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Industrialized Housing and Buildings

Technical Bulletin

IHB TB 09-02 – Combination Arc-Fault Circuit Interrupter (AFCI)

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Combination Type AFCI's are required throughout new residential construction in accordance with Article 210.12 of the 2011 National Electrical Code (NEC). This article became effective in the 2008 NEC and has not substantially changed in the 2011 NEC.

An AFCI is a device intended to provide protection from the effects of arc faults by recognizing characteristics unique to arcing and by functioning to de-energize the circuit when an arc fault is detected. Article 210.12 of the 2008 NEC requires that all 120-volt, single phase, 15- and 20-ampere branch circuits supplying outlets installed in dwelling unit family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sun rooms, recreation rooms, closets, hallways, finished basements, or similar rooms or areas to be protected by a **listed AFCI, combination type** installed to provide protection of the branch circuit. The product standard requires specific marking on AFCI devices to indicate the type of protection provided. Previous code editions only required the installation of branch/feeder type AFCI installed to provide protection of bedroom branch circuits.

Note that rooms required to have ground-fault circuit-interrupter protection (kitchens, bathrooms, unfinished basements, garages, and outdoors) in accordance with section 210.8 of the 2008 NEC are not required to be protected by AFCI's.

What is the difference between a combination AFCI and a branch/feeder type AFCI? **Combo AFCI's protect against parallel and series arc faults** while branch/feeder type AFCI's only protect against parallel arc faults. A parallel arc fault is an unintentional flow of electricity between 2 separate wires (line-to-line, line-to-neutral, line-to-ground). However, arc faults may also occur within a single wire. This is known as a series arc fault, i.e., an unintentional flow of electricity over a gap within a single wire.



Series Arc Fault – Unintentional Flow of Electricity over a single wire



Parallel Arc Fault – Unintentional Flow of Electricity between 2 separate wires



Example of a Listed Combination AFCI