



DP 10322

UDP-ARCNET server for PA-10 robot control

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Kazalo

1	Introduction	3
2	UDP-ARCNET server	4
2.1	Specifications	4
2.2	Usage	4
2.3	Modding	4
3	Simulink Real-Time client	4
4	Literatura	4



Slika 1: Mitsubishi Portable Arm PA-10 robot.

1 Introduction

The report presents a server developed for the purpose of controlling the robot Mitsubishi PA-10 via UDP and the MATLAB® SIMULINK® libraries to allow design of high level control of the robot.

The server acts as middle-ware between the UDP client and the ARCNET robot controller of the servomotors of the PA-10 robot. It works in real time with a sample frequency of 500Hz. It also allows to control the robot through the internal speed or torque regulator, which gives the users freedom to implement various control strategies.

The developed MATLAB® SIMULINK® libraries allow easy communication with the server and an easy start into designing costume control strategies. We also prepared demo programs to present simple control strategies via input speeds or torques. We also prepared a program to identify center of mass and mass of the robot's tool.

2 UDP-ARCNET server

The PA-10 is an industrial robot built by Mitsubishi Heavy industries. The robot has seven degrees of freedom which classifies it as a redundant mechanism. The robot's servo motor controller allows the control of each servo either by reference speed or torque values. The proprietary controller, MHI controller, allows the users to control the robot via input speeds only. The MHI controller works with a sample frequency of 100 Hz and has strong axis speed limits.

2.1 Specifications

2.2 Usage

2.3 Modding

3 Simulink Real-Time client

4 Literatura