## CROUSE-HINDS SERIES

#### **Sonix Communication Systems**

# Public Address General Alarm for harsh environments





14



Part of Eaton's Crouse-Hinds series, Hazardous Area Communications is a comprehensive product offering for potentially explosive atmospheres bringing together a range of specialist systems and solutions for the fire and gas, telecoms and CCTV markets.

Our solution names of MEDC, FHF, Hernis, Gitiesse and Oxalis offer a specialised team of highly qualified staff to ensure all aspects of engineering, design and configuration within your project are fulfilled from initial stages of concept through to commissioning.

The oil and gas industry relies on Eaton's highly respected MEDC range of signalling and alarms for quality and reliability. Designed for potentially explosive atmospheres and harsh industrial and marine environments, Eaton offers a comprehensive range of innovative notification solutions. Hernis is a world leading product range, providing high quality, durable and low maintenance Closed Circuit Television Systems (CCTV) for the oil and gas and marine industries. Designed for the extreme, Hernis systems perform safely and reliably, increasing efficiency and providing safety to both people and equipment in the world's most hazardous and corrosive environments.

Eaton's IMCOS<sup>™</sup>, Integrated Multimedia Communication System is tailor-made for your requirements. IMCOS<sup>™</sup> is a world-class brand in the marine, offshore, and oil and gas industries offering integrated solutions for internal communications and the distribution of alarms and signals.

Engineers, end users and employees in a wide range of industries rely on the innovative FHF range. Decades of experience in the fields of industrial communication and signalling, together with the continuous drive for improvement and innovation, has led to the production of an innovative product range, considered as best in class.

The Oxalis range of telecommunications equipment and surveillance systems has been specifically designed for use in oil and gas, marine, aviation, defence and other extreme environments. Eaton offers a range of products including CCTV and Sonix<sup>™</sup> Public Address General Alarm (PA/GA) systems, telephony and intercoms.



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# About Sonix PA/GA

**Eaton's Sonix PA/GA system** supplies public address and general alarm, telephones, evacuation systems, intercoms and critical telecoms equipment to industries with challenging environments. Potentially hazardous atmospheres demand superior performance and our expertise, together with 30 years' experience encompass many hazardous area applications including oil and gas, marine, power, nuclear and critical infrastructure.

Eaton is an ISO9001, ISO14001 and OHSAS18001 certified manufacturer operating at the highest levels of product quality and reliability. All products meet stringent safety specifications and are approved and certified by leading international regulatory bodies and authorities.

As the world is moving to rely on a faster IP and wireless based architecture, our in-house research and development team enables us to respond to industry trends and to combine proven designs with new technologies. The Sonix system has been designed to provide a common technical solution for onshore, offshore and industrial applications where high integrity, life safety applications are necessary. Sonix PA/GA is the most secure, highly monitored and flexible public address general alarm solution available today. To reinforce the physical PA/GA system, Sonix is certified to ABS, BV, and DNV with UL and CSA pending.



## Let us introduce our patented revolutionary Sonix platform.





The Sonix PA/GA system has been developed and manufactured with inbuilt flexibility for oil, gas, petrochemical and power industries. Its flexibility comes from a universal communication format which allows information to be transmitted between the product, whether local or distributed. This information flow is propagated via CAT6 cables which also provides a fast, secure and efficient interconnection system. To ensure reliability, these communication paths are fully duplicated, with auto switch over on data loss or corruption. As new products are developed, the new data generated can be easily integrated and targeted to units that need it.

At the heart of the system is a patent protected dual path 92% high efficiency amplifier, enclosed within a compact 1U case. This amplifier continues the flexibility out to the field by monitoring for both radial or loop speaker runs. The Sonix software adds further flexibility by allowing the system to be re-configured as the site develops throughout its life. This software is completely passive and isolated from system operation, but provides a convenient way to monitor the detailed status of the system. This allows the software to be located offsite without affecting system performance or operation. Sonix is truly a plug and play solution for the harshest environments without compromising safety.

# Rugged reliability

### Public Address General Alarm system

#### Sonix PA/GA

Sonix has been designed to provide the most technically comprehensive and secure PA/GA solution available today. Sonix offers technical, commerical and operational value to integrators, EPCs and end users. Our design team has focused to ensure that Sonix adds true value to every level of the customer chain throughout all points of product development and execution.

The Sonix PA/GA System has been developed, manufactured and tested in line with the modern requirements of the oil, gas, petrochemical and power generation markets of today and tomorrow. Sonix is able to offer compliant communication solutions to meet the most demanding applications for onshore, offshore, marine and industrial installations. Designed to enhance modern communication philosophies, the Sonix PA/GA system includes a highly sophisticated vet simplified architecture that removes the need for lengthy engineering cycles, bespoke and costly software, custom field engineering or expensive on-site commissioning.

This results in a highly effective and flexible communications solution for the next generation. The Sonix system is rigorously designed for installation in both safe area or potentially explosive environments using latest protection philosophies including EExe, d, i and p to ensure the highest levels of safety without compromising operational features.



#### Sonix Hmi 5 😡 PA/GA Hmi Access Unit

Sonix Hmi 5 is a compact, ATEX/IECEx Hmi access panel designed to operate PA/GA equipment. The Hmi 5 has been specifically designed to operate in harsh environments; it's certified from -40° to +60°C and can be used within Zones 0, 1 and 2 Ex environments just as easily as it can be in safe area applications. Type approved for offshore and marine use, the Hmi 5 connects to the Sonix system via a 2-pair armoured cable. The Hmi 5 has been specifically designed to work with the Sonix Hmi Br intrinsic barrier. The Hmi Br is designed to give the perfect balance of power within the I.S circuit. This permits the Hmi 5 to offer backlit buttons for low light conditions, on-board re-programmable features, and a local loudspeaker mute control.

High integrity communication between the Hmi 5 and partner equipment is achieved in such a way as to avoid transmitted "DTMF" bleed-through, sometimes found on similar equipment. Communication to the Hmi 5 is fully monitored even during speech and alarm broadcasts.



#### Sonix Hmi 26 PA/GA Hmi Access Unit

Sonix Hmi 26 is a compact, rugged Hmi access panel designed to operate Sonix PA/GA equipment. The Hmi 26 has been specifically designed to operate as a 19" chassis, wall, console or desktop mounted unit. Certified to meet DNV and IMO SOLAS regulations, the Hmi 26 connects to the partner equipment via a 2-pair armoured cable. Sonix Hmi 26 enables operation of PA/GA to selected zones, selection of pre-recorded messages via the M612 unit and zoned alarms. High integrity data communication between the Hmi 26 and partner equipment is achieved in such a way as to avoid transmitted "DTMF" bleed through, sometimes found on similar equipment. Connected via copper or fibre, the RS422 communication to the Hmi 26 is fully monitored even during speech and alarm broadcasts. With a Vu Meter, shortcuts panel and 26 fully re-configurable, backlit buttons, the Hmi26 is the access panel of choice.



#### Sonix Hmi benefits and features

- · State of the art technology.
- 50% reduction in cable and installation costs for Hmi.
- Local mute speaker bypass and control via Hmi access unit.
- Simplified acoustic designs.
- Ease of installation and relocation once installed.
- · Back lit push buttons for low light conditions.
- · Fully reprogrammable button configurations.
- Low profile design, reducing cabinet size.
- · Vastly simplified architecture.
- Common hardware for all applications.
- · Fully duplicated and monitored internal cables.
- 92% efficient, energy saving patent protected amplifier.
- Full range of type approvals.
- ATEX and IECEx certified.



# Control, manage and protect

### Matrix Manager

#### Sonix 2Mx Matrix Management Unit

The Sonix 2Mx matrix unit provides an integral backbone for the structure of the Sonix PA/GA system, housed within an ergonomic and compact 1u case. Connectivity of this unit is via colour coded, rapid fit RJ45 patch cords to ensure simple installation and maintenance. The unit provides a highly visible front panel and system activity status, along with status of the external GUI for remote users. The 2Mx internal data bus and field wiring is fully monitored, and multi broadcast on a hybrid RS422 network. It operates on internal and external self-healing rings to ensure continuous service at all times.

Multiple speech paths, 12 address zones, 6 manual alarm tones and 24 zoned auto F&G alarms provide the 2Mx unit with powerful, flexible and secure field reprogrammable features. Real-time continuous monitoring of the PA/GA system and peripheral connectivity is controlled and managed within the 2Mx unit. Hmi access panel audio and data signals are independently monitored, while loudspeaker networks are monitored with an inaudible integrity signal. Beacon networks are monitored with a voltage test signal.

In addition to fully duplicated architecture, the 2Mx unit allows for auto switch over of all signals between A & B systems in the event of a local fault (A+B PLUS). This ensures that if either 2Mx unit is not operational, all amplifiers and beacons are controlled from the remaining 2Mx controller, which is done without the need for de-rating either system to manage the total load capacity. This results in zero loss of broadcast signal whilst maintenance is being carried out and can be achieved without overloading the remaining operation system.



## Compact design

## High efficiency amplifiers

#### Sonix 350-d PA/GA parallel power amplifier unit

Sonix 350-d power amplifier is a compact 1u designed housing the 350W amplifier module, power supply, status panel and thermal management units. Sonix 350-d autonomously monitors and supervises the amplifier, loudspeaker cable insulation and loop integrity with an inaudible signal. The robust and industrial design of the 350-d amplifier ensures its protection against open circuit, short circuit, load deviation and abnormal loads associated with field loop faults. In the event of abnormally high ambient temperatures, the 350-d is fitted with a multi-stage, intelligent over-temp protection circuit that ensures the amplifier remains active at all times.

The on board power supply and fans are fully monitored to ensure continuous operation. Central to the Sonix PA/GA system efficiency is the patent protected 350-d parallel power amplifier. The 350-d has been specifically designed with Sonix parallel amplifier technology to offer the most efficient and compact amplifier and power supply available, at over 92%. The 350-d simply connects to the PA/GA system via rapid fit RJ45 and standard IEC power receptacles to ensure guick installation and simple maintenance.

Designed as a complete sealed unit without the need for sub frames or cards, the Sonix 350-d reduces the risk of failure between distributed parts and dramatically reduces down time in the unlikely event of equipment replacement.



# **Constant** performance

#### Power management

#### Sonix Pm 10 PA/GA power management unit

Sonix Pm-10 is a compact 1u device housing the circuitry for power distribution, switchover and management for the Sonix PA/GA system components. The Pm-10 ensures that critical power is protected, monitored, and efficiently and securely distributed throughout the PA/GA system at all times. For highly critical systems requiring duplicated power inputs, the Sonix Pm-10 ensures that in the event of power loss, the system will seamlessly switch over to the standby power supply, without system outage or power loss.

Should the supply return to the system, the unit will automatically reinstate the primary supply and continue to monitor the secondary. The Pm10 device also monitors and indicates fuse condition as part of the critical path, resulting in fast and effective fault finding, speedy repair, and ease of use and system repair. Rapid fit RJ45 power bus connection permits intelligent monitoring of incoming power, voltage, current, and distribution cabling.

Reporting both back to the 2Mx status panel, Sonix software interface and site wide DCS system ensures that the operator is aware of system status at all times.

Input power connection to the Pm-10 unit is via a shake proof plug and socket, ensuring simple and quick connectivity of the unit and simple maintenance.



## **Distributed intelligence**

## Digital messaging

#### Sonix Ms 12 PA/GA digital message store

The Sonix Ms12 Tu is a compact 19" 1u designed housing for the Sonix digital message store. It provides the user with the secure means to record and play back digital messages via the PA/GA system. Users can simply record either analogue or digital messages, tones or announcements and load them to one of the Ms12 secure memory locations. Loading is carried out through either USB or line inputs. The required message can be inititated through either 12 volt free inputs on the rear of the Ms12, or programmable keys on the Hmi 26 access panel.

Through Sonix configuration software, the user can select if the messages should be broadcast to all zones (global) or to pre configured zones of address. The Sonix Ms12 Tu provides fully duplicated and isolated synchronised outputs to ensure that both A and B PA/GA systems broadcast simultaneously. Connection to the host PA/GA systems can be carried out either through CAT6 or 2 pair twisted cable depending upon user selection. Zoned selection is available via CAT 6 and global is available via 2 pair connection.

To ensure a rapid warning of any system issues, all monitoring of Ms12, power supply, data communication network and field cabling is reported onboard the front status panel, the 2Mx matrix, on the Sonix software interface and out to the site wide distributed control system (DCS).



## Broadcast

#### Private branch exchange interface

#### Sonix Pbx Tu PA/GA Pbx Interface

Sonix Pbx Tu is a compact 19" 1u designed, or IP65 ABS enclosure housing a compact and efficient circuit. It interfaces the PA/GA system to site Pbx systems, providing a means to record and play back Pbx messages via the PA/GA without risk of Larsen effects. Users can take advantage of the audio prompt feature to opt for either global (all zones) or zone select message playback ensuring only the required zones of address are selected. Upon completion of the message, the PA/GA system will broadcast the message as selected. If required the delay can be removed or cancelled to provide a direct live access to the PA/GA system.

The Sonix Pbx Tu provides

fully duplicated and isolated synchronised outputs to ensure that both A and B PA/GA systems broadcast simultaneously. Also, a supervisor monitor and cancel feature that allows all recorded messages to be monitored prior to broadcast is provided. This ensures that any unwanted or inappropriate messages can simply and effectively be removed from the playback queue. Connection to the host PA/GA systems can be either through CAT6 or 2 pair twisted cable depending upon user selection. Zoned selection is available via CAT 6 and global selection is available via 2 wire connection.

Connection to the Pbx is available through 2-wire audio and 2-wire E&M connectivity. To ensure rapid and early warning of any system issues, all monitoring of Pbx Tu power supply, data communication network and field cabling is reported on the front status panel, the 2Mx matrix, Sonix software interface, and out to the site wide DCS.



# The Configurator

## Configure, Status, Log

#### Sonix Software

Sonix software is a dedicated software package that allows integrators, users and operators to log in to the Sonix PA/GA system for re-configuration, system status and activity logs. This ensures that the full control and flexibility of the Sonix system is in our clients' capable hands. The Sonix PA/GA system has been designed from conception to allow maximum hardware and firmware flexibility, as well as the highest levels of security and system operational stability. The Sonix software adds to this flexibility and control by providing an unrivalled solution for the most demanding and security sensitive applications. Sonix software can be used to monitor and configure the PA/GA system via a local or remote computer connected to the network.

This flexibility ensures that the system status is always known. For added security, Sonix software is provided with user log in facility and operator restriction to ensure users are permitted defined access which can be determined by the owner. A detailed log of user, date, time and changes of access rights is also available to provide an auditable trace for safety analysis if needed. Configurations can be easily prepared in advance before being uploaded to the system. Once connected and loaded, configurations can be overwritten, saved and modified as needed with backups saved from the host PA/GA system.



## **Monitors and protects**

## End of line units

#### Sonix Eol 8 PA/GA power amplifier end of line units

Sonix Eol 8 unit is a compact, high efficiency speaker loop monitoring device designed to work with the 350-d amplifiers. It securely houses the circuitry and management for loudspeakers connected to the Sonix PA/GA system and external field cabling. Sonix PA/GA autonomously monitors and supervises the amplifier, loudspeaker cable insulation and loop integrity with a high frequency inaudible out of band signal every minute. The robust and industrial design of the system ensures its protection against open circuit, short circuit, load deviation and abnormal loads associated with field loop faults.

In the event of such common field loop faults, the Eol 8 rapidly detects, reports and diagnoses the fault, reporting this information back to the amplifier, 2Mx controller, ICCS output and to the Sonix software. During this process, the amplifier automatically protects the output from permanent damage. The unit is provided with amplifier loop blade terminals to securely and safely isolate the field cables for testing and fault rectification. The Eol 8 ensures that field speakers are driven with audio signals in both directions at all times. Additionally, the self-healing ring design feature ensures that in the event of an open circuit condition critical communications are not lost.

The Eol 8 is connected within the Sonix central cabinet via dual rapid fit RJ45 connectors. For additional safety, should either cable become disconnected then the amplifier will isolate its output to avoid electrical shock risk or cable overcurrent conditions. This is reported via the amplifier, 2Mx, and Sonix software. This ensures a quick and fail-safe connection to the amplifier. For additional security, this internal connection can also be operated on a self-healing ring architecture. Each Eol 8 can manage 8 amplifiers or be easily configured to provide 8 common (series) outputs per amplifier to assist with field cable topology and reduce IDF requirements on larger loops.



## Loop monitoring

## End of line units

#### Sonix Eol 1 🚱 PA/GA power amplifier end of line units

Sonix Eol 1 is a compact designed unit, housing the circuitry for amplifier loudspeaker circuit monitoring. On systems where loudspeakers cannot be connected in "self-healing loop" topology, the Eol 1 can be located after or within the last radial speaker to monitor that radial/spur. For use in either safe or hazardous areas, the Eol 1 provides fault free and seamless speaker loop monitoring as if connected in a loop back to the PA/GA cabinet. The Sonix 350-d amplifiers regularly perform silent monitoring and interrogation of each amplifier loop connected to the system, checking for open circuit, short, earth and loudspeaker load deviations.

During this process, the Eol 1 will acknowledge the signal and handshake report back its status to the amplifier. Any loss of handshake or non-definitive results will trigger the amplifier and 2Mx to report a fault which will be displayed to the user via front status panels and out to the site wide DCS system. The Eol 1 is supplied as standard in an industrial IP67 polycarbonate, or EExd explosion proof enclosure, ready to install. Other enclosure options are available upon request. Connection to the Eol 1 is simply achieved by means of three 2.5mm<sup>2</sup> terminals; two for the speaker cable (nonpolarised) and one bonded to earth.





# Field device control

## Termination units

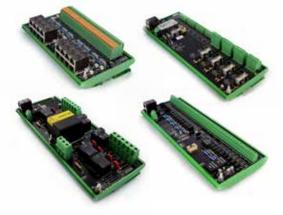
#### Sonix termination units

**Sonix Hmi Tu** provides a secure and reliable means of terminating the Hmi field cable to the PA/GA cabinet whilst providing monitoring and management of up to 12 phantom powered Hmi panels on 2 pair cables.

Sonix lo Tu unit is a compact, DIN mountable, high efficiency, input-output termination device. Designed to work with the 2Mx matrix, the lo Tu provides connection of all external interfaces inbound and outbound to the PA/GA system, F&G, DCS, Entertainments, UHF radio, PBX and many others.

**Sonix lo Ep Tu** unit is a compact, DIN mountable, inputoutput expansion termination device. It is designed to work in conjunction with the lo Tu where large scale or zoned fire and gas inputs are required. **Sonix Vw2** unit is a compact, high efficiency, beacon loop monitoring device. Designed to work with the 2Mx PA/GA matrix, the Vw2 can be configured to provide 12 independent 20A channels.

**Sonix Eol 8 Tu** manages up to 8 x 350w amplifiers, eliminating the use of high volt drop ribbon cables. It provides lightning protection, EOL line monitoring and adhoc re-configuration of field loop topology. The Eol 8 Tu provides the security and flexibility needed within PA/GA applications.



## Keep talking

#### Telephony

#### Weatherproof telephone

This weatherproof telephone from FHF is as stylish for indoor use as it is resistant for outdoor use in safe areas. With an operating temperature of  $-20^{\circ}$ C to  $+60^{\circ}$ C, and an ingress protection rating of IP65, the FernTel 3 is suitable for many different applications. The unit is offered in two variations; the 16 buttons without display or with 21 buttons with display.

14 363

16 300 14 30

Both variations are offered with spiral cord or steel armoured cord. Additionally, some models of the FernTel 3 come with additional features such as telephone directory (display version) and hotline phone (ZB version).

The FernTel 3 is suitable for almost universal use thanks to its transformability and can be mounted to either a wall or desk.



#### Sonix acoustic booth

The Sonix booths are high quality acoustic booth/ shelters, designed for use in onshore, offshore, marine and heavy industrial environments. Utilising a unique advanced sound absorbing barrier, the Sonix acoustic booths provide sound attenuation of 16dB or 26dB. This allows intelligible and audible communication in high ambient noise areas.

The design of the Sonix booth series ensures that the robust GRP housing

is fire retardant to BS476, UV stable and resistant to oil, salt, chemical spills and vapours, ensuring zero maintenance throughout installation life.



#### Ex industrial telephone

The Ex ResistTel telephone from FHF is an Explosion-proof and weatherproof, industrial telephone, certified for use in hazardous dust and gas atmospheres. It is completely programmable, and has been equipped with a 21-piece stainless steel (4VA) keypad, designed for use with industrial gloves.

This Ex telephone has been developed for operation in the petro-chemical industry, offshore plants, mills and harbours. It is build to withstand extreme temperatures, air humidity, sea water dust and strong mechanical wear and tear.



# See and hear the Sonix experience

## Field equipment

#### Ex flashing beacon

The MEDC XB12 high output certified beacon has been designed for use in potentially explosive atmospheres and harsh environmental conditions. The enclosures are suitable for use offshore or onshore, where light weight combined with corrosion resistance is required. With a glass reinforced polyester body, the XB12 leads the way in signalling devices where the effects of harsh environmental conditions and extreme temperatures of -55°C to +70°C demand the highest quality and performance possible. With global certifications including ATEX, IECEx, Inmetro , cULus, ULC, CUTR & CQST, the XB12 can be specified and selected for all applications.



#### Sonix sound pressure meter

Sonix Spl 100 is a compact, ruggedized digital sound pressure meter. It is vital to ensure that any PA/GA installation produces the correct level and coverage of audio power to meet user specifications and regulatory requirements. The Sonix Spl 100 provides the latest features and benefits usually only reserved for far more expensive and complex devices.



#### Sonix mute tu PA/GA

The Sonix mute allows for direct connection of a mutable loudspeaker control to the local Hmi panel. Whilst control is local the audio is fed via the main amplifier loop. This feature removes the need for extensive, exposed mutable speaker cables back to the main PA/GA cabinets, and saves purchase, installation and maintenance costs. The mute unit ensures that all mutable speakers are part of a fully monitored amplifier loop and monitored at all times.



#### Audible and visual combination unit

This MEDC CU1 combination unit is intended for use in potentially explosive gas atmospheres providing a sound output of up to 116dB(A) and tube energy of up to 10 joules (beacon). With global certifcations including ATEX, IECEx, CUTR and Inmetro, it is suitable for use in the harsh environmental conditions found in the offshore and onshore. oil, gas and petrochemical industries.

The flamepaths, flare and body are manufactured from a UV stable glass reinforced polyester. Stainless steel screws and mounting stirrup are incorporated to ensure a corrosion-free product. A tapered flamepath is used to overcome the problems of assembly of parallel spigot flamepaths.



#### Ceiling-mounted loudspeaker

This MEDC ceiling-mounted loudspeaker, intended for use in potentially explosive atmospheres, has a power rating of up to 8 Watts (upon request) and is suitable for use in the harsh environmental conditions found in the offshore and onshore, oil, gas and petrochemical industries. The lightweight, patented design provides self-supporting and self-locking mounting

#### Sonix junction box

The Sonix junction box is produced in sheet 316L stainless steel with all stainless steel fixings and suitable for onshore and offshore installations. The unit is preconfigured with terminals and gland entries to suit safe and hazardous area installations.

#### Ex loudspeaker

The DB4B is a high power, explosion proof loudspeaker from MEDC. Certified for use in a wide range of temperatures (from -55°C to +70°C) the Ex enclosure is manufactured from GRP with a rugged thermoplastic flare providing a

onto a ceiling tile from 0.5 to 55mm thick.

The speaker is held in the mount via a twist-fit support and locking grille, giving access from above or below and allowing first fit of either ceiling or speakers. The DB20C's compact design will fit a ceiling cavity of limited space and its aesthetically pleasing appearance will enhance the surroundings.

Additionally, it is supplied with pre-drilled 3 x M20 gland entires; two for field cables loop in/out and one for connecting the loudspeaker. Internally 8 x 2.5mm<sup>2</sup> terminals are mounted in DIN rail for Live (+), Neutral (-), Earth and screen conductors.

corrosion free and aesthetically pleasing product.

The SPL figure for sensitivity (1W @ 1m) is 113dB. At 1m, 25W unit produces a maximum SPL of 127dB, the 15W unit 125dB and the 8W unit 123dB.



#### Services

From simple Ex electrical enclosures through to complex PA/GA and CCTV solutions, the availability and reliability of Sonix equipment is down to how well it is installed and commissioned. To assist clients in all aspects of site work, Eaton offers a team of

fully certified, gualified and experienced field engineers. Ensuring that equipment is installed to the latest regulatory standards, the system is commissioned fully and handed over for SAT in a compliant and expedient manner.







Eaton is dedicated to ensuring that reliable, efficient and safe power is available when it's needed most. With unparalleled knowledge of electrical power management across industries, experts at Eaton deliver customized, integrated solutions to solve our customers' most critical challenges.

Our focus is on delivering the right solution for the application. But, decision makers demand more than just innovative products. They turn to Eaton for an unwavering commitment to personal support that makes customer success a top priority. For more information, **visit www.eaton.com/electrical**.

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