Getting Started

Get a full list of items you need to make the drone fly
http://www.brickdrones.com/linkstoitemsyouneed/

Download and print the frame you purchased. Or collect the bricks from the Brick Lists.
http://www.brickdrones.com/brickassemblymanual/

If you don’t have a kit and need to buy one or mounts
http://www.brickdrones.com/order/

Have other questions, contact us at
http://www.brickdrones.com/contact
**Build it! But don’t Glue yet**

In this step we are not gluing it yet, you need to make sure you have all the pieces for the frame and you know how to build it like shown below. Colors will vary depending on the frame kit you selected.

Kids can get them in the fun too, The adults should be the ones to glue when ready.
This is an example of the motor mount placements

This is bad, its not seated well with the bricks.

This one below is good, its seated well, important you pressed the motor mounts as flush & level with your bricks.
Unleash the Kragle!

Once you know how they all go together you need to glue them all together including the Motor Mounts.

WARNING: DO NOT GLUE ON TOP PLATE, (4) FLAT BRICKS, OR GOPRO MOUNT

We recommend using Goop E6000 Jewelry and Bead Adhesive as that's what we found works best. We do not recommend CA glue as it dries to fast and can leave “white” spots on the done. Goop needs 72 hrs to fully dry. You can use CA glue but it turns white and ugly if your not careful. You can get it from Amazon or most local craft stores like Michaels.

http://www.amazon.com/E6000-Jewelry-Bead-Adhesive-1oz/dp/B00F2KPF3U/
This next section is about installing the flight controller, motors etc. This all depends on the ones you decide to purchase. Since there are thousands of choices we can only talk about the ones we recommend you purchase with the drone made from LEGO bricks.

We recommend and support the following:

**DJI E300 Propulsion kit**

![DJI E300 Propulsion kit](image1)

**DJI NAZA-Lite with GPS**

![DJI NAZA-Lite with GPS](image2)

The next section assumes you are using the recommended ones above. You will need to read over these manuals and refer back to them during the build and setup process.

[E300 Manual](E300 Manual)
[NAZA-Lite manual](NAZA-Lite manual)
Power Distribution Board

Refer to E300 Manual for detailed information on this section

You will need to install the power distribution board. The board distributes the power from battery to the entire system. This is the only soldering you will need to do.

Use the 3M VHB double-sided tape to cover the bottom of the plate.

Firmly stick the power distribution plate on the bottom as shown, make sure the +/- side is pointing to a corner as shown.
Apply 3M VHB double-sided tape to the flat side of the 4 ESCs.

Firmly apply the 4 esc to each arm. Zip tie to arm if you feel its needed.
Solder on the battery connection cable. Check polarity of connector and the power distribution board when soldering.

Cut the ESC 2 wire power cables to desired length. Strip the ESC 2 wire power cables and twist the shielding together and tin. Solder the ESCs to the power distribution board. Repeat for the NAZA BEC.
Mount the NAZA BEC with 3M VHB double-side tape (use a zip tie if preferred).

Mount the NAZA in the center of the frame using the supplied double-side tape. The NAZA has an arrow indicating the front of your aircraft, so mount in preferred position.
Motors

Use the supplied hardware to mount the motors to the 3D printed motor mounts. Setup your motors as a quad-rotor X. Mount the motors with the cables parallel to the frame. *Do not over tighten the bolts, this will damage the 3D printed motor mounts.*

Connect 3 wire motor phase cables to the ESCs. You may need to switch cables later to change the direction the motor spins.
Receiver and Wiring

Connect the ESCs and BEC to the NAZA FC. Refer to the NAZA manual on how to properly connect these cables.

Connect the your receiver (at least 6ch) to the NAZA FC. Refer to the NAZA manual on how to properly connect to your receiver.
**GPS (Optional)**

Use a 5/32” (4mm) drill bit to drill a hole in the top plate you will consider the back of your aircraft to mount the NAZA GPS pole that is supplied with the NAZA GPS kit.

Secure your GPS on the top plate in the hole you drilled. Recommend the use of hot glue to secure the pole. NAZA GPS has an arrow indicating its proper placement, arrow must point to the front of the aircraft. Plug GPS cable into the NAZA FC.
Setup the Flight Controller Software

Follow the instructions for the NAZA Assistant Software in the NAZA-lite manual. This software is used to calibrate, upgrade firmware, and adjust features for your NAZA-lite flight controller. **It is important you do this before flying your aircraft!**
Install Top Plate

Install to plate on to frame. DO NOT GLUE! You will need to access your electronics so it is important to not glue the top plate on. Add Velcro to the center of the top plate for your battery.

Attach props to the proper motors, see NAZA manual for support. If you are having trouble screwing on a prop, you most likely are placing it on the wrong motor. Motors are self tightening, 2 have CW threads and other 2 our CCW.
Ready to take flight!

Before flying, remove your props and power up your aircraft and transmitter. Throttle up your mounts to check that all components are working properly and motors are spinning the correct way. Use your transmitter to give forward, back, and side power checking each motor movement.

You are now ready to take flight and enjoy!!

Before flying please follow procedures and safety rules seen on the next.
A. GENERAL: A model aircraft is a non-human-carrying aircraft capable of sustained flight in the atmosphere. It may not exceed limitations of this code and is intended exclusively for sport, recreation, education and/or competition. All model flights must be conducted in accordance with this safety code and any additional rules specific to the flying site.

1. Model aircraft will not be flown:
   (a) In a careless or reckless manner.
   (b) At a location where model aircraft activities are prohibited.

2. Model aircraft pilots will:
   (a) Yield the right of way to all human-carrying aircraft.
   (b) See and avoid all aircraft and a spotter must be used when appropriate. (AMA Document #540-D)
   (c) Not fly higher than approximately 400 feet above ground level within three (3) miles of an airport without notifying the airport operator.
   (d) Not interfere with operations and traffic patterns at any airport, heliport or seaplane base except where there is a mixed use agreement.
   (e) Not exceed a takeoff weight, including fuel, of 55 pounds unless in compliance with the AMA Large Model Airplane program. (AMA Document 520-A)
   (f) Ensure the aircraft is identified by the name and address or AMA number of the owner on the inside or affixed to the outside of the model aircraft. (This does not apply to model aircraft flown indoors.)
   (g) Not operate aircraft with metal-blade propellers or with gaseous boosts except for helicopters operated under the provisions of AMA Document #555.
   (h) Not operate model aircraft while under the influence of alcohol or while using any drug that could adversely affect the pilot’s ability to safely control the model.
   (i) Not operate model aircraft carrying pyrotechnic devices that explode or burn, or any device which propels a projectile or drops any object that creates a hazard to persons or property.

Exceptions:
- Free Flight: fuselage or devices that burn producing smoke and are securely attached to the model aircraft during flight.
- Rocket motors (using solid propellant) up to a G-series size may be used provided they remain attached to the model during flight. Model rockets may be flown in accordance with the National Model Rocketeering Safety Code but may not be launched from model aircraft.
- Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Team AMA Program Document. (AMA Document #718)

(j) Not operate a turbine-powered aircraft, unless in compliance with the AMA turbine regulations. (AMA Document #510-A)

3. Model aircraft will not be flown in AMA sanctioned events, air shows or model demonstrations unless:
   (a) The aircraft, control system and pilot skills have successfully demonstrated all maneuvers intended or anticipated prior to the specific event.
   (b) An inexperienced pilot is assisted by an experienced pilot.

4. When and where required by rule, helmets must be properly worn and fastened. They must be OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

B. RADIO CONTROL (RC)

1. All pilots shall avoid flying directly over unprotected people, vessels, vehicles or structures and shall avoid endangerment of life and property of others.

2. A successful radio equipment ground-range check in accordance with manufacturer’s recommendations will be completed before the first flight of a new or repaired model aircraft.

3. At all flying sites a safety line(s) must be established in front of which all flying takes place. (AMA Document #705)
   (a) Only personnel associated with flying the model aircraft are allowed at or in front of the safety line.
   (b) At air shows or demonstrations, a straight safety line must be established.
   (c) An area away from the safety line must be maintained for spectators.
   (d) Intentional flying behind the safety line is prohibited.

4. RC model aircraft must use the radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.

5. RC model aircraft will not knowingly operate within three (3) miles of any pre-existing flying site without a frequency-management agreement. (AMA Documents #922 and #923)

6. With the exception of events flown under official AMA Competition Regulations, excluding takeoff and landing, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and the pilot’s helper(s) located at the flightline.

7. Under no circumstances may a pilot or other person touch an outdoor model aircraft in flight while it is under power, except to divert it from striking an individual.

8. RC night flying requires a lighting system providing the pilot with a clear view of the model’s attitude and orientation at all times. Hand-held illumination systems are inadequate for night flying operations.

9. The pilot of an RC model aircraft shall:
   (a) Maintain control during the entire flight, maintaining visual contact without enhancement other than by corrective lenses prescribed for the pilot.
   (b) Fly using the assistance of a camera or First-Person-View (FPV) only in accordance with the procedures outlined in AMA Document #550.
   (c) Fly using the assistance of autopilot or stabilization system only in accordance with the procedures outlined in AMA Document #550.

C. FREE FLIGHT

1. Must be at least 100 feet downwind of spectators and automobile parking when the model aircraft is launched.

2. Launch area must be clear of all individuals except mechanics, officials, and other flyers.

3. An effective device will be used to extinguish any fuse on the model aircraft after the fuse has completed its function.

D. CONTROL LINE

1. The complete control system (including the safety thong where applicable) must have an inspection and pull test prior to flying.

2. The pull test will be in accordance with the current Competition Regulations for the applicable model aircraft category.

3. Model aircraft not fitting a specific category shall use those pull-test requirements as indicated for Control Line Precision Aerobatics.

4. The flying area must be clear of all utility wires or poles and a model aircraft will not be flown closer than 50 feet to any above-ground electric utility lines.

5. The flying area must be clear of all nonessential participants and spectators before the engine is started.
Install Camera Mount (Optional)

Make sure your are confident fly your aircraft before installing, to reduce risk of damaging your camera. Collect the components to use our camera mount (shown below). You will need Brick Drones camera mount, a GoPro flat adhesive mount, short GoPro vertical quick release buckle, thumb screw, and GoPro camera with housing.

Remove the top plate and place the Brick Drone camera mount in between the window pieces and snap on to the bottom plate. Reinstall the top plate and check fitment. For long term durability you can glue the Brick Drones camera mount to the bottom plate and window pieces, but not the top plate.
Mount GoPro Camera (Optional)

Use a GoPro flat adhesive mount, remove the backing of the mount. Line up the top of the mount with the top of the Brick Drone camera mount. Firmly press when confident in position. Not recommend to reuse once removed. Allow 24 hours for the adhesive to properly adhere to surface.

Once you have allowed your mount to properly adhere, you can attach your GoPro using the vertical quick release buckle. When camera is mounted check that it will not interfere with your props by spinning them by hand. We recommend to angle the camera slightly down for best video.