

RFID OPERATIONAL DESCRIPTION

The RFID Tags:

An RFID Tag is made up of a microchip anchored to a strap, which is attached to an antenna and encased in a protective inlay. The actual chip is no bigger than a grain of sand. The antenna however is big enough to allow the tag to be read at a distance of 10 feet (3 meters).

Printronic Smart Label RFID printers use Passive Tags.

Passive Tags have no battery; instead, they draw power from the reader's antenna.

Electromagnetic waves transmitted from the antenna, induces a current in the tag's antenna; The Tag uses the energy to power the chip and talk back to the reader. When passive Tags are not in the presence of a reader they are not capable of emitting any radio signal by themselves.

RFID Printer:

Passive Tags have no data in them. They require an encoding step to prepare them for use.

Encoding can be done by a reader built into the RFID printer, or, any reader that is setup for the task.

When writing data to a tag, a reader has to address a tag individually. The tag must be within the proximity of the reader for the time it takes to program it. The tag must be able to draw sufficient power from the reader to enable the programming circuitry in the tag. . In RFID printers, tags are encapsulated in a roll of smart labels, at a close proximity of the antenna to utilize the advantage of near field electromagnetism for inductive coupling to the tag.

RFID Readers:

RFID readers use backscatter reflection, to energize tags and read their response. A reader uses its antenna to send digital information encoded in amplitude modulation (AM) waveform. A receiver circuit on the tag is able to detect the modulation field, decode the information, and use its own antenna to send an AM signal response.

To avoid collision between tags (reading multiple tags at a time), the printer uses software algorithm to allow tags to be sorted and individually selected.