0617-470 and 870 Controls for Manufacturing Automation

Department of MMET-PS

Rochester Institute of Technology

Laboratory Exercise # 8

10 Points

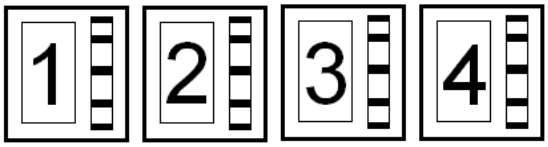
Objective:

The objective of this laboratory exercise is to create a PLC program to understand the use of **Produced and Consumed Tag**, using Selector Switches and Momentary Push Buttons on **Setup # 1**, to turn ON and turn OFF outputs on **Setup # 2**.

Setup # 1: 129.21.95.47 Setup # 2: 129.21.95.23
Setup # 3: 129.21.95.24 Setup # 4: 129.21.95.30

Tasks to be accomplished:

1. The application should not start until the Main Power Switch, NO Selector Switch is turned ON. (**Setup-1**: Local:5:I.Data.20)
2. When the Main power switch, NO Selector Switch is turned ON,
   - Read the number represented by 4th thumbwheel switch (**Setup-1**, Local:5:I.Data.00 – 15)



   - Enable the stepper motor.
   - Red Lights on both setups should turn ON.
3. When a START Switch, NC Momentary Switch (**Setup-1,** Local:5:I.Data.18) is pressed,
   - Turn stepper motor (**Setup-2**) with RPM value indicated by thumbwheel switch (**Setup-1**).
   - Green Light of both setups should turn ON.
   - Red Light of both setups should turn OFF.
4. During the period Stepper Motor is ON,
   - Read the RPM value continuously from thumbwheel switch (**Setup-1** Local:5:I.Data.00 – 15)
   - Change the RPM of motor immediately if number on thumbwheel switch is changed anytime.
   - Green Lights on both setups should stay ON.
   - Display the time duration (in seconds) for which it is ON **(Setup-2** Local:6:O.Data.00 – 15**)**.
5. When an Emergency Stop Switch, NO Momentary Switch (**Setup-1**, Local:5:I.Data.16) is pressed,
   - The system should PAUSE the Motor and the display.
   - On both setups only Yellow Light should turn ON and stay ON, until START switch is pressed again.

6. When a STOP switch, NC Momentary Switch (**Setup # 1**, Local:5:I.Data.19) is pressed,
   - System should RESET and stop until START switch is pressed again.
   - 7-Seg Display should display "0000".
   - Only Red lights on both setups should turn ON.
7. All the outputs should turn OFF and the system should RESET (Timers and 7-Seg display) when the main power switch is turned OFF

NOTE:

- Step Angle for the Stepper Motor is 7.2^{o}
- Setup-1 should only send values of all input switches & turn ON/OFF lights.
- Setup-2 should turn ON/OFF Motor, Lights on setup-2 and display time for which Motor is ON.

Input/output Listing for the Experiment:

	Inputs/Outputs	PLC
Inputs	Main Power Switch (NO Selector Switch)	Local:5:I.Data.20
	Start Switch (NC Momentary Switch)	Local:5:I.Data.18
	E-Stop Switch (NO Momentary Switch)	Local:5:I.Data.16
	Stop Switch (NC Momentary Switch)	Local:5:I.Data.19
	Thumbwheel Switch (BCD Input)	Local:5:I.Data.00 – 15
Outputs	Stepper Enable	Local:6:O.Data.26
	Stepper Pulse Train	Local:6:O.Data.29
	RED Light	Local:6:O.Data.20
	YELLOW Light	Local:6:O.Data.21
	GREEN Light	Local:6:O.Data.22
	7 Segment Display (BCD Output)	Local:6:O.Data.00 – 15

Instructions:

1. Test the program and show the demo to the instructor in the lab.
   (Only for on-campus students)
2. A well documented functional PLC program (RsLogix File), containing all tasks should be submitted with title, your name and rung comments, in the drop box within MyCourses. (You should have tested the program before submission)
3. Use the table as a reference to understand the use of NO contact symbol for the Selector Switch used in this program.