Digital Switchgear Communication at Eye Level

The new xEffect Digital Series

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Powering Business Worldwide

Yesterday, the future was yet to come.
Today, it's already here.

The future has already begun.

For us, innovation is tradition: in 1957 Eaton's Moeller segment developed the first fault current protection switch, and with this, a new era of electrical safety engineering began. And now, Eaton is still ahead of its time: the new digital switchgear range in the Eaton xEffect series communicates potential problems in advance and sets new standards in precision, security and convenient service.

Maximal safety with optimal ease

Modern Residual Current Circuit Breakers (RCCB) protect people and technical equipment conveniently and reliably against faulty currents. The digital RCCB from the xEffect series do more than just switch off. They monitor electrical installations and give advance warning of critical current flows. So plant / factory shutdowns – and the resulting costs – can be avoided.

Precise Release – Highest Reliability

Short-time fault currents or other briefly occurring malfunctions do not cause the digital protection switch to shut down, thanks to the short time delay and optimized tripping threshold. So the electrical installation is optimally protected against power failures.

Easy and adaptable installation for fast modernization

The big Eaton Plus: It is very easy to upgrade a switchboard! Simply replace the RCCB – and you have all advantages of digitalization.

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Digital protection switches – the new era has begun.

More security through proactive communication!

The new xEffect models exceed the IEC/EN-61008 standard: their trigger reaction is much more precise than that of conventional switches to the 100 % fault current threshold. With a fault current, the information is reported to the security center of the industrial plant, and troubleshooting would begin before there would be a shutdown or plant failure. So the cause of the fault current can be determined precisely and the system service can be easily planned ahead. Therefore, system availability is increased and service is improved because of the convenience of the remote control.

Numerous advantages at a glance

- The difference between harmless and critical fault currents is detected

- Precise switching and reduction of nuisance tripping

- Continuous monitoring of plant/factory status – prompt warning of a change in status quo

- Convenient troubleshooting by precise location of the malfunction

- As easy to install as a conventional RCCB

- Longer intervals between servicing

- Ideal for system monitoring thanks to preventive information

- Warning of tripping at leakage current

- Clear status display of the fault current problem with tri-colored LEDs

- Real contact position indicator

- Indicator for fault current tripping

- Comprehensive range of accessories available

- Can be integrated in several bus systems

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To us, innovation is tradition: in 1957, Eaton's Moeller segment developed the first fault current protection switch, and with this, a new era of electrical safety engineering began. And now, Eaton is still ahead of its time: the new digital switchgear range in the Eaton xEffect series communicates potential problems in advance and sets new standards in precision, safety and convenience.

Maximal safety with optimal ease

Modern Residual Current Circuit Breakers (RCCB) protect people and technical equipment conveniently and reliably against faulty currents. The digital RCCB from the xEffect series do more than just switch off. They monitor electrical installations and give advance warning of critical current flows. So plant / factory shutdowns – and the resulting costs – can be avoided.

Precise Release – Highest Reliability

Thunderstorms or other briefly occurring malfunctions do not cause the digital protection switch to shut down, thanks to the short time delay and optimized tripping threshold. So the electrical installation is optimally protected against power failures.

Easy and adaptable installation for fast modernization

The big Eaton Plus: It is very easy to upgrade a switchboard! Simply replace the RCCB – and you have all advantages of digitalization.

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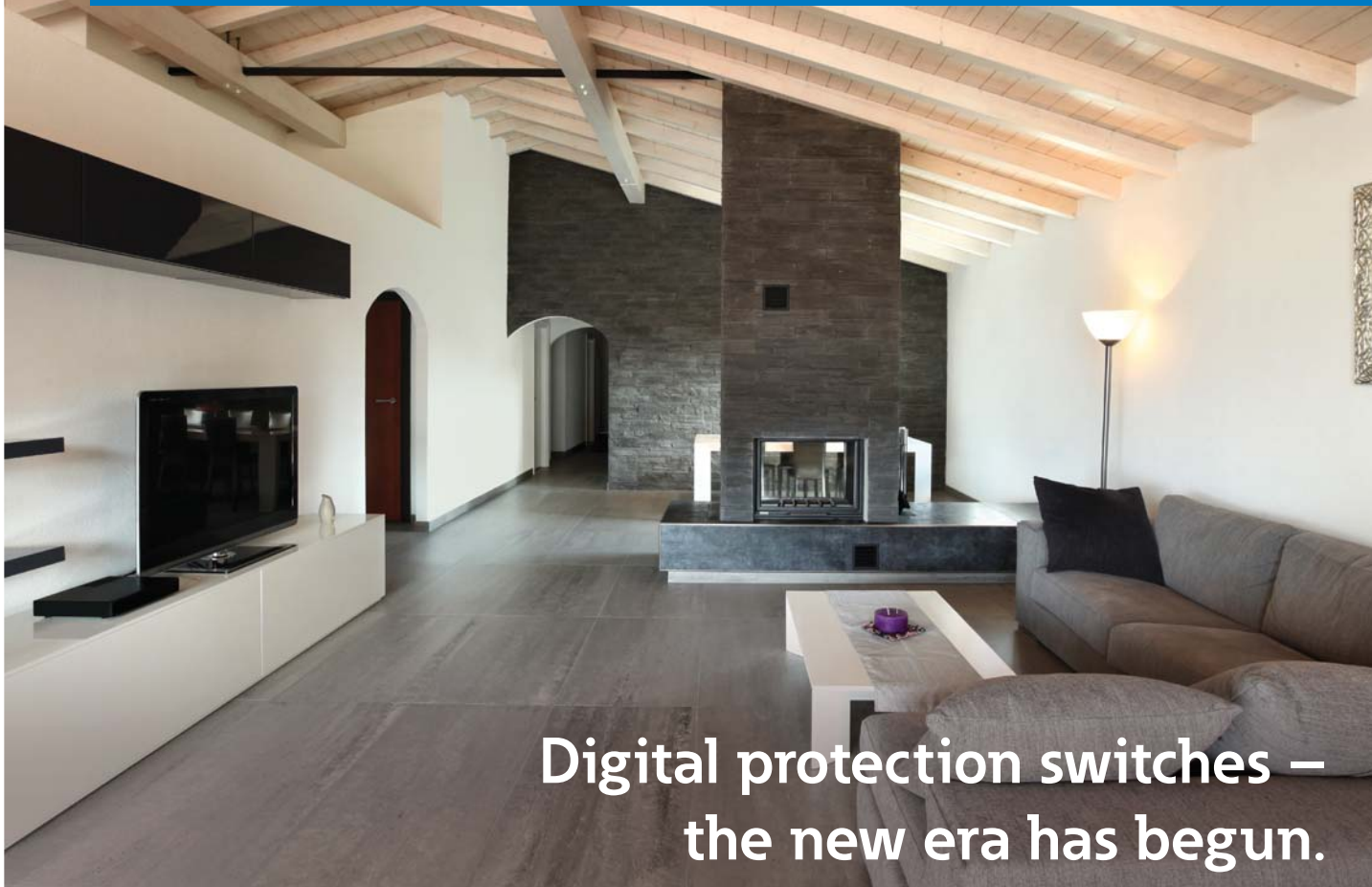
Digital protection switches – the new era has begun.

Better safety in your home thanks to proactive communication!

The new xEffect series digitalizes the residual current protection of every house and makes the entire building considerably safer than with the use of conventional protection switches. The installation of digital switchgears by Eaton has additional advantages, especially with bus system installations. In the case of fault currents, the information goes to the central office of the building and troubleshooting can begin before there is a shutdown or failure of the system. So the cause of the fault current can be investigated precisely and the system can be serviced effortlessly. Through the connection to a GSM module, status reports can also be sent to mobile terminals. This means that system availability can be increased and service enhanced through the convenience of remote maintenance.

Numerous advantages at a glance

- Simple upgrade of the switchgear cabinet in a few simple steps

- The difference between harmless and critical fault currents is detected

- Precise switching and reduction of nuisance tripping

- Continuous monitoring of plant/factory status – prompt warning of a change in status quo

- Convenient troubleshooting by precise location of the malfunction

- As easy to install as a conventional RCCB

- Warning of tripping at leakage current

- Clear status display of the fault current problem with tri-colored LEDs

- Indicator for fault current tripping

- No monthly test necessary

- Comprehensive range of accessories available

- Can be integrated with the xComfort wireless system and other bus systems

Highly qualified controllers offer their services

Allow us to introduce ourselves: **FRCdM** and **FRBdM** would like to work in your switchbox. We're two highly qualified control robots from the famous EATON talent factory – the first of the new digital generation.

It's not only that I work completely reliably as a Residual Current Operated Circuit Breaker with integrated Overcurrent Protection (RCBO), but I also display the cause and extent of the flowing fault current. This enables fast actions quickly take measures to maintain system availability.

And since I'm the RCCB a fault current protection switch, I don't wait until the tripping threshold is reached; I continuously check the present status and register any possible failures, sending this information by remote warning immediately to the central control system. This increases system safety, application availability and minimizes maintenance costs.
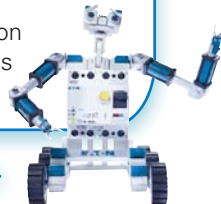
**Hire us – and finally experience communication at eye level!**

The LEDs set off an alarm when fault currents or a shut down are coming. This makes the troubleshooting faster and much easier. The service mode of the fault current protection switch quickly indicates the extent of the flowing fault current in milliamp increments. By pushing the service button, the blinking LED identifies the area where the fault current is located in.

• Mains voltage-independent residual current protection and additional protection with other digital functions

• Auto-reclosure is possible

Red
When the red LED lights up, the leakage current is already higher than 50 percent of the nominal fault current. Therefore the system is in a critical status – the digital RCCB only trips when the fault current continues to increase.
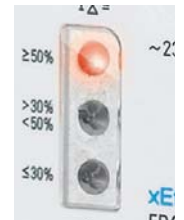
Yellow
The yellow LED shows a residual current in the ambit of 30 to 50 percent of the nominal fault current. Before the system is shut down, professional countermeasures can be taken.

Green
If the current flow in the system to ground is in the ambit from 0 to 30 percent of the nominal fault current, the green LED indicates the proper status.

FRBdM and FRCdM
offer several other advantages

The LED allows for a fault current display directly on site. In the service mode, malfunction causes can be determined quickly and without complication.

The digital display facilitates real-time diagnostics directly at the switch.
By means of the LEDs, the system status can be seen at anytime, and with one glance.

Digital Combi-switch FRBdM:

With help of the service mode, the exact extent of the leakage current can be identified. This is a big advantage for industrial plants and any locations where the maximum security of supply must be ensured in time before the shut down of the plant.

All models have at least a short time delay to prevent from nuisance tripping due to transient disruptions (lightning, engine start).

Digital RCCB type A

Protection in case of specific, non-smooth types of DC fault currents.

Digital RCCB type B

In addition to fault currents in the AC and pulse current range, type B also detects DC fault currents, which can occur in frequency inverter controls, photovoltaic systems as well as through the electronic use in households, and increases safety considerably.

Digital RCCB type B+

Complies with the standard VDE 0664-400 (formerly VVDEV 0664-110) for elevated fire protection as required by the Association of German Insurance Companies.

Digital RCCB type Bfq

Adjusted frequency range (insensitive to higher frequencies) prevents nuisance tripping errors in industrial plants with powerful frequency inverter controllers.

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.eu/electrical**

To contact an Eaton salesperson
or local distributor/agent, please visit
www.eaton.eu/electrical/customersupport