

Quick Instruction Manual

DLB Controller for Mode 3 Wall Box Charger

Model DLB-A1 Managed wall boxes 1-3 Link 433 MHz (radio only)

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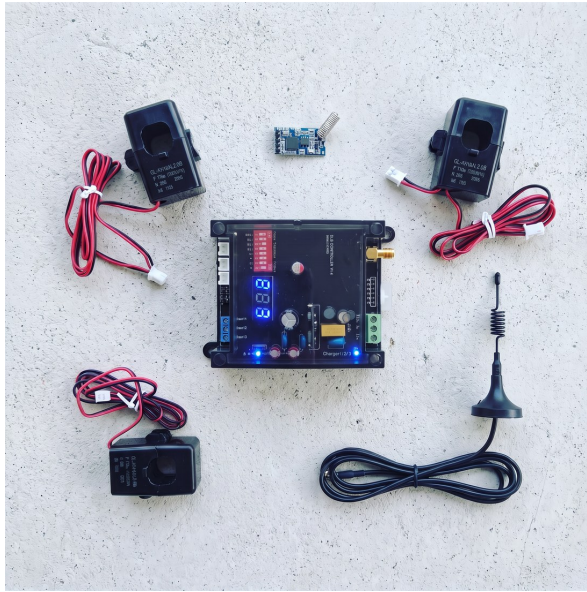
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General Information: The DLB monitors the household's total current and allocates optimal charging current to 1–3 wall boxes in real time, so the site's supply limit is never exceeded — using every available amp without ever going over.

Install and configure only by a qualified electrician. The DLB is not weatherproof — mount it inside a dry, dust-free, ventilated distribution board.

Thank you for choosing AmperePoint.

Package Contents



DLB-A1 kit as supplied.

- 1 × DLB-A1 Dynamic Load Balancing controller
- 3 × Current Transformer (CT) clamp, with cable — for L1 / L2 / L3
- 1 × 433 MHz antenna, magnetic base, with cable
- 1 × 433 MHz radio module — factory-configured; plugs into the dedicated connector inside the wall box (see Appendix B)
- 1 × Quick Instruction Manual (this document, not shown in photo)

Scope & Safety

Applies to the household/small-commercial DLB controller. Summarizes functions, safety, installation, pairing and operation, indicators, and typical current allocation for 1–3 wall box chargers.

Safety Instructions

- Install and set up only by qualified electricians.
- Isolate power before wiring; lock-out/tag-out where applicable.
- Current Transformer (CT) orientation must be correct — never energize with the CT secondary open-circuited.
- Set the Configured Supply Limit (CSL) according to incoming cable size, breaker rating, and local codes.
- Install inside a dry, dust-free, ventilated distribution board — this device is not weatherproof.
- Keep the wireless antenna away from strong EMI sources; ensure proper strain relief on cables.

Description & Operating Principle

The DLB monitors the household's total current (single/three-phase) and allocates optimal charging current to 1–3 wall boxes in real time, so that the site limit is never exceeded.

- **Dynamic Load Balancing** — per-EV optimization to use every available amp without exceeding the limit.
- **Safety Buffer** — the usable limit available for EV charging is 90% of the Configured Supply Limit (10% margin), minus the highest CT-measured phase current from the rest of the house.
- **Communications** — 433 MHz wireless (SMA antenna) only; target current delivered to the wall box in real time. The RS485 wired link is not currently offered.
- **Fairness & Constraints** — each wall box is capped by its own requested current; any branch below the minimum sustaining current is paused.

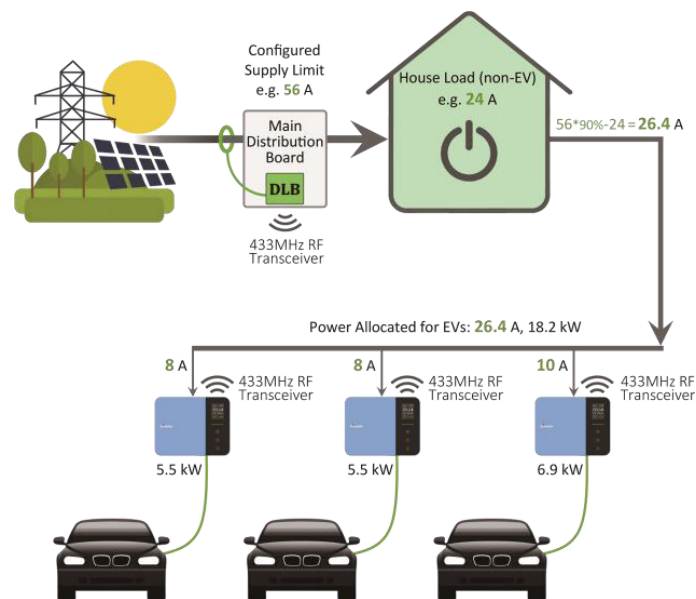


Fig. 1 – DLB system overview: supply to distribution board (DLB + CT) to house load to 1–3 wall boxes. Example: CSL 56 A, usable 26.4 A split 8/8/10 A.

Parts & I/O

- **Antenna** (gold-plated SMA) — 433 MHz wireless.
- **Power input** — AC 100–240 V, 50/60 Hz, L / N / PE.
- **CT inputs** — L1 / L2 / L3 current transformers.
- **Pairing button** — hold 5 s to enter pairing mode (clears all links); press once to finish early, otherwise times out after ~2 min.
- **Link LEDs** — link status for up to three wall boxes.
- **8-way DIP switch** — sets the Configured Supply Limit; 1–255 A mechanically, but must not exceed the rated range of the installed CT (see Key Specifications).
- **Display** — cycles continuously through L1 → current value → L2 → current value → L3 → current value → SEt → configured CSL value (~8 s per full cycle); readings are truncated to whole amps. This is the only local interface — use it at commissioning to verify wiring/CT orientation and to confirm the configured CSL.

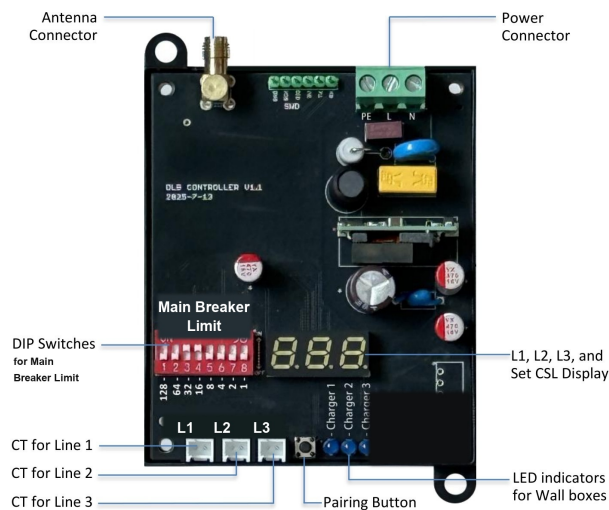


Figure: DLB controller — external connectors and indicators.

Fig. 2 – DLB-A1 controller board with connector/switch labels.

Installation

Important: installation and setup only by a qualified electrician, in accordance with local regulations.

- Mount inside the main distribution board for short CT runs and convenient power wiring.
- **CTs** — clamp on the incoming L1/L2/L3, upstream of all branch breakers (not on branches). Arrow toward load; on three-phase, monitor all phases and limit by the heaviest phase.
- **433 MHz antenna** — keep vertical, ideally outside metal enclosures, for the best signal.

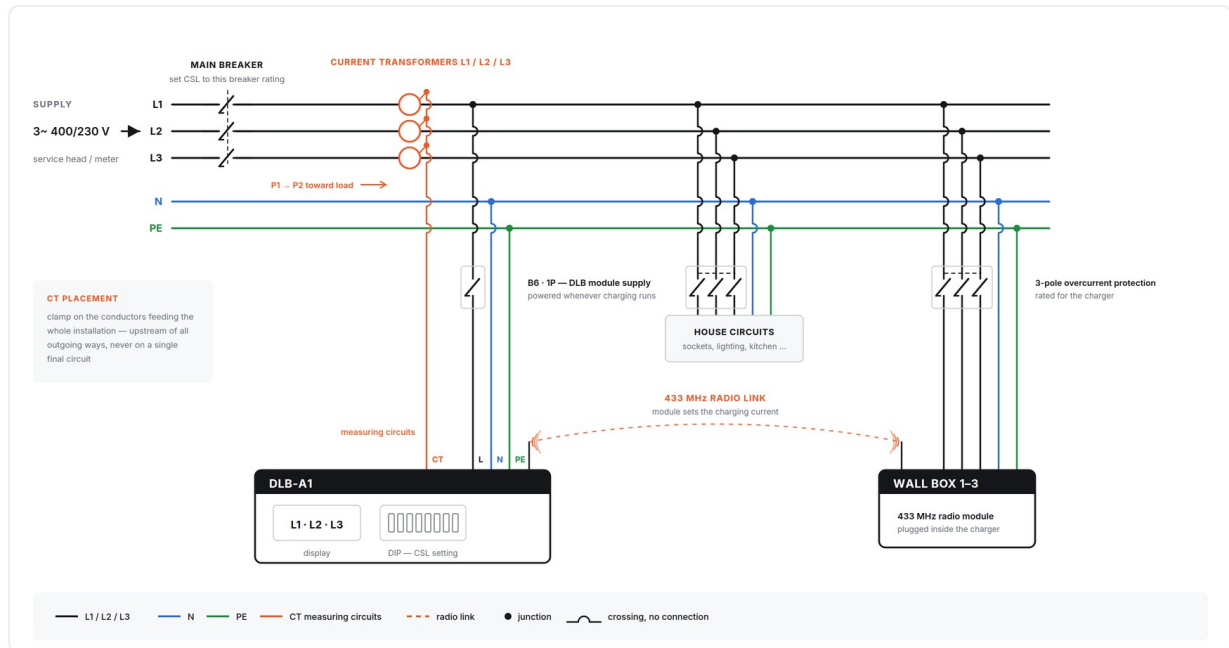


Fig. 3 – DLB-A1 installation wiring: supply, main breaker, CTs (L1/L2/L3), DLB module supply, house circuits, and the 433 MHz radio link to the wall box.

Settings

5.1 Configured Supply Limit

Use the 8-way DIP switch (weights 128/64/32/16/8/4/2/1 A) to set the Configured Supply Limit (CSL) to the smallest of: the main breaker rating, the current implied by the contracted supply power, and the cable/WLZ ampacity after correction factors. The switch mechanically allows any value from 1 to 255 A, but the configured value must not exceed the rated primary current of the installed CT — 0–100 A for the CT supplied as standard, or up to 150/200/250 A with the appropriate higher-range CT.

Examples: **75 A** = 64+8+2+1 · **62 A** = 32+16+8+4+2 · **50 A** = 32+16+2

The DLB applies 90% of the CSL as a safety margin, then subtracts the highest CT-measured phase current from the rest of the house; what remains is the usable limit available for EV charging. The 10% margin exists to cover the window between a load jump elsewhere in the house and the controller's reaction — a step response, not an instantaneous one.

5.2 Minimum Sustaining Current

Recommended: **6 A**. If a branch would receive less than 6 A, that wall box is paused until headroom returns.

Pairing & Operation

6.1 Pairing

Warning: entering pairing mode clears ALL existing links — re-pair all wall boxes (1–3) at the same time.

- **DLB** — hold the pairing button for 5 s until all three link LEDs flash; pairing mode times out after 2 minutes.
- **Wall box** — while not charging: press & hold A + C for 5 s → Settings → DLB Pairing → On → Confirm → Home. Flashing blue DLB icon = pairing mode.
- **Success** — the DLB link LED turns solid; the wall box DLB icon becomes green. Press the pairing button once to finish early.

6.2 Operation

- **Full current charging** (green DLB icon, white current) — sufficient headroom, each wall box charges at its requested current.
- **Reduced current charging** (orange DLB icon & current) — headroom drops; DLB optimizes, keeping each branch ≥ 6 A where possible, otherwise that branch is paused.
- **Paused** (red DLB icon & current) — severe current shortage; recovery is automatic once headroom returns.

6.3 Recovery (ramp-up)

When headroom returns, the DLB re-allocates additional current to each wall box automatically. The step size and ramp-up rate are not yet documented by the manufacturer — do not rely on a specific recovery time for time-critical scenarios until this is confirmed.

Indicators

Mode	DLB LED	DLB icon (wall box)	Current colour
Not paired / offline	Off	■ Grey	White
Pairing	Flashing	■ Flashing blue	White
Paired / online	Solid on	■ Green	White
Full current charging	Slow flashing	■ Green	White
Reduced current charging	Slow flashing	■ Orange	Orange
Charging paused	Quick flashing	■ Red	Red

Typical Allocation Examples

Assumptions: CSL = 74 A → usable limit = 90% × CSL minus the highest CT-measured phase current (≈ 66 A when the rest of the house draws close to nothing); WB1 requests up to 32 A, WB2 and WB3 each request up to 16 A; min. sustaining current = 6 A.

One wall box

Scenario	Usable (A)	WB1 (A)	Icon	Notes
Full current	56	32	■	Capped by wall box max 32 A
Reduced current	21.3	21	■	Limited by household load
Paused	0–5	0	■	Below 6 A → paused

Two wall boxes

Scenario	Usable (A)	WB1 (A)	WB2 (A)	Notes
Full current	56	32	16	All requests satisfied, no derating
Reduced current	26.5	17	9	Proportional reduction
Critical	9.6	9	0	WB2 < 6 A → WB2 paused

Three wall boxes

Scenario	Usable (A)	WB1	WB2	WB3	Notes
Full current	64	32	16	16	All requests satisfied
Reduced current	35	18	9	8	Proportional reduction
Critical	9.6	9	0	0	WB2/WB3 < 6 A → paused

Key Specifications

Model Number	DLB-A1
Power Supply	AC 100–240 V, 50/60 Hz
Managed Wall Boxes	1–3
Communications	433 MHz (SMA), radio only
433 MHz Range	20–30 m indoor (typ.); 80–100 m line-of-sight (open field); site-dependent
CT Inputs	L1/L2/L3, 0–100 A (2000:1), accuracy class 0.5
Configured Supply Limit	1–255 A mechanically (8-way DIP); must not exceed the installed CT's rated range — 0–100 A standard, up to 150/200/250 A with the appropriate higher-range CT
Usable Limit	90% × CSL, minus highest CT-measured phase current
Min. Sustaining Current	6 A per wall box
Overcurrent Reaction	< 1 s (typ.) for the first downward step — single observed event; step size and time to full compliance not yet verified by oscilloscope on CP, treat as provisional
Operating Environment	–20 to +55 °C, ≤95% RH (non-condensing)

Appendix A — DIP Quick Lookup

Weights: 128/64/32/16/8/4/2/1 (A). Toggle to ON to sum to the target amperage — the device applies a 10% safety buffer automatically.

CSL (A)	ON weights
25	16+8+1
30	16+8+4+2
35	32+2+1
42	32+8+2
48	32+16
50	32+16+2
55	32+16+4+2+1
62	32+16+8+4+2
65	64+1
68	64+4
70	64+4+2
75	64+8+2+1
78	64+8+4+2
80	64+16
85	64+16+4+1
90	64+16+8+2
93	64+16+8+4+1
95	64+16+8+4+2+1
100	64+32+4

Appendix B — 433 MHz Radio Link

DLB-side antenna

- **Antenna type** — 433 MHz quarter-wave whip, SMA, magnetic base.
- **Mounting** — install the DLB inside the distribution board; route the antenna cable out and mag-mount the base on the exterior metal surface (top or side).
- **Orientation** — keep the whip vertical; it's omnidirectional.
- **Distance & path** — keep the DLB-wall box distance short, with a clear path and no large metal objects in between.
- **Ground plane** — a magnetic metal surface under the base helps performance.
- **Cable routing** — stay away from high-current cables/VFDs; cross at right angles; basic strain relief, no sharp bends.

Wall box-side antenna

The wall box uses an internal antenna sealed inside its enclosure — fixed, not user-adjustable. Because it sits inside a closed housing, it is typically the weaker end of the link. If range is marginal, prioritise a clear line of sight and minimise metal obstructions between the DLB and the wall box, rather than trying to improve the wall box's own antenna.

Module & regulatory compliance

- Radio configuration (frequency, transmit power, duty cycle) is fixed at the factory and is not user-adjustable. Compliance with applicable radio-equipment regulations is the manufacturer's responsibility, covered by the Declaration of Conformity — the installer does not configure or verify ISM-band parameters.
- Use only the radio module supplied by AmperePoint with this DLB-A1 unit. Do not substitute a different module: because it plugs into a removable connector, fitting a non-supplied module changes the RF configuration of the product and invalidates the declared conformity.
- **Fitting the module** — disconnect the wall box from mains power, then open its enclosure and plug the supplied radio module into its dedicated connector. Refer to the wall box's own installation guide for the exact connector location. Re-seal the enclosure before restoring power.

Warranty Agreement

1. Coverage refers to the product itself.
2. Warranty period: **24 months**. Free repair or replacement for failure/damage during normal use.
3. Start date: date of sale.
4. Distributor may charge extra or refuse service if: (a) failure from not following this manual — wrong CSL, reversed CT, non-qualified install; (b) damage from fire/flood/abnormal voltage; (c) unusual applications; (d) foreign objects/moisture entering the enclosure — the DLB is **not weatherproof**; (e) other man-made external factors.
5. Valid only with proof of purchase.
6. This warranty does not exclude, limit, or suspend the buyer's statutory rights arising from non-conformity of the goods with the contract (in Poland: Art. 577¹ § 2 of the Civil Code).

Guarantor: Ampere Point, Bohaterów Września 9, Warszawa, Poland.

Warranty service: hello@amperepoint.com

Do not dispose of this product with household waste. Take it to a designated WEEE (waste electrical and electronic equipment) collection point, in accordance with local regulations.