KINARM

KINARM End-Point Lab™

A versatile research facility to study sensory, motor and cognitive function

Complete Research Lab

Designed by neuroscientists for neuroscientists, the human KINARM End-Point Lab lets you start collecting data right out of the box. BKIN's standard system includes:

- One or two KINARM End-Point robots for the upper limbs
- Desktop display (optional 2D virtual/augmented reality display
- Dexterit-E™ experimental control software and hardware

High Performance Robot

The KINARM End-Point robot is a stiff, graspable robot that can create highly complex mechanical environments. Optional high-resolution secondary encoders and force/torque sensors provide outstanding feedback signals.

Study Both Arms Simultaneously

Two KINARM End-Point robots can be controlled simultaneously to enable comparison of inter-arm performance as well as the study of bimanual coordination.

2D Virtual/Augmented Reality

Optional 2D virtual reality display for natural, intuitive presentation of visual stimuli.

Modular Design

KINARM End-Point Labs are modular in design, providing a cost-effective way to build a lab over time as needs and funds expand. Typical solutions range from a single, stand-alone robot to a complete lab with two robots, integrated virtual/augmented reality and data acquisition systems, fully upgradeable subject to component availability.

Quick Facts

- Simple, cost-effective graspable robot
- Creates highly complex mechanical environments
- Expandability guaranteed through its modular design
- 2-dimensional paradigm provides balance between behavioural complexity and measurement simplicity
- Integrated VR-AR aligns visual and mechanical environments

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KINARM

Easy To Use and Powerful

System includes Dexterit-E™ behavioural control and data acquisition software, which combines the power of a real-time operating system with the ease of a Windows™-based interface. KINARM Standard Tests™ optionally available.

Components of Human KINARM End-Point Lab

- One motorized KINARM End-Point robot and the following options:
  - Second KINARM End-Point robot for simultaneous right and left-handed investigation
  - High-resolution secondary encoders for improved performance
  - 6 degree-of-freedom force/torque sensors
  - Workstation to support KINARM End-Point robots and subject display
  - Desktop display or integrated virtual reality/ augmented reality presentation of 2D virtual targets in the workspace plane
  - Dexterit-E - data acquisition and experimental control software, with computer systems and a library of Simulink® blocks to assist with rapid custom Task Program creation (MatLab® and Simulink® must be purchased separately)
  - Data acquisition hardware, including up to 32 channels of analog input
  - KINARM Standard Tests™
  - Visual3D™ data analysis software

System Specifications

- Real-time control and data acquisition at 1kHz
- Peak force pulse of 66 N
- Feedback resolution of 3 microns with optional 2° encoders (15 microns without)
- End-point stiffness of ~40,000 N/m with optional 2° encoders (16,000 N/m without)
- 76 x 44cm elliptical workspace/robot
- Effective inertia of 0.8/1.0 kg (minor/major axes)
- Minimum suggested lab size 10'x10'

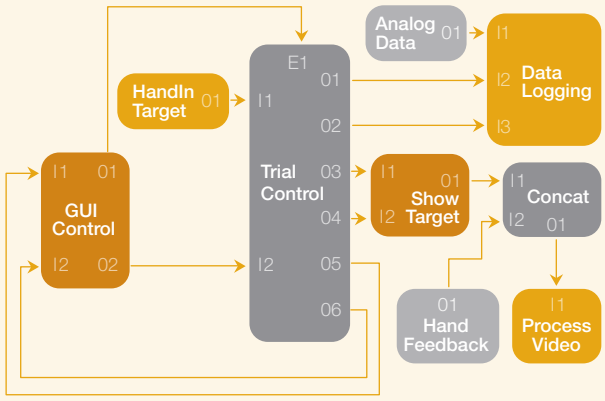
Controlling KINARM Lab with Dexterit-E™

Dexterit-E provides a friendly, easy-to-use user interface for controlling a KINARM Lab.

Custom Tasks can be created and implemented with a KINARM Lab to probe a broad range of sensory, motor and cognitive functions. To create a custom task, users program their task using Simulink® and Stateflow® high level graphical programming tools.

KINARM Standard Tests™ is a battery of automated standardized sensory, motor and cognitive tasks that allow you to start assessing subjects "right out of the box".

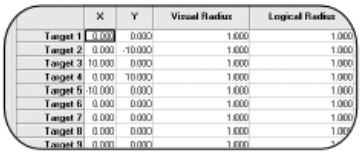
Task Programming in Simulink®



Graphical programming language ensures easy task programming

Parameter Control

Task parameters can be modified in tables (e.g. size, color, location of targets, number of trials in the task, order and repetition of trials, etc.)



	X	Y	Visual Radius	Logical Radius
Target 1	0.000	0.000	1.000	1.000
Target 2	0.000	-10.000	1.000	1.000
Target 3	10.000	0.000	1.000	1.000
Target 4	0.000	10.000	1.000	1.000
Target 5	-10.000	0.000	1.000	1.000
Target 6	0.000	0.000	1.000	1.000
Target 7	0.000	0.000	1.000	1.000
Target 8	0.000	0.000	1.000	1.000
Target 9	0.000	0.000	1.000	1.000

User-specified tables permit customization of behavioural tasks

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