Compact circuit breakers, with diagnosis included.

The new NRX series
IZMX16 / IZMX40

Small, flexible, efficient.

F·T·N

Powering Business Worldwide

Versatile circuit breakers up to 4000 A – for cost-effective, optimized solutions.

The **IZMX16** of the NRX series is the smallest air circuit-breaker (ACB) worldwide: With a volume of only 24 dm^3 and a front surface of only 0.092 m^2 it is just slightly bigger than the size of a DIN A4 sheet of paper! And all this without any loss in terms of performance.

The innovative concept allows the user to install **two circuit** breakers side by side in withdrawable design, **in a 600 mm wide section**. This fact provides for a more cost-effective setup of the section and, in addition, it helps to save operating space. And where remote switching is required, this volume can even accommodate a motor for pre-tightening the stored-energy spring mechanism and some magnetic coils for the on/off command.

More performance in less space is simply impossible.

The **IZMX40** of the NRX series is a circuit breaker for up to 4000 A in a volume of a 3200 A circuit breaker, without the need to install any additional "copper mines" in the connection area.

Tests to integrate it into Eaton switchgear systems, such as Modan, xEnergy, PowerXpert, Capitol 20 and Capitol 40 confirm its outstanding technical data and optimal compatibility thanks to the flexible connection system.

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 at the circuit breaker.

Performance list.

Circuit breakers of the NRX series offer different rated currents for a wide range of applications: From 630 A to 4000 A and a breaking capacity from 42 kA to 105 kA.

In addition, it is also possible to optimally adjust the protective parameters in the electronic tripping system to the application or the operating material to be protected. So the NRX circuit breaker series can be used for many different purposes. Main areas of application are:
• System protection
• Motor protection
• Transformer protection
• Generator protection

In order to increase the functionality of the circuit breaker in the application (e.g. for signalling, automation or communication purposes) we provide a wide range of real-working-world oriented accessories.

Even if you wish to temporarily oversize a system due to several development stages, a 1600 A circuit breaker can be precisely adjusted to an operating material of only 100 A just by replacing a rated current module.

Sizes Versions IEC60947		IZMX16 630 A, 800 A, 1000 A, 1250 A, 1600 A	IZMX40 800 A, 1000 A, 1250 A, 1600 A, 2000 A, 2500 A, 3200 A, 4000 A
Maximum breaking capacity at:			
U_e 415/690 V: I_{cu} (kA)		65/42	105/85
I_{cs} (kA)		50/42	105/85
I_{cw} (kA)		42	85
Section width for xEnergy and MODAN switchgear systems			
Fixed design			
Width 3-pole (mm)		400	1000
Width 4-pole (mm)		600	1000
Withdrawable design			
Width 3-pole (mm)		400	1000
Width 4-pole (mm)		600	1000
Rated current I_n, (A)		**630 - 1600**	**800 - 4000**

$I_{cu} = I_{cs}$ at U_e = 440/690 V AC
I_{cu}: Rated ultimate short-circuit breaking capacity at rated operational voltage U_e
I_{cs}: Rated service short-circuit breaking capacity at rated operational voltage U_e

Basic switching capacity (B)	440 V AC, $I_{cu} = I_{cs}$, kA	42 / 42	66 / 66
	690 V AC, $I_{cu} = I_{cs}$, kA	42 / 42	66 / 66
Normal switching capacity (N)	440 V AC, $I_{cu} = I_{cs}$, kA	50 / 50	85 / 85
	690 V AC, $I_{cu} = I_{cs}$, kA	42 / 42	75 / 75
High switching capacity (H)	440 V AC, $I_{cu} = I_{cs}$, kA	65 / 50	105 / 105
	690 V AC, $I_{cu} = I_{cs}$, kA	42 / 42	85 / 85

I_{cw} t = 1 s, I_{cw} = Rated short-time withstand current

Basic switching capacity (B)		42	66
Normal switching capacity (N)	t = 1 s, I_{cw}, kA	42	85
High switching capacity (H)		42	85

I_{cm} at U_e = 440/690 V AC
I_{cm}: Rated short-circuit making capacity (maximum prospective peak value) at rated operational voltage U_e

Basic switching capacity (B)		88	144
Normal switching capacity (N)	440/690 V AC, I_{cm}, kA	-	166
High switching capacity (H)		-	231

Profibus-DP

Modbus

Ethernet

Increased operating safety and flexibility based on communication.

Thanks to its ability to communicate, the NRX circuit breaker series taps new opportunities for power distribution. It provides all the information that is relevant for operation and forwards it.

This way the transparency of the system can be increased and response times to statuses

such as overcurrent, phase imbalance and overvoltage can be reduced. By quickly intervening in a process, system standstills can be prevented or preventive maintenance actions can be planned.

Consequently, the availability of the system can be increased as well.
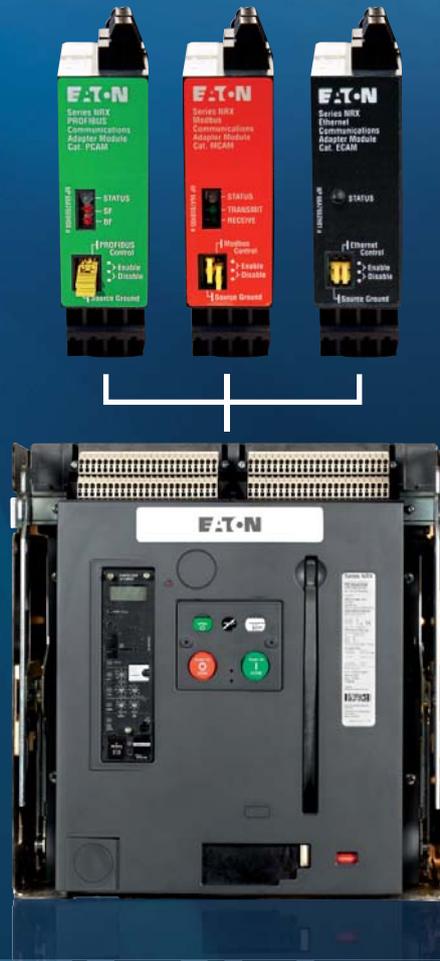
IZMX40

Interface modules for Profibus, Modbus and Ethernet can now easily be plugged onto the circuit breaker, between the control line connections.

With the respective communication module – PCAM, MCAM or ECAM (Profibus-DP / Modbus / Ethernet Communications Adapter Module) – every circuit breaker of the NRX series is equipped for modern communication and is fit for the future. The databus not only allows to transmit information, but also to receive commands/settings.

IZMX System Overview.
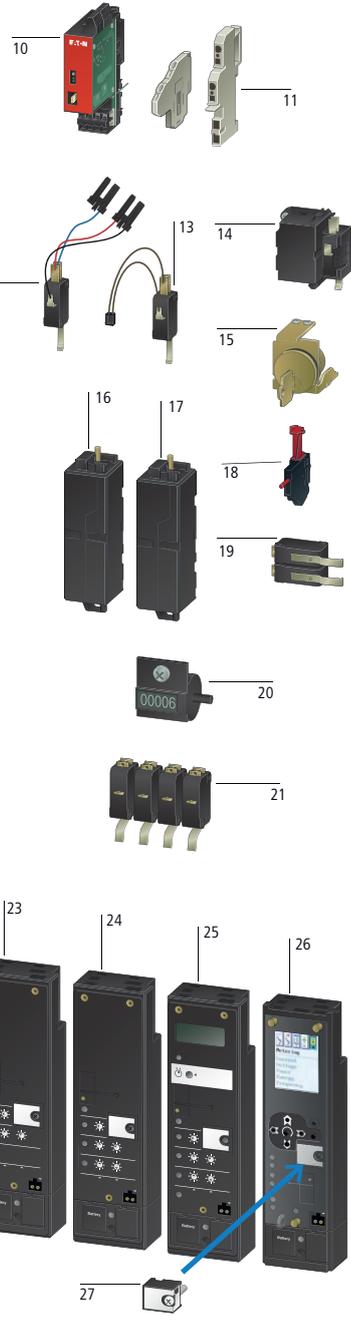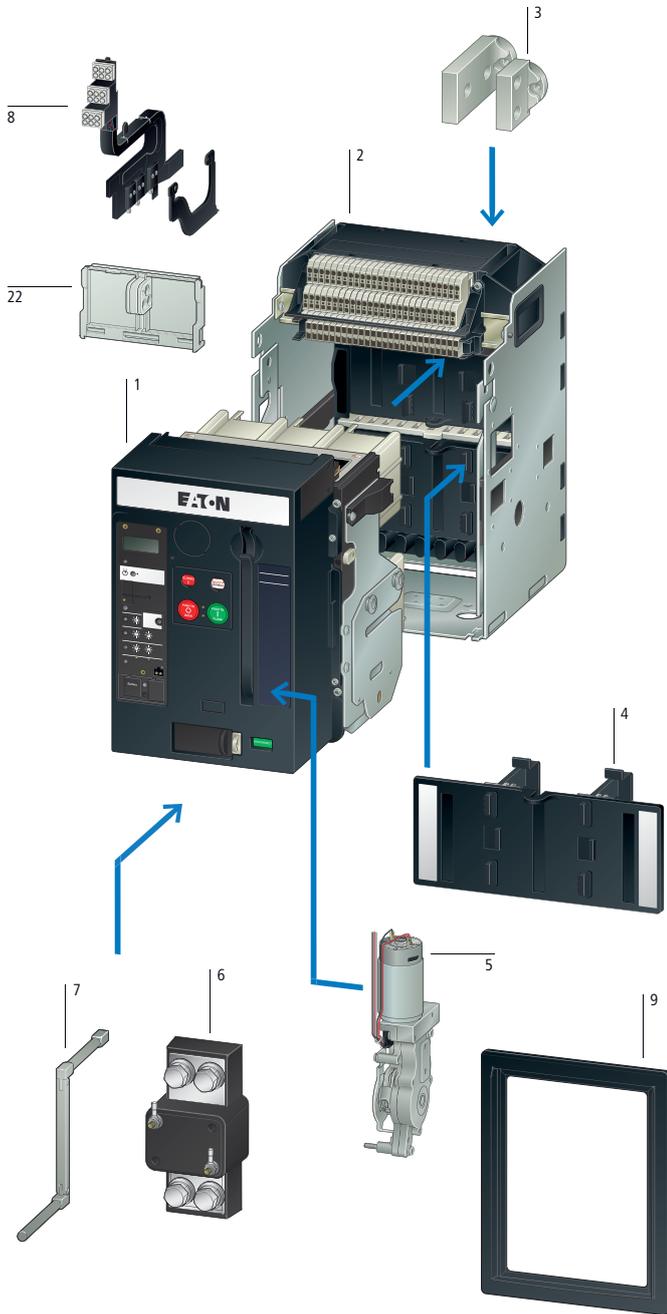
IZMX40

IZMX16, INX16, IZMX40, INX40
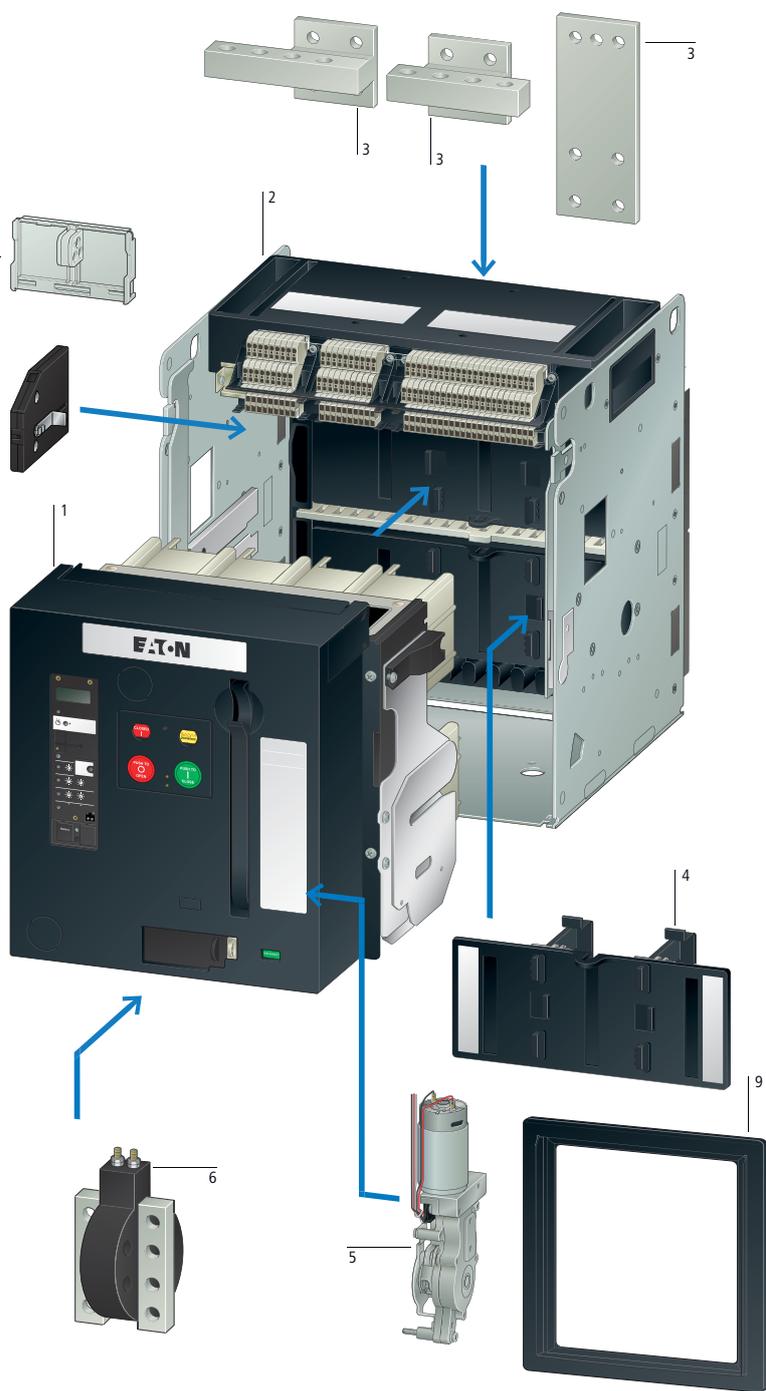
1. **IZMX Circuit-breaker**
   IZMX16: 630 - 1600 A
   IZMX40: 2000 - 4000 A

2. **Cassette for withdrawable units**
   Shutters 3- and 4-pole
   With and without control circuit terminals

3. **Main terminal kits**
   Universal terminals, 3- and 4-pole
   horizontal/vertical

4. **Shutter**
   Shutter for 3- and 4-pole

5. **Motor operator**
   Automatic charging of the spring force storage for remote or local operations

6. **Current sensor for neutral conductor**
   Current sensor for sensing the neutral-conductor-current.

7. **Levering tool**
   Convenient collapsible lev-in tool for lev-in and out operation of the Breaker in and out of the Cassette. The lev-in tool is stored inside the breaker.

9. **Position cell switches**
   Cell switch signals the position of the breaker inside of the cassette. Connect, Test and Disconnect Position.

9. **Door escutcheon**
   Closes the gap between Breaker and Switchgear-door. IP41.
   An IP55 protective cover is available as well

10. **Communication modules**
    Profibus DP, Modbus, Ethernet

11. **Control circuit terminal units**
    Either 8, 20 or 30 units

12. **Latch check switch**
    For external application usage.

13. **Latch check switch**
    For use with closing release.

14. **Closing releases**
    Closes the breaker by an electrical signal.

15. **Key locking**
    Locking of the breaker by a keylock.

16. **Shunt releases**
    Opens the breaker by an electrical signal.

17. **Undervoltage releases**
    Opens the breaker by a voltage-drop in the control-circuit.

18. **Red-pop trip indicator**
    Red-pop trip indicator signals a trip by the trip unit.

19. **Trip indicator switches**
    Overcurrent trip switch (OTS) signals a trip by the trip unit for remove signalisation.

20. **Switching operations counters**
    Counts the number of operations.

21. **Auxiliary contacts**
    Signalling switch ON-OFF

22. **Locking facilities**
    Plastic or metal

23. **Trip unit**
    Digitrip 520; A-type

24. **Trip unit**
    Digitrip 520LSI; V-type

25. **Trip unit**
    Digitrip 520M; U-type

26. **Trip unit**
    Digitrip 1150i; P-type

27. **Rating plug**
    Reduces the Rated Current of the breaker.

Individual solutions combined with IZMX.

Adding individual solutions to IZMX circuit breakers provides both more protection for systems and more safety for personnel in case there is a failure. And it also reduces the risk of unintended interruptions of operation.

These solutions include:
• ARMS™
• ARCON®
• Zone selectivity
• Remote switching
• Profi protection through Digitrip 1150

SAFETY

## ARMS™
(Arcflash Reduction Maintanance System)

This system guarantees even more safety for maintenance staff. Overcurrent or dangerous arc flashes will lead to accelerated breaking of the contact and therefore reduce the energy that is set free (radiation, pressure, temperature).
An accelerated switch-off happens even faster than the switch-off of a non-delayed short-circuit trip.
This function can be activated either directly on the circuit breaker through an external switch, automatically, or via the communication bus.

SAFETY

ARCON®

IZMX breakers, combined with ARCON®, help users to avoid damage and to protect people against arc faults as they can effectively be brought under control within 2 ms.
They also protect against arc flashes that – due to their impedance - would not even cause a protective device to react.
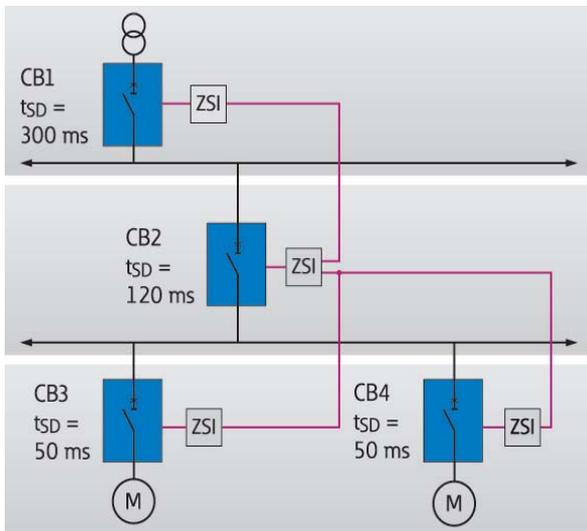
Zone selectivity ZSI

Circuit breakers are directly connected to a signal line, without any additional modules. So, in case of a malfunction, they ensure that only the circuit breaker immediately upstream the point of failure will break a short-circuit without delay.

The advantage of the zone selectivity feature – compared to ordinary time selectivity - is the significantly reduced time until switch-off and the reduced amount of energy released in case of a short-circuit.

For additional safety of maintenance staff we recommend a combination with ARMS® to reduce the released amount of energy even further.

Remote switching

Remote switching requires two magnetic coils (make-contact and operating-current trip). These coils will activate the mechanism of the ON and OFF buttons. After two switching actions have been carried out, a stored-energy spring mechanism needs to be retightened manually. With an additional motor drive, the retightening action can be automated.

Safety: If the second switching action was an ON action, a third action for switch-off or tripping through the energy of the spring will be ensured.

Safety: OFF commands will always be given priority. A permanent command for the operating-current trip enables the user to lock the circuit breaker in the OFF position.

Thanks to the powerful stored-energy spring, the circuit breaker will carry out the switch command sent to the magnetic coil in less than 35 ms. So the NRX series circuit breakers are suitable for synchronized tasks.

Profi protection with Digitrip 1150i

With the "high end" type P trip technology (Digitrip 1150i) you can display functions such as parameterization, protection, measuring, network analyses, diagnosis and event memory on an integrated, high-resolution colour display, transmit them to any remote place via a communication module, display them on a homepage or send them to any place in the world by e-mail. Handling is intuition-based.

The ← → keys allow you to scroll icons on the display for basic tasks/settings.

The ↑ ↓ keys allow you to easily select the required function.

Convenience for planning, selection and documentation

Eaton Configurator for Circuit Breakers

The intuition-based software tool makes it easy to select and configure circuit breakers and load disconnectors with their respective accessories from a database of several thousand articles.

It does not require any special knowledge of the system. With just a few clicks you can select any switchgear configuration and transfer it to the parts or ordering list. All combination possibilities are saved in the software logic, which ensures correct ordering. In a logical step-by-step order, the software

will guide you through the switchgear offer and the suitable accessories. The selection process starts with choosing the appropriate standard, i.e. IEC or UL/CSA, the rated operating voltage and the rated frequency.

In the following steps you will need to:
• Determine the number of poles
• Choose a circuit breaker or load disconnector
• Choose the protection task (e.g. motor protection, cable/line protection)
• Decide on either fixed or withdrawable design

Download from: www.moeller.net/de/products_solutions/index.jsp

CurveSelect

CurveSelect allows the user to simultaneously display setup-specific tripping curves of several protective devices – both in terms of time and electric current values.

This tool makes it easy for the user to analyze the interaction of NZM and IZM circuit breakers, PKZ motor-protectors, motor-protective relays, MCBs and h.b.c. fuses.

Freely defined curves (Free-StyleCurves = 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
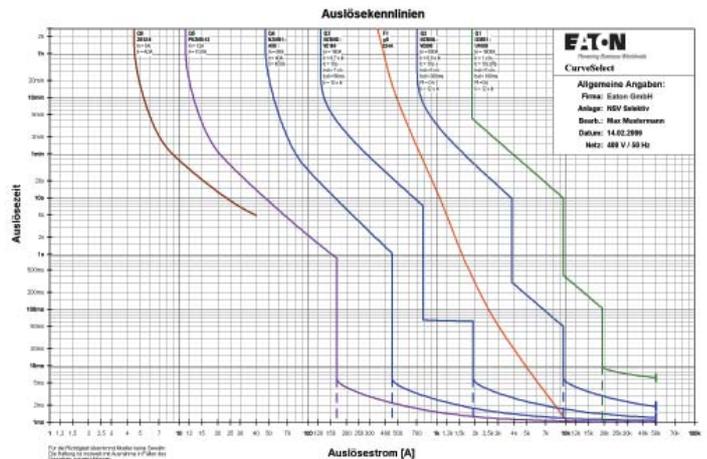
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BreakerVisu

BreakerVisu allows the user to monitor several ACBs and MCCBs and helps him to quickly detect and clearly visualize the status of circuit breakers, such as currents, switching statuses or load warnings, and to dynamically visualize them on an http page.

In addition, all events will automatically be recorded in a log file.

This information is necessary to correctly evaluate warnings and malfunctions and to take the appropriate steps.
Keeping a log file will also enable you to carry out an additional error analysis.
BreakerVisu is composed of ready-made hard and software components. So no special software needs to be installed on the PC. All you need is an Internet browser and Microsoft Excel!
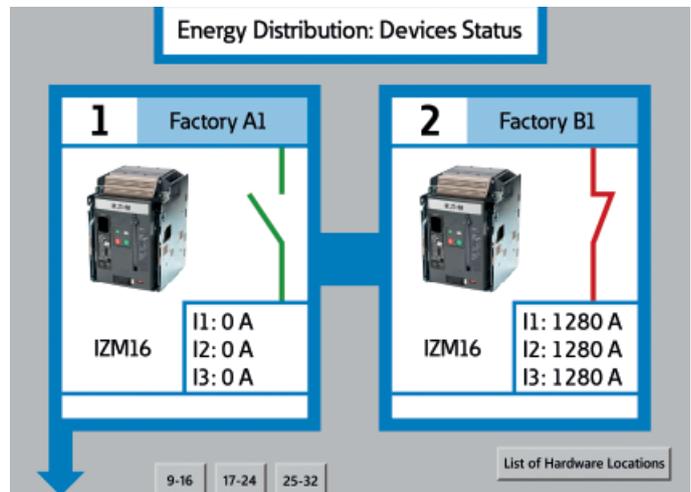
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Availability and delivery.

In order to ensure short delivery times, technical feasibility of the combinations will automatically be checked at the time the order is entered into the SAP program.
So any possible errors can be eliminated right away. Then the final assembly of the switchgear will be done at the nearest final assembly center, in line with the order. Once all accessories have been added, an automatic final test will be carried out. Test data will then be transmitted online, via the Internet, monitored and saved. Each circuit breaker carries an ID number that the data will be assigned to.

This makes it easier to communicate with the end-user at any later point in time. Delivery is carried out from our state-of-the-art logistic center, where the circuit breakers will be united with any other products that may have to be delivered to the same address. They will then be shipped at the same time.

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.

Eaton's Electrical Sector is a global leader in power distribution, power quality, control and automation, and monitoring products. When combined with Eaton's full-scale engineering services, these products provide customer-driven PowerChain™ solutions to serve the power system needs of the data center, industrial, institutional, public sector, utility, commercial, residential, IT, mission critical, alternative energy and OEM markets worldwide.

PowerChain solutions help enterprises achieve sustainable and competitive advantages through proactive management of the power system as a strategic, integrated asset throughout its life cycle, resulting in enhanced safety, greater reliability and energy efficiency.

For more information, visit www.eaton.com/electrical.

The products presented are part of the comprehensive Eaton offer.
For more information, please contact your Eaton consultant.

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