

# EntelliGuard\* R Retrofill from GE

## FAQ

Frequently Asked Questions



### 1. When and why should I consider the EntelliGuard R retrofill product from GE?

If you've had a circuit breaker failure, the EntelliGuard R retrofill provides an economical solution to get your operations up and running quickly and safely.

From a preventative maintenance perspective, if your facility is challenged with aging equipment that can lead to unplanned outages or increased maintenance and troubleshooting, the EntelliGuard R retrofill offers a practical solution that provides improved reliability and safety through GE's ArcWatch\* technology.

### 2. What is a retrofill?

A retrofill is the term used for replacing an existing circuit breaker with a different circuit breaker without modifying the racking mechanism or cubicle bussing.

### 3. What is a retrofit?

A retrofit is the act of replacing an existing circuit breaker with a different type of circuit breaker by modifying the existing cubicle buswork and possibly the racking mechanism.

### 4. What is a conversion kit?

A conversion kit is used to upgrade the existing metal frame circuit breaker with a new trip unit, current sensors and flux shifter.

### 5. Why would a user opt for a retrofill vs. a conversion kit?

A conversion kit only upgrades the "brain" or trip unit of the circuit breaker, and is only a good solution for an otherwise mechanically sound circuit breaker. A retrofill upgrades the entire circuit breaker (trip unit included) and provides your switchgear a new lease on life due to the EntelliGuard's modern mechanism. In addition, it offers safety features such as through door racking, and faster clearing times than the legacy circuit breaker it is replacing.

## 6. What circuit breakers are suitable for the GE retrofit?

GE retrofit may be used for the following breakers: Power Break<sup>®</sup> I, AK-25, AK50, AKS-50, AKR30, AKR30H, AKR30L, AKR30S, AKR50, AKR50H, and WavePro up to and including 2000A. Competitive and other GE legacy styles are also available.



GE AK/AKR



GE WavePro

## 7. What options are available on the EntelliGuard R?

All EntelliGuard G options are available: motors, close coils, shunt trips, UVR, coil signaling contact, 8NO/8NC aux. contacts, network interlocks and Kirk Keys. All trip unit options include: LSIGCA, Modbus, RELT, I-ZSI, metering, relaying and waveform capture.

## 8. What are the two most impactful upgrades the EntelliGuard R retrofit can bring to your switchgear?

The EntelliGuard R retrofit solution includes advanced technologies such as ArcWatch. ArcWatch allows simultaneous arc flash mitigation and selective coordination, available via the EntelliGuard trip unit (visit [www.geindustrial.com/arcwatch](http://www.geindustrial.com/arcwatch) to learn more).

In addition, the free Trip Unit Toolkit software can help simplify set up, testing and performance reporting (visit [www.geindustrial.com/free](http://www.geindustrial.com/free)).



## 9. What are the additional standard benefits of the EntelliGuard R retrofit?

Some additional benefits include:

- In most cases your switchgear will maintain its UL certificate with a GE retrofit.
- Remote racking using the standard EntelliGuard G racking device
- High quality, modern mechanism to help reduce circuit breaker maintenance
- Through-the-door racking helps to reduce exposure to electrical shock or arc flash
- The single finger cluster design generates less heat and provides a solid, more reliable connection when compared to designs with finger clusters on both the cassette and breaker
- Most designs are pre-wired at our manufacturing facility, and are ready to roll in and mate with the legacy cubicle's control circuit.
- Trip unit and all indicators are visible through the door to help minimize exposure to arc flash or electrical shock
- Pre-punched doors for all stack widths are available, with or without holes, for pilot lights and RELT switch
- No buswork required, even in a 4-wire ground fault system

## 10. What advantages does EntelliGuard R retrofit offer when compared with other brands?

GE has one of the largest installed bases of circuit breakers in the U.S. Although it is possible to replace GE legacy circuit breakers with other brands, the EntelliGuard R is 100% interchangeable with GE circuit breakers and provides the following advantages:

- Requires little to no cubicle modifications, which helps to minimize shut down time during circuit breaker replacement
- Interfaces with the original cubicle secondary disconnects, position switches and neutral disconnects
- Is compatible with shutters in existing circuit breaker cubicles
- AK retrofills utilize the EntelliGuard G lifting bar
- Makes the secondary disconnect wiring connection with no modifications to existing switchgear
- Is available for both GE and OEM-built equipment
- Available up to 5000A (without fans) and 200kAIC (fusable)/100kAIC (non-fusable)
- Single finger cluster design throughout range
- In most cases your switchgear will maintain its UL certificate with a GE retrofit.

### 11. Does GE use a double finger cluster design?

No, all GE retrofills use a single finger cluster, which means there is only one set of fingers between the circuit breaker and the cubicle bus. This provides a reliable connection that generates less heat. Many other manufacturers use a set of finger clusters on the retrofit cassette and an additional set on the circuit breaker. This translates to 2 possible failure points and higher heat in the enclosure.

### 12. Is the retrofit UL Listed?

Yes, and the AKD5, AKD6, AKD8 and AKD10 switchgear maintain UL listing as well. Only GE retrofills can maintain the UL listing on the switchgear. The retrofit is cUL listed.

### 13. I need a higher AIC Rating. What can I do?

The AK25 and AKR30S increase the KAIC rating to 42KAIC and maintain UL listing. No bus modifications are required. NOTE: AK25 was 22KAIC and AKR30S was 42KAIC.

### 14. My circuit breaker has LSIG. Do I need to change the neutral current transformer (CT)?

No, our retrofills now include a built-in neutral CT converter that can accept the iron core signal.

### 15. Can EntelliGuard R be used in a multi-source ground fault situation?

Yes. This is made possible due to the neutral CT converter built inside the EntelliGuard R.

### 16. I want to change my existing COMNET communications (EPIC, MVT) to Modbus. What do I need to do?

In order to change existing Comnet communications to Modbus, a new Beldin cable must be run and it must bypass the Modbus concentrator/FPU/Comnet repeater. In addition, the software on the PC must be remapped to the EntelliGuard trip unit. If there is a mixture of EntelliGuard trip unit and communicating legacy trips in the lineup, some of these will need to run through the concentrator, and others will not.

### 17. Can the EntelliGuard R retrofit solution be used to replace other manufacturer's circuit breakers?

Yes, EntelliGuard R retrofit is suitable to replace legacy Westinghouse circuit breakers up to 2000A, as well as select Allis Chalmers and I-T-E circuit breakers. Contact your GE representative for details on availability.



Allis Chalmers

I-T-E

Westinghouse

### 18. What testing was performed?

All retrofills were designed based on the original requirements of AK/AKR and WavePro circuit breakers and related switchgear. In addition to short circuit, withstand and heat rise testing, the retrofills went through an extensive racking endurance, and mechanical fit testing.

### 19. Does the retrofit come wired per the wiring diagram for my specific job?

Entellisys and WavePro retrofills are completely pre-wired at our manufacturing facility. Some AK/AKR designs are also pre-wired, however those that are not pre-wired come with the secondary wiring attached to the bullets and coiled near the EntelliGuard G's 78-point secondary disconnect. All wires have wire markers. The wires will be landed in the field. The original wiring diagram is provided. Note: You will need to confirm if any changes were made in the field since the old switchgear originally shipped.

### 20. When will the EntelliGuard R retrofit be available?

Retrofills for AK/AKR and WavePro up to and including 2000A are available now. Retrofills for 3200-5000A will be available August 2016.

## 21. What is the lead-time for the EntelliGuard R retrofills?

The lead times vary based on the project. General guidelines are as follows:

- Standard EntelliGuard R: quotes in 7 - 10 working days / delivery in 5 - 6 weeks (ships from Burlington, IA)
- Standard EntelliGuard R with cubicle modifications: quotes in 10 - 14 working days / delivery in 5 - 6 weeks (ships from Burlington, IA)
- Non-standard EntelliGuard R: quotes in 2 - 5 weeks / delivery in 12 - 26 weeks (Ships from Rotterdam, NY)