Boomerang™

Data Sheet

Boomerang - TinySense series

Description

The Boomerang TinySense series is a wireless communication concept for monitoring and logging of environmental parameters in laboratories, pharmacies, health care centers and more.
Thanks to an extremely easy and efficient configuration the Boomerang TinySense concept provides fast and flexible monitoring of refrigerators and freezers in many areas.

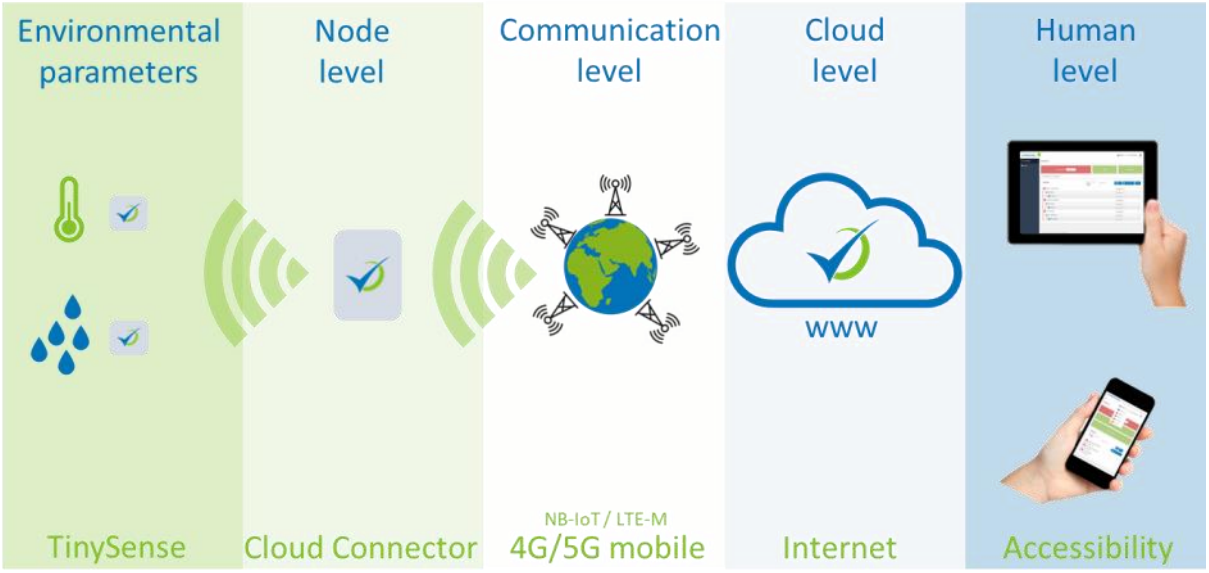
TinySense is a part of the IoT (Internet-of-Things) solution provided by Boomerang. The TinySense concept enables an efficient way of achieving continuous monitoring and logging, also on singular and remotely located measuring points, such as: refrigerators in pharmacy stores, in health care centers, cold storage etc.

The sensors are tiny in size (only 19×19×3.5 mm), wireless and battery powered. The sensors connects to the Internet and to the Boomerang cloud via one or several CloudConnectors (4G mobile and/or Ethernet).

Applications

- Cold storage
- Restaurants
- Cold logistics
- Food producers
- Pharmacies
- Cold storage
- Health care centers
- Catering facilities

...and much more



Part.no	Short description
BTINY-CC	TinySense Cloud Connector
BTINY001	TinySense Temperature sensor
BTINY002	TinySense Ambient Humidity and Temperature sensor
BTINY003	TinySense Temperature sensor with Memory Buffer
BTINY004	TinySense CO2 sensor
BTINY005	TinySense Temperature node for external Pt100 sensor
BTINY006	TinySense Tactile touch

Boomerang™

Data Sheet

BTINY001 - *TinySense Temperature sensor*
BTINY003 - *TinySense Temperature w. Memory buffer*

Description
The BTINY001 & BTINY003 are wireless tiny temperature sensors for continuous monitoring and logging of temperatures between –30°C and +50°C.

BTINY001 & BTINY003 allows for data transmission intervals from five (5) minutes up to 60 minutes, and log interval (sampling rate) down to one (1) minute.

Both BTINY001 and BTINY003 has a powerful battery to ensure a battery life (life time) up to 15 years.

BTINY001 & BTINY003 can be set in calibration mode, one (1) minute log interval for efficient calibration.

BTINY003 with Memory Buffer
If the BTINY003 goes offline, i.e. loses connection to the CloudConnector and to Internet, it will start storing the temperature measurements locally. The local memory buffer size is 100 000 datapoints, i.e. with a one minute log interval the buffer can store data for more than two months before it starts to overwrite data.

Technical data	
Size (L×H×W)	19×19×3.5 mm
Battery life	Up to 15 years
Range	–30°C to +50°C
Accuracy	Better than ±0.5°C
Transmit interval	Min. 5 minutes
Log Interval	Down to 1 minute
Buffer memory (BTINY003)	Up to 100 000 logs
Wireless range	Up to 40 meter
Internet access	Cloud Connector

BTINY002 - *Boomerang TinySense Humidity & Temp.*

Description
The BTINY002 is a wireless tiny sensor for continuous monitoring and logging of surrounding relative humidity and temperature, between 0-100% RH and 0 to +50°C.

BTINY002 has a fixed log-interval of 15 minutes and battery life up to 10 years.

Technical data	
Size (L×H×W)	19×19×2.5 mm
Battery life	Up to 10 years
Accuracy	±0.5°C (±4.5% RH)

BTINY004 - *Boomerang TinySense Ambient CO2, Humidity, Temperature & Barometric pressure*

Description
The BTINY004 is a wireless sensor for continuous monitoring and logging of ambient CO2, Humidity, Temperature and Barometric pressure.
BTINY004 has a fixed log-interval of 5 minutes

Auto calibration:
Every sensor is factory calibrated at 400 ppm, and there is a settling period of 7 days before the CO2 measurements are correct.
In order to function correctly the sensor must be exposed to typical background levels (400-450 ppm) at least once during a 7 day period. (eg. most buildings will drop quickly to background CO2 levels when unoccupied during night and weekends.

BTINY004 CO2

Technical data	
Size (L×H×W)	95×66×25 mm (116 gram)
Battery	2×AA (up to 10 years)
Carbon Dioxide, CO2	Range: 0 to 5000 ppm Accuracy: ±45ppm +3% of reading
Relative Humidity	Range: 10 to 95% (non condensing) Accuracy: ±3 %
Temperature	Range: 0 to 50°C Accuracy: ±1°C
Barometric pressure	Range: 500 to 1110 hPa (mbar) Accuracy: ±1 hPa (mbar)

BTINY005 - *Boomerang TinySense Node for Pt100*

Description
The BTINY005 is a wireless TinySense Node for external Pt100 temperature sensors, intended for continuous monitoring and logging of temperatures in refrigerators, freezers, ultra-low freezers and ovens/heating cabinets.

BTINY005 is compativle with all existing Boomerang Pt100 sensors.

BTINY005 Pt100

Technical data

Size (L×H×W)	95×66×25 mm (116 gram)
Battery	2×AA (up to 10 years)
Input	External 4-wire Pt100 sensors

Available sensors –200°C to +200°C

Part no.	Probe	Temperature range
FT012	60 mm	-90°C to +200°C
FT004	600 mm	-200°C to +200°C
FT020	ϕ 2.1 mm (hermetic)	-60°C to +200°C
FT052	15 mm (flex)	-20°C to +200°C

BTINY006 - *TinySense Tactile touch*

Description
The BTINY006 is a TinySense wireless touch sensor that transmits a message to Boomerang every time it is pressed.
The BTINY006 comes in a mechanical housing that gives audible and tactile feedback to the user when the sensor is pressed.

Usage in Boomerang
Control point objects; you can sign off to the control point with the Tactile touch.
Temperature objects; the Tactile touch creates events in the log.

Technical data

Size (L×H×W)	26×26×5.9 mm (2 gram)
Battery life	up to 15 years

BTINY-CC - *Boomerang Cloud Connector*

Description
The Cloud Connector connects the whole range of Boomerang TinySense sensors to the Internet and to the Boomerang Cloud. The Cloud Connector operates via 4G/3G/2G mobile networks or Ethernet (PoE).

Seamless roaming over 4G / Ethernet, as well as between all BTINY sensors. Hundreds of sensors can connect to each Cloud Connector and numerous Cloud Connectors can be used for wireless coverage of larger areas.

The BTINY-CC is powered from the mains (230VAC) or via Power-over-Ethernet, PoE.

Cloud Connector

General

- Boomerang TinySense and Cloud Connectors are CE, UKCA, WEEE and FCC certified.
- TinySense uses wireless ISM band (EU) 868MHz., (US) 915MHz.
- Typical wireless range: 40 m from BTINY-CC (up to 100m with Range Extender)

  Wireless range always depends on surrounding environment, typically metal in walls and shelves affects the range. Magnetic power fields also affects.
  On the other hand, free space or line-of-sight works well for the wireless range and distances up to hundred meters and more might be achievable, also the BTINY-RANGEX has good impact of the range (up to 4× the distance).
- Estimated sensor (battery) lifetime:
  - Ambient/Room up to 15 years (RH 10 years)
  - Refrigerator up to 10 years
  - Freezer up to 5 years

  There are several factors that affects the battery life of the TinySense products.
  Surounding Temperature is obviously one of them. At high temperatures the battery will have increased self-discharge, and at low temperatures the battery has less ability to deliver the total amount of its stored energy.
  Radio transmission is the most energy-consuming activity and of course the transmitting interval has a large impact on battery life. Also the radio signal conditions are important, if the TinySense have poor wireless connection to the CloudConnector (BTINY-CC) it will automatically increase its transmitting power … and thus decrease the battery life. To ensure good wireless signalling conditions at longer distances using the Range Extender (BTINY-RANGEX) is a good idea.
- Robust design, IP68

BTINY-RANGEX *- TinySense Range Extender*

Description
The TinySense Range Extender provides improved wireless range and battery life. (BTINY-RANGEX)

The Range Extender can improve the radio signal as much as four times (4×). The BTINY-RANGEX allows for installation directly on metal surfaces and is designed to work inside refrigerator and freezers.

Range extender

Note: the dot on the sensor shall be aligned with the dot on the BTINY-RANGEX

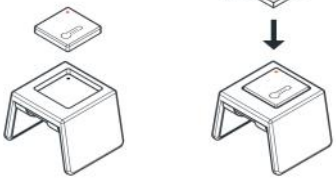
Or

Note: Use the adhesive to attach the BTINY-RANGEX or use zip ties.

BTINY-SURFACE *-TinySense Surface Range Extender*

Description
The TinySense Surface Range Extender provides great thermal coupling between sensor and surface, and in addition improved wireless range and battery life. (BTINY-SURFACE)

The thermal conductivity of thermal pad is 1.6W/m·K



1. peel the protective film from the back of the sensor

2. the dot on the sensor shall be aligned with the dot on the BTINY-SURFACE

3. place the thermal pad with the sticky side on top of it

4. remove the second protective film from the thermal pad, flip it around and install it on a clean and dry surface