

Combination Arc Fault Circuit Interrupters Application Guidelines

Applying 1-pole Combination AFCIs to Shared Neutral Circuits

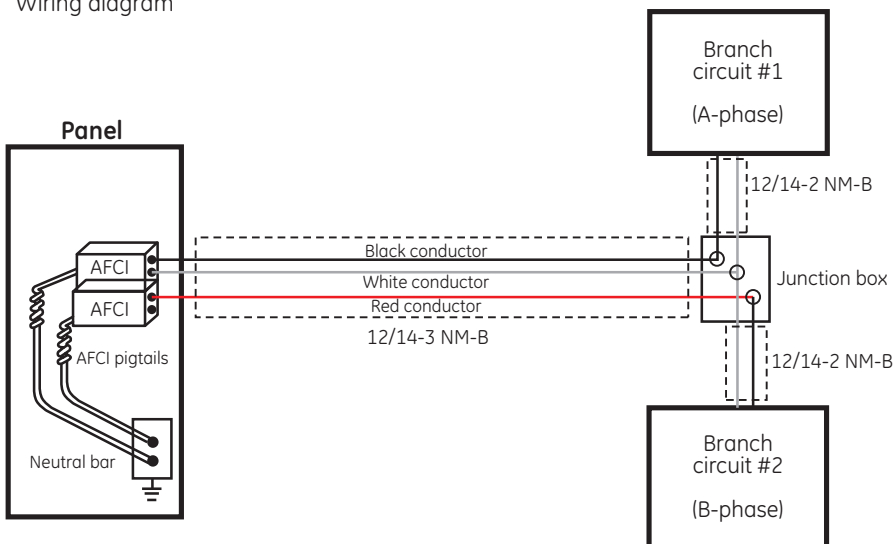
Until now, using a shared neutral (multiwire branch circuits) on arc fault protection circuits required the use of 2-pole AFCI breakers, since the AFCI circuitry uses a ground fault CT to help it detect arcs. But with GE's newly developed combination AFCI technology, no ground fault CT is required, so shared neutral circuits can be used with two 1-pole AFCIs connected together with a handle tie (see Figure 1).

The use of shared neutral circuits produces significant copper savings when two branch circuits are close to each other but far from the circuit breaker panel. A shared neutral circuit uses 3-conductor NM-B wire to join two adjacent circuit breakers in the panel to a junction box near the branch circuit loads/outlets (see Figure 2).

Figure 1.
Two 1-pole AFCIs with
THT104 handle tie



Figure 2.
Wiring diagram



Note: for simplicity the ground wires are not shown



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Selection

The catalog numbers for new combination type AFCIs that are suitable for use in shared neutral circuits are shown below. It is important to note that the **MOD 3** suffix be on the breaker, as the MOD 2 suffix type AFCIs do have ground fault CTs and cannot be used in shared neutrals. MOD 3 breakers are easily distinguishable by their gray cases and black test switches.

Amps	10kAIC Plug-In	22kAIC Plug-In	10kAIC Bolt-On	22kAIC Bolt-On
15A	THQL1115AF2	THHQL1115AF2	THQB1115AF2	THHQB1115AF2
20A	THQL1120AF2	THHQL1120AF2	THQB1120AF2	THHQB1120AF2

Installation

Connecting two 1-pole Combination AFCIs to a shared neutral circuit is easy. Before inserting the AFCIs into the panel, connect the handles together with the handle tie (Cat. No. THT104). Then, as shown in Figure 2, connect the black conductor to the load lug of the first AFI and connect the red conductor to the load lug of the second AFI. The white conductor can be connected to the neutral lug of either AFI. It is not necessary to wire the two neutral lugs together. The second AFI’s neutral lug can remain unconnected.

The handle ties only provide manual on-off capability between one-pole devices. They do not tie the internal trip mechanisms together. Therefore, after installation and energization, **both** of the AFI’s push-to-test switches should be tested in both the up and down positions.

This application complies with all applicable National Electric Codes and UL standards.

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