

THE STRONGEST LINK.

STAHL

ELECTROSTATIC GROUNDING

In hazardous areas



ELECTROSTATIC CHARGE – AN UNDERRATED HAZARD

In hazardous locations, electrostatic charge and discharge pose a serious explosion hazard that nonetheless tends to be underrated.

The risk of electrostatic ignition mainly arises when handling liquids or solids – for example, when mixing or stirring liquids, filling/emptying containers, and during loading/unloading operations in hazardous areas.

Grounding prevents the electrostatic charge from reaching critical levels. But how best to ensure this vital connection to earth ground in harsh working environments?









Here, monitored grounding provides optimum protection. The combination of grounding clamp, cable and monitoring device ensures a safe connection from clamp to ground point is

established and maintained throughout the entire process.

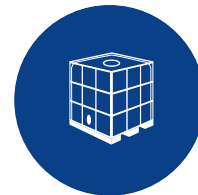
R. STAHL has a comprehensive portfolio of grounding monitoring devices for various types of application.



OVERVIEW OF GROUNDING MONITORING DEVICES

	 Barrels, IBCs, tank containers	 Tank wagons	 Road tankers	 FIBCs, Big Bags	 Multi-point, continuous
 8146/8150	✓	✓			
 9170					✓
 8485		✓	✓	✓	

BARRELS, IBCs, TANK CONTAINERS



GROUNDING MONITORING DEVICES SERIES 8146/8150

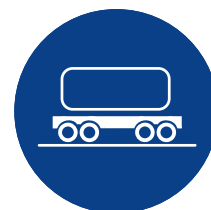
Whenever flammable liquids are agitated in small containers this may result in an electrostatic charge – certain operations such as filling or emptying of the containers or the use of mixers can amplify the static charge accumulation.

The problem becomes even more complex when the containers stand on pallets, as this prevents electrostatic charge dissipation. The series 8146 and 8150 grounding monitoring devices with their measuring system are tailored to this type of application. The devices establish and continuously monitor the entire connection from clamp to grounding point.

Highlights

- One potential-free changeover contact.
- Temperature range -20 °C ... +55 °C.
- Plastic or stainless-steel enclosure.
- For use in Zones 1, 2, 21, 22.
- For use in SIL2 applications.

TANK WAGONS



GROUNDING MONITORING DEVICES SERIES 8146/8150 AND 8485

Tank wagons are an essential part in the logistics of goods and intermediates in the chemical and petrochemical industry. When in use, sufficient electrostatic grounding is essential. Generally, the connection to earth is maintained due to the way the tank wagons are constructed, and their contact with a grounded rail. Monitoring this connection is, however, recommended and in some parts of the world even mandatory.

The series 8146/8150 devices are suitable for this kind of application. The series 8485 has been designed for installation in areas with extreme ambient temperatures.

Highlights

Series 8146/8150

- One potential-free changeover contact.
- Temperature range -20 °C ... +55 °C.
- For use in Zones 1, 2, 21, 22.
- For use in SIL2 applications.

Series 8485

- Two potential-free changeover contacts (Ex i or Ex e).
- Temperature range -55 °C ... +60 °C.
- For use in Zones 1, 2, 21, 22.
- Aux. power: 24 V DC – 230 V AC.

ROAD TANKERS



GROUNDING MONITORING DEVICE SERIES 8485

The law requires that road tankers are safely grounded before any other operation is performed, such as the connection of a loading arm or hose.

The series 8485 grounding monitoring devices ensure that the connection to earth has been established and is being monitored during the entire loading or unloading process.

Furthermore, the device features road tanker recognition. This means that the device will recognise whether it is connected to a road tanker, and will only give the go-ahead for the loading/unloading to start once it has identified a road tanker and provided the maximum resistance between the road tanker and the grounding point is not exceeded, thus ensuring operational safety.

Highlights

- Automatic road tanker recognition.
- Two potential-free changeover contacts (Ex i or Ex e).
- Integrated clamp suspension.
- Temperature range -55 °C ... +60 °C.
- For use in Zones 1, 2, 21, 22.
- Aux. power: 24 V DC – 230 V AC.

FIBCS / BIG BAGS



GROUNDING MONITORING DEVICE SERIES 8485

FIBCs (Flexible Intermediate Bulk Containers) are frequently used for moving bulk materials. Some of these bulk materials may be subject to dust explosion protection. Special types of FIBCs are used that prevent ignition from electrostatic discharge. These FIBCs must be grounded during loading and unloading operations.

The series 8485 grounding monitoring devices have an operating mode specially designed for this application, which uses automatic FIBC recognition to prevent operating errors. This ensures the safe handling of FIBCs.

Highlights

- Automatic FIBC / Big Bag recognition.
- Two potential-free changeover contacts (Ex i or Ex e).
- Integrated clamp suspension.
- Temperature range -55 °C ... +60 °C.
- For use in Zones 1, 2, 21, 22.
- Aux. power: 24 V DC – 230 V AC.

MULTI-POINT GROUNDING OF SYSTEMS AND CONTAINERS



GROUNDING MONITORING DEVICE 9170/21-30-10

For grounding monitoring of systems with a great many grounded objects such as filling and mixing stations, or in the case of machinery connected via a pipe system such as fluid bed dryers, grinding plants, and feed and conveyor systems, type 9170/21-30-10 devices are particularly suitable.

These devices have two channels for grounding monitoring, and due to their small size several devices can be operated simultaneously without using up much space.

They can be installed in a regular control cabinet or in a customised solution in hazardous areas.

Highlights

- Low space requirement (2 channels, width 18 mm).
- Easy integration into planned or existing control cabinets.
- Combination with series 8146/8150 accessories.
- For use in Zones 1, 2 or 21, 22 on the basis of individual field enclosures.

ACCESSORIES AND OTHER PRODUCTS

CABLES / SPIRAL CABLES WITH GROUNDING CLAMP



Robust, UV-, oil- and fuel-resistant cables with high-quality stainless-steel clamps. Can be operated at a wide range of temperatures.

- 10 m cable with grounding clamp.
- 5 m spiral cable with grounding clamp.
- 10 m spiral cable with grounding clamp.

CABLES WITH AUTOMATIC RETRACTOR



Robust automatic retractor with UV-, oil- and fuel-resistant cables with high-quality stainless-steel clamps. Can be operated at a wide range of temperatures.

- 9 m with grounding clamp.
- 12 m with grounding clamp.
- 20 m with grounding clamp.

MULTI-SIGNALLING DEVICES



Explosion-protected multi-signal devices are suitable for process control around loading and unloading stations.

SIGNALLING DEVICES – AUDIO/VISUAL



These signalling devices help to increase awareness of operating conditions, and will alert operators if these become critical. R. STAHL has a wide range of audio/visual signalling devices.



TAILOR-MADE SOLUTIONS

As a leading provider of explosion-protected products and a great many grounding monitoring systems we are always able to adapt our systems to suit

individual, customer-specific requirements.

At the same time we ensure compliance with the various legal

stipulations applicable to each project, thanks to international certifications and approvals available worldwide.

EXAMPLES OF CUSTOMER-SPECIFIC SOLUTIONS



Multi-channel grounding monitoring device

For constant grounding monitoring of several objects and signalling to a DCS via Ethernet or Profibus DP.



NEC solution for use in the USA

Specifically for U.S. applications, the grounding monitoring device can be installed according to NEC in an Ex d enclosure in Class I, Div. 1.



Can be operated at -40 °C in Kazakhstan

This solution is a version of the series 8146 grounding monitoring device, fitted with an additional heater and a separate connection box.

R. STAHL AUTOMATION – MORE THAN YOU **EX**PECT

R. STAHL was founded as a family-run German company in 1876 and has been actively involved in explosion protection since the 1940s.

AUTOMATION has been firmly established in the company for 50 years, and has resulted in significant pioneering work, for example, in explosion-protected remote I/O systems and intrinsically safe fieldbus solutions.

We actively cooperate in **future topics**, such as NAMUR Open Architecture (NOA), the Open Process Automation Forum

(OPAF), Ethernet APL (Advanced Physical Layer), and Cyber Security, so that our customers can digitalise their process plant of the future.

Nowadays, R. STAHL is one of the world's three largest providers of components and solutions for electrical explosion protection.

We are the the number one company for **system solutions**, including for the most extreme ambient conditions. R. STAHL actively supports standardisation in accordance with ATEX, IECEx and NEC/CEC for its customers

in order to ensure a high safety standard within Germany and internationally.

From development through to production and operation in systems, we act true to the **„Made in Germany“** seal.

R. STAHL places great importance on the safety, quality and durability of its products. This is why we have been certified since 1993 in accordance with ISO 9001 and are one of the first manufacturers to be certified in explosion protection in accordance with IEC EN 80079-34.





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