

[HaplyHaptics / The-Haply-Development-Kit](#)

This should be the first stop on the path to getting your Haply Dev Kit up and running. Here you will find information about the kit contents of a Haply Development Kit along with assembly instructions to put your kit together

[Edit](#)

[Add topics](#)

21 commits

2 branches

0 releases

2 contributors

GPL-3.0

Your recently pushed branches:

Elie (2 minutes ago)

[Compare & pull request](#)

Branch: master ▾

New pull request

Create new file

Upload files

Find file

Clone or download ▾

 crgallac	Update README.md	Latest commit 7018f94 on Nov 22, 2017
 Previous Builds	updated media file after merge problems	6 months ago
 media	updated media file after merge problems	6 months ago
 Haply Control Board Version 0.3.pdf	documentation Resources Oct 30 2017	6 months ago
 Haply Dev Kit V1.0 Assembly Instructions.pdf	documentation Resources Oct 30 2017	6 months ago
 Haply Development Kit Version 1.0.pdf	documentation Resources Oct 30 2017	6 months ago
 LICENSE	Add files via upload	6 months ago
 README.md	Update README.md	6 months ago

 README.md

The Haply Development Kit:



Introduction

The Haply development kit is a robust and adaptable open-source hardware development platform for haptic applications. Designed to be accessible to novices and experts alike, the kit allows you to quickly setup and interact with a haptic simulation using a 2-degree-of-freedom pantograph device.

Kit Overview

The Haply development kit contains all the mechanical and electrical components needed to construct your own 2-degree-of-freedom pantograph device.

Using the hAPI or Haply API, and with a myriad of example projects and detailed setup tutorials available, the kit allows you to quickly start developing your own haptic applications.

With design expansion in mind, the Haply Control Board is capable of controlling up to up to 4 motors. Allowing experienced users to develop their own unique designs ranging from 1-degree-of-freedom to 4-degree-of-freedom haptic devices.

Kit Contents

1. 1x Acrylic top plate/Dev board housing

2. 1x Acrylic bottom plate

3. 3x Suction cup feet

4. 1x Haply control board

5. 1x Power supply

6. 1x Wire adapter board

7. 1x 3D printed motor housing

8. 2x Motors

9. 1x End-effector handle assembly

10. 2x Plastic joint assembly

11. 1x Micro USB cable

12. 2x Dev board extension wires

13. 1x 3D printed motor stand

14. 2x Bearings (or brass inserts)

15. 2x 3D printed L1 arm linkages

16. 2x Acrylic L2 arm linkages

Haply Control Board (Version 0.3)



Overview

The Haply control board is a highly robust and configurable open-source platform ideal for haptic and robotic development.

Based on the Arduino Due, the Haply board uses the 32-bit AT91SAM3X8E ARM microcontroller as its core. Side rail pin connections are maintained giving the Haply board compatibility to a majority of available Arduino Shields.

Two L298P Motor drivers are incorporated into the board, allowing the Haply control board the ability to precisely control up to four DC motors.

The Haply control board is fully compatible with the Arduino IDE and programmable through the Native USB port.

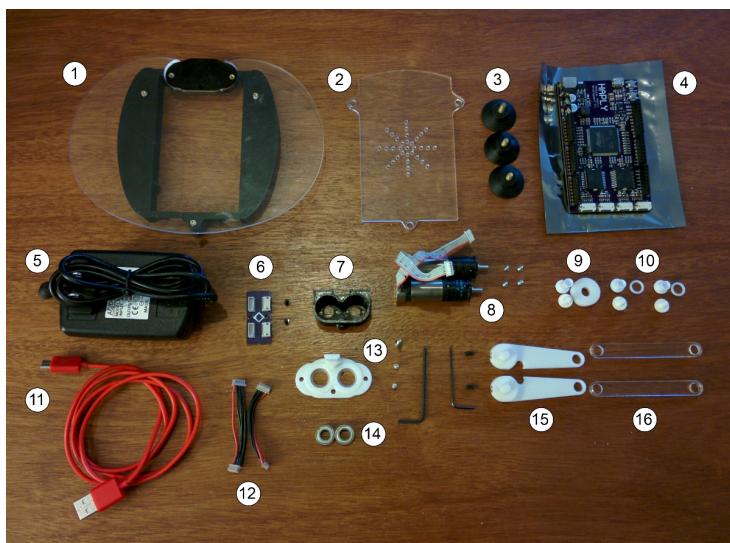
Technical Specifications

- Measures 100mm X 59.5mm x 8mm
- AT91SAM3X8E 32-bit ARM MCU @84MHz
- Native USB port for programming and debugging
- Contains 4 motor control ports
- 3.3V operating voltage
- 5 - 12V recommended input voltage
- 2A Max output current per motor port
- Reset and Erase Button

Warning: MCU I/O pins have maximum tolerated voltage of 3.3V

Haply Dev Kit Assembly Instructions (V1.0)

Haply Development Kit Contents



1. 1x Acrylic top plate/Dev board housing 9. 1x End-effector handle assembly

- | | | | |
|----|-----------------------------|-----|---------------------------------------|
| 2. | 1x Acrylic bottom plate | 10. | 2x plastic joints assembly |
| 3. | 3x Suction cup feet | 11. | 1x Micro USB cable |
| 4. | 1x Haply control board | 12. | 2x Dev board extension wires |
| 5. | 1x Power Supply | 13. | 1x 3D printed motor stand |
| 6. | 1x Wire adapter board | 14. | 2x Bearings (or brass inserts) |
| 7. | 1x 3D printed motor housing | 15. | 2x 3D printed L1 arm linkages (L & R) |
| 8. | 2x Motors | 16. | 2x Acrylic L2 arm linkages |

Screws

- | | | | |
|----|---|----|--------------------------------------|
| 1. | 2x 2-56 screws black (Wire adapter board) | 4. | 4x M2 screws (Motors) |
| 2. | 2x 2-56 screws (Motor stand) | 5. | 2x 4-40 set screws (L1 arm linkages) |
| 3. | 1x $\frac{3}{4}$ " 4-40 screw (Motor stand) | | |

Device Assembly

Before proceeding with the device assembly, please check over the inventory of the kit contents from the previous section. Two Allen keys are included with the kit to aide with construction. You will need also need a small flat head screw driver and a small Philips head (cross head) screw driver for device assembly.

Please peel off all protective plastics on the acrylic pieces, and attach the acrylic top plate to the 3D printed dev board housing with 3x 2-56 screws using the appropriate Allen key.

***Warning:** Take care not to over tighten screws

Part A: Motor Housing Assembly

 <The Haply Project: Colin Gallacher & Steven Ding>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <<http://www.gnu.org/licenses/>>.