
Turbo H1 Series

User Manual

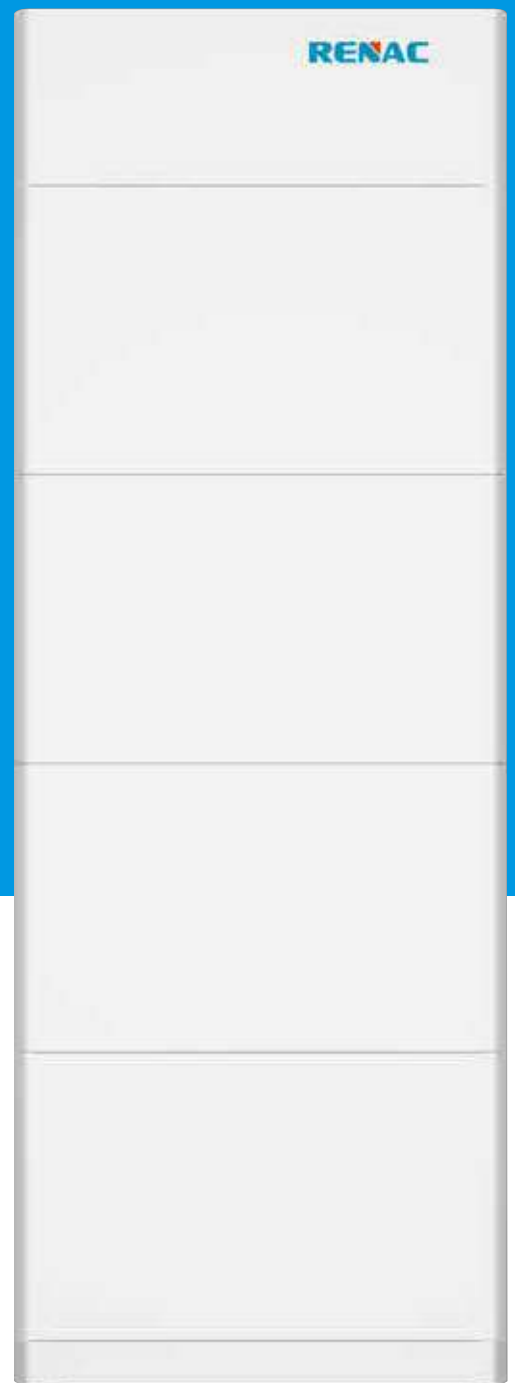
TB-H1-3.74

TB-H1-7.48

TB-H1-11.23

TB-H1-14.97

TB-H1-18.7



RENAC

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Notice

This manual contains important safety instructions that must be followed during installation and maintenance of the equipment.

Save the manual!

This manual must be stored carefully and be available at all times.

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1. About This Manual

1.1 Applicability

Please read the product manual carefully before installation, operation or maintenance. This manual contains important safety instructions and installation instructions that must be followed during installation and maintenance of the equipment.

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1.2 Target group



The instructions in this document may only be performed by qualified persons who must have the following skills:

- Knowledge of how batteries work and are operated
- Knowledge of how an inverter works and is operated
- Knowledge of, and adherence to the locally applicable connection requirements, standards, and directives
- Knowledge of, and adherence to this document and the associated system documentation, including all safety instructions
- Training in dealing with the hazards associated with the installation and operation of electrical equipment and batteries
- Training in the installation and commissioning of electrical equipment

Failure to do so will make any manufacturer's warranty, guarantee or liability null, and void unless you can prove that the damage was not due to non-compliance.

1.3 Symbols used

The following types of safety instructions and general information appear in this document as described below:

	DANGER! 'Danger' indicates a hazard with a high level of risk that, if not avoided, will result in death or serious injury.
	WARNING! 'Warning' indicates a hazard with a medium level of risk that, if not avoided, will result in death or serious injury.
	CAUTION! 'Caution' indicates a hazard with a low level of risk that, if not avoided, could result in minor or moderate injury.
NOTICE	NOTICE! 'Notice' indicates a situation that, if not avoided, could result in equipment or property damage.
	NOTE! 'Note' provides tips that are valuable for the optimal operation of your product.

1.4 Designation in the Document

The following types of safety instructions and general information appear in this document as described below:

Designation in this document	Designation in this document Complete designation
BMC	Battery Master Controller
RBS	Rechargeable Li-ion Battery Stack
SOC	State of Charge
DOD	Depth of Discharge





2. Safety

2.1 General Safety

The Turbo H1 Series battery is for residential and works with a photovoltaic system. It is a high voltage Li-ion battery storage system, with the control module on itself. It could be operated in on-grid, off-grid and backup modes with compatible inverters. The battery system could be connected to the Internet through network cable for maintenance and firmware updating. Read all safety instructions carefully prior to any work and observe them at all times when working on or with Turbo H1 Series battery. Incorrect operation or work may cause:










- ◆ injury or death to the operator or a third party;
- ◆ damage to the inverter or other properties.

2.2 Important safety instructions

	<p>DANGER!</p> <ul style="list-style-type: none"> ◆ Danger to life due to electric shock when live components or DC cables are touched. The DC cables connected to an inverter may be live. Touching live DC cables results in death or serious injury due to electric shock. Disconnect the battery system and inverter from voltage sources and make sure it cannot be reconnected before working on the device. Do not touch non-insulated parts or cables. Do not remove the terminal block with the connected DC conductors from the slot under load. Wear suitable personal protective equipment for all work on the battery system. Observe all safety information of the inverter.
	<p>WARNING!</p> <ul style="list-style-type: none"> ◆ Battery Module Leakage If the battery modules leak electrolytes, contact with the leaking liquid or gas should be avoided. The electrolyte is corrosive, and the contact may cause skin irritation and chemical burns. If one is exposed to the leaked substance, do these actions: Inhalation: Evacuate the contaminated area, and seek medical help immediately. Eye contact: Rinse eyes with flowing water for 15 minutes and seek medical help immediately. Skin contact: Wash the affected area thoroughly with soap and water and seek medical help immediately. Ingestion: Induce vomiting and seek medical help immediately. ◆ The battery modules and its components should be protected from damage when transporting and handling. Do not impact, pull, drag, or step on the battery modules. Do not insert unrelated objects into any part of the battery modules. Do not throw the battery module into a fire. Do not soak the battery modules in water or seawater. Do not expose to strong oxidizers. Do not short circuit the battery modules. The battery modules cannot be stored at high temperatures (more than 50°C). The battery modules cannot be stored directly under the sun. The battery modules cannot be stored in a high humidity environment. Do not use the battery modules if it is defective, or appears cracked, broken or otherwise damaged, or fails to operate. Do not attempt to open, disassemble, repair, tamper with, or modify the battery modules. The battery modules are not user-serviceable. Do not use cleaning solvents to clean the battery modules
	<p>CAUTION!</p> <ul style="list-style-type: none"> ◆ Risk of injury due to weight of the battery module Injuries may result if the battery module is lifted incorrectly or dropped while being transported or installed. • Transport and lift the battery module carefully. Take the weight of the battery module into account. • Wear suitable personal protective equipment for all work on the battery system. ◆ If the battery is not installed within one month after receiving the battery, the battery must be charged till the SOC is more than 50% for maintains.
<p>NOTICE</p>	<p>NOTICE!</p> <p>Firefighting Measures The battery modules may catch fire when it is put into the fire. In case of a fire, please make sure that an ABC or carbon dioxide extinguisher is nearby. Water cannot be used to extinguish the fire. Full protective clothing and self-contained breathing apparatus are for the firefighters to extinguish the fire.</p> <ul style="list-style-type: none"> ◆ Damage to the battery system due to under voltages If the battery system doesn't start at all, please contact Renac after-sales service within 48 hours. Otherwise, the battery could be permanently damaged.
	<p>NOTE!</p> <ul style="list-style-type: none"> ◆ Electrical installation and maintenance must be carried out by competent electricians according to local regulations.

2.3 Explanation of symbols

This section gives an explanation of all the symbols shown on the type label. Symbols on the Type Label

Symbol	Explanation
	TUV mark.
	Do not disconnect or disassemble by untrained personnel.
	Do not short circuit.
	Do not expose the battery to open flame, heat or sparks, as there is a risk of fire or explosion.
	Keep the battery modules away from children.
	Observe the documents Observe all documents supplied with the system.
	Warning! Metal parts of the batteries are always under voltage. Do not short-circuit the batteries! In case of a short-circuit, may flow very high currents and cause burns. By Touching conductive parts can cause cardiac arrhythmia and shock.
	The battery contains corrosive electrolytes. Please avoid contact with the leaked substance.
	WEEE designation Do not dispose of the system together with the household waste but in accordance with the disposal regulations for electronic waste applicable at the installation site.

3. Introduction

3.1 Product Overview

The Turbo H1 series battery can be integrated with high voltage hybrid inverter for PV energy storage system

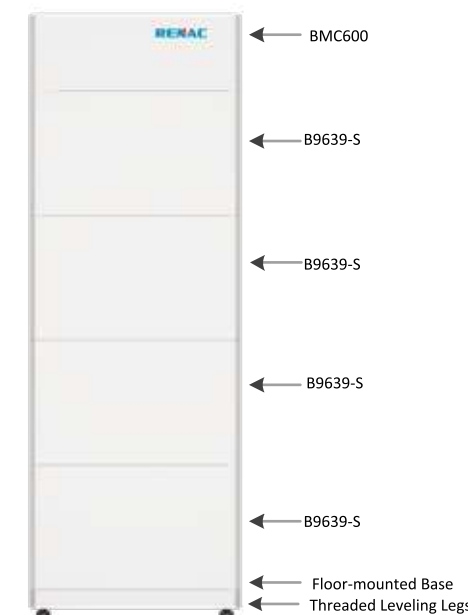
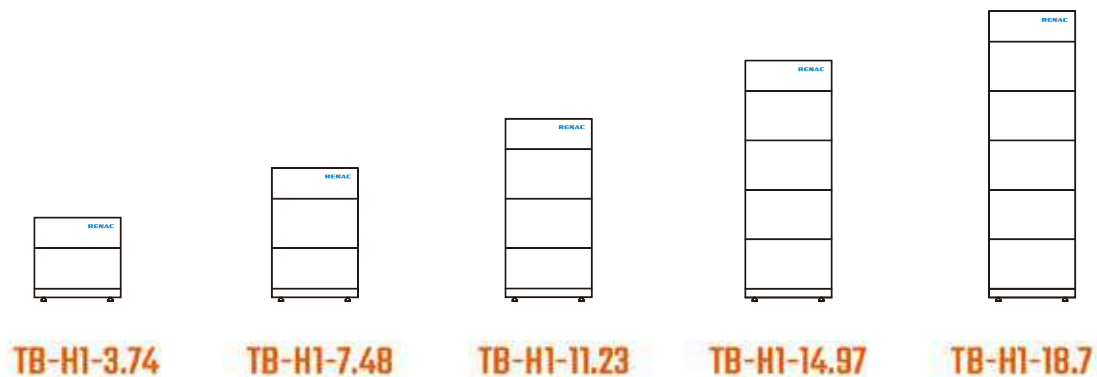


Figure 3-1 PV Energy Storage System (TB-H1-14.97 is used as example)

Note: The Turbo H1 series battery consists of a battery master controller and rechargeable battery stacks. BMC model name is BMC600. RBS model name is B9639-S.

Battery Capacity Description

The battery supports power and capacity expansion. One BMC supports a maximum of five RBS expansion modules.



3.2 Terminals

BMC view

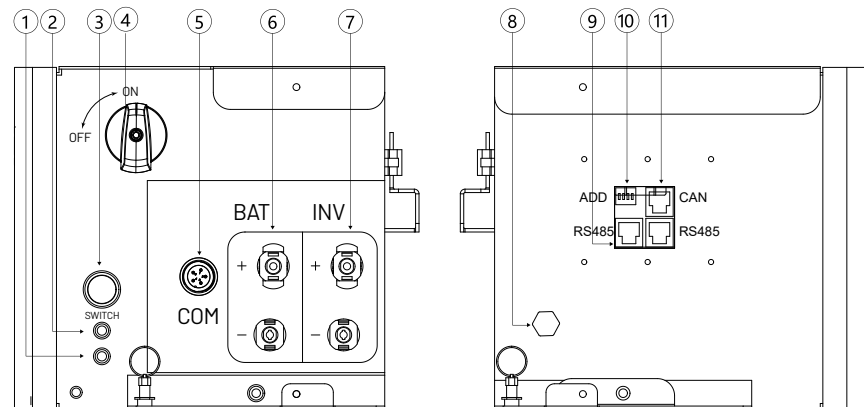
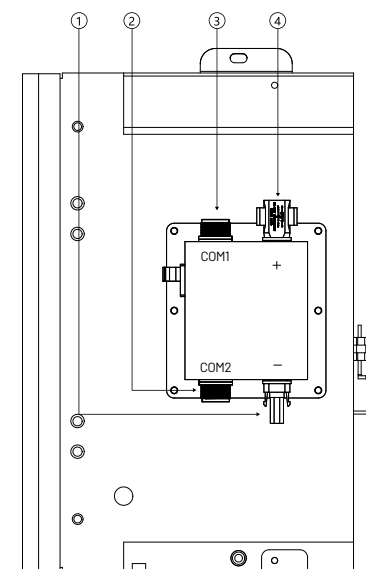


Figure 3-2 Terminals of BMC600

Object	Description
1	Alarm LED
2	Running LED
3	Start button
4	DC breaker
5	Communication port
6	Battery terminals connect with B9639-S(BAT+/BAT-)
7	Battery terminals connect with hybrid inverter (BAT+/BAT-)
8	Waterproof valve
9	RS485 port
10	Parallel communication Add
11	CAN port

RBS view



Object	Description
1	BAT- connector
2	CAN communication connector
3	CAN communication connector
4	BAT+ connector

4. Technical data

Model	TB-H1-3.74	TB-H1-7.48	TB-H1-11.23	TB-H1-14.97	TB-H1-18.7
Electrical Parameters					
Nominal Energy[1](kWh)	3.74	7.48	11.23	14.97	18.7
Usable Energy(90%DOD)(kWh)	3.36	6.73	10.1	13.47	16.83
Nominal Voltage(V)	96	192	288	384	480
Voltage range(V)	81~108	162~216	243~324	324~432	405~540
Maximum charge / discharge current(A) [2]	30/30				
Depth of Discharge	90%				
Cooling	Natural				
General					
Battery technology	LiFePO4				
Dimensions(H*W*D)(mm)	606*651*217	932*651*217	1258*651*217	1584*651*217	1910*651*217
Weight(kg)	49.5	86.8	124.1	161.4	198.7
Number of battery units	1	2	3	4	5