

# Necessity of NFPA 70 and 79 compliant cables



In the United States there are regulations for what cables can be used based on service conditions including the intended purposes, service spaces, and wiring methods. These conditions are stipulated in the National Electrical Code (NEC), commonly known as NFPA 70.

NFPA 79 is rated a supplementary standard for NFPA 70 to cover the category of industrial machinery. When NFPA 79 was revised to produce the 2012 edition (coming into effect in July 30, 2011), section 12.2.7.3 banning the use of AWM cables, which was included in the 2007 edition, was deleted, and chapter 12.9 was added. This chapter permits the use of AWM cables under specific conditions.

Accordingly, both AWM cables (UL recognized) and UL listed cables are now usable within the scope of NFPA 79; however, it is necessary to note that the conditions stipulated in chapter 12.9 of NFPA 79 must be satisfied when using AWM cables.

When using listed cables, it is necessary to select cables appropriate for the conditions of use (intended purposes, wiring methods, wiring locations, current, voltage, etc.) as the cables that can be used differ depending on such conditions. Refer to, page 107-108 (NFPA 70, NFPA 79 Compliant Cables List) for selecting cables.

The table below shows the differences between UL listed cables and AWM (UL recognized) cables.

Cable certification type	Description
UL listed cable 	A cable can be used as a product (regarded as a complete product) . (On-site wiring is allowed in accordance with NFPA 70 and NFPA 79.)
AWM (UL recognized) cable 	A cable can only be used as a component of a listed product (regarded as part of a product) .

## CL2 and CL3 rated cables

Wiring in accordance with NFPA 79 in general requires the use of MTW cables; however, in the case of control wiring, the use of Class 2 (CL2) rated cables (for configurations with Class 2 circuits) and Class 3 (CL3) rated cables (for configurations with Class 3 circuits) is allowed.

Overall diameters of cables for Class 2 and Class 3 circuits can be reduced compared to MTW cables (to overall diameter almost equivalent to those of conventional AWM cables), providing advantages such as improved flexibility for easier wiring work.

In addition to CL2 rated cables, upwardly compatible cables, namely CL3, PLTC, CM, and CMG rated cables, can also be used with Class 2 circuits.

In addition to CL3 rated cables, upwardly compatible cables, namely PLTC, CM, and CMG rated cables, can also be used with Class 3 circuits.

Kuramo's products are rated as CL3, CM, or CMG, which can be used reliably with Class 2 and Class 3 circuits.

However, there are restrictions on the configuration of control circuits as Class 2 or Class 3 circuits. Please follow the precautions below and the requirements of NFPA 70 and 79 when using these products.

### <Restrictions and Precautions>

#### Configuration

(1) There are restrictions on the configuration of control circuits.

When configuring a circuit as a Class 2 circuit, use of a Class 2 power supply certified by an accreditation organization and Class 2 (CL2) rated or upwardly compatible (CL3, PLTC, CM, or CMG) cables is required.

When configuring a circuit as a Class 3 circuit use of a Class 3 power supply certified by an accreditation organization and Class 3 (CL3) rated or upwardly compatible (PLTC, CM, or CMG) cables is required. (NFPA70 Article 725)

(2) When configuring a circuit as a Class 2 or Class 3 circuit, there are limitations on the power supply and voltage. For details, refer to NFPA 70 Article 725.121 and Tables 11 (A) and 11 (B) .

#### Wiring

(1) When using electric wires with different withstanding voltages in the same duct or enclosure, separate them using partition plates or racks, or provide a sufficient space between the wires. (NFPA 79-2007 Section 13.1.3, and NFPA 70 Section 725.136)

If it is impractical to separate them or provide a sufficient space, use wires with the same rated voltages as the largest one in the wiring.

Note: The above instructions also apply to wiring inside panels.

① At least a 6 mm space is required between a CL2 compliant cable (CL2, CL3, or PLTC) and a power cable (MTW) .

② If no interspace is available within a limited space such as inside a panel, use MTW cables for the wiring of a Class 2 circuit.

For details, please refer to NFPA 70 Chapter 7 Article 725 (Class 1, Class 2, and Class 3 Remote-Control, Signaling, and Power-Limited Circuits) .