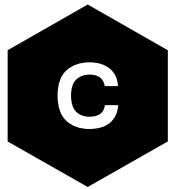


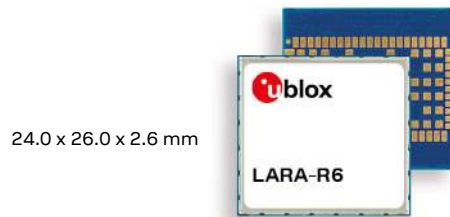
# LARA-R6 series



## Single or multi-mode LTE Cat 1 modules

### Universal connectivity and reliable performance in smallest form factor

- Reduce logistics complexity with three regional product variants and extensive MNO certifications
- Any region, any band, any technology for simple roaming anywhere in the world
- World's smallest LTE Cat 1 module with global coverage, ideal for size-constrained devices
- Receive-diversity for reliable performance in difficult conditions
- Secure by design to always keep your device running and updated



### Product description

LARA-R6 series modules provide global and multi-regional coverage in a very small form factor, thereby reducing logistics complexity and increasing design flexibility. Three different product variants provide flexibility for band use and access technology by region, and include all relevant MNO certifications. All modules in the series support receive-diversity, making them the ideal choice for deployment in North America, as well as for a diverse set of applications with demanding requirements for reliable performance in difficult coverage conditions or those that require voice functionality via VoLTE. The modules are also secure by design with root of trust, secure boot, secure updates, and secure communications ((D)TLS) functionalities. Security is regularly updated via maintenance releases to keep your device running and protected from attacks.

LARA-R6001 is the smallest LTE Cat 1 multi-mode module with global coverage available in the market. As a single SKU, it provides universal connectivity and greatly simplifies logistics. This truly global module has 18 LTE bands plus 3G/2G fallback.

LARA-R6401 provides an ideal LTE Cat 1 solution for North America, as it supports all relevant LTE bands and is designed for use on AT&T, Verizon, FirstNet, or T-Mobile. Managing a single SKU for the North American market simplifies logistics and reduces associated costs.

LARA-R6801 is a multi-regional variant specifically designed for use in EMEA/APAC/Japan and LATAM regions, supporting all relevant LTE bands and technologies.

With the three regional variants, you can maximize the reuse of development efforts. Versatile interfaces, features, multi-band and multi-mode capabilities make LARA-R6 ideally suited for a wide range of applications that require medium data speed, seamless connectivity, superior coverage, low latency and streaming data or voice. They include asset tracking, telematics, remote monitoring, alarm panels, video surveillance, connected health, and point-of-sale terminals.

|   | LARA-R6001<br>LARA-R6001D*                      | LARA-R6401<br>LARA-R6401D*  | LARA-R6801<br>LARA-R6801D*                   |
|---|---|-----------------------------|--|
| <b>Grade</b>                            |   |                             |  |
| Automotive                              |   |                             |  |
| Professional                            | •   | •                           | •  |
| Standard                                |   |                             |  |
| <b>Regions</b>                          |   |                             |  |
|   | Global  | North America               | Multi-region:<br>EMEA, APAC,<br>Japan, LATAM |
| <b>Access Technology</b>                |   |                             |  |
| LTE FDD bands                           | 1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 19, 20, 26, 28 | 2, 4, 5, 12, 13, 14, 66, 71 | 1, 2, 3, 4, 5, 7, 8, 18, 19, 20, 26, 28      |
| LTE TDD bands                           | 38, 39, 40, 41                                  |                             |  |
| UMTS/HSPA bands                         | 850, 900, 1900, 2100                            |                             | 850, 900, 1900, 2100                         |
| GSM/GPRS bands                          | Q   |                             | Q  |
| Data rate                               | Cat 1   | Cat 1                       | Cat 1  |
| <b>Positioning</b>                      |   |                             |  |
| GNSS via modem                          | •   | •                           | •  |
| <b>Compatible u-blox services</b>       |   |                             |  |
| MQTT Anywhere, MQTT Flex                | •   | •                           | •  |
| AssistNow™                              | •   | •                           | •  |
| CellLocate®                             | •   | •                           | •  |
| <b>Interfaces</b>                       |   |                             |  |
| UART                                    | 2   | 2                           | 2  |
| USB                                     | 1   | 1                           | 1  |
| I2C                                     | 1   | 1                           | 1  |
| I2S                                     | 1   | 1                           | 1  |
| GPIO                                    | 9   | 9                           | 9  |
| <b>Features</b>                         |   |                             |  |
| Root of trust                           | •   | •                           | •  |
| MQTT / MQTT-SN                          | •   | •                           | •  |
| Power save mode                         | □   | □                           | □  |
| TCP/IP, UDP/IP, HTTP/FTP                | •   | •                           | •  |
| TLS / DTLS                              | •   | •                           | •  |
| eDRX                                    | •   | •                           | •  |
| Secure boot / update                    | •   | •                           | •  |
| RxDiversity                             | •   | •                           | •  |
| Dual stack IPv4/IPv6                    | •   | •                           | •  |
| FW update via serial (FOAT)             | •   | •                           | •  |
| FOTA/uFOTA                              | •   | •                           | •  |
| LwM2M                                   | •   | •                           | •  |
| Last gasp                               | •   | •                           | •  |
| Jamming detection                       | •   | •                           | •  |
| Antenna and SIM detection               | •   | •                           | •  |
| VoLTE/CSFB (not for data-only variants) | •   | VoLTE only                  | •  |

Cat 1 = 10 Mbit/s DL, 5 Mbit/s UL  
Q = Quad-band

\* = Data-only module variant  
□ = Available in future FW

# LARA-R6 series



## Features

|       |   |
|-------|---|
| LTE   | LTE Cat 1 (10 Mbit/s DL, 5 Mbit/s UL)<br>3GPP Release 10<br>– LARA-R6001 (Global)<br>– LARA-R6401 (North America)<br>– LARA-R6801 (Multi-region)<br>Power saving features:<br>– Rel 12 LTE power save mode, PSM <sup>1</sup><br>– Rel 13 eDRX |
| UMTS  | HSDPA category 8, HSUPA category 6<br>Bands (in MHz):<br>– LARA-R6001: 850/900/1900/2100<br>– LARA-R6801: 850/900/1900/2100   |
| GSM   | GPRS/EDGE multi-slot class 33<br>Bands (in MHz):<br>– LARA-R6001: 850/900/1800/1900<br>– LARA-R6801: 850/900/1800/1900  |
| SMS   | MT/MO PDU / Text mode<br>SMS over IMS and via SMS-C   |
| Voice | VoLTE or CSFB<br>Codec: HR/FR/EFR/AMR/AMR-WB<br>Echo cancellation and noise reduction   |

1 = In future FW release

## Compatible u-blox services

|               |                            |
|---------------|----------------------------|
| Communication | MQTT Anywhere<br>MQTT Flex |
| Location      | AssistNow<br>CellLocate    |

## Software features

|                   |   |
|-------------------|---|
| Protocols         | Dual stack IPv4 and IPv6<br>Embedded TCP/IP, UDP/IP, FTP, HTTP<br>Embedded MQTT and MQTT-SN<br>Embedded LwM2M<br>eSIM and Bearer Independent Protocol |
| Device Management | OMA LwM2M   |
| GNSS Interfaces   | Direct access to u-blox GNSS via module   |
| Firmware upgrade  | Via UART (FOAT) and USB (FOAT and EasyFlash)<br>FOTA / uFOTA client/server solution<br>(Firmware upgrade Over the Air)                                |

## Electrical data

|                   |  |
|-------------------|--|
| Power supply      | 3.8 V nominal, range 3.3 V to 4.5 V<br>Extended range 3.1 V to 4.5 V |
| Power consumption | Active Idle Mode: ~1.1 mA  |

## Further information

For contact information, see [www.u-blox.com/contact-u-blox](http://www.u-blox.com/contact-u-blox).

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

## Package

100 pin LGA (Land Grid Array): 24.0 x 26.0 x 2.6 mm, < 4 g

## Environmental data, quality & reliability

Operating temperature –40 °C to +85 °C

RoHS compliant (lead-free)

Qualification according to AEC-Q104

Manufactured at ISO 9001 / 14001 certified production site

## Certifications and approvals

|            |   |
|------------|---|
| LARA-R6001 | PTCRB, GCF, FCC, ISED, RED, UKCA, NCC, RCM, Giteki, Anatel, KC, AT&T, Verizon <sup>2</sup> , T-Mobile <sup>2</sup> , Deutsche Telekom <sup>2</sup> , Telefonica <sup>2</sup> , Telstra <sup>2</sup> |
| LARA-R6401 | PTCRB, GCF, FCC, ISED, AT&T, Verizon, FirstNet, T-Mobile <sup>2</sup>   |
| LARA-R6801 | GCF, RED, UKCA, NCC, RCM, Giteki, NTT DoCoMo <sup>2</sup> , SBM <sup>2</sup> , KDDI <sup>2</sup>  |

2 = Planned certifications

## Interfaces

Serial  
2 UART  
1 USB 2.0 (high-speed, 480 Mbit/s)  
1 I2C  
1 I2S

GPIO  
Up to 9 GPIOs, configurable

(U)SIM  
Supports 1.8 V and 3.0 V, SIM toolkit

Audio  
1 digital

## Support products

|        |   |
|--------|---|
| EVK-R6 | Evaluation kits for LARA-R6 series<br>RIL software available for Android 12.0 and previous versions |
|--------|---|

## Product variants

|                                 |   |
|---------------------------------|---|
| LARA-R6001                      | Global LTE Cat 1 module   |
| LARA-R6001D (data-only variant) | LTE FDD bands:<br>1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 19, 20, 26, 28<br>LTE TDD bands: 38, 39, 40, 41<br>3G bands: 1, 2, 5, 8<br>2G bands: Quad-band |
| LARA-R6401                      | LTE Cat 1 module for North America  |
| LARA-R6401D (data-only variant) | LTE FDD bands: 2, 4, 5, 12, 13, 14, 66, 71  |
| LARA-R6801                      | LTE module for multi-regional use   |
| LARA-R6801D (data-only variant) | LTE FDD bands: 1, 2, 3, 4, 5, 7, 8, 18, 19, 20, 26, 28<br>3G bands: 1, 2, 5, 8<br>2G bands: Quad-band   |

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