Instrumentation and Control

Assessment Tool

AIAC 021 001

021 Project 1
001 Entry Level: Hold Circuit Controller

With reference to
Occupational Standard IAC 021,
Install and service stand-alone controllers (SACs)

Assignment

Task: IAC 021, Install and service stand-alone controllers (SACs), Element 1 – 4	Duration : 6 hours
Job Statement	Install and service stand-alone controllers (SACs) Project 1 – Entry Level: Hold Circuit Controller
Performance Criteria	· Types of inputs and outputs are identified according to engineered designs · Environmental conditions such as extreme ambient temperature, cleanliness, or contamination are identified as per the workplace procedures · Locations for controllers are determined according to workplace procedure · Controllers are configured according to manufacturers' specifications · Documentation is completed according to workplace procedures · Configuration techniques applied to specific control strategies are identified · Control parameters and process limitations are identified according to workplace requirements · Equipment is isolated and make-safe procedures performed according to workplace procedure · Controllers are tuned to the process conditions according to manufacturers' specifications · System diagnostics are performed according to workplace procedure · Controller deviations, faults, and errors are identified according to workplace procedure · Process upset conditions and limitations are identified according to workplace procedure · Controller parameters are tuned to varying process conditions according to manufacturers' procedure and specifications
Resources Required	**List of Recommended Resources** · www.instrumentationtoolbox.com · www.us.endress.com/en · Manufacturers' manuals; Equipment maintenance documentation · User Manual Siemens LOGO! https://cache.industry.siemens.com/dl/files/461/16527461/att_82564/v1/Logo_e.pdf · Siemens Online E-Learning https://sitrain.automation.siemens.com/sitrain/open_wbt/logo/tutorial/menu.html?mode=standalone
Name of Developer	**Fransisco Omutsani,** **TUM, June 2017**

Practical Assessment

Hold Circuit Controller:

The following conditions must be fulfilled for a hold circuit controller with jog operation.

- Actuation of a Button, named S1, should pick up the Contactor K1, which should remain picked up for as long as the button is pressed.

- Actuation of another Button, named S2, should pick up the Contactor K2 and maintain itself. The Contactor K1 responds simultaneously.

- On actuation of a third button, named S0, both contactors drop out.

Tasks

1. Create the circuit diagram that fulfils the named conditions.
2. Create the list of the operands
3. Create the ladder diagram
4. Create the programme for the Controller
5. Install the devices on a board. Use a lamp 1 and lamp 2 to show the status of the outputs.
6. Wire the connections.
7. Configure the controller and add the programme to the device.

8. Show the results to your trainer

Assessment Checklist

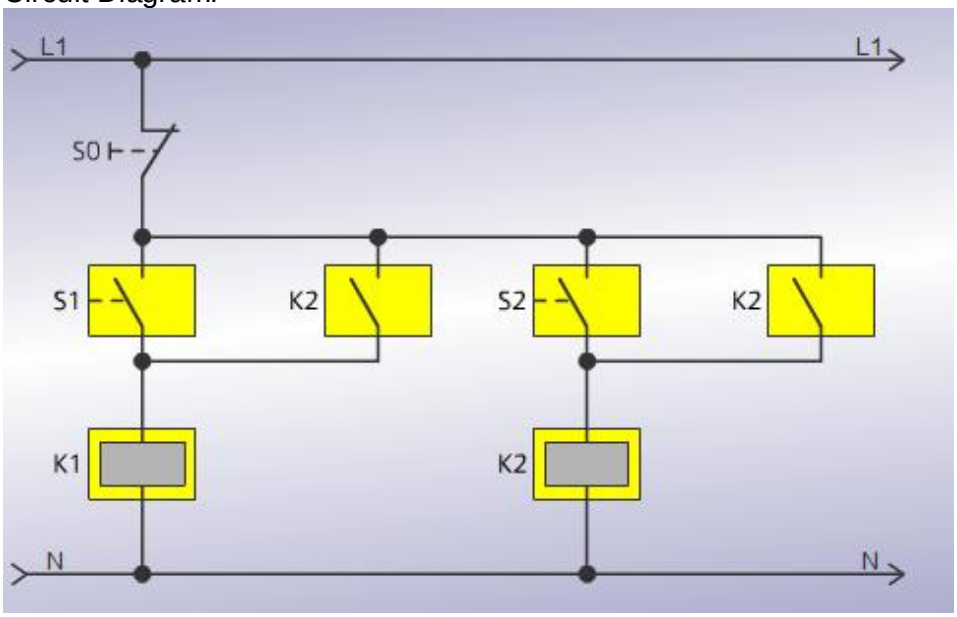
Learner ID and Name:			
Project	AIAC 021 001 Project 1 Entry level: Hold Circuit Controller	Date:	

Items to be Evaluated	Tolerance	C	NYC
Safety: Equipment is isolated and make-safe procedures performed according to workplace procedure			
Circuit Diagram is completed according to required design.			
Ladder Diagram is completed according to required design.			
Types of inputs and outputs are identified. The list of operands is completed according to the required design			
Control parameters and process limitations are identified and controller is configured according to the required design			
The program is completed and the controller is programmed according to required design and specification			
Locations for controller and other items are determined according to workplace procedure			
All components installed and wired according to required design and specifications			
Remarks			

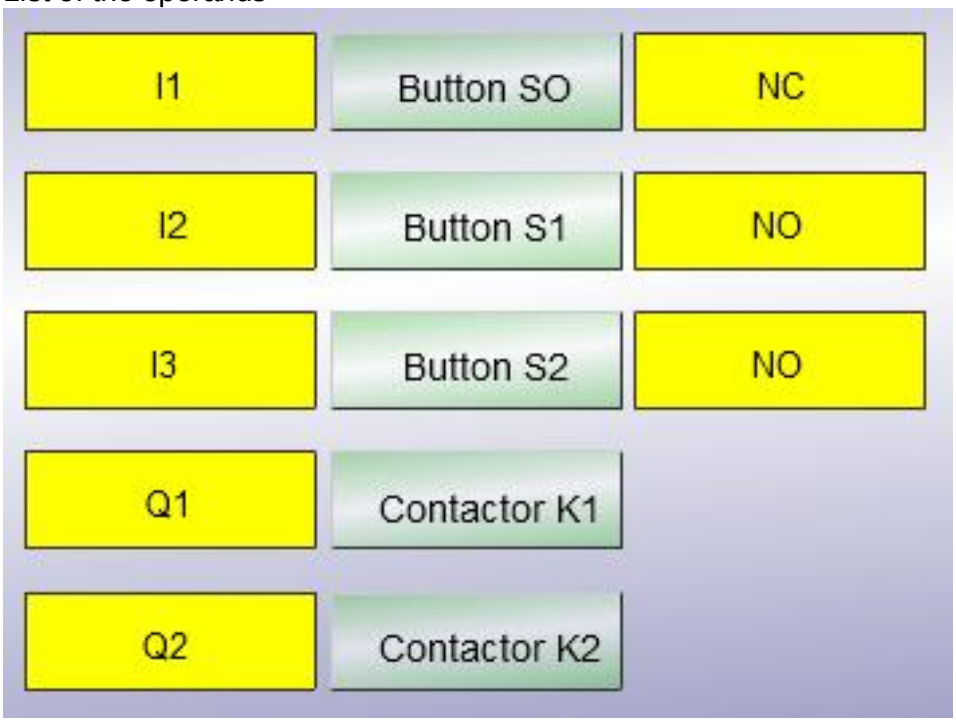
Learner is	q Competent q Not Yet Competent
Occupation Safety and Health Considerations	Follow Health, Safety and Environment ACT 2007 of Kenya.
Name and Signature of Instructor/Assessor	

Sample Answer - Assessment:

Circuit Diagram:

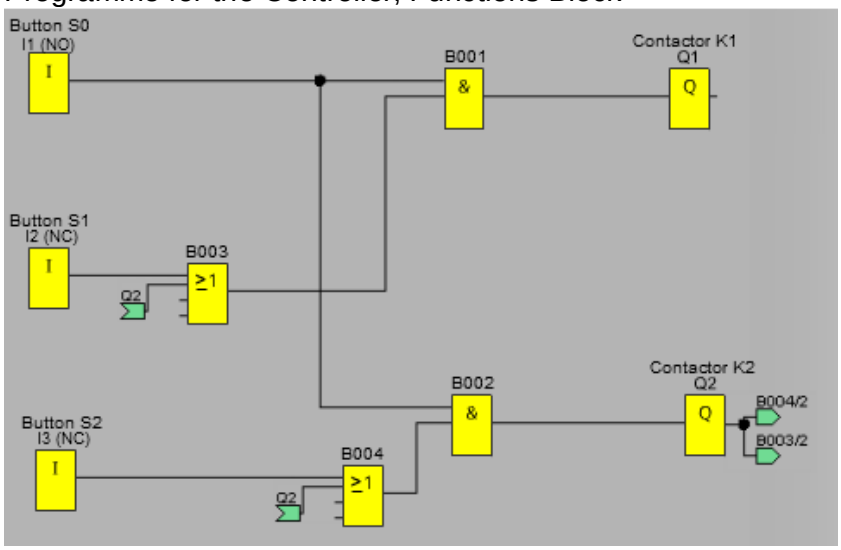


List of the operands



Sample Answer - Assessment:

Programme for the Controller, Functions Block



Ladder diagram