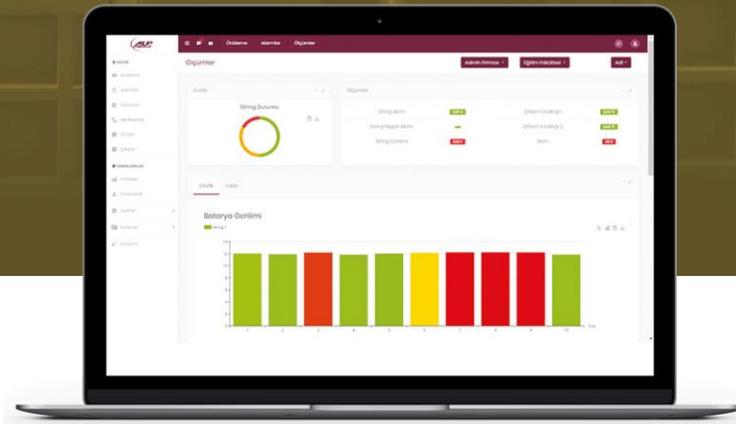


# Protect your business from costly downtime!

The Alpais battery monitoring system guarantees  
live and secure monitoring of your batteries  
24/7 & 365 days a year.

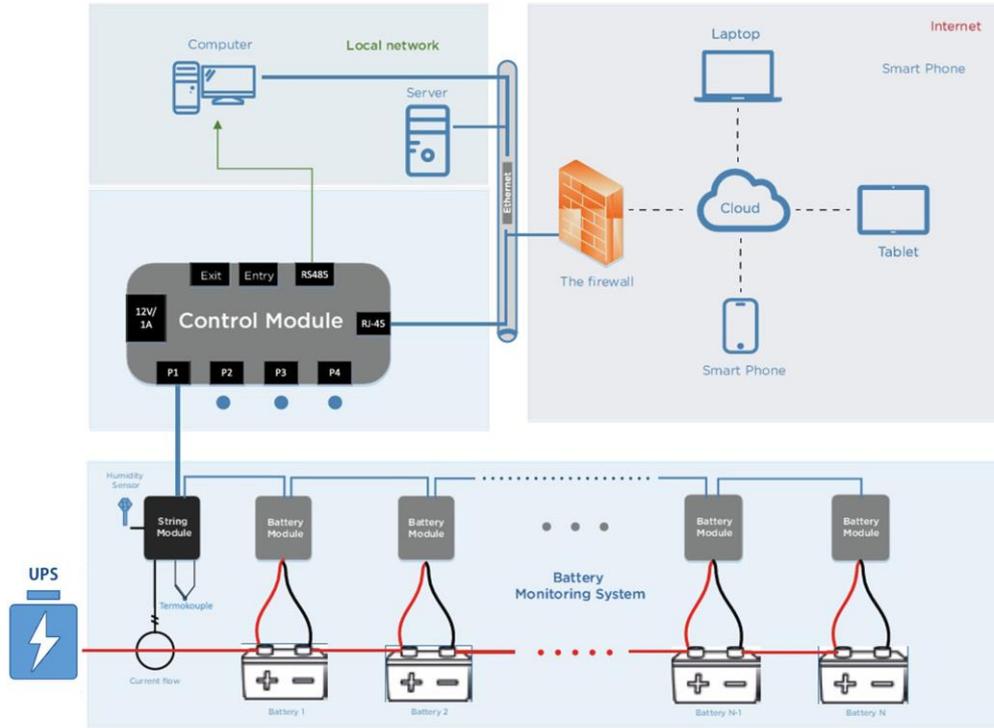


**alpais**  
battery monitoring system

[www.alpais.com.tr](http://www.alpais.com.tr)

# Alpais: Modular Battery Monitoring System

Located at the center of the Alpais system, the control unit offers a complete solution for monitoring an unlimited number of batteries with its integrated hardware and software. Alpais offers maximum usage of the available backup power infrastructure generated by the batteries which ensures that businesses make the most of their investment in the batteries



## ➤ System Components



### ➤ Measurement of Battery Parameters Using Battery Monitoring Modules

The voltage, internal resistance, and temperature parameters of VRLA, VLA, or Ni-Cd type batteries are measured, and the measured parameters are transmitted to the control unit via Modbus protocol.



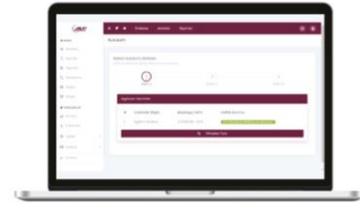
### ➤ Measurement of Current and Environment Parameters Using String Modules

The string current, ambient temperature, and humidity ratio are measured, and the measured parameters are transmitted to the control unit via Modbus protocol.



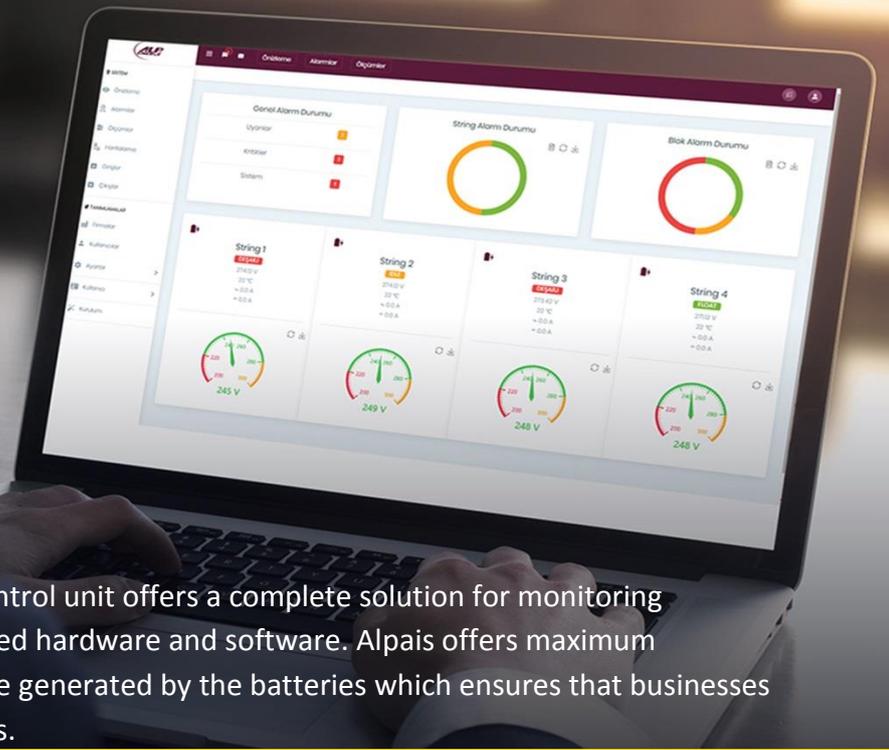
### ➤ Control Unit

The control unit is located at the center of the system and is responsible for saving and processing the parameters transmitted from the batteries and string units.



### ➤ Battery Monitoring System Software

An unlimited number of batteries installed either in a single room or in different facilities/countries are monitored extensively through a single control center.



## Alpais Battery Monitoring Software

Located at the center of the Alpais system, the control unit offers a complete solution for monitoring an unlimited number of batteries with its integrated hardware and software. Alpais offers maximum usage of the available backup power infrastructure generated by the batteries which ensures that businesses make the most of their investment in the batteries.

➤ **Alpais offers proactive protection by allowing you to make the right decisions based on the data it provides.**

- YereLocal Area Network or Cloud Monitoring
- Multiple Location control from single control center
- Supports Modbus-TCP / RTU
- String Based Battery Positioning
- Real-Time Battery Status and Color Notification
- Detailed Charge / Discharge Record
- Alarm and Event Activities
- E-E-mail and SMS Notifications
- Service Life Estimation
- Automatic Data Management
- PDF or Excel Reporting
- Graphics and Analysis Tools
- Facility and Project Customization
- Alarm history and service logs





## ➤ What does ALPAIS measure?



### Battery Voltage

The float charge voltage carries an important significance for battery life. Charge voltages that are not applied correctly cause loss of capacity, accelerated corrosion in the network, excessive gas release, and eventually a reduction in battery life. Battery voltage monitoring allows for the detection of short circuits, discharge performance, and fatal failures in the UPS battery backup systems in advance.



### Battery Internal Resistance

Internal resistance is a growing factor that increases as the battery ages. Due to the rise in internal resistance, the battery becomes unable to deliver the desired current. Thus, the service life of the batteries can be determined exactly by monitoring the internal resistance value. Internal resistance measurements also enable the system to detect weak connections and open circuit batteries before fault occurs. In some cases, battery failures take place in as little as a week. For this reason, daily internal resistance measurements allow you to detect faulty batteries before a problem occurs without the need for a discharge test.



### Battery Temperature

The most important advantage of measuring the temperature of each battery is identifying thermal runaway before it occurs, and then taking the necessary intervention methods. Moreover, data about environmental problems as a result of a weak HVAC system, weak connections, and excessive ripple voltages can also be indirectly collected.



### String Voltage

The string voltage is monitored to verify that the charging system is active and charging as required.



### String Current

By monitoring the string current, the amount of energy received or given for each string can be measured. An ordinary UPS only measures string current and does not detect imbalances between the strings. The imbalances between the strings are the warning signs about the voltage problems in the system. Monitoring the string current also allows for the detection of incorrect charging methods and the ground fault that will adversely affect the system.



### Ambient Temperature

The recommended usage temperature of batteries varies between 20-20 °C. Temperatures outside of this range can significantly affect the battery's corrosion rate and shorten battery life. Approximately a mere 8-10 °C increase in ambient temperature can cause the battery life to decrease by 40-50%. Therefore, whether the ambient temperature in the battery rooms is within the recommended range is closely monitored and the useful feedback is provided back to the user.

# End of Costly Downtime

If we are talking about the backup battery infrastructure installed somewhere, it can be easily predicted if and when a critical task has been carried out there. If the battery infrastructure is required and this need cannot be met on demand, the increase in costs will be inevitable.

Power blackouts are a very common occurrence all around the world. If power blackouts are taken into account, the investment made into UPSes and battery monitoring systems becomes vital for your business.

You can be ready for any negative situation by monitoring the installed battery infrastructure in place for providing backup power.

The Alpais battery monitoring system always refreshes your sense of trust by providing you with daily feedback and information about the battery infrastructure.



## ➤ Alpais: Adds Value to Your Business & Protects Your Investment!

- Extends the lifetime of the batteries in the infrastructure.
- Reduces maintenance and replacement costs through effective protective and preventative maintenance.
- Provides maximum benefit with minimum workforce.
- Provides remote access, giving you the opportunity to manage your business anytime, anywhere.
- Provides planned battery procurement by avoiding emergency situations.
- Enables the identification and verification of the warranty status with recorded data and reporting.
- Provides improvements in business insurance premiums as risks are reduced to a minimum.
- Keeps your staff away from battery racks/chambers and vulnerable areas which further ensures that their safety and activities continue without interruption. This allows you to focus on your core activities by simplifying your work safety

## ➤ Order Information

SYSTEM STRUCTURE		EXPLANATION	PRODUCT CODE
<b>CONTROL MODULE</b>		Control Module Control Module - with Hydrogen Sensor	CONMOD CONMOD-H
<b>STRING MODULE</b>		String Module String Module – with Temperature and Humidity Sensor	STRMOD STRMOD-ENV
<b>BATTERY MODULE</b>		2V Battery Module ( Optional Transparent Case ) 6V Battery Module ( Optional Transparent Case ) 12V Battery Module ( Optional Transparent Case )	BATMOD02 (BATMOD02-T) BATMOD06 (BATMOD06-T) BATMOD12 (BATMOD12-T)
<b>ACCESSORY</b>	<b>DATA CABLE</b>	Cable Terminal : RJ11 Input, L:40 cm Cable Terminal : RJ11 Input, L:70 cm	COMCAB-40 COMCAB-70
	<b>BATTERY MEASUREMENT CABLE</b>	Cable Terminal: U Type, r:X mm L:30 cm Cable Terminal: O Type, r:X mm L:30 cm Cable Terminal: Faston Type, L:30 cm	MEACAB-U-X-30 MEACAB-O-X-30 MEACAB-F-30
	<b>CURRENT SENSOR</b>	Rated Input : 50A ( Measure Range : $\sim 0 \pm 100A$ ) Rated Input : 100A ( Measure Range : $\sim 0 \pm 200A$ ) Rated Input : 200A ( Measure Range : $\sim 0 \pm 400A$ ) Rated Input : 400A ( Measure Range : $\sim 0 \pm 800A$ ) Rated Input : 500A ( Measure Range : $0 \pm 1000A$ )	CS050 CS100 CS200 CS400 CS500
	<b>POWER SUPPLY</b>	12V DC Power Supply	PA-12-2
<b>CONTROL MODULE CABINET SOLUTION</b>		Dimensions : 300x600x165mm (for 1 Control Module) Dimensions : 500x600x165mm (for 2 Control Module)	PTC-1 PTC-2

Note: Our solutions vary according to user demand. The standard dimensions and product dimensions can be changed according to the requirements of the Project if technically appropriate.



### **How the Battery Monitoring System works?**

With the Alpais battery monitoring system, a battery module is installed in each battery. The battery module measures the voltage, temperature, and internal resistance of each battery. Charge and discharge status, string current, and string voltage are measured by each string module placed on each string. Ambient humidity and temperature are also measured by the sensors in these string modules. The control unit collects and records the data received through the communication links between them. Afterwards, the data is transmitted to the user through the Alpais software to show the battery status as well as a time-axis and some column graphs. Notifications of critical and alert batteries are sent by e-mail and SMS and are displayed via the interface. In this way, critical batteries are detected and necessary actions or planned battery changes can be made according to the data received.



### **I have a periodic maintenance agreement with my UPS or battery service provider. Why should I need a battery monitoring system?**

Your periodic maintenance cannot keep you as safe and secure as you think. Batteries and the management of batteries are shown as the cause of nearly 85% of all interruptions connected to the uninterruptible power supply. Periodic maintenance has become a traditional method as a result of time. However, there are still interruptions in critical area applications, and these have considerable costs to business owners. Therefore, protecting your backup power system with only periodic maintenance will not reduce the 85% failure rate caused by the battery and will not reduce your risks sufficiently. Batteries, which are unpredictable by nature, can suddenly break down within 2 weeks and cause your system to crash.



### **I already have a monitoring system in the UPS or rectifier. Is the battery monitoring system necessary for my operation?**

All monitoring systems are the same. Monitoring systems in UPSes or rectifiers monitor batteries as a group and provide only string-based monitoring. It monitors the battery pack as whole, singular block. They usually monitor the group's voltage and charge/discharge states, which does not provide adequate protection. However, each battery in the battery group has its own importance, so if even one of the batteries in the group fails or is unhealthy, this will affect the whole group and the system may seize operating. In other words, since the monitoring systems in the UPS or Reducer are not able to inspect each battery individually, your system is still at great risk, even though everything might seem ok. Whenever you need to ensure that your system will work properly, it is essential to use a system that can monitor each battery separately, examine parameters that may affect its health, and allow you to perform scheduled battery replacement as soon as necessary.



### **Instead of installing a battery monitoring system, I can reserve some more resources by replacing all my batteries. Should I still use a battery monitoring system?**

The backup power system responsible makes this mistake. Installing a new battery system does not eliminate the risk of battery failure. Risks cannot be reduced to zero in any unmonitored component. The possibility of fabricated problems and the effect of this situation on the total life of the system, along with the fact that some batteries can be completed by the end of the warranty period (approximately 3%) are among the risk factors that cannot be ignored. Even if your batteries are newly purchased, unexpected situations may occur and even your new system that is being relied on can interrupt your business and cause significant financial losses. Thanks to the measurements and reports provided by the battery monitoring system, it is possible to identify production-related problems and to submit reports for warranty evaluation.



### **Installing the Battery Monitoring System is a cost for my business. Will it benefit financially?**

Contrary to popular belief, the battery monitoring system has many financial benefits. Installing this system reduces routine visits and maintenance to battery rooms and reduces the amount of work to be done, which saves you money. It may also lead to reducing the frequency of conducting discharge tests which wear batteries. This will result in saving you time, costs, and prolonging the lives of the batteries. Because you can monitor the status of your batteries instantly and be aware of the alarms and warning signs as soon as possible, you can prevent situations that reduce the life of each battery individually by detecting and replacing an unhealthy battery which could otherwise have reduced the life of the entire system. Thus, the life of your battery system is extended, its continuity is ensured, and replacement of the whole battery group is postponed. Even in this situation, the battery monitoring system is a self-paying system.

## ➤ Technical Specifications

<b>Control Module</b>	
<b>Operating Conditions</b>	
Operating Temperature	0-50°C ( 32-122°F )
Storage Temperature	-10-80°C ( 14-176°F )
Relative Humidity Ratio	%5 - %90 RH
Atmospheric Pressure	80 – 110 kPa
Power Input	12Vdc @2A
Max. Power Consumption	20 Watt
<b>Communication Interface</b>	
RS-485	Modbus RTU
Ethernet	SNMP
<b>Features</b>	
Number of String	4 Strings can be monitored
Number of String Unit	1 String Unit at each String
Number of Battery Monitoring Unit	120 Battery Monitoring Unit at each
Supported Batteries	Between 1,2V and 12V
String Voltage	1,2V – 800Vdc
<b>I / O</b>	
Relay Output	2xDry Contact Output, 30 VDC @ 5A
Digital Output	2
Isolated Output	2
Electrical Isolation	2000V
<b>Physical Characteristics</b>	
Dimensions ( H x W x D )	( 190 x 148 x 45 mm )
Enclosure	Metal
Color	Grey

<b>String Unit</b>	
<b>Current Monitoring</b>	
Current range	0-500A
Resolution	10 mA
Accuracy	1%
Current Sensor	Hall Effect
<b>Ambient Temperature Monitoring</b>	
Temperature Range	0-50°C ( 32-122°F )
Resolution	0.01°C
Accuracy	±2°C
<b>Protection</b>	
Isolation	2000V Opto İzolasyon
Short Circuit Protection	Max. 3.5A (Internal Fuse)
Reverse Polarity Protection	Provides protection at rated voltage against reverse connection
<b>Environmental Conditions</b>	
Operating Temperature	0-50°C ( 32-122°F )
Storage Temperature	-10-70°C ( 14-158°F )
Relative Humidity Ratio	%5 - %90 RH
Atmospheric Pressure	80-110kPa
<b>Power</b>	
Power Consumption	1.25 Watt
<b>Operating Current</b>	
Quiescent current	150 mA
<b>Communication</b>	
Data Transmission Interface	Serial Modbus Protocol
<b>Features</b>	
Auto Addressing	Automatically obtain address during installation or replacement
<b>Physical Characteristics</b>	
Dimensions ( H x W x D )	( 91 x 63 x 29 mm )
Enclosure	Flame retardant ABS
Color	Transparent or Black

<b>Battery Module</b>	
<b>Compatibility</b>	
Battery Type	Ni-Cd, VLA, VRLA
<b>Battery Voltage Monitoring</b>	
Voltage Range	0-16V
Resolution	2 mV
Accuracy	0.1 % ± 5 mV
<b>Internal Resistance Monitoring</b>	
Resistance Range	0.05 – 64m ohms
Resolution	1µOhm
Accuracy	±2 %
<b>Temperature Monitoring</b>	
Temperature Range	0-50°C ( 32-122°F )
Resolution	0.01°C
Accuracy	±2 °C
<b>Protection</b>	
Isolation	2000V Opto Isolation
Short Circuit Protection	Max. 3.5A (Internal Fuse)
Reverse Polarity Protection	Provides protection at rated voltage against reverse connection
<b>Operating Conditions</b>	
Operating Temperature	0-50°C ( 32-122°F )
Storage Temperature	-10-70°C ( 14-158°F )
Relative Humidity Ratio	%5-%90 RH
Atmospheric Pressure	80-110kPa
<b>Power</b>	
Power Consumption	60mA @2V battery 25mA @12V battery
<b>Operating Current</b>	
Nominal Operation	25mA – 60mA
Internal Resistance Measurement During Test	0.066A/dk
Sleep mode	<2 mA
<b>Communication</b>	
Data Transmission Interface	Serial Modbus Protocol
<b>Features</b>	
Auto Addressing	Automatically obtain address during installation or replacement
<b>Physical Characteristics</b>	
Dimensions ( H x W x D )	( 91 x 63 x 29 mm )
Enclosure	Flame retardant ABS
Color	Transparent or Black



**BIG  
WORKS  
BIG  
BENEFITS**

**About Us;**

"15 years of field experience, knowledge and technical expertise."

We create global benefits by focusing on uninterrupted sufficiency and sustainability in our critical energy infrastructure with our integrated production capacity, and our reliable and practical solutions. Our brand provides you and your business with superior technology 24/7 through the distinguished efforts of our expert team.

We offer productivity, simplicity and sustainability with our industrial experience, expert and solution-oriented team, high-quality products/services and our ability to carry out global-quality business.

We are making a difference with our ability to intervene immediately with the power to provide uninterrupted energy.

**ALPAIS BATTERY MONITORING SYSTEM**

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