Doepke

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The experts in residual current protection technology

DIZ

DOEPKE-INFO-ZEITUNG

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IN THIS ISSUE

E-mobility: Residual current protection without compromise

Doepke's DFS 4 EV for charging stations makes retro-fitting the building installation superfluous

The DFS 4 EV residual current circuit-breaker has been developed especially for protection when charging electric vehicles. It is designed to be installed in charge columns and wall boxes, offering an ideal solution.

More and more car manufacturers are looking to renewable energy sources and electromobility is gaining more presence on our roads, with the number of electric vehicles increasing just as quickly. This is why it has become necessary to adapt residual current protection technology.

▲ *Specialist in charge columns: the DFS 4 EV*

What does the standard say?

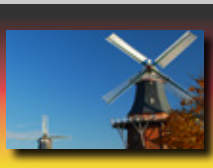
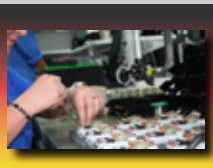
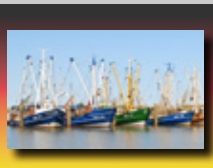
According to DIN VDE 0100-722, every connection point must be used with its own residual current operated protective device with a rated residual current of less than or equal to 30 mA. This has to be at least type A. Measures must also be taken to ensure protection in the case of smooth DC residual currents that are higher than 6 mA.

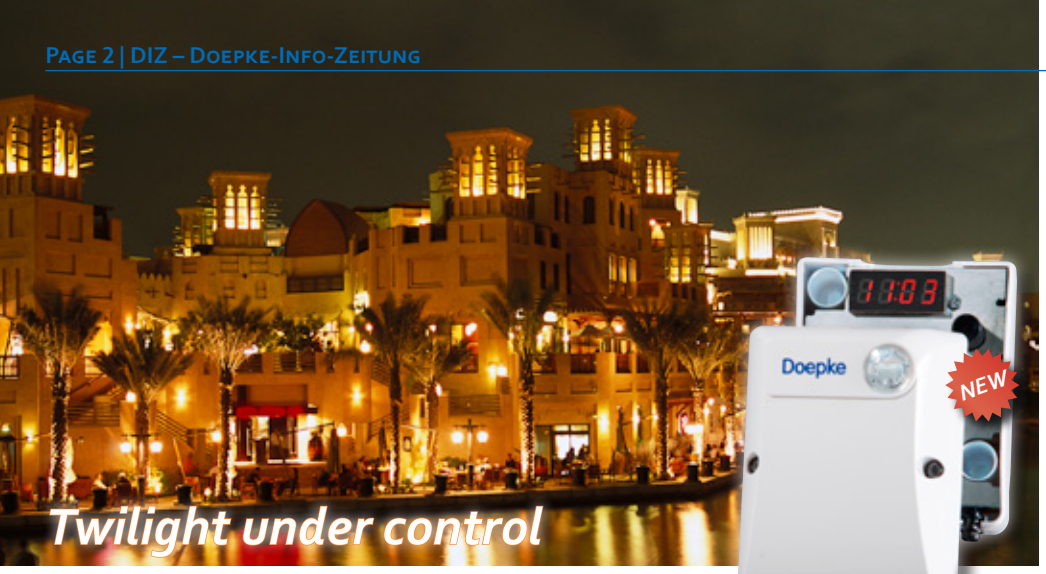
In the event of a fault during charging, smooth DC residual currents that are higher than 6 mA can occur in the charging equipment for electrical vehicles, which would cause a type A or F residual current circuit-breaker to fail. This would prevent it from being able to fulfil its intended protective function, resulting in an inadequate level of protection against personal injury and fire hazards. This is where the DFS 4 EV offers an effective solution as it is sensitive to pulsating and AC residual currents and, thanks to its active extra function, it can also protect against failure in the case of smooth DC residual currents that are higher than 6 mA. This self-protection function also means that upstream residual current operated protective devices are secured in the event of series connection. Depending on the construction of the e-mobility supply unit, the switch is either supplied by the manufacturer of the charging station or installed by a specialist electrician. The DFS 4 EV simplifies the standard-compliant, safe installation of charging equipment, irrespective of whether it is operated from an available electrical socket or is installed by a specialist electrician. The DFS 4 EV is available in two variants in the 4-TE housing: the two-pole design is suitable for rated currents up to 25 A, the four-pole design up to 40 A. Both residual current circuit-breakers are also available in the HD design. ■

Heino Thoben-Mescher
Product Management

The benefits at a glance:

- detects type A residual currents
- active extra function: trips for smooth DC residual currents higher than 6 mA
- maintains protective function of upstream RCD (e.g. in TT system)
- specially developed for protection when charging electric vehicles
- no other components required per charging socket



Twilight under control

The new Dasy TC with timer switch opens up new possibilities

▲ *A prototype of the new device*

Another product has been added to the Dasy twilight switch series – the Dasy TC featuring a built-in timer switch.

This new product can be used, for example, to completely switch off car park lighting when the lighting is not needed. This will help significantly reduce operating costs as well as costs for lights. Many features from the previous version have been retained, such as the wide adjustment range of 1–200 lux, high switching stability and quick, precise adjustment.

The switching times can be adjusted in a convenient and user-friendly manner by means of a rotary switch and a thermally stable LED display that is extremely clear to read. The lighting can be checked using the test key, which means it is not necessary to open the device or perform any programming. If there is a power outage, the time and any stored switching times will remain unaffected for several days. It is possible to switch automatically to and from daylight savings time, and there is the option of wall or mast mounting with a cable entry point at the rear or underneath. The Dasy TC will be available from May 2015. ■

Günter Düselder
Product Management

'Standards in electrical installation' symposium

Specialists introduce new standards and regulations

On 9 October 2014, the specialist magazine 'de – das elektrohandwerk' welcomed one hundred participants from the electrical trade to the symposium called 'Standards in electrical installation'. Participants were given a concise update on the latest trends in standardisation during this one-day seminar.

The editorial team were able to call on experienced speakers, who have been well acquainted with standards for years and work closely with the electrical trade, to appear throughout the day. The topics presented by these well-qualified speakers included new standards for lightning and surge protection and foundation earth electrodes; current requirements for protection against electric shock in low-voltage installations; the basic rules for measurement and testing processes for portable electrical equipment and the standard requirements for electrical installation in buildings when implementing the German Energy Saving Ordinance (EnEV) 2014, which specifically includes building system technology in the calculation of the energy needs of a building for the first time.
In his entertaining talk, Stefan Davids provided the participants with more information on the topic of the interaction between RCDs and frequency converters along with the latest developments in the field of residual current protection.
The 100 participants in the seminar were each given a folder containing all of the specialist knowledge in the form of the presentation slides. After the event, the editorial team asked the participants to fill in a feedback form, with a good result of 1.7 that clearly demonstrates just how relevant the specialist talks were in practical terms. ■

Roland Lüders
Specialist Editor at Hüthig GmbH

STANDARDISATION

DIN VDE 0100-510

Construction of low voltage installations – Part 5-51: selection and erection of electrical equipment – common rules

A new version of these installation regulations was published in October 2014. Section 516 outlines measures for protective conductor currents that are generated by electrical equipment during fault-free operation. Protective conductor currents of this kind are also known as leakage currents. In order to avoid undesired tripping of residual current operated protective devices (RCDs), it is preferable to make use of equipment with low protective conductor currents. Appendix NA and DIN EN 61140 (VDE 0140-1) define permitted protective conductor currents.
Protective conductor currents must not impair the safety or the proper operation of all equipment in an electrical installation.
In accordance with DIN VDE 0100-530, the protective conductor current should not exceed 0.4 times the rated continuous residual current of an RCD. Furthermore, a protective conductor is not an active conductor, meaning that it should not conduct a (significant) current to an electrical installation during fault-free operation. In practice, however, this is not the case as increased protective conductor currents, and consequently undesired tripping of RCDs, are not that uncommon due to more frequent use of electronic equipment and installations with PEN conductors.

It can be extremely useful to analyse the protective conductor and residual currents. The measuring equipment used needs to be capable of measuring over a wide range so that it is also possible to detect currents with higher frequencies (e.g. those caused by converter switching frequencies). Our DRCA 1 residual current analysis system is ideal for this purpose as it can detect currents up to 100 kHz.

For constant monitoring, residual current monitors (RCMs), such as our DRCM, DMD or DCTR, can be used. According to DIN VDE 0100-410, Section 411, however, the latter should not replace a residual current operated protective device (RCD) that needs to be provided as per the standard in order to implement the protective measure 'Automatic switch-off of power supply'. However, the installation of additional RCMs can provide information about the current height of the residual current and output a pre-alarm. ■

Günter Grünebast
Head of Standardisation/ Testing/Certification

Increasing in popularity – residual current operated circuit-breakers with integral overcurrent protection (RCBOs)

Combination protective devices reduce interference

Residual current operated circuit-breakers with integral overcurrent protection are being used in more and more applications. This is all down to the fact that entire electrical areas will not be switched off when just one part of a system is faulty.

Potential additional hazards can therefore be avoided, for example when entire areas of a building are not lit. Plus, it is possible to prevent undesirable production downtimes. In addition, familiar residual current circuit-breakers with integral overcurrent protection that are easy to install can be used to conveniently divide up an electrical system.

The overall result is a reduction in faulty tripping and an increase in availability. This is why residual current circuit-breakers with integral overcurrent protection have become standard over the past few years and are now continuing to grow in popularity. Doepke has been working on this area too and is going to replace the dual-module residual current circuit-breakers with integral overcurrent protection in the FIB/FIC series with the modified devices in the DRCBO 3 series. A number of improvements can be expected from this replacement. The terminals have protection against wires being lodged behind them. The shape of the housing has been modified in the area of the top hat rail bracket, meaning removal is now also possible when the phase bar is installed. There is now even a display tripped by residual current. These new devices are also available in the KV design. It is not uncommon for switching strip lights, for example, or nearby lightning strikes to cause faulty tripping. The weatherproof KV design has increased surge current strength and has a short time delay (10 ms), meaning it helps provide high system availability. Even the way it looks has changed, with the DRCBO 3 now having a blue toggle and test key. Common accessories, such as the Hi 11 auxiliary switch and the FAM operating current trip can now also be installed on the new DRCBO 3 devices. ■

Heino Thoben-Mescher
Product Management

New float switch

The Champ 2 HD for specific applications

▲ *The special plastic sheathing also protects the switch itself*

► **There are number of application options for float switches as they are used anywhere where switching needs to take place based on the fill level – for simple pumping operations or as part of complex industrial processes.**
Float switches are usually hidden when they are in use, for example in cisterns or tanks, and it is rare for them, or the important function they fulfil, to be noticed in day-to-day life. They come into contact with a wide range of liquids and can sometimes be exposed to high levels of chemical or mechanical stress.

The new Champ 2 HD float switch has been designed especially to meet the requirements in waste-water tanks. Its unique design and shape enable it to maintain functionality even when there are objects floating around on the surface of the water. The float switch is equipped with a changeover contact and can be used for both filling and emptying. The rubber-insulated connection cable is available in lengths of between 5 m and 20 m. ■

Heino Thoben-Mescher
Product Management

DRCBO 4 Hi 1

The auxiliary switch we have been waiting for is here

It is highly interesting to know the switch position of a protective device when system parts are being monitored remotely as it allows the necessary steps to be taken in the event of a fault. A system failure going unnoticed, for example in the case of a photovoltaic system installed on an isolated roof, is particularly annoying, not to mention costly. Doepke's new DRCBO 4 Hi 1 auxiliary switch is ideal for mounting on the AC-DC sensitive residual current circuit-breakers with integral overcurrent protection and the 3+N pole residual current circuit-breakers with integral overcurrent protection that are sensitive to pulsating currents. It can be configured as an auxiliary switch or as a signal switch. The auxiliary switch is equipped with a changeover contact and measures 0.5 module widths. ■

Heino Thoben-Mescher, Product Management

Sales promoter meeting in Norden

BMW i8 checked with DRCA

▲ *The Doepke Germany sales promotion team with the new BMW i8*

Our new products for 2015 were revealed at the sales promoter meeting in Norden. The topic of electromobility was covered extensively during this meeting. The DRCA 1 residual current analysis software was used to check the frequency band of the BMW i8 and the results showed that a DFS 4 EV can be used. There was therefore a short test drive after the three-day event. ■

Stefan Davids
Head of Sales Promotion

35 years on

We would like to congratulate Mr Gerhard Zimmer on 35 years of service for our company.

Mr. Zimmer still very much forms the crucial link between sales and production, making a considerable contribution to the success of the company, given that it is of utmost importance to us that our customers receive their deliveries quickly.

As a football fan, he remains completely loyal to his team, HSV, through the good times and the bad. ■

▲ *Gerhard Zimmer (centre) celebrates his work anniversary with our Managing Directors, Andreas Müller (left) and Heinz-Erhard Weeken (right)*

Keep calm and carry on

Three work anniversaries at Doepke UK

▲ *From left to right: Martin Plumb, Simon Cranton and Steve Grellier in front of the Daventry site*

We would like to congratulate our colleagues at Doepke UK on ten years of service for our company, with Martin Plumb (Accounts Manager), Simon Cranton (Managing Director) and Steve Grellier (Production Manager) all reaching this milestone at the same time.

We are really pleased with the successful endeavours of our English colleagues. A significant part of this success can be attributed to the outstanding teamwork that has characterised the working environment for years. This is mainly down to the fact that our UK team has stuck together for many years – the three employees celebrating their work anniversary make up a third of the staff there.

Our British branch, Doepke UK, was founded in 1979 and currently has nine employees. Its site in Daventry near Birmingham is also a distribution centre and where consumer units with various designs are assembled for the British market. ■

Full steam ahead

A winter train experience

This year's Christmas celebrations kicked off with a leisurely journey to Dornum on the museum railway. The historical carriages dated back to 1883 and even included a dining car, with employees from the museum railway providing the service. After an hour's stopover, the train returned to Norden and the passengers went on to restaurant Speicher 77, where they were served a delicious buffet of Snirtjebraten pork casserole and green cabbage. They then carried on their celebrations in this cosy, relaxed atmosphere. ■

▲ *The museum railway, a piece of history*

The angel out and about

On the trail of the Minoans

Image: Günter Grünebast

The Bronze Age Minoan civilisation was based predominantly in Crete. Before they were wiped out by severe earthquakes and the resultant fires, they were considered to be the first advanced civilisation in Europe. The Minoans already had an extensive trade network across the Aegean region as well as a number of palaces and settlements with a water supply and sewerage system and their own script.

But did they already have electricity networks with residual current circuit-breakers? Well, they did already know about the electrostatic effects of charge separation, e.g. by rubbing amber (the Greek word for which is *elektron*) in ancient times.

The Minoans were a peaceable civilisation – no weapons for attack or defence have been found in any of the many archaeological excavations. Our angel must have felt completely at ease in these peaceful surroundings. ■

DATES/NOTES

ELTEC, Nuremberg
14/01–16/01
Hall 1, stand 230

Middle East Electricity, Dubai
02/03–04/03
Stand S2C-18,
German Pavilion

Elektrotechnik, Dortmund
18/02–20/02
Hall 3B, stand C44

Eltefa, Stuttgart
18/03–20/03
Hall 5, stand 5 B 62

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QUARTERLY QUOTE

If last year was a success,

look forward to the next one for sure.

And if it was bad, then do so all the more.

Albert Einstein

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