

REMOTE READING SYSTEM FOR WATER METERS EQUIPPED WITH LoRaWAN™ INTERFACE RADIO MODULE FOR FIXED TYPE INFRASTRUCTURE AND WITH LoRa FOR WALK-BY/DRIVE-BY SYSTEMS

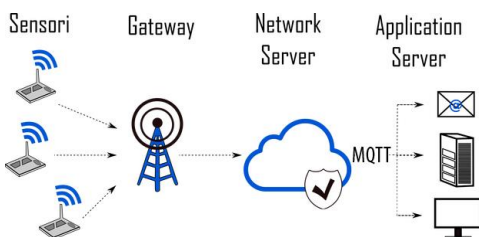


FIXED TYPE RADIO SYSTEM

- Transmission of data from various meters installed in manholes, niches, flats, etc.
- Radio communication interface with LoRa modulation on 868Mhz free frequency and LoRaWAN transmission protocol
- Dual communication
- Fixed system of collection and transmission via Gateway/Concentrator of data coming from the devices at regular intervals to the Network Server with dual and multicast communication
- Transmission distance about 15 km in open field (2-3 km in high populated towns), at the location of the gateway (distances may have variations in excess or defect due to natural obstacles from environmental conditions and electromagnetic pollution)
- Transmission data package including:
 - Instant consumption data
 - Historic reading of consumption per hour of previous 24 hours period
 - Low Battery
 - Possible alarms (general, fraud, reverse flow, low battery level,)
 - Leakage (loss report)
- The same radio module can be used for Walk By / Drive By readings via LoRa protocol transmission without configurations in the field

NETWORK SERVER FOR FIXED TYPE INFRASTRUCTURE

- Control layers, authentication, and quality of data received in the LoRaWAN network
- Receiving and storing the data transmitted by each device and elimination of unwanted or duplicate packets
- Dual and multicast communication to all covered devices
- Battery life optimized via Adaptive Data Rate (ADR) mechanism that modulates the output RF power of each individual node
- Through the application of the data management platform each data can be monitored and retrieved constantly and periodically via MQTT communication protocol



DATA MANAGEMENT PLATFORM FOR FIXED TYPE INFRASTRUCTURE

- Web interface accessible from any consultation and export of data collected during reading internet location with monitoring, shifts, analysis.
- Data synchronizing between back office operators and operations personnel on the field. Processing of reading shifts, user profiles, data reference
- Map representation of where the meter is located
- Analysis tools and statistical charts
- Import/export tools compatible with the BILLING CRM format
- Network analysis of the devices installed in the field
- It also supports infrastructure of fixed type with LoRaWAN communication protocol
- Cloud data storage at multiple levels of data security and data privacy
- Scheduled back up storage



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WALK-BY/DRIVE-BY RADIO SYSTEM

- Equipped with radio module Transmission of data from various meters installed in manholes, niches, flats, etc
- Radio communication interface with LoRa modulation on 868Mhz free frequency
- Dual communication
- Mobile data collection walk by/drive by a portable notebook on microUSB port via portable receiver antenna connected to Transmission distance about 50mt in manhole – about 1 km in open field, at the position of the person collecting data (distances may have excess or defective variations as well as natural obstacles, environmental conditions and electromagnetic pollution)
Transmission data package including:
 - Instant consumption data
 - Historic reading of consumption per hour of previous 24 hours period
 - Low Battery
- Possible alarms (general, fraud, reverse flow, low battery level,)
- Leakage (loss report)
- The same radio module can be used for fixed system of remote reading via LoRaWAN protocol transmission without field set up

LoRa



FIELD DATA DETECTION SOFTWARE

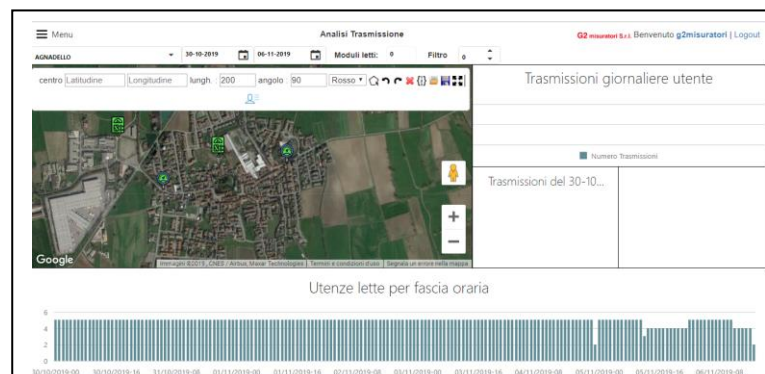
- Android OS 5.0 or higher via Cloud
- Geographic coordinate detection with map support
- Navigator Functionality It is possible to view reading shifts with
- Alarm management and meter consumption
- Synchronizing directly on the field



DATA MANAGEMENT PLATFORM



- Web interface accessible from any internet location with monitoring analysis, consultation and export of data collected during reading shifts
- operations synchronizing between back office operators and personell on the field
- Processing of reading shifts, user profiles, data reference
- Map representation of where the meter is located
- Analysis tools and statistical charts
- format Import/export tools compatible with the BILLING CRM
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- It also supports infrastructure of fixed type with LoRaWAN communication protocol



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