Product Summary

UBX-R52/S52 series

Multi-band LTE-M / NB-IoT / satellite chipset

Standard

Professional

Automotive

Ubiquitous connectivity redefined with LTE-M /NB-IoT and satellite communication on L-band

- Multi-mode cellular and satellite modem for connectivity anywhere
- 5G-ready, software-configurable cellular modem to last an IoT lifetime
- Power-optimized and cost-effective positioning with SpotNow receiver
- Easy integration with u-blox GNSS products and operation of LTE-based positioning
- Powerful edge computing platform provides a hosted application environment

8.5 × 9.0 × 1.0 mm

	UBX-R52	UBX-S52
Grade		
Automotive		
Professional	•	•
Standard		
Regions		
	Multi-region	Global
Access Technology		
LTE bands	*	*
Data rate	M1/NB2	M1/NB2
Satellite protocol		IDP
Satellite bands		L-band
Positioning		
SpotNow	•	•
Compatible u-blox services		
AssistNow™	•	•
CellLocate®	•	•
CloudLocate™	•	•
Interfaces		
UART	•	•
USB (for diagnostics)	•	•
DDC (I2C)	•	•
SDIO (host)	•	•
ADC	•	•
PWM	•	•
I2S	•	•
GPIO	•	•
SAT RF IN		•
GPS RF IN	•	
Features		
Open CPU (uCPU)	•	
u-blox Smart Connection Manager	•	
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™	•	

* = All bands within the 450 MHz to 2.46 GHz range

NB2 = Cat NB2 (125 kbit/s DL, 140 kbit/s UL)
M1 = LTE Cat M1 (375 kbit/s DL, 1200 kbit/s UL)

Product description

UBX-R52/S52 is a multi-band / multi-mode chipset supporting two different categories of telecommunication standards: cellular 5G-ready LTE-M / NB-IoT and IDP for the Orbcomm GEO satellite constellation.

The UBX-R52/S52 chipset is available in two variants: the single mode, cellular-only UBX-R52 and the dual mode, cellular and satellite UBX-S52.

The UBX-R52/S52 series has been designed to offer low-power wide-area (LPWA) and satellite communication to applications requiring ubiquitous connectivity like mission-critical IoT assets, critical infrastructures, vehicle monitoring and control, or devices that transmit critical information.

Due to the high degree of software configurability within the fourth generation, in-house, VSP-based modem processor, the UBX-R52/S52 offers unparalleled flexibility and future-proofness ensuring platform stability and longevity to customer devices.

UBX-R52/S52 is based on a service-on-chip architecture, which offers low-level insights and data points from deep within the hardware, such as event-based energy consumption monitoring. The chipset can easily be combined with any u-blox GNSS product.

The UBX-R52/S52 chipset has two RF pathways, baseband, power management, and RAM. It supports several power-saving cellular functionalities, such as PSM and eDRX, thus extending the service life for battery-powered applications.

UBX-R52/S52 series

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Features

LTE standards	**3GPP Release 13 LTE Cat M1 and NB1** **3GPP Release 14 LTE Cat M1**: Coverage Enhancement Mode B, Uplink TBS of 2984b **3GPP Release 14 LTE Cat NB2**: Higher data rate (TBS of 2536b), Mobility enhancement (RRC connection re-establishment), E-Cell ID, Lower power class PC6 (14 dBm), two HARQ processes, Release Assistant, Random access on Non-Anchor Carrier Cat M1 Half-duplex, 375 kbit/s DL, 1200 kbit/s UL Cat NB2 Half-duplex, 125 kbit/s DL, 140 kbit/s UL
LTE channels	375 kb/s UL/DL HD-FDD PDSCH modes (TM) 1, 2 MPDCCH SMS over SGS RAN overload control for MTC – extended access barring R11 Coverage extension A, B I-DRX, C-DRX, PSM
Satellite	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
Security	Secure boot, secure update, secure production
Positioning	External GNSS or SpotNow
Cellular bands	Software selectable HD-FDD band configurations enables single hardware SKU supporting all 3GPP bands from 450 MHz to 2.46 GHz, depending on external components
Satellite bands	L-band (~1.5 - 1.7 GHz)
Application CPU	Industrial grade

Interfaces

Serial	UART USB SPI DDC (I2C) SDIO (host) 4-bit ADC PWM I2S
GPIO	Up to 15 GPIOs, configurable
SIM	ISO 7816-3
GNSS	1 Time sync

Package

FCBGA package	8.5 x 9.0 x 1.0 mm 395 pins
Pitch	0.4 mm

Environmental data, quality & reliability

Operating temperature	–40 °C to +85 °C (AEC-Q100 certified)
Storage temperature	TBD
RoHS compliant (lead-free) and green (no halogens)	
Manufactured in ISO/TS 16949 certified production sites	

Certifications and approvals

Module dependent

Electrical data

Power supply	Range 3.3 V to 4.4 V
Power consumption	LTE-M Mode: 0.5 µA in idle/PSM 180 µA in active idle SAT Mode: TBD

Product variants

UBX-R52	u-blox LTE-M and NB-IoT chipset for multi-regional use
UBX-S52	u-blox LTE-M / NB-IoT and satellite chipset 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.