Product summary

SARA-R42 series

LTE-M / NB-IoT / EGPRS modules

Standard

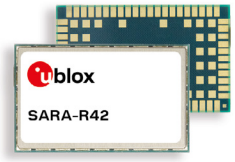
Professional

Automotive

Feature-rich IoT connectivity with 2G fallback and best-in-class GNSS

- Simultaneous LTE communication with GNSS positioning
- Power autonomy through positioning in the cloud; integrated u-blox M10 GNSS receiver and CloudLocate
- Better RF performance thanks to configurable dynamic antenna tuning interface
- Guaranteed best coverage with 23 dBm output power
- Cost-effective, power efficient, end-to-end IoT communication with MQTT Anywhere and MQTT Flex

16.0 × 26.0 × 2.5 mm



Product description

The SARA-R42 series modules provide LTE-M, NB-IoT, and EGPRS coverage and are certified by leading mobile network operators (MNOs) around the world, thus enabling global deployments with a single product. Their guaranteed best coverage is built-in via 23 dBm LTE output power, eliminating problems at cell edges and unwanted re-transmissions.

SARA-R422M10S is pre-integrated with the u-blox M10 GNSS receiver and separate GNSS antenna interface, which provides highly reliable, accurate positioning data simultaneously with LTE communication. CloudLocate, the u-blox positioning cloud service, extends the life of energy-constrained IoT applications. In addition, the module offers unique hybrid positioning, in which the GNSS position is enhanced with u-blox CellLocate® data, providing location always and everywhere.

The ultra-compact 16 x 26 mm LGA modules allow software-based configuration of LTE bands, radio access technology and mobile network operator profiles. 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 many interface options and an integrated IP stack, the SARA-R42 modules are targeted to a wide range of data-centric IoT applications, such as smart metering, smart lighting, telematics, asset tracking, remote monitoring, alarm panels, and connected health. With u-blox's communication services – MQTT Anywhere or MQTT Flex – data overhead, time spent on-the-air, and energy consumption can be reduced, thus enabling users to extend device life cycles, lower costs, and improve ROI.

SARA-R42 modules leverage hardware-based security functions provisioned in a secured production environment, to ensure that the module only runs authorized firmware.

Thanks to the u-blox nested design principle SARA modules are compatible with other u-blox product families, enabling easy migration from 2G, 3G, and 4G. This maximizes the investments of customers, simplifies logistics, and enables very short time-to-market.

	SARA-R422	SARA-R422S	SARA-R422M10S
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			
Integrated u-blox GNSS receiver			•
Dedicated GNSS antenna interface			•
External GNSS control via modem		•	
Compatible u-blox services			
MQTT Anywhere, MQTT Flex		•	•
AssistNow™ and CellLocate®		•	•
CloudLocate			•
Interfaces			
UART	2	2	2
USB (for diagnostics)	1	1	1
I2C	1	1	1
USIM	1	1	1
GPIO	6	6	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

SARA-R42 series

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 [1] MQTT Flex [1]
Location	AssistNow [1] CellLocate [1] CloudLocate [2]

Software features

Protocols	Dual stack IPv4 and IPv6 Embedded TCP/IP, UDP/IP Embedded secure MQTT, MQTT-SN [1] Embedded HTTPS, FTPS, TLS, DTLS [1]
Device mgmt.	OMA LwM2M
GNSS interfaces	Integrated u-blox M10 chip with concurrent GNSS (GPS, GLONASS, BeiDou, Galileo) [2] Dedicated GNSS antenna interface [2] Direct access to u-blox GNSS via module
Functionalities	Antenna dynamic tuning Last gasp [1] Jamming detection
Security	Secure boot Secure updates Secure production
Firmware upgrade	Via UART 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:	3 μA
	Active idle mode:	0.1 mA

1 = only on SARA-R422M10S and SARA-R422S
2 = only on SARA-R422M10S

Package

96 pin LGA: 16.0 x 26.0 x 2.5 mm, < 3 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 – planned

SARA-R42 series	ANATEL, FCC, UKCA, ISED, NCC, RCM, RED, GCF, PTCRB, Deutsche Telekom, Vodafone, AT&T [3], Verizon [3], KC [3], GITEKI [3]

3 = available from ordering code 01B onwards

Interfaces

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

Support products

EVK-R422M10S	Evaluation kit for SARA-R42 series

Product variants

SARA-R422	LTE-M, NB-IoT and EGPRS module for multi-regional use
SARA-R422S	Secure Cloud LTE-M, NB-IoT and EGPRS module for multi-regional use
SARA-R422M10S	Secure Cloud LTE-M, NB-IoT and EGPRS module with integrated M10 GNSS receiver 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.