Laboratory 2 / Measurement 11

Application technology of logic controllers

(Preparatory tasks)

Name: Task code: PLC04 Deadline: 09-05-2022 14:15

Solve the following tasks before the measurement. At the beginning of the measurement copy your solutions to your report. **If these tasks are not solved before beginning of the measurement, you cannot start Measurement 11.**

**1. Answer the following questions in writing form.**

A: What is PLC? What can this tool be used for?   
B: Give the pulse transfer function and difference equation of a discrete PI controller.

**2. Determining a model based on measurement data**

Using the instructions in the measurement guide, determine the parameters of the first order process. Data are enclosed in the file: PLC04.m! (Data can be entered into the MATLAB interface by running the file.)   
A: Enter the old and new values of operating point (with dimensions).   
B: Specify the transfer function of the specified process. Specify the process time constant and gain (with dimensions). Control your figures.   
C: Check the behavior of the process with the MATLAB step statement. Simulate the behavior of the obtained continuous process even with the input signal specified in the file (e.g: lsim statement)! Plot in the **same** figure and then compare the measured and simulated output signal! If signals are not in the same figure this part is invalid.   
D: Determine the mean and standard deviation of the measured and simulated signal deviations. Make sure that the definitions are implemented correctly.

Bring your solutions and MATLAB code for the tasks electronically!

*Information on administration: The independently developed task must be presented to the measurement manager at the beginning of the measurement exercise. The preparation tasks can no longer be entered afterwards. If any part of the tasks is missing Preparatory task is invalid. It can be replaced at the end of the semester once, at the same time as the replacement of the given measurement practice.*

I solved the tasks independently, without any unauthorized help:

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