



Overview of Low-Voltage and Power-Limited Systems

“Low voltage” is not defined by the *National Electrical Code*. And strictly speaking, optical fiber cable systems, which transmit information using high-speed bursts of light generated by tiny lasers, are “no-voltage.” In developing this book, various terms for describing the different technologies were considered. However, I decided to stick with “Low Voltage and Power Limited” to describe these diverse systems.

Articles covering low-voltage and power-limited devices, wiring, and systems are generally contained in Chapter 7 and 8 of the *National Electrical Code*. However, Chapters 4 and 5 of the *NEC* contains the requirements for:

Low-Voltage Lighting (Article 411)

Intrinsically Safe Systems (Article 504)

Sound Systems (Article 640).

Article 411 Low-Voltage Lighting Systems

Article 411 covers listed low-voltage lighting systems consisting of an isolating power supply. Low voltage show window and landscape lighting are examples of lighting systems required to comply with Article 411 and UL 2108. Figure 1-1

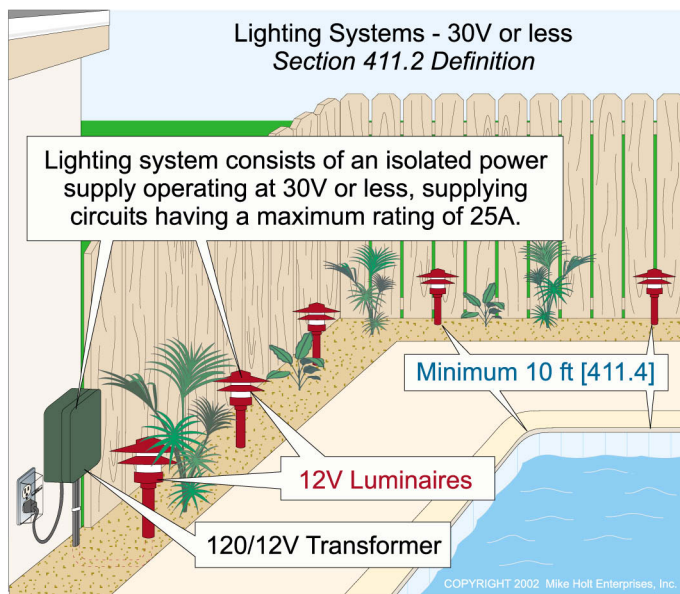


Figure 1-1

Wiring Method. Low-voltage lighting system shall be installed in accordance with the system instructions, which is typically low-voltage cable [110.3(B)].

Article 504 Intrinsically Safe Systems

Article 504 covers the installation of listed intrinsically safe systems, apparatus, and wiring in Class I, II, and III hazardous locations.

AUTHOR'S COMMENT: An intrinsically safe circuit is not capable of developing sufficient electrical energy to cause ignition of a specified gas or vapor under normal or abnormal operating conditions. An intrinsically safe system reduces the risk of ignition by electrical equipment or circuits and offers an optional wiring method in hazardous locations.

Wiring Method. Intrinsically safe equipment shall be wired with CL2, CL3, CM, MP, or PLTC cables.

AUTHOR'S COMMENT: CL2 stands for Class 2 Cable, CL3 is Class 3 Cable, CM – Communication Cable, MP – Multipurpose Cable, and PLTC – Power-limited Tray Cable.

Article 640 Sound Systems

This article covers equipment and wiring for audio distribution of sound and public address, including temporary audio system installations.

AUTHOR'S COMMENT: Permanently installed distributed audio system locations include, but are not limited to, restaurants, hotels, business offices, commercial and retail sales environments, churches, and schools. Temporary installations include, but are not limited to, auditoriums, theaters, stadiums (which use both temporary and permanently installed systems), and outdoor events, such as fairs, festivals, circuses, public events, and concerts.
