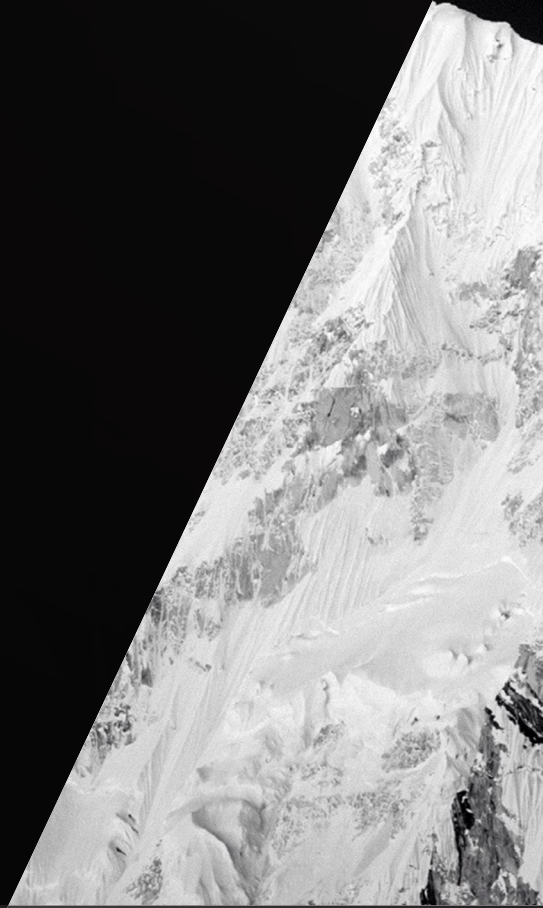# AoFrio

PRODUCT GUIDE

Network Pro Product Brochure

Document no: WT9675 i5 August 2024

Warnings

Please read the following warnings to maintain the safe operation and continued performance of the **AoFrio Network Pro**.

Warnings	Important do's and don'ts
Installation The **Network Pro** must be installed in accordance with the instructions provided in the Network Pro Installation Guide otherwise the warranty may be void. The Network Pro must only be installed and configured by trained and authorized staff.	• Do not drop the Network Pro. • Do not put in a location where water or heat is a concern.
USB-C port Do not connect anything to the USB-C port. The port is a non-standard USB-C and is only intended to be used by AoFrio during manufacturing. Connecting anything to this port may damage the product and void the product warranty.	• Do not connect anything to the USB-C port.
No serviceable parts There are no serviceable parts inside the **Network Pro**. Do not attempt to open the housing. Opening of the electronics housing, altering, or modifying the Network Pro will invalidate the warranty and damage the device.	• There are no serviceable parts inside the **Network Pro**. • Do not open the housing.
Fit for purpose The **Network Pro** 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 **Network Pro** (where such a relationship may exist), no liability, responsibility or risk is accepted in determining if the **Network Pro** 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.	• The **Network Pro** must only be used for the purposes described in this manual.
Continuous development AoFrio undertakes to continuously develop and improve products and services. The design and specification of **Network Pro** 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 (published on the AoFrio website www.aofrio.com) before proceeding.	• The design and specification of the **Network Pro** is subject to change and new firmware may be released without notice.

Warnings	Important do's and don'ts
Correct disposal The **Network Pro** 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 **Network Pro** must not be disposed of in municipal collections, it must be disposed of through an approved WEEE collection point. Alternatively, **Network Pro** may be returned to an authorised AoFrio distributor at the end of its working life. Penalties may be applicable for incorrect disposal, as specified by national legislation. 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. Once the device's battery is depleted, remove device from equipment and dispose of it according to local requirements. Leaving **Network Pro** installed in the equipment presents risks due the potential for battery housing corrosion leading to chemical leakage.	• The **Network Pro** must not be disposed of in municipal collections; it must be disposed of through an approved e-waste collection point. • **Safety warning:** The **Network Pro** devices contain a lithium battery. This may be hazardous if incinerated or physically damaged. • Do not leave an old **Network Pro** installed in field equipment after it has reached its end of life.
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 Network Pro to become unsafe. Damage caused by impact is not covered by warranty.	• Do not drop or install the **Network Pro** in locations with vibration.

Introduction

The **Network Pro** is one of the communications devices in the AoFrio Connect IoT system. It provides real-time automated data acquisition from AoFrio SCS controllers, Monitors and Clicks installed in your coolers 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 site visits to acquire data from the asset fleet, or update the firmware on the Network Pro.


Network Pro expands the portfolio of data collection options for the Connect IoT system by adding all the intelligence in the existing AoFrio Track App and SDK portfolio for permanent deployment near the target AoFrio IoT device.

- Cloud connectivity using LTE Cat M1 with 2G fallback
- BLE connectivity with up to 16 coolers
- Location tracking via Wi-Fi positioning
- Over the air updates for firmware and parameters
- "Just works" with existing AoFrio SCS/Monitor /Click products

Getting familiar

How it works

Network Pro is an advanced communications gateway that collects data from AoFrio's IoT devices and uploads it to the AoFrio Cloud Platform. It connects to the entire suite of AoFrio Connect IoT devices using Bluetooth. It then uploads all the data to the AoFrio Cloud using a cellular data connection.
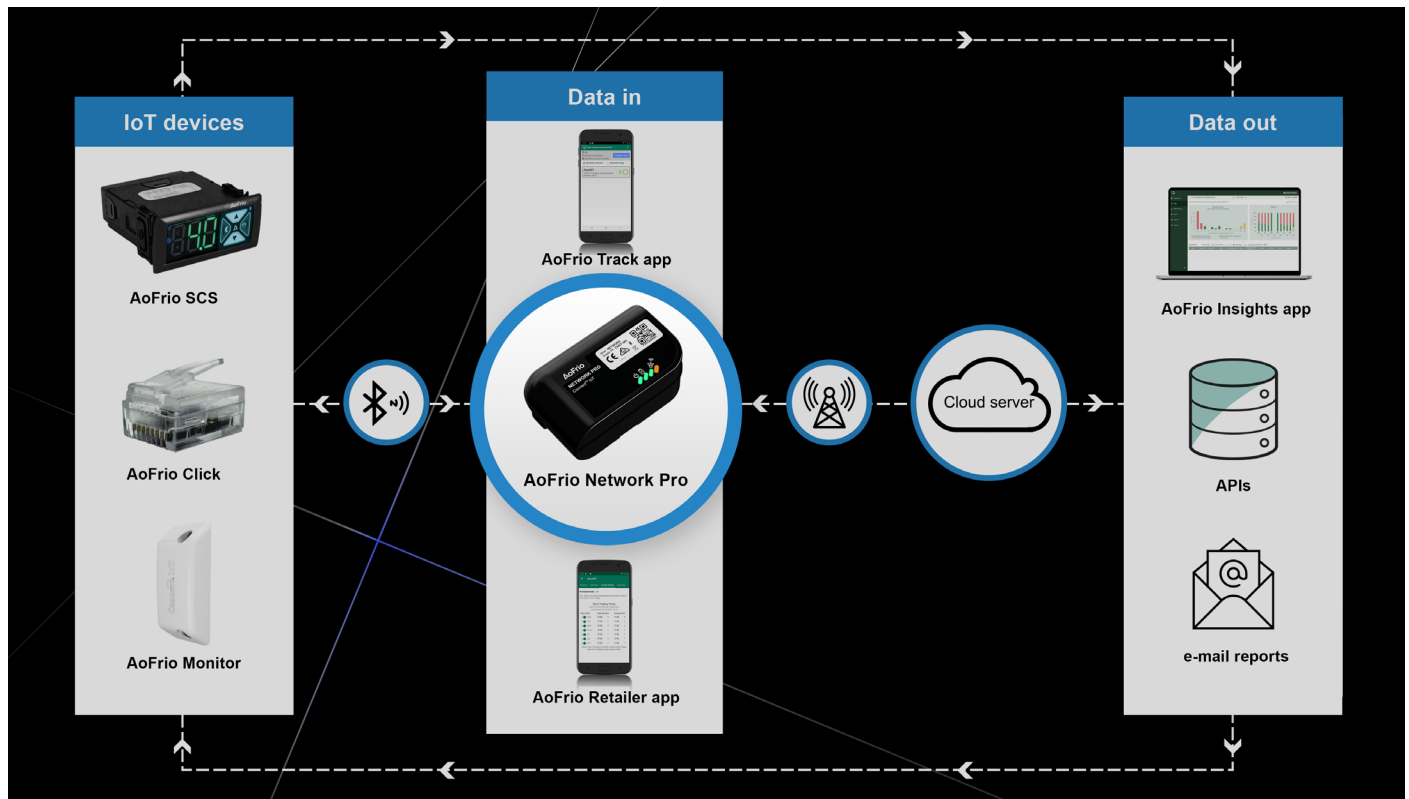
Key Features

Communications

Network Pro is equipped with 2 different types of radio connectivity:

- Bluetooth, for connectivity to AoFrio IoT devices
- Cellular, for internet access to enable data uploads to the AoFrio Cloud.

Bluetooth

The device is fully compatible with the AoFrio Connect IoT system and uses Bluetooth to acquire data from up to 16 AoFrio IoT devices.

Cellular connectivity

Network Pro is equipped with a global cellular module that provides connectivity using LTE Cat M1 with a 2G fallback. Cellular SIMs are installed at the time of manufacture and the data plan is managed by AoFrio.

Battery

The device has a rechargeable internal battery that is used for backup if the external power supply is removed. The battery life is approximately 12 hours during which time the **Network Pro** will continue to operate fully as if it was still connected to its external power supply.

Getting familiar continued

Key Features

Location Reporting

Wi-Fi positioning is used to help determine the location of the **Network Pro**, and therefore also the coolers that are within Bluetooth range. WiFi is not used to transfer data i.e. Network Pro is not capable of establishing a WiFi connection.

Report App

The AoFrio Report App now includes features for management of Network Pro and any devices it is connected to. Refer to the Report App section in this document for more information.

Field App

The AoFrio Field App has been updated and now includes functionality that allows the Network Pro to run a self-test and display the test results to the Installer. This means that the Installer can ensure that the system is fully functional before they leave the site. Refer to the separate Installation Guide document for the Field App usage guide.

What's in the box

⚠ **DO NOT USE THE USB-C PORT**

The port is a non-standard USB-C and is only intended to be used by AoFrio during manufacturing. Connecting anything to this port may damage the product and void the product warranty.
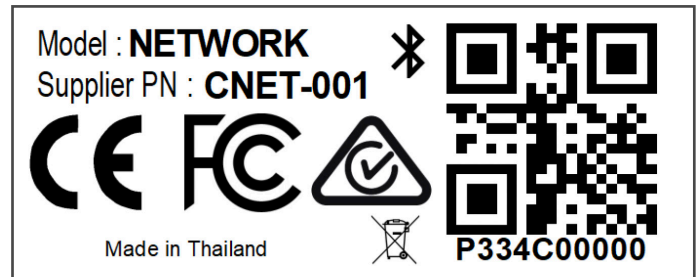
Getting familiar continued

Product label

The **Network Pro** product identification label contains product information and a QR code.

Product label and QR code

Includes the model and part number as well as all compliance requirements and marks. Can be scanned by users to connect to the device using the AoFrio IoT apps and digital toolkit.

Installation

Please refer to the **Network Pro Installation Guide** for full installation instructions.

Connection and setup

Shipping mode

Network Pro ships from the factory in a deactivated state which ensures that its backup battery is not in use and there are no radio emissions during transport. Network Pro only activates when external power is applied to it.

SIM card

Network Pro ships from the factory with an appropriate SIM card installed for the country of installation. The SIM card and cellular account is managed by AoFrio unless special arrangements have been made. Network Pro is not designed to be opened and any attempt to open the product will void the warranty, therefore the SIM card cannot be removed or replaced by the customer.

Please contact AoFrio prior to when Network Pro devices will be installed so that the SIM cards can be activated and AoFrio Cloud configuration can be set.

Commissioning

On first power-up **Network Pro** will connect to the cellular network and the AoFrio Cloud and download configuration and commissioning information. This will happen automatically and will allow Network Pro to know which AoFrio Connect IoT devices to track.

Only AoFrio Connect IoT devices associated with the same customer database will be allowed to connect to the Network Pro.

Network Pro will also check for any new firmware updates at start up, and then every 24 hours.

Verification

The AoFrio Field App can be used to verify the correct operation of Network Pro. Please refer to the **Network Pro Installation Guide** for full installation instructions and use of the Field App.

*NOTE: When **Network Pro** is in Trial mode, data collected will be uploaded to a customer specific test database and not their normal production database. The customer can therefore use the production database as normal and evaluate the **Network Pro** separately.*

Operating modes

Normal operation

During normal operation, Connect Network Pro will perform the following tasks:

- Check-in to the AoFrio Cloud every 24 hours to determine if new firmware or configuration is available for download.

- Acquire data from Connect IoT devices that are owned by the same customer and within Bluetooth range. Data will be uploaded to the AoFrio Cloud periodically, typically at least every 24 hours.

- Listen for alarms from any AoFrio IoT devices and upload data to the AoFrio Cloud immediately if high priority alarms have been configured.

Battery powered operation

The device has a rechargeable internal battery that is used for backup when external power is removed.

- If fully charged the backup battery will continue to operate the Network Pro for approximately 12 hours.

- When operating from the backup battery the Network Pro will continue to acquire data from Connect IoT devices and send data to the AoFrio Cloud until the battery is depleted.

- Once the battery is depleted the Network Pro will turn off.

- Network Pro will reactivate once reconnected to external power and then acquire and upload data from Connect IoT devices as normal.

- The backup battery will take 5-6 hours to fully charge from a fully depleted state.

Report App

The AoFrio Report App has been extended to support the **Network Pro** product. Access to the Network Pro feature is controlled by Roles in the User Manager. If a user's Role type does not include the Network Pro permission then they will not have access to the feature. Adding the Network Pro permission to a Role can currently only be performed by AoFrio Support.
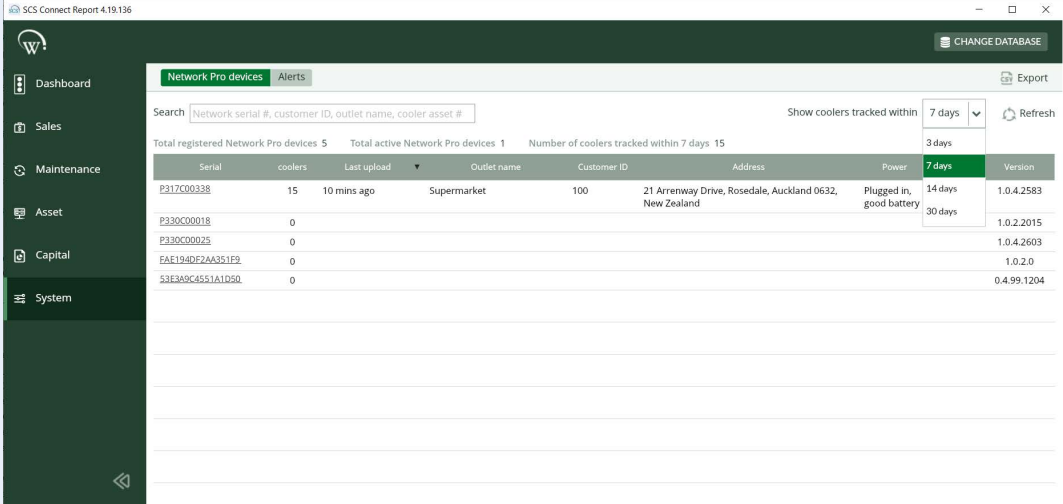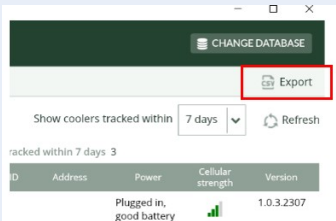
Note: Network Pro features are available in version 4.19.122 or later of the Report App. Check the Report App version in the banner of the Report App.

The Report App now includes features that enable the management of Network Pro devices and the Connect IoT devices that it is connected to:

- See the Network Pro details including the outlet where it is installed, the installation address, when it last uploaded data to the AoFrio Cloud and other details.

- List all of the coolers the Network Pro is connected to, and click through to the cooler details.

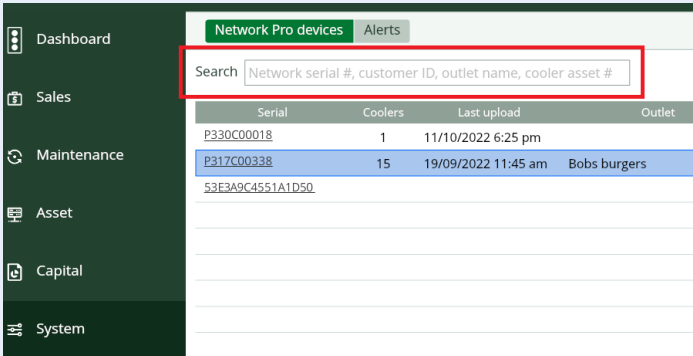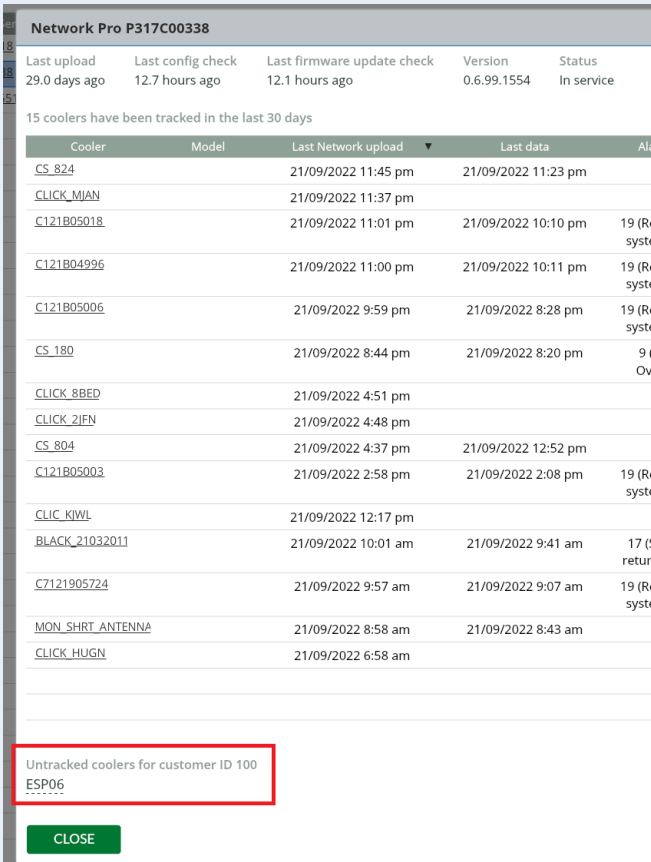- Search Network Pro's by Network Pro serial #, Customer ID, Outlet name or Cooler asset #.

For full details of the Network Pro Report App functionality please refer to 'System > Tutorial Videos' within the Report App.

Report App continued

Feature	Details / Screenshots
Access all the Network Pro devices in the customer account.	1. In the left-hand menu, click **System**, then click **AoFrio Network Pro.**
List of all Network Pro connections in the customer account	1. In the left-hand menu, click **System**, then click **AoFrio Network Pro**. 2. Select a **Network Pro serial number** to see details for the Network Pro and all Connect IoT devices it has connected to. Details include: • **Total registered Network Pro devices** • **Total active Network Pro devices** • **Number of coolers tracked within the time period selected** • **Power** • **Cellular Signal Strength** • **Firmware Version number** 3. (Optional) Filter connected devices. By default the list will show the devices it has connected to in the past 30 days but you can adjust this to show just the last 3, 7, or 14 days. A checkbox is also available to show ALL coolers that the Network Pro has connected to in its life. You can also filter by: • **Last upload** – the last time that the Network Pro uploaded data for the cooler to the AoFrio Cloud. • **Last data** – the timestamp of the last datapoint that was received from the cooler.
Export option that lists all Network Pro devices and the coolers they have tracked as a downloadable CSV file.	1. In the left-hand menu, click **System**, then click **AoFrio Network Pro**. 2. Click **Export** to generate a CSV file.

Feature	Details / Screenshots
Search by Network serial number, customer ID, outlet name, or cooler asset number	1. In the left-hand menu, click **System**, then click **AoFrio Network Pro**. 2. Select a **Network Pro serial number** to see details for the Network Pro and all Connect IoT devices it has connected to. 3. Enter your search into the **Search** box. The list of Network Pro's will dynamically update as you add additional search criteria. **Dashboard** **Sales** **Maintenance** **Asset** **Capital** **System** Network Pro devices / Alerts Search [Network serial #, customer ID, outlet name, cooler asset #] 	Serial	Coolers	Last upload	Outlet
P330C00018	1	11/10/2022 6:25 pm	
P317C00338	15	19/09/2022 11:45 am	Bobs burgers
53E3A9C4551A1D50				
List of untracked coolers to identify coolers that may be in the same store but out of range of the Network Pro's Bluetooth, or incorrectly configured as being available for this customer but are not actually on site.	1. In the left-hand menu, click **System**, then click **AoFrio Network Pro**. 2. Select a **Network Pro serial number** to see details for the Network Pro and all Connect IoT devices it has connected to. 3. View a list of coolers that are not connected to the Network Pro but have the same customer ID as other coolers that are connected. **Network Pro P317C00338** Last upload 29.0 days ago / Last config check 12.7 hours ago / Last firmware update check 12.1 hours ago / Version 0.6.99.1554 / Status In service 15 coolers have been tracked in the last 30 days | Cooler	Model	Last Network upload ▼	Last data	Ala
CS_824		21/09/2022 11:45 pm	21/09/2022 11:23 pm	
CLICK_MJAN		21/09/2022 11:37 pm		
C121B05018		21/09/2022 11:01 pm	21/09/2022 10:10 pm	19 (Re syste
C121B04996		21/09/2022 11:00 pm	21/09/2022 10:11 pm	19 (Re syste
C121B05006		21/09/2022 9:59 pm	21/09/2022 8:28 pm	19 (Re syste
CS_180		21/09/2022 8:44 pm	21/09/2022 8:20 pm	9 (Ove
CLICK_8BED		21/09/2022 4:51 pm		
CLICK_2JFN		21/09/2022 4:48 pm		
CS_804		21/09/2022 4:37 pm	21/09/2022 12:52 pm	
C121B05003		21/09/2022 2:58 pm	21/09/2022 2:08 pm	19 (Re syste
CLIC_KJWL		21/09/2022 12:17 pm		
BLACK_21032011		21/09/2022 10:01 am	21/09/2022 9:41 am	17 (S returi
C7121905724		21/09/2022 9:57 am	21/09/2022 9:07 am	19 (Re syste
MON_SHRT_ANTENNA		21/09/2022 8:58 am	21/09/2022 8:43 am	
CLICK_HUGN		21/09/2022 6:58 am			 Untracked coolers for customer ID 100 ESP06 **CLOSE**

Over The Air Firmware Updates

AoFrio will update the Network Pro firmware when necessary. Firmware updates are performed Over The Air (OTA) via the cellular network; enabling new functionality, improving product performance and/or resolving any product issues.

AoFrio Support staff will only deploy new firmware after comprehensive testing has been completed. Customers may not be notified of new firmware deployments ahead of time.

Network Pro will check the AoFrio Cloud every 24 hours for firmware updates and will download any new version of firmware that is available.

During an OTA update:

• Network Pro will not be servicing other tasks i.e. reporting of alarms and sending data from Connect IoT devices to the AoFrio Cloud will be deferred until the firmware update has completed.

• If external power is lost during the OTA update process the cellular connection could be dropped and when external power is reconnected the OTA process will restart again.

• Firmware updates will consume up to 700kB of cellular data per download.

Once Network Pro has downloaded the new firmware it will restart and be offline for a few seconds before checking into the AoFrio Cloud again.

Specifications	
Input voltage and current	4.5V – 6.4V DC, 300mA max
Cellular communications	LTE Cat M1 with 2G (GPRS) fallback
Cellular bands	B1, B2, B3, B4, B5, B8, B12,B13, B18, B19, B20, B25, B28, B39
Connectivity	Bluetooth (BLE 4.1)
Wi-Fi (Geo-location only)	2.4GHz, 802.11 b/g/n
Battery	750mAh, 3.7V, Li-Po (approx. 12 hrs full product operation)
Status LEDs	1 x Power Status ; 1 x Battery Status ; 2 x Cellular status
Connector/Interface	3.5mm 4 pole audio plug
Mounting method	2 x self-tapping screws or double sided adhesive pad
Ingress protection	IP43
Operating temperature[1]	-20°C to +60°C (-4°F to 140°F)
Storage temperature	-20°C to +60°C (-4°F to 140°F)
Weight	63g (2.2oz)
Approvals	CE FC △ NOM

[1] Backup battery charging only occurs between 0°C and 40°C
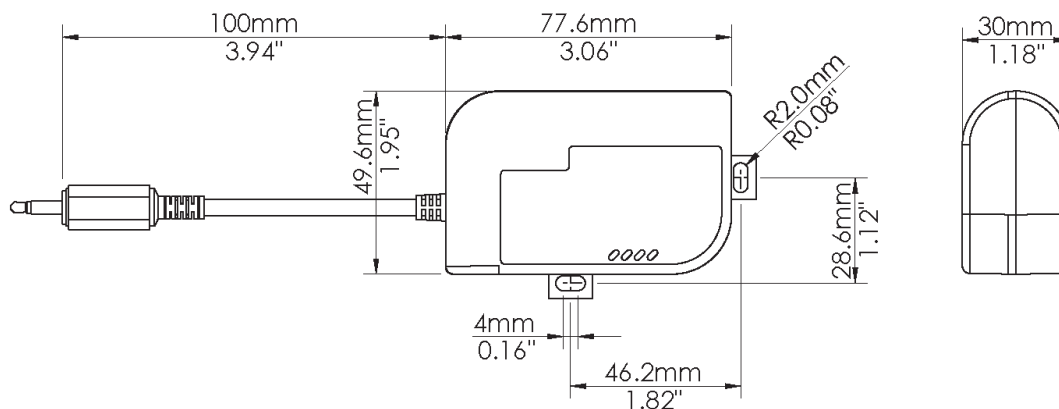
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