

# Control of mobile walking robot [Hexapod]

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**Abstract:** This paper presents the design and control system of the walking six-foot mobile robot further referred as a hexapod. Hexapod is a robot, i.e. motor vehicle that walks on six legs. Since for the keeping stability of the robot only three legs are sufficient, hexapod possesses the great flexibility in walking. For instance, even if one of its legs would become incapacitated, the robot can still walk. The considered robot is controlled using the software provided through a mobile phone. Communication is realized via a Bluetooth wireless network with a range of about 50 m. Robot is equipped with a wireless camera, the system separating the control signals, and the ATmega162 micro-controller. A choice of the micro-controller has been motivated by a number of the generated PWM (Pulse-Width Modulation) signals. Hexapod drive is realized by means of 18 servos. In addition, it has a gripper, whose movement is performed by three servos. A servo is controlled by a variable signal with a fill factor of 50 Hz. PWM signal with variable duty cycle is divided into eight different servo-controlled signals. ATmega162 micro-controller can control 32 servos. The system dividing the signal is based on a 4-bit binary counter 74LS93N and demultiplexer 74238N.

**Keywords:** hexapod, control

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