

UL listing of Retrofit Kits

This white paper includes information about UL listing of trip unit retrofit kits on LVPCB (Low Voltage Power Circuit Breakers).

Importance of UL Listing

UL is a world recognized leader in product safety testing and certification. UL Listing is a valuable tool to facilitate acceptance of equipment. For a product to be UL Listed it must pass rigorous examination, testing and surveillance that demonstrate compliance with nationally recognized safety standards.

Requirements to be UL Listed

UL has a category that covers trip devices suitable for use in place of the original trip device of a LVPCB. This is UL Product Category PAYK.

The requirements for listing under Product Category PAYK are:

“The basic standard used to investigate products in this category is ANSI/IEEE C37.59, “IEEE Standard Requirements for Conversion of Power Switchgear Equipment”, which references ANSI/IEEE C37.13, “Low-Voltage AC Power Circuit Breakers Used in Enclosures”, ANSI/IEEE C37.17, “Trip Devices for AC and General Purpose DC Low Voltage Power Circuit Breakers”, ANSI/NEMA C37.50, “Switchgear Low Voltage AC Power Circuit Breakers Used in Enclosures”, and ANSI/UL 1066, “Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures”.

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Challenges of Required Testing

The main test for UL Product Category PAYK is a sequence of 3-Phase, fault interruptions at full voltage and at the maximum rated interrupting current of the breaker. Typically, 635V and up to 85KA.

The test setup consists of the breaker in its enclosure and a short circuit on the load side of the breaker. The fault interruption test sequence is an “O-15S-CO” test. That is, the breaker starts out closed and then the voltage is applied causing a trip open “O”. Fifteen seconds later the breaker is closed into the same fault and the breaker trips open “CO”.

There are several challenges in performing the fault interruption testing required by the standards in UL Product Category PAYK.

The challenges are:

- For most breaker types, used breakers must be utilized since new breakers are no longer available.
- A high-power testing laboratory is required.
- The test is very expensive.

Who offers UL Listed Retrofit Kits

There are only two manufacturers listed under UL Product Category PAYK as shown below in the screen shot from the UL web site.



The screenshot shows the UL Online Certifications Directory search results for the category PAYK. The results table lists three entries: Guide Information, SATIN AMERICAN CORP, and UTILITY RELAY CO LTD. Each entry provides a link to a file containing more information.

Search results		
You may choose to Refine Your Search .		
Company Name	Category Name	Link to File
Guide Information	Trip Devices Certified for Use in Low-voltage AC Power Circuit Breakers	PAYK.GuideInfo
SATIN AMERICAN CORP	Trip Devices Certified for Use in Low-voltage AC Power Circuit Breakers	PAYK.E148994
UTILITY RELAY CO LTD	Trip Devices Certified for Use in Low-voltage AC Power Circuit Breakers	PAYK.E193475

Model number information is not published for all product categories. If you require information about a specific model number, please contact [Customer Service](#) for further assistance.

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Of the two manufacturers listed, Satin American Corp. is no longer in existence.

Utility Relay Co. (URC) with the AC-PRO, AC-PRO-II and AC-PRO-MP is the only existing manufacturer that offers UL Listed retrofit trip unit kits for legacy* LVPCBs.

GE's EntelliGuard retrofit kits are not UL Listed as suitable for use in place of the original trip devices in legacy* Low-Voltage AC Power Circuit Breakers.

Eaton's DigiTrip retrofit kits are not UL Listed as suitable for use in place of the original trip devices in legacy* Low-Voltage AC Power Circuit Breakers.

Is Every Retrofit Kit Offered by URC UL Listed?

No, not every AC-PRO or AC-PRO-II retrofit kit offered by URC is UL Listed.

AC-PRO-II retrofit kits for the following breakers are UL Listed:

DS-206, DS-416, DS-632, AKR-75, K-600, K-800, K-3000, LA-1600

AC-PRO retrofit kits for the following breakers are UL Listed:

DB-50, DS-206, DS-416, DS-632, AK-2-50, AK-2-75, KB Steel, K-600, K-800, K-1600, H-3 Series

URC is periodically adding more breakers to the list of UL Listed trip unit retrofit kits. Contact URC for additional information.

EntelliGuard is a trademark of the General Electric Company.

* Our use of "legacy" breaker means a breaker that originally did not have an electronic trip unit or if it did have an electronic trip unit then the breaker was from a different manufacturer than the manufacturer of the retrofit trip unit.