FREEWAVE

FUSION SATELLITE

Totalflow and Satellite Quick Start

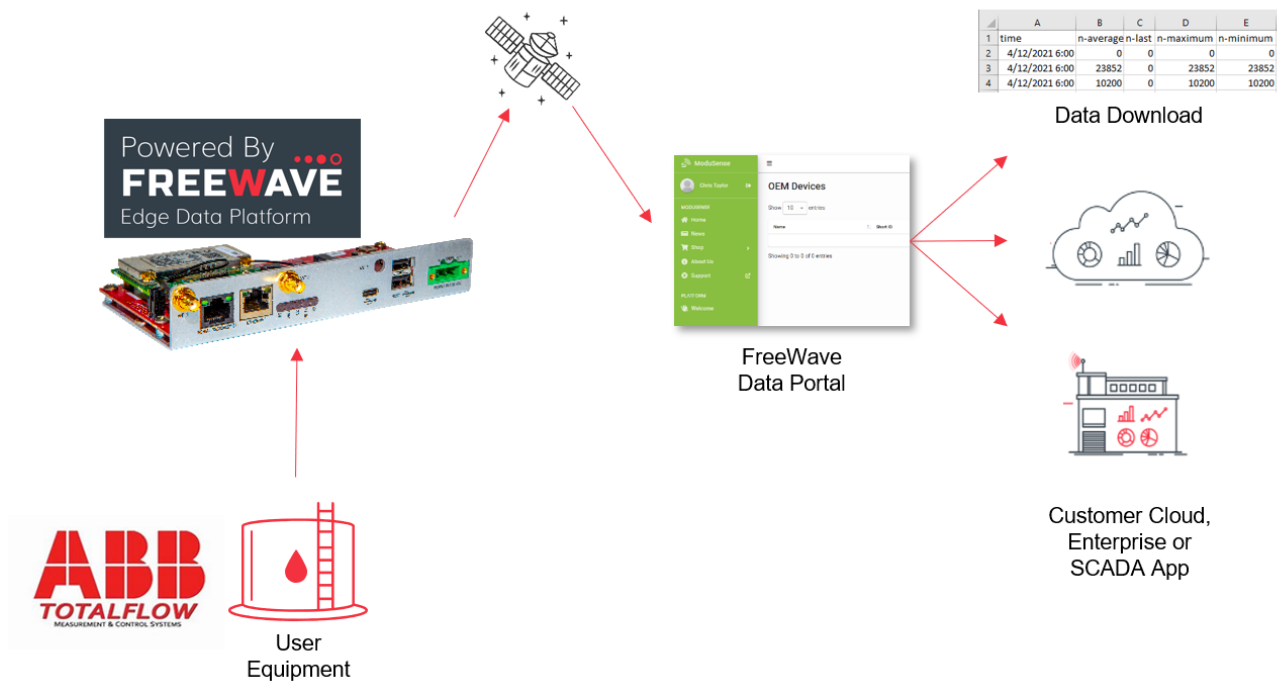# Table of Contents

The Fusion Satellite with support for ABB Totalflow allows you to automatically publish your TotalFlow measurement data from any location to your SCADA system.

FreeWave provides a cloud portal to make it easy to download the satellite data and automatically move the data to your Enterprise, Cloud, or SCADA system.

YOU WILL NEED

1. A computer running Windows with an available USB port and USB-C cable

2. A Fusion Satellite with FreeWave Edge Software and the Totalflow Protocol Driver

3. An ABB Totalflow

PURCHASES REQUIRED

1. Fusion Satellite
  a. Includes FreeWave Edge & Modbus
  b. Includes FreeWave Cloud Portal
2. TotalFlow Protocol Upgrade

PURPOSE OF THIS GUIDE

This guide will walk you through the end to end data flow for connecting a TotalFlow to Fusion Satellite and retrieving your data from the FreeWave Cloud Portal.

This guide assumes you have a deployed and connected Fusion Satellite device.
For the Fusion Satellite Quick Start Guide - https://www.freewave.com/getting-started-with-fusion/

Configure FreeWave Edge Polling

All Protocol Drivers in FreeWave Edge are separated into a "Device" which typically represents each PLC or Flow Computer or RTU or other industrial field equipment.

Under each Device are the "Sensors" also known as Tags or Registers associated with that Device.
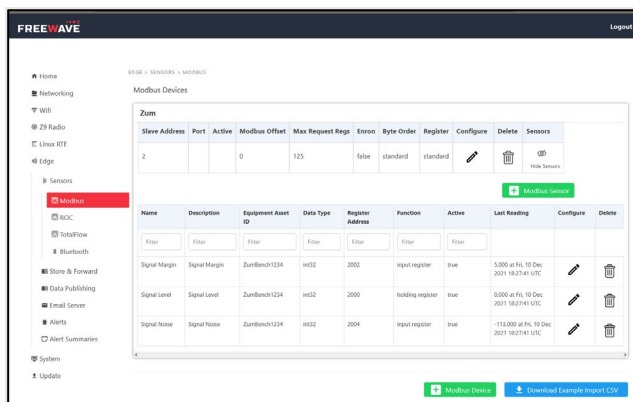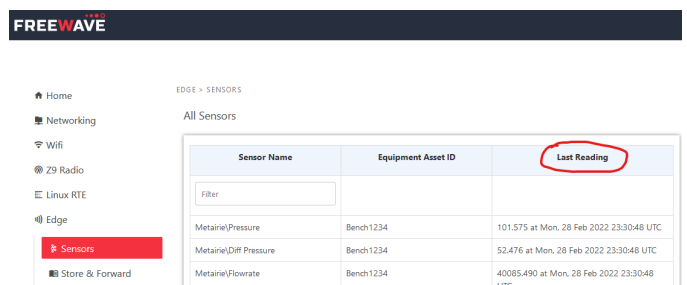

Add Totalflow Device

1. Go to the Protocol Tab for Edge > Sensors > Protocol

Add a Device using the "Add Device" button

2. Enter the IP Address and connection details for your device

3. Make sure to set your polling interval for your device. All tags or sensors created under this device will use this same polling interval.

Add Totalflow Registers

1. To add tags manually, under each Device, use the "Add Sensor" button to add the relevant sensor & register details for each of your Sensors/Registers/Tags

2. Use the "Last Readings Column" and the "Refresh Last Readings" button to ensure that the Edge software is correctly reading from your device

OPERATION NOTE: Once you are seeing correct "Last Readings" on the Sensors tab, that indicates that data is being received and is stored in the database and is ready for Store & Forward.

Configure Satellite Store & Forward

Go to the "Store & Forward" Tab

Choose Your Store & Forward Interval

The default data plan supports a 1 Hour Interval.

Choose Your Sensors to Include

1. Use the checkboxes to select the most important data you want included in your data payloads.

2. The green "Message Size" bar shows how many bytes in each message are used, or if the total data size will go to more than 1 message.

OPERATION NOTE: Make sure to take a note or screenshot of the Satellite Store & Forward Page with the Sensor IDs, Sensor Names, and Asset IDs. The Cloud Data Exports will only include Sensor ID numbers at this time.

Download Your Data from the Cloud

1. On the Device List in the FreeWave Provided cloud portal at portal.modusense.com,
2. Click the "Edit" button and "Data Export" tab
2. You can view a snapshot of the most recent messages on the page.
3. Click the Export button to select the data you wish to export
4. The Excel file with your selected data will be e-mailed to your account
      a. Check your spam folders if necessary

Automatically Send Data to SCADA

Your external Cloud, Enterprise, or SCADA server can receive new data via the Cloud REST API or Webhooks

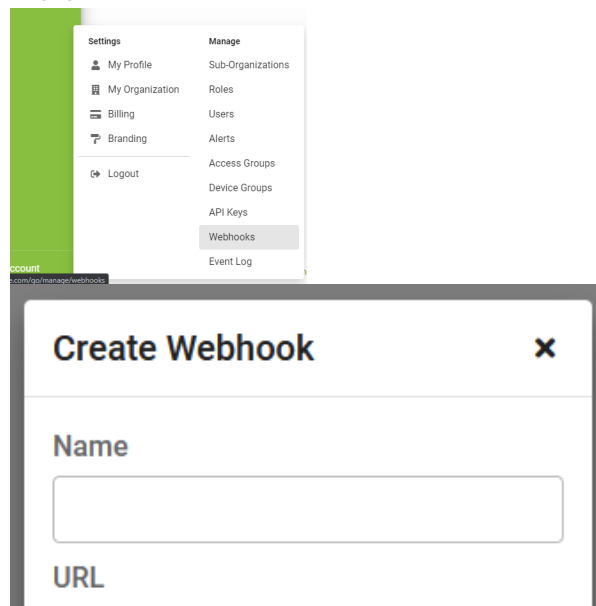REST API is a Request/Response paradigm and is useful for retrieving data history in batches

Webhook is a Push or Event-Based paradigm and is useful for immediate publishes of new data.

If your cloud, SCADA, or enterprise apps needs the new data as soon as it is published, we recommend using Webhooks.

There are many web development tools such as https://webhook.site, which can be used for testing webhooks before integrating into your own application.

Account Setup

Webhooks can be setup in the portal by clicking your profile in the bottom left and navigating from there.

Webhook Usage

You will create a webhook in your SCADA system that will be configured to receive data from the cloud.

Every time new satellite data is available, it will be pushed to the webhook you created within your SCADA system and assigned to your account or device in the FreeWave portal. Webhooks can be assigned either globally to all devices in your account or to only certain devices.

All webhooks are sent from the outgoing ip 103.14.216.238.

All messages are sent as Json and will have the user-agent ms-consumer. Requests will accept encoding gzip.

A web-server that is receiving these messages should return a 200 OK as a response once a message is received. If a 200 is not received the message will be placed onto the queue and retried after a delay. This delay will increase on repeated failure up to a maximum of 1 week, where the message will then be dropped.

Data Format

Raw Content

```json
{
  "type": "decoded",
  "data": {
    "deviceId": "41939986-abab-4c7f-b520-4f89b814785c",
    "measurements": [
      {
        "data": {
          "i-payload-index": 1,
          "i-payload-total": 1
        },
        "metadata": {
          "s-schema": "1",
          "s-version": "1"
        },
        "name": "fusion-satellite-header"
      },
      {
        "data": {
          "n-altitude": 0,
```

Advanced Configuration Notes

Claim Your Device In Cloud Portal

NOTE: As part of the Fusion Satellite Quick Start Guide, you should have created your Portal Account and Claimed Your Device. If you haven't, that is required before downloading your data.

To do this you need to register and log on to your account in the FreeWave Data Portal at **portal.modusense.com**

Once logged in, you can use the 'Claim a Device' function to adopt the Gateway.
To do this you will need the unique, one-time Claim Token – found on the card included in the box.

Once a message has been sent from the Fusion device to the satellite, it will be relayed to the cloud and appear under your account in the data portal. To view it, login to the portal, find your device under "Devices"

You should see a "Last Seen" field that represents when your device last sent a message from the satellite
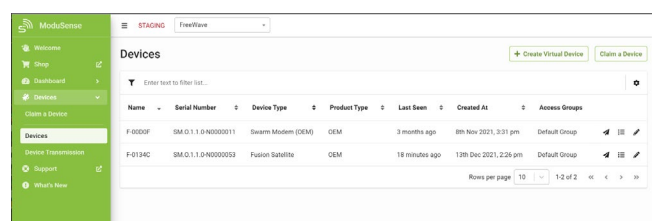
DATA PLAN NOTES:

If you choose an Interval faster than once per hour, you will receive warnings that you will end up with more than 750 Messages per Month (which is the max allowed for 1 data plan)

If you have purchased more data stacked plans (up to 4) you can do the math to choose a faster Store & Forward interval for your deployment scenario. In all cases, the system will still send messages at the interval you choose and you are responsible for any overage charges.

Example: 30 Minute Interval

Example: **Max Tags for 1 Data Plan with 1 Hr Interval**

You can Double or Triple your Sensors by reducing message interval to 2 or 3 hours, or by stacking data plans

Selected Datasets	Max Float32 Tags in 1 Message
All Statistics, All GPS	**12 Tags**
All Statistics, No GPS	**13 Tags**
Last Readings, All GPS	**32 Tags**
Last Readings, No GPS	**36 Tags**

DATA STORAGE NOTE: The FreeWave provided cloud portal by default will save data for the last 7 Days. Please download or connect your enterprise system to store and save the data in your own system.

FREEWAVE

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