



RFID Technology for the **Medical Device Industry**





When seeking to gain a competitive advantage over your industry counterparts, consider enhancing your medical device product lines with RFID technology. From asset tracking, product authentication, to agency compliance such as unique device identification, and more, HID Global's suite of RFID solutions for your enterprise offers innovative ways to meet your customer needs while maximizing your revenue stream.

Learn more below about how RFID technology works, its benefits, and how our products can help you become a market-disrupting industry leader in Medical Devices.

What is RFID?

RFID is an acronym for "radio frequency identification" referring to a technology where digital data is encoded in tags or smart labels. The information is captured by a reader via radio waves. RFID is similar to barcoding in that data is affixed to an item and captured by a scanner. RFID offers distinct advantages over barcodes.

ADVANTAGES OF RFID OVER BARCODES/QR CODES:

- Can be used without line-of-sight
- Many items can be read at one time
- Data can be written back to the item
- Higher storage capacity
- Cryptographic security protocol capability
- Support for environmental sensors
- Form factors that withstand harsh environments



Adding Value With HID RFID

The use cases for RFID in medical devices offer a wide range of opportunity for the device manufacturer to save money, improve patient safety, increase product sales and gain more in-depth knowledge on everything from inventory to customer product usage. Keep reading to learn how.

- **Asset Tracking and Traceability**

RFID technology allows for the tracking of medical devices from manufacturing and distribution through supply chain and inventory management at the hospital level. Once inside the hospital, RFID can track the number of sterilization cycles for a product to prevent the overuse of a device or activate an internal kill-switch to prevent the reuse of a single-use device. Lab specimens like those in fertility clinics that need to be stored in very cold environments are easily followed.

- **Product Authentication and Counterfeit Protection**

Device manufacturers can increase disposables revenue by ensuring their equipment will only function when using an approved disposable. This also increases brand strength by protecting against counterfeit product use. Embedded tags can ensure the device only functions when assembled properly to reduce human error.

- **User Authentication/Sign-In**

Verifying the identity of each person who uses a device ensures they are properly trained on the use of the equipment. It also provides a digital timestamp that can record the length of time a user has operated the device and can record the number of procedures a user has performed with specific equipment like advanced robotics.

- **Auto-Calibration**

Operating settings like torque, RPM's and speed can be embedded to eliminate human error and increase patient safety.

- **Unique Device Identification (UDI)**

Government agencies may require a medical device to have a unique device number. Manufacturers can marry the UDI of the RFID to fulfill this requirement. The tag lasts the lifetime of the device, there is no concern for faded laser etching or barcodes. For implantable devices, these can be scanned without having to remove the device from the patient.

How Does RFID Work?



TAG

Attached or imbedded in a device or consumable



READER

Communicates with the tag via radio waves



DATABASE

Allows the storage and evaluation of the tag data



APPLICATION

Executes actions based on the data

Advanced Capabilities

DBOND

Direct Bonding (DBond) is a patented technology that directly adheres an RFID wire antenna to a micro-sized chip eliminating additional material. This allows for miniature products and higher durability.



STERILIZATION

HID offers an RFID solution for all methods of sterilization:

- Ethylene Oxide (EtO) Gas
- GammaRay/E-BEAM/X-Ray-Special
- Autoclave — Steam & Dry Heat
- Sterrad — Vaporized Hydrogen Peroxide Gas

CUSTOMIZATION

- Fully customizable tag design
- Custom injection molding
- Dual-source from a single company alleviates supply chain shortages

RFID COMMUNICATION

Tags contain an integrated circuit and an antenna used to transmit data to the reader. There are three main types of RFID systems each communicating on a different frequency. Choosing the right frequency depends on the use case. As the frequency increases, the amount of data transferred per second increases, but the ability to penetrate materials diminishes.

THE THREE TYPES OF FREQUENCY ARE:

- **Low Frequency (LF)** – Operating range 125 KHz. Short transmission range of several inches. Generally unaffected by environmental influences such as water and contact with metal.
- **High Frequency (HF)** – Operates at 13.56 MHz. Short transmission range, but increased data rate and security, such as the type that can be used for payments or product authentication. NFC or Near-Field Communication tags are a type of HF tag.
- **Ultra High Frequency (UHF)** – Operates at ETSI (865-868 MHz) or FCC (902-928 MHz) depending on world region. UHF is also called RAIN® RFID. Transmission range is several meters and tags can be read in bulk.

Why Partner With HID?

HID Global creates trusted identities for customers around the globe. Remaining chip agnostic gives us the flexibility to provide our customers with a broad range of solutions to solve their challenges. Medical devices demand exacting standards because patient lives are at stake and we meet those rigorous standards. HID creates fully customized RFID designs to fit into OEM products that can be embedded during the manufacturing process. HID sales consultants and engineers act as trusted advisors working with our customers to find the ideal design and chip for the use case. Fully automated, HID owned production ensures stable, high volume product quality over many years. Device approvals can take months and even years. HID Global is a stable, reliable company that will be here when the product is ready to go to market.

For more information go to our website at hidglobal.com or contact your sales representative at tagsales@hidglobal.com.





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