PRODUCT CATALOG

TECMES

SYSTEMS AND INSTRUMENTS TO MONITOR THE ENVIRONMENT

Rev. 13

TECMES

OUR MISSION

TECMES Instrumentos Especiales SRL, is a company dedicated since its foundation in 1975, to the development, manufacture and installation of instruments and equipment for the measurement, monitoring and control of environmental and industrial variables, providing a "Comprehensive Solution", adapted to the local conditions

Our developments have been and are always designed to find technological solutions that respond to customer needs in the collection of environmental and industrial variables, their registration, telemetric transmission, processing and control in applications as varied as meteorology, oceanography, hydrology , water quality, air quality, industrial processes, extractive and transport processes.

TECMES, is the only Argentine Company in the field, with international relationship, having exported its technology to more than 20 countries.

INDEX

TECMES

Nature conditions the way we live and produce through multiple environmental factors.

The knowledge of these natural factors as well as those generated by man through different activities constitute the fundamental step, to achieve the greatest harmony between the needs of humanity and the natural environment in which we live. Therefore, from protecting the life and health of communities to optimizing a productive process, a dam or a navigation channel, these are the challenges for which TECMES proposes solutions through technological and scientific tools.

It is what we call

ENVIRONMENTAL INTELLIGENCE

NETWORKS AND SYSTEMS

SOME APPLICATIONS

Many and varied are the applications for Hydrometeorological Measurement Networks, like obtaining historical data for later use, such as real-time data for the preparation of weather forecasts as well as anticipation of floods, avalanches, etc.

Among the most important can be mentioned:

FLOOD ALERT

Flood Alerts are obtained through networks of Hydrometeorological Stations, primarily intended to obtain the real-time data necessary to alert about extreme events as well as run and adjust flood models in natural channels.
Having the information in real time of the precipitation and the level in rivers, streams and conduits of a basin, allows to run hydrological models by means of which it is possible to make the forecast of the water level, indispensable data for the decision making conducive to operate floodgates, pumps and inform the population about the need for eventual evacuation.

ENERGY

Power generation and transmission management networks.
These networks make use of the information collected by Hydrometeorological Stations to run hydrological models that allow efficient management of power generation, in hydroelectric plants, as well as for the control of thermal power plants operation, the design of wind farms, the generation of solar energy and transmission line control.

WATER RESOURCES

The knowledge of water resources in all its forms, surface, underground and solid waters is essential for the development of each of the regions of a country.

PORTS AND NAVIGABLE ROADS

The control of the waterways allows navigation to be optimized and ensures the flow of goods between regions and countries.

INDUSTRY

Measurement and control of pressure, flow, humidity, temperature, conductivity, etc. They are fundamental in every industrial process allowing to know and act in real time at each point of the system.

AGRO

The PEGASUS Meteorological Stations line, specially designed for agriculture, helps manage agricultural production and allows you to easily and safely obtain the data that the farmer needs.

ENVIRONMENT AND ROAD

The knowledge of the environment and the traffic conditions on routes and highways are of fundamental importance for the safety and health of the inhabitants.

TOURISM AND RECREATION

Increasingly knowledge of the climatic conditions are essential to ensure a good tourist day.

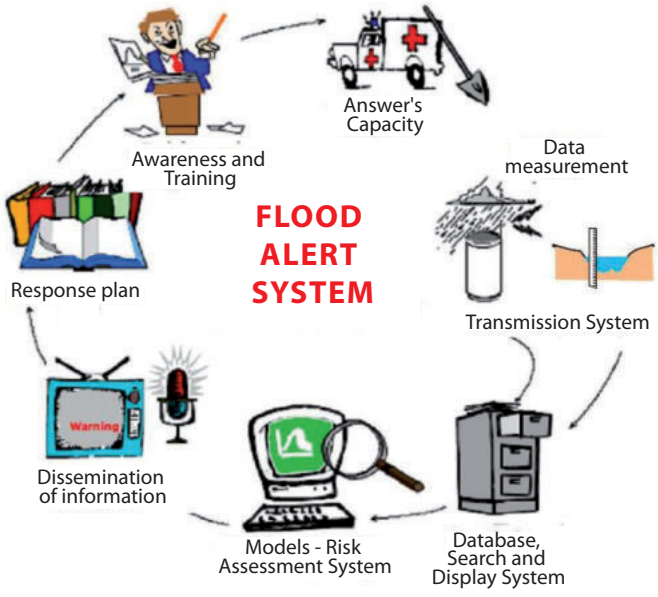
FLOOD ALERT SYSTEM

WHAT IS AN EARLY FLOOD ALERT SYSTEM?

An Early Warning System is a set of elements that operate in an interrelated way to alert the population to the risk of flooding so that its effects can be minimized or avoided, when the event is known with some anticipation.
The fundamental purpose of an Early Flood Warning System is to provide the inhabitants with a tool that allows them to react with due anticipation to an imminent flood, to safeguard their own life and property.
This is achieved by measuring certain meteorological and hydrological variables in different places in the basin (rain, river levels or flows, etc.) in real time and transmitting them online to a processing center, where By using mathematical modeling of the basin and river, the evolution of a flood can be anticipated. These modeling could also include the use of adjusted forecasts based on the data being measured in the basin. These systems support different degrees of automation in order to help as quickly as possible those who must make decisions to attend the emergency.

The main objective of an Early Flood Warning System is to know, with some hours in advance, the risk of flooding due to a particular climatic or hydrological event, detecting the location and magnitude of the eventual flood.

The idea is to predict as soon as possible where floods will occur, whether due to accumulation of surface water or overflow of rivers or storm systems of a city and the levels that water will reach at these sites.
The alert system must finally be integrated into another series of components that allow acting upon the occurrence of the event. The figure illustrates these components, that is, the collection, transmission, storage and processing of information to obtain anticipated results of the flood and its connection with the response system.
TECMES has provided an integrated monitoring system for the Salado River Basin in the Province of Santa Fe, to control floods in the framework of a project to protect the city of Santa Fe from the calamitous floods suffered in the past. The purpose of the system is to anticipate the floods of the Salado River and monitor its operation through Meteorological and Hydrological stations, as well as control the water quality of the different sections of the river.



Level control in the Salado River, Santa Fe Province, Argentina.

POWER STATIONS

Real-time observations are essential to ensure the efficient and safe operation of hydroelectric power plants.
The Power Stations and Substations require monitoring to control their operation and the environment. TECMES weather stations are based on more than 40 years of experience. We offer robust and sophisticated Station Networks to monitor weather conditions in your specific location. Our applications include real-time data and deliver fundamental information for operations personnel. The use of meteorological data allows operations personnel to effectively monitor generation resources, make informed decisions, maintain a safe working environment and operate the facility efficiently in order to maximize power generation.
TECMES weather networks are easy to use and offer data measured with quality controlled sensors. They can even be used for unattended operations at remote sites that require monitoring.

Provision, installation, maintenance and technological update.
Reliability and accuracy proven in the field in hostile environments.
Low power consumption in remote and extensive operations.
Low total cost in life.

Control room of the ITAIPU Dam

Measuring station of the Hydrometeorological Monitoring Network of ITAIPU, Brazil-Paraguay

WIND POWER

Wind farm designers, manufacturers and operators require high quality environmental measurements to maximize performance and comply with Industry standards. TECMES, offers its products and experience in this field with meteorological sensors for control systems, radiation, speed monitoring and direction of wind and environment.

Learn more how our products can help you with your wind energy operations.

Wind turbine field, Catamarca, Argentina

SOLAR ENERGY

To generate solar energy it is essential to know the amount of available sunlight at a particular location at specific times. As governments around the world increasingly seek renewable energy resources, the need for accurate measurements of solar radiation increases. TECMES solar radiation measurement systems measure the conditions of the solar power generation sites and nearby, providing the necessary information to operate effectively and have maximum energy production.

Meteorology in Solar Park Cannava, Jujuy, Argentina

TRANSMISSION LINES

The medium and high voltage electric transmission lines cover long distances, carrying energy through Provinces and Countries, are directly affected by daily weather conditions. From lightning to wind and ice, or even excessive heat, they can alter their behavior, which is why electricity companies need reliable weather data to efficiently manage their operations.

Temperature, rainfall, atmospheric pressure, humidity, and wind speed and direction are important measurements for meteorological monitoring of the transmission line. These data provide information to operators about the weather conditions in strategic locations on the lines. Whether a complete weather station or simple sensors located at points along the transmission lines, TECMES, offers the Weather Stations to meet the needs of electrical operations.

Ice conditions present a threat to transmission lines and a large ice storm can be a devastating experience for operations. TECMES understands this situation very well and we are experts in understanding extreme weather conditions. We have developed remote sensors specifically to monitor these conditions, which can be placed along the transmission lines. These sensors allow operators to monitor temperature and conditions, so that they can be prepared and make the best decisions.

Snow measurement, Minera Alumbrera, Catamarca, Argentina

Measurement of snow height and meteorological parameters, Minera Alumbrera, Catamarca, Argentina

WATER RESOURCES

Hydropower is a source of natural, clean and renewable energy. Many governments are enthusiastic about the use in their country of this potential so little exploited to reach the electrical capacity they need. TECMES hydrometeorological stations measure the climatic conditions in the supply basins of the hydroelectric plants and nearby and provide the information that stakeholders need to optimize operations and obtain the largest hydroelectric production.

High quality hydrological records are necessary in the planning and rehabilitation of infrastructure for hydroelectricity generation. TECMES hydrometeorological stations provide real-time rainfall and water level data with centralized data collection, even from the most remote locations in areas where hydroelectricity can be used. By combining this information with hydrological models, it is possible to generate medium and long-term series to quantify the resource. In addition, TECMES can deliver integrated solutions with centralized data collection, forecasting models and data management and related systems for decision support.medición de caudales y niveles en cursos naturales en ríos, estuarios o en el mar, para mejor evaluar y controlar los recursos hídricos.

Level measurement in Laguna Picasa

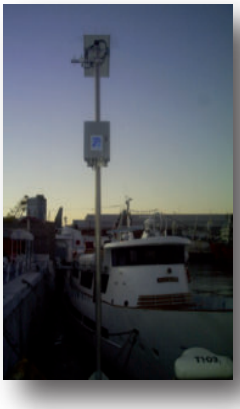
TECMES Engineers also carry out flow measurements and the development of measuring instruments and methods to increase the accuracy in the measurement of flows in rivers and estuaries. These flow measurements are essential elements of water resources planning, development and management.

TECMES offers quick and effective answers to your problem of measuring flows and levels in natural courses in rivers, estuaries or at sea, to better evaluate and control water resources.

Current measurement, Rio Salado, Santa Fe, Argentina

PORTS AND NAVIGABLE ROADS

The ports face unique challenges related to both their environment and the prevailing weather conditions. Constantly, port operations and security suffer the impact of changing climatic or maritime conditions. Sometimes, these can be highly localized. For example, boats often cannot approach the port during extreme weather conditions and helicopter operations are restricted in case of strong winds, poor visibility and thunderstorms. Similarly, extreme weather conditions affect cargo handling, ship robbery, steering, towing and extraction operations.
In addition to security, maintaining the programming of activities under any circumstance is of vital importance. A variety of parameters of the climatic and maritime state, including winds, fog, rain, water levels, waves and currents, directly affect operations. The information about the climatic and maritime status that is observed, analyzed and communicated accurately helps port users to make the right decisions at the right time. The use of the meteorological information available in all critical operations will allow them to proceed safely and efficiently.



Levels and Meteorology in Waterway, Paraná River, Argentina

To achieve successful and uninterrupted operations, it is vital to have a system to measure specific meteorological, hydrological and oceanographic parameters in the precise area of operation. TECMES maritime observation systems data are easily integrated into port management information systems (PMIS), terminal operations systems (TOS) and vessel traffic services (VTS) to enhance performance and commercial predictability.
TECMES products and services are used in many countries, being the preferred provider of weather solutions for many government organizations and system integrators. Our reference deliveries range from hydrological-meteorological sensors to assist in navigation and automatic meteorological stations for VTS systems, to integral network meteorological solutions for coastal surveillance systems. Our offer consists of a great diversity of weather stations with sensors, telemetry, network data collection, management and visualization software, installation and maintenance services.

LEVEL MONITORING IN WATERWAYS AND COASTS

HIDROVIA S.A. It relies on TECMES to carry out the control of the river levels throughout the extension of the TRONCAL HYDROVIA of the Río del Plata and Paraná rivers.
Since 1976, when TECMES developed its first Digital Telemetric Marograph, the tide measurements, along the coast performed by the NAVAL HYDROGRAPHY SERVICE, are also entrusted to TECMES.
The design of the tide station that is most suitable for you is something that can be entrusted to TECMES Engineers, who will find a solution that best suits your needs.
Tide stations range from a data logger and a pressure transducer for stations to more demanding systems with teletransmission of information over long distances, with a unified control center. The stations can measure in addition to the level of water, speed of the currents, and the quality of the water. All communication systems, radio, fixed or cellular telephony, satellite, etc., are available in the technological solutions provided by TECMES.
TECMES offers turnkey tide gauges and services, including all necessary tasks for proper installation and operation.

INDUSTRY

INTEGRATED MONITORING AND CONTROL SYSTEMS

TECMES engineering has been providing integrated data collection systems to customers since 1980. These systems consist of the following subsystems that work together for reliable data collection and process control:

- Remote Field Stations
- Sensors and cables
- Electro-mechanical interfaces
- RTU
- Telemetry / Communication Systems
- Hardware y software

Level control in wells, San Salvador Bay, Brazil

Pressure control in gas pipelines, Gas NEA, Entre Ríos, Argentina

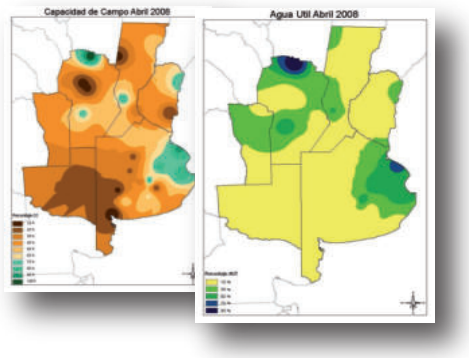
In-line pressure measurement systems with transmission for gas pipeline networks, level and flow measurement systems in water treatment plants, field monitoring networks for measurement and control of environmental parameters, are a reality of key solutions in hand that TECMES can provide through its extensive experience.

TECMES works with customers to develop complete turnkey systems. Some examples show the variety of system solutions we have developed for customers.

Applications include:

- La Plata YPF Distillery monitoring and capacity flow
- On-line control of the pressure in derivations of gas pipelines for GasNea.
- The control of flows and levels in the water treatment plant of Cordoba
- Control of mud density in YPF oil wells
- Pressure control at more than 100 points in the Pilcaniyeu heavy water plant, INVAP
- Control of sheet rolling thicknesses, TECHINT

AGRO



Agrometeorological Networks
The management and study of agricultural production processes require the availability of an agrometeorological database. The basic data offered by the Stations can be presented through Web pages in a simple way to be interpreted by the user.
Likewise, these pages can also present information that carries messages about trends, perspectives or user orientation about management practices in their crops, pest forecasts, prediction of diseases in crops, irrigation management among others.

TECMES has created its PEGASUS LINE of Automatic Meteorological Stations and Agro-Meteorological Systems specially designed to meet all the needs of agricultural production.

WHAT IS PEGASUS?

PEGASUS

PEGASUS, is much more than a wireless Weather Station for professional use, it is undoubtedly an essential management tool in any rural or recreational establishment.

WHY PEGASUS IS MUCH MORE THAN A METEOROLOGICAL STATION?

Because PEGASUS, in addition to the information obtained by the PEGASUS Wireless Weather Station sensors, the connection through a GSM 2G / 3G or ORBCOMM satellite cell phone communication system, the possibility of storing all your data, in a proprietary base or common, and see on the Internet all the information online of your Station, but also the statistically processed data, with values of rain, wind, temperature, humidity and pressure, pest alarms, etc.

HOW DO I ACCESS PEGASUS INFORMATION?

PEGASUS, allows you to access the station data through the WEB, using a keyword, and also through Pegasus Mobile APP for Android and IOS.

WHAT IS THE USE OF PEGASUS INFORMATION?

Local meteorological information is increasingly necessary and valuable when making decisions about different activities in which weather and climate conditions are relevant. Among these activities we can quickly distinguish the most relevant, like this:

EXTENDED AGRICULTURE:

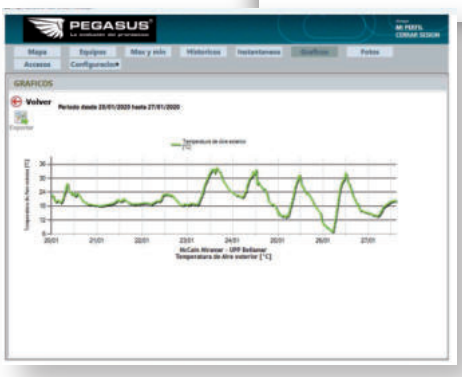
The production of cereals and oilseeds, as well as the raising and fattening of cattle, are directly related to environmental conditions, in particular with the moisture content in the soil and temperatures. The first of these is the product of a complex process of rainfall, soil storage capacity, evaporation, evapotranspiration and surface drainage.
The knowledge of what are the real conditions in which the soil is, before planting, tells us how we should handle this work, in order to achieve the highest possible yield.
Something similar will happen at the time of harvest, since based on the knowledge of the environmental conditions, we will be able to decide whether it is convenient to harvest with a high percentage of humidity or it is possible to wait to obtain a drier cereal or oilseed and so So much more profitable.

Additionally, based on the information recorded by the Station and stored in the database, a series of parameters indicative of the conditions in which the crops are unfolding, such as degree-days, cold hours, etc. can be determined, as well as the determination of favorable conditions for the development of diseases, which allows to anticipate them.
The field, like every living being, is subject to environmental conditions, the more we know about them, the better we will be able to deal with the different situations we will go through, just like a person, the better and more complete his medical history has, You can better manage your health.
Undoubtedly there are many other uses, from being able to know for sure in what conditions I will find access to the agricultural establishment, especially if it implies traveling a dirt road, to knowing to what extent I can have an overdose of water, through the index water, etc.
In cases of supplementary irrigation carried out with Pivot-type equipment, being able to know what the real conditions of humidity in the soil are, as well as the forecast of rains, will allow us to make a more rational use of the irrigation system with the consequent energy saving .

EXTENSIVE AGRICULTURE:

Intensive productions, in general, are linked to fruits and vegetables of different characteristics. These productions are characterized by greater added value and greater sensitivity to climatic factors.
In these cases, irrigation is often used, as well as frost control, which generates serious losses to production if the necessary actions are not taken to mitigate its effects.
Being able to make a proper irrigation schedule, which minimizes the use of energy, is undoubtedly of great benefit. In this regard, the information obtained through PEGASUS will allow the establishment of an intelligent irrigation program that maximizes its efficiency, with the lowest energy and water consumption.
The forecast of frosts is a difficult task, since they are linked not only to the environmental conditions of the temperature, humidity and wind zone, but also to the topography of the place, since local conditions can be strongly affected for the orography. The information provided by PEGASUS is essential to anticipate and thus avoid the destructive effects of frost.

EXPOCHACRA, Argentina



FOREST FIRE PREVENTION

The determination of index indicators of the contribution of a certain factor to the probability of a fire and its spread requires local meteorological information of the risk areas.
Having this information online allows the calculation of these indices spatially

Forest fire control, Patagonia, Argentina

IRRIGATION

Many companies continue to operate with an irrigation system with canals with old-fashioned floodgates, operated by hand and without any control of salinity and water quality.
Through the TECMES Remote Stations combined with reliable telemetry links (and optically isolated relay technology), it is possible to know and operate the systems from a control office.

Levels and quality, irrigation canals, Mendoza, Argentina

Individual pumps and valves can be operated remotely using the most sophisticated control system with all the doors and valves required.

Remote Stations can be programmed to automatically respond to changes in water level and / or flow conditions.

Reliable automated irrigation systems require engineering. Contact TECMES for the evaluation of your irrigation system by our team of trained hydrologists and engineers.

Control of irrigation flows, Neuquen, Argentina

ENVIRONMENT

Air quality control is also a subject of TECMES through the assembly of mobile air monitoring stations for urban use The systems are made up of mobile stations and a central station, which communicate by radio and cell phone and generally include the following sensors and analyzers:

- Atmospheric pressure.
- Humidity and room temperature.
- Wind speed and direction.
- Precipitation.
- Solar radiation.
- Acid rain.
- Sound level.
- Powder in suspension.
- Carbon monoxide.
- Sulfur Dioxide.
- nitrogen oxides.
- ozone.
- Hydrocarbons.
- Ammonia.
- Hydrogen sulfide.

Environmental control, Córdoba city, Argentina

ROAD AND HIGHWAY CONTROLS

The control of the atmospheric conditions in a route are fundamental for road safety.
In fact, thousands of accidents occur annually as a result of visibility restrictions caused by fog, smoke, or dust, as well as high winds, ice, rain, etc.
Many of these accidents can be avoided with an adequate network of meteorological parameter measurements and an early warning system.
TECMES Meteorological Stations with precipitation sensors, wind speed and direction, atmospheric pressure, humidity and temperature, can be equipped with visibility sensors, road ice etc., allowing adequate monitoring of the environmental conditions at different points of the highways.

Route meteorology, road corridors, Argentina

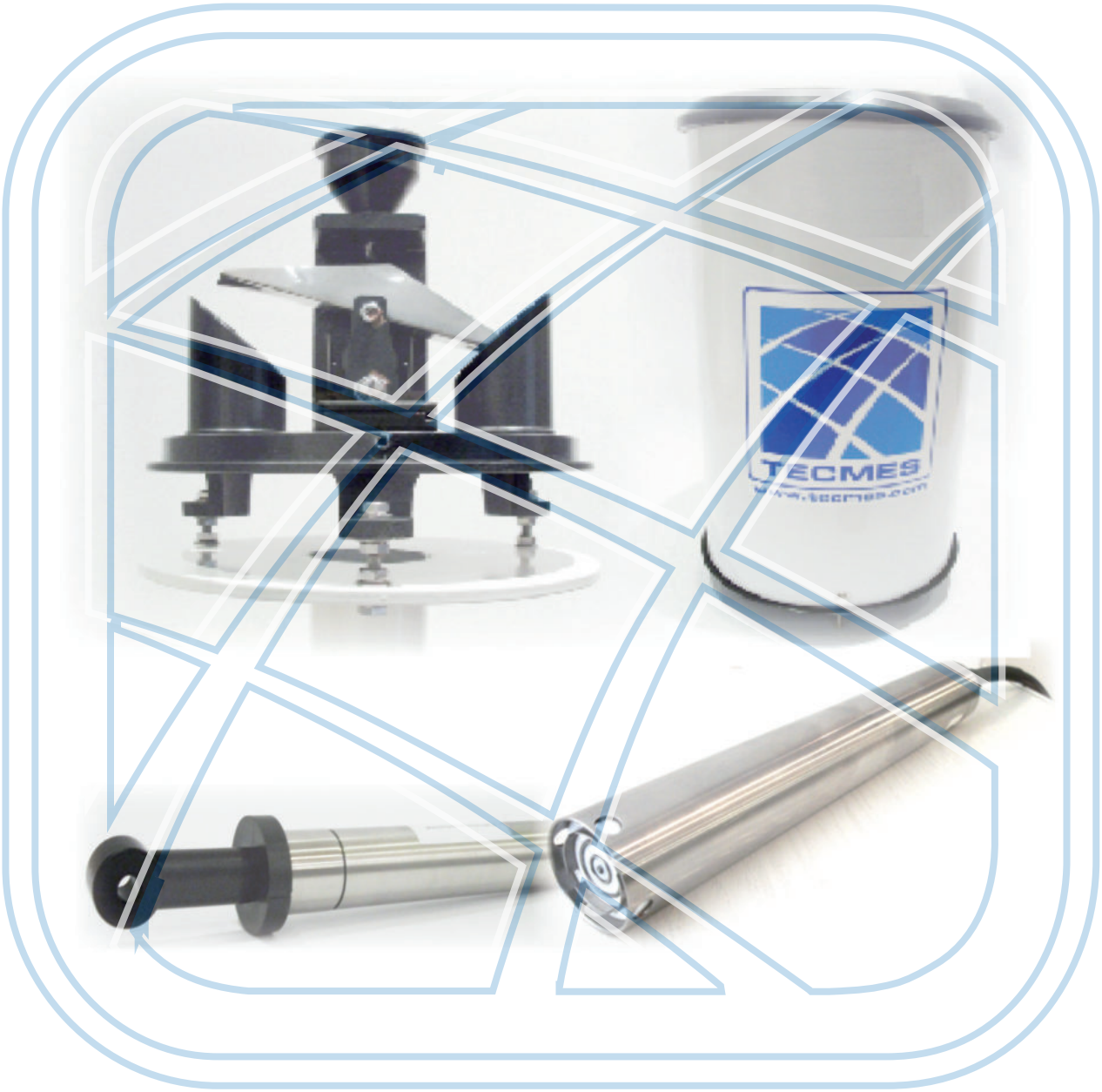
RECREATIONAL USE:

The PEGASUS Station, is ideal for all Resort Establishment type Resort, SPA, Health Resort, etc., since it allows all clients or potential clients to know what the weather is in the place, as well as its forecast.
In this way all outdoor activities, typical of these places, can be scheduled in a safe way, making the stay of guests more pleasant.
For these establishments, having historical records that clearly show the climatic conditions of the place may represent a distinctive element with respect to other establishments. This also serves to control energy consumption, since it is known what have been the thermal cycles that the place has suffered.
But undoubtedly, a very important factor is to have long-term weather forecasts, which allow establishing the most appropriate strategy to successfully face the coming season.
The access through the WEB by the possible guests, to know the prevailing weather conditions in the place of the Establishment, also helps them to schedule their trips in a more efficient and safe way.

OTHER USES:

Among the multiple uses of the PEGASUS Meteorological Stations designed and manufactured by TECMES, there is undoubtedly the personal use for those who seek the greatest comfort to develop their activities, this is how someone who is not near a large capital can Being Buenos Aires, Córdoba, Rosario, etc., you can hardly know what the prevailing environmental conditions are when leaving your home and much less which are the ones that you have inside your home.
This information is directly available through the PEGASUS MOBILE APP. But a quick look at the website allows you to know what forecast you have for the area where you are, both in temperature and humidity, rain and wind.
This is how you can leave your home with the appropriate clothing to the circumstances, not only of the moment but of all the time you will remain outside.
But even more, if it is the case that you must travel by car, to another location, you can, through the weather maps, know with very good precision how the weather conditions will be in the journey to travel at the time you intend travel.
In this way you can if you possibly choose the most appropriate time to travel in such a way, for example to avoid heavy rain, or wind, or heat, etc.
The use of this tool is also linked to the possibility of having alarms under preset conditions.

SENSORS



RAIN GAUGE SENSOR TS 221

WIND SPEED AND DIRECTION SENSORS TS 231 - TS 232

TEMPERATURE SENSOR TS 247 - TS 265

HUMIDITY AND AIR TEMPERATURE SENSOR TS 251-T

LEAF WETNESS SENSOR TS 253

SOIL MOISTURE SENSOR TS 254

EVAPORATION STATION SENSOR TS 260

SNOW WATER CONTENT SENSOR TS 270

MAGNETIC CONDUCTIVITY SENSOR TS 280

CONDUCTIVITY SENSOR TS 282

ATMOSPHERIC PRESSURE SENSOR TS 290

SOLAR RADIATION SENSOR TS 304

CLASS A PYRANOMETER SENSOR TS 301

FLOAT LEVEL SENSOR TS 310F

PRESSURE LEVEL SENSOR TS 312 P

PH SENSOR TS 320

DISSOLVED OXYGEN SENSOR TS 330

SPEED AND LEVEL WATER SENSOR TS 350

RAIN GAUGE TS 221

- **Great robustness**
- **High accuracy**
- **Calibrated pickup ring**
- **Reed switch and magnet detection.**
- **Buckets of 0,10; 0,20; 0,25; or 0,50**

Its construction with stainless materials makes it highly reliable and unalterable even in severe environmental conditions.
The rain is collected in a 200 mm diameter catchment with a metal beveled calibrated ring and driven by a funnel to a stainless steel tilting bucket.
The water then goes to a smaller funnel where the discharge of water is produced by drops and at a constant distance to the bucket, thus ensuring a very good repeatability.
The angle and depth of the collecting funnel and the upper inlet filter prevents rebounds at high intensities and by means of a mesh filter system in the inner collector prevents passage to the bucket of suspended materials and insects.

SPECIFICATIONS*

Sensor:	Tipping Bucket, built in stainless steel
Sensitivity:	*0,10; 0,20; 0,25 o 0,50 mm (0,25 mm standard)*
Orifice Diameter:	*200mm ±10,3mm*
Accuracy:	*±1 % at 50mm/h*
Detector:	*Reed switch activated by a magnet.*
Dimensions:	*Outside diameter 226 mm. height 430 mm*
Leveling:	*Bubble level*
Connection Cable:	*Length 10 m.*

How to order
TS221 XX Indicate bucket sensitivity

ACCESSORIES
- Rain Gauge, Model AS 222 for mounting 1.5 m from the floor manufactured in treated steel.
- AS 224 electric heater with power supply and electronic thermostat

Other specifications and ranges available upon request.

Sensors

WIND SPEED AND WIND DIRECTION SENSORS TS231, TS232

- **Excellent sensitivity**
- **High accuracy.**
- **Built in stainless steel.**

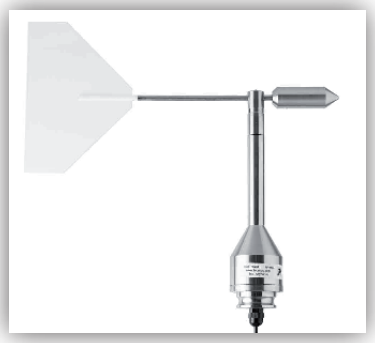
The TS231 and TS232 wind speed and direction sensors are intended for a wide range of applications.

They are built with stainless steel bodies and with moving parts that turn on armored stainless steel bearings. This ensures the measurement of both light breezes and very high intensity gusts.

The Model TS 231 wind intensity sensor is composed of a three-cup system with an optical rotation detector that produces an analogue output and a frequency output proportional to the speed.

The Model TS 232 wind direction sensor consists of a dynamically balanced wind vane whose angular position is measured by a magnetic potentiometer without mechanical contact.

This system enables high sensitivity and a virtually zero deadband.



SPECIFICATIONS TS231*

Range: 0-60 m/s. Other ranges upon request
Accuracy: ±1 % F.E.
Temperature range: -30 °C to + 60 °C.
Output: Analog and pulse. 0-4 V; 0-350 Hz
Cups: 3 cups 52 mm diameter
Turning radius: 92 mm
Dimensions: 237 mm x 60 mm in diameter
Used materials: *AISI 304 stainless steel, bronze, aluminum and synthetic material.*
Power Supply: 9 to 16 Vcc (typical 12 Vcc)
Power consumption: *10 mA in 12Vcc*

TS232*

Range: *0° - 360°*
Accuracy: *±3 º*
Dead Band: *3°*
Temperature range: *-40 °C to + 60 °C.*
Output: *0,2 to 3,8 Vcc.*
Turning radius: *250 mm*
Dimensions: *237 mm x 60 mm in diameter*
Used materials: *AISI 304 stainless steel, bronze, aluminum.*
Power Supply: *9-16 Vcc,*
Power consumption: *28 mA in 12Vcc*

These sensors are supplied with 15 m long cables.

ACCESSORIES

- *Anemometric support arm for tower mounting, model AS 237*
- *Heater, model AS 233 Includes power supply and electronic thermostat*

Other specifications and ranges available upon request.

TEMPERATURE SENSOR TS247/TS265

The temperature sensors of this series are constructed with stainless steel sheath and have a high accuracy linear thermistor as a temperature sensitive element.
The sheathing in stainless material gives it durability even in adverse environmental conditions.

SPECIFICATIONS

Soil Temperature / Water Model TS247/TS265

Ranges:	-30° to + 50°C
Sheath:	Stainless steel AISI 316
Accuracy:	± 0,3°C in the whole range
Power Supply:	4 +/- 0.005 V stabilized
Consumption:	<1 mA
Load impedance:	< 1MΩ

Output range:	*580 mV to 2755 mV*
Wire:	*5 m Standard length.*
Dimensions:	*80 mm (lenght) x 8 mm (Diameter)*
Model TS265:	*with float for evaporation tank*

TS 265 sensor with float for evaporation tank

Sensor TS 247

Other specifications and ranges available upon request.
Other lenght of wire on request.

HUMIDITY AND AIR TEMPERATURE SENSOR TS251T

The combined humidity and temperature sensor Model TS251 T is designed for ambient measurement.
The humidity measurement is based on the dielectric variation of a high stability solid state capacitor, while that of temperature by a high accuracy platinum resistance resistance.
The sensor is protected by means of a filter, giving it high resistance to dust and contaminants and can be used for extended periods of time without recalibration.

The electronics integrated to the sensor, allows an amplified signal from 0 to 4 V suitable for recorders, weather stations, etc. A watertight cabinet houses the electronics, and is provided with an anchor suitable for attaching to a sunscreen and mounting arm.

SPECIFICATIONS*

Humidity

Range:	*0 - 100% HR.*
Sensor:	*Capacitiv, solid state*
Accuracy:	*±3% Fe*
Analog Output:	*500 to 4000 mV.*

Temperature

Range:	*-40 to +60ºC*
	(Other ranges upon request)
Accuracy:	*±0,2°C (0 to +50ºC)*
	±0,4°C (-40 to +60ºC)
High level analog output:	*400 to 3600 mV*
Power Supply:	*9 to 16 Vcc (typical 12Vcc)*
Dimensions:	*230 x 110 x 40 mm (no sunscreen)*
Connection Cable:	*Length 15 m.*

Other specifications and ranges available upon request.

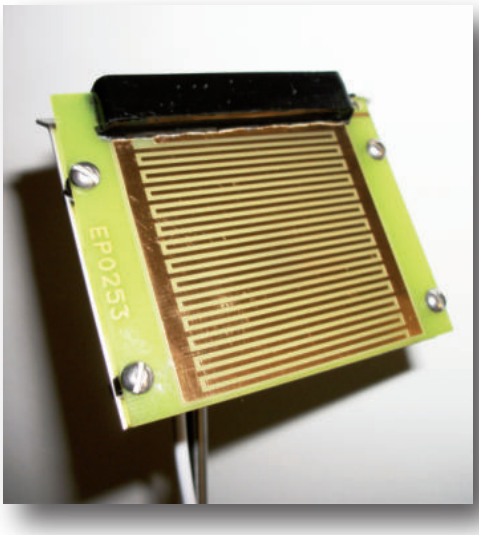
ACCESSORIE

Sunscreen Model AS 250

The TS250 included Multiplate Plate Radiation Shield, manufactured with UV stabilized white thermoplastic plates.

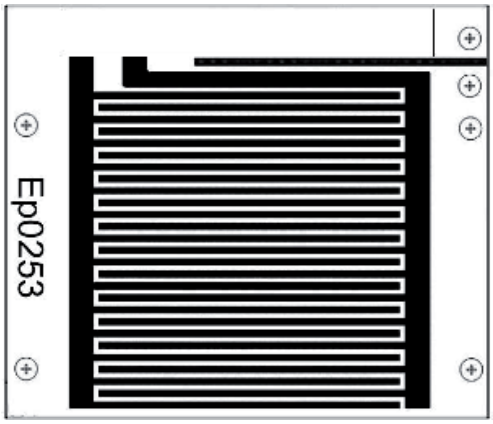
LEAF WETNESS SENSOR TS 253

The TS253 Sensor is designed to simulate a sheet and measure the dry / wet condition.
To do this, it uses a printed circuit board on which there are 2 conductive lines with a certain proximity to each other which are covered in gold to prevent corrosion from exposure to the weather. These 2 conductive lines are insulated, in the presence of moisture on the surface there is an electrical conduction between them. This can be interpreted as a variable resistance depending on the degree of existing humidity:



Dry sensor: R sensed = ∞
Wet sensor: R sensed = 0

The maximum electrical output is achieved for a wet sensor, which is approximately 0.01 times the power supply connected to the sensor.



SPECIFICATIONS

Power Supply:	*0 to 16 Vcc 0 or 12 Vca (between 1 and 2 Khz)*
Output:	*Dry < 20mV*
	Wet *> 50mV*
Sensed area:	*57 x 52 mm*
Cable length:	*5 mts*
Bracket:	Metal base with mounting rod

***Other specifications and ranges available upon request.**

SOIL MOISTURE SENSOR TS254

The TS 254 soil moisture sensor measures the dielectric constant of the soil which is directly related to the water content of the soil.
The sensor consists of a pair of electrodes encapsulated in epoxy resin, containing an electronic circuit that measures the dielectric capacity of the medium at a frequency of 5MHz.
This sensor, of very high durability, is not influenced by the salinity or conductivity in a soil suitable for agriculture.
The most important application of this sensor is to be able to decide when and how much to irrigate in controlled irrigation systems.
Being easily connected to Weather Stations, recorders, etc., it is possible to start irrigation automatically when the humidity levels fall below a user-determined value, as well as cut off the water supply when the humidity increases to the optimum default value of the crop.

FEATURED FEATURES

- **High durability**
- **High stability**
- **Easy installation**
- **Free maintenance**

SPECIFICATIONS

Range:	*0 – 100% of field capacity*
Tipe:	*encapsulated electronic*
Principle of operation:	*Variation of Dielectric Constant of the soil*
Precition:	*+/- 5 %*
Output:	*0.5 – 3.3Vcc*
Power Supply:	*5.5 – 16 Vcc*
Diameter:	*30mm*
Length:	*170mm*
Encapsulated:	*IP68*
Materials:	*epoxy resin*
Length of cable:	*5 mts*

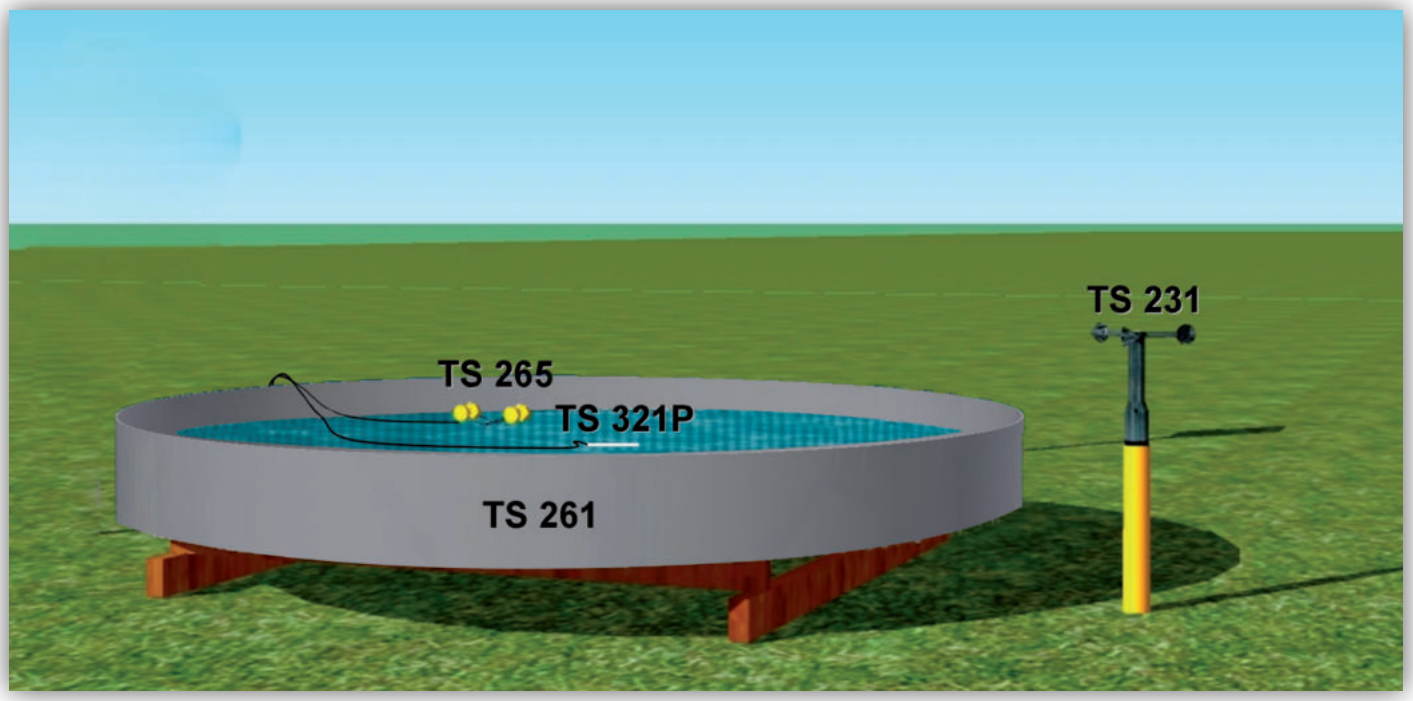
**** Other specifications and ranges available upon request.***

SET OF SENSORS TO MEASURA EVAPORATION TS260

The TECMES Model TS 260 sensor evaporation station consists of a set of sensors and elements by which the amount of evaporated water is measured in a calibrated tank.

The group consists of the following sensors:

. A Class A Model TS 261 tank 1225 mm in diameter and 280 mm high I give it in galvanized plate of Fe in which it is installed on a mesh base built of hardwood.
. A pressure level sensor Model TS 312P.
. A water temperature sensor Model TS 265 provided with float and accessories.
. A wind speed sensor Model TS 231 with its respective AS 236 support.



** Other specifications and ranges available upon request.*

SNOW WATER CONTENT SENSOR TS 270

The TECMES snow measurement sensor is basically composed of four very thin pads made of stainless steel, which contains a very low freezing point liquid.
These pads are interconnected to a vertical tube through pipes.
In this tube, a level sensor is installed, by which the displacement of the liquid level is measured as a result of the pressure of the snow exerted on the pad.
In this way, a continuous measurement of the water content of the snow accumulated at the measurement site is obtained.

SPECIFICATIONS

Dimensions:	*950 x 1500 X 20 mm*
	(Other dimensions on request)
Pad material:	*Stainless steel AISI 304*
Pressure and purge:	*Stainless steel AISI 304*

List of Parts

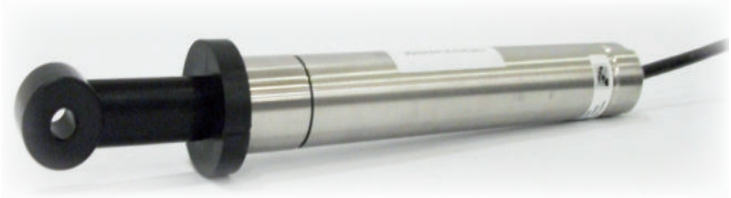
Cushion AS 271 Quantity: 4
4 m long stainless steel vertical pipe AS 272
Set of interconnecting pipes AS 270
TS312P level sensor, range 10m with 25m cable

***Other specifications and ranges available upon request.**

MAGNETIC CONDUCTIVITY SENSOR TS280

FEATURED FEATURES

- **High accuracy**
- **No electrodes**
- **Output 4-20 mA**



This submersible sensor up to 20 mts. Depth of depth allows precise measurement of conductivity, by means of a magnetic measurement system without electrodes.
The body containing the electronics is constructed of AISI 316 stainless steel, and has an output of 4-20 mA.
Their low supply voltage makes them suitable for PLC, datalogger, RTU, etc. A thermistor housed within the capsule allows the conductivity to be compensated with temperature.

SPECIFICATIONS

Range:	*0-2 ; 0-10; 0-20 mS*
Linearity:	*± 1% F.E.*
Output:	*4-20 mA*
Power Supply:	*10 to 16 Vcc (typical 12Vcc)*
Operating Temperature:	*0° to + 50°C*
Case:	*Stainless steel AISI 316. No electrodes*
Cable:	*PE 15 m long (Other length on request)*
Dimensions:	*Long. Total 334 mm; ø body 38 mm; ø toroid 34 mm*

How to order

TS280-XX
XX: 02 range 02 mS
XX: 10 range 10 mS
XX: 20 range 20 mS

***Other specifications and ranges available upon request.**

CONDUCTIVITY SENSOR TS282

This submersible sensor up to 20 meters deep allows the precise measurement of the medium conductivity of titanium electrodes.

The measurement is based on the generation of a constant excitation signal in one of the electrodes and measurement of the induced signal in the second electrode due to the conductivity of the medium in which it is immersed.

The microprocessor controlled sensor allows a wide measuring range.

The body containing the electronics is made of AISI 316 stainless steel and has a 4-20 mA output.

Their low supply voltage makes them suitable for operating with PLC, datalogger, RTU, etc.

SPECIFICATIONS

Material:	*316 Stainless steel*
Dimensions:	*Length = 265mm* *Diameter = 38mm*
Transducer:	*Titanium electrode*
Measurement Ranges (RM):	*0-500µS; 0-5.000µS; 0-10.000µS; 0-20.000µS.*
Output Range:	*4-20 mA*
Linearity:	*±1% S.F.*
Power Supply:	*9 to 16 Vdc*
Power Consumption:	*30 mA*
Load Resistance:	*<300Ω*
Cable:	*3 conductors x 0.25 mm^2 with PE.* *Insulation Kevlar threads (for assembly support).* *General shielding with Al.* *MeshBlack PE outer sheath, D = 8 mm ± 0.2 mm.* *Length: 10m*

Other specifications and ranges available upon request.

ATMOSPHERIC PRESSURE SENSOR TS 290

The TS 290 atmospheric pressure sensor uses a thermally compensated transducer of high linearity and stability that responds to changes in atmospheric pressure.
The sensor requires a power supply of 9 to 16 Vdc and is ready to be part of an automatic measuring station.
It can be mounted in any position, and has a socket for sensing the pressure remotely in case of installing in watertight compartments.

SPECIFICATION*

Range:	*600 to 1100 hpa / 500 to 1100 hpa*
Output:	*0 to 4000 mV*
Accuracy :	*±0,2hpa (at +20°C)*
Resolution:	*0,1hpa*
Temperature range of operation:	*-40°C to + 60°C - Standard*
Annual Stability:	*0,1hpa / year*
Power Supply:	*9 to 16 V (typical 12 Vcc)*
Consumption:	*< 10 mA in 12Vcc*
Dimensions:	*90 x 90 x 55 mm*
Weight:	*0,25Kg*
Mounting:	*On DIN rail*
Connection Cable:	*Length 5 m.*

Other specifications and ranges available upon request.

SOLAR RADIATION SENSOR TS304

Silicon pyranometer Model TS 304 is an instrument intended for the measurement of solar radiation.
The sensor consists of a silicon diode that converts light energy into an electrical signal that is conditioned to obtain a high level analog output.
It responds in a spectral band between 400 and 1100 nm, being able to measure both incident and reflected radiation
The integrated accuracy over a one-day period and has a one-day integrated accuracy as a snapshot of ± 5% Fe.

SPECIFICATIONS

Spectral response:	*0.4 to 1.1 microns*
Measurement range:	*0 – 1400 W/m2*
Output:	*200 to 3280 mV*
Sensor:	*Silicon photovoltaic cell*
Accuracy:	*± 5% scale background*
Response time:	*10 milliseconds*
Operating Temperature:	*-30 to + 60 °C*
Leveling:	*by level bubble*
Power Supply:	*9 – 16 Vcc(typical 12Vcc)*
Cable:	*3 mts. long*
Material of the body:	*Delrin with UV protection*

ACCESSORIES

- *Multiple support model AS 237*

***Other specifications and ranges available upon request.**

CLASS A PYRANOMETER SENSOR TS301

The TECMES Radiation Sensor, model TS 301 is an instrument for measuring global solar radiation in the spectrum 385 to 2105 nm. A thermocouple system measures radiation up to 2000 W / m2 with a response time of 18 seconds.
A glass dome protects the sensor from external influences.
The sensor is specially developed for use in weather stations, agriculture, solar system monitoring, industrial applications, etc.

Support

SPECIFICATIONS

Class:	*C*
Range:	*0 to 2000 W/m2*
Spectral response:	*385 to 2105 nm*
Output:	*0 - 90mV*
Sensor:	*termopile*
Linearity:	*1%*
Response time:	*18 seg*
Cable:	*5m*
Operating Temperature:	*-50 to +80 °C*

ACCESSORIES

- *AS 237 multiple support*

***Other specifications and ranges available upon request.**

Sensors

FLOATING LEVEL SENSOR TS310F

FEATURED FEATURES

. **Potentiometric type**

. **Analog output**

. **High accuracy.**

. **High durability.**

. **Easy installation.**

The TECMES Model TS 310 F float level sensor is especially used to measure the level of rivers, lakes, reservoirs, etc.
The fluid level variations that occur in a shrink tube displaces a float of aging-resistant thermoplastic material, which, coupled with a non-tensile steel sheath, causes the rotation of a calibrated pulley. This pulley is integral with its axis, a precision potentiometer, which fed with a reference voltage, generates an analog output proportional to the level variations.

Output V: *0,1 to 1,1 V range 1,10, 20 mts*
0,1 to 0,6 V range 6 mts
0,1 to 2,1 V range 20 mts

Accuracy: *± 0,1% Fe*

Power Supply: *4 V reference*

***Other specifications and ranges available upon request.**

PRESSURE LEVEL SENSOR TS312P

The TECMES TS 312 P pressure sensor is suitable for both level and estuarine level measurements, such as wells or tanks.
It consists of a high accuracy piezoresistive pressure transducer, thermally compensated, housed in a stainless steel watertight capsule.
In this watertight capsule is also the signal conditioning electronics, which allows its connection to any recorder, data acquisition system, reader, etc.
The electrical interconnection is done by means of a cable wrapped in polyethylene, containing the electrical conductors, a tape of kevlar to confer a great resistance to the traction, and a capillary tube that connects the camera of the capsule seal with the outside. This is done to compensate for the errors that the variation of atmospheric pressure could produce in the measurement.
Optionally supplied with temperature sensor (T version)

FEATURED FEATURES

. **High accuracy**

. **Easy installation**

. **With Atmospheric pressure compensation**

SPECIFICATIONS*

Transducer: *Piezorresistivo with temperature compensation*
Ranges: *0-1 mca; 0-10 mca; 0-20 mca 0-50 mca*
Output: *4-20mA/ 0-3 VDC*
Power Supply: *9 - 16V*
Dimensions: *25,4 x 176mm / 25,4 x 210mm version **D***
Accurancy: *± 0,1 % Fe (Compensated between 0ºC and 35ºC)*
Operating temperature: *-10 °C to + 60 °C / -30 °C to + 60 °C / others on request.*
Overpressure: *3 times the range.*
Case: *Stainless steel AISI 316*
Interconnection cable: *4-conductor, 1 Kevlar tape capillary tube, 8 mm polyethylene sheath, 1 mm thickness*

Cable Lengths according to measurement range
1m Range 10m Cable
10m Range 15m Cable
20m Range 25m Cable

Other specifications and ranges available upon request.

PH SENSOR TS 320

The TS 320 pH measurement sensor uses flat surface electrodes to prevent the deposition of suspended solids, and even more the current fluid on the electrodes facilitates a self-cleaning action, prolonging their life and improving their performance.

FEATURED FEATURES

- **Ideal for surface measurements and in depth**
- **Easy to install**
- **Self cleaning electrode**

SPECIFICATIONS

Range:	*0-14 pH*
Accurancy:	*± 2 % Fe at 25ºC*
Body of Sensor:	*Stainless steel AISI 316*
Power Supply:	*9-16 Vcc (typical 12Vcc)*
Consumption:	*10 mA in 12Vcc*
Output:	*4- 20 mA*
Operating temperature:	*-10 – 60 °C*
Pressure:	*2 kg/cm²*
Cable:	*PE 10 meters in length (Other lengths on request)*
Dimensions:	*Length 335 mm x Diameter 45 mm*

Other specifications and ranges available upon request.

DISSOLVED OXYGEN SENSOR TS 330

The TECMES sensor, Model TS 330, is a submersible type sensor for the measurement of dissolved oxygen in rivers, reservoirs, treatment plants, etc.
Built with a large electrolyte reservoir, an adequate membrane fixing system, and a galvanic technology cell, it allows its use submerged for a long time and with very low maintenance.
The membrane can be supplied in either HDPE (High Density Polypropylene) or Teflon.
The electronics included with the sensor have an analog output suitable for interconnection to dataloggers, indicators, etc.

SPECIFICATIONS

Range:	*0 - 100 % or 0 - 200 %*
Temperature operating range:	*0 - 50°C*
Pressure range:	*0 - 10 mca*
Cell type:	*Galvanic*
Linearity:	*± 3 % FE*
Response time:	*1 minute for HDPE, 2 minutes for Teflon*
Capsule:	*Stainless steel watertight*
Output:	*4 – 20 mA*
Power Supply:	*9 to 16 Vcc (typical 12Vcc)*
Cable:	*PE 10 meters in length (Other lengths on request)*

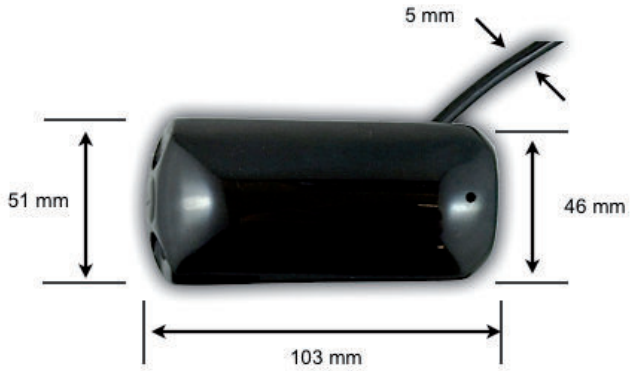
Other specifications and ranges available upon request.

Sensors

SPEED AND LEVEL WATER SENSORTS350

FEATURED FEATURES

- **Very low consumption**
- **Easy installation**
- **Doppler Effect**



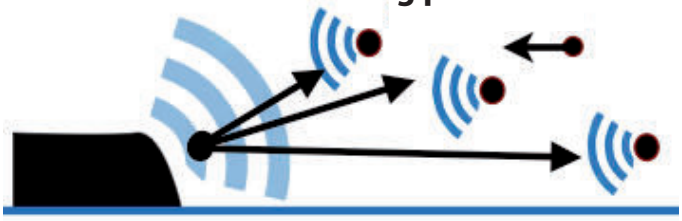
DESCRIPTION

The TS350 liquid speed sensor is a device for measuring the average speed of the fluid where it is immersed.

The speed measurement is performed by a sensor installed at the bottom of the channel, which measures the average speed that together with the level measurement allows to obtain the value of the flow

This sensor is conditioned to be connected to Data Acquisition equipment for the storage and transmission of flow and level data of channels, or water pipes.

Moving particles

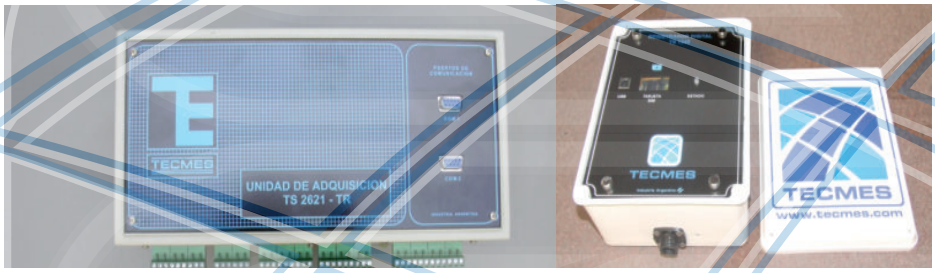


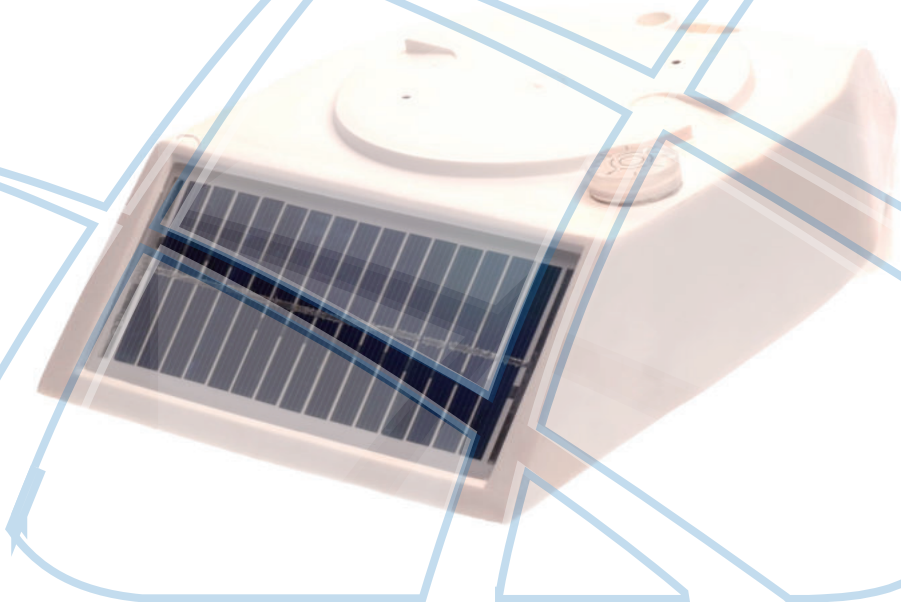
ESPECIFICATIONS

Speed range:	*0 to10 m/s*
Level Range:	*0 to10 m*
Output:	*frecuency for speed and analogic for level*

Other specifications and ranges available upon request.

DATALOGGERS





DATALOGGER TS 2631

DATALOGGER GSM 2G / 3G with Solar Panel EP2010

DATALOGGER GSM / GPRS TS 2040

INDICATOR, REGISTER AND DATALOGGER TS 2002 DL

DATALOGGER TS 2631

The dataloggers of Line 2631 are measurement and data acquisition systems for industrial, meteorological or environmental sensors.
Its transmission through a cell phone equipment, by radio or satellite, makes it very versatile and applicable to remote telemetric stations.
Through a tablet or P.C., acquired data is accessed easily and reliably.
It has standardized analog and digital inputs, which allows direct connection of sensors, both industrial and meteorological and environmental.
Its 12 V power supply and low consumption make it suitable for autonomous operation with batteries and solar panels.

COMUNICATIONS

The Acquisition Unit has multiple communication ports: RS232, USB, RS485, SDI12, *(RS422 Optional)*.
These communication ports allow the equipment to easily communicate with Laptops, Satellite communication modems, cell phone, Radio modems etc.

OPERATIONAL PROGRAMS

The unit has statistical calculation programs on the input variables, such as maximums, minimums and averages.
Data and calculated values are validated and processed with High and Low thresholds and Ascending and Descending slopes.
The standard modes of operation are:

- Autonomous
- Periodic
- By interrogation
- For events

Optionally, operation program appropriate to each specific need, requested by the user, can be provided.

FEATURED FEATURES

- **Non-volatile memory**
- **Modular and compact**
- **configuration and programming update of the firmware by USB port**
- **Transmission via cell phone / radio / satellite**
- **Large coverage**
- **Protected inputs / outputs**

SPECIFICATIONS*

CPU:	*Low power processor, 32-bit CMOS technology.*
Data storage memory:	*16 MB FLASH, not volatile*
Data register:	*FIFO, 30.000 data per channel*
Real time clock:	*Accuracy ± 2 min / month: synchronizable*
Communication Ports:	*USB, RS232, RS485, SDI12, Ethernet (RS422 Optional)*
Analog inputs:	*16 common mode / 8 differentials + 1 for battery voltage measurement*
AD Converter:	*16 bit resolution*
Input levels:	*0 – 4 V or 4 – 20 mA*
Accuracy:	*± 0,04% de FS (0 to 40 ºC)*
Protections:	*In all - in out, by gas discharge tube protectors, inductor and semiconductor*
Digital inputs / outputs:	*1 port RS 232; RS 485; USB* *8 / 16 digital contact inputs* *1 Rain Gauge input, with debounce and fault detection.* *1 SDI12 Port capable of directional up to 15 sensors*
Outputs :	*2 for sensor supply 12Vcc-100mA*
Power Supply:	*9-16 Vcc*
Range of operation:	*-40 ºC to + 60 ºC - Standard (In environments without condensation)*
Enclosure:	*Metallic with treatment* *233 x 186 x 80 mm*

Other specifications and ranges available upon request.

DATALOGGER GSM 2G / 3G With Solar Panel EP2010

The Tecmes Model EP2010 Remote Acquisitor is a device for the measurement, storage and transmission of data from industrial sensors such as hydrometeorological via GSM 2G / 3G Cellular telephony.

The unit that is supplied fully integrated in a cabinet built in acetal resin with its battery power supply and solar panel, allows to quickly and easily integrate any remote monitoring and measurement system.

Its simple assembly on a 45 mm tube and its connection through RJ9 connectors make them especially suitable for monitoring variables efficiently and economically.

Access to the measured data is done through your USB port, or remotely on an external server through a TECMES web page by means of a password (GSM 2G / 3G Option).

Another possibility is to do it through the user's website, using the data collection and storage program optionally provided by TECMES.

The equipment is supplied with the configuration software, data download and sensor scaling in engineering units

FEATURED FEATURES

- **Monitoring and transmission of alarm to cellulare**
- **Acquirer with integrated solar panel**
- **Easy installation**
- **2G / 3G GSM transmission**
- **Local storage**
- **Access to data via the Internet**
- **Includes atmospheric pressure sensor**

SPECIFICATIONS

Number of analog channels:	*9*
Digital pulse input:	*2 (1 to 300 Hz)*
Digital analog converter:	*12 bits*
Resolution:	*1 in 4096*
Accuracy:	*± 0,02%*
Analog Input Levels:	*0-3, 3 V or 4-20 mA*
Measuring periods:	*1, 5, 10, 12, 15, 20, 30 y 60 minutes*
Measurement:	*Last minute average*
Atmospheric pressure sensor:	*600 to1100 hp*
Data storage capacity:	*14.000 data per channel*
Dataports:	*USB, RS232 or RS485. Protocol Modbus*
Power Supply:	*8 – 16 Vcc*
Setting:	*By PC*
Transmission:	*GSM 2G/ 3G*
Enclosure:	*With battery and solar panel*
Dimensions:	*L 354 x A 215 x H 154 mm*

OPTIONALS

EP0010 mounting tripod
2G / 3G GSM transmitter
Website Program
Pegasus Mobile APP

Other specifications and ranges available upon request.

DATALOGGER 3G / 2G TS 2040

The TECMES Model TS2040 Datalogger is a device for the measurement and storage of data from hydrological and industrial sensors.

Its implementation optimizes energy use, operating in low consumption modes, turning on peripherals, sensor and communication systems on demand. This allows you to operate with 4 alkaline batteries D achieving autonomies of up to 12 months (according to the defined measurement and recording times).

The unit is supplied fully integrated in a suitable outdoor enclosure, with IP65 egree of protection, small dimensions and very easy installation.

Optionally it can be provided with 2G / 3G or RF transmission.

Software is provided that runs in Windows environment for local operation and is available as an option of a software capable of receiving the data sent by 2G / 3G, managing it in a Database and making it public through a Web Application which is accessed from any Internet browser accessing with username and password.

FEATURED FEATURES

- **Acquirer and Autonomous Registrar**
- **Very low consumption Great autonomy**
- **Reduced Dimensions**
- **Easy installation**
- **Transmission via 2G / 3G**
- **USB communication port**

Dataloggers

ESPECIFICATIONS

Input channels:	*3 Analogue* *1 Frequency*
Input Range:	*0 – 3,3 Vcc / 4 - 20 mA*
Accuracy:	*± 0,04%*
Registration Period:	*1, 10, 15, 20, 60, 120, 360, 720 minutes*
Registered Data:	*Average during measurement time*
Measurement Time:	*15, 30, 60, 120, 300 seg*
Data memory:	*30.000 records*
Local connection:	*USB port*
Wireless connection:	**2***G / 3G*
Power Supply:	*4 Alkaline Batteries D*
Enclosure:	*IP65 – suitable outdoors*
Dimensions:	*150 mm x 200 mm x 110 mm*

OPTIONALS

SAT2-M: Server and Web Application

Other specifications and ranges available upon request.

Dataloggers

INDICATOR, REGISTER AND DATALOGGER TS 2002 DL

ONLY ONE INFINITE TEAM POSSIBILITIES

The Tecmes TS2002DL Industrial Indicator has as its fundamental function the visualization and registration of process variables. It is applicable to automated and instrumented production processes that require local monitoring and indication of the variables involved.

It has a liquid crystal display of 128 x 64 points in which 2 variables are displayed simultaneously with its main attributes such as Identification, Units and.

The front panel, made of polycarbonate, has 4 bubble-type keys, which allow access to the programming and operation menus of the equipment.

It allows the connection of up to 4 analog voltage or current inputs in their standard ranges and 1 high-speed pulse input.

The equipment has control capability through 2 dry contact outputs which can be commanded based on the values obtained in the measurements.

Another built-in electrical output is a 4-20 mA type through which the value of any of the 4 analog inputs is repeated.

Acting as an analog repeater, remote signals can be transmitted to enter other indicator or acquisition equipment.

The TS2002DL has an asynchronous serial communications port with the RS232 interface as standard which allows the connection of a local PC for reading the recorded data and configuration of the equipment, optionally the interface can be RS485 allowing this to make the connection of a distant PC or put together a multipoint network with several devices connected to the same Supervision and Control system.

The TS2002DL, has a Data Storage subsystem, consisting of a Flash Non-Volatile Memory bank and a Real.

Time Clock with a Backup Battery.

The stored data is available for local display or for download on PC where it can be stored in text formatted files with ease of importing into processing and graphing applications.

FEATURES HIGHLIGHTS

. Can operate as Indicator, Controlle and Datalogger.

.Posee graphic display of Liquid Crystal (LCD) high definition.

. Great diversity of inputs and outputs.

. Easy Programming

. 1/4 DIN size

ESPECIFICATIONS

Microcontroller Based:	*CMOS, arquitecture RISC*
Liquid Crystal Graphic Display (LCD):	*128 x 64 pixels with contrast adjustment and backlight on keyboard control*
Front panel:	*Polycarbonate suitable for use in industrial environments*
Analog Inputs:	*Four, 0-5Vdc, 4-20 mA, or high-speed pulses*
Outputs:	*1 Analog output 4-20mA.*
Analog / Digital Converter:	*10 bits as standard with the possibility of expanding to 16 bits* *Conversion of the variables to Engineering Units, possibility of scaling through* *9 points that de"ne 8 consecutive linear sections. Enabling and con"guring the inputs independently and from the keyboard.*
Memory:	*Non-volatile 1Mbit Flash type for data storage (8192 data per channel).*
Clock:	*Real time.*
Asynchronous serial port:	*RS232, with implementation of the standard "Modbus" protocol through which you can extract the recorded data and perform the total con"guration of the equipment.* *Optionally the serial port can respond to the RS485 standard*
Dimensions:	*Front: 100 x 100 mm .; Depth: 136 mm .;*
Draft:	*92 x 92 mm (+ 0,8 – 0,0)*

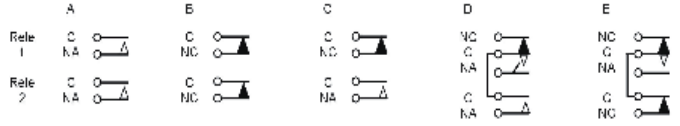
How to order : TS 2002 - X - X - X - X

Power Supply 12Vcc: 12
24Vcc: 24
110Vca: 110
220Vca: 220

Port RS232
Port RS485

Contact Relay

3A — 3 Analogue In. 1 Of pulses
2A — 2 Analogue In. 1 Coil (floating)
4A — 4 Analogue In.



**Other specifications and ranges available upon request.*

AUTONOMOUS EQUIPMENT AND METEOROLOGICAL STATIONS

CURRENT AND DIRECTION RECORDER TS 1020

HYDROMETRIC CURRENT METER TS 1001

2G / 3G LEVEL RECORDER TS 1340

GSM 2G / 3G LEVEL RECORDER with solar panel EP 1350

DOPPLER EFFECT FLOW METER TS 1360

RAIN REDORDER 2G / 3G TS 1240

SATELLITE RAIN RECORDER TS 1221

GSM 3G RAIN RECORDER with solar panel EP 1222

METEORTEC HYDROMETEOROLOGICAL STATION

METEORTEC HYDROMETEOROLOGICAL STATION FOR SOLAR PARKS

PEGASUS WEATHER STATION

AIR QUALITY MONITORING NODE BETTAIR

CURRENT AND DIRECTION RECORDER TS 1020

The TECMES Model TS 1020 Directional Corneograph is a device for measuring and recording speed and direction of currents in rivers, estuaries, etc.
Autonomous operation, allows operation submerged for long periods with minimal maintenance.
Made of non-oxidizable metals, it has a mechanism of great robustness and durability.
Your electronics records the speed of the current and direction using an electronic compass for very long periods of time without replacing your batteries.
With very few moving parts, only the propeller with its magnets inserted, make this equipment a very reliable instrument.

ESPECIFICATIONS

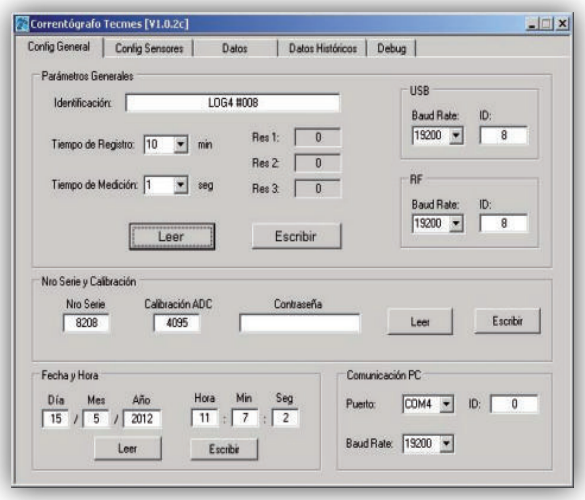
Range:	Speed: 0,05 to 8 m/sec.
Address:	0 to 360 °
Precision:	Speed: 1,5% for reading by above 0,15 m/sec. Address: ± 5 °
Propeller:	Styrene 125 mm in diameter.
Subjection:	Para operar suspendido de un cable.
Data register:	Configurable in 1, 10, 15, 20, 60, 120, 360 and 720 minutes.
Measurement time:	Configurable in 1, 15, 30, 60 and 120 seconds.
Configuration and Data download:	Via USB port or via RF by air 100m reach, via AS1020 interface to PC
Registration Capacity:	30.000 data
Power Supply:	4 AA alkaline batteries up to 12 months of autonomy (measuring every 15 minutes)
Dimensions:	Length 72 cm, fin width 14 cm and height 27 cm.
Weight:	12 Kg

FEATURED FEATURES

- **Acquirer and Autonomous Registrar.**
- **Measures Direction and Speed of the current.**
- **Very low consumption. Great autonomy.**
- **Operation via RF link.**
- **Minimum maintenance.**

IT INCLUDES

PC communication interface Model AS 1020
Replacement Propeller Shaft
Carrying case
User manual in Spanish and English

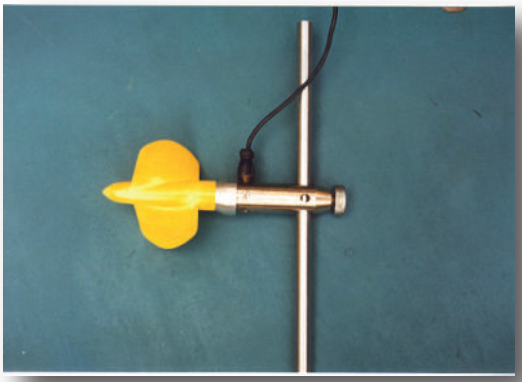


*Other specifications and ranges available upon request.

Autonomous Equipment

HYDROMETRIC CURRENT METER TS 1001

The TECMES Model TS 1001 Digital Hydrographic Windmill or Wind Turbine is a device suitable for the measurement of river flow velocities, as well as in industrial effluents.
It allows submerged operation for long periods of time with minimal maintenance.
Built in aluminum and bronze, it has a system of rotation detection by switch network of great robustness and durability.
An electronic counter with liquid crystal display shows the rotation speed after 10, 30, 60, 120, 180, 240 seconds and infinity (permanent count).
With very few moving parts, only the propeller with its magnets inserted, make this equipment a very reliable instrument.



FEATURED FEATURES

- **Wide measuring range.**
- **Simple and low maintenance project.**
- **Simple operation.**

SPECIFICATIONS

Range: *0,05 to 5 m/sec.*

Precision: *1,5% for reading above 0,15 m/sec.*

Propeller: *High-impact styrene 125 mm in diameter.*

Sujetion: *Capacity Bar 3 x 0.5 m in length and Bar 0.25m perforated stand for use with pendant suspended from a cable.*

Display: *Electronic with 4 digits and auditory signal for every turn of the propeller.*

Indication: *In m/s and pulses*

IT INCLUDES

- Directional flap with clamping bar.
- Replacement Propeller Shaft.
- Suspension bar.
- Carrying case 54x26x36cm (weight with all accessories, 6kg
- User manual in Spanish and English

*Other specifications and ranges available upon request.

2G / 3G LEVEL RECORDER TS 1340

FEATURED FEATURES

- **Acquirer and Autonomous Registrar**
- **Very low consumption Great autonomy**
- **Reduced Dimensions**
- **Easy installation**
- **Transmission via 2G / 3G**
- **Remote data download by RF**
- **Pressure level sensor or Float**
- **USB communication port**

DESCRIPTION

The TECMES Model TS1340 Limnigraph is a device for measuring, storing level data from pressure or float type sensors.

Its implementation optimizes energy use, operating in low consumption modes which allows it to operate with 4 alkaline batteries D achieving autonomies of up to 24 months (according to the defined measurement and recording times).

The equipment is composed of a Model TS2040 data logger and a level sensor that can be by pressure such as the TS312P or float model TS310F.

The unit is supplied fully integrated in a cabinet suitable outdoors, with degree of protection IP65, of dimensions reduced and very easy installation resulting highly recommended to install in places with public access, being able to hide easily to avoid acts of vandalism, for example: under a bridge, which is possible since its operation does not depend on solar energy.

The standard version includes a 2G / 3G cell phone communication MODEM transmitting to our website with access by username and password or through a radio link that allows data downloading close to the installation site being necessary in this case to use the AS1020 Interface to PC.

A software is provided next to the device to configure and download the data that you run in a Windows environment.

SPECIFICATIONS

Input Range:	*0 – 3.3 Vcc*
Accuracy:	*± 0,04%*
Registration Period:	*10, 15, 20, 60, 120, 360, 720 min.*
Registered Data:	*Average during measurement time.*
Measurement Time:	*15, 30, 60, 120, 300 sec.*
Data memory:	*30.000 records*
Local connection:	*USB port*
Wireless connection:	*RF o 2G / 3G*
Power Supply:	*4 Alkaline Batteries D.*
Autonomy:	*Up to 12 months.*
Enclosure:	*IP65 – suitable outdoors*
Dimensions:	*D: 210 x 160 x 110 mm*

MODELS

TS1340 X Recorder with Level Sensor

X = P: Pressure Level: 0-1, 0-10, 0-20 mts
X = F: Float Level: 0-1, 0-6, 0-10 mts

OPCIONALS

SAT2-M: Server and Web Application

TS 312P

TS 310F

**Other specifications and rangesavailable upon request.*

GSM 2G / 3G LEVEL RECORDER whit solar panel EP 1350

The TECMES Model EP 1350 Limnígrafo is a device for the measurement, storage and transmission via GSM 2G / 3G cellular telephone of level data.

The unit that is supplied fully integrated in a cabinet built in acetal resin with its battery power supply and solar panel, allows to quickly and easily integrate level sensors by pressure or float.

Its simple assembly on a 45 mm tube and its connection through RJ9 connectors make them especially suitable for measuring levels efficiently and economically.

Access to the measured data is done through your USB port, or remotely on an external server through the TECMES website through a password.

Another possibility is to provide the web application for the user to install on their own server.

The equipment is supplied with configuration software, data download and sensor scaling in engineering units.

FEATURED FEATURES

- **Acquirer with integrated solar panel**
- **Easy installation**
- **2G / 3G GSM transmission**
- **Local storage**
- **Access to data via the Internet**
- **With pressure or float level sensors.**
- **USB communication port**

SPECIFICATIONS

Digital analog converter:	*12 bits*
Accuracy:	*± 0,04%*
Measurement periods:	*5, 10, 12, 15, 20, 30 y 60 minutes*
Measurement:	*Last minute average*
Data memory:	*14.000 data per channel*
Entry doors exit:	*USB*
Power Supply:	*8 – 16 Vcc*
Setting:	*By PC*
Transmission:	*GSM 2G/ 3G Quadband*
Enclosure:	*Integrated with buyer, battery and solar panel*
Dimensions:	*L 354 x W 215 x H 154 mm*

Level Sensor: *TS312P by pressure, ranges:0-1; 10; 20 m.*
TS310F by float, ranges: 0-1; 6; 10m.

TS 310F

TS 312P

MODELS:
TS1350 X: Recorder with level sensor and 2G/ 3G comunication
X=P: Pressure level sensor
X=F: Float level sensor

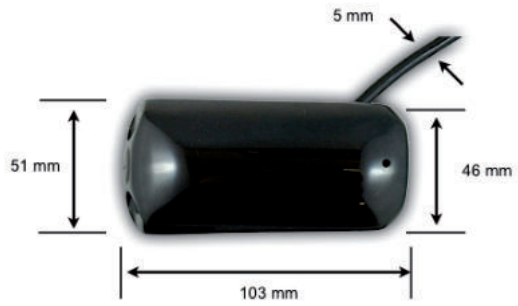
OPCIONAL: SAT2-P web application software
EP0010 mounting tripod

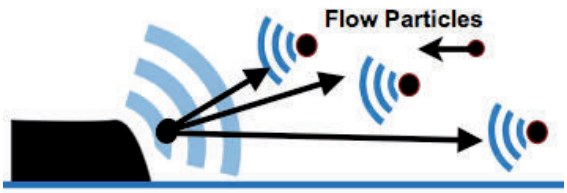
Other specifications and rangesavailable upon request.

DOPPLER EFFECT FLOW METER TS 1360

FEATURED FEATURES

- **Doppler effect speed sensor**
- **Acquirer and Autonomous Registrar**
- **Very low consumption Great autonomy**
- **Battery operation**
- **Easy installation**
- **Transmission via 2G / 3G**
- **USB communication port**





DESCRIPTION

The TECMES Model TS1360 Flowmeter is a device for measuring, storing and transmitting data on the flow and level of channels, or wath clean bottoms.

It consists of a transducer that acts by Doppler effect measuring the speed of the fluid and a TECMES TS2040 datalogger.

Its implementation optimizes energy use, operating with 4 alkaline batteries D achieving autonomies of up to 12 months (according to defined measurement and recording times).

The speed measurement is performed by a Doppler effect sensor that installed at the bottom of the channel, measures the average speed that together with the level measurement allows the flow value to be obtained.

Data transmission is done by 2G / 3G cell phone to a server with access by username and password.

In this way, data is accessed online from any site with an Internet browser simply through a username and password.

In this site you can access the latest data received, it is possible to download historical data, plot it between dates, view them on a map etc.

SPECIFICATIONS

Speed Range:	*0 to 10 m/s*
Level Range:	*0 to 10m*
Registration Period:	*1, 10, 15, 20, 60, 120, 360, 720 minutes*
Registered Data:	*Average during measurement time*
Measurement Time:	*15, 30, 60, 120, 300 sec.*
Data memory:	*30.000 records*
Local connection:	*USB port*
Wireless connection:	*2G / 3G*
Power Supply:	*4 Alkaline Batteries D*
Autonomy:	*up to 12 months*
Enclosure:	*IP64 – suitable outdoors*

Other specifications and rangesavailable upon request.

RAIN RECORDER 2G / 3G TS 1240

The TECMES Model TS1240 Pluviograph is a device for the measurement, storage and transmission of precipitation data by means of a tilting bucket.

The rain, collected by a catchment mouth of calibrated diameter, is conducted by means of a single-piece funnel to the internal receiver that discharges on a tilting bucket.

When you dump it, a magnetic contact (reed switch) without mechanical linkage with the bucket emits a digital signal.

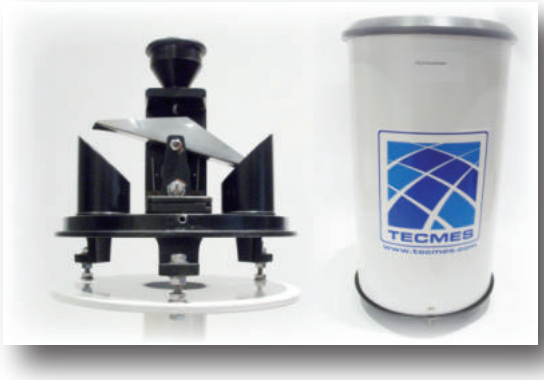
This digital signal is sent to the TS 2040 datalogger.

Its implementation optimizes energy use, operating with 4 alkaline batteries D achieving autonomies of up to 12 months (according to defined measurement and recording times).

Data transmission is done by 2G / 3G cell phone to a server with access by username and password.

In this way, data is accessed online from any site with an Internet browser simply through a username and password.

In this site you can access the latest data received, it is possible to download historical data, plot it between dates, view them on a map etc.



RAIN GAUGE SPECIFICATIONS

Sensor:	*Tipping bucket*
Sensitivity:	*0,25 mm*
Operation range:	*0 – 300 mm/h*
Orifice Diameter:	*200 mm pickup ring*
Accuracy:	*±1 % to 50 mm/h*
Operating Temperature:	*-20 to + 60°C*
Insect Protection:	*Metal mesh in the funnel and in a water discharge*
Detector:	*Reed switch activated by a magnet*

DATALOGGER SPECIFICATIONS

Registration Period:	*10, 15, 20, 60, 120, 360, 720 minutes*
Registered Data:	*Average during measurement time*
Data memory:	*30.000 records*
Local connection:	*USB port*
Wireless connection:	*RF o 2G / 3G*
Power Supply:	*4 Alkaline Batteries D*
Autonomy:	Up to 12 months
Enclosure:	*IP65 – suitable outdoors*
Dimensions:	*D: 210 x 160 x 110 mm*

Other specifications and rangesavailable upon request.

SATELLITE RAIN RECORDER TS 1221

The TECMES Model TS1221 Pluviograph is a device for the measurement, storage and transmission of precipitation data by means of a tilting bucket.

The rain, collected by a catchment mouth of calibrated diameter, is conducted by means of a single-piece funnel to the internal receiver that discharges on a tilting bucket.

When you dump it, a magnetic contact (reed switch) without mechanical linkage with the bucket emits a digital signal.

This digital signal is sent to the TS 3040 Equipment, which is composed of a TS 2631 datalogger and an Orbcomm AS 3013 satellite transmission modem.

This equipment operates with a 12V battery which is charged by solar energy, through a photovoltaic panel.

The modem sends a message with the compressed data to an email box preset in AS 3013.

This e-mail is received and processed by a Central Station (EC) software service, which decompresses the data and incorporates it into the Database. This action generates a warning, notifying the arrival of new data.

The Orbcomm system maintains almost real-time connectivity, which basically depends on satellite coverage at the installation site of the equipment. The satellite link is made between AS 3013 and an Orbcomm earth station. From this earth station internet is used to reach the user with the final information through the use of emails.

RAIN GAUGE SPECIFICATIONS

Sensor:	*Tipping bucket*
Sensitivity:	*0,25 mm*
Operation range:	*0 – 300 mm/h*
Orifice Diameter:	*200 mm pickup ring*
Accuracy:	*±1 % at 50 mm/h*
Operating Temperature:	*-20 to + 60°C*
Insect protection:	*Metal mesh in the funnel and in the water discharge*
Detector:	*Reed switch activated by a magnet*

MODEM SPECIFICATIONS

Power Supply: *9 to 14 Vcc (typical 12 Vcc)*
Antenna:
Impedance: *50 ohm*
Operating Frequency: *Rx 137,00 - 138,00 MHz. Tx 148,00- 150,00 MHz.0 – 300 mm/h*
Tx power: *5W*
RS-232 Serial Port:
Signals: *RXD: pin 2 / TXD: pin 3 / 0V: pin 5*
Configuration Mode against PC:
8-N-1 data format.
No flow control
Configurable speed
Autonomous Mode:
N-1 data format.
No flow control
Configurable speed between 1200 bps and 115 Kbps
Temperatura de Operación: *-20 ºC a +60ºC*

Other specifications and rangesavailable upon request.

GSM 2G / 3G RAIN RECORDER with solar panel EP 1222

The TECMES Pluviograph, Model EP 1222 is a device designed to record in a solid state memory, the precipitation detected by means of a tilting bucket.

The rain, collected by a catchment mouth of calibrated diameter, is conducted by means of a single-piece funnel to the internal receiver that discharges on a tilting bucket.

When you dump it, a magnetic contact (reed switch) without mechanical linkage with the bucket emits a digital signal.

This digital signal is sent to the solid-state recorder that is located under the platform that supports the precipitation sensor.

The equipment is supplied with the very easy-to-operate Model TP 02 software, which by means of an oriented menu allows the con!guration of the pluviograph and the downloading of memory data.

It is also possible through this soft check the operation of the bucket or inspect the data already stored in the memory of recorded rainfall.

Its construction is robust and easy to install, requiring only a 45 mm tube for assembly.

The power is through a battery that is charged by a solar panel integrated into the equipment.

Optionally, a 2G / 3G GSM transmission can be provided to a server for access from anywhere with the Internet.

Autonomous Equipment

SPECIFICATIONS

Sensor:	*Tipping bucket*
Sensivity:	*0,25 mm*
Operation range:	*0 – 300 mm/h*
Orifice Diameter:	*160 mm pickup ring*
Accuracy:	*4 % at 50 mm/h*
Operating Temperature:	*-20 to + 60°C*
Insect protection:	*Metal mesh in the funnel and in a water discharge*
Detector:	*Reed switch activated by a magnet*
Recorder:	*In nonvolatile memory*
Autonomy:	*14.000 precipitation data*
Autonomy of Power Supply:	*Unlimited*
Leveling:	*By level bubble*
Building:	*In stainless materials*

Optional: **TS 1222 Recorder with 2G / 3G communication**
SAT2-P WEB application software
EP0010 mounting tripod

Other specifications and rangesavailable upon request.

FEATURED FEATURES

- **High reliability**
- **GSM 2G/ 3G**
- **High accuracy and autonomy**
- **Calibrated pickup ring**
- **Solid state memory**
- **Easy installation**
- **USB communication port**
- **EP0010 mounting tripod**

METEORTEC HYDROMETEOROLOGICAL STATION

DESCRIPTION

The TECMES METEORTEC Station is a robust and compact unit for reliable and continuous measurement of meteorological and hydrological parameters, both analog and digital.

Easy to install and expand to customer needs, it is fully configurable locally and remotely, with multiple communication ports for operation and telemetry.

It is basically made up of the TS 2631 Remote Terminal Unit, which forms a data acquisition, processing and storage unit.

The channel for level measurement has a wave filter to allow accurate measurement of it, regardless of oscillations or waves on the surface of the liquid.

In addition, its 24-bit digital analog converter, with automatic zero and gain calibration, ensures excellent sensitivity and accuracy.

This station is easily configurable for network operation, with communication systems such as satellite (Orbcomm, Iinmersat, Goes, Argos, etc.), radio modems in UHF, VHF, and Spread Spectrum, telephony, MODEM, etc.

Typical sensors configurable in the Station METEORTEC

Wind (Direction and Speed)	*TS231 / TS232*
Humidity and temperature	*TS 251-T*
Soil / water temperature	*TS 247/265*
Soil moisture	*TS 254*
Solar radiation	*TS 301/ 302/304*
Atmospheric pressure	*TS 290*
Precipitation	*TS 221*
Pressure level	*TS 312-P*
Float level	*TS 310F*
Water quality sensors	*TS 280/282/320*

SPECIFICATIONS Remote Terminal Unit TS 2631:

	Range	Accuracy
SENSORS		
Wind Intensity TS 231	*60 m/s*	*1% Fe*
Wind Direction TS 232	*0 – 360º*	*3º*
Heater Mod. AS 233		
Humidity and Ambient Temperature TS 251-T	*30 at + 50°C / -20 at +50ºC*	*± 0,3°C*
Accessories: Sunscreen Model *AS 250*	*0-100% HR*	*±3%*
Soil moisture per dielectric constant TS 254	*0-100%*	
Soil Temperature TS 254	*-30° to 50°C*	*±0,25°C over the entire range*
Soil / water temperature TS 247/265	*-10° to 50°C*	*±0,25°C over the entire range*
Solar Radiation TS 301/ 302 / 303		
Accessories: AS 237 Multiple Support		
Atmospheric pressure TS 290	*600 at 1100 mb*	*±0,5 mB*
Precipitation TS 221	*±1 % a 25 mm/h*	
Accessories: AS 221 Mounting Bracket		
Pressure level TS 312-P	*0-1, 0-6, 0-10, 0,20, 0-50*	*±0,1% Fe*
Float pressure and counterweight level TS 310-F	*0-1, 0-6, 0-10, 0,20, 0-50*	*±0,1%Fe (±0,25% for 0-1 m)*

Other sensors are available for direct connection at the Station, such as water quality, ultrasound level, flow due to doppler effect, snow height, etc.

16 analog inputs
24-bit digital analog converter with autozero and gain
8 digital inputs (1 pulse counter, 1 frequency)
2 digital outputs

Data memory: 4 Mbit non-volatile Flash type
RS 232 / RS485 / SDI12 communication ports
Protection against electric shock on all inputs and outputs.
Communication with satellite systems, radiomodems, etc.

Other specifications and rangesavailable upon request.

METEORTEC SOLAR

The Meteortec Solar Automatic Meteorological Station is specifically configured to assist the electricity generation of solar parks.

It is a system prepared to be configured with different sensors and accessories for additional measurements with alternative communication systems.

The solar monitoring weather station includes weather sensors, mounting accessories, a data logger, the power supply and the communication module.

The equipment can be powered from an AC source or through a solar panel power system. The standard sensor suite includes two Class A pyranometers, a combined temperature and relative humidity sensor, wind speed and direction sensors, precipitation, atmospheric pressure, and solar panel module temperature sensors.

The system maintains real-time **connectivity,** with a latency of 1 minute. The satellite link is made between the AS 3015 and an earth station. From this earth station, the Internet is used to reach the user with the final information through the use of emails.

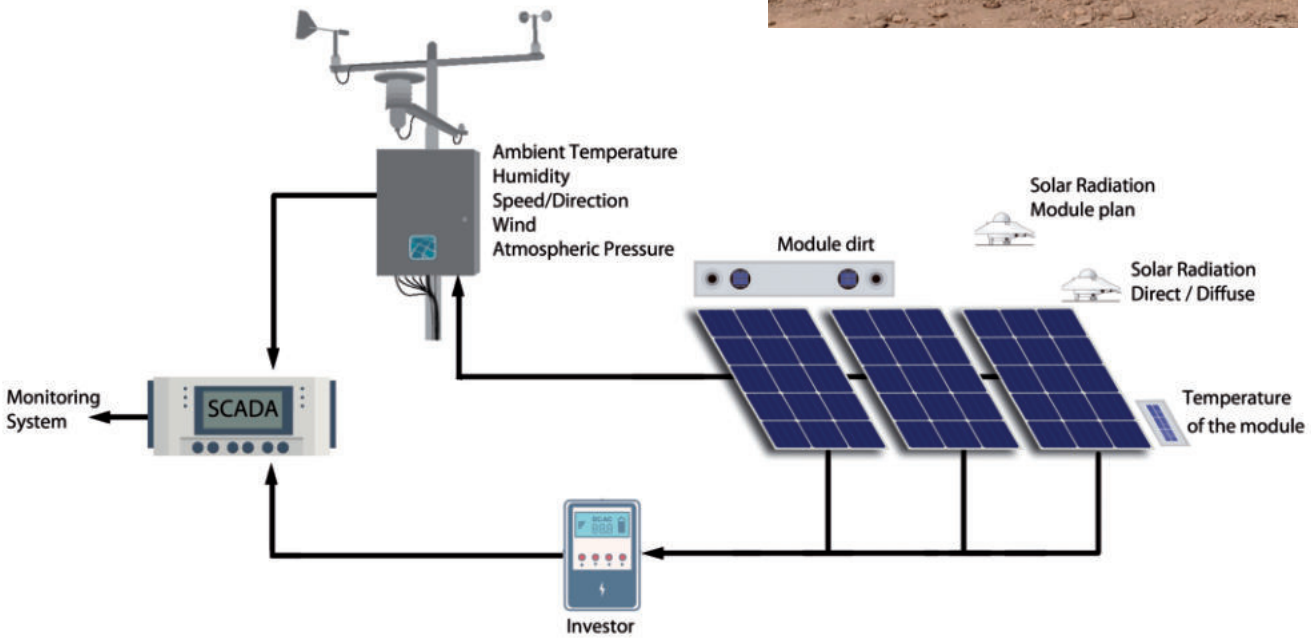
Optionally, diffuse solar radiation and module dirt sensors can be added.

It can have cellular, satellite, TCP/IP or Modbus RTU communication.

Modular and easily customized to client requirements.

FEATURED FEATURES:

- Measures the global, horizontal and plane solar radiation of the solar panel.
- Measures wind speed and direction, ambient temperature and relative humidity..
- Includes a surface mounted sensor measuring the temperature of the solar panel.



**Other specifications and rangesavailable upon request.*

PEGASUS WEATHER STATION

DESCRIPTION

The Pegasus Meteorological Station is a portable station with direct data transmission to the web, by means of GSM 2G / 3G cellular telephony.

Its modular and compact construction with solar panel included allows its assembly and configuration with the most convenient sensors for your application.

Access to environmental information is achieved in two ways: by connecting to the Station via USB cable (provided) or through the Internet, downloading all data and information from a website (through a password).

It allows the configuration of alarm thresholds, with automatic transmission to three cell phones of your choice.

The Station is composed of the following parts:

• Datalogger EP2010: records, stores and transmits via GSM 2G / 3G, has 12 input channels for external sensors and an internal atmospheric pressure sensor.

It allows to select the period of data recording between 5 and 60 minutes, with a memory capacity of 14,000 data per variable (145 days of autonomy recording every 15 minutes).

Alarm transmission: via SMS messages to 3 cell phones.

The Datalogger allows connection to the following sensors:

• EP0221 Rain Gauge: with 0.25 mm sensitivity, and calibrated metal pickup.

• Humidity and temperature EP0251:

• Humidity: Range: 0 - 100%.

• Temperature: Range -20 to + 60 ºC. / -40 to + 60 ° C.
Sunscreen: Self-priming type.

• Wind speed and direction EP0233:
Speed: 1m / s at 50m / s
0-360 º wind direction;

• Solar radiation EP0304: Silicon cell type with a range of 0 to 1500 W / m2 / 1800 W / m2

• UV solar radiation EP 0306: sensitive to the range of 0,5 to 1,2 microns

• EP0247 soil temperature: range -20 to + 60 ° C. / -40 to + 60 ° C.

• EP0254 soil moisture: range 0 to 100%. Of the type by dielectric constant, high durability and maintenance free.

• EP0253 Leaf Wetness: wet sheet sensor with installation accessory Mounting system: for the installation, on a 45 mm diameter tube or tripod.

FEATURED FEATURES

. Easy to install and operate
. Portable
. GSM 2G / 3G communication
. Data visualization using PEGASUS MOBILE
. Access to data locally and online

Autonomous Equipment

Other specifications and rangesavailable upon request.

AIR QUALITY MONITORING NODE BETTAIR

We provide a high-precision, large-scale mapping tool for Smart cities and other scenarios.

A network of static nodes is easily installed in street furniture, forming a dense matrix that allows high spatial and temporal resolution to be achieved.

Bettair® static nodes measure various air quality indicators, including NO2, NO, CO, O3, SO2, H2S, CO2, PM10, PM2.5, PM1.0, as well as ambient noise level and other environmental parameters.

The nodes include 3G/4G/5G connectivity, NB-IoT, LoRaWAN or any other wired connection that is necessary.

Bettair® nodes do not need to be calibrated in situ. The algorithms are based on unsupervised machine learning techniques that are applied to the raw data provided by gas sensors to achieve exceptional performance for low concentrations (parts per billion, ppb).

The bettair® software platform allows the visualization of nodes as well as their status in real time. In it you can view all the data sent by each device. The bettair® platform also allows you to view a heat map for each pollutant, as well as the Air Quality Index.

Featured Features:

Dust and water resistance (IP65 certification)
Low consumption electronics
Access to low power wireless networks

What do the nodes measure?:

Temperature
Relative Humidity
Ambient noise
Atmospheric Pressure
PM1, PM2.5, PM10
NO2, NO, SO2, CO, O3
H2S, CO2, VOC

Operating Temperature:

-10 ºC a +40ºC

Relative Humidity:

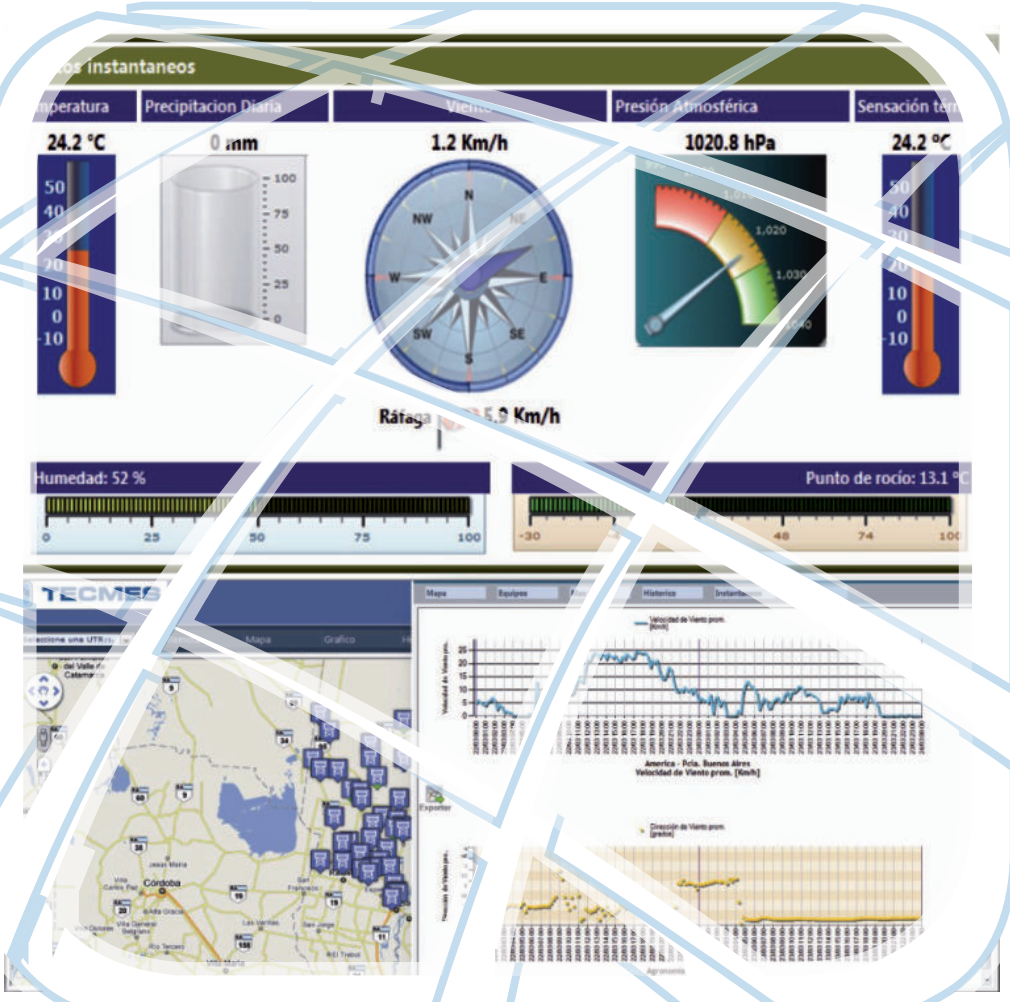
Up to 95%, without condensation.

What can you do with Bettair?

- *Mitigate air pollution.*
- *Identify unknown sources of contamination.*
- *Evaluate the impact of environmental measures.*
- *Reduce the costs of air pollution.*
- *Categorize areas according to their air quality.*
- *Predict air pollution episodes.*
- *Monitor climate change.*

*The design of the sensor cartridges allows all sensors to be easily changed when required and **does not require in-situ calibration.***

SOFTWARE


instantaneos
Precipitacion Diaria
Presión Atmosférica
24.2 °C
1.2 Km/h
1020.8 hPa
24.2 °C
Humedad: 52 %
Punto de rocío: 13.1 °C
Córdoba

The effective use of real-time data requires software. TECMES offers complete computer systems and application software for its remote stations. See the Software and Computer Systems section of the catalog for a complete description of our excellent software products such as SAT 2.
Systems Engineering Services
TECMES offers a wide range of engineering services systems. Our deep knowledge allows us to help integrate your systems either by TECMES or third party hardware. If your hardware provider does not understand your problem, contact TECMES to help you:

- **Communications Analysis System**
- **Electromechanical designs**
- **Computer Systems and Network Analysis**
- **Irrigation System Control, Design**
- **Hydrological Services**
- **Forecasts of extreme weather conditions, water runoff models and levels.**

PROGRAMS

TP-200 Programming program and local data collection for TS 2631 Stations

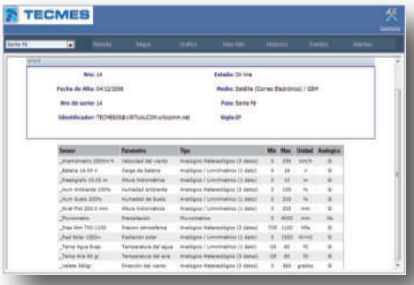
TP-250 Program for viewing and recording rainfall data for P.C.

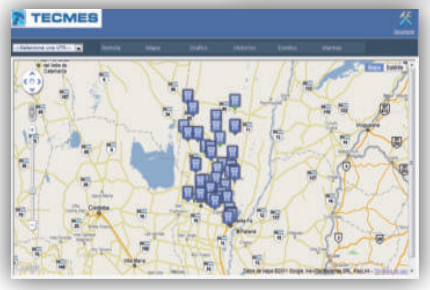
TP-300 Reading and configuration program for TS 2002

TP 608-SAT 2-P Pegasus Station Network Manager

TP 607-SAT 2-T TS 3040 Station Network Manager

- **Alert Systems**
- **Computer Systems and Network Analysis**
- **Irrigation System Control**
- **Hydrological Services**
- **Weather conditions forecasts extreme, water runoff models and levels.**
- **Configurable according to needs of the user.**





The Automatic Telemetry System, SAT 2 is a software specially designed to receive, acquire, transmit, store, make available and control, if necessary, data obtained from a network or system of Automatic Remote Stations, related to meteorological parameters, environmental or industrial, field or plant. This software can be configured according to the needs and specifications of the client and its particular application.
All SAT programming was carried out by TECMES specialists and developed in Spanish and English.

SAT 2.
The SAT 2 allows the user has a great monitoring tool for the entire measurement network.
There are 3 basic configurations for this software.

Main Control Center
It is the web application whose main virtue is to visually display a large amount of information related to the operation and status of the network of remote stations that provide the information of their measurements and events to the system.

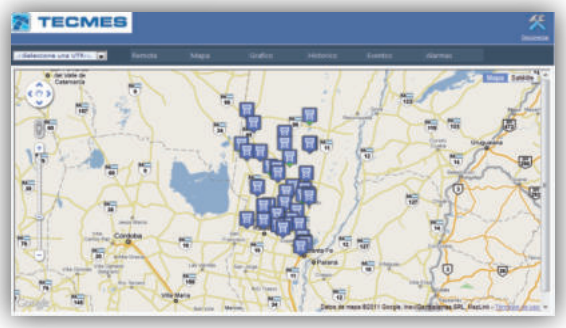
Secondary concentrator
The software is configured to be able to receive information from the remote stations or PC Datalogger via different means of communication and then concentrate it for shipments to the control center over high-speed and availability networks.

Communication drivers
It allows to gather information from remote stations or PC Datalogger via different means of communication and then concentrate them and make them available to the main control center.

Access to the system.

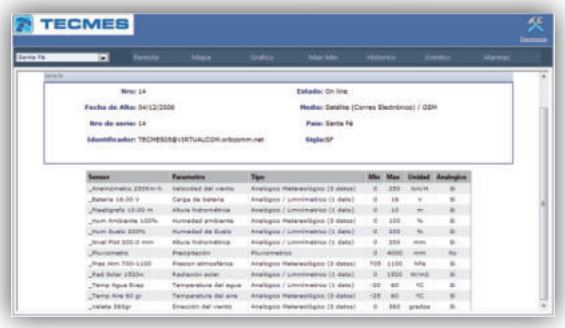
Once the user and password are accepted, the application is accessed and the main screen showing the network of remote monitoring stations located on the map is displayed.

At the top of the screen a menu is displayed that allows access to the different queries of the remote stations.



Location map of remote stations

Remote
It shows all the information related to the remote station selected in the drop-down list of the menu.

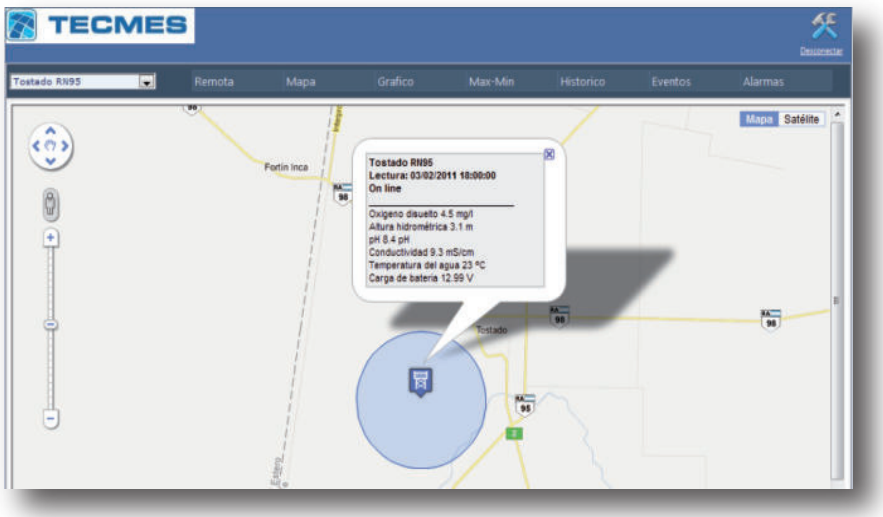


Data from a selected remote station

Map.

Once the remote station is selected, when selecting the Map option from the menu, the map is loaded with all the remote ones and with an approach to the position of the selected remote, marking the area where it is located, with a blue circle to achieve a more Quick visual location.
If the mouse clicks on the icon of the remote, a poster is displayed showing a summary of it.
The remote icons have different colors that indicate the different states of the remote.
The remote states can be:

- On Line - Blue .
- Off Line – Green.
- Maintenance – Brown.
- Failure – Orange.
- Unsubscribed – Yellow.
- Installation in progress – Lilac.



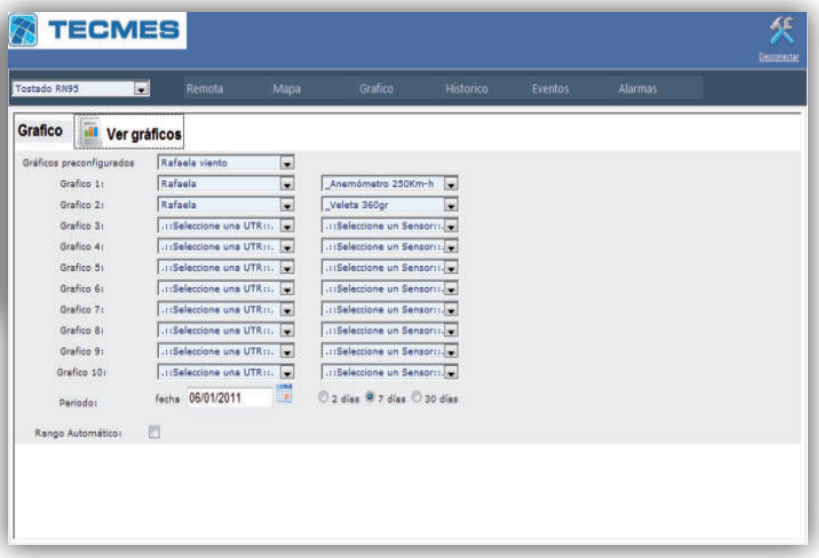
Location on the map of the selected remote station.

On the map you can visualize the location of all the remote stations and clicking on each icon opens a poster with a summary information and the values of the last reading of the sensors.

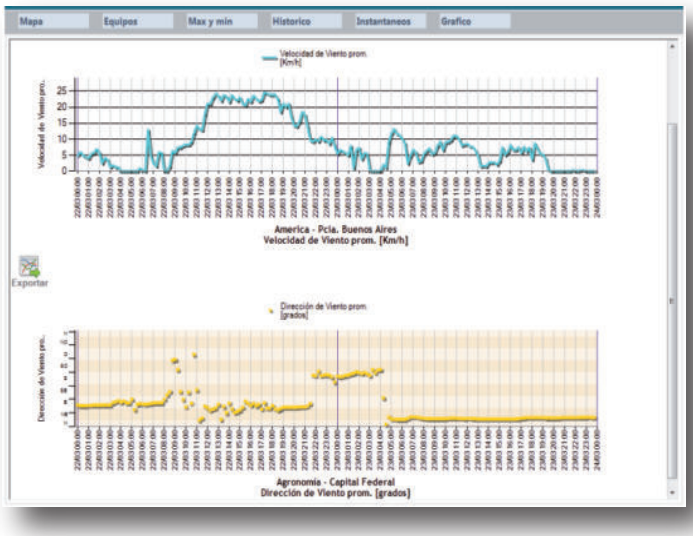
Graphic.

This option allows you to visualize the information in the form of a line, bar and point chart depending on the measurement data of the remote stations. The maximum amount of graphics that can be seen at a time is 10, being able to make a combination of remote stations and sensors within 2, 7, or 30 days, before the selected date, or between dates selected by the user.
It is also possible to have previously loaded the combination of remote stations and sensors under an identification, which can be selected from the drop-down list of preconfigured graphics, allowing a faster way to detail the required combination

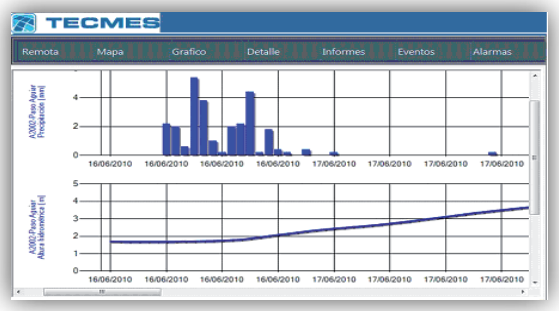
Once the graphics display parameters have been established, click on the "See graphics" sign and after a moment the required graphics are displayed one under the other.
Overlay graphics can also be generated according to customer needs.

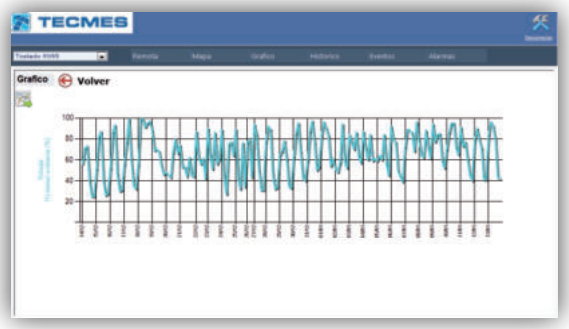


Graphics parameters



Show consecutive charts.





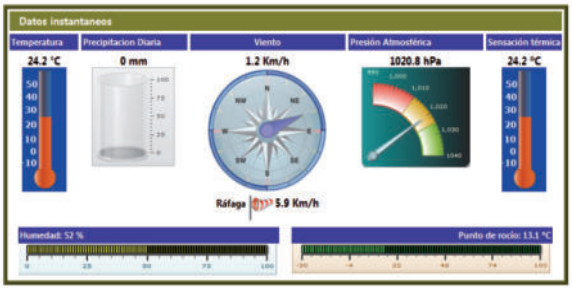
Humidity graph for a period of 30 days.

Software

Historical.
Shows historical data for a period for the selected remote station.
The measurements of all the sensors are displayed in grid format, indicating measurements, maximums and minimums by date.

Maximus and minimous.
This menu option allows you to display the maximum, minimum data of the current day and the previous day. The average of the measurements of the current month or between dates eligible by the operator is also displayed.

Instant Data
This menu option allows you to view the latest readings and present them with graphic mimics.
As an example, the mimic of instantaneous data from a Weather Station is shown.



Events
This menu option allows you to view system events. The remote station, event, group and date period must be selected.
In all cases where the data is displayed as a grid, it can be exported in Excel format, by pressing the icon on the upper left margin of each grid.

Alarms
It allows to visualize the alarms that occurred in a period of time. You can filter by grade or state and display them in grid form.
After selecting the filters of the alarm search, press "View Data" to obtain the result in the form of a grid.

Settings menu
Only those users whose profile reaches this menu will have access. This section allows you to register, delete and modify some system tables.
You can select the remote station you wish to modify or delete from the grid by clicking on the selection icon.

Communications
The SAT system allows multiple communication systems, such as those of cellular telephony in GSM / GPRS, Satellite Orbcomm by mail, Radiomodems with direct communication, Landline, Communication modems, Internet etc.

Alerts
Allows you to configure alerts for remote stations.
To load a new alert you must indicate the name of the alert, grade (1, 2, 3, 4, 5), status, enabled (yes / no), duration, send mail (yes / no) and destination mail, once When the alert header is recorded, the system enables loading of the alert detail.
In detail the configuration that will have this alert is specified, remote station, sensor, data value, type of alert (max. / Min.) And time (min.) Must be indicated.

Graphics.
It allows loading the configuration of different remotes, sensors and period under an identification and at the desired time, generate the related graphics under that identification.

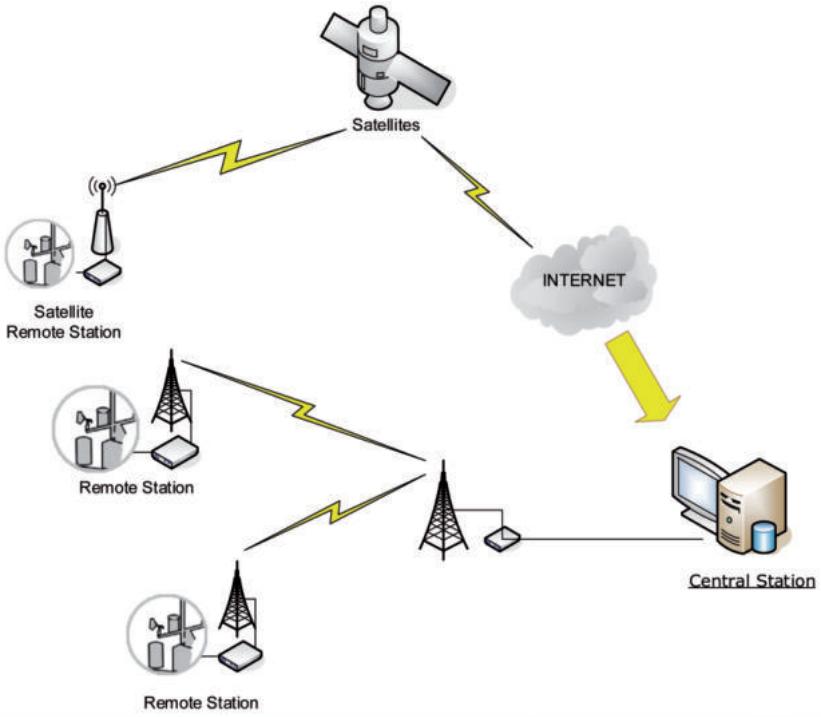
Users
It allows loading users who will have access to the system.
You must indicate user, password and profile.

Profiles
It allows to create different profiles for users. These profiles enable or not access to different sections of the system.

The Automatic Telemetry System (SAT) is a software specially designed to receive, acquire, transmit, store, make available and control, if necessary, data obtained from a Meteorological Station or network or system of Automatic Remote Stations, related to meteorological parameters, environmental or industrial, field or plant. All SAT programming was carried out by TECMES specialists and developed in Spanish and English.

It is of the Web type, where the user accesses the data of their stations through the Internet from anywhere.

The server that manages the Network is from TECMES and is hosted in the cloud for greater reliability.



It allows to gather information from remote stations or PC Datalogger via different means of communication and then concentrate them and make them available to the main control center.

Access to the system.

It is done through a username and password.
Once the username and password are accepted, the application is accessed and the screen of the **Instant Data** tab is seen.

Software

At the top of the screen a menu is displayed that allows access to the different queries of the remote stations.

Description of the flaps

Instant Data.

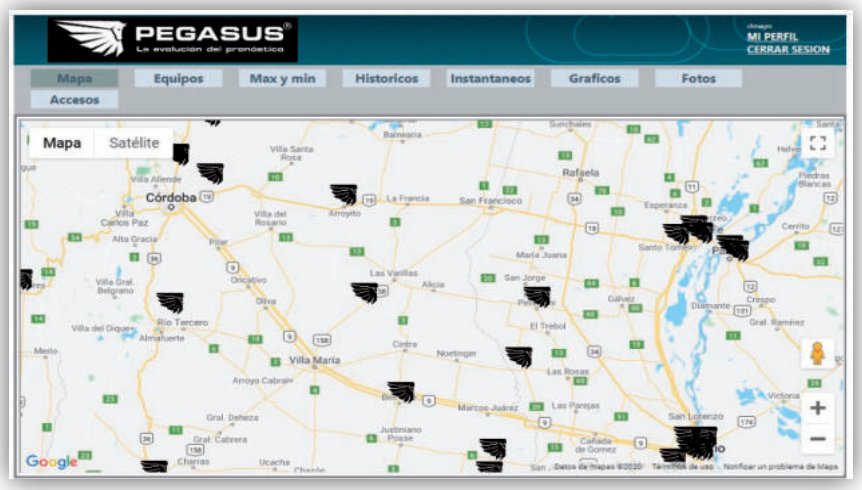
This menu option allows you to view the latest readings and present them with graphic mimics.

As an example, the mimic of instantaneous data from a Weather Station is shown.

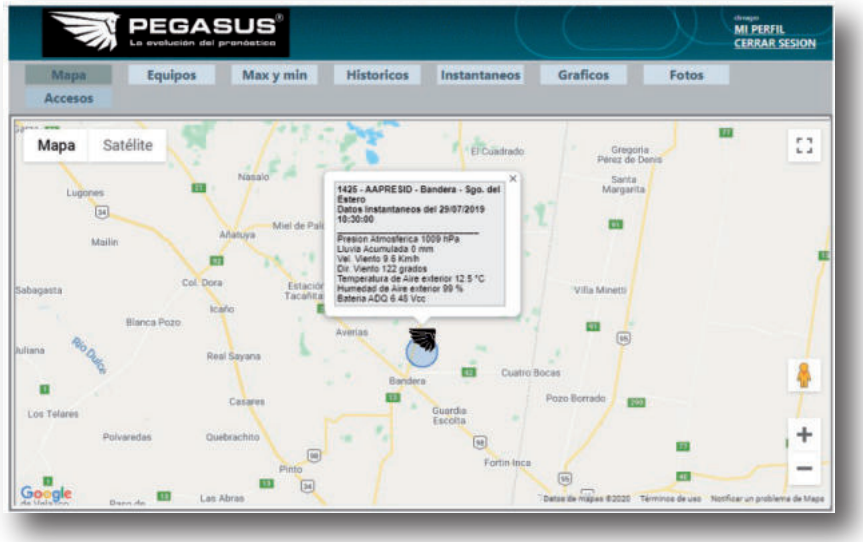
Map.

Once the remote station is selected, when selecting the Map option from the menu, the map is loaded with all the remote ones and with an approach to the position of the selected remote, marking the area where it is located, with a blue circle to achieve a more Quick visual location.

If the mouse clicks on the icon of the remote, a poster is displayed showing a summary of it.



Location map of remote stations

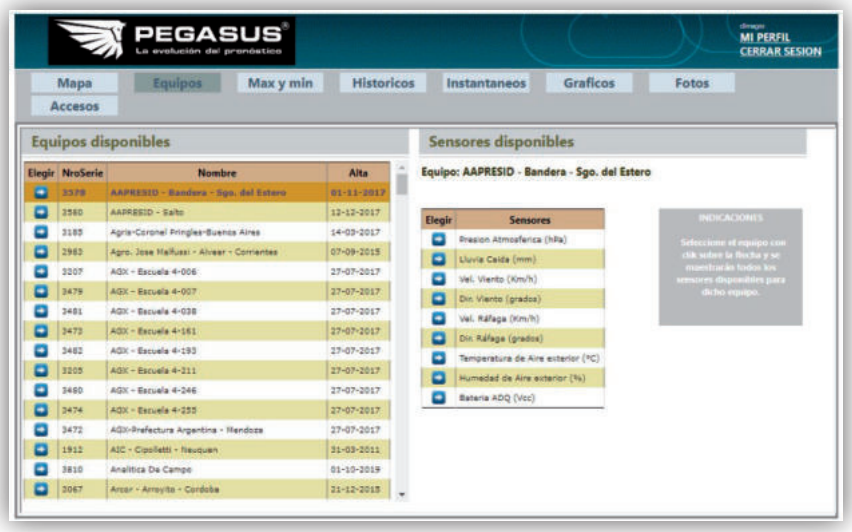


Location on the map of the selected remote station.

Software

Equipments:

Displays all the information related to the remote station selected in the list of available devices.



Data from a selected remote station

Graphic.

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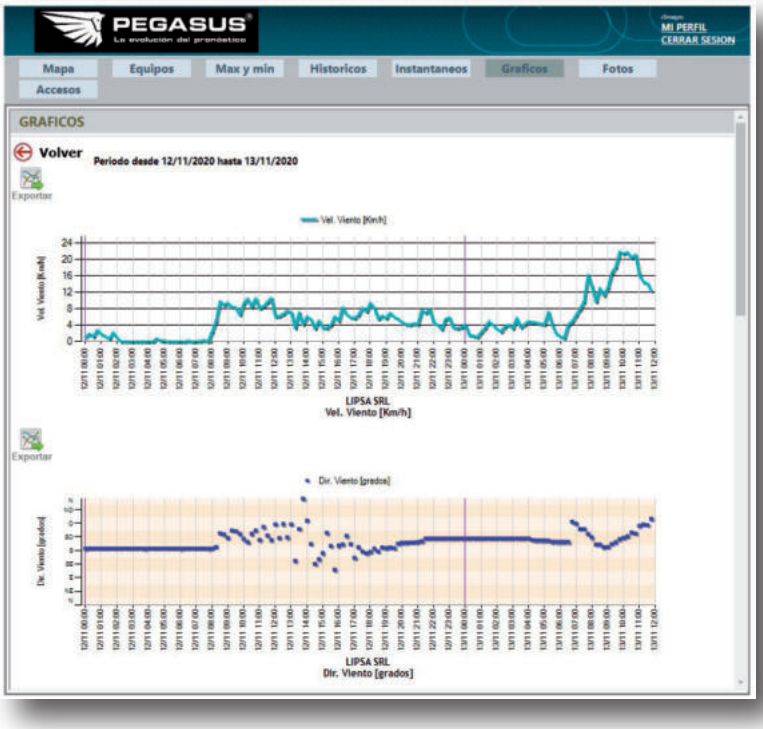
It is also possible to have previously loaded the combination of remote stations and sensors under an identification, which can be selected from the drop-down list of preconfigured graphics, allowing a faster way to detail the required combination

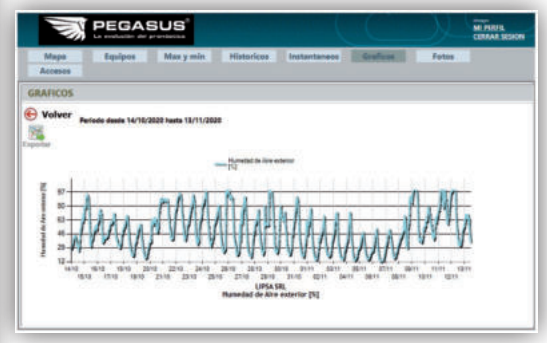
Once the graphics display parameters have been established, click on the "See graphics" sign and after a moment the required graphics are displayed one under the other.

Graphics parameters.

Software



Show consecutive charts.

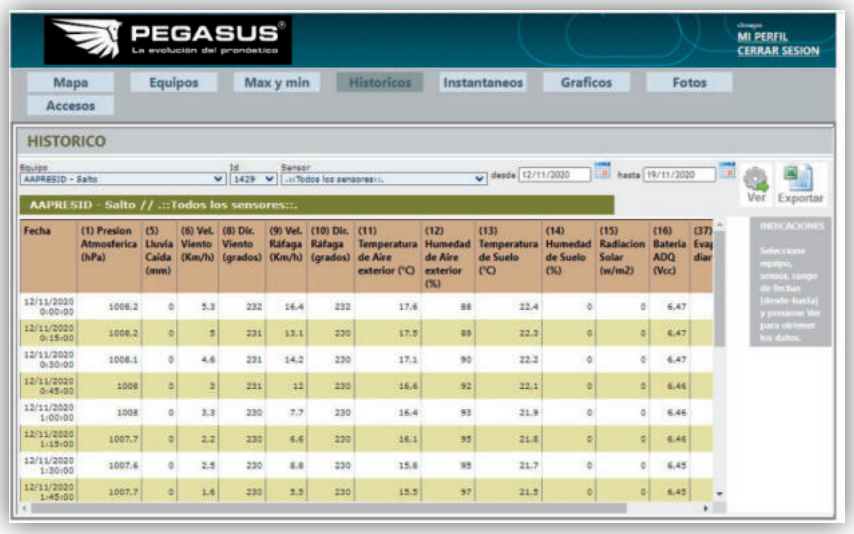


Humidity graph for a period of 30 days.

Historical.

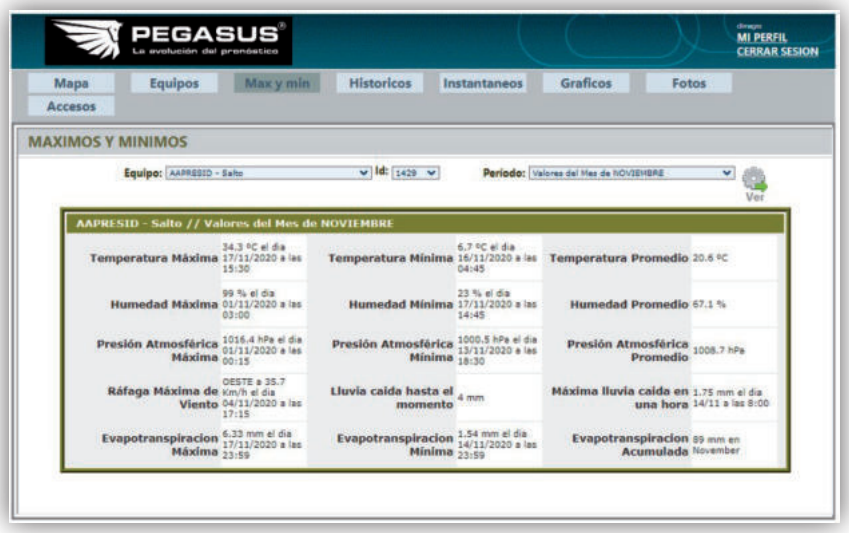
Shows historical data for a period for the selected remote station.

The measurements of all the sensors are displayed in grid format, indicating measurements, maximums and minimums by date.



Maximus and minimous.

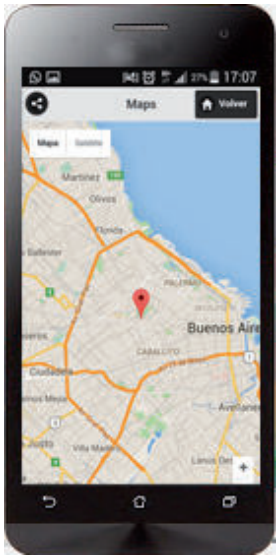
This menu option allows you to display the maximum, minimum data of the current day and the previous day. The average of the measurements of the current month or between dates eligible by the operator is also displayed.



Application PEGASUS MOBILE

With the application you can view all the information recorded by the weather station.

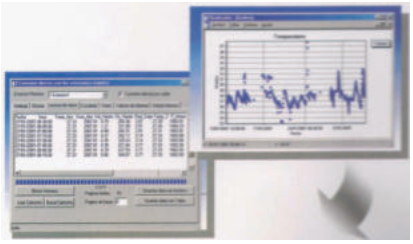
Provides accurate readings on data of temperature, humidity, wind direction, precipitation, comparative graphs, maximum and minimum, historical data, etc.



Software

FEATURED FEATURES

- **Easy operation**
- **Irrigation Optimization**
- **Pest control**
- **Performance Forecast**
- **Greenhouse control**
- **Frost protection**
- **Stress Water**
- **Mitigation of Environmental Impacts**



DESCRIPTION

The TECMES Agronomic software allows the permanent monitoring of the main meteorological and agronomic variables that, integrated with mathematical calculation models, allow to obtain diagnoses and agroclimatic forecasts and information related to the growth of crops, appearance of pests (fungi and insects), and control of the water stress in a friendly and easy to operate environment.

The information used comes from a network of agrometeorological stations and is stored in a database which is managed by the software of the central station of the network.

It allows you to use this information in two ways:

• By automatic control from a control start date to the last available information allowing permanent crop control as new station data is available.

• Through a historical data calculator that allows analyzing historical information to adjust control models and obtain statistics more appropriate to the location region of the stations.

SOFTWARE CAPABILITIES

. Grade-day calculation

. Cold hours calculation

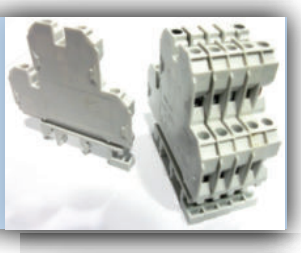
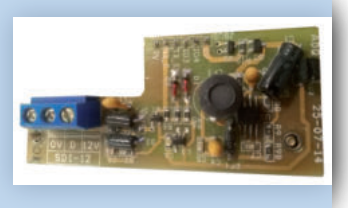
. Water balance calculation

. Insect attack alert programmable in day function - grade.

. Alert for fungal attack (venturia inequa lis, phytophtora infestans, oidio, perenospora viticultural)

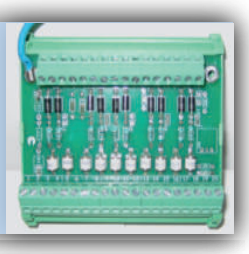
ACCESSORIES

LIST OF ACCESSORIES

AS 4210	Double Interface converter 0-4Vcc at 4-20mA with protection against downloads. With IP65 cabinet	
AS 4212	Terminal block for battery voltage measurement	
AS 4230	RS232 interface to analog output for sensors ultrasonic wind speed and direction. With cabinet to water proof	
AS 1020	USB to PC interface for correrтograph.	
AS 4214	Interface board SDI12 for Pegasus stations.	
AS 170	Unipolar electric shock protector for inputs analog and digital	
AS 174	Unipolar electric shock protector for input Solar Panel and 12V power	

accessories

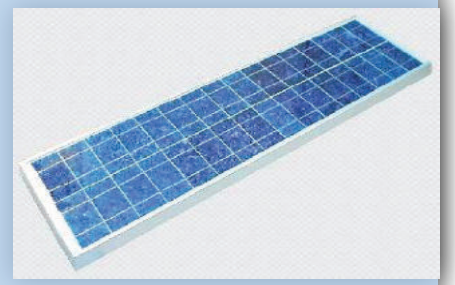
AS 177	Electric shock protection plate



AS 178	Electric shock suppressor for radio modem in VHF and UHF with less than 20 W of power

AS 179	Electric shock suppressor for radio modems in frequency greater than 1 GHz.

UC 208	10W solar panel With tube holder
UC 209	20W solar panel With tube holder
UC 210	45W solar panel With tube holder
UC 212	54W solar panel With tube holder



accessories

UC 254	4 A charge controller for solar panel

UC 280	12 A / h battery charger
UC 281	38 A / h battery charger

UC 301	12v 12 A / h battery of absorbed electrolyte
UC 303	24v 12 A / h battery of absorbed electrolyte
UC 304	33v 12 A / h battery of absorbed electrolyte
UC 305	45v 12 A / h battery of absorbed electrolyte
UC 307	65v 12 A / h battery of absorbed electrolyte

AS 222	Rain support, to land.

AS 230	Steel Cable for Float (50 m)

accessories

AS 231 190 mm plastic float

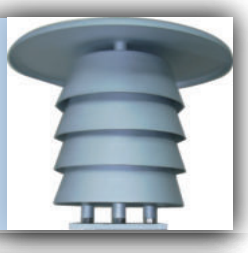
AS 232 75 mm plastic float

AS 237 Multifunction support with tower or mast anchoring system and fasteners for mounting wind, humidity - temperature and solar radiation sensors of the TS line.

AS 265 Multifunction support with tower or mast anchoring system and fasteners for mounting Solar Panel and Antenna.

AS 236 Anemometric surface support.

AS 250 Sunscreen for humidity and temperature sensor TS 251 T



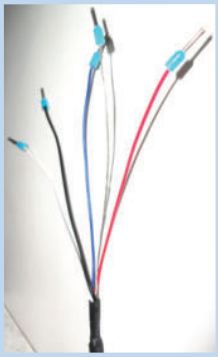
AS 312 25mm diameter waterproof joint for pressure level sensors, steel stainless for 8 mm cable.

AS 316 Dehumidifier for capillary tube pressure level sensor.

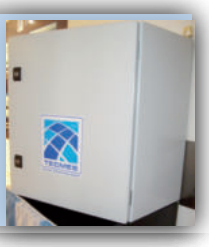
accessories

AS 323 PE weather cable (for sensors)

AS 325 Cable PE con tubo capilar para sensores de nivel



AS 411 IP 65 steel outer cabinet for remote stations, wall mounting, column mounting.
Includes AS 502 mounting frame.

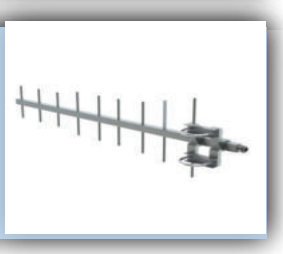


AS 410 IP 65 steel outer cabinet for Datalogger TS2002 DL, wall mount, column mount.
Includes mounting frame with terminals AS 503.

AS 505 Hydrodynamic accessory for sensor installation water speed in dirty fluids TS 350.

AS 630 Directional antenna for GSM modem

AS 636 Omni-directional antenna for Orbcomm modem



AS 651	3 m mast for weather stations
AS 652	9 m mast for weather stations
AS 653	12 m mast for weather stations

AS 655	Base for folding tower.
AS 660	6 m braced tower. (complete, with reins, dead, anchor and shackles)
AS 661	9 m braced tower. (complete, with reins, dead, anchor and shackles) With extensible tube for mounting wind sensors at 10m high.
AS 662	12 m braced tower. (complete, with reins, dead, anchor and shackles)
AS 663	18 m braced tower. (complete, with reins, dead, anchor and shackles)
AS 664	21 m braced tower. (complete, with reins, dead, anchor and shackles)

AS 670	Night beacon kit 18 to 24 m

AS 741	Lightning rod with javelin and cable for 3m, 9 to 12 m bracing tower mast.
AS 742	Lightning rod with javelin and 12 m mast cable.
AS 743	Lightning rod with javelin and 18 m mast cable.
AS 744	Lightning rod with javelin and 21 m mast cable.
AS 745	Lightning rod with javelin and 24 m mast cable.

AS 800	Coaxial cable UHF 95/30, low loss
AS 805	1/2' selflex coax cable, Very low losses

AS 900	RGC58 Type N Male to Cable Connector
AS 901	Female to cable connector RGC58 Type N
AS 905	Type N female chassis connector
AS 907	1/2' selflex male cable connector
AS 908	1/2' selflex female cable connector

AS 3010	Radiowave Frewave Spread Spectrum 900 MHz
AS 3011	Radiomodem at UHF Fait
AS 3020	VHF radio modem

AS 3024	Radiomodem Spread Spectrum at 2.46 GHz

AS 3003	GSM / 2G / 3G Module
AS 3006	GSM / GPRS Modem
AS 3009	GSM / G2 / G3 Modem
AS 3010	2G / 3G/ 4G Modem

AS 3013	ORBCOMM satellite modem

AS 3008	TCPIP converter for TS2631

AS 3040	INMARSAT-C satellite transceiver

accessories

SERVICES

INSTALLATIONS - Turnkey

MAINTENANCE

TECHNICAL SERVICE

RECALIBRATIONS

INSTALLATIONS - Turnkey

Tecmes delivers your turnkey projects!
For this, we have a professional team of specialists in setting up environmental stations.
With extensive experience in installations in the geographical diversity of our country, we have installed and commissioned stations in Antarctica, in the south of the province of Santa Cruz, in the Puna of Salta at 4500 ASL, in energy transformer stations, in parks solar in hydroelectric plants and in the Argentine countryside.
The works include the executive project and the development of the necessary civil works as well as field communication tests, whether by cell phone, satellite, Wifi, fiber optics, communications with SCADAs.
g in each intervention tasks that range from the cleaning of the equipment site to the complete verification of the equipment and the validation of the data taken by the sensors thus ensuring quality measurements.
Maintenance of central stations is also carried out where its operation and that of the database are verified and back-ups of the stored data are performed.

MAINTENANCE

Just as it is important to have precise, robust and reliable equipment, preventive maintenance is also essential. Our experience indicates that maintenance reduces the need for unforeseen repairs and prolongs the life cycle, thus ensuring the continuous supply of high quality data.

Our preventive maintenance service offers complete reviews of system status, updates, performance checks, periodic and scheduled calibrations, as well as replacement of worn parts. The service is carried out at the site of implantation of the equipment and / or in the industrial plant of TECMES adapting to the needs of the client.

Types of maintenance and technical assistance

TECMES offers different types of maintenance, tailored to the needs of the client, and can be summarized as follows:

Permanent technical assistance:

All our clients are provided with permanent technical assistance both by mail and by telephone, helping the client to solve in real time any difficulty with their equipment.

MAINTENANCE

Preventive maintenance programs

These maintenance programs are carried out periodically, performing in each intervention tasks that range from the cleaning of the equipment site to the complete verification of the equipment and the validation of the data taken by the sensors thus ensuring quality measurements.
Maintenance of central stations is also carried out where its operation and that of the database are verified and back-ups of the stored data are performed.

Corrective Maintenance Programs

All equipment may be damaged by extraordinary weather, atmospheric discharges or vandalism.

This corrective maintenance service on request, ensures a rapid technical intervention with secured spare parts so that the system is back in operation in the shortest possible time.

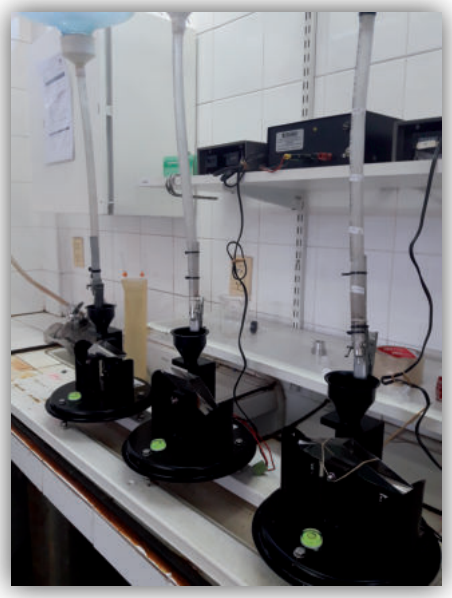
This service is contracted according to the needs and conditions of service of the equipment.

TECHNICAL SERVICE

TECMES assures its customers technical assistance, spare parts and repair of defective equipment. This task is carried out in our Industrial Plant taking control and history of the interventions carried out.

RECALIBRATIONS

TECMES ensures the quality of our clients' sensor data by performing the periodic recalibration service of the sensors and equipment performed in our laboratory where the equipment is contrasted with standards certified under ISO 9001-2015 quality standards.



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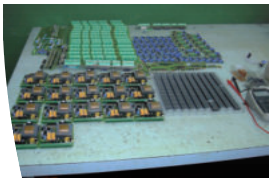

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