

**MINFARMTECH** 

SatCom for IoT



**Satellite  
communications  
and solar power for  
remote LoRaWAN™ Infrastructure**

**MF 400 IoT Satellite Bridge**  
IP-67 solar powered field unit

# MF 400

## IoT Satellite Bridge

- Global coverage with the Inmarsat IsatData Pro satellite network
- Runs continuously off single 80W solar panel
- Compatible with all COTS LoRaWAN™ sensors
- Water and rain proof (IP-67)
- Cloud based interface and API for remote LoRaWAN™ configuration (No field visits required for reconfiguration)

## Components

- MinFarm IoT Satellite Bridge
- CPN IP67 Enclosure (400 x 405 x 160mm)
- 12V 26Ah Battery
- STECA PR 1010 Solar Charger
- 80W 12V Solar Panel (670 x 770 x 30mm)
- LoRa Omnidirectional Antenna (8dBi, 0.8m)
- Enclosure Pole Mount
- Solar Panel Pole Mount
- LoRa Antenna Pole Mount
- IDP Satellite Terminal Power & Data Cable (5m)
- Solar Panel to Enclosure Cable (5m)
- LoRa Antenna Cable (5m)

The following components can also be supplied:

- IDP ST 6100 Satellite Terminal
- IDP Pole Mount



## Overview

The MF 400 IoT Satellite Bridge provides network server connectivity for 100 remote LoRaWAN™ sensors via Inmarsat IsatDataPro (IDP) satellite terminal and can operate continuously from a single 80W solar panel. The MF 400 runs an optimized protocol to ensure that airtime satellite costs per sensor are kept to a minimum. This makes the MF 400 IoT Satellite Bridge a stand alone, low power, low cost solution for adding satellite connectivity to your existing COTS LoRaWAN™ sensor devices.

### Ease of Installation

The solar power management system contains a helpful display that shows all the important operational metrics including voltage, current and battery capacity. This allows an installer to see at a glance that the solar panel is working and correctly charging the battery.

### Innovative cabling design for the IDP terminal

The MF 400 IoT Satellite Bridge features an integrated power and data cable for the IDP terminal. The cable is securely attached to the MF 400 and allows the IDP to be connected up to 5m from the MF 400 to achieve optimal satellite reception. The IDP terminal is powered by the MF 400 and the MF 400 communicates with the IDP terminal using AT commands. No extra cabling or power components are required.

### Autonomous Solar Power

The MF 400 IoT Satellite Bridge runs continuously from its single 80W solar panel. The unit's 12V 26Ah Battery provides up 2-3 days of battery backup capacity.

### Temperature Range

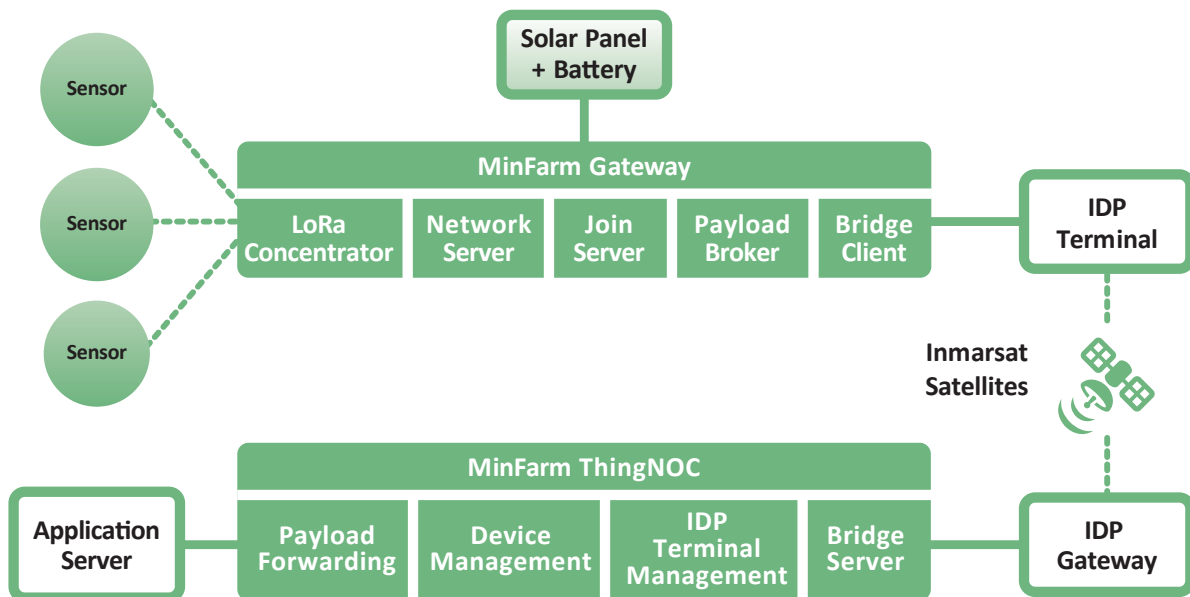
-10°C to 40°C (Temperate model\*)

\*Extended temperature models of the MF 400 IoT Satellite Bridge that use different battery and power management components are available, please contact MinFarm for more information.

### Satellite airtime costs per sensor

The MF 400 IoT Satellite Bridge is optimized to transmit data from LoRaWAN™ IoT sensors over the Inmarsat IDP satellite link in an extremely reliable and low cost way. It does so by a client/server bridge architecture. The MinFarm Bridge Client (see Network Architecture diagram) forwards sensor payload traffic over non-IP packet data satellite services of Inmarsat IDP. This makes the MF 400 IoT Satellite Bridge an extremely cost effective way to add satellite connectivity to remote LoRaWAN™ sensor installations.

## Network architecture



### Compatible sensors

The MF 400 IoT Satellite Bridge supports LoRaWAN™ version 1.0.2. The MF 400 IoT Satellite Bridge is compatible with a very wide range of commercial off the shelf (COTS) LoRaWAN™ sensors.

Dedicated LoRaWAN™ nodes + COTS sensors: These nodes provide LoRaWAN™ communications to a very wide range of non-LoRaWAN™ COTS sensors. In this configuration a dedicated LoRaWAN™ node is deployed with each sensor.

COTS native LoRaWAN™ sensors: These sensors have LoRaWAN™ communications built in and often come with an associated cloud based application server. The MF 400 IoT Satellite Bridge comes with an easy to use Dashboard and API for integrating these devices.

Programmable LoRaWAN™ sensors: The MF 200 IoT Satellite Bridge has been tested with the MultiTech mDot LoRaWAN™ sensor development platform. This allows users to design and build sensors with the exact security, communications, and ruggedization as required for their projects.

### GNSS Specifications

GNSS Systems: GPS, QZSS, SBAS, GLONASS

### LoRa Specifications

Supports multiple regional frequency plans: EU868, US915, AU915, AS923 (Other frequency plans available on request)  
Channel Capacity: 8 channels  
LoRa Power Output: 27 dBm maximum output power before antenna

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