WIBOTIC™

Programmable Wireless Charging and **Battery** Health Management

Autonomous power and data for mobile robots, UAVs, AS/RS, carts, and other battery-powered devices

Maximize Device 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 extending the lifespan of batteries.

Our Solutions

Battery-powered 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 battery health management 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 and allowing fewer robots to do more work. WiBotic offers the most flexible wireless charging solutions on the market, so robots and other devices don't need perfect alignment to reliably charge.

How WiBotic Wireless Power Solutions Work

Based on more than eight years of research at the University of Washington, WiBotic's unique technology builds on the strengths of both inductive and resonant power transfer by incorporating the best of both worlds.

Our patented Adaptive Matching system constantly monitors relative antenna position and dynamically adjusts both hardware and firmware parameters to maintain maximum efficiency – delivering reliable charging at high power levels, and across several centimeters of vertical, horizontal and angular misalignment.
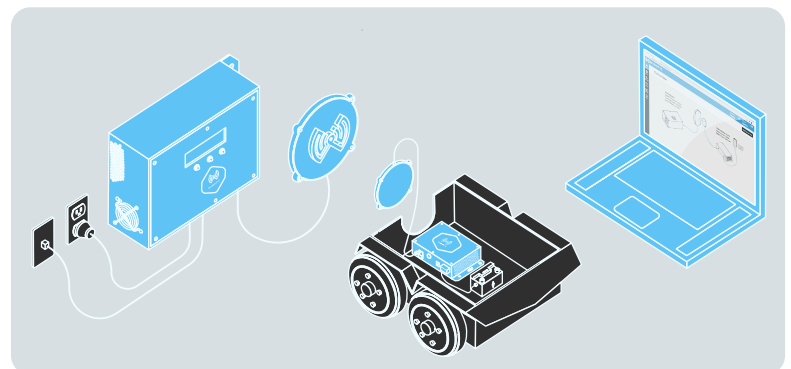
Available Components For Your Specific Application Needs

WiBotic offers a range of wireless charging components to accommodate nearly any battery powered system. Designed for "many-to-many" operation, the system allows multiple transmitters to autonomously recharge multiple devices. Battery voltage and charge rate is configurable in software, so devices 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 power transmission to the robot fleet. (DC powered models also available)

TRANSMITTERS (in enclosure)	TR-302	TR-1000
Recommended Load	300W	1000W
Input Power (AC*)	100-230V, 5.8A Max	100-230V, 20A Max
Input Receptacle	IEC320-C14	IEC320-C14
Input Frequency	50-60 Hz	50-60 Hz
Enclosure Type	All Metal	All Metal
Data Port	Ethernet (RJ45)	Ethernet (RJ45)
Rating (standard encl.)	IP20	IP20

300W DC powered configuration also available

TR-302

TR-1000
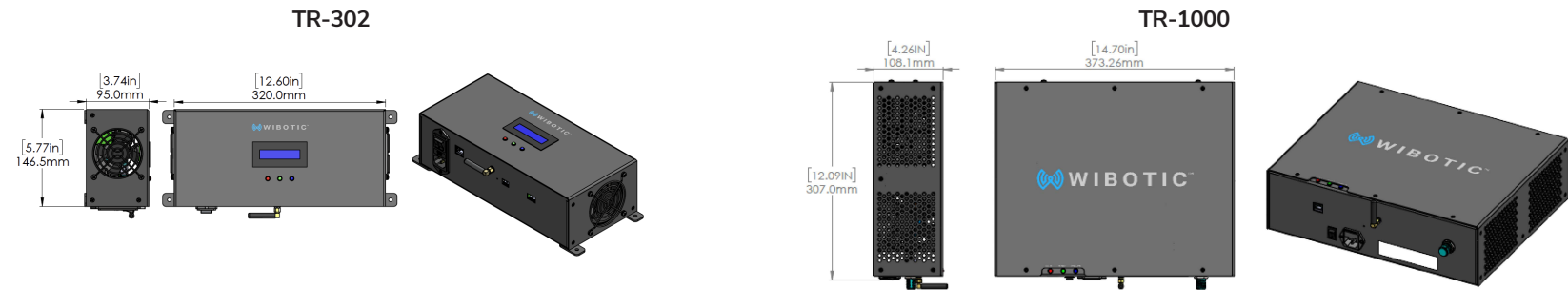
ONBOARD CHARGERS

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-150	OC-251	OC-262-ST	OC-262-WP	OC-301	OC-1000
Battery Voltage Range	10.0-58.4v DC	10.0-58.4v DC	10.0-58.4v DC	10.0-58.4v DC	10.0-58.4v DC	12.0-58.4v DC
Max Charging Current	10A	12A	12A	12A	30A	36A
Max Charging Power	150W*	250W*	300W*	300W*	300W*	1000W*
Battery Compatibility	LiPO, LiIon, Lead-Acid, SLA,LiFePO4, NiMH, NiCAD	LiPO, LiIon, Lead-Acid, SLA,LiFePO4, NiMH, NiCAD	LiPO, LiIon, Lead-Acid, SLA,LiFePO4, NiMH, NiCAD	LiPO, LiIon, Lead-Acid, SLA,LiFePO4, NiMH, NiCAD	LiPO, LiIon, Lead-Acid, SLA,LiFePO4, NiMH, NiCAD	LiPO, LiIon, Lead-Acid, SLA,LiFePO4, NiMH, NiCAD
Weight (in enclosure)	170g	293g	580g	630g	540g	1087g
Operating Temperature	-20 to 45C	-20 to 45C	-20 to 45C	-20 to 45C	-20 to 45C	-20 to 45C
Onboard API Comms	UAVCAN API over CANBus	UAVCAN API over CANBus	UAVCAN API over CANBus	UAVCAN API over CANBus	UAVCAN API over CANBus	UAVCAN API over CANBus
Aux Wired Charging Input Voltage	24-50v DC	24-50v DC	24-50v DC	24-50v DC	24-50v DC	N/A
Cooling Method	Active	Active	Passive	Passive	Active	Active
IP Rating	IP20	IP20	IP20	IP67	IP20	IP20

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

OC-150

OC-251

OC-262-ST

OC-262-WP

OC-301

OC-1000
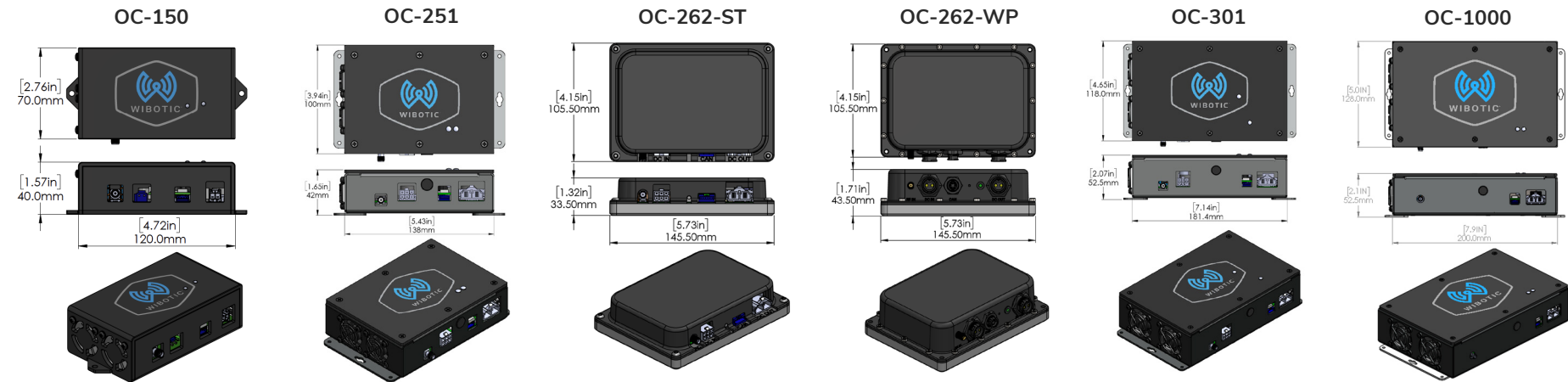
TRANSMITTER AND RECEIVER COILS

Transmitter (TC) and receiver (RC) 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)	TC-200-300	RC-100-300	TC-200-1000	RC-150-1000
Max Power Level	300W	300W	1000W	1000W
Total Weight (PCB only)	101g	27g	87g	57g
Total Weight (w/enclosure)	457g	160g	457g*	250g*

* Preliminary values

TC-200-300

RC-100-300

TC-200-1000

RC-150-1000
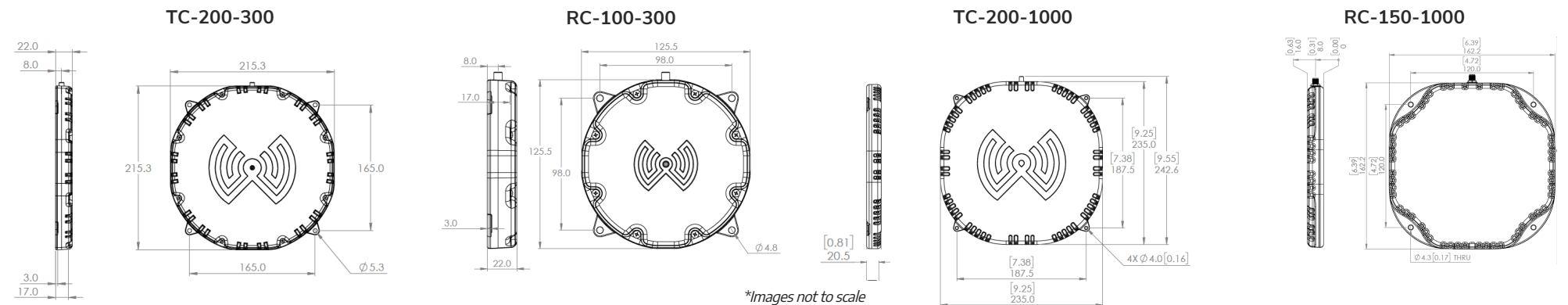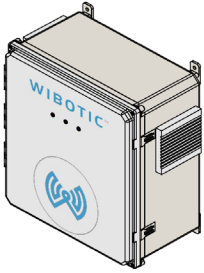
*Images not to scale

INTEGRATED OPTIONS

WiBotic's standard configurations can be mixed and matched to build the system that best suits your needs. However, for those 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 developed

About WiBotic

WiBotic wireless charging solutions can greatly enhance the working efficiency of your robot fleets and significantly reduce your company's charging and maintenance costs.

Our solutions include wireless charging and power optimization software. So we not only maximize the battery life of each battery we charge, we create an operational plan for the entire collection of batteries in your robot fleet.

WiBotic wireless charging and power optimization solutions are safe, reliable and scalable. And they are easy-to-implement and highly customizable for specific robot deployments.

For more information, visit our Products Page!

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