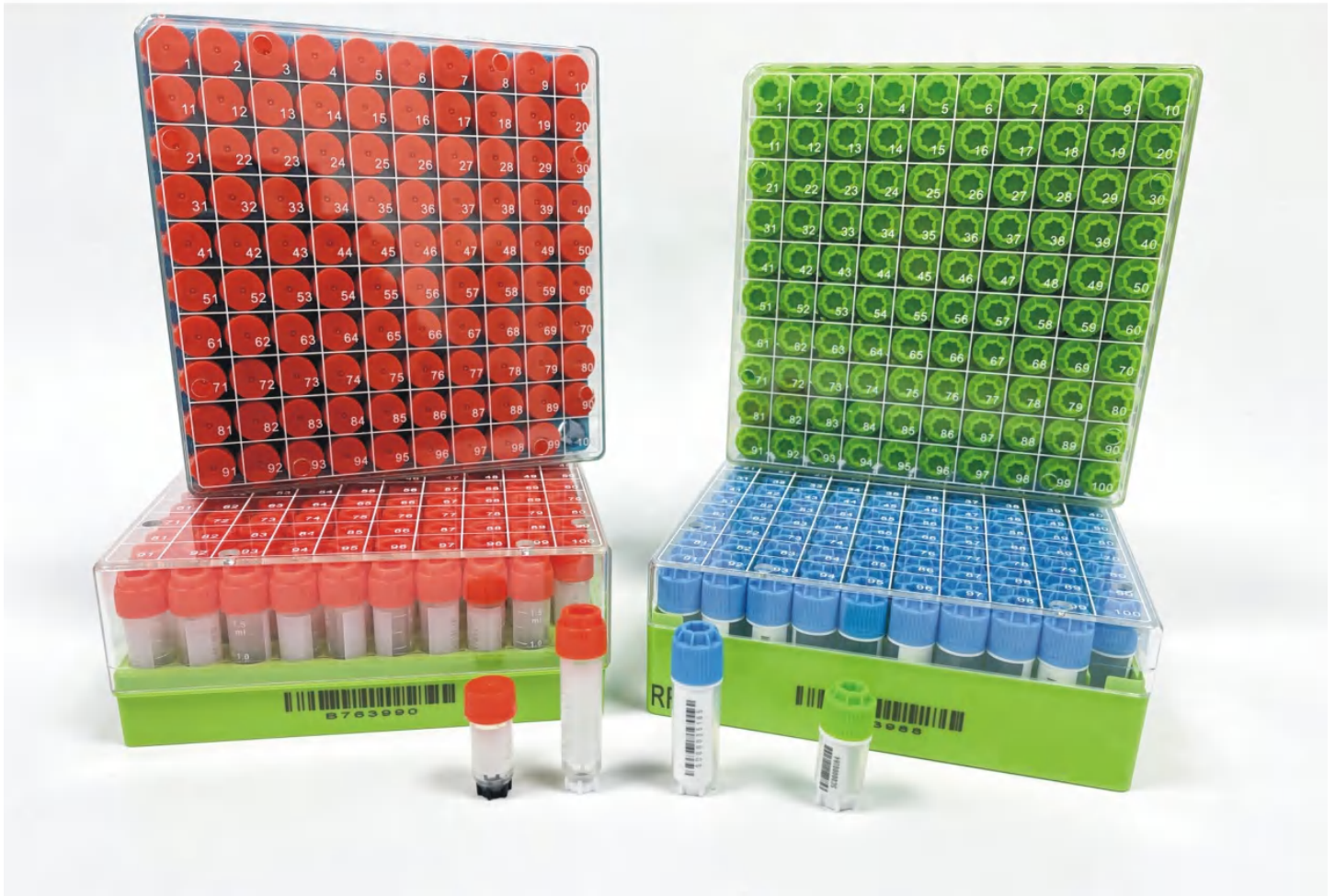


RFID Cryogenic Vial



What is RFID?

RFID (Radio Frequency Identification) is a wireless communication technology that can identify specific targets and read relevant data through radio waves, without the need to establish mechanical or optical contact. Imagine the anti-theft systems in supermarkets or transit cards; these are examples of RFID technology applications.

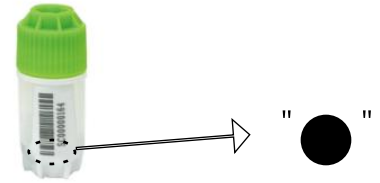
A complete RFID system typically includes two main components: tags and readers.

Types of RFID Tags

- **Passive tags:** These tags do not have their own power source. They obtain energy from the signals emitted by readers and send back information. These tags are inexpensive but have a shorter reading distance.
- **Active tags:** These tags have their own power source, allowing them to send signals from greater distances. They are more expensive and suitable for scenarios requiring long-distance reading.

RFID Cryogenic Vial

Integrating RFID tags on cryogenic vials (small sealed containers specially designed for long-term storage of biological samples such as blood, DNA, cells, etc.) allows for wireless tracking and management of biological samples.



"Core Values of RFID Cryovials"

Unique Identification

Each tag has a unique ID, used for accurate identification of samples

Information Storage

Capable of storing detailed information about the sample, such as origin, date, type, etc

Increased Efficiency

Allows for rapid scanning of entire cryogenic boxes or racks in refrigeration



Reduced Errors

Reduces errors associated with manual data entry or mismatches with traditional database information

Large-scale Storage

Manages large volumes of biological samples, ensuring they are easy to retrieve and maintain

Convenience of Use

Breaks away from traditional cryogenic vial image recognition difficulties. No risks of frosting, QR code peeling off, etc



ISO9001 & ISO13485

Challenges with RFID Cryovials

1. Low-temperature resistance: A reader and tags suitable for low-temperature environments, capable of long-term stable operation in such conditions.
2. Compact size: Considering the small size of cryogenic vials, the tags should be small and integrate stably with the vials without affecting the samples.
3. Interference-free: Ultra-small cryogenic vials should not interfere with each other on the reader and should be stored in metal containers without mutual interference.
4. Long-term storage validation: There is currently a lack of long-term storage validation data for RFID cryogenic vials.
5. Regular testing: RFID cryogenic vials need regular testing of the system's accuracy to ensure that the tags and reader are working properly.
6. Cost analysis: Consider the costs of introducing an RFID system (additional costs for tags, tag integration processes, and costs generated by the read-write programs).

RFID Cryogenic Vial



RFID Chip "●"



"Four-in-One Code"

RFID chip, QR code, barcode, and readable numeric code
Suitable for automated/manual sample handling in cryogenic environments.

"Writable Freedom"

With a chip writing device, data can be edited on the chip.
Overcomes traditional low-temperature label issues such as easy detachment and non-writable QR codes.

"Rapid Reading"

With a chip reading device, chip parameters are read.
Radio frequency reading completely resolves the difficulty of reading QR codes through frost, enabling rapid reading and localization of entire pages, racks, or even freezers.

"Extreme Durability"

Temperature tolerance: -196°C to 121°C
Innovative chip encapsulation technology withstands deep cryogenic temperatures (-196°C) without affecting data read/write, ensuring sample data security.

"Life Traceability"

Global unique TID code, unalterable for life.
Trace sample life cycles through the chip without the need for sample management software.

"Injection Molding Integration"

Dual-color chip injection molded at the bottom of the cryogenic vial.
Original dual-color injection molding chip design ensures stable integration at the bottom of the vial, preventing detachment and contact with the sample.

► RFID Parameters

Air Protocol	EPC Global Class1 Gen2ISO18000-6C
Operating Frequency	UHF902-928MHz(FCC)
Environmental Compatibility	Best on Non-Metal Surfaces
Reading Distance	0.5m(Non-Metal)
Polarization	Linear Polarization
Chip	Impinj R6-P
Storage	EPC 128bit TID 96bitUser 32bit

► Mechanical Parameters

Tag Material	Fr4
Surface Material	Industrial-grade resin
Size	4.8 x 2.1 mm
Weight	0.1 g
Installation Method	Medical-grade material encapsulation
Color	Black

► RFID, SBS(6*8)

Cat. No.	Volume (ml)	Description	Package	QTY/ctn (racks)
T6301-RF4	1	RFID, 3 codes, External thread	48 pcs/rack, 12 racks/box, 4 boxes/ctn	48
T6401-RF4	2	RFID, 3 codes, External thread	48 pcs/rack, 9 racks/box, 4 boxes/ctn	36
T6501-RF4	4	RFID, 3 codes, External thread	48 pcs/rack, 6 racks/box, 4 boxes/ctn	24

► RFID, 2D(10*10)

Cat. No.	Volume (ml)	Description	Package	QTY/ctn (racks)
T2077-RF3	0.5	RFID, 2 codes, External thread, flat cap, with gasket	100 pcs/rack, 8 racks/box, 4 boxes/ctn	32
T2277-RF4	1.5	RFID, 3 code, External thread, flat cap, with gasket	100 pcs/rack, 6 racks/box, 4 boxes/ctn	24
T2501-RF4	1	RFID, 3 codes, External thread	100 pcs/rack, 8 racks/box, 4	32
T2401-RF4	2	RFID, 3 codes, External thread	100 pcs/rack, 6 racks/box, 4	24

RFID Integrated Decoding Device



- Supports various types of cryogenic boxes, including 10x10, 9x9, etc., with customizable specifications.
- Reads within ≤ 5 seconds, allowing for rapid inventory and precise localization, suitable for high-throughput sample storage scenarios.
- Chip radio frequency reading, unaffected by appearance, with no risk of frosting.
- Supports disordered reading for rapid organization of entire boxes of samples.
- Interfaces such as TXT, CSV, XML, and RESTful are available, enabling integration with sample library systems and automated equipment.
- Features an open and friendly design, equipped with an SDK toolkit, which can be integrated into automated systems or laboratory management systems.

► Equipment Parameters

Dimensions	98x98x32 mm
Weight	100 g
Body material	Engineering plastics
Input voltage	DC 5V
Standby current	<100mA
Maximum operating current	1100mA+/-5%@DC 5V Input
Operating temperature	-20°C~+65°C
Storage temperature	-40°C~+85°C
Operating humidity	5%RH-95%RH (No condensation)
Air interface protocol	EPC global UHF Class 1 Gen 2Is18000-6C
Operating frequency range	902-928MHz FCC 865-868MHz ETSI
Output power	0-26dBm

Output power accuracy	+1dB
Output power flatness	+0.2dR
Receiver sensitivity	<-80dBm
Inventory tag peak speed	-
Antenna	Internal circularly polarized antenna
Tag RSSI	Supported
Antenna connection protection	Supported
Environmental temperature monitoring	-
Communication interface	USB communication simulated keyboard output
GPIO	-
Maximum communication baud rate	115200 bps
LP level	lp54

RFID Handheld Decoding Device



► Communication Data

Bluetooth	Bluetooth v2.1+EDR,3.0+HSv4.1+HS
WLAN	IEEE802.11 a/b/g/n/ac
WWAN	2G:900/1800 MHz 3G:WCDMA:B1,B8 CDMA2000 EVDO:BC0 TD-SCDMA:B34,B39 4G:B1,B3,B5,B8,B34,B38,B39,B40,B41
GNSS	Beidou/GPS/GLONASS, supports A-GPS

► Physical Parameters

Touch screen	Corning Gorilla Glass, supports multi-touch, supports glove or wet hand operation
Display screen	5.2-inch, IPS FHD 1920x1080 resolution
Communication interface	USB 2.0 Type-C, OTG, supports Type-C headphones
Battery	Rechargeable lithium polymer battery 8000 mAh standby time >500 hours Working time >12 hours (depending on usage and network environment) Charging time 3-4 hours (using standard power adapter and data cable)
Dimensions	164.2x80.0x24.3 mm
Weight	654 g
Sensors	Gravity sensor, light sensor, proximity sensor

► Specifications

Cat. No.	Item Name	Description	Package
1510000	RFID integrated decoding device	Batch decoding	1 unit/case
1520000	RFID handheld decoding device	Single decoding	1 unit/case