



## Contest Description

Edmonton Expo Centre, Edmonton

May 8 & 9, 2024

<b>EVENT:</b> Industrial Control	<b>LEVEL:</b> Post-Secondary																						
<b>WORLD SKILLS TRADE #:</b> 19	<b>LOCATION:</b> Hall C, Edmonton Expo Centre, Edmonton																						
<b>DURATION:</b> 12 hrs. (Two Days)																							
<b>COMPETITION SCHEDULE:</b>																							
<b>May 8:</b>	<b>May 9:</b>																						
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*Please Note: This document is subject to change as competition information is updated. Competitors are responsible for staying up to date with the most recent information. Check the footer for last updated date. Changes will be highlighted in yellow.*

### CONTEST INTRODUCTION

Description of the associated work role(s) or occupation(s).

<https://skillsalberta.com/skills/industrial-control/>

### Purpose of the Challenge

Install and program an industrial control system.





### Skills and Knowledge to be tested

Designing, installing, and commissioning of an automated process using a Programmable Logic Controller (PLC).

### CONTEST DESCRIPTION

#### Tasks that may be performed during the contest

- Interpreting and using electrical designs, diagrams and a process flow chart to assemble a functional control system.
- Installing various industrial cables and raceways to a wall mounted control panel.
- Programming a PLC, to meet project requirements.
- Installing and commissioning terminal components (push buttons, limit switches, pilot device, 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 and fault finding on actual project.
- Proper Occupational Health and Safety procedures

#### Prerequisites

- 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.
- Effective use of allotted time

### EQUIPMENT, MATERIAL, CLOTHING

#### Equipment and material provided by Skills Canada Alberta (SCA)

- All required materials to assemble the project
- Conduit Bender
- Cordless Drill
- Power bar
- Step Ladder





**COMPETITORS WILL BE REQUIRED TO USE THE MATERIAL AND EQUIPMENT PROVIDED BY SCA.  
ALL OTHER MATERIAL AND EQUIPMENT WILL BE REMOVED FROM THE SKILL AREA IF NOT PRE-APPROVED.**

**Equipment and material provided by the Competitor**

- Programmable Logic Controller, communication cable and software. Laptop computer with appropriate operating system and PLC software. Computer & PLC need to be free of all pre-programmed PLC files. Computer will be inspected by the Provincial Technical Committee (PTC) prior to usage.
- The PLC must have the following minimum requirement:
  - 120 VAC power will be provided to supply the Enclosure
  - 24 Volt DC Inputs and Outputs
  - Fit into a space 250mm high x 250mm deep x 500 mm wide
  - 16 - Inputs
  - 16 -Relay Outputs
  - Internal Battery (if applicable)
  - PLC technical documents/manuals will be permitted provide they are free of additional notes and writings and contain only original manufacturer’s information.
  - Additional backup PLC (Recommended)
- DC Power Supply (120VAC:24VDC) (if required for competitors PLC)
- Multimeter
- Complete set of pliers (diagonal cutting, needle nose, electrician’s, terminal crimper, slip-joint type)
- Complete set of screwdrivers (Phillips, Robertson, Slotted or Standard)
- Level(s)
- Wire strippers
- Electrician’s knife (utility knife not allowed)
- Metric measuring tape
- Ruler, straight edge, and/or T-square
- Metal saw (Hack saw-recommended 32TPI) & mitre-box/vise
- Flat and round metal file with handle
- Hammer
- Centre punch
- Set of metal drill index
- Knockout punches and/or carbide hole saw (22 mm) or Unibit
- Full compliment of screwdriver tips for cordless drill (short & long including nut drivers)
- Set of termination screwdrivers (slotted)
- Adjustable wrench
- Allen keys (metric and imperial)
- Any additional tools are subject to approval from Provincial Technical Committee Chair prior to competition start.
- No additional power tools and no pre-fabricated templates allowed.





**Required clothing provided by the competitor.**

- Proper work site clothing (no shorts allowed)
- Long sleeves are recommended for the installation portion of the project

**SAFETY REQUIREMENTS**

**Safety workshop**

Upon arrival at the Skill area, Competitors will participate in a Safety workshop and they will be expected to work and maintain a safe working area during the competition. Any Competitor breaking any health, safety and environmental rules, may be required to undertake a second safety workshop, this will not affect the Competitor’s competition time.

**List of required personal protective equipment (PPE) provided by Competitor.**

- Safety Glasses with side shields
- CSA approved Safety Shoes
- Protective Gloves (high dexterity)
- Hearing protection
- Hard Hat
- Lockout Hasp for Main Disconnect

**ASSESSMENT**

POINT BREAKDOWN	/100
Measurements	20
Wiring & Components Installation	42
Functionality	30
Safety practices	8

**Tie (No ties are allowed)**

- Tiebreaker #1: The Competitor with the highest score in the Wiring & Workmanship will be declared the winner.
- Tiebreaker #2: The Competitor with the highest score in the Functionality will be declared the winner.
- Tiebreaker #3: The Competitor with the highest score in the Installation Measurements will be declared the winner.





### Test Project change at the Competition

Where the Test Project has been circulated to Competitors in advance, PTC shall change a maximum of 30% of the work content. Please refer to the Competition Rules.

### ADDITIONAL INFORMATION

#### Skills Canada Alberta Regional and Provincial Rules and Regulations

[Regional and Provincial Rules and Regulations](#)

#### Lunch

Lunch for competitors will be provided by Skills Canada Alberta.

#### Parking & Venue Maps

<http://edmontonexpocentre.com/attend/parking/>

Parking is FREE for all attendees.

#### Opening Ceremonies / On-site Provincial Competitor Registration

Opening Ceremonies for the PSCC will take place on Tuesday May 7, 2024, at 6:00 pm in Hall D of the Edmonton EXPO Centre. Admission is free, and everyone is welcome to attend. It is important to note that competitor registration will open immediately following the Opening Ceremonies.

#### Awards Ceremony

The Awards Ceremony will take place on Thursday May 9, 2024, at 6:30 pm in Hall D of the Edmonton EXPO Centre. Admission is free and everyone is welcome to attend. The Awards Ceremony will be shown live at <http://skillsalberta.com/>

#### Team Alberta Information

Team Alberta will be selected at the PSCC Awards Ceremony. Gold medalists will then be eligible to participate at the Skills Canada National Competition (SCNC) on May 27- June 1, 2024, in Quebec City, QC. It is recommended that competitors review the SCNC contest description to be familiar with the national contest description and project at <http://www.skillscanada.com/>.

During the PSCC Awards Ceremony on Thursday May 9, 2024, gold medalists will be given their Team Alberta information package and will confirm their participation in the SCNC. Students must be present at the Awards Ceremony to claim their position on Team Alberta. If the Gold medalist is not able to attend SCNC, the next top ranking individuals will be asked to participate. If a student is not able to attend the Awards Ceremony a letter confirming the student's interest in Team Alberta participation must be emailed to [javierad@skillsalberta.com](mailto:javierad@skillsalberta.com) prior to the start of competition on May 8, 2024.





Please prepare your students in advance to accept a position on Team Alberta and outline how your school will support their participation.

### Questions?

Please contact Whitney Koop at [whitneyk@skillsalberta.com](mailto:whitneyk@skillsalberta.com) if you have any questions regarding the Contest Description.

### COMMITTEE MEMBERS

- Ben Cooney – SAIT
- Neil Schlosser – NAIT
- Peter Friesen – NAIT
- Sean Costello – Pembina Pipeline
- Zack Hartle – SAIT

