Title: **Alternating Motor Direction** Job: 29

Course: Introduction to Automation Unit: Introduction of PLC CLO: 2, 4

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Station \_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**

1. Student shall reinforce their knowledge of a stop/start motor control circuit.
2. Student shall develop a knowledge of alternating control of a three-phase motor.

**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 of PLC rubric.

**Devices**

|  |  |  |
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| Inputs | | |
| *Device* | *Description* | *Symbol* |
| Mushroom head Pushbutton | Emergency Stop | ESTOP |
| NC Pushbutton (PB1) | Stop Motor | STOP |
| NO Pushbutton (PB2) | Start Sequence | START |
| NO Contacts (MS-F-AUX) | Motor Forward Status | MSF\_STAT |
| NO Contacts (MS-R-AUX) | Motor Reverse Status | MSR\_STAT |
| NO Contacts (MS-OL) | Motor Overload Contacts | MS\_OL |
| Outputs | | |
| *Device* | *Description* | *Symbol* |
| Green Pilot Light | Motor Running Forward | FORWARD |
| Red Pilot Light | Motor Stopped | STOPPED |
| Yellow Pilot Light | Motor Overload | OVERLOAD |
| Blue Pilot Light | Motor Running Reverse | REVERSE |
| 24VDC Three-Phase Motor Starter | Forward Motor Starter | MS\_F |
| 24VDC Three-Phase Motor Contactor | Reverse Motor Contactor | MS\_R |

**Instructions**

Design a stop/start motor sequence control circuit using the devices listed above. The circuit shall control a motor in a periodic alternating forward/reverse pattern until the operator presses the stop button. When the operator presses the start button, motor shall start and run in the forward direction for 10 seconds. The motor will then “stop” and coast for 5 seconds, the restart in the reverse direction. After 10 seconds of running in reverse, the motor shall “stop” and coast for 5 seconds then start in forward, repeating the sequence until the operator presses the stop button. Lights are defined as listed above. During the 5 second coast time, the next direction light shall flash.

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