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Based on talent strategy,
Create excellent Internet of
things products and services.

R1 Product Specifications

PositionX

Document version

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History

Date	Version	Change description	Author	Audit
2020/9/1	1.0	The first version	Lv	Tong
2021/1/20	1.1	Add GNSS information	Lv	Zhao
2021/2/2	1.2	Text perfection	Lv	Zhao

Contents

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1. Introduction

PositionX R1 is a LTE CAT.1 wireless communication module with GNSS using LCC/LGA castellation package. Adopting the 3GPP Rel.11 LTE technology, it delivers maximum data rates up to 10Mbps download and 5Mbps upload. It also supports high precision positioning with single-band RTK. It has comprehensive software functions to covers most of the conventional application scenarios.

PositionX R1 a best choice for a wide range of M2M applications, such as logistics management, shared equipment electronic fence management, driverless, agriculture, tracking system, automotive, security solutions, anti-theft system, mobile computing devices, wireless POS, metering, wearable device, etc..

Key Benefits

– LTE cat. 1 with 10Mbps download and 5Mbps upload;

– Standard AT instruction;

– Transparent mode support; Each socket supports 20 data caches with the maximum 4KBytes;

– Embedded abundant Internet service protocols;

– Based on the existing operator network, with wide coverage and high stability;

– Support KEEP-ALIVE, can keep the connection alive, and enhance the stability of the connection;

– High precision positioning GNSS(GPS/BeiDou/Glonass) with single-band RTK;

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2. Key Features

Table 1: R1 Key Features

Feature		Details
Hardware	Packaging	80 LCC pads+64 LGA pads
	Power supply	Supply voltage: 3.4V~4.2V (Typical supply voltage: 3.8V)
	Status indicator	5 pins indicating working status
	SIM/USIM card	Standard 6-pin SIM card interface, 3V/1.8V SIM card Support 2 SIM card interface, only single standby.
	Expansion CARDS	Support TF card interface
	USB Interface	Compliant with USB 2.0 specification. Used for AT command communication, data transmission, GNSS NMEAoutput, software debug and firmware upgrade.
	UART interface	Communication serial port: UART1, for AT instruction and data transmission.Support the baud rate 1200~921600 Debug serial port: DBG, for log printing, baud rate 115200
	Audio Feature	Support one MIC, one headset, one speaker
	Video Feature	Support CAMERA, LCD
	Antenna interface	Main antenna interface *1, GPS antenna interface *1, WiFi/ Bluetooth antenna interface *1
Physical Characteristics	Size (mm)	32mm×29mm×2.4mm (LCC+LGA)
	Weight (g)	< 4.2g
Temperature Range	Normal operating	-35℃ ~ +75℃
	Extended operating	-40℃ ~ +85℃
	Storage	-40℃ ~ +90℃
Humidity range	Working humidity	5%~95% (No condensation)
Technical Rpecification	TD-LTE	3GPP Release 13 CAT1 MAX 7.5 Mbps(DL), 1 Mbps(UL)
	FDD-LTE	3GPP Release 13 CAT1 MAX 10 Mbps(DL), 5 Mbps(UL)
Frequency segment	TD-LTE	Band 38/39/40/41
	FDD-LTE	Band 1/3/5/8
Transmitting Power	TD-LTE Band 38/39/40/41	+23dBm(Power class 3)
	FDD-LTE Band 1/3/5/8	+23dBm(Power class 3)

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Feature		Details
Software	Working mode	Transparent mode support
	Setup instructions	AT command
	Network protocol	TCP/UDP/HTTP/DNS/FTP
	Number of sockets	4
	User configuration	Uart AT Command, network AT Command
GNSS	GNSS Feature	Support single system of BDS/GPS/GLONASS satellite navigation system, or any combination of multi-system
		Support SBAS、QZSS、A-GNSS Support
		Single-band RTK support
	Peak supply current	Dual mode continuous operation: <20 mA (@ 3.3 V)
		Single mode continuous operation: <16 mA (@ 3.3 V)
		Standby <20 uA (@ 3.3 V)
	Sensitivity	Cold start: -147dBm
		Hot start: -155dBm
		Reacquisition: -159dbm
		Tracking: - 163 DBM
	TTFF	Cold start <28s
		Warm start <1s
		Hot start <1s
		A-GNSS <10s
	Update rate	Max 10Hz, default 1Hz
Others	DNS	Support
	Transparent mode	Support TCP Client /UDP Client
	Heartbeat packet	Support custom /SN code /ICCID/IMEI/LBS/GPS heartbeat package
	FOTA	Support
	Socket Distribution Protocol	Support
	Socket backup	Support
	LBS	Support
	NTP	Support

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3. Block diagram

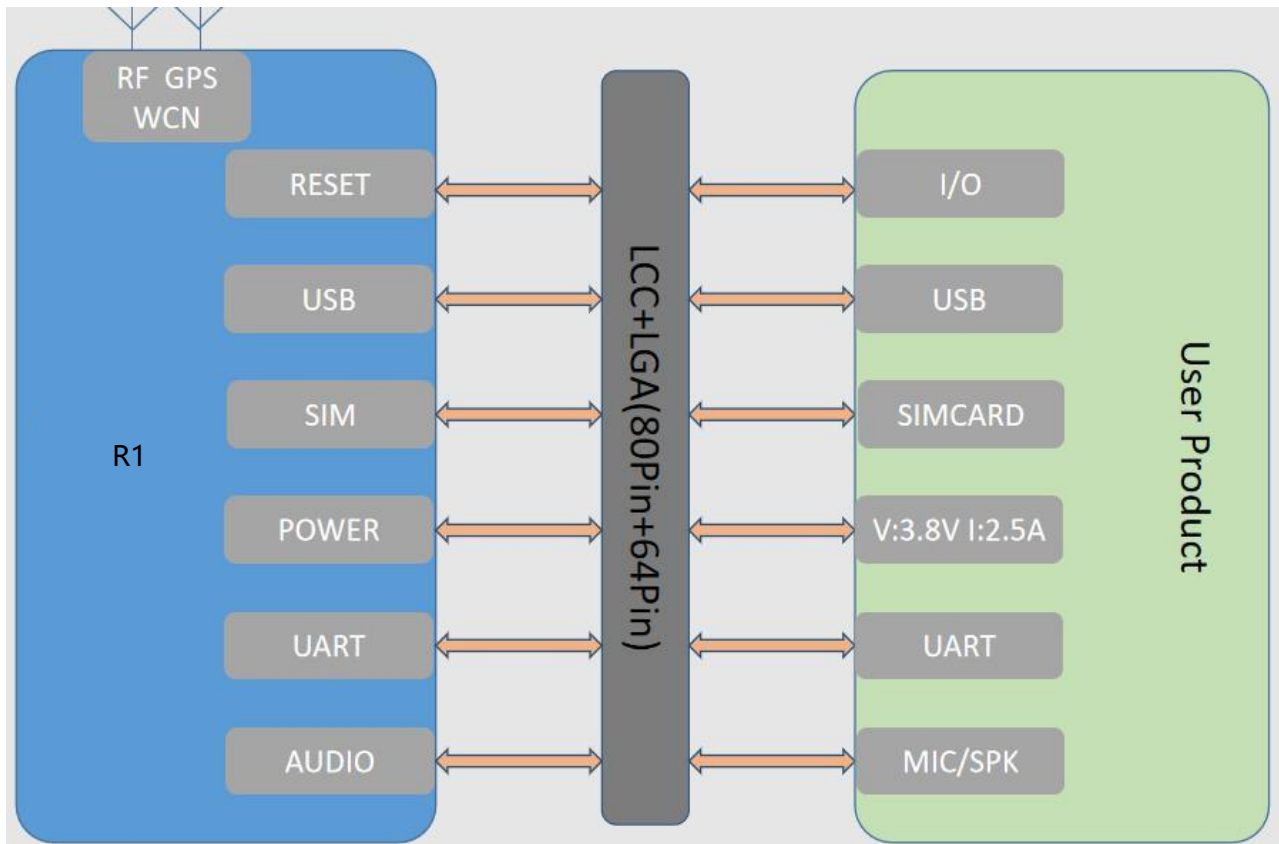The block diagram of R1 is as follows:

Figure 1: block diagram

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