SWIFT LOONG

Blue Shunt Gen2
Smart Battery Monitor
User Manual

Bluetooth battery monitoring · 200A / 500A / 1000A / 2000A

Document version: Rev 1.0

Release date: September 2026

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1. Safety Precautions

This chapter concerns personal and equipment safety. Read it in full before installation and use.

1.1 General safety precautions

Read this manual carefully before installing, operating or maintaining this product, and keep it for future reference. This product must be installed by a person with electrical knowledge. Although the DC main circuit operates at low voltage, the short-circuit current can be extremely high; incorrect wiring may cause equipment damage or personal injury.

1.2 Battery safety warnings

Working in the vicinity of a battery is dangerous. Batteries can generate explosive gases during operation. Never smoke or allow a spark or flame near a battery, and provide sufficient ventilation.

- Wear eye protection while working near batteries, avoid touching your eyes, and wash your hands when done.
- Be careful when using metal tools near batteries — a dropped tool may cause a short circuit. Remove personal metal items such as rings, bracelets, necklaces and watches before working; a battery can produce a short-circuit current high enough to melt metal and cause severe burns.

- If battery electrolyte contacts skin or clothing, wash immediately with soap and water. If it enters an eye, flood the eye with running cold water for at least 15 minutes and get medical attention immediately.

1.3 Transport and storage

Store this product in a dry environment, away from rain, moisture and direct sunlight. For long-term storage, disconnect all wiring and keep the product in its original packaging.

2. Introduction

This chapter explains what the Gen2 does, why battery monitoring matters, how to size the right model, and the companion APP.

2.1 What is the Blue Shunt Gen2

The Blue Shunt Gen2 is a smart battery monitor based on true shunt sampling. It is wired in series with the main battery circuit and continuously measures battery voltage and current, from which it calculates the battery's state of charge (SOC), time remaining and historical data. Data is displayed in real time on your phone via the built-in Bluetooth (BLE) connection to the Tuya Smart app, and can also be integrated into a vehicle energy system or host display via RS485 (Modbus).



Figure 2-1 Blue Shunt Gen2 appearance

Compared with voltage-estimation gauges, shunt sampling is not affected by the battery's plateau voltage and does not drift over time. Combined with one full-charge/full-discharge synchronisation, the SOC reading stays accurate in the long term.

2.2 Why should I monitor my battery?

No one can tell how much energy is left in a battery by just looking at it. Over-charging, over-discharging, excessively deep discharges, excessive charge or discharge currents and high ambient temperature all shorten battery life. A battery monitor gives the user real-time feedback so that remedial measures can be taken in time — the monitor quickly pays for itself in extended battery life.

2.3 Models and sizing

The Gen2 is available in four ranges named after the full-scale current of the paired shunt. Sizing rule: choose the range by the maximum continuous current of the main circuit, with about 30% headroom.

Model	Paired shunt	Continuous current	Peak current	Typical use
Gen2 · 200A	200A / 75mV	0–140A	≤200A	Class B /

				small RVs, battery ≤400Ah, inverter ≤1500W
Gen2 · 500A (standard)	500A / 75mV	0–350A	≤500A	Mainstream Class C RVs, battery ≤800Ah, inverter 2000–3000W
Gen2 · 1000A	1000A / 75mV	0–700A	≤1000A	High-power RVs / parallel battery banks, inverter ≥5000W
Gen2 · 2000A	2000A / 75mV	0–1400A	≤2000A	Commercial vehicles, construction machinery, storage cabinets

Note: Shunts and meters of different ratings have different internal parameters and **must not be mixed**. Contact us before ordering to verify your battery capacity and maximum main-circuit current. Factory pre-configuration is available for fleet projects.

2.4 The Tuya Smart App

The APP is essential to set up and monitor the Gen2. After connecting via Bluetooth BLE, you can view SOC, voltage, current, power and history curves in real time, and configure battery capacity, work mode, P1 power supply and other parameters (with power-loss memory). Scan the QR code in Figure 2-2 or search “Tuya Smart” in your app store to download.



Tuya Smart

Figure 2-2 Tuya Smart app download QR code (App Store / Google Play)

3. Installation

Installation quality directly determines measurement accuracy and electrical safety. Follow the steps in this chapter in order.

3.1 What's in the box?

Item	Qty
Blue Shunt Gen2 main unit	1
Matched shunt (same range as ordered)	1
Sampling / power-supply harness	1
Manual / warranty card	1 each

3.2 Mounting

The Gen2 is rated IP52 (natural cooling) and is **not waterproof**. Mount it in a dry, ventilated location away from water drops and dust, away from flammable materials, direct sunlight and heat sources. Fix the unit to a flat, rigid surface using the mounting holes with screws or cable ties, and make sure it cannot loosen in service.



Figure 3-1 Mounting base and fixing holes (actual product)

3.3 Connections overview

Interface	Function
Shunt main-circuit terminals	Wired in series between battery negative and system negative (BATTERY side / SYSTEM side, see silkscreen)
P1 supply terminal (V+)	Connect to battery positive to power the meter (DC 8–60V)
COMM port	RJ45 8PIN, RS485 Modbus, dual-channel parallel output, to vehicle system / display

Reset button	On the rear panel; long-press 5 s for factory reset
LEDs	Red = fault, Blue = Bluetooth, Green = running

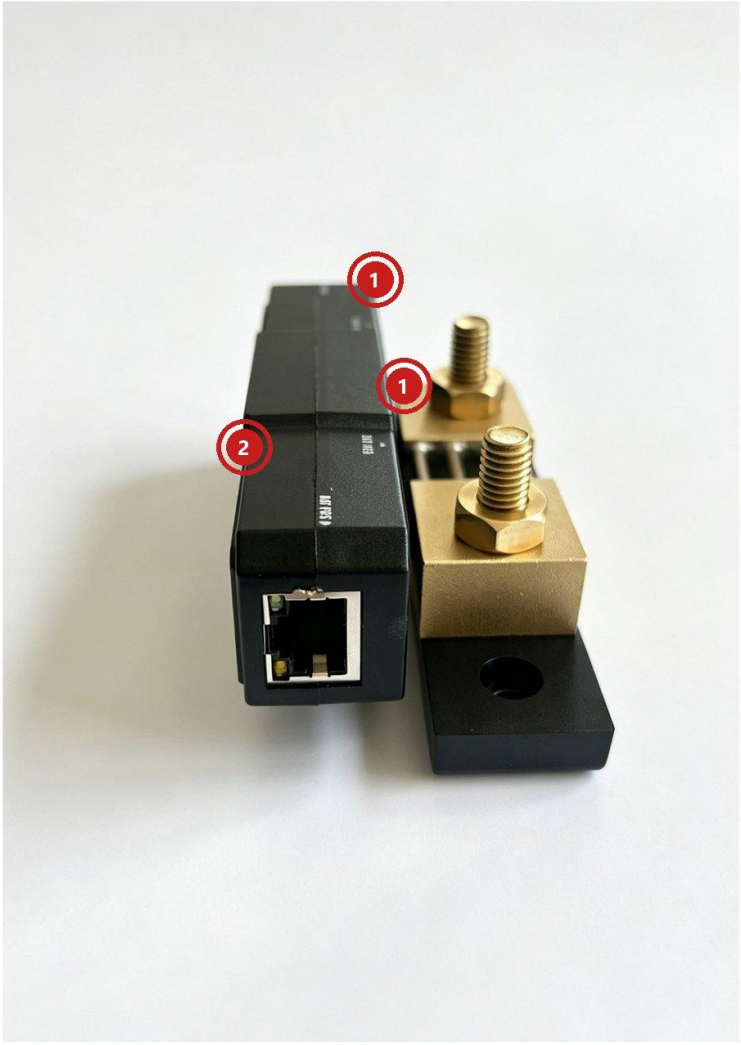


Figure 3-2 Connections overview (actual product)

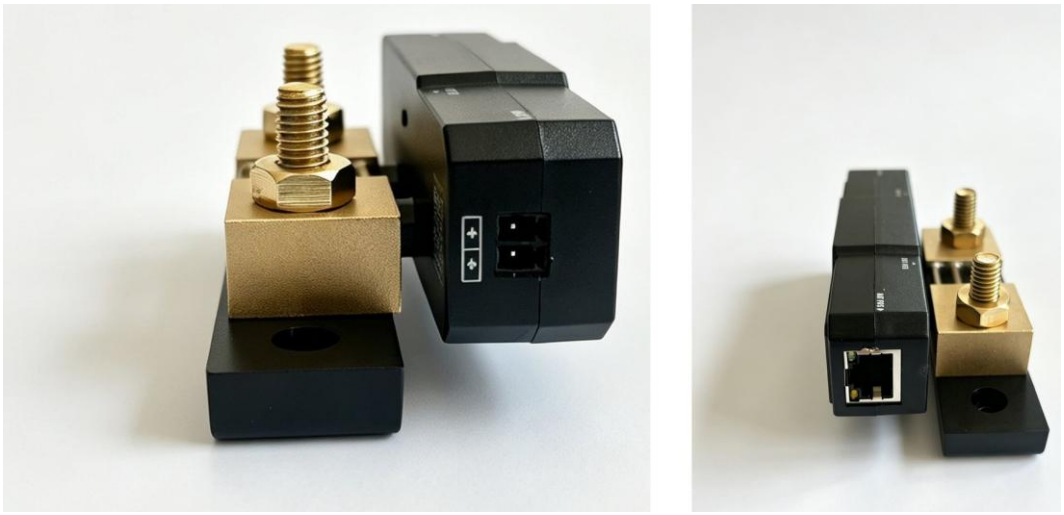


Figure 3-3 Interface close-ups: P1 supply terminal (left) and COMM port, RJ45 (right)

3.4 Main-circuit wiring

Follow the steps below and make sure all loads are off before wiring:

1. **Disconnect power**: open the battery-positive fuse or breaker and confirm no current in the main circuit.
2. **Battery side**: connect **only** the battery negative to the BATTERY side of the shunt. No load or charger may be connected on this side — anything wired directly to the battery negative is excluded from the SOC calculation.
3. **System side**: connect the vehicle/system negative bus to the SYSTEM (LOAD) side of the shunt. **The negatives of all DC loads, inverters, chargers and solar controllers must be connected after the shunt** (system side); otherwise their current is not counted and the SOC reading will read too high.
4. **Power supply**: plug the sampling/power harness into the P1 supply terminal and connect the other end to battery positive through a fuse. On power-up the green LED lights and the blue LED blinks (Bluetooth ready).
5. **Verify**: compare the APP current reading with a clamp meter; the sign convention is charge = positive, discharge = negative.

Warning: Terminal polarity and silkscreen markings follow the quick wiring diagram supplied with the product. Tighten all terminals — a loose high-current connection can overheat and burn.

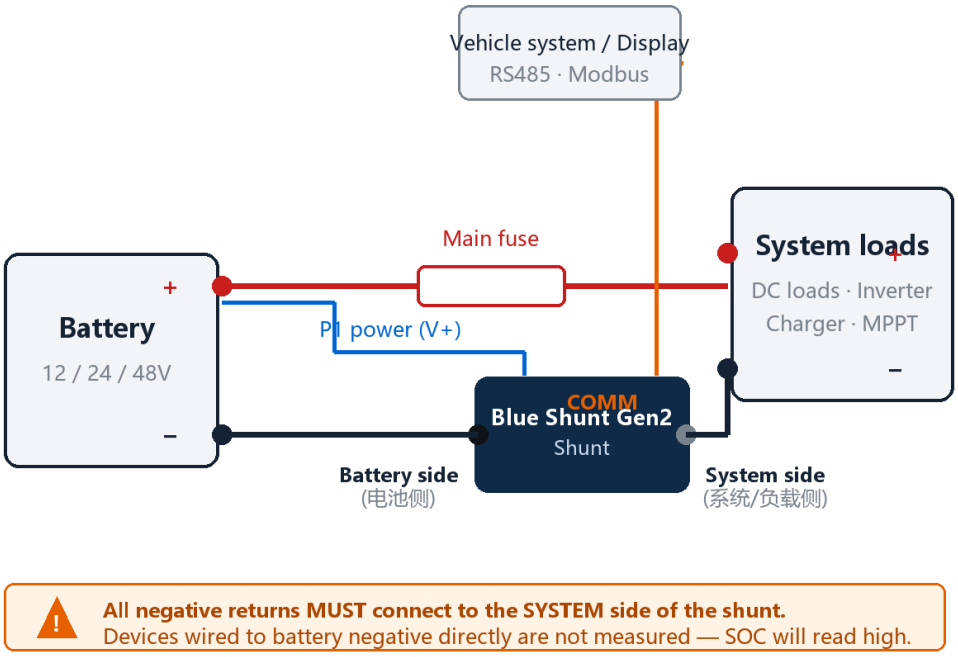


Figure 3-4 Main-circuit wiring diagram

3.5 RS485 communication

The COMM port is RJ45 8PIN, RS485 physical layer with the Modbus protocol, and supports dual-channel parallel output. Use a standard network cable to connect the Gen2 to your vehicle energy system (such as a BiDC charger host, Smart PDU or third-party display/PLC). The register map and communication parameters (baud rate, station address) are available on request from technical support.

4. Configuration

Complete the following configuration in the Tuya Smart app before first use.

4.1 Connecting the APP

1. Turn on phone Bluetooth, open the Tuya Smart app and register / log in.
2. Tap “Add Device” on the app home page, search for and select the nearby Gen2 device; it pairs automatically on first connection.
3. When connected, the blue LED stays on and the device panel shows live data.

4.2 Essential settings

The following settings **must** be completed in the APP before first use:

Setting	Description
Battery capacity (CAP)	Enter the nominal capacity of the battery bank (Ah), range 1–9999Ah. An incorrect capacity setting is the No.1 cause of inaccurate SOC
Work mode	One-tap selection in the APP (three modes) to match battery type / use case; stored through power loss
P1 power supply	Configure as prompted in the APP

4.3 Charged voltage and synchronisation

Letting the meter know "what counts as fully charged" is the second key to accurate SOC. Recommended: after a normal full charge (charging current has dropped to a trickle and voltage has reached the full value), synchronise to 100% in the APP; or synchronise to 0% after a complete discharge. This is needed only once at installation or after long-term use — it does not need to be repeated.

5. Operation

This chapter covers everyday use: readouts, status indication and maintenance.

5.1 How does the Gen2 work

The Gen2 samples the millivolt drop across the shunt once per second, converts it to current, integrates amp-hours over time, and divides by the set capacity to obtain SOC. Shunt sampling does not rely on the battery voltage curve, so lead-acid, lithium and LiFePO4 batteries are all supported.

5.2 Readouts

The APP main page shows: SOC (%), battery voltage (V), current (A; charge positive / discharge negative), power (W), time remaining, and history curves of voltage, current and SOC.

5.3 LED status codes

LED	State	Meaning
Green	Solid	Running normally
Blue	Blinking	Bluetooth ready, waiting for connection
Blue	Solid	Connected by the APP
Red	On / blinking	Sampling or communication fault; check the APP alarm details

5.4 Alarms

Abnormal conditions (over/under-voltage, over-current, over-temperature, depending on the work mode) trigger a prompt in the APP together with the red alarm LED. The alarm clears automatically once the cause is removed.

5.5 Standby draw and long-term parking

The Gen2 draws ≤15mA on standby. When the vehicle is parked for a long time and the battery is small with no charging source, disconnect the P1 supply fuse to prevent slow discharge.

5.6 Factory reset

Long-press the rear Reset button for 5 seconds with a pin. All parameters return to factory values (including the capacity setting, which must be re-entered). This is not required in normal use.

6. Troubleshooting

Work through this chapter step by step when something goes wrong; contact technical support if the issue persists.

6.1 Cannot connect via Bluetooth

- Make sure the meter is powered (green LED on, blue LED blinking).
- Make sure no other phone or tablet is already connected — only one device can be connected at a time; a solid blue LED means the device is occupied.
- Move closer and retry. In open space the range is about 10–15 m; surrounding metal (chassis, cabinets) reduces it.
- Make sure the APP is up to date.

6.2 Meter has no power / no readings

Check the fuse in the P1 supply cable and the harness connections; verify the battery-positive voltage is within DC 8–60V.

6.3 Charge and discharge current are inverted

Charging current should read positive and discharging current negative. If the sign is reversed, the battery negative and system negative are swapped across the shunt — swap the two main-circuit sides.

6.4 Incomplete current reading / SOC reads too high

A load or charger negative is wired directly to the battery negative (battery side of the shunt), so its current bypasses the shunt. Move that negative to the system side.

6.5 A current reading is shown while no current flows

Confirm the main circuit is truly idle, then perform zero-current calibration in the APP.

6.6 SOC inaccurate / drifting over time

- Check that CAP matches the actual capacity of the battery bank.
- Run one full charge/discharge cycle: synchronise to 100% after a full charge (or to 0% after a full discharge) in the APP.
- If the battery is aged (actual capacity well below rating), set CAP to the measured usable capacity.

6.7 RS485 communication failure

Check the cable and RJ45 connectors; confirm A/B lines are matched; verify the baud rate and station address on the host match the meter; check for address conflicts on the bus. Contact technical support if it still fails.

7. Technical Data

Specifications apply to the whole Gen2 series; current-range differences are listed in the sizing table (Section 2.3).

Item	Specification
Supply voltage	DC 8–60V (12 / 24 / 36 / 48V systems)
Continuous / peak current	0–350A / ≤500A (with 500A/75mV shunt, standard model; other ranges see sizing table)
Battery capacity setting	1–9999Ah
Standby draw	≤15mA
Resolution	Current 1mA · Voltage 0.1V · SOC 1% · Time 1min
Communication	COMM (RJ45 8PIN) RS485 · Modbus, dual-channel parallel output
Bluetooth	Built-in BLE, APP data interaction
LEDs / reset	Red (fault) / Blue (Bluetooth) / Green (run); rear Reset long-press 5s for factory reset
Operating temperature / ingress protection	-35℃ ~ +65℃ · IP52 (natural cooling)
Housing / dimensions / weight	Flame-retardant ABS+PC matte · 106 × 54 × 43mm · 0.26kg
Customisation	OEM / ODM: logo, housing, measurement range and protocol

8. Appendix

This chapter contains important reminders, warranty terms and contact information.

8.1 Important reminders

Shunts and meters of different ratings have different internal parameters and **must never be mixed or replaced separately**.

Never connect the SYSTEM-side terminal of the shunt directly to the battery negative (short-circuit risk).

Always disconnect the battery-positive fuse before wiring or servicing.

8.2 Warranty and service

This product carries a **1-year warranty** from the date of purchase (excluding human-induced damage). For fleet installations and OEM/ODM projects (logo, housing, measurement range, protocol customisation), contact us.

8.3 Contact

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