**Product description**

The SARA-R52 series is the second generation of SARA-R5 modules based on u-blox’s UBX-R52 cellular chipset and the u-blox M10 GNSS receiver chip. By bringing all technology building blocks in house and having full hardware and software ownership, u-blox provides long-term device availability and lifetime support of the entire platform, down to the chipset level. The modules support LTE Cat M1 and LTE Cat NB2 technologies based on a comprehensive set of 3GPP Rel. 14 and Rel. 15 features that are relevant for IoT applications, including improvements on power consumption, coverage, data rate, and mobility. With the integrated uCPU, customers can run their applications on the UBX-R52 chipset, and thus omit need for an external MCU.

The SARA-R52 series includes a variant for general purpose LTE connectivity and a variant with an additional GNSS receiver. SARA-R520M10 is pre-integrated with 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. On SARA-R520, SpotNow provides location information. It is a new cost-optimized assisted GPS receiver solution, for occasional tracking use cases. The SARA-R52 modules deliver state-of-the-art security thanks to their secure boot, secure updates, and secure production implementations.

All versions support u-blox’s communication services – MQTT Anywhere or MQTT Flex – by which 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-R52 is AWS IoT Core qualified and Microsoft Azure certified.

**Designated to provide top performance in both communication and positioning**

- Customer applications can run with uCPU on the UBX-R52 chipset
- Delivers accurate and reliable positioning with the u-blox M10 GNSS receiver, concurrent with LTE
- Power optimized and cost-effective positioning with SpotNow receiver
- Cost-effective, power efficient, end-to-end IoT communication with MQTT Anywhere and MQTT Flex

### Product summary

**SARA-R52 series**

**LTE-M / NB-IoT modules based on u-blox chipset**

**Product description**

- The SARA-R52 series is the second generation of SARA-R5 modules based on u-blox’s UBX-R52 cellular chipset and the u-blox M10 GNSS receiver chip. By bringing all technology building blocks in house and having full hardware and software ownership, u-blox provides long-term device availability and lifetime support of the entire platform, down to the chipset level. The modules support LTE Cat M1 and LTE Cat NB2 technologies based on a comprehensive set of 3GPP Rel. 14 and Rel. 15 features that are relevant for IoT applications, including improvements on power consumption, coverage, data rate, and mobility. With the integrated uCPU, customers can run their applications on the UBX-R52 chipset, and thus omit need for an external MCU. The SARA-R52 series includes a variant for general purpose LTE connectivity and a variant with an additional GNSS receiver. SARA-R520M10 is pre-integrated with 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. On SARA-R520, SpotNow provides location information. It is a new cost-optimized assisted GPS receiver solution, for occasional tracking use cases. The SARA-R52 modules deliver state-of-the-art security thanks to their secure boot, secure updates, and secure production implementations. All versions support u-blox’s communication services – MQTT Anywhere or MQTT Flex – by which 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-R52 is AWS IoT Core qualified and Microsoft Azure certified.
### Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LTE</strong></td>
<td>3GPP Release 13, 14 (partial support), 15 (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.</td>
</tr>
<tr>
<td><strong>SMS</strong></td>
<td>MT/MO PDU / text mode, SMS over SG/NAS.</td>
</tr>
<tr>
<td><strong>Compatible u-blox services</strong></td>
<td>Communication: MQTT Anywhere, Location: AssistNow, CellLocate.</td>
</tr>
<tr>
<td><strong>Functionalities</strong></td>
<td>Antenna dynamic tuning, CellTime for robust and accurate timing reference, Last gasp, Jamming detection, Antenna and SIM detection.</td>
</tr>
<tr>
<td><strong>Firmware upgrade</strong></td>
<td>Via UART, uFOTA client/server solution (firmware upgrade over the air).</td>
</tr>
</tbody>
</table>

#### Interfaces

<table>
<thead>
<tr>
<th>Interface</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial</td>
<td>8-wire UART, configurable as 2x 4-wire UART with ring indication. DDC (I2C). USB for diagnostics.</td>
</tr>
<tr>
<td>GPIO</td>
<td>Up to 6 GPIOs, configurable.</td>
</tr>
<tr>
<td>[U]SIM</td>
<td>Supports 1.8 V and 3.0 V.</td>
</tr>
</tbody>
</table>

### 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-R52 series: AWS IoT Core qualified, Microsoft Azure certified

#### Electrical data

- Power supply: 3.8 V nominal, range 3.0 V to 4.5 V
- PSM current consumption: 0.5 μA
- eDRX current consumption: 200 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)

### Support products

- EVK-SARA-R520 Evaluation kit for SARA-R520
- EVK-SARA-R520M10 Evaluation kit for SARA-R520M10

### Product variants

- SARA-R520: LTE-M and NB-IoT module for global use
- SARA-R520M10: LTE-M and NB-IoT 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.

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