

DATE	LOCATION
Thursday, April 15, 2021	Building Trades Advancement College of Nova Scotia IBEW 625 Electrical Workers Campus (Beechville)

1. Schedule

Time	Task
8:00 am	Orientation and project documentation issued
8:30 am	Competition begins
10:00 am – 10:15 am	Coffee break (optional)
10:15 am – 12:00 pm	Competition
12:00 pm – 12:30 pm	Lunch (provided)
12:30 pm – 2:00 pm	Competition
2:00 pm – 2:15 pm	Coffee break (optional)
2:15 pm – 4:00 pm	Competition
4:00 pm	Competition ends & final evaluation

2. Purpose of the Contest

To install the required wiring and develop a user program for a programmable logic controller to control motors in an industrial process using a partially fabricated control panel.

3. Criteria

4. Number of Stations / Allocations

There will be four (4) stations.

5. Skills & Knowledge to be Tested

- Performance of all required elements in a safe manner;

- Interpretation of various electrical symbols used in electrical drawings;
- Performance of the required tasks using drawings and specifications provided;
- Ability to install wiring and wiring components using standard trade practices;
- Connection of proper protection devices for equipment and components;
- Connect a programmable logic controller to control and monitor an industrial process;
- Develop, install and debug a user program for a controller to provide control as specified;
- Troubleshoot circuit faults using standard electrical test equipment.

Note: due to contest time restrictions, each competitor will be working on a pre-fabricated panel.

6. Prerequisites

Contest-Specific Prerequisites

- Knowledge of safety practices;
- Ability to configure communications drivers for Allen Bradley MicroLogix 1000 PLC (RSLinx);
- Knowledge of RSLogix 500 programming software (ladder logic format);
- Ability to develop, interpret and de-bug an RSLogix 500 ladder logic program;
- Knowledge of symbols used in an electrical wiring and schematic diagrams;
- Ability to interpret specifications for an industrial process;
- Proper installation practices for a control panel wiring;
- Effective trouble shooting techniques using standard testing means.

SCNS Prerequisites

- Enrolled in a community college, university or private school OR be registered as an apprentice with the Department of Labour and Advanced Education;
- Registered as a competitor with Skills Canada – Nova Scotia (SCNS);
- The competitor cannot be a certified journey-person;
- The competitor must possess a Canadian citizenship or landed immigrant status and be a resident of Nova Scotia. Competitors are responsible for verifying this information if requested;
- Have been earning post-secondary credits any time during the academic school year (September to June);

- All competitors must be able to show either current apprenticeship status and/or proof of enrollment in a post-secondary institution upon request of the Provincial Technical Committee (PTC) or SCNS.

7. Equipment & Clothing

a) What Will Be Supplied

- Prefabricated control panel with all required devices mounted;
- Wiring materials (cables, wires, connectors, markers, terminals, tape etc.);
- Competition project descriptions, wiring diagrams, PLC programming data [I/O data table addresses];
- Stationery supplies.

b) What Competitors Must Supply

- 1 set of flat-head screwdrivers - sizes 1 to 5;
- 1 set of Robertson screwdrivers sizes 1, 2 & 3;
- 1 set of Phillips screwdrivers sizes 1 to 5;
- 1 set of terminal screwdrivers (3 mm for 1492-J4 terminals);
- 1 electricians side cutting pliers - 1 diagonal cutting pliers;
- 1 needle nose pliers - 1 crimping pliers;
- 1 slip-groove gripping pliers - 1 wire stripper tool;
- 1 electrician's knife;
- 1 Multimeter (V-O-M);
- 1 pair safety boots / shoes;
- 1 pair safety glasses / goggles.
- Programmable Logic Controller, communication cable and software. Laptop computer with appropriate operating system and PLC software. Computer to be free of all pre-programmed PLC files. Computer may be inspected by Judges prior to usage.

The PLC must have the following minimum requirement:

- 120 VAC power will be provided to supply the Enclosure
- 24 Volt inputs/outputs are preferred
- Fit into a space 250mm high x 250mm deep x 500 mm wide
- 16 – Inputs

- 16 - Relay Outputs
- PLC technical documents/manuals will be permitted provide they are free of additional notes and writings and contain only original manufacturer information. Note : Additional backup PLC (Recommended)

8. Evaluation & Judging Criteria

Competition judging and evaluation will be done by judges with supervision from the competition captain. The captain will be a Skills Canada - Nova Scotia Provincial Technical Committee (PTC) member.

Judging Criteria:

- Observance of safety and housekeeping rules;
- Interpretation of diagrams and specifications;
- Installation techniques;
- Selection and connection of conductors;
- Program development;
- Functionality of process system.

Item	Point Value
Personal safety	50
Installation of wiring	300
Controller programming techniques	150
Completed project functions	500
TOTAL	1000

9. PTC Contact Information

Name	Employer	Email
John Harding (NTC Member)	IBEW Local 625 JATC	jharding@ibew625.ca

