

Ref No: I10-125

Wiring Harnesses No. 2

(Supersedes INFORMS – Wiring Harnesses No. 1)

Existing Certification not affected

Date: October 29, 2010

Apply any time to have your products evaluated

Announcing: Update of CSA Certification Program for Wiring Harnesses

Class No: 5852 01, HARNESSSES - Wiring
5852 81, HARNESSSES - Wiring - Certified to US Standards

Who is affected?

Manufacturers of wiring harnesses.

What do you do?

1. This publication outlines certification revisions that do not affect your currently certified product designs.
2. Please contact CSA engineering staff if you have questions or need information concerning this publication and how it applies to you.
3. If you would like to arrange for an evaluation of new products to the revisions, initiate a certification project by contacting our Client Services Centre at 1-866-797-4272. Please supply appropriate supporting documentation*. If testing is needed, we will inform you of the samples required.

*Technical information as well as company name, address, factory locations and CSA file number or master contract number (if assigned) when applying.

Introduction:

The CSA wiring harness program was previously outlined as a CSA Certification program in CSA International INFORMS Wiring Harnesses No. 1.

This document clarifies some details of the program.

Major Revisions:

Wiring harnesses are constructed solely as accessories to be used within or interconnecting specific equipment and are therefore considered to be a component.

Wiring harnesses are certified only for use as a component where suitability shall be determined in the end product evaluation.

See attachment 1 for updated details of the wiring harness program.

For questions specific to your file or products contact your regular CSA International engineering staff.

Go to <http://directories.csa-international.org/> and enter your Master Contract # and the class numbers associated with this Informs to view your certified products.

For technical questions on this Informs

Contact Ziggy Psarski
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ATTACHMENT 1

Major Revisions

INFORMATION SHEET ON CSA PROGRAM FOR WIRING HARNESSSES

SCOPE

This program applies to wiring harnesses that consist of an assembly of various numbers, sizes and types of wire and/or flexible cord, with or without integral devices such as terminals, special use connectors, special use attachment plugs and splices. The devices may also include components such as LED's, resistors, etc. not covered by a CSA Certification Program.

This program applies to wiring harnesses which are designed and intended to be installed as components of specific equipment or appliances, such as part or all of the wiring of a single appliance. It is not intended that a stand-alone equipment (e.g., a portable lamp) be certified as a wiring harness.

Wiring harnesses are generally limited to internal wiring of equipment (i.e. totally or partially enclosed and protected from mechanical abuse) but may be used in interconnecting applications where equipped with flexible cord and/or AWM rated Class II in accordance with CSA Standard C22.2 No. 210. Harnesses are not suitable in applications where exposed to oil and other liquids or moisture unless suitably evaluated in the end use application. Wiring harnesses are not acceptable in hazardous locations.

A wiring harness consists of certified or non-certified components such as crimp-type wire connectors and terminations, special-use connectors, moulded-on connectors and body caps, EMI filters, transformers, lampholders, switches, terminal blocks, accepted extra-low voltage (30V and less) Class 2 circuit components (e.g. IC's, LED's switches, connectors mounted on PCB's). The wire utilized in the assembly of harnesses includes equipment wire, flexible cord or appliance wiring material (AWM) and may also include the use of extruded insulating tubing or coated electrical sleeving. A wiring harness may also consist of Certified wire types in various lengths, cut and stripped with or without additional components, assembled to customer's specifications.

Evaluation associated with the acceptability within specific equipment or appliances is not included under the wiring harness program. Final evaluation based on suitability of the harness in the equipment or appliance is conducted at the time of end-product Certification.

This program does not apply to power supply cords or cord sets covered by CSA Standard C22.2 No. 21 or products covered by other current CSA International certification programs.

Wiring harnesses shall be listed in one of the following manners:

1. **General Applications** – This listing service is intended to provide verification that harnesses are constructed in accordance with a typical drawing or parts list provided by the equipment manufacturer. Harnesses are made based on customer specifications (typically a harness assembly drawing) and are not subject to individual investigation. (i.e part or catalogue numbers are not documented) Harnesses listed for general applications also include those used in Class 2 Circuits and include wire lengths, cut and stripped without additional components.
2. **Design Specific** – Harnesses are listed within this category where electrical ratings (i.e. temperature, voltage, and /or current) are assigned.

Standards:

CSA and UL Standards used in product evaluation include but are not limited to the following:

C22.2 No. 0	- General Requirements, Canadian Electrical Code Part II
C22.2 No. 21	- Cord Sets and Power Supply Cords
C22.2 No. 42	- General Use Receptacles, Plugs and Similar Wiring Products
C22.2 No. 43/ UL 496	- Lampholders
C22.2 No. 49 /UL 62	- Flexible Cords and Cables
C22.2 No. 65 / UL 486A-486B	- Wire Connectors
C22.2 No. 75 / UL 83	- Thermoplastic-Insulated Wires and Cables
C22.2 No. 127	- Equipment and Lead Wires
C22.2 No. 153 / UL 310	- Quick-Connect Terminal
C22.2 No. 182.1/ UL 1682	- Plugs, Receptacles and Cable Connectors of the Pin and Sleeve Type
C22.2 No. 182.2	- Industrial Locking Type, Special Use Attachment Plugs, Receptacles and Connectors
C22.2 No. 182.3	- Special Use Attachment Plugs, Receptacles and Connectors
C22.2 No. 188 / UL 486C	- Splicing Wire Connectors
C22.2 No. 198.1 / UL 224	- Extruded Insulating Tubing
C22.2 No. 198.3 / UL 1441	- Coated Electrical Sleeving
C22.2 No. 210	- Appliance Wiring Material Products
UL 66	- Fixture Wire
UL 83	- Thermoplastic Insulated Wire and Cable
UL 498	- Electrical Attachment Plugs and Receptacles
UL 758	- Appliance Wiring Material
UL 817	- Cord Sets and Power Supply Cords
UL 1977	- Component Connectors for use in Data, Signal, Control and Power Applications

GENERAL

Wiring harnesses covered by this program are subject to the following:

1. Wiring harnesses are CSA Certified only for use as components of other assemblies where the suitability of each combination is determined by the CSA International (or other NRTL, where applicable).
2. Wiring harnesses are not specifically investigated with regard to ampere/voltage ratings of the wire and components, unless they have been designated as “design specific”. The wiring harness is still subject to investigation for suitability in the end-use product.
4. Wiring harnesses are normally constructed in accordance with a harness diagram and are designed for a specific application as indicated on the diagram or carton.
5. A wiring harness may consist of a single wire cut and stripped in accordance with a harness diagram.
6. **Components certification:**
- 6(a) Wiring harness intended for use in Canada, with CSA Mark

For a Design Specific harness all components used in other than extra-low voltage Class 2 circuits shall either be CSA certified type or shall be evaluated to the relevant CSA Standard or shall be partially tested for acceptance in the particular equipment with the restriction indicated in the certification report and record. Otherwise, uncertified components shall be identified as such under Conditions of Acceptability and subject to evaluation in the end use product.

For a General Application harness, uncertified components shall be identified in drawings provided by end product manufacturers and shall be investigated as part of the end product.

6(b) Wiring harness intended for use in Canada and the USA, with CSA C US Mark:

For a Design Specific harness all components used in other than extra-low voltage Class 2 circuits shall either be CSA certified C- US type or shall be evaluated to the relevant CSA and UL standards or shall be partially tested for acceptance in the particular equipment with the restriction indicated in the certification report and record. Otherwise, uncertified components shall be identified as such under Conditions of Acceptability and subject to evaluation in the end use product.

For a General Application harness, uncertified components shall be identified in drawings provided by end-product manufacturers and shall be investigated as part of the end product.

6(c) Wiring harness intended for use in the USA, with CSA US Mark:

For a Design Specific harness all components used in other than extra-low voltage Class 2 circuits shall either be CSA certified for US type or shall be evaluated to the relevant UL standard or shall be partially tested for acceptance in the particular equipment with the restriction indicated in the certification report and record. Otherwise, uncertified components shall be identified as such under Conditions of Acceptability and subject to evaluation in the end use product.

For a General Application harness, uncertified components shall be identified in drawings provided by end-product manufacturers and shall be investigated as part of the end product

Components which are not CSA certified but listed by another NRTL shall be accepted in accordance with the existing CSA International procedures.

Components which are not CSA certified, nor NRTL listed, but approved as components only, must be identified as such on the applicable harness drawing.

CONSTRUCTION REQUIREMENTS

Because of the wide variety of electrical components that might be incorporated in the assembly of wiring harnesses, the following are general requirements for certified and non-certified components to be used:

- (a) Except as permitted in Item (b), CSA Certified and/or UL approved insulated wires and flexible cords tubing, plugs, receptacles, connectors, splices and terminals shall be used.
- (b) Where a non-certified component is used in a Design Specific harness, samples shall be submitted for the applicable tests to the relevant CSA and/or UL Standard, as applicable. Where a non-certified component is accepted on this basis, retesting of such component may be required in accordance with CSA procedure on retesting.

Manufacturer of a harness may request the un-certified component to be identified as such and to be evaluated in the end-product.

Where a non-certified component is used in a General Application harnesses, it shall be identified in drawings provided by end-product manufacturers and shall be investigated as part of the end product

For all types of harnesses, non-certified components shall be identified in the production assembly drawings, used by the harness manufacturer.

Manufacturer of a harness may request the un-certified component to be tested to applicable standards, to avoid testing in the end-product.

Note: Extruded insulating tubing (CSA Standard C22.2 No. 198.1 / UL 224) may not be chemically diluted.

- (c) Moulded type, plugs and connectors made by the wiring harness manufacturer shall comply with the applicable requirements of the latest edition of CSA Standard C22.2 Nos. 21, 42, 65, 182.1, 182.2, 182.3 and 188 and/or UL Standards 817, 498, 486A-486B, 1682, 1977, 486C as needed for the application.
- (d) Where non-certified components are used and the entire harness is for use in extra low potential Class 2 circuits, the wiring harness shall be marked as in Item (d) of Markings.
- (e) Where devices such as crimp-on type wire connectors and quick-connect terminals are used, installation tooling and wire sizing shall be in accordance with the connector manufacturer's recommendation as documented in the CSA Certification files covering the product.

Notes:

i. Certain Canadian Electrical Code, Part II Standards require that wiring connected to different circuits be insulated for the highest voltage involved unless they are separated by insulating barriers or segregated by some means which ensures permanent separation of the different circuits. When it is required to have extra-low-voltage circuit conductors along with conductors of other circuits in the same wiring harness, the conductors of all circuits must be suitable for the maximum voltage which is present in the wiring harness. The use of insulating barriers is permitted in an end-product application, but the use of such insulating barriers in the construction of wiring harnesses is not acceptable.

ii. It is the responsibility of the end-use product Certification personnel to evaluate the wiring harness specification drawing for compliance of the wiring harness in the final equipment with requirements of the applicable CSA Standard, as wiring harness manufacturers build the wiring harnesses according to the specification drawings of their customers.

APPLICATIONS

- (a) Representative samples are required for examination with regard to workmanship and testing as required for "Design Specific" wiring harnesses. For harnesses listed for "General Applications" acceptance will cover the broad categories of the wiring materials and devices submitted. Custom harnesses shall be covered as "Design Specific", acceptance based on specific part or catalogue numbers.
- (b) The manufacturer's agreement, in writing, to comply with the applicable Construction Requirements as outlined in this Information Sheet, shall be provided. The applicable requirements shall be recorded in the CSA Report.

MARKING

The following shall be marked on a tag or label attached to each bundle of wiring harnesses or on each carton containing wiring harnesses:

- (a) Submitter's name or recognized trademark;
- (b) Customer's part or drawing number; (applicable to "Design Specific" wiring harnesses only)
- (c) The electrical ratings (if applicable);
- (d) "For use in extra-low voltage Class 2 circuits only" where applicable
- (e) The wording "CAUTION; NOT FOR INTERRUPTING CURRENT" for harnesses not evaluated for compliance with overload current tests; and
- (f) The CSA Mark with the adjacent "C – US" indicator, as applicable.

The additional statement is also included:

Note: Jurisdictions in Canada may require markings to be also in French. It is the responsibility of the Manufacturer to provide bilingual marking, where applicable, in accordance with the requirements of the Provincial Regulatory Authorities

For harnesses containing uncertified components, a drawing identifying such components shall be included with the smallest packaging unit.

TYPICAL PRODUCT DESCRIPTION IN CERTIFICATION REPORT:

A: For General Applications Listing:

A general description of the harness. For harnesses employing crimp-type wire connectors and terminals, reference is made to the use of a proper crimping tool as supplied by or recommended by the connector manufacturer. Conductor ends of stripped wires shall be tinned or solder dipped. See Figures 1 to X for drawings representative of the wiring harnesses covered by the Report.

B: For Design Specific Listing:

The following information is applicable as a minimum:

- a) The specific catalogue or part number and general description each of the components comprising the harness;
- b) A complete description of each of the components used within the harness. This would include the following as applicable: Cable and associated lengths , Connectors, Housings, Terminal Blocks, Strain Reliefs, etc.
- c) Wiring harness assembly drawings detailing the construction and components of each catalogue / part number, also identifying uncertified components if applicable.

TESTS

For harnesses listed for use in general applications, no testing will be required.

For design specific harnesses, tests will be selected based on the required ratings or use of uncertified components. Temperature test and cycling heat test shall be performed using CSA Standard C22.2 No. 21 as a guide.