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Product Name :	**Product Code :**
Fuzzy Control Carrier Vehicle with Inverted Pendulum	AR212

Description :

Fuzzy Control Carrier Vehicle with Inverted Pendulum

Technical Specification :

Fuzzy Control: Carrier Vehicle With Inverted Pendulum
A vehicle with an inverted rod pendulum acts as a mechanical multivariable system. A fuzzy control moves the rod pendulum to the centre position, where it is held in position, and at the same time controls the position of the vehicle.
A rotary encoder determines the position of the vehicle from the rotation of its wheels. A rotary potentiometer detects the inclination of the pendulum. These sensors supply crisp signals to the fuzzy controller, where the signals are transformed into fuzzy input values and inferenced before being transformed back into a crisp output value. This in turn activates an actuator, the drive motor on the vehicle. The control process is made more difficult by the fact that the vehicle can only move to a limited extent from its original position.
Fine tuning of a fuzzy control system with strong coupling and use of microcontroller technology
Inverted rod pendulum with vehicle as mechanical multivariable system, miso (multiple inputs - single output)
Switchable between fuzzy and manual mode
Motor to drive the vehicle as actuator
Microcontroller with usb port as fuzzy controller
FSH-Shell development software for designing and optimising the fuzzy controller; software via USB under Windows 7, 8.1, 10 including PC1 Computer-System with 21" TFT-Monitor Win 10 engl.
Rotary potentiometer as pendulum inclination sensor
Rotary encoder as vehicle position sensor
Permitted route of vehicle relative to starting position: adjustable
Part of the structured learning concept: level 3

Technical Data:
Vehicle
Tensile force: 12N
Rod pendulum
Length: 990mm
Weight: 0,1kg
Drive motor
12V
Microcontroller
8bit microcontroller Zilog Z8Encore
12-fold ADC 8bit
Rotary potentiometer
Resistance value 5k Ohm; ±20%
Rotary encoder
Diameter of sensor wheel: D=40mm
Impulses per revolution: 50
Resolution: 2,51mm / impulse
230V, 50Hz, 1 phase

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