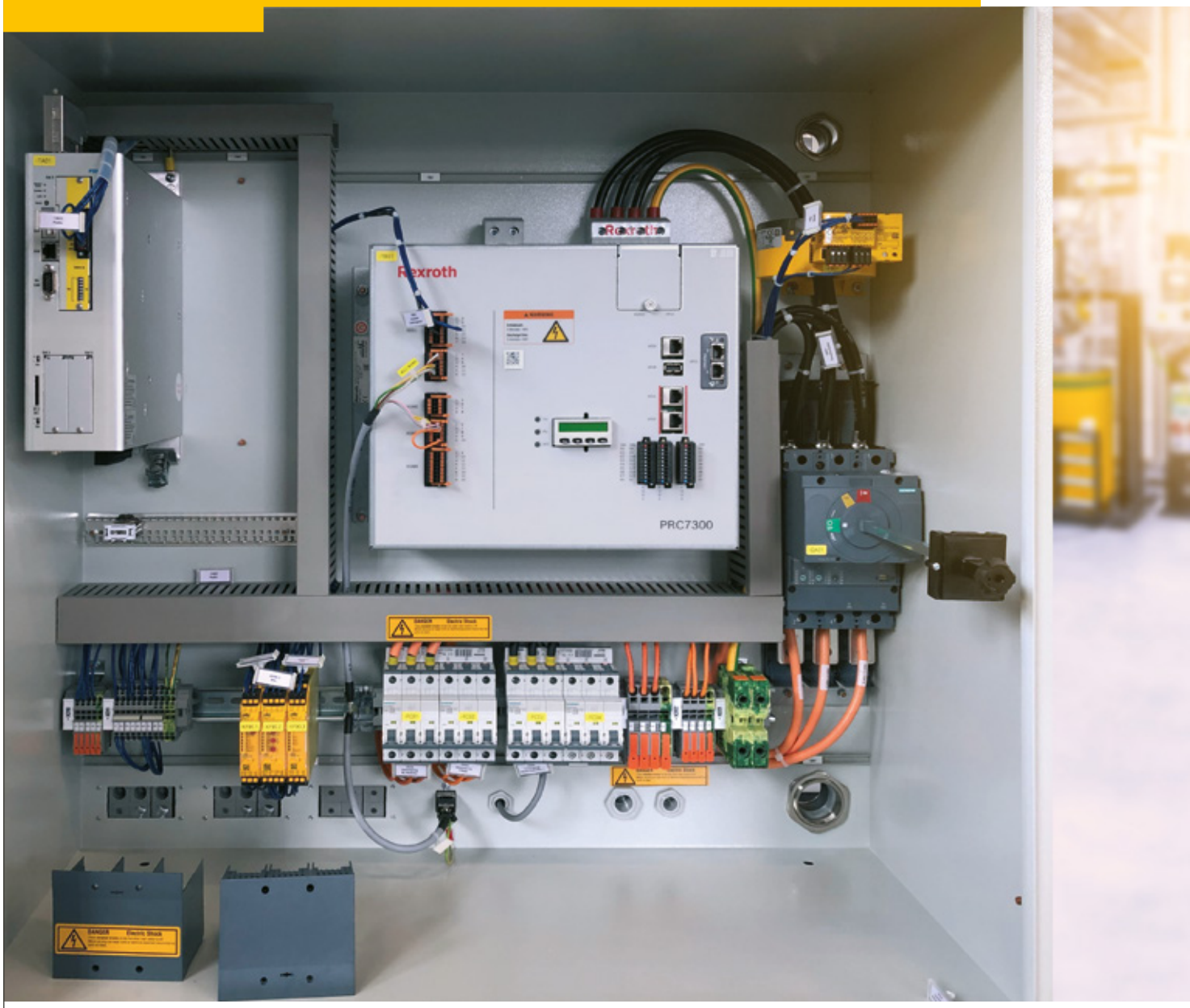
Modular residual current devices (MRCD)

for safe operation in electrical systems



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Modular residual current devices MRCD according to IEC 60947-2 Annex M

Effective protection against electric shock
Electrical systems must function smoothly and always be available. However, protection against electric shock is important. In the event of a fault, residual current devices (RCDs) provide effective protection against indirect contact and fire by switching off within a very short time.
RCD (Residual Current Device) is the generic term for all types of residual current devices. In addition to the well-known RCCB, RCBO and CBR (circuit breaker with residual current protection), this product group also includes the modular residual current device MRCD (Modular Residual Current Device).

What is an MRCD?
An MRCD is a device or combination of devices for detecting and evaluating fault currents, which can be used for protection purposes.
A potential-free contact switches when a preset warning threshold is exceeded. If the set response value is exceeded, the MRCD's alarm relay switches and activates the undervoltage or operating current release of the circuit breaker to interrupt the circuit within the time specified by the standard.

Why MRCD?
In some applications/production facilities, conventional RCDs cannot be used because they either reach their technical limits or only very expensive solutions are available. In addition, RCDs have a high tripping tolerance, which can lead to false tripping and thus unplanned shutdowns of electrical systems.
If unplanned shutdowns of electrical systems are undesirable because they can lead to production downtime and possibly damage to equipment, modular residual current devices (MRCDs) are the alternative, as they have a lower tripping tolerance and can also be used in applications where higher voltages and currents occur.

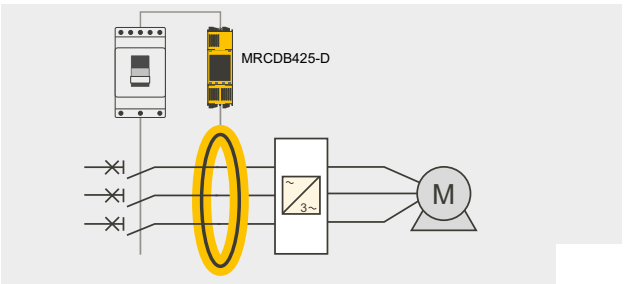
What can MRCDs be used for?
An MRCD can be used to implement automatic shutdown in the event of a fault as part of fault protection (protection against indirect contact) of the protective measure 'automatic shutdown of the power supply' (IEC 60364-4-41) to protect against electric shock. In addition, MRCDs can be used as a preventive fire protection measure in accordance with IEC 60364-5-53. In general, an MRCD solution can always be used if the MRCD is only accessible to trained personnel or qualified electricians. An MRCD solution is therefore not suitable for domestic installations (IEC 60364-5-53).

Benefits of MRCDs

- Early detection of fault currents
- Fault current detection via measuring current transformer (independent of mains voltage and frequency)
- Can also be used with high load currents
- Adaptation to different system configurations and application requirements
- High reliability and accuracy
- Adjustable pre-warning threshold with alarm
- Avoiding unplanned and costly system shutdowns
- Greater operational and system safety

Typical MRCD applications

- Welding systems
- Industrial lifts
- Charging stations for electric vehicles
- Crane systems
- Generators



Device overview

In conjunction with a suitable disconnecting device for personal, fire or system protection, MRCDs can be used in industrial environments. The integrated relays are used to control the disconnecting device and issue a prewarning. In addition, the Modbus interface offers the option of continuously monitoring and, if necessary, analysing the leakage and fault currents of the system in a higher-level monitoring system.

MRCDB425-L

- AC/DC sensitive MRCD **type B** according to IEC 60947-2 Annex M
- LED bar graph with device status LED
- LEDs for warning, main alarm and LED bar graph



MRCDB425-D

- AC/DC sensitive MRCD **type B** according to IEC 60947-2 Annex M
- Display with device status LED indicator
- Alarm LED, full-text menu and 4-button navigation



MRCDB300 series

- AC/DC sensitive MRCD **type B** according to IEC 60947-2 Annex M
- Compact/combined solution consisting of plug-in electronics and measuring current transformer.
- Multi-colour LED for operation, response value exceeded, fault and status messages



MRCD410R

- Alternating and pulsed current sensitive MRCD **type A** according to IEC 60947-2 Annex M
- LED bar graph with device status LED
- LEDs for warning and main alarm



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