Connect™ Monitor Manual

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Warnings

Please read the following warnings to maintain the safe operation and continued performance of your Wellington Drive Technologies Limited Connect Monitor:

Warnings	Important Do's and Don'ts
Installation Installation of the Connect Monitor otherwise than in accordance with the "Description & Install" section of this manual will invalidate the warranty. The Connect Monitor must only be installed and configured by trained and authorized staff.	Do not drop the Connect Monitor.
No serviceable parts There are no serviceable parts inside the Connect Monitor. Do not attempt to open the housing. Opening of the electronics housing, altering, or modifying the Connect Monitor will invalidate the warranty and damage the device.	There are no serviceable parts inside the Connect Monitor. Do not open the housing.
Fit for purpose The Connect Monitor must only be used for the purposes and functions described in this manual. While Wellington Drive Technologies Limited may provide technical support on suitable applications and configurations of the Connect Monitor (where such a relationship may exist), no liability, responsibility or risk is accepted in determining if the Connect Monitor is fit for purpose for any particular application. No liability, responsibility or risk is accepted by Wellington Drive Technologies Limited for the correct operational function of any particular installation or configuration.	The Connect Monitor must only be used for the purposes described in this manual.
Continuous development Wellington Drive Technologies Limited undertakes to continuously develop and improve products and services. The design and specification of Connect Monitor is subject to change without notice. The contents of this manual are subject to change without warning. While every endeavor is made to ensure that all specifications and documents are current and complete, Wellington Drive Technologies Limited accepts no liability, responsibility or risk due to omissions or changes caused by continuous improvement and design changes. Users of this manual should verify that they have the latest version of the information (published on the Wellington Drive Technologies website www.wdtl.com) before proceeding.	The design and specification of the Connect Monitor is subject to change without warning.

Correct disposal

The Connect Monitor is subject to EU Directive 2012/19/EU (WEEE) for e-waste. It may also be subject to other national legislation for the safe disposal of e-waste. The Connect Monitor must not be disposed of in municipal collections; it must be disposed of through an approved WEEE collection point. Alternatively, Connect Monitor may be returned to an authorized Wellington Drive Technologies Limited distributor at the end of its working life. Penalties may be applicable for incorrect disposal, as specified by national legislation.

The Connect Monitor must not be disposed of in municipal collections; it must be disposed of through an approved e-waste collection point.

⚠ The device contains a lithium battery. This may be hazardous if incinerated or physically damaged. The circuit board may contain hazardous substances which could affect health and the environment if disposed of incorrectly. Connect Monitor complies with EU Directive 2011/65/EU (RoHS).

Safety warning: The Connect Monitor devices contain a lithium battery. This may be hazardous if incinerated or physically damaged.

Chemicals

The Connect Monitor must not be exposed to any solvents or chemicals, as this may damage the housing, leading to unsafe operation. Exposure to such chemicals invalidates the warranty.

Temperature

The Connect Monitor must only be subjected to temperatures as specified in the “Datasheet” and the “Technical Specification” section of this manual. Exceeding these ranges in operation, installation, transportation, or storage, will invalidate the warranty and may damage electronic circuits and housing components, leading to premature failure.

Vibration and impact

The unit must be installed in such a way as to be protected from impact in operation. Exposure to impact and mechanical shock, either in operation, installation, transportation, or storage, may damage electronic circuits and housing components, leading to premature failure, and may cause the Connect Monitor to become unsafe. Damage caused by impact is not covered by warranty.

Do not drop the Connect Monitor.

Connect™ Monitor Instructions Manual

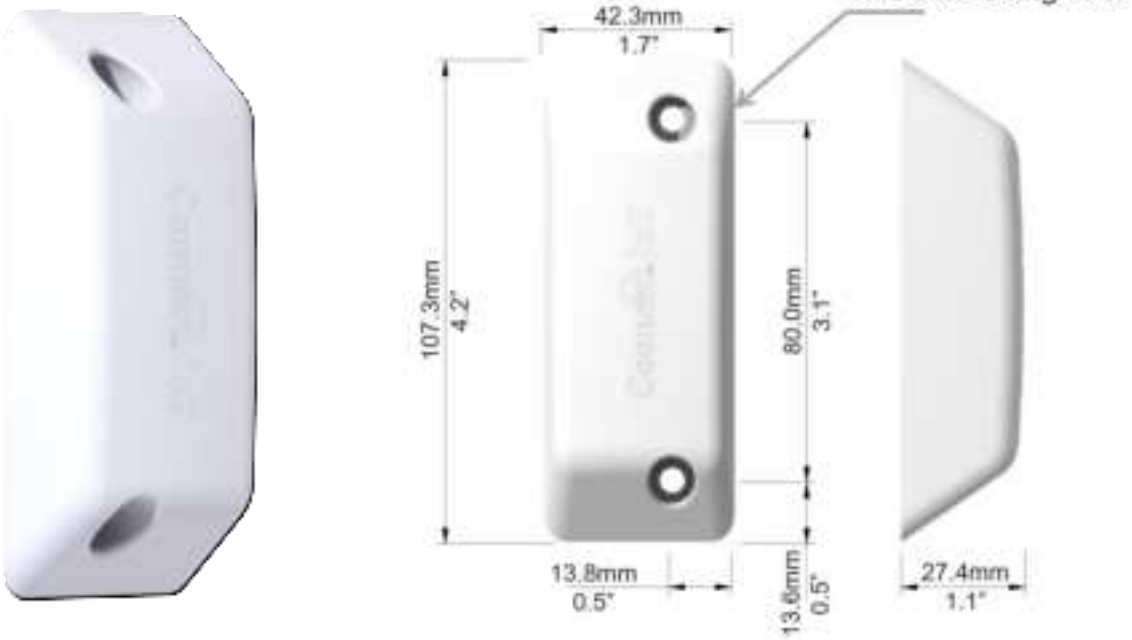
AUGUST 2020

Introduction

The Connect Monitor by Wellington is a battery operated self-contained Bluetooth LE transmission sensor hub designed for providing radio connectivity to existing refrigeration equipment in the market. It adds functionality such as telemetry connectivity, asset tracking, and proximity based marketing.

Another unique feature is wireless connectivity to a mobile app that gives authorized Service Technicians full wireless access to data logging and troubleshooting.

- Mobile app with intuitive touch screen interface
- Wireless data logging and diagnostic control
- Compact size
- Built-in sensors
- Flexible installation

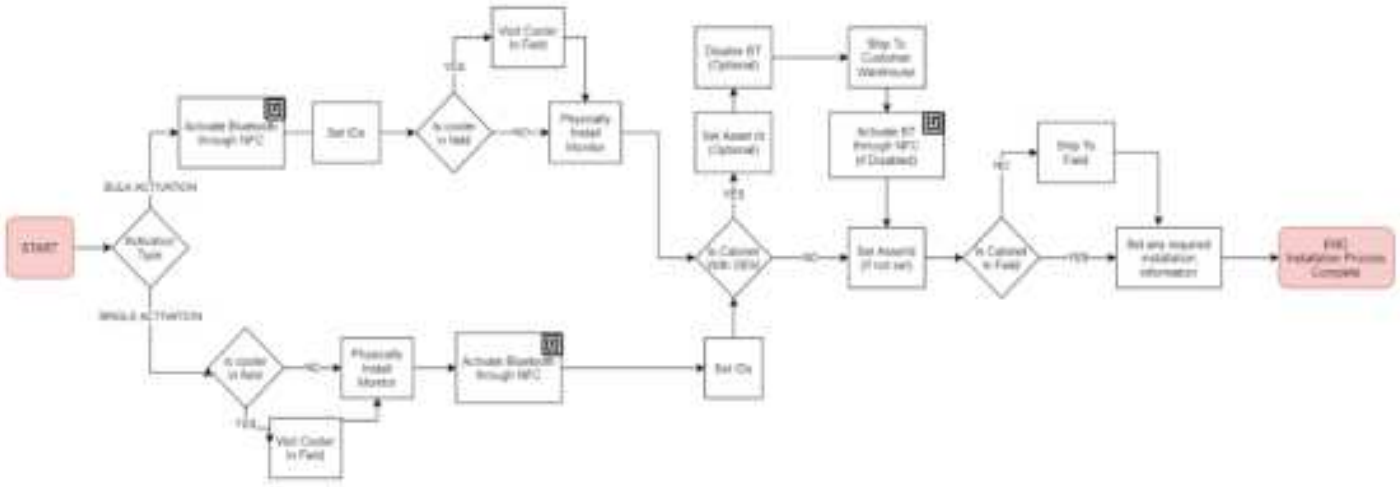


Process Overview

The following process details the steps required for Connect Monitor installation, commissioning, and activation within the Wellington Connect ecosystem and reporting tools.

> ***An NFC phone is required to activate Bluetooth connectivity. These steps are marked with the NFC symbol in the process diagram. If no suitable mobile phones are available at installation site, Bluetooth connectivity needs to be activated in warehouse, prior to field deployment.***

> ***Bluetooth deactivation for transport is not required, except when in accordance to shipment compliance. Please consult your logistics specialist for requirements.***
> ***Wellington recommends Bluetooth deactivation when transit duration is expected to be extensive, to preserve battery and extend the device usable life.***
> ***Connect Monitor is designed to recognize when equipment has been removed from operation. Therefore, deactivation for warehousing is not necessary.***



The installation process is designed for different scenarios:

- In-factory installation by equipment manufacturers;
- Warehouse installation by customers;
- Field installation by authorized personnel.

The Connect Monitor arrives from manufacturer with Bluetooth communications configured to OFF to preserve battery and extend usable life.

> ⚠ ***The Manufacturer, Owner, and Brand IDs are factory set to BLANK.***

Activation of the Connect Monitor turns on Bluetooth communications and must be performed using an NFC capable device. All other configurations can be performed over Bluetooth connection.

- Bulk Activation is designed for use when activating multiple devices prior to installation;
- Single Activation is designed for single (or low count) device activation at the time of installation.

Once activated, the following data must be configured to ensure data collection and storage for the Connect Monitor:

- Manufacturer Id
- Owner Id
- Brand Id
- Asset Number

The following data should also be configured when Connect Monitor is installed into an asset:

- Model
- Serial Number

When an asset fitted with Connect Monitor is delivered to a field location, or installed in outlet, the following data should be entered through the SCS Field mobile app.

- Installation Address
- Additional Data
- Photos and Notes

> ⓘ ***Please follow all steps in the process defined by your organization.***

Attributes which **must** be configured:

- Manufacturer Id
- Owner Id
- Brand Id
- Asset Number

Attributes which **should** be configured:

- Model
- Serial Number
- Installation Address
- Additional Data
- Photo and Notes

Physical Installation

Position and Location

For optimum operation, the choice of physical location and position of the Connect Monitor should meet all the following criteria.

If installation in accordance to the below conditions proves to be challenging, please contact your WDTL representative to review appropriate recommendations.

FOR COOLERS WITH EVAPORATORS LOCATED AT THE TOP OF THE CABINET:

Connect Monitor must be mounted BELOW the evaporator inlet, preferably ABOVE the top shelf.

This ensures the Connect Monitor reads the return air temperature correctly.

Installation ABOVE the evaporator inlet may result in incorrect temperature reading due to placement in an air circulation dead-space that is often different to the cabinet temperature.

Connect Monitor works best when mounted on the side wall on the HINGE side of the cooler.

Hinge side placement reduces the visual impact and likelihood of Connect Monitor being accidentally knocked out of place.

When possible, mount Connect Monitor away from LED panels to improve temperature measurement accuracy.

FOR COOLERS WITH EVAPORATORS LOCATED AT THE BOTTOM OF THE CABINET:

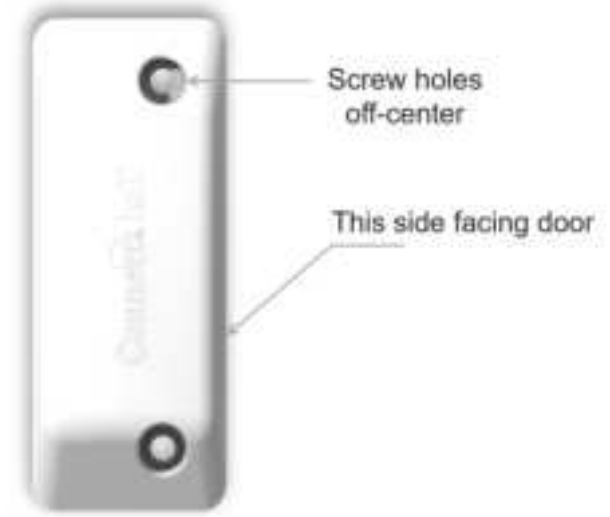
Connect Monitor must be mounted in front of the evaporator inlet.

This ensures the Connect Monitor reads the return air temperature correctly.

Installation not in the airflow stream may result in incorrect temperature reading due to placement in an air circulation dead-space that is often different to the overall cabinet temperature.

When possible, mount Connect Monitor away from LED panels to improve temperature measurement accuracy.

FOR ALL INSTALLATION TYPES:



The side closer to the screw holes must be installed facing the door.

> ⚠ ***This is critical to ensure door opening detection.***

When installed, the barcode should be facing the back of the cooler, and hence not be visible from the front.

> ⚠ ***If you can see the barcode label after installation, Connect MONITOR is installed facing the wrong way and door openings will not be detected.***

The front edge of the Connect Monitor should be installed within 70 mm (2 3/4”) of the point where the door seals touch the cabinet wall.

> ⚠ ***This ensures accurate door detection. If the device is placed too far from the door, door opening count will not be accurate.***

Procedure

STEP 1

Clean mounting surface using the supplied alcohol wipe.

STEP 2

Wait for surface to dry before attaching Connect Monitor.

> ⚠ ***If cabinet is cold, ensure there is no condensation on the surface prior to attaching the device.***

STEP 3

Expose adhesive on the back of the device by removing liner.

STEP 4

Firmly press Connect Monitor onto mounting surface and hold for at least 5 seconds.

STEP 5 (optional)

Insert the two #8 self-drilling screws provided into the mounting holes.
Use a standard Phillips head driver to secure screws into the mounting surface (screws will pierce foam tape and seal).

Connect Monitor Activation via NFC

Prerequisites

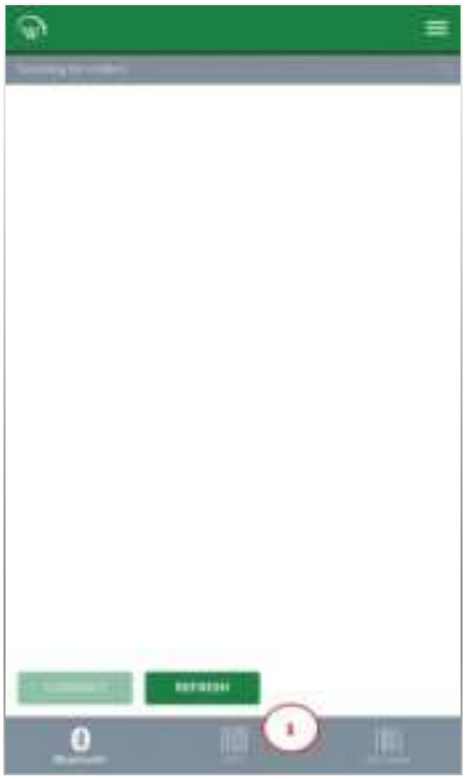
- An NFC capable mobile phone is required to perform Activation on an Connect Monitor.
    - Prior to initiating the process, check that the mobile phone has NFC enabled. Please refer to the phone user manual for instructions on how to enable NFC.

- Make sure you have the latest version of SCS Connect Field application installed and activated to the correct database. Check for updates in the App Store or Google Play. Detailed instructions on how to install and activate Connect Field app can be found in **Field App Quick Steps**, available on request.

- There are two types of activation processes: Single and Bulk:
    - For single or low count unit activation, follow the Single Activation process.
    - For multiple unit activation, follow the Bulk Activation process.

Single Activation process through SCS Field App

Open the Connect Field app and follow the steps below.



1. From the “Scanning for coolers” screen, navigate to NFC tab at the bottom of the screen.

> ⚠ ***Connect Monitor will not be visible on “Scanning for coolers” screen until Bluetooth is activated via NFC.***

2. The following message will be visible: “Move your mobile device close to the SCS Monitor you wish to connect to”.

3. Place your mobile phone on top of the Connect Monitor, as depicted, until “CONNECTING MoXXXXXXXX” message is displayed.

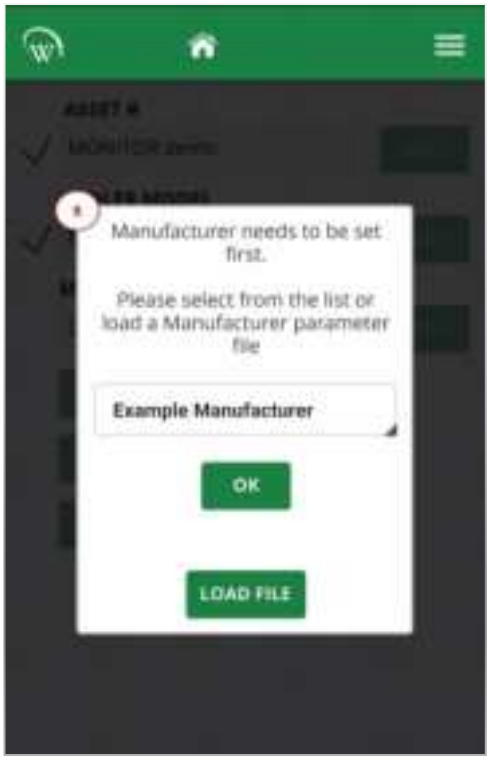
You may need to hold the phone over the Connect Monitor for a few seconds to establish an NFC connection.

If this process takes longer than 5 seconds, try slowly hovering your phone over the device to facilitate alignment of the device NFC module and the phone NFC antenna.

4. “CONNECTING MoXXXXXXXX“ will be displayed when NFC is enabled.

> ⚠ ***The phone may emit a sound and vibration when NFC is successfully enabled on the Connect Monitor.***

You will be automatically connected to Connect Monitor via Bluetooth for visualization and set up.



5. Upon successful connection you will be prompted with the configuration screen. Please specify the Manufacturer, Owner and Brand.

> ⚠ ***It is vital to configure the device to the correct Manufacturer and Owner.***

> 🛈 ***This ensures only authorized connections can be made to the device, and data collection is only possible by the assigned Owner.***

Please refer to Field App Quick Steps for detailed instructions on how to:

- *WT9403_Set IDs through SCS Connect Field App*
- *WT9404_Set Asset Details through SCS Connect Field App*

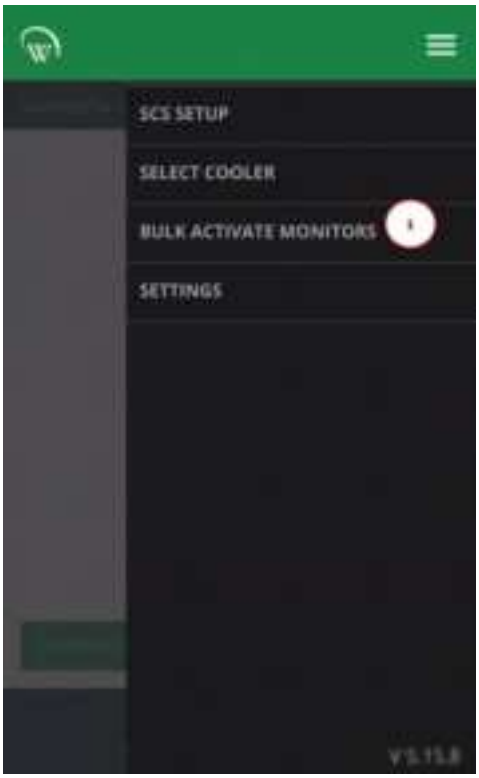
Available on request.

Bulk Activation process through SCS Field

Open the SCS Field app and follow the steps below.

This option is only available for users with the appropriate permissions.

- ***Please contact the relevant person within your organization (User Manager) if you wish to gain access to the BULK ACTIVATE MONITORS option within SCS™ Field App.***



1. From the menu tab, navigate to the BULK ACTIVATE MONITORS tab.

2. “Ready to Scan” screen will be displayed.

From this screen, select START BULK ACTIVATION.

3. “Move your mobile device close to the SCS Monitor you wish to activate” message will be visible.

4. Place your mobile phone on top of the Connect Monitor, as depicted, until "CONNECTING MoXXXXXXXX" message is displayed.

> ***You may need to hold the phone over the Connect Monitor for a few seconds to establish an NFC connection.***

> ***If this process takes longer than 5 seconds, try slowly hovering your phone over the device to facilitate alignment of the device NFC module and the phone NFC antenna.***

5. "Activated MoXXXXXXXX" message will be displayed when NFC is enabled.

> ***The phone may emit a sound and vibration when NFC is successfully enabled on the Connect Monitor.***

6. Continue activation of the next Connect Monitor by repeating **Step 4.**

7. When all Connect Monitor have been activated, please select STOP BULK ACTIVATION

It is vital to configure the device to the correct Manufacturer and Owner.

-This feature is NOT supported for Bulk Activation in the Field Trial Prototype units. So manufacturer and owner needs to be set up at the point of installation-

This ensures only authorized connections can be made to the device, and data collection is only possible by the assigned Owner.

Please refer to Field App Quick Steps for detailed instructions on how to:

- *WT9403_Set IDs through SCS Connect Field App*
- *WT9404_Set Asset Details through SCS Connect Field App*

Available on request.

Connecting to Connect Monitor

Connecting to Connect Monitor requires the SCS Field app, available on Google Play Store and the App Store.

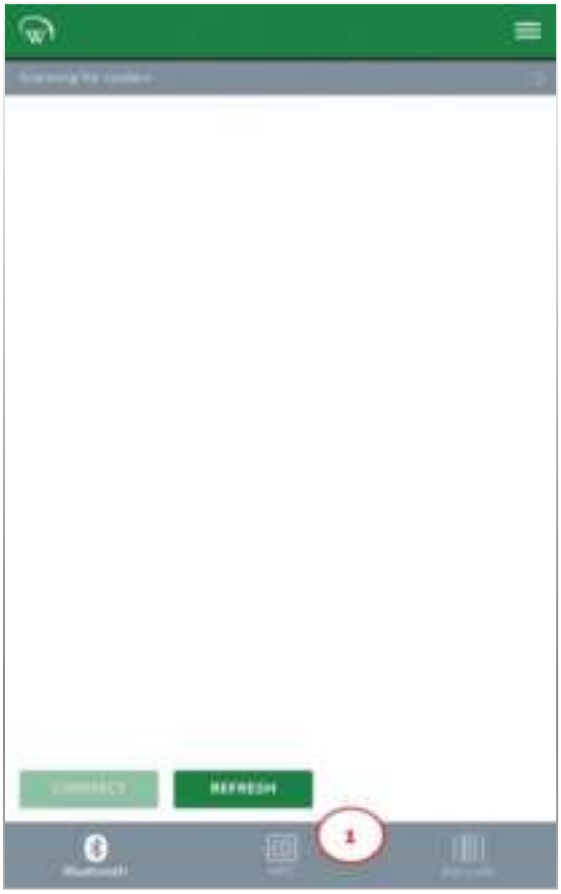
Make sure you have the latest version of SCS Field application installed and activated to the correct database. Check for updates in the App Store or Google Play. Detailed instructions on how to install and activate Field app can be found in Field App Quick Steps, available on request.

There are three ways the SCS Field app can connect to the Connect Monitor. All are accessed through the SELECT COOLER page:

BLUETOOTH

As per an SCS controller, select the advertised Id (MoXXXXXXXX) of the target device and select CONNECT

NFC



1. Select NFC from the bottom banner.

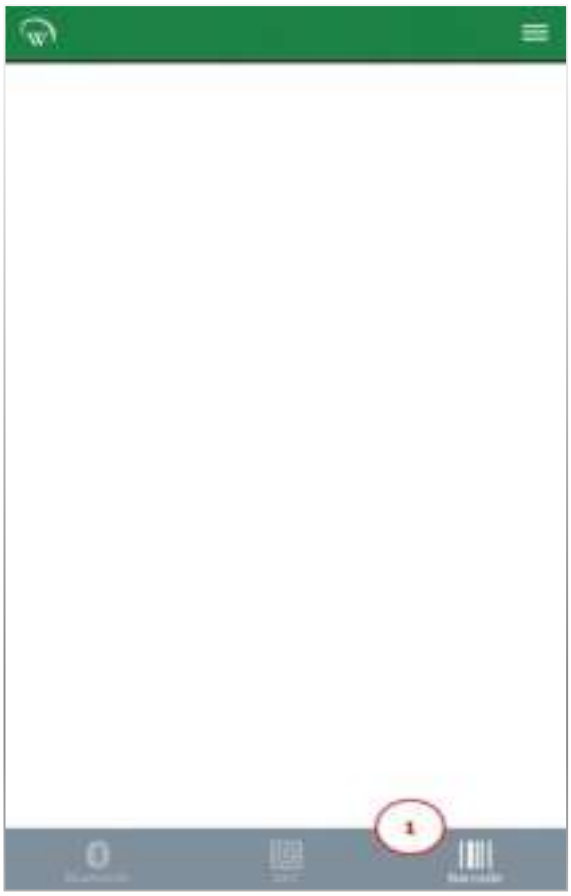
2. Hold the phone close to the Connect Monitor you wish to connect to.

You may need to hold the phone over the Connect Monitor for a few seconds to establish an NFC connection.

If this process takes longer than 5 seconds, try slowly hovering your phone over the device to facilitate alignment of the device NFC module and the phone NFC antenna.

3. The phone will read the NFC tag inside the Connect Monitor and connect to the device over Bluetooth.

QR CODE



1. Select BARCODE from the bottom banner

2. Point the camera at the QR code included in the Connect Monitor label.

> ⚠ ***FOR FIELD TRIAL UNITS ONLY!!***
> ***If the device is already installed, the label will be facing the FRONT of the cooler.***

3. The phone will read the QR code and connect to the Connect Monitor over Bluetooth.

Google Play

Apple Store

Parameters

All parameters are set to read and write by any level of user unless otherwise stated.

HIGH TEMPERATURE ALARM SET POINT (not supported in Field Trial Prototype units)

Description	Parameter Range	Increment & Units	Default
The Absolute Temperature above which an alarm is triggered. The measured temperature must exceed this setpoint for a time specified by **Temperature Out-Of-Spec Alarm Delay** before the alarm is triggered.	-40.0 to 15.0 or disabled	0.1°C	disabled

LOW TEMPERATURE ALARM SET POINT (not supported in Field Trial Prototype units)

Description	Parameter Range	Increment & Units	Default
The Absolute Temperature below which an alarm is triggered. The measured temperature must exceed this setpoint for a time specified by **Temperature Out-Of-Spec Alarm Delay** before the alarm is triggered.	-40.0 to 15.0 or disabled	0.1°C	disabled

TEMPERATURE OUT-OF-SPEC ALARM DELAY (not supported in Field Trial Prototype units)

Description	Parameter Range	Increment & Units	Default
The amount of time the measured temperature must be continuously above or below the alarm setpoints before an out-of-spec alarm is triggered. If the measured temperature returns to values between the high and low alarm setpoint range, this time counter is reset.	0.5 to 4 hours	0.5 hours	2 hours

DOOR OPEN DELAY (not supported in Field Trial Prototype units)

Description	Parameter Range	Increment & Units	Default
The time between the cabinet door opening (and staying open), and the Door Open Alarm triggering.	0 seconds to 1800 seconds	10 seconds	180 seconds (3 minutes)

TEMPERATURE CALIBRATION OFFSET (not supported in Field Trial Prototype units)			
Description	**Parameter Range**	**Increment & Units**	**Default**
The offset amount applied to the Air Temperature parameter to compensate between the measured value and the actual Air-Temperature inside the cabinet used by the equipment control system. ***This parameter is intended to be set automatically by the Field app upon selection of equipment model.***	-10.0 to 10.0 °C	0.1 °C	0.0 °C

TEMPERATURE CALIBRATION OFFSET - read/write permissions for service technician, read only for sales

LOGGING INTERVAL			
Description	**Parameter Range**	**Increment & Units**	**Default**
Sets the time (in minutes) between logging of statistics. Statistics are uploaded via the asset tracking application to the cloud for viewing of historical data.	30 to 1440 minutes	1 minute	30 minutes

Connect Monitor LED Indicator

Connect Monitor is equipped with a single LED indicator, used to impart meaningful messages through flashing sequences.

The operating scheme is as follows:

Connect Monitor State	Pattern	Purpose
Activation successful	Three 5ms flashes at 200 ms intervals	Demonstrates a successful activation, removed from flight mode, and advertising Bluetooth. *Supports recognition of firmware startup and reboot.*
Normal operation	One 5ms flash every 30 seconds (rate configurable)	Monitor is advertising Bluetooth and fully configured but does not have an active Bluetooth connection.
Normal operation, incomplete configuration	Two 5 ms flashes every 30 seconds (rate configurable)	Monitor is advertising Bluetooth but with incomplete configuration (such as missing asset number or owner ID).
Bluetooth connected	One 5 ms flash every 2 seconds	Indicates Monitor has an active Bluetooth connection with a device.
Deactivation successful	Ten 5 ms flashes at 200ms intervals on BT disconnect.	Indicates Monitor is entering deactivated state, as set through the Field App. *Demonstrates Monitor is entering flight mode with Bluetooth deactivation.*
Flight mode	No flashing	Indicates that Monitor is in its lowest power state: *Bluetooth is turned off, requiring an NFC interaction for activation.*

Technical Specs

Technical Specification Table

POWER	
Battery Life*	5+yrs
ENVIRONMENTAL	
Operational Temperature Range	-35°C to +40°C (-31°F to +104°F) <90% RH non-condensing
Storage Temperature Range	-40°C to +85°C (-40°F to +185°F) <90% RH non-condensing
CONNECTIVITY	
Bluetooth™ Capability	Bluetooth™ SMART
NFC Capability	Passive read/write
Supported Windows O/S for GUI module	Windows 7 Windows 8 Windows 8.1 Window 10
Supported Mobile App Devices	Android with Bluetooth 4.0 and OS 4.4.3 or above iPhone 4S or later iPAD 3rd Gen or later iPAD mini
PHYSICAL	
Dimensions	Connect Monitor Overall Dimensions: 107mm (H) x 42mm (W) x 27mm (D) 4.2” (H) x 1.6” (W) x 1.1” (D)
Weight	100g (3.5oz)
Activity Indicators	LED Indicator
Housing Material	ABS
COMPLIANCE AND APPROVALS	
Fire Rating	UL94-HB

Compliance** (includes EMC, RF, Safety&Health)	CE RED Certification: • EN300328 V2.2.2, EN300330 V2.1.1, EN301489-1&17 & -3, EN62479, EN62368-1, EN60529. FCC: • FCC part 15C, 15B IC ID: • RSS247(for Bluetooth), ICES-003 (EMC), RSS-210 (for NFC)
Ingress Protection	IP67
European Directive: Restriction of Hazardous Substances	EU Directive 2011/65/EU (RoHS)
European Directive: Waste Electrical and Electronic Equipment	EU Directive 2012/19/EU (WEEE)^
Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)	Regulation (EC) No 1907/2006
Bluetooth SIG**	BQB QDL

^ Article 11 Recovery and Recycling Calculation of Theoretical Recovery and Recycling Rate
* Under nominal operating conditions
**Approvals pending

FCC Declaration

CLASS B DEVICE
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC Caution:
Changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

FCC Statement:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
• Reorient or relocate the receiving antenna
• Increase the separation between the equipment and receiver
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
• Consult the dealer or an experienced radio/TV technician for help RSS-Gen & RSS-247 statement:

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:
1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
1. l'appareil ne doit pas produire de brouillage, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RSS-102 Statement:
This equipment complies with Industry Canada radiation exposure limits set forth for an uncontrolled environment.
Cet équipement est conforme à l'exposition aux rayonnements Industry Canada limites établies pour un environnement non contrôlé.

Glossary

Term Used	Definition
CE Mark	Conformité Européenne. The CE mark signifies that the product conforms to all applicable European Directives required by the European Economic Area (EEA).
Cooler Unit	The unit containing the refrigeration system and an insulated space for storing and displaying product.
cUL Mark	The cUL Mark signifies that the product conforms to the relevant safety compliance required by the USA and Canada.
Diagnostics	The process of analyzing data from the controller to determine the current function of the unit, particularly for initial set up and fault finding.
EU Directive 2011/65/EU (RoHS)	The EU Directive which governs the Restriction of Hazardous Substances (RoHS) in goods. This directive is closely linked with the Waste Electrical and Electronic Equipment directive (WEEE).
EU Directive 2012/19/EU (WEEE)	The Waste Electrical and Electronic Equipment directive (WEEE), which governs the collection, recycling and disposal of electrical and electronic goods. This directive is closely linked with the Restriction of Hazardous Substances directive (RoHS).
GUI	Graphical User Interface.
HACCP	Hazard Analysis & Critical Control Points is a preventive approach to food safety and storage of medicines, where refrigeration control is recognized as a critical control point.
Internal Temperature	The temperature detected inside the cooler unit where the product is placed.
LED	Light Emitting Diode.
OEM	Original Equipment Manufacturer

Products	Products are the items being stored inside the refrigerated cabinet, for example chilled drinks.
Refrigeration System	The components comprising the complete refrigeration circuit, including controller, evaporator, expansion valve, condenser, compressor and evaporator fan.
Sensor	Sensors are devices which generate a signal used to control devices as a result of a detected environmental change. Probes are a kind of sensor, and the two terms are often used interchangeably.
Thermostat	A switch or signal device activated by changes in temperature.
UL Mark	The UL Mark signifies that the product conforms to the relevant safety compliance standard published by Underwriters Laboratories Inc.
VDE Mark	The VDE Mark signifies that the product conforms to the relevant electrical equipment safety regulations from the independent VDE organisation.