

MODAN® Power Distribution Systems The original - now better than ever

MODAN®
Modular switchboard
system



Powering Business Worldwide

Flexible Solutions for Power Distribution and Motor Control



The power distribution systems offer flexible solutions for all your requirements up to 6300 A. Function units that can be fitted to individual requirements provide the basis for creating flexible solutions.

The individual sections can

- Feeders and outgoers – MODAN® P
- Withdrawable units – MODAN® W
- Removable compartments – MODAN® R
- Fuse-switch units – MODAN® R
- and for individual configurations MODAN® G

The sections are available with protection to IP 30/31, IP 40/41 or IP 54. You can choose between cable and busbar trunking connection systems which can be connected from the top or bottom. They are naturally available for all network types.

Our new withdrawable units technology now also enables us to meet the requirements of the respective degree of protection while the drawers are in test and disconnected position.

Parallel busbar routing without a lateral overlap allows the exchange of individual sections in the assembly. Your system can be expanded easily at any time. Two independent main busbar systems offer a wide range of different circuit options.

Advantages:

- Latest drawer units technology complying with the degree of protection in operating, test and disconnected position of the drawers
- Design-verified and documented according to IEC 61439-2
- Personal safety and equipment protection according to TR 61641
- Optionally available with the Arcon active arc-fault protection system for highest personal safety and equipment protection
- Permanent temperature monitoring of the system thanks to Eaton's Diagnose
- Available worldwide thanks to license partners
- Comprehensive information material is available

Applications:

- Data center
- Chemical industry
- Automotive Industry
- Oil and gas industry
- Glass and aluminum industry
- Hospitals
- Paper industry
- Commercial buildings
- Power Plant Technology
- Sewage treatment plants



MODAN® P – Power

- Feeders, outgoing or couplings up to 6300 A
- Fixed/withdrawable units
- 3-pole or 4-pole circuit-breakers
- Cable or busbar trunking connection from bottom or from top
- Rated operational voltage 400 to 690 V AC
- Rated short-time withstand current up to $I_{CW} = 120 \text{ kA}/0.5 \text{ s}$ in 4000 A – 6300 A systems
- 2 outgoing up to 1000 A, 3 poles in a 600 mm wide section. Reduced costs of the section and at the same time less operational space requirements



MODAN® R – Removable

- Removable compartments for motor starters up to 90 kW
 - Power outgoing up to 630 A
 - Up to 14 removable compartments possible per section
- or
- Power outgoing with switch-fuse units up to 630 A
 - Up to 27 switch-fuse units possible per section
 - Main current and control current plug connected
 - Cable connection from top and bottom
 - Removable compartments can be exchanged when energized
 - Simple maintenance and reduced downtime



MODAN® W – Withdrawable

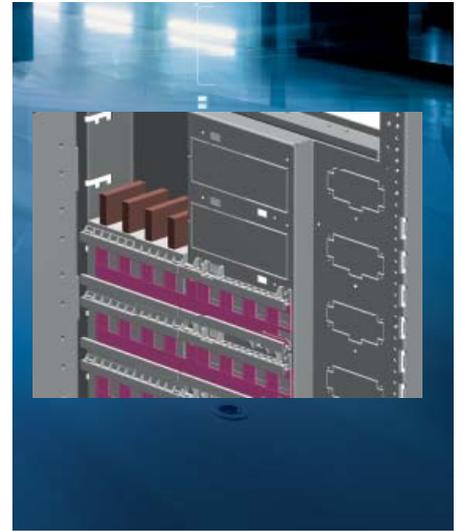
- Each section can be equipped with a maximum of 32 drawers
- Motor starters up to 250 kW and power outgoing up to 630 A
- Test and disconnected position is possible while complying with the requirements of degrees of protection up to IP54
- Withdrawable units can be exchanged while energized, and they can be expanded
- Section dropper bar free of arc fault roots
- Standard and simple operation
- Cable connection from top and bottom
- Simple maintenance and minimum downtime required

New withdrawable units technology for MODAN®



- Thanks to the new withdrawable units technology, MODAN® not only provides for flexible energy and motor-starter combinations for up to 250 kW, but also meets the requirements of the most stringent safety standards and ensures a maximum of availability.
- Compliance with degrees of protection up to IP54 in operating, test and disconnected position, with the door being closed, is a significant improvement in terms of safety.
- When changing the operating position it is no longer necessary to mechanically move the drawers.
- A section dropper bar free of arc fault roots comes as standard and emphasizes our concern for a maximum of personal safety and equipment protection.
- The new withdrawable units technology, thanks to a wear-free type of contacting, is based on the principle of "switching instead of plugging in".
- Handling the operation, test and disconnected position is fail-safe and the positions can be locked without applying any force.
- Communication systems can be added via Profibus.
- The type of internal separation is Form 4b.
- The complete system is type-tested according to IEC 61439-2.
- Project planning can be done using the Configurator or ProPlan software.
- The cable connection area is available in a width of 400 mm or 600 mm
- The IP40 and IP41 degrees of protection have been added for the complete system.





- **Up-to-date front design** provides clarity and **clear identification of the module units**.
- **Micro-drawers** ensure **maximum packing density**.
- A **robust locking system** increases the **resistance to arc faults**.

- A new **type of switch-contacting** allows for **fast** and **precise switching** between the different operating statuses using a **minimum of force**.
- Up to **48 control circuits per drawer** provide unlimited possibilities for control, communication and visualization purposes.

- A **completely encapsulated dropper bar** ensures **optimum arc-fault protection**.
- The compact type of contacting leaves **more space** for switchgear and communication modules.

Technical data the new withdrawable units technology:

Rated operating voltage of the section dropper bar U_e	up to 690 V AC
Rated current of the section dropper bar I_e	1600 A
Rated short-time withstand current I_{CW} (1s)	80 kA
Rated peak withstand current I_{pk}	176 kA
Type of internal separation	up to Form 4b
Degrees of protection	IP30, IP31, IP40, IP41, IP54
Degree of protection with the doors open	IP20
Number of drawers per section	max. 32
Dimensions: Width of the drawers	600 mm, 200 mm, 120 mm
Dimensions: Depth of the drawers	475 mm, 425 mm
Dimensions: Height of the drawers	75 mm x n
Sheet thickness of the doors	2 mm

More security to your switchboard

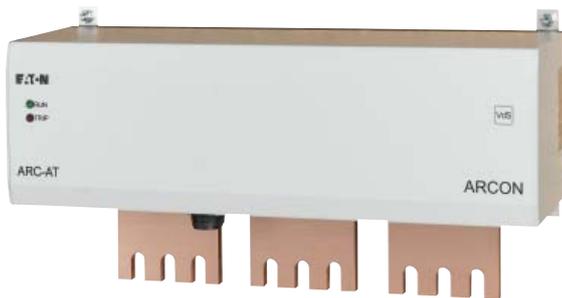
Eaton provides solutions that greatly improve switchgear and staff safety solutions that significantly cut the risk of an operational failure and any related costs potentially threatening the survival of a company.

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

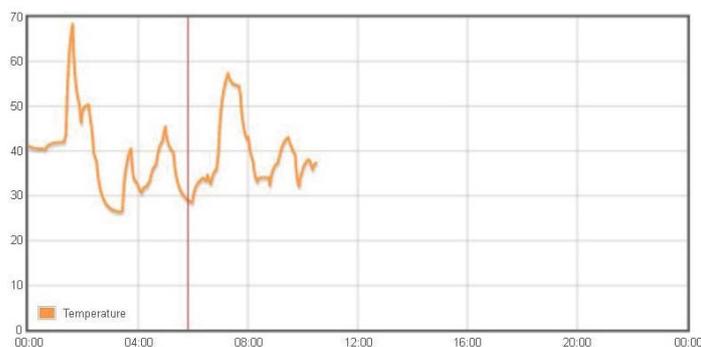


Adding individual solutions to Eaton's IZMX circuit breakers provides both more protection for systems and more safety for personnel in case there is a failure. This system guarantees added safety for maintenance staff. When this feature is enabled in the maintenance mode, the instantaneous trip setting 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



To effectively prevent personal injury and damage to property in the event of a short-circuit, Eaton has developed a comprehensive package for passive arc-fault protection in MODAN® cabinets.

On the one hand it is possible to apply an arc-fault root reducing epoxide-type of coating to main busbars and other bars in order to minimize the occurrence of arc-faults to the greatest possible extent.

In addition, there is a section/section partition to prevent an arc fault from spreading within the system. On the other hand, MODAN® systems are designed in a way to provide extensive personal protection.

The section dropper bar of the new withdrawable units technology already comes free of arc-fault roots as standard.

Earthquake protection



Symbolphoto

Earthquake protection has top priority at Eaton.

The MODAN® system is an extremely robust construction that has undergone seismic testing to the most stringent standards.

MODAN® switchgear systems have been designed to be optimally equipped for use in hazardous areas. The system meets these demanding requirements without adding any extra equipment.

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

- IEC 60068-3-3: Level AG2 und AG5
- UBC-Code: Zone 4

Eaton is a power management company with 2015 sales of \$20.9 billion. Eaton provides energyefficient 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.



Eaton Industries (Austria) GmbH
Scheydgasse 42
1210 Wien
Austria

Eaton Industries Manufacturing GmbH
EMEA Headquarters
Route de la Longeraie
1110 Morges
Switzerland

© 2016 Eaton Industries (Austria) GmbH
Subject to technical modifications. No
responsibility is taken for misprints or errata.
Printed in Austria (04/16)
Publication number W4600-7575GB

Graphics: SRA
DigiPics, Lithos:
Print: