# Wireless Industrial LTE Router

## MII42A1

## Product Value

The MII42A1 is a highly integrated industrial-grade gateway designed for industrial-grade connectivity applications. It supports a wide range of wireless technologies-including dual band concurrent WiFi (2.4GHz & 5GHz), LTE, HaLow function and provide
multiple industrial interfaces, making it a powerful all-in-one networking solution for industrial deployments.

With dual Micro SIM slots, the MII42A1 provides reliable LTE backhaul connectivity with automatic switching between primary and secondary cellular networks to ensure high availability and minimal downtime.

For Wi-Fi, the MII42A1 supports IEEE 802.11n/ac (2.4GHz & 5GHz). It also supports IEEE 802.11ah (HaLow), enables long-range, low-power communication with strong penetration, ideal for large-scale industrial environments.

The MII42A1 provides versatile industrial I/O interfaces, including software configurable RS-232/RS-485 and DI/DO, enabling easy connection to field devices like sensors and controllers. Integrated Modbus TCP to RTU gateway and MQTT support further streamline communication between legacy equipment and cloud-based IIoT systems.

Designed with a rugged metal enclosure, the MII42A1 supports stable operation in harsh environments with extreme temperatures ranging from -30°C to +70°C. It supports multiple installation options—including wall mount, DIN-rail, and desktop—ensuring deployment flexibility across diverse industrial settings.

Combining robust performance, versatile connectivity, and industrial durability, the MII42A1 delivers a cost-effective and future-ready solution for industrial networking, making it an ideal choice for scalable and resilient IIoT applications.

## Features

- High-performance wireless network SoC processor enabling localized data analytics and processing
- Dual Micro SIM card slots for enhancing network connection stability
- Supports dual-band concurrent Wi-Fi (2.4GHz & 5GHz) with IEEE 802.11n/ac
- Supports for IEEE 802.11ah (HaLow) for long-range, low-power wireless communication
- High-precision GNSS (L1) positioning for accurate location tracking in industrial IoT applications
- Versatile industrial I/O interfaces including RS-485/RS-232 (SW configurable) and Digital Input/Output (DI/DO)
- Compatible with M.gear detachable SMA antennas (LTE/Wi-Fi/GNSS/HaLow) for expanded coverage and greater reliability
- Wide-range power input support (9~60 VDC) and extreme temperature operation (-30°C to +70°C)
- LED indicators for real-time monitoring of power, Wi-Fi, LTE, failover, and HaLow connectivity monitoring
- Linux-based OpenWrt OS with support for VPN, firewall, and SNMP management

# Specifications

## General

**Cellular Interface**
- 4G: LTE FDD
- GNSS: L1

## Band (Telit LE910C4-WWXD)

- LTE FDD: B1/ B2(B25)/ B3(B9)/ B4/ B5/ B7/ B8/ B12/ B13/ B14/ B26(B18)/ B19/ B20/ B28

## Hardware Interface

- 1 x 10/100/1000 Base-T WAN port
- 1 x 10/100/1000 Base-T LAN port
- 2 x Micro SIM slots
- 1 x Reset Button
- 1 x RS-485/ RS-232 (D+/D-/GND, Non-Isolated, SW configurable)
- 1 x DI (Isolated), 1 x DO (Isolated)
- Terminal Block Power Input: 9~60 VDC

## Wireless Interface

- 2T2R IEEE 802.11n 2.4GHz & 802.11ac 5GHz
- Wireless security with WPA2 mode
- Wireless MAC filtering
- Wireless client isolation
- IEEE 802.11ah (Optional)

## Antenna

- 2 x SMA female connectors for detachable LTE antenn
- 2 x RP-SMA female connectors for detachable WiFi antenna
- 1 x SMA female connector for detachable GNSS antenna
- 1 x RP-SMA female connector for detachable HaLow antenna (Optional)

## Physical Characteristics

**Enclosure :** Metal case
**Dimensions (W x H x D) :** 140.0mm*121.3mm*32.5mm
**Weight :** 500g
**Installation :** Wall mounting, DIN-rail mounting, Desktop
**LED Display :**
- 1 x Power status
- 1 x LTE
- 1 x Wi-Fi
- 1 x Failover
- 1 x HaLow

## Power Supply

**Power Input :** AC 100 ~ 240 V
**DC Output :** 12V/1.5A(MAX)

## Software

**Software Version**
- Linux Open Wrt version: 21.02 Lede
- Kernel version: 5.4.284

**Network Protocols**
- IPv4, IPv6, IPv4/IPv6 dual stack, DHCP server and client
- Static IP, SNTP, DNS Proxy, Modbus TCP to Modbus RTU,
- MQTT

**VPN**
Open VPN, IPSec (3DES, AES128, AES196, AES256, MD5, SHA-1, SHA256), L2TP, PPTP, Wire Guard

**Firewall**
- NAT, Virtual Server, Port Trigger, DMZ
- MAC and URL filter, Stateful packet inspection, DOS attack

**Alarm:** SMS, VPN/WAN disconnect, SNMP trap

**Others:** DDNS, QoS(SCM), SMS action, Diagnostics

**Management:** Web GUI with HTTPS/HTTP, Dual image, Syslog, SNMP, SSH v2
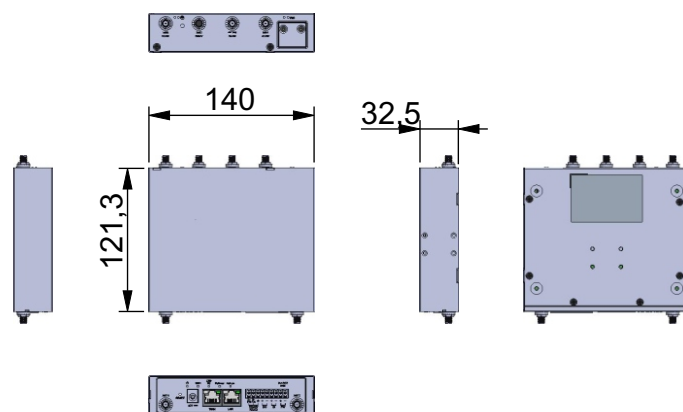
## Environment

**Operating Temperature:** -30 ~ +70°C

**Storage Temperature:** -40 ~ +85°C

**Ambient Relative Humidity:** 10 ~ 95% (Non-condensing)

**Humidity:** 0 ~ 95% (Non-condensing)

## Enclosure Drawing

# MII42A1 HaLow Penetration Test

| Level | Location | Operating Bandwidth (MHz) | Link Rate (RX/TX) | Signal (dBm) | TCP/RX (Mbps) | TCP/TX (Mbps) | UDP/RX (Mbps) | UDP/TX (Mbps) | Remark |
|-------|----------|---------------------------|-------------------|--------------|---------------|---------------|---------------|---------------|--------|
| 1 | B1F | 8MHz | 32.5/32.5 | -51 | 16.1 | 17.5 | 17.7 | 22 | |
| 2 | 1F | 8MHz | 32.5/26 | -70 | 12.9 | 12.6 | 13.1 | 19.7 | |
| 3 | 2F | 8MHz | 6.5/6.5 | -84 | 5.16 | 5.94 | 5.05 | 5.09 | |
| 4 | 3F | 8MHz | 0.75/0.675 | -89 | 0.153 | | | 0.651 | |
| 4 | 3F | 1MHz(ch11) | 1.376/0.390 | -94 | 0.811 | 0.776 | 0.762 | 0.845 | Limitation of operating bandwidth changed from 8MHz to 1MHz. |
| 6 | 5F | 1MHz(ch11) | 0.619/0.342 | -95 | 0.572 | 0.497 | 0.043 | 0.013 | |
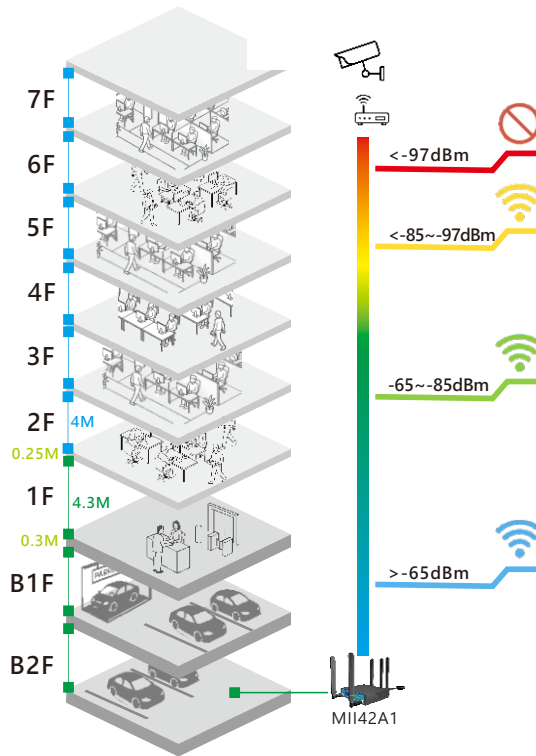


# MII42A1 HaLow OTA Range Test @ 1.2km

| Distance(m) | Bandwidth (MHZ) | Model | Ch_No | Link Rate(RX/TX) AP view | Signal (dBm) AP view | TCP (Mbps) AP TX | TCP (Mbps) AP RX | UDP (Mbps) AP TX | UDP (Mbps) AP RX |
|-------------|-----------------|-------|-------|--------------------------|----------------------|------------------|------------------|------------------|------------------|
| 1200 | 8 | MII42A1 | 12 | 29.25/26 | -71 | 12.3 | 12 | 17.2 | 14.9 |