

UL TECHNICAL GUIDANCE DOCUMENTS

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Product Category (CCN): KCXS-2/7/8, DKUY-2/7, DIYG-7, KCXX-7

Standard Number: 943

Standard Title: Standard for Ground Fault Circuit Interrupters

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Subject: UL 943 “Visual Indicator” Requirement

GUIDANCE:

Handle movement of a circuit breaker is a “visual indication” of the status of the breaker. Circuit breaker type GFCIs provided with instructions noting that when the supervisory TEST button is operated, the “lack” of handle movement indicates a malfunction and that the device will no longer provide GFCI protection and should be replaced, is one acceptable method to provide “visual indication” as required by 6.31.8(A).

BACKGROUND:

A recent revision to UL 943 removes the exemption for the auto monitor function simulated fault test from clauses 6.31.2(D) (open circuit of the trip solenoid) and 6.31.2(E) (open switching semiconductor supplying the trip solenoid) for circuit breaker type ground fault circuit interrupters (GFCIs). Without the exemption, all GFCI's shall either provide the level of protection outlined in Clause 5.16, or comply with the alternate requirements specified in clause 6.31.8. When applying 6.31.8(A), the GFCI shall “visually or audibly indicates if it does not interrupt the electric circuit to all loads, when the manually operated supervisory test function shall be performed, after which the reset button shall be operated”.

RATIONALE FOR GUIDANCE:

UL 943 requires “visual indication” (Clause 6.31.8(A)). In contrast, the Standard for AFCI's, UL 1699, requires that “results of the test shall be made known to the user by a positive visual indication” (Clause 15.2).

Normal operation of a GFCI circuit breaker supervisory test circuit (by pressing the TEST button) results in the user visually observing the handle moving to a middle trip position. In an event of a malfunctioning GFCI circuit breaker, one option is for the user to visually observe that the trip handle does not move after pressing the TEST button.

Since UL 943 does not require a “positive visual indication”, the lack of handle movement is an acceptable “visual indication.” For this to be considered a “visual indication” the GFCI circuit breaker instructions shall indicate that the operation of the supervisory test circuit results in the circuit breaker handle moving to the “tripped” position, and that if this does not occur, it is an indication of a malfunction and the breaker should be replaced by a qualified electrician.

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