

Cold Chain Monitoring

End-to-end BLE cold-chain monitoring — sensors, gateway, dashboard and mobile app

Product Datasheet



100 m*
RANGE, FREE
SPACE

25,000
READINGS
BUFFERED PER TAG

100s
SITES, ONE
DASHBOARD

Local + cloud
ALARM — SIREN
AND DASHBOARD

OVERVIEW

The IoTReady Cold Chain Monitoring System pairs **ColdTag** BLE sensor tags and battery-powered **door sensors** with a wall-mounted **Gateway** that bridges every reading to a **centralized dashboard** and a **mobile app**. Tags and door contacts stream over Bluetooth LE to the nearest Gateway — up to 100 m in free space, and reliably through a standard coldroom door, including metal*. The Gateway uplinks over WiFi or Ethernet, with GSM available for sites with no fixed network, and drives a local siren or strobe from its relay output the instant a threshold or a door event trips, while also raising the alert on the dashboard.

The dashboard is built to watch hundreds of sites from one screen — live temperature status, alert history and gateway/door health side by side — while the mobile app handles on-site commissioning: mapping each tag and door sensor to its site, and diagnosing signal and gateway status during a visit.

*Free-space range with the Gateway's external antenna and unobstructed line of sight; range through a coldroom door depends on door construction, insulation thickness and metal gauge — verify per site during commissioning.

APPLICATIONS

Coldroom & warehouse

- Walk-in freezers and chillers, including metal-door rooms
- Door-open alarms alongside temperature excursions

Home-visit sample transport

- Blood-vial and specimen carriers on doorstep collection rounds
- ColdTag travels with the sample; syncs at the gateway or via app

Multi-site fleet monitoring

- Pharma, QSR and retail chains with hundreds of sites
- One dashboard for temperature status and gateway/door health

KEY FEATURES

Long BLE range, even through metal doors

Up to 100m free-space from the Gateway's external antenna, with reliable reach through a standard coldroom door — sensors don't need a direct line of sight to the Gateway.

Local and centralized alarms

The Gateway's relay drives a site siren or strobe the instant a threshold or door event trips, while the same event raises an alert on the dashboard and the mobile app — no dependency on the network being up for the local alarm.

Fleet dashboard for hundreds of sites

One screen for live per-site temperature status, a searchable alert/excursion history, trend charts, and gateway/door connectivity health across the whole estate.

Mobile commissioning and diagnostics

Map tags and door sensors to a site in minutes, then use the same app on a site visit to check signal strength and gateway status.

25,000-reading offline buffer, per tag

Every ColdTag keeps logging locally regardless of Gateway or network state, so a connectivity gap never loses a reading — pulled back over BLE on reconnect.

Uplink matched to the site

WiFi or wired Ethernet out of the box, with GSM available for sites with no fixed network reach.

DEPLOYMENT SCENARIOS

Every scenario below runs on the same Gateway, sensors and dashboard — differing only in what's being watched and what triggers an alert, so a site commissioned for one flow extends to another by adding sensors, not hardware.

Coldroom monitoring, metal door

WALK-IN FREEZER / CHILLER

- 1 Gateway is mounted near the coldroom, its external antenna within the rated free-space or through-door range.
- 2 ColdTags placed with the stored goods stream temperature over BLE, through the door, to the Gateway.
- 3 The Gateway forwards every reading to the dashboard over its configured uplink.
- 4 A threshold breach raises an alert on the dashboard and, if wired, drives the Gateway's local siren.

Result: Continuous temperature visibility inside a sealed metal-door room, without opening the door to check.

Door and access alarm

DOOR SENSOR + GATEWAY RELAY

- 1 A door sensor's two halves are fitted to the door and frame; it reports open/close over BLE to the Gateway.
- 2 An unexpected door-open event is timestamped and forwarded to the dashboard.
- 3 The Gateway's relay output can drive a site siren or strobe directly from the same event.
- 4 Dashboard and mobile app both raise the alert, with the door's open/closed state visible immediately.

Result: An audible local alarm and a centralized record the moment a monitored door opens.

MONITOR AND MANAGE

Centralized dashboard

FLEET-WIDE MONITORING · HUNDREDS OF SITES

- Live per-site, per-tag temperature status — green / yellow / red
- Searchable alert and excursion history, with timestamps
- Historical temperature trend charts, per tag and per site
- Gateway online/offline and door open/closed status alongside temperature — fleet health, not just readings

Built for an operations team watching hundreds of sites from one screen, not a spreadsheet per site.

Mobile app

COMMISSIONING AND SITE DIAGNOSTICS · ANDROID

- Map each ColdTag and door sensor to a named site or zone during setup
- Push alerts for threshold breaches and door events, wherever the technician is
- On-site diagnostics — signal strength to the Gateway, Gateway status — during a site visit

The same app commissions a new site and troubleshoots an existing one.

DEPLOYMENT TOPOLOGY

ColdTag & door sensors

Stream temperature and open/close events over BLE, buffering locally when the Gateway is out of range.



Gateway

Bridges BLE sensors to the network; drives a local relay/siren and onboard buzzer on threshold or door events.



Dashboard & mobile app

Centralized fleet-wide status, alert history and trend charts; mobile app for commissioning and alerts.

INTEGRATION

Gateway — temperature event

WIFI / ETHERNET / GSM UPLINK · FLEET CHANNEL

```
{ "site_id": "site-042",
  "tag_id": "BC57291D0ECS",
  "temp_c": 4.2,
  "ts": 1721160000000 }
```

Forwarded the instant the Gateway receives it from a ColdTag in range — the same event schema regardless of the Gateway's uplink.

Gateway — door event

WIFI / ETHERNET / GSM UPLINK · FLEET CHANNEL

```
{ "site_id": "site-042",
  "door_id": "door-7",
  "state": "open",
  "ts": 1721160000000 }
```

Raised on every open/close transition; the Gateway's relay can be wired to fire a local siren from the same event.

MORE DEPLOYMENT SCENARIOS

Home-visit sample transport

COLDTAG · DOORSTEP COLLECTION ROUNDS

- 1 A ColdTag travels with the vial from doorstep pickup to lab drop-off.
- 2 Temperature streams live to the collector's phone over BLE whenever it's in range.
- 3 Any gap in that connection is covered by the tag's own 25,000-reading offline log.
- 4 The buffered log is pulled back over BLE at the lab, or the next time a Gateway or the app is in range.

Result: A complete, timestamped temperature record for the trip, even across a connectivity gap.

Multi-site fleet monitoring

DASHBOARD · HUNDREDS OF SITES

- 1 Each site's Gateway uplinks independently over WiFi, Ethernet or GSM.
- 2 Every ColdTag and door sensor reading lands on the same centralized dashboard, tagged by site.
- 3 Fleet health — Gateway online/offline, door open/closed — sits alongside temperature status.
- 4 Operations staff work from one alert queue and one trend view across every site, instead of per-site logs.

Result: One screen of truth for a cold-chain estate, instead of a spreadsheet per site.

COLDTAG – BLE SENSOR

SoC	nRF52-series
Connectivity	Bluetooth LE, Eddystone or iBeacon advertising (specified at purchase)
Sensing range	–40 °C to +85 °C
Accuracy	±0.5 °C
Offline log capacity	25,000 readings, non-volatile
Battery	CR2477 lithium coin cell, 3 V, 12 months typical
Dimensions	65 × 41 × 17 mm, 2 mounting holes

DOOR / WINDOW SENSOR

Type	Two-part magnetic reed contact
Connectivity	Bluetooth LE to Gateway
Reported states	Open / closed, on every transition
Battery	Battery-powered, field-replaceable
Mounting	Adhesive or screw, door + frame halves

GATEWAY

BLE range	Up to 100 m free-space; reliable through a standard coldroom door, incl. metal*
Uplink	WiFi and wired Ethernet; GSM/cellular optional
Local alarm	Dry relay output (siren/strobe) + onboard buzzer
Status display	Onboard LCD
I/O	Screw-terminal block for relay and auxiliary I/O
Antenna	External 2.4 GHz, connectorized
Power input	12 V or 24 V DC
Mounting	Wall-mount enclosure
Fleet management	Reports to the centralized dashboard; QR-coded identity for commissioning

*Free-space range with the Gateway’s external antenna and unobstructed line of sight; range through a coldroom door depends on door construction, insulation thickness and metal gauge — verify per site during commissioning.

ORDERING INFORMATION

ORDER CODE	DESCRIPTION	NOTES
CCT-TAG	ColdTag BLE sensor	Advertising format (Eddystone or iBeacon) specified at purchase
CCT-D00R	Door / window sensor	Two-part magnetic reed contact
CCT-GW-[W/E/G]	Gateway	Suffix selects the uplink — W WiFi, E Ethernet, G GSM/cellular
CCT-DASH-1Y	Dashboard subscription, one site, one year	Scales per site; contact sales for multi-site pricing
CCT-APP	Mobile app access — commissioning and alerts	Android; included with a dashboard subscription
CCT-SVC-1Y	Extended warranty and commissioning support, one year	Optional

Specifications are subject to change without notice. BLE range is subject to the RF environment and door/wall construction at the installation site. GSM/cellular Gateway variant requires a customer-supplied SIM with a data plan. © 2026 IoTReady Solutions. All rights reserved.