Titanium ESS-L20

Second-Life DC Block · 638 kWh

Containerised DC energy storage from graded Nissan Leaf packs · MODEL ESS-L20-638

638 kWh	320 kW	288 – 806 V	24 packs
Rated energy [1]	Peak power · 160 kW rated	DC voltage, 1× or 2× series	Leaf 40 kWh



Renders are for illustration; the final product may differ.

One block. Twenty-four graded packs.

- Graded Leaf Packs
- DC Combiner
- System BMS
- Cooling and Fire

A complete DC block for third-party PCS: stored solar for island sites facing high tariffs, capped export and hurricane outages.

3.4 h	24	N+1	2×
At 160 kW	Graded packs	Cooling	Series option

Second-Life Battery Assets

- 24 OEM Nissan Leaf 40 kWh packs in their original enclosures
- Capacity rated on measured health: Band A, 68% SOH
- No new cells manufactured for the block

Integrated Safety

- Pack-level contactors and OEM battery controllers
- Gas, smoke and heat detection with aerosol suppression
- Off-gas exhaust and roof deflagration vents

Serviceability

- Every connector faces the doors
- Single-pack replacement without system shutdown
- Graded spare packs matched to each block



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WHY SECOND LIFE

Island storage. From packs already built.

Island utilities are adding storage: Jamaica's next tender [1] pairs 300 MW of renewables with 150 MW of batteries. The ESS-L20 brings the same to commercial sites, with Nissan Leaf packs that are already built, graded and matched.

Complete DC Block

Insulated IP55 enclosure with DX cooling, fire protection, DC combiner and BMS. Pairs with the site's own PCS at 50 or 60 Hz.

1.6 GWh Over 10 Years [2]

At one cycle per day from 68% SOH, allowing for observed field fade. Graded spares restore capacity.

Duty Relief on Batteries [3]

Lithium-ion batteries enter the Bahamas duty-free. Guyana exempts deep-cycle batteries and inverters from duty and VAT.

Spares on the Island

Keep graded spare packs on site. Packs swap one at a time from the door while the block keeps running.

Rated on Measured Health

Every pack is scanned and graded. The block uses Band A only and is rated at its lower limit, 68% SOH.

Cells Already Built

The block uses recertified OEM packs in their crash-tested enclosures. Reuse comes before recycling; no new cell manufacturing.

[1] Jamaica Information Service, 6 May 2026. [2] Observed field fade of 3 SOH points per year. [3] Bahamas Customs, Frequently Imported 2024; Guyana Revenue Authority, 2026. Confirm the tariff line for each market.



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APPLICATIONS

Where it pays back. One cycle a day.

543 kWh usable at 160 kW, about 3.4 hours: sized for commercial, industrial and off-grid sites. Values are indicative per block, excluding PCS, PV and installation, and are confirmed by a site study.

Island C&I Tariffs [1]

In St Lucia, Grenada and Dominica, commercial power costs US$0.38 – 0.44 per kWh. Shift midday solar into the evening.

Diesel and Off-Grid Sites

Resorts, marinas and outer cays: stored solar replaces genset run hours and diesel shipped in by sea.

Peak Shaving [2]

Take up to 160 kVA off demand charges, such as BBD 26.41 (US$13.21) per kVA each month in Barbados.

Hurricane Resilience [3]

Melissa left over 70 % of JPS customers in Jamaica without power; 33,000 were still out three months on. PV recharges the block daily.

Store What You Can't Export [4]

Net billing in Jamaica and grid-tied solar on New Providence both stop at 100 kW. Store midday solar on site instead.

Sized to the Site

One block: 638 kWh rated, 543 kWh usable at 160 kW. Add blocks for larger sites. Allow for fade, or plan graded-spare top-ups.

[1] CCREEE Energy Report Cards 2022 – 23, commercial rates including fuel charges. [2] BL&P Secondary Voltage Tariff, 16 Sep 2022, company-owned transformer, plus VAT; BBD 2 = US$1. [3] Jamaica Observer, 29 Oct 2025; The Gleaner, 27 Jan 2026. [4] OUR net billing notice, 2025; BPL interconnection requirements for SSRG systems.

DC POWER AND ENERGY

Configuration	24 × 96S2P, direct parallel; option 12 × 192S2P
Voltage range	288 – 403 V; option 576 – 806 V [5]
Nominal voltage	350 V; option 700 V
Rated / peak current	457 / 914 A; option 229 / 457 A
Nameplate energy	941 kWh (new cells)
Rated energy	638 kWh at 68% SOH [1]
Usable energy	543 kWh, 10 – 95 % SOC [1]
Rated / peak power	160 / 320 kW [2]
Charging & discharging rate	≤ 0.25P continuous, 0.5P peak
DC round-trip efficiency	≈ 97 %, excluding auxiliaries [3]

BATTERY

Pack	Nissan Leaf 40 kWh (ZE1), OEM enclosure, second life
Cell	NMC pouch, 56.3 Ah, 3.65 V nominal
Pack configuration	96S2P, 192 cells, 350 V nominal
Packs per block	24 (4 stacks × 6 levels)
Grade band	Band A: 76 – 79 Ah per cell group (68 – 71 % SOH)
Pack protection	Pack contactors and precharge; fuse-switch per pack
Battery management	System BMS (3 controllers) reads every pack: SOH, cell-group voltages, temperatures; insulation monitoring

[1] Start of second life, 25 °C, 0.25C; rated at the Band A lower limit. Each block's delivered rating follows its measured pack grades.

[2] Operating power set by the site PCS within these limits.

[3] Design estimate; verified at factory acceptance test.

[4] Power derates above +45 °C ambient.

[5] Series option: 12 strings of two packs in series; energy and power unchanged.

MECHANICAL AND ENVIRONMENT

Dimensions (L × W × H)	6,058 × 2,438 × 2,591 mm (20 ft)
Weight	≈ 13.8 t (30,428 lb)
Enclosure	Insulated steel, IP55, C4; not stackable
Access	Front double doors; ISO cargo doors
Operating ambient	–20 to +50 °C [4]; ≤ 2,000 m
Humidity	0 – 95 % RH, non-condensing

THERMAL AND SAFETY

Cooling	2 × 7.5 kW DX, R32, N+1
Battery temperature	15 – 30 °C in operation
Detection	Smoke, heat, H_2, CO per stack
Suppression	Aerosol generator per stack
Explosion control	Gas-alarm exhaust; roof vents

CONTROL AND COMMUNICATION

Site EMS	Modbus TCP
PCS interface	CAN or Modbus TCP
Auxiliary supply	400/230 or 480/277 V, 3-phase
Hard-wired I/O	Fire, E-stop, door contacts

STANDARDS AND CERTIFICATION

NFPA 855 · 68 · 69
Design basis

IEC 62933-5-2
Design basis

UL 1974
Pack grading aligned

UL 9540 · 9540A
Not yet listed

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