Product summary

LEXI-R422 module

LTE-M / NB-IoT / EGPRS module

Standard

Professional

Automotive

Feature-rich IoT connectivity in smallest form factor with 2G fallback

- Guaranteed best coverage with 23 dBm output power
- Cost-effective, power efficient, end-to-end IoT communication with MQTT Anywhere and MQTT Flex
- Always and everywhere location, with u-blox CellLocate®
- Better RF performance with configurable dynamic antenna tuning interface

16.0 × 16.0 × 2.0 mm

Product description

LEXI-R422 is the first module of the u-blox LEXI 16 x 16 mm compact form factor. It offers LTE-M and NB-IoT coverage with 16 bands and software-based filtering configuration, plus 2G fallback to enable global deployments with a single product.

LEXI-R422 provides 23 dBm RF output power in LPWA bands, thus ensuring robust connections and lower rate repetitions especially at cell edges. It is more cost effective since no external power amplifiers are required to achieve best coverage.

The module's dynamic antenna tuning interface optimizes the end-device antenna efficiency and overall RF performance. The antenna matching circuitry is tuned dynamically based on the frequency in use.

With PSM and eDRX, its low power consumption extends battery life to up to 10 years. LEXI-R422 has a dedicated interface to u-blox M10 modules, such as MIA-M10 (4.5 x 4.5 mm). As a pair, LEXI-R422 and MIA-M10 are at the core of ultra-compact, high performing tracking solution designs for applications requiring continuous tracking and flexible cellular and positioning power management. In additon, LEXI-R422 provides easy access to u-blox GNSS services AssistNow Online and Offline. It also allows easy access to u-blox's CellLocate service to estimate position via surrounding cell station data without the need of a GNSS receiver.

With u-blox's MQTT Anywhere or MQTT Flex communication services, data overhead, time spent on-the-air, and energy consumption can be further reduced, thus enabling users to extend device life cycles, lower costs, and improve ROI.

Its many interface options and an integrated IP stack make LEXI-R422 perfect for a wide range of ultra-compact data-centric IoT applications, such as personal/pet trackers, telematics (ODBs), industrial automation and monitoring, smart city and smart building, payments, micromobility and connected health.

The LEXI-R422 leverages hardware-based security functions provisioned in a secured production environment, to ensure that the module only runs authorized firmware.

	LEXI-R422
Grade	
Automotive	
Professional	•
Standard	
Regions	
	Global
Access technology	
LTE bands	1, 2, 3, 4, 5, 8, 12, 13, 18, 19, 20, 25, 26, 28, 66, 85
GSM/EGPRS bands	Q
LTE data rate	M1/NB2
LTE power class	23 dBm
Positioning	
External GNSS control via modem	•
Compatible u-blox services	
MQTT Anywhere, MQTT Flex	•
AssistNow™ and CellLocate®	•
Interfaces	
UART	2
USB (for diagnostics and FW updates)	1
I2C	1
USIM	1
GPIO	6
Features	
Secure boot, updates, production	•
Jamming detection	•
Last gasp	•
Antenna detection	•
LwM2M	•
FW update via serial (FOAT)	•
uFOTA	•
eDRX and power save mode	•
Deep sleep mode	•
Dual stack IPv4/IPv6	•
Embedded MQTT / MQTT-SN	•
Embedded TCP/UDP stack	•
Embedded HTTPS, FTPS	•
Embedded TLS / DTLS	•
Embedded CoAP/DTLS	•
Antenna dynamic tuning	•

M1 = LTE Cat M1 (up to 588 kb/s DL, 1119 kb/s UL)
NB2 = Cat NB2 (up to 127 kb/s DL, 158.5 kb/s UL)
Q = Quad-band

LEXI-R422 module

C

Features

LTE	**3GPP Release 13 LTE Cat M1 and NB1** **3GPP Release 14 LTE Cat M1**: Uplink TBS of 2984b, CIoT optimizations, and Release Assistance Indication (RAI) **3GPP Release 14 LTE Cat NB2**: Higher data rate (TBS of 2536b), mobility enhancement (RRC connection re-establishment), two HARQ processes, release assistant, random access on non-anchor carrier Cat M1 half-duplex, up to 588 kb/s DL, 1119 kb/s UL Cat NB1 half-duplex, 27.2 kb/s DL, 62.5 kb/s UL Cat NB2 half-duplex, up to 127 kb/s DL, 158.5 kb/s UL
GSM	GPRS / EGPRS Multi-Slot Class 33
SMS	MT/MO PDU / text mode SMS over SG/NAS

Compatible u-blox services

Communication	MQTT Anywhere MQTT Flex
Location	AssistNow CellLocate

Software features

Protocols	Dual stack IPv4 and IPv6 Embedded TCP/IP, UDP/IP, FTP, HTTP Embedded secure MQTT, MQTT-SN Embedded HTTPS, FTPS, TLS, DTLS
Device mgmt.	OMA LwM2M
GNSS interfaces	Direct access to external u-blox GNSS via module
Functionalities	Antenna dynamic tuning Last gasp Jamming detection
Security	Secure boot Secure updates Secure production
Firmware upgrade	Via UART (FOAT) uFOTA client/server solution (Firmware upgrade over the air)

Electrical data

Power supply	3.8 V nominal, range 3.2 V to 4.5 V
Power consumption	Power save mode (PSM): 3 μA Low Power Mode (eDRX): 100 μA

Package

133 pin LGA: 16.0 x 16.0 x 2.0 mm, < 1.5 g

Environmental data, quality & reliability

Operating temperature	–40 °C to +85 °C
RoHS compliant (lead-free)	
u-blox qualification policy (based on AEC-Q104 standard)	
Manufactured in IATF 16949 certified production sites	

Certifications and approvals

LEXI-R422	ANATEL, FCC, ISED, NCC, RCM, RED, UKCA, GCF, PTCRB, Deutsche Telekom, Vodafone

Interfaces

Serial	2 UART 1 USB, for diagnostics and FW update 1 DDC (I2C)
GPIO	Up to 6 GPIOs, configurable
(U)SIM	Supports 1.8 V, SIM toolkit

Support products

EVK-LEXI-R422	Evaluation kit for LEXI-R422

Product variants

LEXI-R422	LTE-M, NB-IoT and EGPRS module for multi-regional use

Further information

For contact information, see **www.u-blox.com/contact-u-blox**.

For more product details and ordering information, see the product data sheet.