



INSTALLATION GUIDE

Gateway Retrofit Installation Guide

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Warnings	Important do's and don'ts
<p>Installation The Gateway is electricity powered. Therefore it should only be installed in a suitable location within the cooler, and by an installer with appropriate qualifications in the country of installation.</p> <p>The Gateway 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>	<p> Warning! Risk of electrocution</p> <ul style="list-style-type: none"> • Only authorised and appropriately qualified staff should install the Gateway. • Mount the Gateway and the power connector in an environment that is not subject moisture or high humidity.
<p>No serviceable parts There are no serviceable parts inside the Gateway. Do not attempt to open the housing. Opening of the electronics housing, altering, or modifying the Gateway may invalidate the warranty and damage the device.</p>	<ul style="list-style-type: none"> • There are no serviceable parts inside the Gateway. • Do not open the housing.
<p>Fit for purpose The Gateway 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 the Gateway (where such a relationship may exist), no liability, responsibility or risk is accepted in determining if the Gateway is fit for purpose for any particular application. 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"> • The Gateway must only be used for the purposes described in this manual.
<p>Cellular connection, ownership, and activation The Gateway requires a cellular connection, either LTE-M or 2G to set up and upload data to the Cloud.</p> <p>A cellular connection might not be available in all locations. The presence of LTE does not guarantee LTE-M signal being available. LTE-M is intended for low bandwidth Internet of Things (IoT) products where LTE is for mobile high bandwidth applications.</p> <p>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's User Manager software.</p> <p>To use AoFrio's Field app as part of the configuration process, the Gateway feature needs to be activated for the database that you are working in.</p>	<ul style="list-style-type: none"> • The Gateway requires a clear cellular connection • 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 User Manager.
<p>Mains connection Installation should only be done by a qualified technician.</p>	<ul style="list-style-type: none"> • Only authorised and appropriated qualified staff should connect mains power



Warnings continued

Warnings	Important do's and don'ts
<p>Correct disposal The Gateway 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.</p> <p>The Gateway must not be disposed of in municipal collections, it must be disposed of through an approved WEEE collection point. Alternatively, Gateway returned to an authorized AoFrio distributor at the end of its working life. Penalties may be applicable for incorrect disposal, as specified by national legislation.</p> <p>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.</p> <p>Once the device's battery is depleted, remove the device from equipment and dispose of it according to local requirements. Leaving Gateway installed in the equipment presents risks due the potential for battery housing corrosion leading to chemical leakage.</p>	<p> Safety warning: The Gateway devices contain a lithium battery. This may be hazardous if incinerated or physically damaged.</p> <ul style="list-style-type: none"> Do not leave an old Gateway installed in field equipment after it has reached its end of life. The Gateway must not be disposed of in municipal collections; it must be disposed of through an approved e-waste collection point.
<p>Chemicals The Gateway must not be exposed to any liquids, solvents, or chemicals, as this may damage the housing and lead to unsafe operation. Exposure to such chemicals invalidates the warranty.</p>	<ul style="list-style-type: none"> Do not expose to liquids. Any installation should be adequately assessed by the customer to meet the applicable end product standards for Hydrocarbon refrigerant environments.
<p>Temperature The Gateway must not be subjected to temperatures outside its specified temperature limits.</p> <p>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.</p>	<ul style="list-style-type: none"> Do not expose to high or low temperatures.
<p>Vibration and impact The unit 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 Gateway to become unsafe. Damage caused by impact is not covered by warranty.</p>	<ul style="list-style-type: none"> Do not drop or install the Gateway in locations with vibration. Mount the Gateway and its power connector in an environment that is not subject to movement.
<p>Continuous development AoFrio undertakes to continuously develop and improve products and services. The design and specification of Gateway 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.</p>	<ul style="list-style-type: none"> The design and specification of the Gateway is subject to change and new firmware may be released without notice.

Introduction

The Gateway is one of the communications devices in the AoFrio IoT ecosystem. It provides real-time automated one-to-one data acquisition from either an AoFrio SCS Controller, Monitor or Click installed in an asset or equipment in the field, adding a cellular connectivity option to the existing portfolio of data acquisition solutions provided by AoFrio.

Connectivity over the cellular network eliminates the need for cooler owners to make site visits to acquire data from their fleet. (NB. For this manual, we will use “cooler” as the asset type and “SCS Controller” as the AoFrio IoT device.)



Gateway is equipped with 2 different types of radio connectivity:

- **Bluetooth** - The device is fully compatible with the AoFrio IoT system and uses Bluetooth to acquire data from the other AoFrio IoT device it is paired with.
- **Cellular connectivity** – A global cellular module provides connectivity using LTE Cat M1 with 2G fallback. Cellular SIMs are installed at the time of manufacture and the data plan is managed by AoFrio unless an alternative arrangement has been made.

Battery - The device has a rechargeable internal battery that provides backup if the external power supply is removed or interrupted. The battery backup enables cooler location updates for up to 1 month.

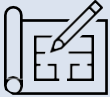




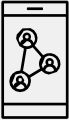
Location Reporting - Wi-Fi positioning is used to help determine the location of the Gateway, and therefore the equipment it is installed into. NOTE: Gateway is not able to establish a WiFi connection to transfer data.

What you'll need for installation

- AoFrio Gateway
- Hardware (screws, cable ties, tape etc) to mount the Gateway

Key steps




When planning how to make a retrofit installation into a bottle cooler, these are the main steps to consider:

	1. Plan where to mount the Network Pro device within the cooler
	2. Pair the Gateway with the SCS Controller
	3. Mount the Gateway
	4. Connect to the power supply
	5. Use the LEDs to confirm operation
	6. Test 1-1 pairing with Field app verification



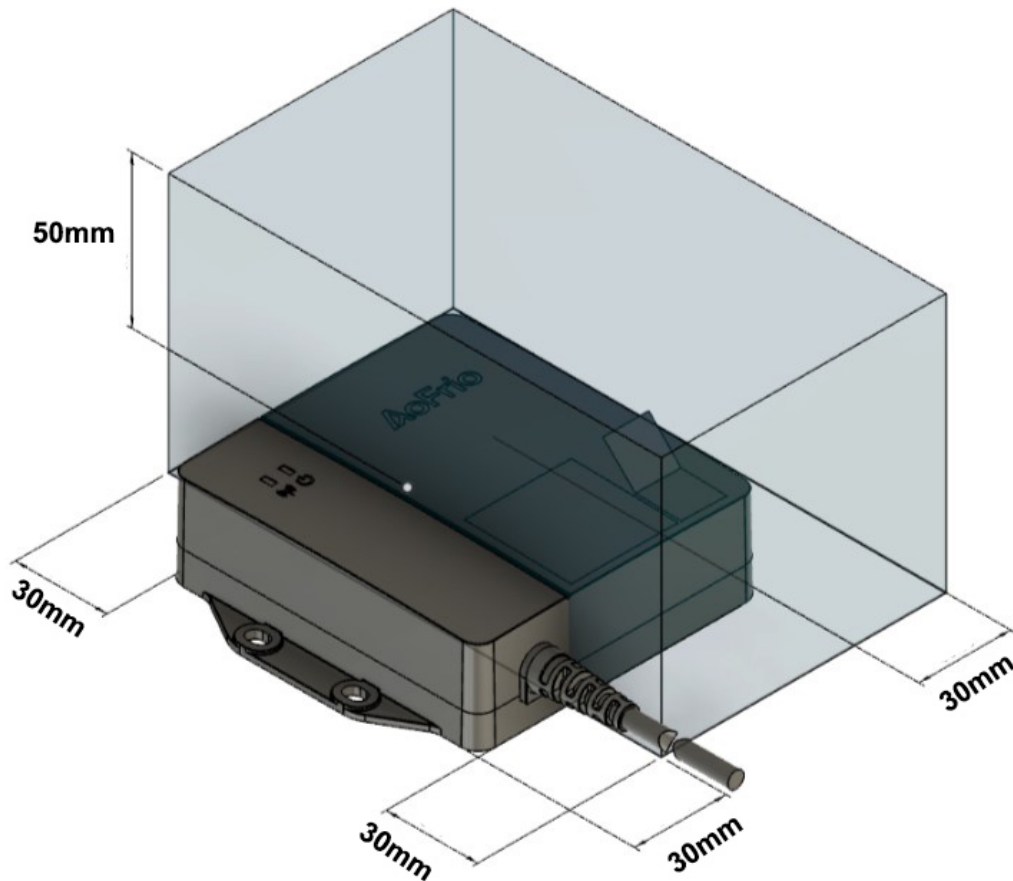
Plan where to mount the Gateway within the cooler

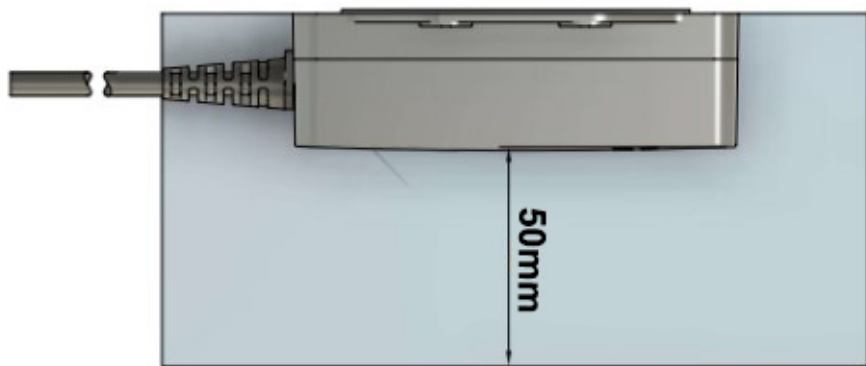
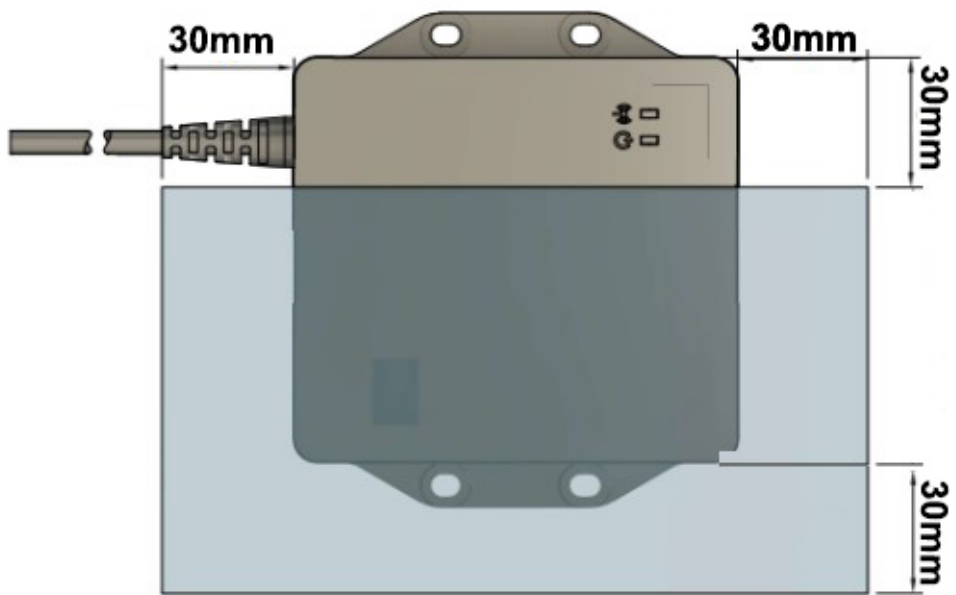
While the mounting location can vary widely depending on the asset type (e.g., Open Deck cooler, Bottle cooler, Ice cream chest freezer), we would recommend the following:

	Ensure the Gateway will be in a position to successfully use Bluetooth to pair with the SCS Controller housed inside the cooler. (See diagrams below)
	Mount the device at or near the top of the cooler for the best cellular performance when possible. This is especially relevant when paired with an SCS Controller that may be mounted closer to the equipment's motor or compressor.
	Wire the Gateway to AC mains supply within the cooler.

Identify a suitable installation position to improve communications

We recommend installing the Gateway near the top of the equipment, ideally with sufficient space around the device away from metal parts to allow for an uninterrupted signal. See diagrams below. The transparent box shows recommended clearance around Gateway from metal parts.





Pair the Gateway with the SCS Controller

If the 1-to-1 association between the Gateway and the SCS Controller or Monitor hasn't been configured, use AoFrio's Field app to do the configuration.

Before you start

Gateway

- Ensure you are in a location with a clear cellular network signal to set up and upload data to the Cloud.

Field app

- You will need a user role with permission to manage pairing with other AoFrio hardware. This can be granted through User Roles within AoFrio's User Manager software.
- Field app must be version 5.28 or later. You can check the Field app version from the menu within the app and download the latest version if required.
- Your device must have an active internet connection to perform this configuration.

SCS Controller / Monitor

- These devices must be "powered on" to allow pairing – but the Gateway should remain "powered off" at this stage.

Download Field app

Use these QR codes to download AoFrio's Field app or visit the iOS store or Google Play to find the downloads.

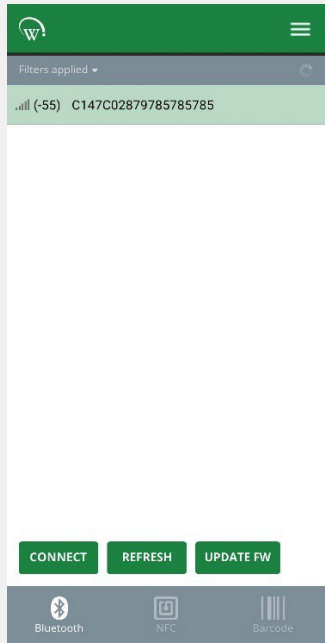
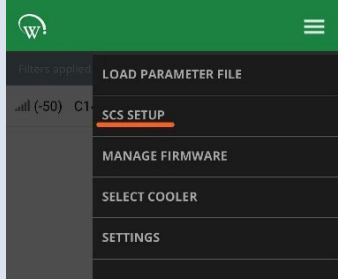


Apple Store

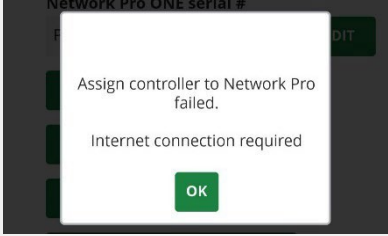
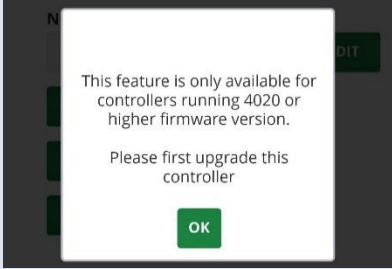
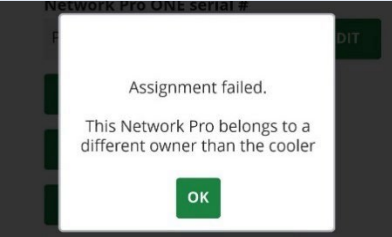
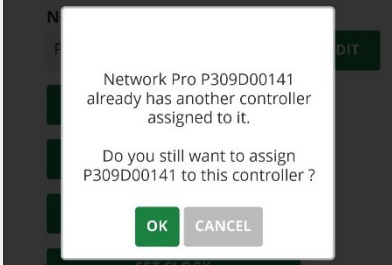
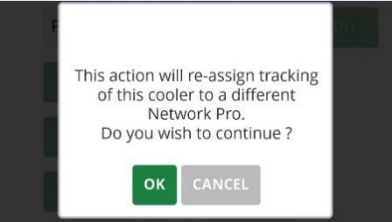


Google Play

Configure the SCS Controller and Gateway with Field app

Step	Details
<p>1. To pair the SCS Controller with a Gateway, go to Field app and select the SCS Controller from the list of visible devices and click CONNECT.</p> <p>NOTE: The list of available devices is filtered by your activation permission. Devices you are not authorized to connect to will not display.</p>	 A screenshot of the Field app interface. At the top, there's a green header with a 'W+' logo and a menu icon. Below it, a grey bar says 'Filters applied'. A device entry is visible with a signal strength indicator, '-55', and a device ID 'C147C02879785785785'. At the bottom, there are three green buttons: 'CONNECT', 'REFRESH', and 'UPDATE FW'. Below these buttons are icons for 'Bluetooth', 'NFC', and 'Barcode'.
<p>2. Open the main menu and select SCS SETUP.</p>	 A screenshot of the Field app main menu. The 'SCS SETUP' option is highlighted in red. Other menu items include 'LOAD PARAMETER FILE', 'MANAGE FIRMWARE', 'SELECT COOLER', and 'SETTINGS'. The background is dark grey.
<p>3. Click EDIT in the relevant rows to add details for the ASSET #, COOLER MODEL, and MANUFACTURER SERIAL #. Leaving the ASSET # field empty means the device will not be tracked.</p>	
<p>4. Click EDIT in the row for Gateway serial #.</p> <ul style="list-style-type: none">• Either type in the Gateway serial number OR scan the QR code by clicking SCAN BARCODE.• Click SAVE to complete the configuration. <p>If this process fails, refer to the section Configuration Troubleshooting.</p>	






You are ready to “power up” the Gateway. If it is already plugged in, unplug for at least 2 minutes then plug in again and “power on” for it to download the latest configuration.

Problem	Possible Solution
<p>Internet Connection Required</p> <ul style="list-style-type: none"> an internet connection 	<p>Check the Internet connection on your mobile device</p>
<p>SCS Controller FW not supported</p> <ul style="list-style-type: none"> This feature is only enabled for SCS controllers with FW version 4020 or later. 	<p>Update the SCS Controller firmware.</p>
<p>Gateway already belongs to someone else</p> <ul style="list-style-type: none"> The Gateway you are trying to associate has already been claimed to another bottler or company. 	<p>Contact AoFrio support.</p>
<p>Gateway is already tracking.</p> <ul style="list-style-type: none"> The Gateway appears to be tracking an SCS Controller already. 	<p>Click OK to proceed and override the association.</p>
<p>SCS Controller already being tracked</p> <ul style="list-style-type: none"> The SCS Controller appears as its being tracked by another Gateway already 	<p>Click OK to proceed and override the association.</p>










Mount the Gateway

Things to avoid

	Avoid mounting the device where it is fully surrounded by metal surfaces as this may prevent successful communications.
	Avoid external mounting on the side or back of a cooler where the device can be damaged during cooler movement.
	Avoid mounting the device inside a cold or warm space as this will impact the communications and device battery. The mounting location must be an area where the temperature is maintained between 0°C (32°F) and 40°C (104°F).
	Avoid mounting in areas where there is a high risk of condensation or moisture.
	Avoid mounting the power supply at or near a heat source. The power supply mounting location must be an area where the temperature is maintained between -10°C (14°F) and 40°C (104°F).

Recommended actions

	Mount the device inside the cabinet. While mounting can vary depending on cooler type, in most situations we recommend that the Gateway is mounted inside the cabinet (not the 'cold space'), but not in a place where it is fully enclosed by metal. See diagrams earlier in manual for further installation recommendations.
	Mount the device behind plastic paneling or a grid as these are less likely to interfere with communications.
	Mount the device where it is out of sight from customers to minimize the risk of theft or tampering.
	Mount the device at or near the top of the cooler to ensure the best connection strength to a Cellular Network (LTE-M or 2G) for data upload to the Cloud.
	Use screws and/or double-sided tape to ensure secure mounting on metal or plastic surfaces. We also recommend that you use cable ties to secure the power cable in place.
	If you plan to configure the device after you have completed the cooler build, make sure you remove and store the additional supplied QR code sticker from the device separately so you can scan it later.
	The AC cable is supplied with open ends. We recommend that you terminate the AC cable with an appropriate connector to allow easy integration with the cabinet AC wiring.

Screw mounting

Use 2 to 4, 8G (4.2mm) screws if screw mount is required. Screw type will depend on material. For example, use a stainless steel 8G 19mm self drilling screw when installing Gateway to a metal plate and set drive torque appropriate to material type and thickness to avoid damaging screw thread or Gateway enclosure. Maximum allowed torque to prevent damage to the enclosure is 3Nm.

1. Mark and drill pilot holes.
2. Using a screwdriver, tighten the two screws to secure the device to the surface.

Tape mounting

1. Ensure the mounting surface and the back of the device are clean and dry.
2. Stick the adhesive pad to the back of the device.
3. Firmly press the device into position, ensuring it is secured to the surface.

QR Code

If you mount the Gateway in a location that isn't easily accessible for later scanning of its QR code, AoFrio supplies a duplicate QR code sticker which can be attached to a more accessible location on the outside of the cooler.

Connect to the power supply

Connect the AC wires to the AC distribution point using AC terminations as per local regulations.



- Wire the AC side of the power supply to the cooler mains using your preferred connectors. 100-240V AC, 50/60Hz.
- (Optional) Secure the position of the device and cables with cable ties to avoid unplugging when the cooler is moved.

If the Gateway fails to operate, please check the following:

- Ensure that the Gateway is connected to the AC power outlet.
- Ensure that the voltage and current requirements of the device are within the specifications of the power

Use the LEDs to confirm operation

Gateways LEDs indicate:

Colour	Purpose	Behaviour
Green 	External power status	<ul style="list-style-type: none">• On – not flashing = Power is connected• On – flashin every second = Running from battery• Off (Flight mode)
Red 	Cellular network connectivity status	<ul style="list-style-type: none">• Slow short flash - searching for cellular network• Slow long flash - connected to a cellular network, idle• Fast flash - connected to a cellular network, sending data

Test 1-1 pairing with Field app verification

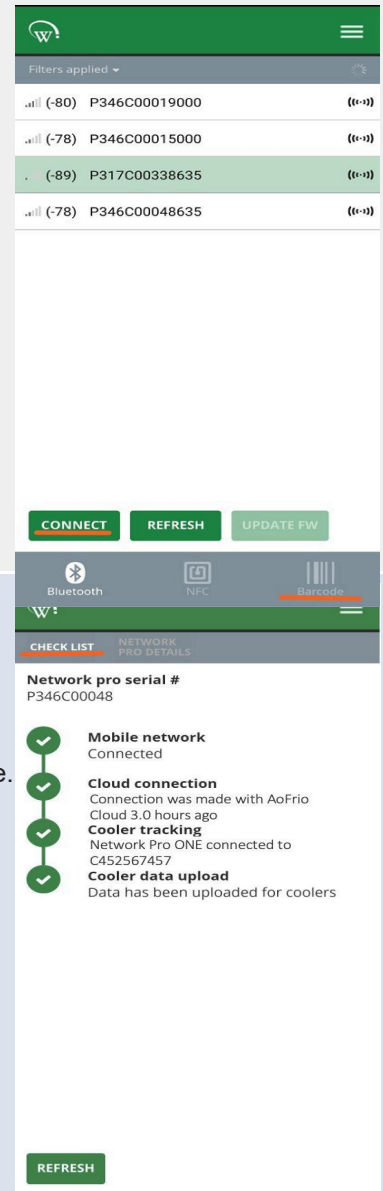
Where required the Field app can be used to verify that the Gateway is working and that the 1-to-1 association with the SCS Controller has been properly configured.

However, if this verification step is required then we recommend that it is only performed on a sample basis as there is a dependency on SIM card activation, cellular network connectivity and a sufficient level of backup battery voltage of the Gateway, some of which may not be available immediately following the installation. AoFrio is developing an API to make this step faster.

NOTE: The Gateway will not start advertising or communicating over Bluetooth until it is activated. We recommend that you always configure the Gateway first and then plug it in while working on the mounting process to reduce this wait time.

1. To verify the Gateway with Field app, open Field app and either: Scan the QR code on the Gateway with your mobile device camera, OR

Select the Gateway from the list of available devices displayed on the Field app homepage and click **CONNECT**.



2. Click **REFRESH** button to retrieve the latest data from the AoFrio Cloud then read through the **CHECKLIST** screen to verify each function is operating as expected.

- a dark green check mark shows the function is operating as expected.
- a yellow check mark highlights a potential problem.
- a red cross shows that the function is not working, and installation is incomplete.


If all items are marked with a dark green check mark, then the device is fully operational. For assistance with functions marked with a yellow check mark or a red cross refer to the section on **Verification troubleshooting**.

3. To check cellular connectivity, click **NETWORK PRO DETAILS** and review the signal strength and the connection between AoFrio's Cloud and the Gateway.

Verification troubleshooting

Problem Observed	Possible Cause	Possible Solution
Can't see Gateway serial number in the list of devices in the Field app	<ol style="list-style-type: none"> 1. User role may not have access to the Gateway feature. 2. Gateway hasn't been activated and therefore is not advertising over Bluetooth yet 	<ol style="list-style-type: none"> 1. Make sure the Gateway is powered. 2. The Gateway can take several minutes to activate. Please wait and try again. 3. Contact Technical Support and request Gateway access in the Field app.
 Red cross next to Mobile Network	The cellular account has not been activated. This may mean the mobile provider is not available in the area.	<ol style="list-style-type: none"> 1. See Troubleshooting with LEDs to check the cellular network status. 2. Contact AoFrio support.
 Yellow check mark next to Mobile Network	Gateway is in a location with poor cellular coverage	Move the Gateway to another location where it has a stronger signal reception
 Red cross next to Cloud connection	<p>Gateway has not been able to connect with the AoFrio cloud.</p> <p>It needs a connection to the mobile network. Check that the 'Mobile network' test shows a green check mark: </p>	Wait for a few seconds and click REFRESH .
 Red cross next to Cooler Tracking	If you see the message "Gateway has not been configured to connect to any cooler" this means that the pairing process has not completed.	<p>You may need to wait several days currently for this to update*. Click REFRESH and if the problem persists, try to configure the association again.</p> <p>*AoFrio is developing a solution to make this faster</p>
 Red cross next to Cooler Tracking	If you see the message "Gateway is not connected to any cooler. Gateway is assigned to track cooler XXXXX" this means that Bluetooth communications with the paired controller is not possible.	<ol style="list-style-type: none"> 1. Check that the SCS controller is powered. 2. Move the Gateway to another location where it is closer to the SCS controller you want to pair it with. 3. Wait for a few minutes and click REFRESH
 Red cross next to Cooler Data Upload	No cooler data has successfully been uploaded to the cloud.	Wait for a few minutes and click REFRESH .



Specifications	
Power Supply	Input 90-240V AC, 50/60Hz, 0.5A
AC Connections	2-core double-insulated 0.5m cable with ferrule ends
Cellular communications	LTE Cat M1 with 2G (GPRS) fallback
Cellular bands	B1, B2, B3, B4, B5, B8, B12, B13, B18, B19, B20, B25, B26, B27, B28
Bluetooth	Bluetooth (BLE 4.2)
Wi-Fi	2.4GHz, 802.11 b/g/n
Battery*	1150mAh, 3.7V, Lithium-Polymer
Status LEDs	1 x Power; 1 x Communication
Mounting method	Screws or double-sided adhesive
Ingress protection	IP54
Operating temperature*	-20°C to +55°C (-4°F to 131°F)
Storage temperature	-20°C to +60°C (-4°F to 140°F)
Weight	~256g (~9oz)
Approvals†	

* Backup battery charging only occurs between 0°C and 40°C

† NOM, CE, FCC, RCM, UL Recognised, other approvals pending

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