ST87M01

NB-IoT cellular and GNSS/Wi-Fi positioning module

Ultracompact, ultralow-power industrial NB-IoT and positioning module series for massive cellular IoT applications

The ST87M01 is a high-performance, ultracompact, ultralow-power, LTE Cat-NB2 certified, industrial NB-IoT and positioning series of modules offering worldwide frequency band coverage and advanced security features.

Customers can easily design and develop specific use cases using the EVKITST87M01-2 evaluation kit together with comprehensive ST sales and technical support.

KEY FEATURES & BENEFITS

- LTE Category NB2 (3GPP Release 15) B1/B3/B5/B8/B20/B28 certified
- Industrial grade: (-40°C, +85°C)
- 100% ST product (SoC & module)
- 15-years longevity commitment
- Ultracompact size (10.6 x 12.8 mm)
- Data rates up to:
  - Down-link: 127 kbps
  - Up-link: 159 kbps
- Multipower classes support (up to +23 dBm Tx output)
- Power saving mode (PSM) < 1.2 µA Ioff (Power Off) < 0.5 µA
- GNSS and Wi-Fi positioning support
- ST4SIM embedded SIM option
- GCF and RED (including RED-DA) certified

KEY APPLICATIONS

- Asset tracking
  - Logistics
  - Livestocks and tools
- Healthcare
- Smart city
  - Environment
  - Infrastructure
  - Street lighting
- Smart metering
  - Electricity smart meters
  - Gas smart meters
  - Water smart meters
- Smart industry
  - Condition monitoring
  - Factory automation
  - Predictive maintenance

st.com/nb-iot

ST87M01 overview

The ST87M01 is an ultracompact, ultralow-power certified NB-IoT and positioning module series, featuring multiband data transmission and indoor and outdoor geolocation in a tiny form factor, with full ecosystem support.

NB-IoT and positioning module

The ultracompact module form factor is a major feature of the ST87M01 series in a 51-pin LGA package of only 10.6 x 12.8 mm for size-critical applications.

Thanks to ultralow power consumption and qualification over the industrial temperature range, the ST87M01 represents an excellent choice for a wide range of IoT applications, including smart grid, smart metering, smart city, factory automation, industrial IoT, and asset tracking, as well as any smart monitoring application implementing low-power wide-area network (LPWAN) communication.

The ST87M01 can receive firmware updates and additional features via firmware upgrades over the air with optimized firmware upgrade procedures (differential FOTA).

The ST87M01 series also embeds the PDU SMS service and internet protocols for NB-IoT products, including TCP/IP, TLS/DTLS, CoAP, LwM2M, MQTT, and HTTP/HTTPS, enabling many different IoT applications.

The GNSS and Wi-Fi positioning features enable robust geolocation in different outdoor, indoor, and dense urban scenarios.

The product series is designed to extend battery life on a single cell primary battery, thanks to full power saving mode (PSM) support and extended discontinuous reception (eDRX) mechanisms, along with ultralow-power features and an interface for interrupts to wake up the module.
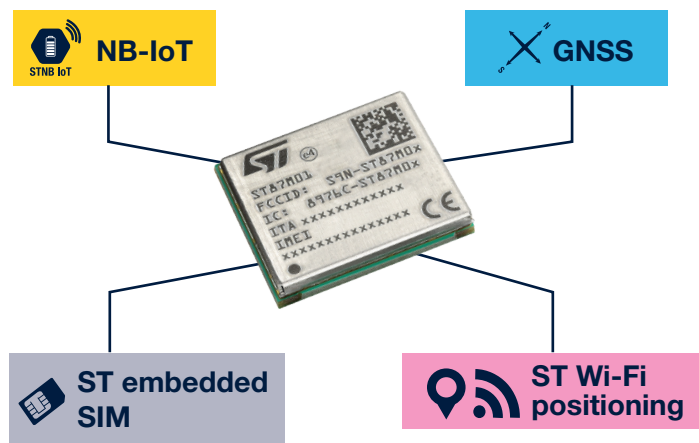
The ST87M01 module is GCF, RED, and RED-DA certified for full compliance with stringent cybersecurity regulations. It comes fully tested and traced according to stringent ST reliability and quality practices to meet industrial-grade qualification and ensure reliable operation for 15-year, long-term field use.
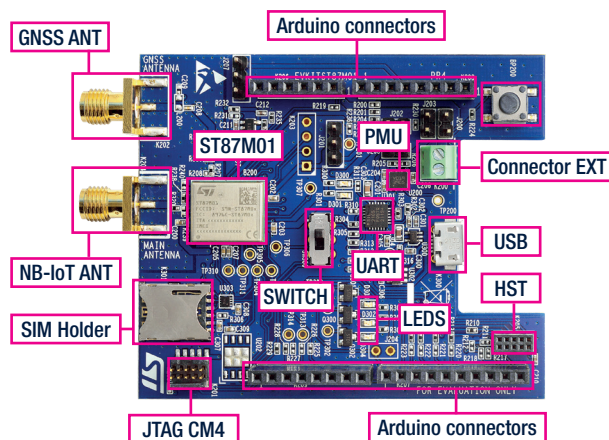
Evaluation kit

The EVKITST87M01-2 evaluation kit includes a board based on the ST87M01 module, and is designed to be compatible with the Nucleo hardware environment by Arduino connectors. The board has two possible HOST connections to ST87M01 for a PC or associated board. The kit is complete with an NB-IoT antenna, a GPS active antenna, and a SIM with a limited data plan for evaluation purposes.

ST87M01 building blocks

Evaluation kit

Product table

Order code	Description
ST87M01-1001	NB-IoT cellular module
ST87M01-1301	NB-IoT cellular + GNSS/Wi-Fi positioning module
EVKITST87M01-2	Evaluation kit