

# The new SACE Emax 2 Ekip G trip units for generator protection

In addition to the SACE Emax 2 family of air circuit-breakers, ABB's Low Voltage Products Division is proud to present the Ekip G, generator version trip unit series. The Ekip G is available in a Touch and Hi-Touch version. They include all the functions of generator protection without the need for external devices or wiring, offering a safe control solution that is immediately ready for use.

As part of the Emax 2 family, circuit-breakers with the new Ekip G trip units meet or exceed the standard functions and performances the market demands from an air circuit-breaker. In addition, they contain all the features and benefits of the standard Emax 2 line, including:

- A patented, Power Controller that monitors and controls power usage to reduce management costs.
- Extensive, direct communication abilities to simplify network integration and eliminate the need for costly and difficult conversion components.
- Optimal frame organization and accurate design to provide the ability for high performance switchgear with a reduction of both materials and space required.
- Bus bar friendly, modifiable terminals that eliminate the need to bend and extend bus bar and provide quick, easy installation.
- Large, color touchscreen interfaces to allow for clear navigation, creating a quick and easy way to find information or make adjustments.
- A wide variety of accessories that have been designed to simplify use or installation and increase safety.

In addition to being a cutting edge circuit-breaker, Emax 2 circuit-breakers with Ekip G trip units offer an opportunity to improve the way low voltage



electric generators are protected.

By incorporating generator protection functions into the trip unit of a circuit-breaker, ABB has developed a system of protection that enables the number of components installed, such as external protection devices, current sensors, voltage transformers and the relative cabling to be reduced or eliminated.

This development not only allows for faster and easier implementation and commissioning of the generator with less risk of error, but a significant savings on the materials and space required.

Like all Emax 2 protection functions, the functions for generators are extremely precise and provide improved tripping times over those of relay devices.

The generator specific protections incorporated into the Ekip G are:

- Voltage controlled overcurrent (S(V) – ANSI 51V)

- Residual Voltage maximum homopolar voltage (RV – ANSI 59N)
- Loss of field or reverse reactive power (RQ – ANSI 40 or 32R)
- Reactive overpower (OQ – ANSI 32OF)
- Active overpower (OP – ANSI 32OF)
- Active underpower (UP – ANSI 32LF)
- Rate of change of frequency(ROCOF – ANSI 81R)
- Second protection against voltage controlled overcurrent (S2(V) – ANSI 51V)
- Second protection against loss of field or reverse reactive power (RQ2 – ANSI 40 or 32RQ).

These protections are suitable for the replacement of multifunction relays or several single function relays. Each protection has the ability of operating in an active, alarm only or deactivated mode.

In addition, as an added benefit, the setting and viewing of each protection is possible through the trip unit's touch-

screen display or through one of Emax 2's optional remote devices as opposed to the dials or small screens available on most relays.

Emax 2 with Ekip G is an ideal solution for small power plant generators, such as:

- Mini and small hydro generators;
- Generator Sets;
- Cogenerators;
- Biomass generators;
- Marine generators.

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**ABB SACE**  
**A division of ABB S.p.A.**  
**L.V. Breakers**

Via Baioni, 35  
24123 Bergamo - Italy  
Phone: +39 035 395.111  
Fax: +39 035 395.306-433

**[www.abb.com](http://www.abb.com)**

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