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communications

IoT for life

TEKTELIC BREEZE
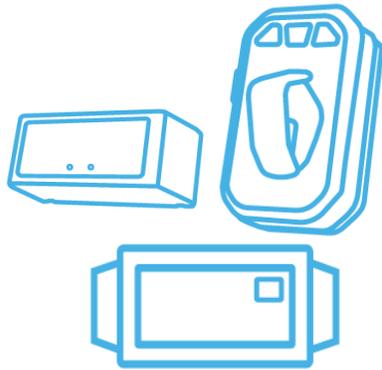
Distributor Introduction
Jack Stuart (Director – Business Development)

Date	Apr 28, 2022
Version	1.0
Name	Jack Stuart

LoRaWAN® Architecture

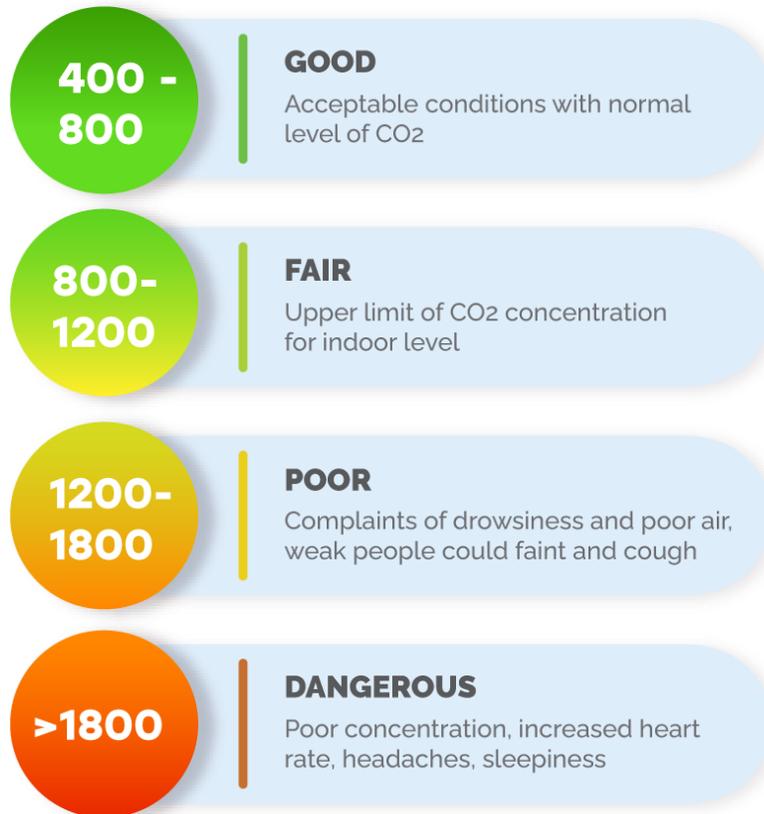## Low Total Cost of Ownership & Best-In-Class Performance

End Devices

Gateways

Network Server

Application

Why Monitor CO2?

CO2 CONCENTRATION LEVEL

400 - 800

GOOD
Acceptable conditions with normal level of CO2

800-1200

FAIR
Upper limit of CO2 concentration for indoor level

1200-1800

POOR
Complaints of drowsiness and poor air, weak people could faint and cough

>1800

DANGEROUS
Poor concentration, increased heart rate, headaches, sleepiness

» Virus Spread Mitigation
  » At 800 PPM; 1% of the air you breathe in comes from someone else's exhaled breath

» Cognitive Function
  » High levels of CO2 affect productivity, causing tiredness, dizziness and headaches and reduced cognitive ability including information retention and focus
  » 1800+ ppm will fatigue, resulting in a 70-80% decrease in cognitive function

» HVAC Monitoring
  » High CO2 levels can indicate insufficient airflow, filtering and may indicate presence of other toxins

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» Monitor CO2 levels in real-time

» Easy to read visual updates with indicators when levels are too high

» Long Battery Life – no need for constant re-charging or replacing batteries

CO2
Concentration

Temperature

Humidity

Light

Barometric Air
Pressure
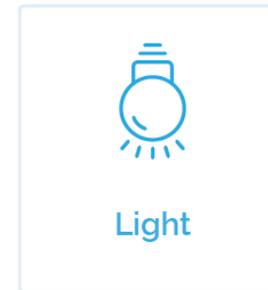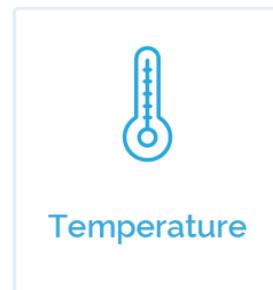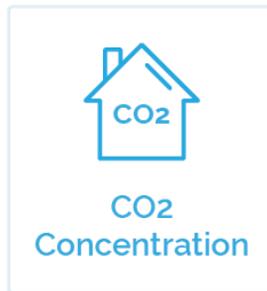
Two Available **Options**

BREEZE

» Standard model BREEZE

BREEZE-V (coming soon)

» Optional PIR enabled model for motion detection

Data Visualization

Web-based Dashboard

TEKTELIC LeapX Mobile Application

E-Ink Display

» View data with E-Ink Display or web-based dashboard, or LeapX

» Full featured application in development

» Seamlessly connects with existing LoRaWAN Infrastructure

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Why BREEZE?

» Small Form Factor
  » Device: 80 x 80 x 26 mm
  » Display: 100 x 50 x 23 mm

» Long Battery Life
  » 6 Years in normal operating conditions

» High Accuracy
  » ±30ppm CO2 Accuracy

» Simple Deployment

» Separated Device / Tablet
  » Visualize Data
  » Freedom to mount the sensor in the right place

Key Use Cases

Schools & Universities

Office Buildings

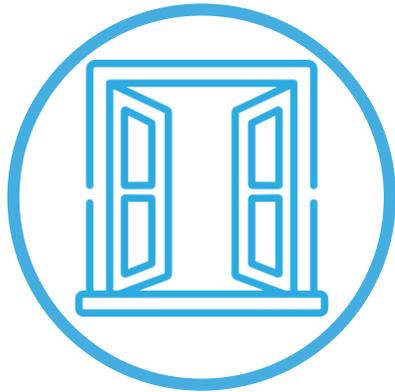Medical Facilities

Theatres

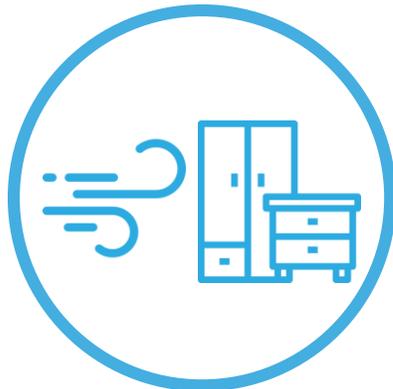Stadiums

Hotels

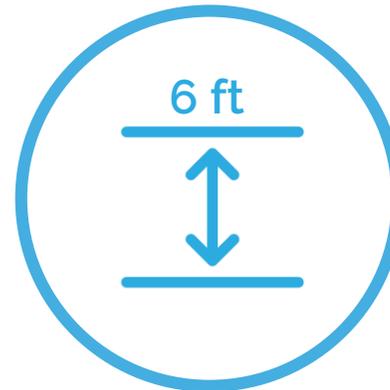Retail Facilities

Mounting Strategy

For accurate results:

Keep away from open doors, windows & air vents

Watch for proximity to humans or CO_2 producing equipment

Coverage will vary by room depending on air flow, obstructions etc.

6 ft

Mount the BREEZE Sensor 2-6 ft (0.6-1.8m) off the ground

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How CO2 is Measured

» NDIR (Nondispersive Infrared)
  » Industry standard CO2 monitoring method
  » Measures in PPM

» Uses **Pressure Compensation** via onboard barometer to adjust for pressure differences from sea-level
  » Example: Calgary is 1000m above sea-level and we see a ~100 PPM discrepancy using devices with/without pressure compensation

» Threshold or Periodic Reporting

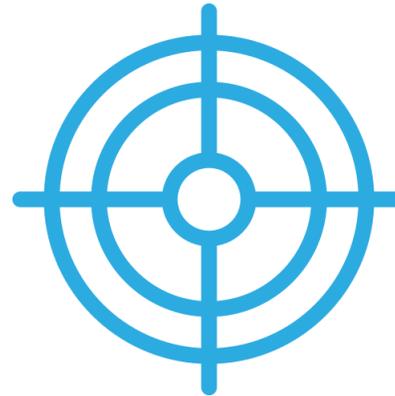» Default Sample and Tx rate = 5 minutes (both are configurable)

BREEZE Calibration

» Calibration Methods can be configured/triggered over LoRaWAN

» Resetting the sensor holds the last calibration

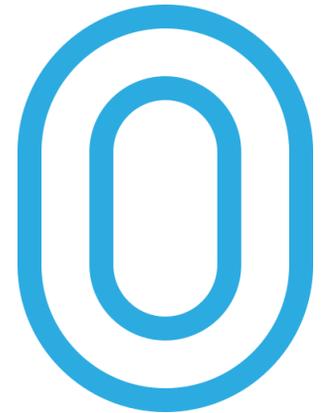» **4 Calibration Options** (Automatic & Manual)
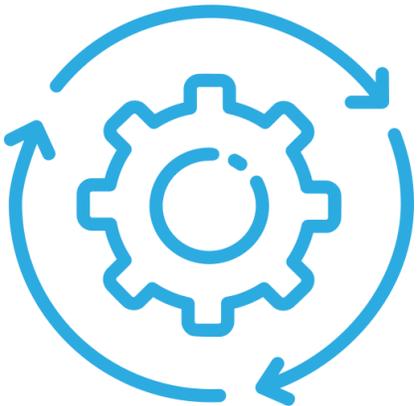
Automatic   Background Calibration   Target Calibration   Zero Calibration

BREEZE Calibration

» **1. Automatic** – ABC (Automatic Baseline Correction)
  » User sets the calibration period and target (default 7.5 days / 400 PPM)
  » Sensor will find lowest PPM reading during period and use that to calibrate
  » Best for environments with a "natural reset" (ie. office, school, supermarket)
  » Calibration command sent via downlink from the LNS (TEKTELIC provides the command template via TRM

» **2. Background Calibration** – place the device in fresh air (ie. outside, by an open window or fresh air inlet), set PPM target, send calibration command via LNS or with button (pinhole button on device)

» **3. Target Calibration** – set target and send a DL from LNS, setting to a known target

» **4. Zero Calibration** - calibrates to a target of 0PPM (flush with Nitrogen gas)

BLE Connectivity

» BLE connection is only established when there is something to send. Once sent – it disconnects

» Device and Display are paired at factory

» If connection is lost it will continue to try at the next reporting period

» Don't mount display more than 10m
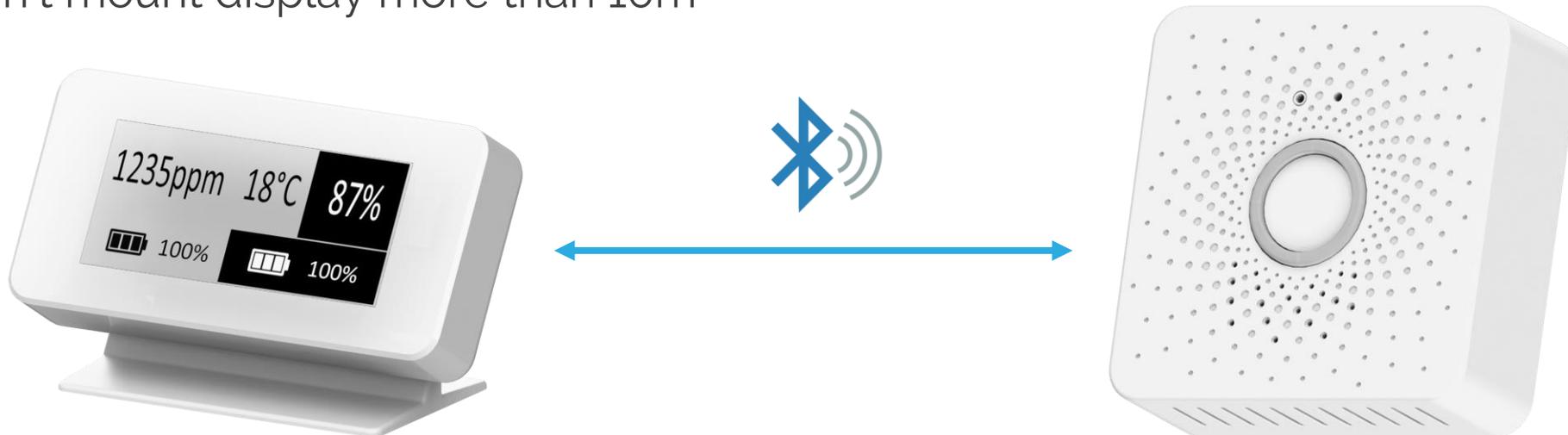
TEKTELIC Support

» Please visit https://support.tektelic.com/ for additional support including:

» Technical Documentation

» FAQ's

» Support Ticketing System

TEKTELIC LoRaWAN® Solutions

The ideal solution for Public and Private Network Operators that require a Carrier Grade and Cost Effective IoT solutions that scale with business.

IT JUST WORKS™