

How to get CSA Electrical Approval for your project

CSA Electrical Approval is required By Ontario Electrical Safety Code (OESC) rule 2-022 and rule 2-024

CSA Electrical requirements include, but are not limited to the following:



Step #1

Select an Enclosure

- No holes larger than a finger
- Lid or door must be in place and removal must require a tool
- Large enough to properly mount components and accommodate organized wiring



Step #2

Power Entry

- Use Strain relief for all high voltage power entry/exit (above photo left)
- Or use CSA approved power entry module (above photo right)

Step #3

Wire Gauge

- Use the appropriate wire gauge (size depends on current draw)

AWG (Wire Size)	Approximate Current
10	< 30 Amps
12	< 20 Amps
14	< 15 Amps
16	< 12 Amps
18	< 10 Amps
20	< 7 Amps
22	< 5 Amps

- Also be aware of the voltage rating on the wires insulation. Voltage applied should be less than the insulation rating.

Step #4

Correct Fusing



- Fuse the live (BK wire)
- Put Labels on the box indicating each fuses amp value
- What fuse should I use?
 - Fuse should have CSA label
 - Ceramic ideal, glass is ok in lower power applications
 - Example:
 - If my device draws maximum 200 Watts of power and the input voltage is 110 VAC then a 2 Amp fuse would be reasonable ($200W/110V=1.8$ Amps).

Step #5

Proper Grounding



- Attach all ground wires to a ground stud
- Scrap away paint before installing the ground stud to ensure a good electrical connection
- Ground wires MUST BE GREEN

Step #6

Use CSA approved parts

- Use CSA approved parts in the high voltage/ high power section of the wiring
- CSA approved parts will be marked with a symbol that certifies it as an approved part. Please refer to Appendix A. for a list of approved symbols.
- Parts in the low voltage/low power section do not require approved parts
- Example - The below supply is approved to be used as a component in your enclosure, however it cannot be used as a standalone supply.



Step #7

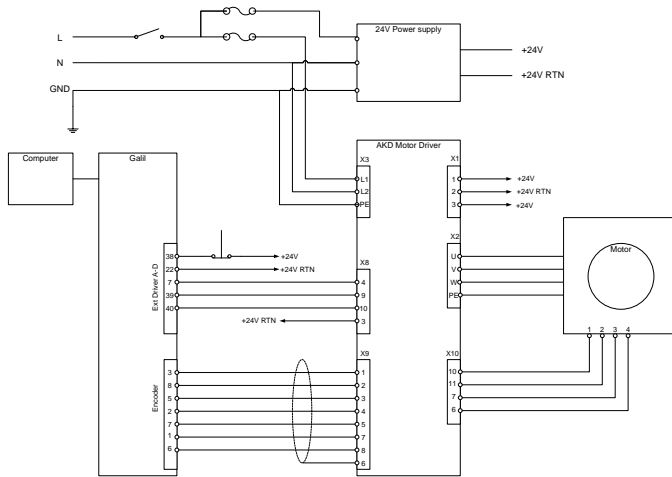
Use appropriate wire colours

- BLACK for Live wire
- WHITE for Neutral wire
- GREEN for GND

Step #8

Wiring diagram/Schematics

- Include a wiring diagram/schematic with your project to be inspected (example below)



Step #9

Pre-inspection Check

- Have one of the MME Techs perform a Pre-inspection check
- Andy Barber, Neil Griffett, Jim Merli



Step #10

Inspection

- Have the project inspected by a field evaluation inspector (Jim Merli can coordinate)
- The inspector will apply a recognized field evaluation stick to the project if it passes inspection. Please refer to Appedix A for a list of recognized field evaluation stickers.

Appendix A.

2-7-29

Ontario Electrical Safety Code - **Bulletins**

Bulletin 2-7-29 **Approval of electrical equipment** **Rules 2-022 and 2-024**

Issued May 2012
Supersedes Bulletin 2-7-28

Scope

- (1) Approval requirements
 - (a) Recognized certification marks
 - (b) Recognized field evaluation marks
 - (c) Recognized component marks
- (2) Approval of devices on class 2 circuits

(1) Approval requirements

The Ontario Electrical Safety Code and Ontario Regulation 438/07 recognize certification organizations accredited by the Standards Council of Canada to approve electrical equipment (Rule 2-024). Only equipment bearing one of the marks or labels shown in the following tables is approved.

To meet the requirements of the Ontario Electrical Safety Code, equipment must be approved to Canadian standards. This is signified by the "C" outside the Curtis Strauss, Entela, ETL, FM Approvals, IAPMO, IWH, LC, MET, Nemko, OTL, QAI, QPS, UL, UPC and USPC marks. The "C and US" shown outside the CSA, ETL, LC, NSF, TUV America, TUV Rheinland and UL marks, indicates the equipment with those marks is also compliant with United States standards.

Underwriters Laboratories mark without the "c" at the eight o'clock position, indicates the equipment is compliant with United States standards.






















, CE mark, is manufacturer self-declaration mark and is not recognized in Canada.







Note 1

For the most updated list of recognized certification and field evaluation marks and certification or field evaluation agency info, visit the Electrical Product Safety section of www.esasafe.com.










(a) Recognized certification marks











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Certification Body	Marking		
Canadian Standards Association (CSA)			
Curtis Strauss			
FM Approvals			
IAPMO			
Intertek Testing Services	 		
Labtest Certification (LC)			
Met Laboratories (MET)			
Nemko			
NSF International			
OMNI Environmental Services Inc			
Quality Auditing Institute			

QPS	
TUV America	
TUV Rheinland	
Underwriters' Laboratories of Canada (ULC)	
Underwriters' Laboratories Inc.	 

(b) Recognized field evaluation marks



Inspection Body	Marking
Canadian Standards Association (CSA)	 
Electrical Safety Authority (ESA)	  <p>See Note 2</p>
Intertek Testing Services	    <p>See Note 2</p>
Labtest Certification (LC)	

<p>MET Laboratories</p>		
<p>Nemko</p>		
<p>Quality Auditing Institute</p>		
<p>QPS</p>		 <p>See Note 2</p>
<p>TUV America</p>		
<p>TUV Rheinland</p>		
<p>Underwriters Laboratories of Canada (ULC)</p>		

Note 2

"PANEL ONLY" label identifies that the panel has been evaluated to the SPE-1000. It does not cover equipment that is added or connected to the panel.

(c) Recognized component marks

Certification Body	Marking
<p>Canadian Standards Association (CSA)</p>	
<p>Underwriters Laboratories Inc. (UL)</p>	

Note 3

Electrical components bearing these marks may have restrictions on their performance or may be incomplete in construction, and are intended to be used as part of a larger approved product or system. The recognized component marks are found on a wide range of products, including some switches, power supplies, printed wiring boards, some kinds of industrial control equipment and thousands of other products.

(2) Approval of devices on class 2 circuits

Electrical equipment does not require approval if it is connected to the load side of an approved class 2 power supply whose power output does not exceed 100 V•A and is operating at less than 42.4 V peak or dc with the exception of:

- (i) luminaires, decorative lighting strings, signs or displays with incandescent or halogen lamps;
- (ii) luminaires with Light Emitting Diode (LED) lamps;
- (iii) luminaires, decorative lighting strings, signs or displays incorporating a ballast with operating voltages greater than 42.4 volts peak or 42.4 DC;
- (iv) electromedical equipment;
- (v) equipment for hazardous locations as defined under OESC Sections 18 and 20 of the Code; or
- (vi) equipment that incorporates heating elements.

Appendix B note intended for item (ii) does not require decorative light strings, signs or displays with LED lamps to be approved if connected to a class 2 power supply.