BROCHURE

SACE® EMAX 3
SOLVING WHAT'S NEXT

Anticipate change. Protect your future.
ANSI C37 / UL1066 / CSA Standards

- Adaptive
- Reliable
- Secure

ENGINEERED
TO OUTRUN

SACE EMAX 3: SOLVING WHAT'S NEXT IN POWER DISTRIBUTION

In response to the evolving needs of electrical distribution systems, SACE Emax 3 has been expertly engineered to be adaptive, reliable and secure to align with the necessities of the present as well as the advancements of the future.

Building on the trusted legacy of ABB's SACE Emax family, this innovative solution integrates advanced features to enhance operational performance and resiliency. Equipped with cutting-edge technology and intelligent data processing, SACE Emax 3 effectively optimizes control, adapts to emerging challenges and mitigates risks, all while safeguarding personnel and protecting valuable assets.

ADAPTIVE

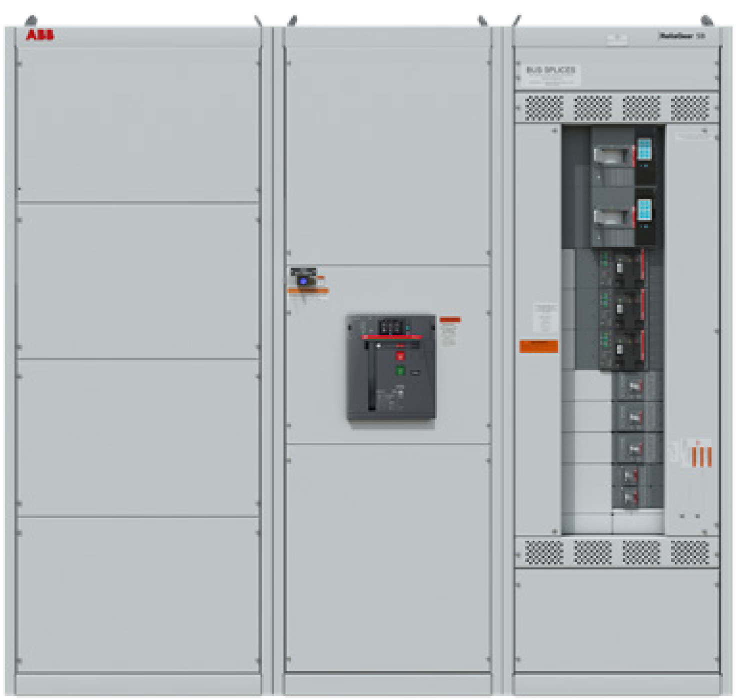
Maximize the efficiency of electrical distribution systems. Emax 3 is constructed for seamless integration and offers the flexibility to customize and adapt its functionality to meet evolving needs.

RELIABLE

Optimize uptime for electrical distribution systems through comprehensive sensing capabilities and effective power and asset management strategies.

SECURE

Safeguard what matters most. Emax 3 is designed to help protect and secure personnel and assets with a high level of reliability.



SACE EMAX 3 — ANTICIPATE CHANGE. PROTECT YOUR FUTURE.

DISCOVER THE ULTIMATE EVOLUTION IN CIRCUIT BREAKER TECHNOLOGY.

SACE EMAX 3 IS ADAPTIVE

Seamlessly integrates and evolves with your system for a scalable, future-ready solution.

UPGRADE WITH EKIP AWARE

To enhance flexibility and efficiency in electrical systems, ABB introduces Ekip Aware, the new trip unit platform designed for extensive field customization, minimizing lead times and installation efforts.

- **Customizable protection:** On-demand upgrades tailored to meet specific requirements, including field-upgradable short time delay (S) and ground fault protection (G).
- **Digital upgrade architecture:** Adapt to fast-growing design changes and ensure systems remain relevant and effective.
- **Digital rating plugs:** Enable flexible/scalable load growth, with the ability to adjust the nominal current without the need for additional hardware.

INTUITIVE INTERACTION

Refining the overall user experience, the Ekip Aware trip unit platform offers a comprehensive set of features designed for ease of use and connectivity.

- **Improved HMI user interface:** Facilitates easier navigation and programming of key settings and parameters.
- **Standard USB-C connection to Ekip Connect 3 software and EPiC mobile app:** Enables test and programming, in addition to providing temporary power supply for Ekip Aware trip units.
- **Extended wireless connectivity:** Supports smartphones through NFC and Bluetooth for greater accessibility.

ENHANCED COMMUNICATION

Recognizing the need for adaptability in an era of rapidly increasing connected devices, Emax 3 and Ekip Aware feature an optimized communication architecture that meets modern application requirements for flexibility and reliability.

- **Modbus TCP:** Utilizes daisychain connections to simplify cabling and streamline installation.
- **Redundancy:** Incorporates IEC 61850, Profinet and Ethernet/IP to enhance system reliability.

SEAMLESS INTEGRATION

Emax 3 offers backward compatibility with Emax 2. This thoughtful design allows for a smooth transition into new designs and brownfield upgrades.

- Consistent dimensions and mounting points.
- Identical minimum enclosure requirements.
- Standardized power and auxiliary connections.
- Compatibility between Emax 2 fixed/cradles and Emax 3 moving parts.
- **Ethernet modules:** Designed to manage more devices through new redundancy schemes, ensuring robust communication across the network.

SACE EMAX 3 IS RELIABLE

Optimize uptime for electrical distribution systems through comprehensive sensing capabilities and effective power and asset management strategies.

CUSTOM LOGICS

Create and control your distribution system.

- **Ready-to-go solutions:** Integrated Automatic Throw Over (ATO) solutions engineered and tested by ABB for immediate deployment.
- **Adaptive capability:** Solutions that can be tailored to fit specific application needs.
- **Graphical interface design tool:** A user-friendly tool to create new and customized logics from scratch, ensuring alignment with specific system requirements.

POWER QUALITY AND MEASUREMENT

Exceptional accuracy and analyzation.

- **Class 0.5 Certification:** IEC 61557-12 certified for active power and energy.
- **Network analyzer:** Optional built-in functionality eliminates the need for additional devices.
- **THD and TDD analysis:** Analyze Total Harmonic Distortion and Total Demand Distortion.
- **Enhanced data loggers:** Improved event data recording for accurate reporting and insights of events.

ASSET MANAGEMENT

Enhance asset reliability through condition-based maintenance and predictive maintenance strategies. An internal network of sensors continuously monitors key metrics, proactively identifying potential issues and forecasting maintenance needs. This approach minimizes unexpected failures, allowing for maintenance only when necessary, rather than on a set schedule. Key features include:

- **Temperature monitoring:** Internal and external wireless sensors to enrich system reliability, reducing the need for manual IR temperature scanning.
- **Sense accessories:** Assess the health of accessories and provide insights into diagnostics and preventative maintenance.
- **Predictive maintenance:** Elevate your maintenance strategy by moving from time-based to condition-based maintenance.

SACE EMAX 3 IS SECURE

Safeguard what matters most. Protect and secure personnel and assets with a high level of reliability.

CYBERSECURITY

Grasping the importance of security in modern electrical systems, Emax 3 is the first circuit breaker in the market to comply with IEC 62443-4-2 Security Level 2 (SL2). This commitment enhances access protection for critical parameters on the trip unit and communication protocols.

- **Secure firmware update:** Digitally signed FW with anti-rollback features.
- **Secure storage:** Anti-tampering of device parameters.
- **Dedicated module portfolio:** Ensure that the circuit breaker communicates only with original modules, thanks to security artifacts. Anti-spoofing and anti-tampering features included.
- **Secure USB and BLE:** Ensure that the circuit breaker communicates only with original ABB tools, thanks to security artifacts.
- **Role-based access ABB account management:** Enables role-based access (owner, admin, engineer, operator, viewer).
- **Bluetooth and NFC:** Require user authentication for activation, ensuring only authorized personnel have access.

EXPANDED PROTECTION

Emax 3 offers a comprehensive offering to address various levels and scenarios to help ensure protection of personnel and assets.

- **Integrated arc flash:** Supports up to 12 sensors per circuit breaker and the ability to reduce incident energy to less than < 8 cal/cm^2 @ 480 V up to 100 kA bolted fault, and reduces clearing time to less than 40 ms.
- **Remote racking device (RRD):** Prioritizing operator safety during breaker racking procedure, Emax 3 expands its offering of remote racking devices, enabling operations without being directly in front of the equipment.
  - **External RRD:** Enables operation of the breaker from up to 10 m (32.8 ft.). Available for all frame sizes.
  - **Embedded RRD-E:** Specifically designed for E4.3 and E6.3 frames, it facilitates the racking operation through the USB-C connection or EPiC mobile app for added safety and convenience.
- **Advanced MDGF:** This innovative solution reduces installation time and minimizes the overall number of components required, ensuring a more effective and streamlined solution.
  - Sensing managed via Com Link internal breaker-to-breaker communication.
  - No need for additional phase current transformers.
  - No need for external summing current transformers.
- **RELT:** Increase operator safety during maintenance in accordance with NEC 240.87. This advancement ensures clear communication and multiple methods for activation.

ENHANCED KEYLOCKS, PADLOCKS AND INTERLOCK MECHANISMS

Addressing the need for enhanced safety, Emax 3 introduces enhanced solutions to prevent unwanted openings and closings of circuit breakers while enabling interlock logics across different devices.

- **Dual keylock and padlock:** Provides redundancy by securing the circuit breaker in the open position.
- **Simplified design for mechanical interlocks:** Reduce installation time, making it easier to implement effective safety measures.

PRODUCT RANGE — A GLOBAL PLATFORM

EMAX 3 UL
A complete portfolio of circuit breakers ranging from 250 A to 6000 A for applications in accordance to UL1066/ANSI C37.

EMAX 3 IEC
A complete family from 250 A to 6300 A for applications in accordance to IEC 60947 standards.

EMAX 3 MULTI-STANDARD
Offers global OEMs standardized solutions. It includes IEC, UL and CCC markings on the same device.

E1.3
UL / ANSI:
- Amp range: 250–1200 A
- Interrupting rating: Up to 65 kAIC @ 508 V AC (480 V AC) and 42 kAIC @ 635 V AC (600 V AC)

IEC
- Amp range: 250–1600 A
- Interrupting rating: Up to 66 kAIC @ 440 V AC and 50 kAIC @ 690 V AC

E2.3
UL / ANSI
- Amp range: 250 – 2000 A
- Interrupting rating: Up to 100 kAIC @ 508 V AC (480 V AC) and 85 kAIC @ 635 V AC (600 V AC)

IEC
- Amp range: 250–2500 A
- Interrupting rating: Up to 100 kAIC @ 440 V AC and 85 kAIC @ 690 V AC

E4.3
UL / ANSI
- Amp range: 800–3600 A
- Interrupting rating: Up to 100 kAIC @ 508 V AC (480 V AC) and 100 kAIC @ 635 V AC (600 V AC)

IEC
- Amp range: 2000–4000 A
- Interrupting rating: Up to 150 kAIC @ 440 VAC and 100 kAIC @ 690 V AC

E6.3
UL / ANSI
- Amp range: 4000–6000 A
- Interrupting rating: Up to 100 kAIC @ 508 V AC (480 V AC) and 100 kAIC @ 635 V AC (600 V AC)

IEC
- Amp range: 4000–6300 A
- Interrupting rating: Up to 150 kAIC @ 440 V AC and 120 kAIC @ 690 V AC

OVERVIEW OF FUNCTIONS

Main innovations

BLE, NFC
(Wireless communication for ease of use)

M-sense enabler
(Spring charging motor diagnostic and predictive maintenance)

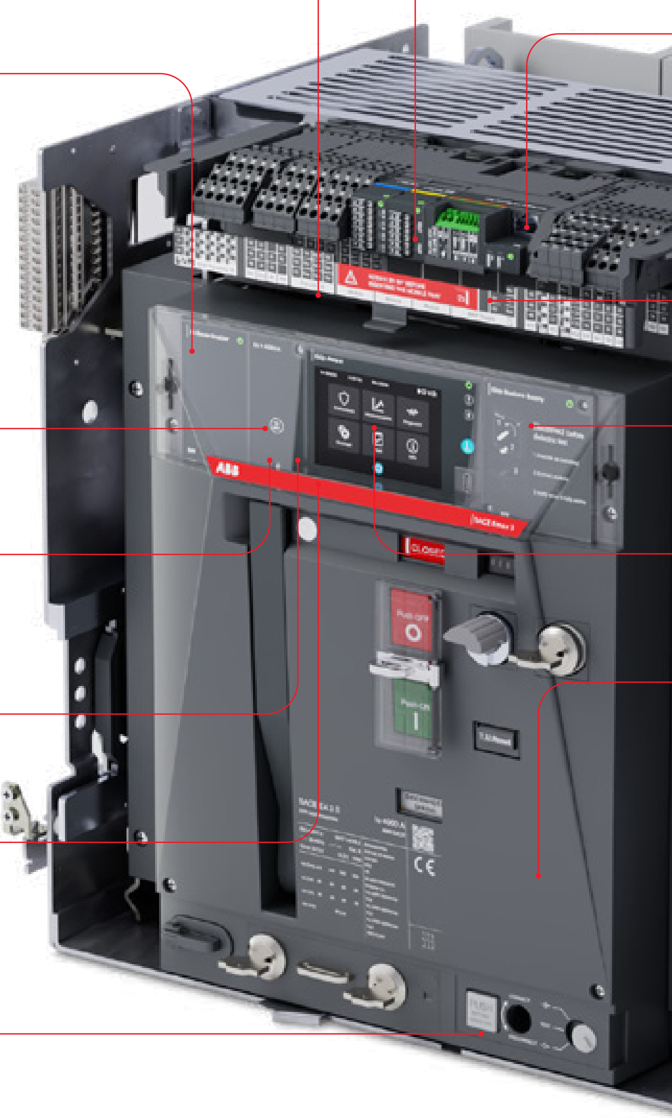
Enhanced datalogger with SD card slot
(Deep data acquisition of plant and event analysis)

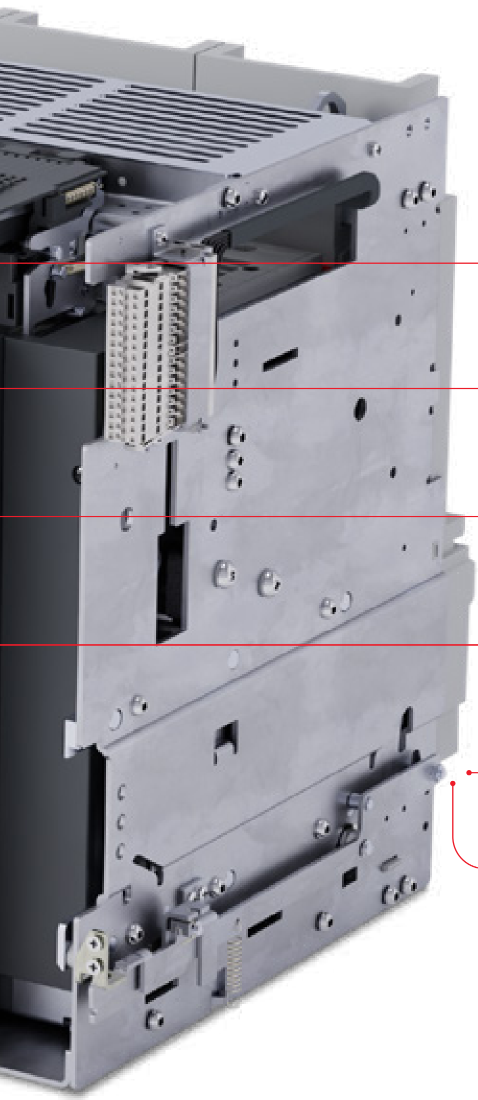
USB type-C port
(Standard interface for software connection by computer and by mobile)

Digital rating plug
(Adjustable nominal current on site with digital upgrade)

Wireless temperature sensors
(External sensors to monitor installation temperature)

Embedded RRD-E
(Easy and safer CB racking with communication and diagnostic)





Ekip supply Evo Modbus® TCP
(Ekip supply and integrated communications)

Daisychain Ethernet communication
(Easy cabling and installation without switches)

Arc flash sensors
(Connected to arc flash 6F module for faster clearing times)

IEC 62443-4-2 SL-2 cybersecurity
(Best-in-class cybersecurity protection)

3.5 IPS touch panel
(New refined HMI for intuitive user experience)

Sense coils
(Opening, closing, UVR with integrated health and diagnostics)

Internal temperature monitoring
(Health and predictive maintenance)

Exceptional accuracy and analyzation
(Class 0.5 active power and energy in accordance
with IEC 61557-12)

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ABB Inc.
305 Gregson Drive
Cary, NC 27511

**electrification.us.abb.com/products/
circuit-breakers/sace-emax-3**

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