



ACROBOT 6-DOF SERIAL KINEMATIC ARM ROBOT

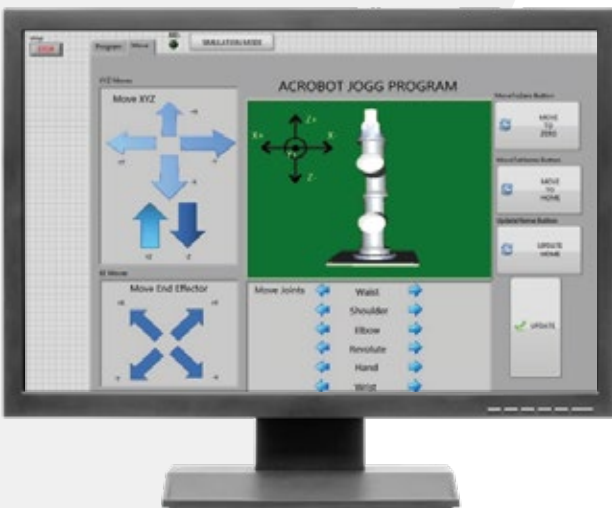
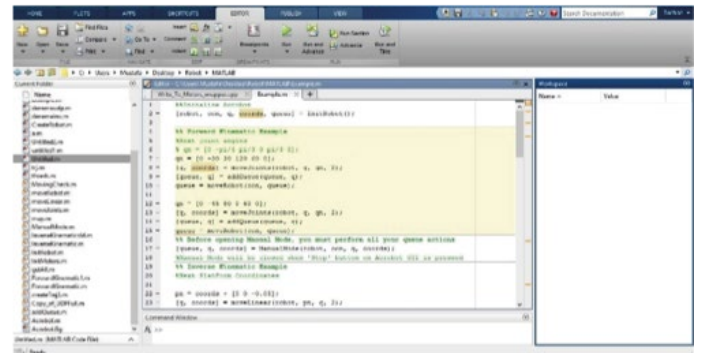
Access robotics technology straightforward! ACROBOT is an open-platform suitable for collaborative robotics, intelligent control systems and Industry 4.0.

OVERVIEW

ACROBOT 6-DOF Robot Arm is an open-platform suitable for hands-on experiments, closing the gap between real industrial systems and DIY- approach. Users can understand the complex inverse-kinematics algorithms and quickly prototype new motion control architectures for industrial parallel kinematics robots. ACROBOT enables the students and researchers to design complex applications and gives them access to the world of industry 4.0.

OPEN-SOURCE EMBEDDED SOFTWARE

ACROBOT is designed as an open source robotics platform available in NI LabVIEW or Matlab. Completely open-source and well-documented software with support to either NI myRIO or Arduino makes the platform extremely suitable to develop, modify and test users' custom algorithms.



INDUSTRY 4.0 ENABLED

ACROBOT offers a user-friendly programming interface that allows to create motion-sets. With analog and digital I/O on the controller, ACROBOT can make decisions with conditional operations around external devices and it enables Industry 4.0 applications for both teaching and research.



FEATURES

Compatible with NI myRIO and Arduino

Assembled 6 DOF serial kinematic arm robot

Aluminum Cast Joint Structure

Every joint has a high resolution absolute encoder after gear reduction. +/- 0.1 mm repeatability

Actuating the robot by high precision smart servo actuators (3.5 – 4.5 arcmin backlash).

2 kg payload at maximum reach. 960 mm workspace

Position, velocity, and torque (Electrical current sensing) control are available

Enables students to create their own real-time algorithms.

Open architecture with extensive courseware, suitable for undergraduate and graduate courses for engineering disciplines related to robotics and control systems.

Available in NI LabVIEW or Matlab/Simulink

CURRICULUM

COMPONENTS OF ACROBOT

Smart Servo Motors
Microcontroller
ACROME Power Unit
RS485 to Serial Converter Module
Mechanics of the System

FUNDAMENTALS OF SERIAL KINEMATIC CHAINS

Denavit Hartenberg Convention
Forward Kinematics
Inverse Kinematics

TRAJECTORY GENERATION

General Considerations in Path Description and Generation
Cartesian Space Schemes
Joint Space Schemes
Cubic Polynomials
Higher Order Polynomials
Linear Function with Parabolic Blends

LINEAR CONTROL OF MANIPULATORS

Feedback and Closed-Loop Control
Control of Second Order Linear Systems
Trajectory Following Control
Modeling and Control of a single Joint

Programming

Computer Interface of Robotic Software
Program Tab
Creating Motion Sets
Command Tasks
Structure Options
Graphics Tab

Move Tab

XYZ Coordinate Move
End Effector Move
Joint Angle Move



For more information on the solutions Acrome Offers, please visit the web site at: <http://www.acrome.net>



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