DTU Electrical Engineering

ASSIGNEMENT 1

31342 - Introduction to Programmable Logic Controllers

João Ramiro
S182059@student.dtu.dk

PART1

PLC1

Name: Simatic S7-300
Manufacturer: Siemens
Datasheet:
https://cache.industry.siemens.com/dl/files/629/8859629/att_55794/v1/s7300_module_data_manual_en-US_en-US.pdf

According to the datasheet (See Page 52) this PLC contains a lot more than 4 Digital Inputs,
It contains several modules that contain either 16 or 8 digital inputs with support for either 24VDC or even more, and some supporting Alternating Current of 120/230V. Some of those modules are: 1BH10, 7BH01, 7EH00, 1BH50, 1CH00
It also contains more than 2 analog outputs, all of them with 12bits or above. Some of the modules containing such outputs are: 5HF00 7ND02 5HD01 5HB01
Finally this module also contains 3 Interface modules named IM 360, IM 361 and IM 365 to communicate.

PLC2

Name: 1769-L24ER-QBFC1B Controller
Manufacturer: Allan-Bradley
Datasheet: http://literature.rockwellautomation.com/idc/groups/literature/documents/td/1769-td005_-en-p.pdf

According to the datasheet this controller includes 16 DC digital inputs and 2 analog output points,
It also has built-in communication ports which are two Ethernet ports to connect to an EtherNet/IP network.

PART2

First the Washing Clycle settings are set, these include the water temperature, the washing time and the rpm of the drum.
After the settings are set, fill the drum with water. After there is enough water, the temperature of the water should be adjusted to match the one set by the washing cycle. After that, the machine should start rotating, and a sensor should keep the drum rotating at the correct speed.
Finally after the selected amount of time has passed the drum should be drummed.

This tasks can be implemented through a PLC, but it make much more sense to use a simple microcontroller, since PLCs are much more expensive in mass production and since this control would be applied to a big amount of washing machines, it makes more sense to use a microcontroller that contain much cheaper hardware and therefore are not expensive for mass production