Ref. No. 1201
Date

Radio type small sized temperature sensor

JP THERMO（2.4GHz）

Handling Instructions

Receiver

Transmitter

J-Power Systems Corporation

Overhead transmission line division

Introduction

- This paper describes about the handling of JP-THERMO (2.4GHz) radio type small sized temperature sensor.
- Please read this paper carefully before using JP-THERMO for safety application
- Please keep this paper close to you to use JP-THERMO properly.

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.

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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１．Behavior of JP-THERMO

- JP-THERMO repeats starting, thermometry, radio transmission and sleep during every two minutes and thirty seconds (±15%). It means that the thermal data are transmitted every two minutes and thirty seconds.

２．Preparation before use

- A JP-THERMO is attached to a measured object directly. A Special attachment (belt) is supplied with the JP-THERMO. The metal surface of the JP-THERMO shall be touched with the measured object tightly.
- There are two kinds of JP-THERMO. One is an aluminum metal surface and another is a cupper metal surface. If the surface of the measured object is made of Aluminum, the JP-THERMO with an aluminum metal surface shall be used. On the other hand, the JP-THERMO with cupper metal surface shall be applied for the measured object with a cupper surface.
- The JP-THERMO with an aluminum metal surface can be applied for other metals (e.g. galvanizing iron/steel), plastic, etc. except stainless steel.
- **Attached accessories (special belts) shall be used. Don't use other attachments.**
- The position of the JP-THERMO shall be over 1.8 meters from the ground. If the position of the JP-THERMO is less than 1.8 meters from the ground, the transmitted distance is shorter than specified distance. The metal surface of the JP-THERMO shall be upside when install the JP-THERMO.

３．Points to notice

- Don't throw or drop the JP-THERMO and give strong shock to the JP-THERMO. These actions may cause the failure of the JP-THERMO.
- Don't shave the molding part of the JP-THERMO and dismantle the JP-THERMO.
- **If the measured object has a high temperature, the consumption of the built-in lithium battery increases which causes a short product life cycle of the JP-THERMO.**
- Don't use over 150 degrees Celsius. It may cause the failure of the JP-THERMO.
- When the JP-THERMO keeps until its usage, please store the JP-THERMO in the place with a low humidity and temperature around 20 degrees Celsius.
- The field intensity of the JP-THERMO is so weak that it does not affect human bodies. But it is recommended that the JP-THERMO keeps away from the person who has a pacemaker in his (her) heart.
- The JP-THERMO uses the radio wave at the range of 2.4 GHz. This radio wave range is used for several kinds of radio equipment. So it is necessary to confirm that there is no equipment which interfere the use of the JP-THERMO. If the interference by the JP-THERMO may occur to other radio equipment, please contact below mentioned contact address.

Contact address
J-Power Systems Corporation
Toyoura Works / Overhead Transmission Line Division
4-10-1 Kawajiri-cho, Hitachi-shi, Ibaraki-ken, 319-1411, Japan
TEL: +81-294-43-2131
FAX: +81-294-43-8456
E-mail: jpthermo@jpowers.co.jp

４．Special Notation

４．１　Product life cycle

- The product life cycle of the JP-THERMO changes due to consumption of the built-in lithium battery.
- **If the measured object has a high temperature, the consumption of the built-in lithium battery increases which causes a short product life cycle of the JP-THERMO. Especially the temperature of the measured object is over 100 degrees Celsius, the product life cycle of the JP-THERMO decreases rapidly.**
- The expected product life cycle of the JP-THERMO is calculated as below. The duration mentioned below is not guaranteed value and is reference value.

  Measurement temperature 60 degrees Celsius (continues) ･･･approx. 3.9 years
  Measurement temperature 80 degrees Celsius (continues) ･･･approx. 2.2 years
  Measurement temperature 100 degrees Celsius (continues) ･･･approx. 1.3 years
  Measurement temperature 125 degrees Celsius (continues) ･･･approx. 0.1 years
- The product life cycle of the JP-THERMO may change an annual temperature pattern of the measured object. Please contact us when the calculation of the expected product life cycle is required.
- When the built-in lithium battery reaches its lifetime, the field intensity of the JP-THERMO decreases and receivable distance of the reader becomes shorten. So the acquisition rate of temperature data becomes worse than normal condition.

  The shorter receivable distance and the worse acquisition rate of temperature data are the sign of an exchange of the JP-THERMO.

４．２　Warranty

- If a malfunction of the JP-THERMO occurs within a year, even if the expected product life cycle of the JP-THERMO is over a year, the JP-THERMO exchanges with new one without charge. If the malfunction of the JP-THERMO occurs after a year, the exchange of the JP-THERMO becomes a chargeable service.

４．３　Exemption from responsibility

- If the cause of a malfunction is a fall, a throw and other failures due to inadequate handling, the exchange of the JP-THERMO shall be a chargeable service even if a malfunction occurs within a warranty period. As the JP-THERMO is a fragile article, the careful treatment is required.
- **The installation cost to exchange the JP-THERMO shall bear by the Customer.**
- The loss or trouble due to error measurement of temperature data, an incorrect action of the JP-THERMO exempts from responsibility.

４．４　Problem handling

- The JP-THERMO will exchange with new one when an incorrect action of the JP-THERMO occurs within the warranty period. Please contact below mentioned address. An abnormal JP-THERMO shall be returned. Please let us know about the failure condition.

  Contact address
  J-Power Systems Corporation
  Toyoura Works / Overhead Transmission Line Division
  4-10-1 Kawajiri-cho, Hitachi-shi, Ibaraki-ken, 319-1411, Japan
  TEL: +81-294-43-2131
  FAX: +81-294-43-8456
  E-mail: jpthermo@jpowers.co.jp

４．５ Transportation

- The JP-THERMO always transmits a radio wave, so necessary action shall be taken when the JP-THERMO transports by an airplane.
- The JP-THERMO shall be covered by an antimagnetic sheet when it transfers by an airplane. A simple method for preventing the leakage of a radio wave is to keep the JP-THERMO inside of a metal container.
- If the JP-THERMO exports from Japan, necessary procedures prescribed by Security Export Control Manual provided by Ministry of Economy, Trade and Industry shall be taken.

４．６ Radio wave

- The JP-THERMO obtains a technical standards conformity approval as a small radio station based on the radio low.
- The field intensity of the JP-THERMO is so weak that it does not affect human bodies. But it is recommended that the JP-THERMO keeps away from the person who has a pacemaker in his/her heart.

４．７ Waste disposal

- The JP-THERMO has a built-in lithium battery. It shall be clearly indicated about a built-in lithium battery when the JP-THERMO is disposed. The fact that the JP-THERMO has a built-in battery shall be announced to company treating industrial waste.
- The JP-THERMO shall be scrapped after retrieving a built-in lithium battery from the JP-THERMO.

５．Main Specification

Transmission frequency band	:	2.4GHz
Transmission output	:	1mW
Temperature precision	:	±2 ℃
Transmission interval	:	2.5minutes ± 15% （It can be customized）
External Dimension	:	113mm × 18mm × 22mm
Weight	:	Approx. 80 g
Operating temperature	:	－30 ℃～125 ℃

Measurement accuracy

Atmospheric condition(0 ℃～＋40 ℃)	: Thermometry range	: 0 ℃ ～＋125 ℃
	: Accuracy	: ±2 ℃
Constant temperature oven	: Thermometry range	: -30 ℃ ～＋125 ℃
	: Accuracy	: ±2 ℃