W-PAN RADIO LINK
Wireless Personal Area Network

The new data transmission system developed by Agisco and based on the W-PAN (Wireless Personal Area Network) protocol reads and acquires different types of electrical signals such as current, voltage, strain-gauges, temperature, resistance, and many more.

The system consists of a central unit called a master which is kept in permanent operational mode, and up to 256 peripheral stations (slaves) that transmit data from the connected gauges in real time.

Slaves may be switched on and contacted at pre-set intervals so as to cut energy consumption drastically and obtain significantly long operating time - even several years - when battery powered. Of course operating time is strictly dependent upon the mode and frequency of acquisition.

This new device is extremely versatile and may work in any environmental condition especially when the monitoring area is significantly wide or where cables for data transmission are difficult to lay.

Connections are made through free-band frequencies radio waves being 868MHz or 2.4GHz up to 80km (16 in Italy) - line of sight range, and up to 500 - urban range.

Slaves can also be used as repeaters in mesh networks so to amplify the radio signal significantly.

OPERATING METHODS
Each module, either master or slave, is made up of not just the thoroughgoing transmitter, but also a microprocessor with 6 inputs for analogical high-resolution (18bit) signals, 4 inputs for analogical low-resolution signals (e.g. 10bit for battery power check, measurements of temperature or barometric pressure), 4 digital inputs, 4 digital outputs to switch on and off the power supply to the gauges.

Power is supplied either by the master itself or by an external electricity main.

The unit is equipped with a choice of USB, RS-422, RS-232 interfaces. These communication ports allow connection of each module to several supplementary Agisco's acquisition units so as to have a larger number of channels and suit the larger number of sensor types.
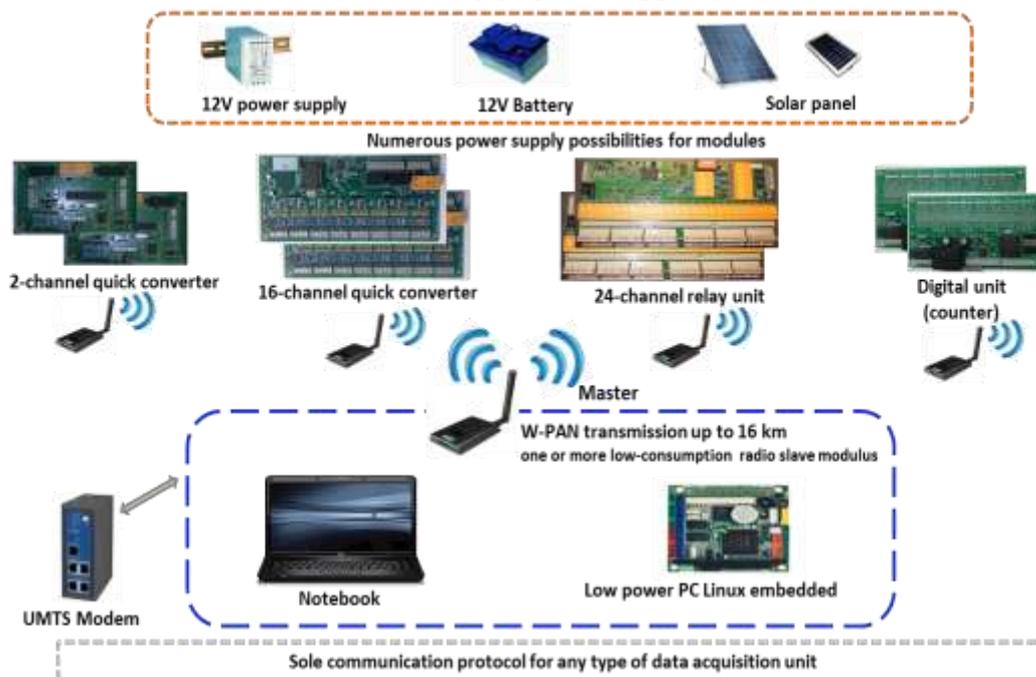
The overall system can be managed by a personal computer or an embedded PC, a UMTS modem, or a combination of PC and modem for remote connection.

MATERIALS
Casings are made in different materials to best suit the environmental conditions of the instrumentation emplacement.

Materials range from polyester with high fireproof characteristics for an environment with elevated fire and/or explosion risks, fibreglass, metal and even polypropylene for perfect waterproofing and resistance against atmospheric bodies.

RADIO LINK

ADVANCED
GEOTECHNICAL
INSTRUMENTATION
SYSTEMS AND
CONSULTING

W-PAN radio link to READ

Numerous power supply possibilities for modules

12V power supply   12V Battery   Solar panel

2-channel quick converter   16-channel quick converter   24-channel relay unit   Digital unit (counter)

Master

W-PAN transmission up to 16 km
one or more low-consumption radio slave modulus

UMTS Modem   Notebook   Low power PC Linux embedded

Sole communication protocol for any type of data acquisition unit

TECHNICAL SPECIFICATIONS

W-PAN RADIO LINK	
Input/ Output	6 analogical input channels (18bit) 4 analogical input channels (10bit) 4 digital input channels
Supply switches	4 digital output on/off switches to the sensors
Type	Voltage, current, temperature (PT100), potentiometers , strain-gauges, thermistors, compensated load cells
Range	0÷2 V, 0÷20 V , 4-20 –mA, 0-200mV
Converter	10-bit resolution; possibility to connect additional boards with 18-bit resolution
Microprocessor	8 bit data - 16 bit instruction PIC 18F242
Memory	16KBytes flash. 256 bytes non-volatile fixed EPROM built-in the microprocessor for system operating parameters
Acquisition intervals	To be set: range from 320ms up to 3 weeks
External communication ports	Wireless 868MHz or 2.4GHz
Internal communication ports	1 USB, 1 RS 422, 1 RS 232
Operating conditions	Standard model - max temperature range: -20° ÷ +70 °C; relative humidity: 20 ÷ 90 % without condensation
Power supply	Standard: 5Vdc Possibility of external supply for transducers