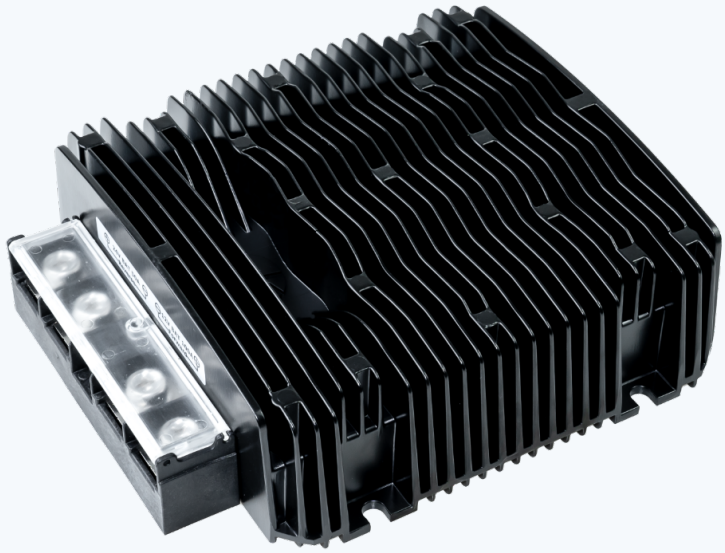
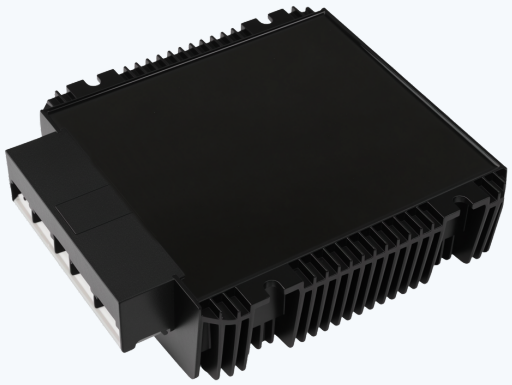
12V / 24V TWO-WAY CHARGING

Bidirectional DC-DC Battery Charger

SKU: WTDC-12-24V-50A 24V / 1500W



FRONT VIEW



REAR VIEW

50A / 100A	Up to 96%	IP65
FORWARD / REVERSE MAXIMA	CONVERSION EFFICIENCY	ENVIRONMENTAL PROTECTION
Base model factory settings	Specified at Vin = 12VDC	Natural cooling

Two-way charging. Built for the road.

- ✓ **Charge while driving**
  Vehicle battery to lithium house battery.
- ✓ **Maintain the starter battery**
  Auxiliary battery to vehicle battery.
- ✓ **Controlled charging**
  CC/CV charging with current soft start.
- ✓ **Compact 60mm profile**
  200 × 178 × 60mm in the specification table.

Forward/reverse maxima depend on the selected model. Factory defaults are detailed on page 03.

PRODUCT OVERVIEW

Optimized for lithium batteries

CC/CV charging for LiFePO4 and LiMn2O4 battery systems.

The WT-24BC1500M is a 24V / 1500W bidirectional battery charger with a DC input range of 10-60VDC. It uses intelligent multi-stage charging with constant current (CC) and constant voltage (CV) phases.

Lithium batteries require a dedicated lithium battery charger. The source warns that unsuitable charging may cause undercharging or permanent battery damage.

Lithium charging settings

BATTERY CHEMISTRY	SERIES CONFIGURATION	SOURCE CC VOLTAGE
24V LiFePO4	8 cells in series	29.2V
24V LiMn2O4	6 cells in series	25.2V

Once the CC voltage threshold is reached, the charger reduces charging current to 10% of the rated current. Lithium charging has no float charge stage.

Key features

- Design meeting CE, RoHS and ISO9001-2015, as stated in the source.
- Dedicated CC/CV design for LiFePO4 and LiMn2O4 batteries.
- Full charging-current design; efficiency up to 96%.
- OV, OT, OC (in CC mode) and short-circuit protection.
- Multiple DC output-terminal options for battery systems.
- Advanced switching-mode power supply technology.
- Waterproof, dustproof and shockproof design.
- Optional RS485/CAN protocol for current and voltage control.*
- LED charging-state indication; compact, lightweight and naturally cooled.
- Built-in Bluetooth module and app functionality.*
- 2-year limited warranty.

*Communication availability differs across source sections; see the source check notes on page 14.

MODEL SELECTION

Choose the right model

Match the vehicle battery voltage and auxiliary battery chemistry.

Model naming method

WT	24	BC	1500	M	1
WeVolt product series	Battery B voltage	Bidirectional charging	Charging power (W)	Shell type	Battery-type suffix

How to choose the model

WT-24BC1500M

- A 12V vehicle (AGM/GEL)
- B 25.6V / 8S (LiFePO4)

FORWARD A → B — 29.2V, 50A (CC-CV)
Input cutoff: ≤12V / Startup: 13V

REVERSE B → A — 14.4V, 100A (CC-CV)
Input cutoff: ≤24V / Startup: 25V

WT-24BC1500M1

- A 12V vehicle (AGM/GEL)
- B 22.2V / 6S (LiMn2O4)

FORWARD A → B — 25.2V, 50A (CC-CV)
Input cutoff: ≤12V / Startup: 13V

REVERSE B → A — 14.4V, 100A (CC-CV)
Input cutoff: ≤20V / Startup: 21V

WT-24BC1500M2

- A 24V vehicle (AGM/GEL)
- B 22.2V / 6S (LiMn2O4)

FORWARD A → B — 25.2V, 50A (CC-CV)
Input cutoff: ≤24V / Startup: 25V

REVERSE B → A — 28.8V, 50A (CC-CV)
Input cutoff: ≤20V / Startup: 21V

WT-24BC1500M3

- A 24V vehicle (AGM/GEL)
- B 25.6V / 8S (LiFePO4)

FORWARD A → B — 29.2V, 50A (CC-CV)
Input cutoff: ≤24V / Startup: 25V

REVERSE B → A — 28.8V, 50A (CC-CV)
Input cutoff: ≤24V / Startup: 25V

These are factory default values. Contact WeVolt if application-specific adjustments are required.

Model suffixes identify different voltage and battery-chemistry configurations.

TECHNICAL SPECIFICATIONS

Electrical performance

Factory CC/CV limits and shared electrical specifications.

Charging limits by model

PARAMETER	WT-24BC 1500M	WT-24BC 1500M1	WT-24BC 1500M2	WT-24BC 1500M3
Battery type	LiFePO4	LiMn2O4	LiMn2O4	LiFePO4
CC (constant current)	A: 29.2V↓, 50A B: 14.4V↓, 100A	A: 25.2V↓, 50A B: 14.4V↓, 100A	A: 25.2V↓, 50A B: 28.8V↓, 50A	A: 29.2V↓, 50A B: 28.8V↓, 50A
CV (constant voltage)	A: 29.2V, 50A↓ B: 14.4V, 100A↓	A: 25.2V, 50A↓ B: 14.4V, 100A↓	A: 25.2V, 50A↓ B: 28.8V, 50A↓	A: 29.2V, 50A↓ B: 28.8V, 50A↓

The A/B labels and downward arrows in this matrix are reproduced from the source specification.

Shared electrical specifications

PARAMETER	SPECIFICATION
DC input voltage range	10-60VDC
DC input peak voltage	60VDC
Input fuse	150A; built-in fuse at the unit input positive terminal
Maximum input current	105A (Vin = 10V)
No-load current	150mA (Vin = 12VDC)
Power efficiency	96% (Vin = 12VDC)
Ripple and noise (A → B)	220-600mVp-p
RS485 remote output OFF	100mA (Vin = 12VDC)
Ignition shutdown (ACC OFF)	250μA (Vin = 12VDC)
Battery leakage current	0.5mA

Electrical values are retained from the supplied charger specification.

CONTROLS AND ENVIRONMENT

Control functions & operating limits

Enable signals, charging logic and environmental specifications.

Charging functions

FUNCTION	STATUS
Anti-backflow	Yes
Bidirectional charging	Yes
Lithium full-charge cutoff	Yes
AGM/GEL float charging	Yes
Remote OTA	Yes (optional)
Power-on delay	Yes
V/I calibration	Yes
Current soft start	Yes
Reverse sleep	Available

Physical specifications

PARAMETER	SPECIFICATION
Working temperature	-40°C to +55°C
Waterproof level	IP65
Dimensions	200 × 178 × 60mm (7.87 × 7.07 × 2.36in)*
Weight	≤2.7kg
Input cable (suggested)	4AWG
Output cable (suggested)	4AWG
Cooling	Natural
Packing	Box
LED display	Red: charging Green: fully charged

Use a thicker cable if wire length exceeds 1m.

ACC / RMT charging logic

ACC ON + RMT ON

Automatic bidirectional charging

ACC ON + RMT OFF

Forward charging

ACC OFF + RMT ON

Reverse charging

ACC forward signal and RMT reverse signal: ON = 10-60VDC; OFF = 0-8VDC.

Reverse sleep function (specification table): With ACC OFF and RMT ON, the charger enters sleep 1 minute after the battery is fully charged. It wakes when Battery A voltage falls below the cutoff point, or when ACC turns ON for forward charging.*

*Original dimensional and sleep-time inconsistencies are listed on page 14.

PROTECTION AND COMMUNICATION

Protection & connected control

Automatic protection and optional RS485 / app communication.

Function & safety

FUNCTION / TEST	SPECIFICATION
Short-circuit protection	Yes; automatic recovery
Overvoltage protection	Yes; automatic recovery
Overcurrent protection	Yes; automatic recovery
Overtemperature protection	Automatic derating of output charging power at high temperatures; see the derating curve on page 13
Dielectric strength	Input-to-shell and output-to-shell: ≥500V; leakage current ≤1mA for 1 minute; no breakdown or arcing
Insulation resistance	Input-to-shell and output-to-shell: ≥10MΩ; test voltage = 500V
MTBF	≥200,000 hours; Vin = 12V / 24V / 36V / 48V

RS485 & app functions (optional)

01 Set input undervoltage / overvoltage protection and recovery points for different applications.

02 Adjust output voltage from 10-60V for battery-specific charging curves.

03 Adjust output current from 1-100A for battery-specific charging curves.

04 Set the full-charge indicator current-conversion point from 1-20A.

05 Control remote output ON/OFF through RS485; stop charging when the battery is full.

06 Calibrate output voltage and current to maintain batch consistency.

07 Report input/output operating parameters and protection alarms in real time.

08 Retain all configurable parameters after power is removed.

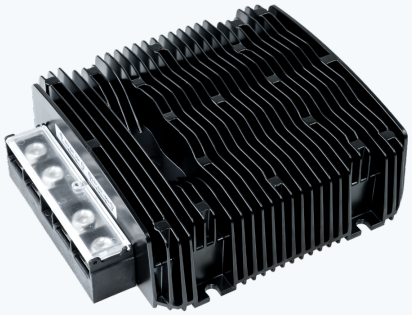
09 Control the built-in Bluetooth module through the mobile app.

Communication and Bluetooth option descriptions are retained from the source; see page 14.

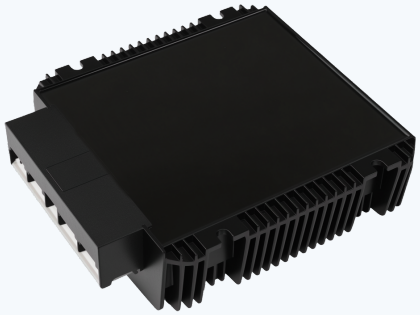
SIGNAL CONNECTIONS

Signal wiring & product views

Eight-pin communication and enable-signal harness.



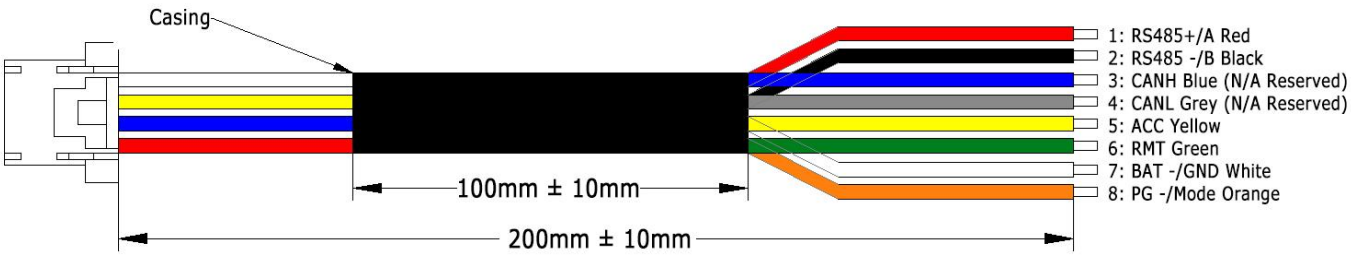
FRONT VIEW



REAR VIEW

PIN	WIRE COLOR	SIGNAL	FUNCTION
1	Red	RS485+/A	RS485 communication positive / A
2	Black	RS485-/B	RS485 communication negative / B
3	Blue	CANH	N/A; reserved
4	Grey	CANL	N/A; reserved
5	Yellow	ACC	Forward enable signal
6	Green	RMT	Reverse enable signal
7	White	BAT-	Battery negative signal
8	Orange	PG	Mode-switching signal

Signal cable dimensions



PG mode: In battery mode, shorting PG to BAT- selects automatic forward/reverse switching. Leaving PG and BAT- open selects manual forward/reverse operation.

Harness dimensions, pin numbers and wire colors follow the original drawing.

DUAL-BATTERY APPLICATION

Automatic charging mode

ACC follows the ignition key; RMT connects directly to Battery B positive.

Example: Battery A = 12V AGM vehicle battery; Battery B = 24V LiFePO4 auxiliary battery. Connect ACC to the ignition key switch and RMT directly to the auxiliary battery positive terminal.

1 Forward charging | A → B

Conditions: A > 13V; 16V > B < 31V (source expression). ACC ON while driving; RMT connected to auxiliary positive.
Action: Charge Battery B from Battery A.
Stop: Battery A voltage drops below 12V.

2 Reverse charging | B → A

Conditions: A > 8V; 25V > B < 31V (source expression). ACC OFF while parked; RMT connected to auxiliary positive.
Action: Charge and supply Battery A from Battery B.
Stop: Battery B voltage drops below 24V.

3 Reverse sleep mode | B → A

Conditions: ACC OFF while parked; RMT connected to auxiliary positive.
Operation: With Battery A under no load, Battery B fully charges Battery A, then the charger sleeps after 3 minutes. Battery B leakage current: 1.5mA.
Wake: When Battery A is below 12V, it wakes after 20 seconds and resumes B → A charging. The cycle repeats.

4 Quick exit from reverse sleep

Turning ACC ON wakes the charger after 20 seconds and selects forward charging. Turning ACC OFF returns it to reverse operation. The cycle repeats.

Voltage expressions and the 3-minute sleep time are retained as printed. See page 14 for source check notes.

Automatic-mode operating conditions are reproduced from the source application example.

MANUAL OPERATION AND INDICATORS

Manual mode & LED status

Use a switch in the RMT connection to Battery B positive.

Example: Battery A = 12V AGM; Battery B = 24V LiFePO4. Connect ACC to the ignition key switch; connect RMT to auxiliary battery positive through a switch.

1 Forward charging | A → B

Conditions: A > 13V; 16V > B < 31V (source expression). ACC ON while driving; RMT switch OFF.
Action: Charge Battery B from Battery A.
Stop: Battery A voltage drops below 12V.

2 Reverse charging | B → A

Conditions: A > 8V; 25V > B < 31V (source expression). ACC OFF while parked; RMT switch ON.
Action: Charge and supply Battery A from Battery B.
Stop: Battery B voltage drops below 24V.

3 Stop operation

ACC OFF while parked and RMT disconnected from auxiliary positive.
Battery B leakage current: 55μA.

LED indicator status

OPERATING STATE	LED	INDICATION
Pre-charge	Red	Blink: 3s ON / 3s OFF
CC/CV charging; current >10% rated	Red	Continuously ON
Fully charged / float; current <10% rated	Green	Continuously ON
Lithium full; charging stopped	Green	Blink: 3s ON / 3s OFF
Forward fault	Red	Blink at 400ms intervals
Reverse fault	Red	Blink at 250ms intervals

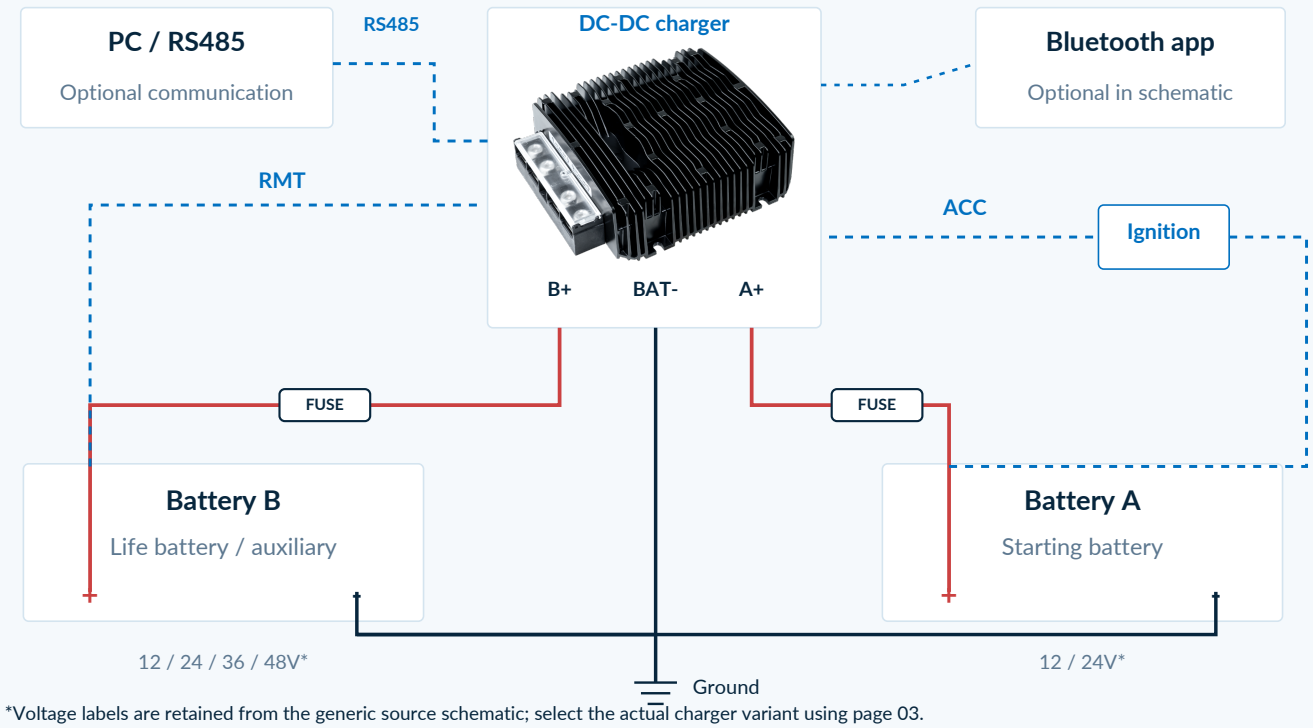
Lithium full-charge cutoff and AGM/GEL float behavior are separate charging modes.

POWER FLOW AND ARCHITECTURE

How bidirectional charging works

Vehicle-to-battery and battery-to-vehicle energy transfer.

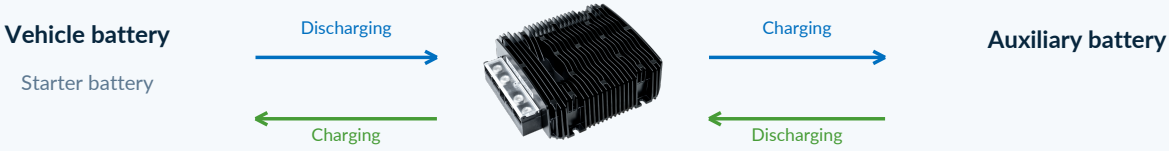
ILLUSTRATIVE DUAL-BATTERY CONNECTIONS



*Voltage labels are retained from the generic source schematic; select the actual charger variant using page 03.

Connection note: Incorrect power-wire connections can permanently damage the charger. Incorrect signal-wire connections can cause abnormal operation.

Vehicle-to-battery (V2B) / Battery-to-vehicle (B2V)



Dual-battery system: Battery-to-battery (B2B)



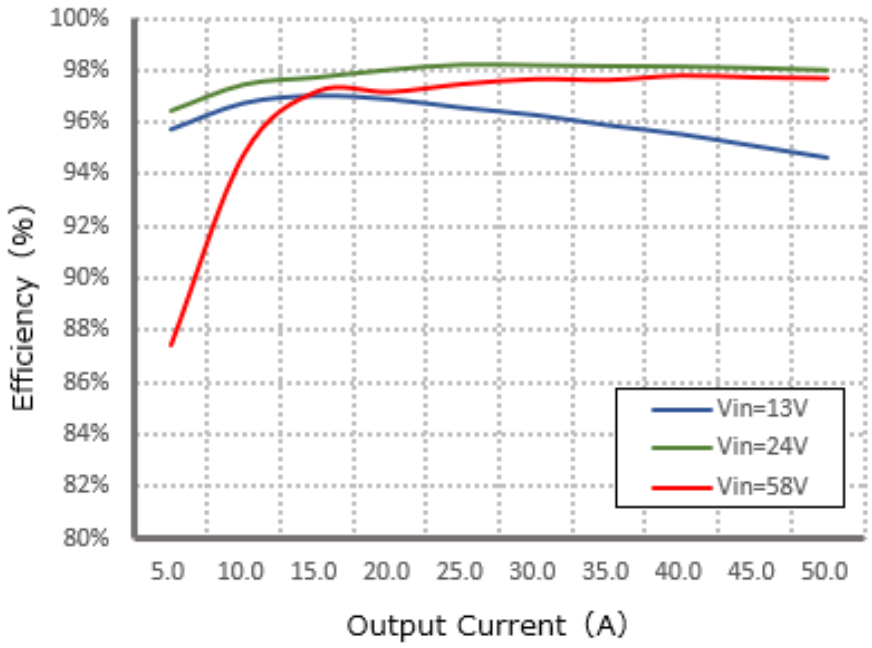
The charger charges a dual-battery system and can supply the vehicle battery from the auxiliary battery.

CHARACTERISTIC CURVES

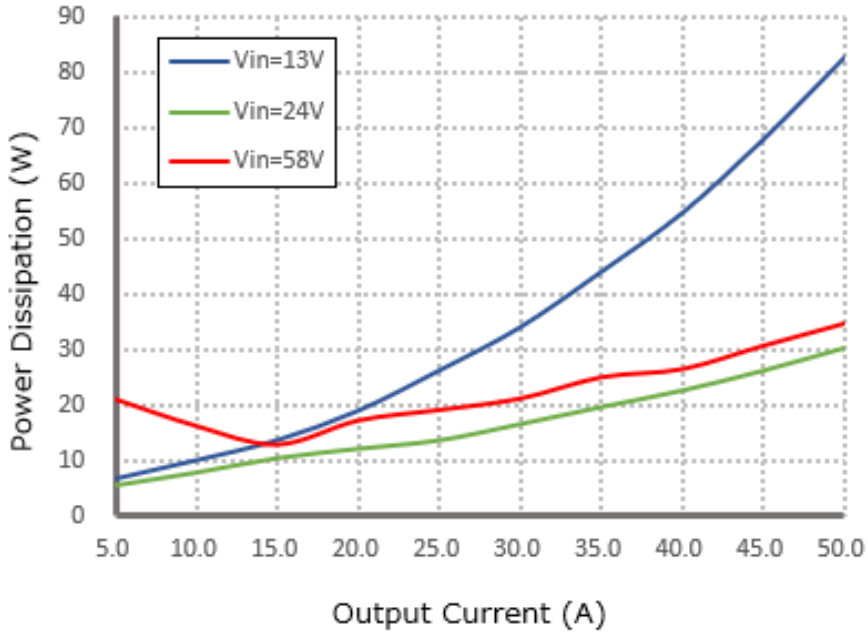
Efficiency & power dissipation

Original manufacturer curves for Vin = 13V, 24V and 58V.

Efficiency



Power dissipation



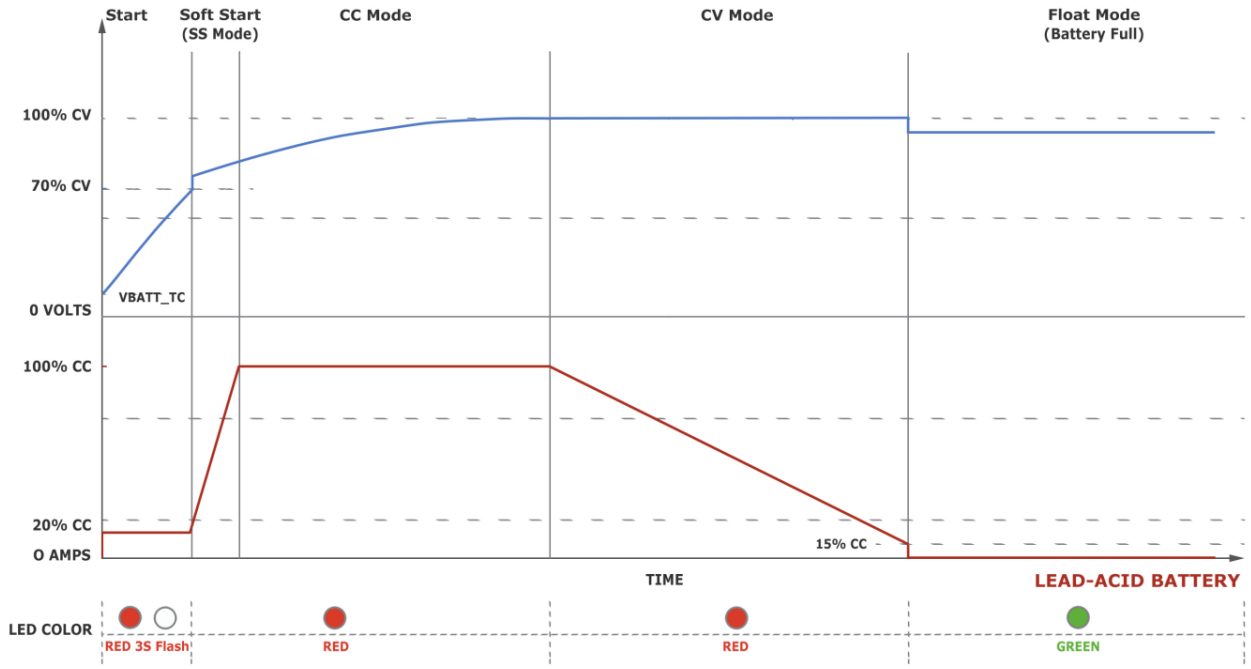
Original curve data, scales, line colors and input-voltage legends are preserved.

CHARGING CHARACTERISTICS

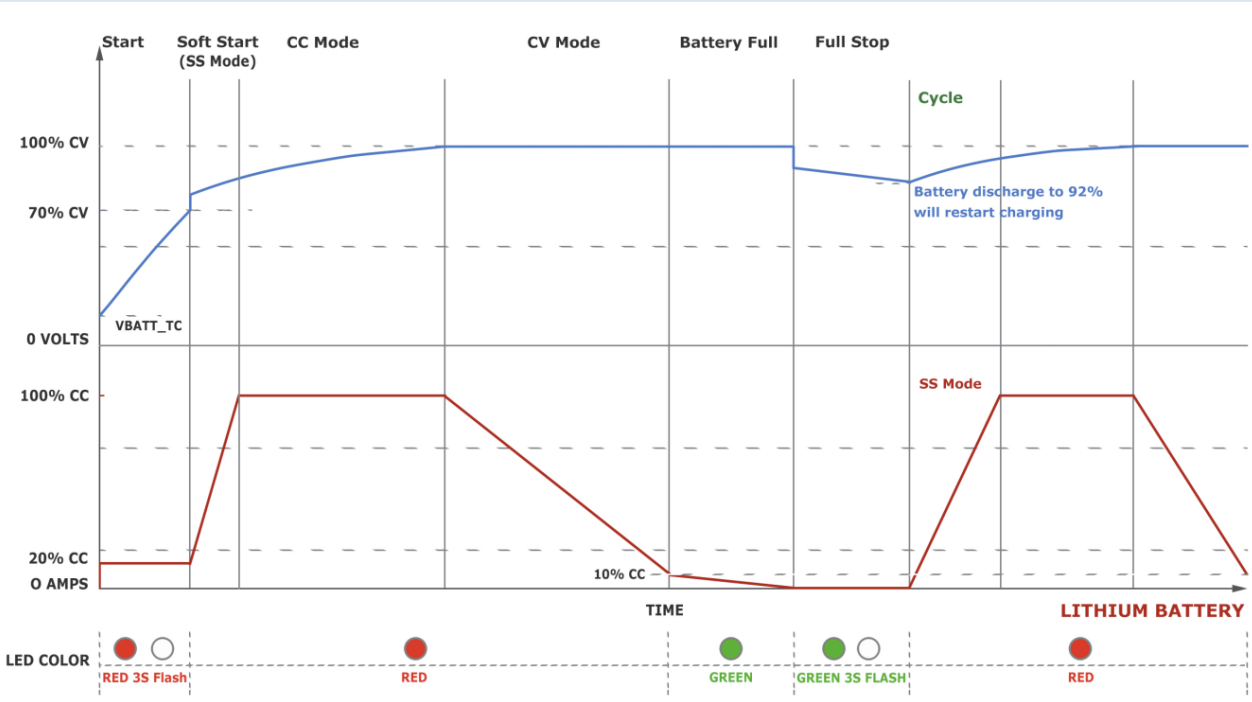
Charging curves

AGM/GEL float charging and lithium full-charge cutoff.

AGM / GEL battery



Lithium battery



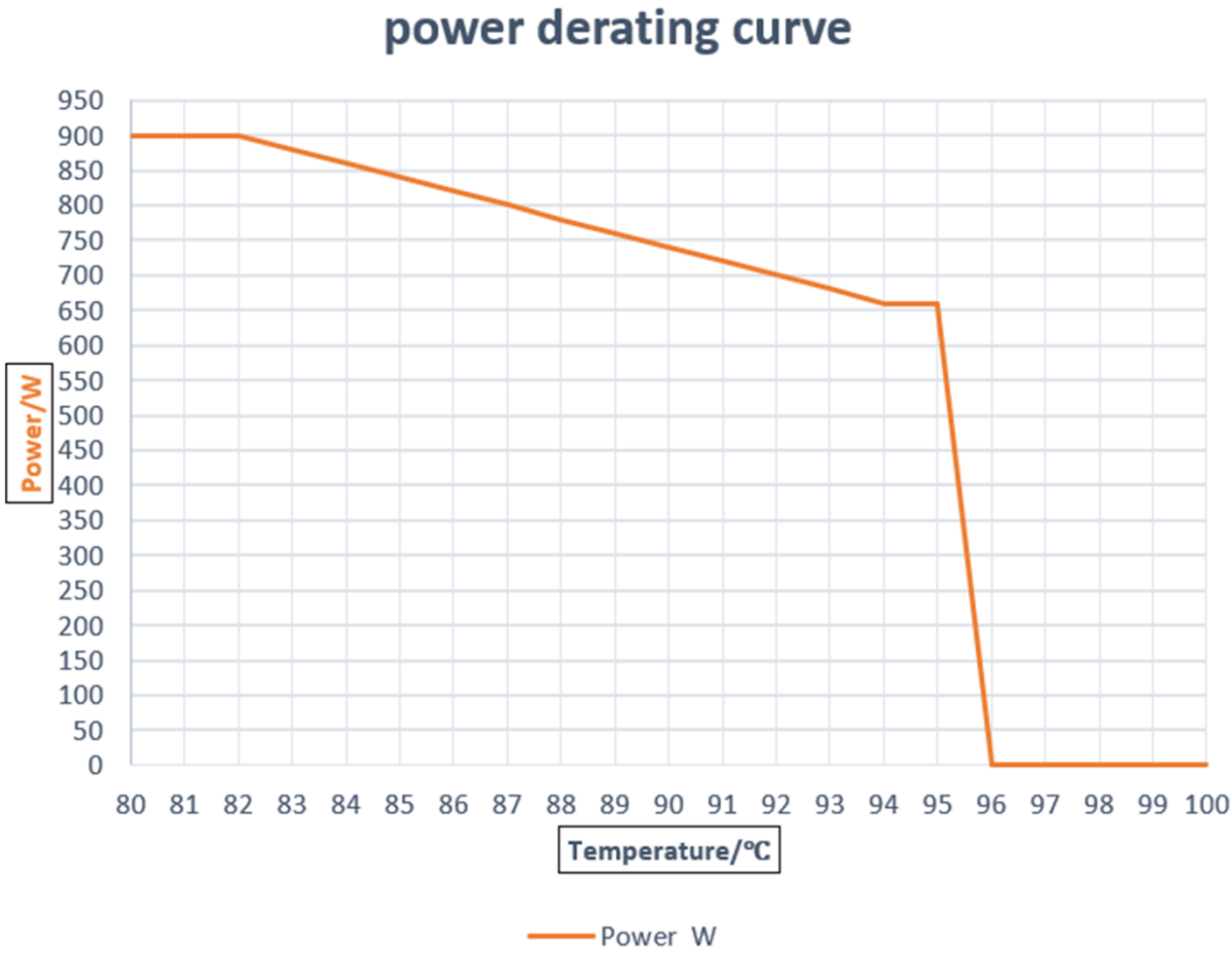
Stage labels, current/voltage traces, restart behavior and LED indications follow the source curves.

THERMAL PROTECTION

Temperature derating

Charging power automatically reduces at high temperatures.

Temperature derating curve



-40°C to +55°C

WORKING TEMPERATURE

As listed in the specification table

Automatic derating

OVERTEMPERATURE PROTECTION

See the original curve above

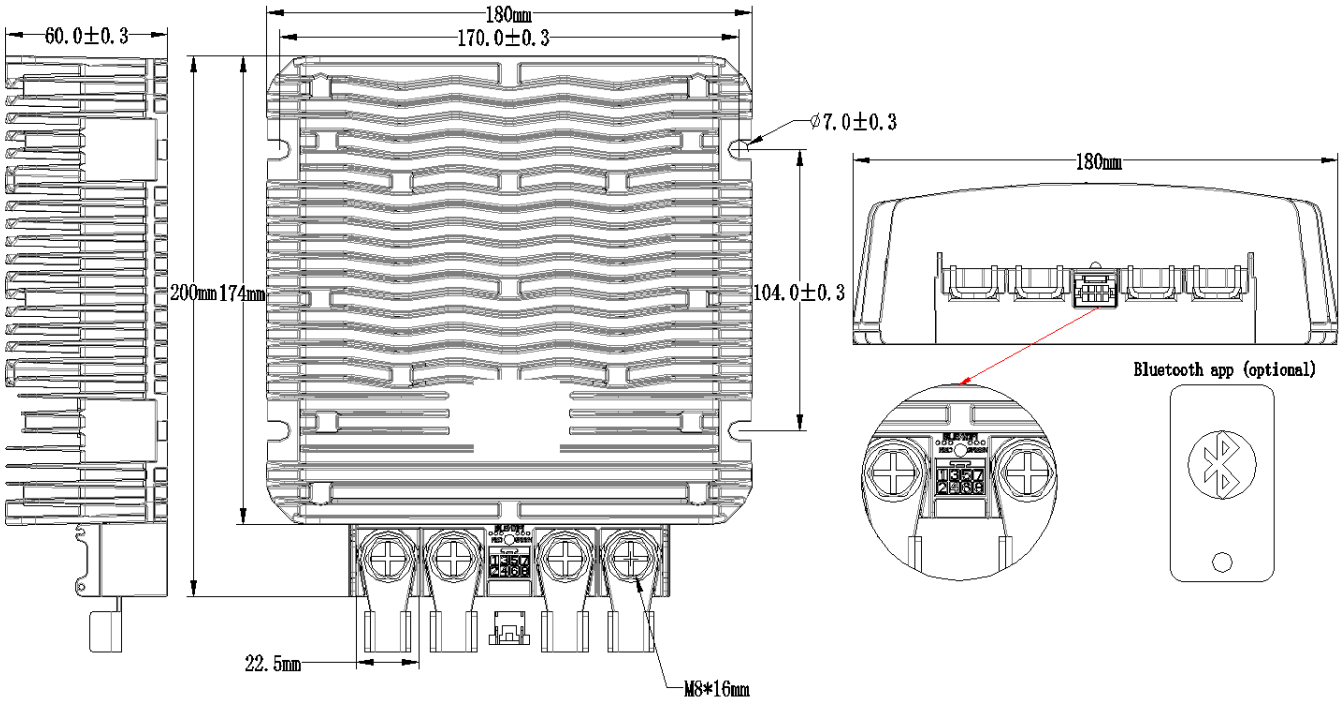
Source context: The derating graph uses an 80-100°C temperature axis. The source does not identify its sensor or reference point. The working-temperature range and plotted curve are retained separately.

No new thermal thresholds or extrapolated curve values have been introduced.

DIMENSIONS AND SOURCE CHECKS

Mechanical dimensions & notes

Original engineering drawing. Unit: mm.



200 × 178 × 60mm	≤2.7kg	Natural cooling
Specification-table dimensions	Weight	Cooling method

Source check notes

Sleep timing
The specification table says 1 minute; the automatic-mode example says 3 minutes. Both values are retained for manufacturer confirmation.

Voltage conditions
The source prints “16V > B < 31V” and “25V > B < 31V”. These expressions are retained; confirm the intended inequalities before configuration.

Dimensions
The table gives 178mm width; the drawing shows 180mm. The source inch width is 7.07in; 178mm converts to 7.01in. Source dimensions are retained.

Communication
The source lists optional RS485/CAN but marks CAN pins reserved. It also describes Bluetooth as built-in and as optional. Confirm the supplied option.

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Source values are preserved. Notes identify inconsistencies without silently changing technical data.