

## Electrical Low-Voltage Purpose

To require the permitting and inspection of Classes 1, 2, and 3 low-voltage and power-limited circuits and communication wiring installations.

### Reasoning

Many businesses today are installing low-voltage wiring to meet the need for state-of-the-art technologies such as audio, video, telecommunications, high-speed data transfer, LED lighting, occupancy sensors, etc. But most installers are not familiar with the important *National Electrical Code* safety requirements for the installation of these types of installations. Too often, low-voltage and power-limited systems are not installed properly or inspected for *NEC* compliance and user safety.

### Dangers

There are many important safety reasons to inspect low-voltage installations for *NEC* compliance. Here are just a few of them:

**Audio** - Audio voltages can be as high as 70 volts AC.

**Telephone** - Telephone ringing voltages can be as high as 90 volts AC.

**Network-Powered Broadband Communications Systems** – operate at up to 150 volts.

**Shock hazard** - Incorrectly installed low-voltage wiring may accidentally become energized at line voltages, thus endangering both installers and users.

**Explosion hazards** - Low-voltage wiring within hazardous (classified) locations can easily produce arcs capable of igniting combustible gases.

**Fire Spread Hazards** - Installation of cables through fire-rated walls, floors, and ceilings without proper fire-stops can spread fire or smoke throughout buildings.

**Grounding** - Proper grounding of communication circuits, CATV cables, TV and satellite masts, etc. are essential to prevent fires and electric shock from dangerous potential differences between the electrical systems.

With new types of internet and interactive services beginning to take over the function of traditional telephones, it is even more important that these alternative low-voltage systems be installed safely and reliably in accordance with the *National Electrical Code*.

### Scope

Inspections are for installation materials and methods only. Systems will not be tested for wiring integrity or proper operation. Articles that regulate the installation of low-voltage systems include:

Article 411 - Low-Voltage Lighting

Article 501.150 - Signaling, Alarm, Remote-Control, and Communication Systems Class 1 areas

Article 502.150 - Signaling, Alarm, Remote-Control, and Communication Systems Class 2 areas

Article 503.150 - Signaling, Alarm, Remote-Control, and Communication Systems Class 3 areas

Article 504 - Intrinsically Safe Systems

Article 640 - Sound Systems

Article 720 - Circuits Operating At Less than 50 Volts

Article 725 - Remote-Control, Signaling, and Power-Limited Circuits

Article 727 - Instrumentation Tray Cable

Article 760 - Fire Alarm Signaling Systems

[Article 760 - Part B] Non-Powered-Limited Fire Alarm (NPLFA) Circuits

Article 770 - Optical Fiber Cables and Raceways

Article 800 - Telecommunications (Telephone) Circuits

Article 810 - Radio and Television Equipment

Article 820 - Community Antenna Television Systems

Article 830 - Network-Powered Broadband Communications Systems

*Tables* – Chapter 9 contains tables that apply to limited-energy systems, such as Table 11 for Classes 2 and 3 power limitations, and Table 12 for Fire Alarm power limitations.

## Objective

The practical safeguarding of persons and property through the regulation of installation, maintenance, and repairs to low-voltage and power-limited systems by requiring contractors to be registered with the city, secure permits, and request inspections for wiring installations in other than one- and two-family dwelling units.

## Plan

Any person who engages in the business of installing new low-voltage, power-limited, or communication wiring shall hold a Class 1 or Class 5 electrical license or shall be registered with the city as an LV-PL wiring contractor.

An LV-PL registration shall entitle the holder thereof to engage in the business of, and to secure permits for the installation, alteration, and repair of any low-voltage or power-limited wiring systems.

Such registration does not supplant or replace any licensing required by the state of Tennessee. Contractors shall call for inspections in accordance with Section 10-52 of the Knoxville Code of Ordinances.

## Fees

Registrations shall be issued on a calendar year basis.

All registrations shall expire on December 31.

The fee for an LV-PL registration will be \$150.00. (The same as a Class 2, 3, or 4 license.)

Permit fees for single tenant buildings will be assessed at \$15.00 per floor per system with a base fee of \$35.00 per permit.

Multi-tenant buildings will be assessed at \$15.00 per tenant space per system with a base fee of \$35.00 per permit.

## Exemptions

1. One- and two-family dwellings.
2. Two-conductor bell wiring installed exclusively for a single doorbell.
3. 0-30 volt thermostat wiring when installed by a licensed mechanical contractor for equipment installed under their mechanical permit.
4. Outside and underground wiring.