POWERCAST®

– Your One-Stop-Shop for Wireless Power – Microwatts to Kilowatts –
Concept to Mass Production

Quick Start Guide

Evaluation Kit v2.2b

Introduction

This Evaluation Kit is intended for quick prototyping using Powercast's magnetic resonance wireless power technology, powered by Etherdyne. This kit will allow you to add wireless power to a variety of devices.

Powercast's magnetic resonance technology enables energy to be wirelessly transferred to multiple receivers within a volume of space called the "power zone".

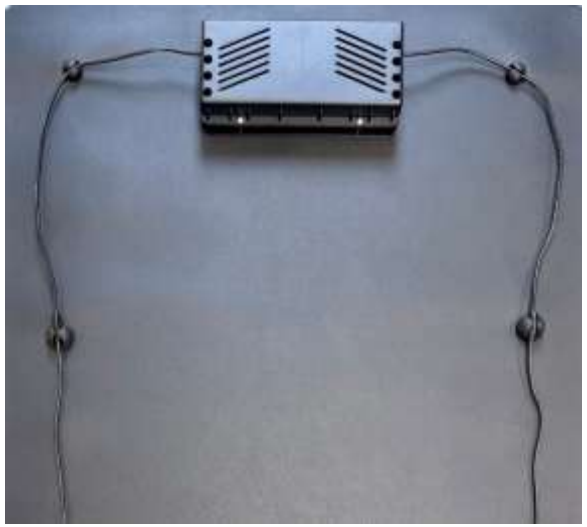
The power receivers absorb the magnetic energy and convert it into electricity.

What's in the box?

1. A 48V Power Adapter
2. RF generator with meta-wire loop antenna, mounted to a mat to form a ~51"x18" loop
3. Eight power receivers
4. Two LED Field Probes power receivers

1

2



3

4

Setup Instructions

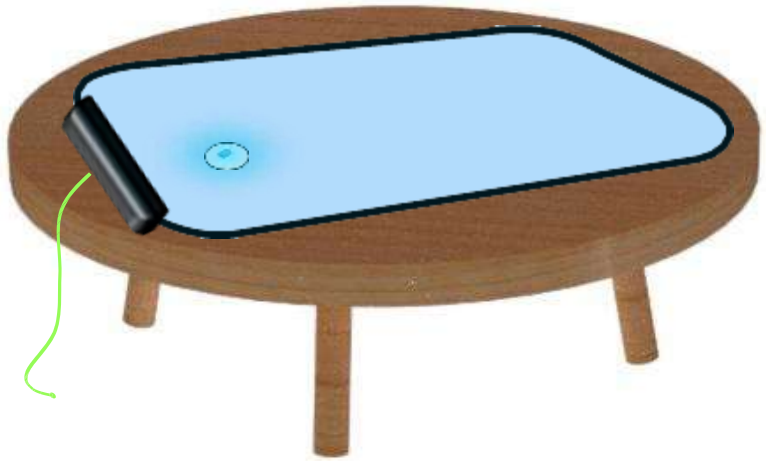
1

1.Placement

a) Place the mat and generator unit on a stable wooden or plastic table / surface. ***Please note: NO METAL SURFACES***

b) Arrange the mat so that it lies flat and the wire loop is straight.

2



2. Powering On

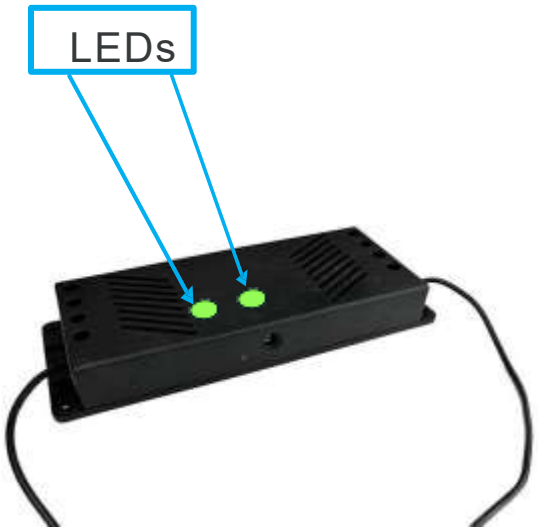
a) Connect the power supply unit (PSU) to the generator (**green wire** in Figure 2).

b) Plug the PSU into a wall outlet. The device will power on automatically.

c) Place LED Field Probes inside the wire loop and watch them **light up!**

Troubleshooting

Issue	Solution
Status Lights **not illuminated**	Check that the power supply is plugged in to a working AC outlet and the 2.5mm barrel connector is plugged in to the RF Generator.
Status light **red** or **red** with **flashing green** **No receivers** in transmitter loop	Verify that the transmitter is not placed on or near a metallic or conducting surface. Some tables may have an internal metal frame. Try moving the transmitter to a different surface. Make sure that the Loop Antenna lies flat and is fully extended.
Status light **red** or **red** with **flashing green** **Receivers present** in transmitter loop	The transmitter may be overloaded. Try removing receivers from the power zone. If the red LED is still illuminated after removing the receivers, verify that the transmitter is not placed on or near a metallic or conducting surface. Some tables may have an internal metal frame. Try moving the transmitter to a different surface. Make sure that the Loop Antenna lies flat and is fully extended.
Status light **illuminated green** Receiver: **no power output**	Try bringing the receiver closer to the transmitter or changing its angle relative to the Loop Antenna. Check that no metallic objects or other receivers are in proximity of the receiver. If there is still no power output from the receiver, check if the receiver is overloaded or shorted. Try removing the load and checking the receiver's output voltage.
Status light **illuminated green** Receiver: **low output voltage**	Try bringing the receiver closer to the transmitter or changing its angle relative to the Loop Antenna. If voltage is still low, check if the receiver is overloaded. Try removing the load and checking voltage again.
Status light **illuminated green** Receiver: **full output voltage** Device: **abnormal operation**	If the device is receiving full voltage, but not operating properly, check the peak power draw of the device and ensure that the receiver can supply both the average power and the peak power requirements of the device. (Some devices draw short pulses of current) If the device peak power draw is below the receiver output power limit and the device is still not operating properly, check that the device power supply requirements are compatible with the receiver output voltage ripple.



*The LEDS are not on the surface of the generator, but rather underneath the casing on the board.

Power Receivers Matrix

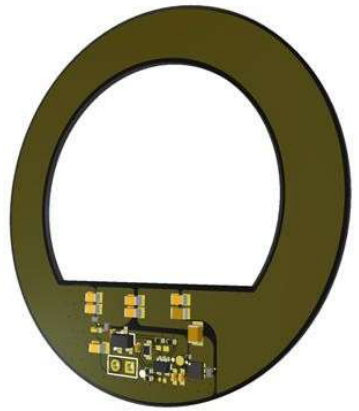
Receiver	Size		Output Voltage	Output Power
	[mm]	[inches]		
Rx1	Ø34	1.33	5V	0.1W
Rx2	Ø46	1.81	5V	0.2W
Rx3	Ø56	2.20	5V	0.3W
Rx4	Ø68	2.67	12V	1.0W
Rx5	Ø68	2.67	24V	1.0W
Rx6	Ø78	3.07	24V	2.0W
Rx7	Ø108	4.25	24V	4.0W
Rx8	Ø130	5.11	24V	7.0W

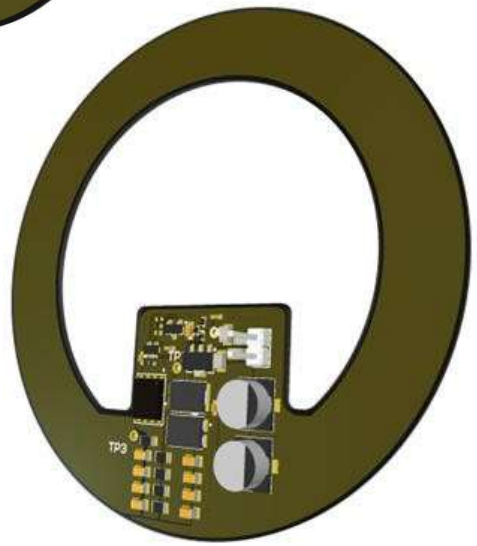
Please note the following:

- *The rated power outputs are minimums and assume a loop size of ~51"x18" and a voltage tolerance of +/-5%.*
- *Lower power outputs are likely as the wire loop approaches an aspect ratio of 1:1*
- *Higher power outputs can be possible on receivers Rx2, Rx3, and Rx6 as they are moved closer to the wire, or if the wire loop is extended to be longer and thinner. Note that if the loop is too thin the generator output may turn off.*

Rx1

Rx2 to Rx4





Rx5 to Rx8

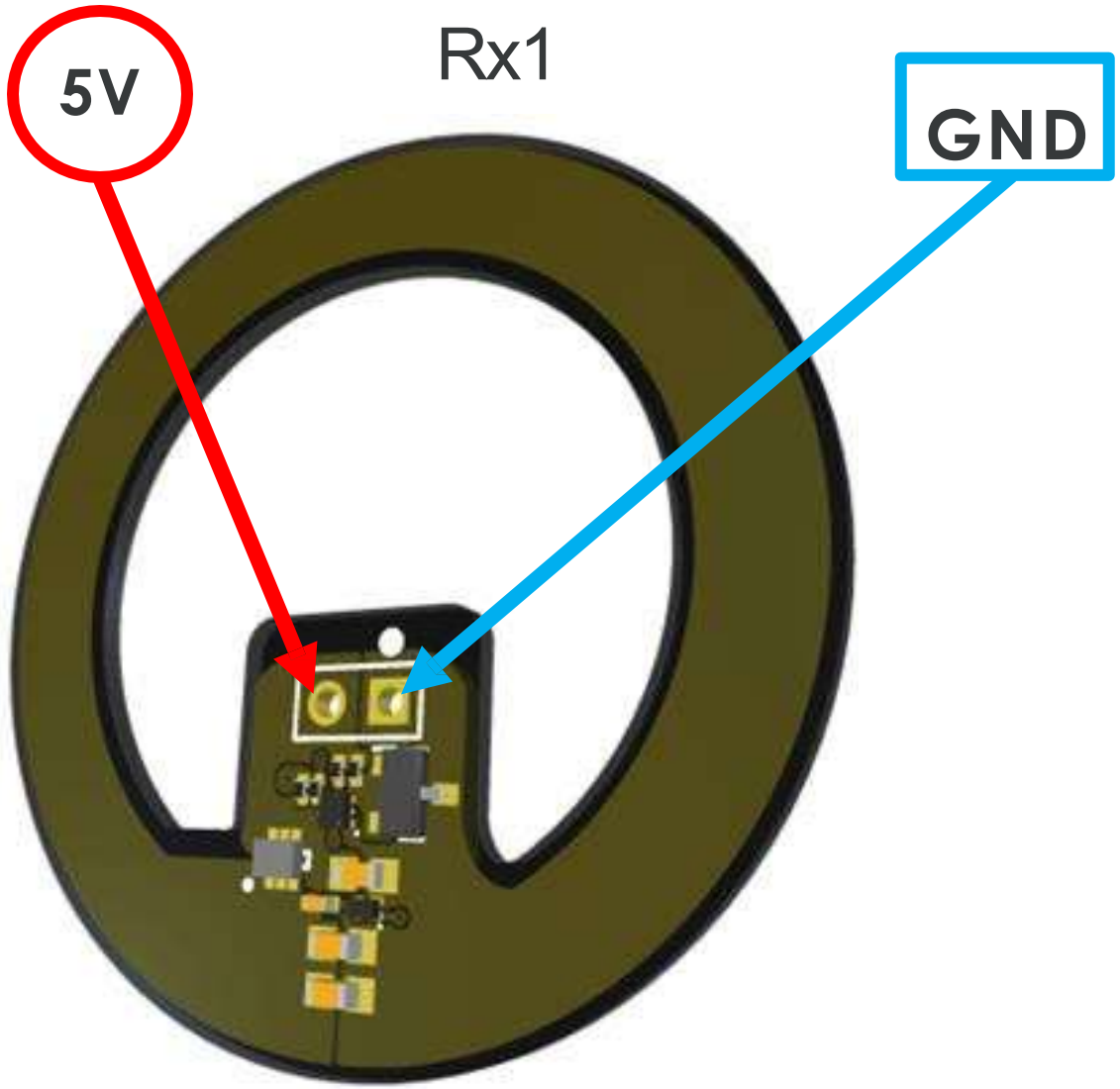
Power Output - 1

The output power from each receiver is available across positive(+) and negative(-) terminals.

The **Positive terminal** has a rounded shape, while the **Negative terminal** has a squared shape.

Any 2-pin header with a 0.1" pitch (2.54mm) can be soldered on these pads. *Example Part.*

The maximum output power is **0.1W for Rx1.**



Power Output - 2

The output power from each receiver is available across positive(+) and negative(-) terminals.

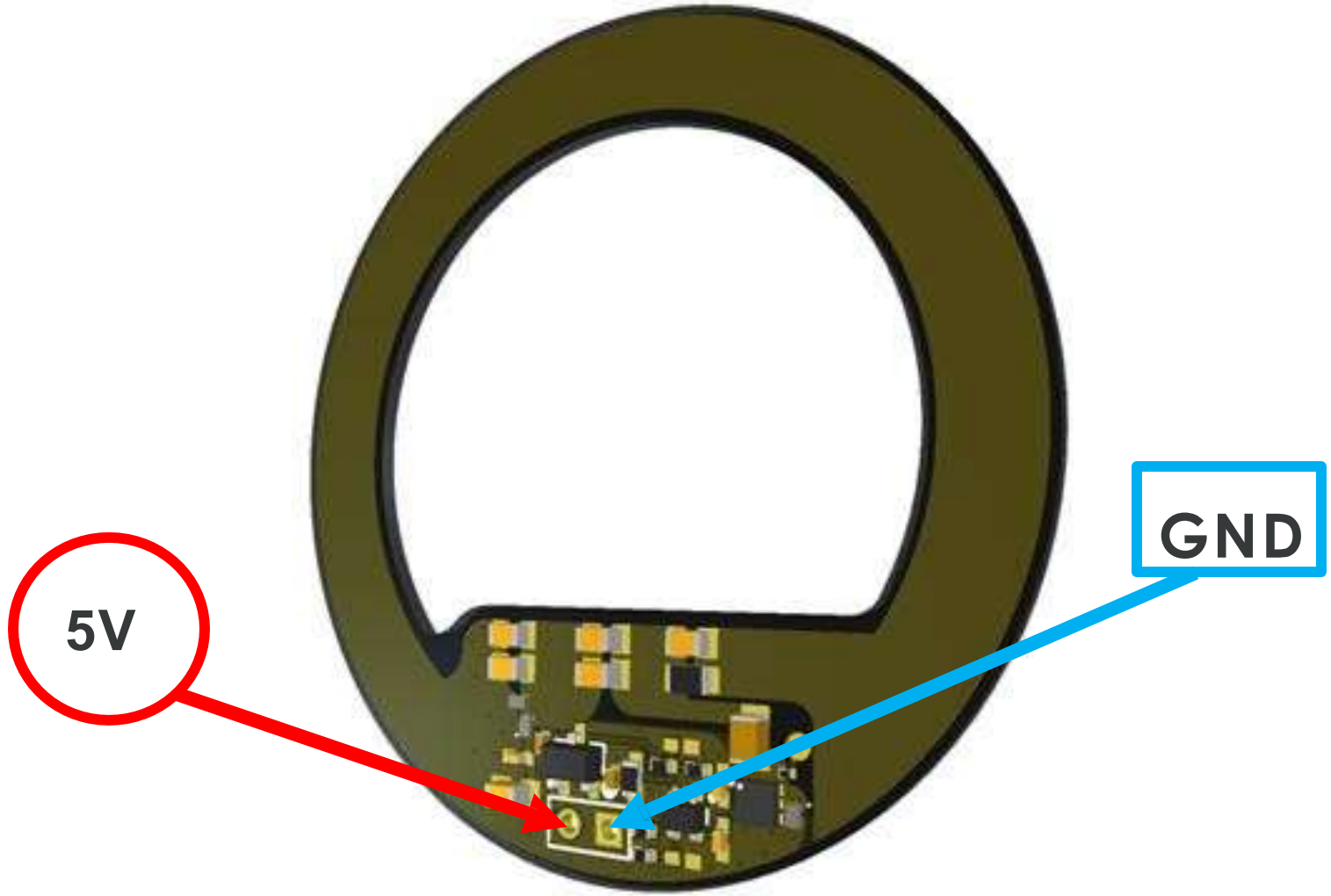
The **Positive terminal** has a rounded shape, while the **Negative terminal** has a squared shape.

Any 2-pin header with a 0.1" pitch (2.54mm) can be soldered on these pads. *Example Part.*

The maximum output power is:

- **0.2W for Rx2**
- **0.3W for Rx3**

Rx2 & Rx3



Power Output - 3

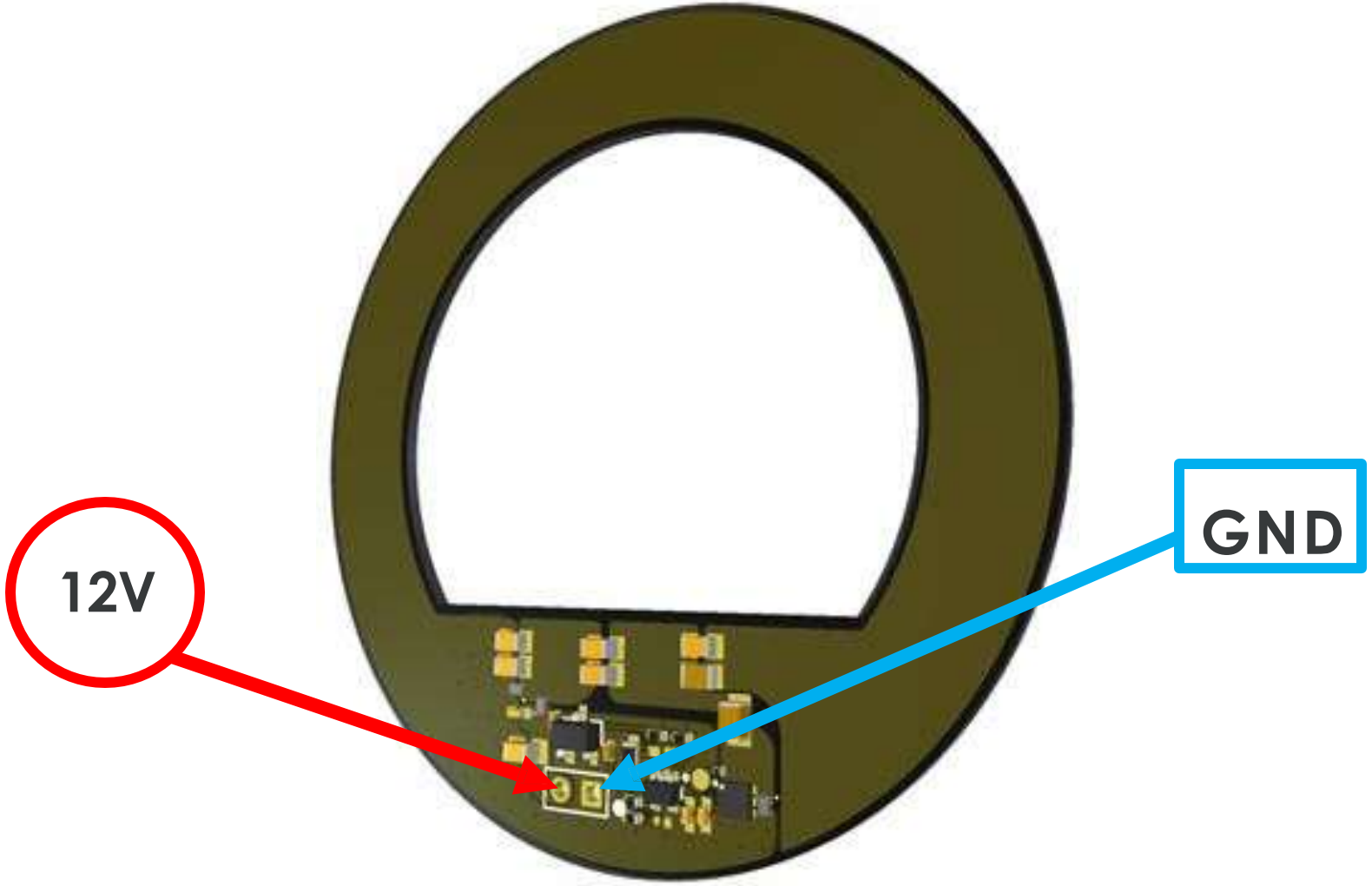
The output power from each receiver is available across positive(+) and negative(-) terminals.

The **Positive terminal** has a rounded shape, while the **Negative terminal** has a squared shape.

Any 2-pin header with a 0.1" pitch (2.54mm) can be soldered on these pads. *Example Part.*

The maximum output power is **1W for Rx4.**

Rx4



Power Output - 4

The output power from each receiver is available across positive(+) and negative(-) terminals.

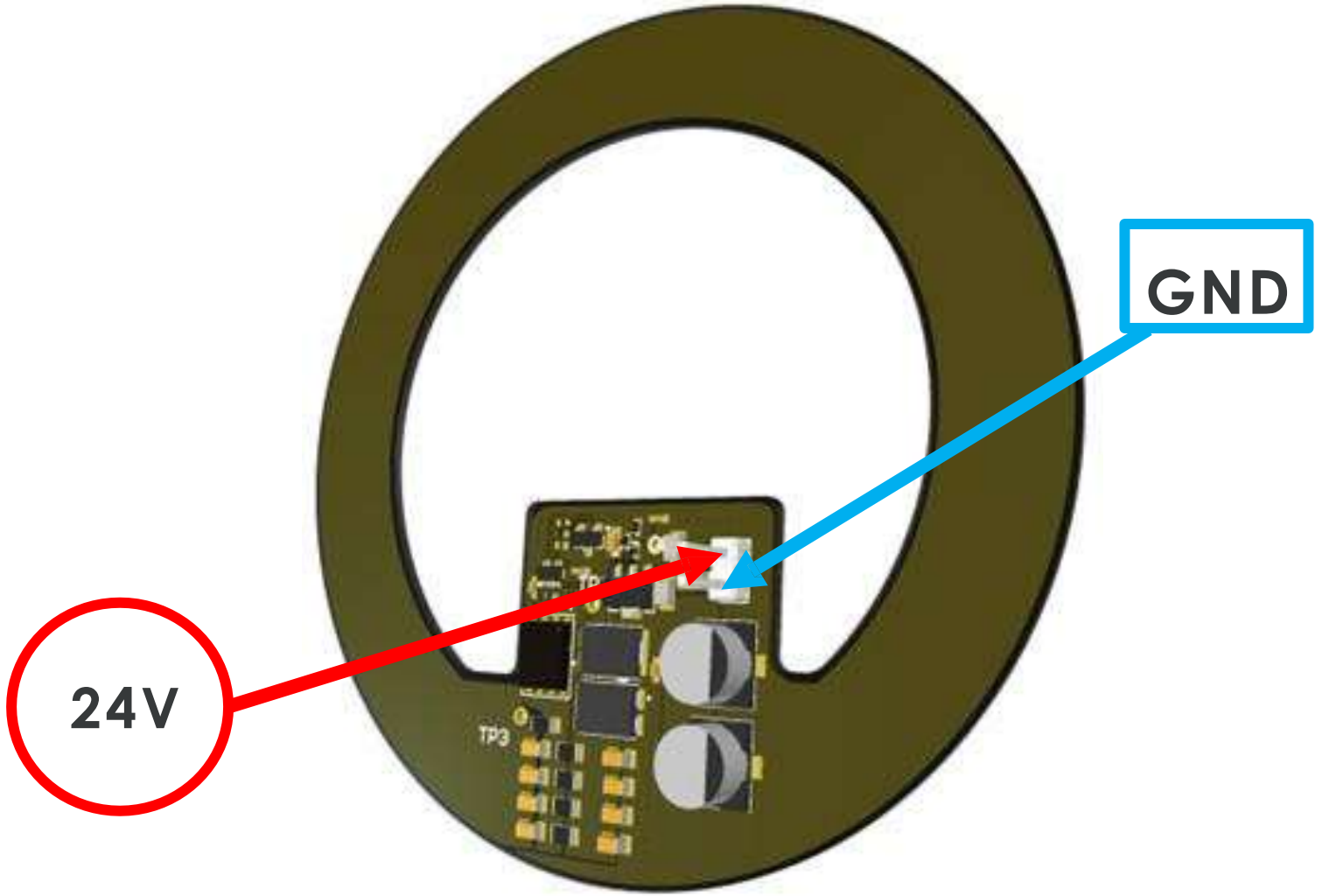
The **Positive terminal** has a rounded shape, while the **Negative terminal** has a squared shape.

Any 2-pin header with a 0.1" pitch (2.54mm) can be soldered on these pads. *Example Part.*

The maximum output power is:

- **1W for Rx5**
- **2W for Rx6**
- **4W for Rx7**
- **7W for Rx8**

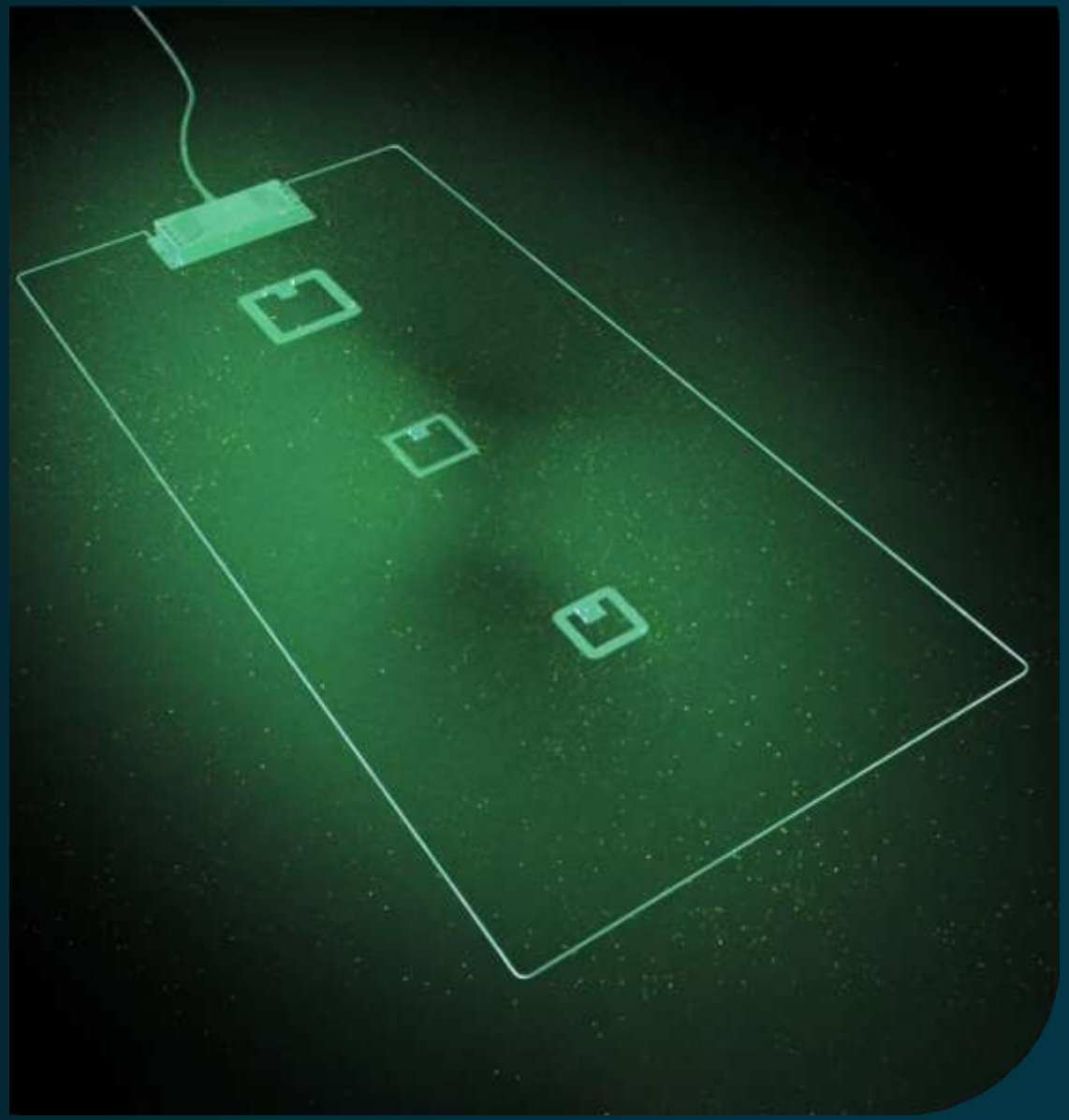
Rx5 to Rx8



Regulatory and Safety Information

Magnetic resonance wireless power has been approved by the FCC in various products. These regulatory certifications prove that the technology is safe and can be sold as a product.

However, this particular evaluation kit has not been tested and is intended to be used by professional R&D facilities for evaluation and testing purposes only.



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www.powercastco.com

Alan Neves, Director of Sales
aneves@powercastco.com

Charles Greene, Ph.D., COO&CTO
cgreene@powercastco.com

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