

# ***RFID Introduction***

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**TECHNOLOGY:** ID Recall Systems is happy to offer the latest in RFID technology. We supply tags and the hardware to read and write them. We have been working diligently for several years to find the best RFID solutions for our customers as well as developing many of our own solutions. We also work with a number of strategic suppliers. We guarantee compatibility with other library automation vendors. We will perform testing to verify compatibility when any doubt exists.

**TAGS:** The recommended standard hardware for library RFID tagging is 13.56 MHz ISO15693. And the recommended data format for new libraries is the “Open Danish Model.” (See definition below)

These tags are also known as High Frequency (HF) Tags. They have a better read distance than Low Frequency (LF) tags and are less directional than Ultra High Frequency (UHF) Tags. This makes them reasonably well suited for library inventory management and security. The maximum readable distance to the tag is 10 to 20 inches depending on the size of the tag.

Common sizes are 1-1/2 inch circular for CD/DVDs and 2x2 inch square for books.



Shown: Typical RFID inlays - the electronic part of the label. This part is made by electronics companies such as Philips and Texas Instruments. These include a tiny chip and an outer coil antenna. These inlays will then be integrated into a paper label allowing them to be stuck in a book or on a CD/DVD.

**COST:** RFID Tags and hardware have come down in cost dramatically. They are very complex devices, but mass production has made them very reasonably priced. The finished labels can be purchased wholesale at roughly \$0.50 each in large quantities. Thus for a medium size library with 80,000 titles this equals \$40,000. A high quality desktop RFID reader may cost about \$1000, and consists of a square or rectangular antenna pad that sits on the desk and a small box the size of ones hand. The box contains a radio transmitter and receiver with a USB connection (or Serial Port) connection to your computer. Security Gates that read RFID tags may cost around \$15,000 including installation for a dual aisle system with 36 inch walk ways.

**PLACEMENT:** Tags should be placed in the back lower part of the book close to the binding. The exact distance from the bottom of the book should be randomly offset an inch or two. This will reduce the chance that labels in adjacent items will be exactly aligned. When such alignment occurs, the signal from the labels may be unreadable.

**CD and DVDs:** The circle hub tags for CDs and DVDs have a very short signal range. (5 to 10 inches maximum) This is so for two reasons. (1) The tag is small and (2) Metal oxide used in the

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coating of the media interferes with the signal transmission. Also be aware that some standard multi-item CD/DVD cases cause exact alignment of adjacent RFID tags and will not work at all. The options in that case would be to only tag one item in the set or obtain special RFID friendly cases that offset each item.

**Open Danish Model:** The memory in the RFID tag is like any other computer memory. It is a blank canvas that can be filled with content in any manner imaginable. Therefore it is advisable to organize the information on the tag to be the same format as most other libraries. This will facilitate interlibrary loans and moving books freely among libraries in a consortium. ID Recall Systems software will default to using the “Open Danish Model”, but will also support custom data formats in use by many different libraries.

**CONVERSION:** There are two basic methods to convert a library to RFID: (1) All-at-once or (2) gradually. The all-at-once approach involves setting up conversion stations and retagging your entire collection in a short period such as over a weekend. The gradual approach would be to re-tag items as part of the normal circulation process.

**RFID and the CheckEze:** When you plug in any of our supported RFID readers into any variety of CheckEze system it will automatically be recognized and used just like a barcode scanner. Blank RFID labels will be detected and programmed to match the codabar or code39 barcode label on the item. Additionally the CheckEze software has two built-in utilities to assist with high speed RFID conversion and inventory.



Other RFID terms	Meaning
AFI byte	A number you can write to the tag to indicate the tag's purpose. Often used for security.
EAS bit	Another method that may be used for security. This is only supported in Tags made by Philips Electronics.