



THE INTERMEC®

GUIDE TO

**RFID
READER**

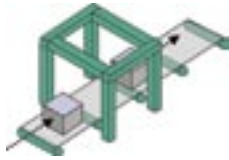



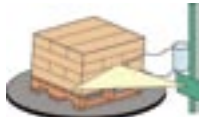








SELECTION



Intermec®
expect MORE™

RFID Reader Options by Application

With the variety of form factors and functionality of RFID readers available today, the application should be the determining factor in reader selection. For example, some items, due to their bulk, will always need to be transported via forklift truck, which would necessitate overhead scanning for volume processing, and handheld mobile scanning when reacting to an exception. The chart below outlines best-fit reader options for some of the most common RFID reading applications.

Application	Description	Reader Options
Conveyor Reading 	Recommended for case-level and each-level tracking, conveyor reading is best achieved with multiple antennas. Recyclable plastic containers (RPCs) with embedded RFID tags have also proven effective in conveyed reading applications.	IF4 
Dock Door or Portal Reading 	Ideal for pallet-level reading, portal readers work in conjunction with presence detectors and an RF-reflective surface, such as metal mesh. The metal mesh, which surrounds the doorway, prevents transmissions from adjoining doors being read in error.	IF5 
Stretch Wrap Station Reading 	The stretch wrap station provides a fixed reader ample time to identify and categorize items on pallets and to associate them with RFID-enabled pallets.	IF4 
Overhead Reading 	Using a fixed reader and a single set of antennas that radiate downward to an RF-reflective surface, bulky single items and pallets, with RFID tags oriented skyward, can easily be read while traveling on a forklift truck.	IF5 
Handheld Mobile Reading 	There is always a need for exception-based scanning. Applications requiring a search for a specific item are made easier by the mobility of a handheld mobile RFID reader because the user can bring them to a specific location to execute a search.	IP3 1555 
Forklift Reading 	The mobility and flexibility offered by an RFID-enabled forklift mounted computer can be a good alternative to portal reading applications. It is especially well-suited for reading pallet-mounted or pallet racking tags.	CV60 IF4 
RFID Printer Reading 	While often overlooked as a reader, RFID printers do contain a reader module that allows the printer to verify the data commissioned to the smart label insert at the time of printing.	PM4i 

Expect More Choice with Intermec RFID Solutions - Intellitag RFID Readers

IP3 Portable Reader



The IP3 Intellitag® reader is an accessory handle for attachment to the popular Intermec 700 Series Color mobile computers. The IP3 was the first-of-its kind to combine the power of a handheld mobile computing device with three radios, and the ability to read and write to RFID tags. It allows the user to take the technology to the work—whether it's on the shop floor, the store floor or the receiving dock, whenever it's more practical to bring the read/write device to the tagged object rather than moving tagged objects passed a fixed reader.

Typical Applications: Exception scanning and re-writing.

Specifications

Dimensions: 3.7"W x 7.0"H x 5.2"D
Operating Temperature: -4°F to 131°F
Frequency Range: 915 MHz
Connection to Network: 802.11b via the 700 Series Mobile Computer
Air Interface: ISO, upgradeable to EPC
Availability: now
Part Number: IP3UA1104-Standard configuration with Lithium Battery, 915MHz, FCC

IF4 Fixed Serial Reader



The IF4 fixed serial reader is a "peripheral device" specifically designed with a RS232 port, which provides a cost effective solution for implementing RFID by attaching the reader to a programmable logic controller (PLC). When identifying relatively small numbers of items at a time, such as boxes traveling on multiple conveyor belts, cost savings can be achieved by deploying a single IF4 reader with four antennas instead to installing four separate readers with one antenna each.

Typical Applications: Conveyor scanning, stretch wrap stations, work-in-process monitoring in supply chain management for retail operations, industrial manufacturing, and logistics.

Specifications

Dimensions: 7.5"L x 2.6"H x 5.3"W
Operating Temperature: -4°F to 131°F
Frequency Range: 915 and 2450 MHz
Air Interface: ISO, upgradeable to EPC
Availability: now
Read/Write Capable: yes
Part Number: ITRF915001

IF5 Fixed "Smart" Reader



Considered a "smart" reader, custom applications running on the IF5 enable it to filter information from tags, as well as monitor external sensors and control audible and visual indicators, without the expense and potential additional failure point of a separate server "box" that is often required by other RFID scanning solutions. The IF5 reader is factory configured to operate in two of the three RFID frequency bands: 869MHz (Zone 1, primarily Europe), and 915MHz (Zone 2, primarily North and South America). Rules for operating in the third zone, 950MHz (Zone 3, primarily Japan and Asia), are still being written.

Typical Applications: Dock door scanning and overhead scanning in supply chain management for retail operations, consumer goods and industrial manufacturing, and logistics.

Specifications

Dimensions: 14.0"L x 9.1"W x 3.75"H
Operating Temperature: -13°F to 158°F
Frequency Range: 869 and 915 MHz
Connection to Network: Ethernet, 802.11G or 802.3 wired
Air Interface: ISO and/or EPC
Availability: Q4, 2004
Read/Write Capable: yes
Part Number: IF5UA2030000004-RFID Reader, Fixed, EPC global Gen 2 only, FCC, Ethernet (one of multiple unique configurations)

Sabre™ 1555 Bar Code and RFID Portable Reader



The Intermec Sabre 1555 is an extremely powerful data collection device capable of scanning bar codes as well as reading and programming RFID tags and labels. The Sabre 1555 combines a laser scan engine for reliable bar code scanning up to 5m (7ft) with the capacity to read/program RFID tags up to a 2m (6ft) range. By tethering the Sabre 1555 to an existing Intermec handheld or vehicle-mount computer, RFID read/write capability can be inexpensively added to the enterprise.

Typical Applications: Mobile RFID reading and programming support for all industry applications served by both handheld and vehicle-mounted computers.

Specifications

Dimensions: 5.75"L x 8.75"H x 3.5"W
Operating Temperature: 32°F to 122°F
Frequency Range: 915 and 2450 MHz
Connection to Network: RS232
Air Interface: ISO
Availability: Now
Part Number: 1555E0902040001 (one of multiple unique configurations)

CV60 Vehicle Mount Computer with Intellitag



Using an internal single-antenna module, an external 4-antenna module, or an external tethered handheld, the CV60 is the first RFID-enabled vehicle mounted computer on the market with full PC functionality and a bright 12" color touch screen display. It delivers the ultimate flexibility in RFID supply chain management because it is able to perform RFID reading and programming right where the data is—at the dock, on the warehouse floor, in the trailer or in the yard.

Typical Applications: Picking, put away, cross docking, and receiving for retail operations, consumer goods and industrial manufacturing, and logistics.

Specifications

Dimensions: 10.7"H x 13.4"W x 3.7"D
Operating Temperature: -4°F to 122°F
Frequency Range: 915 MHz
Connection to Network: 802.11g
Air Interface: ISO
Availability: now
Part Number: CV60A10A84001804-Resistive Touch, 128MB Memory, WinXP ProMtg, 20GB RHD, Bluetooth-Acitontec, No Device, InternalAnt, 802.11g FCC [4,804] - (one of multiple unique configurations)

IM3 Reader Module



The IM3 915 MHz reader module provides OEMs an easy ISO standard-based RFID integration solution for applications requiring read range, multi-tag sort, read/write and memory capacity. The PC card is designed for integration into industrial data terminals, using a simple digital-level serial interface. The IM3 spread-spectrum frequency-hopping RFID reader module will not cause interference with existing 802.11 RF data collection networks.

Typical Applications: Single-antenna applications in transportation, security access, and supply chain management for retail, manufacturing, logistics, and healthcare, primarily in North America.

Specifications

Dimensions: 3.35"L x 2.1"H x .16"W
Operating Temperature: -4°F to 131°F
Frequency Range: 915 MHz
Air Interface: ISO
Availability: now
Read/Write Capable: yes
Part Number: Available through OEM Sales

IM4 PC Card Reader Module



The IM4 PC card reader module provides OEM integrators the option of reading and programming RFID tags in either 869 MHz (Zone 1) or 915 MHz (Zone 2) frequency bands. Additionally the IM4 module offers multi-air interface protocol capability for applications with tags implemented under both ISO and EPC standards. The PC card is designed as an option for industrial data terminals, using a simple digital-level serial interface or a PCMCIA bus interface. The IM4 spread-spectrum frequency-hopping RFID reader module will not cause interference with existing 802.11 RF data collection networks.

Typical Applications: Single antenna applications in transportation, security access, and supply chain management for retail, manufacturing, logistics, and healthcare, worldwide.

Specifications

Dimensions: 3.35"L x 2.1"H x .16"W
Operating Temperature: -4°F to 131°F
Frequency Range: 869 and 915 MHz
Air Interface: ISO and EPC
Availability: Q4, 2004
Read/Write Capable: yes
Part Number: Available through OEM Sales

IM5 Reader Module



The IM5 module is ideal for OEM integrators needing a reader with multiple antenna ports as well as interfaces to monitor external sensors and control audible and visual indicators. The IM5 reader is factory configured to operate in RFID frequency bands 869MHz (Zone 1, primarily Europe) and 915MHz (Zone 2, primarily North and South America). Rules for operating in the third zone, 950MHz (Zone 3, primarily Japan and Asia), are still being written.

Typical Applications: Multi antenna applications in transportation, security access, and supply chain management for retail, manufacturing, logistics, and healthcare, worldwide.

Specifications

Dimensions: 8.3"L x 5.1"H x 1.2"W
Operating Temperature: -13°F to 158°F
Frequency Range: 869 and 915 MHz
Connection to Network: 802.11G or 802.3 wired
Air Interface: ISO and EPC
Availability: Q4, 2004
Read/Write Capable: yes
Part Number: Available through OEM Sales

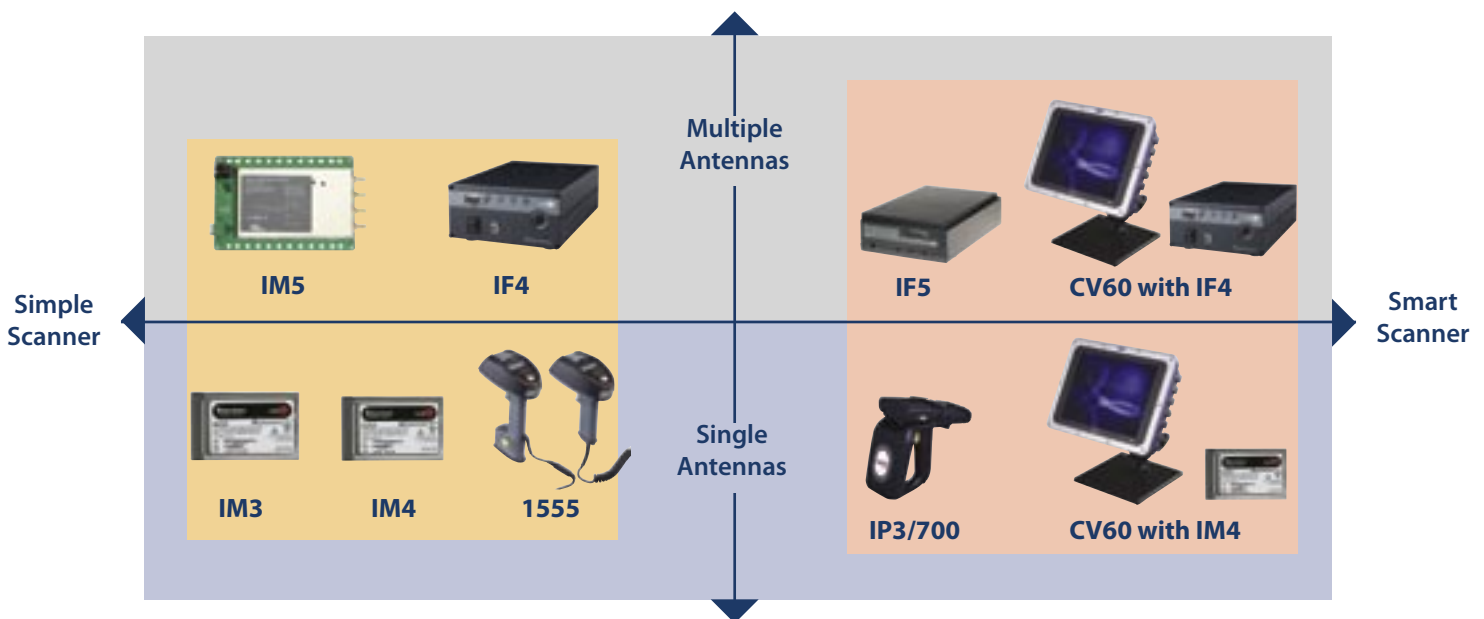
How To Determine Which Reader Is Right For You

Not all readers are created equal, and for good reason. They can be grouped into four simple categories based upon the maximum number of antennas they support and local intelligence they provide. The characteristics and behavior of the tagged items play a large role in determining the number of antennas your reader needs to support.

Your application may dictate the use of a sophisticated RFID reader capable of controlling peripheral devices based on data read from the tag or you may need to attach your RFID reader to a separate local server or a programmable logic controller for local decision making.

The questions below have “either/or” options that are color coded to aid you in determining your reader choices in the quadrant below.

1. Are the tags you’re trying to read **always oriented the same way** or are they **unpredictable** in their placement?
2. Will you be reading a **small** number or **large** number of tags at the same time?
3. Will the tagged items be moving **slowly** or **fast** at the time they are read?
4. Will filtering of redundant tag data need to be performed **at the reader level** or by a **server or host**?
5. Are **PLCs currently used** or will local decision making need to be **handled by the reader**?



Simple Scanners versus Smart Readers

With a primary function of collecting and passing on tag data, simple scanners rely on a host system “up stream” for decision making. The host system can either be a tethered handheld or vehicle-mounted computer, or a cabled connection to a programmable logic controller, server or PC. This is an adequate solution in environments where PLCs and edge servers are already relied upon to drive application-based decisions. A simple scanner, combined with a single antenna, will usually provide a cost effective solution when 1) there is already a local controller, 2) tags are consistently oriented the same way and always located in the same place, and 3) only a few tags travel through the RF field at a time, relatively slowly. Simple scanner readers with multiple antennas can alleviate issues with tag orientation, quantity and speed by increasing the “read field”. Additionally, simple scanners offer a more economical option for enterprises that want to leverage their investment in existing handheld and vehicle-mounted computers to achieve RFID capability.

When the application requires real-time decision making based on the data read from the tag, smart readers are the clear choice. Local intelligence within the smart reader allows it to not only evaluate the data on the tag, but also respond to it, such as triggering a red signal light to indicate that manual intervention is required. Because decisions are made by the reader, they occur without communications or server-induced delay. Smart readers combined with multiple antennas are better equipped to cope with the unpredictable tag placement, tag volume and speed, while also providing local filtering. Smart readers with a single antenna are often mobile and therefore offer best solution for exception reading and subsequent re-writing because local decision making can be taken directly to the item to be read.

Realizing the Promise of RFID

The total elimination of the manual processes currently associated with locating and scanning bar codes is one of the promises of RFID. In order to achieve that level of success, there are certain requirements and steps that should be taken:

- **Define RFID field patterns.** Take into account the tag's orientation, trajectory and surrounding environment while being scanned.
- **Create redundancy within the scan process.** This includes sufficient dwell time within the field to account for the worst-case tag-to-antenna link as well as redundant scan stations.
- **Use RFID tags designed for the tagged asset's composition,** the environment to which the asset is exposed, and the intended RFID scan applications.



Proven RFID. Investment protection. A commitment to open and interoperable standards that provide a clear technology migration path. That's Intermec Technologies.

Next Steps: Select An Expert

Because RFID is an emerging technology, many enterprises lack the expertise on staff to carry out these procedures or to anticipate the complexities and consequences. With years of experience installing complete RFID systems around the world, Intermec is committed to working with companies to make sure each implementation of RFID technology is successful, today and tomorrow.

Intermec RFID products already are being used in a multitude of government and commercial applications around the world from manufacturing, food processing, security and logistics applications in the United States to retail and logistics applications in Europe, to bio-hazard waste management in Africa and transportation systems in Japan. An active participant of EPCglobal Inc. and ISO, Intermec supports open standards and global interoperability, ensuring companies' investment protection as RFID global standards continue to evolve.

Intermec RFID systems are well-suited for a wide range of applications that include inventory and asset management, access control, compliance tracking, and personnel and vehicle identification. Intermec offers the broadest range of RFID hardware, software and implementation services, all compatible with adopted or emerging standards, ensuring interoperability and providing a clear technology migration path.



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