

## Solutions for thermal management ...



## Specification PTP®

## Professional Temperature Profiler

# Electronics

Real time radio data transmission	Bluetooth™
Number of measuring channels	8 + internal Temperature + Battery Status 0-100%
Measuring range [°C]	-150 to +1350
Resolution ADC	0,1
Measuring interval [s]	0.1 / 0.2 / 0.5 / 1.0 / 2.0
Measuring time (selectable) [min]	10 / 20 / 50 / 100 / 200
Accuracy (23°+3°C) Within calibration range [°C]	+/- 0.5°C 0 to 1200
Power supply TX RX	Li-Ion-Battery / USB USB
Average working time / battery capacity C (Cycle Life C/5 ton of 80% initially capacity)	approx. 4h / 350mAh > 500 cycles
Load time (empty to full battery capacity)	~ 1 h
Max. Temperature of battery [°C] without thermal protection of shuttle/measuring board	60
RF- output power (regulated) (Antenna 50R/2,5dB)	max. 20dBm / 100mW
Output frequency ISM Band	2.402 –2.480 GHz
Range (surrounding of oven / plants)	> 10 m
Range (free field)	> 300 m

## RoHS

The PTP® electronics are produced according to the ROHS (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment) directive.

## Bluetooth™

Bluetooth™ is a transmitting standard for wireless connections. Bluetooth™ devices can take up contact completely independently and automatically with one another. The communicating devices change thereby repeatedly per second the frequency channel (frequency hopping) with a jump width of 1 MHz within the ISM range 2402-2480 MHz. The frequency jump procedure ensures a particularly safe transmission, since breakdown influence (Noise, Fading, spurious distortion signals, etc.) are avoided. The protocol, with which Bluetooth™ devices inform themselves with one another, contain further information (e.g. an ID) beside the data which they communicate. Pairing makes a safe communication between two Bluetooth™ devices possible. The connection between two or several paired Bluetooth™ devices is established as soon as an device comes into the range of another equipment. The Bluetooth™ radio devices integrated for data communication in the measuring system PTP® realize internally an asynchronous serial (point to point) connection and work in this connection like a direct cable connection. The software for the Bluetooth™ devices was factory-installed.

*Because of pairing the RX and TX both devices are to be sent to the local service in the case that a calibration of the measuring system is needed.*

## Declaration of conformity

The product (RF-Bluetooth™ module and power supply) to which this declaration relates, conforms to the following product specifications:

### R&TTE Directive 1999/5/EC

EN 300 328 V1.6.1 (2004-11)

### EMC Directive: 89/336/EEC

EN 301 489-1 V1.4.1 (2002-08)

EN 301 489-17 V1.2.1 (2002-08)

EN 61000-6-2 (2001)

### Safety Compliance

EN 60950-1:2001 and/or IEC 60950-1:2001 (1<sup>st</sup> Edition)

EN 60950-1/A11:2004 + Corrigendum:2004

### Medical Electrical Equipment

IEC 60601-1-2 (2001)

## RF-exposure Statement for the Bluetooth™ RF-Modules

This modular transmitter MUST have a separation distance of at least 20 cm between the antenna and the body of the user or nearby persons, excluding hands, wrists, feet, and ankles.

This device complies with Part 15 of the FCC Rules.

The **FCC ID** has to be readable on the device.

## Guidelines for Efficient and Safe Use

### Radio Frequency Exposure

The electronics contains a small radio transmitter and receiver. During communication with other Bluetooth™ products the modules receives and transmits radio frequency (RF) electromagnetic fields (microwaves) in the frequency range 2400 to 2500 MHz. The output power of the radio transmitter is very low. When using the electronic devices, you will be exposed to some of the transmitted RF energy. This exposure is well below the prescribed limits in all national and international RF safety standards and regulations.

### Electronic Equipment

Most modern electronic equipment, for example, in hospitals and cars, is shielded from RF energy. However, certain electronic equipment is not. Therefore:

**Note:** This equipment emits RF energy in the ISM (Industrial, Scientific, Medical) band. Please insure that all medical devices used in proximity to this device meet appropriate susceptibility specifications for this type of RF energy.

### Potentially Explosive Atmospheres

Turn off your electronic device before entering an area with potentially explosive atmosphere. It is rare, but your electronic device could generate sparks. Sparks in such areas could cause an explosion or fire resulting in bodily injury or even death. Areas with a potentially explosive atmosphere are often, but not always, clearly marked. They include fuelling areas, such as petrol station, below deck on boats, fuel or chemical transfer or storage facilities, and areas where the air contains chemicals or particles.

### Trademarks

Bluetooth™ is a trademark owned by the Bluetooth™ SIG, Inc,

PTP® is a registered trademark owned by the globalPoint ICS GmbH.