

## Programmable Wireless Charging and Uptime Optimization for Mobile Robots

### Autonomous Power Management



#### Maximize Robot Uptime

Due to their low profile, charging stations can be placed throughout the facility to provide “opportunity charging” for maximum robot uptime.



#### Enhance Durability

Wireless charging systems can be fully embedded in walls or floors, and are impervious to dirty/corrosive environments.



#### Monitor and Control Remotely

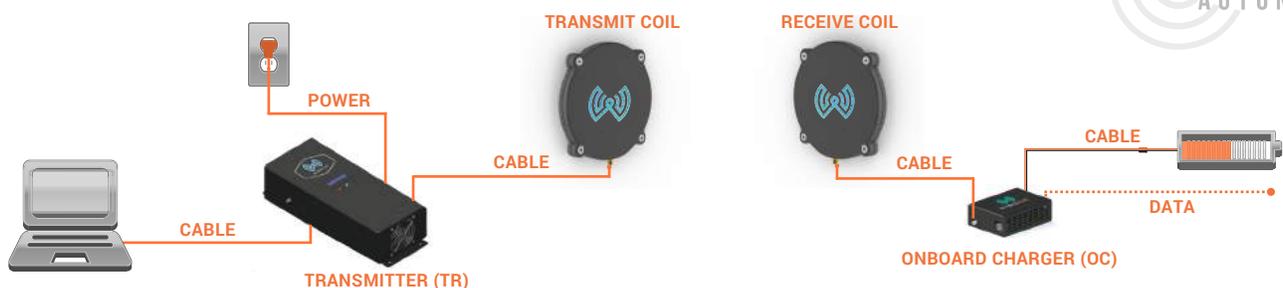
WiBotic’s technology enables fleet-wide power management eliminating the need for constant human monitoring and management of battery charging.

### Our Solutions

Mobile robot applications have exploded in recent years, but their full potential simply isn’t realized if humans must constantly monitor and manage battery charging functions. While semi-autonomous, physical-contact chargers eliminate some of the operator burden, those devices can suffer from dirty, corroded, or worn out contacts. Further, contact-based charging stations and docked robots take up floor space – especially when dozens or hundreds of robots are required.

WiBotic’s wireless charging and software-enabled uptime optimization solutions solve these problems for OEMs, Service Providers, and Operators of mobile robots. Wireless charging systems can be unobtrusively embedded in walls or floors and are impervious to dirty/corrosive environments. When located strategically throughout a facility, wireless transmitters also allow charging whenever and wherever robots naturally pause – constantly topping off batteries, allowing fewer robots to do more work. WiBotic offers the most flexible wireless charging solutions on the market, so robots don’t need perfect alignment to reliably charge.

### How WiBotic Wireless Power Solutions Work



## Available Components For Your Specific Application Needs

WiBotic offers a range of wireless charging components to accommodate nearly any mobile robot system. Designed for “many-to-many” operation, it allows multiple transmitters to autonomously recharge multiple robots. Robot battery voltage and charge rate is configurable in software, so robots with different battery chemistries and voltages can share the same set of transmitters.

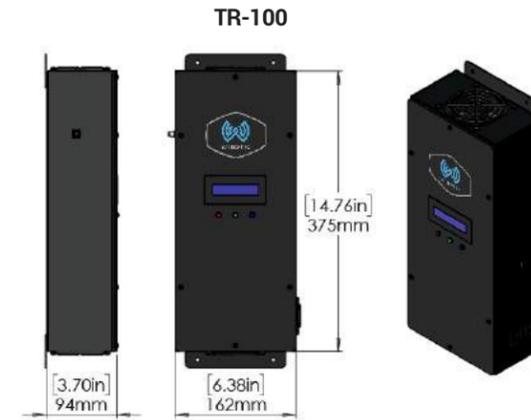
WiBotic’s API allows robot scheduling systems to optimize charge rate (amps) for every charge cycle. The result is not only maximum uptime for entire robot fleets, but superior management of battery health and longevity for reduced operating costs and preventative maintenance.

### TRANSMITTER UNITS

WiBotic transmitters (TRs) convert AC power to a high frequency wireless power signal for transmission to the robot fleet. (DC powered models also available).

TRANSMITTER UNIT (in enclosure)	TR-100	TR-300
Input Voltage (AC)	90-264v	90-264v
Input Receptacle (AC)	IEC320-C14	IEC320-C14
Input Frequency	43-63 Hz	43-63 Hz
Enclosure Type	ABS Plastic/Metal	ABS Plastic/Metal
Data Port	Ethernet	Ethernet

\*DC powered configurations available

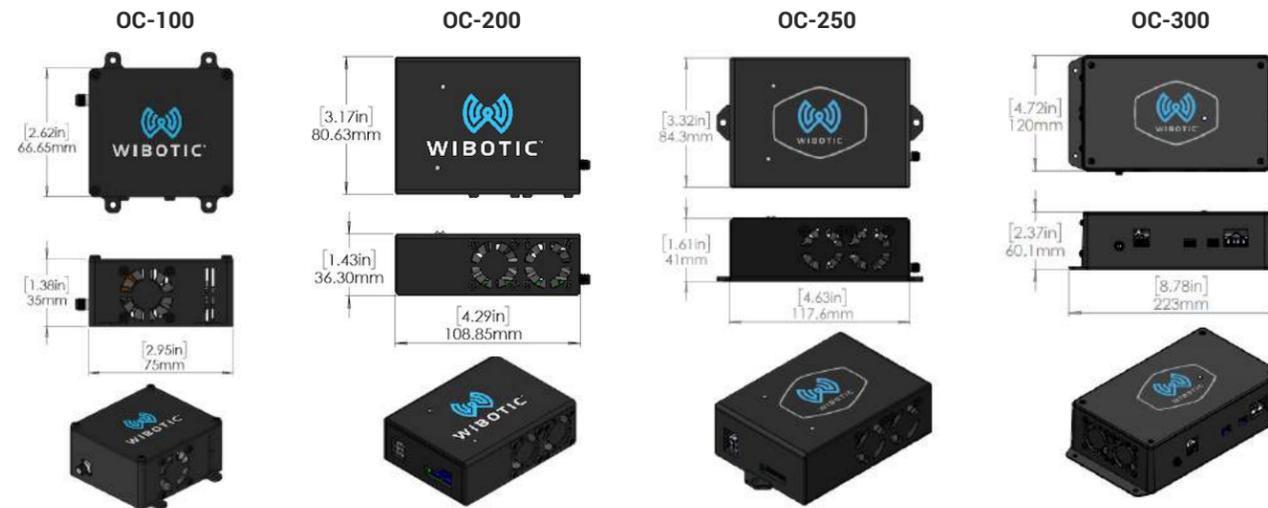


### ONBOARD CHARGERS

Onboard Chargers (OC's) are receiver circuit boards that convert incoming wireless power to a usable DC voltage. They're also smart battery chargers, with the ability to safely charge a wide range of battery types at adjustable charge rates.

ONBOARD CHARGERS	OC-100	OC-200	OC-250	OC-300
Battery Compatibility	LiPO, Lilon, SLA LiFePO4,NMH	LiPO, Lilon, SLA LiFePO4,NMH	LiPO, Lilon, SLA LiFePO4,NMH	LiPO, Lilon, SLA LiFePO4,NMH
Battery Voltage Range	11.2-58.4v DC	11.2-58.4v DC	11.2-58.4v DC	11.2-58.4v DC
Max Charging Current	5A*	10A*	10A*	30A*
Max Charging Power	90w*	125w*	250w*	>300w*
Weight (PCB & Fan)	46g	82g	100g	220g
Total Weight (w/enclosure)	74g	154g	200g	413g
Operating Temperature	-20 to 40C	-20 to 40C	-20 to 40C	-20 to 40C
Transmitter/Receiver Communication	2.4 GHz Wireless	2.4 GHz Wireless	2.4 GHz Wireless	2.4 GHz Wireless
Aux Wired Charging Input Voltage	12-48v DC	12-48v DC	12-48v DC	12-48v DC

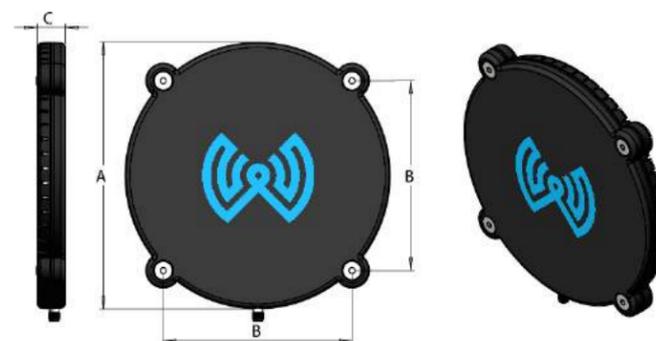
\*Must be paired with properly sized transmitter to achieve max value



### TRANSMITTER AND RECEIVER COILS

Transmitter (Tx) and receiver (Rx) coils are specialized antennas that transmit and receive wireless power at specific frequencies. The standard WiBotic coil set is shown, but custom coil configurations, offered through our Professional Services, are also available.

TRANSMITTER/RECEIVER COILS (in enclosure)	RX-100	TX-200
Total Width (A)	104.5	205.5
Mounting Hole Distance - Max (B)	85	145
Thickness (C)	7.6 [0.30]	15.5 [0.61]
Enclosed Coil Diameter	100	200
Total Weight (w/enclosure)	35g	180g



### OPTIONAL COMPONENTS

WiBotic’s standard configurations can be mixed and matched to build the system that best suits your needs. However, if you’re interested in ready-to-deploy simplicity, our optional embodiments may be of interest.

**WIBOTIC EDGE:** The WiBotic Edge is a complete wall-mountable station containing an internal power supply, TR circuit board, and transmitting antenna. Mounted directly to a wall, or in a wall cut-out for flush mounting, the Edge requires no floor space. In fact, the Edge can be mounted under packing/shipping tables or on aisle end-caps to provide Opportunity Charging any time a robot pauses during its regular routine.



\* Customized wall-mount designs can also be available

**BATTERY INTELLIGENCE MODULE:** Many robots use new “smart batteries” with onboard balancing and BMS systems. Unless you’re a master programmer, though, you probably haven’t taken advantage of their advanced features. And there are still many robots that use traditional batteries without battery intelligence on their own. WiBotic’s BIM solves these problems. Providing Cell Balancing, Monitoring and Protection, the BIM provides complete battery management and a host of reporting capabilities to help minimize long term battery costs.



**Data Centers**



**Energy/Utility**



**Industrial Automation**



**Logistics/Delivery**



**Defense**



**Remote Surveillance**

## How To Get Started

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WiBotic wireless charging and software enabled uptime optimization solutions are extremely flexible across a wide range of applications and power levels. We offer standard off-the-shelf systems for quick installation and evaluation, but also recognize that many robot applications are specific and unique. For these applications, we provide Professional Services toward a customized solution to meet your needs. Depending upon the design of your robot, the service may include:

- Analysis and testing of component positioning
- Final performance verification testing
- Installation support of a standard set of components
- Customization of component sizes and shapes

### Contact Us To Learn More

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