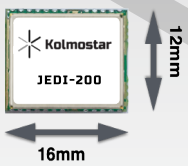
LoRa Alliance Member™

Kolmostar

JEDI-200

Kolmostar Ultra Low Power GNSS Module



Highlights

Ultra Low Power Consumption
- 10mW power consumption @1 Hz navigation rate (measured in real environment)

Fast Time to Fix
- 1 second TTFF (time to first fix)

Accurate Position Fix
- 2.0m CEP

A-GPS via LPWAN to Further Minimize Power and TTFF
- 100 Byte compressed ephemeris file for speedy download & only 1 refresh per day needed
- 50Byte raw position data for efficient narrow-band upload and auxiliary high-performance cloud computing

Features	
Receiver Type	GPS L1; Beidou B1I
Nav. Update Rate	Up to 1 Hz
Position Accuracy	2.0m CEP
TTFF	1 s

Package and Interface	
Package	24pin 12.0 x 16.0 x 2.5mm
Interface	1 UART

Quality and Reliability	
Storage Temp.	-40 °C to +85 °C
Operating Temp.	-40 °C to +85 °C

Electrical Data	
Supply Voltage	2.8V
Power Consumption	Acquisition: 20mW Tracking: 10mW

Product Description

Following the record-setting JEDI-100, JEDI-200 is Kolmostar's most advanced ultra-low-power GNSS module, which once again refreshes the industry record of the lowest power consumption. Built on the superior performance of the Kolmo JEDI GNSS engine, it integrates SAW filter, stand-alone LNA, and TCXO, and follows the industry proven 12mm x 16mm form factor for easy RF integration.

Designed for IoT applications, and optimized for integration with LPWAN technologies such as LoRaWAN™/NBIoT, etc., JEDI-200 achieves industry record low power consumption. Compared with traditional GNSS sensors, JEDI-200 reduces the energy to get one position fix by up to 150x.

Application Example

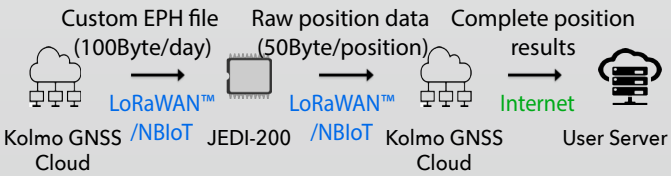
- GPS+LPWAN position tracker. Use GPS to get the position, and use LPWAN to transmit data. The position needs to be updated every two hours.

- Challenges: A-GPS is widely used to provide ephemeris (EPH) to GPS sensors in phones. However, the ephemeris file can be as big as 15KB, which is too big for narrowband LPWAN transmission channels such as LoRaWAN™/NBIoT.

- In practice, traditional GPS sensors in LPWAN devices download ephemeris directly from GNSS satellites. This process takes more than 30 seconds and costs lots of energy.

Our Solution

Our solution reduces the ephemeris file from 15KB to 100Byte and it only needs to be refreshed once per day. This greatly reduces power consumption while also enables A-GPS via LoRaWAN™/NBIoT.



JEDI-200 consumes 20mW per second in acquisition mode and TTFF is 1 second with A-GPS. In comparison, traditional GPS consumes more than 100mW every second and TTFF is more than 30 seconds if ephemeris needs to be downloaded. As a result of these advantages, our solution reduces the energy of GPS to get one position by up to 150x.

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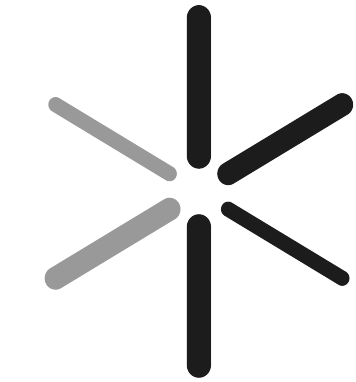

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