A GUIDE to BUYING RFID TAGS & EQUIPMENT

atlasRFIDstore.com

RFID BUYER'S GUIDE

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RFID BUYER'S GUIDE

INTRODUCTION

Due to the Walmart and Department of Defense mandates in the early 2000's, the use of RFID technology began to rise in popularity. At that time, tag, reader, and antenna options were fewer; so, the selection process was much simpler. Today, there are hundreds of products, allowing for system customization so that each application is set up for success.

This guide is designed to get the reader thinking about the information needed to make a knowledgeable purchasing decision, including considerations such as reader power options, size limitations for antennas and tags, connection options common for each piece of hardware, and many more.

The first step is to get a 360-degree picture of what needs to be accomplished or what problem needs to be solved. By understanding the overall business need, scope of the project, budget, and other aspects, the types and amount of equipment required will start to take shape.

Take a few moments and answer the questions relevant to your application. When you're finished, please send your completed answers to sales@atlasRFIDstore.com, or fax it to 212 993 6075. If you have any questions or would like assistance with product recommendations, please contact us.

OVERALL APPLICATION QUESTIONS

01 What is the business problem/goal you are trying to solve/achieve?

02 What is your current system for aiding this problem?

03 Describe your desired application.

04 What is the timeframe for deploying this application?

05 What is your budget for the project?

06 In which country will you be using RFID?

OVERALL APPLICATION
CONTINUED

07 Which items/assets would you like to tag and track?

08 How many read points or read zones do you need?

09 Where do you plan on placing the reader, computer equipment, antennas, etc.?

10 Do you require a FULL solution (including software & installation), or, are you looking to purchase hardware/tags only and implement the solution yourself?

INTRODUCTION TO RFID TAGS

RFID tags are available in many shapes, sizes, read ranges, and more. Because there are so many RFID tags available, it is imperative to narrow down the search as much as possible in order to find a tag that fits within the requirements of the given application. Answer the questions below to get a better understanding of which type of tag will work best for your application. If you will be tagging more than one type of object, either try to find a tag that will work for all objects, or answer the questions for each object to be tagged.

The first step in determining which type of tag to use is to understand if you will need a hard RFID tag or an RFID inlay/label. Check out the graphic below to decide whether to move on to the RFID Hard Tags section or the RFID Inlays/Labels section.

For more information on tags, check out our Guide to UHF RFID Tags.

INTRODUCTION TO
RFID TAGS

RFID INLAYS/LABELS

RFID Inlays/Labels are tags that are usually peel and stick, unobtrusive, and can support printing of human-readable and barcode information. These tags are more commonly used than hard tags due to cost, and are basic with regard to features. These tags vary in size, read range, printability, adhesive choices, and more.

PROS

Low cost.

Easy to use.

Can be used with an RFID printer for mass printing/encoding.

CONS

Not rugged or weather resistant.

Adhesive attachment method only.

Very few metal-mount versions available.

RFID HARD TAGS

RFID Hard Tags refers to tags that are constructed from materials like plastic, ABS, ceramics, or polymer. These tags are not paper-thin like inlays and labels; they are usually designed for specific application requirements such as increased read range, embedding into objects, ruggedness, and increased heat and cold resistance.

PROS

Depends on the tag - (i.e. increased read range, ability to be embedded, withstand extreme temperatures, autoclavable, etc.)

Variety of attachment methods.

CONS

More expensive than RFID inlays/labels.

Labeling and encoding is a slow, manual process. Additionally, there are some types that cannot support a label.

RFID INLAYS/LABELS
QUESTIONS

11 How many items will you be tagging?

12 How long will the tags need to last?

13 Size limitations (i.e. the tag can be no larger than x by y inches)?

14 What type of surface will you be tagging? On metal, plastic, wood, etc.?

15 If using an RFID printer, which RFID printer will you be using?

16 Any excessive environmental conditions to consider? (i.e. excessive heat, cold, moisture/liquids, impact, vibrations, UV Rays, corrosive elements, etc.?

RFID INLAYS/LABELS
CONTINUED

17 Is high-temperature adhesive required?

18 Do you require any user memory (i.e. will the tag have to store something other than the unique product code?

19 Do you require custom coding or printing?

20 Are perforations between labels needed?

RFID HARD TAGS
QUESTIONS

21 How many items will you be tagging?

22 What type of surface will you be tagging? Metal, plastic, wood, etc.?

23 How long will the tags need to last?

24 What read range do you require?

25 Size Limitations (i.e. the tag can be no larger than x by y by z inches)?

26 Any excessive environmental conditions to consider? (i.e. excessive heat, cold, moisture/liquids, impact, vibration, UV rays, corrosive elements, etc.)?

RFID HARD TAGS
CONTINUED

27 Method of attachment? Adhesive, epoxy, rivets/screws, cable ties, etc.?

28 Do you require any user memory? (i.e. will the tag have to store something other than the unique product code)

29 Do you require any custom coding or printing?

30 What is your target price per tag?

INTRODUCTION TO RFID READERS

RFID readers serve as the brain of the system, and the one chosen will set the tone for the application. Three general types of readers exist - handheld readers, fixed readers, and reader modules. Read about each below to help decide which may be ideal for your application. Then, click on the reader type to be directed to the relevant section of the guide.

If you require more than one type of reader for an application, be sure to read through the related sections and answer the questions.

For more information on RFID readers, checkout our Intro to RFID Readers Basics & Features.

INTRODUCTION TO RFID READERS

FIXED READERS

Fixed readers are immobile, high-performance devices used for reading and writing tags in all types of applications. Two types of fixed readers exist, non-integrated readers that connect to antennas via coaxial cable, and integrated readers that consist of a reader and antenna combined in one device. Fixed readers are easy to setup and use out of the box, and, depending on the reader, anywhere from 1 antenna up to 64 antennas may be connected (with the use of auxilliary multiplexer devices).

HANDHELD READERS

Handheld readers are mobile devices that are great for locating tagged items or taking inventory. Handheld readers have an integrated antenna and can either have an onboard computing device, or connect to a personal computing device like a smartphone or tablet. Like fixed readers, handheld readers are relatively easy to setup and use out of the box.

READER MODULES

RFID reader modules are the computing portion of the RFID reader. Typically, they are integrated into an existing product design, or they are used as the base to create a unique RFID reader product. RFID reader modules cannot be used out of the box because they are not finished products; they require additional engineering to make them operational.

RFID FIXED READERS
QUESTIONS

31 In what country will you be using the RFID reader?

32 Where will the reader be mounted?

33 How quickly will the tags be moving through the read zone?

34 How many tags might need to be read at one time?

35 How many antennas do you plan on using with this reader?

36 How will the reader be powered?

RFID FIXED READERS
CONTINUED

37 Any excessive environmental conditions to consider? (i.e. excessive heat, cold, moisture, impact, etc.)

38 Will the reader be connected directly to a host computer or placed on a network?

39 Will you need any GPIO functionality? (i.e. Light-stacks, Motion Detectors, etc.)

RFID HANDHELD READERS
QUESTIONS

40 In what country will you be using the RFID reader?

41 Any excessive environmental conditions to consider? (i.e. excessive heat, cold, moisture, impact, etc.)

42 Which operating system do you prefer? (i.e. Windows, Android, iOS, etc.)

43 Will you be using your mobile computing device (e.g. smartphone, tablet, etc.) or will the mobile RFID reader need its own computing system?

RFID READER MODULES

QUESTIONS

44 Have you read our Reader Module Guide?

45 In which country will you be using the RFID reader module?

46 How many tags might need to be read at one time?

47 How many antennas do you plan on using with this reader module?

INTRODUCTION TO RFID ANTENNAS & CABLES

Antennas and antenna cables are essential in systems with a non-integrated fixed reader or a reader module. (Handheld readers and integrated fixed readers are manufactured with an onboard antenna, so purchasing an antenna is not necessary with these two types.) Antennas have quite a few different distinguishing characteristics like size, gain, and polarity; so, it is important to first understand what the application requires before selecting one.

Coaxial cables come in different lengths, insulation ratings, and connector types (which correlate directly with the connectors on the chosen reader and antennas). In order to choose the appropriate cable for the application, it is vital to choose the reader and antenna first.

Answer the following questions to narrow down which antennas and cables will work best for your application. For more information on antennas, check out #9 Tactics for Choosing an RFID Antenna.

For more information on coaxial cables, check out A Guide to Cables, Connectors, and Adapters.

ANTENNAS & CABLES
QUESTIONS

48 How much read range do you need?

49 Is it possible to always know or control the orientation of the RFID tag relative to the antenna's position in your application?

50 What would the ideal read zone look like (in terms of dimensions)?

51 Will the antenna be mounted indoors, outdoors, or on a vehicle?

52 Any excessive environmental conditions to consider? (i.e. excessive heat, cold, moisture, impact, etc.?)

53 Size limitations (i.e. the antenna can be no larger than x by y by z inches)?

ANTENNAS & CABLES

QUESTIONS

54 Do you need mounting brackets?

55 Which reader are you using?

56 Which antenna(s) are you using?

57 How far will the antenna(s) be from the reader?

58 Will any cable need to bend more than 45 degrees to connect to any antenna?

INTRODUCTION TO RFID PRINTERS

RFID Printers not only print, but also encode, RFID labels or inlays. These devices, with the addition of software, can automatically print and encode a large roll of tags quickly and effectively. Applications using labels or inlays that have become too difficult or numerous to manually encode are best-suited for RFID Printers.

Like everyday, printers need ink, RFID printers use ribbon to print text or graphics on tags. The type of ribbon to be used depends on the tag's face material. Tags with a paper face will require a different ribbon than labels with a poly or plastic-type face.

The addition of printer software allows for standard features (e.g. label design) and an easy-to-use interface rather than having to write custom integration software code. Answer the questions below to determine which type of printer and printer ribbon to use for your application as well as if software will be needed.

For more information on RFID Printers, check out the blog posts When to Invest in an RFID Printer, and Layers of RFID Printers.

RFID PRINTERS
QUESTIONS

59 What do you estimate your average printing volume to be per day/week/month?

60 Size (i.e. how large are the tags that you are printing - x inches by y inches)?

61 How high of a resolution do you need on the printed label?

62 Do you need a network addressable printer, or will the printer connect directly to a host computer?

63 Do you need Wi-Fi capability?

PRINTER LABELS & SOFTWARE

QUESTIONS

64 Will you be printing Paper or Poly faced tags?

65 What exact printer model are you using?

66 Will you write custom integration software code to interface with the printer, or will you require 3rd party software?

67 What functionality do you need from your printer software?

68 How many printers will you be using with the software?

CONTACT THE RFID EXPERTS

If you have any additional questions about if RFID is right for your application, or about RFID tags, don't hesitate to contact us.

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