

**Myriota**

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# Myriota FlexSense User Guide

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# Revision History

Rev	Date	Description of Change
01	Jun 2024	Initial version
02	Oct 2024	Updates to reflect the latest FlexSense details, including regulatory, and Minor clarifications
03	Jul 2025	Updates to reflect the latest FlexSense details, including LED and button behaviour.
04	Jul 2025	Updates with details on the new line-powered FlexSense, large message support, I2C wiring guidance & other minor updates

## Related Documentation

Find the latest versions of all Myriota documentation at [support.myriota.com](https://support.myriota.com)

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# FlexSense Basics

## Overview

The FlexSense is Myriota's next-generation “Just Works” IoT edge solution for monitoring & control. It is the perfect springboard for your IoT ambitions, providing a low-risk and low-cost “fast track” to market.

The ready-to-go edge device is designed for integration with a large number of standard IoT sensor interfaces, enabling maximum flexibility to meet a multitude of application types with a single device.

It comes pre-programmed with location and internal temperature reporting by default and can be easily reprogrammed via USB.

The low-power FlexSense can be powered by 2 AA or 4 AA Lithium batteries, providing up to five years of autonomous, maintenance-free operation.

## Key Features

- Integrated Myriota secure and private low-power satellite IoT connectivity
- 5 year+ in-field battery life
- Flexible range of sensor interfaces
- Rugged IP67, UV-resistant enclosure with internally mounted antenna
- Software-configurable LED optionality
- Secure, isolated battery caddy
- Seamless install & field updates via BLE & USB-C

## Applications

The Myriota FlexSense is designed to suit sensing and monitoring applications across a multitude of industries, including but not limited to:

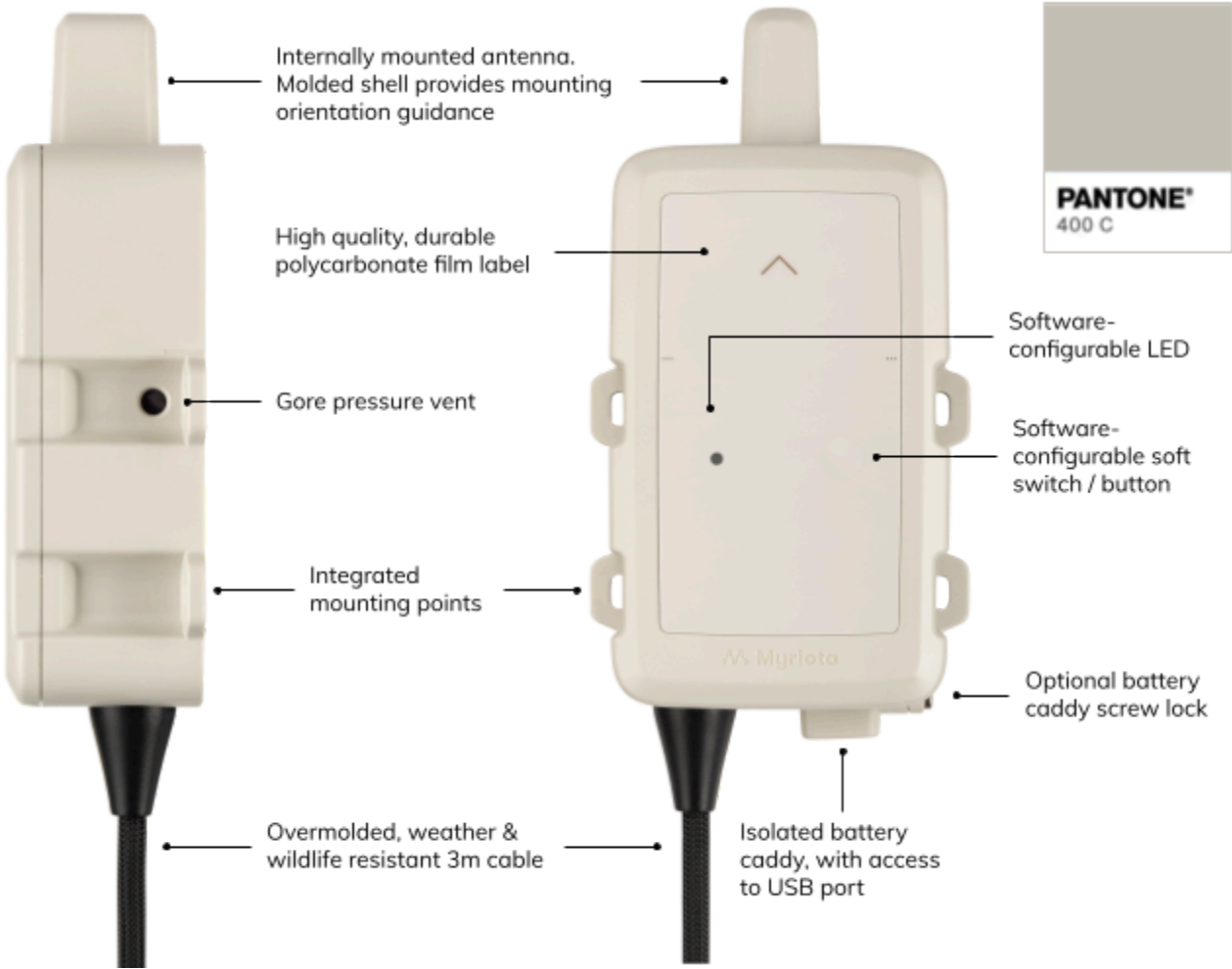
- Environmental Monitoring and Management
- Weather and Meteorological
- Utility Metering
- Bores and Groundwater
- Agriculture & Livestock
- Location Monitoring

# FlexSense In Depth

## Device Features

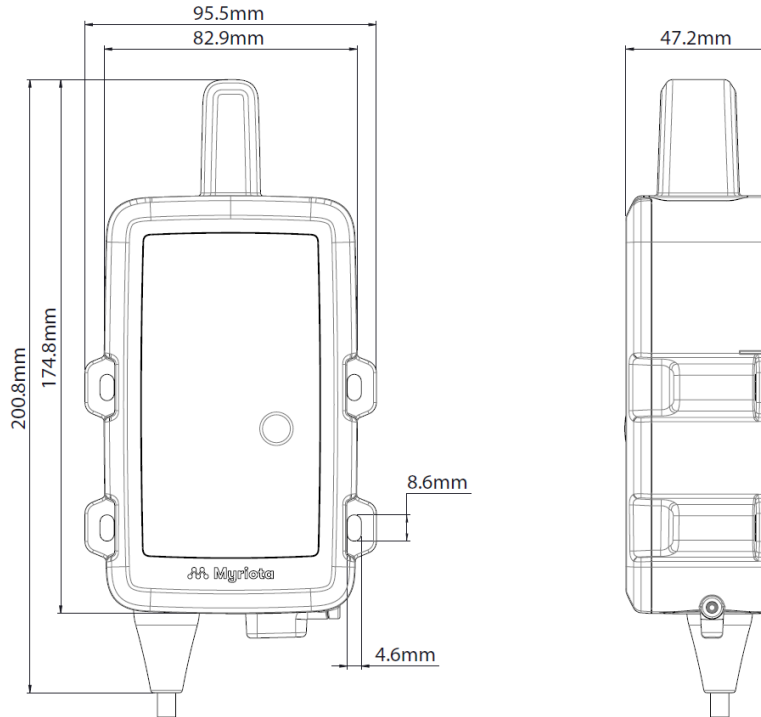
<b>Model Number</b>	FS-S-2A
<b>Communications</b>	Myriota UltraLite secure and private low-power satellite IoT connectivity AES-CBC-256 encryption using unique per-Module keys
<b>Enclosure</b>	Rugged IP67-rated, UV-resistant enclosure

Diagram 1: FlexSense device features



## Dimensions

Diagram 2: FlexSense dimensions



Weight (FlexSense only)*	0.25kg
Weight (with 3m Cable)*	0.42kg

\*Weight is without batteries. 2 batteries add 0.05kg and 4 batteries add 0.08kg.

## Pre-Installed Cable

The FlexSense is supplied with a 14-wire, 3m cable pre-connected. The cable entry point is overmolded to ensure the IP67 rating, and the cable is enclosed in a heavy-duty braiding to provide resistance to weather and wildlife. At the point of integration, the cable can be trimmed to suit the attached sensor.

## USB-C Port

The USB-C port, accessible via the battery compartment, is designed for programming and configuring only.

Diagram 3: FlexSense USB port



# Technical Specifications

Table 1: FlexSense technical specifications

<b>Environmental</b>	Operating temperature	-30°C to +70°C (-22°F to 158°F)	
	IP Rating	IP67	
<b>Onboard MCU</b>	Flash	38kB	
	RAM	4kB	
<b>Satellite Transmit &amp; Receive</b>	Transmit Frequency	399.907 - 400.043 MHz	
	Receive Frequency	400.15 - 401 MHz	
	Max out Power (EIRP)	30.15 dBm	
<b>Bluetooth Transmit &amp; Receive</b>	Technology	Bluetooth Low Energy (LE)	
	Transmit Frequency	2402.0 - 2480.0 MHz	
	Receive Frequency	2402.0 - 2480.0 MHz	
	Max out Power (EIRP)	5.84 dBm (+25°C)	
<b>Application Firmware</b>	API Support	Simple Application Programming Interface (API) for job scheduling, sensor input/output, diagnostics, and access to Myriota's communication stack	
	Reference Applications	Library of reference applications for specific use cases and sensor types provided as both pre-built binaries and source code	
	Custom Firmware	The Myriota Design Services team can develop custom applications or your in-house development team, using the Myriota FlexSense Software Development Kit (Flex-SDK) and Device API	
	Firmware Re-Programming	USB-C Bluetooth Low Energy (BLE)	
<b>Interface Types</b>	Input	1x Analogue (4-20mA or 0-10V)	
	Output	1x Power (25mA @ 5/12/24V) Configurable power output for external sensors	
	Bidirectional		2x Digital I/O (Digital IN, Digital OUT, or Pulse Counter) 1x Serial (RS-232 or RS-485) 1x I2C 1x Expansion header for connection of daughter boards and new interfaces
<b>Power Supply</b>	Battery	2x or 4x Lithium AA Batteries (3 - 3.6V)	
	Power In	12V to 24V DC	

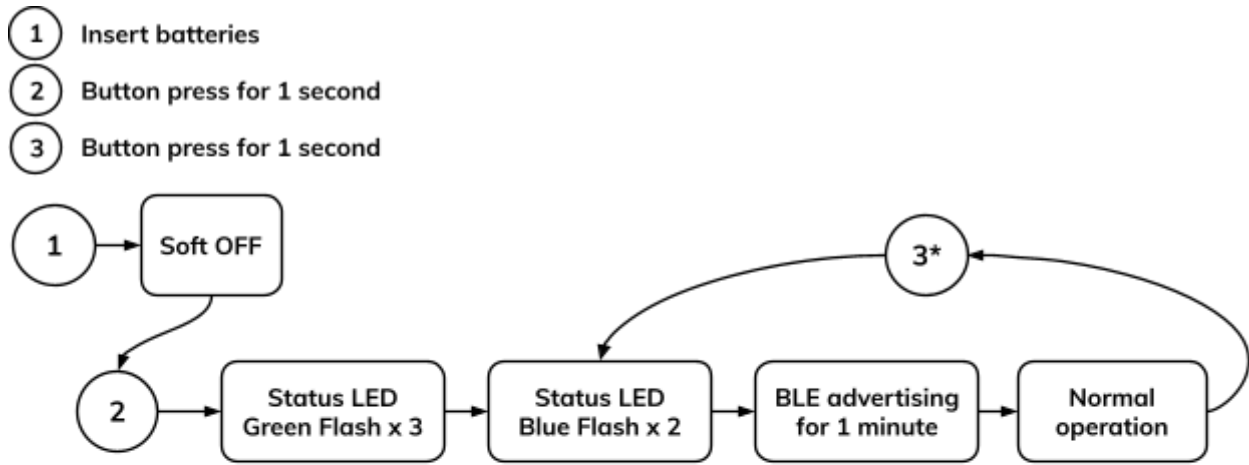
## Soft Switch/Button Operation

Diagram 4: FlexSense button mapping



The behaviour of the FlexSense status LED is software-defined and can be programmed to suit the needs of your customers and application. The FlexSense pre-programmed startup behaviour is described in Diagram 5.

Diagram 5: FlexSense startup behaviour



Any button press during BLE advertising or GNSS fix will be ignored.



To avoid device tampering once deployed in the field, the button cannot be used to turn the unit off once the device is powered and turned on. To reset, pull out the battery tray and reinsert to restart.

\*The Status LED Blue Flashes on startup and after a button press during normal operation. Enabling BLE through a button press is only supported from Flex-SDK v2.4.0 and higher. The Bluetooth is available for 1 minute after the LED flashes blue.

Note that after the button press it takes 2-3 seconds for the LED to flash blue. Previous Flex-SDK releases will only enable BLE advertising for 5 minutes after start-up and a button press will not re-enable BLE advertising.

When FlexSense is in the Soft OFF state, it consumes minimal power, only detecting button presses. During normal operation, high-power components are powered as needed, resulting in increased battery consumption.

The following table shows the mapping from button to component state for the different onboard modules:

Table 2: FlexSense button-to-component state mapping

Definition	Component State			
	Onboard I/Cs	Myriota Module	GPS	BLE
Soft OFF	ON	OFF	OFF	OFF
Normal Operation	ON	ON	ON	ON

## Bluetooth Interface

The Myriota FlexSense is enabled with a Bluetooth Low Energy (BLE) interface, designed for configuration, diagnostics, and firmware updates.

The Myriota FlexAssist application, available on [iOS](#) and [Android](#), enables you to view device information, including version and registration details, perform firmware upgrades, access diagnostics, and update configuration fields.

## Countries of Operation

The FlexSense can be deployed in all countries where the Myriota UltraLite Network is commercially available.

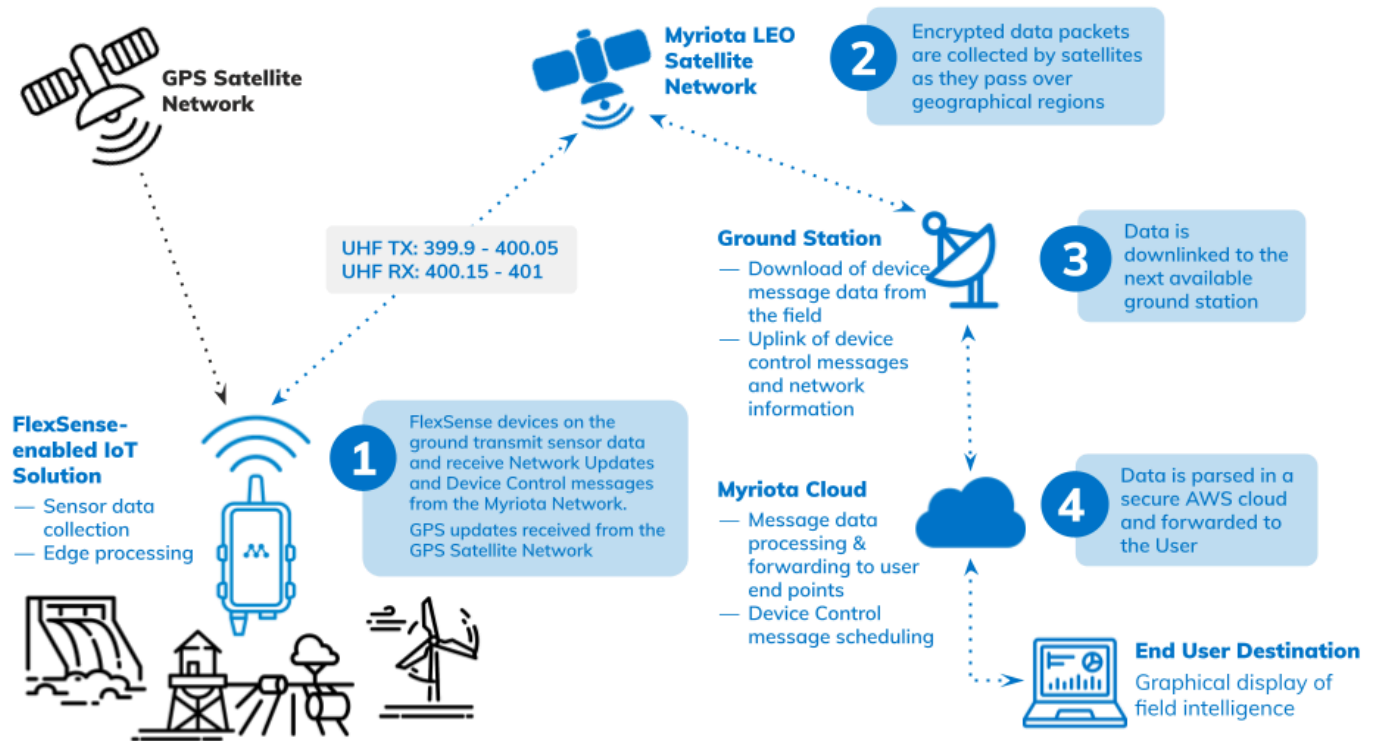
For the latest list of countries where commercial Myriota UltraLite Network service is available, check out [Network Coverage](#) on Myriota Support.

If your regions of interest are not currently available, please reach out to your Myriota sales representative or submit a [support request](#) to obtain more information on future availability.

## Message Communications

The FlexSense communicates data to and from the field via the Myriota UltraLite Network, as shown in Diagram 6. If you would like to understand more about the behaviour and architecture of the Myriota UltraLite Network, see [Data Service](#) on Myriota Support.

Diagram 6: Myriota UltraLite Network architecture



## Data Plans & Billing

Myriota offers a variety of FlexSense Data Plans to suit the needs of your customer and application types.

To determine which data plan best suits your needs, please contact your Myriota sales representative or submit a [support request](#) today.

## Battery Power

The FlexSense is powered using four or two AA batteries. For optimal performance and longest in-field lifetime, Myriota highly recommends using **four AA lithium batteries**, specifically Energizer [L91 AA Lithium Batteries](#).



Alkaline and other primary batteries with 1.5V nominal voltage are not recommended for use with the Myriota FlexSense.

These battery options **may not work, or only work for a short time period.**

Rechargeable batteries **will not work** due to their low voltage.

Myriota has taken all efforts in the design of the Myriota UltraLite Network and the FlexSense to prioritise energy efficiency and deliver the longest possible device lifetime. Appropriate battery selection is critical to realising these benefits.

Diagram 7: FlexSense battery requirements



The desirability of upfront cost savings from lower-quality batteries is understandable. However, their use will result in significant underperformance in terms of expected battery life, and any initial savings will be significantly outweighed by the operational costs of remote infield replacement and the reputational costs associated with a poor customer experience.

Note that Lithium-Thionyl Chloride (Li-SOCl<sub>2</sub>) batteries e.g. SAFT LS14500 are not supported by FlexSense as these have a higher voltage of 3.6V and will damage the FlexSense device, and void the warranty.

For any assistance with battery selection, raise a [support request](#).

# Getting Started

## Required Tools

### Laptop or Desktop Computer

A laptop or desktop computer running Windows, macOS, or Linux operating system, and with a USB port, capable of supplying at least 500mA of current. Low-quality cables, non-powered USB hubs, and older version USB 1.0/1.1 ports may not be able to provide 500mA to the FlexSense.

### Myriota DeviceAssist App

The Myriota DeviceAssist App, required for registration, updating, and re-programming, can be downloaded from the [Support Site](#).

### USB-C Cable

A USB-C cable is required to program and configure the FlexSense using DeviceAssist.

### Phillips-head Screwdriver (optional)

A Phillips-head screwdriver is required to insert and remove the battery caddy security screw if used.

### Batteries

Due to shipping restrictions, the FlexSense is not shipped with batteries.

For battery selection requirements, see the [Battery Power](#) section.

## Account Registration

If you and your organisation are new to Myriota, you can register for a Device Manager account. Go to [Device Manager Register](#), and your request will be processed by the Myriota team as soon as possible.

If your organisation already has a Device Manager account, do not submit a registration request, instead please ask your account administrator to add you as a user. Device Manager accounts are created within an organisational account structure. This enables all of your Myriota devices to be displayed together and accessed in one location by your team.

For any account registration issues, raise a [support request](#).

## Device Activation

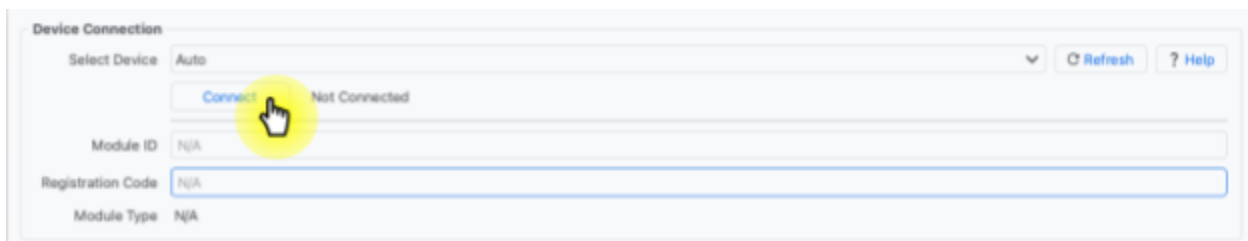
The Myriota FlexSense can be activated using the Myriota DeviceAssist application and the Myriota Device Manager.

To get started, ensure you have a computer or laptop with DeviceAssist installed and a USB cable.

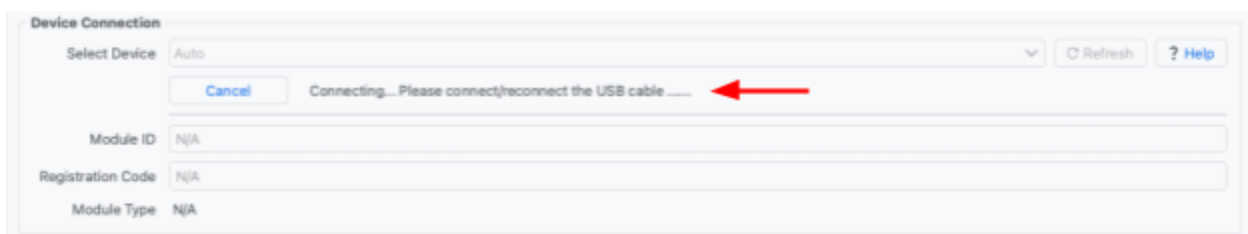
On your FlexSense, remove the optional security screw from the battery caddy cap, if used, and turn the cap anti-clockwise slightly to release the caddy.

Pull the caddy fully out of the enclosure to expose the USB-C port inside the caddy opening.

On your computer or laptop, launch or switch to the DeviceAssist application. In the Device Connection panel, make sure the “Auto” option is selected and click **Connect**.

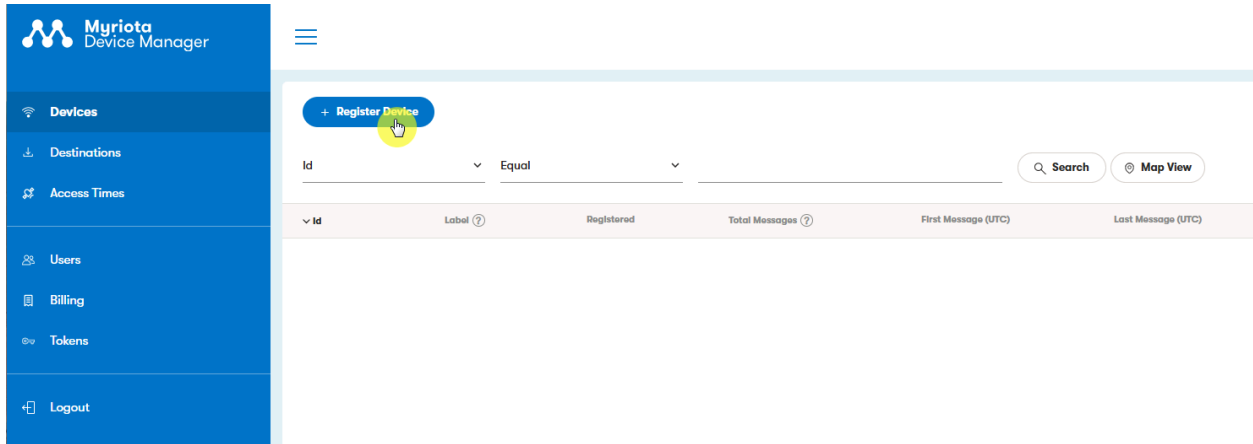


When prompted, connect the USB cable to the FlexSense to reset the device. Please note that the reset may take up to 15 seconds to complete.



Once complete, the device status will change to “Connected”, and the Device ID and Registration Code fields will be populated. Copy the Registration Code field.

Navigate to the Device Manager and log in to your account. From the Devices screen, click on **Register Device**.



On the Registration pop-up, complete the form fields as follows:

- Enter the Registration Code copied in the steps above
- Select the Destination as “Myriota Message Store” (or any other custom destination you may have already set up)
- Assign the device a meaningful name in the field “Label” and click **Register**

Congratulations, your FlexSense is now registered and ready for use!

If you wish to reprogram the device with custom firmware first, leave the USB cable connected and keep reading for the next steps on [Programming](#). If you are finished, disconnect the USB cable and insert the batteries.

For more information on the use of the DeviceAssist application, check the [DeviceAssist User Guide](#).

## Programming

### Default Firmware

The Myriota FlexSense comes pre-programmed with the tracker reference application firmware, which is configured to report location and temperature data (collected from the onboard sensor) four times per day. If this behaviour is suited to your needs, [insert the batteries](#) and [deploy](#) to start sending messages.

The source code to the reference application is available on the [Flex-Reference-Applications](#) github site.

### Reference Applications

A variety of reference applications are available to suit different use cases and sensor interfaces. The reference applications are provided as pre-built binaries and source code. The pre-built binaries and their corresponding parsers are available via the [Device Manager](#)

under the “Download Binaries” menu. The corresponding source code is available on the [Flex-Reference-Applications](#) github site.

## Custom Firmware

The FlexSense can be reprogrammed with new firmware to customise its behaviour to the specific needs of your use case or sensor type.

For a head start with developing your own FlexSense firmware, check out the [Flex-SDK](#). Further information is available in the [FlexSense API documentation](#), or raise a [support request](#) to find out how Myriota’s Design Services team can help.

## Reprogramming FlexSense

Once your firmware is ready, you can reprogram your FlexSense using the DeviceAssist app.

For instructions on how to reprogram with a new firmware binary, refer to the "Device Update" section of the [DeviceAssist User Guide](#).

## Sensor Wiring

The FlexSense supports a wide variety of sensor types. For examples of how to wire up common sensor interface types, see the [Interfacing to external devices](#) section.

If your particular sensor type is not covered or you have further questions, please raise a [support request](#) for additional assistance.

## Battery Preparation

For battery selection requirements, see the [Battery Power](#) section.

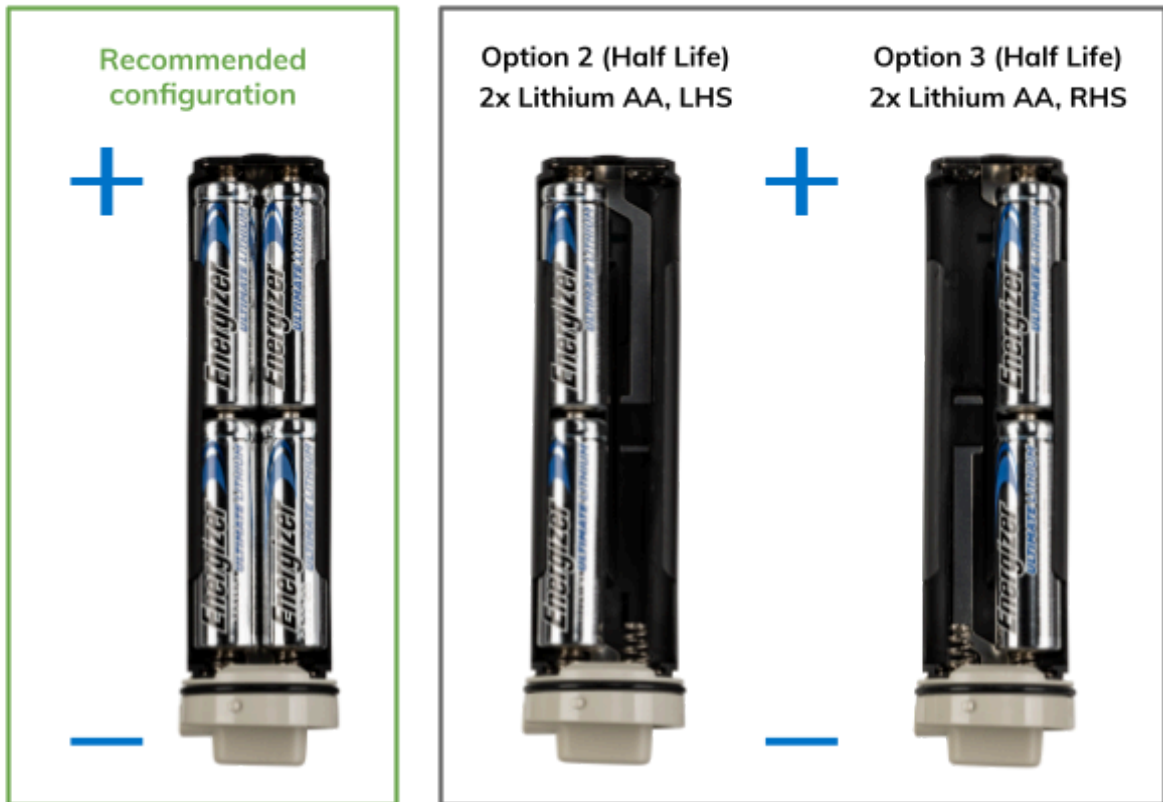
Before inserting your batteries, we recommend the following:

1. Always use new batteries
2. Test your batteries by measuring their voltage with a multimeter and ensure the reading is above 1.7 V for new Lithium batteries.
3. Decide on either a two or four-battery configuration (see diagram 8), in accordance with your device lifetime requirements.

Diagram 8: FlexSense battery configuration options



For maximum lifetime in the field, the use of four AA lithium batteries is highly recommended. FlexSense can operate on two in a vertical orientation, but the battery lifetime is halved.

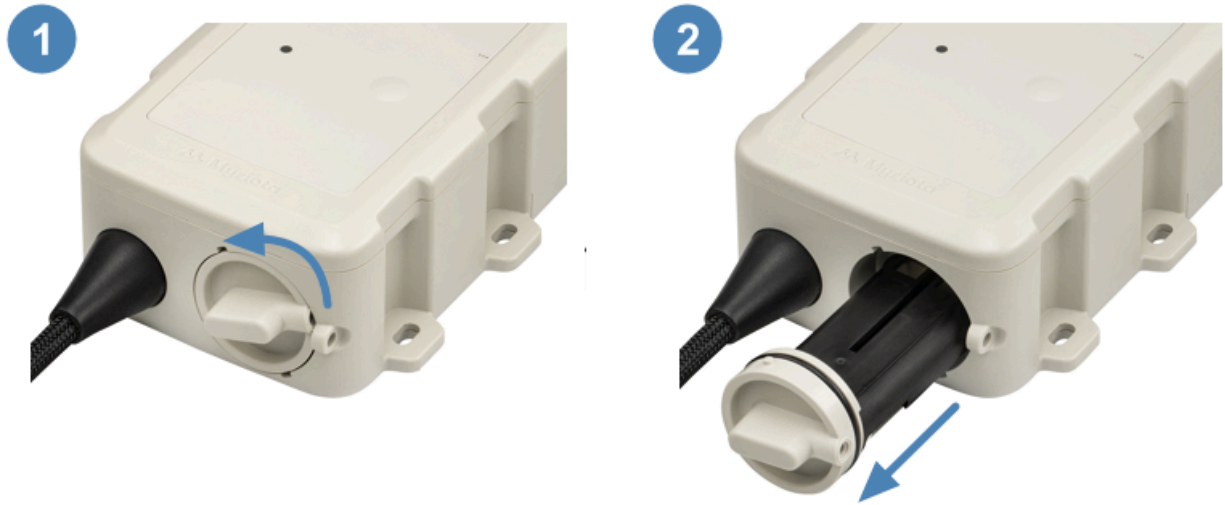


## Battery Insertion

On your FlexSense device, remove the optional security screw from the battery caddy cap, if present, and turn the cap slightly anti-clockwise to release.

Pull the caddy completely out of the enclosure and turn it over. Taking note of the + and - symbols in the holder for correct battery orientation, insert two or four Lithium AA batteries.

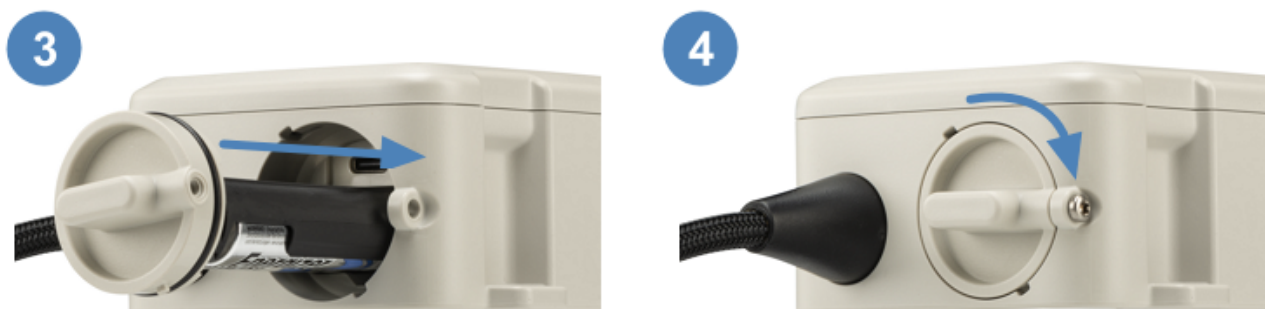
Diagram 9: Removing the FlexSense battery caddy



To reinsert, turn the battery caddy over so that the batteries are facing down, and slide it back into the FlexSense enclosure.

Turn the cap clockwise slightly to the right to engage the closing mechanism. If required, replace the security screw to lock the caddy in place.

Diagram 10: Reinserting the FlexSense battery caddy



# Deployment

## About Antennas

- Deploy with a clear sky view, with the antenna pointing towards the sky; elevate where required
- Avoid metal and concrete mounting surfaces
- Do not deploy indoors
- Avoid strong sources of RF and electrical interference, such as radio devices and high-voltage equipment
- Use the mounting holes with screws or zip ties as required
- Ensure that the antenna, as shown below, is free from any obstructions

## Site Selection

The diagrams below show good and bad deployment scenarios.

- Structures made from metal, brick, and concrete materials may block transmission completely
- Direct overhead signals have lower gain
- Trees may block signals intermittently
- Elevate the device to provide a clear sky view

Diagram 11: Optimal FlexSense deployment



## Mounting

When selecting your mounting position, consider the chances of the device being accidentally crushed, dislodged, or otherwise damaged.

The FlexSense can be mounted using the four integrated brackets with screws, bolts, cable ties, or industrial adhesives.

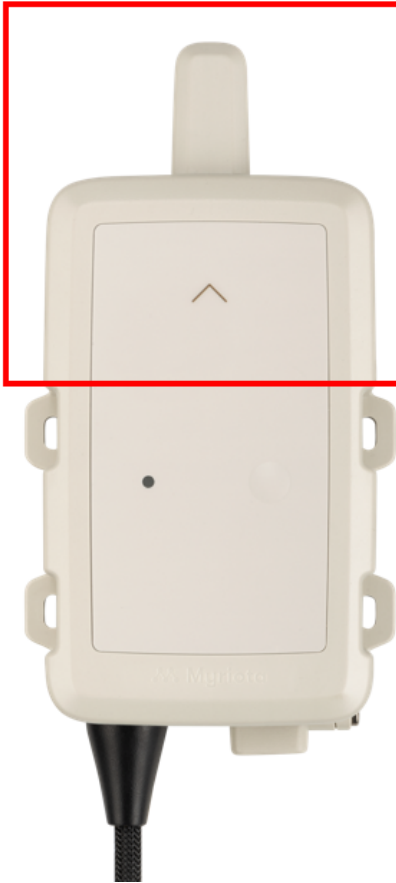
Diagram 12: FlexSense mounting examples



When mounting, ensure the unit is correctly orientated, with the antenna (positioned at the top of the device) pointing up towards the sky. The antenna is designed to transmit up and out sideways. Orienting the antenna in any other position will impact communications performance.

According to the diagram below, the area marked with a red box requires a clear view of the sky and should not be obstructed by the mounting surface.

Diagram 13: FlexSense antenna clearance area



Care should be taken to route the cable appropriately and securely. Cable routing should consider the following potential sources of damage to the cable:

- Avoiding sharp edges or objects
- Tampering or damage by people and/or animals
- Direct sunlight for extended periods

Conduit can be used to add additional protection to the cable if needed.

## Start-up

The Soft switch on the front panel is used to start the FlexSense after inserting the batteries (see [Soft Switch/Button Operation](#) for more details). The FlexSense will flash the LED three (3) times on start-up to indicate that the unit is operational.

# Sending Messages

FlexSense devices are optimised for messages with a minimum packet size of 20 bytes. However, messages larger than 20 bytes are also supported, allowing you to include more detailed sensor data or metadata when needed. To use this capability, ensure your application is built with Flex SDK version 2.3.0 or later.

Transmitting larger messages increases transmission time, which consequently impacts the unit's battery life. It is therefore crucial to consider this effect when sending such messages.

Sending messages up to 500 Bytes will maintain current latency levels, similar to the 20-byte messages of today. Messages exceeding this range will experience further latency increases depending on the satellite network configuration at the current time. Details on message latency can be found here [Message Latency](#)

Daily message size is capped at 1.5 kB. A single message can reach this limit, but transmission will have a latency that can take up to 24 hours to transmit, and therefore, only one such message is allowed daily.

The entire data packet, just like with the previous 20-byte messages, remains fully available for your application to utilise for any data transmission needs.

For transmission reliability, large messages are segmented into smaller packets with multiple retries. The message packets are designed with multiple redundancies to ensure a high level of probability that the whole data packet arrives.

Message size flexibility allows for sending various types of messages with different sizes, according to specific application needs, from a single device.

# Receiving Messages

For more information on creating and assigning message destinations for your FlexSense devices, refer to the [Receiving Messages](#) documentation on the Support site.

## Data Plans & Billing

Myriota offers a variety of FlexSense Data Plans to suit the needs of your customer and application types.

To determine which data plan best suits your needs, please contact your Myriota sales representative or submit a [support request](#) today.

# Data visualisation

Once you have registered your FlexSense device and it is sending messages to your Destination(s), the next step is to turn that data into information and insights.

If you don't already have a visualisation solution in place, [Eagle.io](#) and [TagoIO](#) support Myriota integration as native visualisation platforms.

These cloud-based platforms provide ready-to-go widgets and dashboards to get up and running straight away, as well as the ability to extend these to build custom and branded views of your data.

For more information on how to connect your FlexSense to one of these platforms, see [Visualise Your Data](#) on the Support site.

# Interfacing to External Devices

FlexSense has a large number of connection options as detailed below. Some are software-configurable, but it is possible to combine multiple different I/Os for enhanced functionality.

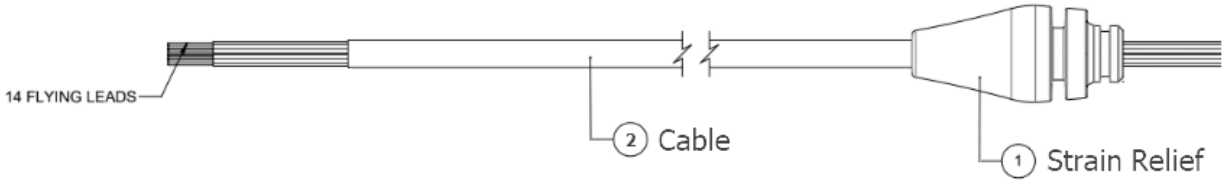
## Cable wiring

The Myriota FlexSense comes with a 3m cable preinstalled. The cable has 14 wires available via the flying lead. The cable can be cut as needed to meet the required cable lengths.

The cable can be connected directly to sensors or control boxes and must be terminated correctly and sealed to prevent any water intrusion into the device.

An optional in-line cable connector can be used where the sensor already has a cable and wiring available. Any unused conductors should be trimmed to avoid the risk of shorting.

It is important to note that there are two versions of the FlexSense unit, one that supports Line In Power via the FlexSense cable and the other that does not. The serial number identifies those units and is noted in the two tables below.

**Diagram 14: FlexSense cable**


## Cable Interface Specification

**Table 5A: FlexSense cable interface specification for devices starting with serial number 00XXXXXXXXXX - NON-power in enabled**

Interface Type	Name	Description	Cable Colour	Notes
ANALOG	ANALOG IN	Analog Input (0-5V, 0-10V or 4-20mA)	ORANGE	Software configurable between Voltage mode (0-10V) or Current mode (4-20mA)
DIGITAL I/O	DIGITAL I/O 1	Digital Input/Output (open-drain)	YELLOW	See [Note 1]. Supports the wakeup feature
	DIGITAL I/O 2	Digital Input/Output (open-drain)	GREEN	See [Note 1]. Supports the wakeup or pulse counter feature
RS232	RS232 RX	RS232 Receive	PINK	Configurable between either RS232 or RS485. RS232 Rx & Tx referenced to SIGNAL GND.
	RS232 TX	RS232 Transmit	BLUE/WHITE	
RS485	RS-485 A	RS-485 Line A	GREY	See [Note 2]
	RS-485 B	RS-485 Line B	WHITE	
I2C Bus	I2C SDA	I2C Data	RED/WHITE	It is recommended that the I2C interface use a cable length of 1m (~3ft) or shorter to avoid degraded device performance.
	I2C SCL	I2C Clock	PURPLE	
SIGNAL GND	SIGNAL GND	Signal ground	BLACK/WHITE	Signal ground used for Analog, Digital & Communication interfaces.
N/A	N/A	N/A	RED	Do not connect.
	N/A	N/A	BLUE	
POWER OUT	PWR OUT POS (+)	Power Output for Sensors (5V, 12V or 24V)	BROWN	Configurable between 5V±10%, 12V±5% & 24V±5% Maximum current draw is 25mA
	PWR OUT NEG (-)		BLACK	



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**Note 1.** Digital output is configured as an open drain output. The output is pull-up to 3.3V via a 10k resistor. External pull-up (up to 24V) can be used if operating at a different voltage level.

Digital Input can support voltages up to 24V. 3.3V logic level threshold. The input is internally pulled up to 3.3V via a 10k resistor.

External device must drive the input low (e.g. open collector)



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**Note 2.** FlexSense is primarily designed to be the master device in any serial communication.

FlexSense can support slave configuration however the external system will need to "wake-up" the FlexSense prior to any communication via a digital input.

**Table 5B: FlexSense cable interface specification for devices starting with serial number 01XXXXXXXXXX - Power in enabled**

Interface Type	Name	Description	Cable Colour	Notes
ANALOG	ANALOG IN	Analog Input (0-5V, 0-10V or 4-20mA)	ORANGE	Software configurable between Voltage mode (0-10V) or Current mode (4-20mA)
DIGITAL I/O	DIGITAL I/O 1	Digital Input/Output (open-drain)	YELLOW	See [Note 1]. Supports wakeup feature
	DIGITAL I/O 2		GREEN	See [Note 1]. Supports wakeup or pulse counter feature
RS232	RS232 RX	RS232 Receive	PINK	Configurable between either RS232 or RS485. RS232 Rx & Tx referenced to SIGNAL GND.
	RS232 TX	RS232 Transmit	BLUE/WHITE	
RS485	RS-485 A	RS-485 Line A	GREY	See [Note 2]
	RS-485 B	RS-485 Line B	WHITE	
I2C Bus	I2C SDA	I2C Data	RED/WHITE	It is recommended that the I2C interface uses a cable length of 1m (~3ft) or shorter to avoid degraded device performance.
	I2C SCL	I2C Clock	PURPLE	
SIGNAL GND	SIGNAL GND	Signal ground	BLACK/WHITE	Signal ground used for Analog, Digital & Communication interfaces.
POWER IN	PWR IN POS (+)	Power Input (12V <sub>DC</sub> to 24V <sub>DC</sub> )	RED	External power supplies are required to be low noise for optimal RF performance. Contact Myriota for a list of verified external power supplies.  See [Note 3]
	PWR IN NEG (-)		BLUE	
POWER OUT	PWR OUT POS (+)	Power Output for Sensors (5V, 12V or 24V)	BROWN	Configurable between 5V±10%, 12V±5% & 24V±5% Maximum current draw is 25mA
	PWR OUT NEG (-)		BLACK	



**Note 1.** Digital output is configured as an open drain output. The output is pull-up to 3.3V via a 10k resistor. External pull-up (up to 24V) can be used if operating at a different voltage level.

Digital Input can support voltages up to 24V. 3.3V logic level threshold. The input is internally pulled up to 3.3V via a 10k resistor.

External device must drive the input low (e.g. open collector)



**Note 2.** FlexSense is primarily designed to be the master device in any serial communication.

FlexSense can support slave configuration however the external system will need to "wake-up" the FlexSense prior to any communication via a digital input.



**Note 3.** FlexSense is designed to be operated with batteries.

FlexSense requires a minimum of two(2) batteries to turn ON the device, even when operated using an external power supply. The batteries will also serve as backup power in the event of no external power supply.

## Multisensor Support

The FlexSense can support multiple sensors connected simultaneously, provided they are using different interface types.

The recommended multi-sensor configuration is two or three sensors at most. Whilst it is possible to have all interfaces in use, or to use the serial port RS485 to connect a larger number of external sensors (via an RTU, for example), this increases power consumption and generates a large amount of sensor data.

Data can be pre-processed at the edge to reduce the number of messages required per day, taking into account the associated energy consumption.

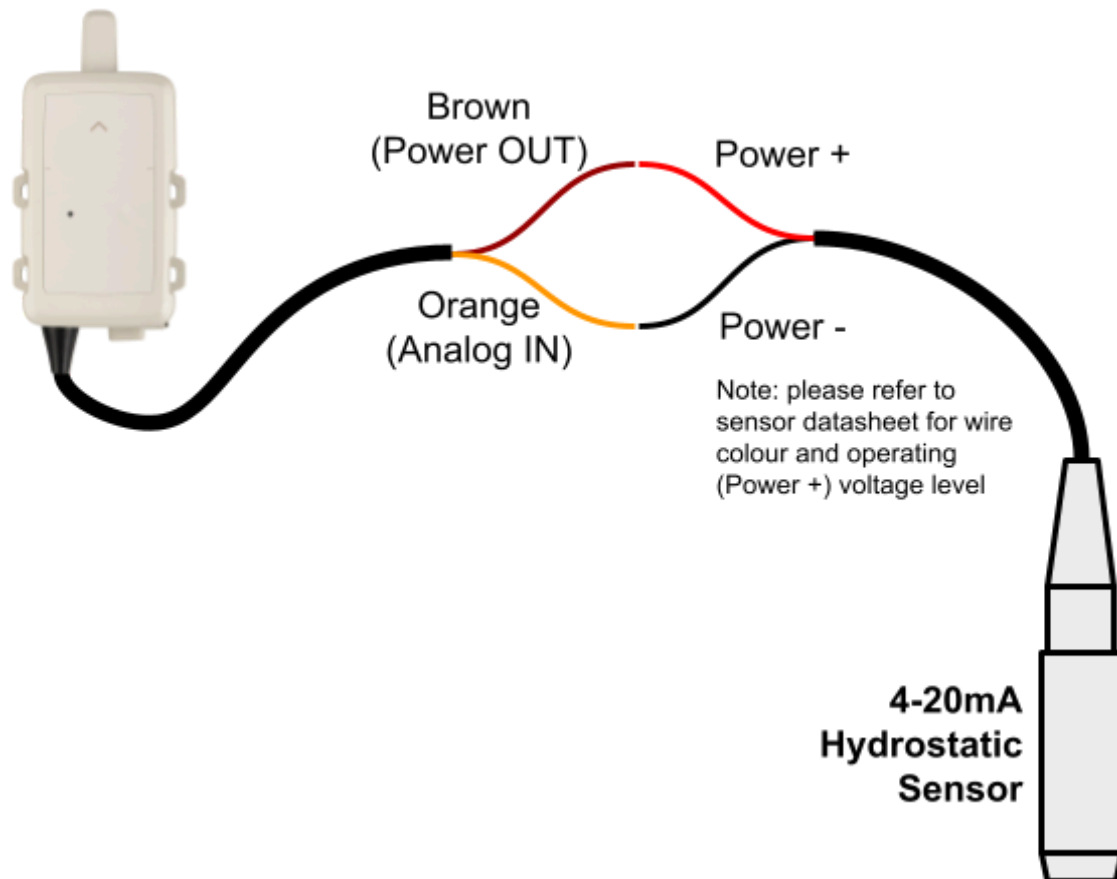
In deciding how many sensors to use with a FlexSense, carefully consider the overall product solution, including:

- Battery Life
- Network throughput
- User application size and complexity
- Manufacturability

## Wiring Examples

### Analog Input (4-20mA)

Diagram 14: Analog sensor wiring guidance

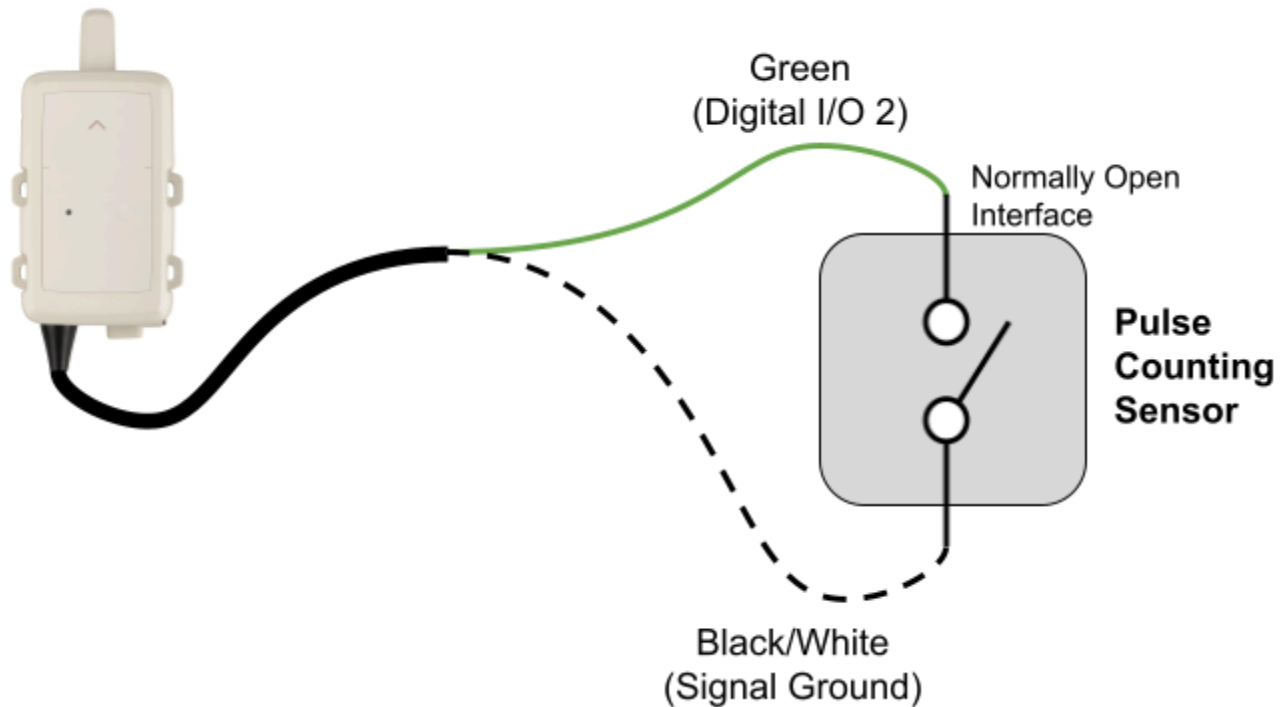


Connect the FlexSense wires as shown, noting that manufacturer and model variants may have alternate wire colours to those shown.

Trim all unused wires to avoid accidental shorting.

## Digital I/O as a Pulse Counter

Diagram 15: Digital sensor wiring guidance



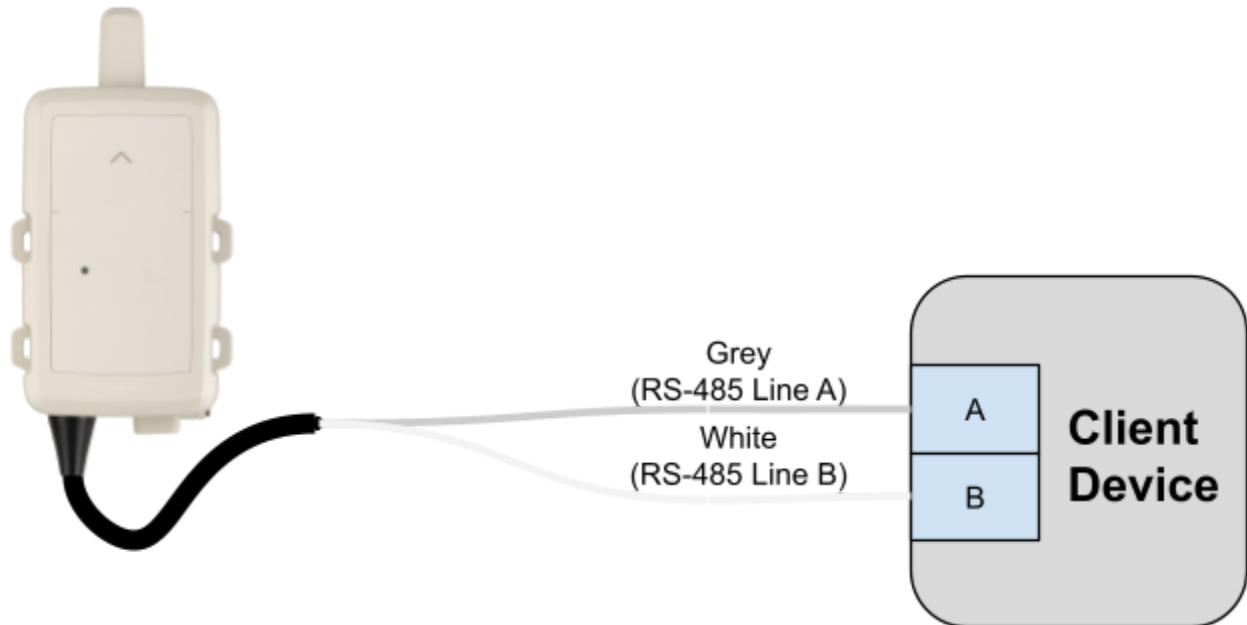
FlexSense supports Pulse Counting only on the Digital I/O 2 interface.

Connect the FlexSense wires as shown. The Digital I/O 2 wire must connect to the "Normally Open" terminal of the sensor. This will allow the sensor to pull-down the I/O line on an event.

Trim all unused wires to avoid accidental shorting.

## RS-485 as a Master Device

Diagram 16: Serial (RS-485, Master) sensor wiring guidance

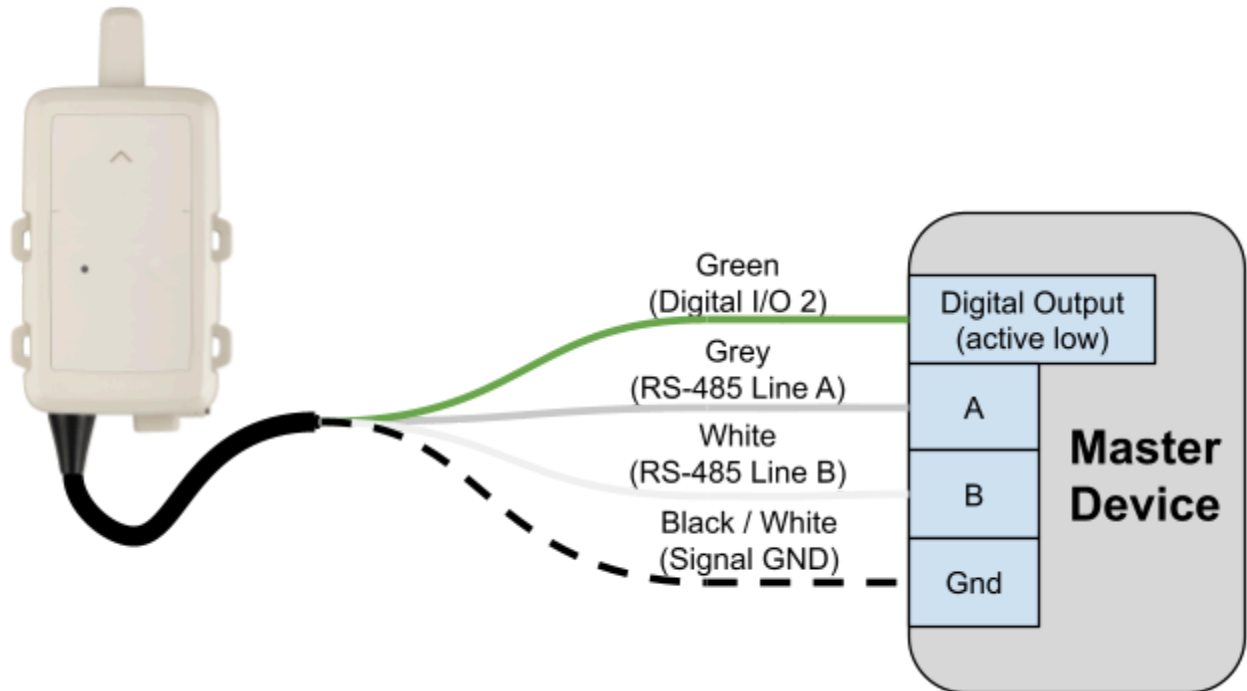


Connect RS-485 lines from FlexSense to client device Serial Bus as shown in the image.

Trim all unused wires to avoid accidental shorting.

## RS-485 as a Modem (external Master)

Diagram 16: Serial (RS-485, Slave) sensor wiring guidance



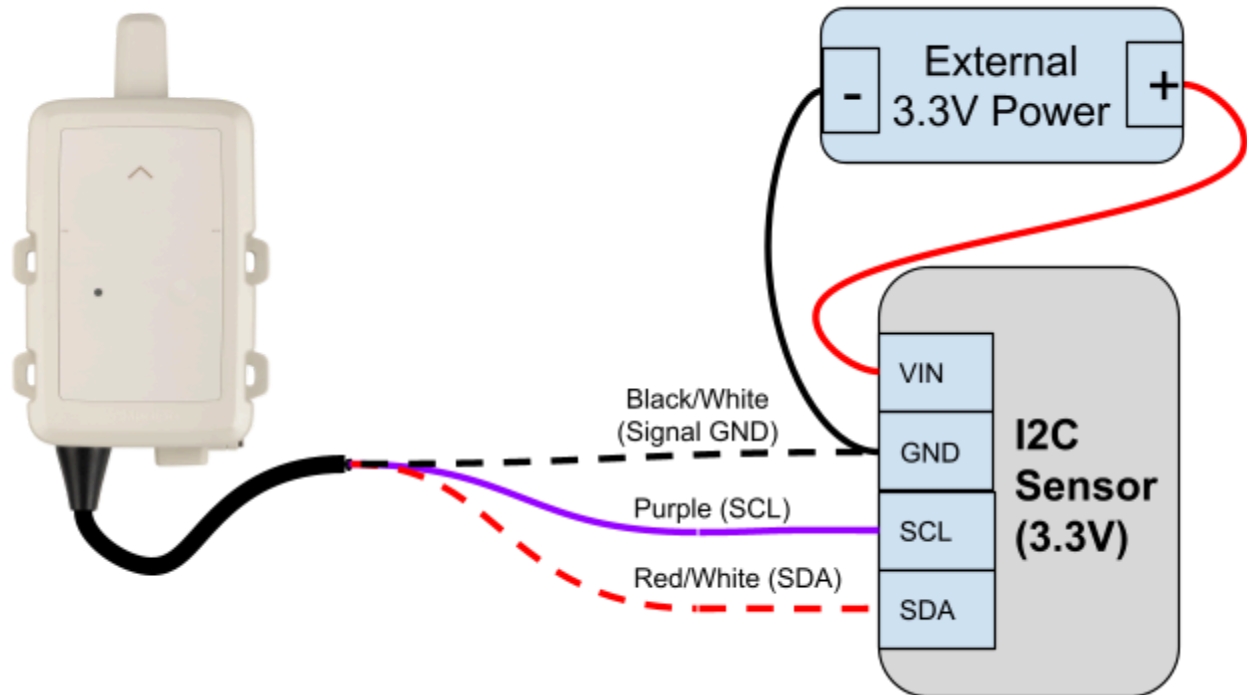
Connect RS-485 lines from FlexSense to master device Serial Bus as shown in image. The Master Device will need to wake-up the FlexSense unit before sending data by pulling the Digital I/O low i.e. short to Ground.

Note: There will be ~100ms delay after pulling Digital I/O 2 low whilst the RS-485 transceiver wakes up before communication can begin.

Trim all unused wires to avoid accidental shorting.

## I2C (Master only)

Diagram 17: I2C sensor wiring guidance



The I<sup>2</sup>C interface operates at 3.3V while the minimum voltage output that can be supplied by FlexSense is 5V. To ensure safe and reliable operation, the connected I<sup>2</sup>C slave device must be powered externally at 3.3 V.

Due to signal degradation constraints, the maximum recommended cable length between FlexSense and the I<sup>2</sup>C slave device is 1 meter. Exceeding this length may lead to communication failures or degraded performance.

External pull-up resistors are not required, as the SCL and SDA lines already include integrated 3.3 V pull-ups.

# Regulatory Approvals

The FlexSense satellite communication operates in the UHF band between 399.907 MHz and 400.043 MHz, with a bandwidth of 136 kHz and a power output of 30.15 dBm.

The Myriota FlexSense has the following regulatory approvals:

- ACMA/RCM
- FCC
- Industry Canada
- ANATEL
- ENACOM (pending)
- IFETEL (pending)
- SUBTEL (pending)
- MTC (pending)

The FlexSense contains the following modules:

FCC ID: 2ATKL-M2-24, IC: 25148-M224

FCC ID: SH6MDBT50, IC: 8017A-MDBT50

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## General warnings

**Warning – Modifications:** Changes or modifications to the FlexSense not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Warning - Battery:** User must set charge/discharge limits according to the battery manufacturer's Safety Data Sheets (SDS) for safety concerns.

**Warning – Blasting Area:** To avoid interference with blasting operations, turn your FlexSense off when in a “Blasting Area” or in areas posted “Turn off two-way radio.” Obey all signs and instructions.

**Warning – Potential Explosive Atmosphere:** Turn off the FlexSense or any product with the FlexSense installed when in any area with a potentially explosive atmosphere and obey all signs and instructions. (End products specifically designed to work in Explosive Atmospheres are to follow their certification guidelines.)

**Warning – Pacemakers:** The Health Industry Manufacturers Association recommends that a minimum separation of six (6") inches be maintained between the FlexSense and a pacemaker to avoid potential interference with the pacemaker.

**Warning – Hearing Aids:** Some digital wireless devices may interfere with some hearing aids. In order to prevent such interference, you may want to consult the manufacturer of your hearing aid.

**Warning - Specific Absorption Rate (SAR):** the device should always use a separation distance of 20 cm from the body.

**NOTE:** If concerned about RF exposure during use, place the FlexSense away from your body. The RF exposure level drops off dramatically with distance from the FlexSense antenna.

## Warranty

### Myriota’s Manufacturer’s Warranty (“Manufacturer’s Warranty”)

Myriota offers a Product manufacturer warranty for a period of 12 months from delivery. To the extent permitted by law, this warranty is limited to rectification of manufacturing defects and/or non-compliance with the Product Brief.

Myriota will undertake in-warranty service for Products subject to verification of proof of purchase and purchase date.

To the maximum extent permitted by law, Myriota accepts no liability for any defect or failure not caused by Myriota (including Customer accident, misuse and non-observance of operating instructions), or for Products which have been repaired by a person other than Myriota or used for purposes other than for which they are intended or deterioration due to normal use and exposure, including environmental conditions.