



RFID BAGGAGE TRACKING for Airport Security Customs

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Airports are facing tremendous growth in the number of passengers on a daily basis. Hence, airports need to minimize passenger's disruption to keep operations running as smoothly as possible while keeping the passengers safe.

RFRain Customs Baggage Tracking is a comprehensive and cost-effective RFID solution using RFRain Smart Readers to effectively track marked checked-bags from the baggage screening process to customs exit points. The solution significantly reduces the number of random searches made by customs officers and allow customs officers to focus on the luggage that needs to be searched.

BENEFITS

- ✓ Increase airport security
- ✓ Improve efficiency & effectiveness of checked-bag screening operations
- ✓ Improve workflow and movement of customs
- ✓ Ease customs bag tracking & handling
- ✓ Single contact for customer service and support

CUSTOMS BAGGAGE SECURITY CHECKPOINT

The aviation security system is a human system that relies extensively on human perception, performance, decision making, and judgement. This is particularly true with regard to checkpoint screening functions that rely extensively on human operators and screeners to detect and resolve potential threats. Therefore, airports are investing in improving the visibility of checked luggage screening at customs to ensure smooth and faster operations. The solution allows customs duty officers the ability to provide better customer experience for travellers while enhancing airport security. The system can enhance any checkpoint in a cost-effective and operationally efficient way without disrupting passenger flow. The RFRain system provides improved checkpoint detection for contraband.

How it works

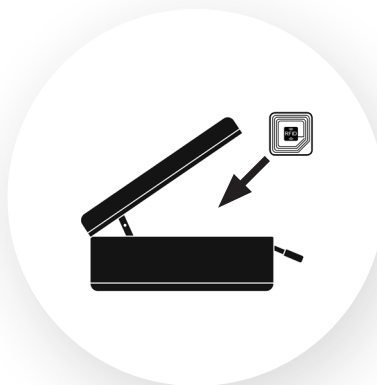
- 1- In checked-baggage security screening, a bag is marked as suspicious.
- 2- The customs agent opens the suspicious bag and places an RFID hard tag (RFR-TAG-0102) inside the bag.
- 3- At customs exit, overhead RFR-RAIN-4-SMART-ADV readers and up to 4 RFID antennas are installed at the ceiling and generate an alarm LED indicating that a bag needs to be searched.
- 4- The system generates an alarm on registered tags only, to reduce the number of false alarms.

RFRain Baggage Tracking software

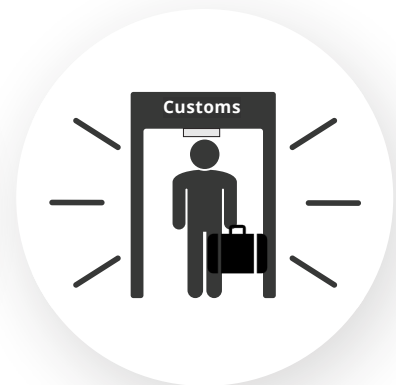
Unlike other readers on the market, our Smart Readers come with pre-installed RFID software, which eliminates the need for additional software development. Further, our readers provide real-time alerts to identify tagged luggage. The RFR-ZM Zone Manager provides full reporting capabilities and data portability, and integrates seamlessly with the airline's existing management systems using Rest API and the JSON protocol.



1. BAG SCREENING



**2. BAG INSPECTION &
TAG PLACEMENT**



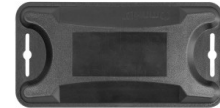
3. CUSTOMS EXIT

RFRAIN BAGGAGE TRACKING HARDWARE

RFRain's comprehensive and cost-effective Smart Reader platform help maximize visibility at customs baggage checkpoint in airports in real-time.

RFR-TAG-0102

The RFRain RFR-TAG-0102 is the most durable and long range tag of our product offering for long read ranges and through any material even if placed inside a luggage. Even out of line of sight, the tag can be read at a distance of up to 80 ft with 9 dBiL antenna.



RFRAIN RFR-ANT-0201

The RFRain RFR-ANT-0201 antenna is the perfect solution for baggage tag processing. The RFR-ANT-0201 provides automatic scanning and checking the accuracy of marked bags passing through customs green portals. The RFRain antennas are optimized and guaranteed to work with RFRain's Smart Readers for fast and accurate detection of tagged items.



RFRAIN RFR-RAIN-4-SMART-ADV

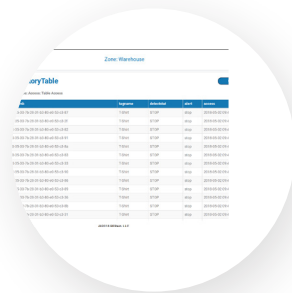
The RFRain RFR-RAIN-4-SMART-ADV reader is a high-performance RFID reader optimized for fast and accurate reading of tagged bags. It can be used to identify tagged luggage in customs' exit that have not been declared. High read rates and long read range allow to identify multiple tags at once. It increases read rates in the customs which leads to higher baggage handling productivity. The RFR-RAIN-4-SMART-ADV connects to the Zone Manager software and detected tags will instantly result in an alert.



Zone Manager™ software

Provide in-depth insights and allow customs officers to quickly respond to alerts

Our easy-to-use software helps customs duties officers track number of suspicious marked bag activity and the ability to provide a data history log.



Remotely track item usage

Quickly and conveniently read the data gathered from your RFR-RAIN-4-SMART-ADV from a web browser. Easily keep track of total daily marked bags and help customs officers understand the number of illegal activity/tagged bags passengers from the smart readers each day without having direct access.



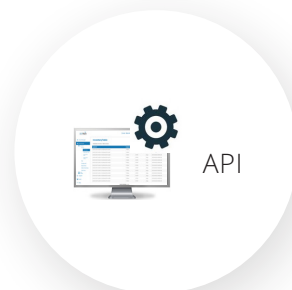
Alarms & alerts

LED indicators at the exits will light up when bags have passed the nothing to declare. The Zone Manager™ software notifies officers with real-time text or email notifications with all the necessary information to track suspicious bags. In the event an marked bag has passed the green exit.



Scalable platform with Zone Manager Enterprise™

The Zone Manager advanced software aggregates the data from all the Smart Readers from multiple locations into one centralized management platform. This provides the entire management an accurate view of bag tracking status.

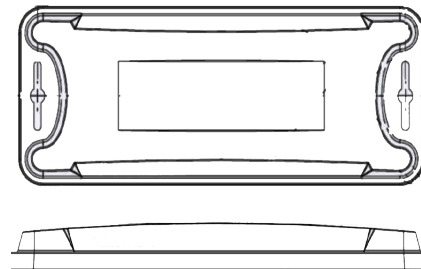


ERP integration

The zone Manager seamlessly integrates with an ERP system through REST APIs.

RFR-TAG-0102

UHF HARD TAG



2.76"

0.69"

6.85"

RF SPECIFICATIONS

Protocol	EPC Class 1 Gen2
Frequency Range	860-930 MHz (global)
Read Range	Up to 20.0 (global)
Material Compatibility	Optimized for metal
IC Type (chip)	Monza 4QT
Memory	EPC - 128bits User - 512bits Unique TID - 48bits

PHYSICAL SPECIFICATIONS

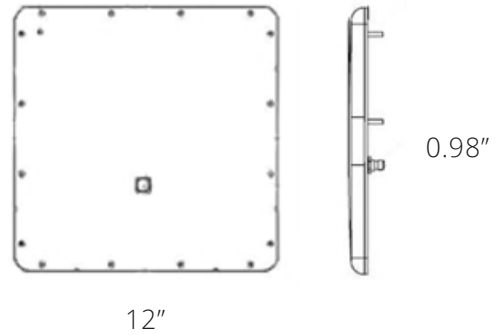
Encasement	Polycarbonate ABS blend
Size (mm) (tolerance)	174 x 70 x 17.6 (+/-1.0)
Size (in) (tolerance)	6.85 x 2.76 x 0.69 (+/-0.04)
Weight (g)	85.0

ENVIRONMENTAL

Operating Temperature	-20 to +100 °C
Long term Max Temperature exposure - (days,weeks,years)	-20 to +100 °C
IP Rating	IP68
Shock and Vibration	MIL STD 810-G
Impact	>25kg from 1m
Certifications	RoHS approved CE approved ATEX/IECEx certified (option) US&Canada (C1D1/D2) certified (option)

RFR-ANT-0201

ANTENNA



ELECTRICAL

Regulatory Compliance	RoHS, CE 0682
Frequency Range	865 - 956 MHz (Global)
Gain	7.5 dBic (min), 8.5 dBic (max) @ 865-870 MHz 8.5 dBic (min), 9.5 dBic (max) @ 902-928 MHz 7.5 dBic (min), 9 dBic (max) @ 950-956 MHz
VSWR	1.2:1 (typ) 1.35:1 (max)
Polarization	RHCP
Elevation Beamwidth	65° (typ)
Azimuth Beamwidth	65° (typ)
Front to Back Ratio	-18 dB (max)
Power	6W (max)
Input Impedance	50 ohms
Axial Ratio	865-870 MHz @ 2.5 dB (max) 902-928 MHz @ 1 dB (typ) 1.5 dB (max) 950-956 MHz @ 3 dB (max)
Lightning Protection	DC Grounded

MECHANICAL

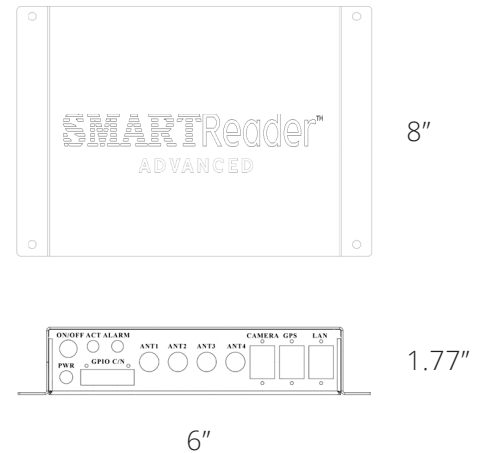
Dimensions	12" x 12" x .98" / 305 x 305 x 25 mm
Connector	RP-TNC Female
Weight	2.6 lb / 1.2 kg
Radome Material	Plastic
Base Plate Material	Aluminum with chemical conversion coating
Mount Type	Four threaded studs
Outline Drawing	RD 43072500 C
Orientation	Rectangular

ENVIRONMENTAL

Operating Temp.	-55°C to +71°C
IP Rating	IP 67

RFR-RAIN-4-SMART-ADV

ADVANCED READER



DATA/CONTROL INTERFACE	
Communication	USB, WIFI, Ethernet, PoE+, optional Cellular
Communication Protocol	RCI RAIN Communication Interface
Software	The Zone Manager software comes pre-installed and pre-configured with the RFR-RAIN-4-SMART-ADV
RSSI	Yes
Modes of operation	Fast Asset Tracking: detect fast moving assets on toll stations or conveyor belt up to 100 mph Checking: Automatically add newly discovered assets in database, and customize content Discovery: Detect the movement or presence of assets in doorways and cabinets
Temperature Monitoring	Automatic shutdown during high or low temperature
Brown-out Recovery	Yes
Live Upgrade Capability	Yes
Interface	Standalone: Configure and access the data using the built-in UI from any web browser

RF INTERFACE	
Frequency Range	865-868 MHz and 902-928 MHz
Tag Protocol	EPC-global UHF Class 1 Gen 2 (ISO 18000-6C) with anti-collision, DRM, and advanced anti-jamming
Antenna Connector	4 RP-TNC female monostatic ports
RF Power Output	Separate read and write levels, command adjustable from 5 dBm to 31.5 dBm (1.4 W)

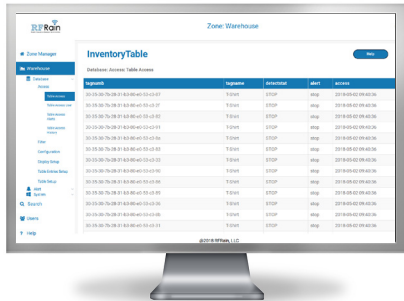
ARCHITECTURE	
RFID Processor	Indy R2000
Memory	1 GB RAM, up to 32 GB Extended Flash
POWER	
DC Power required	DC Voltage: 5 V \pm 5%; DC power: 24W max when transmitting
Battery Backup	1820 mAh lithium-ion battery, lasts 1 hour
PHYSICAL	
Dimensions	6" x 8" x 1.77" / 15.2 x 20 x 4.5 cm
Weight	2.6 lb / 1.2 kg
Interface	GPIO, USB 2.0 x 2, Ethernet TCP/IP (RJ45)
Button	Power Push button
Enclosure Material	Aluminum
Mount Type	Four 1/4" Mounting holes

ENVIRONMENT	
Certification	FCC 47 CFR Ch. 1 part 15 Industrie Canada RSS-21 0 ETSI EN 302 208 v3.1.1 (RED 2014/53/EU)
Operating Temp.	-40°C to +60°C
Storage Temp.	-40°C to +85°C

PERFORMANCE	
Max Tag Read Rate	Up to 750 tags/second
Max Tag Read Distance	Up to 80 feet (24 m) with 9 dBiL antenna
Max Tag Read Rate for moving object	100 mph with Fast Track software (optional)

RFR-ZM

ZONE MANAGER SOFTWARE



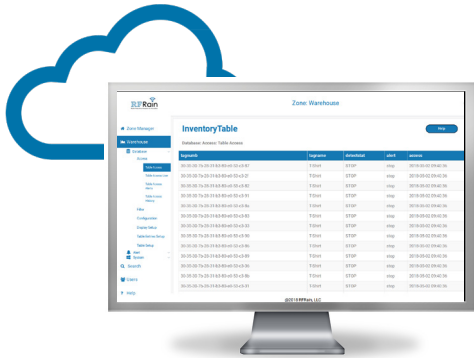
DATA/CONTROL INTERFACE

Communication	RCI RAIN Communication Interface
Modes of operation	Fast Asset Tracking: Detect fast moving assets on toll stations or conveyor belt up to 100 mph Checking: Automatically add newly discovered assets in database, and customize content Discovery: Detect the movement or presence of assets in doorways and cabinets
Zone Support	Configure a zone for every reader Configure a database for each zone Configure a single database for multiple zones Support for unlimited amount of readers
Real Time Updates	Real-time updates cloud Real-time updates LAN
Security	User mode Admin mode
Cloud	Full cloud support
Temperature Monitoring	Live temperature monitoring
Upgrade	Live upgrade Zone Manager software Live upgrade readers
Scalability	Full access reader and database information from the RFR-ZM Supports tens of thousands of items
System	WiFi setup LAN setup Shutdown and restart readers

Reader Configuration	Start/Stop Reader Set Reader Mode Receive Status Information RFID Settings Subzone Settings Local and Remote Setup
Database	Built-in database Local server database Remote database in the cloud History Access Database Configuration Display Configuration Start/Stop Tags Add/Remove Tags Download/Upload Database Information Update Tag Entries
Alerts	Setup Custom Alerts Start/Stop Alerts Setup e-mail Alerts Setup Text Alerts

RFR-ZM-ENT

ZONE MANAGER ENTERPRISE



DATA/CONTROL INTERFACE

Communication	RCI RAIN Communication Interface
Zone Support	Configure a zone for every reader Configure a database for each zone Configure a single database for multiple zones
Real Time Updates	Real-time updates cloud
Security	User mode Admin mode
Temperature Monitoring	Live temperature monitoring
Upgrade	Live Upgrade Zone Manager Enterprise
Scalability	Full access reader and database information from the RFR-ZM-ENT Supports tens of thousands of items
Database	RFRain Cloud database History Access Database Configuration Display Configuration Start/Stop Tags Add/Remove Tags Download/Upload Database Information Update Tag Entries
Accounts	Store data into separate accounts to support multiple users
Alerts	Setup Custom Alert Start/Stop Alerts Setup e-mail Alerts Setup Text Alerts
Camera	Enhance RFID data capture with traceability. Associate video footage with triggered events
GPS	Precise localization of your assets
Access Control	Combine RFID asset/inventory management with enhanced security.
Encryption	During Transit At Rest

PLANS

RFR-ZM-ENT-INDIVIDUAL	Monitor up to 1,000 items and provide access to 1 user
RFR-ZM-ENT-S	Monitor up to 10,000 items and provide access to 5 users
RFR-ZM-ENT-M	Monitor up to 50,000 items and provide access to 10 users
RFR-ZM-ENT-L	Monitor an unlimited amount of items and provide access to 50 users

ABOUT RFRAIN

RFRain is an inventory and asset management company which has developed a complete end-to-end solution of hardware and software. It collects data received from RFID tags and sensors and manages the data within the cloud, or on-premise, for real-time access by multi-location companies, airlines, and organizations. The technology gets delivered via an online dashboard that offers real-time data delivery 24/7 for inventory management.

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