

Skills Canada National Competition

SCOPE DOCUMENT

SCOPE DOCUMENT	
Competition Year	2012
Competition location	Edmonton, AB
Trade Number	19
Trade Name	Automation and Control
Level	Post-Secondary

1. INTRODUCTION

1.1 Purpose of the Challenge.

Install and program an industrial control system

1.2 Duration of contest.

14 hours

1.3 Skills and Knowledge to be tested.

Designing and commissioning a sequential process using a PLC device

2. CONTEST DESCRIPTION

2.1 List of documents produced and timeline for when competitors have access to the documents.

DOCUMENT	DATE OF DISTRIBUTION VIA WEBSITE
No other documents will be published before the competition	

2.2 Tasks that may be performed during the contest

- Interpreting and using basic electrical designs and diagrams to assemble a functional control system
- Installing various industrial cables and raceways to a wall mounted control panel.
- Installing and commissioning terminal components (push buttons, limit switches, pilot devices, etc.)
- Wiring a panel using standard trade practices, complying with relevant sections of the Canadian Electrical Code
- Determining adequate protection for equipment, components and personnel diagnostic skills in fault finding on a existing relay panel.
- Proper occupational Health and Safety procedures

Pre-Requisites

- Knowledge of the current Canadian Electrical Code
- Ability to effectively locate information in technical documents.
- Effective troubleshooting techniques
- Ability to install various industrial cables and raceways
- Knowledge of symbols used in an electrical diagram and a control diagram
- Proper layout, installation practices and techniques for a control panel.
- Knowledge of fail safe designing
- Knowledge of safety practices in the work environment
- Knowledge of PLC programming

3. EQUIPMENT, MATERIAL, CLOTHING

3.1 Equipment and material provided by Skills/Compétences Canada

- ½" emt bender head and handle
- Ladder
- Power bar

3.2 Equipment and material provided by the competitor

Mandatory

- Programmable logic controller, communication cable and software.
- Laptop computer with appropriate operating system.
- The PLC must have the following minimum requirement:
 - 120 VAC power will be provided to supply the PLC, inputs and outputs
 - fit into a space 250mm high x 250mm deep x 500 mm wide
 - 16 - inputs
 - 16 - relay outputs
 - Clean PLC technical documents/manuals will be permitted
 - Software to be compatible with computer. Computer to be free of all preprogrammed PLC files. Only PLC software, and Windows will be allowed on computer. Computer will be inspected by Judges prior to usage.
 - Note: If inputs to PLC are DC the competitor is responsible to provide the DC power supply.

Optional

- Additional backup PLC (Recommended)
- cordless drill
- diagonal cutting pliers
- flat metal file with handle
- round metal file with handle
- spirit level (torpedo) (No laser level allowed.)
- Chalk line
- Multimeter

- centre punch
- metric measuring tape
- metal saw (Hack saw)
- hammer
- Set of metal drill index
- Full compliment of screwdriver tips for cordless drill (short & long including nut drivers)
- Knockout Punches (½" 3/4")
- 3/16" to 7/8" Unibit
- set of Phillips screwdrivers
- set of Robertson screwdrivers size 6, 8 and 10
- set of flat-head screwdrivers – sizes 1 to 5
- Set of termination screwdrivers
- needle nose pliers
- sta-kon pliers (Crimp)
- electrician's pliers
- wire strippers
- slip-joint gripping pliers
- scribe
- 50-cm minimum length ruler
- electrician's knife
- square
- adjustable wrench
- 15' (5m) length of fish tape
- Screw retaining flat screwdriver

3.3 Required clothing (Provided by competitor)

- Proper work site clothing

4. SAFETY REQUIREMENTS

4.1 List of required personal protective equipment(PPE) provided by competitors

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Safety Glasses with side shields | <input checked="" type="checkbox"/> CSA approved Safety shoes | <input type="checkbox"/> Latex gloves |
| <input type="checkbox"/> Safety Gloves | <input type="checkbox"/> Welding helmet | <input type="checkbox"/> Dust Mask |
| <input checked="" type="checkbox"/> Hard Hat | <input type="checkbox"/> Welding gloves | <input checked="" type="checkbox"/> Leather gloves |
| <input type="checkbox"/> Hearing protection | <input type="checkbox"/> Respiratory protection | <input type="checkbox"/> No PPE required |

4.2 List of required personal protective equipment(PPE) provided by Skills/Compétences Canada (SCC)

- | | | |
|--|--|--|
| <input type="checkbox"/> Safety Glasses | <input type="checkbox"/> CSA approved Safety shoes | <input type="checkbox"/> Latex gloves |
| <input type="checkbox"/> Safety Gloves | <input type="checkbox"/> Welding helmet | <input type="checkbox"/> Dust Mask |
| <input type="checkbox"/> Hard Hat | <input type="checkbox"/> Welding gloves | <input type="checkbox"/> No PPE required |
| <input checked="" type="checkbox"/> Hearing protection | <input type="checkbox"/> Respiratory protection | <input type="checkbox"/> No additional PPE will be supplied by SCC |

5. ASSESSMENT

5.1 Point breakdown

POINT BREAKDOWN	/1000
Panel door	90
Wall mounting	75
Components installed inside panel	240
Programming & Functionality	285
External Panel Components	180
Safety practices	100
Fault finding	30

6. ADDITIONAL INFORMATION

6.1 Consecutive translation

If consecutive translation is required on site, the Skills/Compétences Canada Provincial/Territorial offices must advise Skills/Compétences Canada National Secretariat a minimum of 1 month prior to the competition or this service might not be guaranteed.

6.2 Software requirements

If French software is required the Skills/Compétences Canada Provincial/Territorial offices must advise Skills/Compétences Canada National Secretariat a minimum of 1 month prior to the competition or this software might not be guaranteed.

6.3 Computer keyboard requirements

English Keyboards will be provided, if a French keyboard is required the Skills/Compétences Canada Provincial/Territorial offices must advise Skills/Compétences Canada National Secretariat a minimum of 1 month prior to the competition or this keyboard might not be guaranteed.

6.4 Tie (No ties are allowed)

In the event of a tie a judge's decision will determine the winner on the basis of project esthetics.

6.5 Competition rules

Please refer to the competition rules for all general SCNC information.

7. NATIONAL TECHNICAL COMMITTEE MEMBERS

Region	Name	Email address
Pacific Region	Peter Friesen	peterf@nait.ca
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