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wavenis

# SOLUTIONS for HOME MEDICAL CARE and SOCIAL ALARMS

Our know-how

Specialised in radio data transmission technologies with an Ultra Low Power feature for use in Industry-Scientific-Medicine applications, CORONIS Systems places its know-how at the service of an industrial sector based on the «Business-to-Business» model. The high added value of the CORONIS Systems solutions is based on the use of patented WAVENIS technology which offers access to the Bluetooth radio communication protocol. WAVENIS technology pushes back the limits of radio communication performance and reliability, and maximises the quality/price ratio thanks, in particular, to the development of ASIC (Application Specific Integrated Circuit).
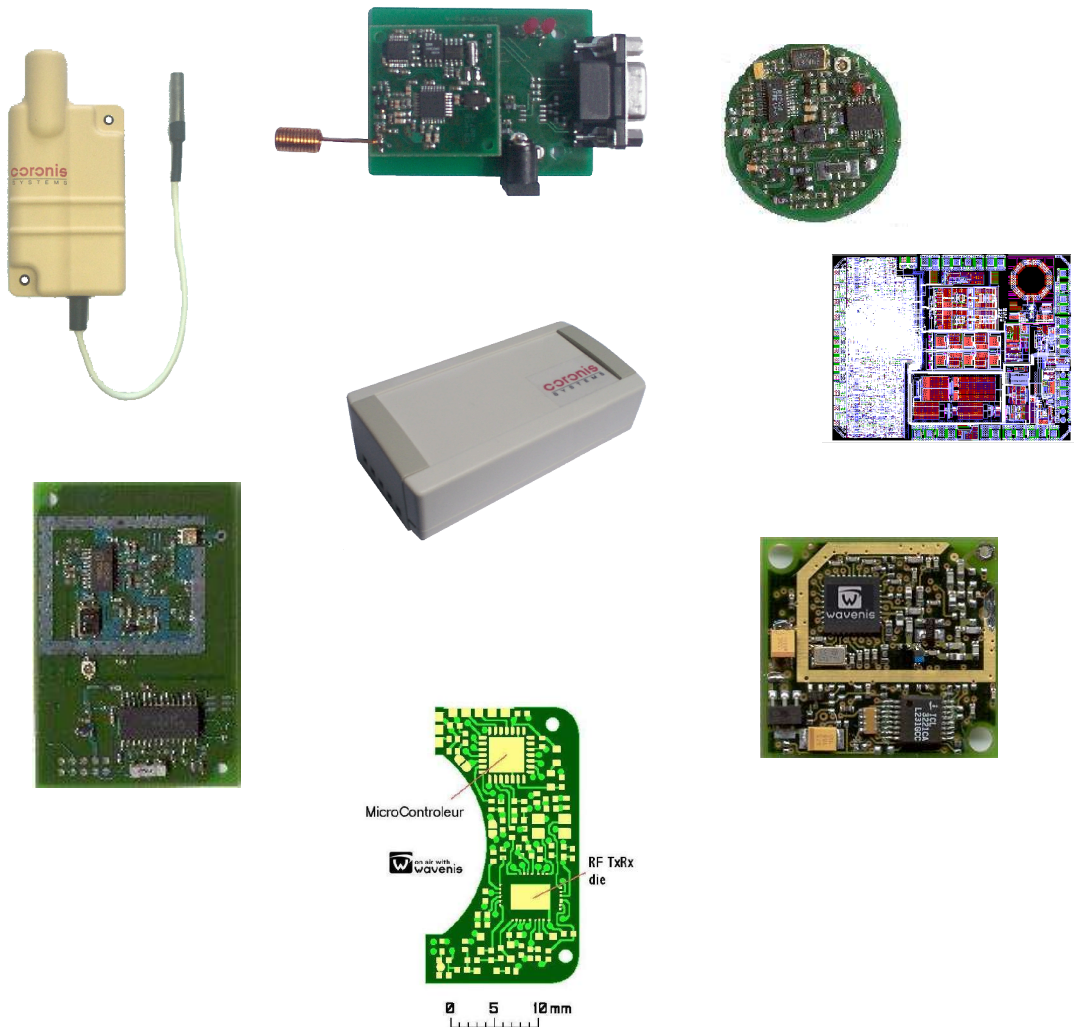
CORONIS SYSTEMS

Our proposal

The range of products and solutions offered by CORONIS Systems is based on WAVENIS Ultra Low Power radio technology and is intended for the remote management of equipment: service providers and equipment manufacturers.

> ### For remote equipment management service providers:

CORONIS Systems proposes complete radio-communicating products using WAVENIS technology:

Wavetherm : radio module for remote reading of temperatures

Wavetank : radio module for remote monitoring of fuel tank levels

Waveflow : radio module for remote meter reading (water, gas, electricity,…)

Wavelog : radio module for management of equipment status (on/off, open/close)

Waveport : control/command module for WAVENIS radio appliances

Waveblue : dual-mode radio module Bluetooth/Bluetooth-ULP

> ### For manufacturers of equipment with a remote management function:

- Radio-communication sub-products or solutions incorporated into the client's finished products: **OEM Wavecard.**

- WAVENIS radio technology operating licence (ASIC transceiver radio and protocol stack) for mass production products.

> ### Customised solutions to suit your specific requirements:

CORONIS Systems proposes products and solutions adapted to the customer's specifications. WAVENIS product parameters may therefore be set according to customer specifications.

It is by offering gl**obal solutions** that CORONIS Systems is able to adapt its service to the specific requirements of each individual customer. This global solution incorporates the entire span of the WAVENIS radio network and comprises several products or sub-systems up to the transfer of remote control and monitoring data from the customer's base to a server or hand-held device.

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This document covers on the one hand the applications and associated functional constraints in the remote temperature measurement sector, and describes on the other hand the solutions proposed by CORONIS Systems.

An ever-increasing phenomenon of society

The progressive increase in life expectancy has led to a subsequent increase in the need for medical assistance. The tax-payers' money invested to cover these costs is so high that public authorities now tend to favour the home medical care system to help control pubic health spending while respecting the well-being of patients by allowing to remain in their own home.

Who does it concern?

The home medical care system covers services provided in the treatment of illnesses and afflictions requiring regular supervision and for which some of the treatment may be dispensed at home. Patients suffering from hypertension, heart problems or requiring regular dialysis are only a few examples of the many cases in which the hospitalisation of the patient may not be strictly necessary.

Means and services …

This medical supervision is generally achieved with sensors worn by the patient or placed at his disposal in the home. The number and nature of these sensors varies greatly depending on the individual cases (sphygmomanometer, cardiometer, weighing scale, thermometer, spirometer, pill dispenser).

This data is recovered at regular intervals as required and transmitted to a central data base for data pre-analysis. This central base may either display some of the data recovered for patient information, or, more importantly, transfer all data to a central medical supervision base for detailed analysis of results.

Communication between the home and central bases offers the medical supervisor the possibility to adjust the medical treatment according to the state of health of the patient under his responsibility.

Alarm and help …

The home medical care systems are generally coupled with an alarm function in case of an emergency:

- either the alarm is triggered automatically in the case of an alarming result after processing of the data transmitted by the sensors. In this case, the degree of urgency is gauged in order to adapt the assistance provided according to the state of health of the patient.

- or the alarm is triggered manually by the patient in the case of an emergency (malaise, fall), by simply pressing a button on the alarm pendant. In this case, the emergency calls requesting «assistance for a person in danger» are grouped under the collective term «social alarms». These emergency calls are immediately followed up by the intervention of the emergency paramedic services.

However, other home security services are now appearing on the market such as supervision between two persons in the same home, each of whom is equipped with a radio emitter-receiver unit allowing them to call for assistance at any time.

Which portable supervision device?

Portable medical assistance devices i.e. communication devices used for medical supervision of patients and which may be reduced to a simple social alarm function, are available in various forms as medallions, pendants, bracelets or any other form offered by the medical device manufacturer.

«Wireless» communication for medical care

Remote medical supervision is rendered possible thanks to progress made in the fields of wireless communication and miniaturisation while increasing the operating life of the batteries. Devices equipped with medical sensors using «wireless» technology have now become a viable economic reality offering the incomparable mobility advantages of «wireless» technology not available with conventional technologies.

CORONIS PROVIDES ULTRA-LOW-POWER RADIO SOLUTIONS

Specialised in « Ultra Low Power» (ULP) radio data transmission, CORONIS Systems has applied its know-how to the development of WAVENIS technology with the following 5 objectives in mind:

A wireless plug and play network

WAVENIS provides all functions enabling radio communication between devices in total transparency. All networking functions are incorporated as standard in the WAVENIS technology (point-to-point, broadcast, pooling, repetition, …).

High-level communication reliability

The incorporation of frequency hopping spread spectrum technology (FHSS), data interleaving (BCH) and forward error correcting codes (FEC) abilities lend WAVENIS its extremely reliable communication qualities rendering it ideal for applications requiring a very high level of security.

ULP and long-range radio transmission

The use of microelectronic architecture developed by CORONIS Systems offers an incomparable performance/consumption ratio on today's radio communications market for Industry-Scientific-Medicine applications. The technical features of WAVENIS render it suitable for use in all types of communicating devices thanks to its high level of integration and operation autonomy.

Miniaturisation of devices

WAVENIS technology is at the core of all CORONIS products and offers a very high level of integration rendering them ideal for the miniature communicating devices market (PDAs, watches and even smart cards, …)

Extension to Bluetooth Ultra Low Power

In addition to its Ultra Low Power and high level of reliability, the innovative aspect of WAVENIS is characterised by the fact that its communication protocol offers access to the Bluetooth standard via a «Bluetooth Ultra Low Power» operating mode intended to extend the use of Bluetooth technology to battery-operated systems with a very long operating life.
Bluetooth radio technology with its potentially vast scope of application is rapidly becoming the universally recognised system for the replacement of cable connections between communicating devices such as computers, printers, PDA, cell phones, hand-held audio devices, …

WAVENIS devices already communicate with the world of tomorrow!

WAVECARD

ULTRA LOW POWER RADIO TRANSCEIVERS

Wavecard is the name given to a family of high-performance, RF transceivers. It is based on the use of very low cost **WAVENIS** technology and incorporates all the advantages of a radio communication protocol to guarantee maximum transmission reliability with a very low power consumption. **Wavecard** is designed for use in wireless transmission applications in the ISM bands.
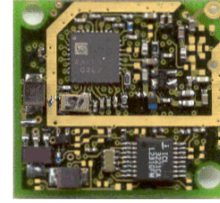
True size

TECHNICAL CHARACTERISTICS

- Frequency : 433/868/915 MHz single-channel or frequency hopping spread spectrum (FHSS).

- Modulation: Gaussian Frequency Shift Keying (GFSK).

- Receiver sensitivity: better than 110dBm for a BER of 1%.

- Throughput: up to 32Kbauds

- Output power: +14dBm at 50 Ohms.

- Programmable throughput and output power.

- Radio range:

LOS: up to 1km

Indoor: generally 200m

- Power: 3.0V-3.6V

- Ultra-low power consumption:

Average operating current : several µA (depending on the configuration used)

- Serial interface control: UART RS232/TTL, bus I2C

- Approval: EN300-220-1

FUNCTIONAL CHARACTERISTICS

– Free use (ISM bands).

– Includes the highly reliable **WAVENIS**® protocol

– Plug and Play installation in the **WAVENIS**® network

– Simplified data transfer protocol via the serial interface Frame Emission/Reception, Set parameter

– Configurable operating procedure

– Compatible with the PC Windows 2000 environment

– Parameters stored in an E2PROM. On-site updating with RF transmission

– Firmware in flash memory (optional). Updating via the serial interface or RF

– Compatible with Bluetooth™ technology via the **WAVENIS**® network

EUROPEAN and US RADIO STANDARDS respected

WAVENIS$^{®}$ radio technology is conform to the American (915MHz) and European (868MHz) ISM bands regulations and recommendations. It also respects the most stringent constraints of 25kHz channel spacing imposed for alarm signals.

Europe : EN300-220
US : FCC 15.247

The European standard EN300-220 (ETSI) and recommendation REC70-03 (ERO) have enabled classification and regulation of the use of Industry Scientific Medicine (ISM) dedicated radio bands. These regulations only apply to radio communication Short Range Devices (SRD)which are sub-divided into 3 categories for security reasons:

– SOCIAL ALARMS
– ALARMS
- NON-SPECIFIC

For each of these applications, the frequency bands have been attributed with or without 25kHz channel spacing requirements. These bands have a maximum output power and a maximum output duty ratio. Furthermore, for operating safety reasons, the selectivity of the radio receivers has also been classified in 3 levels to indicate the degree of radio transmission reliability.

WAVENIS technology is available in several versions and provides industrial solutions for the classes 2 and 3.

ACCESS OF CORONIS SOLUTIONS TO BLUETOOTH

Use of CORONIS Systems technology enables extension of the Bluetooth international wireless communication standard intended to replace cable connections in the computer and telephone sectors to applications requiring an Ultra Low Power capacity. It is worth noting that Bluetooth is rapidly becoming the universally recognised standard and has a very promising future ahead of it.

The interactivity of WAVENIS with the Bluetooth protocol therefore enables extensive installation of home networking systems communicating with the outside world via the «Open Service Gateways» (OSG).

By simply becoming a co-renter with the gateway operator, the user considerably reduces the costs related to an owner infrastructure while preserving the possibility to extend the range of services offered to subscribers.

Please don't hesitate to contact us for further details.
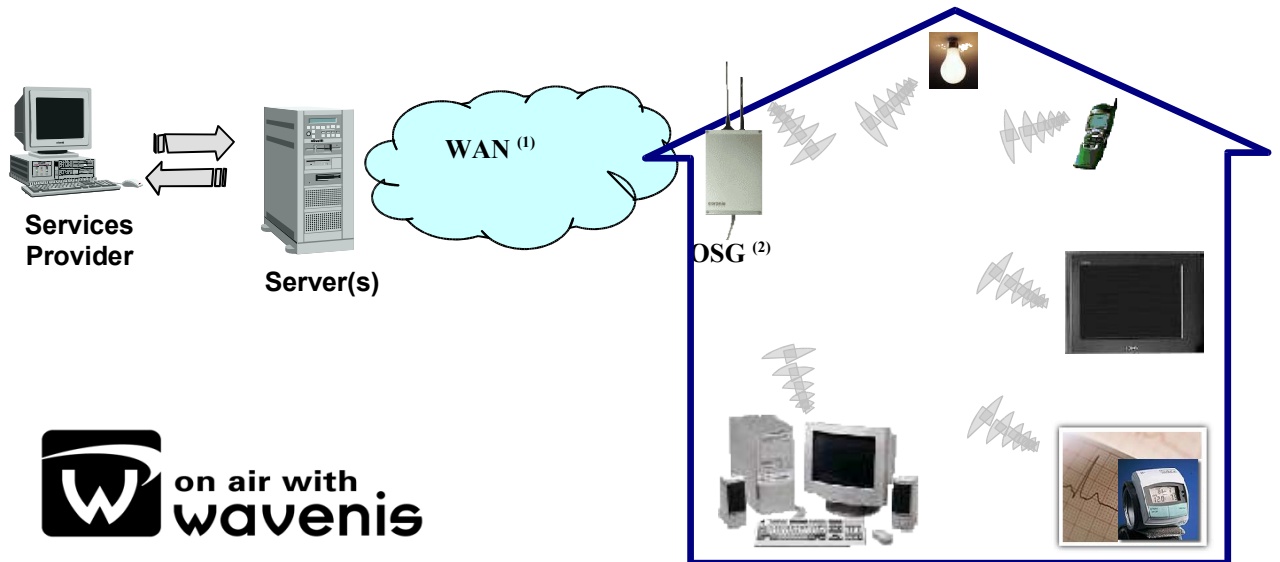
(1) Wide Area Network
(2) Open Service Gateway