



**Eaton** – convincing in terms of safety, performance and operational availability.

# Shift to Future – xEnergy switchboard systems for panel builders.



*Powering Business Worldwide*



# Energizing a world that demands more.

## We deliver:

- **Electrical solutions** that use less energy, improve power reliability and make the places we live and work safer and more comfortable
- **Hydraulic and electrical solutions** that enable machines to deliver more productivity without wasting power
- **Aerospace solutions** that make aircraft lighter, safer and less costly to operate, and help airports operate more efficiently
- **Vehicle drivetrain and powertrain solutions** that deliver more power to cars, trucks and buses, while reducing fuel consumption and emissions

Discover today's Eaton.

## Powering business worldwide

As a global power management company, we help customers worldwide manage the power needed for buildings, aircraft, trucks, cars, machinery and businesses.

Eaton's innovative technologies help customers manage electrical, hydraulic and mechanical power more reliably, efficiently, safely and sustainably.

We provide integrated solutions that help make energy, in all its forms, more practical and accessible.

With 2015 sales \$20.9 billion, Eaton has approximately 97,000 employees around the world and sells products in more than 175 countries.

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*Powering Business Worldwide*



# xEnergy Main: Controls systematically. Saves in three ways. Thinks ahead.

**With Eaton, you have a business partner who supports your expertise in every respect. With Eaton xEnergy, you have a switchboard system that provides you with a wide variety of options for reliable power distribution, motor control, automation and specific solutions to meet your customers' needs.**

The xEnergy system thinks ahead, it is designed to meet constantly increasing requirements. Designed to provide maximum efficiency in implementing your specific project needs, Eaton xEnergy provides the optimum solution for low-voltage switchgear and controlgear assemblies up to 6300 A.

Every single functional module in this switchgear assembly is perfectly prepared and systematically planned – from the switchgear and mounting system technology to the enclosures and design software tools.

## **Systematic switching = Shaping the future**

xEnergy is a technically sophisticated and cost-effective combination of the enclosure, switchgear, controlgear and protective devices, and mounting systems to provide the Panelbuilder with the equipment to optimally switch and control power, in other words to dominate it. The system is modular and offers many smart combination options to allow you to meet the most exacting of project requirements xEnergy provides a wide range of benefits to the Panelbuilder and the end-customer. These benefits also include the optimal added

value in your own panel building business and the certainty that – with Eaton – you will always be building state-of-the-art and safety-tested panels. They will also help you to save time, money and space.

# More security to your switchboard

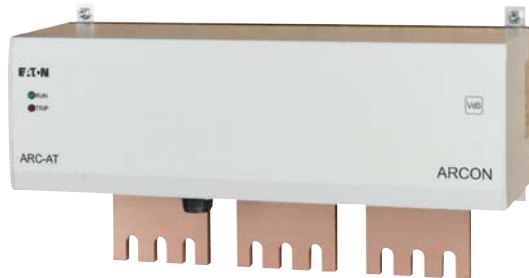
Eaton provides solutions that greatly improve switchgear and staff safety solutions that significantly cut the risk of an operational failure and any related costs potentially threatening the survival of a

company. Eaton has always been a pioneer in personal and plant protection. Our established protective circuit breakers and many innovations in this field are further improving safety for operating

personnel. In applications from tunnel power supplies to the paper industry and data centres, an uninterruptible power supply is essential for protecting people and machinery.

We provide assemblies that offer maximum availability and safety with minimum downtime.

## ARCON® Arc Fault Protection



Arc faults represent some of the risks to a reliable supply of electrical energy. Even today, they still occur in electrical power distribution systems, despite all the precautionary measures that are given due consideration and implemented in advance. They are caused by human error when work is carried out on the switchboard, as well as by contamination, overvoltages or similar occurrences. This type of event

occurs more often than you would expect, and any damage caused has serious consequences. Using ARCON® restricts the effects of the arc fault to a minimum. After the cause of the fault has been rectified and the quenching device has been exchanged, the system can be made ready for operation in the shortest possible time in order to ensure the required availability of power.

## Arcflash Reduction Maintenance System

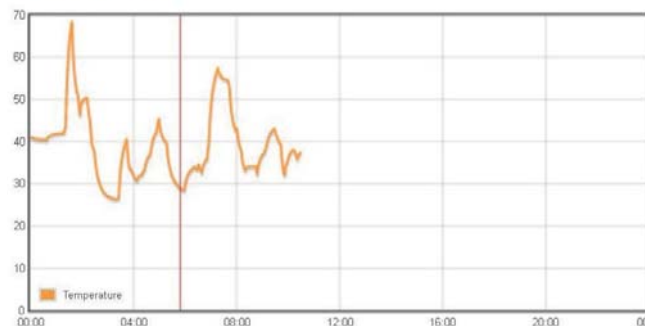


Adding individual solutions to Eaton's IZMX circuit breakers provides both more protection for systems and more safety for personnel in case there is a failure. This system guarantees added safety for maintenance staff. When this feature is enabled in the maintenance mode, the instantaneous trip setting of the IZM breaker is reduced to such a limit that the amount of energy (radiation, pressure, temperature) released in the event of a

dangerous arc flash is dramatically reduced thus increasing the safety level of any personnel in the vicinity of the equipment. This accelerated switch-off happens even faster than the switch-off of a non-delayed short-circuit trip. This function is activated either directly on the circuit breaker through an external switch, or automatically, via an external contact, or via the communication bus.

## Diagnose System

### TODAY'S VALUES



Diagnose is an energy-autonomous continuous temperature monitoring and diagnostic system. It is easy to install regardless of its position, because it can easily be fixed anywhere on the current path. The sensors supply themselves with energy from the magnetic electrical field of the live conductor, i.e. by means of inductive energy harvestings. The sensor needs an amperage of only 80 A to produce enough energy for temperature measurement and

data transfer. The values measured are then reliably transmitted through wireless technology to the monitoring station. This station saves the measured data in real time. Alarms, trending, data logging are all part of the system analysis providing a powerful tool for preventative maintenance programmes to be planned. Alarm messages can also be created and sent both to mobile phones and to a control centre.

## Passive Arc fault protection



Short circuits in electrical systems can develop a huge destructive impact and endanger human life. This applies in particular to short circuits which cause an arc. Electric fault arcs produce a faulty connection between system parts with different potentials. In doing so, enormous amounts of energy are released into the environment, primarily as heat and radiation energy of very high intensity. To effectively prevent personal and material damage in the event of a short circuit,

Eaton has developed a comprehensive package for passive arc protection in xEnergy control cabinets. The concept of personal protection in control cabinets is based on the fact that the pressure generated by hot gases, which are formed during an arc in the control cabinet, can escape upwards and away from the enclosure.

## Earthquake protection



Earthquake protection is a top priority at Eaton. The xEnergy system is a robust construction which has undergone seismic testing to the most stringent standards. xEnergy switchgear systems have been designed in such a way that they are optimally equipped for being used in hazardous areas. Due to the swaying movements occurring during earthquakes, corner

joints are the most sensitive-to-danger zones in the control cabinet.

The xEnergy enclosure only requires the addition of a corner stiffening bracket kit to pass these test requirements.

Eaton products have been successfully tested in accordance with the following international standards:

- IEC 60068-3-3: Level AG2 and AG5
- UBC-Code: zone 4
- IEEE Std. 344: class 1E (OBE @ AG2 and SSE @ AG5)
- IEEE Std. 693: moderate level (0,25g) and high level (0,5g)

# Be it for healthcare or data centers, for industrial or sewage treatment plants: Panel builders put their trust in Eaton.

**More than any other provider of switchboard systems, this expert in safe power distribution knows all about the importance of operational availability and the consequences of downtimes.**

With xEnergy, Eaton offers a design-verified low-voltage switchgear and controlgear assembly to IEC61439-1 & 2 providing the ultimate safe, reliable and efficient system. Available in five basic panel types, this modular system will "grow" in line with the project requirements and can be expanded and combined at the users' discretion.

In other words: xEnergy is the ideal product for any requirement.

**Service done within seconds**  
Eaton has therefore designed a number of different types of outgoing modules. The XF outgoing feeder system using fixed built-in components. Maintenance and downtime in this type of fixed system can be unacceptably long for some applications. The xEnergy system has two solutions for applications where downtime is critical. The XR system is based on plug-in modules, the replacement of which takes no more than a few minutes.

However even a few minutes can be too long in some cases so the fully withdrawable XW system provides the most effective and least downtime alternative. The XW fully withdrawable units (drawers) can be replaced under live-line working conditions that dramatically reduces any downtime.



Functional and residential buildings



Hospitals



Water treatment plants



Hotels

## Benefits

- A design-verified, modular and therefore flexible system
- Verified/safe assemblies of switchgear and enclosures
- Combination with a large number of components
- A solution for all kinds of application (from power distribution to motor control centers)
- Time-saving
- Optimal safety
- Delivery as flat-pack or as a pre-assembled switchboard cabinet
- Software tools and training for easy planning and implementation
- Long service life, even under harsh operating conditions



## Consistently tested and documented in accordance with IEC61439

Low-voltage switchgear assemblies are classed as electrical operating equipment. A compulsory pre-requisite for lawfully releasing such operating equipment for sale and use within the European Union is their compliance with the requirements of some relevant European Directives (colloquially often called "CE-Directives"). However, low-voltage switchgear assemblies consist of different electrical operating equipment. A switchgear assembly includes - for example - circuit breakers, contactors, miniature circuit breakers, residual current devices, wires, terminals etc. So, when we talk about electrical operating equipment in the context of switchgear assemblies, we need to be clear about whether we refer to a switchgear assembly "as a whole" or only to an individual electrical operating equipment that is part of the switchgear assembly. One criterion for meeting the most important requirements regarding low-voltage switchgear assemblies - in view of the low-voltage and EMC directive - is their compliance with the IEC 61439 series of standards. Eaton has consistently tested its switchgear assemblies in accordance with IEC61439 and provides consistent documentation on these tests.

## Internal separation

Internal separation between the functional units of an assembly provides protection against accidental contact with live parts belonging to adjacent units, limitation of the probability of initiating an arcing fault and protection against the passage of solid foreign bodies from one unit in an assembly to an adjacent unit. Depending on operational requirements, the xEnergy system provides various levels of internal separation up to the maximum Form 4b.



# 2 Configurations, Busbar Back & Busbar Top

Busbar Back



Busbar Top



## Standards

### xEnergy complies with the following international standards

IEC 61439-1	General rules
IEC 61439-2	Power switchgear and controlgear assemblies
IEC/TR 61641 Ed 2.0	Enclosed low-voltage switchgear and controlgear assemblies - Guide for testing under conditions of arcing due to internal fault
IEC 60529	Degrees of protection (IP Code)
IEC 60068-3-3	Environmental testing - Part 3: Guidance. Seismic test methods for equipment
IEEE 344 IEEE	Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations
IEEE 693	IEEE Recommended Practice for Seismic Design of Substations
IBC	International Building Code



System	Busbar Back	Busbar Top
Rated operational voltage	380 - 690 Vac	380 - 690 Vac
Rated frequency	50 / 60 Hz	50 / 60 Hz
<b>Main busbar data</b>		
Position of the bars	rear - top/bottom	top/center/bottom/vertical
Rated insulation voltage	1000 Vac	1000 Vac
Rated impulse withstand voltage	up to 12 kV	up to 12 kV
Rated current	800 - 5500 A	800 - 6300 A
Rated short-time withstand current	50 - 100 kA / 1 s and 50 - 66 kA / 3 s	35 - 105 kA / 1 s and 35 - 66 kA / 3 s
Rated peak withstand current	220 kA	220 kA
<b>Vertical distribution busbar data</b>		
Rated insulation voltage	1000 Vac	1000 Vac
Rated impulse withstand voltage	up to 12 kV	up to 12 kV
Application	Fixed / Removable / Withdrawable	Fixed / Removable / Withdrawable
Rated current	800 - 2000 A	800 - 2000 A
Rated short-time withstand current	up to 100 kA / 1 s	up to 105 kA / 1 s
Rated peak withstand current	220 kA	231 kA
<b>Enclosure data</b>		
Degree of protection	IP31 / IP42 / IP55	IP31 / IP42 / IP55
Form of separation	Form 2b / Form 3b / Form 4a & 4b Form 4a type 2 / Form 4b type 6 & 7	Form 2b / Form 3b / Form 4a & 4b Form 4a type 2 / Form 4b type 6 & 7
Entry of cables	Top and / or bottom	Top and / or bottom
Access	Front	Front and rear
Standard Colour	RAL 7035 / Special colours are available	RAL 7035 / Special colours are available

# xEnergy Main - 5 basic variants for Busbar Back and Busbar Top



## XP Power Sections

- Incoming supplies, outgoers and couplings with circuit breakers IZMX16/40 and Series NZM
- Internal separation up to form 4
- Cable connection from the top or bottom
- Incoming supply system for drill-free cable connection
- Fixed or withdrawable
- 3 or 4-pole and 3p+N
- 630 - 6300 A
- Widths of 425 - 1350mm
- Circuit breakers can be placed individually, next to each other or on top of each other (4 per section)



## XF outgoing sections for fixed outgoers up to 630A in Form 2b

- Outgoers with circuit breakers PKZ, PKE, NZM, FAZ,
- Section height 2000mm, section depth 600 or 800mm
- Cable connection area at the rear or side
- 3 or 4-pole and 3p+N
- IP31, IP42, IP55
- Circuit breakers can be combined with all accessory components, e.g. with a rotary drive
- Transparent doors (glass doors) are available
- Dropper bar can be selected from 800 – 2000A



## XF outgoing sections for fixed outgoers up to 630A in Form 4b

- Section widths 600/800/1000/1200mm
- Module widths 600mm
- Cable connection area at the rear or side
- Each module has its own front plate
- 3 or 4-pole and 3p+N
- Form 4b up to Type 7
- IP31, IP42, IP55
- Circuit breakers can be combined with all accessory components, e.g. with a rotary drive
- Transparent doors (glass doors) are available
- Dropper bar can be selected from 800 – 2000A
- Clear separation of functional areas



## XF Box Solution

- Fixed type Motor Starters
- Section widths 600/800/1000/1200mm
- Module widths 600mm
- Cable connection area at the rear or side
- Each module has its own door
- 3 or 4-pole and 3p+N
- Form 4b up to Type 7
- IP31, IP42, IP55
- Circuit breakers can be combined with all accessory components, e.g. with a rotary drive
- Dropper bar can be selected from 800 – 1600A
- Clear separation of functional areas
- Can be operated behind the door or with a door coupling rotary handle



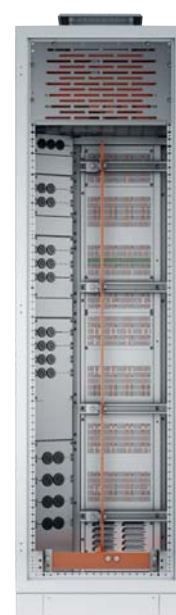
### XG General for general equipment to be installed

- Empty sections for individual equipment to be installed e.g. Power Factor Correction, Large Variable Speed Drives, plc systems etc.
- Fitting systems for devices for modular installation
- Individual fixed units on a mounting plate
- Control technology – mounting plates as high as the section or split ones can be installed
- Section height 2000mm
- Section depth 400/600/800mm
- Section width 425/600/800/850/1000/1100/1200/1350mm
- IP31, IP42, IP55
- Compatible with installation systems Profi+, EP, IVS, Sasy60i



### XR Removable

- Plug-in Motor Starters
- Power outgoing with circuit breakers and strip type switch-disconnector-fuse, up to 630 A
- Empty modules for individual applications
- Plug-in modules and strip type switch-disconnector-fuse can be replaced under live-line working conditions
- Internal separation up to form4 / type7
- Easy maintenance and reduced down times
- Rated current of dropper bar  $I_n = 800-1600A$
- IP31 / IP42 / IP55
- Modules adaptable in height
- Each module can be equipped with a separate door



### XW outgoing sections - Withdrawable

- Section widths 600/800/1000/1200mm
- 3 or 4-pole
- Rated current of dropper bars  
 $I_n = 1000A-1600A$
- IP31, IP42, IP55
- Internal separation up to Form 4b/type 7
- Empty drawers for individual applications
- Easy and uniform handling
- Unambiguous position indicator
- Drawer units available:
  - o Energy outgoing up to 400A
  - o Direct on line starters from 0.06 – 132kW
  - o Reversing starters from 0.06 – 132kW
  - o Star-Delta starters from 5.5 – 110kW
- Motor starters above 132kW up to 250kW and MCCB feeders up to 630A are mounted as fixed units.
- SmartWire-DT solutions are available for automaton and iMCC applications
- Softstarter solutions are integrated

# xEnergy Main - Busbar Top

Using Eaton's experience the xEnergy system is tailored to your requirements as a Panelbuilder. That is why the xEnergy system is constantly being developed to offer additional solutions to facilitate the changing requirements of the market. One example is the recently introduced: xEnergy Busbar Top.

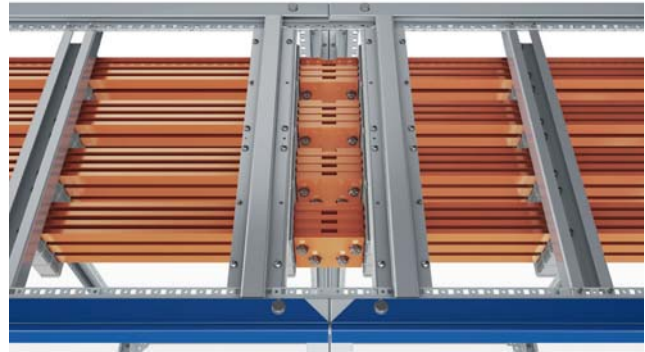
In the development of xEnergy Busbar Top, utmost attention has been paid to the compatibility of new components with the proven xEnergy system (Busbar Back). Thanks to its modular concept, the system grows with specific customer requirements.

## Free choice - free access

An essential feature of the new system is the new patented **Open Frame structure** with a freely selectable rail position. Using the newly developed modular busbar carrier, currents up to 6300A are possible.

A further valuable feature: Permanent availability of electrical equipment and installations is an increasingly important issue, and production downtime needs to be avoided when and wherever possible.

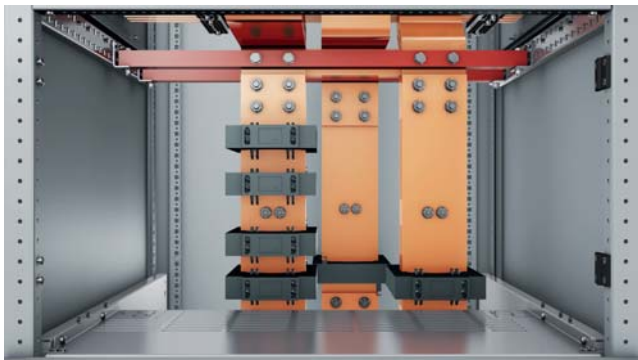
The unit is equipped with fully featured connections at the back. This makes installation and extensions easier to achieve.



## Modular, multi-talented

Air circuit breakers and modular circuit breakers can be installed above or next to each other in the xEnergy power field, for use as incomers, outgoers or couplings. Our incoming cubicles can be fitted with measurement modules. They also have space for special versions with up to 4 current transformers per phase

(as usual in the Middle East). The current transformers are installed on copper terminals, connected to the phase conductors. In order to provide the best layout for current transformers installation, the phase conductors are routed into the enclosures at different depths.



The incoming cubicles provide space for special versions with up to 4 current transformers per phase.

## Modular, high-density

Power Distribution with focus on footprint reduction to limit the need for increased non-revenue generating floor space.





## XF Box solution - A flexible solution

Outgoing feeder panels are just as easy and flexible to configure. A large number of switching combinations is possible; MCCB feeders, Motor Starters, Soft Starters and Variable Speed Drives. Even special configurations of MCCBs with remote operator and/ or plug-in socket and rotary handle. The internal separation can be configured for Form 4b.

The cable connection compartments are modular in construction. This has the advantage that no panels or covers obstruct access to the interior of the compartment during installation and cabling.

In brief: xEnergy Busbar Top provides an easy to install, technically fully-featured and cost-effective power distribution system which saves you time and effort during installation and maintenance.

### Benefits

- Simple connection to the main busbar
- Easy access
- Significantly reduced installation time

# xEnergy Light

## Power distribution board and control panel up to 1600 A



The proven xEnergy Light cabinet system is suitable for a wide range of applications. Thanks to its incredible versatility, xEnergy Light can be used both as a power distribution board and as a control panel in industrial applications and in functional buildings.

The robust 2 mm thick, multiple-folded sheet-steel frame provides the stability required for any application, in stand-alone enclosures as well as in add-on enclosures which are common in power distribution.

Flat-pack orders allow for space-saving and therefore cost-efficient deliveries. xEnergy Light can also be ordered as a pre-assembled cabinet. xEnergy Light meets of course the requirements of the latest IEC 61439/1-3 and IEC/EN 62208 standards.

### Benefits:

- Pre-assembled or flat-pack
- Wide range of enclosure sizes to choose from
- Easy to handle
- Robust frame construction
- Flexible and easy to mount
- Same screw head throughout the system
- Corrosion-resistant powder coating
- Straight-forward industrial design

### Features:

- IEC 61439/1-3 and IEC/EN 62208
- Combination options with different installation systems such as EP, xEnergy Basic, SASY60i,...
- Degree of protection IP40 and IP55
- Stand-alone cabinet or add-on system
- Foam-shaped door sealings
- Consistent system up to 1600 A

# xEnergy Basic

## Wall-mounted and floor-standing enclosures for electrical distribution up to 630 A



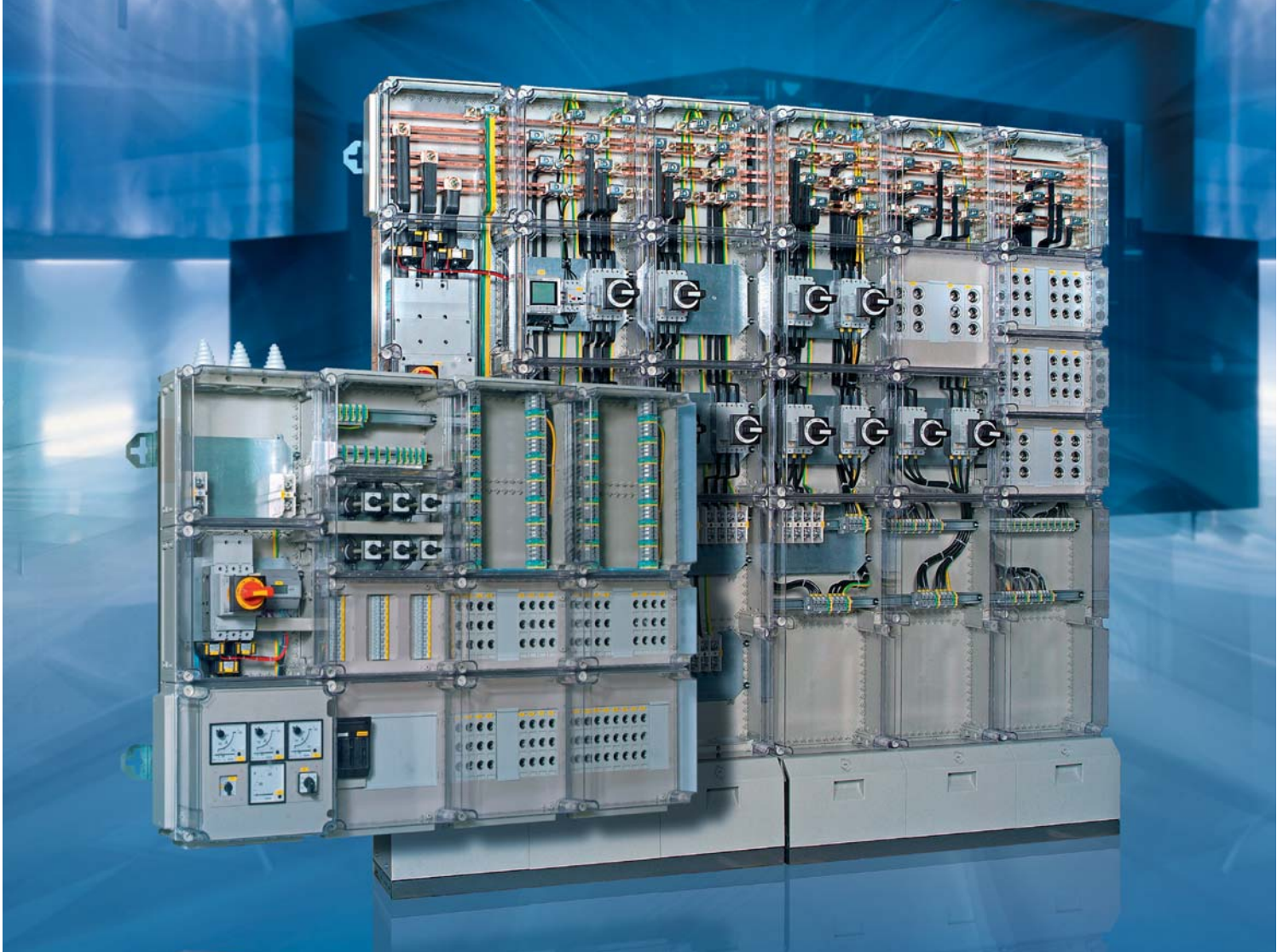
The smallest distribution board of our xEnergy family is the most flexible and variable system in the entire range. The diversity of different types and sizes makes the use in almost every application possible. Thanks to its certification as low-voltage distribution board intended to be operated by ordinary persons acc.to IEC/EN 61439-1/3 as well as to IEC/EN 62208, the xEnergy B is the first choice for electrical distribution in residential and functional buildings.

### Benefits:

- Wide range of products
- Pre-assembled or flat-pack
- The interior is completely flexible
- Large number of accessories
- Compatible with other products

### Features:

- Sheet steel enclosure polyester powder-coated (grey or white)
- Floor-standing, surface-mounted or flush-mounted version
- Degree of protection IP30, IP43 or IP54
- Impact resistance IK07
- Protection class I



# The all-insulated xEnergy safety distribution enclosure.

**Requirements electrical electrical power distribution are constantly increasing. Eaton's products are not only the answer to these requirements, they also offer the highest degree of Safety, Reliability and Efficiency for the customer.**

## **A consistent system for up to 1600 A**

Eaton's all-insulated Ci power distribution enclosures have been designed to meet the most stringent requirements and offer a consistent system for up to 1600 A. These all insulated distribution enclosures provide an IP65 degree of protection and are insensitive to almost any environmental impact such as dust, moisture and water and chemical corrosion.

## **Timeless optimized protection**

This type of enclosures made of high-quality polycarbonate

offers additional protection against mechanical impacts and caustic substances. Thanks to their total insulation, xEnergy safety distribution enclosures provide maximum protection against electric shock.

## **Cover equipped with 4 spring-loaded fittings**

Thanks to a cover equipped with 4 spring-loaded fittings, the xEnergy safety system provides special protection against short-circuits and arc faults. Where necessary, it ensures pressure-relief by allowing the pressure to escape by lifting the cover a few millimeters and closing it again immediately.

## **An easy system**

All three types of enclosures are based on the same system components: This reduces the storage place required for the system and makes their handling significantly easier.

## **Safety comes first**

Total insulation is the safety measure that outperforms all other safety precautions by far because there is no touch voltage possible. Carrying voltage over to other parts of the system is therefore impossible.

## **High system availability**

Reliable system availability is increased because short-circuits between live parts and protective conductors or mounting plates due to the slipping of a tool, for example, are not possible.

## **Economic efficiency for all parties involved**

### **For the system planner:**

Any of the common applications can be covered through as few as five enclosure sizes and four different depth levels.

### **For the panel builder:**

Sophisticated connection technology allows grouping and arranging the enclosures in every direction without using any special tools. Four installation technologies are available to complete the system: Mounting plates, module rails, carrier rails and busbars.

### **For the system integrator:**

Supply lines can be inserted from any side, and cables can be interconnected in the socket.

# Versatile circuit breakers up to 6300 A – for cost-effective, optimized solutions.

Eaton's air circuit-breakers up to 6300A. The highlight of the Eaton series: The Digitrip 1150 P trip electronics. It covers all possible applications. And in conjunction with a communication module ensures that operation can be monitored from all round the globe.

The modular structure, integrated detail solutions as well as a complete range of accessories and additional functions make it easy to adapt the circuit breaker to any of the required applications. Optionally it can be adapted right at the factory – without any extra cost for additional installation work by the panel builder.



The next generation trip unit platform:

## Power Xpert Release (PXR)

- LCD display with multilingual capability
- Current metering on PXR20 and power metering on PXR25
- Extended range for pickup value and delay timing setting
- „OFF“ setting available for ground fault(G) and non-delayed instantaneous trip(I)
- Onboard Modbus communication (standard on PXR25 and optional on PXR20)
- MicroUSB for computer connection
- PXR Configuration and Test Tool to remotely configure and test the trip unit
  - Trip test
  - Waveform capture
  - Diagnostics
  - Long trip curve setting
  - ZSI/Thermal Memory on/off

Safety is a worldwide concern:

## Arcflash Reduction Maintenance System provides greater safety for maintenance and operator personnel.

In the event of an arc fault the patented Arcflash Reduction Maintenance System trips faster than a short-circuit release. In conjunction with ARCON™ Eaton offers the highest level of personnel and equipment protection against arc faults.

# Circuit-Breakers - Reliable Protection for systems, generators and motors up to 1600 A

The new Eaton circuit-breakers cover a range from 15 to 1600 A with just four frame sizes. And they are optimally matched to one another. The wide application spectrum covers every requirement as Eaton has closely examined what every customer needs and implemented the appropriate solutions. Outstanding, for example, is the continuous switching power range – which extends from the smallest to the largest circuit-breaker or the modular system which can be matched without difficulty to suit the specific application. Thus, the circuit-breakers can be used universally – from the smallest of service distribution boards, to machine controls or motor starter combinations, up to large energy distribution systems with a short-circuit breaking capacity of up to 150 kA.



## NZM

- Global availability
- Global approvals



- Only 4 different Frames 20-1600A
- Up to 690VAC/1000VAC/1500VDC
- Up to 150kA / 415VAC - P
- 3 and 4pole Devices -
- Highest safety - for usual switching up to intelligent protecting
- Broad Accessory offer

## LZM

### Available for the EMEA market

- Local approvals
- Only 4 different Frames 20-1000A
- Up to 440VAC - Solution for all commercial buildings
- Up to 50kA / 415VAC
- Tailored Accessory offer
- Highest safety for usual switching up to intelligent protecting

## BZM

### Available for the Eastern Europe, Middle East, Africa

- Local approvals
- Only 3 different Frames 16-400A reduced integration and stock costs
- Up to 440VAC
- Up to 50kA / 415VAC
- Mainly 3 (1,2 and 4pole for Frame 1)
- Basic Accessory offer
- Highest safety for usual switching up to intelligent protecting



# A smart system to distribute, switch power, and to protect at the same time.



## Power Xpert FMX®

**Medium-voltage power distribution based on SF<sub>6</sub>-free vacuum technology**

An innovative and compact switchboard system with fixed circuit breakers for applications up to 24 kV, suitable for use in distribution networks of power providers as well as for industrial and public utility companies. FMX sets new standards in terms of convenient connecting, compactness, operational safety and user-friendliness.



## Power Xpert UX®

The Power Xpert UX is a global design of MV Primary Switchgear that is certified to the latest IEC 62271 -100 and -200 standards. UX is a complete range up to 4000 A, 50 kA – 3s short circuit withstand, and 50 kA – 1s AFLR internal arc classification. The compact UX design is based on Eaton's leadership vacuum technology and is available in three panel widths (600, 800, 1000 mm) and three system voltages (12, 17.5, 24 kV). Eaton's latest vacuum circuit breaker, the W-VACi, sits at the heart of Power Xpert UX. The W-VACi, with its advanced vacuum interrupter contact designs, yields longer life and is very compact.



## Xiria switchgear

**Medium-voltage power distribution based on SF<sub>6</sub>-free vacuum technology**

For a high level of operational safety in applications up to 24 kV. The hermetically sealed housing with primary system components and mechanisms ensures Xiria is maintenance-free. It is available in two basic panel versions (for ring cable connections as well as for the protection of network transformers and related cable connections) and its design is ready for use in fully automated networks.



## Power Xpert® XP

**Busbar systems in copper and aluminum**

The sandwich-type design of XP makes it suitable for a wide variety of applications from 500 to 6300 A. It manages any challenge an electrical installation may face, ensures a significantly reduced power loss compared to using cables, saves energy and reduces emissions.



## CS

### Wall-mounted enclosure made of solid sheet steel

It is used where effective protection against direct contact with live parts is required, available in 45 enclosure sizes.



## NH fuse load disconnecter units

### NH fuse load disconnecter units

NH fuse load disconnecter units are appropriate protection and switching devices for energy distribution. They can be used in power plants, municipal mains stations, cable distribution cabinets, industrial distribution systems and low-voltage main distribution systems.

#### Their advantages:

- Time-saving mounting thanks to drop-down windows, no need to disassemble the units
- Easy access to cable connection area
- Cover can be locked in an open and closed position
- Monitoring of the cover position thanks to two signaling switches for each cover
- Ergonomic handle for easy activation of the switch
- Manifold possibilities for cable connection
- Outgoer can be changed from top/bottom
- Cover can be lead-sealed



## SASY 60i

### Modular busbar system

For effective power distribution in the switchboard cabinet. SASY 60i is a safe, compact and modular busbar system for efficient energy distribution in the switch cabinet. Thanks to the time-saving mounting technology, feeders and outgoing as well as circuit breakers can quickly and efficiently be mounted. In combination with the new generation of motor protectors and circuit breakers from Eaton, SASY60i provides a consistent, UL-certified solution for the global market when it comes to switching, controlling, protecting and distributing of energy.



## PIFT

### Plug In Fuse Terminal

Revolutionizes the fuse-related technology in distribution board building. With its wide range of different accessories and types of fuses it can accommodate, its modular design and its uncomplicated options for expansion, it offers a high level of flexibility. The PIFT has an extremely high level of short-circuit strength of up to 120 kA at AC690V. Additionally there are optional fuse monitoring, Amperemeter, Voltmeter and an integrated switch-on lock capability which makes the PIFT an extremely versatile fuse-switch unit.



## PKZ

### Motor and system protective circuit breaker

A synonym for quality and innovation, with an exchangeable tripping block, if required.



## PKE

### Motor-protective circuit breaker

Easy to equip with auxiliary switches, "tripped" indicators and other components for a minimum of planning efforts.



## DIL

### Contactors

Designed for individual solutions classified according to customer segments.



## LS/FI

### Miniature Circuit Breakers, Residual Current Devices

Complete ranges of Miniature Circuit Breakers, especially designed for residential, commercial and industrial use.



## SmartWire-DT®

### Insights into the technology

Eaton has inaugurated a new age in connection technology between the individual control panel components with SmartWire-DT®. SmartWire-DT® replaces the control wiring in all components right down to the sensor, thus enabling direct and continuous communication between the central control and moving plant components. Complex wiring becomes unnecessary, remote intelligence is created and entire device levels are eliminated, including of course the associated procurement and maintenance costs.



## Soft Starter DS7

The DS7 is Eaton's solution for judder-free motor starts with power network protection. It is the perfect alternative to direct-on-line or star-delta motor starting. With the three phase motor currently the optimum drive for simple and cost effective machine and system building, the DS7 is the ideal solution.



## DC1 Compact Drives

### Insights into the technology

The DC1 is the new compact variable frequency drive by Eaton. Its simple mounting and installation requirements, together with its basic parameter configuration, make this drive ideal for fans, pumps, and conveyor systems. A straightforward commissioning process makes the DC1 ideal for mass production applications in the field of machine building.

# Service / Software / Support

Eaton actively supports the “Services in Automation” initiative of ZVEI (Association of the German electrical and electronics industry). For the services we offer, this means: The services are tailored to the customer’s needs, they are easy to identify, they guarantee that the competences required for the services offered are available and that the results and performance data are defined together with the customer.

## Service



### Design-verified quality

Eaton is DIN ISO 9001 certified. The quality of Eaton products is reliable. For switchboard systems, Eaton trusts in a modular design principle consisting of accurately fitting functional modules, design-verified in accordance with the IEC/EN 61439 standard. The system modules can be arranged to comply with specific national requirements such as DIN VDE, CEI, NF or UNE.



Eaton offers all relevant protective switchgear assemblies in the required degree of protection up to 5500 A. In addition, design verification of the entire switchgear, fitting system technology and cabinet in accordance with IEC/EN 61439 provides for a high level of safety, reliability and efficiency.

This modular system allows for easy expansion to meet increasing future requirements.

### Delivered according to customer’s needs

Eaton offers the entire product range as a flat-packed consignment, functionally packed as assembly groups, or as cabinets pre-assembled to customer specifications. Short delivery times make it easy to react to enquiries or modifications requested by the customer.

- Easy configuration and ordering thanks to software configuraton tools that support the setup of parts lists
- Fast delivery ex warehouse thanks to lean logistic processes
- Easy handling of individual parts thanks to convenient packaging units
- Safe and time-saving assembly based on Eaton assembly instructions

The system offer is optimized for the incorporation of internationally available Eaton switchgear and protective devices and it is completed by configuration and planning tools.

The right tool for every project.

## Technical support



Eaton’s technical support is both competent and reliable. New customers are offered optional training on how to build a design-verified switchgear assembly.

The advantage of realizing the first switchgear assembly directly with the panel builder is an opportunity to communicate the optimal workflow.



POWERED WITH



TECHNOLOGY™

xEnergy

Under license of Eaton

# Eaton Partner program

The key to your success with xEnergy switchboard systems is the Eaton Partner program. Joining the program is well worth it: Not only will you receive a wealth of insider information, you will also be the first to get informed about facts and innovations regarding xEnergy.

To learn more about the xEnergy Partner Program please contact your nearest Eaton Sales Office.

Visit us at [www.xenergy-partner.com](http://www.xenergy-partner.com)

## Benefits

- Listing as a Licensed Partner on the Eaton website
- Access to BAs, ILs (building and assembly instructions), Configurator, certificates and technical data sheets
- Continuously up-dated product information
- Software downloads
- Installation instructions
- Information material for your customers, such as catalogues and flyers
- Certificates of conformity and guidelines regarding IEC standards



## Software and Documentations

Eaton provides you with the appropriate tools. Software tools for planning, documentation and calculation not only support planning engineers, but also panel builders or installers. Eaton's toolbox is perfectly designed for network and system planning right through to ordering. Using Eaton's tools including the system-specific data ensures a safer, faster and more efficient way of processing orders.

### Eaton xEnergy Main Support

#### Configurator free of charge

- One configurator to plan and design for xEnergy Main, Light, Safety and Basic
- To make it as easy as possible for you to plan and design an xEnergy system, we offer you the proven xEnergy Configurator as a free planning tool.
- Easy to handle when selecting xEnergy components
- Windows-based dialogue guidance
- Functional, self-evident structure
- Short training period thanks to Look and Feel

- Versatile applications
- Project management and system structure
- The function-based system choice automatically generates the suitable distributor
- Generation of a bill of material for steel work, device fitting kits and mainpower devices
- Generation of a front view for providing offers, individual adjustment by Drag and Drop
- Calculation of the copper and of the temperature rise

#### More information

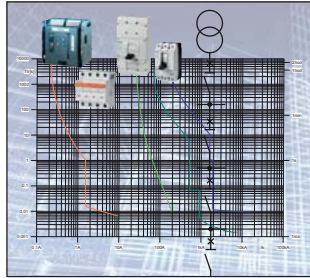
- Detailed catalogue with Ordering section and Technical Data section
- Guidance thanks to instruction leaflets, set-up instructions and technical manuals

All data are freely available at [www.xEnergy-partner.com](http://www.xEnergy-partner.com). For technical questions please contact us at [SupportDistributionBoardAustria@eaton.com](mailto:SupportDistributionBoardAustria@eaton.com).



A graphic-oriented draft system for calculating low-voltage networks equipped with Eaton protective switchgear. xSpider is available for free download.

The software includes a database with all protective switchgear (MCBs, MCCBs, ACBs, fuses, motor starters). MatSelect is a database for the management of product and material data in both user-defined and standardized classification systems.



## TC Tool

### Calculation of results

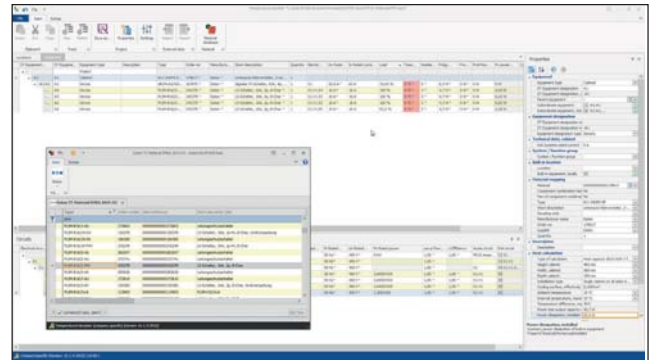
$I_{na} < 1600A$

Calculating the temperature-rise within the switchgear and controlgear assembly: Calculate power loss of all circuits including the internal conductor on the basis of the rated current. Power loss of the switchgear and controlgear assembly is calculated by adding up the power losses of the circuit (total load current is limited to the rated current of the switchgear and controlgear assembly).

Power loss of conductors is

determined by calculation.

Determining the temperature-rise characteristic curve within the switchgear and control-gear assembly: From the entire power loss using the procedure mentioned in IEC 60890.



## CurveSelect

The program for characteristic curves of protective devices is available free of charge and allows the user to display setup-specific tripping curves of several protective devices simultaneously – both in terms of time and electric current values.

The tool makes it easy for the user to analyze the interaction of NZM and IZM circuit breakers, PKZ motor-protective circuit breakers, ZB overload relays and circuit breakers as well as h.b.c. fuses.

## Freely defined curves

(FreeStyleCurves = FSC) enable the user to directly compare the

- selected motor protector and motor starter characteristics,
- incoming supply switches and up-stream medium-voltage protection
- intended expansions and existing protective equipment.

CurveSelect supports you in planning and documenting your system.

Documentation on the subject of "EN61439"

This paper is all about explaining as clearly as possible how low-voltage switchgear assemblies can (must) be designed and released for sale and use in order to be safe and to comply with the laws.



Specifications tables:

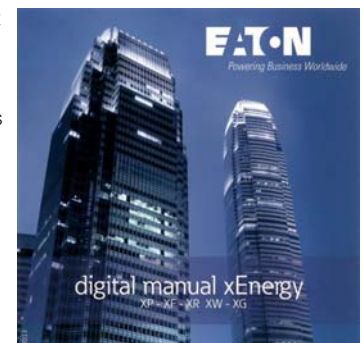
The specifications paper on circuit breakers, miniature circuit breakers and motor protectors makes the choice of the right products easier and faster. Applications can be configured to customer needs in a menu guided way.

- Selectivity
- Back-up protection
- Selection of motor protection

[illegible]

Assembling Video:

This video shows how easy it is to assemble and combine several distributors with each other. In addition, you can download the individual steps as a PDF document.



Eaton is a power management company with 2015 sales of \$20.9 billion. Eaton provides energy-efficient solutions that help our customers effectively manage electrical, hydraulic and mechanical power more efficiently, safely and sustainably.

Eaton has approximately 97,000 employees and sells products to customers in more than 175 countries.

For more information, visit  
[www.eaton.eu](http://www.eaton.eu).

