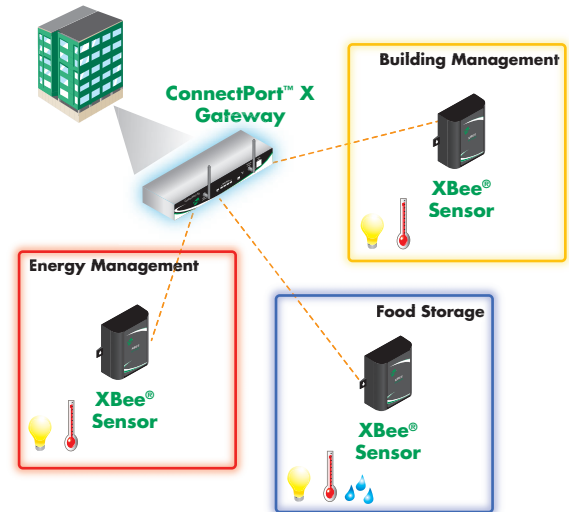# XBee® Sensors

Compact Battery Powered Sensors with Integrated ZigBee®

XBee sensors easily integrate into ZigBee networks, featuring long battery life and small size for unobtrusive installation anywhere.

Features/Benefits

- **ZigBee wireless sensors - Temperature, humidity, light**

- **Small form factor can be mounted anywhere**

- **Long-life battery**

- **Easy to install/configure**

- **Easy to integrate with Digi's Drop-in Networking family of gateways, adapters and modules on a ZigBee network**
  - **Integrate with custom Python® development environment for events, triggers and data logging**

- **Applications include building automation and security, energy management, food management, freight/vehicle monitoring**

Overview

ZigBee technology enables low-cost, low-power networking of sensors, controllers and other devices in self-configuring, self-healing wireless mesh networks. Part of Digi's Drop-in Networking solutions, XBee sensors offer the ability to provide real-time data from a variety of sensors (e.g., temperature, humidity, light) in a single solution for wireless communication across a ZigBee infrastructure.

Their small form factor and long-life battery power make XBee sensors easy to integrate with Digi's Drop-in Networking solutions to provide reliable, unobtrusive communications. Applications include building automation and security, energy management, food management, freight/vehicle monitoring and many more.

Installation is a snap. Simply insert batteries, add the XBee sensor to the ZigBee network, and configure the update interval. Next, mount the device in an out-of-the way location and start communicating.

XBee sensors can be used with ConnectPort™ X gateways, XBee embedded modules, XBee adapters or XBee wall routers to drop-in end-to-end device networks – without the need for a wired network infrastructure.

www.digi.com

Features/Specifications

FEATURES

General
- Frequency: 2.4 GHz (ISM)
- Internal antenna

Performance
- Indoor/Urban range: 133 ft (40 m)
- Outdoor RF line-of-sight range: 400 ft (120 m)
- Transmit power output: 1.25 mW (+1 dBm) / 2 mW (+3 dBm) boost mode
- RF data rate: 250,000 bps
- Receive sensitivity (1% PER): -97 dBm (-98 dBm boost mode)

Networking and Security
- Networking topologies: Point-to-Point, Point-to-Multipoint, Peer-to-Peer, Mesh
- Number of channels: 16 - 5 MHz channels (Direct Sequence Spread Spectrum)
- Filtration options: PAN ID, Channel, 2^64 (64-bit) addresses

LEDs
- Power: Solid when powered and not associated to network.
- Associate: Blinks when unit is associated to network

Push Button
- Device reset
- Configuration reset to factory defaults
- Identification/Commissioning mode

INTERFACES

- ZigBee - compatible with:
  - Digi XBee ZNet 2.5 (formerly Series 2) module
  - EmberZNet 2.5x mesh stack

MODEL.....................PART NUMBERS

Model	Worldwide
XBee Sensor - Battery powered temperature and light	XS-Z14-CB1RB
XBee Sensor - Battery powered temperature, humidity and light	XS-Z14-CB2RB

INTEGRATED SENSORS

Temperature Sensor
- Range: -18° C to +55° C (-0.4° F to +131° F)
- Accuracy: +/- 2° C

Ambient Light Sensor
- Range of spectral bandwidth: 360 to 970 nm (similar to human eye)
- Wavelength of peak sensitivity: 570 nm

Humidity Sensor
- Range: 0 to 100% RH
- Interchangeability:
  +/- 5 %RH (0% RH to 59%RH)
  +/- 8 %RH (60% RH to 100%RH)
- Accuracy: +/- 3.5% RH

ENVIRONMENTAL

- Operating temperature: -18° C to 55° C (-0.4° F to 131° F)
- Power requirements: 3 x AA alkaline 1.5V batteries (batteries not included)

BATTERY LIFE

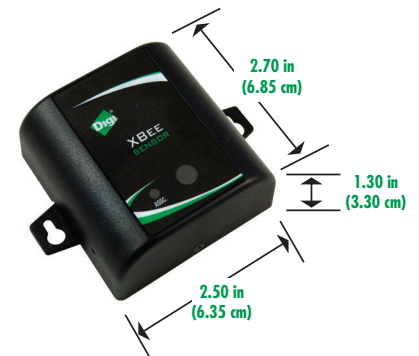| Duty Cycle	Battery Life Estimate
1 read per 30 sec	1.5 years
1 read per minute	2.5 years
1 read per hour (or less frequent)	6 years

- Assumptions based on:
  - Cyclic sleep enabled with single transmit per wake cycle
  - At 21° C
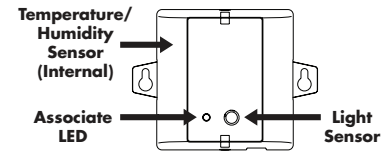
REGULATORY APPROVALS (pending)

- FCC Part 15, Class B
- EN55022 Class B, EN 55024
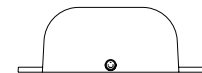- RoHS Compliant

DIMENSIONS

- Length: 2.70 in (6.85 cm)
- Width: 2.50 in (6.35 cm)
- Height: 1.30 in (3.30 cm)
- Weight: 0.35 lb (0.158 kg) w/batteries, 0.20 lb (0.091 kg) without batteries

2.70 in (6.85 cm)
1.30 in (3.30 cm)
2.50 in (6.35 cm)

XBee Sensor - Front

Temperature/ Humidity Sensor (Internal)
Associate LED
Light Sensor

XBee Sensor - Top/Bottom

WHEN RELIABILITY MATTERS™

Digi International, the leader in device networking for business, develops reliable products and technologies to connect and securely manage local or remote electronic devices over the network or via the web. With over 20 million ports shipped worldwide since 1985, Digi offers the highest levels of performance, flexibility and quality.

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