



Canadian Standards Association
Etobicoke, Ontario
To the Part I Committee

Date: April 16, 2003

Title: Conductors of Different Systems, Rules 12- -904 and 12 3032

Submitted by: Ken McLennan of Ken McLennan Inc., Islay Alberta, Tel: (780) 744-2149, Fax: (780) 744-2394 on March 14, 2002.

Proposal:

1. Revise Subrule 12-106 as follows:

Revise Subrule (2) to read as follows:

- (2) A multi-conductor cable shall be permitted to contain low voltage circuits of different systems where the voltage rating of the cable is at least that of the system with the highest voltage.

Add a new Subrule 12-106(3) and renumber the remaining Subrules to suit.

- (3) A multi-conductor cable shall not contain circuits connected to both low voltage and high voltage system.

2. Revise Subrule 12-904 as follows:

Revise Subrule (2) as follows:

- (2) No raceway or compartment of a multiple-channel raceway containing conductors connected to low voltage systems shall contain conductors that are connected to high voltage systems except where the conductors:
 - (a) Same as existing.
 - (b) Same as existing.
 - (c) Delete.

Add a new Subrule (2) and renumber the remaining Subrules to suit.

- (3) A raceway or compartment of a multiple-channel raceway shall be permitted to contain conductors that are connected to different low voltage systems providing the conductors are all insulated for the highest system voltage.

3. Revise Rule 12-3032 as follows:

Revise Subrule (1) to read”

- (1) Conductors that are connected to low voltage systems shall not be installed in the same box, cabinet, or fitting with conductors that are connected to high voltage systems unless:
 - (a) Same as existing.
 - (b) Same as existing.
 - (c) Same as existing.

Add a new Subrule (1) and renumber the remaining to suit.

- (1) Where the conductors are all insulated for at least the same voltage as that of the system having the highest voltage, conductors that are connected to different low voltage systems shall be permitted to be installed in the same box, cabinet, or fitting.

Reasons for Request: The rules governing installation of conductors connected to different systems in cables, raceways, and boxes having traditionally been awkward to apply to say the least. There has been no problem to my knowledge where the provisions of “supply and/or control or remote devices” has been implemented permitting conductors of different systems to be installed together. However, the application of that provision, although often used, requires some creativity in some cases.

The NEC has, for some time, permitted mixing conductors of different systems where the voltage does not exceed 600 V. I believe there should be no concern about mixing conductors connected to different low voltage systems as long as the conductors are insulated for the highest voltage encountered.

Chair’s Comments: I agree with the submission.

Subcommittee Deliberations: There were eleven responses where six members were in favour of the proposal and five members not in favour.

Some of the comments for rejecting the proposal are:

1. Existing rule is adequate
2. Indiscriminate mixing of 120/208; 120/240 and 347/600 both single and polyphase AC and DC in same raceway or enclosure without any clearances may be a safety issue.
3. Problems of cross-talk between power conductors and signal and control circuits cause problems which are difficult to detect and control.
4. Conductors of different systems could set up potential ground loops between the different systems and introduce objectionable currents.

Subcommittee Recommendation: Since there is no consensus, the recommendation is to reject the proposal and close the subject.