

Are there certified AFCIs that can be installed into another manufacturer's panelboard?

Q Does UL certify combination AFCI circuit breakers that are intended for use in another manufacturer's panelboard? If so, how can one identify these products and the panelboards in which they can be installed?

A Yes, UL Classifies molded-case circuit breakers, including arc-fault circuit-interrupter combination type and branch-feeder-type circuit breakers for use in other manufacturers' panelboards under the product category Circuit Breakers, Molded-Case, Classified for Use in Specified Equipment (DIXF), located on page 99 in the 2010 UL White Book. The Guide Information can also be found online at www.ul.com/database and entering DIXF in the category code search field.

This category covers molded-case circuit breakers rated 15 to 60 A, 120/240 V maximum that have been investigated and found suitable for use in place of other Listed circuit breakers in specific Listed panelboards, with ratings not exceeding 225 A, 120/240 V ac, to be connected to circuits having an available system short-circuit current of 10 kA maximum. The circuit breakers are Classified for use in specified panelboards in accordance with the details described on the circuit breaker or in the publication provided therewith.

In addition, Classified molded-case circuit breakers may also be Listed with additional features such as a ground-fault trip element, ground-fault circuit interrupter, arc-fault circuit interrupter, secondary surge arrester, transient-voltage surge suppressor, and the like.

A circuit breaker that is Classified *only* is marked on the side with the statement:



Classified CB
Courtesy of Eaton Corporation

“Classified for use only in specified panelboards where the available short-circuit current is 10 kA, 120/240 volts ac or less. Do not use in equipment connected to circuits having an available system short-circuit current in excess of 10 kA, 120/240 volts ac. For catalog numbers (or equivalent) of specified panelboards, refer to Publication No. _____ provided with this circuit breaker. If additional information is necessary, contact [Classified circuit breaker manufacturer's name].”

A circuit breaker that is *both* Classified and Listed is marked on the side with the statement:

“This circuit breaker is Listed for use in circuit breaker enclosures and panelboards intended and marked for its use. This circuit breaker is Classified for use, where the available short-circuit current is 10 kA, 120/240 V ac or less, in the compatible panelboards shown in Publication No. _____ provided with this circuit breaker. When used as a Classified circuit breaker, do not use in

equipment connected to circuits having an available system short-circuit current in excess of 10 kA, 120/240 V ac. If additional information is necessary, contact [Classified circuit breaker manufacturer's name]."

The referenced publication is a compatibility list which tabulates the company name, catalog number, number of poles and electrical ratings of the Classified circuit breaker, in addition to the company name and catalog number of the applicable UL Listed panelboards, and corresponding UL Listed circuit breakers in place of which the Classified circuit breaker has been investigated. The compatibility list also details the maximum permissible voltage and maximum available short-circuit current of the supply system to the panelboard. The Classified circuit breaker is not suitable for the specified application if the system supply characteristics exceed the maximum values indicated in the compatibility list. One copy of the compatibility list is provided with each circuit breaker.

Circuit breakers which are both Classified and Listed have markings as above, with the addition of the Listing Mark, located on the side of the circuit breaker.

Q Can I install a general use ordinary location Listed industrial control panel (ICP) to control a circuit that extends into a hazardous classified location? If not, what ICPs are suitable for use in this application and how can these panels be identified? Are these the same as ICPs that are Listed for installation in the hazardous area?

A No, industrial control panels Listed for use in ordinary locations are Listed under the product category Industrial Control Panels (NITW), and are not intended for controlling circuits extending into a hazardous classified location. Industrial control panels (ICPs) that would be suitable for this application are Listed under the product category Industrial Control Panels Relating to Hazardous Locations (NRBX), located on page 249 in the 2010 UL White Book. The Guide Information for NITW can be located on page 235 in the 2010 UL White Book. The Guide Information for these categories can also be found online at www.ul.com/database and entering the category code NITW or NRBX in the category code search field.

Industrial control panels Listed under NITW are intended for installation in accordance with Article 409 of ANSI/NFPA 70, *National Electrical Code (NEC)* and

unless otherwise marked, are intended for general-use industrial applications for control of heaters, lighting, motors or pump loads, or a combination of these loads, and are intended for installation in accordance with chapter 4 of the *NEC*.

Products Listed under (NRBX) are intended for installation in unclassified (ordinary) locations. They are provided with intrinsically safe (low energy) circuit(s) as indicated on the product, for extension into a hazardous (classified) location.

For intrinsically safe circuits, the energy level available in the hazardous location under normal and abnormal conditions is sufficiently low as not to cause ignition of the specified explosive atmospheres. To maintain the low energy levels, it is necessary that the intrinsically safe and associated equipment be installed and interconnected in accordance with the instructions provided. The intrinsically safe circuit wiring must be routed in a separate raceway or otherwise reliably segregated from all power and other circuit wiring to preclude excessive currents and voltages from being impressed on the intrinsically safe circuit, rendering it non-intrinsically safe.

Control panels intended for installation in hazardous (classified) locations are covered under Control Panels and Assemblies for Use in Hazardous Locations (NNNY), located on page 244 in the 2010 UL White Book.

The UL Mark is a clear indicator regarding the intended application for each of these UL Listed services:

NITW panels: The UL Listing Mark will contain one of the following product identities, "Open Industrial Control Panel," "Enclosed Industrial Control Panel" or "Industrial Control Panel Enclosure."

NRBX panels: The UL Listing Mark will contain one of the following product identities, "Industrial Control Panel Relating to Hazardous Locations" or "Enclosed Industrial Control Panel Relating to Hazardous Locations" and the statement "with Intrinsically Safe Circuit Extensions."

NNNY panels: The UL Listing Mark will contain one of the following product identities, "Control Assembly Body for Hazardous Locations," "Control Assembly Cover for Hazardous Locations" or "Control Panel for Hazardous Locations."

In addition, UL Listed NRBX and NNNY panels will be externally marked to indicate the intended Class, Division and Group associated with the end-installation.