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The future  
of green energy

# USER MANUAL

## 12V

12V 50Ah

12V 100Ah Mini Smart

12V 100Ah

12V 100Ah Smart

12V 200Ah

12V 300Ah

**LiFePO4**  
BATTERY

LiFePO4  
BATTERY  
12V  
SERIESWT

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## Important Safety Instructions

Please save these instructions.

# DISCLAIMER

Please read all specifications, usage, storage conditions, and warnings on this document before use. Always adhere to our handling and usage directions for this battery pack. Misuse of batteries can cause the battery to malfunction, degrade and reduce its capacity or life expectancy, overheat, explode, or become a fire hazard. Customers are responsible for the proper use and storage of this battery pack which is outlined on this document. If at any point, the battery excessively overheats, leaks, etc, or does not function as stated, or is visibly damaged; **DO NOT USE.**

**Please contact our support team for further assistance.**

We do not bear responsibility for any damages caused by the misuse of this battery accidental or otherwise.

# SAFETY PRECAUTIONS

- 1. Check materials: Check materials before installation. Do not install if they are missing or damaged.
- 2. Personal protection: Wear insulating gloves during installation, avoid metal jewelry, and wrap tools with insulating tape.
- 3. Prevent debris: Prevent debris from falling into the product to prevent system instability or damage.
- 4. Professional operation: Non-professionals are forbidden to remove the module shell or touch the internal circuit board; Without the manufacturer's confirmation, it is prohibited to modify or use for other projects.
- 5. Keep away from heat sources: Keep batteries away from heat sources, sparks, flames, and hazardous chemicals, and maintain good ventilation and heat dissipation.
- 6. Cables and connectors: Use battery cables and connectors of appropriate sizes, ensure that the cable length is the same, and tighten all connections to prevent loosening.
- 7. Battery protection: Do not puncture, drop, crush, burn, shake or impact the battery, to avoid long-term pressure on the battery.

- 8.Use note: Fix the battery when placing or handling to prevent impact or drop; Do not expose metal terminals or connectors during use or placement, and do not short circuit or overuse.
- 9.Handling damage: Do not immerse the battery in water, do not touch the exposed electrolyte or powder when the shell is damaged, and clean it immediately and seek medical attention.
- 10.Prevent short circuit: To avoid short circuit, use the circuit breaker and fuse of the appropriate size, and confirm the polarity of the multimeter before wiring.
- 11.Recycling: Batteries are recycled according to local regulations and must not be disposed of as household waste.

## **WARNING**

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01

Batteries are potentially hazardous and appropriate precautions must be taken during operation and maintenance.

02

Improper use of batteries may result in battery failure or other potential damage.

03

Improper configuration, installation or use of related equipment in the battery system may damage the battery and other related equipment. Wear appropriate personal protective equipment when handling batteries.

04

Battery installation and maintenance must be performed by trained and certified technicians.

05

If you have questions or need any assistance, please feel free to contact us: Leave your contact information at this email [service@heyfuturepower.com](mailto:service@heyfuturepower.com), and we will respond via phone or email within 12 hours.

# PRODUCT OVERVIEW

12V lithium battery is a lithium-ion battery with a rated voltage of 12V and a rated capacity ranging from several hundred mAh to several thousand mah. Lithium-ion batteries have many characteristics, such as high energy density, low self-discharge rate, long life, no memory effect. At the same time, lithium-ion batteries also have the advantages of having less impact on the environment and are regarded as green energy.

## External Features

12V100Ah Mini Smart and 12V100Ah Nano are similar in appearance, But differences in size.

01

Positive Terminal(red)

02

Negative Terminal(black)

03

Nylon Handle

04

Protective Cover

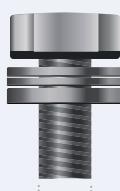


12V100Ah Mini Smart

length\*width\*height  
9\*5.4\*8.2inch

12V100Ah &  
12V100Ah Smart

length\*width\*height  
10.24\*6.61\*8.3inch



0.31 inch

0.63 inch



0.31 inch

0.47 inch

M8x16(mm)\*2

M8x12(mm)\*2

## Terminal Bolt

**M8-16/12(mm)" 0.63/0.47(inch)**

## Terminal Size :

M8(1.25mm Metric Thread)

## Post Bolts :

M8 (1.25mm Metric Thread " 16mm Bolt Length)

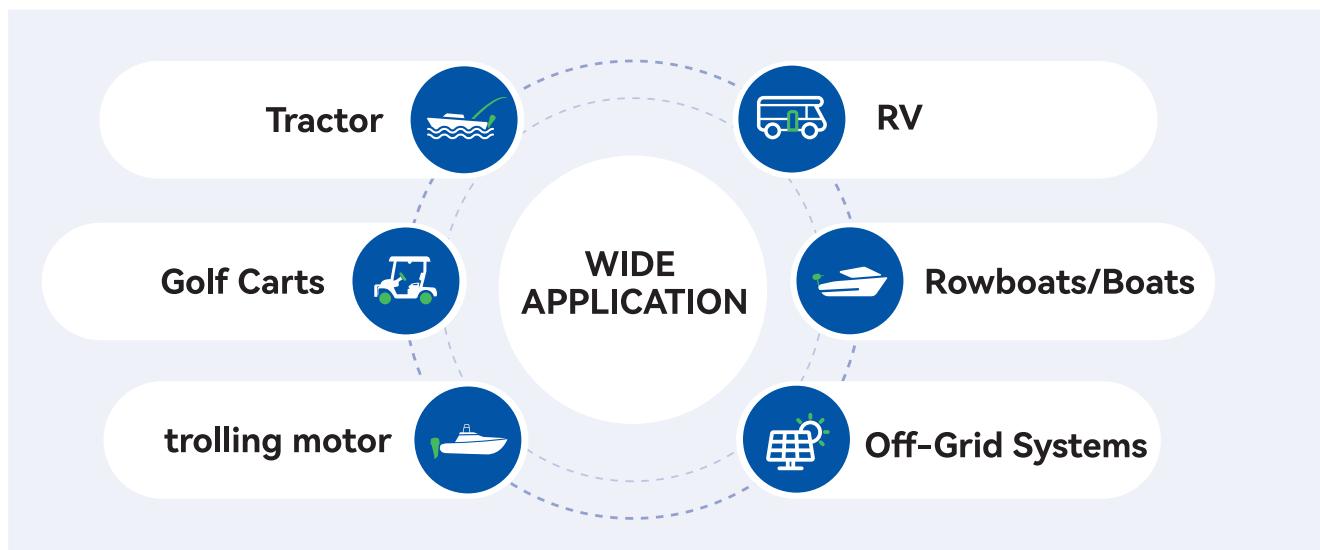
( The bolts can be replaced with M8 bolts of other lengths based on actual needs)

# SYSTEM FEATURES

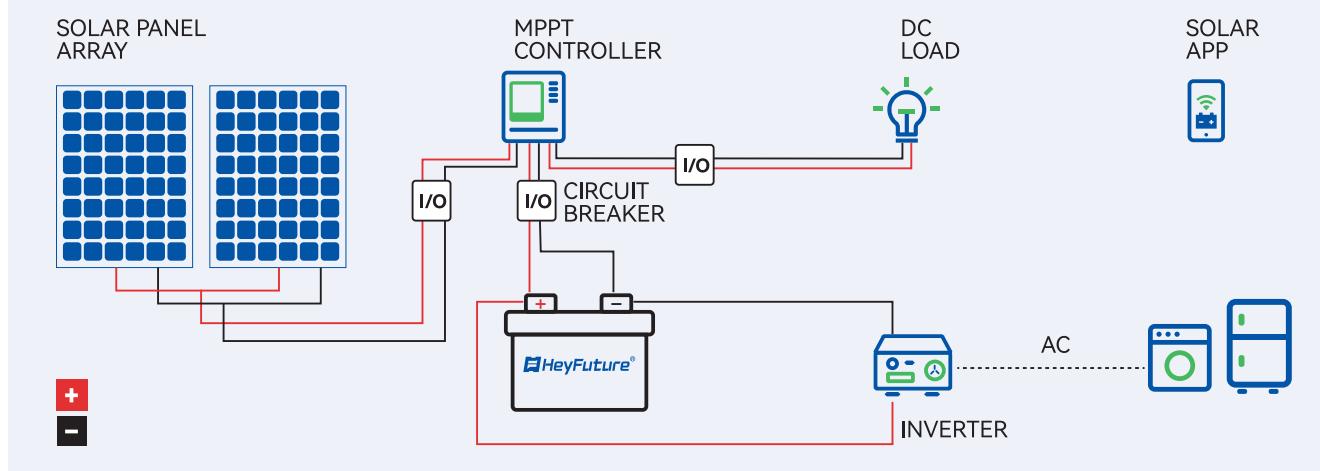
12V lithium battery system is lead-acid battery upgrade replacement with lithium battery is a common battery upgrade scheme. By replacing a 12V lead-acid battery with a lithium battery of the corresponding specification, **higher energy density, lighter weight, longer cycle life and better performance can be achieved**. This upgrade scheme is usually suitable for a variety of equipment and systems that need to use 12V power supply, in the process of replacing lead-acid batteries with lithium batteries, it is necessary to pay attention to the installation of the battery, charge and discharge control, protection measures, etc., to ensure the safe operation of the system and the best performance.

## Advantages:

- Long cycle life
- High energy density, light weight
- Good safety performance
- Green environmental protection



## USE REFERENCE DIAGRAM



# SPECIFICATIONS

Content	12V 50Ah	12V 100Ah Mini Smart 12V 100Ah 12V 100Ah Smart	12V 200Ah Smart	12V 300Ah Smart
Standard/Maximum Continuous Charging	10A/50A	20A/100A	40A/100A	5A/200A
Max Continuous Discharge Current	50A	100A	100A	200A
Over-charge Voltage Protection	15±0.1V	14.6±0.1V	15±0.1V	15±0.1V
Over-charge Voltage Protection Release	14.2±0.1V	14.2±0.1V	14.2±0.1V	14.2±0.1V
Over-discharge Voltage Protection	8.8±0.12V	9.2±0.12V	8.8±0.12V	8.8±0.12V
Over-discharge Voltage Protection Release	10.8±0.12V	10.8±0.12V	10.8±0.12V	10.8±0.12V
Over-current Discharge Protection	500±100A	300±50A	900±200A	1600±350A
Over-current Charge Protection	100±30A	140±30A	180±50A	320±50A
Short Circuit Current Protection	Support			
Release Condition	Cut Load			
Charging High Temperature Protection	127.4±41°F	149±41°F	127.4±41°F	127.4±41°F
Charging Temperature protection release condition	120.2±41°F	131±41°F	120.2±41°F	120.2±41°F
Discharge High Temperature Protection	167±41°F	158±41°F	167±41°F	167±41°F
Discharge Temperature protection release condition	136.4±41°F	140±41°F	136.4±41°F	136.4±41°F
Charging Low Temperature Protection	5±41°F	32±41°F	5±41°F	5±41°F
Charging low Temperature protection release condition	17.6±41°F	50±41°F	17.6±41°F	17.6±41°F
Discharge Low Temperature Protection	-4±41°F	-4±41°F	-4±41°F	-4±41°F
Discharge low temperature protection release condition	50±41°F	50±41°F	50±41°F	50±41°F

# SPECIFICATIONS

Content	12V 50Ah	12V 100Ah Mini Smart 12V 100Ah 12V 100Ah Smart	12V 200Ah Smart	12V 300Ah Smart
Dimension(inch)	9.13*5.31*7.13	9.01*5.67*8.35 10.24*6.62*8.35 10.24*6.62*8.35	19.02*6.7*9.45	20.55*10.6*8.66
Weight(lbs)	11.46	20.72/23.8/23.1	45.20	97
Terminal Bolt Size	M6	M8	M8	M8
Rated Voltage		12.8V		
Standard Charging Voltage		14.6V+0.2V		
Shipping Voltage		12.8V-13.5V		
Shipping Capacity		50%		
Cycle Life		4000@80%DOD		
Self Discharge Rate		<3%/Month		
Series & Parallel communications		6 Parallel(Max)4 Series(Max)		
Communications		Not Supported (Smart supported Bluetooth)		
Case Material		ABS+PC		
Waterproof Grade		IP65		
Storage Temperature		32-140°F		

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# CHARGING WITH AC-DC BATTERY CHARGER

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Check the AC-DC battery charger you intend to use has a dedicated lithium charge setting that meets the below charging requirements. A lot of battery chargers are designed for charging lead-acid batteries only and may not have a suitable charge setting for LiFePO4 battery.

## Preparation

Before the installation and operation of the battery, it is recommended to have the following equipment or tools available.

## Inspection

Please check for visible damage including cracks, dents, deformation, and other visible abnormalities. The top of the battery and terminal connections should be clean, free of dirt and corrosion, and dry. If any problems are detected with the battery, please contact us for assistance. Refer to the last page of the manual for contact information.

# CABLE SIZING

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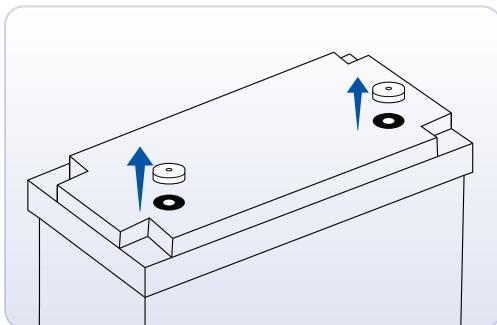
Battery cables (sold separately) should be appropriately sized to handle the expected load. Please refer to the following table for the ampacities of copper cables with different gauge sizes.

Cable Specification and Capacity(AWG/MM2)	Current Capacity(A)
14(20.8)	20
12(3.31)	25
10(5.25)	35
8(8.36)	50
6(13.3)	65
4(21.1)	85
2(33.6)	115
1(42.4)	130
1/0(53.5)	150
2/0(67.4)	175
4/0(107)	230

# INSTRUCTIONS FOR USE

STEP

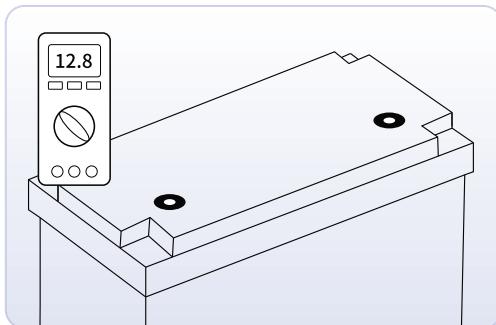
**01**



Unplug the insulated plug.

STEP

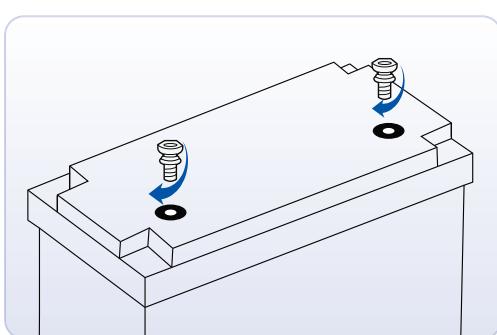
**02**



Measure battery voltage with a multimeter. If  $>12V$ , proceed.

STEP

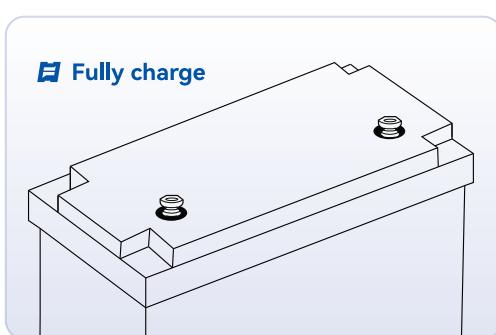
**03**



Tighten the stud bolts. Loose terminals can heat up and damage the battery.

STEP

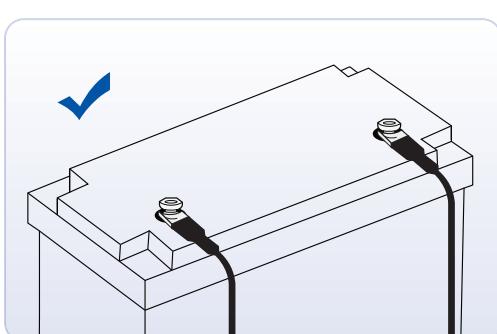
**04**



Fully charge the battery.

STEP

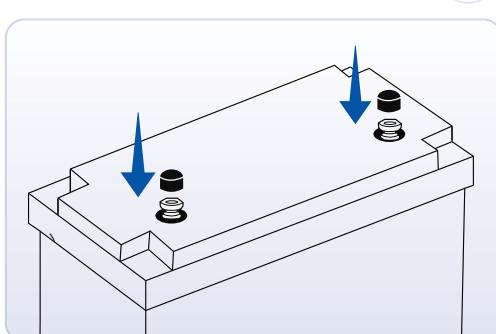
**05**



Use the connecting cable to connect and use.

STEP

**06**



Use an insulating cap during storage to prevent short circuits.

# PLEASE FOLLOW THE BELOWING SUGGESTIONS

## Same Brand



Do not connect batteries from different brands as their BMS settings may differ.

## Same voltage



It is recommended to use fully charged batteries (12V).

## Same Battery Type (LiFeP04)



Do not connect different battery types with this battery, such as li-ion, SLA, or other types.

## Purchase Cycle



The purchase cycle between two batteries should not exceed 3 months.

## Same capacity.



Ensure same to prevent unbalanced charging/discharging and damage.

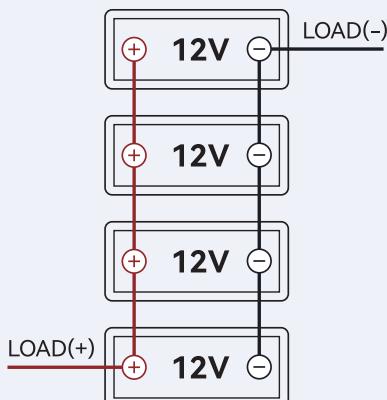
# EXTENDED CONNECTION STEP

**STEP1.** Fully charge the batteries separately.

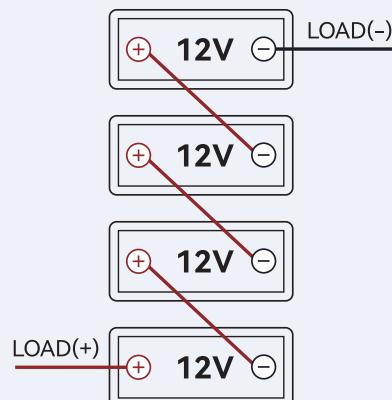
**STEP2.** Let the batteries rest for 15 minutes and then test the voltage; it should be  $>13V$ .

**STEP3.** Connect your batteries in series and/or in parallel.

Parallel Connection: Four 12V 100Ah batteries connected in parallel result in 12V 400Ah.



Series Connection: Four sets of 12V 100Ah batteries connected in series result in 48V 100Ah.





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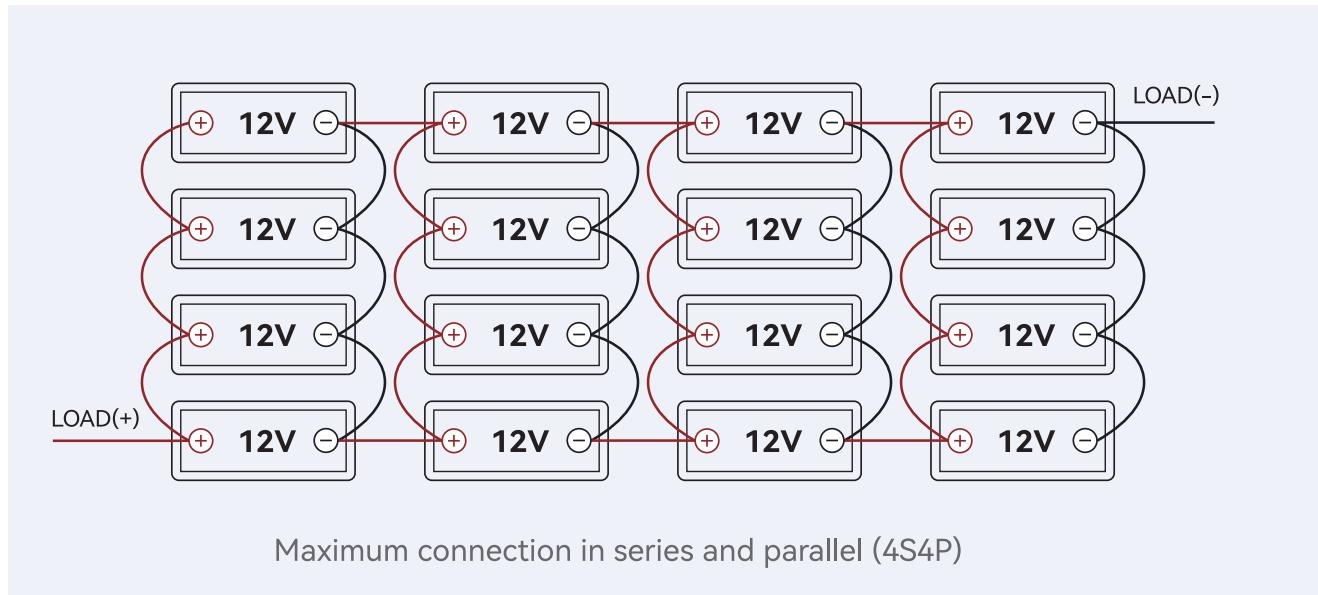


Email:  
[service@heyfuturepower.com](mailto:service@heyfuturepower.com)

Provider:  
Guangzhou Tianlan New Energy co.l Ltd

Example:

**Using a 12V 100Ah battery, connect four 12V 100Ah batteries in parallel to get 12V 400Ah. Then connect these in series to get 48V 400Ah.**



## PRECAUTIONS FOR USE

When using the battery, avoid metal or conductive objects touching the positive and negative electrodes of the battery at the same time. Otherwise, short circuit may be caused.

Install batteries upright with the column bolts facing upwards. Do not install batteries upside down. If you need to mount the battery on its side, contact [service@heyfuturepower.com](mailto:service@heyfuturepower.com) for directions.

Tighten the column bolts. Loose battery terminals heat up, which damages the battery. This battery is not used to start any device, please do not use it as a starting battery.

### Long-term storage suggestions:

Batteries can operate at temperatures from  $-20^{\circ}\text{C}$  to  $60^{\circ}\text{C}$  /  $-4^{\circ}\text{F}$  to  $140^{\circ}\text{F}$ , and temperatures from  $10^{\circ}\text{C}$  to  $35^{\circ}\text{C}$  /  $50^{\circ}\text{F}$  to  $95^{\circ}\text{F}$  are ideal for long-term storage. Store in a fireproof container away from children.

In order to use longer-lasting products, it is best to store the battery at 50% charge, and if it is not used for a long time, it is best to charge it every three months.

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12V  
SERIESWT  
LiFePO4  
BATTERY



# **TROUBLESHOOTING**

If any problems occur during the battery operation, please refer to the following instructions or contact us for assistance.

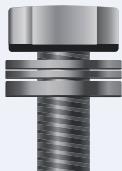
## **PACKING LIST**

**Battery\*1**



**Screw\*4**

M8x16(mm)\*2



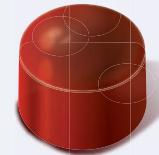
M8x12(mm)\*2



**Specification\*1**



**Plastic insulation cap\*2**



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# FCC WARNING

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**This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:**

- ①** this device may not cause harmful interference, and
- ②** this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**NOTE:**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum 20cm distance between the radiator and your body: Use only the supplied antenna.