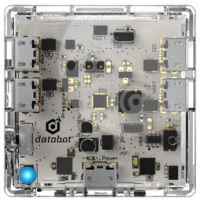
databot™ Quick Start



Meet the databot™ kit

The databot™ kit comes with all the materials you need to start **collecting data**, doing **experiments**, and **programming**. The databot™ kit consists of a Softcase, Micro USB cable, Lanyard & Velcro fastener, External temperature probe, and databot™.

Softcase

When not in use in the field, databot™ likes to kick back and relax in this rich and luxurious black matte, easily stored, zippered case! databot™ likes to brag that it's not just about comfort and safety but serious style.

Micro USB Cable

This is your lifeline to databot™. Use this cable to both **charge** and **transfer programs** to databot™ 's Arduino based brain.

The rear port in databot™ is the power and programming port and it matches the small end of this cable – use that to plug it into any **5v** source to charge up the internal battery. You can also use an external 5v USB power supply and connect databot™ for extra-long run-times in the field.

Lanyard & Velcro Fastener

databot™ was born for action so you can launch, swing, egg drop, play toss, and more with it. databot™ ships with a lanyard so you can easily connect it by looping it through the opening in one corner of databot™'s plastic enclosure.

Hang it off your neck, swing it like a bolo – go for it! Each databot™ also includes a handy-dandy velcro dot that you can use to attach databot™ to **drones**, walls, **monitors**, and any other item you can think of that might need some data logging action.

External Temperature Probe

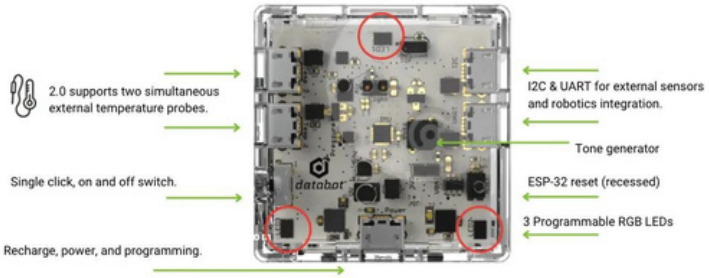
databot™ has two dedicated ports located on the **left side** dedicated for temperature probes. One probe is included in your kit, and additional probes are available on our website.

Use this to take environmental temperature readings of a local creek or pond, use it for monitoring temperatures during chemical reactions, or just hold it in your hand and check out your own temperature! databot™ IS **NOT WATERPROOF** so please don't toss databot™ in a pond, just **use** the **probe**!

databot™

And of course, last but not least – you should have a databot™ in your kit! Let's move on to databot™'s features now and get ready to start some serious science fun.

databot™ Physical Design



- **On / Off Switch:** databot™'s switch is simple to use. One-click turns it on, a second quick click turns it off.
- **Micro USB charging and programming port:** Located at the "back" of databot™ to juice up the rechargeable battery. It takes about an hour to charge and will run for 4-6 hours depending on the type of use.
- **External temperature probe ports:** This is where you connect the waterproof temperature probe included in your kit. There are two ports, if you are using just one probe, use port number 1, closest to the power switch.

Ready to explore some data now ? Let's get connected!

Meet the Vizeey™ App

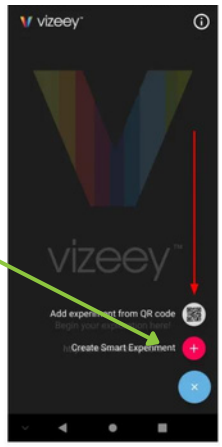
Vizeey™, a free app, is available on both the App Store and the Google Play Store. The Vizeey™ app allows you to easily "**visualize**" data from sensors whether they are external on your databot™ or internal to your smartphone.

Download on the App Store

GET IT ON Google Play

App Installation Instructions

- Search for Vizeey™ on the App or Play Store, install, and open.
- Tap on the + sign. In this menu, you will see an option to scan a **QR Code**.
- Note: On Android, the Plus menu is in the lower right corner, on IOS, the upper right.
- Select this option and your camera will activate to **scan**.
- Scan this QR Code to load the basic databot™ sensor collection into Vizeey™.
- Select the **Save All** option at the bottom of your screen.
- Now you will see the full collection of databot™ sensors displayed and ready to go!



Each icon on your Vizeey™ menu will activate a different sensor for exploration.

Live sensor data from databot™ is only a finger tap away!

Let's Get Charged!

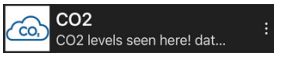
Use the included micro USB cable to plug databot™ into any standard 5v USB power supply (USB adapter is not included). This can be a computer, a wall charger for your phone or other device, or a phone battery bank as shown.

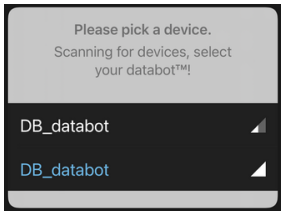
The charging port is the one oriented to the back of the case – you will see a single, micro-USB port in the center of the board to the right of the on/off switch.

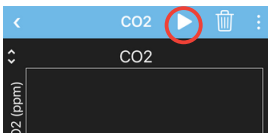
When turned on and plugged in, you will see a pulsing, red charge indicator light. If you do not see the red light, press the on/off switch. It will only display when turned on.

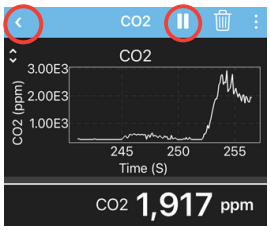
Let's Get Connected!

- After charging databot™ remove the USB and turn it on in Vizeey™ mode (top side up). You will see a blue light "breathing" waiting for a Bluetooth connection.
- Open Vizeey™ and select CO2.
- Accept any permissions for activating Bluetooth and then choose your databot™.
- If there is more than one displayed, hold your 'bot close to your device and select the one highlighted in **blue**.
- Tap the "start" button at the top of your display and databot™ will begin to stream CO2 sensor data to your display.
- Breathe on databot™ and you will see the CO2 levels elevate as you exhale CO2.
- Tap on the "pause" icon to halt the experiment.
- Tap on the "back" indicator in the top left corner of the experiment and return to your main menu.









Great job connecting! Next, let's look at the System Tools!

System Tools

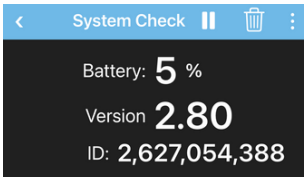
Using the "plus" menu again, scan in this **QR code** to add four important System Tools for managing your databot™ **health** and **accuracy**:

- System Check
- Calibration: Altitude
- Calibration: Humidity
- Calibration: Dual Temperature Probes

A new experiment collection will display.

System Check

System Check provides you with your databot™ **battery charge** status, serial **number**, and your current firmware **version**. System Check also runs a fun light and sound routine on databot™.



Note: databot™ firmware updates add new functionality and enable new experiments. Check for firmware updates at https://databot.us.com/firmware

Calibration Basics

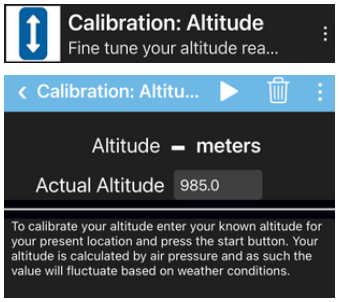
Calibration is the process of **aligning** (calibrating) a test instrument like databot™ with a known measurement. You may have calibrated a scale before using a known weight and setting the scale to **match** that weight.

databot™ has several values that require a calibration to properly set it for your **local environment** or experimental conditions. With the exception of the dual temperature probe synchronizing calibration values are retained in databot™'s memory unless you update the firmware which will require recalibration.

Calibration: Altitude

Altitude Calibration

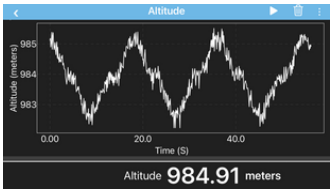
- Use Google Earth or other tools to look up your altitude.
- Tap the calibration icon.
- Enter your altitude and start the experiment.



Altitude Accuracy

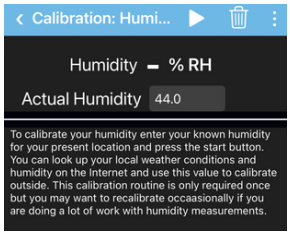
databot™ calculates altitude based on **air pressure**. Since air pressure constantly fluctuates the data will change based on weather conditions. Consequently, we don't recommend using the databot™ altimeter for hang-gliding, it is not intended for that type of mission critical use.

For science education however it provides an opportunity for students to learn first hand about air pressure. Once calibrated databot™ is quite accurate in determining your relative changes in altitude. The Vizeey™ screen capture above shows walking up and down a set of stairs and are accurate to within two inches.



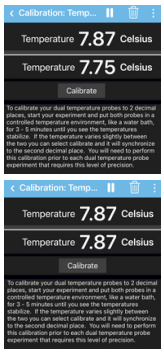
Calibration: Humidity

- Look up your local humidity (outdoors).
- With databot™ outdoors, tap the experiment.
- Enter the humidity value.
- Press the Start icon.



Calibration: Dual Temp Probes

For dual temperature probes calibrated to match one another to two decimal places **synchronize** them each time prior to conducting a dual probe experiment.



- Place both probes in a water bath
- Wait 5 minutes and start the experiment.
- Select the start icon.
- Press calibrate.

Great job with the Tools! Next up, Modes of Operation!

Basic Modes of databot™

There are **two** basic modes of operation for interacting with sensor data using databot™:

- **Vizeey™ Mode** – when you are connected by Bluetooth to a Smart Device and streaming data to our app, Vizeey™
- **Server Mode** – which enables you to connect to a local databot™ 2.0 network using Wi-Fi.

Meet Vizeey™ Mode!

In this mode, you connect to Vizeey™ using your Smart Device **Bluetooth** connection and conduct **live experiments**.

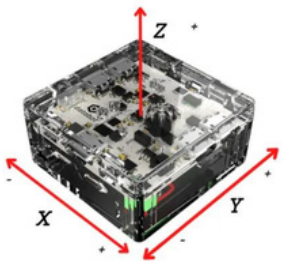
Sensor data streams in real-time at the rate of 10 samples per second to your Vizeey™ app and can be **visualized**, **recorded**, and easily **exported** for further analysis in your favorite software!

Vizeey™ Mode Position

databot™ uses its internal **accelerometer** to help it decide what mode it is going to be operating in, so it checks its **orientation** when you're turning it on.

If databot™ is **right-side up** when you power it on, it will check the accelerometer data and activate in **Vizeey™ mode**, ready to connect to Vizeey™.

In Vizeey™ mode databot™ will be blinking a **blue** connection light.



Meet Server Mode!

In Server mode, databot™ creates its own **local Wi-Fi** Network and also starts its on-board web server. You can use any **Wi-Fi-ready** device and your favorite browser to access databot™ services through a friendly web interface.

When you connect to databot™'s **local network** in Server mode you can configure databot™ to store data in **internal memory** for later download or access other services such as the **Environmental dashboard**.

Configuring sensor storage using Server mode is useful for when you are conducting **longer-term** experiments such as an **environmental activity** where you take readings **every hour** for a **few weeks**. You can store this data **internally** to databot™ then download it all at once for analysis.

The Server Mode services like the **Environmental** and **Drone dashboards** are useful for monitoring your local **environmental conditions** and selecting **pre-configured** sensor settings for drone missions.

Server Mode Position

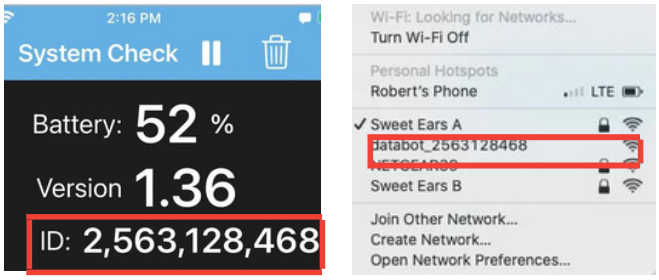
Place databot™ face **down** and power it on. Again it will check the accelerometer to determine its position and this time it will activate in "**Server**" mode.

In Server mode, databot™ will be blinking a **green** connection light.

Awesome possum! Let's test out Server Mode now!

databot™ Server: Preparation

Prepare to connect to databot™ by **WiFi**! The first step is to find your databot™'s **unique address**. You can find this by opening your basic Vizeey™ experiment list in Vizeey™ Mode and running "**System Check**."

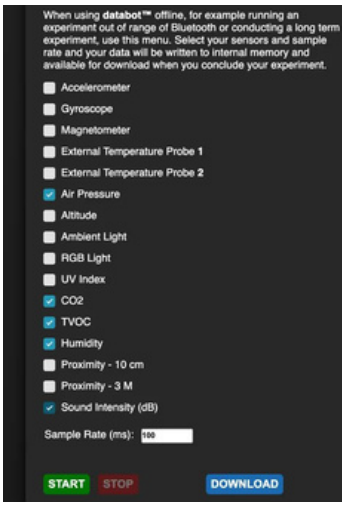


The **ID** number in the "System Check" is your databot™'s unique identification number! Now, **disconnect** from System Check, turn off databot™, and turn it back on in Server Mode. The **green** indicator light will be pulsing and databot™ will be broadcasting its **unique ID** number. Connect to it like any network.

Server Mode databot™ Connection

You can connect the databot™ to your **smart device**, **computer**, etc. – anything that has **Wi-Fi** networking capability. Once connected access databot™'s web server by entering this IP address,**192.168.1.160,** in your browser on the connected device. The following Sensor Settings menu will display in your browser.

Check the sensors you wish to activate and enter the desired Sample Rate (ms). The default rate of 100 ms collects at the rate of 10 samples per second. Click the START button to begin, click STOP to halt data collection, and DOWNLOAD to retrieve your data in a .CSV file.



Long Term Collection Behavior

While collecting data for a longer period of time, you can **disconnect** the databot™ from the network by leaving the **experiment running**. Make sure you do not turn databot™ off as this will stop the experiment. When completed, repeat the connection steps and when reconnected, your configuration menu will come up still **active**. You can now STOP your data collection and download!

Downloading Data!

Once you select the DOWNLOAD option databot™ will download the data you have collected in a **Comma Separated Values** (CSV) file called **EXP_DATA.csv**. You will find it in your downloads.

Extending Your Data Gathering Time

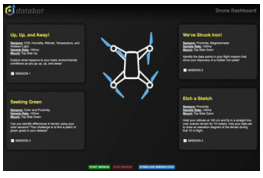
You can plug databot™ into any **5v USB** power source – battery bank, outlet, etc. to run long-term data collection experiments of days – months.

Environmental Dashboard

In Server Mode use the menu icons to toggle between the **Sensor Settings** menu and other dashboards. The Environment dashboard can be used for monitoring your local **environmental conditions** including Ambient light, Humidity, CO2, VOCs, Air Pressure, Temperature(External Temperature probe port 1). The Dashboard also generates an Air Quality value by combing the CO2 and VOC values.

Drone Dashboard

The Drone Dashboard was designed to help you easily **pre-configure** databot™ for four experimental drone missions in Server Mode. Simply select your mission and START, data collection will commence. Post mission reconnect to databot™, download the Mission data set, and conduct your analysis!



Congratulations, you know the basics! Now Go Forth and Explore!