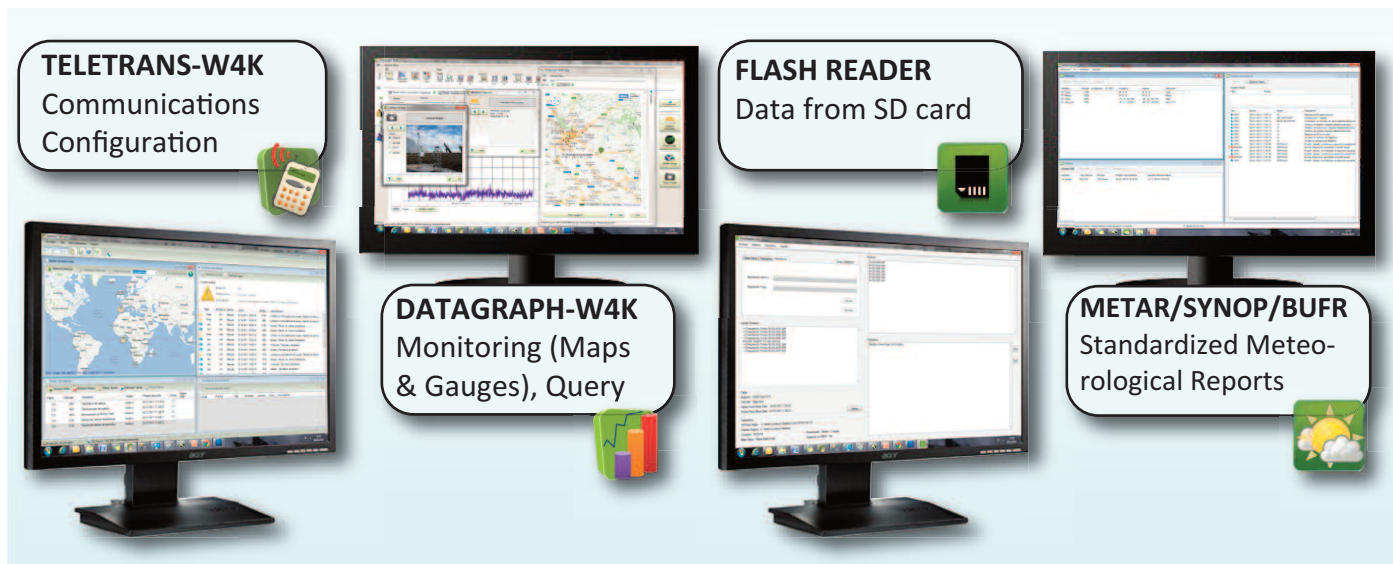




GEONICA SUITE 4K

MAIN COMPONENTS & KEY FEATURES



✦ TELETRANS-W4K

- Remote communication with stations
- Wide variety of communication systems supported: GSM, GPRS, 3G UMTS/WCDMA, Wi-Fi, WiMAX, Fiber Optic, Ethernet, ISM Radio, RS232, RS485, USB, Satellite (INMARSAT, Thuraya, Insat, Meteosat, GOES, etc), etc.
- Data storage remote request
- Instantaneous data display on tables /charts
- Request of images captured by the stations
- Station settings: time, channels, etc.
- Basic and advanced test of station features
- Calibration of stations and sensors
- Automatic execution of tasks
- Station firmware / configuration update
- Compatible with high availability cluster
- "Keep Alive" function included
- Fully automated and unattended operation

✦ DATAGRAPH-W4K

Query

- View real time data, statistical and historical charts and graphs
- Reporting
- New virtual parameters from existing ones
- Alarms display
- Easy display of parameters with bit-coded data

Maps and Information

- Display of station's status data on map
- Latest data on map
- Display of weather forecasts and camera/radar/satellite images

Monitoring

- Data in real time displayed by means of "gauges"
- Full customization of monitoring environment

✦ METAR/SYNOP/BUFR REPORTER

- Weather reports encoding according to METAR (frequently used at aerodromes), SYNOP (widely extended in meteorology) and BUFR (format defined by the WMO-World Meteorological Organization).

✦ FLASH READER

- Data import from the station's SD card
- Data export to Excel and other databases



INTRODUCTION

Geonica Suite 4K is the last generation of a software package developed by GEONICA for the interaction, configuration, data presentation, data analysis and real-time data monitoring of Geonica's data acquisition stations (METEODATA/HYDRODATA 2000/3000/4000 series).

The package, which runs under Windows (Windows 7 Pro or higher, Server 2003 SP2 and Server 2008 R2, 64 bits), consists of four main applications:

TELETRANS-W4K: This application is designed for the communication between PC and stations, which allows the data recovery and other configuration commands as: date and time synchronization, station parameter setup, tests, firmware update, calibration, image requests, etc.

DATAGRAPH-W4K: This application is designed for data query, data management and real-time data monitoring. This data captured by the station is stored in the database by **TELETRANS-W4K** application or accessible by means of a web service.

FLASH READER: This application can convert raw data (stored by METEODATA /HYDRODATA stations in a SD card or captured through satellite systems) into a binary format that can be used by the final user (CSV or Access).

METAR/SYNOP/BUFR Reporter: This application accesses the station database and generates encoded meteorological reports according to **METAR** standard (frequently used in aerodromes), **SYNOP** standard (widely extended in meteorology) and **BUFR** standard (defined by the WMO-World Meteorological Organization).

GENERAL DESCRIPTION

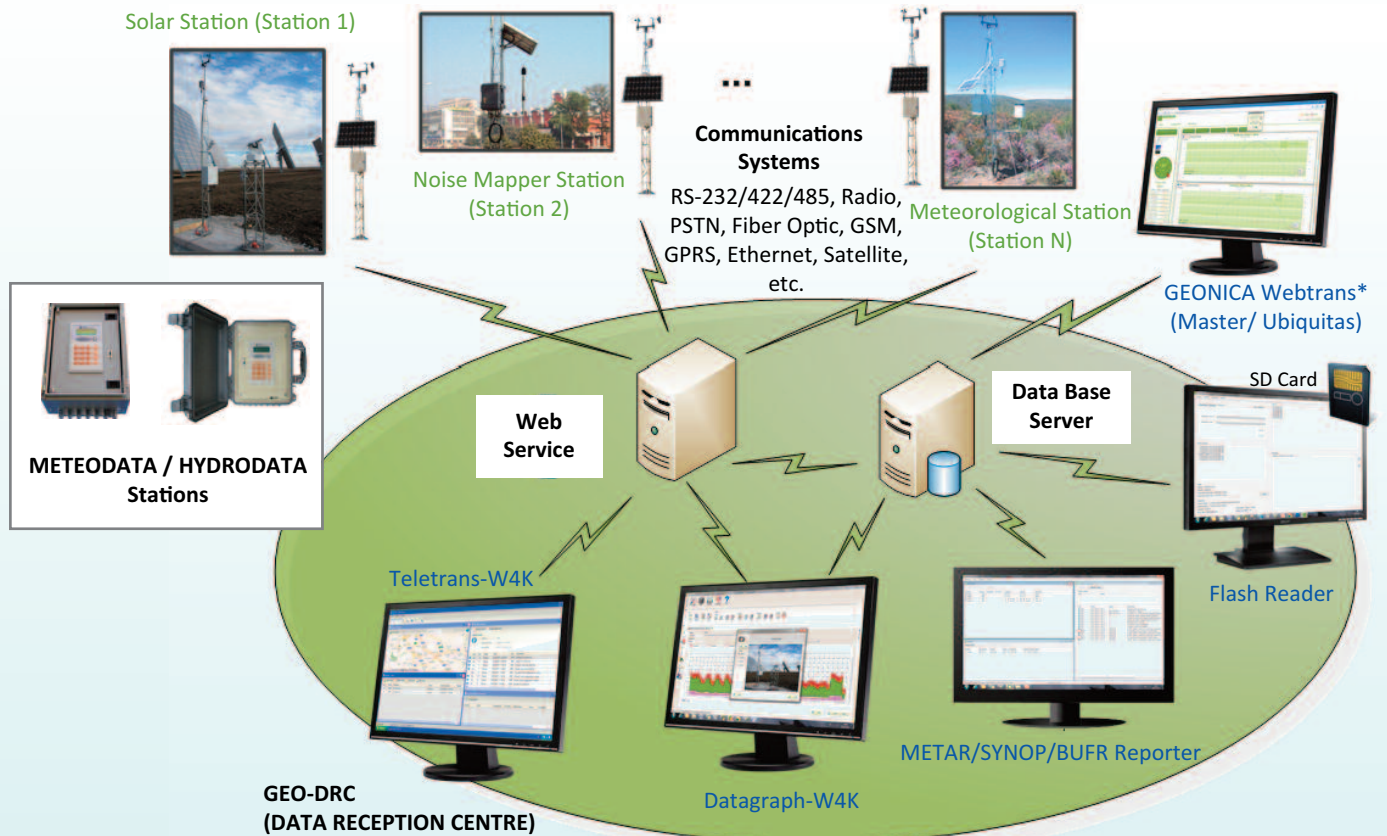
Data acquisition stations are configured using the **TELETRANS-W4K** application (station number, active channels, associated mathematical functions, units, etc.). This configuration is stored in a database (SQL or Oracle), where data from stations will be stored as well.

DATAGRAPH-W4K accesses the database and provides a large number of management possibilities. Statistic and instantaneous data query can be made using simple interpretation tables or elaborated graphs that provide an intuitive analysis of data collected. This powerful tool also allows to query information related to the stations, display the stations network on a map, create monitoring environments for the real-time data monitoring using colourful animated objects, etc.

METAR, SYNOP and BUFR standards were created in order to make data uniform and universal. **METAR/SYNOP/BUFR Reporter** application designed by Geonica, accesses the raw data stored in the database and groups and processes them to generate standardized meteorological reports.

In certain applications, SD cards are used to considerably increase the station's memory data backup time. For the sake of space optimization, data is stored in Geonica's binary format (.GBF). **FLASH READER** application is used in these cases; it will modify this information and encode it into a format readable with Excel or compatible to be entered directly in the database.

All the applications included in Geonica Suite 4K package work in both Spanish and English.



*NOTE: GEONICA Webtrans application allows access to real-time data via the web. This application is not included in the package Geonica Suite 4K. It must be supplied independently.



TELETRANS-W4K

WINDOWS APPLICATION DESIGNED TO INTERACT WITH METEODATA/HYDRODATA STATION INTEGRATED IN GEONICA SUITE 4K PACKAGE

INTRODUCTION

TELETRANS-W4K is an application designed for communication system management that allows to interact with a stations network and, thus, configure and control them remotely.

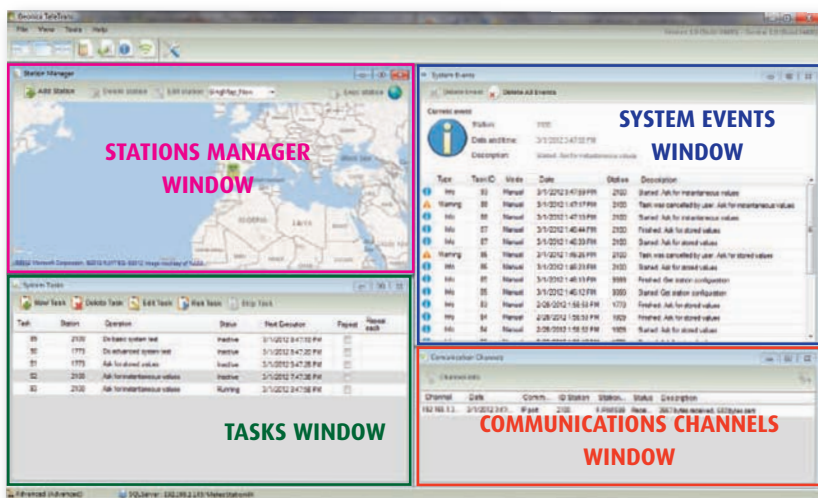
The basic command of **TELETRANS-W4K** is "Data request" (instantaneous or statistical data). In addition, this application includes other commands that make the station maintenance (firmware update, station calibration, sensor calibration, basic and advanced status tests, etc.) easier and commands to update the station firmware, date and time, etc.

The application's Windows-based visual interface makes its handling intuitive and easy.

Communication between the application and the stations is based on a Web Service which allows access to the same station's by different users. **TELETRANS-W4K** integrates multiple communication system options: public switched telephone network (PSTN), mobile communications (GSM), IP mobile communications (GPRS, EDGE, HSDPA, UMTS, etc.), direct serial communications (RS-232), Ethernet, radio, satellite (INMARSAT, Thuraya, Insat, Meteosat, GOES, etc.).

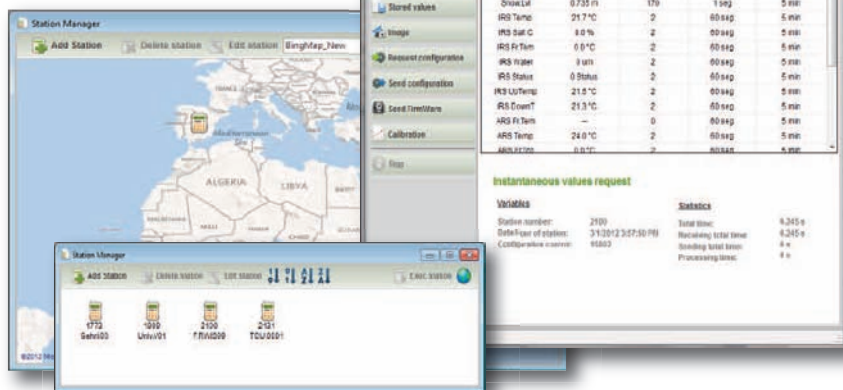
One of **TELETRANS'** most important features is its multitasking ability, that allows simultaneous data collection from multiple stations (depending on the number of communication ports and/or modems available on the GEO DRC- Data Reception Centre-).

TELETRANS-W4K includes all the necessary mechanisms for secure mode or high availability cluster mode operation, characterized by workload distribution over the multiple servers to ensure that tasks are completed, even if any of the nodes fails.



STATION MANAGER WINDOW

This window contains an icon for each station of the network. The icons can appear sorted on a white background or located on a map according to their coordinates.



- **Basic Test:** It returns the status of station: lithium battery, analog voltages of its internal electronics, battery status and communication statistics.
- **Advanced Test.** This command returns more complete information about **METEODATA/HYDRODATA** status.
- **Instantaneous Values:** This button requests data from each channel on a real-time basis, updating the data displayed on the screen (in a table or a graph).
- **Stored Values:** Data storage from the station to the database. Transmission starts after the last data transmitted in previous communication.
- **Image.** The system sends a photograph capture request to any of the cameras connected to the **METEODATA / HYDRODATA** station.
- **Request Configuration.** This button updates the station's configuration saved in the database.
- **Send Firmware.** Its function is to update the station's firmware remotely, without moving to the station location.
- **Calibration.** It is possible to carry out an electronic calibration of all analogue channels and of the sensors which may have experienced some changes in its measurement parameters.

Double clicking on each station will display a window that lets you interact with the station will appear. The available options are:

- **Edit:** button used to change the configuration of the station: alarms, cameras, channels, communication, storage period, etc.

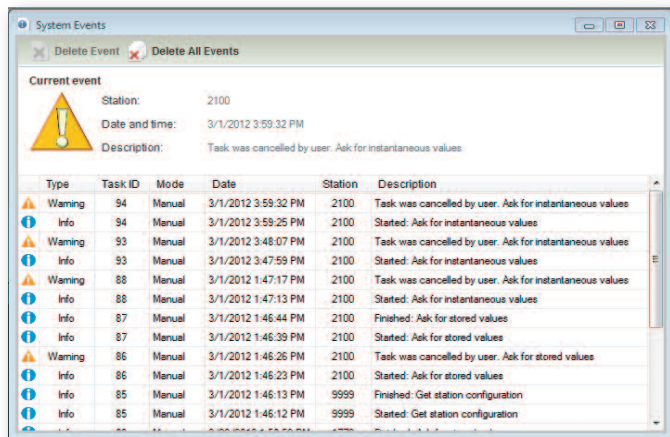


SYSTEM EVENTS WINDOW

This window contains the log of all the events occurred in the system and the associated information (station id., type of operation, task origin -manual or programmed-, additional information, etc.)

Some types of events are considered:

- **Info:** Useful information (e.g. commands run in the system).
- **Warning:** Alert about unusual operations.
- **Error:** Errors occurred during an operation.

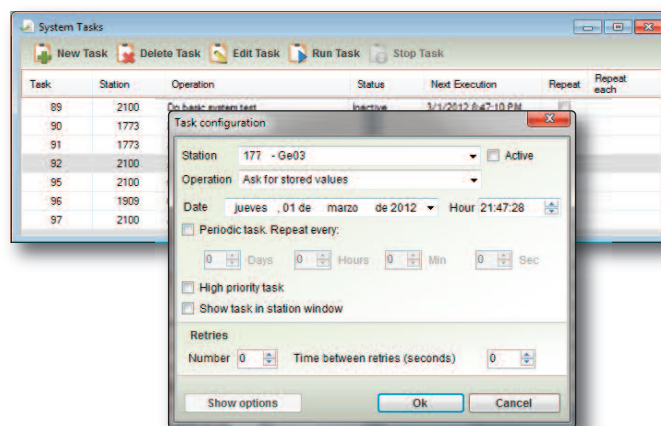


TASKS WINDOW

This window provides the possibility to schedule commands to be automatically executed in the station and to monitor the commands running at each moment.

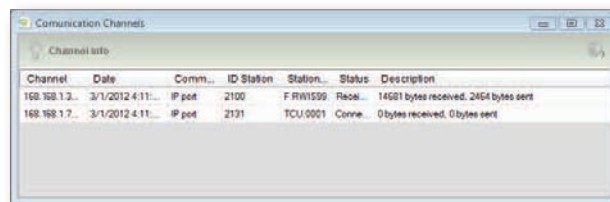
Program a Command

- Date and time for first execution.
- Command intervals and priority.
- Time between executions.
- Number of retries in case of communication failure.



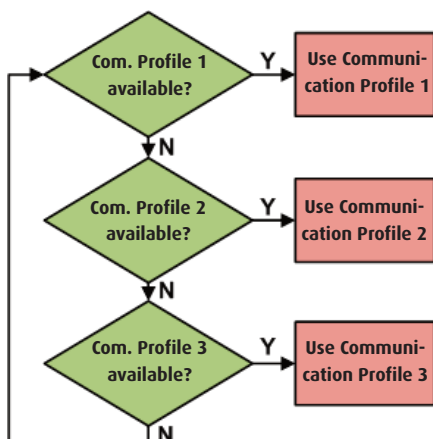
COMMUNICATION CHANNELS WINDOW

It contains the information about the communication channels used in each instant: Channel (e.g. IP address which Teletrans-W4K is communicating with), Date, Communication Type, Station ID, Channel status and a brief description of the communication (sent and received bits).



OTHER NEW FUNCTIONS

TELETRANS-W4K has three profiles in order to configure the communications module of each station. Each profile can be configured with a specific priority and a type of communication (Serial Port, Modem or TCP/IP). The key advantage of this function is that it allows to associate various types of communications to a single station; if the main communication type fails, a secondary communication mode will be used, and in its absence a third type of communication can be used. This provides better communication optimization.



If the system includes a (some) camera (s), the user will be able to set up an ftp server to store data and images.

TELETRANS-W4K allows to configure up to four cameras for the same station, configuring image quality, maximum number of images to be stored in internal memory, etc.



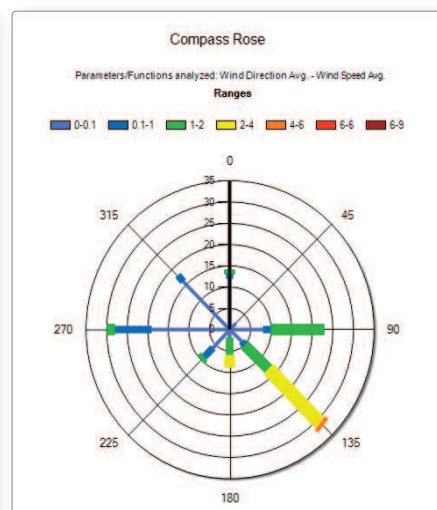
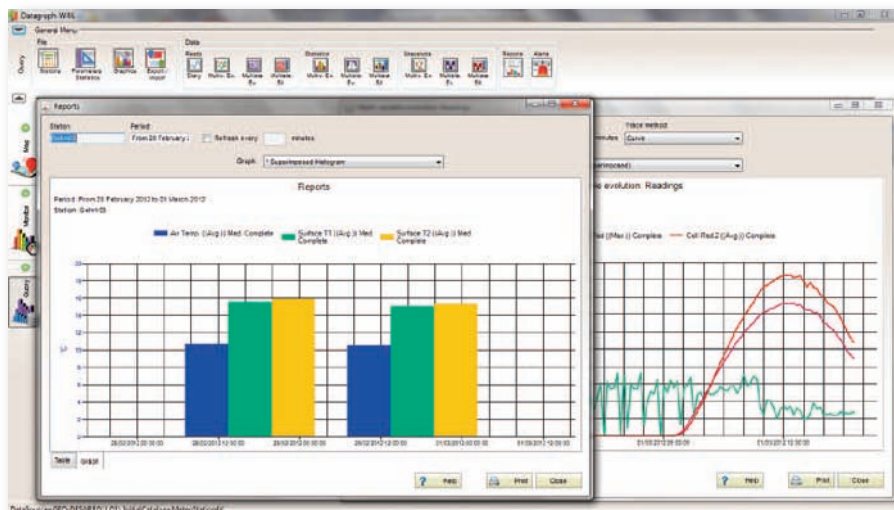
The user can be alerted when an alarm is generated at the station (thresholds exceeded, failures in test results, etc.). TELETRANS-W4K includes a section to configure the type of communication to warn the user (SMS, TCP/IP, digital output, etc.).



DATAGRAPH-W4K

WINDOWS APPLICATION INTEGRATED IN GEONICA SUITE 4K PACKAGE, DESIGNED FOR DATA QUERY, PROCESSING, ANALYZING AND REAL TIME MONITORING. IT CONSISTS OF 4 MODULES: QUERY, MAPS, INFORMATION AND MONITORING.

✦ QUERY MODULE



This module includes the following functions:

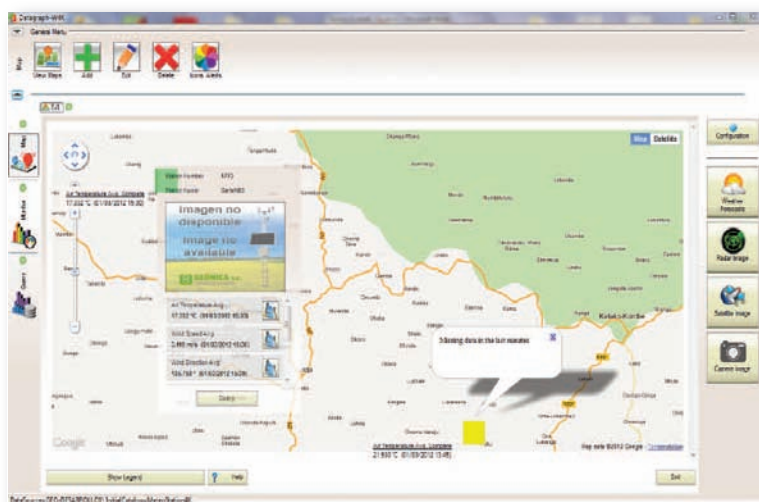
- View complete **information about the data acquisition stations** (name, location, type of communications, parameters configured, images, etc.)
- **Data import/export.** Formats: CSV, XML, MDB.
- **Data Query.** Datagraph-W4K provides access to historical data stored in the database, statistical and instantaneous data. All these values can be shown in both graphs and tables.
 - ✓Temporal comparison among various parameters of a single station.
 - ✓Temporal comparison of one parameter in different stations.
 - ✓Comparison at one instant of a parameter of different stations.
 - ✓Etc.

- **Multiple graphic options.**
 - ✓Display various parameters overlapped or stacked.
 - ✓Zoom with automatic scale resizing.
 - ✓Graph printing.
 - ✓Advanced menu with multiple graphic capabilities (appearance style, tracing properties, colours, backgrounds, styles, etc.).
- **Calendar window:** Easy day and period finding. Red numbers on days on which station has data.
- **Special chart Compass Rose.** This graph is ideal to represent vector quantities, such as the wind speed and direction. The total bar (total time) of each petal is divided in "sections" or "ranges" according to the speed: each section represents the amount of time that the wind has been blowing at a specific speed, between a maximum and minimum (defined by means of "list of ranges").

✦ MAPS MODULE

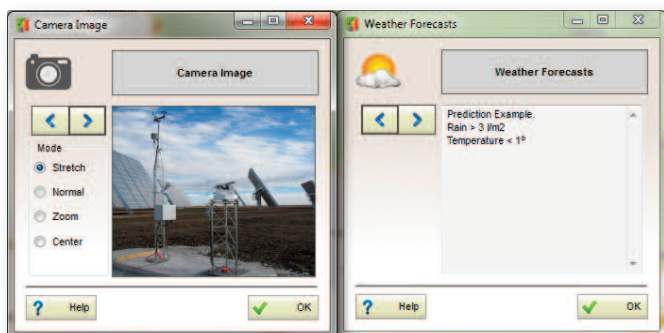
The application allows to create as many maps windows as the user wants where icons representing stations will be located.

- At first, user can identify the station status through the color of its icon.
- User can configure the type of map where the station icons will be located among different options ("Bing Maps", "Google Maps", image, satellite view, with(out) labels, etc.), zoom and coordinates on map.
- Icons that represent the stations are fully configurable (size, shape, colour, etc.).
- The user can associate to each station icon the visualization of parameters whose value will be displayed permanently or when mouse hovering over the icon.
- In addition, when user hovers the mouse over the station icon, a window containing an image of the station and direct access to graphs will appear.





✦ INFORMATION MODULE



The information module consists of several buttons that provide the user direct access to radar, satellite and camera images and weather forecast text files.

This data can be stored in a local folder or an ftp server, completely configurable by the user.

After clicking on any information button, a window with the image or forecast text will appear. The user will be able to move to older images/texts using arrows.



✦ MONITORING MODULE

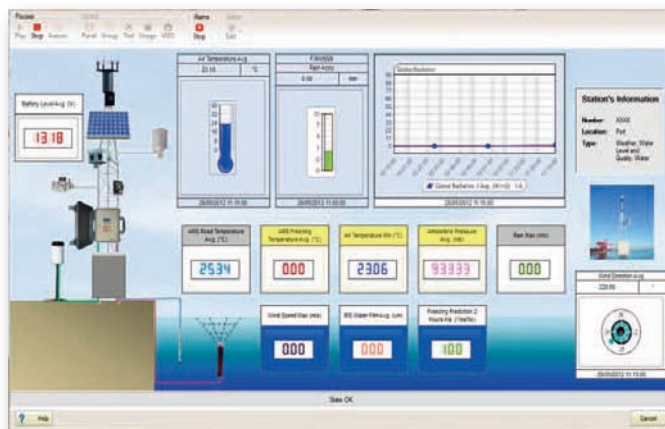
The monitoring module accesses historical data stored in the database and instant data through a **TELETRANS-W4K** web service to display the selected parameters in a monitoring environment using VMOs (Variable Monitoring Objects):

- Level Bars
- Numeric Values
- Temporal graphics
- Vector graphics

The application allows to fully customize these VMOs: size, colour, axis, etc. and the monitoring environments to suit any requirement.

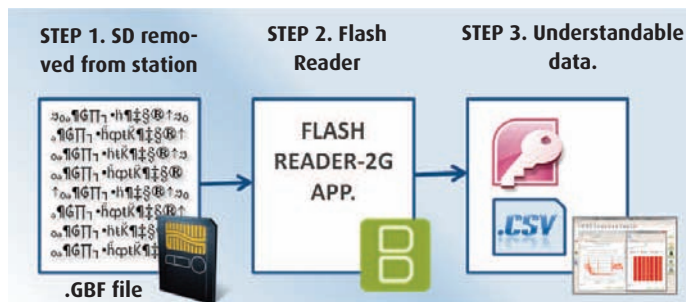
In addition, this module includes alarm functions, associating alarms to each VMO and alert the user through:

- The monitoring environment, through a warning message on screen.
- E-mail: to preconfigured addressees.
- SMS: to preconfigured cell phone numbers.



FLASH READER

The stations can store mass information on a 2GB SD card. Data stored on the SD card will consistently appear in compressed binary format in order to maximize the available storage capacity. These data must be changed to other formats understandable by the user.



Therefore, the application **FLASH READER** will be responsible of this change, providing data in CSV format (compatible with MS Excel) or in Access, SQL or Oracle databases.

METAR/SYNOP/BUFR Reporter

The application **METAR/SYNOP/BUFR Reporter** makes a further step in data collection; it adapts the data collected by the stations to a standardized format that can be sent to various weather national and international organizations.

- **METAR** (from French MÉtÉorologique Aviation Régulière) is the international standard code format used to issue reports of meteorological observations in aerodromes.
- **SYNOP** has its most frequent application in meteorology and contains general information such as temperature, barometric pressure, visibility, etc.
- **BUFR** is characterized by its binary data format and its universality. It was developed by the WMO to replace the different types of existing meteorological data reports.

