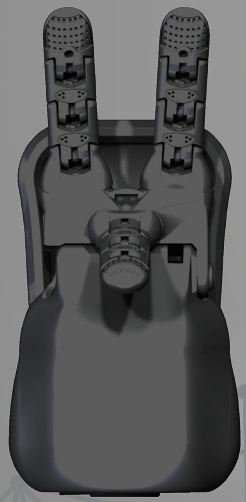
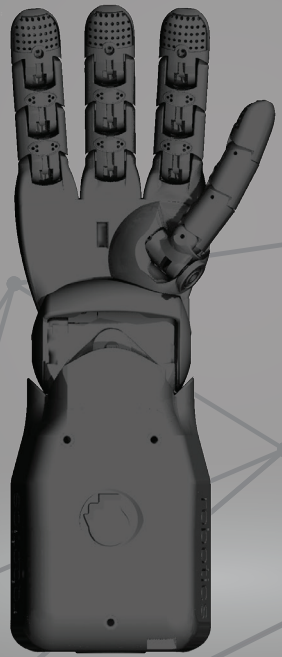
seed robotics





NEW

FTS Tactile Pressure Sensors
Contact force measurement
3 axis, 1mN resolution

RH8D Adult Robot Hand

Human-inspired, adult-size robot hand

Dexterity:

Inspired in the Human hand, capable of performing the most important grips.

Advanced Sensing and Data Acquisition

Real time feedback of position, speed, PWM output and current sensing for each smart actuator, enabling force estimation.
Palm TOF distance sensor
Capacitive Touch areas on the back of the hand (optional)

Optional high resolution Tactile Pressure sensor (FTS) for the fingertips (refer to dedicated page)

Technical Data

Payload (3D space): 1kg
Payload (vertical pull): 2.5kg
Weight: 620g

Main processor: ARM Cortex M4, 96Mhz
Interface: RS485 and USB
Power supply: 12 ~24V

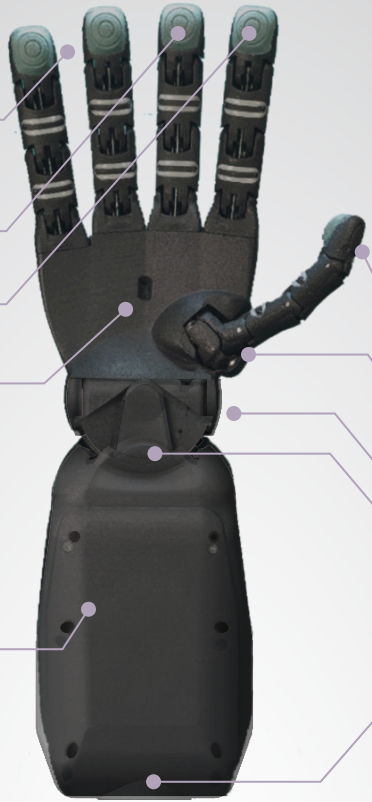
RH8D Adult Robot Hand

Under actuated design

. 19 Degrees of Freedom

. 8 Smart actuators for precise control

Under actuated design aims to provide the right balance between fine control and conformance to the shape of the objects.



Ring finger and Little finger flexion with tendon tension equalization (8)

Middle finger flexion (7)

Index finger flexion (6)

Time of Flight Distance Sensor
Accurately detects proximity and presence of grasped objects

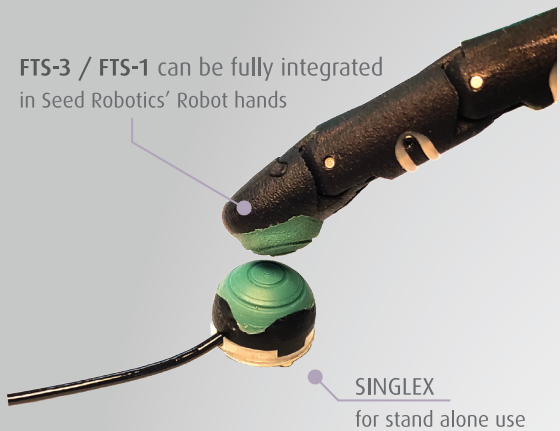
All the Smart Actuators and control modules are contained inside the forearm in one compact unit.

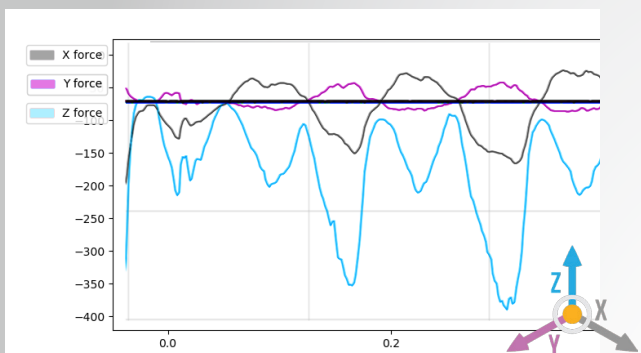
ISO 9409-1-50 mounting adapter for direct assembly on most Robot Arms. Custom mounting adapters also available upon request.

Opposable thumb (2 actuators):
- Thumb flexion (5)
- Thumb adduction (4)

Spherical Wrist joint (3 actuators)
- Wrist Flexion (3)
- Wrist Adduction (2)
- Wrist Rotation (1)

For videos of the RH8D in action visit
https://tinyurl.com/rh8dadultsize





High frequency output. Resolution of 1mN or output in "counts" for improved accuracy when used in A.I

FTS Tactile Pressure Sensors

High resolution tactile force sensing in compact form factor

FTS sensors measure the magnitude of force applied on the X, Y and Z axis of the sensor (Z axis only in the FTS-1 variant), providing a wide range of measurement.

The high resolution and low cost make it possible to build highly sensitive hands **for next generation research in A.I., industrial robots and medical applications.**

Key features:

- High resolution (**1mN / 0.1g**)
- High measurement range, up to 30N
- Compensated for Temperature and Immune to Magnetic interference
- Compact form factor
- Cost effective

Available Models:

. **FTS-3** (3D) and **FTS-1** (1D) integrated in Seed Robotics hands

. **SINGLEX** (20mm diameter) and **SINGLEX mini** (12mm X 10mm) for stand alone use in third party designs and applications.

The FTS (and SINGLEX) range is Designed and Manufactured by Seed Robotics. For more information visit https://seedrobotics.com

Human-inspired with Dexterity and Expression capabilities

The RH8D and RH5D models present a human-inspired design, with *opposable thumb*.

The opposable thumb enables the execution of most human grips, and a wide range of hand expressions in H.R.I. scenarios.

For advanced H.R.I., select models can be optionally fitted with *capacitive touch areas* on the back of the hand.

Sensors and Data Acquisition

The smart-actuators provide real-time, high frequency feedback of *position, speed, PWM output and high-resolution current measurement*.

Combining the *high-resolution current measurement* with the additional parameters, users may *infer force information*.

A distance sensor on the palm reports the proximity or presence of objects.

Tactile Pressure Sensors (FTS Sensors) can also be installed on the fingertips for accurate contact force measurement. Resolution of 1mN in 3 axis (FTS-3D) and 1 axis (FTS-1D) variants.

Physical Interfaces

UART up to 3Mbps (user-configurable, 1Mbps standard) over RS485

USB Interface: Text console, for Configuration and Maintenance

Bluetooth Wireless Interface (optional)

Reliability and robustness at the core of our design

All models feature a *magnetic finger detachment* system that protects finger joints in the event of impacts.

Dyneema (a Kevlar fiber) tendons are used for maximum durability.

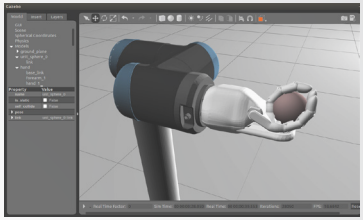
Specially designed elbow attachments, with reinforced shell construction, ensure the best protection in case of an impact.

Command and Control

Open Source ROS Package

Python (PyPot)

Low-level Serial Protocol (UART)



3D Simulation models. Available in URDF format.

Technical Specifications

Operating Voltage: 12V~24V

Embedded Processor: ARM Cortex M4, 96Mhz