Product summary
SARA-S520M10L module

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Multimode LTE-M / NB-IoT / satellite / GNSS module with u-blox chipset

Based on u-blox UBX-S52 chipset for ORBCOMM satellite connectivity and cellular terrestrial networks

- First u-blox cellular module compliant with ORBCOMM IDP protocol
- Multimode module: Cellular and satellite connectivity with GNSS positioning
- Product longevity and best support guaranteed by u-blox LTE and GNSS chipsets
- u-blox M10 GNSS receiver delivers accurate and reliable positioning, concurrently with LTE
- Smallest multi-mode IoT module at ~400 mm2 in the SARA form factor

16.0 × 26.0 × 2.2 mm

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SARA-S520M10L

Product description

The SARA-S520M10L module, powered by the u-blox UBX-S52 cellular chipset and the u-blox M10 GNSS receiver chip, offers comprehensive connectivity capabilities, including access to satellite connectivity. It relies on ORBCOMM network access via the IDP protocol. With complete hardware and software ownership, u-blox ensures long-term device availability and lifetime support at the chipset level.

Designed for applications requiring constant network connectivity worldwide, the module leverages the GEO satellite network ecosystem to ensure seamless coverage across the globe. Support of the ORBCOMM networks enables customers to use SARA-S520M10L everywhere in the world, making devices using this module truly global.

IDP is fully reliable protocol designed for IoT solutions that need to transmit data from everywhere in the world.

On top of the satellite connectivity, this module supports LTE Cat M1 and LTE Cat NB2 optimized for IoT applications. It boasts enhancements in power consumption, coverage, data rate, and mobility.

Notably, the SARA-S520M10L is future-proof and 5G-ready, allowing customers to upgrade their devices once 5G LTE networks are deployed by mobile operators. This feature greatly enhances the scalability and lifetime of end products.

The SARA-S520M10L integrates the u-blox M10 GNSS receiver to deliver best-in-class positioning data concurrent with the LTE communication, making it the ideal solution for continuous or cyclic tracking applications.

	SARA-S520M10L
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, 71, 85
Data rate	M1/NB2
LTE power class	23 dBm
Satellite protocol	IDP
Satellite bands	L-band
Satellite power class	33 dBm
Positioning	
Integrated GNSS receiver	•
Dedicated GNSS antenna interface	•
Compatible u-blox services	
AssistNow™	•
CellLocate®	•
CloudLocate	•
Interfaces	
UART	2
USB (for diagnostics)	1
DDC (I2C)	1
USIM	1
GPIO	6
Features	
Ultra low PSM	•
Secure boot, updates, and production	•
HTTP, FTP	•
TCP/UDP	•
TLS/DTLS	•
CoAP and LwM2M	•
FW update via serial (FOAT)	•
uFOTA	•
Last gasp	•
Jamming detection	•
Antenna and SIM detection	•
CellTime	•

M1 = LTE Cat M1 (588 kb/s DL, 1200 kb/s UL)
NB2 = Cat NB2 (125 kb/s DL, 140 kb/s UL)

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Features

LTE	**3GPP Releases:** 13, 14 with partial support for LTE Cat M1 and LTE Cat NB2 Cat M1 Half-duplex, 588 kb/s DL, 1200 kb/s UL Cat NB2 Half-duplex, 125 kb/s DL, 140 kb/s UL

SAT	IDP protocol
	Latency less than 15 sec for 100 bytes
	       less than 60 sec for 1000 bytes
	Maximum payload:
	      6.4 kbytes UL
	      10.0 kbytes DL

SMS	MT/MO PDU / text mode SMS over SG/NAS

Compatible u-blox services

Location	AssistNow™ CellLocate® CloudLocate

Software features

Protocols	Dual stack IPv4 and IPv6 PPP over IPv4 and IPv6 Embedded TCP/IP, UDP/IP, FTP, HTTP, DNS Embedded MQTT and MQTT-SN Embedded CoAP and LwM2M Embedded TLS/DTLS SIM provisioning (BIP)
Positioning	GNSS antenna interface shared with satellite Integrated u-blox M10 chip with concurrent GNSS (GPS, GLONASS, BeiDou, Galileo)
Functionalities	CellTime for robust and accurate timing reference Last gasp Jamming detection Antenna and SIM detection

Firmware upgrade	Cellular:
	    Via UART
	    uFOTA client/server solution
	    (firmware upgrade over the air)
	Satellite:
	    OTA via satellite connection

Interfaces

Serial	8-wire UART, configurable as 2x 4-wire UART with ring indication DDC (I2C) USB for diagnostics
GPIO	Up to 6 GPIOs, configurable
(U)SIM	Supports 1.8 V and 3.0 V

Package

96 pin LGA: 16.0 x 26.0 x 2.2 mm, < 3 g

Environmental data, quality & reliability

Operating temperature	–40 °C to +85 °C
RoHS compliant (lead-free)	
Qualification according to AEC-Q104	
Manufactured in ISO/TS 16949 certified production sites	

Certifications and approvals

SARA-S520M10L [1]	FCC, ISED, GCF, PTCRB, Verizon, AT&T, US Cell, T-Mobile, Telus, RED, UKCA, Vodafone, Deutsche Telekom, Giteki, RCM, Telstra, NCC
SARA-S520M10L	AWS IoT Core qualified Microsoft Azure certified

1 = Planned certifications

Electrical data

Power supply	3.8 V nominal, range 3.0 V to 4.5 V
PSM current consumption	1 µA
eDRX current consumption	180 µA
LTE Cat M1 Connected mode current consumption	195 mA (at 23 dBm)
LTE Cat NB2 Connected mode current consumption	135 mA (at 23 dBm)
Satellite Connected mode current consumption	TBD

Support products

EVK-SARA-S520M10L	Evaluation kit for SARA-S520M10L

Product variants

SARA-S520M10L	LTE-M, NB-IoT, and satellite module with integrated u-blox M10 GNSS receiver for global 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.