

Quickstart Guide for v4 Hub Installations

CHANGELOG

Date	Version	Author(s)	Notes
20200311	0.1	AEK & DA	Initial version

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Overview

Welcome to Skylo! This document provides a brief overview how to get up and running with a Skylo Hub.

Specifications

V4 Hub Specifications		
Dimensions	212 x 212 x 43 mm	When secured to MMP
Weights Hub MMP Harness w/M12 Connector	920 g 200 g 100 g/m (typical)	
Power Requirements Power-on Operating (average) Transmitting (peak)	12 W max. 2.5 W max. 15 W	Battery fully charged
Power Sources Internal Battery External via M12 Connector	Internal 12000 mAh 9-36 VDC	Li-Ion, UV/OV/OC/OT protected
External Power Supply Input Output	100-240VAC/50-60 Hz, 1.3A 24 VDC @ 2.5A	
Battery Charging Time	4 hours (typ.)	
Certifications	FCC, WPC, BIS	
Protections	Automotive-grade (reverse hookups, load dumps, transients)	
Ingress Protection (IP) Rating	IP67	At Hub and M12 connection
Operating Temperature	-40°C to +70°C*	External power SKU*
Operating Humidity	5% to 100%	
Shock and Vibration	SAE J1455, Mil_STD-810H, EN50155, IEC61373	
Frequency Range	Wi-Fi/BLE: 2.4GHz-2.5GHz SAT NB: 1525MHz-1660.5MHz GNSS: 1559MHz-1610MHz 1. LB: 703MHz-960MHz 2. MB: 1805MHz-2200MHz	

	L-Band Spectrum: 34MHz	
RF Output Power	Wi-Fi: ~20dbm EIRP BLE: ~13dbm EIRP SAT NB: 40dbm EIRP	
Emission and Bandwidth	RHCP (Right Hand Circular Polarisation)	
Product Purpose/Class	NB IoT Satellite Modem	
Hours of Operation	24 hours/365days	

Specifications are subject to change without notice.

Related Documents

Additional, detailed information can be found in the following Skylo documents:

- *Reference User Guide for v4 Hub Installations*
- *Mobile Application User Guide -- Android*

What's Included

Hardware

A Hub kit's hardware consists of (CW from bottom right in image):

- A Hub
- A pair of Hub release keys
- A matching Multifunction Mounting Plate (MMP)
- A power & charging harness with M12 connector
- An optional external power supply that mates to the free end of the harness



Software

Obtain and install the Skylo mobile application on your mobile phone.

Setting Up the Hub

Locating and Installing the Hub

Follow these steps to setup Hub to connect to the Skylo network. See the images in Appendix A for installation and removal.

1. Make note of the Hub's identifying information label (with MAC ID, etc.) should you require it at a later stage when onboarding the Hub.
2. Identify an outdoor location, with a clear view of the sky.
3. Choose a location for the hub. It should be as flat and level as possible.
4. If installing on a vehicle, align the arrow on the MMP in the direction of vehicle forward movement.
5. Secure the MMP to the desired location. It can be secured via a wide range of fasteners. See ***Skylo Reference User Guide for v4 Hub Installations*** for detailed information.
6. Mate the Hub to the MMP. Choose one of four possible orientations for the Hub that places the M12 connector and/or the attention button in the most convenient location. Place the Hub over the center of the MMP, about $\frac{1}{8}$ of a turn counterclockwise (CCW) relative to the MMP. After the Hub slides down into the central hole of the MMP, rotate it $\frac{1}{8}$ of a turn clockwise (CW) to lock it into place.
7. If operating from external power, attach the M12 connector end of the harness to the Hub's M12 connector. Secure and route the harness to the source of DC power (e.g., to a vehicle's 12Vdc adapter). Ensure that the harness does not physically strain the M12 connector at the Hub. Two cable ties have been included in your kit specifically for this purpose by attaching the cable to cable "tie downs" located along the MMP edge.
8. Apply power (via the M12 harness) or press the attention button on the hub (if battery powered) to turn on the Hub.

Once installed on an MMP, the Hub is securely attached to the MMP and can be deployed on moving vehicles and other mobile platforms.

To separate a Hub from its MMP, follow these steps:

1. Insert two Hub release keys between the Hub and MMP, in the slots designated for them.
2. Twist the hub slightly counterclockwise (CCW), around $\frac{1}{16}$ th of a turn.
3. Remove the two Hub release keys.
4. Finish turning the Hub CCW until you encounter a stop. Then lift the Hub off the MMP.



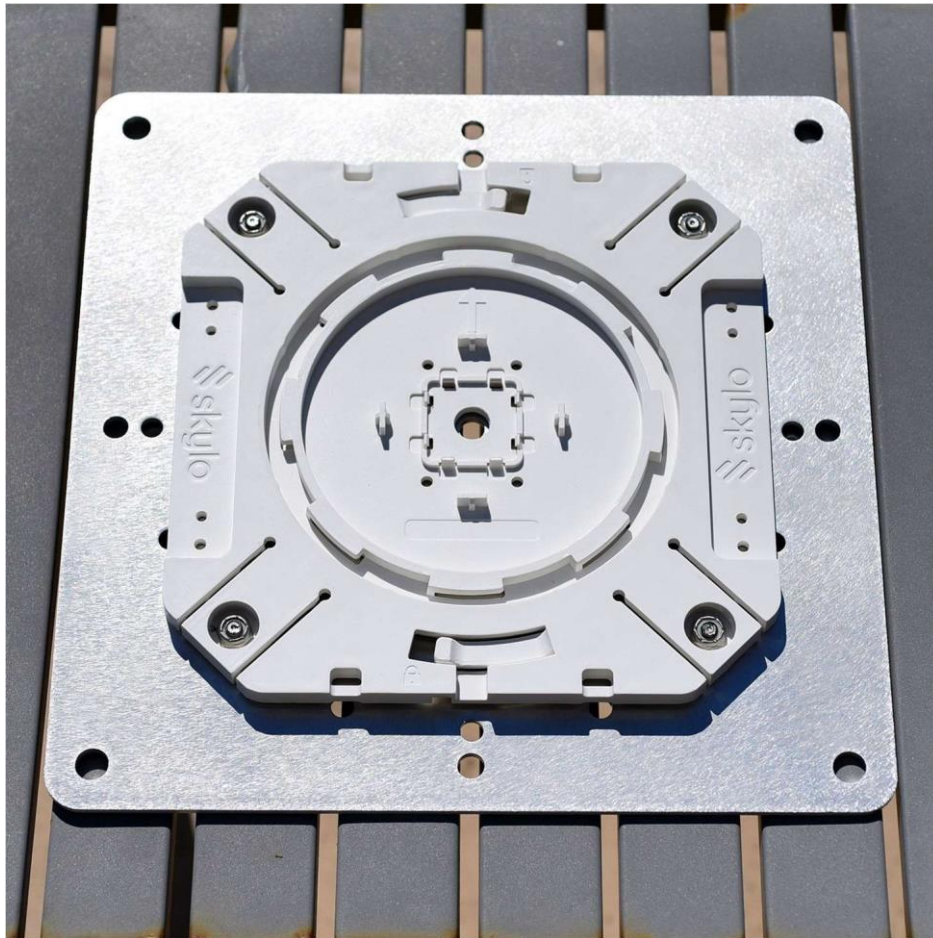
Onboarding the Hub onto the Skylo Network

Follow the steps in the *Skylo Mobile Application User Guide -- Android* for onboarding.

Appendix A - Installation & Removal Images

MMP with alignment arrow and release key slots

In this image, the MMP has been secured to an aluminum plate that has four M6 stainless-steel studs in it. Four M6 self-locking nuts in the corners of the MMP secure it to the aluminum plate. The MMP is rigidly and permanently secured to the aluminum plate, and is now ready to have a Hub installed onto it.



MMP secured to aluminum plate with studs via M6 locknuts. Note alignment arrow at 12 o'clock, and guides for release keys at 12 and 6 o'clock

Aligning the Hub with the MMP

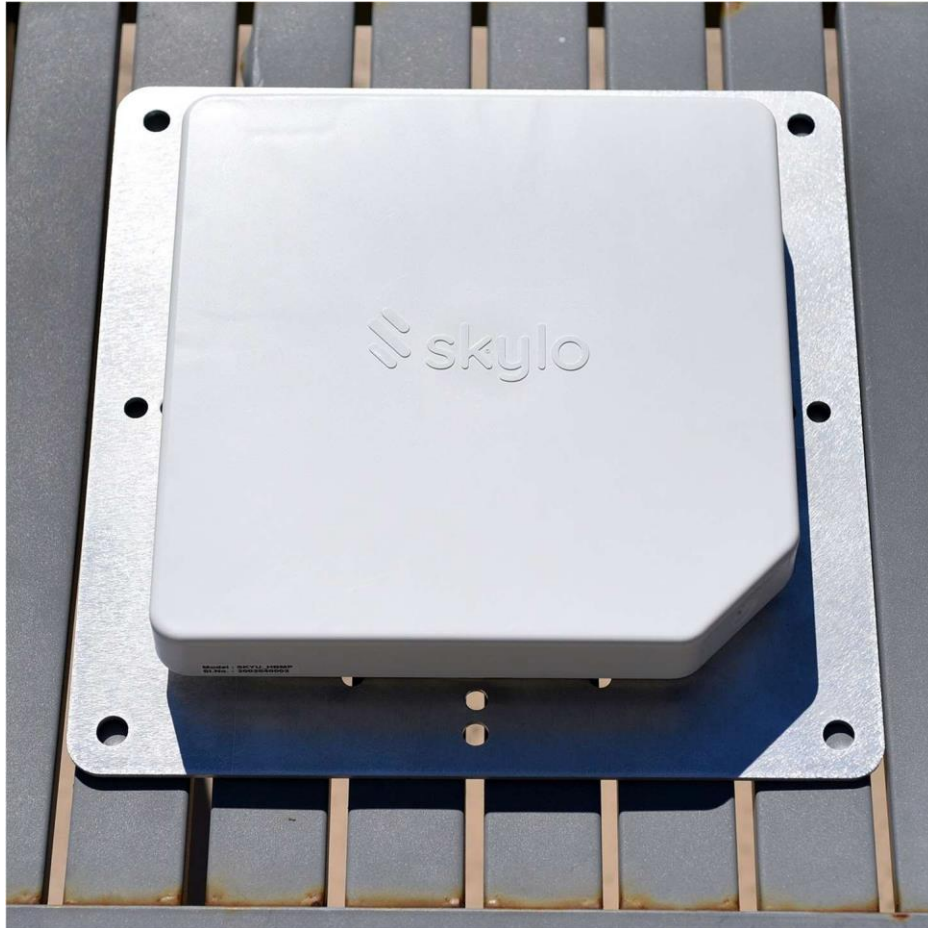
A Hub can be installed onto an MMP in any one of four orientations, via the mating bayonets of the Hub and MMP. The start location for the bayonet is $\frac{1}{8}$ of a turn counterclockwise (CCW) from having the sides of the Hub aligned with the sides of the MMP. When the correct Hub-MMP orientation is achieved, the Hub will drop down into the MMP by 6mm.



Hub inserted on top of MMP

Locking the Hub into position on the MMP

Once the Hub is aligned with the MMP and dropped down into it, turn the hub clockwise (CW) by $\frac{1}{8}$ of a turn until a positive click is heard and felt. This locks the Hub to the MMP securely.



Hub locked into place on MMP

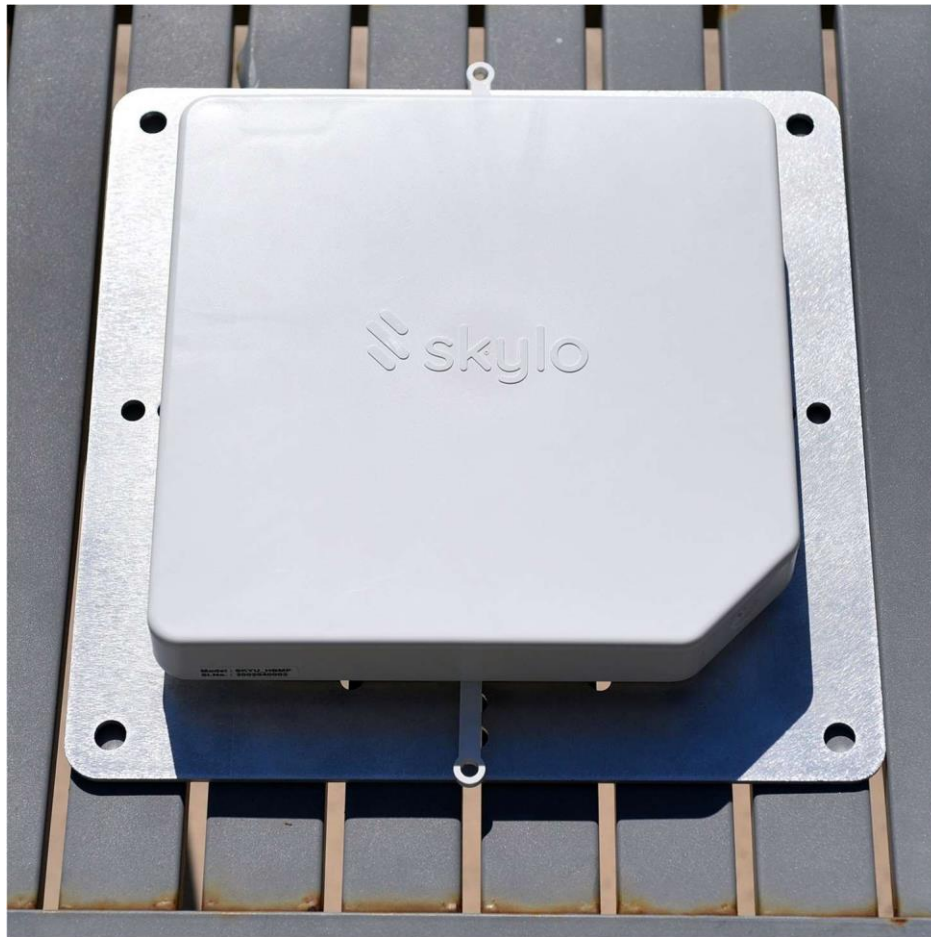
Unlocking the Hub from the MMP

To separate a Hub from an MMP, it must first be unlocked. Insert two Hub release keys 180 degrees apart where the padlock icon is visible on a bare MMP.



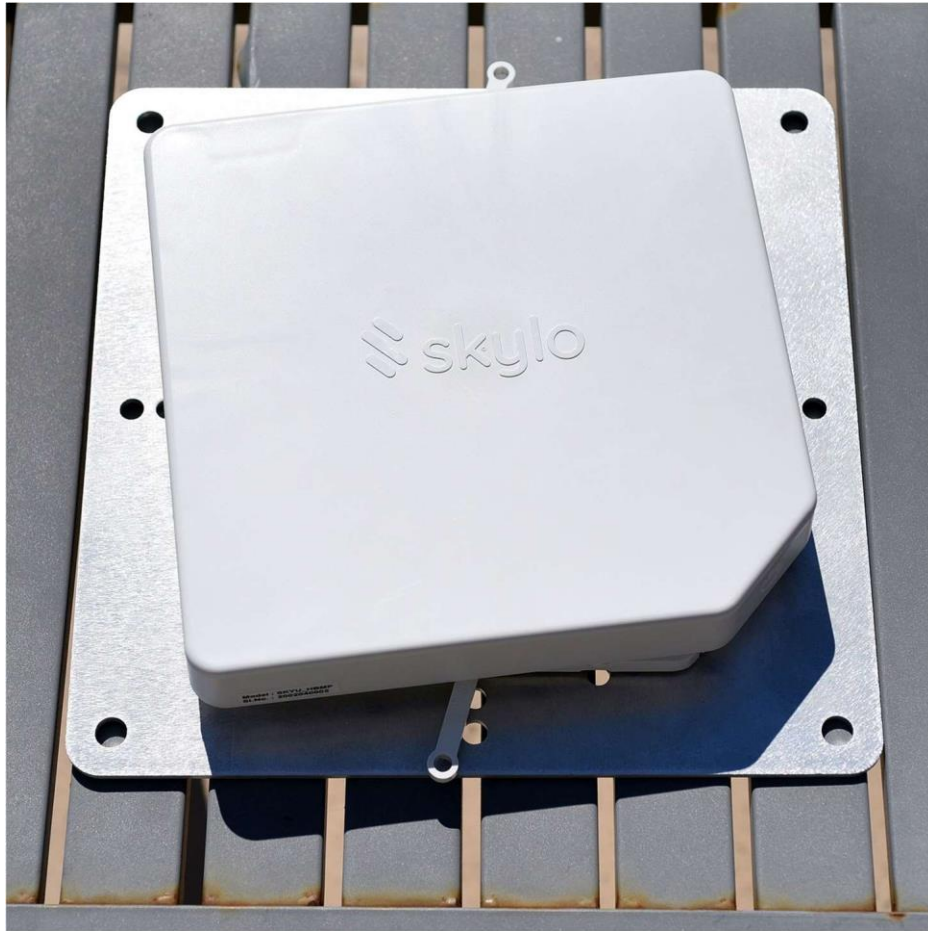
One of two Hub release key slots between the Hub and the MMP. An optional security screw can be used to prevent unlocking.

Insert each key fully. The Skylo logo on each Hub release key must be visible:



Hub release keys installed between Hub and MMP.
Hub can now be rotated CCW to release it from the
MMP.

With the keys fully inserted, rotate the Hub 1/16 of a turn counterclockwise (CW), to the stop:



Limit of unlocking rotation when Hub release keys are in place.

Once the limit of unlocking rotation with the Hub release keys still in place has been reached, remove the Hub release keys and continue rotating counterclockwise (CCW) until the stop. Then remove the Hub from the MMP. Store the Hub release keys in a safe location.

M12 Harness mating to Hub

The M12 harness screws onto the Hub's M12 connector to form a rainproof, sealed connection to the Hub. Always ensure that the keyed connector is aligned properly before screwing it fully onto the Hub's M12 connector:



M12 connector end of harness, fully engaged with Hub's M12 connector.



FCC PART 15 STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been verified to comply with the limits for a class A computing device, pursuant to FCC Rules. In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

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. See 47 CFR Sec. 15.105(b). These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.

REGULATORY INFORMATION

Model name: S-111 MK I

Series Model: S-101 MK I

FCC ID: 2AW9D-HUB

FCC CAUTION STATEMENT FOR MODIFICATIONS CAUTION: Any changes or modifications not

expressly approved by skylo technologies could void the user's authority to operate the equipment.