

**EX 4.0**

*THE NEXT LEVEL OF  
EXPLOSION PROTECTION.*



THE STRONGEST LINK.

**STAHL**

# INNOVATIONS 2018/2019

Our latest products - your benefits



# FUTUREPROOF INNOVATIONS

## PREFACE

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### Experience the future of explosion protection with EX 4.0

World markets are undergoing a period of radical change – as are the businesses that operate in these markets. Industry 4.0 is transforming entire industries and will be pivotal in ensuring that companies can remain competitive in the future. Only those that embrace innovative products and new solutions will be able to hold their own in the market. Our job is to provide **explosion protection** and **system safety** solutions to be up to speed with this rapid progress.

We not only focus on **high quality**, but also on **state-of-the-art technologies that stand the test of time**. Therefore, we provide our customers with much more than just exceptional safety – we offer you **futureproof EX 4.0 solutions**, which bring with them the certainty that you will be able to **hold your own against the competition in the long term**.

Our commitment to innovation has once again resulted in a spectacular development – our all-new **EXpressure technology**. This technology can be used to make Ex d enclosures more

compact and more lightweight. Added to this, our ranges of switchgear, control systems and system solutions have also benefited from further developments. At the same time, we focus ongoing efforts on improving and progressing our automation technology, and regularly offer our customers new network solutions, innovative HMI and camera solutions, as well as state-of-the-art LED light fittings. We also provide first-rate service – for example with **PEC inspection software** for paperless planning, organisation and implementation of all plant inspection tasks.

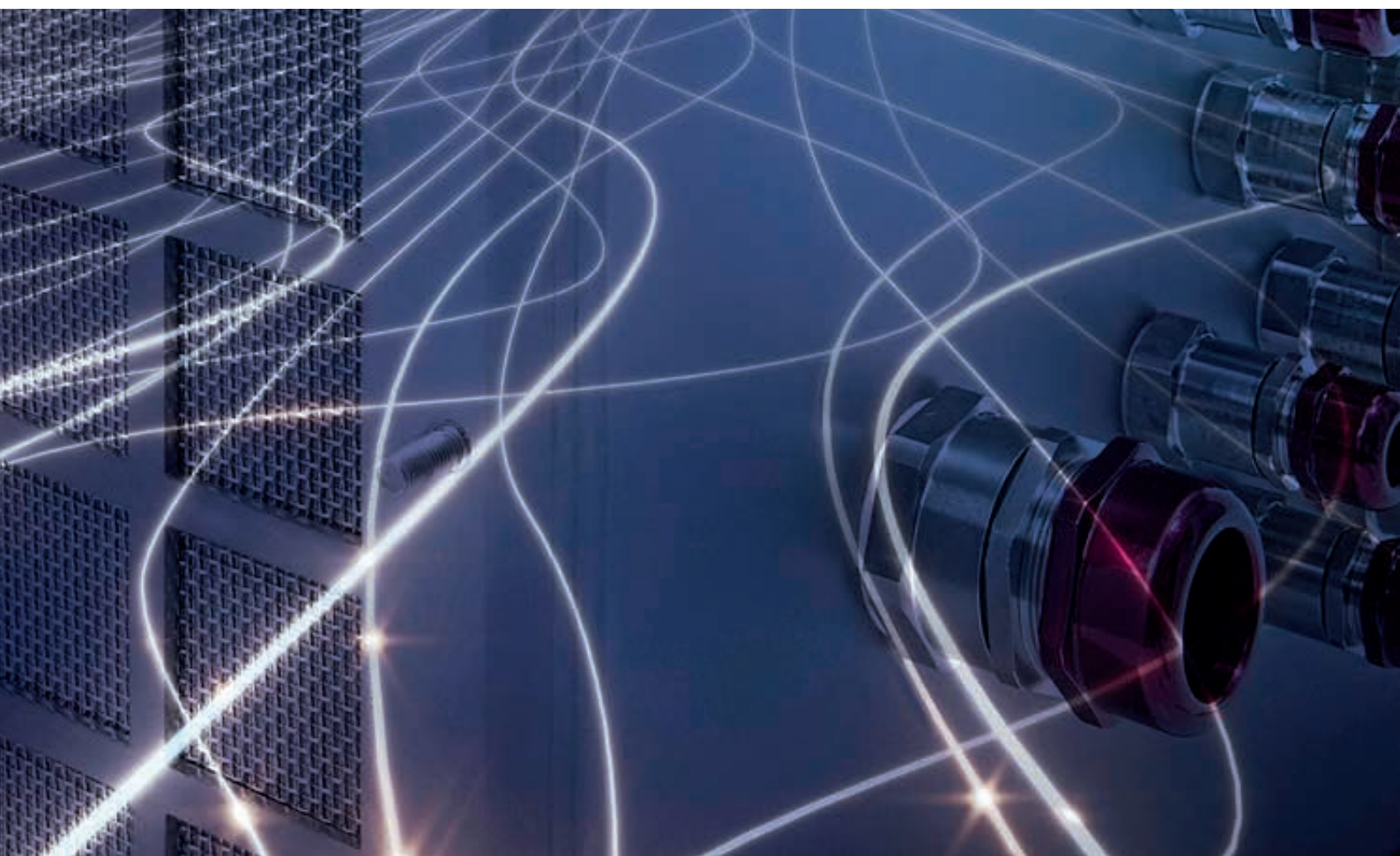


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*THE NEXT LEVEL OF  
EXPLOSION PROTECTION.*

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# SYSTEM SOLUTIONS



**EX**PRESSURE

## EXpressure – new, innovative technology for enclosures

### LIGHTER, MORE COMPACT AND MORE COST-EFFECTIVE Ex d ENCLOSURES

**By drawing on modern principles of lightweight construction and novel material combinations, the new EXpressure technology allows control cabinets virtually identical to those used in non-hazardous industrial areas to be built, and used reliably – without restrictions – in Zone 1.**

EXpressure is certified as an “Ex d flameproof enclosure” and, as a result, is suitable for applications in hazardous areas. The novel design enables quick and easy project engineering and manufacturing of explosion-protected control systems and distribution boards. Instead of dividing the overall electrical operation between a number of small, thick-walled flameproof enclosures, a single, large flameproof installation space is now sufficient for the entire control system or distribution board. This results in significant cost savings, which we pass on to you.

And this is not the only benefit for you: Completed developments for use in non-hazardous industrial areas can be adopted directly for Ex applications without significant modifications. The internal wiring is clearly laid out, and accessibility is improved for inspection and maintenance purposes. Subsequent modifications and additions to the control systems and distribution boards can be made without requiring significant alterations or reconfiguration. Large pieces of equipment (such as frequency converters) could previously not be adapted for use in hazardous areas, or could only be adapted for use in these areas with great technical difficulty. This equipment is now available in large EXpressure enclosures.

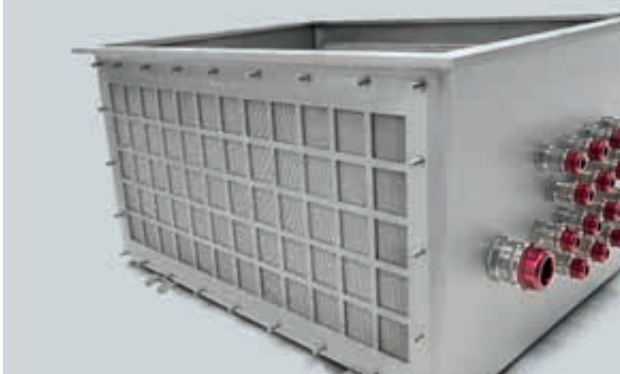
### Highlights

- Space-saving enclosure concept and reduced footprint, resulting in a more compact machine and system design.
- Save time and money at the project engineering, manufacturing and commissioning stages, as well as during operation, maintenance and repair work.
- Weight reduced by approximately 30–50%, making transportation, handling and installation easier.
- Quicker, easier access to the control cabinet interior, coupled with a perfectly clear configuration and wiring.



# REVOLUTIONARY TECHNOLOGY OPENS UP NEW POSSIBILITIES

## New pressure-relief solution



To relieve pressure, the new EXpressure technology safely dissipates explosion pressure via flow channels in multi-layer stainless steel wire cloths.

- Optimal for integration in Ex d enclosures.
- Can either be poured into cast aluminium enclosures or welded in stainless steel enclosures.
- Maximum internal pressure less than 1 bar.
- Significantly reduced enclosure wall thicknesses ( $\leq 1.5$  mm).

## Lighter, more compact, more versatile



EXpressure enclosures offer considerably more compact solutions. This is particularly useful in instances in which installations are to be packed tightly together, and allows you to set up equipment in confined spaces, on oil drilling platforms or along escape routes.

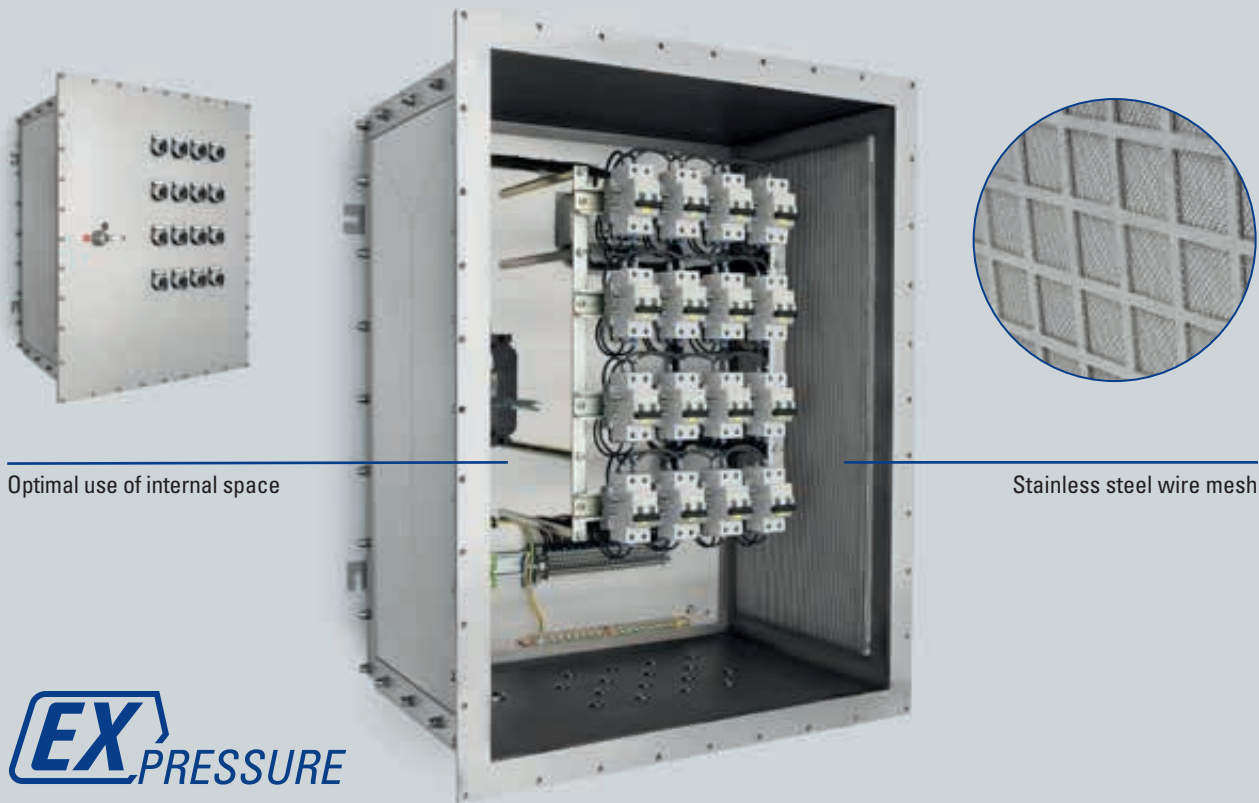
- External dimensions reduced by 25%.
- Approximately 30–50% lighter.
- Optimised machine integration.
- Reduced logistical and installation costs.

## Optimised project turnaround time



The project turnaround time is significantly reduced with EXpressure. Whilst it may have been necessary in the past, using conventional technology, to combine more than one enclosure in order to accommodate complex control systems and distribution boards, you need only a single EXpressure enclosure now.

- Huge time and cost savings.
- No need to spend lots of money laying extensive connection cabling, since large pieces of equipment (such as transformers and frequency converters) can be installed in the capacious enclosures and positioned directly beside the drive in hazardous areas.
- Commissioning is made easy.
- Easily adapted should there be any changes to the order.
- Retrofitting and upgrading do not require significant alterations or reconfiguration.



Optimal use of internal space

Stainless steel wire mesh

**EX**PRESSURE

### Clear layout



For the same dimensions, EXpressure offers you more space for installing switching and control components.

- Clearer component layout and direct wiring.
- Optimal use of internal space.
- Accessibility is drastically improved for inspection and maintenance purposes – for example, components are easy to locate and the connection points/cable routing are easy to track.

### Low operating costs



With EXpressure, we save you money at the commissioning stage, as well as during operation, inspections, maintenance and repair work. Your system can easily be upgraded or expanded at a later date.

- Greater system availability and productivity thanks to reduced downtime in the event of a malfunction.
- Enclosure is quick to open and close.
- All components in one enclosure.



# SYSTEM SOLUTIONS



## Uninterruptible power supply (UPS) to measure

### 100% PROCESS RELIABILITY IN HAZARDOUS AREAS

To ensure that systems for which 100% availability is vital continue to operate safely, R. STAHL offers a modular system for Ex-protected uninterruptible power supplies (UPSs) that encompasses a wide selection of components.

These UPS systems prevent your company from incurring the high financial losses than can result from voltage drops and power failures. They balance out brief fluctuations and, in the event of extended power outages, ensure that your systems are shut down in a safe, controlled manner.

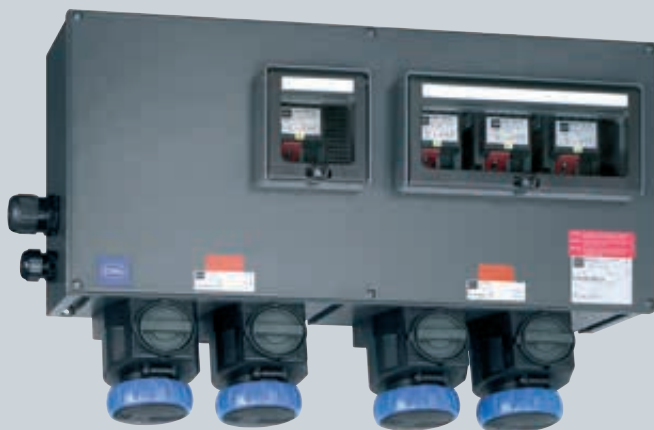
R. STAHL's UPS solutions can be combined in many different ways and, if required, can be designed with special equipment so that they are optimally adapted to the requirements of specific applications. These solutions can be designed for online or offline operation. They allow connected devices to be independently powered and to continue to operate for periods of between five minutes and several hours. Off-grid solutions that can be charged using solar panels for total autonomy are also an option.

The modular system comprises chargers, various explosion-protected battery types, battery monitoring equipment including alarm indicators, DC power distribution boards and inverters for various power ranges.

### Highlights

- UPS with capacitors for energy storage.
- Standard UPS up to 300 VA or 300 W.
- Compact UPS up to 2 kVA or 2 kW.
- High-power UPS up to 15 kVA or 15 kW.
- Customised solutions, for example with increased power, redundant UPS and battery design, further battery management systems, etc.

# SYSTEM SOLUTIONS



## Modular, Ex-protected power distribution boards

### CUSTOMISED, MODULAR, COST-EFFECTIVE: MODIBEX – THE CLEVER SOLUTION

**Explosion-protected stationary and mobile socket outlet assemblies can be designed quickly, easily and economically with the convenient ModibEx module range from R. STAHL.**

The demand for safe, efficient maintenance is growing along with the increasing complexity of industrial systems. In addition to ensuring that systems operate safely, the duration of system shutdowns must be minimised. Our socket outlet assemblies and maintenance sockets make your maintenance work in hazardous areas easier, and the portable Ex socket outlet assemblies are a flexible solution for powering mobile equipment (e.g. inspection lights).

We provide you with a customised socket panel in an extremely temperature-resistant and robust enclosure system – naturally accompanied by the required certification and explosion-protection documents for global use. Different combinations of up to five sockets allow for a variety of uses.

### Highlights

- Predefined assemblies make for fast engineering.
- Pre-assembly and inspection conducted by R. STAHL to minimise construction time.
- The external dimensions and weight of the modules are pared down to the absolute minimum.
- Certification for worldwide use.
- Clear documentation facilitates communication.
- Overall, faster delivery time for all power distribution boards.



# FLEXIBLE SOLUTIONS

## Machinery and system control systems: Low-maintenance and built to last



R. STAHL offers you a complete product portfolio coupled with project engineering for Ex machinery and system control systems – now also available with an inspection window. The comprehensive range of enclosures allows us to devise flexible, compact solutions for use in Zones 1, 2, 21 and 22.

- Long service life thanks to the seawater-resistant enclosure material.
- The versatile design broadens your options, offering you a control system that can be used under extreme temperature conditions.
- Solutions for controlling electrohydraulic systems in Ex d aluminium enclosures that provide explosion protection for the systems that they house.

## Machinery and system control systems with an Ex e connection chamber enclosure



The machinery control systems and motor starters are designed in such a way that we are able to quickly and easily devise a solution that meets your needs.

- Get a quote fast.
- Highly flexible with many options to allow for customisation.
- 20% weight reduction makes installation easier for you.
- Easy to install on existing wall-mounting frame.
- Additional applications possible with IECEx and ATEX certification.

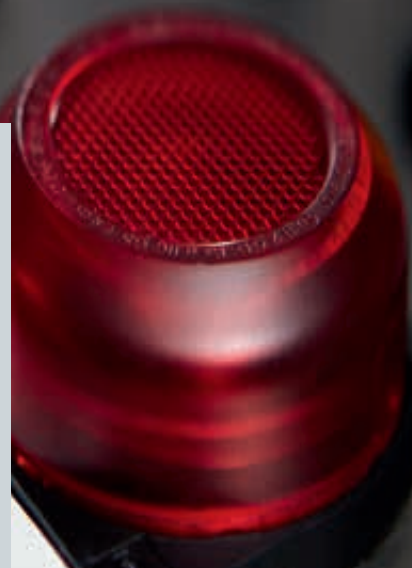
## Integrated engineering



The project engineering and assembly of explosion-protected control and distribution systems require both experience and care in all design and production processes. Based on the customer's technical documents, we will devise a perfectly engineered, cost-effective solution. Right from the project engineering phase, we communicate with your systems and use your information. You will see the solution at work in your own system, and have the data at your disposal, ready for further use.

- No need to do things twice.
- No transmission errors.
- Reduced documentation work.
- Early detection of logic errors.

# INSTALLATION AND CONTROL



First-rate control boxes for all your requirements

WebCode 8150B

## CUSTOM-MADE FOR THEIR INTENDED PURPOSE

**Ex control boxes are custom-made for their intended purpose. The choice is yours – from the material, size and dimensions of the enclosure to what features and built-in equipment your control box should have.**

R. STAHL's control box is configured to your exact specifications. One of the things that may be of particular interest is the option to use up to four contact elements with a single actuator. Another interesting feature is the LED indicator lamps, the colour of which can be changed by changing the calotte directly on the cover.

The components can be configured across different levels in the interior. The design allows all contact elements, individual lamps and control elements, as well as the control switch, to be installed directly on the inside of the enclosure cover, freeing up space inside the enclosure.

The control box is available in a range of different enclosure sizes and materials, such as stainless steel and glass-fibre-reinforced polyester resin.

## Highlights

- Suitable for ambient temperatures as low as -60 °C.
- Modular, universal, individual: made-to-measure solutions.
- Large selection of actuators.
- The new design allows elements to be installed directly on the inside of the enclosure cover, freeing up space inside the enclosure.
- Can be used in all climates and at extreme temperatures, thanks to its robust construction and international certification.



# CUSTOMISED CONTROL BOXES

## Large selection of actuators

WebCode 8602A



R. STAHL offers an extensive range of robust actuators for use in hazardous areas. These include:

- Pushbuttons and mushroom pushbuttons.
- Rotary actuators.
- Key-operated switches and mushroom stay-put buttons with key lock.
- Mushroom stay-put buttons, twin pushbuttons and illuminated pushbuttons.
- Potentiometer and indicator lamp actuators.

We also supply a huge range of different accessories in the form of sign holders, label holders and locking devices.

## Ammeters and voltmeters for ambient temperatures as low as -40 °C



These explosion-protected ammeters and voltmeters reliably measure currents and voltages, even at extreme temperatures as low as -40 °C, and display these values clearly. The adjustable pointer shows you at a glance the extent to which a measured value deviates from the specified value.

## Elements installed directly on inside of enclosure cover, freeing up space



The new design allows all contact elements, individual lamps and control elements, as well as the control switch, to be installed directly on the inside of the enclosure cover, freeing up space inside the enclosure. This is an industry first – you will find no better alternative than the 8150 series control box from R. STAHL for saving space.

# INSTALLATION AND CONTROL

## Small, effective, Ex-protected 8060/2 series position switch

**WebCode 8060B**



Position switches are used to position, control and monitor the moving parts on machines and systems. Because they meet the requirements of the EN 50047 and IEC 60947-5-1 product standards, they can also be used as a position switch with a safety function. In addition, this series has small dimensions, making it a perfect fit when space is at a premium.

- International certificates: ATEX, IECEx, EAC, cCSAus – featuring all markings.
- Operating temperature range of between -60 °C and +60 °C.
- IP66/67 degree of protection.
- 5 different contact versions.
- 9 different actuator versions.

## Large, effective, Ex-protected 8070/2 series position switch

**WebCode 8070C**



Position switches are used to position, control and monitor the moving parts on machines and systems. Because they meet the requirements of the EN 50041 and IEC 60947-5-1 product standards, they can also be used as a position switch with a safety function. In addition, this series boasts a capacious inner connection chamber, making installation easy.

- International certificates: ATEX, IECEx, EAC, cCSAus – featuring all markings.
- Operating temperature range of between -60 °C and +60 °C.
- IP66/67 degree of protection.
- 5 different contact versions.
- 9 different actuator versions.

## New solutions for safe electrostatic grounding in hazardous areas

**WebCode 8485A**



The 8485 series ground monitoring device ensures the electrostatic grounding of road tankers, rail cars and big bags while loading flammable liquids and powder.

- 2 potential-free change-over contacts for signalling to the process control system or external signalling devices.
- Continuous monitoring for correct grounding.
- Object recognition prevents potential operator errors.
- Ambient temperature of between -55 °C and +60 °C.
- Nominal voltage range of between 20 and 230 V DC/AC.



# NEW SOLUTIONS FOR YOUR SAFETY

## R. STAHL is an ETL HazLoc- and UL-certified panel shop



R. STAHL is the first European manufacturer to have been included in Intertek's ETL Hazardous Locations Panel Shop Programme. This official recognition by the international test, inspection and certification company allows us to provide switchgear and controlgear intended for the North American market with an ETL certificate in our own production facility.

We are also a recognised partner in the UL Hazardous Locations Industrial Panel Shop Programme. This means that R. STAHL can issue UL certificates for its own systems for use in hazardous areas and industrial environments.

## Cable glands for all your needs

**WebCode 8161B**



8161/7 and 8161/8 series plastic cable glands safely route cables into Ex e enclosures. In addition to the standard versions that accommodate a single cable, this series offers versions with four entries. These can be used at temperatures between -40 °C and +75 °C and boast IP68 degree of protection.

- Multi-cable entry: Up to 4 individual cables can be routed in through a single cable gland.
- Stopping plugs for unused openings.
- Colour-coded sealing inserts for clearer identification of the different cable diameter ranges.

## Circuit breakers that provide reliable protection for conductors



Each variant of the 8530 series miniature circuit breakers, residual current circuit breakers, and residual current circuit breakers with overcurrent release offers perfect protection against earth faults, overload and short circuit in hazardous areas. They capitalise on their ability to very effectively limit current to minimise the current load on the conductors in the event of a short circuit.

- Ancillary equipment (e.g. auxiliary contacts, fault signal contacts, release units) offers many different possibilities.
- 1- to 4-pole version.
- Nominal currents of between 0.5 A and 40 A.
- Isolating function in accordance with EN 60947-2.
- Switching capacity of 6 kA/10 kA in accordance with DIN VDE 0641/EN 60898.

# LIGHTING



## The latest generation of LED linear luminaires

### OPTIMISED CONNECTION TECHNOLOGY FOR FASTER INSTALLATION

**The 6002/4 series linear luminaire is a new and improved luminaire with optimised LED technology, upgraded explosion protection and enhanced connection technology; all the best features from the previous generation have been retained – the proven enclosure technology, ergonomic central lock and reliable electronics – to produce a product that operates efficiently.**

In the future, R. STAHL will be using highly efficient, mid-power LED technology. Special LED components will be installed, which will be subjected to rigorous corrosive gas testing. This means that the luminaires are also suitable for industries in which aggressive and corrosive chemicals are used. The LED components we use are also extremely efficient, allowing a luminaire efficacy of over 130 lm/W to be achieved. Optics were necessary in the previous generation in order to protect against explosions – but since they are no longer used, optical losses are reduced.

With the latest generation of luminaires, intrinsic safety is afforded when the LED components are activated, and these components require no further protection. You will also benefit from the optimised connection technology. The luminaire will be fitted with a universal 6 mm<sup>2</sup> terminal block. Convenient push-in terminals are provided to facilitate electrical connection and reduce installation time.

### Highlights

- Fully interchangeable with the previous generation.
- Can be used in any hazardous area worldwide.
- Features long-life, efficient, mid-power LED technology.
- Quick and easy to install.
- Incredibly low-maintenance, lightweight and robust.
- Kinder to the environment due to reduced CO<sub>2</sub> emissions.



# EFFICIENT LIGHTING FOR HAZARDOUS AREAS

## 6102/6109 series LED escape path marker signs



6102 and 6109 series LED luminaires are optimised as escape path marker signs in accordance with ISO 7010. Different versions of these luminaires are available: a basic version, a version with an address module that can be powered by a central battery system, and a version with an integrated battery for use in and a version with an integrated battery for the use as an emergency luminaire in a lighting system. Without the symbol display panel, the luminaire can also be used as a compact light fitting for illuminating specific areas, escape routes or danger zones.

- Can be used universally for both indoor and outdoor applications.
- Versatile: can be used to display the different signs and symbols in accordance with ISO 7010.
- Integrated battery allows it to be operated independently of the mains power supply for up to 90 minutes.

## 6050/6 series LED universal spotlight



The choice of different fastening methods, luminous fluxes and light distribution curves for this LED universal spotlight means that it can be used as a pendant light fitting, a floodlight or a ceiling light. It can completely replace luminaires with conventional light sources of up to 500 W. The available light distributions together with an optimised light planning will help to fulfil the requirements regarding the illuminance levels and the uniformity.

- Flexible – can be used either onshore or offshore.
- Low maintenance plus long service life thanks to innovative chip-on-board LED technology.
- Incredibly low life cycle costs – you will quickly see returns on your investment.

## 6012 series LED sheet steel luminaire

**WebCode 6012C**



The 6012 series LED sheet steel luminaire has all the advantages of a sheet steel luminaire with a glass cover: very high chemical resistance, very easy to clean and well suited for use in clean rooms and spray booths. The use of a diffuser means that glare is minimal, even when installed relatively low down.

- Features long-life, efficient LED technology.
- Quick and easy to install, and easy to maintain.
- Excellent lighting performance.

# AUTOMATION



## Communicative remote I/O headend for Zone 2

is1plus.de

### NEW CPU & POWER MODULE FOR MARKET-LEADING IS1+ REMOTE I/O SYSTEM

**R. STAHL is launching a new headend for the explosion-protected transmission of data and signals with the market-leading IS1+ remote I/O system. These modules, comprising a CPU, power module and socket, are designed for the intrinsically safe supply of power and transmission of data to up to 16 I/O modules in Zone 2 hazardous areas worldwide.**

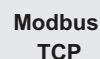
The new Zone 2 CPU comes with all the communications protocols supported by R. STAHL. These can be switched by the user, which reduces the stock required if different automation systems are in use. During plant modernisations, the migration from e.g. PROFIBUS DP to Ethernet networks does not require a change of the CPU. IS1+ diagnostics allow for predictive maintenance and avoid unplanned downtime.

The CPU and power module makes upgrading to the latest generation simple – and makes modifications unnecessary. Ethernet installations can be implemented even more effectively thanks to the new dual Ethernet port for linear and ring topologies.

Three new I/O modules are available for non-intrinsically safe signals. These can be combined as required with Ex i modules in the IS1+ system in Zone 2. They feature the same, extensive functions, while offering even more multifunctionality for analogue and digital signals.

### Highlights

- Can be used worldwide in Zone 2/Division 2.
- Connection via PROFIBUS DP, Modbus RTU, Modbus TCP, EtherNet/IP and PROFINET.
- Multi-functional modules for combining analogue and digital inputs/outputs.
- Temperature range between -40 °C and +75 °C.
- Enhanced diagnostics for CPU, power module and I/O modules.
- Typical system service life extended to 15 years.
- Additional versions available for installation in Zone 1/Division 1.



# EX-PROTECTED SIGNAL TRANSMISSION

## CPU & power modules for Zone 2

WebCode 9442A/9445A



The benefits of the new CPU and power modules include their extensive application possibilities, along with the flexibility they offer in terms of integration into a whole variety of system structures. Thanks to the enhanced diagnostics functions, effective integration into plant asset management systems is easy.

- We have made things simple: All the communications protocols are available in one CPU for you to choose from.
- Enhanced, integrated diagnostics provide early warnings of an approaching system failure.
- Robust, vibration-resistant installation and significantly longer life cycle than comparable systems.

## Zone 2 modules for non-Ex i signals

WebCode 9471B



The IS1+ functionalities for Zone 2 applications have been boosted by three new I/O modules. These can be hot-swapped, and operate at temperatures from -40 °C to +75 °C.

- 9471 series digital input/output module with 16 channels for contacts, proximity switches and low-power solenoid valves.
- 9472 series 24 V digital input/output module with 16 channels for contacts, PNP/NAMUR proximity switches and solenoid valves (24 V/0.5 A).
- 9469 series UMH universal module with 8 channels for 2-, 3- and 4-conductor HART transmitters, PNP proximity switches, positioners and solenoid valves (24 V/0.5 A).

## Standard enclosures for IS1+ in Zones 1 and 2

WebCode 8150D

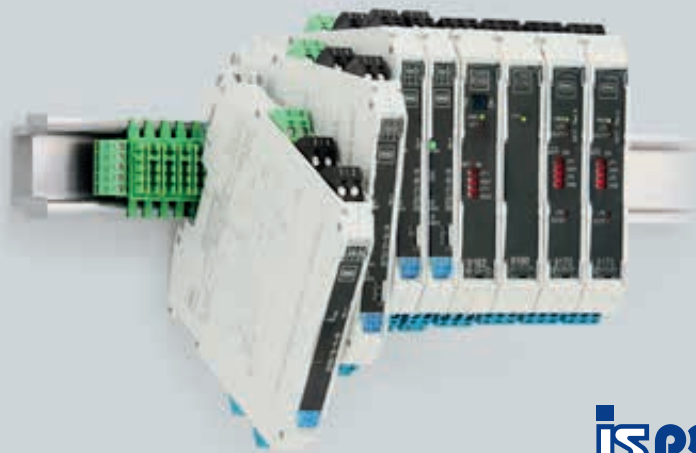


With the IS1+ standard enclosures, we offer a variety of pre-defined Zone 1 and 2 field enclosures with reduced delivery times of no more than three weeks. Allow for just one extra week's delivery time and we can offer a whole host of different customisation options.

- Robust V2A stainless steel enclosure (1.4301), prepared and operational for the IS1+ remote I/O.
- Preconfigured with all accessories and assembly parts; no additional approval or certification required.
- Optional extras, e.g. V4A stainless steel (1.4404), other cable entries, redundant IS1+.



# AUTOMATION



**ISpac**

**Intrinsically safe isolation occupying only 12 mm**

**WebCode 9260A/9270A/9275A/9176A**

## **ISPAC ISOLATORS – LARGE SELECTION, SMALL FOOTPRINT REQUIRED**

**R. STAHL is adding a new, extremely slimline model series of its ISpac isolator system to its product range. With a width of a mere 12.5 mm, the new one-channel and two-channel modules use up to 30% less space in the control cabinet.**

The slim modules fit perfectly into the existing product portfolio and can be installed on either DIN rails or, without the need for tools, on the practical pac-Bus. The pac-Bus eliminates the need for individual wiring, supplies up to 40 modules with auxiliary power and, together with the 9193 series supply module, provides a collective fault signalling function that is useful for diagnostic purposes.

The suite of new modules encompasses the following functions: 9260 series transmitter supply unit, 9270 series switching repeater, and 9275 and 9176 series binary output. The new modules expand the existing, extensive portfolio, which has something for virtually any application.

### **Highlights**

- Lower installation costs because a significantly higher signal density can be attained due to the reduced space requirements.
- New 12 mm modules can be combined with existing isolators on the pac-Bus.
- Simple and cost-effective wiring with the pac-Bus.
- Virtually the entire product range can be used for functional safety SIL 2 or SIL 3.
- The modules have been developed and tested for a service life of at least 15 years.



Fieldbus integration and migration: R. STAHL bus-Carriers with linking device

WebCode 9419C

## GATEWAY SOLUTIONS FOR USE WITH PROFINET AND FOUNDATION FIELDBUS FOR ZONE 2

Linking devices manufactured by Softing connect FF H1 or PROFIBUS PA segments via Ethernet to distributed control and plant asset management systems. This makes them an effective solution for migration projects and system upgrades.

The integrated solution using R. STAHL bus-Carriers minimises the installation work required and significantly reduces the amount of cabling work that is necessary. The ISbus fieldbus power supplies feature simplex and redundant power supply of fieldbus segments. Different versions of the bus-Carriers are available for use with up to eight fieldbus segments. The ISbus fieldbus power supplies' integrated advanced physical layer diagnostics can also be employed when used with FOUNDATION Fieldbus H1.

When it comes to installing fieldbus equipment in Zones 1 and 2, R. STAHL is on hand with a comprehensive selection of different field device couplers for FISCO and non-intrinsically safe equipment. Further information on Softing's linking devices can be found at <http://industrial.softing.com>.

### Highlights

- Versions in the form of a proxy for PROFIBUS PA to PROFINET, or a linking device for FOUNDATION Fieldbus H1 to FF HSE or Modbus TCP.
- Adapted bus-Carriers minimise the amount of installation work required.
- Redundancy for the segment power supply and redundant linking devices as an option.
- Advanced physical layer diagnostics.
- Installation in Zone 2 with customised field enclosures.

# AUTOMATION



## Network solutions for hazardous areas

### WLAN ACCESS POINT À LA CARTE

**A high-performance digital infrastructure will play a crucial role in implementing Industry 4.0 and the Industrial IoT (IIoT) in process automation. R. STAHL is one of the very few tech leaders offering solutions today for the systems of tomorrow. A unique set of components for Ethernet and fieldbus networks enable us to provide custom-made solutions.**

For example, R. STAHL helps you to integrate your chosen WLAN access point, e.g. Cisco or Aruba products, into hazardous areas in no time. The explosion-protected design offers excellent flexibility and is easy to install and maintain. For instance, the connection technology for wired Ethernet signals makes the connection process a breeze.

This solution can be used in any hazardous area worldwide.

### Highlights

- Installed device is easy to replace.
- Ex i antenna connection – any antenna can be used.
- Ex op is fibre optical interface (hot swap, hot work).
- Ex e Ethernet terminal – upgraded for 1 GigE.
- Temperature range between -20 °C and +40 °C (tested for Cisco 2702e and 2802e).
- Can be upgraded with additional functions such as WirelessHART Gateway.



# ETHERNET COMMUNICATION IN HAZARDOUS AREAS

## Managed switch with 4 explosion-protected "op is" FX ports



Media converters and switches ensure easy use of Ethernet in Zone 1. The optical FX ports use the "op is" type of protection in accordance with IEC/EN 60079-28, capitalising on the benefits of intrinsic safety for optical data transmission.

- Specially designed for use in PROFINET networks.
- Features ring functionality based on the Media Redundancy Protocol (MRP).
- 4 FO ports with "op is" type of protection allow for easy maintenance in Zones 0, 1 and 2 (hot swap, hot plug).
- Temperature range between -40 °C and +70 °C.

## Ethernet installation for FO and copper

**WebCode 8186A/8187A**



The Ethernet terminal and splice box ensure fast installation of a wired Ethernet system. R. STAHL has taken great efforts to ensure that the signal quality is not impaired by the provision of the necessary explosion protection.

Ethernet terminal:

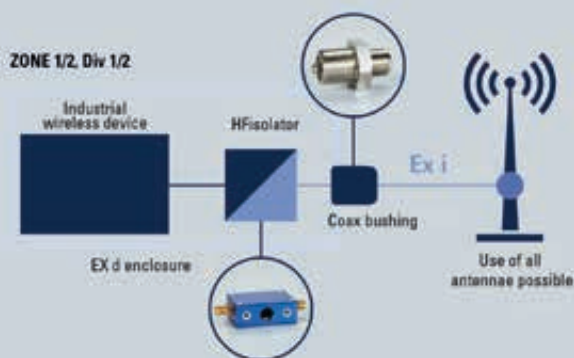
- Can be used with up to 1 GigE (in Zone 1).
- CAT cable is easy to connect.

Splice box:

- Versatile in your choice of enclosure.
- Robust connection of FO fibres in Zone 1.

## HFisolator permits use of full range of antennae

**WebCode 9730A**



The HFisolator makes the use of the complete range of industrial antennae in hazardous areas possible. In combination with the wide range of Ex d or Ex p enclosures, a solution for any wireless technology can be found.

- Ex ia interface – enables use of appropriate antenna.
- Suitable for all frequency ranges.
- Solutions for ATEX, IECEx, UL (NEC) and EAC TR.
- Extremely wide temperature range.

# HMI SYSTEMS



## New GMP operator stations for clean rooms

WebCode IT579GMPA

### DEVELOPED FOR NON-HAZARDOUS AREAS IN THE PHARMACEUTICAL, LIFE SCIENCES AND FOOD INDUSTRIES

**For environments with strict hygiene requirements, we have developed the new GMP HMI. This complies with the regulations set out in the EU GMP directives and the EHEDG recommendations. As such, it can be used in non-hazardous areas and clean rooms in cleanliness grade C.**

All MANTA GMP devices are available as thin clients or panel PCs. They are equipped with fast dual-core processors with 4 GB RAM and 64 or 128 GB industrial SSDs. For safe communication within networks, all thin clients can be configured with the new, highly secure REMOTE V5 firmware.

The process images are faithfully rendered on the 24" widescreen in three resolutions (1920 x 1080/1680 x 1050/1280 x 1024). All displays are available with an optional capacitive glass touchscreen with multi-touch functionality.

### Highlights

- Dual Ethernet for redundant operation.
- Passive cooling without a fan.
- GMP or GMP grade C variant.
- Enclosure can be vertical or at a 15° angle.
- Available with optional audio amplifier and GMP speaker.
- Remote HMI V5 on Win 10 IoT LTSC.
- PXE bootable, e.g. for ThinManager.
- Windows® 7 Ultimate/WES 7/Windows® 10 Enterprise.

# HMI SOLUTIONS FOR EVERY APPLICATION

## Secure REMOTE HMI V5 firmware for thin clients

Exicom.de



Designed as a closed system on Windows® 10 IoT Enterprise, the firmware offers the latest remote desktop services with RDP 10, VNC, DRDC, CITRIX, browser, etc.:

- Intuitive app concept: Apps are safely run in Kiosk mode.
- Write protection for SSDs.
- Customised security concepts.
- Simple, intuitive menu structure.
- Ethernet redundancy.
- Automatic reconnection/fallback.
- Can be used on any display size from SVGA upwards.

## Internationally certified operator interface for machine operation

Exicom.de



R. STAHL operator interfaces are advanced HMI devices with integrated software for operating machinery in the logistics industry, in tank farm automation and on ships:

- Certified for use worldwide in Zones 1, 2, 21 and 22, and Division 2.
- 7"/10.4"/15" display sizes.
- Sunlight-readable displays.
- Movicon CE/SPSPPlus RT software.
- Country-specific keyboards.
- Corrosion-resistant in accordance with ISA-S71.04-1985, G3.
- Suitable for ambient temperatures of between -30 °C and +50 °C, and up to IP69 protection.

## Thin clients and virtualisation

Exicom.de

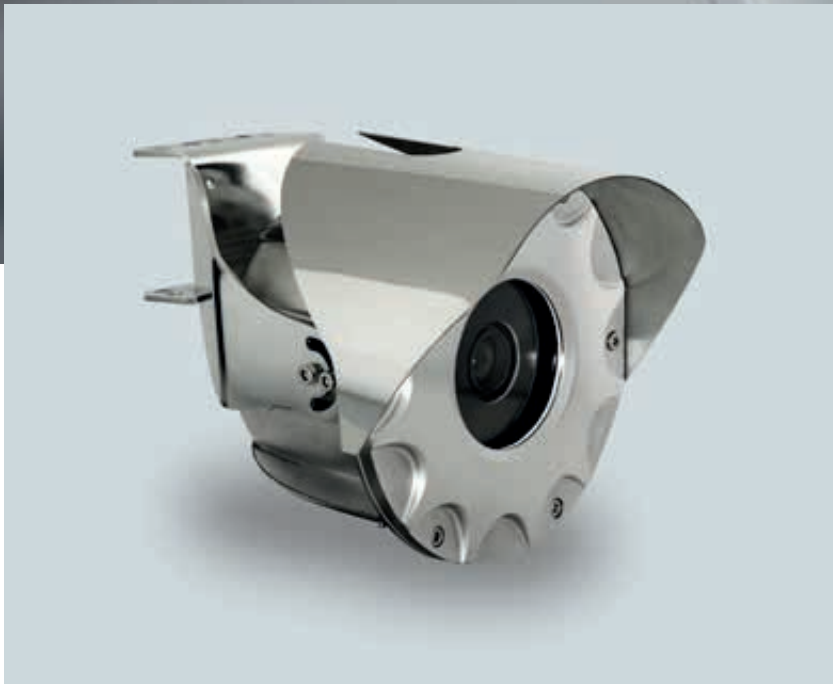


Thin client operator stations for virtual networks are certified for Zones 1, 2, 21 and 22, and Division 2. They can be used universally – including in clean rooms.

- Designed as an operator station or as a device for installation on the enclosure cover.
- 19"/22"/24"/24" WU displays.
- IP66 stainless steel enclosure, optionally in accordance with GMP.
- Optional resistive glass or film touchscreen.
- RFID reader (21 CFR part 11) and barcode scanner.
- Secure communication thanks to REMOTE V5 firmware.



# CAMERA SYSTEMS



**EC-910-AFZ compact full HD camera**

**WebCode EC910AFZA**

## WITH "PLUG & PLAY" INSTALLATION, EVEN IN TIGHT SPACES

**A shiny new addition to our camera family: The EC-910-AFZ Ex-protected full HD zoom camera. This camera is suitable for effective video surveillance and process control in harsh environments with flammable gases or dust.**

The full HD camera with 1080 pixels produces video streams with excellent image quality, depicting a scene in full detail even in poor lighting conditions. The 3x zoom variant is best for monitoring rooms and inspection windows; the 10x zoom variant has Lloyd's certification, making it ideal for offshore applications.

In addition to the extraordinary image quality, the extremely simple and fast installation of the ONVIF S and Q camera is another plus. The camera can be supplied with a prefabricated, armoured multi-cable and be directly supplied via PoE+ without restrictions. The camera comes with a ceiling/wall bracket and a sun-protection canopy.

## Highlights

- Certification for use in Zones 1, 2, 21 and 22.
- Day/night 1080p full HD IP camera.
- 3x/10x optical autofocus zoom.
- Video compression: H.264/AVC, MJPEG, JPEG and MPEG4.
- Stream up to 3 videos simultaneously.
- Power supply: PoE+, 24 V DC or 24 V AC.
- AISI 316L stainless steel enclosure.
- Ceiling/wall bracket and sun-protection canopy included in delivery.

# THE NEXT GENERATION OF UNIVERSAL CAMERAS

## ONVIF – a universal language



ONVIF (Open Network Video Interface Forum) has developed a global interface standard for IP-based security products. This enables IP cameras to be seamlessly integrated into video surveillance networks.

## WDR – optimal exposure at all times



The wide dynamic range (WDR) function compensates for large differences in brightness by automatically merging images with different exposure to form an overall image with good visibility.

## DEFOG – mist and fog reduction



Fog can considerably affect image quality. With the defog function activated, image parameters such as colour and contrast are analysed and optimised to provide clearer images.

# SERVICES | SEMINARS



## Smart inspection management with PEC

### SYSTEM SAFETY THANKS TO PAPERLESS INSPECTIONS

**PEC inspection software is a comprehensive solution for planning, organising and conducting all inspection tasks in your plant – it's paperless and, when used on a tablet, is available both online and offline anywhere in the world.**

With its three modules, PEC enables you to perform all the required inspections relating to explosion protection, functional safety, operational safety and quality. PEC's comprehensive interfaces support the linking of ERP, MES, CAE, engineering and DMS systems in order to avoid duplicate entries, thereby increasing your productivity. It also means that your data is always up to date and easier to find. With the search and report function, you additionally get a complete overview of the entire life cycle of your plant in just a few clicks.

PEC integrates a device database, templates for typical inspection plans, and an electronic calendar that keeps you up to date. PEC also archives your inspection results, documents and all other important information. This means that informative, verifiable assessments can be produced for auditing and compliance purposes.

R. STAHL provides you with support in implementing and configuring the software application, whatever make of products you use. This leaves you more time to concentrate on other tasks.

### Highlights

- Paperless inspection organisation and execution.
- For Explosion Protection, Functional Safety as well as Safety and Quality Assurance.
- Comprehensive interfaces for existing software solutions.
- High data quality through centralised data management.
- Inspection concepts, device and equipment documentation, inspection reports, report templates, error data logs, intrinsic safety and SIL documentation – all integrated into a standardised system.





# HAZARDOUS AREA SERVICES

## Your lighting system, planned by our experts



You provide your objectives, requirements and a 2D layout diagram of your system. Using this data, we will produce a complete 3D model and determine the ideal lighting installation for you.

Our experts analyse the spatial geometry, reflectance, and the number, size and location of all installation points. We use this data to develop a lighting system that is perfectly positioned, has the right light distribution, the ideal light colour and the optimal luminous flux, and consumes minimal power. This is how we create a safe lighting system with just the right luminance coupled with perfect uniformity.

## Engineering and consulting: Solutions to your requirements



Whatever make of products you use, R. STAHL will provide you with in-depth expertise through a range of different services:

- Engineering.
- Commissioning support.
- Intrinsic safety validation.
- Audits to ensure that Ex products comply with the latest generations of standards.
- Laboratory services for your product testing.

## All the very latest expertise: Seminars on explosion protection



- Extensive range of seminars on current explosion protection issues.
- Seminars in which participants complete a variety of different practical exercises pertaining to non-electrical explosion protection – held in collaboration with the Ernst-Abbe University of Applied Sciences Jena. These are aimed particularly at mechanical engineers and equipment manufacturers.
- In-house seminars.



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