Title: **ESTOP-Stop-Start with Overload for 3P Motor** Job: 22

Course: Intro to Automation Unit: Manual Motor Control CLO: 1, 2

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

**Objectives**

1. Student shall establish the use of a motor overload in controlling a three-phase motor.
2. Student shall define the connections to a motor contactor, overload and auxiliary contacts and their terminal numbers.
3. Student shall differentiate between fuse or circuit breaker protection verses that of a motor overload.

**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 Manual Motor Control rubric.

**Devices**

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| Inputs | | |
| *Device* | *Description* | *Symbol* |
| Mushroom-head Pushbutton | Emergency Stop | ESTOP |
| Normally Closed Pushbutton | Stop Motor | STOP |
| Normally Open Pushbutton | Start Motor | START |
| Auxiliary Contacts | 1 NO and 1 NC Set of Contacts | AUX |
| Outputs | | |
| *Device* | *Description* | *Symbol* |
| Green Pilot Light | Motor Running | RUNNING |
| Red Pilot Light | Motor Stopped | STOPPED |
| Yellow Pilot Light | Motor Overload | OVERLOAD |
| Three-phase 24VDC Motor Starter | Three-phase Motor Contactor + Overloads | MS1 |
| 208VAC/3P Motor | Three-phase AC Motor | M1 |

**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 emergency stop. This circuit shall include overload protection for the motor. If the motor experiences an overload condition, power to the motor shall be disconnected and the control logic shall unseal the motor starter coil. The green light indicates the motor is running, the yellow light indicates an overload condition and the red light indicates that the motor has stopped. The lights shall indicate the circuit status even if the emergency stop is pressed. 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, wire the circuit ensuring to label all wires with the appropriate wire numbers. Have the instructor review all wiring before energizing the circuit. Render the schematic using a CAD type software package. Post the schematic to the *student share* folder using filename *MMC Job 22 – name.ext.*

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Discussed design \_\_\_\_\_\_\_\_ Checked wiring \_\_\_\_\_\_\_\_ Energized Test \_\_\_\_\_\_\_\_