DLXN ENERGY · SYSTEM DESIGN GUIDE 2026

Turnkey Solar & Storage Systems

Built around our inverter family, our own LiFePO4 batteries and 580 / 630 / 710 W modules

6	580–710	5–50
system families	W module options	kWh battery steps

dlxnsolar.com · dlxn@dlxnsolar.com · Building 2, Zhidian Science Park, Lianchi District, Baoding, Hebei, China

How these packages are sized

PV window

Strings are sized on Voc at −10 °C against the inverter DC limit, and on Vmp at 70 °C against the MPPT floor, so a cold morning never trips the input and a hot roof never drops out of tracking.

MPPT current

String count per MPPT keeps Isc within the tracker rating (10% short-time over-build allowed). This is why 630 W is not offered on the 16–18.5 A trackers.

DC/AC ratio

Every package lands between 1.05 and 1.50 — enough winter headroom without clipping summer peaks.

Battery

5–20 kWh for single-phase homes, 50 kWh for three-phase commercial. 48 V platform throughout, so batteries stay interchangeable.

Yield

Calculated at 4.0 peak-sun hours and 82% system efficiency. Your site irradiance will move this line — we re-run it before quotation.

The six packages

S1 DLXN-BIN-S-I-6KW — Off-grid 6 kW

TYPICAL SITE

Off-grid homes, cabins, farmhouses with no or unusable grid

WHAT THE CUSTOMER GETS

- Keeps running through outages — AC, fridge, water pump
- Daytime solar direct to load, surplus into the battery
- Built-in ATS for generator auto-transfer
- Parallel up to 9 units as demand grows

CONFIGURATION

Inverter	**DLXN-BIN-S-I-6KW** · 6 kW single-phase
Module	DLXN-580M-TCP · 580W · 2278×1134×30mm
Strings	2 strings (1 × 2 MPPT) × 6 modules = 12 pcs
Battery	5 kWh wall-mount / 10 kWh wall-mount
Est. yield	8,333 kWh/yr · DC/AC 1.16

$3,595 EXW · $517/kWp

S2 DLXN-OCT-S-I-6KW — Hybrid 6 kW

TYPICAL SITE

Grid-connected homes with high tariffs or frequent outages

WHAT THE CUSTOMER GETS

- Cuts the bill on-grid, keeps the lights on off-grid
- Dual AC outputs — critical loads on their own circuit
- Settable generator run-time and charge current
- Parallel up to 9 units — 54 kW max

CONFIGURATION

Inverter	**DLXN-OCT-S-I-6KW** · 6 kW single-phase
Module	DLXN-580M-TCP · 580W · 2278×1134×30mm
Strings	2 strings (1 × 2 MPPT) × 7 modules = 14 pcs
Battery	5 kWh wall-mount / 10 kWh wall-mount
Est. yield	9,721 kWh/yr · DC/AC 1.35

630W · 8.82kWp · DC/AC 1.47

$3,874 EXW · $477/kWp

S3 DLXN-OCT-S-I-12KW — Hybrid 12 kW

TYPICAL SITE

Large homes and small business — shops, clinics, restaurants (single-phase 12 kW)

WHAT THE CUSTOMER GETS

- 12 kW single-phase — central AC and commercial kitchen loads
- 2 MPPTs for two roof orientations
- 10–20 kWh battery options, expand without changing the inverter
- IP54 variant for semi-outdoor mounting

CONFIGURATION

Inverter	**DLXN-OCT-S-I-12KW** · 12 kW single-phase
Module	DLXN-580M-TCP · 580W · 2278×1134×30mm
Strings	4 strings (2 × 2 MPPT) × 7 modules = 28 pcs
Battery	10 kWh wall-mount / 15 kWh stackable / 20 kWh rack-mount
Est. yield	19,443 kWh/yr · DC/AC 1.35

630W · 11.34kWp · DC/AC 0.94

710W · 12.78kWp · DC/AC 1.06

$9,438 EXW · $581/kWp

S4 DLXN-ESS-S-I-1606 — All-in-one 6 kW + 16 kWh

TYPICAL SITE

Homeowners who want one box: inverter plus 16 kWh battery integrated

WHAT THE CUSTOMER GETS

- One enclosure — less rack, less cable, less labour
- 16 kWh covers one to two days of essential load
- Parallel up to 9 units for small mini-grids
- Dual MPPT and dedicated generator input

CONFIGURATION

Inverter	**DLXN-ESS-S-I-1606** · 6 kW single-phase
Module	DLXN-580M-TCP · 580W · 2278×1134×30mm
Strings	2 strings (1 × 2 MPPT) × 7 modules = 14 pcs
Battery	16 kWh integrated
Est. yield	9,721 kWh/yr · DC/AC 1.35

630W · 8.82kWp · DC/AC 1.47

$4,090 EXW · $504/kWp

S5 DLXN-OCT-P-II-12KW — US-split 12 kW

TYPICAL SITE

North America and split-phase 120/240 V markets — residential backup, light commercial

WHAT THE CUSTOMER GETS

- Native split-phase 120/240 V — no external transformer
- UL 1741 certified platform
- Dual AC outputs plus generator port
- Parallel to 9 units

CONFIGURATION

Inverter	**DLXN-OCT-P-II-12KW** · 12 kW split-phase
Module	DLXN-580M-TCP · 580W · 2278×1134×30mm
Strings	4 strings (2 × 2 MPPT) × 7 modules = 28 pcs
Battery	10 kWh wall-mount / 20 kWh rack-mount
Est. yield	19,443 kWh/yr · DC/AC 1.35

630W · 12.6kWp · DC/AC 1.05

$7,911 EXW · $487/kWp

S6 DLXN-OCT-T-I-22KW — 3-phase 22 kW

TYPICAL SITE

Three-phase 380/400 V commercial — workshops, cold storage, telecom sites, mini-grids

WHAT THE CUSTOMER GETS

- Three-phase output for pumps, cold rooms, machine tools
- 1000 Vdc strings — longer runs, lower losses
- 9 units in parallel up to 198 kW
- Pairs with 50 kWh+ commercial batteries for peak shaving

CONFIGURATION

Inverter	**DLXN-OCT-T-I-22KW** · 22 kW three-phase
Module	DLXN-580M-TCP · 580W · 2278×1134×30mm
Strings	6 strings (3 × 2 MPPT) × 9 modules = 54 pcs
Battery	50 kWh commercial
Est. yield	37,496 kWh/yr · DC/AC 1.42

630W · 32.76kWp · DC/AC 1.49

710W · 31.24kWp · DC/AC 1.42

$16,250 EXW · $519/kWp

What it carries — and for how long

Duty cycles at 90% depth of discharge and 95% inverter efficiency. Essentials and comfort are night loads; AC is a full 8-hour night.

Load scenario	Typical loads	Average draw	Per day
Essentials Lights steady, fridge cold, internet up — an outage nobody notices	12 LED lights · 200 L fridge · router · TV	300 W	2.6 kWh
Comfort Fans all night, laundry still runs, homework undisturbed	Essentials + 2 ceiling fans + laptop + washing machine (every other day)	420 W	4.0 kWh
Night AC Sleep at 26 °C all night; sunrise recharges the pack	Essentials + 1.5 HP inverter AC for 8 h	1150 W	9.6 kWh
Light commercial Trade continues through the outage, cold chain intact	2 chillers · lighting · POS/network · fans	1800 W	16.0 kWh

S1 · DLXN-BIN-S-I-6KW

	5 kWh	10 kWh
Essentials · 300 W	14.3 h	28.5 h
Comfort · 420 W	10.2 h	20.4 h
Night AC · 1150 W	3.7 h	7.4 h

S2 · DLXN-OCT-S-I-6KW

	5 kWh	10 kWh
Essentials · 300 W	14.3 h	28.5 h
Comfort · 420 W	10.2 h	20.4 h
Night AC · 1150 W	3.7 h	7.4 h

S3 · DLXN-OCT-S-I-12KW

	10 kWh	15 kWh	20 kWh
Essentials · 300 W	28.5 h	42.8 h	57.0 h
Comfort · 420 W	20.4 h	30.5 h	40.7 h
Night AC · 1150 W	7.4 h	11.2 h	14.9 h

S4 · DLXN-ESS-S-I-1606

	16 kWh
Essentials · 300 W	45.6 h
Comfort · 420 W	32.6 h
Night AC · 1150 W	11.9 h

S5 · DLXN-OCT-P-II-12KW

	10 kWh	20 kWh
Essentials · 300 W	28.5 h	57.0 h
Comfort · 420 W	20.4 h	40.7 h
Night AC · 1150 W	7.4 h	14.9 h

S6 · DLXN-OCT-T-I-22KW

	50 kWh
Light commercial · 1800 W	23.8 h

Module selection matrix

Package	Inverter	Modules	String layout	Array	Yield / yr	Battery	Price (EXW)
S1	DLXN-BIN-S-I-6KW	580W	2×6	6.96 kWp	8,333 kWh	5 kWh wall-mount / 10 kWh wall-mount	$3,595
S1	*DLXN-BIN-S-I-6KW*	*630W*	*Not recommended — single-string Isc exceeds tracker rating*				
S2	DLXN-OCT-S-I-6KW	580W	2×7	8.12 kWp	9,721 kWh	5 kWh wall-mount / 10 kWh wall-mount	$3,874

Package	Inverter	Modules	String layout	Array	Yield / yr	Battery	Price (EXW)
S2	DLXN-OCT-S-I-6KW	630W	2×7	8.82 kWp	10,559 kWh	5 kWh wall-mount / 10 kWh wall-mount	$4,025
S3	DLXN-OCT-S-I-12KW	580W	4×7	16.24 kWp	19,443 kWh	10 kWh wall-mount / 15 kWh stackable / 20 kWh rack-mount	$9,438
S3	DLXN-OCT-S-I-12KW	630W	2×9	11.34 kWp	13,576 kWh	10 kWh wall-mount / 15 kWh stackable / 20 kWh rack-mount	$8,380
S3	DLXN-OCT-S-I-12KW	710W	2×9	12.78 kWp	15,300 kWh	10 kWh wall-mount / 15 kWh stackable / 20 kWh rack-mount	$8,691
S4	DLXN-ESS-S-I-1606	580W	2×7	8.12 kWp	9,721 kWh	16 kWh	$4,090
S4	DLXN-ESS-S-I-1606	630W	2×7	8.82 kWp	10,559 kWh	16 kWh	$4,241
S5	DLXN-OCT-P-II-12KW	580W	4×7	16.24 kWp	19,443 kWh	10 kWh wall-mount / 20 kWh rack-mount	$7,911
S5	DLXN-OCT-P-II-12KW	630W	2×10	12.6 kWp	15,085 kWh	10 kWh wall-mount / 20 kWh rack-mount	$7,125
S6	DLXN-OCT-T-I-22KW	580W	6×9	31.32 kWp	37,496 kWh	50 kWh commercial	$16,250
S6	DLXN-OCT-T-I-22KW	630W	4×13	32.76 kWp	39,220 kWh	50 kWh commercial	$16,561
S6	DLXN-OCT-T-I-22KW	710W	4×11	31.24 kWp	37,401 kWh	50 kWh commercial	$16,232

Installation notes

Mouting & clearance	Fix to a non-flammable wall, out of direct sun and heat. Leave 300 mm above/below and 200 mm either side for airflow.
Environment rating	IP20 units indoor, dry only. IP54 units may go semi-outdoor under a rain hood — never submerged or exposed to spray.
Battery placement	Keep the 48 V pack within 2 m of the inverter, ventilated, 0–40 °C, off the floor. Parallel only identical packs of the same batch — top-balance each before paralleling.
DC side	Measure Voc and polarity per string before connecting. Never exceed the model's DC limit (500/550/1000 Vdc). Fit a DC breaker and surge arrester.
Cable & breaker	PV: 4 mm^2 to 20 A, 6 mm^2 to 27 A, 10 mm^2 to 40 A. AC breaker: 32 A for 6 kW, 40 A for 8 kW, 63 A for 12 kW; size three-phase per phase current.
Earthing & SPD	Bond enclosure, battery rack and module frames to one earth electrode below 4 Ω. In lightning-prone areas fit SPDs on both DC and AC sides.
Generator	Before connecting a genset, cap charge current at 70% of its rating and set ATS transfer to 30 s or more to avoid short cycling.
Parallel operation	Up to 9 units, same model and firmware. Use equal-length AC cables, daisy-chain the comms, commission each unit alone before paralleling.
Commissioning	1) insulation and polarity 2) battery type and capacity 3) grid/off-grid mode 4) CT orientation 5) app connectivity 6) 30-minute load test.

Day-to-day use

PV first, grid second, battery last

Let PV feed the load first and only push surplus into the battery — fewer cycles, longer life.

Give it air in summer

Above 45 °C ambient the unit derates. South walls and closed cabinets need louvres and a fan.

Stagger heavy loads

AC, pump and kettle together can trip overload protection — stagger them by a minute or two.

Restart order

Power down AC, then DC, then battery; power up in reverse. Wrong order draws an arc.

Keep 10–20% in reserve

Cycle between 20% and 95% day to day; go to 10% only during outages. LFP dislikes sitting full or empty.

Clear modules before snow

A snow-covered array produces nothing all day; the inverter idling is normal, not a fault.

Check the app monthly

Watch yield, SOC and alarms. A sudden halving of yield usually means dirty modules or a dead string.

Questions we get asked

How fast does it switch over on outage?

10 ms single unit, 20 ms in parallel (20/30 ms on the off-grid model) — PCs and routers ride through.

Can it start an AC or a pump?

Yes, within surge: a 6 kW unit delivers 12 kW for 5 s — fine for a 1.5 HP inverter AC. Pumps draw 3–5× rated at start, so add a soft starter or VFD.

Can the battery be expanded later?

Yes — parallel identical 48 V packs up to the BMS limit. New packs must match model and batch.

Can it run grid-tied without a battery?

Hybrid units run grid-tied with no battery, but then there is no backup. Backup requires a pack.

How much PV overbuild is allowed?

Our packages stay at 1.05–1.50×. Beyond 1.5× clipping losses and derating eat the gain.

How long does the battery last?

LFP is rated 6,000 cycles at 80% DoD — 15+ years at one cycle a day, less if hot or deeply cycled.

What happens on cloudy days?

Yield drops proportionally; the unit falls back to grid or battery automatically.

How much space does it need?

About 0.6 × 0.8 m of wall per single-phase unit, 0.8 × 1.0 m for the 22 kW three-phase; battery space on top.

How big can a parallel system get?

Up to 9 units: 6 kW to 54 kW, 12 kW to 108 kW single-phase; 198 kW on the 22 kW three-phase.

Are the certificates complete for grid connection?

CE, NRS097, EN50549-1 and -10 for Europe; UL 1741 and FCC for North America. Submit them to the local utility before commissioning.

Pricing basis

Modules	0.20 USD/Wp (EXW, 0.17–0.23 range)
Home battery	110 USD/kWh (5–20 kWh)
Commercial battery	130 USD/kWh (50 kWh+)
Inverter	RMB cost ÷ 7.1 × 1.20, itemised per model
Balance of system	8% of hardware: mounting, DC/AC cabling, breakers, SPD

- Prices are EXW China, USD, excluding freight, duties and installation.
- Minimum order: one pallet of modules; systems quoted per project.
- Lead time 15–45 days depending on inverter model and battery volume.
- Every package is re-verified against the actual module nameplate before contract.

Assumptions: module electrical data are typical 182/210 N-type nameplate values — confirm against the actual module datasheet before contract. Yield uses 4.0 peak-sun hours and 82% system efficiency; irradiance, shading and tilt will change it. Inverter parameters follow the supplied datasheets.