NOVATOR
engineering solutions

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design, development, integration, delivery, maintenance

Formula AllCode Robot Arm Production Cell - Matrix TSL (RB6231-2)

The robot arm production cell consists of a rugged servo controlled 6 degrees of freedom arm bolted to a base plate with a solid mat that provides a range of exercises mimicking industrial robot arm production cells.

The robot arm delivers fast, accurate and repeatable movement with base rotation, single plane shoulder, elbow, wrist motion, a functional gripper and a wrist rotator.

The arm is controlled by an E-blocks2 dsPIC microcontroller with combo board which includes 16 switches, 16 LEDs, 4 line 20 character LCD and quad 7-seg display. A servo motor board, bluetooth board, Grove I2C colour sensor & Grove board are also provided.

The board can be programmed directly from Flowcode for dsPIC or Microchip's MPLAB. A full Flowcode simulation is available free of charge. The control system is also shipped with a full Application Program Interface so that the robot can be controlled using any bluetooth enabled device such as a PC, Android or Apple device using a range of software applications.

The kit is supplied ready assembled with a number of coloured wooden blocks which can be moved by the arm into different locations in the work cell.

The free instructional guide, which includes worksheets and demonstrations is available for free from the resources tab below.
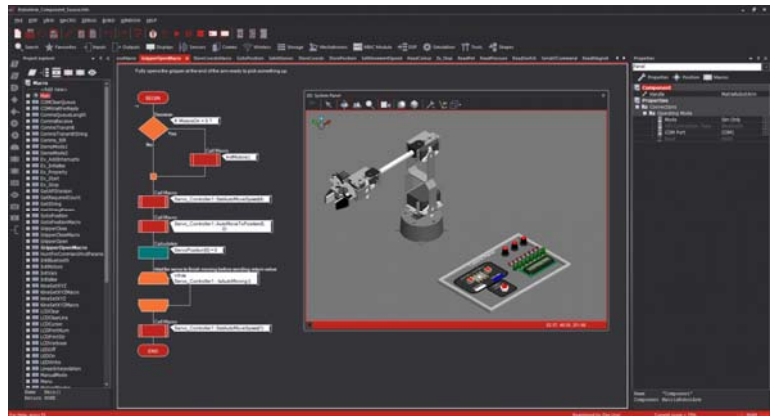
Learning objectives/experiments

- *Robot cell design and programming*
- *Microcontroller programming*
- *Sensors and actuators in robotics*
- *Kinematics: 3D movement in robotic systems*
- *Web based control*
- *Programming in many languages*

Work sheet exercises include
- *Manual movement*
- *Recording positions*
- *API control*
- *Automatic pick and place*
- *Automatic sorting*
- *Path planning*