

Wireless Charge Module

Overview

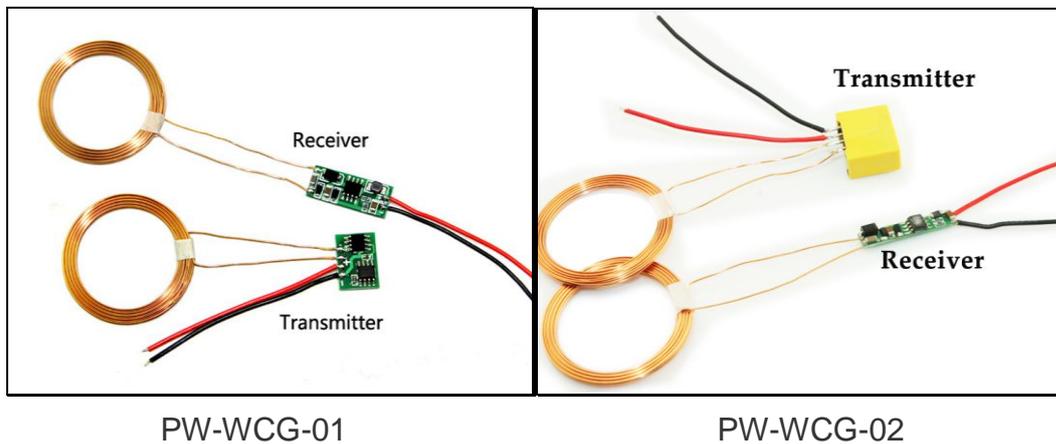
The Wireless Charging Module can be applied in electronic equipments in common use for close wireless charging or power supply. Consisted of a transmitter and insulation coil, it could serve as a replacement for the Wireless Power Supply with stable 5V output voltage and maximum 600mA output current. Its small size and insulation coil is more suitable for using in wireless project.

Model: PW-WCG-01 / PW-WCG-02

Features

- Stable power supply
- Insulation Coil
- Space-saving design

Preview



Working Principle

During any energy conversion there will be losses in going from one form to another. The magnitude of those losses is what dictates the practicality of any type of wireless charging. Magnetic or inductive charging, in particular has been effectively used for some time to power various kinds of biomedical implants. Presently it is the safest and most enduring method to accomplish the job of transferring power to the inside of the body. In these systems, oscillating current in an external coil of wire generates a

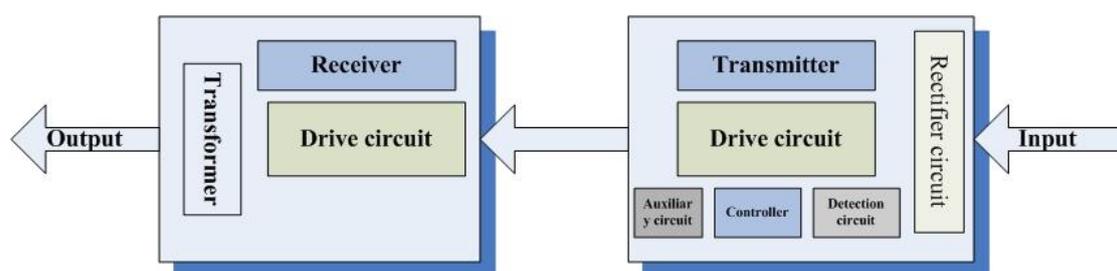
changing magnetic field which induces a voltage inside an implanted coil. The current resultant from this voltage can charge a battery or power the device directly.

While a moving magnet might just as well be used to externally generate the field, an external coil is simply more practical. Apple has just filed a patent for hardware which could make the shake to charge concept a reality, at least in theory. They claim a unique design incorporating internal moveable magnets, and a flat printed circuit board coil. Current chip efficiencies will however preclude practical implementation of this scheme for some time.

Many smartphone users will be wondering whether their near field communication (NFC) chip can be used to harvest power from a dedicated external source, or perhaps an ambient electromagnetic source like WiFi. In theory it is possible and such systems are on the market already, however not every NFC chip would be up to the task. To achieve maximum efficiency the system should be optimized for a use at a particular separation distance, angle of incidence, phase, and frequency such that it is in a resonant condition.

Resonance in an electromagnetic system can be likened to pushing a child on swing only when the swing is at the high point. Anywhere else and the energy transferred to the child will be reduced. If the separation distance is no more than a quarter of the wavelength, such a system can operate at efficiencies up to 35%.

One thing to keep in mind when considering wireless charging: If your charging system is throwing away nearly all of the 10 or so amps available from your wall outlet just to provide you with convenient at-a-distance charging, not only will charging be wasteful but it will be slow. Other wireless charging technologies relying on ultrasound or solar power are being developed, for example by Ubeam. For the time being, however, magnetic inductive charging technologies — spearheaded by the Qi consortium and smartphones like the Nokia Lumia 920 — such have taken the stage.



Specifications

Input Voltage	12.0 V
Input Voltage(limits)	13.5 V
Output Voltage	5V
Output Current(maximum)	600mA
Transmitter Coil Inductance	30uH



Transmit-receive distance	1-20mm
Transmitter	PW-WCG-01 12*7*1 mm / PW-WCG-02 13*10*8mm
Receiver	PW-WCG-01 15*10*1 mm / PW-WCG-02 25*10*1mm
Coil Diameter	:38mm
Coil Height	2mm

- we can be customized to 3.3V 5V 9V 12V etc

The transmitter coil and the receiving coil distance is 1 to 20 mm, if a small current may be appropriate to increase the number of turns of the receiver coil to increase the transmission distance. Test data:

Transmitter coil: copper wire diameter $\phi 0.6\text{mm}$ outer coil diameter 40mm, around the 20-turn, with the transmitting coil of the receiving coil, the transmitter coil connected to the 12V power: standby operating current of 300mA, the load is 4.2V600mAH polymer lithium battery.

Transceiver from the receiver output voltage of 4.2V lithium battery charging current if the receiving distance further need to increase when more coil turns, the practical application, to adjust the number of turns of the coil to adjust the power

Distance	Voltage	Current
1mm	5V	600mA
2mm	5V	450mA
3mm	5V	360mA
4mm	5V	310mA
5mm	5V	240mA
6mm	5V	210mA
7mm	5V	162mA
8mm	5V	150mA
9mm	5V	132mA
10mm	5V	120mA
11mm	5V	110mA
12mm	5V	70mA
13mm	5V	54mA
14mm	5V	41mA
15mm	5V	28mA
16mm	5V	19mA
17mm	5V	17mA
18mm	5V	10mA

Usage



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