Title: **ESTOP/Stop/Start of a Three-Phase Motor Circuit** Job: 21

Course: Introduction to Automation Unit: Introduction of PLC CLO: 4

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Grade \_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**

1. Student shall reinforce their knowledge of a stop/start motor control circuit.
2. Student shall develop a knowledge of retentive timers and their use.
3. Student shall apply this circuit in a three-phase motor control scenario.

**Assessment**

Students shall demonstrate a comprehension of the objectives listed above by scoring a minimum of 75% on this Job. Grading shall be based on the Introduction to PLC rubric.

**Devices**

|  |  |  |
| --- | --- | --- |
| Inputs | | |
| *Device* | *Description* | *Symbol* |
| NC Mushroom Head PB (ESTOP) | Emergency Stop | ESTOP |
| NC Pushbutton (PB1) | Stop Motor | STOP |
| NO Pushbutton (PB2) | Start Motor | START |
| NO Contacts (MS-F-AUX) | Motor Starter Status | MS\_STAT |
| NO Contacts (MS-OL) | Motor Overload Contacts | MS\_OL |
| Outputs | | |
| *Device* | *Description* | *Symbol* |
| Green Pilot Light | Motor Running | RUNNING |
| Red Pilot Light | Motor Stopped | STOPPED |
| Yellow Pilot Light | Motor Overload | OVERLOAD |
| 24VDC Three-Phase Motor Starter | Motor Control Relay | MS\_F |

**Instructions**

Design a stop/start motor control circuit using the devices listed above. The circuit will also utilize a latching mushroom head pushbutton to act as an ESTOP as well. If the ESTOP is pressed, the motor shall stop and not be able to be restarted until the ESTOP is disengaged. One pushbutton shall be a traditional stop. When pressed, it shall stop the motor. The other pushbutton shall be a traditional start button. When pressed the motor shall start and stay running even when the button is released. The control circuit shall also contain an overload function. If a motor overload occurs, the control circuit shall disable itself requiring the operator to press start after the overload has been reset. Whenever the motor is running, the green light shall come on and the red light shall be off. When the motor is not running, the green light shall be off and the red light shall be on. If an overload occurs, the yellow light shall illuminate. When in overload, it is permissible for both the yellow and red lights to be on simultaneously. Use the space on the opposite side of this page to design the circuit. Once complete, review the design with the instructor. After obtaining approval, configure the program in RSLogix 500. Have the instructor review the program before downloading. Once the program has been reviewed, verify and download the program.

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Discussed design \_\_\_\_\_\_\_, Test logic without motor \_\_\_\_\_\_\_, With motor \_\_\_\_\_\_\_