



# Phoenix

## Single-Use Temperature Datalogger

## Notices and safety

### Disclaimer and limitation of liability

OCEASOFT assumes no responsibility for any loss or claims by third parties which may arise through the use of this product. In particular, users must not use the product in any manner not specifically indicated in this user manual. OCEASOFT shall not be held liable for improper use of this product. This document is non-contractual and subject to change without notice.

### Installation

**OCEASOFT Phoenix™** modules are classified by the FCC as devices that must be professionally installed in accordance with the requirements specified in this document.

### Battery warnings

**OCEASOFT Phoenix™** modules contain a non-rechargeable, non-removable lithium battery. Battery life is influenced by operating temperatures.

### Antenna

The antenna used on the Phoenix is a PCB antenna. Its structure is called MIFA (Meandered Inverted-F-Antenna) with a gain of about -4dB, depending on the direction, and orientation. It is not possible to connect an external antenna.

### Approvals

**FCC statements** (FCC part 15 modular qualification – FCC ID: **XTLPHOENIX**)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

**FCC Unintentional Emissions Interference Statement** (FCC Part 15, Subpart B)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in

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accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna;
- Increase the separation between the equipment and receiver;
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected;
- Consult the dealer or an experienced radio/TV technician for help.

### **FCC Caution**

Any changes or modifications to this equipment not expressly approved by OCEASOFT may cause, harmful interference and void the FCC authorization to operate this equipment.

### **FCC RF Radiation Exposure Statement**

This equipment complies with FCC's radiation exposure limits set forth for an uncontrolled environment under the following conditions:

- (1) This equipment should be installed and operated such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and user's/nearby person's body at all times.
- (2) This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

### **CE**

OCEASOFT Phoenix is in conformity with the essential requirements and other relevant requirements of the following standards and/or normative documents.

- Directives:
  - 2014/53/EU Radio Equipment Directive (RED)
  - 2014/30/EU EMC Directive
  - 2014/35/EU Low Voltage Directive
- In application of the following standards
  - EN 61326-1: 2012
  - EN 301 489-1 V1.9.2
  - EN 301 489-3: V1.6.1
  - EN 301 489-17 V2.2.1
  - EN 300330-2 V2.1.1

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- EN 300328 V2.1.1
- CEI 61010-1: 2010

EU Declaration of Conformity provided in Appendix 3 of this document.

### **OC Certificate / CB Scheme (provided in Appendix 3)**

International system for mutual acceptance related to the safety of electrical and electronic products recognized by more than 50 countries worldwide.

### **WEEE compliance**

This wireless device complies with the essential requirements and other relevant provisions of the Waste Electrical and Electronic Equipment Directive 2002/96/EC (WEEE Directive).

### **Environmental protection**



Please respect local regulations concerning disposal of packaging, unused wireless devices and their accessories, and promote their recycling.

### **RoHS compliance**



The wireless device complies with the restriction of the use of certain hazardous substances in electrical and electronic equipment, 2011/65/EU Restriction of Hazardous Substances Directive (RoHS Directive). Do not dispose of this product with household trash. OCEASOFT recycles this product under certain conditions. Please contact us for more information.

#### **Europe**

OCEASOFT SA  
720 rue Louis Lépine  
34000 MONTPELLIER  
Phone: +33(0)4 99 13 67 30  
Fax: +33(0)4 67 42 84 13  
France

#### **North America**

OCEASOFT, Inc.  
250 Phillips Boulevard  
Ewing, NJ 08618  
Phone: +1-609-589-1668  
Fax: +1-609-589-1669  
USA

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# 1 Introduction

Congratulations and thank you for choosing the OCEASOFT Phoenix wireless monitoring solution.

## 1.1 Summary

OCEASOFT Phoenix is a single-use Bluetooth-enabled wireless device designed to monitor time-and temperature-sensitive products during transportation and storage.

With the size of a credit card, Phoenix fits conveniently inside many types of product packaging and containers, where it tracks temperature at regular intervals according to parameters that you can define for your specific needs, especially in cold chain application.

By using OCEASOFT Phoenix with specially supported companion products, you can benefit from a flexible temperature monitoring solution that adapts to many usage scenarios, from low-to very high-volume needs. With this solution, you can keep track of critical temperature information wirelessly without having to open any containers.



## 1.2 Package contents

- 1 Phoenix module with internal temperature sensor
- Adhesive tape for mounting

## 1.3 Companion products

The Phoenix datalogger is designed to work with different types and dedicated companion products, in particular, depending on the volume of modules you intend to use.

### 1.3.1 Phoenix Mobile Application

Sensitive products require a temperature-controlled supply chain to maintain product integrity during transport or storage. The supported Phoenix mobile application for iOS® and Android® allows you to monitor data collected from the module wirelessly. Using the supported application mobile, you can control that sensitive products are maintained at the proper temperature.



The Phoenix datalogger must only be used with companion products approved and recommended by OCEASOFT.

### 1.3.2 Phoenix Loading Bench

Equipped with NFC (near-field communications) technology, the dedicated Loading Bench enables you to quickly and easily program all datalogging settings on Phoenix modules, including temperature ranges, alarm limits, and the module's startup mode.



This solution includes a Windows application to manage programming, stability profile templates, and reports, making it possible to configure each Phoenix datalogger in about 2 seconds.

## 1.4 Placing your Phoenix module



Phoenix™ is designed to be placed directly inside the product package or container whose temperature you would like to monitor.

Depending on the situation, you may choose to use the provided adhesive to fix the datalogger to the side of the container, or leave it loose inside a product box.



## 1.5 Phoenix features

### 1.5.1 Wireless technologies

- Bluetooth® Smart for reading and transmitting data.  
Range: Up to about 50 meters (160 ft.) in line-of-sight  
Frequency (worldwide): 2.4 GHz  
Max output: 4 dBm
- NFC (Near-field Communication)  
Range: About 4 cm (1.6 in.)
- Automatic flight mode to stop wireless activity during flight

### 1.5.2 Monitoring

- Temperature range: -5 to +40°C
- Humidity range: 0 to 99.99% non-condensing
- Reading precision:  $\pm 0.5^{\circ}\text{C}$
- Sensor resolution:  $0.01^{\circ}\text{C}$
- Configurable temperature range through stability profiles
- Read interval: 5 minutes
- LED indicator for product status (compromised or not)

### 1.5.3 Casing & dimensions

- IP54 product protection index
- ABS casing
- Unique serial number for every module
- Dimensions  
H: 85.6 mm (3.4 in.)  
W: 48 mm (1.9 in.)  
D: 4.3 mm (0.2 in.)
- Weight: 31 g (1 oz.)
- Adhesive mount (optional)

### 1.5.4 Operating and storage conditions

- Indoor use only
- Designed for altitudes up to 6,500 feet (2,000 meters)
- Module operating range: -10 to +50°C
- Module storage conditions: -40°C to +85°C; 0 to 99.99% relative humidity non-condensing
- Pollution degree (according to IEC 61010-1): 3

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#### 1.5.5 Battery

- Non-replaceable Lithium battery
- Battery life at least 3 years from activation
- Shelf life (before first use) depends mainly on the storage temperature. To benefit from three full years of operation we recommend storing Phoenix modules between about 10°C and 20°C (50°F and 68°F). See

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- *Maintaining your modules*
- *Cleaning Instructions*

You occasionally may need to clean your Phoenix modules depending on site or environmental conditions.

Here are some recommendations and guidelines for cleaning your modules:

- Clean using a soft cloth with water, a detergent or isopropanol.
- Do not use any aggressive cleaning agents or scratching cleansers that might cause damage to your datalogger.
- Appendix 1 – Phoenix battery life page 16 for estimated operating and storage times.

## 2 Overview of your Phoenix module

Generally speaking, most of the useful features provided by Phoenix are activated or accessed through the companion software and hardware tools.

The module itself is quite simple, with just two user interface functions: the pushbutton and the LED light.



Figure 1 –Phoenix data logger

The LED on the front indicate the temperature-sensitive product status, based on settings programmed by the user:

LED	Description
● ✓	The product is considered as being “OK”, that is “not compromised”, and that it has been stored within the tolerances of preset temperature conditions.
● ✗	The product is considered compromised with respect to settings, indicating that it has been exposed to temperatures outside preset conditions.

## 2.1 Using the pushbutton

The Phoenix pushbutton is used to either to:

- Activate Bluetooth on the module so you can program it with the OCEAView mobile application on your smartphone or tablet, or
- Check device status with the LED (color codes described below)

### 2.1.1 Activating Bluetooth to program with Phoenix Mobile

Upon delivery from the factory, Phoenix modules are in a mode called “deep sleep”. That mode is used to preserve battery life before the module is used. Wireless communication and datalogging are both deactivated in deep sleep mode. If you want to program your Phoenix module via Bluetooth using a supported and compatible mobile application, you must first activate the module, as follows:

1. Press and hold the pushbutton on the front of the Phoenix module for 3 seconds.
2. Bluetooth is activated, the green and red LEDs blink, and the Phoenix may be discovered by the Phoenix mobile application for 1 minute.
3. During that period, the device is listed on the Phoenix mobile application display, at which point you may connect to it to configure a mission.



If you are using the Phoenix Loading Bench solution, then you do not need to press the button. Using NFC technology, Phoenix activates automatically when placed in the slot on the Loading Bench.




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### 2.1.2 Using the LED to check module status

The LEDs on the front of the Phoenix module indicate module status, both by their color and their placement. The green LED is located next to the green check mark (✓); the red LED is located next to the red X (✗). These LEDs are activated by pressing the button on the front of the module. Depending on module status, the LEDs light up as follows:

#### When placed on the Loading Bench



If the module is not programmed	LED confirmation (automatic)
The module can be programmed	 ON until removed
The module cannot be programmed <b>due to a problem that is likely to be temporary</b>	 Blinks until removed
The module cannot be programmed <b>definitively</b>	 ON until removed

#### Status request by pushing button

If the module is programmed	LED confirmation
Datalogging is started and the product is not compromised	 ON for 3s
Datalogging is started and the product is compromised (not frozen)	 ON for 3s
Datalogging is started and the product is compromised (frozen)	 ON 3s, OFF 200ms, then ON 200ms and OFF 200ms (3 times)
Module programming succeeded (but mission has not started yet)	 Blinks 200ms every 500ms 6 times
Module programming failed	 Blinks until removed

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#### Bluetooth Low Energy connection

If the module is programmed	LED confirmation
Bluetooth advertising turns on for 1 minute	 Blinks 500ms every 10s for 1 min
Datalogging is started	 Blinks 200ms every 500ms 6 times

● = short flash, ● = fixed ON,

## 3 Maintaining your modules

### 3.1 Cleaning Instructions

You occasionally may need to clean your Phoenix modules depending on site or environmental conditions.

Here are some recommendations and guidelines for cleaning your modules:

- Clean using a soft cloth with water, a detergent or isopropanol.
- Do not use any aggressive cleaning agents or scratching cleansers that might cause damage to your datalogger.



## 4 Appendix 1 – Phoenix battery life

Many factors have an influence on Phoenix battery life, both during use and in storage before being used. Here are the main considerations to take into account when evaluating product battery life:

- **Ambient temperature:** battery capacity is diminished when subject to very cold operating and/or storage conditions.
- **Wireless communications:** Bluetooth connections, from the dedicated software to the Phoenix module, consume battery power. Logically, the more you connect, the more you use the battery.

**Note:** The reading frequency does not have significant impact on battery life. Because of the product's optimized electrical architecture and circuitry, there is no significant difference, in terms of battery life, if the sensor reads and stores data once every ten minutes or once every minute.

### 4.1 Battery details

Phoenix is designed as a single-use temperature monitoring solution, and thus contains a non-user-replaceable battery.

- Battery type: 5 x CR2025
- System: Li / MnO<sub>2</sub>
- Nominal voltage: 3 V

### 4.2 Estimated operating lifetime


Under standard conditions (2°C to 8°C nominal target range), the Phoenix battery lasts at least three years.

Deployments in extremely cold or hot temperatures may significantly reduce battery life.


### 4.3 Estimated shelf-life (storage prior to use)

Phoenix is designed to provide operation for 3 years. In order to ensure 3 years of reliable operation, it is important for the product to be used within a reasonable period of time after manufacturing. A "Use by" date is indicated on the product packaging.

## 5 Appendix 2 – EU Declaration of Conformity



SMQ-ENR-023



### EU DECLARATION OF CONFORMITY

We, OCEASOFT SA, hereby declare under our sole responsibility that the following product(s)

Product Name	Description
PHOENIX	Datalogger

Intended to operate with the Softwares / Accessories listed below

Software / Accessories Name	Description

Is (are) in conformity with the provisions of the following EU directives

EU directive REF	Description
2014/53/EU	Radio Equipment Directive (RED)
2014/30/EU	EMC Directive
2014/35/EU	Low Voltage Directive
2011/65/EU	Restriction of Hazardous Substances Directive

The following standards were used to verify compliance with the applicable directives

References / version	References / version
CEI 61326-1 : 2012	EN 300330-2 V2.1.1
EN 301 489-1 V1.9.2	EN 300328 V2.1.1
EN 301 489-3 : V1.6.1	CEI 61010-1 : 2010
EN 301 489-17 V2.2.1	

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Laurent Rousseau  
CEO OCEASOFT SA

Place : Montpellier  
Date :

OCEASOFT S.A.  
720 Rue Louis Lépine  
34000 Montpellier  
FRANCE

contact@oceasoft.com  
www.oceasoft.com

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## 6 Appendix 3 – OC certificate

		Ref. Certif. No.  
<b>IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME</b>		
<b>SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D'ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC</b>		
<b>CB TEST CERTIFICATE    CERTIFICAT D'ESSAI OC</b>		
<p>Product Produit</p> <p>Name and address of the applicant Nom et adresse du demandeur</p> <p>Name and address of the manufacturer Nom et adresse du fabricant</p> <p>Name and address of the factory Nom et adresse de l'usine</p> <p><small>Note: When more than one factory, please report on page 2 Note: Lorsque il y plus d'une usine, veuillez utiliser la 2<sup>ème</sup> page</small></p> <p>Ratings and principal characteristics Valeurs nominales et caractéristiques principales</p> <p>Trademark (if any) Marque de fabrique (si elle existe)</p> <p>Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur</p> <p>Model / Type Ref. Ref. De type</p> <p>Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire, peuvent être indiqués sur la 2<sup>ème</sup> page)</p> <p>A sample of the product was tested and found to be in conformity with Un échantillon de ce produit a été essayé et a été considéré conforme à la</p> <p>As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat</p>		
<p>This CB Test Certificate is issued by the National Certification Body Ce Certificat d'essai OC est établi par l'Organisme <b>National de Certification</b></p>		
<p>Date: _____ Signature: _____</p>		

## 7 Appendix - Troubleshooting

If you are having difficulties with your Phoenix module, look at these frequently asked questions before contacting technical support.

[To be completed as necessary]

### Question 1?

Answer 1.

### Question 2?

Answer 2.

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No index entries found.



OCEASOFT S.A.  
720 Rue Louis Lépine  
34000 Montpellier - FRANCE  
Tel: +33 (0) 4 99 13 67 30  
Fax: +33 (0)4 67 42 84 13

OCEASOFT Inc.  
250 Phillips Blvd. - Suite 290  
Ewing, NJ 08618 - USA  
Tel: 1-609-589-1668  
Fax: 1-609-589-1669

[www.oceasoft.com](http://www.oceasoft.com)

[contact@oceasoft.com](mailto:contact@oceasoft.com)



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