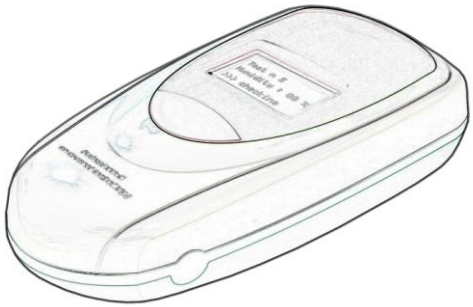
PROFESSIONAL MEASUREMENT TECHNOLOGY

Cobalt® 2 Temperature Monitor

(Internal and External Digital Probes)

Installation guide



Notices

Safety instructions

IMPORTANT NOTE: Do not use this product for protection or as part of automated emergency system or as for any other application that involves protecting people and/or property. Customers and users of Oceasoft products are responsible for making sure that the product is fit for the intended usage. Do not open the product casing and do not disassemble or modify internal components in any manner. Oceasoft products do not contain any internal components that require user intervention or repair. If the device shows signs of improper operation, disconnect it immediately from its power source and contact Oceasoft technical services.

Battery warning

This product contains a lithium battery. Make sure you respect polarity (+/-) when inserting batteries into OCEASOFT devices. Reversing polarity by inserting the batteries incorrectly can cause the product to heat up, and may lead to a battery liquid leak. Use only batteries recommended by OCEASOFT. Do not change battery types, such as such as alkaline and magnesium, or use batteries of different brands, or even different types of batteries of the same brand. Incorrect batteries may cause the device to heat up, and may result in a fire or battery liquid leakage. Never dispose of batteries in fire. Do not charge regular batteries that are not specifically rechargeable. When batteries are low, or in case the battery-operated device in question remains unused for a lengthy period of time, remove the batteries from the device in order to avoid any risk of battery liquid leakage. Never leave batteries within the reach of children. In case of a battery leak, avoid all contact with the liquid present on the batteries. Rinse with clear water immediately in case the battery liquid comes into contact with the eyes, mouth or skin. Contact a doctor or emergency service immediately. Battery liquid is corrosive and can damage vision, or cause blindness or chemical burns.

FCC statement

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, and (2) this device must accept any interference received, including interference that may cause undesired operation: FCC Part 15 §107 - §109 - §207 - §247 (Ed 2008).

Conformity with European regulations

This product has been tested by Oceasoft S.A.. The “CE” mark on this device indicates compliance under the Radio Equipment and Telecommunications Terminal Equipment Directive 1999/5/EC. The following standards were applied for the evaluation of compliance with this directive: EMC: EN 301 489-3 v1.4.1 (02); Radio: EN 300 222-2 v2.1.2 (2007-06); Safety: EN 60950-1:2006/A11:2009

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 is in compliance with the restriction of the use of certain hazardous substances in electrical and electronic equipment Directive 2002/95/EC (RoHS Directive).. Do not dispose of this product with household trash. Oceasoft recycles this product under certain conditions. Please contact us for more information.

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. This document is non-contractual and subject to change without notice.

January, 2010 Ref: ING-ENR-100119-03-MMA

Table of contents

Introduction

Congratulations and thank you for choosing the Oceasoft Cobalt 2 wireless temperature monitor. This document covers Cobalt 2 modules with either internal or external probes.

This Installation Guide describes how to get your new Cobalt 2 module up and running. Detailed configuration instructions and software settings are provided in the complete Cobalt 2 User Guide provided with your product.

Pre-requisites

For the purposes of this Installation guide, we assume that:

- ThermoClient/ThermoServer software is installed and configured on your computer, and that you have appropriate access rights to configure devices.
- A Cobalt receiver is installed on your computer or network.

Please see the relevant product manuals for details on installing Cobalt receivers and ThermoServer/ThermoClient software.

Package contents

- Cobalt 2 wireless monitoring module with battery
- Internal or external temperature probe
    - Digital Temperature Internal Modules (+10° to +50°C) Ambient temperature measurement
    - Digital Temperature External Modules (-40° to +80°C) Freezers, refrigerators, and cold rooms
    - Digital Temperature External Modules (-40° to +120°C) Ovens, incubators, and water baths
- Cobalt mounting kit with plastic holder, magnet, screws and Velcro®
- For modules with external probe only:
    - Flat cable (-40°C to +80°C)
    - Sensor mounting kit with 2 wire-ties and 4 plastic holders with adhesive backing

Product overview

- Configurable data logging, wireless transmission and alerts
- Automatic wireless set-up
- Temperature range: external probe -40°C to +80°C or -40°C to +120 °C; internal probe 10°C to +50°C
- Wireless range from 25-100 meters (65-325 ft) indoors up to approximately 700 meters (2,300 ft) in line of sight
- Operating temperature range for wireless module: 0°C to +50°C
- Calibration certificate downloadable on-line directly from within ThermoClient software.

What is a Cobalt 2 temperature module?

Cobalt 2 temperature modules read and record temperature values, then transmit them wirelessly to a central database managed by Oceasoft ThermoClient software. Alerts can be sent automatically in case readings exceed configurable threshold values.

Figure 1 – Cobalt 2 wireless temperature module (shown here without external probe)

Typical installation

Cobalt 2 modules transmit temperature readings and alerts to a PC running Oceasoft ThermoServer/ThermoClient software, equipped with a wireless receiver. The receiver may also be located remotely from the PC on a network device server. Repeaters may be used when the wireless range between the receiver and the Cobalt 2 end-point module is too great. The diagram below shows these basic configurations:

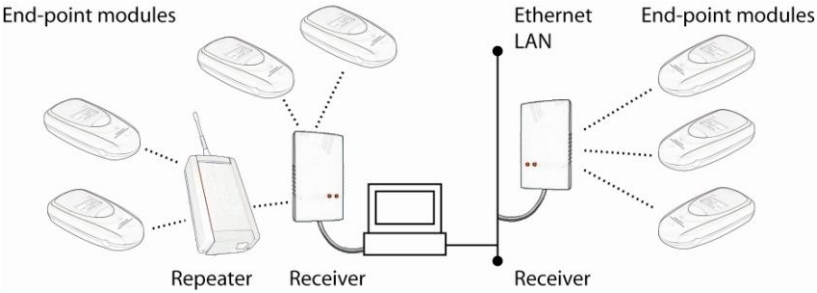


Figure 2 – Typical Cobalt 2 wireless configurations

Each Cobalt 2 end-point module may only connect back to **one receiver** as shown above. Any given module cannot be read by multiple receivers.

Cobalt 2 modules may be installed on the outside of refrigerators and freezers, with the probe place inside the enclosure and connected via the provided capillary cable. Modules with internal probes should not be placed in cold-rooms.

Installation procedure

The procedure described here assumes that ThermoServer/ ThermoClient software is installed on your computer, and that your Oceasoft wireless receiver is configured and ready to use.

Before you begin

1. Connect the temperature probe firmly to one end of the capillary cable by joining the connectors (without unscrewing them).
2. Connect the other end to the Cobalt 2 wireless module.

Placing your Cobalt 2 module for best performance

For optimal operation, follow these recommendations when physically placing your device:

- Do not place the module within 40 cm (16 inches) of another module.
- Make sure the wireless module is not placed on an electrical conduit or cable tray (such as for computer network cables).
- For best results, place the module so that it faces the general direction of the receiver antenna. Modules without displays may be placed on top of refrigerators or freezers.
- Keep around 20 cm (8 inches) clear space around the module. A module that is “stuck” between two refrigerators may not communicate effectively.
- Make sure all cables, if any, are firmly attached, that you can open and close the enclosure door without forcing, and that the capillary cable remains flush with the enclosure door joint.
- See Appendix (*pg 17*) for additional considerations.

Placing the probe within the enclosure

Depending on your refrigerator or freezer model, it may be better to leave the probe sitting on a shelf inside the enclosure rather than sticking it to a side wall. This is particularly relevant in cases where you have carried out a mapping study and determined the ideal location for the probe. In that case, make sure that the probe does not interfere with loading and unloading of your product(s) and that the location does not represent a risk either for your product(s) or the probe.

Recommended order for installing modules

In addition to placing your Cobalt 2 module as described above for best wireless performance, you may also optimize overall network performance by proceeding with installation as follows:

1. Examine the general layout of your site to determine the placement of your Cobalt 2 modules. The extent of your pre-installation site survey depends on the number of modules to install. Feel free to contact your sales representative for more information on this topic.
2. Place all modules in their final locations *before* running wireless setup (described below in *Activation and automatic wireless configuration*, on pg. 12).
3. Begin activation by pressing on the module's button for three seconds (long-press), starting with the modules closest to your receiver, working your way "out" in concentric circles. This enables each Cobalt 2 module to establish the optimal connection to your receiver.

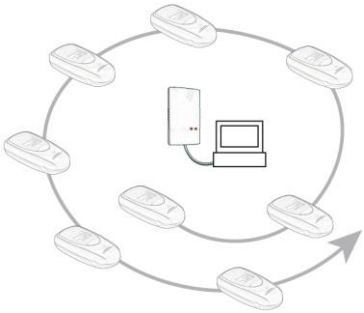


Figure 3 – Start installation with modules closest to your receiver and work your way "out" in concentric circles.

Placing external probe and Cobalt 2 module

1. If you have a Cobalt 2 module with an external probe, run the temperature probe into the enclosure via the door joint, taking care to place the flat cable flush with the joint.
2. Clean the surface for the probe using alcohol to remove any grease or dirt.
3. Attach one of the plastic cable holders to the probe, remove the protective strip from the adhesive, and place the holder on the clean spot inside the enclosure.
4. Place the probe/capillary cable connector on the inside the enclosure in the same manner, as shown here:

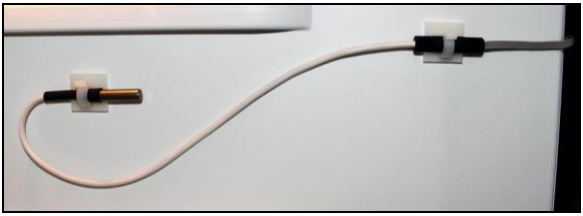


Figure 4 – Probe inside refrigerator enclosure (modules with external probe only)

5. Your mounting kit includes a plastic holder that can be mounted using the provided magnet, screws or Velcro®. Choose the method that is most appropriate for your situation and place the Cobalt 2 module as described earlier in *Placing your Cobalt 2 module for best* performance (pg. 9), for example:

Figure 5 – Cobalt 2 mounted on refrigerator door

6. Attach or coil excess cable neatly.

Activation and automatic wireless configuration

The Cobalt 2 temperature monitor is a standalone device that runs on battery power. To activate your Cobalt 2 module and add it automatically to your wireless monitoring network:

1. Insert the provided battery, if not already installed, making sure to respect the polarity (see image printed inside battery slot).
2. To begin collecting temperature data right away and initiate the wireless configuration sequence, press the button on the front of the module for 3 seconds.

   If a receiver or repeater is within wireless range, the Cobalt 2 module **automatically establishes the wireless connection**, as shown in the sequence of screen shots below:

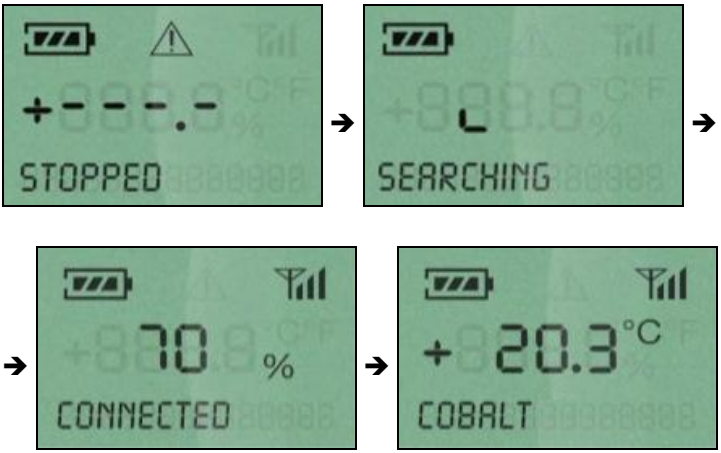


Figure 6 – Cobalt 2 module automatic wireless set-up sequence

The module begins data-logging even if it does not connect to the wireless system.

Software configuration

When activating your Cobalt 2 module as described above, the device adds itself to your current ThermoServer/ThermoClient configuration.

Testing the connection

Check wireless signal strength

You may use ThermoClient to test the wireless signal strength as described here, entering your login name and password when prompted by the software.

1. Launch ThermoClient on your computer and enter your login name and password to continue.
2. Select **Settings ➔ Sensor settings**, or press F11.
3. Click on **Add/Update a module**.
4. Select your receiver in the pick-list (*"PC1" in Figure 7*), then select the wireless module from the sensor list on the left.

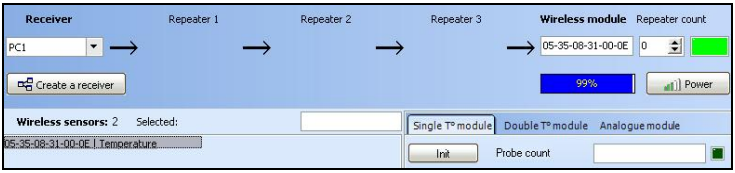


Figure 7 – Configuration with Cobalt 2 module on receiver "PC1"

5. Click on **Power** to test the connection.

If this test does not show a wireless signal, please refer to the Cobalt 2 User Guide for instructions on adding modules into the system manually.

Basic module configuration

Cobalt 2 modules offer a variety of data-logging, alert and transmission options. This section describes the basic settings to get started right away. Please see the complete *Cobalt 2 User Guide* for more details.

Move the Cobalt 2 module into a group

1. Launch ThermoClient on your computer and enter your login name and password to continue. The new Cobalt 2 should be listed as shown here, where “PC1” refers to the receiver and “SDP-PC1” refers to a generic group for new un-configured modules connected to that receiver.

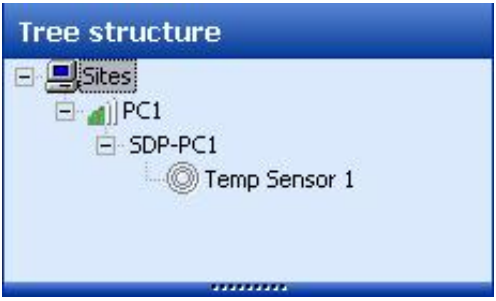


Figure 8 – New temperature sensor in generic “SDP” group

2. Press F11 or select **Settings ➔ Sensor settings**.
3. Drag the new sensor from the “SDP” group to your real group:

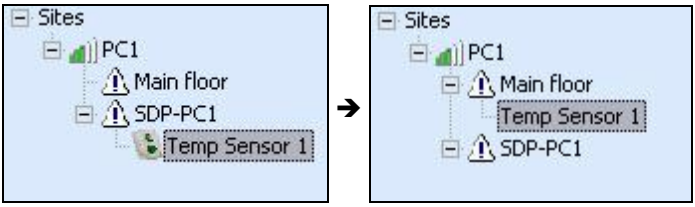


Figure 9 – Move sensor from generic “SDP” group to your real group

4. Click on **Yes ➔ OK ➔ Close** to update the module, save this change, and return to the tree structure, as shown here:

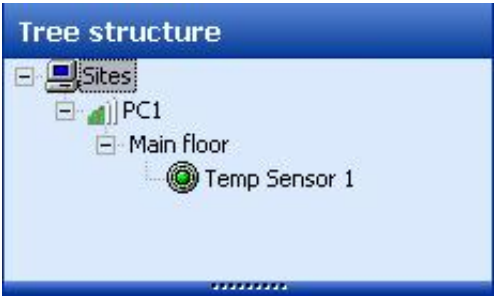


Figure 10 – Temperature sensor in "Main floor" group

Test module by running an on-demand temperature read

You may confirm end-to-end operation by launching an on-demand read from ThermoClient.

1. Click on the sensor in the tree structure ("Temp Sensor 1" in our example).
2. Click on the current temperature (black zone in the image below) to read the sensor wirelessly and update the display:

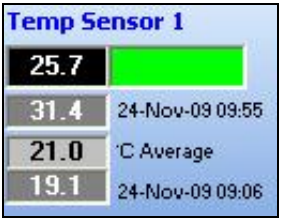


Figure 11 – Run an on-demand read to confirm end-to-end communication

Additional configuration

Your Cobalt 2 module offers many features that are controlled by your system's ThermoServer/Thermo client software. Use the software to define:

- Measurement period
- Frequency of data transmission
- Threshold values for alerts
- Alarm notification via phone, fax, e-mail and SMS
- Probe calibration/correction parameters
- Archiving

Many of these settings are accessed by pressing F11 or selecting **Settings ➔ Sensor settings**, as shown here:

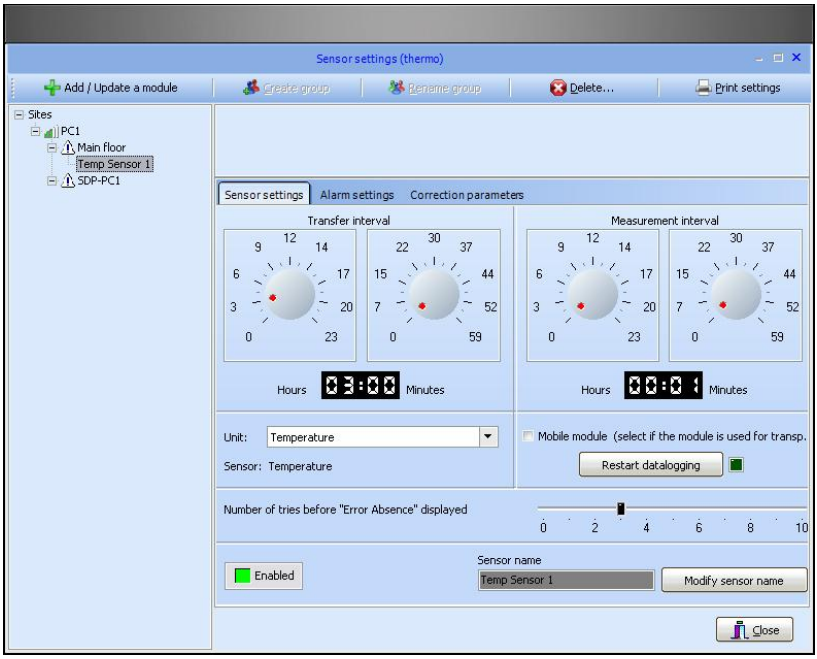


Figure 12 – Main sensor settings screen

Please see the *Cobalt 2 User Manual* for more details on these and other important features. Click on **Help** to open the PDF file directly.

Appendix

Troubleshooting

If you are having difficulties with your configuration, take a look at these frequently-asked questions before contacting technical support. Most common problems are actually quite simple to resolve. Here are some frequently-asked questions:

There is nothing displayed on the Cobalt 2 module screen. What should I do? First check to make sure the battery is installed and that it is inserted in the right direction (+/- according to image in the battery slot). Try testing or changing the battery. Contact technical support if the battery is OK and still nothing is displayed on the screen.

I press the button for three seconds but my Cobalt 2 does not connect to my receiver? Try bringing the module closer to your receiver. If it works closer, then you may need to use a repeater in order for the wireless signal to reach the Cobalt 2 module in its final location. Also check to make sure the receiver is working properly.

Is it OK to have of 25% for my Cobalt 2 module?
No. The signal for each device must show a value higher than 30% when you click on the **Power** button in ThermoClient. Higher values are better.

The Cobalt 2 module shows a strong signal, but I still don't get any temperature readings. This is usually due to a loose cable or improperly connected temperature probe. Check the capillary cable between the Cobalt 2 module and the probe. Unplug the probe and plug it back in. Make sure there are no exposed wires. Try a different probe.

Can the probe be submerged in glycol? Yes. In order to "absorb" sudden variations in temperature, such as those caused by opening and closing the enclosure door, you may submerge the metal part of the probe in glycol or glycerol. This limits inconsequential temperature variations recorded by the probe. Check your laboratory's Quality guide for recommendations and make sure to use a volume of glycol that corresponds to the volume of product(s) that you are monitoring. To achieve the same results, you may also delay the transmission of alarms via software and leave the probes exposed.

Specifications

- ISM (Industrial Scientific Medical) band with 3 frequencies: US/CAN 915 MHz; Europe 868 MHz; APAC 434 MHz; India and other countries 467 MHz
- Channel width: 50 kHz
- Frequency deflection: 16 KHz
- Transmission speed: 9600 Baud in NRZ mode
- Modulation type: GFSK
- Driven receiver sensitivity for BER= 1%: -107dbm to -110 dBm
- Driven transmission: 8 dBm to 10 dBm
- Power output: 25 mW
- Plastic enclosure: ABS with IP65 protection
- Operating conditions: 0°C to 50°C (32° to 122°F); 0 to 90% RH, non- condensing
- Size: 132.7 x 64.2 x 34 mm (5.2 x 2.5 x 1.3 in.)
- Weight: 150 g (5.3 oz.)

Contact information

By e-mail

If you need help with your Oceasoft product, please send a detailed e-mail to us at this address: support@oceasoft.com

Be sure to include as many details as possible, including specific product references, software versions, screen shots from your computer, etc.

By phone

Oceasoft has a dedicated line for technical support, open Mon-Fri, 9:00 am – 1:00 pm and 2:00 pm – 6:00 pm (CET).

- Tel: +33 499 13 67 33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