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YN-42V15A Wireless Power Charger

User Manual

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Yarbo Inc.

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File History

Version	Editor	Date	Notes
V1.0	Tim Gao	2025/7/10	Initial release.

The input voltage of this wireless power charger is a dangerous voltage and may pose a threat to personal safety. Please strictly follow all the warning contents and operation instructions on the charger and in the Yarbo manual.

Unauthorized professional maintenance personnel are not allowed to remove the outer cover of this charger.



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Preface

The user manual specified technical specification of wireless power charger(WPT), and the installation, maintenance, repair, as well as pre-operation safety, operation safety, after-operation safety guide.



FCC Warning(For 2.4 G WLAN)

■ 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.

■ 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.

■ FCC RF exposure statement:

The equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance between 20 cm the radiator with your body.



FCC Warning (For WPT)

This device complies with part 18 of the FCC Rules.

Information on the following matters shall be provided to the user in the instruction manual or on the packaging if an instruction manual is not provided for any type of ISM equipment:

- (a) The interference potential of the device or system;
- (b) Maintenance of the system;
- (c) Simple measures that can be taken by the user to correct interference.

The following ISED caution is mainly for Canada end users.



ISED Caution

■ Radio Standards Specification RSS-Gen, issue 5

➤ English:

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

➤ French:

Cet appareil contient des émetteurs / récepteurs exemptés de licence conformes aux RSS (RSS) d'Innovation, Sciences et Développement économique Canada. Le fonctionnement est soumis aux deux conditions suivantes:

- (1) Cet appareil ne doit pas causer d'interférences.
- (2) Cet appareil doit accepter toutes les interférences, y compris celles susceptibles de provoquer un fonctionnement indésirable de l'appareil.

■ RF exposure statement:

➤ English

The equipment complies with ISED Radiation exposure limit set forth for uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body.

➤ French

Déclaration d'exposition RF:

L'équipement est conforme à la limite d'exposition aux radiations de la ISED établie pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et votre corps.

1. Safety



MUST READ

Failure to follow safety instructions may result in serious injury or property damage.

Yarbo disclaims any liability for consequences due to improper use or disobeying these instructions.



Pre-operation Safety Instructions

- Ensure the area is free of obstacles that may cause damage to the product.
- Verify that the product is functioning correctly before use.
- Do not use the product if any parts are broken or malfunctioning.
- Do not allow children or pets to access the controller (physical or mobile app).
- Ensure the product is assembled and operated according to the user manual. The operator must read and fully understand the manual before use.



Operation Safety Instructions

- Always maintain a safe distance when using the controller or during automatic operation. Never place any part of your body near or under the product, especially when it is turning or climbing slopes.
- Do not allow children, individuals with physical, sensory, or mental limitations, or those lacking experience or knowledge to operate Yarbo. Local regulations may impose age restrictions on the operator.
- A trained and authorized individual must supervise untrained persons whenever Yarbo is in operation.
- Do not operate the product if the operator is under the influence of alcohol, drugs, or illness.
- Do not throw objects toward the product or surrounding service robots and buildings, as this may damage the auger and impeller.
- If the product operates in public spaces, clearly display warning signs around the work area, including one of the following messages:
“Warning! Automatic Snow Blower! Keep away from the machine! Supervise children!”
“Warning! Automatic Lawn Mower! Keep away from the machine! Supervise children!”
“Warning! Automatic Blower! Keep away from the machine! Supervise children!”
- Do not operate Yarbo near fires, hot ashes, or heat sources to prevent fire hazards.

- Ensure Yarbo is powered off before clearing blockages, performing maintenance, or inspections. If abnormal vibration occurs, stop operation immediately, press the emergency stop button, and check for damage. If vibration persists, remove the battery and inspect for faults.
- Never step on or sit on the product.
- Only use the provided docking station to charge the product. Do not touch any part of the charging station while charging to avoid electric shock, overheating, or battery leakage.
- Caution on Slippery Surfaces: Areas where snow has been cleared may still be slippery.
Pedestrians and service robots should proceed cautiously to prevent accidents.
- Adapt to Extreme Weather Conditions: Under extreme weather conditions (e.g., heavy snow, icy conditions), equipment performance may be affected. Adjust operation strategies accordingly.



After-operation Safety Instruction

- Always wear gloves and follow the recommended maintenance procedures. Shut down Yarbo and remove the battery before performing any maintenance, inspections, or clearing blockages in the discharge chute.
- Disconnect the battery from the core if Yarbo will not be used for an extended period.
- Regular Maintenance: Regularly inspect the blades, battery, motor, and other parts to ensure proper function and minimize the risk of malfunction.



Disclaimer

This safety guide is provided for general informational purposes. The operator is solely responsible for ensuring compliance with local laws, regulations, and safety standards. Yarbo disclaims all liability for injuries, damages, or losses arising from improper use, failure to follow these instructions, or failure to comply with applicable local laws and regulations.

2. Product Introduce

The wireless charger used in Yarbo system product is divided into two assemblies: the transmitter assembly (Tx) and the receiver assembly (Rx).

Among them, Tx is divided into the transmitter coil (PrC) and the transmitter controller (PTC). PrC is integrated with the ground docking station (Docking Station), while PTC is integrated with the Yarbo service robot.

The component structure of the wireless power charger is shown in Table 2.

Table 2. Wireless Power Charger Assembly

Part Nr.	Part Name	Illustration
1641136	Rx	
1641236	Tx	
Yarbo-164	Docking Station	

The following picture shows that the wireless power charger in actual operation condition, the service robot works as snow blower robot. Tx, incl. PTC and PrC, is integrated into docking station and fixed on the ground, while Rx is installed on the

chassis of snow blower robot. Once the robot rides on the docking station, wireless power charger can start charge power for the robot autonomously.



Figure 2. Wireless charger and snow blower robot

2.1 WPT Function

2.1.1 A simple and user-friendly human-machine operation interface is provided; it realizes human-machine interaction and on-site control functions, and is deeply integrated with the Yarbo APP.

2.1.2 It can determine whether the wireless charger is correctly connected. Once it is correctly connected, the wireless charger can transmit electrical energy. In case of any abnormalities, the wireless charger can immediately stop outputting to ensure personal safety.

2.1.3 The charging station has protection functions for overvoltage, undervoltage, and overloading. When the charging voltage exceeds the overvoltage protection value or is lower than the undervoltage protection threshold, the charging station stops charging to protect the charging equipment. When the charging current exceeds the rated current value, an alarm signal is delayed and the charging power supply is automatically cut off.

2.1.4 The wireless charger has short circuit and leakage current protection functions.

2.2 WPT Characteristics

2.2.1 Safety and Stability: The wireless charger provides reliable electrical safety protection functions, as well as overvoltage, overtemperature, etc. protection functions. It is dustproof and water-resistant, operates stably, and can ensure long-term reliable operation.

2.2.2 System Integration: The functions required by the wireless charger, such as charging, human-machine operation, safety protection, etc., have been highly integrated with the Yarbo APP. The operation is stable and reliable.

2.2.3 Simple and Easy to Use: The operation is simple and clear, making it convenient for use.

2.2.4 Installation is Convenient: The ground transmitting coil is integrated in the Yarbo charging extension dock, making it easy to install and apply in the home garden environment.

2.2.5 Equipped with Complete Three-Defense (damp-proof, mold-proof, salt-spray-proof) Protection and Rust Protection: The printed circuit board, connectors, and other circuits inside are treated for damp-proof, mold-proof, and salt-spray-proof to ensure that the charging station can operate normally in outdoor environments.

3. WPT system Parameters

WPT system Parameters are shown in table 3-1.

Table 3-1. Datasheet of WPT

Category	Items	Parameters	Note
Main performance	Rated output power	700 W±35 W	
	Rated. Efficiency	≥85 %	
Position tolerance	Distance btw Tx and Rx	60 mm~80 mm	
	X direction(F/R) tol.	±20 mm	
	Y direction(R/L) tol.	±30 mm	
Work conditions	Work temp.	-40 °C~55 °C	
	Derating temp.	55 °C~85 °C	
	Storage temp.	-40 °C~105 °C	
	RH range	5%~95%	
	Altitude height	≤5 km	
Communication	Btw. Tx and service robot	CAN	300 Ω
	Btw. Tx and Rx	2.4G Wi-Fi WLAN	
Electric parameters	Rated input voltage	110 V±20% or 220 V±20%	
	Max. input current	32A	
	Power output adjustment	Autonomous	
	Work frequency	50 Hz±1Hz	
	Insulation resistor	≥10 MΩ	
	OC protection	Up to 1.1* nominal	
Compatibility	Multi-Device collaboration	Yes	
OTA	OTA function	Tx:OTA Rx:CAN OTA	
Reliability	Mean time btw. failure	≥10 000 h	

EMC	EMI	CE: EN55032; FCC PART15, CLASS B RE: EN55032; GB9254, CLASS B, FCC PART15, CLASS B	
	EMS	ESD: GB/T 17626.2 1998, IEC61000-4-2	
Product Certificate	Certificate type	CE/FCC/ISDE, etc.	
Environment	Standard	CP65\TSCA\RoHS2.0	

Docking station parameters are as following table 3-2.

Table 3-2 Docking station parameters

Item	Parameters
Size (L*W*H)	25 in*36 in*3 in/640 mm*910 mm*76 mm
IP code	IP67
Work temp.	-13°F~113°F/-25 °C~45 °C
Charging mode	Charging with inner receiver coil Contactless Autonomous
Batt. Charging voltage	42 V
Installation requirement	Horizontal ground

4. Equipment Installation and Commissioning



MUST READ

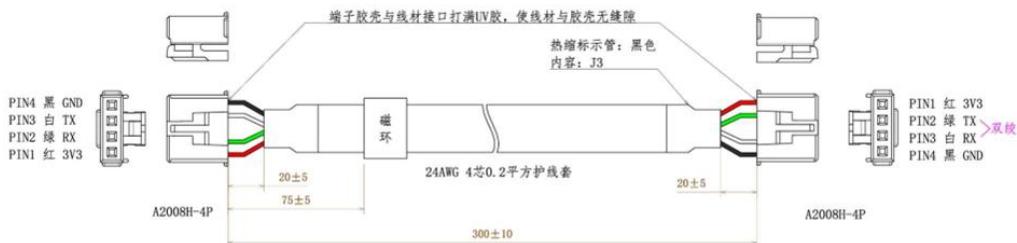
WPT has been integrated with Yarbo product and undergone service robot-level integration testing before the end users receive the Yarbo product. The installation of the Yarbo service robot is completed in accordance with the user manual of the Yarbo product.

- The installation and commissioning content of the WPT in this chapter is for reference and use by Yarbo's production and commissioning.
- The installation and commissioning content of the WPT in this chapter can also be used as a reference by trained professionals when troubleshooting charging faults or performing service robot maintenance with the wireless power charger.
- The installation and commissioning content of the WPT in this chapter is not a usage guide for end users to disassemble and repair the WPT by themselves. If any adverse consequences occur due to not following this mandatory reading and disassembling or repairing without authorization, Yarbo will not bear any related responsibilities.

4.1 Tx Installation

The output controller has a total of 6 wires. Among them, communication wires quantity is 4, AC power supply wires quantity is 2, and there is no connector between the output controller and Tx.

The low-voltage wiring harness is shown in Figure 4.1, and the definition of the low-voltage wiring harness leads-out wires is given in Table 4.1.



技术要求

- 所有原料应符合《RoHS 2.0》/1《REACH/CA Prop65》等环保指令；
- 线束阻燃等级：VM-1；线材耐温：-30°C~105°C；
- 有UL认证号；
- 所有端子胶壳打UV胶，胶壳根部完全密封，不露出线材端子；胶水禁止打到胶壳卡扣和热缩管上。

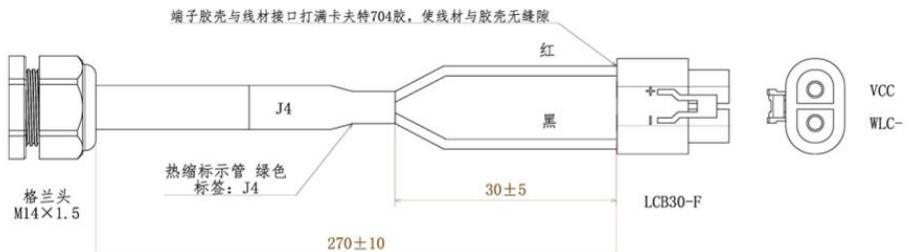
Figure 4.1 Low voltage cable
Table 4.1 Definition of low voltage lead wire

Nr.	name	Rate current (A)	Color	Notes
1	3V3	≤ 0.5	Red	1. Communication serial port requires isolation..
2	Tx	≤ 0.5	Green	2. Cable of Tx and Rx need to be twin-wire.
3	Rx	≤ 0.5	White	3. GND is the reference ground of 3V3 and communication serial port.
4	GND	≤ 0.5	Black	

4.2 Rx installation

The Rx assembly integrates the receiver coil and the receiver controller. The external electrical interfaces include a DC output wire harness, a low-voltage input and signal wire harness.

DC output harness is illustrated as figure 4.2.



技术要求

- 所有原料应符合《RoHS 2.0》/《REACH/CA Prop65》等环保指令；
- 线束阻燃等级：VM-1；线材耐温：-30°C~105°C；
- 有UL认证号；
- LCB30端子胶壳打卡夫特704胶，胶壳根部完全密封，不露出线材端子；
胶水禁止打到胶壳卡扣和热缩管上。

Figure 4.2 DC output harness

And low voltage electric characteristics is shown as table 4.2.

Table 4.2 Datasheet of low voltage electric characteristics

Pin. Nr.	Name	Rated current (A)	Notes
1	CAN_H	≤1	1. The voltage of GND and CAN bus ground is 24V.
2	CAN_L	≤1	2. 24V, Max. current ≤ 1 A. 3. PCBA, connector type is A2008H-5P.
3	NC		
4	GND	≤1	4. CAN_H wire and CAN_L wire is twin-wire.
5	24V	≤1	

4.3 Commissioning

After installing the wireless power charger on the Yarbo service robot, the charger shall conduct integrated commissioning and testing with the Yarbo service robot to ensure that the wireless power charger can operate normally.

5. Operation and maintenance

5.1 Autonomous Charge with Yarbo Docking Station

Before Yarbo is to charge with WPT autonomously, you need to

5.1.1 Make sure you have already set up a map for Yarbo.

5.1.2 Yarbo is located within your area.

5.1.3 Make sure the RTK Signal is strong.

Normally, Yarbo will automatically return to charge when it detects low battery level (<20%). You can also manually send Yarbo to the docking station to recharge by:

5.1.4 Tapping the "Recharge" button on the Yarbo app's virtual controller page or

5.1.5 Tapping the "Recharge" button on the Yarbo app's autonomous plan page.

Once the Yarbo is placed at the center of the docking station, automatic charging will commence without user intervention for 5 minutes.

Click the Charge button on the APP home page if you want Yarbo initiate the charging process right now.



Figure 5.1. Yarbo service robot autonomous charging with WPT at docking

station

5.2 Manual Charge

Use the physical/virtual controller, manually drive Yarbo onto the docking station. Ensure that the Yarbo is positioned directly at the center of the docking station and parked in the correct orientation.

5.3 Maintenance Instructions



WARNING

- Please ensure that you do not wear open-toed shoes or go barefoot when performing the following maintenance tasks.
- Always use appropriate Personal Protective Equipment (PPE). Wear protective gloves and goggles whenever performing maintenance tasks or when needed.
- Ensure that Yarbo is switched OFF and disconnects the battery when performing the following maintenance tasks.

5.3.1 Disconnecting Battery from Yarbo

- Press the Emergency Stop Button.
- Confirm that Yarbo is turned off by checking if all the lights are switched off.
Unscrew the bolts on the side of the battery cover.
- Remove the battery cover and unplug the cable connecting Yarbo and battery pack.
- Remove the battery pack and safely secure it.

5.3.2 Installation spare parts

5.3.3 Applicating Grease on the Tracks of Yarbo

5.3.4 WPT firmware update through OTA

5.3.5 Keeping Battery at its Best Performance

Extended periods of inactivity can significantly diminish the performance of the battery pack. To minimize this degradation, it's important not to leave the battery pack inactive for more than three months. Lithium-ion battery packs experience slight self-discharge over time. Charging the battery pack for at least 15 minutes once every three months will suffice to maintain its activity level.

5.3.6 Parts Replacement of WPT

6. Limited Warranty

This wireless charger is covered by a 2-year warranty.

Product damage or malfunction caused by improper transportation, operation or use is not covered by the warranty.