Motorized Mini Camera Jib

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VIEW IN BROWSER

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Summary

Digital Bird DIY 3D printable Mini Jib . Part of the Digital Bird Camera motion Control System.

Gadgets > Photo & Video

Tags: camera wifi cameramount esp32 control motion crane cameraslider pantilt boom motioncontroller jib boomarm motioncontrol

The Digital Bird DIY 3D printable Mini Jib offers smooth near silent operation combined with range of exciting new camera moves not easily achieved with a slider. The Jib connects wirelessly with all the other parts of the Digital Bird camera motion control system offering you limitless possibilities for finding the perfect shot.

Introduction Video

Features:

- Typically up to 550mm of Jib Travel more with lighter payloads.
- Vertical, horizontal & diagonal motion.
- Camera head can be mounted Upright or under slung.
- Digital Bird Pan Head adds second axis for pan control.

- Tested on payloads up to 4.5KG (Camera and pan Tilt head. 2.5kg of Camera)
- Sony NP style batteries with 7.5v external power port
- Full feature interface though Digital Bird compact WIFI remote or PTZ remote
- OLED battery monitor and PTZ slave ID
- Camera shutter control
- Links in wirelessly with all the other Digital Bird devices.
- Ultra quiet operation.
- Silky smooth motion.

Operating modes:

- A-B straight run
- A-B with acceleration controls (ramp/Ease)
- A-B-A Bounce mode
- Time-lapse mode with built in intervalometer and camera shutter control.
- Six key sequencer for more complex moves.
- Stop motion functions for animators.
- PTZplus real-time camera functions.

Links:

- Kits are available here: https://digital-bird-motion-control.myshopify.com/
- Software: https://github.com/digitalbird01/
- Printable Build Instructions: https://www.instructables.com/preview/EC7T8I8LBXO0HZZ/

Credits: This project makes particular use of two main open source arduino libraries for which I am very grateful

- gin66/FastAccelStepper A great resource for controlling multiple stepper motors with acceleration control on all steppers
- Seithan/EasyNextion Library An easy to use method of setting up and actioning commands from the Nextion displays.

None Plastic Parts

Electronics

- Digital Bird Main board with ESP32 38pin & TMC 2208v3 Stepper driver
- Digital Bird Battery terminal board & cable 160mm long
- AS5600 encoder board & Diametrically magnetized magnet & 70mm long cable

- OLED Display 0.49 Inch 64x32 res & Cable 130mm long
- Mini Rocker switch and cable 110mm long
- Aux Power jack and cable 140mm long
- Shutter cable 2.5mm Stereo Jack socket & Cable 80mm long
- 2No mini limit switches with cable
- Stepper cable 120mm long
- 2-4 pin JST XH 2.54mm Pitch connectors (**Only required If not building from a kit**)
- 4 core Silicon Wire 24 Gauge (**Only required If not building from a kit**)
- NP style battery 7.4v 5000mAh is ideal (**Not included in kit)**

Drive components

- 200mm Closed loop GT2 Timing belt 6mm wide
- 20T Metal GT2 Timing pully for 6mm belt 5mm bore
- 38-40mm long High Torque Nema17 **(Not included in kit)**

Bearings

- 5x16x5mm x6
- 20x27x4mm x5
- 30x42x7 x2
- 55x72x9mm x1

Magnets

- 8x3mm Disc magnets x4
- 6x2mm Disc magnets x2
- Diametrically magnetized encoder magnet x1 (normally comes with the encoder board)

Camera Screws & Clamps

- 5/8th to 3/8th Camera screw adapter (Also known as a microphone adapter) x1
- 1/4 to 3/8th Camera screw adapter x2
- 1/4 Camera screw with Flip up 19mm Diameter head 11mm long screw x1
- M5 Adjustable Wing bolt 17mm long
- 32mm diameter Ross plate with 12mm diameter centre hole x2
- 25x25mm Cold shoe mounting plate with screws x1
- 120mm Swiss plate **(Not included in kit)**
- 120mm Swiss Clamp **(Not included in kit)**

Damper grease

- Teibosyn 320 Blue Very heavy or equal (**Only required If not building from a kit**)

Nuts & Bolts

M10 Hex head Bolt

- 120mm with M10 Nut x1

M6 Hex head bolts

- 100mm with M6 Nut x1
- 65mm x1
- 14mm x1

M6 Counter Sunk head bolt

- 60mm with M6 Nut x1

Threaded brass inserts

- M6 Threaded brass insert 8mm long x1
- M5 Threaded brass insert 8mm long x1

M5 Low profile Bolts

- 50mm x14
- 45mm x1
- 40mm x7
- 30mm x8
- 20mm x10
- 10mm x2
- M5 Nylock Nuts x 7

M5 Cap head Bolts

- 30mm x2
- 60mm x3

M5 Hex head Bolts

- 30mm x2

Grub screws

- M4 Grub screw 12mm x2

M3 Cap head bolts

- 40mm long x1
- 6mm long x4

Washers

- M5 x2

Self tapping screws

- M1.7 11mm x6

Counter weights:

Counter weights required depend on your payload but I would suggest:

- 2No. 60x20x120mm long mild steel bar stock (approx. 1kg each)
- 3No. 60x10x120mm long mild steel bar stock (approx. 500g each)

Note: These can also be used with the Digital Bird Slider vertical support stand.

Suitable Tripod legs to use for the Jib Arms

It was incredibly difficult to find suitable telescopic sections to use for the jib arms. After spending around £30 on raw aluminium sections which were suppose to be telescopic but simply did not work! I hit on the idea of using the legs from a cheap Velbon DF-60 tripod I owned and only cost me £18.00 used on ebay. While these tripods are nothing special, the legs proved to be a gold mine and work very well complete with section locks. Some of these tripods are no longer manufactured however there are always some available on the used market.

Tripods:

- Velbon DF61
- Velbon DF60
- Velbon CX640
- Velbon C600
- Velbon EF61
- Velbon 7000

Note tripods like the Velbon DF51 may work but the leg profiles are smaller. Probably better to find a DF60 or above.

If you purchase one of these tripods and the leg profiles do not work with the parts provided. Please send me a tracing of the smallest and largest profiles with some simple dimensions and I will provide additional parts to

match where required. **If in doubt send me some information on the tripod you plan to use before you disassemble it!**

Printing

In terms of plastic I use Matt PLA for its superior matt finish. Carbon PLA is also very nice to use but considerably more expensive and not really any stronger in my opinion. In terms of infill this can be taken from the part numbers so **001_25** =25% fill. Most of the parts require supports. The good news is that Auto supports will work just fine so long as you remember to turn them on!

For more detailed build instructions visit https://www.instructables.com/Motorised-Camera-Mini-Jib/

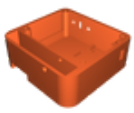
A word of caution

This is quite a large build using almost 3kg of filament. You will be printing the parts for a few days. A 0.6 nozzle may be a wise choice for all but the parts with gears!

Build Videos

Model files

Drive Assembly 14 files



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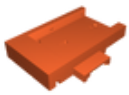
Updated for New main board



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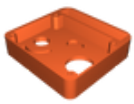

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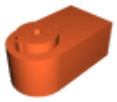

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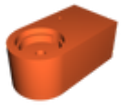

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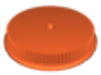

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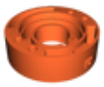
014_100.stl

Centre Pivot Support Assembly 16 files



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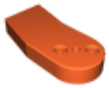

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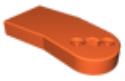

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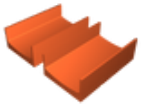

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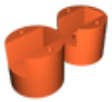
Camera Support 9 files



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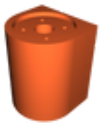

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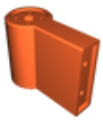

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Counter weight carriage 7 files

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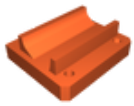

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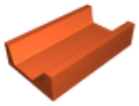

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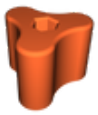

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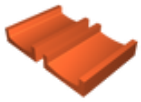

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