

# TECHNICAL WHITE PAPER

Title: DASBOX oem product description

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## INTRODUCTION:

The DASBOX ecosystem has been created from a need to monitor temperature, humidity level and sound pressure level of an inhabited condo unit in Florida, while the owner was living in Quebec for the summer. The Sensing unit needed to warn the owner of a drastic change in temperature or humidity level, or even a potential intrusion. The unit needed to be low cost, minimal maintenance and needed to communicate with the internet using mobile network. The prototype has been built and successfully tested for over two years before we decided to go to production with it.

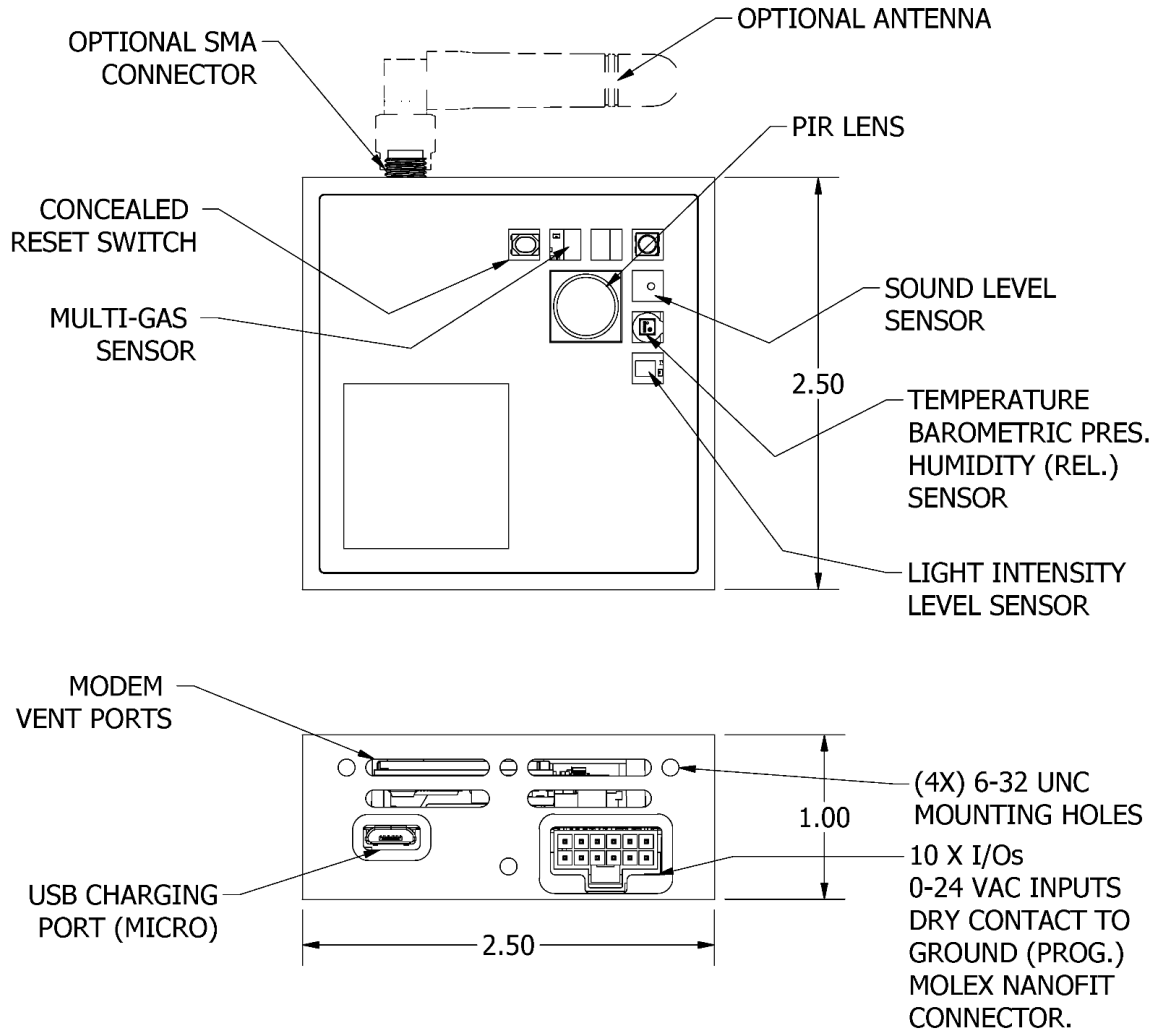
This document refers to our OEM product offering. The OEM version of our leading DASBOX cube product is made to be installed as an aftermarket item to existing designs by third parties. The technology is the same to the exception of the enclosure and the optional external antenna provided with the OEM product.

## SHORT DESCRIPTION:

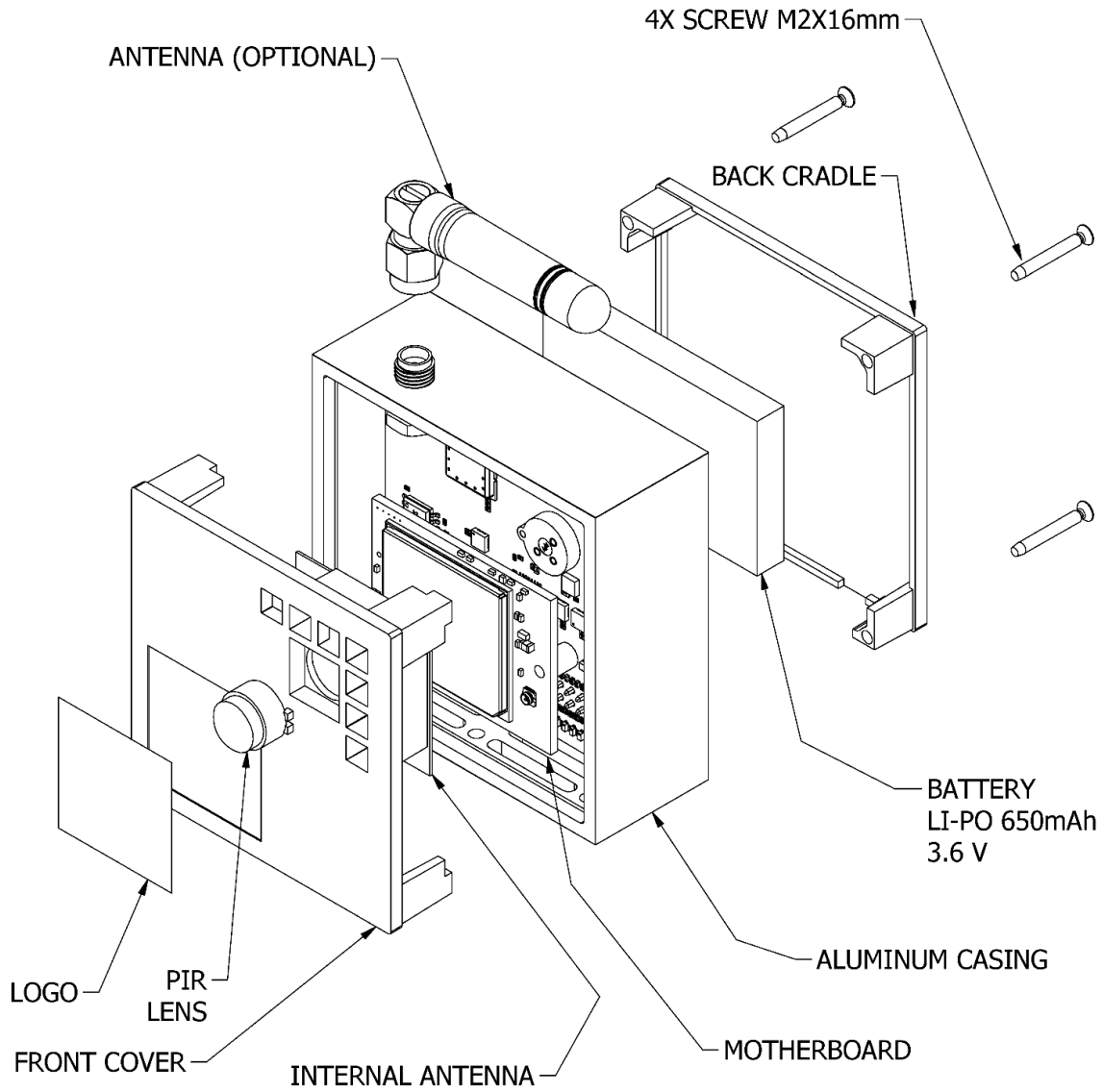
A multi-purpose, industrial strength and cloud based modular multi-sensor data acquisition system to be used to collect and send 36 different data to a web server that will analyze and send warnings to specified email addresses, SMS. It includes a 3G communication module, a power cord, and a battery which allows it to be autonomous. It can be configured via a cellphone app or web application.



PRODUCT IMAGE:



PIN OUT					
GND	IO-10	IO-8	IO-6	IO-4	IO-2
VCC	IO-9	IO-7	IO-5	IO-3	IO-1



## SPECIFICATIONS :

Sensor Type	Operating Temperature	Operating Limits
Accelerometer	-40C to +85C	±2g/±4g/±8g/±16g 6D/4D orientation detection Free-fall detection Motion detection
Multi-Gas Sensor	-30C to 85C	Carbon monoxide CO (1 – 1000ppm) Nitrogen dioxide NO2 (0.05 – 10ppm) Ethanol C2H6OH (10 – 500ppm) Hydrogen H2 (1 – 1000ppm) Ammonia NH3 (1 – 500ppm) Methane CH4 (>1000ppm) Propane C3H8 (>1000ppm) Iso-butane C4H10 (>1000ppm)
Light Level Sensor	-40C to 85C	600M: 1 Dynamic Range
Motion Sensor	-40C to 70C	Field of View $\theta_1=\theta_2=45\text{deg.}$
Audio SPL sensor	0C to 100C	Range 20Hz to 10KHz High SNR of 65dB(A) Directivity Omnidirectional Sensitivity S 94 dB SPL @ 1 kHz = -26 dB Signal to Noise Ratio SNR 94 dB SPL @ 1 kHz = 65dB
Temperature, humidity, pressure sensor	-40C to 85C	Humidity range: 0-100% Humidity precision: ±3 %RH Pressure range: 300-1100 hPa Pressure precision: ±1.0 hPa Temperature range: -40C - +85C Temperature precision: ±1.0C

Externally sourced data acquisition:

Feature	Specification
External Inputs	10 individual inputs 0 VAC – 24 VAC Individually protected Common ground
RS 485	Full duplex TIA/EIA-485A Standard Compliant RS 422 compatible

Geo-location:

Feature	Specification
GPS	99 acquisition-/ 33 tracking channels Tracking sensitivity: -165dBm Position update every 5 secs.

Powering options:

Source	Specification
Battery	Polymer Li-ion with Built in Protection IC (PCB) to avoid battery over charge and over discharge Voltage: 3.6V Capacity: 650 mAh
USB charger	Input Voltage: 100-240v 50-60Hz / Output Voltage: 5vDC 1.2Amp Connector: AC to Micro-USB
I/O connector	0-36 VAC Use optional connector harness. Common Ground

## BATTERY LIFE EXPECTANCY (BLE):

Calculating battery life expectancy (BLE) on a DASBOX unit is both an art and a science. The numerous usage possibilities of a single DASBOX will vary the BLE from 2 hours to 2 months using the single 650 mAh.

The battery can be extended using the DASBOX 2000 mAh battery bank attached to the USB port.

The key consideration that will affect your BLE are:

1. **Sleep mode:** We have included a sleep mode for your DASBOX unit that is user configurable via the API. You may set the device to wake up at specific time to 'read' its external environment.
2. **Sampling rate:** You may set the sampling rate – time span at which the DASBOX will read data from the various sensors and place the data into the log memory. You can sample every 5 seconds to every 5 hours.
3. **Transmission rate:** GSM transmission is the most power consuming function. The more often you transmit the data to the cloud the more power will be drained from the battery. This consumption is also directly related to Sampling rate. If you have collected data every 5 seconds, you are also increasing the data package size to be transmitted and therefore are increasing transmission time.
4. **Sensors used:** You may switch on or off the various sensors on the unit. Some are more power hungry than others. In magnitude of power consumption, the GPS and the multi gas sensors are the two most power consuming sensors. You should consider turning them on only when required.
5. **Outside temperature:** Obviously outside temperature will also affect BLE. Even though the unit will work perfectly between -50C to 70C, the battery optimum operating temperatures are between 0C and 60C.

## DEVICE APPLICATIONS:

- Cold supply chain monitoring.
- Shipping tracking.
- Loss prevention.
- Liability prevention.
- General data acquisition.
- Intelligent cities.
- Intelligent signage.
- Intelligent transport.
- Manufacturing process monitoring.
- Preventive maintenance.
- Agriculture data capture.
- Existing equipment retrofits.
- Power usage monitoring.
- Building management.

## PURCHASING INFORMATION:

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<http://www.dasbox.io>

## API ACCESS POINT:

<http://api.dasbox.io>

