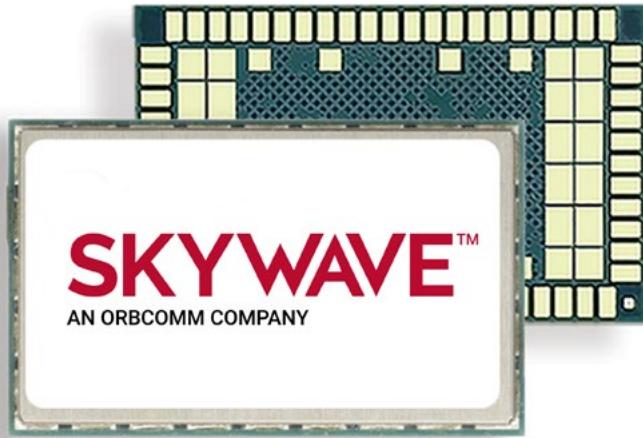




Datasheet



ST 4000 Series

Hybrid dual mode satellite-cellular module

Embedded global IoT connectivity, designed for real-world integration

The ST 4000 delivers global connectivity for custom IoT hardware in remote, mobile or coverage-challenged environments. It's ideal for IoT applications that require always-on connectivity.

Integrating LTE-M cellular and SKYWAVE's satellite IoT connectivity services in a single 16 x 26 mm Land Grid Array (LGA) form factor, the ST 4000 simplifies integrating always-on communication to field devices—without increasing footprint or power draw.

The ST 4000 offers a familiar AT-command interface, low-power profile, flexible antenna configurations and seamless integration into new or existing designs. It's built on u-blox's SARA module platform, making it a perfect fit for adding new connectivity options to products already designed for SARA modules.

Satellite messaging is handled over SKYWAVE's proven IDP satellite service today, with our next-generation OGx service—with its low power consumption, larger message sizes and faster message delivery speeds—coming soon in a firmware upgrade.

Satellite and cellular in one module

Compact footprint built for integration

Low power consumption

SARA-standard footprint for product continuity with satellite connectivity

Upgradeable to OGx

Trusted SKYWAVE satellite network infrastructure

Specifications

Connectivity

- Satellite:
 - ▶ Protocol: IDP (OGx upgradeable via firmware)
 - ▶ Band: L-band uplink
 - ▶ Max payload: 6.4 kB from-mobile/10.0 kB to-mobile
 - ▶ Latency: <15s (100 bytes), <60s (1000 bytes)
 - ▶ Power class: 33 dBm
- Cellular:
 - ▶ LTE Cat M1 bands: 1, 2, 3, 4, 5, 8, 12, 13, 18, 19, 20, 25, 26, 28, 66, 71, 85
 - ▶ Power class: 23 dBm

GNSS

- Integrated receiver: u-blox M10 GNSS
- Constellations: GPS/QZSS, GLONASS, BeiDou, Galileo
- Concurrent GNSS + LTE operation
- Security: Signal jamming detection, CellTime™

Power and efficiency

- Nominal supply voltage: 3.8 V (range: 3.0–4.5 V)
- Idle power (PSM mode): 1 µA
- eDRX power: 180 µA
- Transmit (LTE M1 @ 23 dBm): 195 mA
- Satellite transmit power: 2 A (optimized for burst-mode efficiency)

- ▶ CoAP, LwM2M
- ▶ TLS/DTLS encryption

- Features:
 - ▶ Secure boot, antenna and SIM detection, Last Gasp notification

Mechanical and environmental

- Form factor: 16.0 x 26.0 x 2.4 mm (96-pin LGA)
- Weight: <3g
- Operating temperature: -40°C to +85°C
- Qualification: AEC-Q104-based policy, RoHS compliant
- Manufacturing: ISO/TS 16949 certified sites

Interfaces

- UART: 2 (8-wire, configurable)
- USB: For diagnostics
- I2C (DDC): 1
- GPIO: Up to 6 configurable
- SIM: USIM (1.8V / 3.0V)

Firmware, security and protocols

- Updates:
 - ▶ uFOTA (cellular)
 - ▶ Satellite FOTA (via IDP)
- Embedded protocols:
 - ▶ Full IPv4/IPv6
 - ▶ TCP/IP, UDP, FTP, HTTP, MQTT, MQTT-SN

Certifications

- FCC, ISED, GCF, PTCRB, RED, RCM, NCC, AT&T
- AWS IoT Core Qualified, Microsoft Azure Certified (module-level certifications; product certifications vary by implementation)

Although we strive to ensure accuracy in all of our published specifications, actual field performance can vary depending on a variety of environmental, installation and usage factors, as well as third-party factors such as cellular providers. The specifications listed are approximations, and do not constitute binding statements or modify the terms and conditions of purchase or lease including, but not limited to, product operational limitations and warranties. All specifications are subject to change without notice. Please check www.skywave.com to ensure you have the latest version of these specifications.

Email: sales@skywave.com | Call: **1-800-672-2666**

Visit our website www.skywave.com

SKYWAVE, an ORBCOMM company, is a global provider of IoT solution enablement technology. We empower solution providers, system integrators and OEMs to serve their customers through satellite and cellular managed IoT networks and a complete application enablement platform. We provide a fully integrated ecosystem of purpose-built devices, data automation and connectivity services for high-reliability, low-data solutions. SKYWAVE is where IoT powers mission-critical applications for the transportation, agriculture, oil and gas and maritime industries.