and share the load (imbalance ≤ 5%).

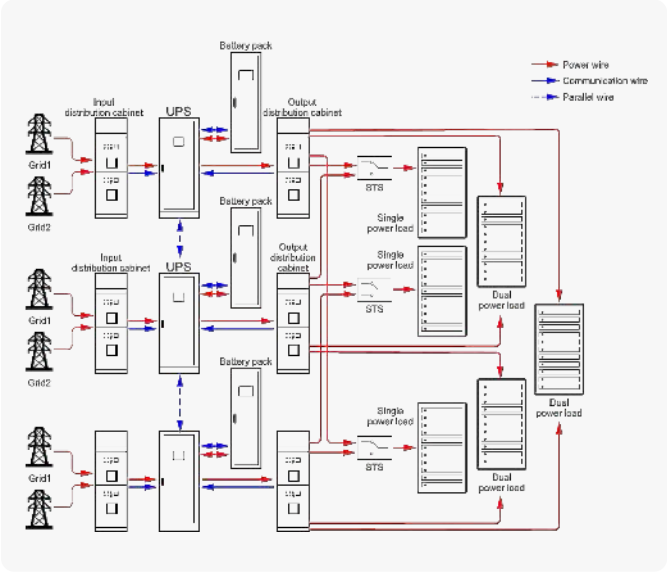


BSC dual-bus system

Two independent UPS systems synchronised by the bus sync controller; an STS supplies single-input loads.

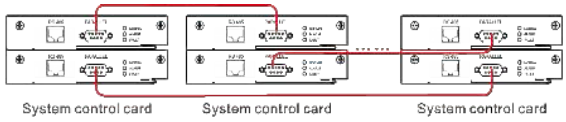


Multi-bus · three buses



Parallel ring

PARALLEL ports of the system control cards in a ring: N UPS need N cables. A 7 m cable is supplied with each UPS.



- Output of each UPS within ± 2 V and ± 0.1 Hz of the system setting.
- Parallel mode, parallel address and BSC address set on the screen.
- EPO linkage: one EPO stops the whole system, or only its UPS (set by AEC service).
- Shared battery pack and parallel ECO available.

8	≤ 5%	3	7 m
UPS in parallel, up to	current imbalance	buses in multi-bus mode	parallel cable supplied

TECHNICAL DATA

IST6 200–500 kVA

Cabinet	200 kVA	300 kVA	400 kVA	500 kVA
Power modules · rating	4 × 50 kVA	6 × 50 kVA	8 × 50 kVA	10 × 50 kVA
Bypass module	200 kVA · 3U	300 kVA · 3U	400 kVA · 3U	500 kVA · 4.5U
INPUT				
System · voltage	3Ph+N+PE · 380 / 400 / 415 V; 138–485 V (full power 324–485 V, linear derating below)			
Frequency · PF · THDi	40–70 Hz · ≥ 0.99 · ≤ 1.5% at full load			
Bypass	304–438 V; synchronisation 50 ± 5 / 60 ± 6 Hz; settable window			
BATTERY				
Lead-acid	±240 V DC nominal (±180 … ±300 V), 30–50 × 12 V blocks, standard 40			
Lithium (with BMS card)	±256 V DC nominal (±192 … ±294.4 V), 120–200 cells, standard 160			
Charging current	up to 30 A per power module · cold start · shared battery			
OUTPUT				
System · voltage	3Ph+N+PE (3Ph+PE optional) · 380 / 400 / 415 V ± 1%			
Power factor · THDv	settable 0.8–1.0 (default 1.0) · ≤ 1% linear, ≤ 4% non-linear			
Frequency · phase error	tracks the bypass; 50 / 60 ± 0.1 Hz with mains abnormal · ≤ 1° balanced, ≤ 3° unbalanced			
Transfer	mains ↔ battery 0 ms · bypass ↔ inverter < 1 ms synchronised, < 15 ms			
Inverter overload (PF 1)	≤ 105% continuous · 105–110% 60 min · 110–125% 10 min · 125–150% 1 min · > 150% to bypass			
Bypass overload	≤ 130% continuous · 130–150% 5 min · 150–200% 1 min · 200–300% 100 ms			
SYSTEM				
Efficiency · modes	up to 98.1% · ECO, WECO, source share, redundancy sleep			
Parallel	up to 8 UPS, current imbalance ≤ 5% · BSC dual bus and multi-bus (3 buses)			
Communication	Modbus · RS232 · RS485 · 4 inputs / 3 outputs dry contact · options: SNMP, expansion, BMS			
Environment	0 … 40 °C · 0–95% RH · ≤ 2000 m (derating to 4000 m) · IP20 · < 70 dB · EMC C3			
W × D × H (mm)	607 × 860 × 2000	607 × 860 × 2000	1203 × 864 × 2000	1203 × 864 × 2000
Weight without power modules	224 kg	236 kg	459 kg	506 kg

Power module 500 × 650 × 130 mm, 39 kg. Data from the IST6 200–500 kVA user manual. Specifications are subject to change without notice.

Ordering codes

Code	Description
IST6-200	Modular cabinet, max. 4 × 50 kVA power modules, without modules
IST6-300	Modular cabinet, max. 6 × 50 kVA power modules, without modules
IST6-400	Modular cabinet, max. 8 × 50 kVA power modules, without modules
IST6-50-J	50 kVA / 50 kW power module
PAR - IST6	Parallel kit

500 kVA cabinet: code on request.

AEC

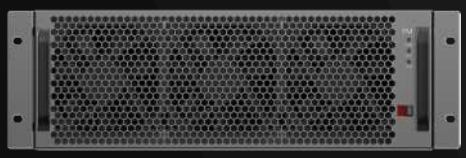
MODULAR ONLINE UPS · DOUBLE CONVERSION

IST6

400–1200 kVA

100 kVA power modules in 3U, from 400 kVA to 1.2 MW per cabinet. Up to 98.1% efficiency with PLUS modules, 99.2% in ECO and up to eight UPS in parallel for large data centres.





100 kVA POWER MODULE · 3U · HOT-SWAP

100→1200
kVA in 100 kVA steps

N+1
one extra power module for redundancy

98.1%
efficiency with PLUS power modules

Hot-swap
Modular technology: power modules replaced online

WHY IST6

Key features
IST6 400–1200 kVA

Efficiency, power density and advanced functions for data centres and critical loads from 400 kVA to 1.2 MW per cabinet.

400→1200

Sized to the site

Six cabinets with 4 to 12 power modules of 100 kVA: single column up to 800 kVA, double column for 1000 and 1200 kVA.

98.1%

High efficiency

Up to 97.2% with General modules and 98.1% with PLUS modules in double conversion; 99.2% in ECO.

kVA = kW

Unity power factor

Output power factor 1: every 100 kVA module delivers 100 kW, settable from 0.8 to 1.0.

Hot-swap

Continuity first

All modules hot-swappable, two system control cards backing each other up, dual DSP control.

40 °C

Built for the plant room

Full power from 0 to 40 °C, with cooling in reserve.

Storage

Smart energy

Energy storage mode for peak cutting and valley filling, ECO, W-ECO, redundancy sleep and generator mode.

OPERATING COST

What PLUS modules save at 800 kW

From 97.2% to 98.1%: less than one point of efficiency, but at megawatt scale it is heat that is not paid for at the meter and in the cooling.

7.55 kW
less losses (≈ 23.0 → 15.5 kW)

66,100
kWh saved per year

≈ € 13,200
per year at € 0.20/kWh

IST6 1000 kVA at 80% load (800 kW), 8,760 h/year, cooling excluded. Losses = P × (1/η − 1) with the maximum system efficiencies 97.2% (General) and 98.1% (PLUS). Indicative values.

DESIGNED FOR

Data centres · Telecom · Banking & finance · Networks & IT rooms · Transport · Public buildings

THE RANGE

Models and range
IST6 400–1200 kVA

Single-column cabinets from 400 to 800 kVA, double-column cabinets for 1000 and 1200 kVA; the same power module, display and functions.



400 · 500 · 600 · 800 kVA
single column · 801 mm



1000 · 1200 kVA
double column · 1201 mm



800 kVA + distribution
1400 mm



1000 · 1200 kVA + distribution
1800 mm

Cabinet	400 kVA	500 kVA	600 kVA	800 kVA	1000 kVA	1200 kVA
Power modules (100 kVA)	4	5	6	8	10	12
Columns · doors	1 · 1	1 · 1	1 · 1	1 · 1	2 · 2	2 · 2
Internal power switches	yes*	yes*	yes*	option[1]	option[1]	option[1]
W × D (mm) · H 2000	801 × 1000	801 × 1000	801 × 1000	801 × 1000	1201 × 1000	1201 × 1000
Weight without modules	345 kg	434 kg	434 kg	435 kg	662 kg	662 kg
Mains input current	661 A	826 A	991 A	1322 A	1652 A	1982 A
Cooling air flow (min.)	3744 m³/h	5415 m³/h	6246 m³/h	7140 m³/h	7902 m³/h	8785 m³/h

* Mains, output, maintenance bypass and bypass switches inside; version without switches available. [1] With the distribution cabinet fitted on the left side: 800 kVA mains, bypass, maintenance bypass and output; 1000 / 1200 kVA mains, bypass and output. Front views to scale, height 2000 mm.

CODE
IST6-800
Cabinet for up to 8 × 100 kVA power modules, without modules.

CODE
IST6-1000
Cabinet for up to 10 × 100 kVA power modules, without modules.

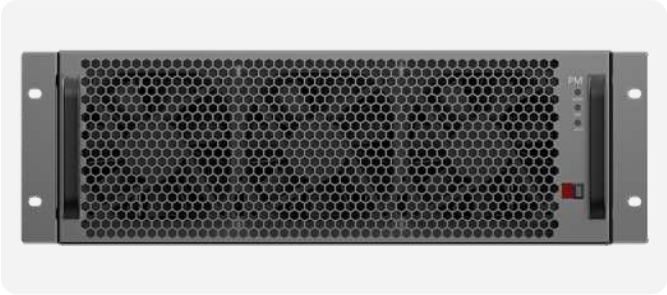
CODE
IST6-1200
Cabinet for up to 12 × 100 kVA power modules, without modules.

CODE
IST6-100-J
100 kVA / 100 kW power module. 400, 500 and 600 kVA cabinets: code on request.

POWER MODULE

Power module
IST6 400–1200 kVA

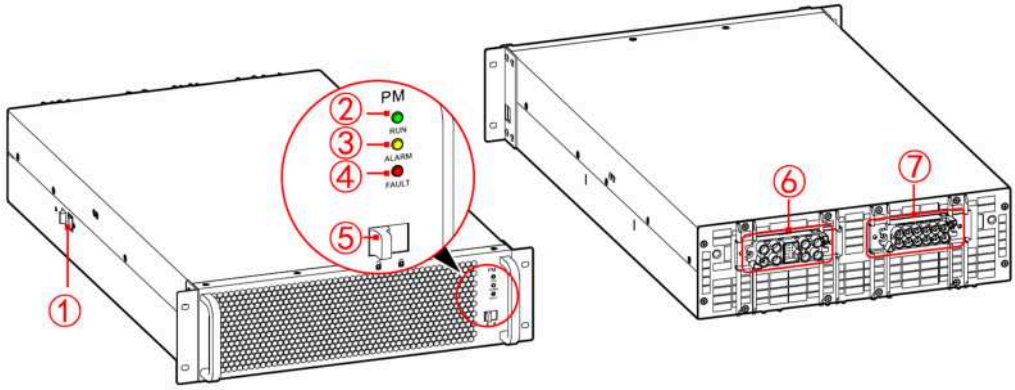
The same 100 kVA module from 400 kVA to 1.2 MW: rectifier, inverter and DC/DC converter in a 3U drawer, with output power factor 1 (kVA = kW).



100 kVA power module, 3U.

Rating	**100 kVA / 100 kW**
W × D × H	**440 × 760 × 130 mm · 3U**
Weight	**54 kg**
Handling	**three installers or a lift truck**
Bypass module	**3U (400 kVA) · 4.5U (500–1200 kVA)**

Front and rear · user manual Fig. 2-13



1. **Limit lock** · press to pull the module out
2. **RUN** · green
3. **ALARM** · yellow
4. **FAULT** · red
5. **Ready switch** · green unlocked · red locked
6. **Output port** · rear
7. **Input port** · AC mains and DC battery

Cooling with reserve

Intelligent fan control with redundant design: the UPS keeps supplying 40% load with one fan failed, 15% with two.

all fans running	100%
1 fan failed	40%
2 fans failed	15%

CONTROL
Dual DSP
No single point of failure.

PROTECTION
Fuses
On frame and modules.

DURABILITY
Conformal coating
On all PCB boards.

AIR
Dust filter
Standard, self-dedusting.

3U
per 100 kVA module

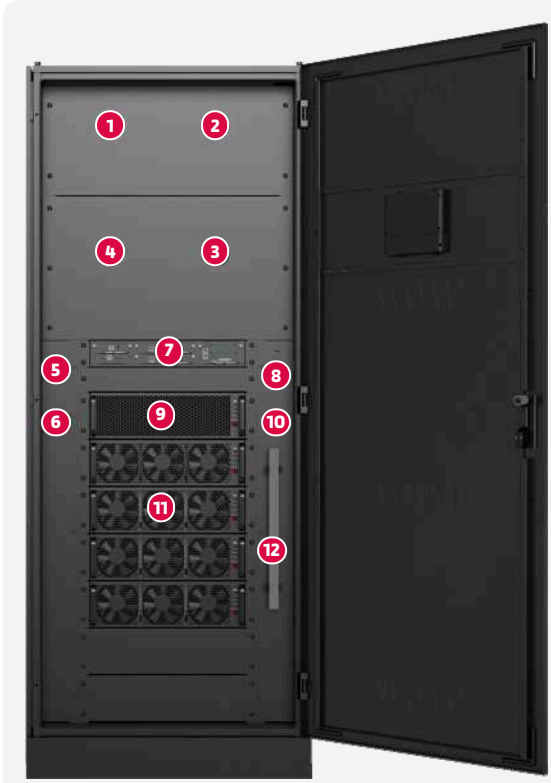
54 kg
module weight

≈ 1 MW/m²
800 kW on 0.8 m², 1.2 MW on 1.2 m²

INSIDE THE CABINET

Cabinet layout
IST6 400–1200 kVA

400–600 kVA single column with internal power switches, and 1000–1200 kVA double column (without switches: these are in the optional distribution cabinet).



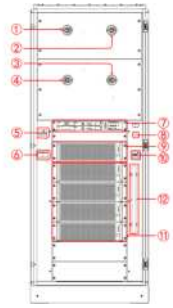
400 kVA · 4 MODULES · WITH SWITCHES



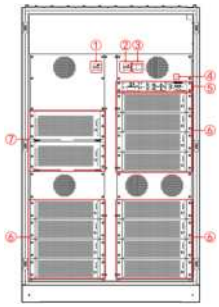
1200 kVA · 12 MODULES

1. **Mains switch**
2. **Output switch**
3. **Maintenance bypass switch**
4. **Bypass switch**
5. **SPD switch** · optional
6. **SPD** · optional
7. **System control box** · five hot-swappable cards
8. **Battery cold start**
9. **Bypass module** · 3U, under the control box
10. **Fan control switch** · optional
11. **Power modules** · 100 kVA each
12. **Switch operating lever**

1. **Fan control switch**
2. **SPD switch** · optional
3. **SPD** · optional
4. **Battery cold start**
5. **System control box** · five hot-swappable cards
6. **Power modules** · three groups of four slots
7. **Bypass module** · 4.5U



400 kVA · Fig. 2-11



1000 / 1200 kVA · Fig. 2-12

Numbers as in the user manual layouts (right). SPD, SPD switch and fan control switch are optional. 500 / 600 kVA: 4.5U bypass module and 6 module slots; 800 kVA: single column with 8 modules and no internal power switches. Layouts after the user manual (Fig. 2-11, 2-12).

DISTRIBUTION CABINET

Distribution cabinet
IST6 400–1200 kVA

For 800, 1000 and 1200 kVA the power switches come in an optional distribution cabinet, fitted at the factory on the left side of the UPS: one line-up, switches pre-assembled.



800 kVA + DISTRIBUTION · 1400 MM

1200 kVA + DISTRIBUTION · 1800 MM

1. **Mains switch**
2. **Bypass switch**
3. **Maintenance bypass switch**
4. **Output switch**
5. **SPD switch** · optional
6. **SPD** · optional
7. **System control box**
8. **Battery cold start**
9. **Bypass module**
10. **Fan control switch**
11. **Power modules** · 8 × 100 kVA

1. **Bypass switch**
2. **Mains switch**
3. **Output switch**
4. **Fan module**

1000 / 1200 kVA: mains, bypass and output breakers (no maintenance bypass).

? DID YOU KNOW?

Location matters: the IST6 400–1200 kVA is not intended for open installations within 3.7 km of the sea.

Options for the site

CABLES

Side wiring cabinet

Bottom cable entry: standard entry is from the top.

AIR

Top air outlet kit

Hot air out from the top instead of the rear.

SOURCE

Single power source kit

Mains and bypass from one source.

BATTERY

Grounding detection kit

Battery grounding detection, 400–600 kVA.

HOT-SWAP

Hot-swap service IST6 400–1200 kVA

All modules are hot-swappable: power modules, bypass module and the five cards of the system control box.



800 kVA · modules on their rails



1200 kVA · modules on their rails

STEP 1

Unlock

Ready switch to unlocked: indication green, the module can be removed.

STEP 2

Pull out

Remove the fixing screws, pull the module out by its handles and lift it onto a lift truck; the other modules keep supplying the load.

STEP 3

Insert and lock

Slide the new module in, fasten the screws and set the ready switch to locked: indication red, the module joins the system.

LED

RUN · ALARM · FAULT

Green, yellow and red LEDs on every power and bypass module show its state at a glance.

SELF-PROTECTION

Faulty module isolated

A faulty module isolates itself from the system automatically; redundancy is reduced until it is replaced.

LIMIT LOCK

Held on its rails

Each power module has a limit lock on the front: press it to pull the module out of the cabinet.

54 kg
power module, lift truck or three installers

2
system control cards backing each other up

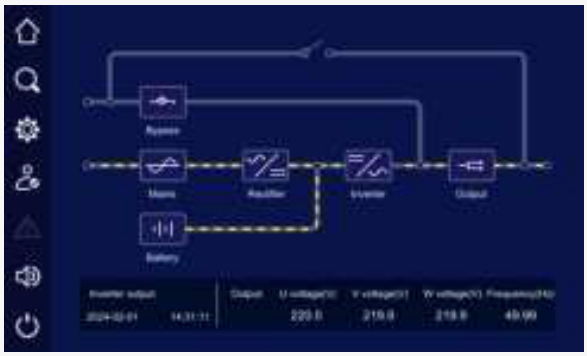
5
hot-swappable control box cards

≧ 15 min
wait before opening a removed module

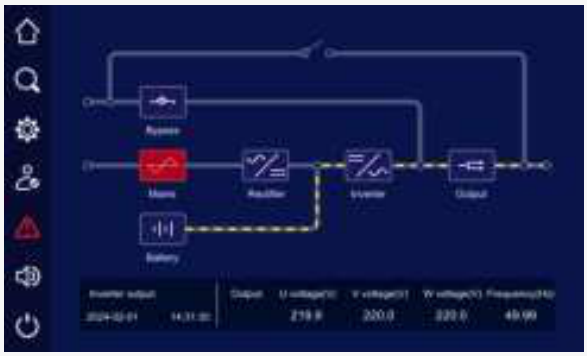
ARCHITECTURE

Operating principle
IST6 400–1200 kVA

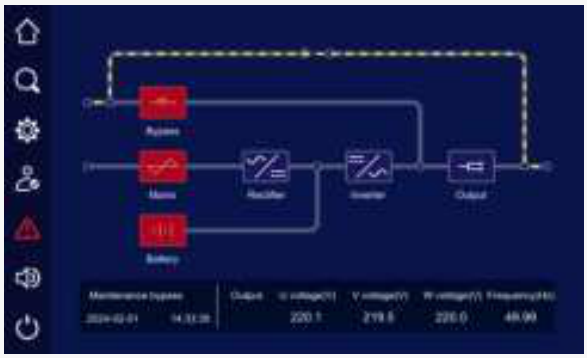
Each operating mode as shown on the touch screen: N power modules in parallel and one bypass module.



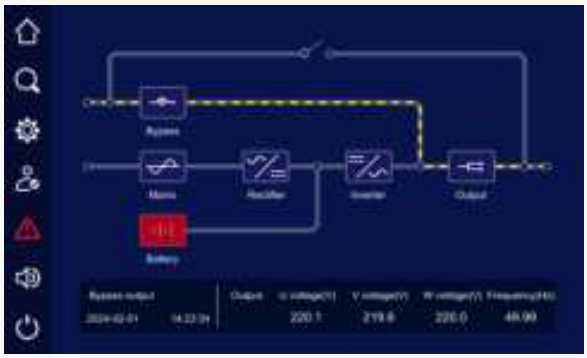
Mains mode
Each module rectifies the mains and the inverter supplies the load; the battery is charged.



Battery mode
Mains abnormal: the DC/DC converter feeds the battery to the inverters, 0 ms.



Maintenance bypass
Manual switch: the load stays supplied while the UPS is serviced.



Bypass mode
Overload or fault: the bypass module supplies the load.

×2

Two control cards
Primary and secondary system control cards, hot-swappable, backing each other up.

CAN

Synchronised modules
CAN communication inside and between cabinets for synchronisation and current sharing.

≤ 5%

Current sharing
Load shared equally between power modules within 5%.

0 ms

No break
Mains ↔ battery transfer time 0 ms; bypass ↔ inverter < 1 ms synchronised.

≥ 0.99
input power factor

≤ 3%
input THDi at full load

≤ 2°
output phase error, unbalanced load

≤ 3%
output THDv, non-linear load

100%
unbalanced load

SCALE AND SLEEP

Load-based module management
IST6 400–1200 kVA

Add 100 kVA modules or whole UPS as the site grows; set redundancy and redundancy sleep from the screen.

100 kVA
Step size
One 3U module at a time, in free slots up to the cabinet rating.

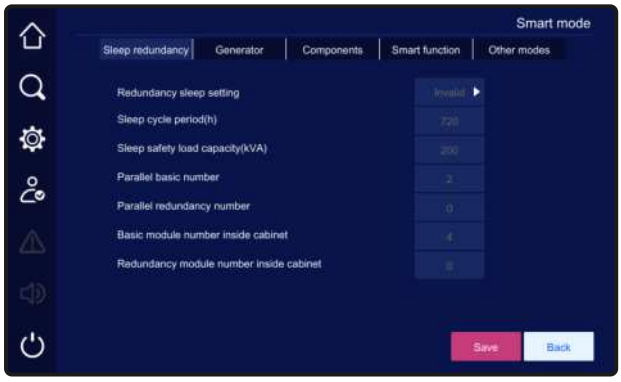
4 → 12
Modules per cabinet
400, 500, 600, 800, 1000 or 1200 kVA cabinets.

× 8
UPS in parallel
Further UPS join with the parallel kit, with N+X redundancy between UPS.

N+X
Two redundancy levels
Basic and redundant modules per cabinet and per parallel system.

Redundancy sleep

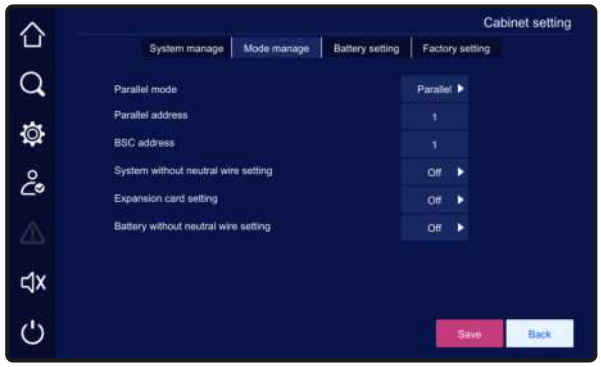
Intelligent sleep mode: at light load the spare modules sleep, while the basic modules carry the load within the sleep safety load capacity set on screen.



Smart mode › Sleep redundancy: on / off, sleep cycle period (h), sleep safety load capacity (kVA), parallel basic and redundant UPS, basic and redundant modules inside the cabinet.

Parallel set on screen

Parallel mode, parallel address and BSC address are set in Cabinet setting › Mode manage; parameter match between UPS is checked in Running info.





ALARMS
Redundancy watched
Power module without redundancy, redundancy insufficient, cabinet without redundancy, system card without redundancy.

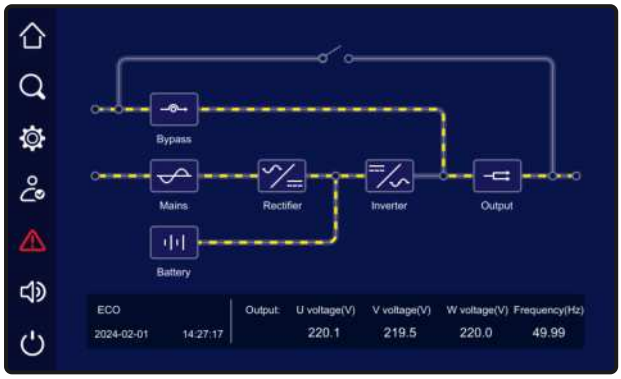
ECO
Parallel ECO
ECO mode is also available on a parallel system, not only on a single UPS.

SLEEP
Picked at random
The modules that sleep are chosen at random among the spare modules.

Energy-saving functions
IST6 400–1200 kVA

ECO mode · up to 99.2%

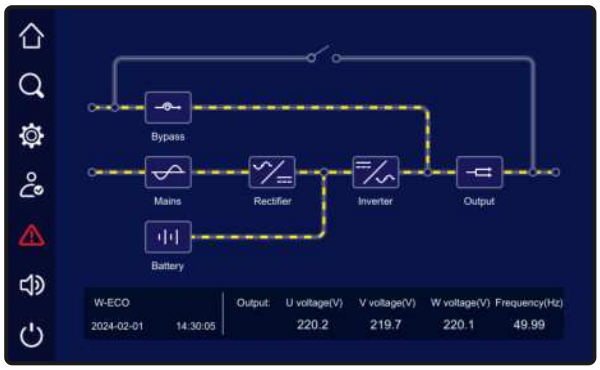
The load runs on the static bypass while the bypass is within the ECO window; the inverter is in standby and the rectifier keeps the battery charged.



ECO window: voltage ±5 / ±10 / ±15% (default ±15%), frequency ±2 / ±4% (default ±2%).

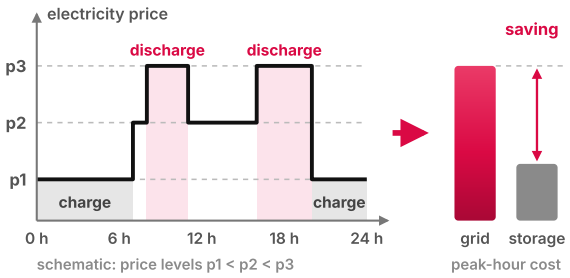
W-ECO mode · up to 99%

High-efficiency mode with input THDi below 5%; its state is shown live on the home page.



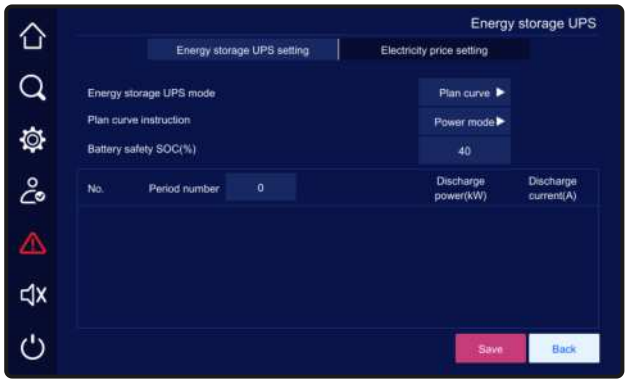
Energy storage mode

Peak cutting and valley filling: the battery supplies part of the load at peak hours and recharges in the valley, following a plan curve set by discharge power or current for each period.



schematic: price levels p1 < p2 < p3

peak-hour cost



Energy storage UPS page on the touch screen.

SLEEP

Redundancy sleep

Spare modules sleep at light load: see Scale and sleep.

GENERATOR

Smart generator mode

Starts and stops the generator by dry contact and can take part of the power from the battery.

TEST

Self-load test

Load test at commissioning without costly temporary loads.

OUTPUT

Frequency converter

Converts 60 Hz to 50 Hz, or 50 Hz to 60 Hz.

40%

battery safety SOC, example setting in energy storage mode

Per period

discharge power or current set for each period of the plan curve

€ / kWh

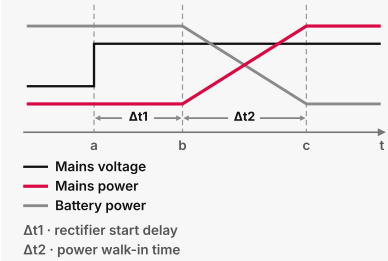
electricity price set for each period

PROTECTION AND SMART GUIDANCE

Protection and diagnostics
IST6 400–1200 kVA

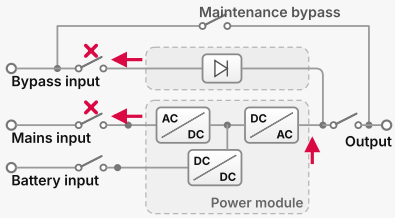
Advanced protection of the 100 kVA platform, plus the guidance tools that shorten installation and maintenance.

Protect · for the grid, the loads and the people



20–400

ms, settable



01 · POWER WALK-IN

GENERATOR-FRIENDLY

Decreases the inrush to the mains or the generator; with several UPS the rectifiers restart in sequence when the mains returns.

02 · SHORT-CIRCUIT PROTECTION

SELECTIVE TRIPPING

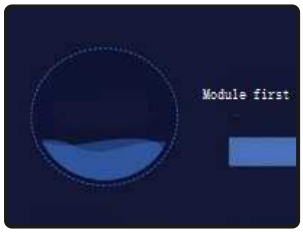
High short-circuit capacity for a settable time, so the breaker of the faulty load trips while the other loads keep running.

03 · BACKFEED PROTECTION

SAFE FOR THE GRID

Enabled on site; dry-contact outputs for single UPS and parallel system bypass backfeeding open the backfeed device upstream.

Guide · smart service tools on the display



FASTER COMMISSIONING

Start-up guidance and diagnosis

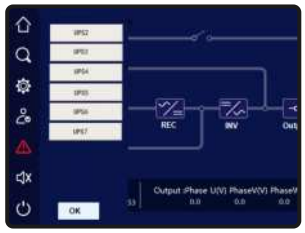
First power-on guidance with module self-test: potential risks are cleared before the system is powered on.



SHORTER REPAIR TIME

Maintenance assistant

Locates the problem easily and quickly, reducing the time for maintenance.



ONE SCREEN, WHOLE SYSTEM

Smart integrated display

One display checks the status of each UPS of the parallel system.



PREDICTIVE MAINTENANCE

Key components pre-alarm and asset records

Pre-alarm on key components such as capacitors and fans; full asset record of spare part replacements, dates and service people.

Stop · shut down safely

EPO

Emergency power off

EPO1 (NO) and EPO2 (NC) inputs on the monitoring card, as standard.

PARALLEL

EPO linkage

One EPO stops the whole parallel system, or only its UPS (set by AEC service).

BATTERY

Under-voltage protection

Battery under-voltage alarm first, then protection; both also as dry-contact outputs.

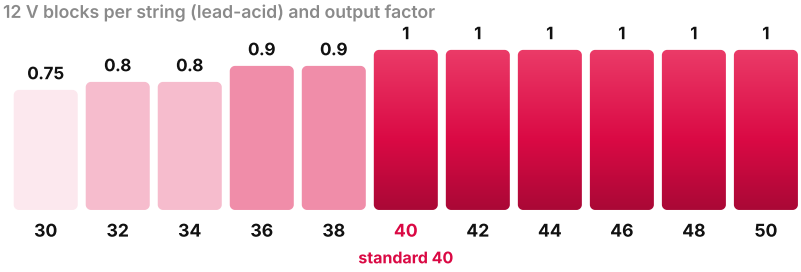
BATTERIES

Battery options
IST6 400–1200 kVA

String length set on site

480 V DC nominal with 40 blocks of 12 V (360–600 V); 30 to 50 blocks (46–50 on request), with the output factor below for short strings. Battery neutral optional (±240 V).

12 V blocks per string (lead-acid) and output factor

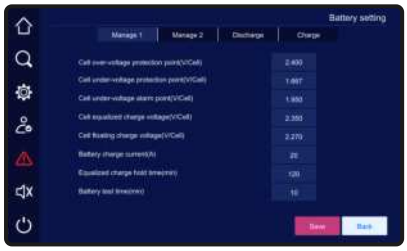


20 A

charging current per power module (specification), three-stage charging

512 V

lithium nominal, 120–200 cells (standard 160, full power from 160), with the BMS card



Battery setting

Cell voltages for protection, alarm, equalising and floating charge, charging current, test time.



Charge management

Charge limit coefficient in C, temperature compensation, timed and forced equalising charge.



Battery test

Standard or deep test with mains normal, battery floating and load ≥ 15%.

SHARED

Common battery

Shared battery pack mode equipped.

COLD START

Start from battery

Battery cold start button: hold more than 3 s to start the UPS from the battery.

LITHIUM

BMS card

Optional BMS expansion card with charge- and discharge-disable inputs.

MANAGEMENT

Find the faulty battery

Intelligent battery management helps replace only the faulty battery.

30–50
12 V blocks per string

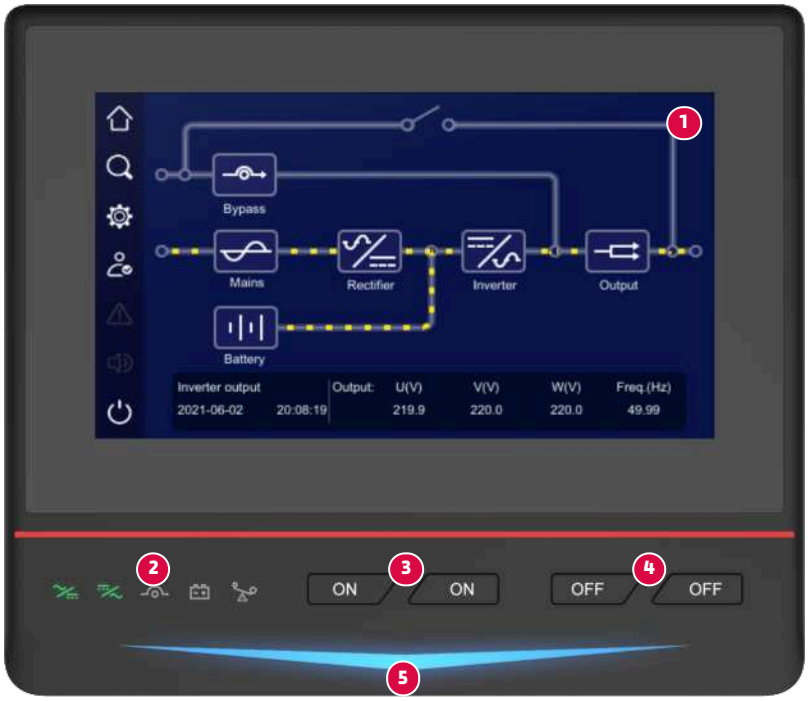
480 V
lead-acid nominal

0.05–0.5 C
charge limit, lead-acid

20–30 °C
best battery temperature

OPERATOR PANEL

Operator panel
IST6 400–1200 kVA



1. **Colour touch screen**
   Seven inches: live power flow, measurements, settings and records.
2. **Five status LEDs**
   AC/DC, DC/AC, bypass, battery, load: green when normal or active, red when abnormal.
3. **ON keys**
   Press both keys for 3 s to power on: no accidental switching.
4. **OFF keys**
   Press both keys for 3 s to power off.
5. **Status light bar**
   Shows the UPS state in colour, also from across the room.

Status light bar

Four states, one colour each: the operator knows how the UPS is doing before reaching the screen. Alarms also light the yellow or red ambient lamp.



Blue
Normal operation



Blue, flashing
Battery mode



Yellow
Abnormal, UPS still running



Red
Abnormal, UPS stopped

Status LEDs

LED	Green	Red
AC/DC	Rectifier normal	Rectifier abnormal
DC/AC	Inverter normal	Inverter abnormal
Bypass	Bypass output	Bypass abnormal
Battery	Battery output	Battery low voltage
Load	Output normal	Output overload

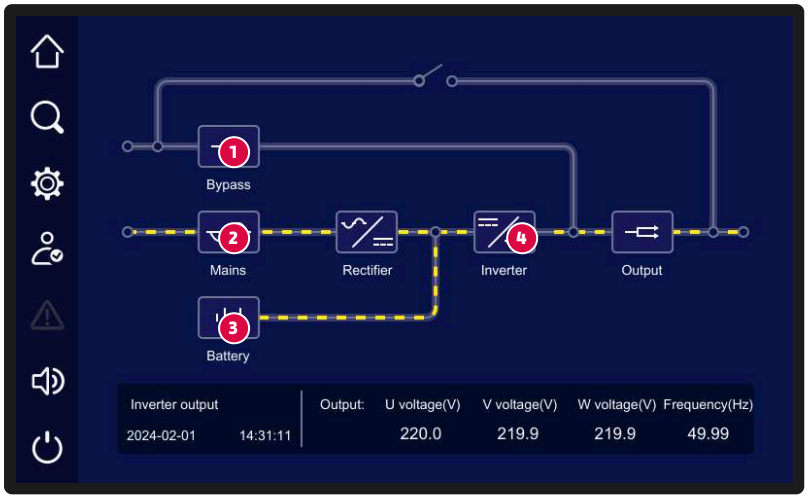
Screen settings



- Backlight time, brightness
- 10 languages, including Italian
- Atmosphere light on / off
- Time zone and NTP time sync

TOUCH SCREEN

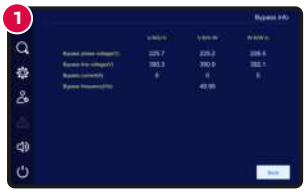
Touch screen display
IST6 400–1200 kVA



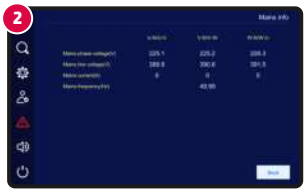
Live single-line diagram

The home page draws the UPS as it runs: yellow dots trace the active power path, abnormal blocks turn red, and the bottom line shows output voltage and frequency.

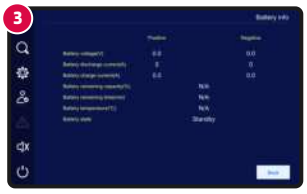
Touch a block (bypass, mains, battery, rectifier, inverter, output) to open its page.



Bypass info
Phase and line voltage, current and frequency of the bypass input.



Mains info
Phase and line voltage, current and frequency of the mains.



Battery info
Voltage, charge and discharge current, remaining capacity and time, temperature, state.



Inverter info
Output voltage, current, power and load of each module.

Menus



Information menu
Running info, history, user log, smart record, device info, wave capture, running record, battery discharge record.



Settings menu
Cabinet, battery, battery test, output, smart mode, dry contact, screen, password, communication, records, energy storage.



Running info
UPS info, parameter match between UPS, UPS status, system cards 1 and 2.



Device info
Hardware and software versions of screen, system cards and modules.

3
password levels: user, technician and service engineer

10
languages on the screen

7″
colour touch screen with live single-line diagram

Online
firmware update of screen, units and cards in one step

RECORDS

Event records
IST6 400–1200 kVA



10,000

records in the history, newest first. When the record is full, the earliest entry is overwritten.

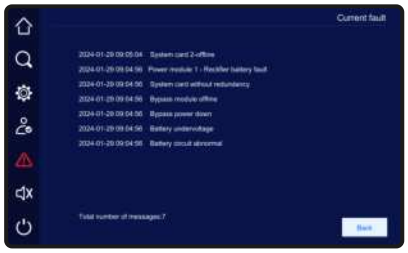
200 ms

of waveform recorded before and after the fault point (fault trace management).



User log

User operations listed with date and time.



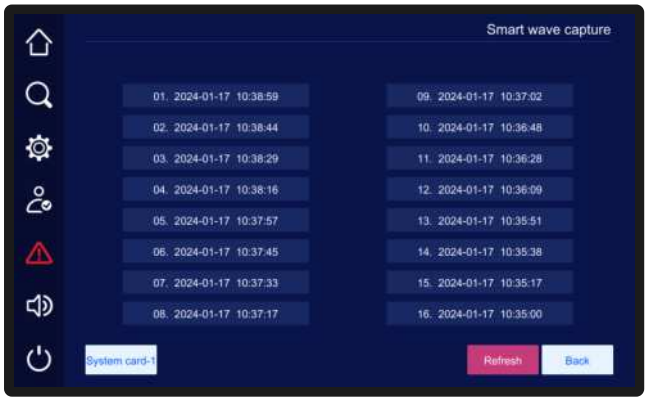
Current fault

Active faults, time-stamped, from the alarm icon of the menu bar.



Smart record

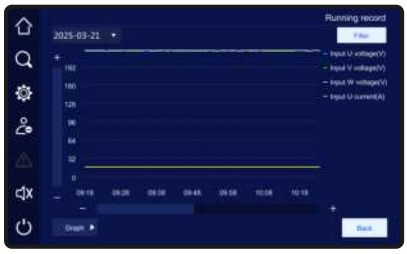
Maintenance actions such as part replacements.



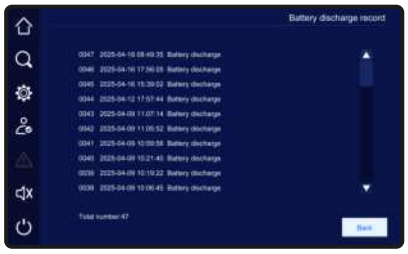
Smart wave capture

Captured fault waveforms are listed with date and time, next to the other records below.

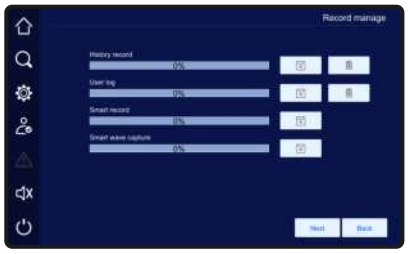
- Running record: input voltages and current over time
- Battery discharge record: every discharge with date and time
- Record manage: save or clear history, user log, smart record and wave capture



Running record



Battery discharge record

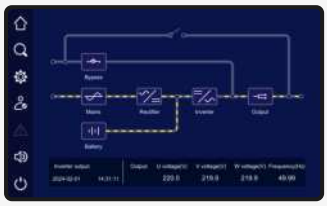


Record manage

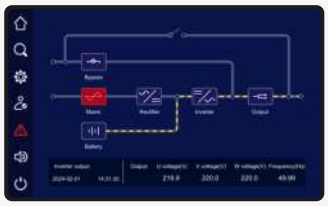
OPERATION

Operating modes
IST6 400–1200 kVA

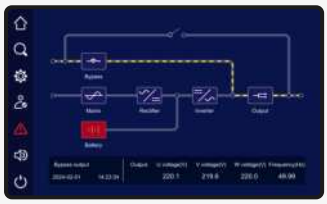
Real screens of the IST6 400–1200 kVA: the yellow dotted line traces the active power path.



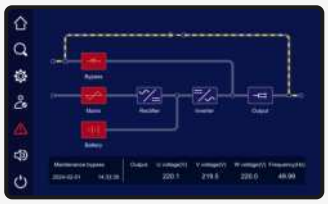
Inverter output
Normal operation.



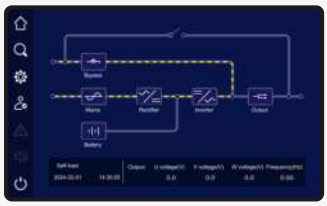
Battery
Mains abnormal.



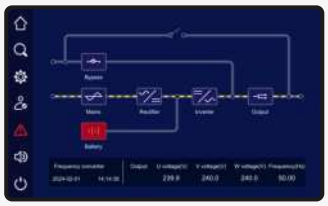
Bypass
Overload or fault.



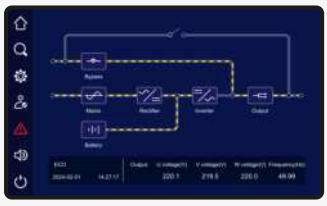
Maintenance bypass
Service with the load on the maintenance bypass.



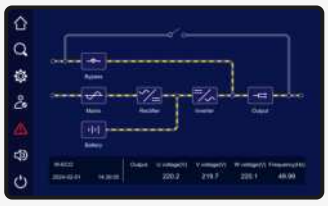
Grid-tied self-load
See Smart energy.



Frequency converter
See Smart energy.



ECO
See Smart energy.



W-ECO
See Smart energy.

Transfers

0 ms	< 1 ms	< 15 ms
mains ↔ battery	inverter ↔ bypass, synchronised	inverter ↔ bypass, not synchronised

RESTART

After a long outage

After battery under-voltage protection, the UPS restarts and recharges the battery when the mains returns.

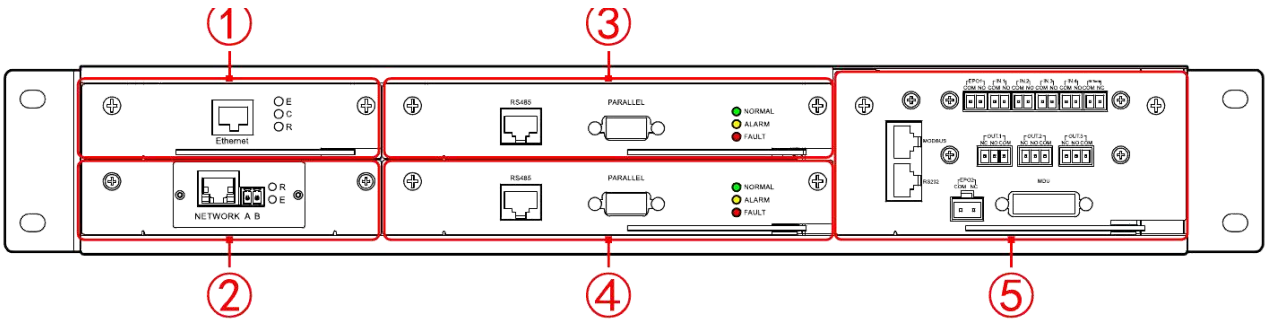
LOAD STEP

Steady through load changes

On a 0 ↔ 100% load step the output voltage stays within 5% and recovers within 20 ms.

Communication and connectivity
IST6 400–1200 kVA

System control box, from the user manual: all five cards are hot-swappable.



1 **Expansion card** · optional: dry contact or BMS

2 **SNMP card** · optional

3 **System control card 1**

4 **System control card 2**

5 **Monitoring card** · Modbus, RS232, EPO, dry contacts

4 inputs (NO) · 10 functions

- Battery abnormal
- Battery grounding abnormal
- Battery switch off
- Bypass switch off
- Generator mode
- SPD abnormal
- Maintenance bypass open
- Mains switch off
- Environment smoke abnormal
- Strip light switch off

3 outputs (NO / NC, 30 V DC / 2 A) · 18 functions

- Inverter mode
- Bypass mode
- Battery trip
- Battery mode
- Battery under-voltage alarm
- Battery under-voltage protection
- Output overload
- UPS abnormal
- Bypass abnormal
- Mains abnormal
- Start generator
- ECO mode
- Inverter abnormal
- Single UPS bypass backfeeding
- Parallel system bypass backfeeding
- UPS ON
- Fan abnormal
- UPS alarm

Standard: Modbus (address 1–247, 2400–19200 baud) · RS232 for an external SNMP card · RS485 linking the displays of a parallel system · EPO1 NO and EPO2 NC · B-Temp input for the battery temperature kit.

Options



SNMP card
Ethernet, SNMP or Modbus; RS485 port for a T/H sensor



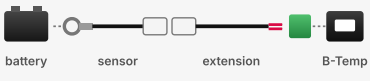
Dry contact expansion card
+3 inputs, +2 outputs (30 V DC / 2 A)



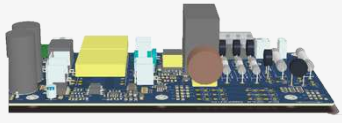
BMS expansion card
BMS port, charge / discharge disable inputs



Class C SPD
with SPD switch, factory fitting recommended



Battery temperature kit
charge voltage compensated by temperature



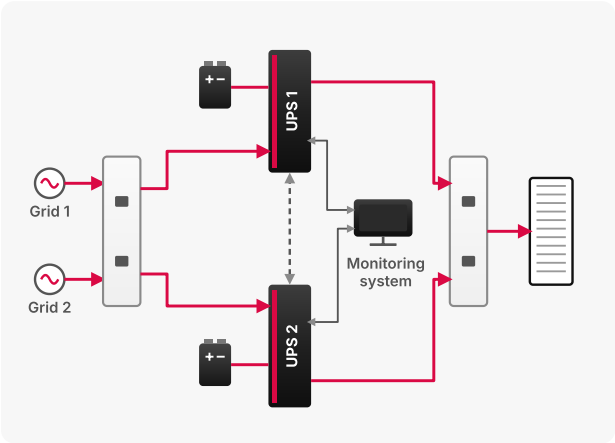
Battery trip kit
trip signal for the external battery breaker

Parallel and multi-bus systems
IST6 400–1200 kVA

System layouts after the user manual, redrawn: the key on the right explains the symbols.

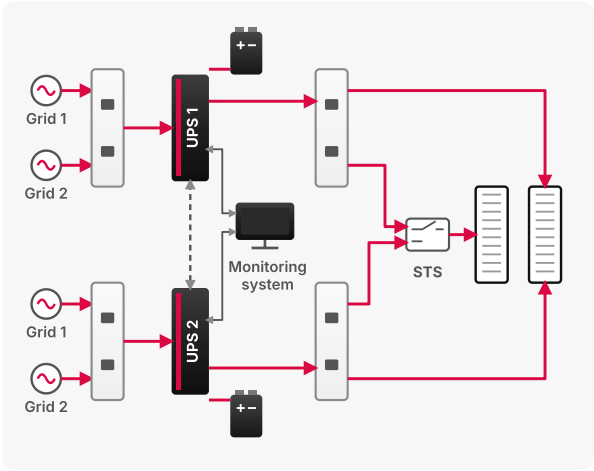
Parallel system · up to 8 UPS

Mains, bypass and AC outputs of each cabinet connected in parallel; the control modules keep all UPS synchronised and share the load (imbalance ≤ 5%).



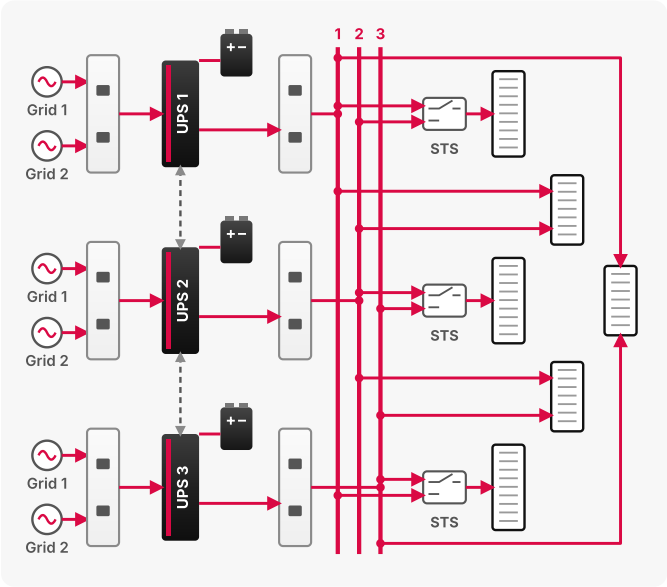
BSC dual-bus system

Two independent UPS systems synchronised by the bus sync controller; an STS supplies single-input loads.



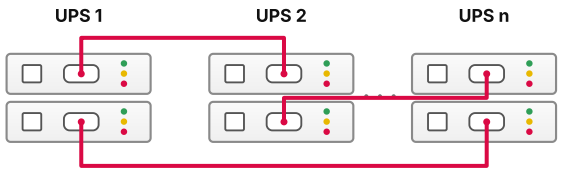
Multi-bus · three buses

Three UPS systems feed three output buses; STS and dual-input loads take power from two buses.



Parallel ring

PARALLEL ports of the system control cards in a ring: N UPS need N cables. A 7 m cable is supplied with each UPS.



PARALLEL ports of system control cards 1 and 2

- Output of each UPS within ± 2 V and ± 0.1 Hz of the system setting.
- Parallel mode, parallel address and BSC address set on the screen.
- Shared battery pack and parallel ECO available.

KEY

- Grid (mains)
- UPS
- Monitoring system
- Load (1 or 2 inputs)
- Communication line
- Distribution cabinet
- Battery pack
- Static transfer switch
- Power line
- Parallel line

8	9.6 MW	≤ 5%	3
UPS in parallel, up to	system power	current imbalance	buses in multi-bus mode

TECHNICAL DATA

IST6 400–1200 kVA

Cabinet	400 kVA	500 kVA	600 kVA	800 kVA	1000 kVA	1200 kVA
Power modules (100 kVA)	4	5	6	8	10	12
Bypass module	3U	4.5U	4.5U	4.5U	4.5U	4.5U
INPUT						
System · voltage	3Ph+N+PE · 380 / 400 / 415 V; 138–485 V (full power 324–485 V, linear derating below)					
Frequency · PF · THDi	40–70 Hz · ≥ 0.99 · ≤ 3% at full load					
Bypass	304–438 V; synchronisation 50 / 60 ± 6 Hz; settable window					
BATTERY						
Lead-acid	480 V DC nominal (360–600 V), 30–50 × 12 V blocks, standard 40; neutral optional					
Lithium (with BMS card)	512 V DC nominal (384–640 V), 120–200 cells, standard 160					
Charging current	20 A × number of modules · cold start · shared battery					
OUTPUT						
System · voltage	3Ph+N+PE · 380 / 400 / 415 V ± 1%					
Power factor · THDv	settable 0.8–1.0 (default 1.0) · ≤ 1% linear, ≤ 3% non-linear					
Frequency · phase error	tracks the bypass; 50 / 60 ± 0.1 Hz with mains abnormal · ≤ 1° balanced, ≤ 2° unbalanced					
Transfer	mains ↔ battery 0 ms · bypass ↔ inverter < 1 ms synchronised, < 15 ms					
Inverter overload (PF ≥ 0.95)	≤ 105% continuous · 105–110% 60 min · 110–125% 10 min · 125–150% 1 min · > 150% to bypass					
Bypass overload	≤ 135% continuous · 135–150% 5 min · 150–200% 1 s · 200–300% 100 ms					
SYSTEM						
Efficiency · modes	97.2% (General) / 98.1% (PLUS) · ECO 99.2% · W-ECO 99% · energy storage, sleep, generator					
Parallel	up to 8 UPS, current imbalance ≤ 5% · BSC dual bus and multi-bus (3 buses)					
Communication	Modbus · RS232 · RS485 · 4 inputs / 3 outputs dry contact · options: SNMP, expansion, BMS					
Environment	0 … 40 °C · 0–95% RH · ≤ 2000 m · IP20 · < 80 dB · EMC category C3					
W × D × H (mm)	801 × 1000 × 2000	801 × 1000 × 2000	801 × 1000 × 2000	801 × 1000 × 2000	1201 × 1000 × 2000	1201 × 1000 × 2000
With distribution cabinet	—	—	—	1400 mm wide	1800 mm wide	1800 mm wide
Weight without modules	345 kg	434 kg	434 kg	435 kg	662 kg	662 kg

Power module 440 × 760 × 130 mm (without ears and handles), 54 kg. Data from the IST6 400–1200 kVA user manual. Specifications are subject to change without notice.

Ordering codes

Code	Description
IST6-800	Modular cabinet, max. 8 × 100 kVA power modules, without modules
IST6-1000	Modular cabinet, max. 10 × 100 kVA power modules, without modules
IST6-1200	Modular cabinet, max. 12 × 100 kVA power modules, without modules
IST6-100-J	100 kVA / 100 kW power module
PAR - IST6	Parallel kit

400, 500 and 600 kVA cabinets: code on request.

CENTRAL POWER SUPPLY SYSTEM · EN 50171

CPSS

10–200 kVA

The AEC double-conversion platform built for safety services, which keep their power when the building needs it most.



CPSS7 10–20 · 30–40 · 160–200 kVA

EN 50171
central power supply for safety services

8–160 kW
ten ratings in four frames

0 ms
transfer to battery in a blackout

THD < 1%
pure sine wave on linear loads

WHAT A CPSS IS

What a CPSS is
CPSS7 10–200 kVA

A central power supply system feeds the safety services of a building from one battery, during a fire, an earthquake or a blackout. It must comply with EN 50171.

What it supplies

Emergency lighting
escape routes and exits lit during a blackout

Fire-fighting
automatic fire-fighting systems

Smoke extraction
fume and smoke extraction equipment

Alarm systems
fire alarms and evacuation signals

CO detection
carbon monoxide detection systems

Exit signs
safety signs that guide the exodus

Where it is required

EN 50171 calls for a CPSS in crowded areas and public places, to keep the lights on in a blackout.

Hospitals · Schools · Museums · Cinemas and theatres · Hotels · Shopping centres · Offices and workplaces · Car parks and tunnels

EN 50171 · WHAT THE AEC CPSS7 PROVIDES

BATTERIES
10–12 years
expected life of the batteries used in the CPSS

OVERLOAD
120%
constant overload handled by the inverter

RECHARGE
< 12 h
recharge from low battery

CASING
Heat and fire
mechanical strength, resistant to heat and fire

Structure in compliance with CEI EN 62040 (safety EN 62040-1, EMC EN 62040-2, classification EN 62040-3). The installation of the safety system remains the responsibility of the installer.

UPS
continuity of supply to general loads: IT, industry, services

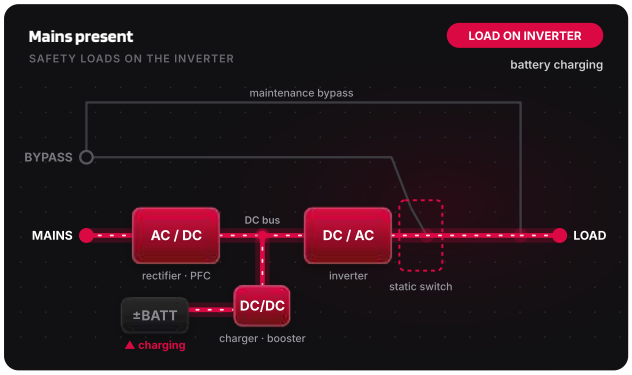
CPSS
safety services only, to EN 50171: a product designed and documented for them

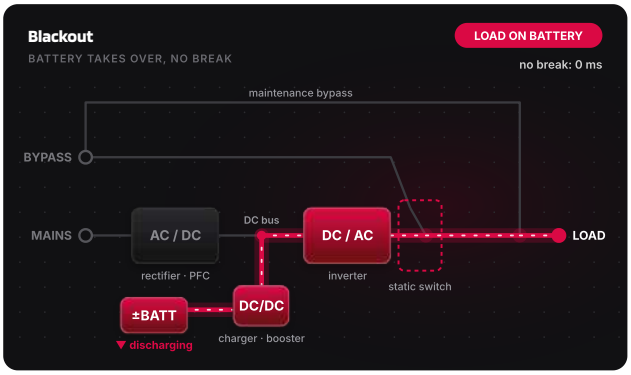
Not interchangeable
same components, different standards and different uses

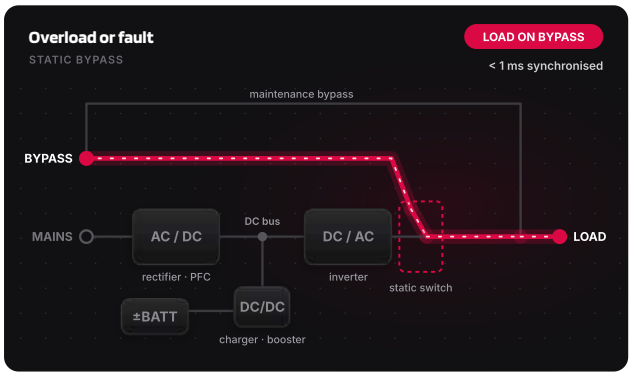
HOW IT WORKS

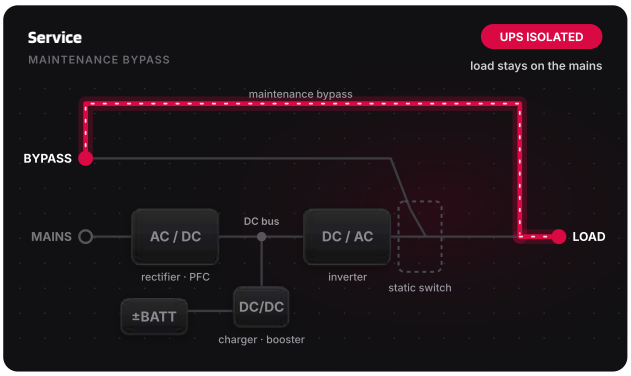
Operating principle
CPSS7 10–200 kVA

CPSS7 is built on the AEC IST7 platform: three-level inverter and digital control, with ratings, overload and charging set for safety services.









INVERTER

Three-level, digital

Pure sine wave, THD < 1% on linear loads; output 220 / 230 / 240 V L-N, 50 / 60 Hz ± 0.1%.

OVERLOAD

Constant 120%

Lamps and drives start together after a blackout: the inverter carries 120% without time limit.

CHARGER

Configurable current

Charging current set to the battery: 1–10 A on 10–20 kVA, 1–20 A on 30–40 kVA, 1–30 A on 60–120 kVA, 1–40 A on 160–200 kVA.

INPUT

Clean for the grid

Input PF ≥ 0.99, THDi ≤ 3%, wide input window: works with generators and weak grids.

Operation and records

- Colour touch screen with live single-line diagram and two access levels
- Event and history records with time stamp
- Battery test and battery data from the screen
- Input contact for battery ground fault, charge stop or discharge block
- RS485 standard, dry contacts OUT.1–OUT.5, EPO and IN.1
- SNMP card and relay card in the intelligent slots

Schematics simplified from the AEC CPSS7 10–40 kVA user manual. Functions and communication as in the AEC IST7 platform manuals.

THE RANGE

Models and range
CPSS7 10–200 kVA

Four frames for a single staircase or a whole hospital: CPSS7 10–40 kVA in two compact towers with internal or external batteries, CPSS7 60–200 kVA in two cabinets with external batteries.



Model	Output kW	Frame	W × D × H (mm)
CPSS7-10	8	Tower	250 × 806 × 880
CPSS7-20	16	Tower	250 × 806 × 880
CPSS7-30	24	Tower	300 × 842 × 1250
CPSS7-40	32	Tower	300 × 842 × 1250
CPSS7-60 · 80 · 100 · 120	48 · 64 · 80 · 96	Cabinet	400 × 960 × 1193
CPSS7-160 · 200	128 · 160	Cabinet	600 × 1000 × 1600

Output power factor 0.8 (kW = 0.8 × kVA). Battery, charging and weight data in the technical data. Battery cabinets BB4–BB8 and OZ Power batteries: see the battery sections.

40–70 Hz
input frequency range

3:3 · 3:1 · 1:1
10–40 kVA configurations

96%
efficiency in double conversion

< 65 dB
noise, 0–40 °C, 0–95% RH

TECHNICAL DATA

CPSS7 10–200 kVA

CPSS7 10–40 kVA

Model	CPSS7-10	CPSS7-20	CPSS7-30	CPSS7-40
Output power (kW)	8	16	24	32
INPUT				
Voltage · frequency	80–280 V L-N / 138–485 V L-L · 40–70 Hz			
Bypass · power factor · THDi	380 / 400 / 415 V −20% … +15% · ≥ 0.99 · ≤ 3%			
Configurations	3:3 · 3:1 · 1:1			
OUTPUT				
Voltage · frequency	L-N 220 / 230 / 240 V ± 1% · L-L 380 / 400 / 415 V ± 1% · 50 / 60 Hz ± 0.1%			
Power factor · waveform	0.8 · pure sine wave, THD < 1% linear, < 3% non-linear			
Efficiency · overload	96% · constant up to 120%			
BATTERY				
Voltage (V DC)	±96 … ±240	±144 … ±240	±144 … ±240	±144 … ±240
Charging current	1–10 A, configurable		1–20 A, configurable	
Battery life · recharge	10–12 years · < 12 hours			
GENERAL				
W × D × H (mm) · weight	250 × 806 × 880 · 64 kg		300 × 842 × 1250 · 102.5 kg	
Noise · temperature · humidity	< 65 dB · 0–40 °C · 0–95%			
Standards	CE · EN 50171 · safety EN 62040-1 · EMC EN 62040-2 · classification EN 62040-3			

CPSS7 60–200 kVA

Model	CPSS7-60	CPSS7-80	CPSS7-100	CPSS7-120	CPSS7-160	CPSS7-200
Output power (kW)	48	64	80	96	128	160
INPUT · OUTPUT						
Input	380 / 400 / 415 V (138–485 V L-L) · 40–70 Hz · PF ≥ 0.99 · THDi ≤ 3% · 3-4W + PE					
Output	L-N 220 / 230 / 240 V ± 1% · L-L 380 / 400 / 415 V ± 1% · 50 / 60 Hz ± 0.1% · PF 0.8 · pure sine, THD < 1% linear					
Efficiency · overload	96% · constant at 120%					
BATTERY · GENERAL						
Battery	external, ±168 … ±288 V DC adjustable · life 10–12 years · recharge < 12 hours					
Charging current	1–30 A				1–40 A	
W × D × H (mm) · weight	400 × 960 × 1193 · 153 / 163 / 165 / 167 kg				600 × 1000 × 1600 · 294 / 296 kg	
Noise · temperature · humidity · standards	< 65 dB · 0–40 °C · 0–95% · CE, EN 50171, EN 62040-1 / -2 / -3					

All information is indicative and may be modified by AEC at any time. Weights as the AEC IST7 of the same rating, without internal batteries; with internal batteries: CPSS7-10 95 kg, CPSS7-20 137.6 kg, CPSS7-30 and CPSS7-40 249.7 kg.

Ordering and systems
CPSS7 10–200 kVA

CPSS7 codes and how AEC sizes a central power supply system.

Code	Description
CPSS7-10 · -20	CPSS7 10 / 20 kVA
CPSS7-30 · -40	CPSS7 30 / 40 kVA
CPSS7-60 · -80 · -100 · -120	CPSS7 60 / 80 / 100 / 120 kVA
CPSS7-160 · -200	CPSS7 160 / 200 kVA
BB4 … BB8	Battery cabinets with fuses and Q1 disconnector, empty or with OZ Power batteries
Options	SNMP card, relay / RS485 card, parallel kit, battery temperature sensor

Sizing a CPSS in three steps

1 · LOAD

Safety loads in kW

Sum of lighting, fire-fighting and extraction loads, with their starting peaks: the 120% overload covers simultaneous starts.

2 · AUTONOMY

Duration required

Autonomy set by the fire-safety design of the building: AEC sizes batteries and cabinets on the OZ Power data.

3 · SITE

Room and records

Ventilated battery room or cabinet, periodic function and duration tests, event records kept by the CPSS.



PARALLEL SYSTEM

Up to four CPSS7 in parallel

- Parallel kit (option) and parallel cables between the units
- Redundant mode for continuity, or capacity mode for more power
- Unit ID 1–4 and parallel mode set from the screen of each unit
- A unit with a fault leaves the parallel system by itself, with an audible and visual alarm
- Batteries can be shared, with the same battery settings on every unit

Codes from AEC CPSS7 documentation. Fire-safety rules and required autonomy depend on the building and the country: AEC sizes each CPSS on the project data.

MODULAR LITHIUM BATTERY SYSTEM

L6

40 · 50 · 100 Ah

Lithium iron phosphate modules that slide in like drawers, each with its own DC/DC converter and BMS, in cabinets of up to 20 modules: from one module to 15 cabinets, for the AEC IST6 modular UPS and lithium-ready AEC UPS.



L6 LITHIUM CABINETS SIDE BY SIDE

LFP
lithium iron phosphate cells

Hot-swap
modules replaced online in minutes

15
cabinets in one system

46–69 kWh
per cabinet, with 40, 50 or 100 Ah modules

Key features
L6 lithium battery system

Lithium battery cabinets of 10 or 20 hot-swappable 50 Ah modules, a combiner for large systems and a three-layer battery management system, for the AEC IST6 modular UPS and lithium-ready AEC UPS.



The L6 cabinet, door open: up to 20 modules of 50 Ah, one pulled out.

KEY DATA

Cabinets	L6-CAB-10x50LI · L6-CAB-20x50LI · L6-CAB-EMPTY
Modules	10 or 20 × 50 Ah LiFePO4, 2.88 kWh each
Energy · power	about 29 kWh, 100 kW · 58 kWh, 200 kW
DC output	240, ±240 or 480 V DC
DC input (charge)	265, ±265 or 530 V DC
System	up to 15 cabinets; combiner for up to 8
Size W × D × H	600 × 850 × 2000 mm
Weight	615 kg · 985 ± 20 kg
Life	15 years; 5,000 cycles at 50 % depth of discharge
Tests	modules UN38.3 tested
On request	40 Ah modules (20 per cabinet, 46 kWh) and 100 Ah modules (12 per cabinet, 69 kWh)

MAIN FEATURES

Hot-swap modules
A 50 Ah module is replaced in about 5 minutes, with the load on.

Three-layer BMS
A BMS in every module, every cabinet and the system.

Isolated DC/DC
One converter per module, fire protection module by module.

Mixed-age modules
New modules beside old ones; current shared within 3 %.

1 to 15 cabinets
A master and up to 14 slaves; a combiner joins up to 8.

10-inch touch screen
On the master: system, cabinets, modules and cells.

ORDERING CODES

L6-CAB-10x50LI · L6-CAB-20x50LI · L6-CAB-EMPTY · L6-MOD-50LI · L6-COMBINER · 40 Ah · 100 Ah: on request

240 / ±240 / 480 V
DC output, three systems

≧ 95 %
SOC accuracy

≦ 3 %
current unbalance

6–1200 kVA
AEC UPS range

L6 · THREE MODULE TYPES

Models and range
L6 lithium battery system

The same 600 mm cabinet takes 20 modules of 40 or 50 Ah for high power and short backup, or 12 modules of 100 Ah for long backup: the module is chosen by the backup time.

Module	40 Ah · 6C	50 Ah · 4C	100 Ah · 1C
Ordering codes	on request	L6-MOD-50LI L6-CAB-10x50LI · L6-CAB-20x50LI	on request
Cell discharge rate	6C	4C	1C
Module energy	2.3 kWh	2.88 kWh	5.76 kWh
DC/DC output per module	10 kW	10 kW	5 kW
Module size W × D × H	223 × 665 × 152 mm	223 × 665 × 152 mm	440 × 665 × 132 mm
Modules per cabinet	20	10 or 20	12
Energy per cabinet	46 kWh	about 29 kWh · 58 kWh	69 kWh
Rated power per cabinet	200 kW	100 kW · 200 kW	60 kW
Typical backup	10 / 20 min	15 / 30 min	1 / 2 / 4 h



20 × 40 / 50 AH

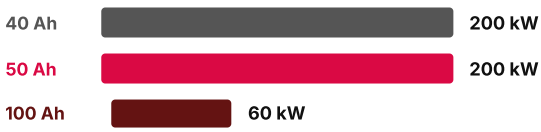


12 × 100 AH

ENERGY PER CABINET



RATED POWER PER CABINET



Full cabinets: 20 × 40 Ah, 20 × 50 Ah, 12 × 100 Ah. The 50 Ah cabinet also comes with 10 modules: about 29 kWh, 100 kW.

WHICH MODULE?

40 Ah, 6C cells: high power, short backup.
50 Ah, 4C cells: more energy, short backup.
100 Ah, 1C cells: long backup, hours.

1. **Battery breakers**
   distribution switches of the cabinet
2. **Cabinet BMS and communication module**
   monitors every module; ports to the UPS and the other cabinets
3. **Touch screen**
   master cabinet; lamps on each slave
4. **Battery modules**
   40 / 50 Ah in two columns, 100 Ah in one column

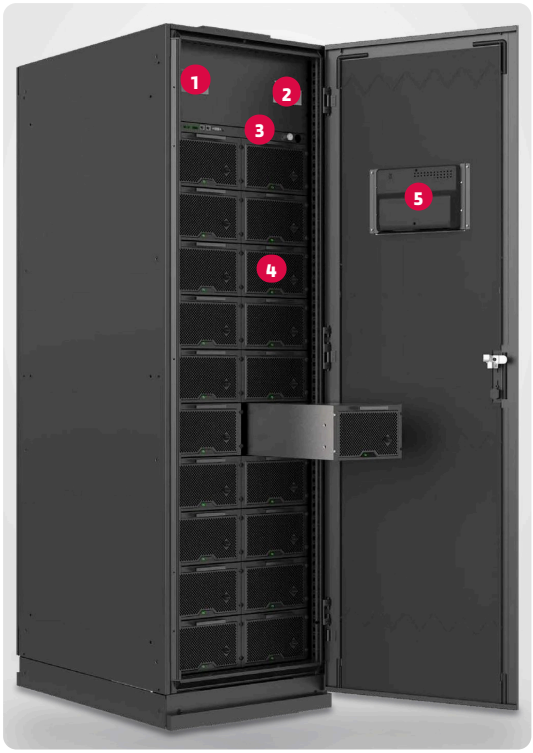
50 Ah data from the AEC L6 50 Ah datasheet; 40 and 100 Ah data from the AEC L6 presentation and user manual. Typical backup: AEC sizing tables at initial capacity (Backup times, p. 175).

Cabinet layout
L6 lithium battery system

The master cabinet with its touch screen beside a slave cabinet with its AEC panel, 600 mm wide and 2000 mm high; behind the door, the two battery breakers, the communication module and the modules.



FRONT
MASTER + SLAVE



INSIDE
DOOR OPEN,
ONE MODULE
PULLED OUT

FRONT

1. **10-inch touch screen** on the master: system, cabinets, modules and cells
2. **AEC panel with lamps** on every slave: run, alarm and fault lamps
3. **AEC logo** on the top frame of every cabinet
4. **Door handle with lock** the modules, breakers and BMS behind the door
5. **Perforated front door** air in at the front; out at the rear, or the top
6. **Slave cabinet** up to 14 beside the master, bolted side by side
7. **Base** anchored to the floor with expansion bolts

INSIDE

1. **Battery breaker 1** first DC switch of the cabinet
2. **Battery breaker 2** second switch; each serves a group of modules
3. **Communication module** the cabinet BMS: ports to the UPS, the network and the other cabinets
4. **Battery modules** up to 20 × 40 / 50 Ah in two columns, or 12 × 100 Ah; blank panels on empty slots
5. **Touch screen or lamp panel** in the door: touch screen on the master, lamps on each slave

Indicators, slave cabinet

Lamp	Colour	When lit
Run	blue	system running normally
Alarm	yellow	a module in alarm or protection
Fault	red	system fault

Cooling

Front air inlet with rear air outlet, or front inlet and top outlet with the top cover plate removed. Fan speed is controlled for long fan life and low noise.

600 × 850
W × D, mm; 2000 mm high

985 ± 20 kg
cabinet with 20 × 50 Ah modules

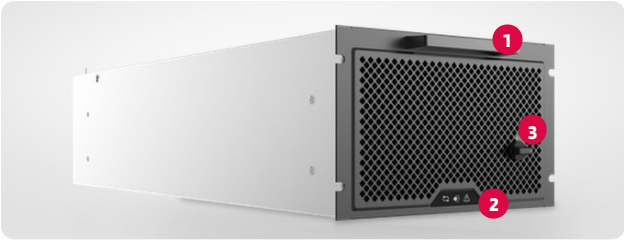
IP20
protection degree

< 65 dB
noise

Data from the AEC L6 user manual and datasheet.

Battery modules
L6 lithium battery system

Every module has its own battery management unit and a bidirectional DC/DC converter. With the knob locked it is held in the cabinet and delivers its power; a faulty module leaves the system by itself.



Front: handle, indicators and the locking knob



Rear: fans, the DC output connector and the rear handle

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

The module

Code	L6-MOD-50LI, 50 Ah
Cells	18 × 3.2 V LiFePO4, 57.6 V
Energy	2.88 kWh; DC/DC output 10 kW
Size W × D × H	223 × 665 × 152 mm
Weight	37 ± 1 kg
Discharge rate	4C
Charge current	up to 40 A, 20 A by default
SOC · SOH	accuracy ≥ 95 % · ≥ 90 %

The locking knob



Knob open: the module is free and off. Knob closed: locked in, it delivers DC by itself after its self-test.

Hot swap, about 5 minutes

Unlock the knob, pull the module by its handles, push the new one in and lock it: after a self-test of about 10 s it joins the system, with the load supplied.

One converter, three modes

CHARGE

Mains normal, modules not full

The DC/DC steps the UPS charge voltage of 265, ±265 or 530 V down and charges at constant current, limited voltage.

SLEEP

Mains normal, modules full

No charge and no discharge until the voltage or the SOC falls below the setting: no float on the cells.

DISCHARGE

Mains failure

The DC/DC boosts the cells to 240, ±240 or 480 V and supplies the UPS, module by module.

Output voltage and UPS matching

- Output 240, ±240 or 480 V DC, to the battery voltage of the UPS.
- The UPS charge voltage must match the L6 input, or it will not charge.
- UPS load within 90 % of the L6 rating, the guideline; AEC sets each margin.
- Modules and cabinets share the current within 3 %.

LFP	4C	≥ 95 %	37 ± 1 kg
lithium iron phosphate	cell discharge rate	SOC accuracy	per module

Data from the AEC L6 50 Ah datasheet and user manual. 40 and 100 Ah modules: p. 170.

L6 · ON REQUEST

40 and 100 Ah modules
L6 lithium battery system

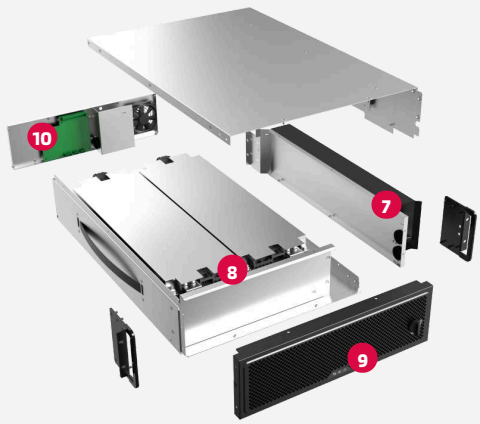
The 40 Ah module uses 6C cells for high power and short backup, in the 223 mm drawer of the 50 Ah. The 100 Ah module uses 1C cells for one to four hours: 440 mm wide, 5 kW through its own DC/DC, 12 in a cabinet.



100 AH · FRONT



REAR



INSIDE THE 100 AH MODULE

1. Front handle
2. Indicators: run, alarm, fault
3. In-place switch: locks the module and starts its output
4. Fan
5. Connector: power and signal
6. Side handle
7. DC/DC module: bidirectional, isolated, 5 kW
8. Battery cells: LFP, 3.2 V
9. Sealing plate: front
10. Sealing plate: rear

The 40 Ah module is built like the 50 Ah (p. 169): same size, same cabinet slots.

	40 Ah · 6C	100 Ah · 1C
Cells	LFP, 3.2 V · 18 in series	LFP, 3.2 V · 18 in series
Module voltage · energy	57.6 V · 2.3 kWh	57.6 V · 5.76 kWh
Cell discharge rate	6C	1C
DC/DC output	240 / ±240 / 480 V · 10 kW	240 / ±240 / 480 V · 5 kW
Current unbalance	≤ 3 %	≤ 3 %
Full cabinet	20 modules: 46 kWh · 10 min at rated power	12 modules: 69 kWh · 1 h at rated power
Size W × D × H	223 × 665 × 152 mm	440 × 665 × 132 mm
Weight · noise	36 ± 1 kg · 58 dB	52 ± 1 kg · 58 dB
Cabinet with full modules	965 ± 20 kg (M1: 955 ± 20 kg)	810 ± 24 kg

Module indicators

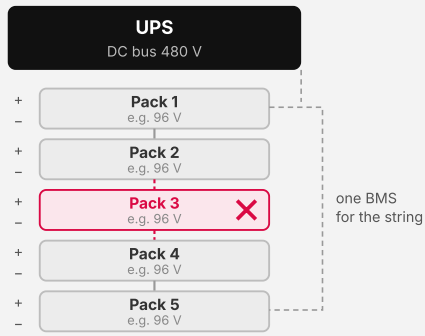
Lamp	Charge	Discharge	Sleep	Off	Module alarm	Communication fault	Module protection	Battery fault
Run (green)	steady	flashing	steady					
Alarm (yellow)			steady	steady	steady	flashing (3 s)		
Fault (red)							steady	flashing

From the AEC L6 presentation and user manual. Indicators: flashing once per second; (3 s): once every 3 seconds. M1: cabinet with one battery breaker. Backup times: p. 175.

DC/DC converter
L6 lithium battery system

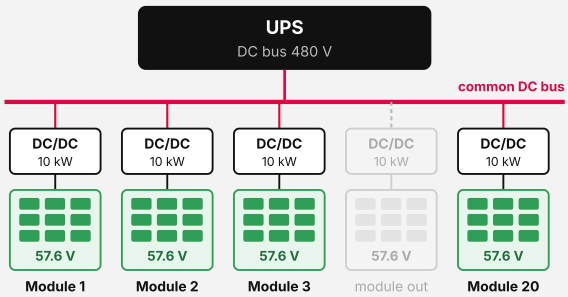
Two ways to build a lithium battery for a UPS: packs in series on one string, or AEC L6 modules in parallel, each with its own DC/DC converter. How each behaves on a fault, as the system grows and as it ages.

Conventional: packs in series
No DC/DC: the cells set the bus voltage



Pack voltages add up to the bus:
one open pack stops the whole string

AEC L6: modules in parallel
An isolated DC/DC in every module



Each module: 18 LiFePO4 cells, BMS, isolated DC/DC.
A faulty module leaves the system:
19 of 20 modules carry on, 190 of 200 kW

Side by side

	Packs in series	L6 modules in parallel
Bus voltage	the sum of the packs: set by the number of packs	set by the DC/DC: 240, ±240 or 480 V DC
One unit fails	the string opens: no backup from that string	the module leaves the system; the others carry on
Replacement	string off, packs matched to the others	hot swap, about 5 minutes, load supplied
Old and new together	the weakest pack limits the whole string	new modules beside old ones, current shared within 3 %
Growing the system	a whole new string of identical packs	one module (10 kW) or one cabinet at a time, up to 15
Charging	the UPS charger drives the string directly	each DC/DC charges its own module
A fault	can spread along the string	stays inside its module: isolated DC/DC, fire protection per module
Monitoring	one BMS for the string	three layers: module, cabinet, system; every cell

Three examples · illustrative

One unit fails
power available, 20 units

Series 0 %
L6 95 %

Series: the string opens. L6: 19 of 20 modules, 190 of 200 kW.

Add capacity
smallest step, one cabinet

Series 100 %
L6 5 %

Series: a full string. L6: one 10 kW module, 5 % of a 200 kW cabinet.

Mixed ages
share of each unit used

Series 80 %
L6 100 %

Series: the weakest pack (here 80 %) sets the string. L6: each module gives its own.

265 · ±265 · 530 V
charge input from the UPS

≥ 90 %
SOH estimate accuracy

5 min
module replacement, online

0
power cuts to replace or add a module

Examples for 50 Ah modules of 10 kW in a 20-module cabinet. Data from the AEC L6 user manual and datasheet.

IST6 + L6

IST6 + L6 system
L6 lithium battery system

Pair an AEC IST6 modular UPS with an L6 lithium system and both halves are modular: power modules and battery modules are redundant and hot-swappable, in two cabinets side by side.

IST6 · POWER

Power modules, N+X

Rectifier, inverter and DC/DC in every hot-swappable module; bypass module and two control cards back each other up.

ONE SYSTEM

Redundant twice

Lose a power module or a battery module: the load stays on the inverter and on the battery.



IST6 MODULAR UPS L6 LITHIUM, 20 MODULES

2 × hot-swap
power modules and battery modules, online

N + X
redundancy on the power and on the battery side

One supplier
UPS, battery, cabinets and service from AEC

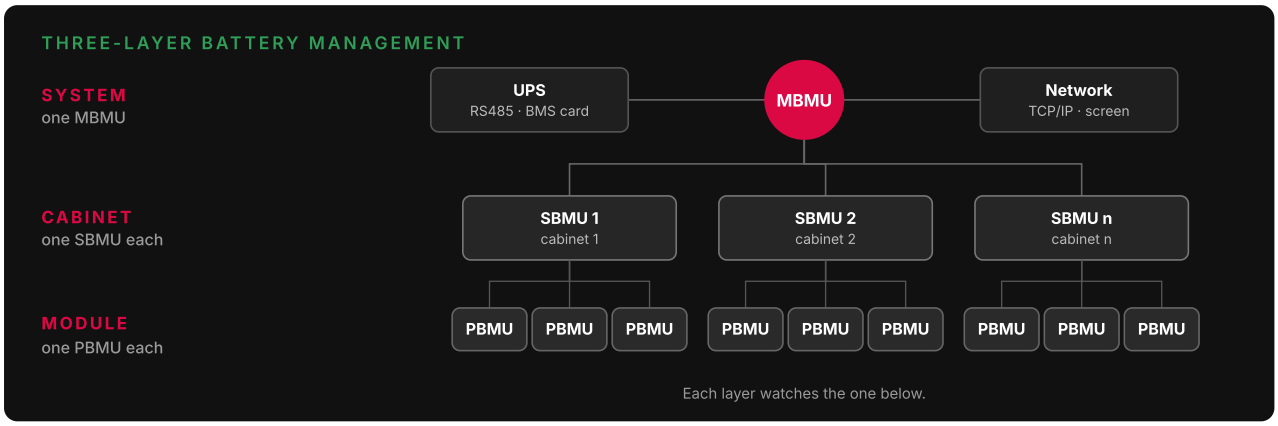
	Monolithic UPS + lead-acid string	IST6 + L6
Power conversion	one inverter: a fault stops the UPS or sends it to bypass	power modules in parallel, N+X: a faulty module leaves, the others carry the load
Service	UPS or battery work with the load at risk or on bypass	power and battery modules both swapped online, from the front
Installation	heavy blocks: floor area and floor load to check	cabinets side by side; modules slid in from the front
Battery life	about three sets in one UPS life, replaced about twice	15-year life · 5,000 cycles at 50 % depth of discharge
Battery service	whole string; checked at least twice a year	one module at a time, load supplied
A faulty unit	blocks in series: one fault affects the string	leaves the system, the others carry on
Monitoring	no health analysis, no early warning	every cell, module and cabinet; SOC and SOH

IST6 data from the IST6 user manuals, L6 data from the L6 user manual and datasheet. Lead-acid column: lead-acid limits, indicative, not a test. Battery cabinets and module quantities sized by AEC for each project.

L6 · SAFE AND SMART

Safety and management
L6 lithium battery system

Protection works at four levels, from the single cell to the whole system, watched by a three-layer BMS (module, cabinet and system): a fault is found early and stays where it started.



FOUR LEVELS OF PROTECTION · CELL → SYSTEM

LEVEL 1 **CELL** LFP 3.2 V	stable iron-phosphate chemistry	cell insulation detection	voltage and temperature of every cell
LEVEL 2 **MODULE** module BMS + DC/DC	isolated DC/DC: no link to the mains	low pack voltage, no output when off	module-level fire control
LEVEL 3 **CABINET** cabinet BMS	faulty module exits automatically	N+1 parallel redundancy	cabinet SOC, SOH and fault diagnosis
LEVEL 4 **SYSTEM** system BMS · touch screen	online insulation detection with pre-alarm	over-temperature, over-current, short circuit, over- / under-voltage, low SOC	EPO, alarms and records

Smart functions

Self-adaptive SOC
Discharge SOC balance between modules and cabinets: new modules beside old ones, current shared within 3 %.

Capacity test, no outage
Battery capacity tested with no risk of power failure.

Alarms and data
Alarm convergence and data recording locate a problem quickly; voltage and temperature of every cell, the faulty one located.

Cold start and self-start
Battery cold start; automatic restart when power returns.

TESTED
UN38.3

All eight UN38.3 tests, T.1–T.8, passed at the first cycle and after 25 cycles on the 50 Ah module (57.6 V, 2880 Wh), by an independent accredited laboratory.

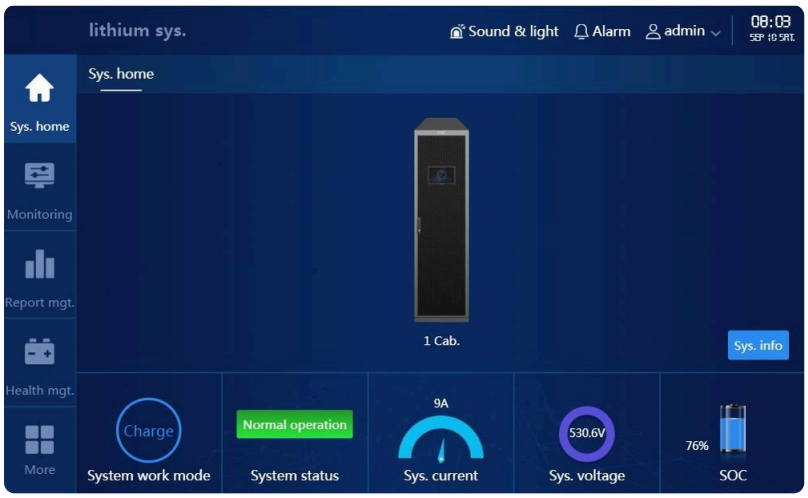
5,000 cycles
at 50 % depth of discharge; 15-year life, 50 Ah module

Functions from the L6 lithium battery system user manual; UN38.3 test report on the 50 Ah module.

L6 · SYSTEM TOUCH SCREEN

Touch screen display
L6 lithium battery system

The 10-inch touch screen of the master cabinet shows the system, each cabinet, each module and each cell, records charge and discharge and keeps the events.



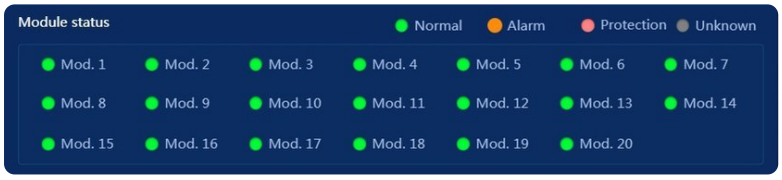
System home
Work mode, system status, current, voltage and SOC at a glance.

10"
touch screen on the master cabinet

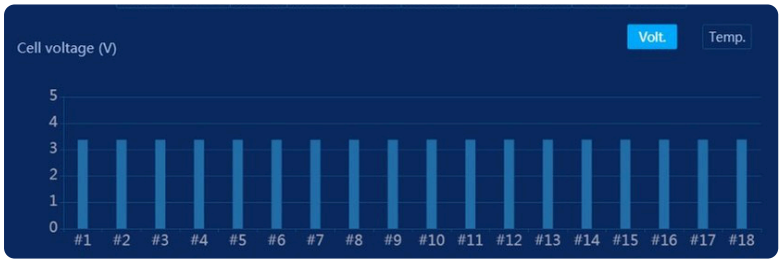
3
lamps on each slave: run, alarm, fault

3 layers
of BMS: module, cabinet, system

TCP/IP
and RS485 to the network and the UPS



Cabinet status
The state of the 20 modules of a cabinet: normal, alarm or protection; above it (not shown) communication, fire control, insulation and the two DC breakers.



Cell data
The voltage of the 18 cells of one module, bar by bar; the Volt. and Temp. tabs above the chart switch to their temperature.



Charge and discharge record
Cluster voltage, current and SOC over time, here a charge starting at 08:02; event, data and fault records on the same menu.

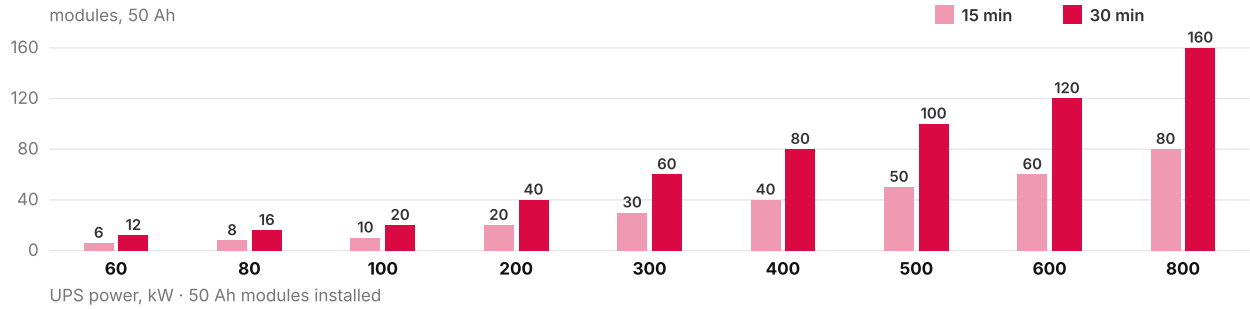
Also on the screen: health details, the health of every module of a cabinet · module status and data, the DC module state, port voltage and current · system information, rated energy, voltage, modules, highest and lowest cell · event, data and fault records.

Remote monitoring: RS485 to the AEC UPS, TCP/IP to a network management server for the control room. Slave cabinets report to the master over LAN. Screen button: press to switch on or off, long press to restart.

L6 · BATTERY RUNTIME

Backup times
L6 lithium battery system

Cabinets and modules for each UPS power, at the start of life: 50 Ah modules for 15 or 30 minutes, 40 Ah for 10 or 20 minutes, 100 Ah for one to four hours.



L6-MOD-50LI · 50 AH

15 and 30 minutes

UPS kW	15 min	30 min
≤ 60	1 · 6	1 · 12
≤ 80	1 · 8	1 · 16
≤ 100	1 · 10	1 · 20
≤ 200	1 · 20	2 · 40
≤ 300	2 · 30	3 · 60
≤ 400	2 · 40	4 · 80
≤ 500	3 · 50	5 · 100
≤ 600	3 · 60	6 · 120
≤ 800	4 · 80	8 · 160

40 AH · ON REQUEST

10 and 20 minutes

UPS kW	10 min	20 min
≤ 60	1 · 6	1 · 12
≤ 80	1 · 8	1 · 16
≤ 100	1 · 10	1 · 20
≤ 200	1 · 20	2 · 40
≤ 300	2 · 30	3 · 60
≤ 400	2 · 40	4 · 80
≤ 500	3 · 50	5 · 100
≤ 600	3 · 60	6 · 120
≤ 800	4 · 80	8 · 160

100 AH · ON REQUEST

1, 2 and 4 hours

UPS kW	1 h	2 h	4 h
≤ 6	1 · 2	1 · 3	1 · 5
≤ 10	1 · 2	1 · 4	1 · 8
≤ 15	1 · 3	1 · 6	1 · 12
≤ 20	1 · 4	1 · 8	2 · 16
≤ 40	1 · 8	2 · 16	–

× 0.9
plan a 10 % margin: actual backup = theoretical × 0.9

1 module
steps of one module for a precise sizing

20 · 12
modules per cabinet: 40 / 50 Ah · 100 Ah

10 · 5 kW
DC/DC output per module: 40 / 50 Ah · 100 Ah

READING THE TABLE

600 kW, 50 Ah modules

Three full cabinets of 20 modules hold 600 kW for 15 minutes; for 30 minutes the table doubles them: 6 cabinets and 120 modules.

AEC SIZING

AEC engineers choose the module type, the number of modules and cabinets and the margin for each project.

125–135 %
discharge overload, 1 min

135–150 %
for 30 s; above 150 %: 500 ms

UPS power in kW; cabinets · modules, from AEC sizing tables at initial capacity (start of life). –: not possible. Each 40 / 50 Ah cabinet delivers up to 200 kW (20 modules × 10 kW), each 100 Ah cabinet 60 kW (12 × 5 kW). AEC sizes every system with its margin.

Parallel and communication
L6 lithium battery system

Up to 20 modules in one cabinet; above that, a master and slave cabinets in parallel, up to fifteen, with a combiner cabinet joining their outputs.



Master with the touch screen, three slaves with lamps and the combiner, side by side; slaves and combiner go left or right of the master.

Combiner cabinet

Code · model	L6-COMBINER · L6-C-4000
Cabinets	up to 8 L6 cabinets per combiner
Output	4000 A max; to the UPS from the top or the bottom
Size · weight	400 × 850 × 2000 mm · 140 kg
Busbars	+, N and –; cabinets on the sides, the UPS in the middle
Smaller	L6-C-2000, up to 4 cabinets, on request



Combiner L6-C-4000, 400 mm wide, closed door: the outputs of up to eight cabinets on its busbars.

NETWORK

Networking device

Eight ports, up to seven cabinets each; needed from two cabinets up.

OPTION

In-row rear frame

Extends the cabinet depth to line up with a modular UPS or IT racks.

OPTION

Blank panels

Close the empty module slots; fitted like a module.

Communication module

Port	Use
RS485	RJ45: communication with the UPS (Modbus)
LAN	RJ45: monitoring by a computer, cascade between cabinets
EPO	the external emergency switch, cascaded between the cabinets
CAN	reserved
AC IN · OUT	160–300 V AC auxiliary supply for the screen, BMS and fans; cascade to the next cabinet

Large systems

- One cabinet: up to 20 modules of 40 / 50 Ah, or 12 of 100 Ah.
- From two cabinets up: the networking device, eight ports, up to seven cabinets each.
- Above that: a master with the touch screen and up to 14 slaves with lamps.
- A combiner joins the outputs: L6-C-2000 for up to 4 cabinets, L6-C-4000 for up to 8.

15
cabinets in parallel

8
cabinets per combiner

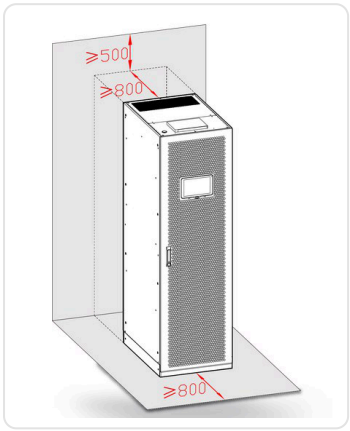
TCP/IP · RS485
communication

EPO
shared by the cabinets

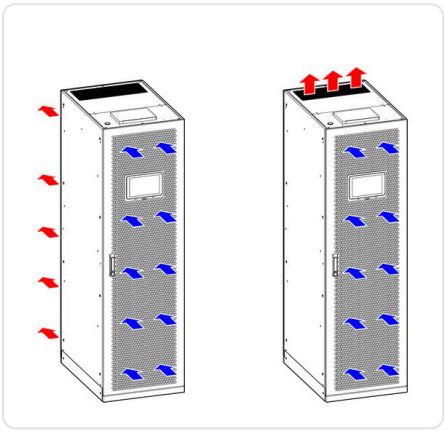
Data from the AEC L6 user manual and datasheet.

Installation and dimensions
L6 lithium battery system

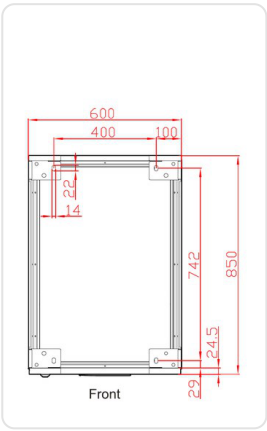
Clearances, airflow, floor fixing, site and storage conditions, and the size and weight of every cabinet and module; AEC engineers size the system and commission it with the UPS.



Clearances: front and rear ≥ 800 mm, top ≥ 500 mm; the same for cabinets in parallel.



Airflow: left, front inlet and rear outlet; right, top outlet with the top cover plate of holes removed.



Floor fixing (mm): 600 × 850 mm cabinet, 4 × Ø 14 mm holes.

Site

- Indoors, ventilated, away from water, heat, dust, corrosive or salty air and direct sun; never in the open air.
- 0–40 °C, best 20–30 °C: warmer shortens the life, colder the backup; 5–95 % RH non-condensing.
- Up to 4000 m, derated above 2000 m.
- Air in at the front, out at the rear, or out at the top with its top cover plate removed; vents kept clear.
- DC cables from the top; 160–300 V AC auxiliary supply for the BMS, screen and fans.

Floor and anchoring

- Concrete or other non-combustible floor; four Ø 14 mm holes, 400 mm across and 742 mm front to back.
- Expansion bolts standing 30–50 mm out of the floor, or a U-steel base; cabinets of one system bolted side by side.

Transport, storage and modules

- Cabinet in a honeycomb carton on a wooden pallet, modules in their own cartons; forklift from the side, kept upright.
- Modules shipped at 20–50 % SOC; storage −10–45 °C, best 0–35 °C, 200 mm off the floor.
- Idle modules charged every 1 to 6 months, by their SOC; 4 h at room temperature before start-up.
- Each module carried by several people; slid in from the bottom up, knob unlocked; a lifting platform above 1 m; blank panels on empty slots.

Start-up by AEC. Knobs locked, self-test about 10 s, voltage checked on the touch screen, breakers closed, then the UPS.

Sizes and weights

Code	What	W × D × H	Weight
L6-CAB-10x50LI	10 × 50 Ah, about 29 kWh	600 × 850 × 2000 mm	615 kg
L6-CAB-20x50LI	20 × 50 Ah, 58 kWh	600 × 850 × 2000 mm	985 ± 20 kg
40 Ah cabinet, on request	20 × 40 Ah, 46 kWh	600 × 850 × 2000 mm	965 ± 20 kg
100 Ah cabinet, on request	12 × 100 Ah, 69 kWh	600 × 850 × 2000 mm	810 ± 24 kg
L6-COMBINER	up to 8 cabinets, 4000 A	400 × 850 × 2000 mm	140 kg
L6-MOD-50LI	18 cells, 57.6 V, 2.88 kWh	223 × 665 × 152 mm	37 ± 1 kg
40 Ah module, on request	18 cells, 57.6 V, 2.3 kWh	223 × 665 × 152 mm	36 ± 1 kg
100 Ah module, on request	18 cells, 57.6 V, 5.76 kWh	440 × 665 × 132 mm	52 ± 1 kg

Cabinet weights with full modules. Data from the AEC L6 user manual and datasheet.

Technical data
L6 lithium battery system

Model	40 Ah on request	L6-CAB-10x50LI	L6-CAB-20x50LI	100 Ah on request
CABINET				
Modules	20 × 40 Ah	10 × 50 Ah	20 × 50 Ah	12 × 100 Ah
Energy	46 kWh	about 29 kWh	58 kWh	69 kWh
Rated discharge power	200 kW	100 kW	200 kW	60 kW
Output voltage · discharge	240, ±240 or 480 V DC (three output systems)			
Input voltage · charge	265, ±265 or 530 V DC			
Discharge overload	125–135 % 1 min · 135–150 % 30 s · > 150 % 500 ms			
Current unbalance	≤ 3 % between modules and cabinets			
Cabinets in parallel	up to 15; combiner L6-C-4000 for up to 8, L6-C-2000 for up to 4			
W × D × H	600 × 850 × 2000 mm			
Weight with modules	965 ± 20 kg M1: 955 ± 20 kg	615 kg	985 ± 20 kg M1: 975 ± 20 kg	810 ± 24 kg
MODULE				
Code	on request	L6-MOD-50LI		on request
Capacity · cell discharge rate	40 Ah · 6C	50 Ah · 4C		100 Ah · 1C
Cells	18 × 3.2 V LiFePO4 in series			
Rated voltage · energy	57.6 V · 2.3 kWh	57.6 V · 2.88 kWh		57.6 V · 5.76 kWh
DC/DC output per module	10 kW	10 kW		5 kW
Charge current	up to 40 A, 20 A by default			
SOC · SOH accuracy	≥ 95 % · ≥ 90 %			
Cycle life	5,000 cycles at 50 % depth of discharge; 15-year life (50 Ah)			
Size W × D × H	223 × 665 × 152 mm	223 × 665 × 152 mm		440 × 665 × 132 mm
Weight	36 ± 1 kg	37 ± 1 kg		52 ± 1 kg
FUNCTIONS				
Standard	cold start, self-start when the mains returns, EPO, SOC balance on discharge, module-level fire control, on-line insulation detection			
Protection	over-temperature, over-current, short circuit, over- and under-voltage, low SOC			
GENERAL				
Display	10-inch touch screen on the master cabinet; run, alarm and fault lamps on each slave			
Communication	TCP/IP, RS485 (Modbus to the UPS); CAN reserved			
Operating · storage	0–40 °C · –10–45 °C			
Humidity · altitude	5–95 % RH non-condensing · 4000 m, derated above 2000 m (IEC 62040-3)			
Noise · protection	< 65 dB · IP20 · battery-side overvoltage level 2			
Tests	modules UN38.3 tested, T.1–T.8 (50 Ah)			
INSTALLATION				
Clearances	front ≥ 800 mm, to open the door and pull the modules; rear ≥ 800 mm, for the air; top ≥ 500 mm			
Floor · placing	concrete or other non-combustible floor, expansion bolts; cabinets of one system bolted side by side			
Auxiliary supply · cables	160–300 V AC for the BMS, screen and fans; DC cables from the top			

50 Ah data from the AEC L6 50 Ah datasheet; 40 and 100 Ah module and cabinet data from the AEC L6 user manual. M1: cabinet with one battery breaker. Sizes and weights of every code: p. 177. Specifications are subject to change without notice.

Ordering codes
L6 lithium battery system

L6 cabinets come with 10 or 20 modules of 50 Ah, or empty to be filled in stages; modules and the combiner are sold on their own. Systems with 40 Ah or 100 Ah modules on request.



L6-CAB-20x50LI open: 20 modules of 50 Ah behind the door, one pulled out.

Code	Description
L6-CAB-10x50LI	L6 lithium cabinet with 10 × 50 Ah modules, BMS and touch screen or lamps, about 29 kWh
L6-CAB-20x50LI	L6 lithium cabinet with 20 × 50 Ah modules, 58 kWh
L6-CAB-EMPTY	L6 cabinet without modules, for up to 20 × 50 Ah
L6-MOD-50LI	LiFePO4 module 50 Ah, 2.88 kWh, with its DC/DC converter
L6-COMBINER	Combiner cabinet L6-C-4000, for up to 8 L6 cabinets

On request

Item	Description	Code
40 Ah cabinet	Cabinet for up to 20 × 40 Ah modules, master (touch screen) or slave (lamps), M or M1	on request
100 Ah cabinet	Cabinet for up to 12 × 100 Ah modules, master or slave	on request
Modules	40 Ah and 100 Ah lithium modules, hot-swappable	on request
Combiner L6-C-2000	Combiner cabinet for up to 4 cabinets	on request
Accessories	Networking device · blank panels · in-row rear frame	on request

How to size

- UPS power (kW) and the backup time you need.
- Module: 50 Ah for 15 or 30 minutes, 40 Ah for 10 or 20, 100 Ah for hours.
- Modules and cabinets from the Backup times tables (p. 175), with the 10 % margin.
- One cabinet up to 20 modules (12 of 100 Ah); a master and slaves above that, with a combiner.
- AEC confirms every system with its margin.

IST6 + L6

One supplier, one system

AEC configures the system for each UPS: module type and quantity, cabinets, combiner and accessories, sized for the AEC IST6 modular UPS and the site (IST6 + L6, p. 172).

24/7
AEC technical assistance by phone and WhatsApp

<30 min
WhatsApp reply to technical and commercial questions

One supplier
UPS, battery, cabinets and service from AEC

21+
countries with spare parts across the Allis Electric group

AEC SERVICE service@aecups.com +39 393 080 5211 www.aecups.com

Codes and descriptions from the AEC L6 ordering information; 40 Ah, 100 Ah, the L6-C-2000 and the accessories on request. Specifications are subject to change without notice.

AEC

BATTERIES FOR AEC UPS

Battery cabinets

& VRLA batteries

Steel cabinets sized for every AEC UPS, from 1 kVA towers to 200 kVA three-phase systems, delivered with AEC wiring diagrams and 12 V AGM batteries.



BB4 · BB5 · BB8, TO SCALE

10 models
tower, rack and floor-standing cabinets

9–100 Ah
12 V VRLA AGM batteries

±240 V
three-pole string with neutral

200 kW
largest UPS served by one cabinet

WHY AEC CABINETS

Key features
Battery cabinets

Steel cabinets that extend the backup of every AEC UPS: supplied empty or complete with 12 V VRLA AGM batteries, fuses and internal cables, with an AEC wiring diagram for every configuration.

10 models
tower, rack and floor-standing

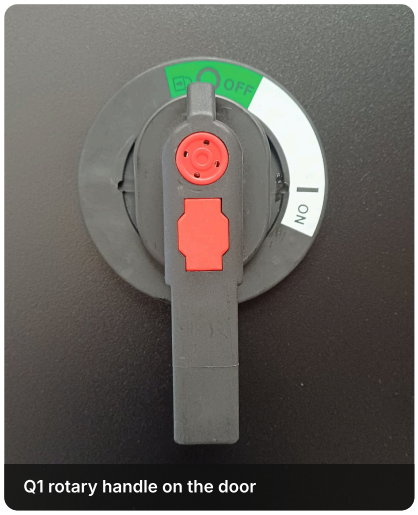
9–100 Ah
12 V VRLA AGM batteries

±240 V
three-pole string with neutral

200 kW
largest UPS served by one cabinet


Steel frame: battery shelves and the Q1 level on top


Assembled and wired with the batteries



Q1 rotary handle on the door

01 · DISCONNECT
Q1 with DC fuses
3-pole switch-disconnector with fuses sized for the UPS; door-mounted rotary handle on BB6–BB8.

02 · STRING
Neutral at the midpoint
One ± string per cabinet, matched to the IST7 split battery; BB8 holds two strings in parallel.

03 · SUPPLY
Empty or complete
Delivered with OZ Power 12 V VRLA AGM batteries, fuses and internal cables, or empty for batteries bought on site.

04 · DOCUMENTS
Wiring diagram for every set
Each configuration has its own AEC wiring diagram, supplied with the cabinet.

05 · SITE
Built to the project
IP20 as standard, up to IP44, forced ventilation, Q1 auxiliary contacts and 2-pole versions on request.

06 · STANDARDS
IEC/EN 62040-1 · EN IEC 62485-2
CE marked, RAL 9005 steel like every AEC UPS, 3-year warranty on the cabinet.


BB4
255 × 880 mm


BB5
460 × 1400 mm


BB6
800 × 1400 mm


BB7
800 × 1900 mm

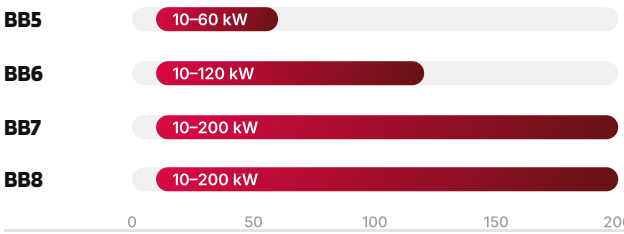

BB8
1400 × 1900 mm

THE RANGE

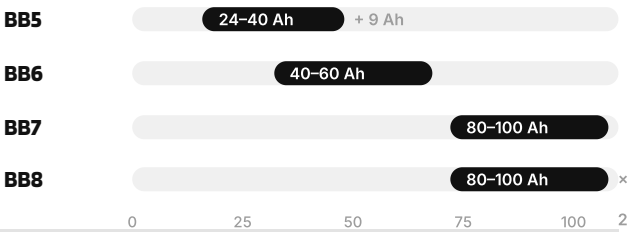
Range overview
Battery cabinets BB5–BB8

One string per cabinet, with the neutral at its midpoint like the IST7 battery input; the BB8 holds two in parallel. The cabinet code is the model + the largest UPS it serves (BB7-160K): fuses and cables follow the power, the battery configuration does not change the code.

UPS POWER SERVED · KW, BY CODE



BATTERY BLOCK · 12 V, AH



SIDE BY SIDE

	BB5	BB6	BB7	BB8
W × D × H, mm	460 × 800 × 1400	800 × 800 × 1400	800 × 800 × 1900	1400 × 800 × 1900
Weight, empty	105 kg	140 kg	160 kg	250 kg
Blocks	30–40 × 24 / 40 Ah 120 × 9 Ah	30–40 × 40 / 60 Ah	28–36 × 80 / 100 Ah	40 · 60 · 64 × 80 / 100 Ah
Largest set, filled	580 kg	≈ 800 kg	1275 kg	2215 kg
Battery shelves	4 + Q1 level	3 + Q1 level	4 + Q1 level	4 + Q1 level, 2 bays
Front	screwed panel	door, Q1 handle	door, Q1 handle	2 doors, Q1 handle
Q1 fuses	+, N, – · 50–125 A	+, – · 50–250 A	+, – · 50–400 A	+, – · 50–400 A
String	±180 … ±240 V	±180 … ±240 V	±168 … ±216 V	2 × ±120 … ±192 V
Base	102 mm plinth	95 mm feet	95 mm feet	95 mm feet

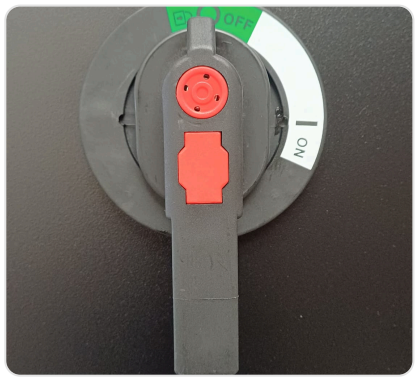
BUILT BY AEC · PHOTOS



BB8 FRAME, WIRED, ON ITS PALLET



BB6 FRAME WITH 60 AH BLOCKS AND Q1



Q1 ROTARY HANDLE ON THE DOOR

SUPPLY

Empty or complete

With OZ Power blocks, fuses and internal cables, or empty for batteries bought on site.

DOCUMENTS

A wiring diagram for every set

Each configuration has its own AEC wiring diagram, supplied with the cabinet.

STANDARDS

IEC/EN 62040-1 · EN IEC 62485-2

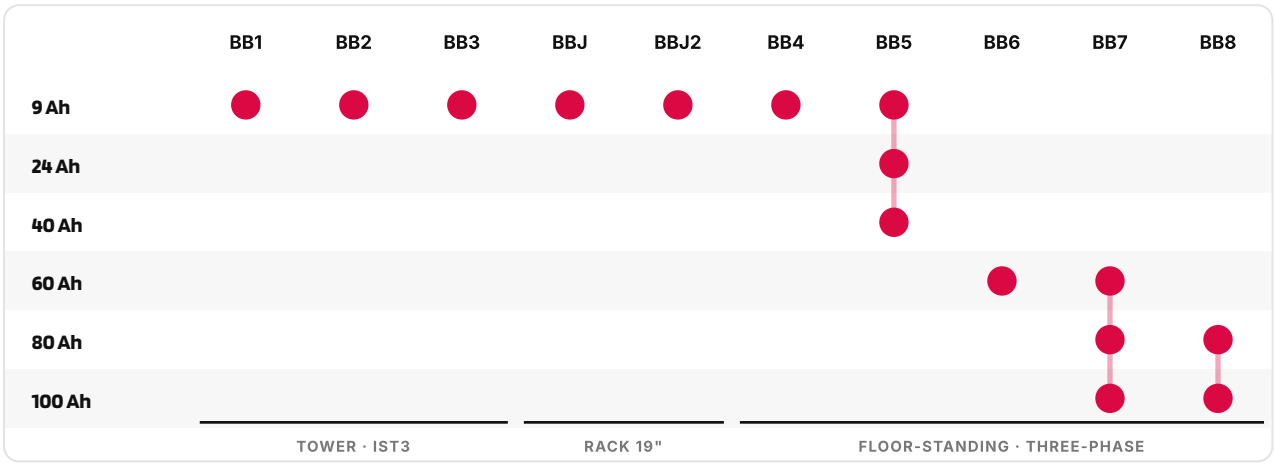
CE marked, RAL 9005 like every AEC UPS, 3-year warranty on the cabinet.

STANDALONE CABINETS

Standalone cabinets
Battery cabinets

AEC cabinets extend every AEC UPS, and they are also sold on their own: for an existing UPS, a new battery string or a project with its own backup time. The number of blocks sets the voltage; the capacity sets the cabinet.

Which cabinet for which battery



BB5 to BB8: standard and on request

01 · STANDARD

Steel, RAL 9005

Black like every AEC UPS; IP20 with ventilation slots.

02 · ON REQUEST

2-pole version

Positive and negative only, no neutral, for UPS with a 2-pole battery input.

03 · ON REQUEST

Q1 auxiliary contacts

Remote signalling of the disconnect status to the UPS or BMS.

04 · CABLES

Cable sizing

Copper cables X1 → UPS to IEC 60364-5-52, voltage drop at most 1.5 V DC.

05 · INSTALLATION

Temperature probe

With temperature-compensated charging, the UPS battery probe goes inside the cabinet, at mid-height of the stack.

06 · STANDARD

Cable entry

Gland plate on top (BB6–BB8); side, top or bottom on BB5.

BUILT TO THE PROJECT

AEC carpentry adapts the cabinets to the site: protection degree, material, ventilation and switchgear.

max. IP44
protection degree on request

Aluminium or stainless steel
cabinet material on request

Forced ventilation
automatic fans, 12 or 24 V DC

max. 1000 A
fuse holders, 2- or 3-pole disconnectors

Data from the AEC BB5–BB8 user manuals and general arrangement drawings, the AEC code list and AEC battery cabinet documentation.

TOWER AND RACK

Tower and rack cabinets
Battery cabinets

Same colour and front style as the UPS they extend. Tower cabinets stand beside the IST3; rack cabinets fit the 19-inch rack under the IST3-J or IST9.

Tower · IST3



BB1

IST3 1 kVA

- 145 × 360 × 225 mm · 4 kg
- Max. 6 × 12 V 9 Ah
- e.g. IST3-1-6X9: UPS + BB1 with 6 batteries



BB2

IST3 2–3 kVA

- 190 × 400 × 330 mm · 6 kg
- Max. 12 × 12 V 9 Ah
- e.g. IST3-2-12X9, IST3-3-12X9



BB3

IST3 6–10 kVA

- 230 × 502 × 553 mm · 15 kg
- Max. 32 × 12 V 9 Ah
- More BB3 per UPS for longer backup

Rack 19" · IST3-J and IST9



BBJ

IST3-J 1–3 kVA

- 438 × 413 mm · 2U · 6 kg
- Max. 8 × 12 V 9 Ah
- Up to 3 BBJ per UPS



BBJ2

IST3-J 6–10 kVA · IST9 20 kVA

- 438 × 500 mm · 3U · 10 kg
- Max. 16 × 12 V 9 Ah
- Up to 8 BBJ2 (IST3-J), 10 BBJ2 (IST9 20 kVA)

HOW THE CODE READS

IST3J-6-32X9

UPS model and kVA, then the total number of batteries × their capacity in Ah. IST3J-6-32X9 = IST3-J 6 kVA with two BBJ2 and 32 × 12 V 9 Ah.

Data from the AEC code list. Battery quantity per UPS is set by the UPS battery voltage: see the UPS sections.

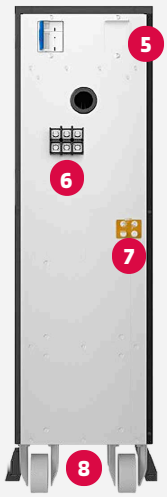
BB4 · TOWER CABINET

BB4 battery cabinet
For IST7 10–40 kVA

A mobile cabinet in the same black body as the IST7 10–20 kVA, for up to 80 batteries of 12 V 9 Ah in four layers. The standard extension of every IST7 S model, and a 9 Ah cabinet for any UPS.



SIDE PANEL REMOVED



TERMINAL SIDE

255 × 755 × 880
W × D × H, mm

58 kg
weight, empty

80 × 12 V 9 Ah
4 layers of up to 20 batteries

10–40 kW
UPS power served

SPECIFICATIONS

Size W × D × H	255 × 755 × 880 mm
Weight, empty	58 kg
Batteries	max. 80 × 12 V 9 Ah
Disconnect	three-pole DC breaker; second breaker optional
Mobility	on wheels
Codes	BB4-10k · BB4-20k · BB4-40k (UPS up to 10 / 20 / 40 kW)
Cables	internal cables included; external cables optional
Colour	black, as the IST7 10–20 kVA

LEGEND

1. **Three-pole DC breaker**
2. **Terminal cover**
3. **Battery layers**
   4 layers, up to 20 batteries each.
4. **DC fuse protection board**
5. **Optional second breaker**
6. **Terminal block**
7. **Earth (ground) terminal**
8. **Wheels**



IST7 S MODEL + BB4

Same 12 V 9 Ah blocks and the same string voltage as the internal battery: IST7-20-80X9 = 40 inside + 40 in BB4. Same black cabinet, side by side.

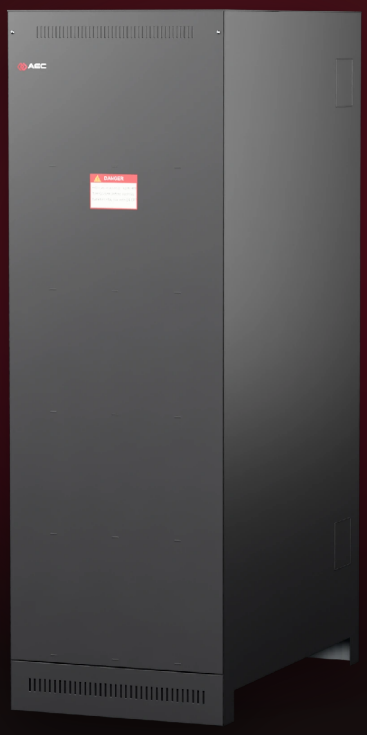
BB4 data from the AEC code list. Wiring diagram supplied by AEC with the cabinet.

BB5

SLIM CABINET

24 to 40 Ah · up to 60 kW

The narrowest AEC floor cabinet: only 460 mm wide, with a screwed front panel. Five levels: four battery shelves and the top level with the fused disconnect Q1, which also takes batteries in the 34–40 configurations.



460 × 800 × 1400
W × D × H, mm

105 kg
weight, empty

30–40 ×12 V
24 / 40 Ah blocks, or 120 × 9 Ah

60 kW
largest UPS, by code



FRONT PANEL OFF · BATTERIES IN



X-RAY · THE STRINGS INSIDE



EMPTY FRAME · SHELVES AND Q1

FOOTPRINT

460 mm wide

Fits beside an IST7 10–40 kVA, in a corridor or a narrow technical room: 0.37 m² of floor.

PROTECTION

Fused on all three poles

+, N and – each on its own fuse: the string is isolated pole by pole.

SERVICE

Removable trays

Galvanised 25 mm trays slide out to load and check the blocks shelf by shelf.

Components
BB5 battery cabinet



OPEN, FROM THE FRONT

LEGEND · **FRONT**

1. **Disconnect Q1**
   3-pole DC fuse holder on the galvanised plate of the top level: fused on +, N and −. No external handle: each pole is a carrier opened by hand with the front panel off.
2. **Terminals X1 to the UPS**
   L+, M (N) and L− to the UPS battery input, PE beside them.
3. **Batteries**
   OZ Power 12 V VRLA AGM, 2 across × 4 deep a shelf as the AEC wiring diagram lays them; Bat. 1 is the negative end.
4. **Links and main cables**
   Short links block to block, jumpers shelf to shelf; + red, − black, N blue from Q1.



Q1 COMPARTMENT

LEGEND · **Q1**

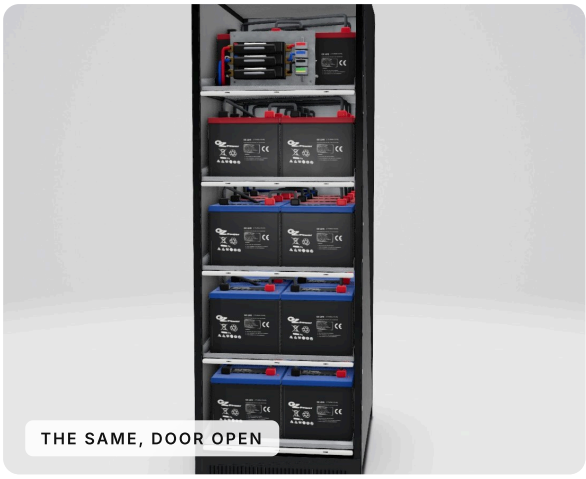
5. **Disconnect Q1**
   3-pole DC fuse holder on the galvanised plate of the top level: fused on +, N and −. No external handle: each pole is a carrier opened by hand with the front panel off.
6. **PE bonding point**
   To the UPS earth or the building earth.

With Q1 OFF the UPS terminals are isolated; the batteries and their cables up to Q1 stay live.

Battery layout
BB5 battery cabinet



X-RAY · + HALF RED, – HALF BLUE



THE SAME, DOOR OPEN

HOW THE STRING IS BUILT

One string with the neutral at its midpoint, as the IST7 split battery: + to N and N to – carry half the voltage each, so 36 blocks give 216 / 216 V, 432 V end to end. The X-ray colours the two halves.

+ half · – half · – cable black · N cable blue · + red



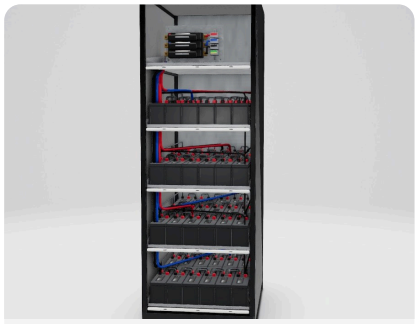
38 × 40 Ah

580 kg filled · IST7 10 · 20 · 30 · 40 · 60 kVA
228 / 228 V · 456 V
OZ-1240 · 197 × 166 × 170 mm · 11.5 kg a block



40 × 24 Ah

420 kg filled · IST7 10 · 20 · 30 · 40 kVA
240 / 240 V · 480 V
OZ-1224 · 166 × 175 × 125 mm · 7.0 kg a block



120 × 9 Ah

405 kg filled · IST7 10 · 20 · 30 · 40 kVA
3 strings of 40 · 240 / 240 V
OZ-1209 · 151 × 65 × 100 mm · 2.3 kg a block

STRING VOLTAGE

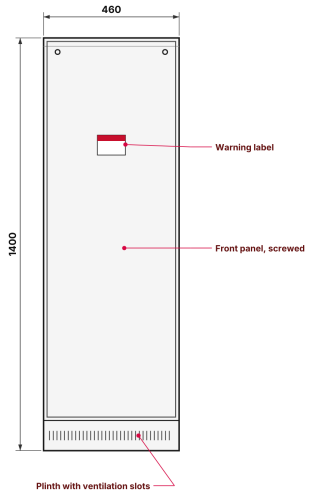
Blocks	+ / N / – · string	Blocks per half
30	180 / 180 V · 360 V	15 + 15
32	192 / 192 V · 384 V	16 + 16
34	204 / 204 V · 408 V	17 + 17
36	216 / 216 V · 432 V	18 + 18
38	228 / 228 V · 456 V	19 + 19
40	240 / 240 V · 480 V	20 + 20

SUPPLIED WITH AEC UPS

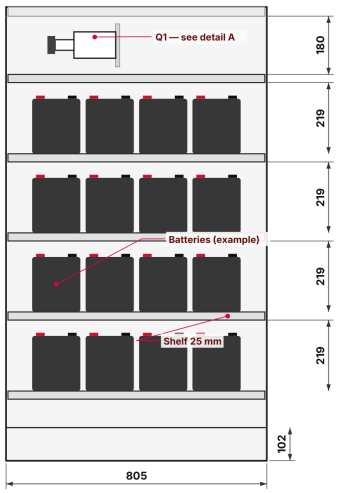
Batteries	Total kg	UPS kVA
30 · 32 · 34 × 24 Ah	340 · 356 · 372	10 · 20
36 · 38 · 40 × 24 Ah	388 · 400 · 420	10 · 20 · 30 · 40
30–38 × 40 Ah	480–580	10 · 20 · 30 · 40 · 60
100 × 9 Ah	355	IST3 10
120 × 9 Ah	405	IST7 10 · 20 · 30 · 40

Technical data
BB5 battery cabinet

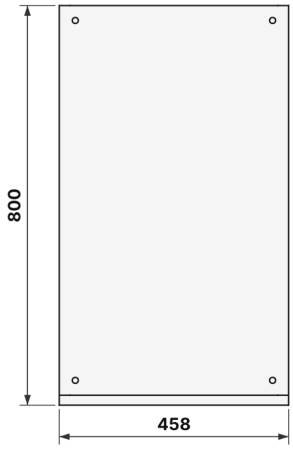
FRONT VIEW



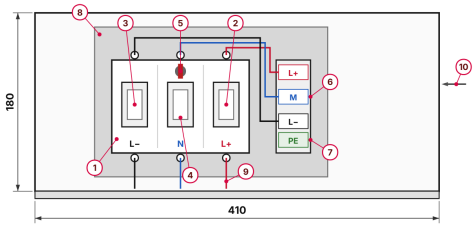
SIDE SECTION



TOP VIEW · CABLE ENTRY



DETAIL A · Q1 COMPARTMENT



1. Q1 3-pole DC switch-disconnector
2. F1 fuse (+)
3. F2 fuse (–)
4. F3 fuse (N)
5. Q1 direct handle (operate with the front panel removed)
6. X1 terminals to UPS: L+ · M · L–
7. PE bonding point
8. Galvanised mounting plate
9. Main cables to the string
10. Cable entry: right side, top and bottom

SPECIFICATIONS

Size W × D × H	460 × 800 × 1400 mm
Weight, empty	105 kg
Levels	4 battery shelves of 219 mm + Q1 level of 180 mm
Internal frame	458 × 785 mm
Front	screwed steel panel
Base	102 mm plinth with ventilation slots
Disconnect Q1	3-pole fuse holder, fused on +, N and –
Fuses	50 / 63 / 100 / 125 A, by code
String voltage	±180 … ±240 V (30–40 blocks)
Cable entry	right side, top and bottom
Floor fixing	through the base; hole positions from AEC
Protection · colour	IP20 (IP21–IP44 on request) · RAL 9005
Typical UPS	IST7 10–60 kVA · IST3 10 kVA (100 × 9 Ah)

CODES · UPS POWER · FUSES

Code	For UPS	Fuses
BB5-11	single-phase UPS, 120 × 9 Ah	–
BB5-10K	up to 10 kW	50 A
BB5-20K	up to 20 kW	63 A
BB5-40K	up to 40 kW	100 A
BB5-60K	up to 60 kW	125 A

Drawings DOC-BB5-GA-001 · MD-001 (AEC, 10/10/2026), full size in Download · data: AEC user manual and code list · fuses and cables on request.

BB6

SQUARE CABINET

40 and 60 Ah · up to 120 kW

An 800 × 800 mm footprint, a hinged door with lock and the Q1 handle on the door: the disconnect is switched without opening the cabinet. Three battery shelves and the Q1 compartment on top, behind a clear screen.



800 × 800 × 1400
W × D × H, mm

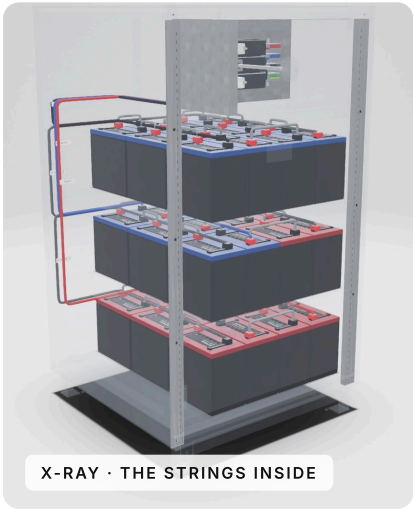
140 kg
weight, empty

30–40 ×12 V
60 Ah blocks · 40 Ah layout available

120 kW
largest UPS, by code



DOOR OPEN · BATTERIES IN



X-RAY · THE STRINGS INSIDE



EMPTY FRAME · SHELVES AND Q1

SAFETY

Q1 switched from outside

Rotary handle on the door, padlockable at OFF: no need to open the cabinet to isolate the UPS.

VISIBILITY

Clear Q1 screen

Polycarbonate screen over Q1, fuses and X1: checked at a glance, never touched by mistake.

FLEXIBILITY

2, 3 or 4 levels

Frames for the battery size: 12 blocks of 60 Ah a shelf, 40 Ah on the same layout.

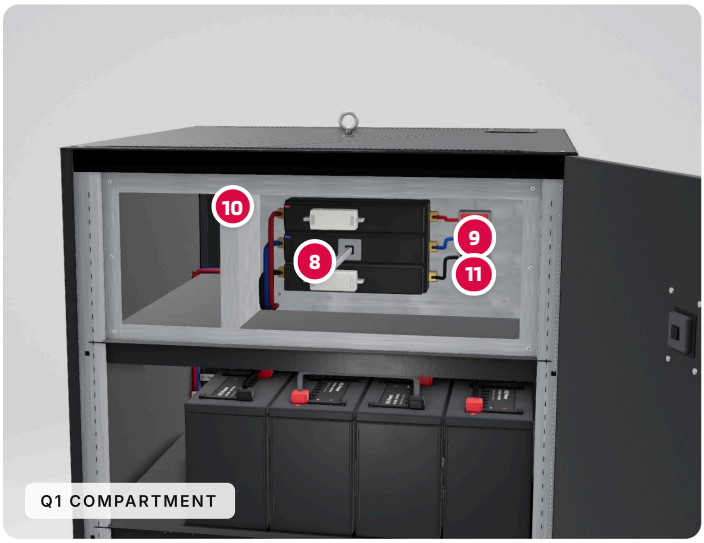
Components
BB6 battery cabinet



OPEN, FROM THE FRONT

LEGEND · **FRONT**

1. **Disconnect Q1**
   3-pole DC fuse switch-disconnector in the top compartment: fuses on + and –, the neutral switched, not fused. Turned from the door handle through a shaft.
2. **Batteries**
   OZ Power 12 V VRLA AGM, 4 across × 3 deep, turned a shelf as the AEC wiring diagram lays them; Bat. 1 is the negative end.
3. **Links and main cables**
   Short links block to block, jumpers shelf to shelf; + red, – black, N blue from Q1.
4. **Galvanised uprights**
   50 mm, holed for the shelf positions.
5. **Q1 rotary handle**
   On the door: lever down = OFF (O), a quarter turn clockwise = ON (I); padlockable.
6. **Door lock**
   Lever lock with key on the free edge.
7. **Door**
   Hinged steel door with lock, the AEC logo and the Q1 rotary handle.



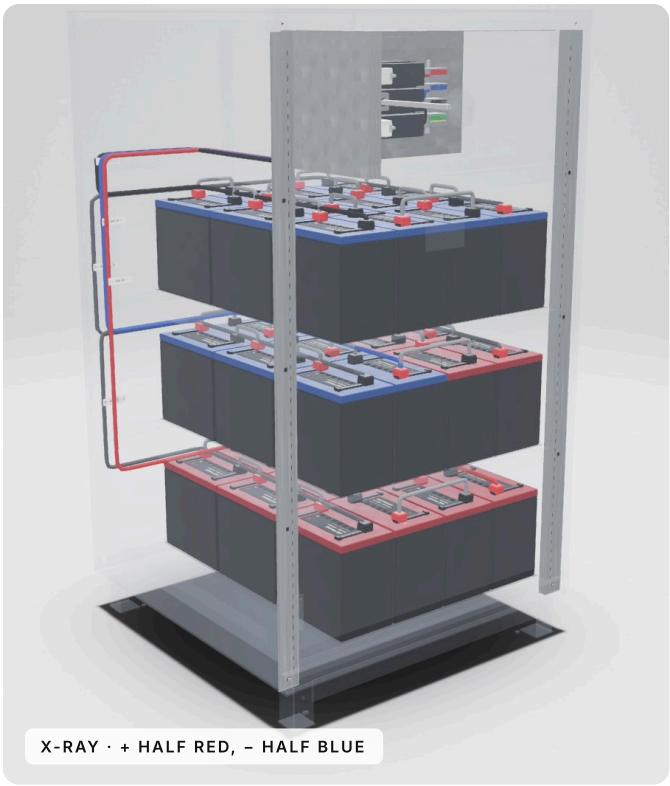
Q1 COMPARTMENT

LEGEND · **Q1**

8. **Q1 screen**
   Clear polycarbonate screen in a galvanised frame: Q1, fuses and X1 visible, never touchable. Open it only with Q1 OFF.
9. **Terminals X1 to the UPS**
   L+, M (N) and L– to the UPS battery input, PE beside them.
10. **Nameplate**
    Model, string voltage, blocks × strings, capacity, CE.
11. **PE bonding point**
    To the UPS earth or the building earth.

With Q1 OFF the UPS terminals are isolated; the batteries and their cables up to Q1 stay live.

Battery layout
BB6 battery cabinet



X-RAY · + HALF RED, – HALF BLUE



THE SAME, DOOR OPEN

HOW THE STRING IS BUILT

One string with the neutral at its midpoint, as the IST7 split battery: + to N and N to – carry half the voltage each, so 36 blocks give 216 / 216 V, 432 V end to end. The X-ray colours the two halves.

+ half · – half · – cable black · N cable blue · + red



30 × 60 Ah

660 kg filled · IST7 10–100 kVA
180 / 180 V · 360 V
OZ-1260 · 230 × 138 × 216 mm · 16.5 kg a block



36 × 60 Ah

760 kg filled · IST7 10–100 kVA
216 / 216 V · 432 V
OZ-1260 · 230 × 138 × 216 mm · 16.5 kg a block



40 × 60 Ah

≈ 800 kg filled · IST7 10–100 kVA
240 / 240 V · 480 V
OZ-1260 · 230 × 138 × 216 mm · 16.5 kg a block

STRING VOLTAGE

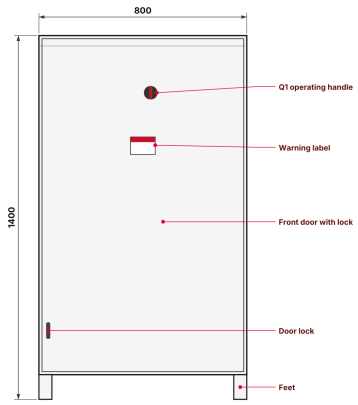
Blocks	+ / N / – · string	Blocks per half
30	180 / 180 V · 360 V	15 + 15
32	192 / 192 V · 384 V	16 + 16
34	204 / 204 V · 408 V	17 + 17
36	216 / 216 V · 432 V	18 + 18
38	228 / 228 V · 456 V	19 + 19
40	240 / 240 V · 480 V	20 + 20

SUPPLIED WITH AEC UPS

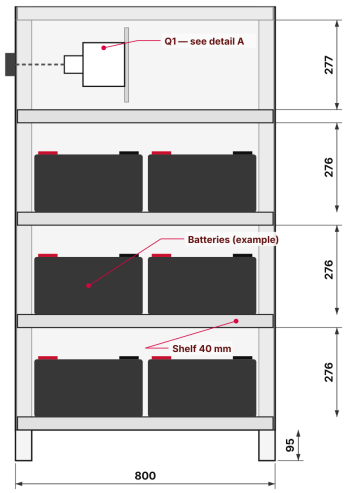
Batteries	Total kg	UPS kVA
30 × 60 Ah	660	10–100
32 × 60 Ah	695	10–100
34 × 60 Ah	730	10–100
36 × 60 Ah	760	10–100
40 × 60 Ah	≈ 800	10–100

Technical data
BB6 battery cabinet

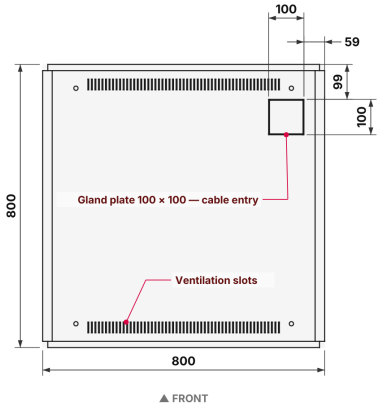
FRONT VIEW



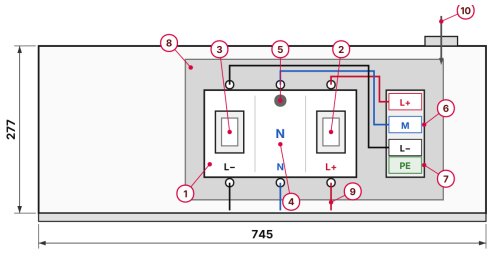
SIDE SECTION



TOP VIEW · CABLE ENTRY



DETAIL A · Q1 COMPARTMENT



1. Q1 3-pole DC switch-disconnector
2. F1 fuse (+)
3. F2 fuse (–)
4. N pole (switched, not fused)
5. Handle shaft to door
6. X1 terminals to UPS: L+ · M · L–
7. PE bonding point
8. Galvanised mounting plate
9. Main cables to the string
10. Cable entry: gland plate 100 × 100 (top)

SPECIFICATIONS

Size W × D × H	800 × 800 × 1400 mm
Weight, empty	140 kg
Levels	3 battery shelves of 276 mm + Q1 level of 277 mm
Internal frame	745 × 760 mm; frames with 2, 3 or 4 levels
Door	hinged, lock, Q1 rotary handle
Base	steel feet 95 mm, open base
Disconnect Q1	3-pole fuse switch-disconnector; fuses on + and –, N switched
Fuses	NH, 50 … 250 A, by code
String voltage	±180 … ±240 V (30–40 blocks)
Cable entry	roof gland plate 100 × 100 mm; open base
Floor fixing	Ø12 mm holes at 610 × 665 mm
Protection · colour	IP20 (IP21–IP44 on request) · RAL 9005
Typical UPS	IST7 10–100 kVA

CODES · UPS POWER · FUSES

Code	For UPS	Fuses
BB6-10K	up to 10 kW	50 A
BB6-20K	up to 20 kW	63 A
BB6-40K	up to 40 kW	100 A
BB6-60K	up to 60 kW	125 A
BB6-80K	up to 80 kW	160 A
BB6-100K	up to 100 kW	250 A
BB6-120K	up to 120 kW	250 A

Drawings DOC-BB6-GA-001 · MD-001 (AEC, 10/10/2026), full size in Download · data: AEC user manual and code list · fuses and cables on request.

BB7

TALL CABINET

80 and 100 Ah · up to 200 kW

The BB6 footprint, 1900 mm high, for the large 80 and 100 Ah blocks: four battery shelves and the Q1 level, which takes 2 or 4 more blocks in the 34 and 36 configurations. Up to 36 × 100 Ah in 0.64 m² of floor.



800 × 800 × 1900 W × D × H, mm	**160** kg weight, empty
28–36 × 12 V 80 / 100 Ah blocks	**200** kW largest UPS, by code



DOOR OPEN · BATTERIES IN



X-RAY · THE STRINGS INSIDE



EMPTY FRAME · SHELVES AND Q1

CAPACITY

43 kWh in 0.64 m²

36 × 12 V 100 Ah, the largest single string in one AEC cabinet.

SAFETY

Q1 switched from outside

Rotary handle on the door, padlockable at OFF; Q1 behind a clear screen.

POWER

Fuses up to 400 A

One cabinet, codes from 10 to 200 kW: fuses and cables follow the UPS.

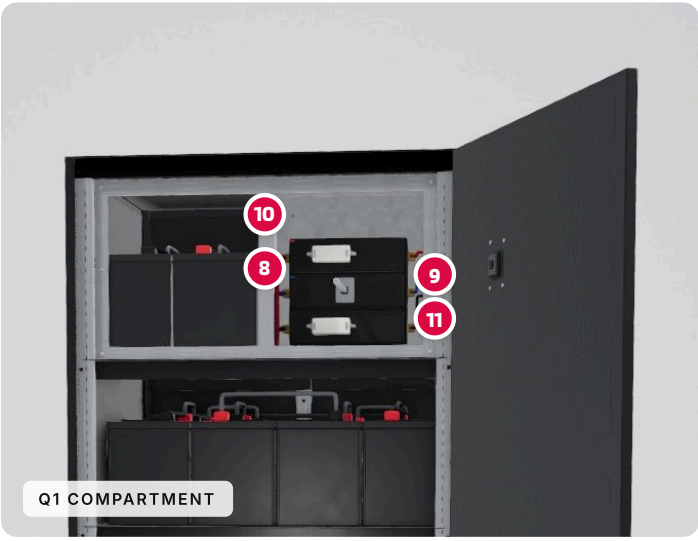
Components
BB7 battery cabinet



OPEN, FROM THE FRONT

LEGEND · **FRONT**

1. **Disconnect Q1**
   3-pole DC fuse switch-disconnector in the top compartment: fuses on + and –, the neutral switched, not fused. Turned from the door handle through a shaft.
2. **Batteries**
   OZ Power 12 V VRLA AGM, 4 across × 2 deep, turned a shelf as the AEC wiring diagram lays them; Bat. 1 is the negative end.
3. **Links and main cables**
   Short links block to block, jumpers shelf to shelf; + red, – black, N blue from Q1.
4. **Galvanised uprights**
   50 mm, holed for the shelf positions.
5. **Q1 rotary handle**
   On the door: lever down = OFF (O), a quarter turn clockwise = ON (I); padlockable.
6. **Door lock**
   Lever lock with key on the free edge.
7. **Door**
   Hinged steel door with lock, the AEC logo and the Q1 rotary handle.



Q1 COMPARTMENT

LEGEND · **Q1**

8. **Q1 screen**
   Clear polycarbonate screen in a galvanised frame: Q1, fuses and X1 visible, never touchable. Open it only with Q1 OFF.
9. **Terminals X1 to the UPS**
   L+, M (N) and L– to the UPS battery input, PE beside them.
10. **Nameplate**
    Model, string voltage, blocks × strings, capacity, CE.
11. **PE bonding point**
    To the UPS earth or the building earth.

With Q1 OFF the UPS terminals are isolated; the batteries and their cables up to Q1 stay live.

Battery layout
BB7 battery cabinet



X-RAY · + HALF RED, – HALF BLUE



THE SAME, DOOR OPEN

HOW THE STRING IS BUILT

One string with the neutral at its midpoint, as the IST7 split battery: + to N and N to – carry half the voltage each, so 36 blocks give 216 / 216 V, 432 V end to end. The X-ray colours the two halves.

+ half · – half · – cable black · N cable blue · + red



30 × 80 Ah

870 kg filled · IST7 10–160 kVA
180 / 180 V · 360 V
OZ-1280 · 260 × 169 × 216 mm · 22.0 kg a block



34 × 80 Ah

960 kg filled · IST7 10–160 kVA
204 / 204 V · 408 V
OZ-1280 · 260 × 169 × 216 mm · 22.0 kg a block



36 × 100 Ah

1275 kg filled · IST7 10–160 kVA
216 / 216 V · 432 V
OZ-12100 · 328 × 172 × 220 mm · 28.5 kg a block

STRING VOLTAGE

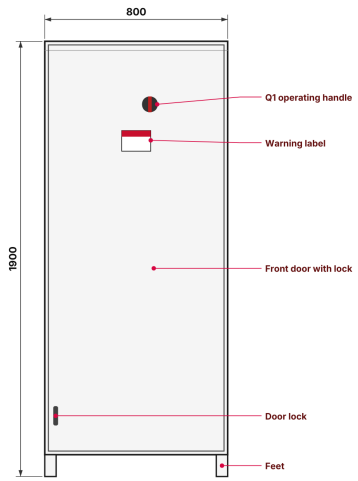
Blocks	+ / N / – · string	Blocks per half
28	168 / 168 V · 336 V	14 + 14
30	180 / 180 V · 360 V	15 + 15
32	192 / 192 V · 384 V	16 + 16
34	204 / 204 V · 408 V	17 + 17
36	216 / 216 V · 432 V	18 + 18

SUPPLIED WITH AEC UPS

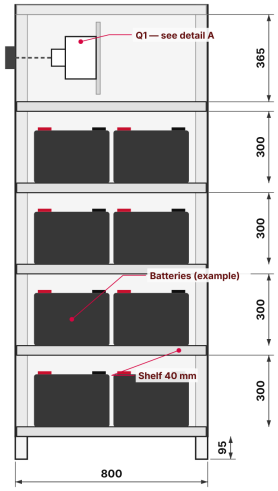
Batteries	Total kg	UPS kVA
30 · 32 · 34 · 36 × 80 Ah	870 · 930 · 960 · 1005	10–160
30 · 32 · 34 · 36 × 100 Ah	1095 · 1155 · 1215 · 1275	10–160

Technical data
BB7 battery cabinet

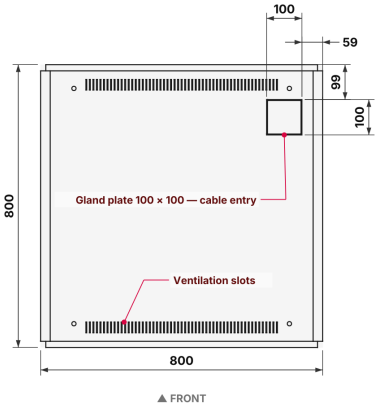
FRONT VIEW



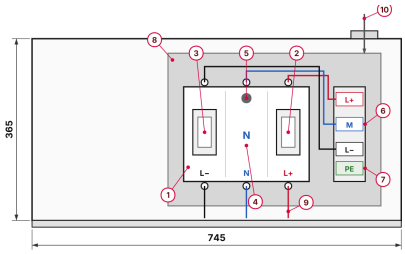
SIDE SECTION



TOP VIEW · CABLE ENTRY



DETAIL A · Q1 COMPARTMENT



1. Q1 3-pole DC switch-disconnector
2. F1 fuse (+)
3. F2 fuse (–)
4. N pole (switched, not fused)
5. Handle shaft to door
6. X1 terminals to UPS: L+ · M · L–
7. PE bonding point
8. Galvanised mounting plate
9. Main cables to the string
10. Cable entry: gland plate 100 × 100 (top)

SPECIFICATIONS

Size W × D × H	800 × 800 × 1900 mm
Weight, empty	160 kg
Levels	4 battery shelves of 300 mm + Q1 level of 365 mm
Internal frame	745 × 760 mm; frames with 2 to 5 levels
Door	hinged, lock, Q1 rotary handle
Base	steel feet 95 mm, open base
Disconnect Q1	3-pole fuse switch-disconnector; fuses on + and –, N switched
Fuses	NH, 50 ... 400 A, by code
String voltage	±168 ... ±216 V (28–36 blocks)
Cable entry	roof gland plate 100 × 100 mm; open base
Floor fixing	4 × Ø9 mm, centres 685 × 700 mm
Protection · colour	IP20 (IP21–IP44 on request) · RAL 9005
Typical UPS	IST7 10–160 kVA (codes up to 200 kW)

CODES · UPS POWER · FUSES

Code	For UPS	Fuses
BB7-10K	up to 10 kW	50 A
BB7-20K	up to 20 kW	63 A
BB7-40K	up to 40 kW	100 A
BB7-60K	up to 60 kW	125 A
BB7-80K	up to 80 kW	160 A
BB7-100K	up to 100 kW	250 A
BB7-120K	up to 120 kW	250 A
BB7-160K	up to 160 kW	400 A
BB7-200K	up to 200 kW	400 A

Drawings DOC-BB7-GA-001 · MD-001 (AEC, 10/10/2026), full size in Download · data: AEC user manual and code list · fuses and cables on request.

BB8

DOUBLE CABINET

Two strings · up to 200 kW

Two bays, two doors, 1400 mm wide: two identical strings in parallel at Q1, each with its own +, N and – cables. Up to 64 × 100 Ah, the largest AEC battery cabinet, with Q1 and its handle in the right bay.



1400 × 800 × 1900
W × D × H, mm

250 kg
weight, empty

40–64 × 12 V
80 / 100 Ah, two strings

200 kW
largest UPS, by code



DOOR OPEN · BATTERIES IN



X-RAY · THE STRINGS INSIDE



EMPTY FRAME · SHELVES AND Q1

CAPACITY
77 kWh in one cabinet
64 × 12 V 100 Ah in two strings of 32: the longest runtimes at 200 kW.

REDUNDANCY
Two strings in parallel
Each string has its own cables to Q1 and is measured on its own.

SERVICE
Two doors, two bays
String A on shelves 4–3, string B on 2–1; Q1 and the handle in the right bay.

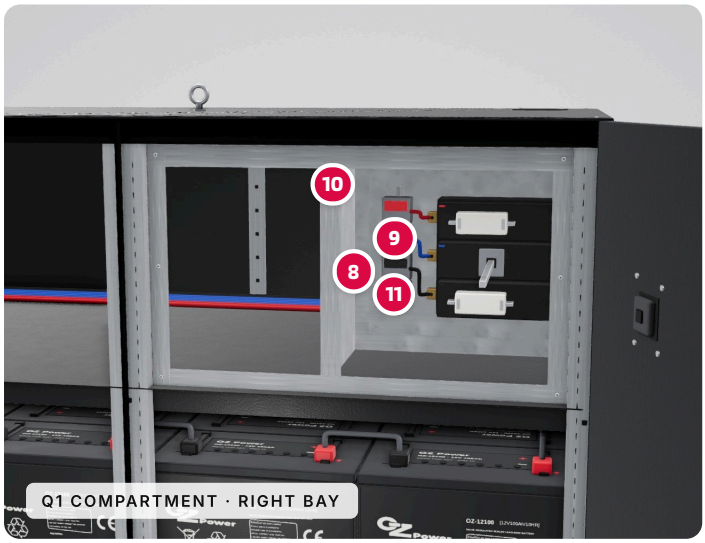
Components
BB8 battery cabinet



OPEN, FROM THE FRONT

LEGEND · **FRONT**

1. **Disconnect Q1**
   3-pole DC fuse switch-disconnector in the right bay: fuses on + and –, the neutral switched, not fused. Both strings meet at Q1.
2. **Batteries**
   OZ Power 12 V VRLA AGM, 4 across × 4 deep a shelf as the AEC wiring diagram lays them; Bat. 1 is the negative end.
3. **Links and main cables**
   Short links block to block, jumpers shelf to shelf; + red, – black, N blue from Q1.
4. **Galvanised uprights**
   50 mm (60 mm in the middle), holed for the shelf positions.
5. **Q1 rotary handle**
   On the door: lever down = OFF (O), a quarter turn clockwise = ON (I); padlockable.
6. **Door lock**
   One lever lock with key per door.
7. **Doors**
   Two hinged steel doors with lock: the AEC logo on the left one, the Q1 rotary handle on the right one.



Q1 COMPARTMENT · RIGHT BAY

LEGEND · **Q1**

8. **Q1 screen**
   Clear polycarbonate screen in a galvanised frame: Q1, fuses and X1 visible, never touchable. Open it only with Q1 OFF.
9. **Terminals X1 to the UPS**
   L+, M (N) and L– to the UPS battery input, PE beside them.
10. **Nameplate**
    Model, string voltage, blocks × strings, capacity, CE.
11. **PE bonding point**
    To the UPS earth or the building earth.

With Q1 OFF the UPS terminals are isolated; the batteries and their cables up to Q1 stay live.

Battery layout
BB8 battery cabinet



X-RAY · + HALF RED, – HALF BLUE



THE SAME, DOOR OPEN

HOW THE STRING IS BUILT

Two identical strings, A and B, each with the neutral at its midpoint: + to N and N to – carry half the voltage each. They meet in parallel at Q1, each on its own +, N and – cables: measure each string on its own.

+ half · – half · – cable black · N cable blue · + red



40 × 100 Ah

1495 kg filled · IST7 10–200 kVA
2 strings of 20 · 120 / 120 V
OZ-12100 · 328 × 172 × 220 mm · 28.5 kg a block



60 × 80 Ah

1650 kg filled · IST7 10–200 kVA
2 strings of 30 · 180 / 180 V
OZ-1280 · 260 × 169 × 216 mm · 22.0 kg a block



64 × 100 Ah

2215 kg filled · IST7 60–200 kVA
2 strings of 32 · 192 / 192 V
OZ-12100 · 328 × 172 × 220 mm · 28.5 kg a block

STRING VOLTAGE

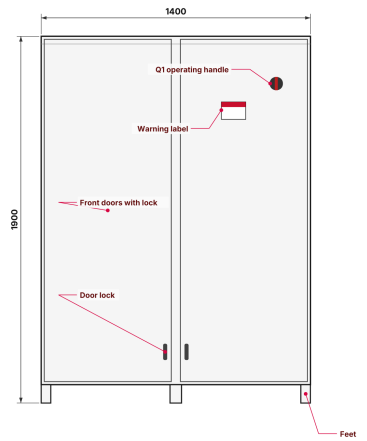
Blocks	Each string	Strings
40 = 2 × 20	120 / 120 V · 240 V	A + B
60 = 2 × 30	180 / 180 V · 360 V	A + B
64 = 2 × 32	192 / 192 V · 384 V	A + B

SUPPLIED WITH AEC UPS

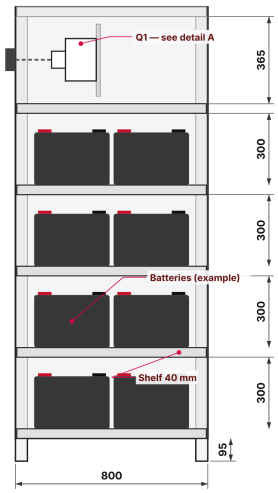
Batteries	Total kg	UPS kVA
40 × 80 Ah	1195	10–40
60 × 80 Ah	1650	10–200
64 × 80 Ah	1735	60–200
40 × 100 Ah	1495	10–40
60 × 100 Ah	2095	10–200
64 × 100 Ah	2215	60–200

Technical data
BB8 battery cabinet

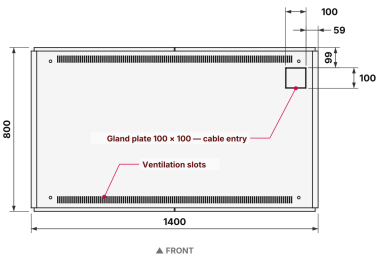
FRONT VIEW



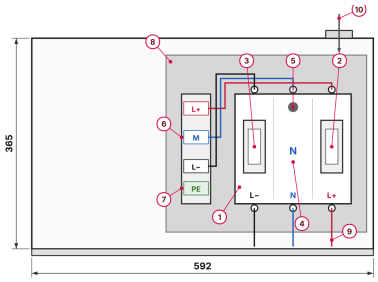
SIDE SECTION



TOP VIEW · CABLE ENTRY



DETAIL A · Q1 COMPARTMENT (RIGHT BAY)



1. Q1 3-pole DC switch-disconnector
2. F1 fuse (+)
3. F2 fuse (–)
4. N pole (switched, not fused)
5. Handle shaft to door
6. X1 terminals to UPS: L+ · M · L–
7. PE bonding point
8. Galvanised mounting plate
9. Main cables to the string
10. Cable entry: gland plate 100 × 100 (top)

SPECIFICATIONS

Size W × D × H	1400 × 800 × 1900 mm
Weight, empty	250 kg
Levels	4 battery shelves of 300 mm + Q1 level of 365 mm
Internal frame	1345 × 760 mm, two bays
Doors	two hinged doors with lock; Q1 handle on the right
Base	steel feet 95 mm, open base
Disconnect Q1	right bay; fuses on + and –, N switched
Fuses	NH00 / NH1 / NH2, 50 … 400 A, by code
String voltage	±120 … ±192 V, each string
Cable entry	roof gland plate 100 × 100 mm; open base
Floor fixing	through the feet; hole positions from AEC
Protection · colour	IP20 (IP21–IP44 on request) · RAL 9005
Typical UPS	IST7 10–200 kVA

CODES · UPS POWER · FUSES

Code	For UPS	Fuses
BB8-10K	up to 10 kW	50 A
BB8-20K	up to 20 kW	63 A
BB8-40K	up to 40 kW	100 A
BB8-60K	up to 60 kW	125 A
BB8-80K	up to 80 kW	160 A
BB8-100K	up to 100 kW	250 A
BB8-120K	up to 120 kW	250 A
BB8-160K	up to 160 kW	400 A
BB8-200K	up to 200 kW	400 A

Drawings DOC-BB8-GA-001 · MD-001 (AEC, 10/10/2026), full size in Download · data: AEC user manual and code list · fuses and cables on request.

INSTALLATION

Installation and safety
Battery cabinets BB5–BB8

From the AEC BB5–BB8 user manuals (10/10/2026). The cabinet holds a DC string of up to 480 V: installation and service by qualified electricians only.

STEP BY STEP

1 Keep Q1 OFF
Open Q1 (BB5: the three fuse carriers) before loading the blocks and keep it open for the whole installation.

2 Load from the bottom
Bottom shelf first, as the AEC wiring diagram places each block: terminals oriented as drawn, covers fitted.

3 Link the blocks
Short links – to + along each shelf, jumpers J1, J2 … shelf to shelf, tightened to the battery torque.

4 Connect N, then –, then +
Main cables from Q1: N blue to the midpoint, – black to Bat. 1, + red to the last block, last of all.

5 Bond PE
PE to the UPS earth or the building earth: same section as the phase cables up to 16 mm², 16 mm² up to 35 mm², half above.

6 Check before ON
Measure + / N and N / – at X1 (each string on its own in the BB8) before Q1 is closed.

THE ROOM

Temperature	20–25 °C is best, 0–40 °C allowed: battery life halves about every 8 °C above 25 °C.
Clearances	BB6–BB8: 100 mm free at the sides and behind for the ventilation slots; the door's swing in front.
Ventilation	Battery room ventilation to EN IEC 62485-2, for the hydrogen a VRLA string can release on charge.
Floor	Check the floor load: up to 2215 kg on 1.12 m² (BB8, 64 × 100 Ah).
Cables	Section by the fuse, from the user manual: e.g. 250 A → 120 mm² copper, PE 60 mm². Cable entry from the roof gland plate or the open base (BB6–BB8), the right side (BB5).

CABLE COLOURS

+ red · N blue · – black · PE yellow-green

BB7-160K

How to read the code

Model + the largest UPS power the cabinet serves, in kW: the fuses and the cables follow it. The battery configuration does not change the code: order the cabinet, then the blocks (OZ Power, Ah and quantity), or the complete set with the UPS.

See every cabinet in 3D

Open the doors, switch Q1, X-ray the strings and change the battery configuration: portal.emea.aecups.com › Tools › 3D. The room check (Tools › Room fit) places the cabinet beside the UPS with the clearances and the floor load.

ORDERING

Ordering codes
Battery cabinets

Code	Description
BB1 · BB2 · BB3	Tower cabinets for IST3 1 kVA · 2–3 kVA · 6–10 kVA
BBJ · BBJ2	Rack cabinets 2U and 3U for IST3-J and IST9
BB4-10k · -20k · -40k	BB4 for UPS up to 10 / 20 / 40 kW, max 80 × 9 Ah, internal cables
BB4-11 · BB5-11	Cabinets for single-phase UPS: max 80 × 9 Ah (BB4) · 120 × 9 Ah (BB5)
BB5-10k ... BB5-60k	BB5 for UPS up to 10 · 20 · 40 · 60 kW; 24 / 40 Ah or up to 120 × 9 Ah; 3 fuse holders
BB6-10k ... BB6-100k	BB6 for UPS up to 10 · 20 · 40 · 60 · 80 · 100 kW; 2 fuse holders
BB7-10k ... BB7-200k	BB7 for UPS up to 10 · 20 · 40 · 60 · 80 · 100 · 120 · 160 · 200 kW
BB8-10k ... BB8-200k	BB8 for UPS up to 10 · 20 · 40 · 60 · 80 · 100 · 120 · 160 · 200 kW
OZ Power 12 V	9 · 24 · 40 · 60 · 80 · 100 · 200 Ah · code on request

BB4–BB8 codes: model + maximum UPS power, which sets fuse rating and cables. Each code is available with or without fuses, internal cables and external cables (X1 → UPS).

1 · UPS

Power and voltage

UPS model and kW set the cabinet code and the number of batteries per string.

2 · BACKUP

Capacity

Backup time sets the battery capacity (9 to 100 Ah) and the number of cabinets.

3 · SITE

Cables and options

External cables to the UPS, and the options for the site listed on p. 183.

EXAMPLE

BB7-120k

BB7 cabinet for a UPS up to 120 kW: fuses F1/F2 250 A NH1, X1 → UPS cables at least 2 × 70 mm² Cu per pole, PE 35 mm².



12 V 9 Ah · 12 V 24 Ah · 12 V 40 Ah · 12 V 60 Ah · 12 V 80 Ah · 12 V 100 Ah · 12 V 200 Ah

OZ Power 12 V batteries, 9 to 200 Ah. Cabinet codes from the AEC code list; fuse data from the AEC battery cabinet catalogues, cable data from the IST7 user manuals.

AEC

ENERGY STORAGE · VRLA

OZ Power

AGM batteries 12 V

Sealed, maintenance-free valve-regulated batteries from 9 to 200 Ah: the energy behind every AEC UPS and battery cabinet.

- **Thin pressed plates** — more power in short discharges
- **Pure lead** — low corrosion, low self-discharge
- **99% recombination** — sealed, no topping up
- **12-year design life** — 40–200 Ah models



9–200 Ah	−20…60 °C	2000 A	< 3%
seven 12 V models	discharge temperature range	max. 5 s discharge, 200 Ah	self-discharge per month

TECHNOLOGY

Battery technology
OZ Power VRLA batteries

Six cells in series, each a stack of thin pressed plates on pure-lead grids, separated by absorbent glass mat and sealed under a one-way valve.

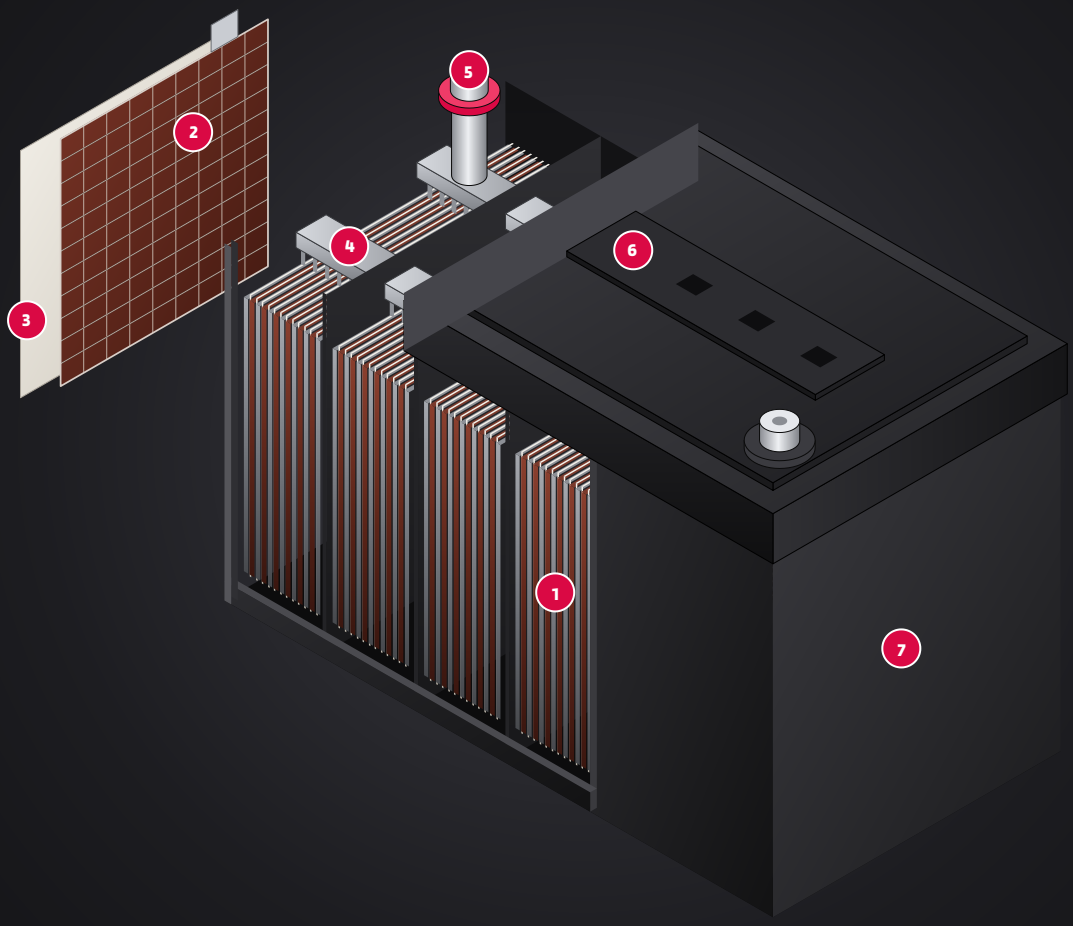


ILLUSTRATION OF THE INTERNAL STRUCTURE OF A 12 V AGM BLOCK · NOT TO SCALE

1 Thin pressed plates
Thin plates, pressed: more plate surface in the same block for high-rate UPS discharges.

2 Pure-lead grid
High-purity lead grid: low corrosion, long float life, low self-discharge.

3 AGM glass mat
Absorbent glass-mat separator holds all the electrolyte: no free acid.

4 Cell connections
Low-resistance current path: internal resistance down to 3.5 mΩ (200 Ah).

5 Terminals
Insert terminals M5 to M8, + marked in red.

6 Safety valve
Opens only on overpressure: 99% of the gas recombines inside the cell.

7 ABS case
UL94-HB container, flame-retardant UL94-V0 on request.

SHIPPING AND END OF LIFE

Non-dangerous goods
The OZ Power 12 V series is classified as non-dangerous goods: shipped safely by truck, rail and air.

99% recyclable
At end of life the AGM VRLA block is 99% recyclable: lead, acid and plastics are recovered.

STANDARDS	DESIGN LIFE	SELF-DISCHARGE	STORAGE
IEC · JIS · BS · CE	6–8 years (9 · 24 Ah) · 12 years (40–200 Ah)	< 3% per month at 25 °C	recharge every 3 months

THE RANGE

Models and range
OZ Power VRLA batteries

From the 9 Ah block inside every single-phase UPS to the 200 Ah block for long backup: same technology, same quality.

TO SCALE
L × W × H



9 Ah	24 Ah	40 Ah	60 Ah	80 Ah	100 Ah	200 Ah
151 × 65 × 94 mm	166 × 175 × 125 mm	197 × 166 × 170 mm	230 × 138 × 211 mm	260 × 169 × 211 mm	328 × 172 × 215 mm	522 × 240 × 219 mm

OZ Power 12 V	9 Ah	24 Ah	40 Ah	60 Ah	80 Ah	100 Ah	200 Ah
Capacity C10 (1.80 V/cell) · C20 (1.75 V/cell)	8.4 · 9.0 Ah	22.4 · 24.0 Ah	40.0 · 42.4 Ah	55.0 · 58.2 Ah	80.0 · 84.8 Ah	100 · 106 Ah	200 · 212 Ah
Capacity C3 · C5 (1.80 V/cell)	6.8 · 7.7 Ah	18.0 · 20.4 Ah	30.0 · 34.0 Ah	41.4 · 46.8 Ah	60.0 · 68.0 Ah	75.0 · 85.0 Ah	150 · 170 Ah
L × W × H (mm)	151 × 65 × 94	166 × 175 × 125	197 × 166 × 170	230 × 138 × 211	260 × 169 × 211	328 × 172 × 215	522 × 240 × 219
Total height (mm)	100	125	170	216	216	220	224
Weight (approx.)	2.3 kg	7.0 kg	11.5 kg	16.5 kg	22.0 kg	28.5 kg	58.0 kg
Internal resistance	≤ 22 mΩ	≤ 16 mΩ	≤ 10 mΩ	≤ 6.0 mΩ	≤ 6.0 mΩ	≤ 5.5 mΩ	≤ 3.5 mΩ
Terminal	F2	F13 (M5)	F11 (M6)	F11 (M6)	F11 (M6)	F12 (M8)	F10 (M8)
Max. discharge (5 s)	90 A	240 A	400 A	550 A	800 A	1000 A	2000 A
Short-circuit current	450 A	850 A	920 A	1160 A	1840 A	2150 A	3430 A
Max. charge current	2.7 A	7.2 A	12.0 A	16.5 A	24.0 A	30.0 A	60.0 A
Design life (float)	6–8 years	6–8 years	12 years	12 years	12 years	12 years	12 years

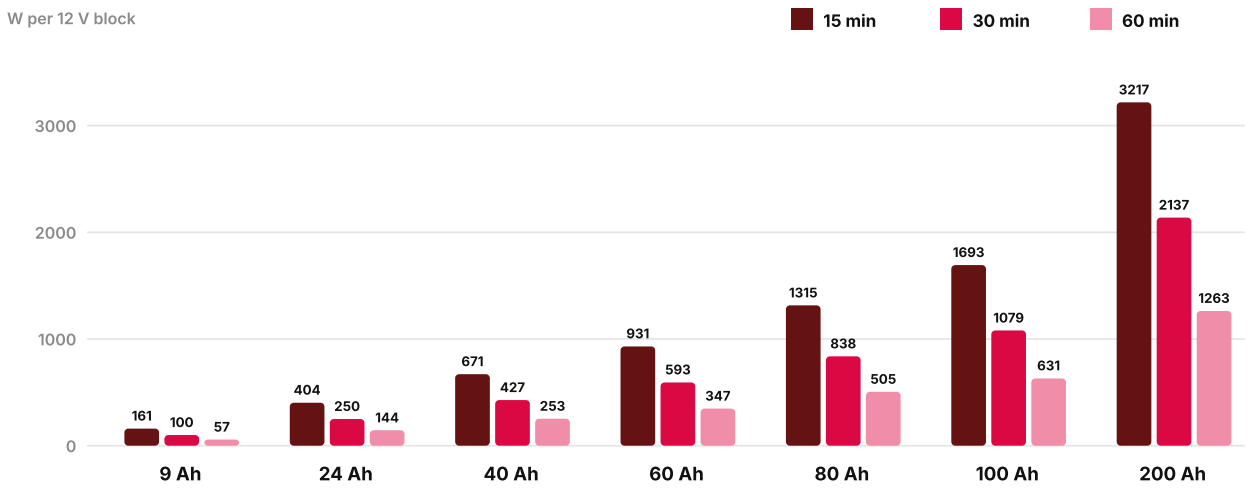
Values at 25 °C, fully charged, from the battery data sheets; C3, C5 and C10 = capacity at 3, 5 and 10 h to 1.80 V/cell; C20 = 20 h to 1.75 V/cell; all models. Model names: 9 and 24 Ah are C20 ratings (general purpose series), 40–200 Ah are C10 ratings (long life series), except the 60 Ah model (C10 55 Ah). Weight tolerance ± 5%. Terminal: default type, others optional.

PERFORMANCE

Performance data
OZ Power VRLA batteries

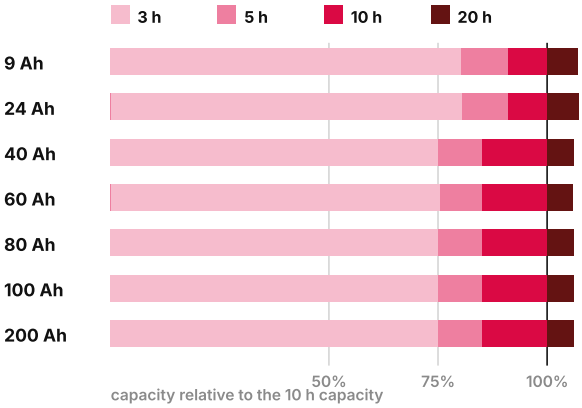
Constant power data for UPS sizing, capacity at every discharge rate, and the conditions that make a battery last.

Constant power discharge

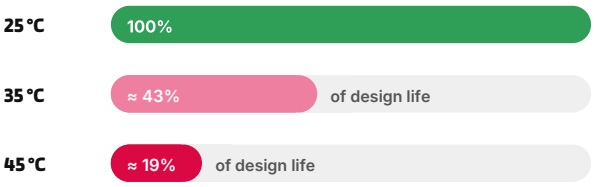


Watts per 12 V block (6 cells), 25 °C, end voltage 1.75 V per cell (10.5 V per block), the usual UPS end voltage; average values from the data sheets. UPS backup time also depends on UPS efficiency and battery voltage: AEC sizes every system.

Capacity by discharge time



Temperature and life



Battery life halves about every 8 °C above 25 °C.

Charging, 25 °C

Use	Per battery	Compensation
Float	13.5–13.8 V	−3 mV/°C/cell
Cycle	14.6–14.8 V	−4 mV/°C/cell

Operating range
Discharge −20 to 60 °C, charge 0 to 50 °C; best life at 25 ± 5 °C.

Charge current
Up to about 0.3 C; AEC UPS and cabinets charge in float mode.

Storage
Recharge for 24 hours at least every 3 months, or earlier if the open-circuit voltage falls below 12.6 V.

Replacement
Same model, capacity and batch across the whole string.

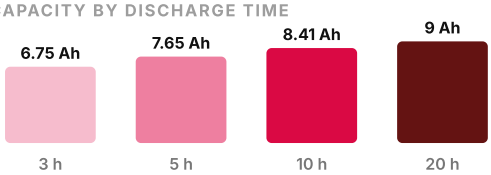
12 V 9 Ah C20

AGM VRLA battery · design life 6–8 years in float · used in IST3 · IST3-J · IST9 · IST7 · BB1–BB5 · BBJ · BBJ2



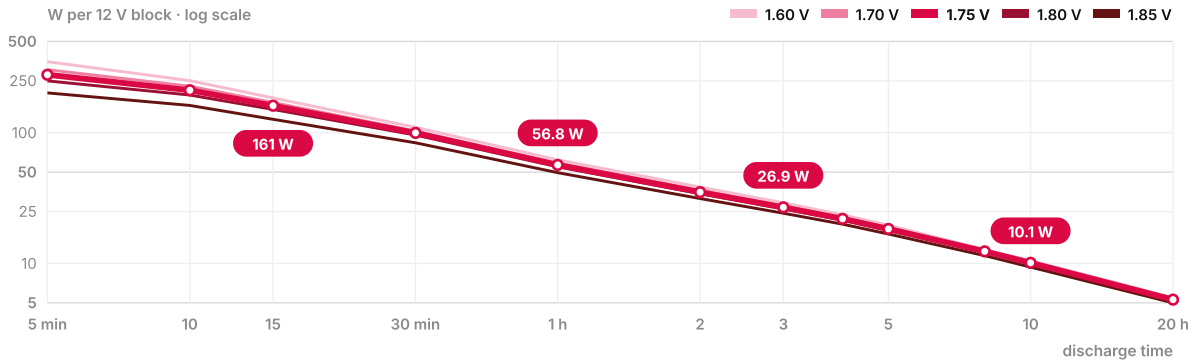
DIMENSIONS L × W × H	151 × 65 × 94 mm
TOTAL HEIGHT	100 mm
WEIGHT	2.3 kg (approx.)
INTERNAL RESISTANCE	≤ 22 mΩ
TERMINAL	F2 (F1 optional)
MAX. DISCHARGE (5 S)	90 A
SHORT-CIRCUIT CURRENT	450 A
MAX. CHARGE CURRENT	2.7 A
FLOAT · 25 °C	13.5–13.8 V (−3 mV/°C/cell)
CYCLE USE · 25 °C	14.6–14.8 V (−4 mV/°C/cell)

CAPACITY BY DISCHARGE TIME



Nominal capacity C20: 20 h to 1.75 V/cell, 25 °C. C10 = 8.41 Ah · C20 = 9 Ah. 6 cells per block; ABS case UL94-HB (V0 optional).

Constant power discharge



Constant power · W per 12 V block · 25 °C

End V/cell	5 min	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V · 9.6 V	350	251	185	110	62.0	38.4	29.1	23.6	19.6	12.8	10.5	5.50
1.65 V · 9.9 V	329	242	179	107	60.2	37.3	28.3	23.1	19.2	12.7	10.4	5.50
1.70 V · 10.2 V	304	227	170	103	58.6	36.3	27.7	22.5	18.8	12.5	10.2	5.40
1.75 V · 10.5 V	278	211	161	99.7	56.8	35.2	26.9	22.0	18.4	12.4	10.1	5.30
1.80 V · 10.8 V	249	195	151	96.3	55.0	34.1	26.2	21.5	17.9	12.2	10.0	5.30
1.85 V · 11.1 V	202	162	127	83.8	49.6	31.4	24.3	20.0	16.8	11.5	9.40	5.00

Constant current · A · 25 °C

End V/cell	5 min	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V · 9.6 V	35.2	24.6	17.6	10.1	5.50	3.38	2.54	2.05	1.70	1.09	0.89	0.47
1.65 V · 9.9 V	32.7	23.3	16.9	9.72	5.31	3.27	2.46	1.99	1.65	1.08	0.88	0.46
1.70 V · 10.2 V	29.5	21.4	15.8	9.29	5.14	3.16	2.39	1.94	1.61	1.06	0.86	0.46
1.75 V · 10.5 V	26.4	19.6	14.7	8.88	4.95	3.05	2.32	1.89	1.57	1.05	0.85	0.45
1.80 V · 10.8 V	23.2	17.7	13.6	8.48	4.76	2.94	2.25	1.83	1.53	1.03	0.84	0.45
1.85 V · 11.1 V	18.4	14.5	11.2	7.31	4.27	2.69	2.08	1.71	1.43	0.97	0.79	0.42

Average values from the battery data sheet, battery fully charged. End voltage per cell and per 12 V block.

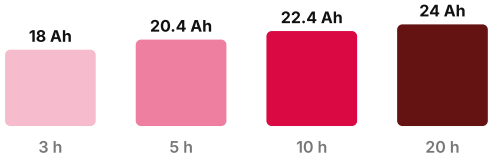
12 V 24 Ah C20

AGM VRLA battery · design life 6–8 years in float · used in BB5



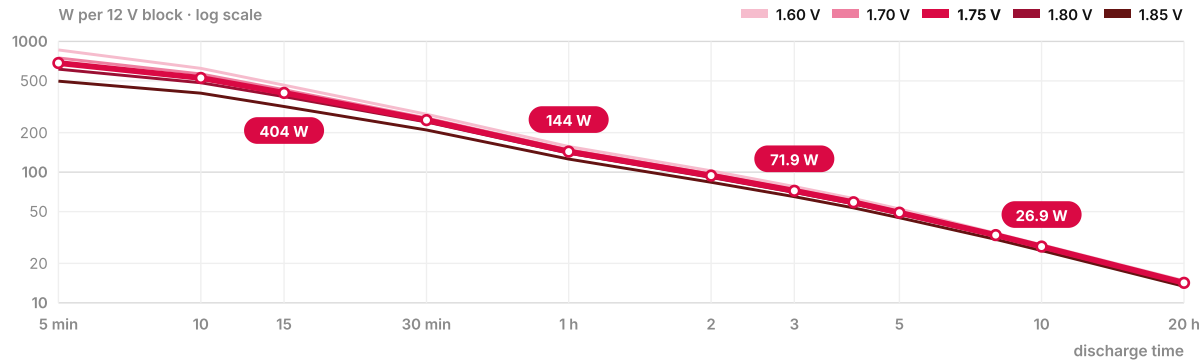
DIMENSIONS L × W × H	166 × 175 × 125 mm
TOTAL HEIGHT	125 mm
WEIGHT	7.0 kg (approx.)
INTERNAL RESISTANCE	≤ 16 mΩ
TERMINAL	F13 · M5 (F3 optional)
MAX. DISCHARGE (5 S)	240 A
SHORT-CIRCUIT CURRENT	850 A
MAX. CHARGE CURRENT	7.2 A
FLOAT · 25 °C	13.5–13.8 V (−3 mV/°C/cell)
CYCLE USE · 25 °C	14.6–14.8 V (−4 mV/°C/cell)

CAPACITY BY DISCHARGE TIME



Nominal capacity C20: 20 h to 1.75 V/cell, 25 °C. C10 = 22.4 Ah · C20 = 24 Ah. 6 cells per block; ABS case UL94-HB (V0 optional).

Constant power discharge



Constant power · W per 12 V block · 25 °C

End V/cell	5 min	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V · 9.6 V	860	623	464	277	157	102	77.6	62.9	52.4	34.1	27.9	14.8
1.65 V · 9.9 V	809	601	450	268	152	99.6	75.5	61.4	51.2	33.8	27.6	14.5
1.70 V · 10.2 V	747	563	428	259	148	96.8	73.7	60.0	50.0	33.4	27.2	14.4
1.75 V · 10.5 V	684	525	404	250	144	93.9	71.9	58.7	48.9	33.0	26.9	14.2
1.80 V · 10.8 V	613	483	378	242	139	91.0	69.9	57.2	47.8	32.5	26.6	14.1
1.85 V · 11.1 V	497	402	318	210	126	83.8	64.9	53.4	44.8	30.6	25.1	13.4

Constant current · A · 25 °C

End V/cell	5 min	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V · 9.6 V	86.5	61.1	44.2	25.4	13.9	9.00	6.77	5.46	4.53	2.91	2.37	1.25
1.65 V · 9.9 V	80.4	57.8	42.2	24.4	13.4	8.72	6.56	5.32	4.41	2.88	2.34	1.23
1.70 V · 10.2 V	72.6	53.2	39.6	23.3	13.0	8.43	6.38	5.17	4.29	2.84	2.30	1.22
1.75 V · 10.5 V	65.0	48.7	36.8	22.3	12.5	8.13	6.19	5.04	4.19	2.80	2.27	1.20
1.80 V · 10.8 V	57.1	44.1	34.0	21.3	12.1	7.84	6.00	4.89	4.08	2.75	2.24	1.19
1.85 V · 11.1 V	45.3	36.0	28.2	18.3	10.8	7.19	5.55	4.55	3.80	2.58	2.11	1.13

Average values from the battery data sheet, battery fully charged. End voltage per cell and per 12 V block.

OZ POWER · LONG LIFE SERIES

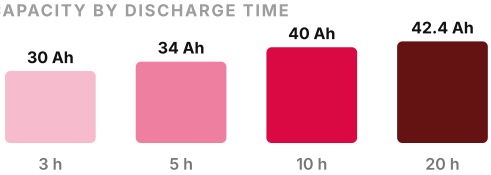
12 V 40 Ah C10

AGM VRLA battery · design life 12 years in float · used in BB5



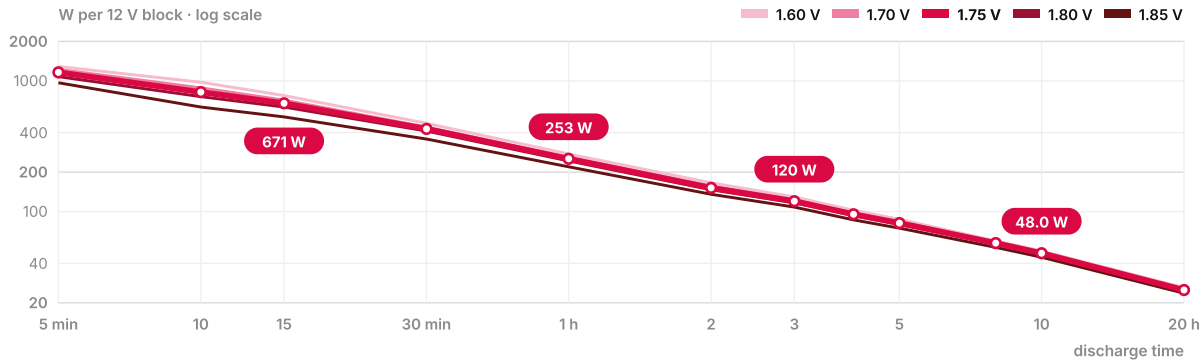
DIMENSIONS L × W × H	197 × 166 × 170 mm
TOTAL HEIGHT	170 mm
WEIGHT	11.5 kg (approx.)
INTERNAL RESISTANCE	≤ 10 mΩ
TERMINAL	F11 · M6 (F4 optional)
MAX. DISCHARGE (5 S)	400 A
SHORT-CIRCUIT CURRENT	920 A
MAX. CHARGE CURRENT	12.0 A
FLOAT · 25 °C	13.5–13.8 V (−3 mV/°C/cell)
CYCLE USE · 25 °C	14.6–14.8 V (−4 mV/°C/cell)

CAPACITY BY DISCHARGE TIME



Nominal capacity C10: 10 h to 1.80 V/cell, 25 °C. C10 = 40 Ah · C20 = 42.4 Ah. 6 cells per block; ABS case UL94-HB (V0 optional).

Constant power discharge



Constant power · W per 12 V block · 25 °C

End V/cell	5 min	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V · 9.6 V	1283	976	770	473	275	166	129	102	87.0	59.4	49.8	26.1
1.65 V · 9.9 V	1270	940	747	458	268	161	126	99.6	85.2	58.9	49.3	25.7
1.70 V · 10.2 V	1222	881	710	443	260	157	123	97.2	83.4	58.1	48.5	25.4
1.75 V · 10.5 V	1162	821	671	427	253	152	120	95.4	81.6	57.4	48.0	25.1
1.80 V · 10.8 V	1077	756	628	413	244	147	116	93.0	79.8	56.6	47.4	24.9
1.85 V · 11.1 V	965	629	529	359	220	136	108	86.4	74.4	53.2	44.7	23.7

Constant current · A · 25 °C

End V/cell	5 min	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V · 9.6 V	124	95.7	73.4	43.4	24.4	14.6	11.3	8.87	7.55	5.07	4.22	2.21
1.65 V · 9.9 V	120	90.4	70.2	41.6	23.6	14.1	10.9	8.63	7.35	5.01	4.17	2.17
1.70 V · 10.2 V	114	83.2	65.7	39.8	22.8	13.6	10.6	8.39	7.16	4.94	4.11	2.15
1.75 V · 10.5 V	106	76.2	61.2	38.0	22.0	13.2	10.3	8.18	6.98	4.87	4.05	2.12
1.80 V · 10.8 V	97.0	69.0	56.5	36.4	21.2	12.7	10.0	7.94	6.80	4.79	4.00	2.10
1.85 V · 11.1 V	85.4	56.4	46.9	31.3	19.0	11.6	9.24	7.38	6.34	4.49	3.77	1.99

Average values from the battery data sheet, battery fully charged. End voltage per cell and per 12 V block.

OZ POWER · LONG LIFE SERIES

12 V 60 Ah C10 · 55 Ah

AGM VRLA battery · design life 12 years in float · used in BB6



DIMENSIONS L × W × H
230 × 138 × 211 mm

TOTAL HEIGHT
216 mm

WEIGHT
16.5 kg (approx.)

INTERNAL RESISTANCE
≤ 6.0 mΩ

TERMINAL
F11 · M6 (F15 optional)

MAX. DISCHARGE (5 S)
550 A

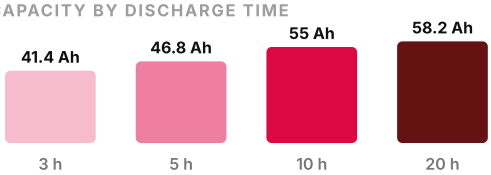
SHORT-CIRCUIT CURRENT
1160 A

MAX. CHARGE CURRENT
16.5 A

FLOAT · 25 °C
13.5–13.8 V (−3 mV/°C/cell)

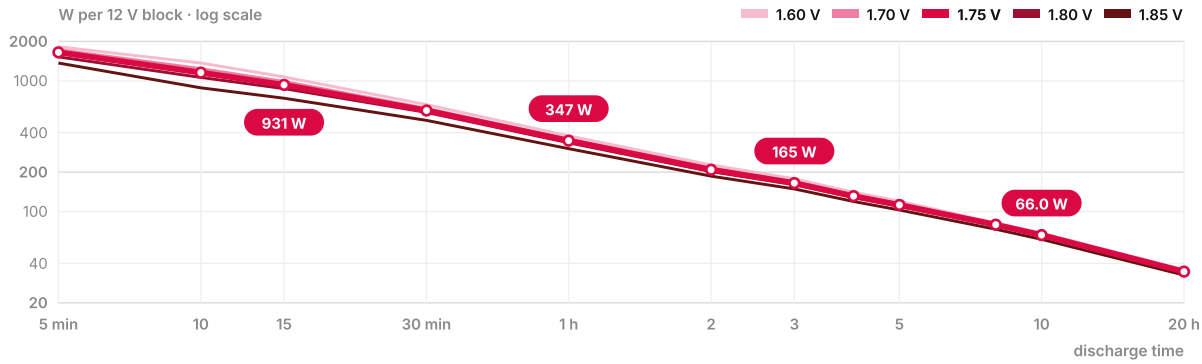
CYCLE USE · 25 °C
14.6–14.8 V (−4 mV/°C/cell)

CAPACITY BY DISCHARGE TIME



Nominal capacity C10: 10 h to 1.80 V/cell, 25 °C. C10 = 55 Ah · C20 = 58.2 Ah. 6 cells per block; ABS case UL94-HB (V0 optional).

Constant power discharge



Constant power · W per 12 V block · 25 °C

End V/cell	5 min	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V · 9.6 V	1820	1369	1070	656	379	227	178	140	120	81.6	68.4	35.9
1.65 V · 9.9 V	1801	1319	1038	637	368	221	173	137	118	81.0	67.8	35.3
1.70 V · 10.2 V	1732	1236	986	615	358	215	169	134	115	79.8	66.6	35.0
1.75 V · 10.5 V	**1647**	**1152**	**931**	**593**	**347**	**209**	**165**	**131**	**112**	**79.2**	**66.0**	**34.6**
1.80 V · 10.8 V	1526	1061	872	573	336	202	160	128	110	78.0	65.4	34.3
1.85 V · 11.1 V	1367	883	734	499	303	187	149	119	103	73.2	61.2	32.6

Constant current · A · 25 °C

End V/cell	5 min	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V · 9.6 V	176	134	102	60.2	33.6	20.0	15.5	12.2	10.4	6.97	5.80	3.04
1.65 V · 9.9 V	170	127	97.5	57.8	32.5	19.4	15.0	11.9	10.1	6.90	5.73	2.99
1.70 V · 10.2 V	162	117	91.3	55.3	31.4	18.7	14.6	11.5	9.84	6.79	5.65	2.95
1.75 V · 10.5 V	**151**	**107**	**85.0**	**52.8**	**30.2**	**18.1**	**14.2**	**11.2**	**9.60**	**6.69**	**5.57**	**2.91**
1.80 V · 10.8 V	138	96.8	78.5	50.5	29.1	17.4	13.8	10.9	9.35	6.58	5.50	2.89
1.85 V · 11.1 V	121	79.1	65.1	43.5	26.1	16.0	12.7	10.2	8.72	6.18	5.18	2.74

Average values from the battery data sheet, battery fully charged. End voltage per cell and per 12 V block.

OZ POWER · LONG LIFE SERIES

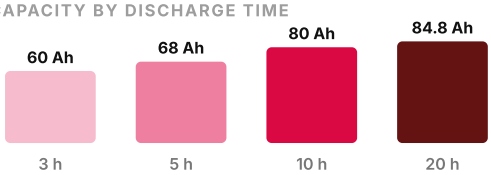
12 V 80 Ah C10

AGM VRLA battery · design life 12 years in float · used in BB7 · BB8



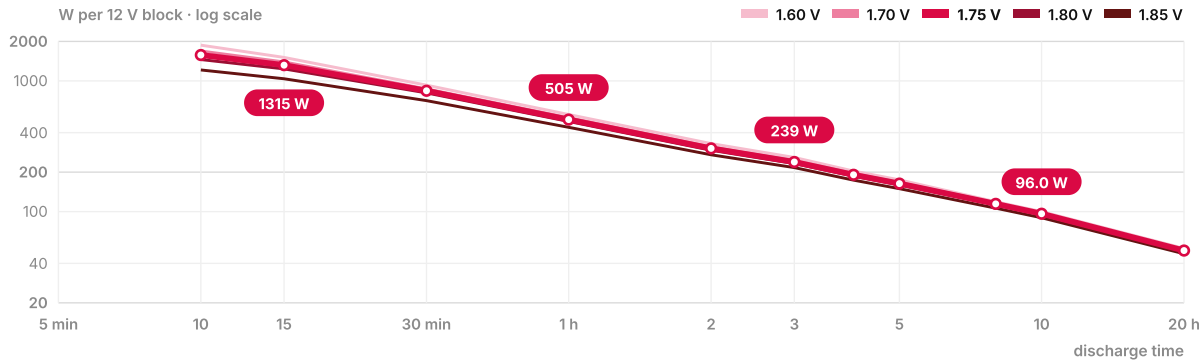
DIMENSIONS L × W × H	260 × 169 × 211 mm
TOTAL HEIGHT	216 mm
WEIGHT	22.0 kg (approx.)
INTERNAL RESISTANCE	≤ 6.0 mΩ
TERMINAL	F11 · M6 (F15 · L4 optional)
MAX. DISCHARGE (5 S)	800 A
SHORT-CIRCUIT CURRENT	1840 A
MAX. CHARGE CURRENT	24.0 A
FLOAT · 25 °C	13.5–13.8 V (−3 mV/°C/cell)
CYCLE USE · 25 °C	14.6–14.8 V (−4 mV/°C/cell)

CAPACITY BY DISCHARGE TIME



Nominal capacity C10: 10 h to 1.80 V/cell, 25 °C. C10 = 80 Ah · C20 = 84.8 Ah. 6 cells per block; ABS case UL94-HB (V0 optional).

Constant power discharge



Constant power · W per 12 V block · 25 °C

End V/cell	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V · 9.6 V	1874	1510	926	551	331	259	204	175	119	99.6	52.1
1.65 V · 9.9 V	1805	1465	899	535	322	251	199	170	118	98.4	51.4
1.70 V · 10.2 V	1693	1392	868	521	313	246	195	167	116	97.2	50.8
1.75 V · 10.5 V	1577	1315	838	505	304	239	191	163	115	96.0	50.3
1.80 V · 10.8 V	1453	1231	809	488	295	233	186	160	113	94.8	49.9
1.85 V · 11.1 V	1208	1036	704	441	271	217	173	149	106	89.4	47.4

Constant current · A · 25 °C

End V/cell	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V · 9.6 V	184	144	85.0	48.9	29.1	22.6	17.7	15.1	10.1	8.44	4.41
1.65 V · 9.9 V	174	138	81.6	47.2	28.2	21.9	17.3	14.7	10.0	8.34	4.34
1.70 V · 10.2 V	160	129	78.0	45.7	27.3	21.3	16.8	14.3	9.87	8.21	4.29
1.75 V · 10.5 V	146	120	74.6	44.0	26.3	20.6	16.4	14.0	9.74	8.10	4.24
1.80 V · 10.8 V	132	111	71.3	42.3	25.4	20.0	15.9	13.6	9.57	8.00	4.20
1.85 V · 11.1 V	108	91.9	61.4	38.0	23.2	18.5	14.8	12.7	8.99	7.53	3.99

Average values from the battery data sheet, battery fully charged. End voltage per cell and per 12 V block.

OZ POWER · LONG LIFE SERIES

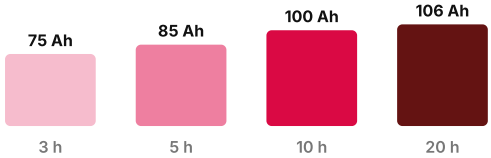
12 V 100 Ah C10

AGM VRLA battery · design life 12 years in float · used in BB7 · BB8



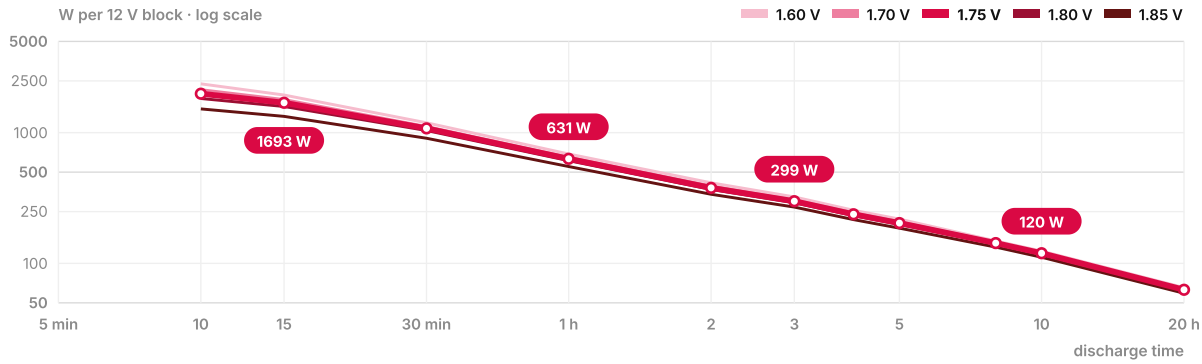
DIMENSIONS L × W × H	328 × 172 × 215 mm
TOTAL HEIGHT	220 mm
WEIGHT	28.5 kg (approx.)
INTERNAL RESISTANCE	≤ 5.5 mΩ
TERMINAL	F12 · M8 (F5 optional)
MAX. DISCHARGE (5 S)	1000 A
SHORT-CIRCUIT CURRENT	2150 A
MAX. CHARGE CURRENT	30.0 A
FLOAT · 25 °C	13.5–13.8 V (−3 mV/°C/cell)
CYCLE USE · 25 °C	14.6–14.8 V (−4 mV/°C/cell)

CAPACITY BY DISCHARGE TIME



Nominal capacity C10: 10 h to 1.80 V/cell, 25 °C. C10 = 100 Ah · C20 = 106 Ah. 6 cells per block; ABS case UL94-HB (V0 optional).

Constant power discharge



Constant power · W per 12 V block · 25 °C

End V/cell	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V · 9.6 V	2365	1945	1193	689	414	323	256	218	149	124	65.4
1.65 V · 9.9 V	2278	1887	1158	669	403	314	250	214	147	123	64.2
1.70 V · 10.2 V	2135	1793	1118	652	392	307	244	209	145	121	63.6
1.75 V · 10.5 V	1990	1693	1079	631	380	299	238	204	143	120	63.0
1.80 V · 10.8 V	1832	1586	1042	611	368	292	232	199	142	119	62.4
1.85 V · 11.1 V	1525	1334	907	551	339	271	217	187	133	112	59.2

Constant current · A · 25 °C

End V/cell	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V · 9.6 V	232	185	110	61.1	36.4	28.2	22.2	18.9	12.7	10.5	5.52
1.65 V · 9.9 V	219	177	105	59.0	35.2	27.3	21.6	18.4	12.5	10.4	5.43
1.70 V · 10.2 V	202	166	100	57.1	34.1	26.6	21.0	17.9	12.3	10.3	5.36
1.75 V · 10.5 V	185	154	96.0	55.0	32.9	25.8	20.4	17.4	12.2	10.1	5.30
1.80 V · 10.8 V	167	143	91.8	52.9	31.7	25.0	19.9	17.0	12.0	10.0	5.25
1.85 V · 11.1 V	137	118	79.1	47.4	29.1	23.1	18.5	15.9	11.2	9.41	4.98

Average values from the battery data sheet, battery fully charged. End voltage per cell and per 12 V block.

OZ POWER · LONG LIFE SERIES

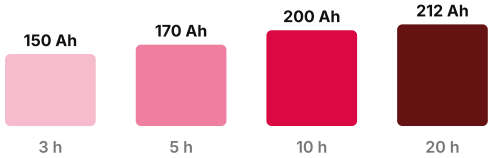
12 V 200 Ah C10

AGM VRLA battery · design life 12 years in float · used in large systems, on request



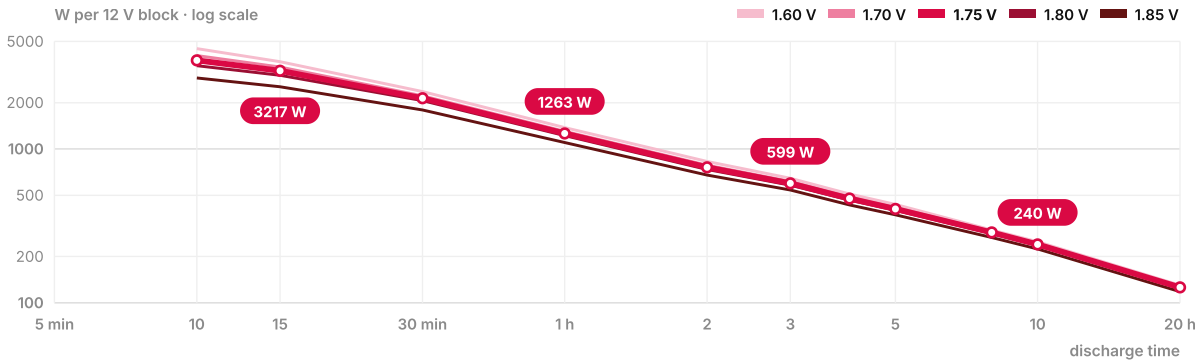
DIMENSIONS L × W × H	522 × 240 × 219 mm
TOTAL HEIGHT	224 mm
WEIGHT	58.0 kg (approx.)
INTERNAL RESISTANCE	≤ 3.5 mΩ
TERMINAL	F10 · M8 (F16 optional)
MAX. DISCHARGE (5 S)	2000 A
SHORT-CIRCUIT CURRENT	3430 A
MAX. CHARGE CURRENT	60.0 A
FLOAT · 25 °C	13.5–13.8 V (−3 mV/°C/cell)
CYCLE USE · 25 °C	14.6–14.8 V (−4 mV/°C/cell)

CAPACITY BY DISCHARGE TIME



Nominal capacity C10: 10 h to 1.80 V/cell, 25 °C. C10 = 200 Ah · C20 = 212 Ah. 6 cells per block; ABS case UL94-HB (V0 optional).

Constant power discharge



Constant power · W per 12 V block · 25 °C

End V/cell	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V · 9.6 V	4481	3695	2363	1378	828	646	511	436	297	249	130
1.65 V · 9.9 V	4316	3585	2293	1338	805	629	499	427	295	246	128
1.70 V · 10.2 V	4046	3408	2213	1303	783	615	487	417	290	243	127
1.75 V · 10.5 V	3770	3217	2137	1263	759	599	476	408	287	240	126
1.80 V · 10.8 V	3472	3013	2063	1222	736	583	464	399	283	237	125
1.85 V · 11.1 V	2888	2536	1795	1102	678	541	433	373	266	224	118

Constant current · A · 25 °C

End V/cell	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V · 9.6 V	439	352	217	122	72.8	56.4	44.3	37.7	25.4	21.1	11.0
1.65 V · 9.9 V	415	337	208	118	70.5	54.7	43.1	36.8	25.1	20.8	10.9
1.70 V · 10.2 V	382	315	199	114	68.2	53.2	42.0	35.8	24.7	20.5	10.7
1.75 V · 10.5 V	350	294	190	110	65.8	51.6	40.9	34.9	24.3	20.3	10.6
1.80 V · 10.8 V	317	271	182	106	63.4	50.0	39.7	34.0	23.9	20.0	10.5
1.85 V · 11.1 V	259	225	156	94.9	58.1	46.2	36.9	31.7	22.5	18.8	10.0

Average values from the battery data sheet, battery fully charged. End voltage per cell and per 12 V block.

Battery sizing
Backup time calculation

Battery data sheets give constant power per block. Divide the UPS load by the inverter efficiency and the number of blocks, then read the time in the tables.

01

Power per block

P block = P load ÷ (efficiency × number of blocks). The DC efficiency of the UPS comes from its data sheet.

02

Read the table

Find P block in the constant power table, in the row of the UPS end voltage: the column gives the backup time.

03

Choose the battery

Pick the capacity, and if needed a second string, that reaches the backup time required. AEC checks every calculation.

EXAMPLE

15 kW on 32 blocks

15 kW
UPS load

95%
assumed DC → AC efficiency

493 W
per 12 V block, 32 blocks

Backup time per battery, same load



Example only: 15 kW load, 95% efficiency assumed, one string of 32 blocks, 25 °C, end voltage 1.75 V/cell, new batteries; times interpolated in the constant power tables of this catalogue. Real backup depends on the UPS, the temperature and battery age.

MORE BACKUP

Strings in parallel

Two identical strings halve the power per block: BB8 cabinets hold two strings as standard.

TEMPERATURE

Size for the site

Below 25 °C the available capacity drops: check the room temperature of the site.

AGEING

Plan for end of life

Capacity falls with age: size with a margin so the backup holds until replacement.

Accessories overview
AEC accessories

Communication cards, sensors, parallel kits and protection options: one family of accessories across the whole AEC range.



SNMP card

Web, SNMP v1 / v2c / v3, traps and e-mail: the UPS on the network.



SNMP card, slot type

For the intelligent slot of the three-phase and modular UPS.



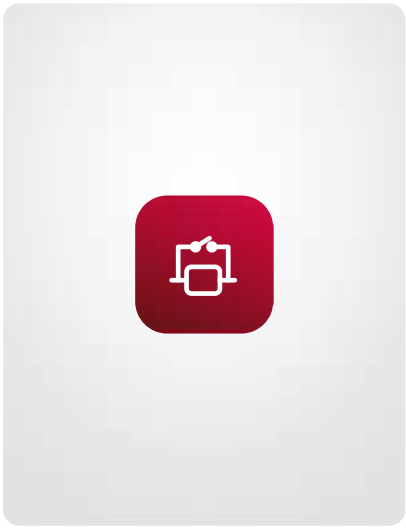
RS485 + dry-contact card

Single-phase card for IST3, IST3-J and IST8.



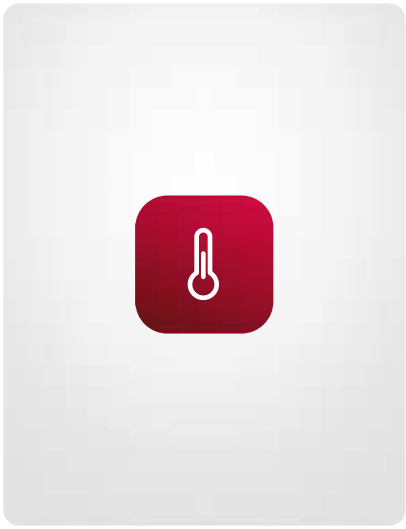
Parallel kit

Parallel card and cable for IST9, IST7 and IST7-T.



Maintenance bypass

External rack bypass for single-phase UPS; distribution module for the IST9.



Sensors

Room temperature and humidity sensor, powered by the SNMP card.

Accessory photos: AEC. Availability per series in the compatibility table.

NETWORK MONITORING

Network monitoring
SNMP card

The SNMP card gives every AEC UPS its own web page and an SNMP agent, sends alarms by e-mail and reads the room sensor.



SNMP card

- Web monitoring and control of one UPS, HTTP and HTTPS
- SNMP v1 / v2c (community) and v3 (MD5 / SHA, DES / AES)
- Traps v1 / v2 / v3, standard UPS-MIB, MIB download
- E-mail alarms, event and data logs, scheduled tasks
- NTP time synchronisation, three user levels
- RS485 port to the UPS, COM port for the room sensor

Temperature and humidity sensor

- Connects to the SNMP card with an RJ45 data cable
- Powered by the card: no extra supply
- Local display: temperature, humidity, address, baud rate
- Added from the card web page under environment devices
- Values and alarms with the UPS data in the same page

WHAT THE WEB PAGE SHOWS, LIVE AND AS CURVES

Input
voltage, current and frequency

Output
supply mode, voltage, current, frequency, load and active power

Bypass
voltage, current, frequency and active power

Battery
running status, voltage and current; remote UPS ON / OFF

CONTACTS AND CARDS

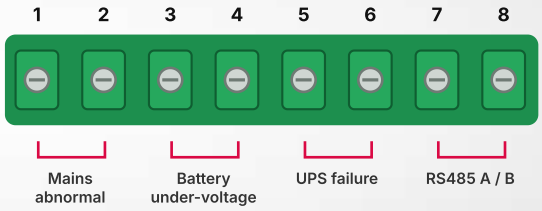
Dry contacts and cards
AEC accessories

Dry contacts and RS485 bring the UPS into the building management system; option cards add contacts, protocols and battery links where the project needs them.



RS485 + dry-contact card · single-phase

IST3 · IST3-J · IST8. Contacts NC by default, NO with jumpers.



8-pin green terminal block: three status contacts and the RS485 pair on one connector.

IST9 · IST7 10–40

RS485 + dry-contact card

3 output contacts (mains, battery, inverter or bypass status), 2 inputs (battery temperature for compensated charging, battery breaker or remote ON / OFF) and one RS485.

IST7 60–200 · IST6

Dry-contact expansion card

Three more inputs and two more outputs, each assigned from the display.

IST7 60–200 · IST6

BMS card

Communication with lithium battery systems such as the AEC L6, with charge and discharge disable inputs.

IST9 · IST7 10–40 · IST3-J

Protocol card

RS485 for the lithium battery protocol plus one RS485 monitoring channel.

IST7 · IST7-T · IST6

Modbus RTU

RS485 Modbus as standard on the three-phase and modular ranges: address and baud rate set on the display.

ALL SERIES

Built-in contacts

Each UPS has its own programmable dry contacts and EPO: see the Connectivity page of each series.

< 60 V DC
contact voltage, single-phase card

< 42 V AC
contact voltage, single-phase card

< 1.25 A
contact current, single-phase card

30 V DC · 2 A
expansion card contacts, IST6

Parallel and protection accessories
AEC accessories

PAR-IST9 · PAR-IST7-60/200

Parallel kit

Parallel card and cable with CAN communication between units: N+1 redundancy or more power with identical UPS. IST7 10–40 and IST7-T with their parallel boards.

MBYP-3K · MBYP-6K

Maintenance bypass

External rack bypass for IST3, IST3-J and IST8 (max. 3 / 10 kVA). IST9: rack distribution module with input, bypass, output and maintenance breakers.

THREE-PHASE · MODULAR

Battery protection

Battery temperature kit with probe for compensated charging; 24 V DC trip of the external battery breaker; class C surge protection with switch.



Which accessory for which series

Accessory	IST3	IST3-J	IST8	AIO	IST9	IST7 10–40	IST7 60–200	IST7-T	IST6
SNMP card	●	●	●	●	●	●	●	●	●
Temperature · humidity sensor	●	●	●	●	●	●	●	●	●
RS485 + dry contacts, single-phase	●	●	●	–	–	–	–	–	–
RS485 + dry contacts, three-phase	–	–	–	–	●	●	–	–	–
Dry-contact expansion · BMS card	–	–	–	–	–	–	●	–	●
Parallel kit	–	–	–	–	●	●	●	●	–
Maintenance bypass	●	●	●	–	●	–	–	–	–
Battery temperature sensor	–	–	–	–	●	–	●	●	●
Battery trip kit	–	–	–	–	–	–	●	●	●
Class C surge protection	–	–	–	–	–	–	●	●	●

Fitted in the UPS slots or ports as described in each series section. Codes from the AEC code list; codes of the other accessories on request. Battery cabinets: see the battery cabinet section.

NOTES

Your project

SIZING SUPPORT

Send us your loads and autonomy

Sales · +39 02 9415 8991 · sales@aecups.com
Service · +39 393 080 5211 · service@aecups.com
www.aecups.com

AEC

TECHNOLOGY BEHIND POWER

Guaranteeing continuity and reliability since 1968

AEC International Srl
Via Nerviano 55, 20045 Lainate (MI), Italy
+39 02 9415 8991

AEC UPS USA LLC
4872 SW 72nd Ave, Miami, FL 33155, USA
+1 786 553 2100

Allis Electric Co., Ltd.
No. 19-11 San Chung Road, Nankang District, Taipei 115, Taiwan

AEC PHD Powerhouse Ltd
115 10th Rd, Kew, Johannesburg 2090, South Africa