10/27/2015 Build | CLAM

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Main menu

Skip to content

- Home
- Build
- Documentation
- GitHub

Build

The following diagram describes the dynamixel servos, communication protocols, joint limits and URDF names used for all joints and links:

Build | CLAM 10/27/2015

I gripper pincher

I_gripper_fwd_link I_gripper_aft_link

Servos:

7: gripper_grip_controller AX-12, TTL, open 240, close 424

> 6: gripper_roll_controller AX-12, TLL, min 0, max 1023

5: wrist_pitch_controller RX-28, RS-485, min 200, max 900

4: wrist roll controller RX-28, RS-485, min 0, max 1023

3: elbow pitch controller RX-64, RS-485, max 890, min 200

2: elbow_roll_controller RX-64, RS-485, min 0, max 650

1: shoulder_pitch_controller EX-106, RS-485, min 926, max 3825

> 0: shoulder pan controller AX-12, TTL, min 0, max 900



r gripper pincher

r gripper fwd link r_gripper_aft_link

gripper_grip_joint → I_gripper_aft_link gripper roll link

gripper roll joint

wrist pitch link wrist pitch joint

wrist roll link

wrist_roll_joint

elbow_pitch_link

elbow_pitch_joint

elbow_roll_link

elbow_roll_joint

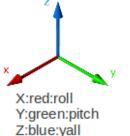
shoulder_pitch_link

shoulder_pitch_joint

shoulder_pan_link

shoulder_pan_joint

base_link



ClamArm Technical Diagram

Bill of Materials Overview:

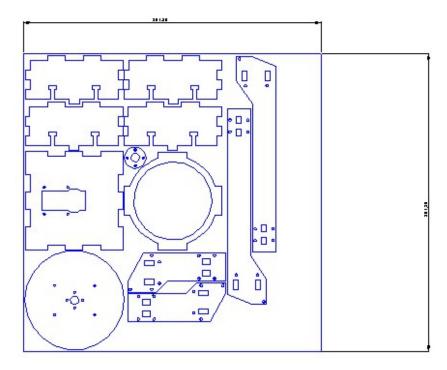
10/27/2015 Build | CLAM

Bill of Materials Estimate	
RoadNarrows Dynamixel Servos Kit	\$1,645.00
CrustCrawler SG-gripper	\$129.00
Shapeways 3D Printed Parts	\$144.00
McMaster-Carr Delrin	\$24.00
Total	\$1,942.00

A <u>design guide</u> written by RoadNarrows. Note – RoadNarrows no longer sells the servo kit (company restructuring).

To build the ClamArm, you need:

- Brackets from the <u>shapeway shop</u>. The brackets come in two kits, the five elements to the left in the drawing, and the camera-holder/gripper adapter shown to the right. You can order them in plastic or stainless steel.
- Laser cut all 2D parts from Delrin/Acetal. Don't use Acrylic, its too brittle.
 - 12×12 inch sheets with 3/16 inch thickness from McMaster
 - Download the <u>DXF file</u> shown below and import it into your laser cutter



2D parts that can be cut from from 3/6" Delrin

- Order the servos from <u>Trossen Robotics</u> or similar vendor
 - DYNAMIXEL AX-12A Quantity: 3
 - DYNAMIXEL EX-106+ Quantity: 1
 - DYNAMIXEL RX-64 Quantity: 2
 - DYNAMIXEL RX-28 Quantity: 2
- Order the **SG-gripper** from CrustCrawler (use an AX-12 servo)
- We power our arm using any cheap ATX power supply
- Mount the arm on a stable surface

The SolidWorks design files for use on a 3D printer can be found on <u>GitHub</u>.

Email for more build instructions help: davetcoleman@gmail.com

10/27/2015 Build | CLAM

3 thoughts on "Build"



Your link to the DXF seems to be broken. Would you please fix it or send me the dxf?

Thanks, Sam

Reply

admin says: September 10, 2012 at 4:13 pm

Done.

Reply

Vincent says:

December 31, 2012 at 7:56 pm

I think you might want to change the Z-axis rotation description from "yall" to "yaw".

Reply

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You may use these HTML tags and attributes: <abbr title=""> <acronym title=""> <blockquote cite=""> <cite> <code> <del datetime=""> <i> <q cite=""> <strike>

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