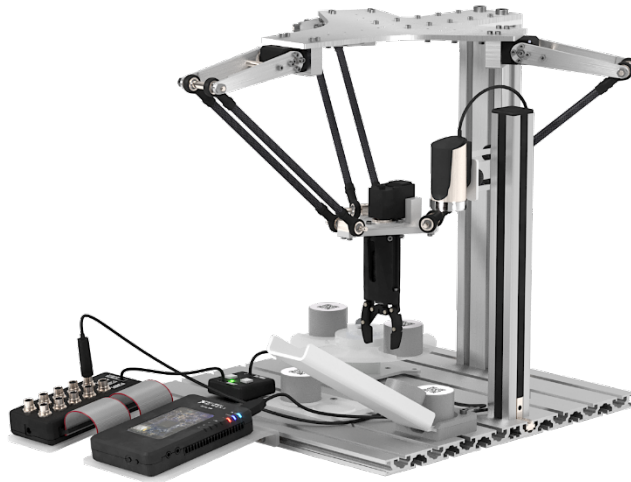# Delta Robot
Training Kit

Overview

The Delta Robot training kit is designed for skills acquisition of practical application of industrial robots in various fields of production. Industrial robots are used to fully or partially release a person from hard physical labor, as well as from simple, repetitive operations. Obviously, the robot has an advantage over humans in the speed and accuracy of performing uniform operations. Educational stand consists of the following main components:

- delta robot;
- control system;
- end effector;
- additional equipment (webcam, sorting cells, workpieces).

The Delta Robot consists of a fixed platform and a movable platform connected by three levers. In the center of the movable platform the nozzle is mounted. For the configuration of electronic components connector block is designed.

The training kit is equipped with the following interchangeable nozzles:

- mechanical grip;
- stylus for the touch screen.

The training kit allows students to learn the basic functions and gain practical skills on the use Delta Robot, such as:

- mechanical gripping and movement of objects;
- sorting objects using machine vision technology;
- sorting objects by shape;
- manipulator position programming.

VAN
TECHNOLOGIES

List of Exercises

1. The study of the design features of the Delta Robot

2. The study of the Delta Robot software

3. The implementation of simple movement operations

4. Solving the direct and inverse kinematics

5. The study gripping, moving and objects relocation algorithms

6. The study of sorting algorithms

7. Implementation Delta Robot step-by-step algorithm

8. Implementation of manipulator motion algorithms along a given trajectory

The Delta Robot training kit is based on the NI myRIO control-measuring equipment.

Course software has been developed in the NI LabVIEW Graphical Programming Environment.

The course software has a simple user interface. During each experiment, the corresponding window with the necessary tables, coordinate planes, and calculation formulas is displayed on the monitor. Students will collect, display and save the obtained data in tables and graphs. The exercises include mechanical assembly and software implementation of the production task.

The training kit guidelines have been developed with theoretical material and step-by-step instructions for each experiment.

The *Delta Robot* training kit is delivered in a plastic container *Gratnells* .

The training kit is designed for high school and college students.

VAN
TECHNOLOGIES