KNOT LR8/LR9 kit

An out-of-the-box IoT Gateway solution for LoRa® technology.
For ultimate versatility and cost-effectiveness.

- LoRa ® 868MHz or 915MHz
- CAT-M/NB technology
- 2.4 GHz wireless
- Bluetooth
- 2x 100 Mbps Ethernet ports
- PoE-in & PoE-out
- MicroUSB
- GNSS
- GPIO
- RS485/Modbus

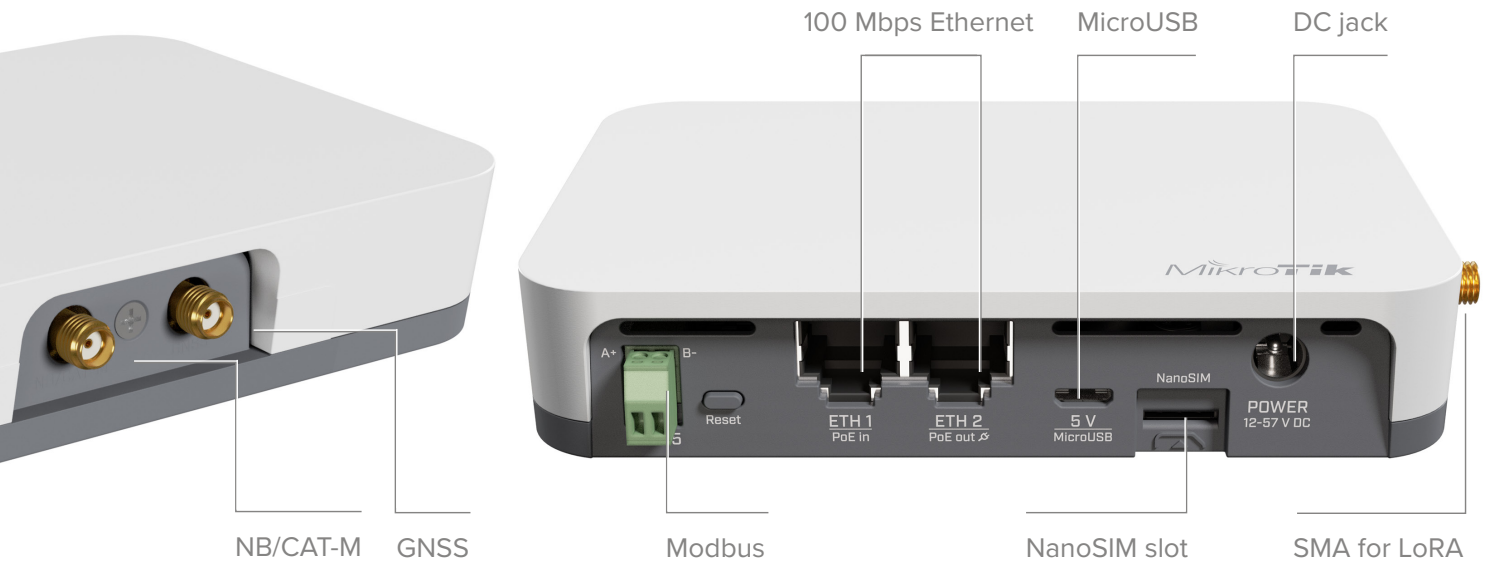
It is an out-of-the-box IoT Gateway solution for LoRa® technology. It uses Narrow Band and CAT-M technology. Because of the low cost, low bandwidth cellular connection, it is supported by countless mobile operators around the globe. This kit contains a pre-installed UDP packet forwarder to any public or private LoRa® servers. With the support of 8 different channels, Listen Before Talk (LBT) and spectral scan features this product will astound you with its enticing price point.

KNOT can monitor onboard GPIOs, convert Modbus protocol to TCP, and even forward Bluetooth packets to TCP/IP network via HTTPS and MQTT.

You can use the KNOT as a TCP bridge from wired Modbus sensors to send readings to a Modbus server. Yes, the KNOT brings wireless connectivity to wired sensors and actuators, such as electricity meters and relays.

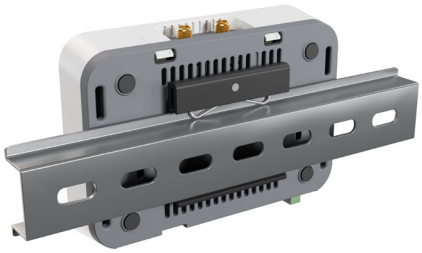
It could be used as a backup connection for the Ethernet or as a management channel for your network. NB/CAT-M monthly plan is much cheaper than LTE. Why spend extra money on bandwidth you don't need? For example, you can manage a KNOT-powered vending machine with temperature and moisture sensors with only a few megabytes per day!

KNOT features so many protocol support and connectivity options: 2.4 GHz wireless, Bluetooth, GPS, LoRa®, 2x 100 Mbps Ethernet ports with PoE-in and PoE-out, Micro-USB. Maximum convenience at the lowest cost! Also, all three connectors — CAT-M, GPS, and LoRa — use SMA female interfaces for maximum compatibility.

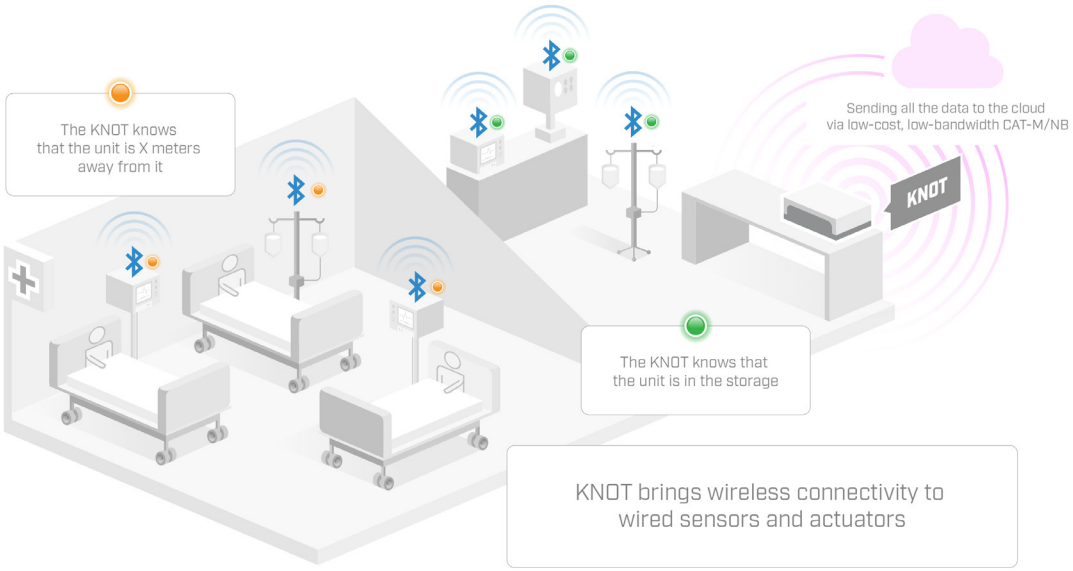


With the Bluetooth interface, you can use the KNOT for asset tracking and telemetry based on Bluetooth advertisement packets. KNOT supports any BLE tag that sends advertisement data. iBeacon, Eddystone or any other format.
It has powerful filters for forwarding only relevant packets and ignoring others.

KNOT is a great tool for most outdoor cabinet IoT applications as well. It comes with a DIN rail mount that allows easy integration with all kinds of setups: from agriculture and asset tracking to cold chain monitoring, industrial manufacturing, and so on.

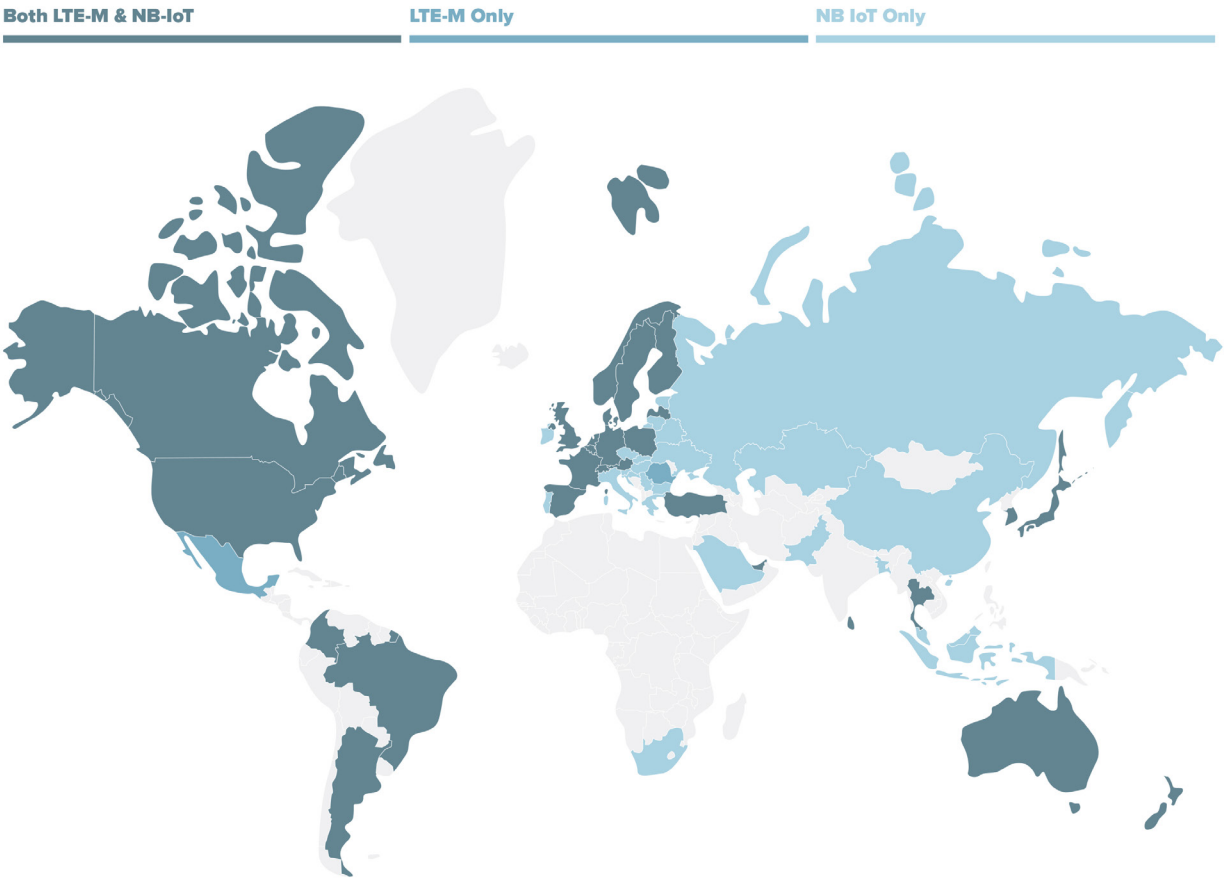


Bring flexible low-cost connectivity to the most remote or tricky areas with the MikroTik KNOT!



How would all this work in real life? Well, let's imagine a hospital. Lots of expensive assets moving across huge buildings. Tools, equipment, meds, you name it. Everything gets moved around all the time. Usually, hospitals have to spend a lot of resources on inventory checking.

Let's fix that. Place low-cost Bluetooth tags on all the important items. Add a KNOT device in every storage room. Now the hospital management always knows if the equipment is returned to its place. Why stop there? You can add temperature sensors to medical supplies and use the KNOT to keep track. The possibilities are endless.



Narrow Band and CAT-M technology is supported by many operators around the world!

** According to the 3GPP deployment map, Feb 2021 https://www.gsma.com/iot/deployment-map/*

Specifications

Product code	RB924i-2nD-BT5&BG77&R11e-LR8/LR9
CPU	QCA9531 650 MHz
Number of 100 Mbps Ethernet ports	2
Number of 100 Mbps Ethernet ports with PoE-out	1
Size of RAM	64 MB
Storage	16 MB flash
Concentrator Gateway card for LoRa®	R11e-LR8/R11e-LR9
Wireless	2.4 GHz 802.11 b/g/n dual-chain
Antenna gain	1.5 dBi
Antenna connector	SMA female (CAT-M, GPS, LoRa)
Bluetooth antenna gain	2 dBi
Antenna beam width	360°
Bluetooth	Version 5.2
Dimensions	122 x 87 x 26 mm
Operating system	RouterOS, License level 4
USB port	1 microUSB port type AB
SIM slots	1 Nano SIM
Built-in GPS	Yes (GPS, GLONASS, BeiDou, Galileo)
Operating temperature	-40°C to +70°C

Powering

PoE-in input Voltage	12-57 V
Number of DC inputs	3 (PoE-in, DC jack, MicroUSB)
Supported input Voltage	12-57 V (PoE-in. DC jack), 5 V (MicroUSB)
PoE-out	802.3af/at
PoE-out ports	1 (Ether2)
Power adapter nominal voltage	24 V
Power adapter nominal current	1.2 A
Max power consumption (without attachments)	5 W
Max power consumption	18 W

Certification & Approvals

Certification	Bluetooth, CE, FCC, IC

Wireless specifications

Rate (2.4 GHz)	**Tx (dBm)**	**Rx (dBm)**
1MBit/s	22	-96
11MBit/s	22	-89
6MBit/s	20	-93
54MBit/s	18	-74
MCS0	20	-93
MCS7	16	-71
Bluetooth Wireless Specification		
1M	18	-93

Supported bands

Module BG77

Cat M1: LTE FDD	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85
Cat NB2: LTE FDD	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85
Region	Global
GNSS (Optional)	GPS/GLONASS/BeiDou/Galileo/QZSS

Included parts

24 V 1.2 A
power adapter

Wall mount
set

DIN rail
mount set

USB A Female to
Micro B cable