Wavelet™ Telemetry System

Rugged Wireless Data-logger & Telemetry Transmitter

Versatile

Connect almost any sensor from any manufacturer to any software

Cybersecurity

Encryption, authentication, and remote updates

Cost-effective

Save time and money with plug-and-play installation

Turn-key Solution

Fully calibrated, configured and assembled kits available.

All-encompassing

Internal memory, GPS, power supply, and antenna

One device for all your field data requirements

Ayyeka's Wavelet™ is a ruggedized wireless data logger, power supply, and telemetry system, ideal for the mining and heavy industry. Its best-in-class IP 68 / NEMA 6P protection ensures long term, continuous operation in the harshest environments.

The device generates and securely transmits data from almost any sensor on the market via 2G, 3G, 4G, 5G, LTE and LoRaWAN to an on-premises or cloud-hosted software platform.

The native SCADA platform (FAI) features advanced AI-driven supervisory control, data acquisition, and reporting functions, ideal as a standalone tool for data management. In addition, the platform integrates with third-party SCADA applications such as Ignition, AVEVA, MIKE+ and PI System.

The high energy density internal battery powers the connected sensors and the device for years without needing solar panels.

The sensor configuration, data logging, and transmission are intuitive thanks to the advanced cross-platform user interface and seamless bi-directional over-the-air communication, mitigating costly and potentially hazardous site visits.

FAI management platform

Field Asset Intelligence (FAI)

Ayyeka's Field Asset Intelligence (FAI) **web interface or on-premises software** allows for easy and intuitive data visualization, reporting, and effective management of your Wavelet data-logger fleet. Its tactical edge analytics allow you to identify critical events and respond quickly.

Dashboards & Maps

- Easy to configure dashboards and maps to show site status
- Status threshold configuration
- Real-time field data with intuitive charting to identify trends

SCADA & Integration

- Integration with most third-party software applications
- Generate and manage API clients
- Communication via DNP3 and OPC

Reports & Notifications

- Powerful report generation tools to output data in seconds
- Configure threshold alerts for situational awareness
- SMS, Email and voice message alerts

User Management

- Manage users and roles at the asset-based level
- Selectively share data with stakeholders

Remote Diagnostics

- View and adjust system status

Fleet Management

- Easy configuration of one or thousands of devices

Custom Applications

- Our development team can support with custom applications

Example Applications

Reliable Plug and Play Technology

The Wavelet's™ internal antenna, power supply, GPS, and robust construction make it ideal for data collection in open pit mining. Its powerful yet easy-to-use FAI interface manages data from almost any sensor, eliminating the need for multiple specialized data loggers or task-specific software.

These features help standardize data collection methods, save time, reduce costs, and streamlines data collection. The Wavelet can measure any parameter from almost any sensor and withstand harsh mining conditions, ensuring reliable data collection. Get the all-in-one solution with the plug-and-play Wavelet system.

Surface and groundwater applications

- Monitoring water level and quality in wells
- Measuring water quality parameters such as pH, NTU, SST, and conductivity in streams, rivers and lakes
- Monitoring flow rate in pipes, rivers and canals
- Leak detection in pipes, geomembranes and tanks
- Managing drinking water distribution, storage, and logistics for remote sites
- Collect data for improving water management practices
- Monitor ecological flow at remote water intake sites
- Flash flood early warning systems.

Operational applications

- Predictive maintenance via real-time detection of abnormalities related to vibration, temperature, and power usage
- Monitor environmental safety parameters such as gas, dust, and toxic fumes
- Metering energy usage and identifying areas for improvement
- Monitor fuel levels and engine status in mobile or semi-mobile bulk material handling equipment.
- Monitoring the volume of stockpiles of bulk materials
- Monitoring stock of chemicals and water in tanks.

Data & Software

Data hosting	Cloud or on-premises
Cyber-security	TLS 1.2 protocol (AES-256)
Software Integration	REST API, CSV
SCADA integration	CSV, DNP3, OPC-UA
Ayyeka IoT platform software	Web-based from desktop, tablet, and mobile
AyyekaGo mobile app	iOS, Android
Data export options	CSV, FTP
Device memory	8 GB
Data communication	Two-way authentication
Alarm threshold	Up to 4 per data stream
Alert notification	SMS, email, voice
System health check	Included

Power

Primary power supply	Internal lithium battery (field-replaceable and non-rechargeable), 3.9 V DC 3A
Internal battery capacity	32Ah
Battery life	Up to 5 years
Battery life notifications	Included
External power	6-24VDC automatic power source switching

Sensor & Camera Inputs

Sensor ports	3 ports; supports up to 12 sensors using cable splitters
Sensor connection	Wired with M12 connectors
Serial interfaces	RS485, RS232, SDI-12
Serial protocols	Modbus RTU, ASCII, custom
Serial channels	16
Analog channels	4 (4-20 mA, 0-24 V)
Digital input channels	5 dry contact, open drain Pulse counting: up to 2 at 39Hz max pulse frequency
Sensor power supply	Up to 3 simultaneously
Output	350mA, 12V or 3.6V

Connectivity

Cellular	4G/3G/2G
LPWAN	LoRaWAN
SIM card(s)	Dual SIM slots, 3FF
Cellular roaming	Global multi-network SIM(s); data plan included for up to 180+ countries
Configuration	Bluetooth Low Energy (BLE), USB and, remotely (over-the-air)
Data transmission	Periodic, data-dependent
Antenna	Internal antenna or optional external antenna
Built-in GPS	Included

Mechanical Enclosure

Dimensions (W x H x D)	13.2 cm x 16.5 cm x 7.3 cm (5.2 in. x 6.5 in. x 2.9 in.)
Weight	0.9 kg (2.0 lbs)
Enclosure material	Polycarbonate with ABS (UL 94V-0 and UV-resistant)
Ingress protection	IP 68 / NEMA 6P
Operating temperature	-40° to +80°C (-40° to 176°F)
Storage temperature	-40° to +80°C (-40° to 176°F)

Certifications

Safety	EN 61010-1 2010 IEC 61010-1
FCC	CC Part 15 Subpart B
EMC	EN 301 489-1 V2.1.1 2017 EN 301 489-7 V1.3.1 2005
Spurious emissions	EN 301 511 V12.5.1 2017
Radiated emissions	EN 301 908-1 V11.1.1 2016
IP68 / NEMA6P	EN 60529:1992+A2:2013 IEC 60529:1989/AM1:1999
CE	EN 60529:1992+A2:2013 IEC 60529:1989/AM1:1999
Ex	Class I Division 1 Zone 0 ATEX Zone 0 IECEx (Available as optional Extra)