



FLOWATT

Energy Storage LiFePO4 Battery

Model: FLOVOLT 25100F/ FLOVOLT 51100F
Battery Chemistry: Lithium Iron Phosphate (LiFePO4)
Nominal Voltage: 25.6V/51.2V
Nominal Capacity: 100Ah
Nominal Energy: 2.56Kwh/5.12kWh

Manufactured By: FLOWATT BATTERY SCIENCE



DOCUMENT INFORMATION

Item	Details
Product Name	Energy Storage LiFePO4 Battery
Model	FLOVOLT 25100F/ FLOVOLT 51100F
Document Type	User Manual
Version	V1.0
Language	English
Prepared By	Flowatt Battery Science
Release Date	1 Apr 2026

IMPORTANT SAFETY INSTRUCTIONS

Please read this manual carefully before installing, operating, or maintaining the battery system.

Keep this manual for future reference.

This manual contains all safety, installation, operation, maintenance, troubleshooting, communication, and warranty instructions for the Flowatt ES51.2-100BS rack-mounted energy storage battery.

Only trained and qualified personnel should install or service this battery system.

TABLE OF CONTENTS

1. Safety Precautions
 2. Product Overview
 3. Product Features
 4. Product Structure
 5. Technical Specifications
 6. Installation Instructions
 7. Wiring Instructions
 8. Parallel Connection
 9. Battery Operation
 10. LED Indications
 11. BMS Communication Settings
 12. Inverter Compatibility
 13. CAN & RS485 Pin Definitions
 14. Maintenance & Storage
 15. Troubleshooting Guide
 16. Warranty Terms
 17. Warranty Registration Card
 18. Contact Information
-

1. SAFETY PRECAUTIONS

1.1 General Safety Instructions

- Read the complete manual before installation and operation.
- Do not disassemble or modify the battery.
- Do not expose the battery to water, rain, or moisture.
- Do not place the battery near fire or heat sources.
- Do not short-circuit battery terminals.
- Use insulated tools during installation.
- Disconnect all power sources before maintenance.
- Ensure correct polarity before wiring.
- Installation must comply with local electrical regulations.
- Keep the battery away from children.
- Do not install the battery in explosive or flammable environments.
- Do not connect AC power directly to the battery.
- Use only compatible inverter and charging systems.

1.2 Before Installation

- Inspect the battery for shipping damage.
- Verify all accessories are included.
- Ensure the inverter is compatible.
- Confirm correct cable sizing.
- Verify installation environment is suitable.

1.3 During Operation

- Do not touch terminals with wet hands.
- Do not place metal objects on the battery.
- Avoid deep discharge conditions.
- Avoid overcharging.
- Disconnect immediately if smoke or overheating occurs.

1.4 Fire Safety

In case of fire:

- Use dry powder extinguishers.
 - Large quantities of water may also be used.
 - Evacuate personnel immediately.
 - Contact emergency responders.
-

2. PRODUCT OVERVIEW

The Flowatt ES51.2-100BS is a high-performance lithium iron phosphate (LiFePO₄) energy storage battery designed for residential and commercial energy storage applications.

The battery integrates an advanced Battery Management System (BMS) providing:

- Overcharge protection
- Over-discharge protection
- Over-current protection
- Short circuit protection
- Temperature protection
- Cell balancing
- Communication monitoring

Applications include:

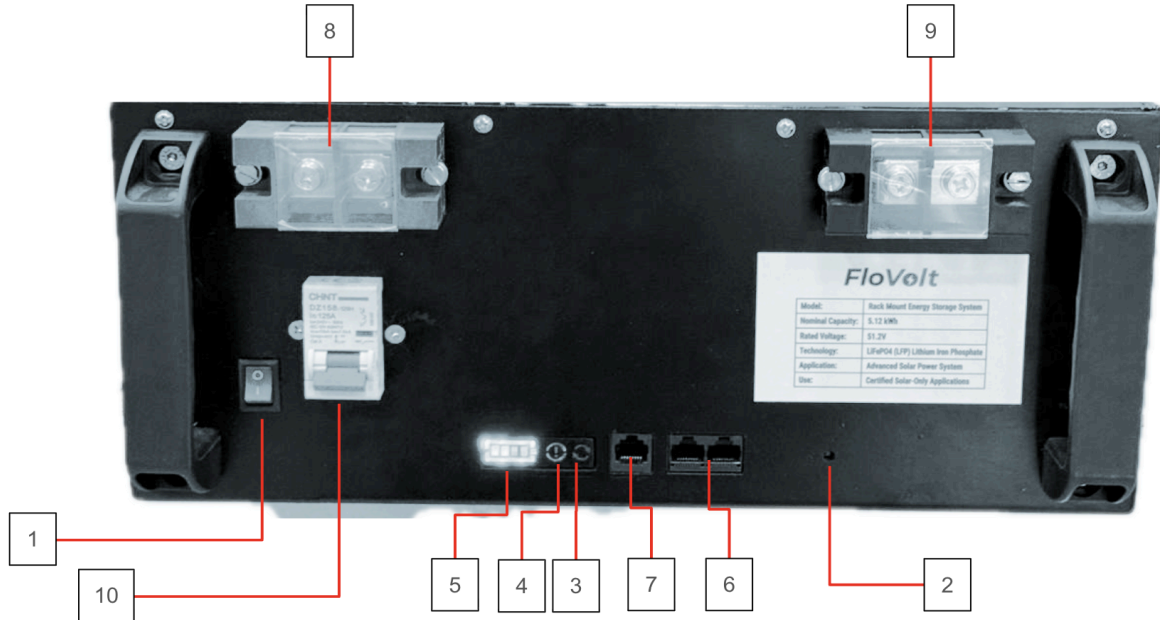
- Residential solar systems
 - Commercial backup systems
 - Telecom energy storage
 - Off-grid systems
 - Hybrid inverter systems
 - Rural microgrids
 - Data centers
-

3. PRODUCT FEATURES

- Long cycle life LiFePO₄ cells
 - Rack-mounted compact structure
 - Intelligent BMS system
 - LCD monitoring support (optional)
 - CAN & RS485 communication
 - Parallel expansion support
 - High thermal stability
 - Low maintenance design
 - 2000+ cycles at 80% DOD
 - High energy efficiency
 - Fast charging capability
-

4. PRODUCT STRUCTURE

4.1 Front Panel Overview



Front Panel Components

No	Component Name	No	Component Name
1	Power Switch	6	RS485 Port
2	Reset Button	7	CAN Port
3	RUN LED	8	Positive Terminal (+)
4	Alarm LED	9	Negative Terminal (-)
5	SOC Indicator LEDs	10	MCB

5. TECHNICAL SPECIFICATIONS

Parameter	Specs	Parameter	Specs
Model	25100F/ 51100F	Standard Charging Current	20A
Battery Chemistry	LiFePO4	Maximum Charging Current	100A
Cell Configuration	16S	Maximum Discharge Current	100A
Nominal Voltage	51.2V	Cycle Life	2000 Cycles @80% DOD
Nominal Capacity	100Ah	Communication	RS485 / CAN
Nominal Energy	5.12kWh	Operating Temperature	Charging: 0°C~60°C
Charge Voltage	58.4V	Discharge Temperature	-10°C~60 °C
Discharge Cut-off Voltage	42V	Dimensions	mm
Net Weight	~44 kg	Parallel Support	Up to 10
Gross Weight	~46 kg	Protection Level	IP54
Installation Type	Rack Mount		

6. INSTALLATION INSTRUCTIONS

6.1 Installation Environment

Install the battery in:

- Indoor dry locations
- Well ventilated areas
- Dust-free environments
- Stable surfaces

- Temperature-controlled locations

Avoid:

- Direct sunlight
 - Water exposure
 - Corrosive atmospheres
 - High humidity
 - Explosive environments
-

6.2 Installation Clearance

Maintain minimum clearance:

Position	Clearance
Top	300 mm
Front	500 mm
Side	200 mm

6.3 Installation Procedure

Step 1 – Unpacking

Inspect battery after unpacking.

Step 2 – Rack Mounting

Secure battery into rack cabinet.

Step 3 – Grounding

Connect grounding wire.

Step 4 – Power Cable Connection

Connect:

- Positive cable to positive terminal
- Negative cable to negative terminal

Step 5 – Communication Cable

Connect CAN or RS485 communication cable.

Step 6 – Power ON

Turn ON breaker and press POWER switch.

7. WIRING INSTRUCTIONS

7.1 Recommended Wiring Size

Model	Recommended Cable Size	Circuit Breaker
ES51.2-100BS	25mm ² / 4AWG	2P-125A

7.2 Wiring Precautions

- Ensure all terminals are tight.
 - Avoid loose connections.
 - Use equal cable lengths for parallel systems.
 - Use insulated copper cables.
-

8. PARALLEL CONNECTION

8.1 Parallel Requirements

- Same model batteries only
- Same capacity batteries only
- Equal cable lengths
- Proper communication wiring

Maximum supported parallel quantity: 4 units.

8.3 Power ON Sequence

1. Connect batteries in sequence.
 2. Connect communication cables.
 3. Turn ON master battery first.
 4. Turn ON remaining batteries.
 5. Start inverter last.
-

9. BATTERY OPERATION

9.1 Power ON

1. Ensure proper installation.
2. Turn ON breaker.
3. Press POWER button.
4. Verify RUN LED.

9.2 Shutdown

1. Turn OFF inverter.
2. Press POWER button.
3. Turn OFF breaker.

9.3 Recommended Inverter Settings

Parameter	Recommended Value
Battery Type	Lithium / LiFePO4
Bulk Voltage	58V
Float Voltage	56V
Over Voltage Protection	58.4V
Discharge Cut-off	50V
Recovery Voltage	51V
Low SOC Protection	10%

10. LED INDICATIONS

10.1 LED Status Table

LED	Status	Description
RUN	Flashing Green	Normal Operation
ALARM	Red	Fault Condition
SOC LEDs	Green	Battery Capacity
POWER	Green	Battery ON

10.2 Capacity Indication

SOC	LED Status
0–25%	L1 ON
25–50%	L1 + L2 ON
50–75%	L1 + L2 + L3 ON
75–100%	All LEDs ON

11. BMS COMMUNICATION SETTINGS

11.1 Communication Interfaces

Supported interfaces:

- RS485
 - CAN
-

11.2 Communication Parameters

Protocol	Baud Rate
----------	-----------

CAN	500K
RS485	9600 bps

11.3 BMS Features

- Cell voltage monitoring
 - Current monitoring
 - Temperature monitoring
 - Overcharge protection
 - Over-discharge protection
 - Short circuit protection
 - Cell balancing
 - Online firmware upgrades
-

12. INVERTER COMPATIBILITY

Compatible inverter brands include:

- Growatt
 - Deye
 - GoodWe
 - SRNE
 - Solis
 - Sungrow
-

13. CAN & RS485 PIN DEFINITIONS

13.1 CAN Pin Definition

Signal	CAN-H	CAN-L
RJ45 Pin	4	5

13.2 RS485 Pin Definition

Signal	RS485-A	RS485-B
RJ45 Pin	1 / 8	2 / 7

14. MAINTENANCE & STORAGE

14.1 Routine Maintenance

Inspect the below twice annually:

- Cable tightness
- Dust accumulation
- Communication status
- LED indications
- Ventilation condition

14.2 Storage Conditions

For long-term storage:

- Store at 40%–60% SOC
 - Recharge every 3–6 months
 - Store in dry indoor environment
 - Recommended storage temperature: 10°C–30°C
-

15. TROUBLESHOOTING GUIDE

Problem	Possible Cause	Solution
Battery not turning ON	Low voltage	Recharge battery
No communication	Incorrect cable	Check communication cable
Alarm LED ON	Protection active	Check error conditions
Battery not charging	Incorrect settings	Verify inverter settings

Over-temperature
alarm

Poor ventilation

Improve airflow

16. WARRANTY TERMS

16.1 Warranty Coverage

Flowatt provides a limited warranty covering manufacturing defects under normal operating conditions.

Warranty Period

- 5 Years Standard Warranty
 - 2000 Cycles @80% DOD
-

16.2 Warranty Exclusions

Warranty does not cover:

- Water damage
 - Fire damage
 - Improper installation
 - Unauthorized modification
 - Reverse polarity connection
 - Physical damage
 - Use with incompatible inverter
-

16.3 Warranty Claim Procedure

To claim warranty:

1. Provide serial number.
 2. Provide purchase invoice.
 3. Contact authorized distributor.
 4. Share fault description.
-