



**FOOD RETAIL**

# Installing sensors in the most common food retail cabinet models

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## Safety precautions

<p><b>Installation</b></p> <p>The Gateway and Sensor must only be installed and configured by trained and authorized staff. Please follow the instructions provided in this guide otherwise the warranty may be void.</p>	<ul style="list-style-type: none"><li>• Only authorised and appropriately qualified staff should install the Gateway.</li><li>• Do not power on the device if the LoRa Antenna port has been left open as this can damage the Gateway. For more detail follow the <a href="#">instructions provided by RAK</a> (RAK Documentation Center website)</li></ul>
<p><b>Mounting</b></p> <p>As set-up and connection of the Gateway and the Sensors can vary depending on the layout of each site, it is possible that you will need to purchase an additional router to connect it successfully to all assets. Follow your company's processes regarding movement, location, connection and installation in the first instance and seek support from your AoFrio representative if needed.</p>	
<p><b>No serviceable parts</b></p> <p>There are no serviceable parts inside the Gateway and Sensor. Do not attempt to open the housing. Opening of the electronics housing, altering, or modifying the hardware will invalidate the warranty and damage the device.</p> <p>The SD card found in the SD card slot must not be ejected, as it might affect the performance of the device, as different logs and data are stored on it.</p>	<ul style="list-style-type: none"><li>• There are no serviceable parts inside the Gateway and Sensor.</li><li>• Do not open the housing.</li><li>• Do not remove or replace the SIM card</li></ul>
<p><b>Fit for purpose</b></p> <p>The Gateway and Sensor must only be used for the purposes and functions described in this manual. While AoFrio may provide technical support on suitable applications and configurations of these devices (where such a relationship may exist), no liability, responsibility or risk is accepted in determining if they are fit for purpose for any particular application.)</p> <p>No liability, responsibility or risk is accepted by AoFrio for the operational function of any particular installation or configuration.</p>	<ul style="list-style-type: none"><li>• The Gateway and Sensor must only be used for the purposes described in this manual.</li></ul>



### Cloud connection, ownership, and activation

The Gateway requires a connection to upload data to the Cloud.

Because this device is shipped in a non-active state, ownership is established as part of the setup process where AoFrio adds the device and owner to its database. Permission to manage pairing with other AoFrio hardware can be granted through User Roles within AoFrio iQ Food Retail web app.

To use Food Retail mobile and web app, the Gateway and Sensor need to be activated to the database that you are working in and registered in the Cloud. If not activated, then it's possible you won't be able to see the device in the app's list of available devices.

- Each device needs to be registered with AoFrio as part of setup and activated to the correct database
- Pairing requires additional user role permissions through AoFrio's Area Manager

### Vibration and impact

The units must be installed in such a way as to be protected from vibration and impact during 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 devices to become unsafe. Damage caused by impact is not covered by warranty.

- Do not drop or install the Gateway or Sensor in locations with vibration.

### Continuous development

AoFrio undertakes to continuously develop and improve products and services. The design and specification of these devices and contents of this manual are subject to change without notice. While every endeavour is made to ensure that all specifications and documents are current and complete,

AoFrio 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 before proceeding.

- The design and specification of the Gateway and Food Sensor are subject to change and new firmware may be released without notice.



## Overview

These are the mounting positions we recommend when physically installing a temperature sensor into a cabinet for AoFrio's Food Retail solution.

### Key principles

- Choosing the right location to mount the temperature sensor in a cabinet is critical because many processes happen at the same time and you need to measure, record, and respond to these changes accurately.
- Sensors must be installed in identical positions in each cabinet to produce comparable results.

#### Mounting instructions for common cabinet types

Cabinet type	Page
Vertical display cabinet	6
Semi-vertical refrigerated display cabinet	7
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Horizontal refrigerated display cabinet with static cooling	9
Assisted service refrigerated display cabinet serve-over counter	10
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## Pre-commissioning

Certain pre-commissioning steps need to be completed within the Food Retail app before the physical installation of sensors inside cabinets. These steps are not covered in this manual but are normally completed by a staff member with Area Manager level permissions.

- Create outlets
- Assign responsible users and contact details
- Define product categories
- Create installation tasks for service technicians

## Sensor activation prior to mounting

Because sensors are powered off during shipment to comply with international shipping regulations, they need to be powered on and activated before mounting. This task is normally completed as part of quality assurance before the installation team receive the hardware.

- 1 Download the **Milesight Toolbox app** from the Google Play or the Apple store.
- 2 Open the **Milesight Toolbox app** on your mobile device and connect to the sensor with NFC to power it on. The app will display basic information and settings for the device if it is recognized successfully.
- 3 Read and configure the device by tapping **Read/Write device** in the app.

NOTE: It's not necessary to update the device password.

## Troubleshooting NFC setup

If you have difficulty setting up the sensor, check:

- you are holding the mobile device close enough to the sensor while the app is turned on
- remove the mobile device if it is inside a case or pouch that may be blocking the signal

If the mobile device still fails to read/write configurations via NFC, try moving further back (eg several feet) and try scanning again.

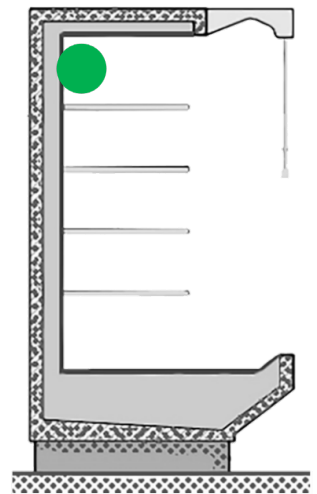


## Vertical display cabinet

Refrigerated display and sales cabinet, with multiple shelves, trolley or with glass door.

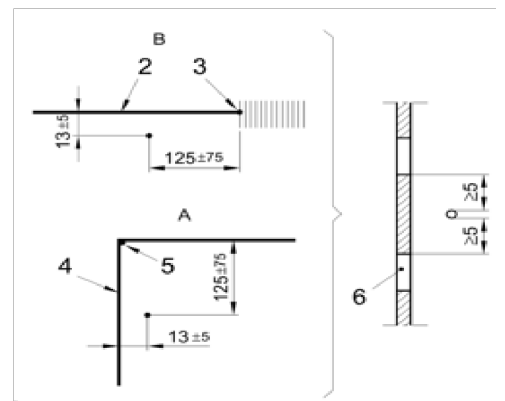


- 1 Unplug the cabinet to turn it off, being careful to follow any local safety and security rules.
- 2 Find the recommended location to mount the sensor  $500 \pm 200$  mm from the end, preferably on the left side looking from the front. (*Either of the green dots pictured*). For long cabinets, place a sensor every two doors (or approximately every 1.5m) apart.
- 3 Prepare the mounting locations by cleaning and drying the surface.
- 4 If using screws, hold up the sensor at the mounting location within the cabinet, then:
  - Mark two holes on the cabinet surface in a horizontal line to match the screw holes.
  - Drill screw holes according to the marks you have made.
  - Attach sensor using screws.



### Interior dimensions (Detailed image on right)

1. Temperature sensor
2. Ceiling
3. Reference point for ceiling mounting: inner side of the air curtain outlet
4. Back wall
5. Reference point for rear wall mounting: corner of the rear of the ceiling or lower edge of the mirror
6. Roof or back wall with holes



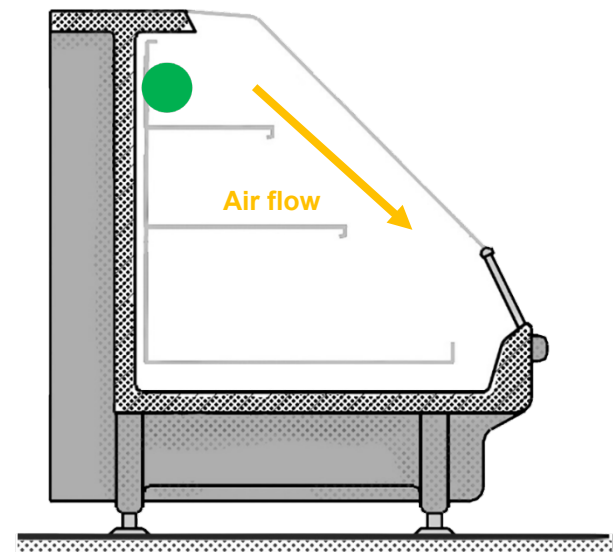
1 Interior dimensions

## Semi-vertical refrigerated display cabinet

Refrigerated cabinet for vertical display and sale whose overall height is not greater than 1.5 m and with a display opening vertical or inclined.



- 1 Unplug the cabinet to turn it off, being careful to follow any local safety and security rules.
- 2 Find the recommended location to mount the sensor 500 ± 200 mm from the end, preferably on the left side looking from the front. (*The green dot pictured below*). For long cabinets, place a sensor every two doors (or approximately every 1.5m) apart.
- 3 Prepare the mounting locations by cleaning and drying the surface.
- 4 If using screws, hold up the sensor at the mounting location within the cabinet, then:
  - Mark two holes on the cabinet surface in a horizontal line to match the screw holes.
  - Drill screw holes according to the marks you have made.
  - Attach sensor using screws.



## Horizontal refrigerated display cabinet with forced air cooling

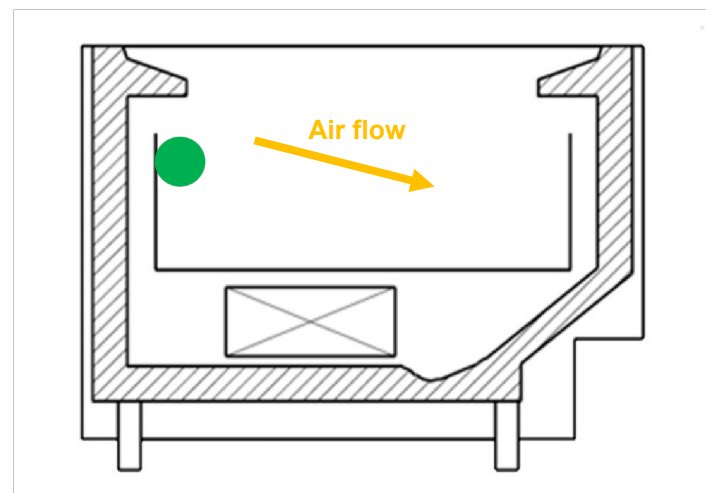
Refrigerated display and sales cabinet [counter] with a horizontal display opening in its upper part and accessible from above, equipped with evaporator fans and a forced air-cooling system.



- 1 Unplug the cabinet to turn it off, being careful to follow any local safety and security rules.
- 2 Find the recommended location to mount the sensor  $500 \pm 200$  mm from the end, preferably on the left side looking from the front. (*The green dot pictured below*). For long cabinets, place a sensor every two doors (or approximately every 1.5m) apart.
- 3 Prepare the mounting locations by cleaning and drying the surface.

4 If using screws, hold up the sensor at the mounting location within the cabinet, then:

- Mark two holes on the cabinet surface in a horizontal line to match the screw holes.
- Drill screw holes according to the marks you have made.
- Attach sensor using screws.



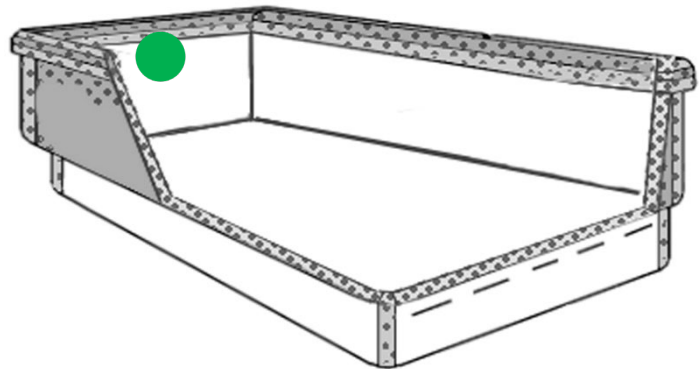
## Horizontal refrigerated display cabinet with static cooling

Refrigerated display and sales cabinet [counter] with a horizontal display opening in its upper part and accessible from above, equipped with a static cold-wall refrigeration system and no fans.



**1** Unplug the cabinet to turn it off, being careful to follow any local safety and security rules.

**2** The sensor-plate assembly (sensor mounted using an adapter plate) must be installed on the inner side wall of the display unit corresponding to the compressor area (the stepped side), centered longitudinally and aligned with the gray plastic divider of the frame and the internal white metal sheet. Use the top edge of the plate as a reference to ensure correct positioning before fastening it. Detailed mounting instructions are provided separately.



**3** Prepare the mounting locations by cleaning and drying the surface.

**4** Make sure to use an **adaptor plate** to prevent damage to components within the cabinet walls.

- Mark two holes on the cabinet edge in a horizontal line.
- Drill screw holes according to the marks you have made.
- Attach adaptor plate and then sensor using aluminium pop rivet.

## Assisted service refrigerated display cabinet serve-over counter

Refrigerated display and sales cabinet that requires a person to serve the consumer with food products sold by the slice or packaged.

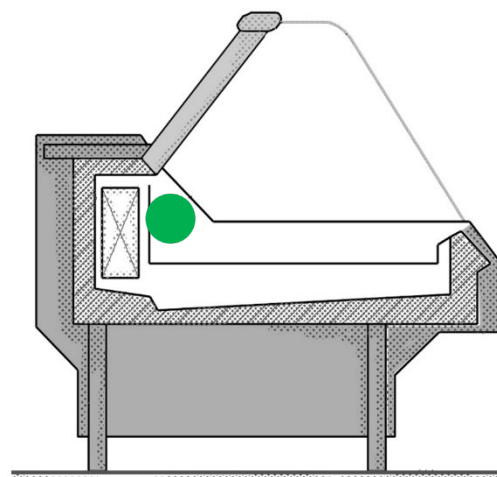


- 1 Unplug the cabinet to turn it off, being careful to follow any local safety and security rules.
- 2 Find the recommended location to mount the sensor  $500 \pm 200$  mm from the end, preferably on the left side looking from the front. (*The green dot pictured below*). For long cabinets, place a sensor every two doors (or approximately every 1.5m) apart.

- 3 Prepare the mounting locations by cleaning and drying the surface.

- 4 If using screws, hold up the sensor at the mounting location within the cabinet, then:

- Mark two holes on the cabinet surface in a horizontal line to match the screw holes.
- Drill screw holes according to the marks you have made.
- Attach sensor using screws.



## Self-service refrigerated display cabinet / self-service counter

Refrigerated display and sales cabinet from which the consumer chooses pre-packaged food products.



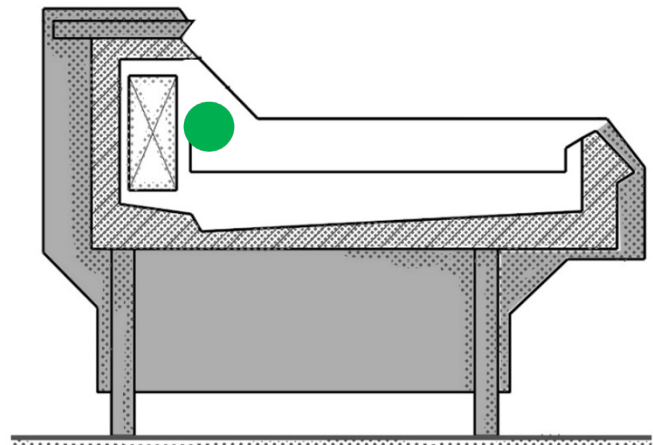
**1** Unplug the cabinet to turn it off, being careful to follow any local safety and security rules.

**2** Find the recommended location to mount the sensor  $500 \pm 200$  mm from the end, preferably on the left side looking from the front. (*The green dot pictured below*). For long cabinets, place a sensor every two doors (or approximately every 1.5m) apart.

**3** Prepare the mounting locations by cleaning and drying the surface.

**4** If using screws, hold up the sensor at the mounting location within the cabinet, then:

- Mark two holes on the cabinet surface in a horizontal line to match the screw holes.
- Drill screw holes according to the marks you have made.
- Attach sensor using screws.

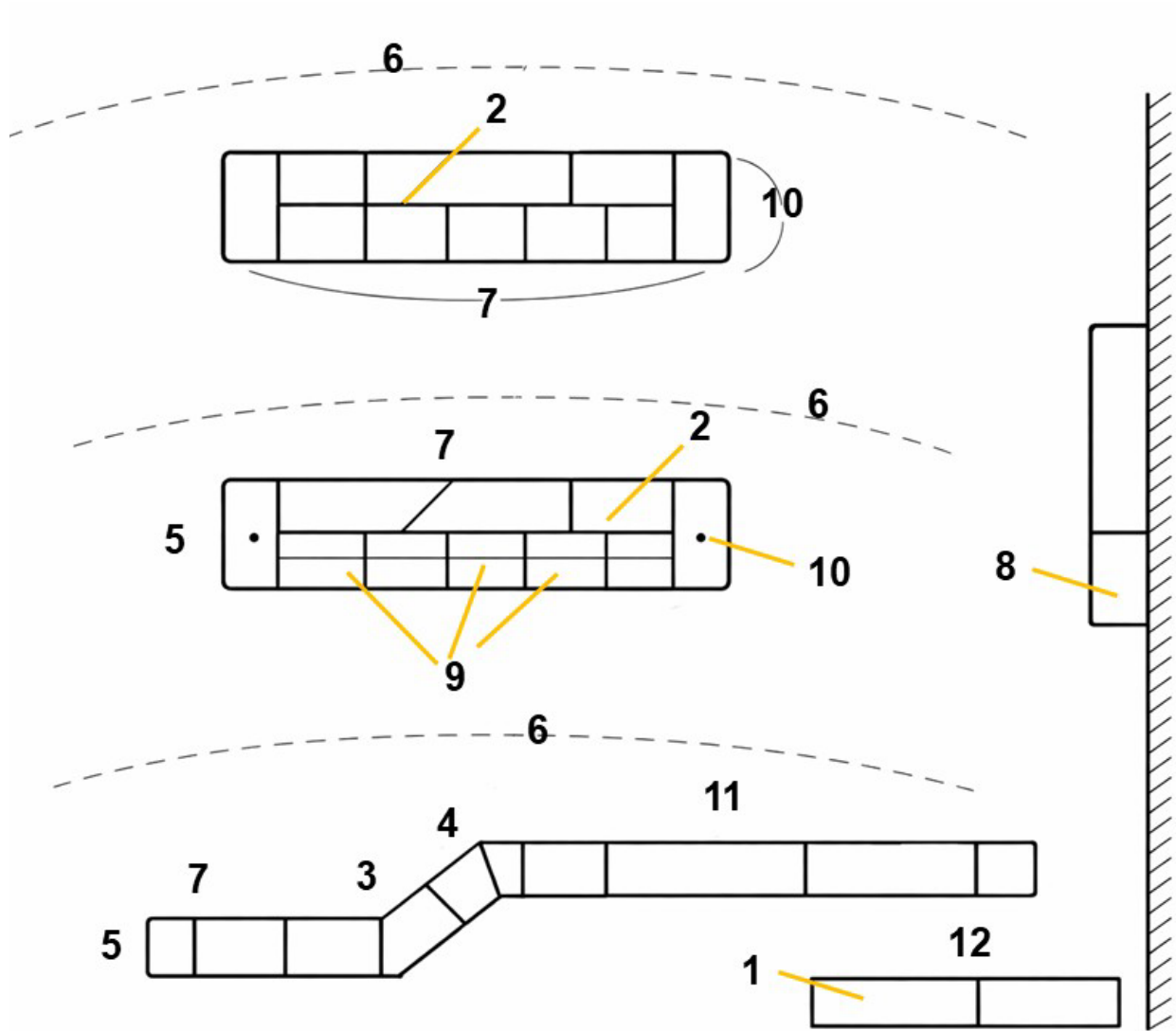




## Appendix 1 - Forms of refrigerated furniture for display and sales

#	Title	Description
1	<b>Rear service cabinet / Vitrina de servicio trasero</b>	-
2	<b>Island run / Isla</b>	Line in the store of furniture that can be coupled (horizontal, vertical, or combined), possibly equipped with a head cabinet so that the consumer has access to all sides.
3	<b>Internal angle / Angulo cerrado</b>	Furniture that ensures geometric continuity between two pieces of furniture whose ends form an angle between 0° and 90°.
4	<b>External angle / Angulo abierto</b>	Furniture that ensures geometric continuity between two pieces of furniture whose ends form an angle between 0° and 90°.
5	<b>End wall / Lateral o Lateral divisor</b>	Panel that closes a cabinet or line, or the side of a line.
6	<b>Line-up or run / Lineal</b>	Line consisting of modular refrigerated cabinets that can be coupled although not in a straight segment.
7	<b>Technical line-up or run / Lineal canalizado</b>	Line consisting of modular refrigerated cabinets that can be coupled although not in a straight segment but with common safety and control devices temperature.
8	<b>Wall cabinet / Contra muro</b>	Furniture intended to be leaned against a wall or other piece of furniture, back-to-back.
9	<b>Island cabinet / Isla canalizada</b>	Furniture in the store or other furniture intended to be paired as a part of an island.
10	<b>End Cabinet / Cabezera</b>	Furniture intended to be placed at the end of an island.
11	<b>Consumer / Consumidor</b>	-
12	<b>Service personnel / Personal de servicio</b>	-

Figure 1





## Part 2 - Parts of refrigerated furniture for display and sale

#	Title	Description
1	<b>Air discharge / Inyección de aire</b>	Opening at which the air curtain exits.
2	<b>Air return / Aspiración de aire</b>	Opening at which the air curtain returns to the inside of the cabinet air ducts.
3	<b>Shelf / Estante</b>	Surface, excluding the tub, on which goods are displayed.
4	<b>Price marking rail or ticket holder / Portaprecio</b>	Profile attached along the cabinet shelves that allows different types of labels to be displayed for consumer information.
5	<b>Kickplate / Zócalo</b>	Vertical panel or plinth covering the space between the floor and the base of the cabinet.
6	<b>Night cover / Tapa de noche</b>	Lid, curtain, or other cover used to reduce the entry of heat (e.g., by infrared radiation or convection) into a cabinet refrigerated open display and sales cabinet.
7	<b>Night blind / Cortina de noche</b>	Night cover type, curtain to be pulled over the cabinet opening for display and sale to close it and which can be moved automatically.
8	<b>Canopy / Techo</b>	Upper front of an upright cabinet.
9	<b>Front panel / Dosel o Cenefa</b>	Group of aesthetic pieces of the front of the cabinet, visible to the consumer.
10	<b>Front / Frente</b>	Consumer-facing side of the cabinet or, in the case of an island cabinet, the side to which the manufacturer applies its nameplate.
11	<b>Front riser / Tope de product</b>	Device to hold goods within the display surface.
12	<b>Handrail / Corrimano o Pasamanos</b>	Upper front profile covering the edge normally touched by the consumer.
13	<b>Condensing unit / Unidad condensadora</b>	Combination of one or more compressors, condensers, and fluid accumulators (when required) and their regularly supplied accessories.
14	<b>Base deck / Estante inferior</b>	Display surface lower than a cabinet.
15	<b>Shelf sham / Falso producto</b>	Device intended to limit the loading of a display surface.
16	<b>Back wall / Fondo</b>	
17	<b>Air duct (grey zone) / Canal de aire</b>	

Figure 2

