



energy.itel-life.com



User Guide

ESS Battery **IPL-51314H**



The contents of this material (including product descriptions, technical parameters, performance references, operational and financial data, etc.) are provided for general reference only and do not constitute any commitment, warranty, or contractual offer by the Company regarding product performance, specifications, or suitability. Product design and specifications may be changed due to technological improvements or market adjustments. For the most up-to-date information, please refer to the latest materials published on the Company's official website. The Company assumes no liability for any losses arising from the use of this material or from improper use of the products.

CONTENT

1. Product overview	01
1.1 Introduction	01
1.2 Features	01
1.3 Specification and Performance	02
1.3.1 Parameters	02
1.3.2 Interface Definition	04
1.3.3 Installation Instructions	06
1.3.4 Packing List	07
2. Battery Management System	08
2.1 Description Of The LED Indicator Light and beep	08
2.2 Status Indication	09
2.3 The LED Indicator Light Flashing Description	09
3. Communication	10
3.1 Communication instructions	10
3.1.1 RS485/CAN	10
3.1.2 Parallel Operation RS485 Communication	10
3.1.2 Automatic Addressing for Parallel Operation	10
3.2 Parallel wiring method	10
3.2.1 Parallel communication connection method	10
3.2.2 Positive and negative wire connection method	11
3.2.3 Power ON/OFF Sequence	11
3.3 Dial switch settings	12
3.4 interface definition	13
4. Battery Use Instructions	18
4.1 Charging	18
4.2 Discharge	18
4.3 Discharge temperature	19
5. Notes for Product Use	19
5.1 Warnings	19
5.2 Charging and Discharge	20
5.3 Storage	20
5.4 Processing	20
6. Electrical performance parameters of the whole series of product	21

1. Product overview

1.1 Introduction:

The model LiFePO₄ battery pack is designed specifically for energy storage systems, with higher efficiency and higher reliability. With the intelligent battery management system, the intelligent battery detection system. This model of LiFePO₄ battery pack is ideal for off-grid and hybrid utilization, providing a long-term built solution, and has the ability to deploy and use in a variety of scenarios, such as homes, farms, factories, data rooms, hotels, etc.

1.2 Features:

- ★ LiFePO₄ chemicals give batteries a safer performance, longer life and energy density
- ★ The fully intelligent battery management system (BMS) protects the battery pack and the battery from over-discharge, over-charge, over-current, and high/low temperature
- ★ The intelligent monitoring system, which can monitor and download the data to the computer in real time
- ★ The battery comes with a balance function that greatly extends the service life of the battery
- ★ The battery has no memory effect, and can deeply charge and release the battery
- ★ The self-discharge consumption is very small, more than 24 hours without the battery will automatically enter the low power mode

- ★ Environmentally friendly, free of heavy metals and harmful substances, and meets the ROHS requirements
- ★ The battery can be used in parallel for any scenario requiring a large power backup
- ★ Battery do not require active maintenance, one-time purchase guarantees life (assuming you use the right battery and follow the guidelines)
- ★ Cell meets IEC62619, and ROHS requirements

1.3 Specification and Performance:

1.3.1 Parameters

Project	Conventional Parameters
Battery Type	LiFePO4
Model	IPL-51314H
Compound Mode	1P16S
Rated Capacity	314Ah
Nominal Voltage	51.2V
Energy	16.07KWh
Operation Voltage Range	43.2~57.6V

Maximum charging persistent current	157A
Maximum discharge persistent current	157A
Recommend Charge Current	157A
Operating Temperature Range	Charge: 0~60°C, Discharge: -20~60°C
Storage Temperature Range	-20~60°C
Dimension (W*D*H)	820*550*232mm
Weight	120KG
Live Capacity Of Products Shipped	30% -40% Electricity delivery
Packaging Material	Plywood box
Communication	RS485 / CAN

1.3.2 Interface Definition

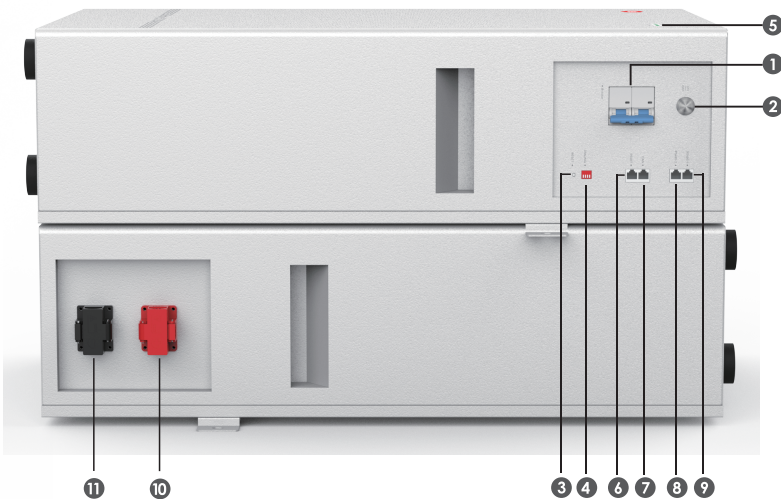
(A) Battery Appearance



(B) Battery Size

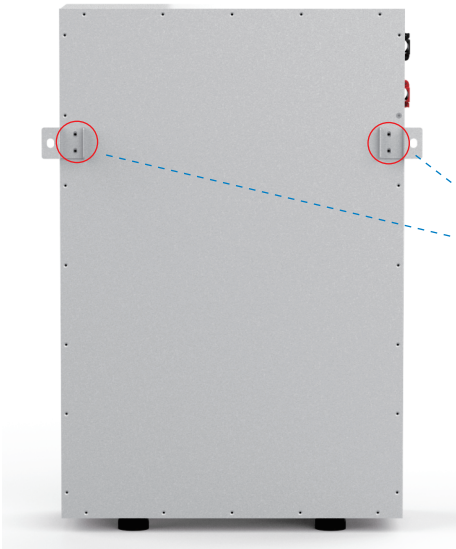


(C) Panel Interface Refer To The Following Figure



Number	Project	Description
1	Air Switch	Turn off the positive terminal suboutput to protect the battery
2	POWER	Open/close output
3	Reset Key	Sleep / activation / reset
4	Dial Key	When connecting the battery pack to different inverters, appropriate communication protocols shall be selected. For specific requirements, refer to Section 3.3.
5	Indicator Light	Displays the battery status, alarm, and capacity
6	RS485	RJ45 interface, Connected to the inverter or battery status monitoring, manufacturer commissioning, and service
7	CAN	RJ45 interface, Connected to the inverter or battery status monitoring, manufacturer commissioning, and service
8	parallelHN	RJ45 interface, used for parallel communication
9	parallel-OUT	RJ45 interface, used for parallel communication
10	Positive Terminal	A pair of terminals with the same function, one connected device is expanded in parallel with other batteries. For each individual module, each terminal can realize the charge and discharge function.
11	Negative Terminal	A pair of terminals with the same function, one connected device is expanded in parallel with other batteries. For each individual module, each terminal can realize the charge and discharge function.

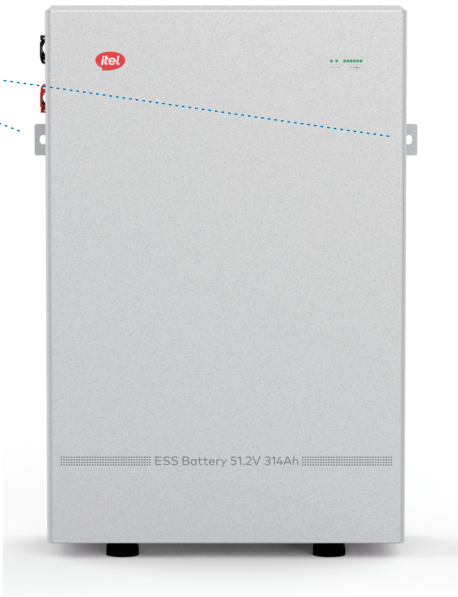
1.3.3 Installation Instructions



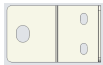
Step1:
Use the M5*14 screws from the accessories to mount metal ear hook onto the battery pack, tighten to a torque of 5 N.m



Step2:
Secure the mounting metal ear hook to the wall using expansion bolts M8*50,Tighten to a torque of 12 N.m



1.3.4 Packing List

Project	Description
	Main unit *1
	User Guide *1
	Warranty card *1
	M5*14 screw *4
	M8*50 expansion screw *2
	Metal ear hook *2
	Battery parallel communication cable *1
	Battery and inverter communication cable *1
	Battery positive teminal cable *1
	Battery negative teminal cable *1

2. Battery management system

2.1 Description of the LED indicator light and Beep

Buzzer Chirping Logic: Beeps for 0.25S every 1S. – beep active 1.

Fault Indicator	RUN	ALM	Battery Capacity Indicator Light						Buzzer	Description
			L6 	L5 	L4 	L3 	L2 	L1 		
Low-Temperature Charging Protection	OFF	OFF	Flashing2	Flashing2	Flashing2	OFF	OFF	OFF	Inactive	Stop Charging
High-Temperature Charging Protection	OFF	OFF	Flashing2	Flashing2	Flashing2	OFF	OFF	OFF	Inactive	Stop Charging
Low-Temperature Discharging Protection	OFF	OFF	OFF	OFF	OFF	Flashing2	Flashing2	Flashing2	Inactive	Stop Discharging
High-Temperature Discharging Protection	OFF	OFF	OFF	OFF	OFF	Flashing2	Flashing2	Flashing2	Inactive	Stop Discharging
Environmental Low-Temperature Protection	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Flashing2	Inactive	Stop Discharging
Environmental High-Temperature Protection	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Flashing2	Inactive	Stop Charging/Discharging
MOSFET Over-Temperature Protection	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Flashing2	Inactive	Stop Charging/Discharging
Charging Overcurrent Protection	OFF	OFF	OFF	OFF	OFF	OFF	Flashing2	Flashing2	Inactive	Stop Charging
Discharging Overcurrent Protection	OFF	OFF	Flashing2	Flashing2	OFF	OFF	OFF	OFF	Inactive	Stop Discharging
Short Circuit Protection	OFF	Flashing4	OFF	OFF	OFF	OFF	OFF	OFF	Active 1	Stop Discharging
Reverse Polarity Protection	OFF	Flashing4	OFF	OFF	OFF	OFF	OFF	OFF	Active 1	Stop Charging/Discharging
Excessive Temperature Difference Protection	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Active 1	Stop Charging/Discharging
Charging MOSFET Failure	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Active 1	Stop Charging/Discharging
Discharging MOSFET Failure	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Active 1	Stop Discharging
Front-end Chip AFE Failure	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Active 1	Stop Charging/Discharging
NTC Failure	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Active 1	Stop Charging/Discharging
Cell Failure	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Active 1	Stop Charging/Discharging
Current-Limiting Hardware Failure	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Active 1	Stop Charging
Cell Excessive Voltage Difference Protection	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Active 1	Stop Charging/Discharging
Parallel Addressing Failure	Flashing2	OFF	Flashing2	Flashing2	Flashing2	Flashing2	Flashing2	Flashing2	Inactive	
Low SOC Warning	Flashing1	OFF	Flashing4	OFF	OFF	OFF	OFF	OFF	Inactive	
Charging Overcurrent Warning	ON	OFF	Display the actual battery level based on the charging status.						Inactive	
Discharging Overcurrent Warning	Flashing3	OFF	Display the actual battery level based on the discharging status.						Inactive	
Cell Overcharge Warning	ON	OFF	Display the actual battery level based on the charging status.						Inactive	
Total Voltage Overcharge Warning	ON	OFF	Display the actual battery level based on the charging status.						Inactive	
Charging Low-Temperature Warning	ON	OFF	Display the actual battery level based on the charging status.						Inactive	
Charging High-Temperature Warning	Flashing3	OFF	Display the actual battery level based on the discharging status.						Inactive	

Environmental Low-Temperature Warning	Flashing3	OFF	Display the actual battery level based on the charging/discharging status.				Inactive	
MOSFET Over-Temperature Warning	Flashing3	OFF	Display the actual battery level based on the charging/discharging status.				Inactive	
Charging Over-Temperature Warning	ON	OFF	Display the actual battery level based on the charging status.				Inactive	
Discharging Over-Temperature Warning	Flashing3	OFF	Display the actual battery level based on the discharging status.				Inactive	
Ambient Over-Temperature Warning	Flashing3	OFF	Display the actual battery level based on the charging/discharging status.				Inactive	
Cell Overdischarge Warning	Flashing3	OFF	Display the actual battery level based on the discharging status.				Inactive	
Total Voltage Overdischarge Warning	Flashing3	OFF	Display the actual battery level based on the discharging status.				Inactive	
Cell Overcharge Protection	ON	OFF	Display based on the actual battery level.				Inactive	Stop Charging
Total Voltage Overcharge Protection	ON	OFF	Display based on the actual battery level.				Inactive	Stop Charging
Cell Overdischarge Protection	OFF	OFF	Display the actual battery level based on the discharging status.				Inactive	Stop Discharging
Total Voltage Over-discharge Protection	OFF	OFF	Display the actual battery level based on the discharging status.				Inactive	Stop Discharging

2.2 Status indication

Stand By		Charging						Discharging					
Capacity indicator light		L6 	L5 	L4 	L3 	L2 	L1 	L6 	L5 	L4 	L3 	L2 	L1 
Quantity of electricity	0% ~ 16.6%	OFF	OFF	OFF	OFF	OFF	Flashing2	OFF	OFF	OFF	OFF	OFF	ON
	16.6%~33.2%	OFF	OFF	OFF	OFF	Flashing2	ON	OFF	OFF	OFF	OFF	ON	ON
	33.2%~49.8%	OFF	OFF	OFF	Flashing2	ON	ON	OFF	OFF	OFF	ON	ON	ON
	49.8%~66.4%	OFF	OFF	Flashing2	ON	ON	ON	OFF	OFF	ON	ON	ON	ON
	66.4%~83%	OFF	Flashing2	ON	ON	ON	ON	OFF	ON	ON	ON	ON	ON
	83% ~ 100%	Flashing2	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
Run The Indicator light, the 		ON						Flashing 3					

2.3 The LED Indicator Light Flashing Description

Flashing Mode	ON	OFF
Flashing1	0.25S	3.75S
Flashing2	0.5S	0.5S
Flashing3	0.5S	1.5S
Flashing4	1S	1S

3. Communication

3.1 Communication instructions

3.1.1 RS485/CAN

Communication Type	Default Baud Rate	Interface Purpose	Default Baud Rate
CAN Communication	500 Kbps	Connects to the inverter or upper computer	When the battery pack is configured as the master device, it aggregates data from slave units and communicates with the inverter via this interface.
RS485 Communication	9600bps		

3.1.2 Parallel Operation RS485 Communication

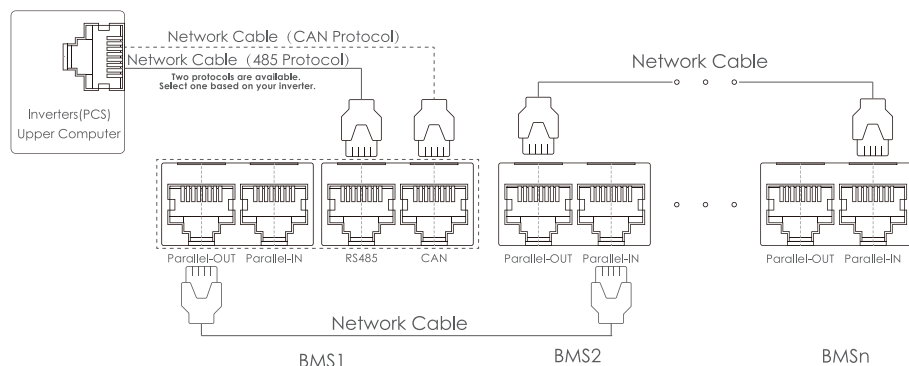
You can view the information of the PACK. The default baud rate is 9600 bps. If you need to communicate with the monitoring device via RS485, the monitoring device should act as the host and poll data according to the address, with the address setting range from 1 to 32.

3.1.3 Automatic Addressing for Parallel Operation

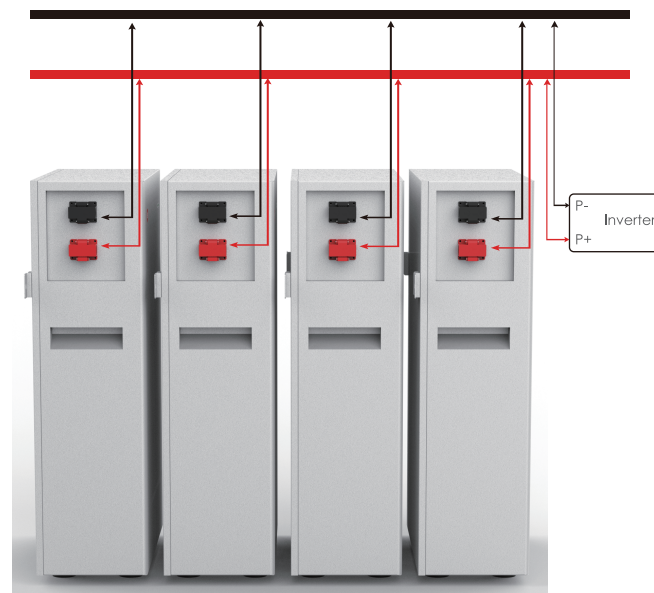
When the parallel communication circuit is properly connected, the system host will automatically perform addressing upon startup (regardless of the startup sequence of the master or slave units). If the addressing fails, the ALM indicator of the corresponding unit will turn off, while all other indicators will flash synchronously (0.5s ON, 0.5s OFF).

3.2 Parallel wiring method

3.2.1 Parallel communication connection method



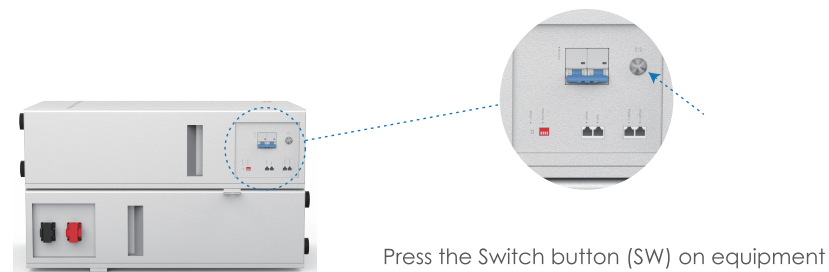
3.2.2 Positive and negative wire connection method



- Positive busbar
- Negative busbar
- ↔ Battery positive terminal cable
- ↔ Battery negative terminal cable

★Ensure before parallel connection circuit breaker in "OFF" state.

3.2.3 Power ON/OFF Sequence



3.3 Dial switch settings

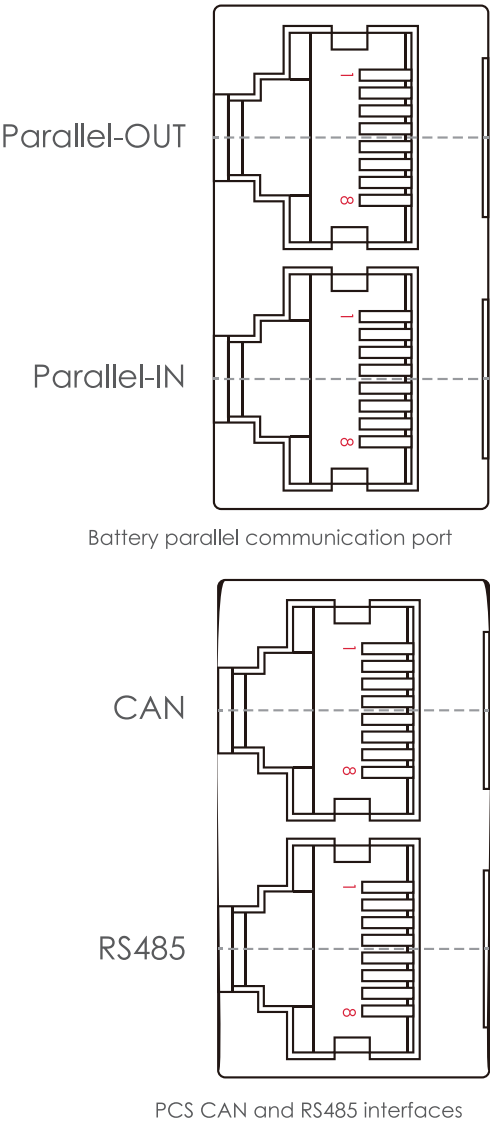
When the battery is connected to the PCS, the communication protocol can be set via the Dial switch on the BMS to facilitate adaptation to different PCS models. Please refer to the following table for the definitions of the BMS Dial switches.



Address	Protocol	485	CAN	Note
0000	/	/	/	Optional protocols for the host computer
1000	PYLON	PYLON RS485 LV V3.5-2019.12.23~9600	PYLON CAN Inverter EMS	Default
0100	Growatt	Growatt RS485 V2.02- 2019.07.24	Growatt CAN LV V1.05-2019.08.28	
1100	Voltronic	Voltronic RS485 Inverter V1.5-2022.01.18	PYLON CAN Inverter EMS	
0010	Luxpowertek	Luxpowertek RS485 Inverter V0.3-2020.07.06	Luxpowertek CAN V1.0-2020.02.11	
1010	WOW	WOW RS485 Modbus V1.3- 2017.06.27	PYLON CAN Inverter EMS	
0110	Schneider	Schneider V2.0	Schneider V2.0	
1110	Victron	PYLON RS485 LV V3.5- 2019.12.23~9600	VictronCAN 2021.01.07	
0001	Sorotec	PYLON RS485 LV V3.5- 2019.12.23~9600	Sorotec CAN Inverter V1.0	
1001	SMA	PYLON RS485 LV V3.5- 2019.12.23~9600	SMA CAN V2.0	
0101	GoodWe	PYLON RS485 LV V3.5- 2019.12.23~9600	GoodWe CAN Inverter LV V1.7-2020.02.28	
1101	STUDER	PYLON RS485 LV V3.5- 2019.12.23~9600	STUDER CAN V1.02-2018.06.14	
0011	MUST	PYLON RS485 LV V3.5- 2019.12.23~9600	MUST CAN PV1800F	
1011	GINLONG	PYLON RS485 LV V3.5- 2019.12.23~9600	GINLONG CAN LV V1.0-2019.12.28	
0111	PYLON	PYLON V03	PYLON CAN Inverter EMS	
1111	Reserve	Reserve	Reserve	

3.4 Interface definition

(1) Interface diagram



Parallel-OUT----Adopting 8P8C vertical RJ45 socket			
RJ45 Pin	Definition Description	RJ45 Pin	Definition Description
1	DI-B (RS485B)	5	CANL
2	DI-A (RS485A)	6	SGND
3	SGND	7	RS485-A
4	CANH	8	RS485-B

Parallel-OUT interface

Parallel-IN----Adopting 8P8C vertical RJ45 socket			
RJ45 Pin	Definition Description	RJ45 Pin	Definition Description
1	DO-B	5	CANL
2	DO-A	6	SGND
3	SGND	7	RS485-A
4	CANH	8	RS485-B

Parallel-IN interface

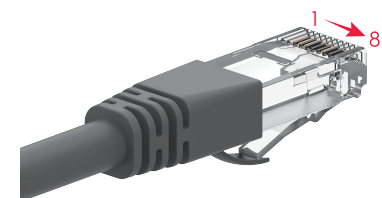
PCS-CAN----Adopting 8P8C vertical RJ45 socket			
RJ45 Pin	Definition Description	RJ45 Pin	Definition Description
1	NC	5	CANL
2	NC	6	SGND
3	SGND	7	NC
4	CANH	8	NC

CAN interface

PCS-RS485----Adopting 8P8C vertical RJ45 socket			
RJ45 Pin	Definition Description	RJ45 Pin	Definition Description
1	RS485-B	5	NC
2	RS485-A	6	SGND
3	SGND	7	RS485-A
4	NC	8	RS485-B

RS485 interface

(2) Communication Cable Interface Definition



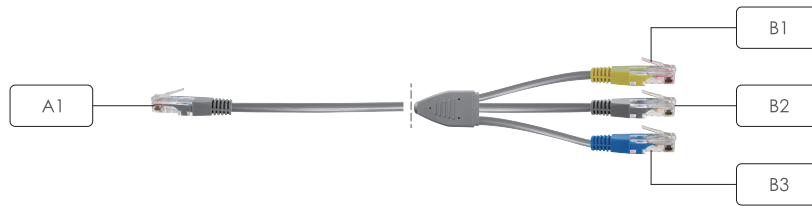
Battery parallel communication cable



A-Side		B-Side	
RJ45 pin	Definition Description	RJ45 pin	Definition Description
1	RS485-B	1	RS485-B
2	RS485-A	2	RS485-A
3	GND	3	GND
4	NC	4	NC
5	NC	5	NC
6	GND	6	GND
7	RS485-A	7	RS485-A
8	RS485-B	8	RS485-B

Battery parallel communication port

(3) Battery and Inverter communication cable



A1		B1		
RJ45 pin	Definition Description			RJ45 pin
	RS485 Communication	CAN Communication	RS485 / CAN Communication	
1	RS485-B	NC	RS485-B	3
2	RS485-A	GND	RS485-A	5
3	GND	NC	GND	8
4	NC	CAN_H	CAN_H	6
5	NC	CAN_L	CAN_L	7

Battery and Inverter communication port - A1-B1

A1		B2		
RJ45 pin	Definition Description			RJ45 pin
	RS485 Communication	CAN Communication	RS485 / CAN Communication	
1	RS485-B	NC	RS485-B	1
2	RS485-A	GND	RS485-A	2

A1		B2		
RJ45 pin	Definition Description			RJ45 pin
	RS485 Communication	CAN Communication	RS485 / CAN Communication	
3	GND	NC	GND	3
4	NC	CAN_H	NC	4
5	NC	CAN_L	NC	5
6	GND	NC	GND	6
7	RS485-A	NC	RS485-A	7
8	RS485-B	NC	RS485-B	8

Battery and Inverter communication port - A1-B2

A1		B3		
RJ45 pin	Definition Description			RJ45 pin
	RS485 Communication	CAN Communication	RS485 / CAN Communication	
4	NC	CAN_H	CAN_H	4
5	NC	CAN_L	CAN_L	3
7	RS485-A	NC	RS485-A	6
8	RS485-B	NC	RS485-B	5

Battery and Inverter communication port - A1-B3

4. Battery Use Instructions

4.1 Charging

- ★ Charging current: cannot exceed the maximum charging current specified in this specification
- ★ Charging voltage: shall not exceed the maximum charging voltage specified in this specification
- ★ Charging temperature: The battery must be charged within the ambient temperature range specified in this specification
- ★ The battery adopts constant current and constant pressure charging mode, and forbids reverse charging. If the positive electrode of the battery meets the negative electrode in the opposite, it will damage the battery

4.2 Discharge

- ★ Discharge Current: the discharge current shall not exceed the maximum discharge current specified in this instruction. Excessive current discharge will reduce the battery capacity and cause the battery to heat up.
- ★ If the battery enters over discharge protection, it should be charged within 3 days. If it could not be charged in a timely manner, all connections on the battery must be disconnected.

4.3 Discharge Temperature

- ★ Battery discharge must be within the temperature range specified in this specification. Immediately charging after a short time of excessive discharge will not affect the use, but a long time of excessive discharge will lead to the loss of battery performance and battery function.

If the battery is not used for a long time, it may be in a certain discharge state due to its self-power consumption characteristics. In order to prevent the occurrence of over discharge, the battery should maintain a certain amount of electricity.

5. Notes For Product Use

5.1 Warnings

- ★ Do Not Put The Battery Into The Water Or Wet It.
- ★ Forbids Charging And Using The Battery Outside Our Specified Temperature Range; Do Not Store, Charge, And Use The Product Near The Fire Sources Or Heat Sources.
- ★ When The Battery Pack Emits An Odor Or Leakage, It Should Immediately Stop Using Or Stop Charging, And Move To The Open And Ventilated Place, Stay Away From The Fire Source, And Contact Us In Time.
- ★ The Optimal Service Temperature Of Products Is $25 \pm 5^{\circ}\text{C}$, If The Product Is Not In This Temperature Range During Use.
- ★ Load Use, Do Not Connect Positive And Negative Poles.
- ★ Do Not Short-circuit The Positive And Negative Electrodes Of The Battery Pack With A

Metal Conductor.

★ Do Not Fire The Battery Pack Or Heat It.

★ It Is Strictly Prohibited To Dissect The Battery Pack, Puncture The Battery Pack With Nails Or Sharp Objects, Use Hammers Or Other External Forces, And Trample Or Fall The Battery Pack.

★Strictly Prohibited Putting Battery Packs In A Microwave Or Pressure Vessel.

5.2 Charging and Discharge

★ The Battery Must Be Charged Using An Appropriate Charger.

★ Do Not Use A Modified Or Damaged Charger.

★ During Charging And Use, Please Stop Charging And Using It Immediately.

5.3 Storage

★Store The Battery In A Cool, Dry, And Well-ventilated Place. If More Than Three Months Of Long Storage, It Is Recommended That You Should Charge The Battery Extra.

5.4 Processing

★ Different Countries Have Different Regulations, Please Handle According To The Local Regulations.

If There Is Any Fault Or Abnormality During Use, Please Contact Us And Do Not Remove The Battery Pack Without Permission.

6. Electrical performance parameters of the whole series of products

Setting	IPL-51628H	IPL-51314H	IPL-51200H
Charger source priority	SNU	SNU	SNU
Maximum charging current (Solar and Utility)	300A*n	150A*n	100A*n
Maximum utility charging current	300A*n	150A*n	100A*n
Bulk charging voltage (C.V voltage)	57.6V	57.6V	57.6V
Floating charging voltage	55.2V	55.2V	55.2V
Low DC cut off battery voltage	47V	47V	47V
Battery stop discharging voltage (when grid is available)	47V	47V	47V
Battery stop charging voltage (when grid is available)	57.6V	57.6V	57.6V

★"n" means the number of battery in parallel.

Itel Lithium Battery warranty

This limited warranty covers the Itel Rechargeable Li-ion Battery models: IPL- 51314H

This warranty does not include any accessories and tool kit items provided along with the product.

This warranty only covers the repair or replacement of a defective product. The repaired or replaced product will continue the original remaining warranty period. In either case, it shall not justify as a renewal of the warranty period.

The warranty continues for a certain period of years from the earlier of: 1.The date of installation of the Product; or 2.Six (6) months after the date the Product was manufactured.

Warranty conditions

1.The battery is intended to be used indoors only. Outdoor use will render the warranty void.

2.The batteries must have not be contaminated with any foreign corrosive matter.

3.The warranty does not cover the damage due to neglect or abuse such as improper installation, freezing, fire, flooding, or any acts of nature.

4.The warranty does not cover surges or spikes from the inverter or charging device that could damage the battery.

5. If the battery or batteries were not installed correctly and not according to the manual with correct settings, it could result in damage. Incorrect installation and setup will invalidate the warranty.

6. Batteries must be provided with a refresh charge every 5-6 months, while in storage, prior to final installation.

7.Warranty will be void if the firm ware or BMS on the device has been deliberately tampered with to try and reset cycle values or any data for warranty evaluation purposes.

8. If it is found that the battery is being overloaded through large current draws outside of the intended specification parameters (157Amps), it will lead to the warranty being void.

9.The warranty is non-transferable, and only applies to the original purchaser of the equipment.

10.The warranty will be void if the serial number has been tampered with or has been removed from the device.

11.The battery will not be considered effective unless it fails to deliver 50% or less of its rated capacity during claimed warranty period.

12. If the battery is interconnected or mixed with other non-Itel batteries the warranty is void.

13.Warranty will be void if the installation or commissioning has not been performed by an Itel approved installer.

14. In the event that the battery needs to be relocated it must be disconnected, moved and re-installed by an Itel approved installer.

15.A standard 5-year warranty is provided for the BMS and trip switch. The warranty of

the trip switch does not cover excessive manual use or overuse of the trip switch. The trip switch is intended to protect the Lithium Battery.

16.The operating temperature for the battery is designed to be -20 to 60 degrees Celsius,however, it is recommended to keep the battery below 25 degrees Celsius to maximise the design life and life cycle of the battery. The cycle life cannot be guaranteed if the battery is operated in temperatures exceeding 25 degrees Celsius.

Warranty Claim Process

In the event of a possible warranty claim, the following steps should be taken:

- 1.Claims under this warranty must be within 48 hours of a defect being discovered, notification must be provided to the approved re-seller of a claim.
- 2.The end user must submit the invoice for the procurement of the Product to the approved re-seller indicating date of delivery.
- 3.The reseller must send or arrange with the end user to send the battery to one of our service centres.
- 4.The service centre will evaluate the battery and validate if a claim is substantiated.
- 5.If a claim has been validated, repair and servicing of the battery will be performed.
- 6.Any replacement parts will become the property of Itel.
- 7.It is for the client to arrange delivery and collection of the unit. If the client wishes to

dispute to final evaluation decision, the product must be evaluated by a certified 3rd party testing company. You will bear the cost of any 3rd party evaluation service charge. (Unless your claim is proven to be valid, in which case Itel will be responsible for the testing costs)

If any testing of the Products capacity is required, the testing must occur in the following conditions:

- a)The test is based on a single module.
- b)The ambient temperature of the Battery Module must be $[25\pm 2^{\circ}\text{C}]$.
- c)The initial temperature of the battery modules pods must be $[25\pm 2^{\circ}\text{C}]$.
- d)157A constant current charge to 3.60V for cell, then switch to constant voltage (57.6Vdc), charge until charge current declines to 2A.
- e)Constant current (157Amps) discharge till all the cell voltages are below 2.70Vdc.

