THERMO KING

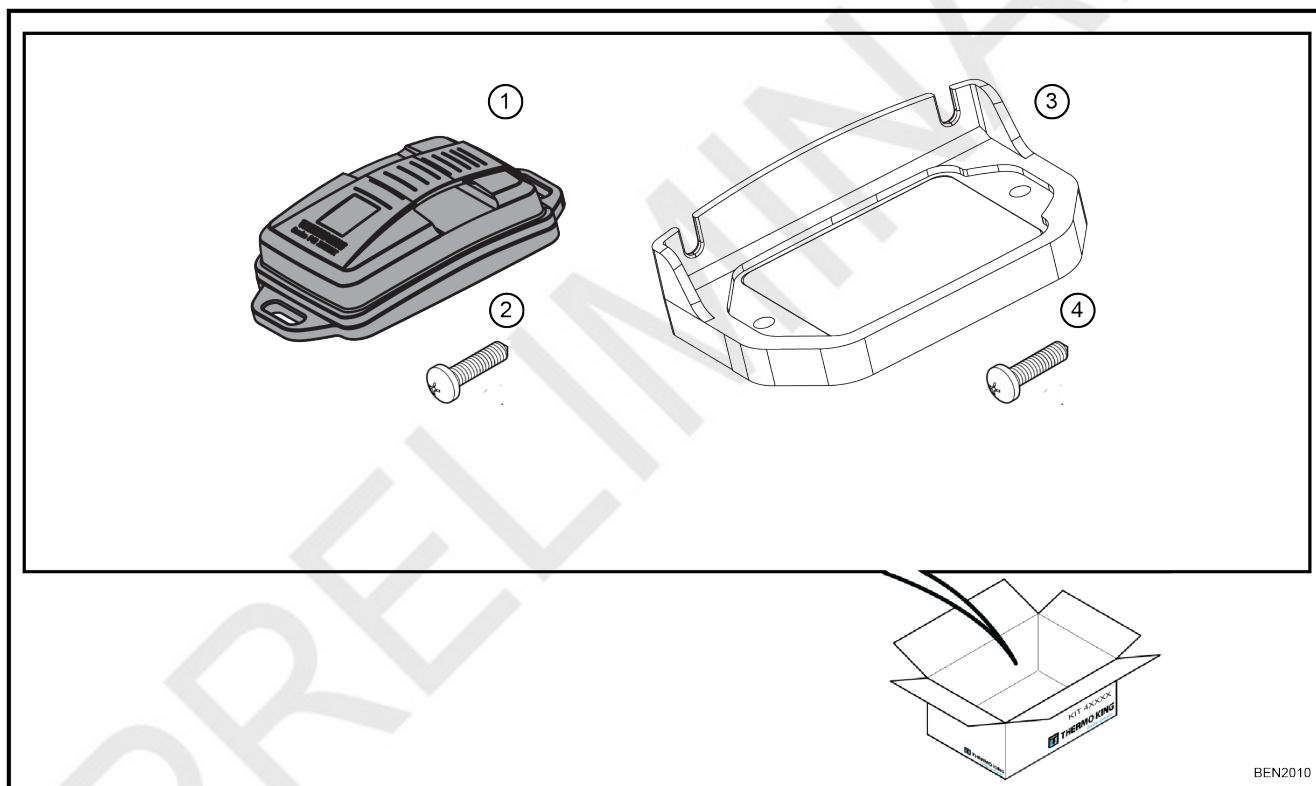# Installation Instructions

Wireless Sensors

Kit Contents

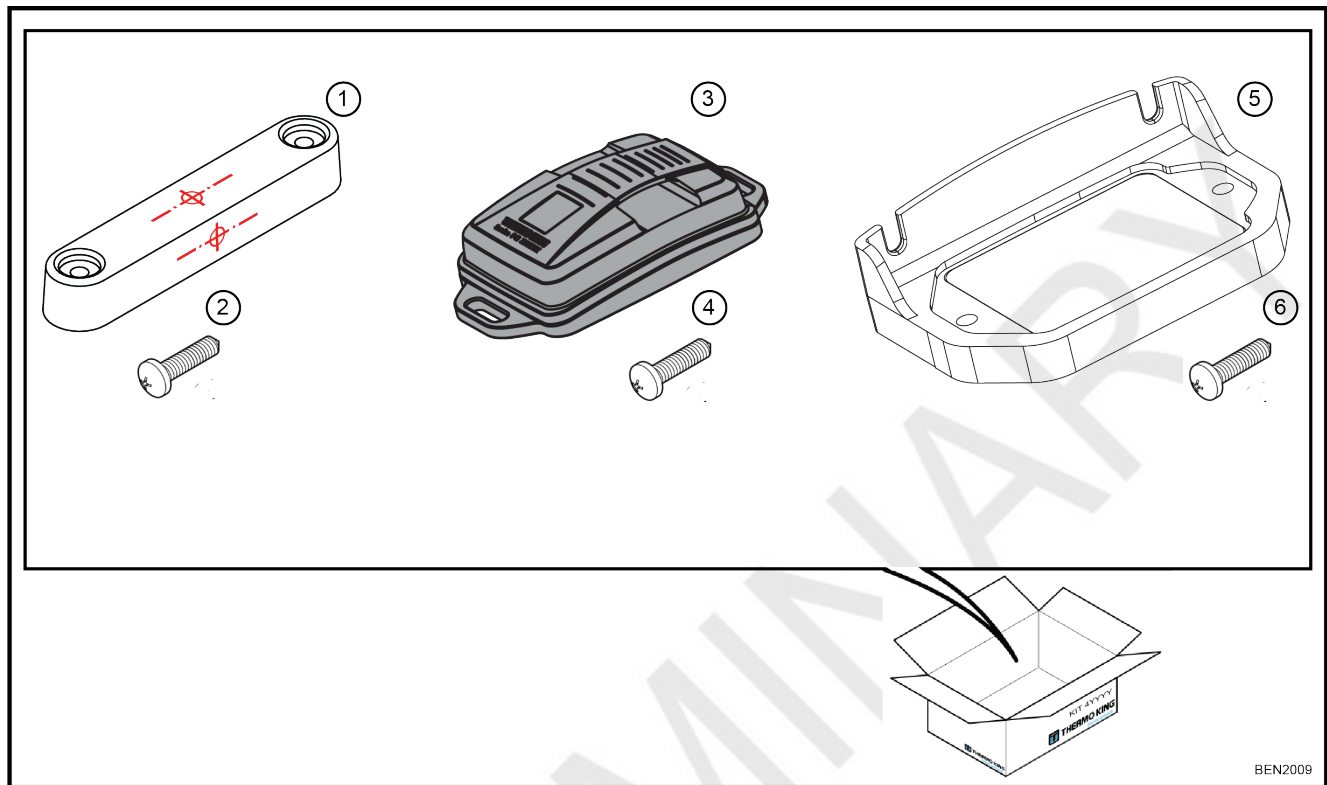## Temperature and Humidity Sensor Kit (401672)

BEN2010

Sl.No	Description	Qty
1	Temperature & humidity sensor	1
2	Screw, sensor	2
3	Bracket, sensor	1
4	Screw, bracket	2

Note: *For return air or discharge air installation, sensor 425484 is available on its own.*

THERMO KING

Door Sensor Kit with Magnet (401674)

BEN2009

Sl.No	Description	Qty
1	Magnet, door sensor	1
2	Screw, magnet	2
3	Door sensor	1
4	Screw, sensor	2
5	Bracket, sensor	1
6	Screw, bracket	2

THERMO KING

Important Information

Before starting the installation, be aware of the following requirements:

1. The Thermo King wireless sensors advertise information via Bluetooth low energy. It is required to have a Thermo King telematics device (i.e TK BlueBox) which will receive the information.

2. Make sure that the vehicle is active in TracKing before installing the sensor.

3. Make sure that the application version is TK Technician Alpha Release V13.apk or above.

4. Make sure that the TK BlueBox firmware version is M-F205 or above. There is no limitation on unit software version.

5. The installer needs to have the TK Technician application and credentials to add tractor ID sensor to the customer account.

Note: Make sure that the TK Activate application is removed from the phone before using the TK Technician application.

6. To activate the tractor ID sensor, the installer does not have to be beside the vehicle (The tractor id sensor is not linked to a particular BlueBox).

7. Installer must be near to the BlueBox to activate the temperature and door sensor (communication happens via Bluetooth).

Note: Make sure that the BlueBox is powered (LEDs on).

THERMO KING

Installation Best Practices

Important: <u>BEFORE</u> *beginning the installation disconnect all power to the refrigeration unit including standby power (if equipped).*

- Familiarize yourself with the components to be installed.
- Plan the layout and wire routing prior to permanently mounting any components.
- Make sure wire routes are free from abrasive materials and have adequate clearance from hot surfaces.
- Holes used for routing harnesses through metal frames, skins or structures should be smooth and non-marring and lined with a grommet.
- Remove fuse (located on the harness) prior to installation.
- Follow installation instructions specific to your installation kit and model refrigeration unit.
- Electrical harnesses routed inside the refrigeration unit must be secured to other harnesses or to a solid frame structure with insulated clamps or band wraps to prevent making contact with rotating or hot components.
- DO NOT attach electrical harnesses to copper tubing, exhaust components or fuel lines.
- Test Procedures must be performed to complete the installation.
- Fill out the Warrant Registration Form after completing the installation.

TK 61990-11-IS

THERMO KING

Wireless Sensor Activation using TK Technician Application

Activation of Temperature and Humidity Sensor, and Door Sensor in SLXi/A-Series
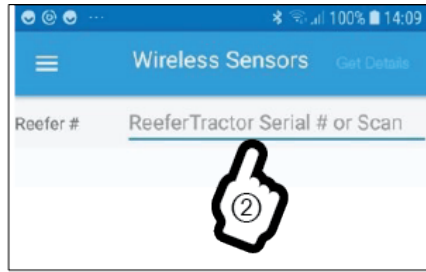
1. Open the TK Technician Application & click on the "WIRELESS SENSORS" option.

    Note: *Make sure that the BlueBox is powered (LEDs on).*

BEN1669

THERMO KING
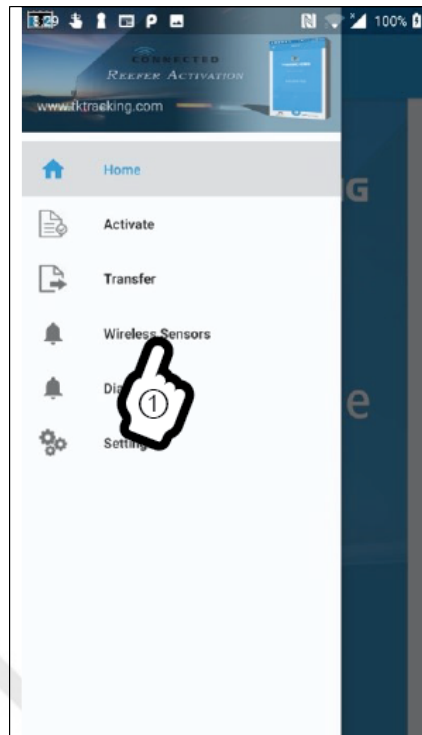
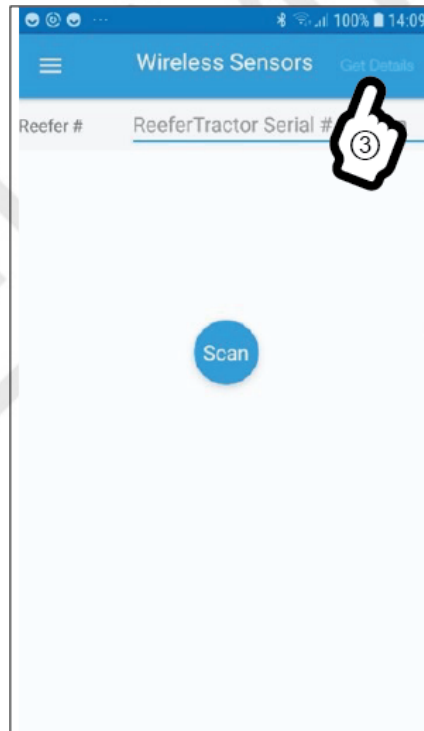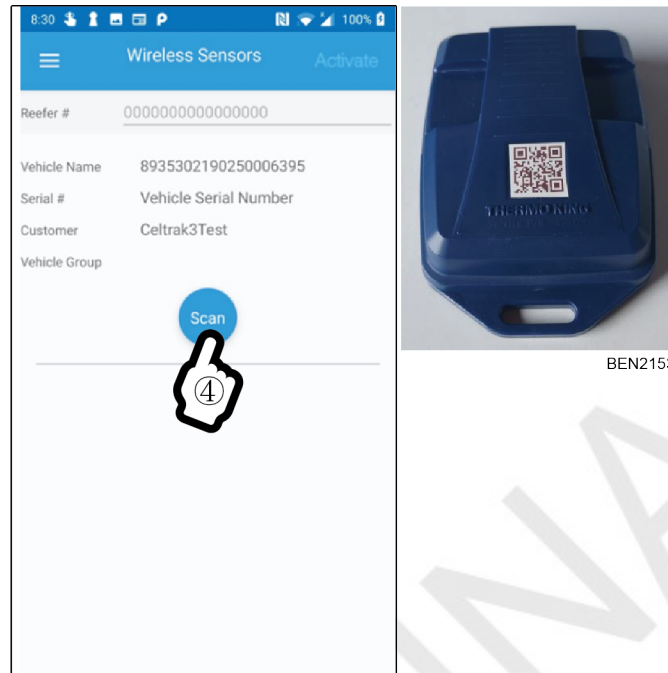2. Enter or scan the reefer serial number or enter the TK BlueBox phone number using the TK technician application.

OR

BEN1670

3. Click on the "GET DETAILS" option.

BEN1671

4. Scan the QR code on the rear side of the sensor to capture the Mac address.

BEN2153

5. Once application retrieves the data from the sensor, enter the sensor name, zone and position of the sensor, and then click on the "CONFIRM" to add the sensor to the bottom.

6. When all temperature and door sensors are confirmed, then click on "ACTIVATE".

Note: Make sure that the installer is near to the BlueBox at this moment.

BEN1673
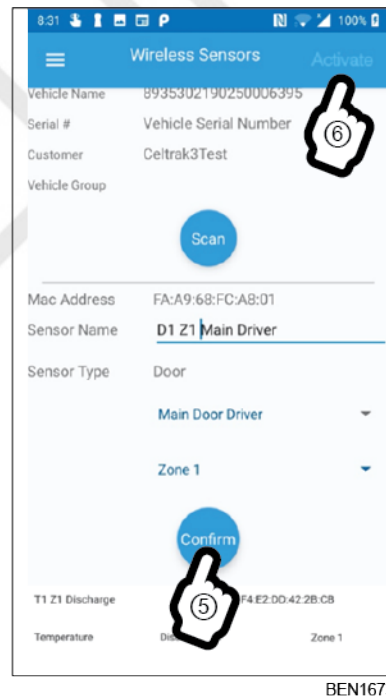
THERMO KING

7. If the Bluetooth activation is correct, you will receive a message at the bottom of the phone.
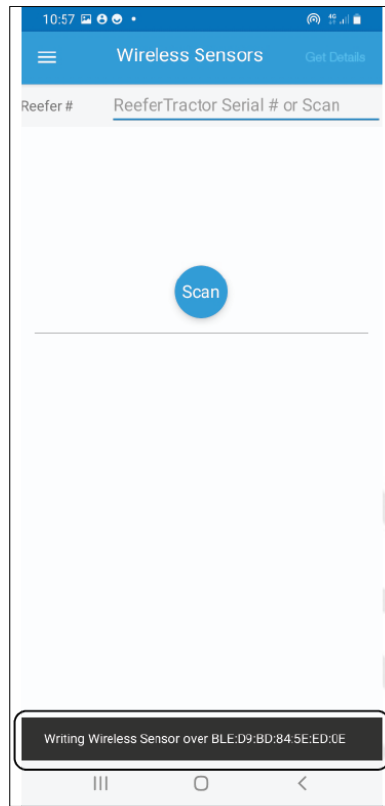
BEN1816

8. The temperature and humidity sensor, and door sensor are well installed and activated now.
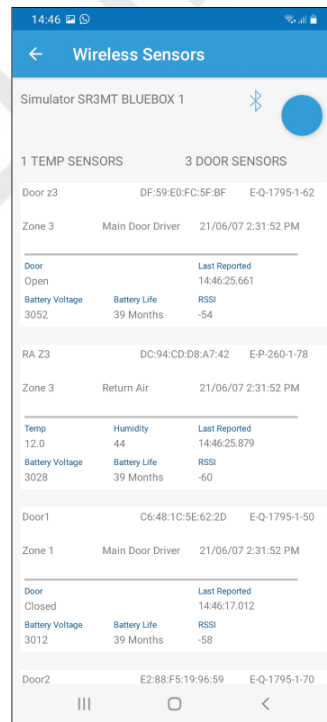
BEN1817

THERMO KING

Mounting Locations for Temperature/Humidity Sensor

The temperature and humidity sensor shall be mounted under the roof, at the Return Air Grille (RAG) or Discharge Air Grille (DAG) positions inside the refrigerated compartment.

Door Sensor
Temperature & Humidity Sensors

A - Ceiling 4/5 of zone 1
B - Ceiling 2/3 of zone 1
C - Ceiling 1/2 of zone 1
D - Between 10 cm to 20 cm

A B C

D

ZONE1
ZONE2

Discharge Air Grille (DAG)

Return Air Grille (RAG) +
Humidity Measurement

BEN2017
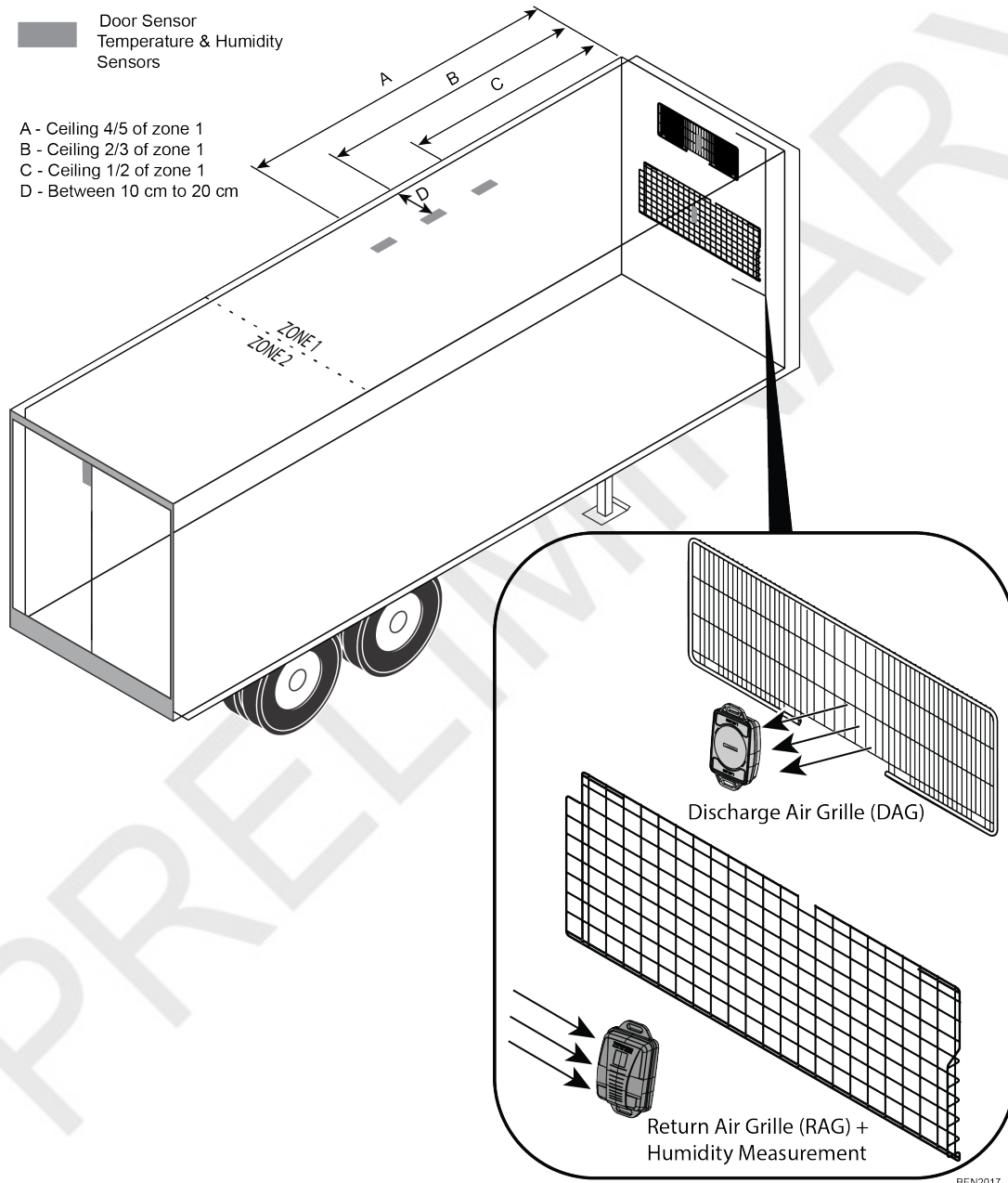
Note: *For installation at return air or discharge air, bracket is not required and the sensor can be tied with tie wraps. Use sensor PN 425484.*

Temperature and Humidity Sensor Installation

Installing the sensor under the roof:

1. Install the sensor on the bracket using screws.

BEN2011

TK 61990-11-IS
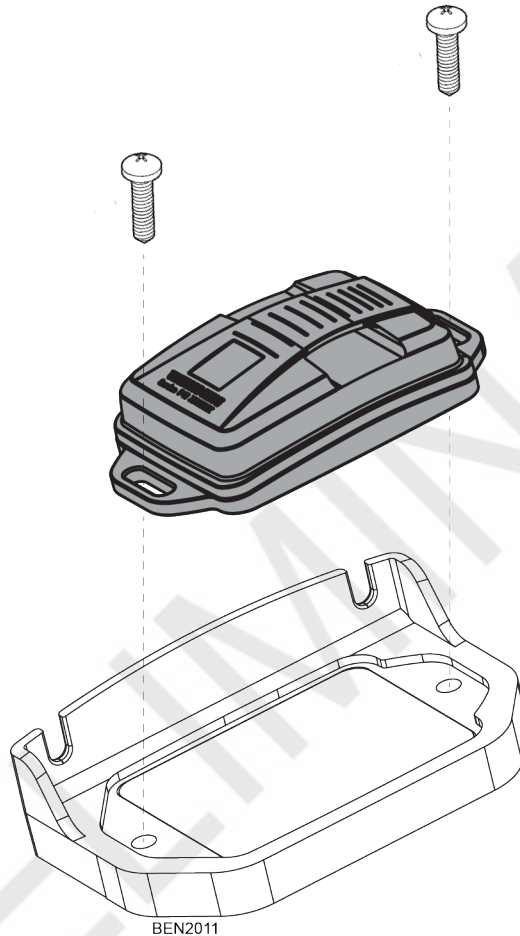
2. Locate the sensor mounting position on the roof. Refer the below illustration for the recommended position and direction from the host.

   Note: Always Install the sensor on the left side of roof to avoid the interference with forklifts.

   Note: Make sure that the sensor is facing towards the reefer. This is important to ensure the signal reaches the TK BlueBox when the trailer is loaded.
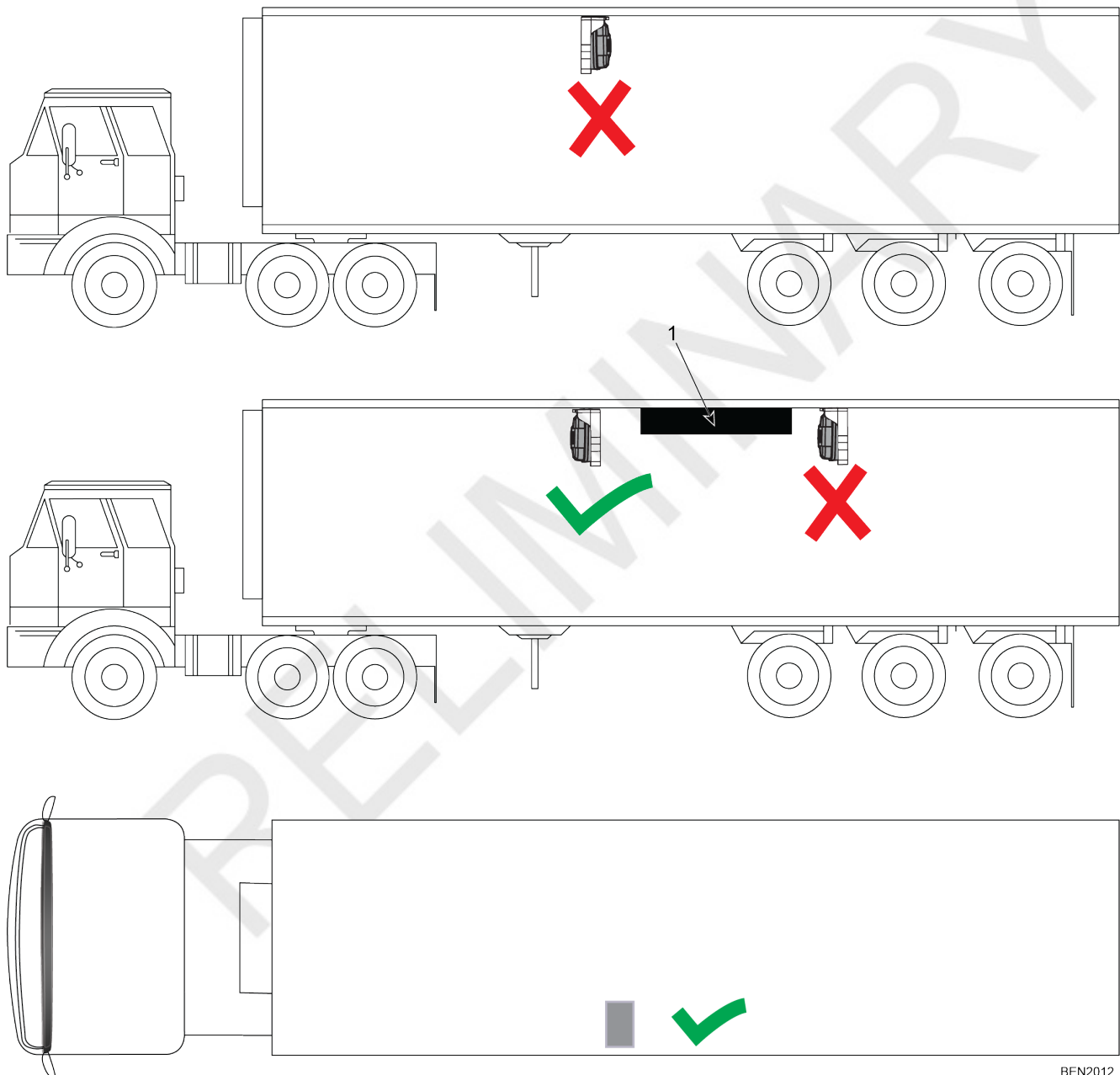
BEN2012

3. Mark the mounting holes position of the sensor bracket.
4. Drill the pilot holes on the roof.
5. Install the bracket assembly to the roof using screws.

Ceiling

Secondary Door

Primary Door

BEN2013

TK 61990-11-IS
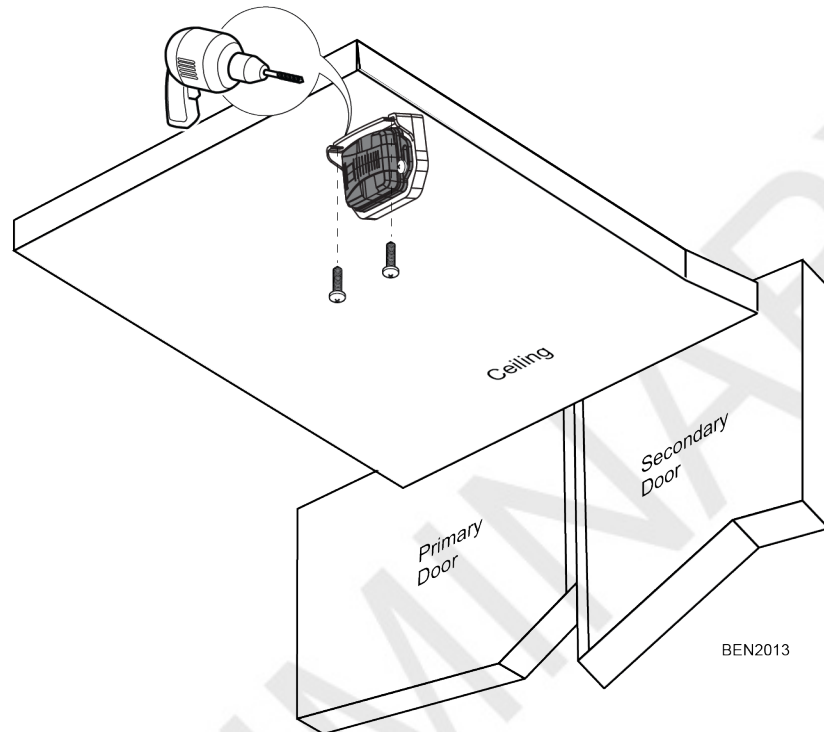
Door Sensor Installation

Note: For proper operation, there must be no metal item(s) between the sensor and magnet.

1. Locate the magnet mounting position on the door.
2. Mark the holes position of the sensor magnet on the door.

   Note: Use the provided template to make sure the distance between the sensor and the magnet is appropriate.

3. Drill the pilot holes on the doors.
4. Install the magnet on the door using screws.

BEN2014
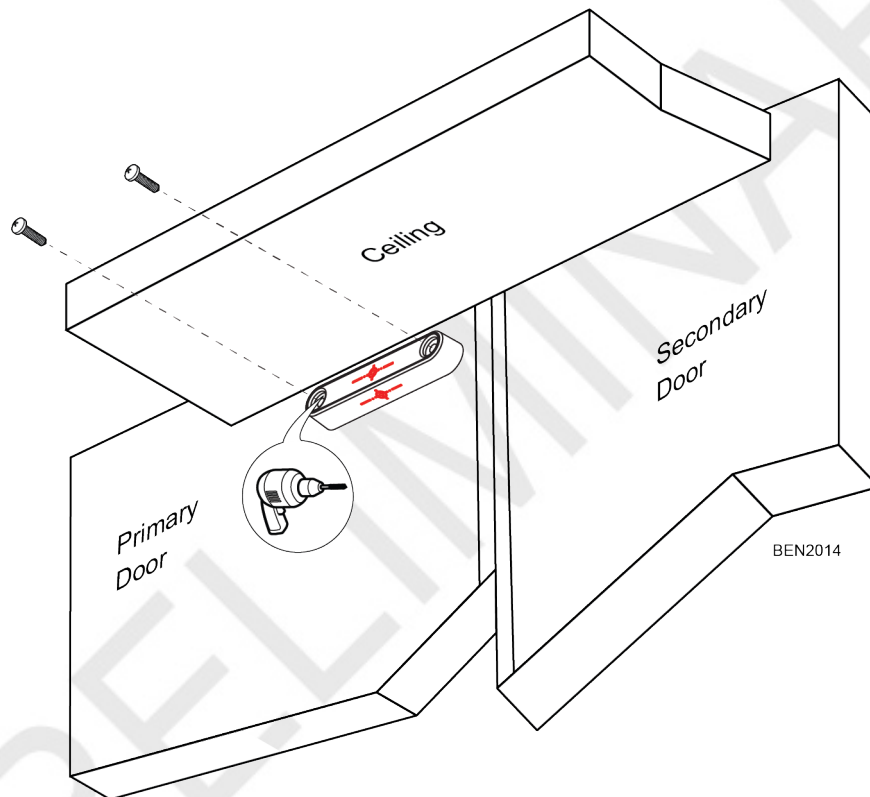
5. Locate the sensor mounting position on the roof.
6. Mark the holes position of the sensor on the roof.

   Note: *Make sure that the magnet is align with the sensor.*
7. Drill the pilot holes on the roof.
8. Install the bracket & sensor assembly on the roof using screws

Ceiling

Secondary Door

Primary Door

BEN2015
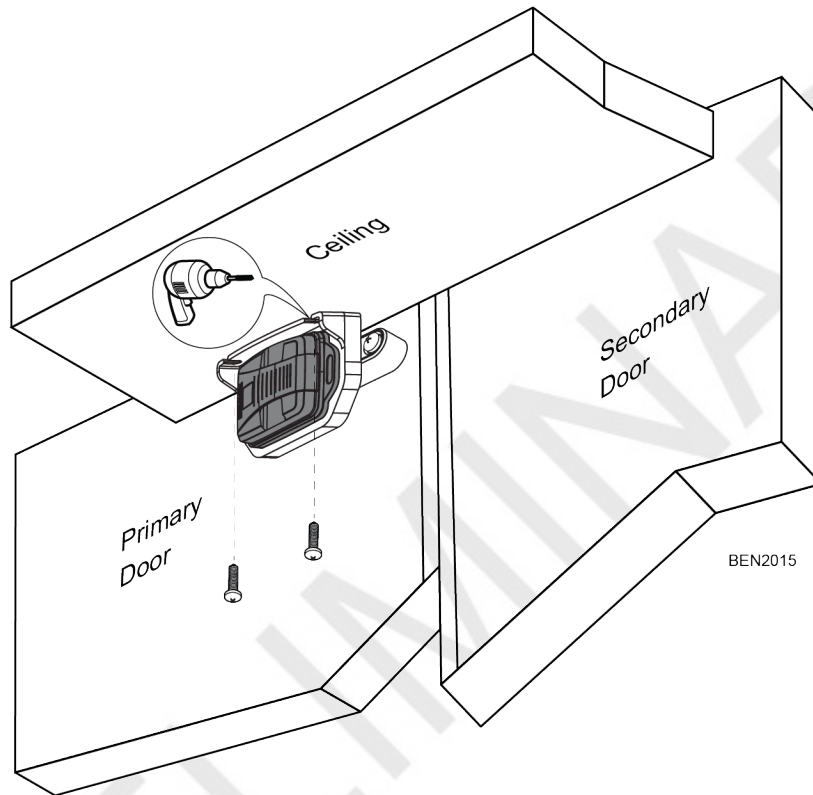
9. Test the door sensor is reporting correctly door open and door closed.

Wireless Sensors HMI Settings and Tracking

HMI Settings

SLXi units

1. Configuration 1 of 2 (To receive the door sensor information): a HMI Main Menu - Guarded Access - Unit Configuration - TK Telematics door switch Enabled? - Enabled
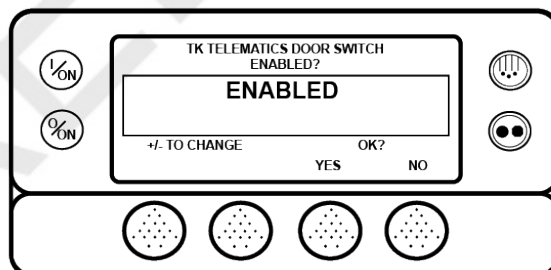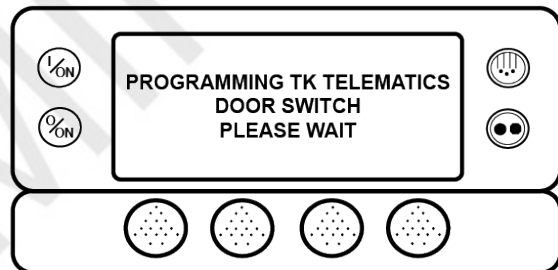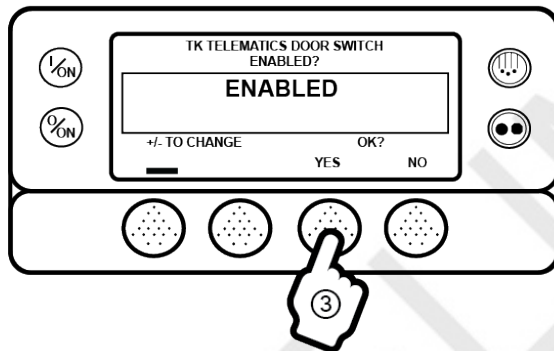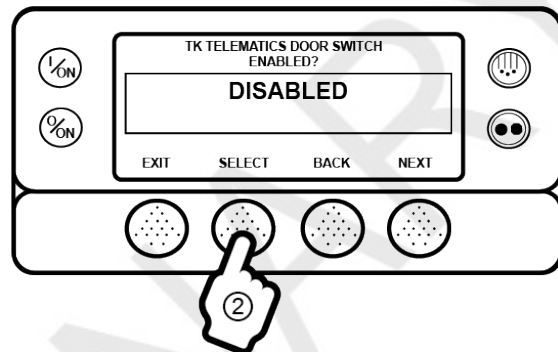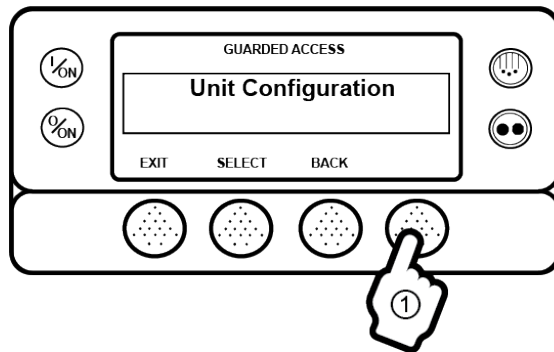
BEN1638

THERMO KING

2. Configuration 2 of 2 (To achieve fuel saving):

   • Configure - To High Speed Lockout.

BEN1639

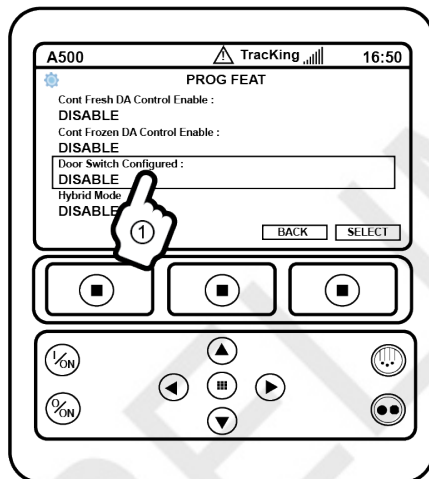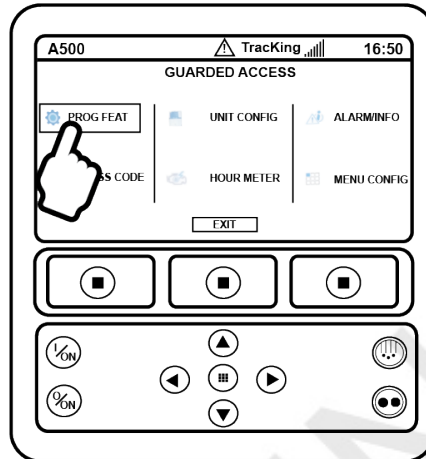©2021 Trane Technologies
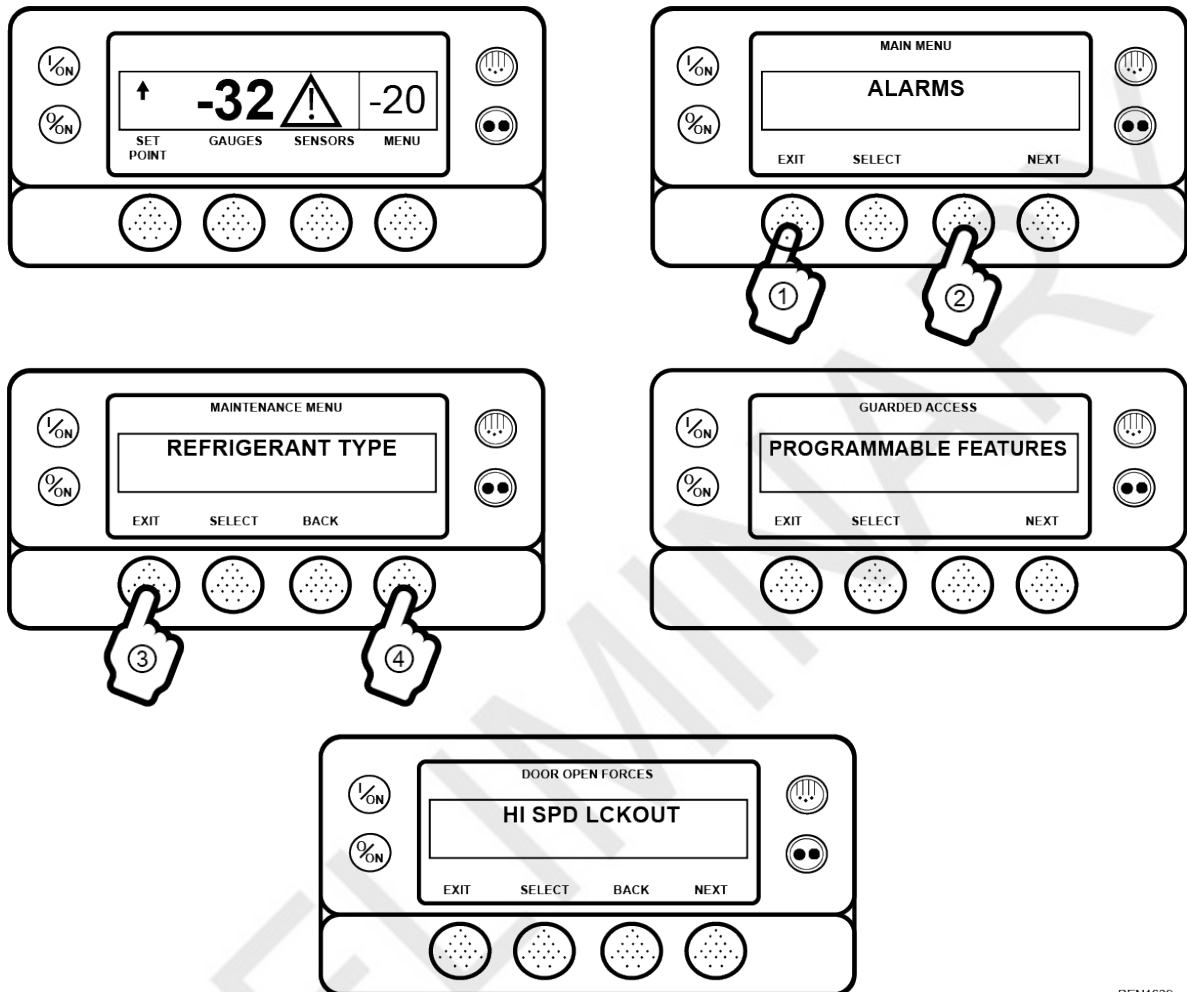
THERMO KING

- Configure - To Unit Null
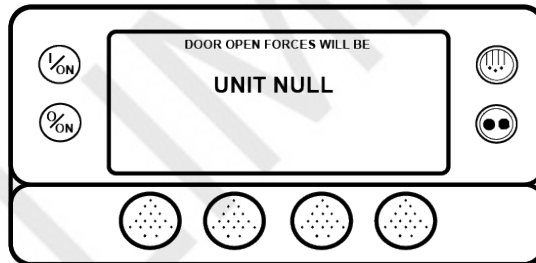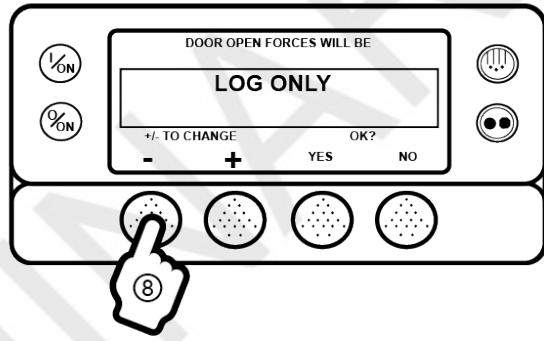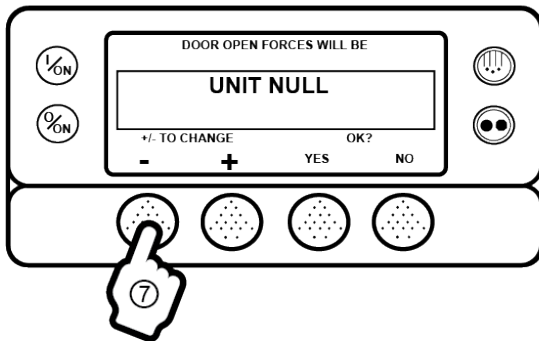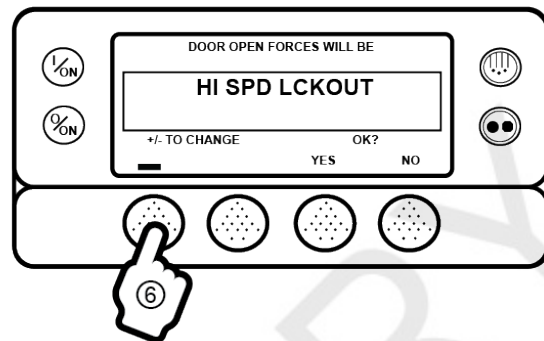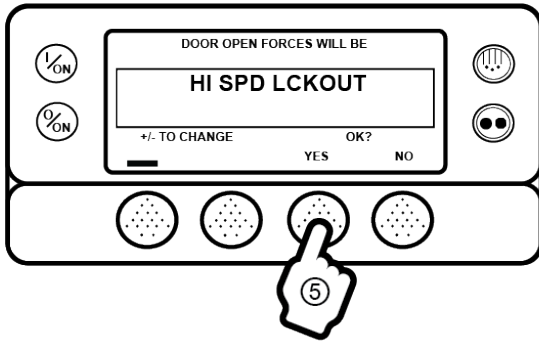
BEN1640

A-Series units

1. Configuration 1 of 4: HMI Main Menu - Guarded Access - PROG FEAT - Door Switch Configured - Enable
2. Configuration 2 of 4: HMI Main Menu - Guarded Access - PROG FEAT - Door Open Forces - UNIT NULL
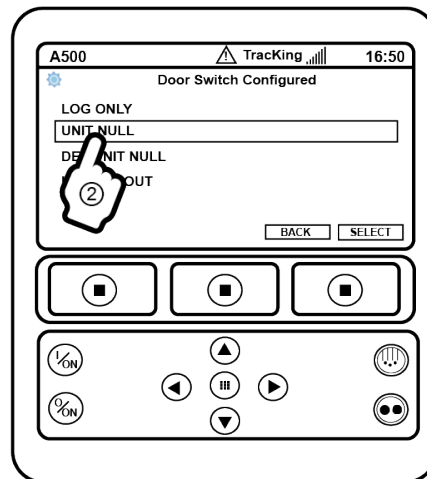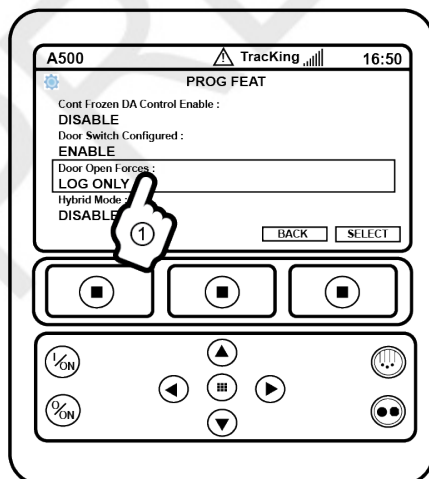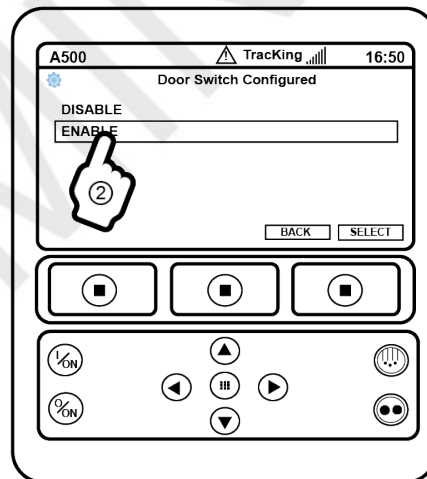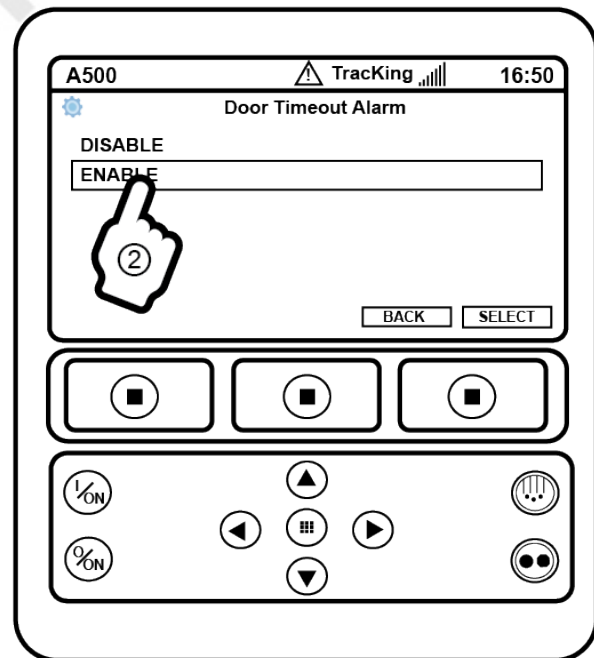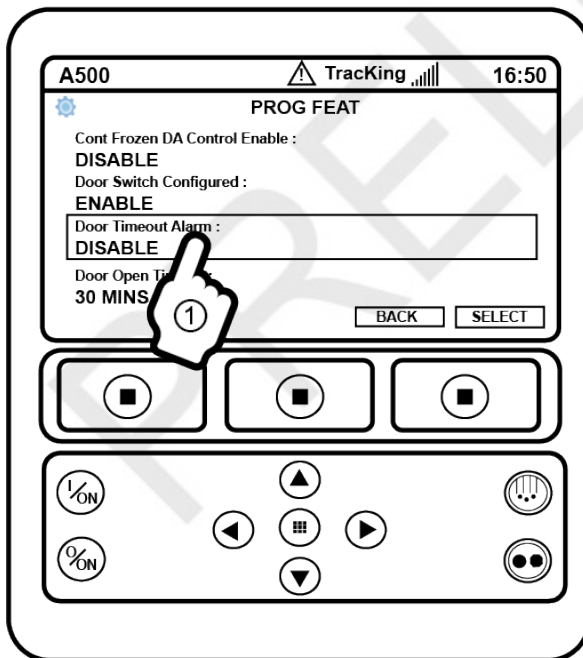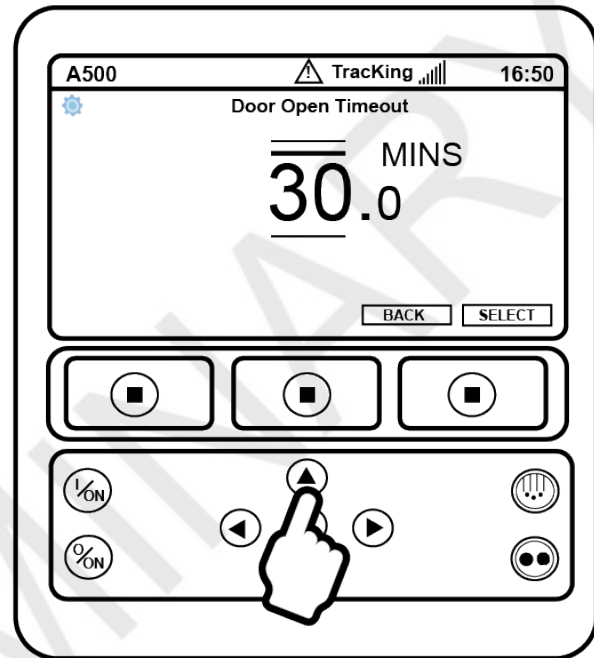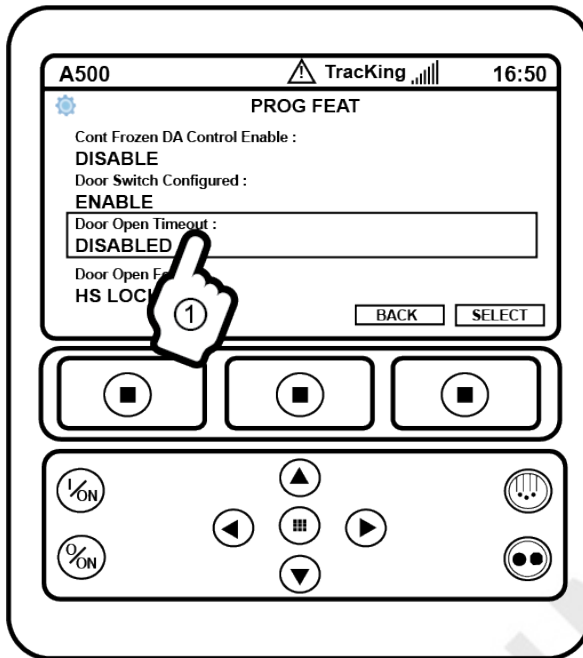

BEN1655

3. Configuration 3 of 4: HMI Main Menu - Guarded Access - PROG FEAT - Door Open Timeout - 30 MINS

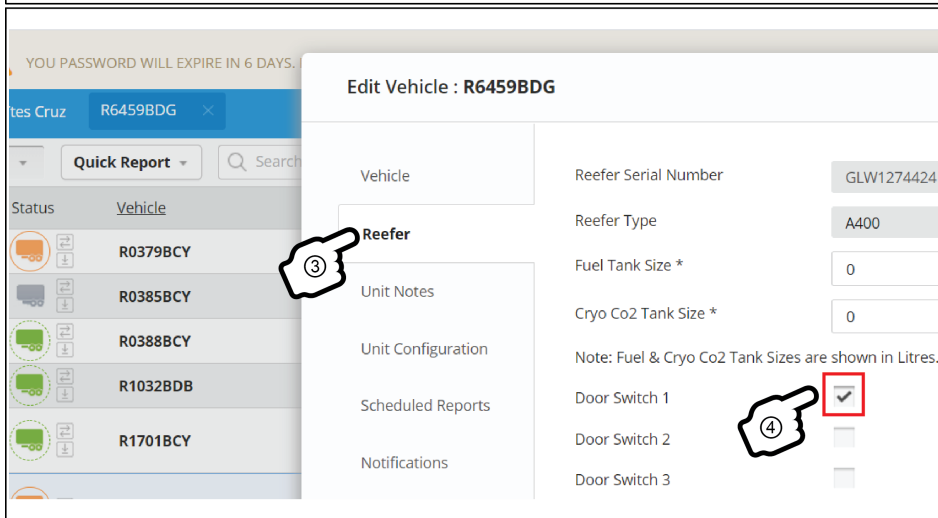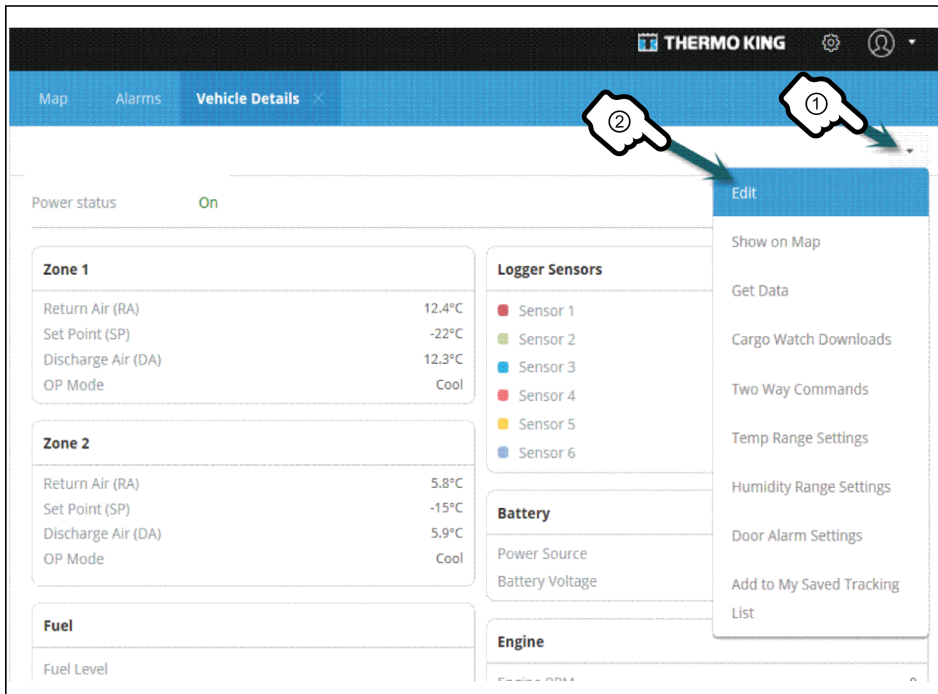*Note: Set the required time using up button.*

4. Configuration 4 of 4: HMI Main Menu - Guarded Access - PROG FEAT - Door Timeout Alarms - Enable
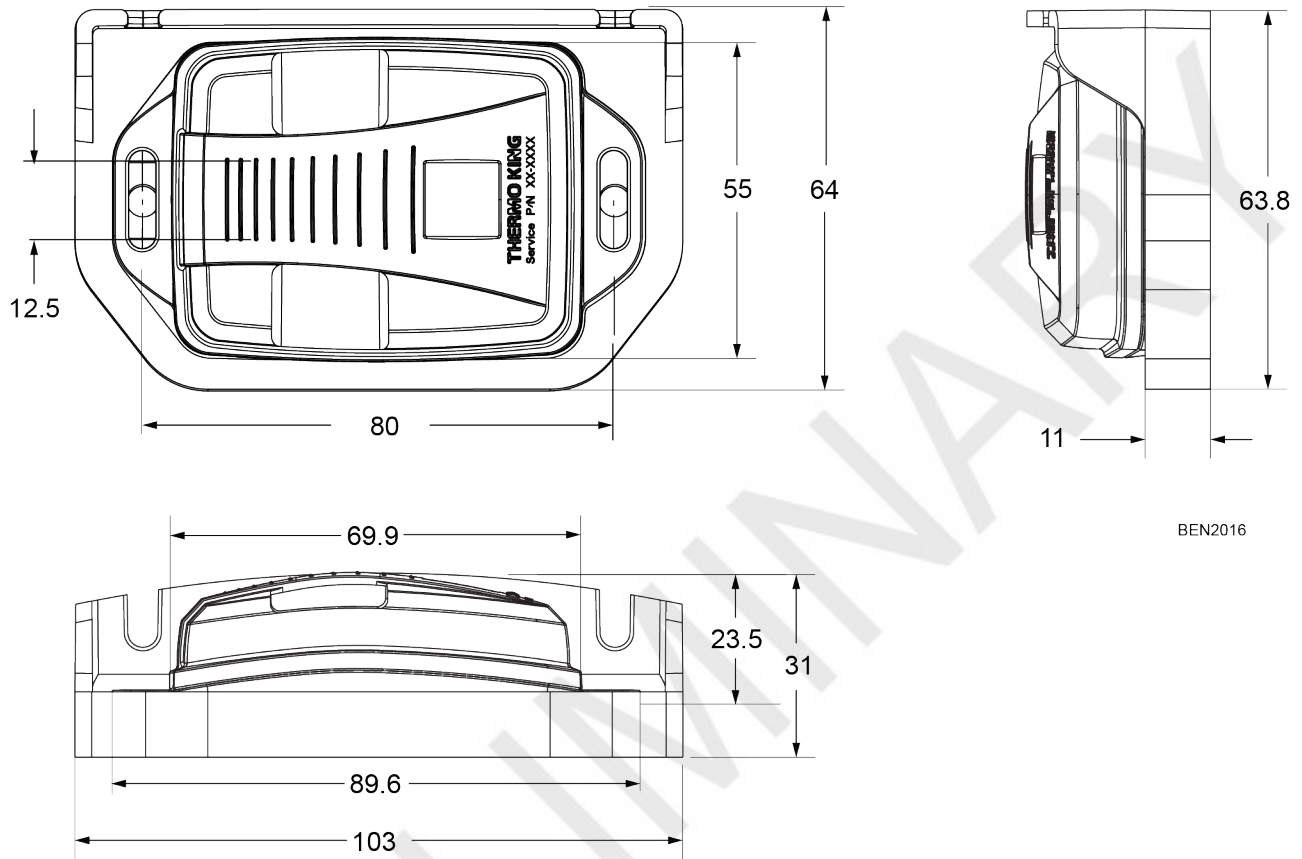

BEN1656

TracKing

1. Login to TracKing Portal.
2. Select Vehicle Detail Tab.
3. Click on the drop down arrow on right hand side, select Edit.
4. Select the Reefer Tab.
5. Tick on the Door Switch.

BEN1641

Annex

Sensor Bracket Dimensions

55   64
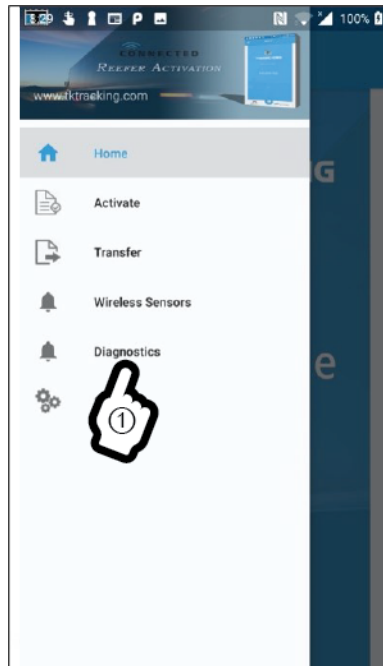
12.5

80

63.8

11

BEN2016

69.9

23.5   31

89.6

103

Troubleshooting

1. Application Diagnostic Menu

Note: This functionality is only usable with android phones. IOS filters the MAC address of the sensor so it is recommended to use android phones.

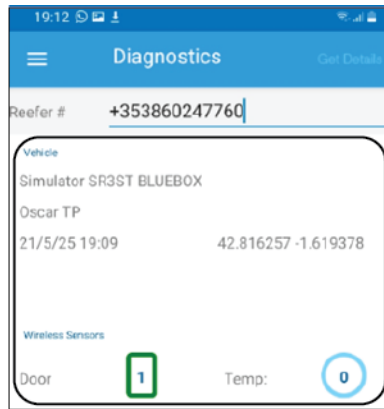   a. Open the TK Technician Application & click on the "DIAGNOSTIC" option.

BEN1724

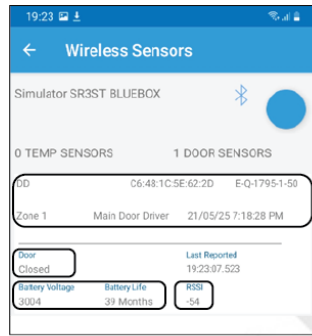   b. Enter the reefer serial number or the TK BlueBox phone number and click "GET DETAILS" option.

BEN1725

 TK 61990-11-IS
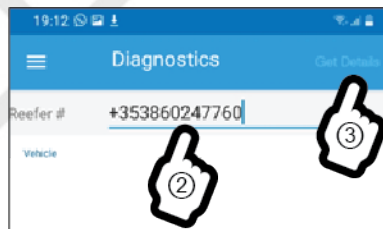
c. The application will retrieve the sensors associated to the TK BlueBox.
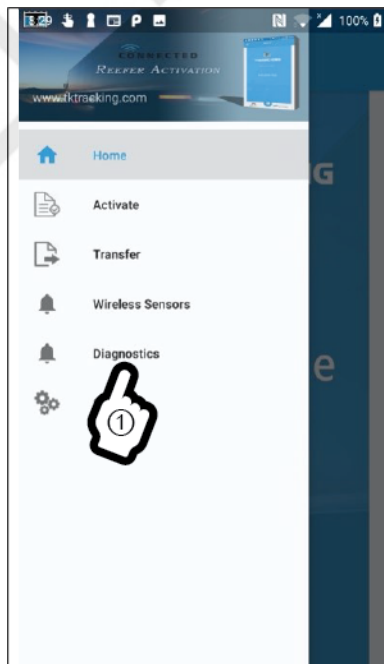

BEN1726

| Sensor general information: Name, MAC address, Serial Number	
Door status: Check door open and close after installation	
Battery voltage: Between 2.2 and 3V	Battery life: If <3months, replace battery

BEN1727

2. To edit a temperature and humidity sensor or door sensor
   a. Open the TK Technician Application & click on the "DIAGNOSTIC" option.
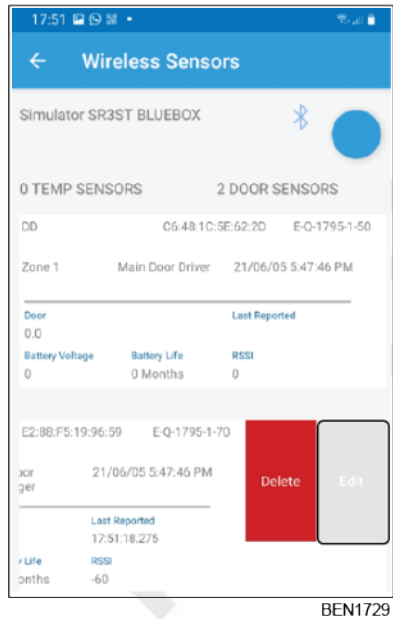

BEN1724

![THERMO KING logo]

b. Enter the reefer serial number or TK bluebox phone number and click on "GET DETAILS".
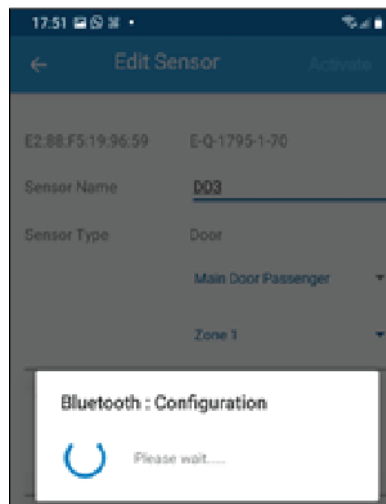

BEN1725
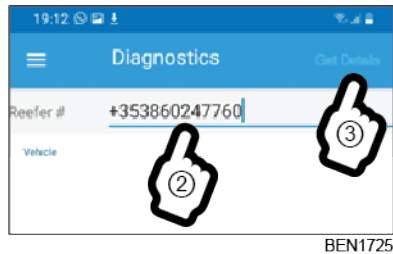
c. Slide the sensor from RIGHT to LEFT direction to select the EDIT option.

BEN1729

d. Update the sensor information: name, position etc. and click on the ACTIVATE.
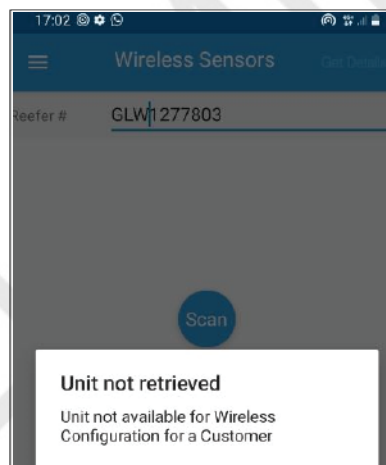

BEN1730

THERMO KING

e. The "Bluetooth Configuration" message will indicate the sensor is being updated.


BEN1731

3. If the application does not recognize the serial number of the unit

a. If you get the message, "it cannot detect the serial number of the unit in TracKing", Please enter the phone number of the BlueBox, starting +353xxxxxxx.

BEN1732

4. If the label of sensor is damaged, to generate the QR code to scan using TK Technician Application
    a. Open online QR generator website in the laptop.
    b. Enter MAC ADDRESS + SPACE + SERIAL NUMBER to generate the QR code.
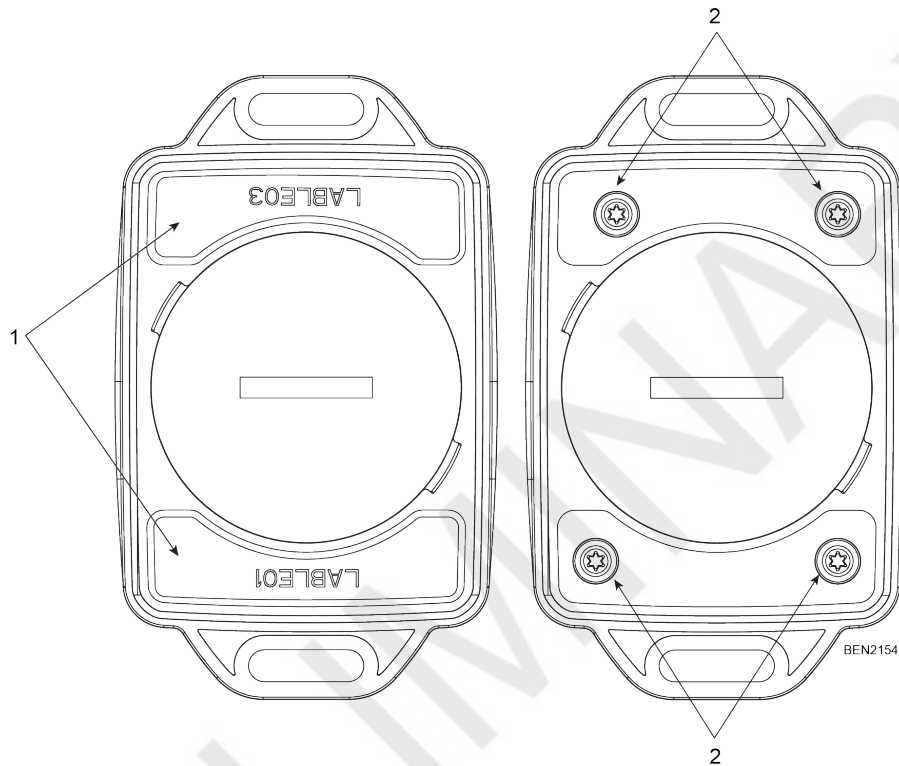   c. Scan the generated OR code using TK Technician Application.

BEN1813

©2021 Trane Technologies
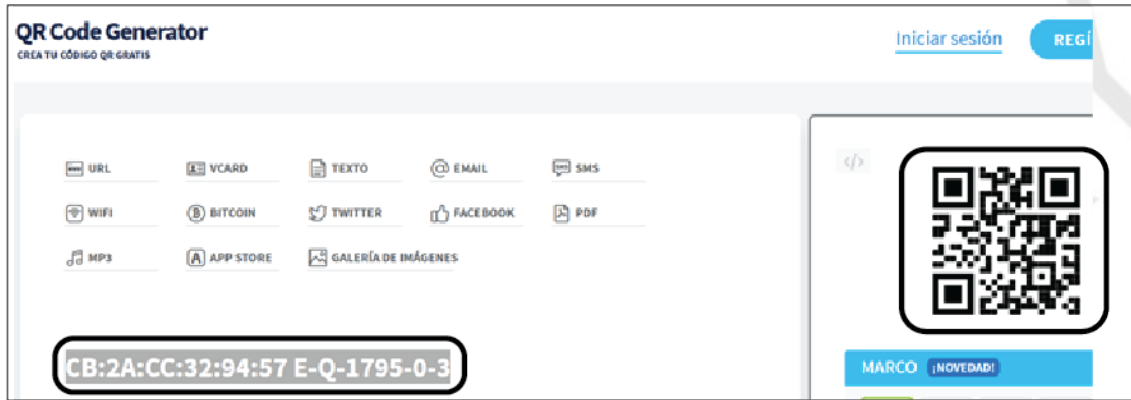
Battery Replacement

1. To replace the sensor battery

Note: *The door and temperature sensors use battery TK PN 2030998 / CR3677X. This special battery is qualified to work at temperatures from -40°C to 85°C. See images to understand how to replace the battery.*

- Remove the label (1).
- Remove the screws (2).
- Replace the battery.
- Torque the screws to xx N.m.
- Dispose the used battery in a suitable container.

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FCC Compliance

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.

⚠ WARNING
Equipment Hazard!
Changes or modifications not expressively approved by the party responsible for compliance could void the user's authority to operate the equipment.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.