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
Applying 1-pole Combination AFCIs to Shared Neutral Circuits

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.

<table>
<thead>
<tr>
<th>Amps</th>
<th>10kAIC Plug-In</th>
<th>22kAIC Plug-In</th>
<th>10kAIC Bolt-On</th>
<th>22kAIC Bolt-On</th>
</tr>
</thead>
<tbody>
<tr>
<td>15A</td>
<td>THQL1115AF2</td>
<td>THHQL1115AF2</td>
<td>THQB1115AF2</td>
<td>THHQB1115AF2</td>
</tr>
<tr>
<td>20A</td>
<td>THQL1120AF2</td>
<td>THHQL1120AF2</td>
<td>THQB1120AF2</td>
<td>THHQB1120AF2</td>
</tr>
</tbody>
</table>

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 AFCI and connect the red conductor to the load lug of the second AFCI. The white conductor can be connected to the neutral lug of either AFCI. It is not necessary to wire the two neutral lugs together. The second AFCI’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 AFCI’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.

Information provided is subject to change without notice. Please verify all details with GE. All values are design or typical values when measured under laboratory conditions, and GE makes no warranty or guarantee, express or implied, that such performance will be obtained under end-use conditions.