POWER BANK

USER MANUAL

Please read this manual carefully before connecting and operating the battery

CONTENT

1. Safety Precautions.....1
1.1 Precautions..... 1
1.2 Warnings.....2
2. Introduction..... 3
2.1 Features.....3
2.2 Warranty.....3
2.3 Interfaces..... 3
2.4 Advanced Battery Management System (BMS).....6
2.4.1 BMSFunctions.....6
2.4.2 Compatible Inverters.....6
3. Inverter Settings.....8
4. Installation.....9
4.1 Connections..... 9
4.2 RS485 DIP switch address setup…….....10
4.3 CAN BUS DIP switch address setup…….....11

1. Safety Precautions

This section describes the safety information that must be observed when working with our battery packs. To prevent any damage, or personal injury, and to ensure the performance of the battery, please read this section carefully.

1.1 Precautions

- It is very important and necessary to read the user manual carefully before installing or using the product. Failure to do so or to follow any of the instructions or warnings in this document can result in electrical shock, serious injury or death, and could damage the battery, and potentially rendering it inoperable.
- If the battery pack is stored for a long time, it is required to be charged every six months, and the SOC should be no less than 50% when in storage.
- The battery pack must be recharged within 12 hours, after being fully discharged to prevent any possible damage to the cells.
- All the battery pack terminals must be disconnected before any maintenance takes place.
- Do not use cleaning solvents to clean the battery pack.
- Do not expose the battery pack to flammable or harsh chemicals, or corrosive gases or liquids.
- Do not paint any part of battery pack, including any internal or external components.
- Do not expose the battery pack to direct sunlight for extended periods of time.
- Do not connect the battery pack directly to your PV solar array wiring. These battery packs are designed to be used inline with a charge controller or inverter.
- Do not insert any foreign objects into any part of the battery pack.

1.2 Warnings

- Do not touch the battery pack with wet hands.
- Do not crush, drop or puncture the battery pack.
- Always dispose of the battery pack according to local council safety regulations.
- Store and recharge the battery pack in a manner in accordance with this user manual.
- Ensure reliable grounding s achieved.
- Do not reverse the polarity when installing the battery.
- Do not short circuit the terminals, remove all jewellery items that could cause a short circuit before installation and handling.
- Disconnect the battery from power or loads before any maintenance works.
- Power off the battery before installation by pressing the reset button for 10 sec.
- Stackable battery packs should not be stacked more than 6 in a tower.
- Continued operation of a damaged battery pack can result in a dangerous situation.

2. Introduction

Power Bank is a professional energy storage battery pack specially designed with high safety ratings and fantastic performance. Mainly used in solar systems to store energy, they can also be used for a number of other applications such as electric generators.

2.1 Features

- Specially designed cell holders are a fireproof feature of this battery pack.
- The BMS has over-discharge protection, over-charge protection, over-current protection and high and low temperature warning protection functions.
- The BMS monitors the charge and discharge state of the battery and balances the voltage of each cell.
- The BMS system allows for a maximum of up to 16 packs to be connected in parallel for expanding capacity. This can be achieved by setting the 8 DIP switches as detailed in this user manual below.

2.2 Warranty

All our batteries come with a 10year warranty. For the warranty to remain valid the battery must be correctly installed, and all warranty stickers must be untouched.

2.3 Interfaces

RESET

Reset button: To start the battery pack, hold the Reset button for 2s and the battery will turn on. Hold the Reset button in for 6s and the battery will turn off.

RS485

RS485 communication interface: RJ45 port, follow the RS485 protocol for transmitting information between paralleled packs. The first 4 DIP switches (#1, #2, #3, #4) are used for

Identifying the packs information on the software.

CAN

CAN 5 communication interface: follow the CAN BUS protocol for output pack information to the inverter. The first battery pack should be assigned as the master pack. The last 4 DIP switches (#5, #6, #7, #8) Will calibrate how many slave battery packs are connected. The first DIP switches are used for identifying slave packs.

ADS

ADS Switch: Use this to setup the battery address for identification and make the communication between batteries, and batteries to inverters possible.

NOTE: There are 8 bit DIP switches, If the switch is down then it is 'OFF', If the switch I up then it is 'ON'.

ALARM

ALARM lights: The red LED light will flash a certain number of times to show the battery's alarm status. Refer to the below diagram. If the red LED light is solid it would indicate that the battery is in one of the 3 protection status modes of abnormal temperatures, over-current or short-circuit.

NORMAL OPERATION

Working lights: The green LED lights are used to show the battery's normal working status along with its charging and SOC status.

Details as follows,

Battery status	Operating Mode	RUN	ALM	LED Light				Remark
		●	●	●	●	●	●	
Power off	Standby	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Standby	Normal	Solid Green	OFF	According to battery SOC status				Standby mode
Charge	Normal	Solid Green	OFF	According to battery SOC status				

Mode	Over current warnings	Solid Green	Blink type 2					
	Over voltage protection	Blink type 1	OFF	OFF	OFF	OFF	OFF	
	Temperature, over current protection	Blink type 2	OFF	OFF	OFF	OFF	OFF	
Discharge Mode	Normal	Blink type 3	OFF	According to battery SOC status				
	Warning	Blink type 3	Blink type 3					
	Over current, temperature, short-circuit protection	OFF	Solid Red	OFF	OFF	OFF	OFF	Termination of discharge
	Under voltage protection	OFF	OFF	OFF	OFF	OFF	OFF	Termination of discharge

CAPACITY

SOC lights: There are 4 green LED lights to show the capacity status of the battery pack. Each LED represents 25% of the capacity.

Status	Charge				Discharge			
Capacity indicator	●L4	●L3	●L2	●L1	●L4	●L3	●L2	●L1
0-25%	OFF	OFF	OFF	Blink	OFF	OFF	OFF	Solid Green
25%-50%	OFF	OFF	Blink	Solid Green	OFF	OFF	Solid Green	Solid Green
50%-75%	OFF	Blink	Solid Green	Solid Green	OFF	Solid Green	Solid Green	Solid Green

>75%	Blink	Solid Green	Solid Green	Solid Green	Solid Green	Solid Green	Solid Green	Solid Green
Operating indicator	Solid Green				Blink			

2.4 Advanced Battery Management System (BMS)

The BMS is used to monitor the current, voltage, temperature and provide protection against over-charging, over-discharging, over-current, over-temperature, under-temperature and has short circuit protection. The BMS provides cell balancing and current limitation during the charging process to ensure reliable and safe performance.

2.4.1 BMS Functions

- Over charge protection
- Over discharge protection
- Over current protection
- Cell balancing
- Temperature protection
- CAN and RS485 communication capabilities

2.4.2 Compatible Inverters

Power Bank Batteries are pre-programmed with multiple CAN protocols to be compatible with multiple brands of inverters. To make sure that the battery module works perfectly, it would be better to use one of the compatible inverters listed below.

Pre-programmed CAN Protocol list:

- Goodwe-V1.5

- Pylon-V1.3
- Growatt-V1.05
- Victron CANBUS_PROTOCOL
- LUXPOWER_CAN Protocol
- Sofar_REV5
- SMA_EN_10

Extended compatible inverter list (CAN Protocol):

- ✓ Goodwe (Choose custom mode, and the BMS choose default protocol)
- ✓ Growatt (Growatt inverter comes with both CAN and RS485 protocol models. Please confirm before purchase.) （Choose"Li""CAN""L51" /"Li""485""L01"）
- ✓ Victron （BMS choose victron）
- ✓ Voltronic (Voltronic inverter comes with RS485 protocol only. Please confirm with your sales representative before purchase.)（BMS choose Default protocol. ）
- ✓ Phocos (Phocos inverter comes with RS485 protocol only. Please confirm with your sales representative before purchase.)
- ✓ LUXPOWER
- ✓ Sofar (Choose custom mode, and the BMS choose SOFAR protocol)
- ✓ DEYE (Choose default, and the BMS choose default protocol)
- ✓ Sermatec
- ✓ RENAC
- ✓ TBB POWER

- ✓ SOLIS (Choose US2000B, and the BMS choose default protocol)
- ✓ SMA
- ✓ FoxESS
- ✓ IMEON (Choose Dyness /BMS choose Luxpower)

3. Inverter Settings

The Battery information will be synchronized to the inverter through the CAN communication port. If the inverter does not support CAN communication, the following parameters need to be modified before connecting with battery system.

Inverter Charging Settings:

Parameter	Setting
Battery type	Lithium
Charge curve	Fixed
Absorption voltage	57.6V
Float voltage	55V
Absorption time	1Hr

Note:

1. Make sure to double check the float voltage after completing Assistants, and if necessary, set it back to 55.0V.
2. For off-grid use: ignore the 'BMS assistant required' warning.

Inverter low voltage Settings:

Parameter	Setting
DC input low shut-down	43V
DC input low restart	47V
DC input low pre-alarm*	47V

4. Installation

Our batteries should be installed in a clean and dry space. They are not designed for outdoor use unless installed inside a weather tight compartment. All our batteries must be installed with an isolating switch and by a qualified person. Our batteries are designed to be used in conjunction with a charge controller/inverter and should not be connected directly to a solar array or power source.

4.1 Connections

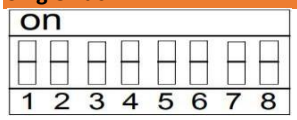
P+/P-

Power terminals: There are 2 different types of connections to our portable and stackable battery's. Our portable batteries have regular hexagon nuts at the rear of the unit for connections. Our stackable batteries are supplied with push lock connections as shown in the image below. There are two pairs of power terminals on the face of the batterie, one set is used to connect the main power supply, and the other is used for a parallel connection to other battery packs. If being used as a single pack, both terminals can be used for charging and discharging the battery.

4.2 RS485 DIP address setup.

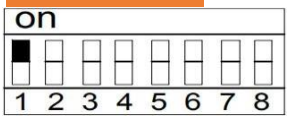
For single pack installation: There is No need to set a DIP switch address.

Single Pack

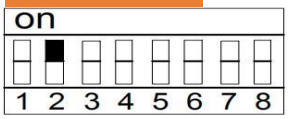


Multiple Packs in Parallel

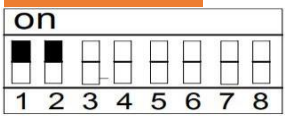
1



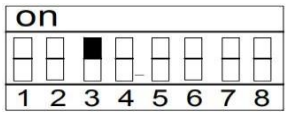
2



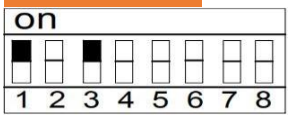
3



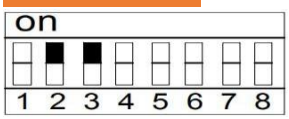
4



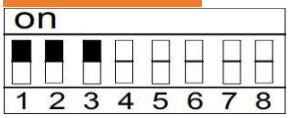
5



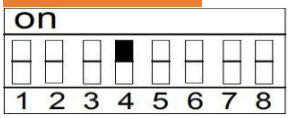
6



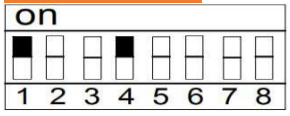
7



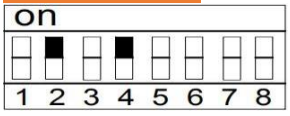
8



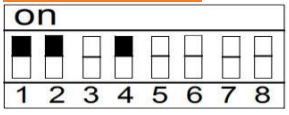
9



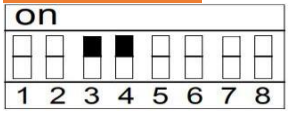
10



11



12



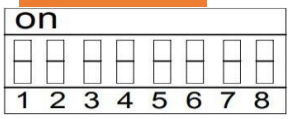
13

14

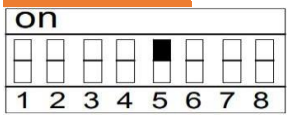
15

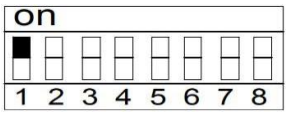
4.3 CAN BUS DIP address setup.

1 Pack

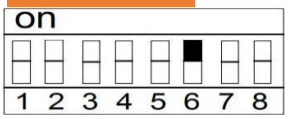


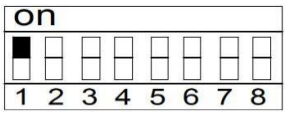
2 in Parallel

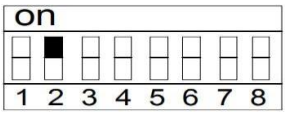




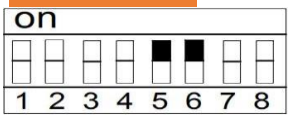
3 in Parallel

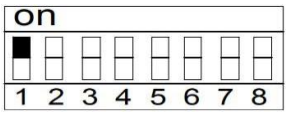


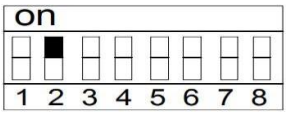


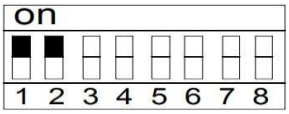


4 in Parallel

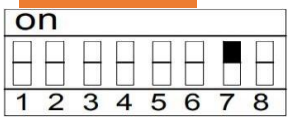


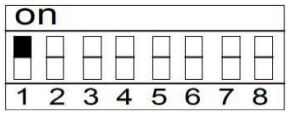


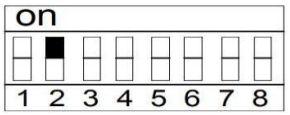


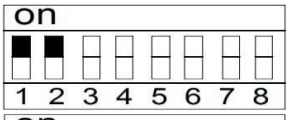


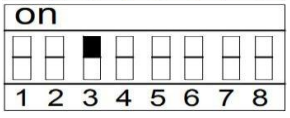
5 in Parallel



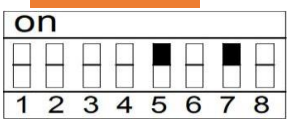


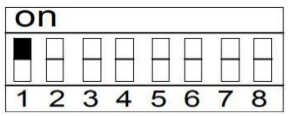


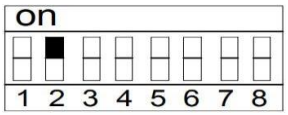


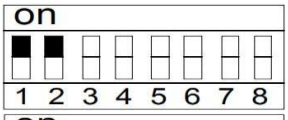


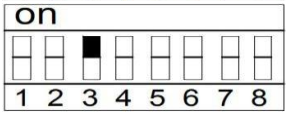
6 in Parallel

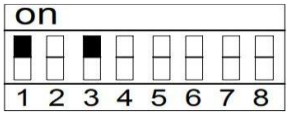




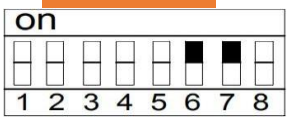


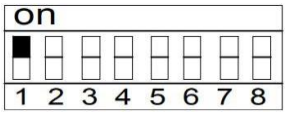


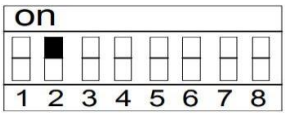


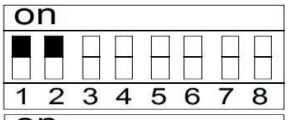


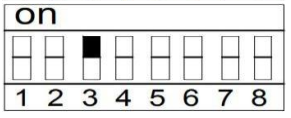
7 in Parallel

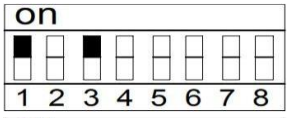


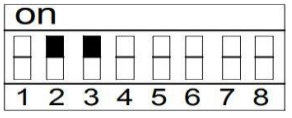




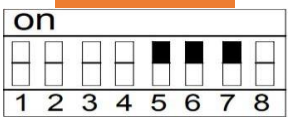


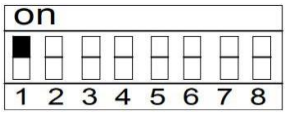


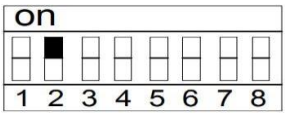


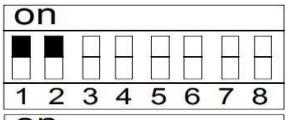


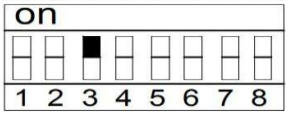
8 in Parallel

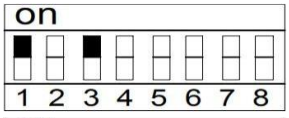


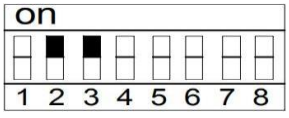


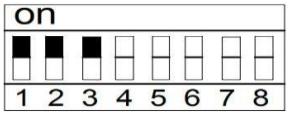




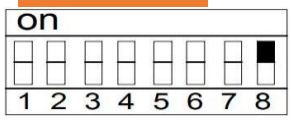


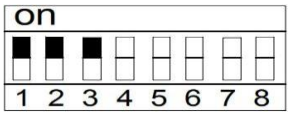


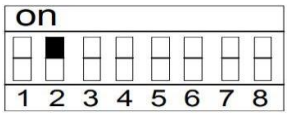


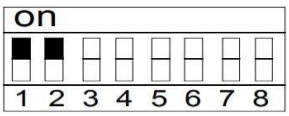


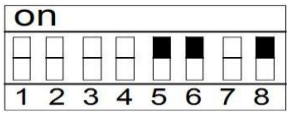
9 in Parallel

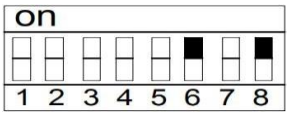


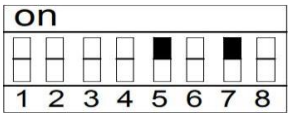


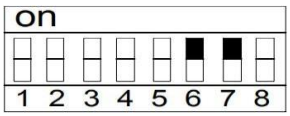


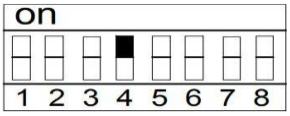




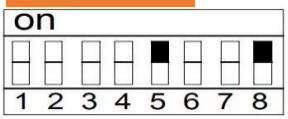


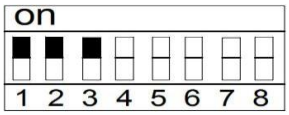


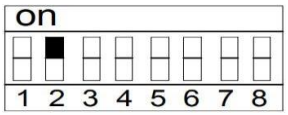


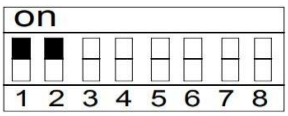


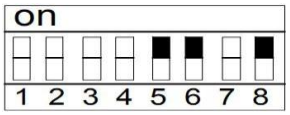
10 in Parallel

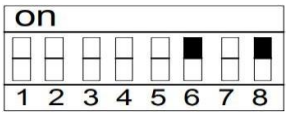


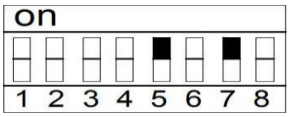


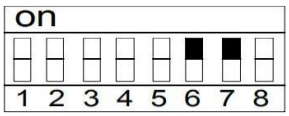


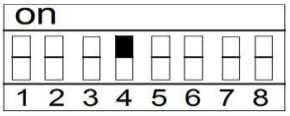


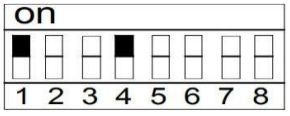




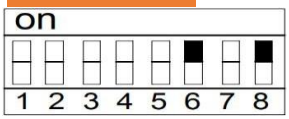


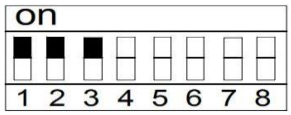


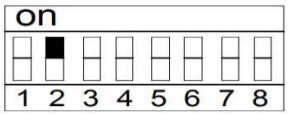


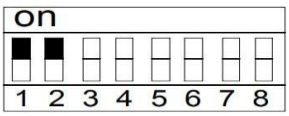


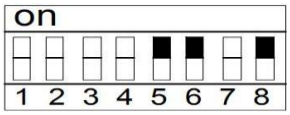
11 in Parallel

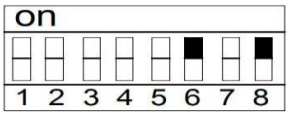


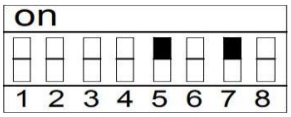


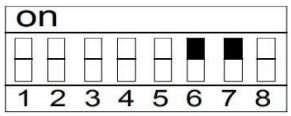


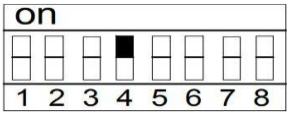


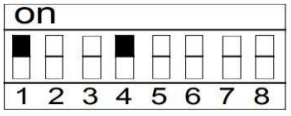


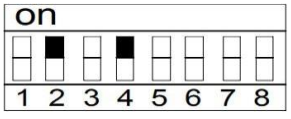




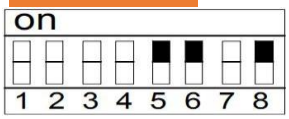


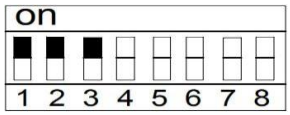


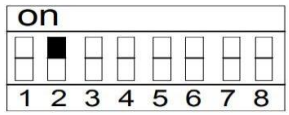


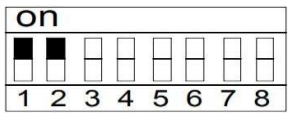


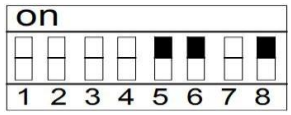
12 in Parallel

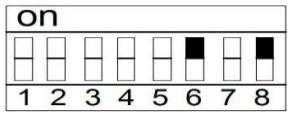


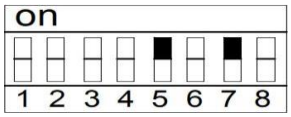


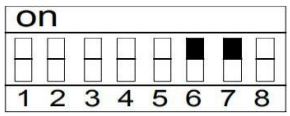


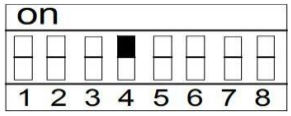


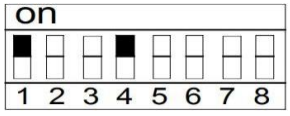


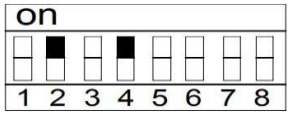


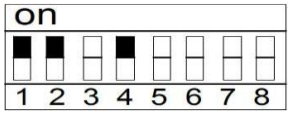




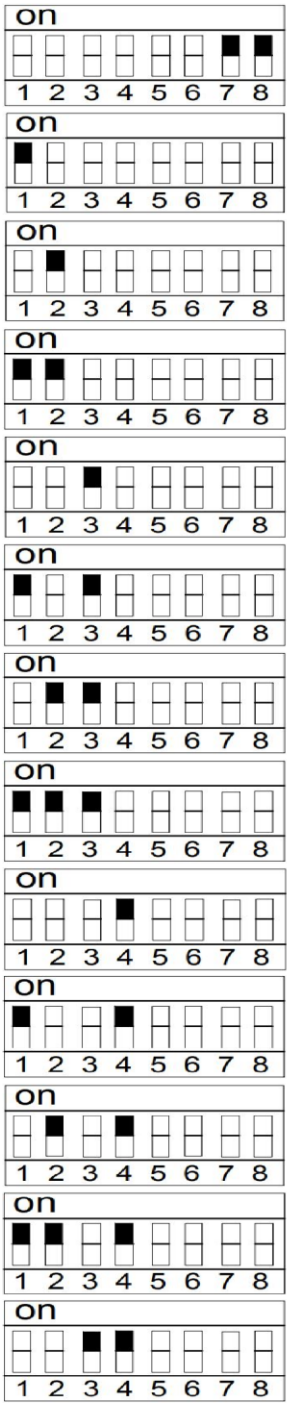




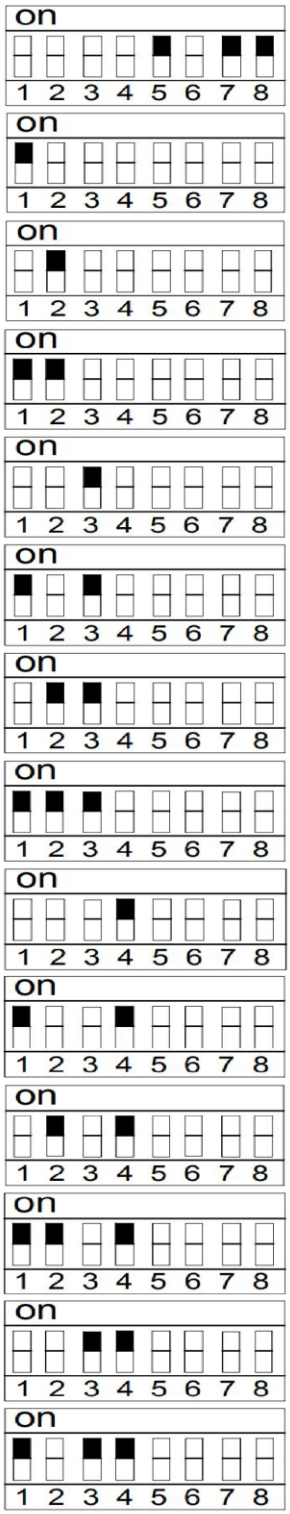




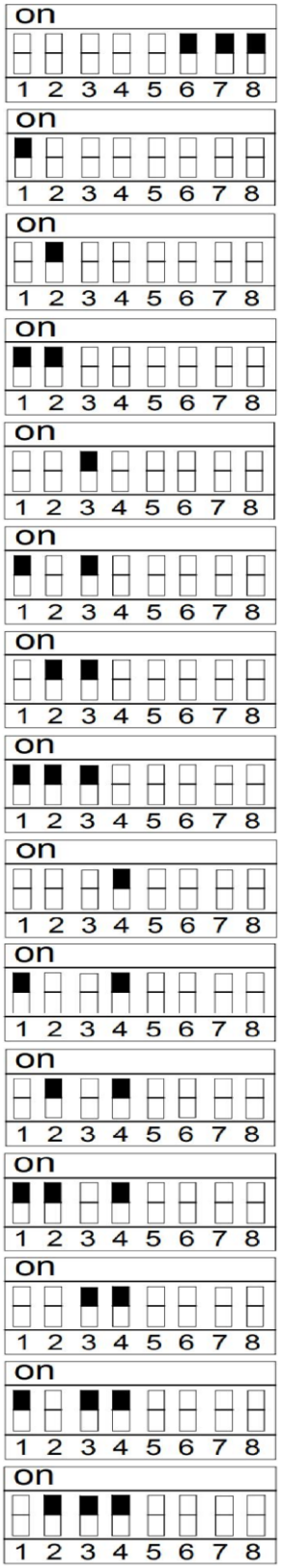
13 in Parallel



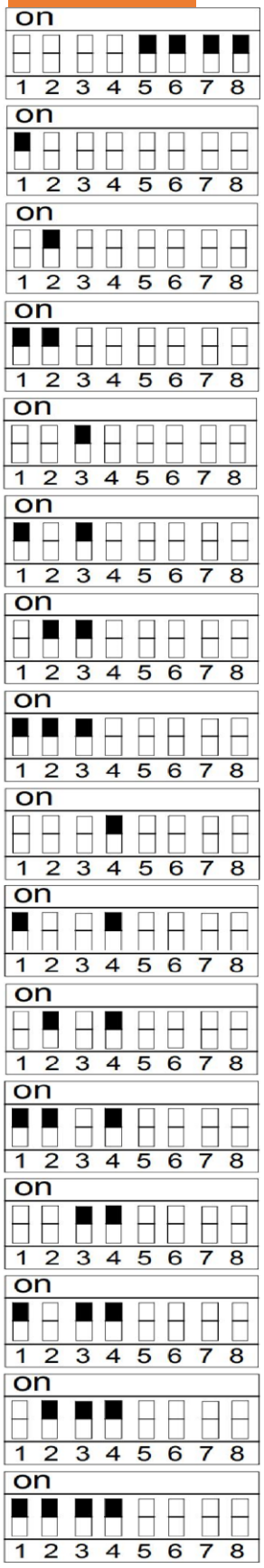
14 in Parallel



15 in Parallel



16 in Parallel



POWER BANK