



PRODUCT DATASHEET

Starnote Datasheet

Starnote for Iridium

Starnote for Iridium is an affordable satellite IoT backup device for NTN (Non-Terrestrial Networking) communications.

Blues Starnote® Datasheet: Starnote for Iridium

Starnote for Iridium is an affordable [satellite IoT](#) backup device for NTN (Non-Terrestrial Networking) communications.

Blues Starnote for Iridium is a low-cost, reliable, developer-accessible device that eliminates the complexity of adding satellite connectivity to any solution. As a cost-optimized "Notecard accessory", Starnote for Iridium only functions when used alongside a paired Notecard.

Starnote for Iridium is intended to disrupt the conventional wisdom that using satellite IoT requires a significant hardware investment and monthly device fees, even when devices aren't actively communicating with satellites.

Functional Description

As an accessory, Starnote for Iridium does not function like a standalone Notecard. Rather, Starnote for Iridium is paired with a Notecard and works alongside a Notecard Cellular, Notecard Cell+WiFi, or Notecard WiFi device (Notecard LoRa is not supported for use with Starnote for Iridium).

From a developer's point of view, Starnote for Iridium operates as an additional available RAT (Radio Access Technology) for Notecard. The developer uses the Notecard API to specify the Notecard's mode of operations for when to fallback to satellite, and Notecard handles all communications between itself and Starnote for Iridium.

Starnote for Iridium has a Notecard-like shape (though much wider) and it uses the same M.2 connector as Notecard. However, the position of the mounting hole makes it unmountable on Notecarriers that are intended for Notecards only.

Starnote for Iridium is only compatible with the Notecarrier X1 and is not intended for use with any other Notecarrier.

Satellite (NTN) Communications

Blues is partnering with [Iridium](#) to provide [NTN](#) (Non-Terrestrial Network) capabilities for Starnote for Iridium. Iridium is a satellite communications company that operates a global LEO (Low Earth Orbit) constellation providing connectivity anywhere, including oceans, polar regions, and other remote areas.

Starnote for Iridium packets have a minimum size of 10 bytes and support a Maximum Transmission Unit (MTU) of up to 10,000 bytes. Starnote for Iridium uses the Iridium 9704 module operating in the L-band and requires a dedicated Iridium satellite antenna for connectivity. The Starnote for Iridium u.FL connector must be used with the Iridium-certified L-band antenna supplied with the device.

Features

- **Global coverage.** Provides blanket satellite coverage globally.
- **Integrated.** M.2 Key E connector is provided for board-to-board usage.
- **Built to minimize data usage.** Bundled with 10KB of satellite data from Iridium. Additional data is priced \$0.00075/byte, with a minimum of 10 bytes per transmitted or received satellite data packet, billed monthly in arrears.
- **Simple.** Starnote for Iridium provides an NTN-capable satellite modem with zero-touch configuration. Starnote for Iridium uses Notecard's JSON command interface and communicates with a Notecard over UART.
- **Hassle-free.** No satellite provider subscriptions, fees, or monthly minimums apply.

Package Configuration

- Product Name: Starnote for Iridium
- NTN Module: Iridium Certus™ 9704 Module
- GPS/GNSS Module: Quectel L76L-M33
- Data Networks: Iridium® satellite network, L-band (1616 MHz–1626.5 MHz)
- Supported Regions: Global
- Data included: 10KB

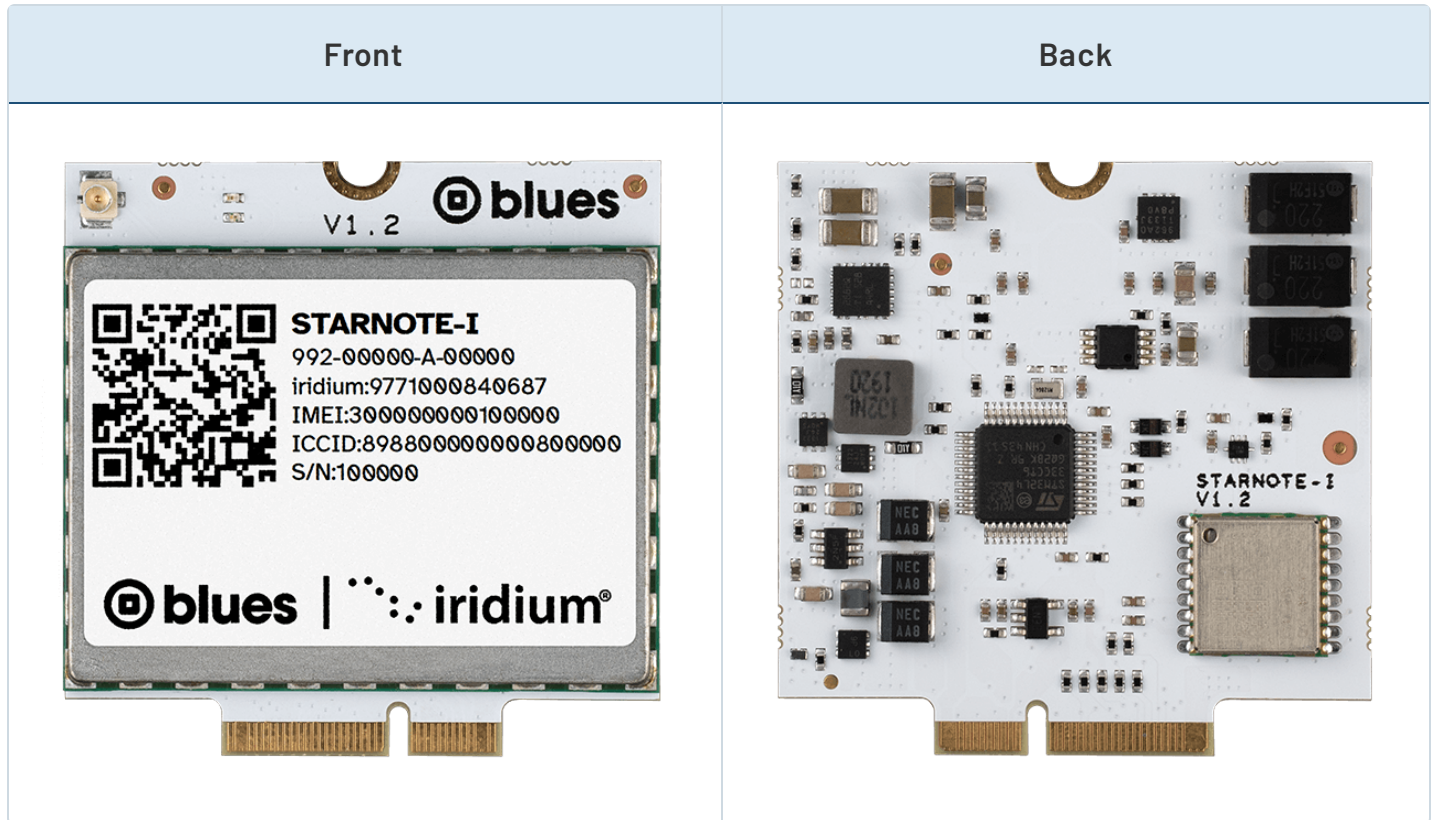
[View in Store](#) 

Module Datasheet

- [Iridium Certus™ 9704](#) 

Block Diagram

3D models for Starnote for Iridium [are available on GitHub](#), making it a straightforward task to embed a Starnote for Iridium and its paired Notecard into a broad variety of host device designs.



Typical Application

Starnote for Iridium is meant to be used alongside a Cellular, Cell+WiFi, or WiFi Notecard in a fallback (failover) capability. The Starnote for Iridium's paired Notecard is programmed by the developer to facilitate efficient failover to satellite data utilizing the same Notecard API they are already using, while minimizing consumption of satellite data.

Key Features

Starnote for Iridium provides a new, expanded connectivity option for Notecard-powered solutions, enabling the following capabilities:

- **Global Coverage**

Starnote for Iridium ensures truly global connectivity across remote, rural, maritime, and polar regions, delivering coverage that terrestrial networks cannot reach. This makes it ideal for applications such as maritime asset tracking, remote environmental and agricultural monitoring, and global logistics and supply chain visibility anywhere on Earth.

- **Interoperability**

Since Starnote for Iridium requires a paired Notecard to function, developers continue using the same Notecard API while making only minor firmware changes to enable satellite connectivity.

- **Cost-Effectiveness**

Starnote for Iridium is a low-cost satellite IoT option that includes 10 KB of satellite data from Iridium. Additional data is billed at \$0.00075 per byte. Each transmitted or received satellite data packet is billed as at least 10 bytes, regardless of actual payload size, and may not exceed 10,000 bytes. Usage is billed monthly in arrears.

Power Information

Starnote for Iridium's main supply voltage (`VMODEM_P`) powers the satellite subsystem (an Iridium 9704 module) and its associated circuitry, and is supplied at a nominal 4.83V. Unlike Starnote for Skylo, Starnote for Iridium re-regulates `VMODEM_P` on-board with a buck-boost converter that generates the internal rail feeding the satellite modem.

When idle, the Starnote draws minimal current. However, the Iridium 9704's power amplifier draws large current bursts during transmit, and the internal power path is dimensioned for these high peak currents. As a result, `VMODEM_P` must be a constant supply that can source the modem's transmit bursts without sagging. A battery or general-purpose regulator sized only for average current often cannot source these bursts directly, so the Notecarrier XI reference design feeds `VMODEM_P` from a buck-boost supercapacitor charger/balancer that uses supercapacitors as a local energy reservoir. See the [Starnote Carrier Board Design Guide](#) for guidance on replicating this supply. It is also recommended that PCB traces for `VMODEM_P` and `GND` be designed to handle high peak current.

The Starnote's logic voltage (`VIO_P`) is provided by the Notecarrier or host system for digital communication; it will be either 1.8V or 3.3V. This supply powers the on-board STM32U575 MCU, the host-facing side of the level shifters, and associated pull-ups. The GPS module is powered from the internal, `VMODEM_P` -derived rail rather than from `VIO_P` .

Pin Name	Direction	Pin Numbers	Usage
GND	--	3,5,6,11,18,33,39,45,51,57,71,73	Ground
VIO_P	IN	2,4	1.8V or 3.3V (STM32U575 + host side of level shifters + pull-ups)
VMODEM_P	IN	70,72,74	4.83V nominal; constant supply that must source high transmit-burst current (feeds the Iridium 9704 and, via the on-board buck-boost rail, the GPS module)

Reset and Loss of Power

Warning

A power-loss event occurs whenever the Starnote loses power on `VIO_P` or `VMODEM_P`, or the Starnote's `RST` pin is pulled low. The satellite modem is designed to use best efforts to maintain integrity when recovering from a power-loss event. That said, there is a small chance that recovery will be impossible and the modem will be rendered permanently unusable.

It is the responsibility of every product designer to ensure that designs utilizing Starnote provide constant power to `VMODEM_P` and `VIO_P` so as to ensure that power-loss events do not occur as a matter of course.

Antenna Requirements

Starnote for Iridium includes a single u.FL connector for use with the included Iridium-certified antenna, which supports both satellite and GPS/GNSS connectivity. The antenna must be installed outdoors with a clear view of the sky.

Warning

Starnote for Iridium is certified on Iridium's network exclusively with the antenna provided. If you replace or modify the antenna, Iridium classifies the device as uncertified and may block it.

Should you wish to pursue Iridium certification with a different antenna, please [reach out to Blues](#)  for guidance.

Regardless of antenna choice, we strongly advise comprehensive field testing in the final enclosure and deployment environment to ensure reliable connectivity.

Antenna Performance

Actual RF performance of Starnote for Iridium depends on a variety of physical factors, including:

- The choice of antenna(s).
- The physical environment.
- The trace layout, dimensions, and/or PCB tolerance of the carrier board (e.g. Notecarrier) used.

Satellite Coverage

Satellite coverage for Starnote for Iridium is provided by the Iridium satellite network, offering [global coverage](#) anywhere on Earth.

Pin Information

Notecard communicates with Starnote for Iridium via Starnote for Iridium's M.2 connector. The core interface between a Notecard + Notecarrier and Starnote for Iridium is:

- GND
- VIO_P - I/O-level supply (generally 3V3 or 1V8)
- VMODEM_P - main supply for the satellite subsystem (4.83V nominal; see [Power Information](#))
- RX/TX pair

Unlike Starnote for Skylo, Starnote for Iridium connects to Notecard over its M.2 connector only; it does not provide a JST wire-to-board connector.

Note

As Starnote for Iridium must be connected to Notecard via UART, your host must interface with Notecard using I2C.

Pin Definitions

Pin #	Pin Name	Func. Interface	Func. Interface	Pin Name	Pin #
1	NC		Power	VIO_P	2
3	GND	Power	Power	VIO_P	4
5	GND	Power	Power	GND	6
7	NC			NC	8
9	NC			NC	10
11	GND	Power		NC	12

Pin #	Pin Name	Func. Interface	Func. Interface	Pin Name	Pin #		
13	NC		Power	NC	14		
15	NC			NC	16		
17	NC			GND	18		
19	NC			NC	20		
21	NC			NC	22		
23	NC			MODULE KEY	--	24	
25	--			MODULE KEY	MODULE KEY	--	26
27	--			MODULE KEY	MODULE KEY	--	28
29	--			MODULE KEY	MODULE KEY	--	30
31	--			MODULE KEY		NC	32
33	GND	Power		NC	34		
35	NC			NC	36		
37	NC			NC	38		
39	GND	Power		NC	40		
41	NC			NC	42		
43	NC			NC	44		
45	GND	Power		NC	46		

Pin #	Pin Name	Func. Interface	Func. Interface	Pin Name	Pin #	
47	NC	Power		NC	48	
49	NC			NC	50	
51	GND			NC	52	
53	NC			NC	54	
55	NC			NC	56	
57	GND	Power		NC	58	
59	NC			NC	60	
61	NC			UART Serial	RX_P	62
63	NC			UART Serial	TX_P	64
65	BOOT			NC	66	
67	RST			NC	68	
69	NC			Power	VMODEM_P	70
71	GND			Power	VMODEM_P	72
73	GND			Power	VMODEM_P	74
75	NC					

Note

All pins whose **Functional Interface** is marked "Power" must be connected.

All pins named **NC** MUST have no connection and be left open because they are reserved for future use. Furthermore, any pin not used in a design MUST also be left open.

Those pins ending with **_P** may be optionally protected from anomalous external conditions on some Notecarrier designs, depending upon use-case specific requirements.

Specifications

Dimensions and Weight

Width	Height	Weight
42mm	42mm	16g

Electrical Characteristics

Absolute Maximum Ratings

Description	Minimum	Maximum	Unit
Storage temperature	-40	85	°C
Ambient operating temperature	-40	85	°C

DC Characteristics

Description	Nominal	Unit
Supply Voltage	4.83	V

`VMODEM_P` is a fixed rail supplied by the carrier's supercapacitor charger/balancer rather than a user-variable input.

Ordering Information

Blues Shop 

Certifications

CE

Pending

FCC

Pending

ISED

Pending

Terms and Conditions

Starnote for Iridium has been certified for transmission to Iridium's satellite network using only the included antenna. Use of any other antenna risks unintended interference in adjacent bands, and thus is prohibited without prior testing and certification by Iridium.

Visit [Blues Hardware Terms & Conditions](#) 

Security and Vulnerability Scanning

As a part of our regular audit and scanning process, Blues Inc. performs full vulnerability scanning every six months. Any identified vulnerabilities will be analyzed, reported, and patched in a timely fashion, where appropriate.

Revision History

Author	Date	Summary
Rob Lauer	11 APR 2024	Document drafted
Rob Lauer	03 JUN 2025	Added Skylo certification and updated antenna information
Rob Lauer	19 SEP 2025	Clarifying bundled satellite data
TJ VanToll	19 NOV 2025	Changes to consistently use "Starnote for Skylo" as the product name
Rob Lauer	15 DEC 2025	Added Starnote for Iridium information
Rob Lauer	16 JUL 2026	Added Starnote for Iridium power and pin information
Rob Lauer	23 JUL 2026	Accuracy review vs. hardware design files

Contact Information

Blues Inc.

<https://blues.com> 

50 Dunham Ridge Suite 1650

Beverly, MA 01915

support@blues.com 