

3D Systems

The RFID buyer's guide

Planning RFID for stock and asset tracking

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2. How an RFID system works
3. Choosing tags and readers
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1 What RFID does

RFID (radio-frequency identification) puts a small chip and antenna on each item. A reader sends a radio signal and every tag in range answers with its own number. Items are identified without scanning each barcode, and without seeing the label.



No line of sight

Tags are read inside cartons, under garments and on high shelves. Nothing has to face the reader.

Many items in one pass

Walk a rack or point at a carton and every tag in range is read at once.

Each item has its own number

A barcode names the product type. An RFID tag names the single item, so you know which ones you have and where they were last read.

Counts more often

Faster counts mean you can count more often with the same team, so stock records stay close to the shelf.

Where barcodes are enough

Low-cost items you rarely count, or a checkout that already works well with barcodes. Many stores use RFID for counts and keep barcodes at the till.

2 How an RFID system works

An RFID system has four parts. We help you choose each one, and support the whole system.

Tags on items — **Reader** — **RFID software** — **Stock / ERP / assets**

1
Tags
A chip and antenna in a label, hang tag or hard tag, chosen for each kind of item and tested on your products.

2
Readers
UHF handhelds for counts, receiving and audits; HF/MIFARE card readers on the POS for staff and loyalty cards.

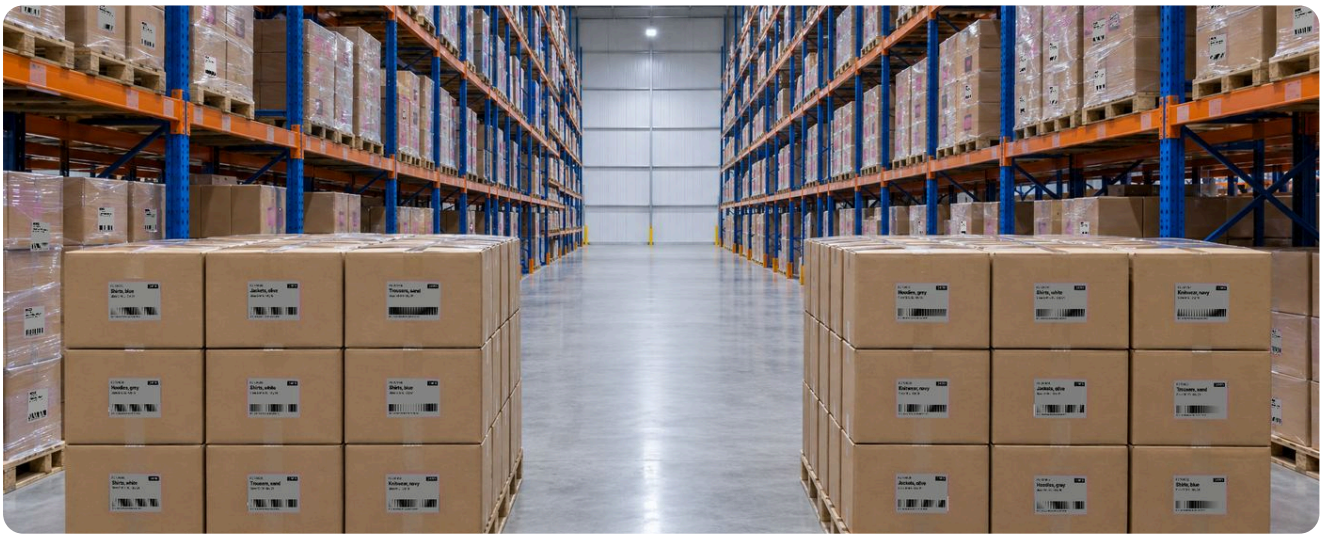
3
Software and integration
Turns reads into counts and sends them to your stock, ERP or asset system.

4
Local rollout and support
Site survey, tag tests, setup, training, spare parts and technical support.

UHF, HF and NFC

UHF RFID
Reads from a distance and many tags at a time. For stock counts, receiving and asset audits.

HF and NFC (incl. MIFARE)
Reads at very short range, one card at a time. For staff cards, loyalty cards and payments.



3 Choosing tags and readers

The right tag depends on the item and the surface it sits on. We test tags on your real products during the site survey.

Tag or reader	Where	Notes
Labels	Cartons, boxes and packs	Printed and encoded like a normal label
Hang tags	Clothing and footwear	Joins or replaces the price tag
Hard and laundry tags	Linen, uniforms, returnable crates	Built for washing and rough handling
On-metal tags	IT equipment, metal furniture, tools	Metal reflects the signal; these tags are made for it
Urovo DT50(P) handheld	Stock counts, receiving, asset audits	UHF, Impinj E710 chip, 5.7" screen, IP67, 9000mAh battery
Urovo UPad with UHF RFID	Counter and floor tablet	Optional UHF RFID module, Impinj chip with Gen2X
Posiflex MIFARE reader	Staff and loyalty cards at the till	Built in or a side attachment; MIFARE Classic 1K and Ultralight

Metal and liquids affect the radio signal: plan on-metal tags and tag positions for those items. Urovo devices are supplied in Saudi Arabia.





4 Connecting to your systems

RFID is only as useful as the data it feeds. Before a pilot, agree these points with your IT and operations teams.

- [ ] An item master with a unique code for every product or asset
- [ ] Which items get tags first, and who applies them (supplier or in-house)
- [ ] How each tag number links to the item code in your system
- [ ] How counts go back to the stock, ERP or asset system (file, database view or API), and how often
- [ ] Who reviews stock differences after each count
- [ ] Wi-Fi coverage for handhelds in stockrooms and on the floor

> **We map the fields with your IT team during the pilot, so counts land where your team already works.**



5 Rollout checklist

- [ ] **Site survey**
  list the items and areas to track, and how often you count today
- [ ] **Tag tests**
  try tags on your real products, including metal and liquids
- [ ] **Readers**
  choose handhelds, POS card readers or other readers for each job
- [ ] **Integration**
  link tag numbers to item codes and send a test count to your system
- [ ] **Pilot**
  one store, one stockroom or one floor, alongside your current process
- [ ] **Training**
  show staff how to tag, count and check differences
- [ ] **Rollout**
  the rest of the site, then other branches
- [ ] **Support**
  spare devices, a support contact and a reporting routine



6 Questions to ask any RFID supplier

1. Do you use UHF, HF or NFC for this job, and why?
2. Which tags do you recommend for each of our items, and will you test them on our products?
3. How do you handle metal items and liquids?
4. Which readers do you supply, and who services them locally?
5. How do tag numbers link to our item codes?
6. How do counts reach our stock, ERP or asset system?
7. Can staff and loyalty cards work on our existing POS?
8. Who trains our staff, and who supports us after go-live?
9. Where do spare devices come from, and how fast?
10. Can we start with a pilot before a full rollout?



7 Pilot and business-case worksheet

Fill this in with your own numbers. It shows what counting costs you today, so you can compare with a quotation.

Sites	____
Items to tag per site	____
Full stock or asset counts per year	____ (A)
Staff hours per count, per site	____ (B)
Staff cost per hour	____ (C)
Items found missing or miscounted per count	____
Deliveries checked per week	____

> **Staff cost of counting per site each year = A × B × C.**

Your pilot

Pilot site and area	____
Items to tag	____
Readers needed	____
Success measure	e.g. time per count, count against a manual check

Plan your pilot with 3D Systems

We supply RFID readers and set up and support RFID projects in Saudi Arabia and the UAE. Tell us what you want to track and we will plan a site survey and a pilot.

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Item names, numbers and prices on the photos are illustrative.