

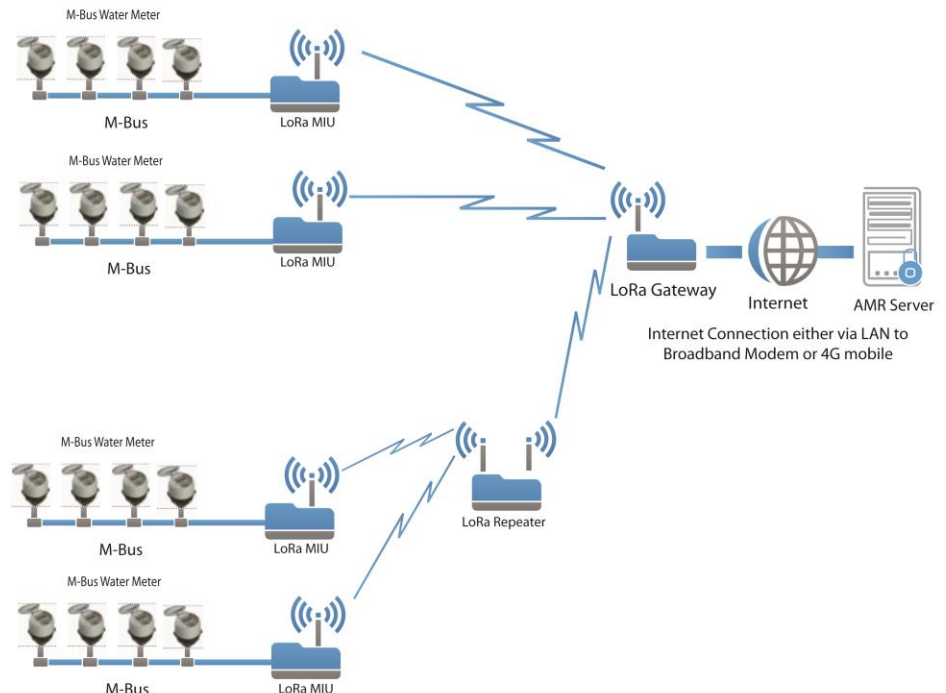


ZM3300 IoT System for Water Metering

WATER CONSUMPTION MONITORING SYSTEM

A COST EFFECTIVE WIRELESS IOT SYSTEM FOR WATER CONSUMPTION MONITORING

ZM3300 is a low cost high efficient IoT network for M-Bus water Metering. The system consists of LoRa MIU, LoRa repeater and LoRa gateway. LoRa MIU is connected to Water Meter via M-Bus interface. A number of LoRa MIUs are connected to LoRa Gateway through LoRa network. LoRa repeater can be used to cover those LoRa MIU which are out of the LoRa gateway coverage area. Data collected by LoRa Gateway can be uploaded to AMR data server via Fixed Line Broadband data network, 4G mobile data network or NBIIoT data network. The system uses a proprietary spread spectrum modulation technique. This modulation, in contrast to legacy modulation techniques, permits an increase in link budget and increased immunity to in-band interference. Frequency hopping spread spectrum (FHSS) is typically employed when the duration of a single packet could exceed regulatory requirements relating to the maximum permissible channel dwell time. This is most notably the case in US operation where the 902 to 928 MHz ISM band which makes provision for frequency hopping operation.



Specification of key system components

LoRa Gateway



Electronics and Software

- Controller
 - An intelligent gateway device running Debian Linux OS in 1.2GHz Quad-Core ARM Cortex-A53 MCU
 - 802.11 b/g/n Wireless LAN
 - Bluetooth 4.1 (Bluetooth Classic and LE)
 - 1GB LPDDR2 RAM
 - 10/100 BaseT Ethernet
 - OS boots from Micro SD card (16GB) running Debian Linux Operating System
- LoRa Module
 - LoRa Class C end device embedded
 - LoRa Spread Spectrum Modulation
 - LoRa Frequency Range : 850 ~ 930MHz
 - Maximum RF transmission power = +20 dBm
 - High sensitivity: down to -148 dBm
 - 168 dB maximum link budget
 - Data rate : 1200 bps – 57600 bps (default 9600 bps)
- Application Software
 - M-Bus meter data collection via LoRa
 - Data are stored in SD Card in XML files
 - Data will be uploaded to server via mobile data module, WiFi/Ethernet LAN to Broadband modem

Electrical Characteristics

- Power Supply : AC 100V – 240V, 50Hz/60Hz

Environmental Characteristics

- Operating temperature : 0 deg C – 70 deg C
- Relative Humidity : 20% - 90%

Mechanical Characteristics

- 240 x 154 x 80 mm
- IP68 (Pressure Washer Proof)
- Tough ABS construction
- Wall Mount Lugs

LoRa MIU



Electronics and Software

- Controller
 - An intelligent IoT node running Debian Linux OS in 700 MHz Single Core ARM11 MCU
 - 802.11 b/g/n Wireless LAN
 - Bluetooth 4.1 (Bluetooth Classic and LE)
 - 256MB RAM Memory
 - OS boots from Micro SD card (16GB) running Debian Linux Operating System
- LoRa
 - LoRa Class A end device allows for bi-directional communication with one uplink transmission followed by two short downlink receive windows.
 - LoRa Spread Spectrum Modulation
 - Frequency range : 850 ~ 930MHz
 - Maximum RF transmission power = +20 dBm
 - High sensitivity: down to -148 dBm
 - 168 dB maximum link budget
 - Data rate : 1200 bps – 57600 bps (default 9600 bps)
 - M- Bus Master section
- M-Bus Master
 - Connection with M-Bus Meters
 - Transmission speeds 300 to 9600 bps (2400 bps default)
 - M-bus voltage : 30V (typical)

Electrical Characteristics

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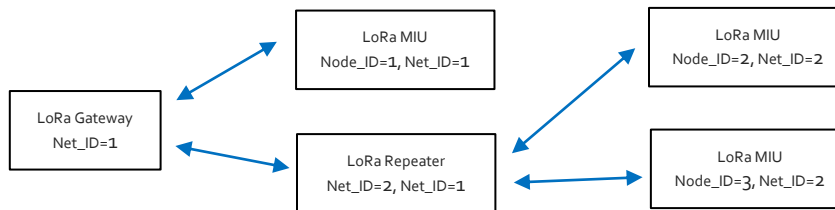
LoRa Repeater



When the system needs to cover a wide area, a LoRa repeater can be added to extend the coverage distance.

Electronics and Software

- LoRa
 - Received and retransmitted LoRa signal



- LoRa Spread Spectrum Modulation
- Frequency range : 850 ~ 930MHz
- Maximum RF transmission power = +20 dBm
- High sensitivity: down to -148 dBm
- 168 dB maximum link budget
- Data rate : 1200 bps – 57600 bps (default 9600 bps)

Electrical Characteristics

- Power Supply : AC 100V – 240V, 50Hz/60Hz

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