DATASHEET

Wirnet Station 923

LoRa gateway for IoT chain

- **915-928 MHz ISM band LongRange™ bidirectional communications capabilities**
- **Embedded, remote and open low power communication station**
- **Open development framework based on standard Linux OS**
- **WAN connectivity over GPRS/EDGE/3G or Ethernet**

1. Hardware Key Features

1.1 System

CPU:
- Based on ARM 926EJS core processor
- Up to 230 MIPS
- Real-time clock saved by battery
- Hardware watchdog
- Optimised power consumption management

Volatile memory:
- Low power DDRAM 128 MB
- 10 MB used for system firmware

Non-volatile memory:
- 128 MB NAND flash (40MB used for system firmware and autorecovery mechanism)
- 8 GB eMMC

1.2 User interfaces

Internal LEDs:
- Operational status : power, GSM signal strenght level, WAN connectivity indicator

Internal push buttons:
- Manual station reset
- Manual test or installation procedure launch

USB host interface allowing :
- Local software upgrade with simple USB key
- USB/NET local configuration/maintenance access

1.3 Communication

LongRange:
- Incorporate LoRa (TM) bidirectional communications technology (RX : 915-928 MHz, TX : 920-928MHz)
- Sensitivity : up to -141 dBm
- Tx conducted power from 0dBm to +30dBm
- 49 LoRa Demodulators over 9 channels
- More than 15km range in direct sight
- More than 2km range in urban situation

WWAN:
- HSDPA/UMTS (900/2100MHz) : DL 3.6 Mbps / UL 384 Kbps (HSDPA), UL/DL 384Kbps (UMTS)
- GPRS/EDGE (850/900/1800/1900MHz) : UL/DL 85.6Kbps (GPRS), UL/DL 236.8Kbps (EDGE)
- IMEI inside
- Internal antenna

Ethernet :
- PowerOverEthernet IEEE 802.3af alternative B 10/100 Base T compliant

1.4 Positionning/Timing

GPS:
- Integrated GNSS high sensitivity GPS module
- NMEA 2.0 compliant

1.5 Sensors

- Embedded temperature sensor
- Door opening detection system

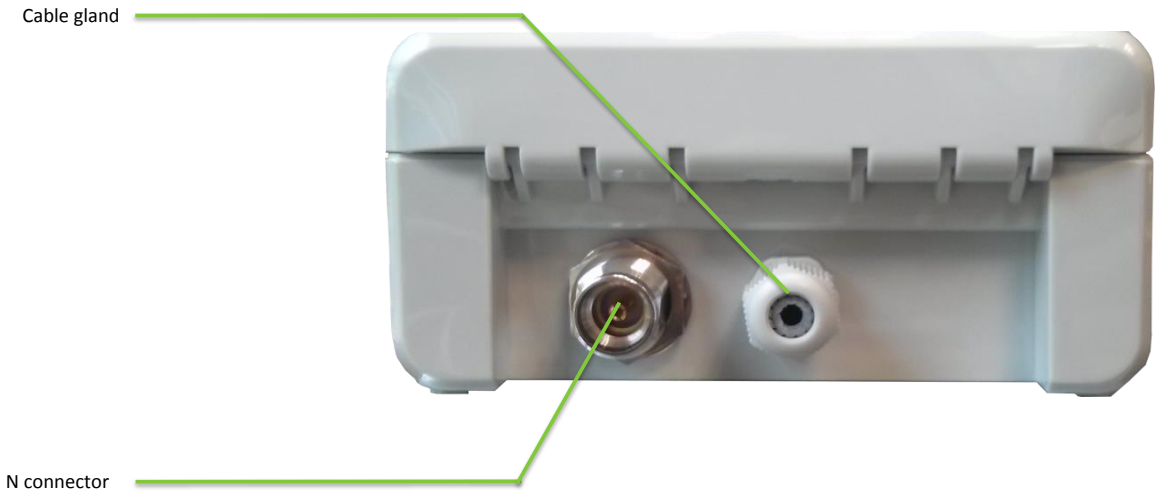
1.6 Power

- PowerOverEthernet supply : 48V class 0 (Max : 15Watts, Nominal : 3Watts (Lora Rx mode with GSM network attachement)
- DC power supply (ex : solar panel use) : 11 to 30Volts
- Power control : ignition detection, software OFF switching

1.7 Mechanical

- Polycarbonate enclosure - Dimensions : 315 x 170 x 215 (including mounting kit) - Weight: about 2 kg (including mounting kit)

Connectors



1.8 Mounting

The provided mouting kit allows three different mounting options:
- Wall mounting by screwing
- Pole mounting by U-bolt (max diameter : 80mm)
- Metallic strapping mounting (tube, pipe, flue...)

The provided mouting kit can be splitted to install apart the antenna.

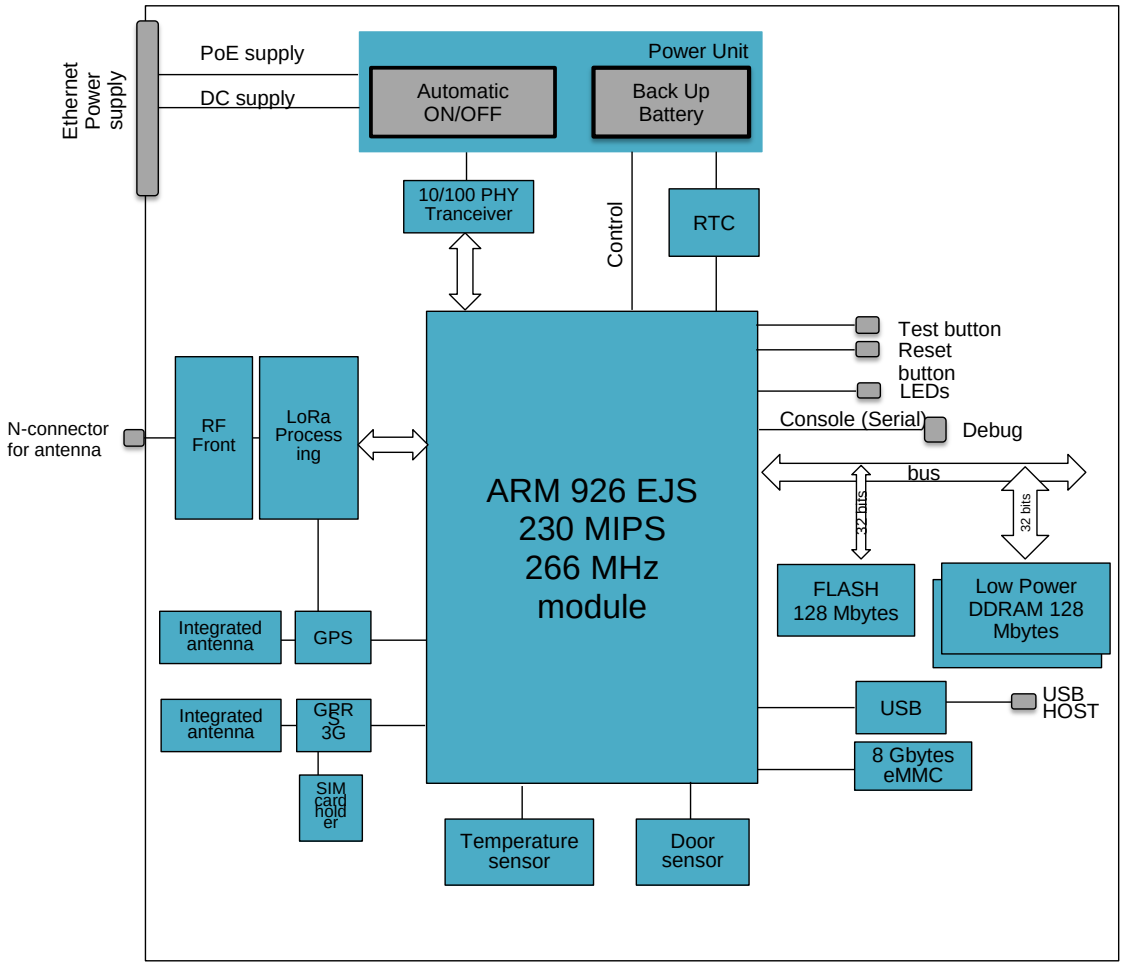
1.9 Environmental

- Full operating range: -20°C to +60°C
- Humidity: 95%, non condensing (protective vent)
- MTBF: 20 years (according to MIL-HDBK-217F) - *non contractual*
- Ingress protection: IP67
- Impact resistance: IK08
- UV resistance: UL508

1.10 Certification

- Safety :
  - IEC 60950-1
  - CENELEC EN 60950-1
  - AS/NZS 60950.1
- Radio:
  - CFR 47 FCC Part 15 :
    - FCC 47 CFR Part 15 : 2014 - Part 15- Radio frequency devices
    - FCC PART 15.247 - Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz. (frequency hopping and digitally modulated)
      - FCC Part 15.207 conducted emissions on AC mains in the band 150kHz – 30MHz
      - FCC Part 15.247 intentional radiated emissions
      - FCC Part 15.215 Additional provisions to the general radiated emissions limitations
  - Article 3.2 of the R&TTE Directive :
    - EN 300 220-1
    - EN 300 220-2
  - AS/NZS 4268 2012 + A1 : 2013 : Radio equipment and systems – Short range devices – Limits and methods of measurement
  - Clause 2, Article 58-2 of Radio Waves Act (Republic of Korea)
  - ARIB STD-T108 - 920MHz-Band Telemeter, Telecontrol and Data Transmission Radio Equipment
  - IDA Technical Specifications for Short Range Devices (IDA TS SRD) – Issue 1 Rev 7, April 2013

1.11 Hardware block diagram



2. Software key features

2.1 Operating system

- Standard Long Term Support Linux version 3.10
- File system YAFFS2 (NAND) and EXT4 (eMMC)
- Support of all GNU/Linux tools (cross-compiled for ARM)
- POSIX1 file system
- TCP/IP BSD4.4 socket on network bearer

2.2 Software packages included (non-exhaustive)

- PYTHON
- SQLITE

Optional

- JAVA ORACLE OJEC VM (J2M2 compliant based on CDC 1.1.2 profile)

Networking:

- DHCP client and server
- FTP server
- SSH server
- NFS client
- Firewalling (iptables) and IP routing (layer 3)
- HTTP server
- TFTP server
- L2TP tunneling

2.3 Kerlink M2M services interfaces

- Simple and reduced interface using XML format over TCP/IP socket providing value added services based on action programming
- Mobile SMS management
- System alarm (memory and CPU usage, hardware failure)
- Internal statistic delivery
- Automatic or manual bearer selection
- Power control management

Optional

- Wanesy ready to remote supervision, maintenance and HQ data transfer.

2.4 Software development tools

- C/C++ Linux cross compilation toolchain based on GNU tools (GCC 4.5.2, Glibc 2.13)
- User manual and Kerlink M2M services description
- Complete C-source code set of example for remote and embedded applications
- On-line wiki

Optional
- Debug probe

3. Optional accessories

- **Antennas** : various antennas can be proposed to adapt to environment (omnidirectionnal, directionnal, high gain).
- **External cavity filters**: Radio filtering can be adjusted adding optional external cavity filter according to specific colocation constraints

4. In option : Wanesy Ready

Wanesy is a M2M platform provided by Kerlink to :
- interconnect devices with customer ERP
- supervise remote device (status, alarm, log...)
- maintain (remote maintenance, update and control)

5. Contacts : For more information please contact:

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