



# ISpac isolators

the perfect system





# safe isolation



2

Handling flammable and potentially explosive substances is part and parcel of everyday operations in many branches of industry. However, it is not possible to do without the advantages of automation even in these sectors. Consequently, there must be a protection system to allow safe and, at the same time, efficient operation when using field devices such as sensors and actuators. Such a system can be achieved for instance by the use of type of protection intrinsic safety »i«. The modern ISpac isolator system from R. STAHL is the ideal »safety lock« between the safe electronic signals and the Exi signals in hazardous areas in such cases. ISpac allows integration of sensors and actuators located in Zone 0, Zone 1 and Zone 2 besides dust explosion hazard Zone 20, Zone 21 and Zone 22. In addition ISpac can be applied for intrinsically safe circuits of Division 1 or 2. Consequently, R. STAHL's ISpac fully covers all requirements made of an isolator used in hazardous areas.



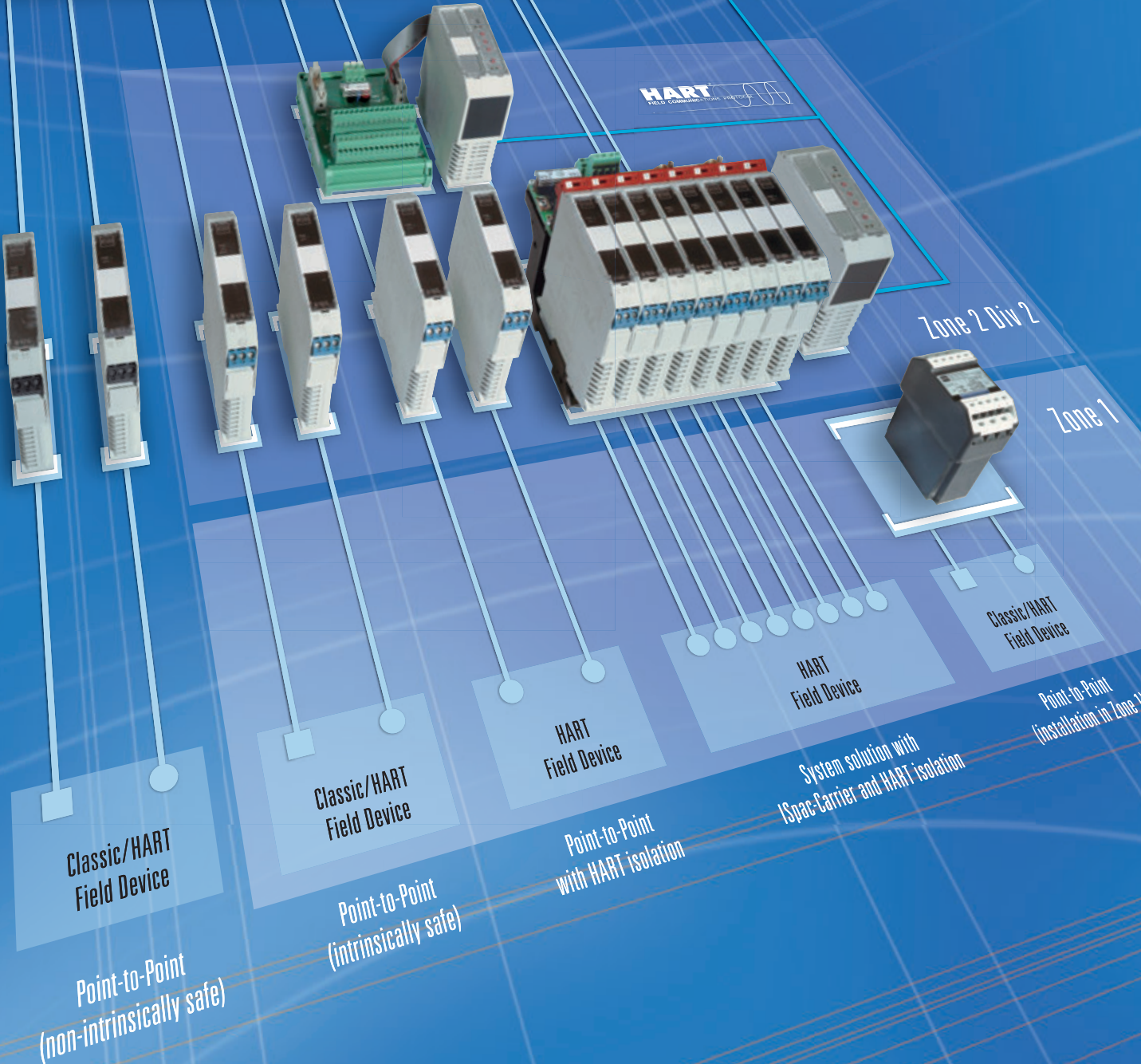


ISpac _ the perfect system	5
One for All	7
ISpac modules _ convincing technology	8
ISpac-Bus _ fast mounting	10
ISpac-Carrier _ integration in complex systems	11
Asset Management _ enhanced efficiency with HART	12
Limit value monitoring _ distributed control	13
SIL-classified	14
Certified _ worldwide approvals	15

Safety PLC or Process Control System				
I/O	I/O	I/O	I/O	I/O

Asset Management System

HART  
Field Communication Protocol



Point-to-Point  
(non-intrinsically safe)

Point-to-Point  
(intrinsically safe)

Point-to-Point  
with HART isolation

System solution with  
ISpac-Carrier and HART isolation

Point-to-Point  
(Installation in Zone 1)

Zone 2 Div 2

Zone 1

Classic/HART  
Field Device

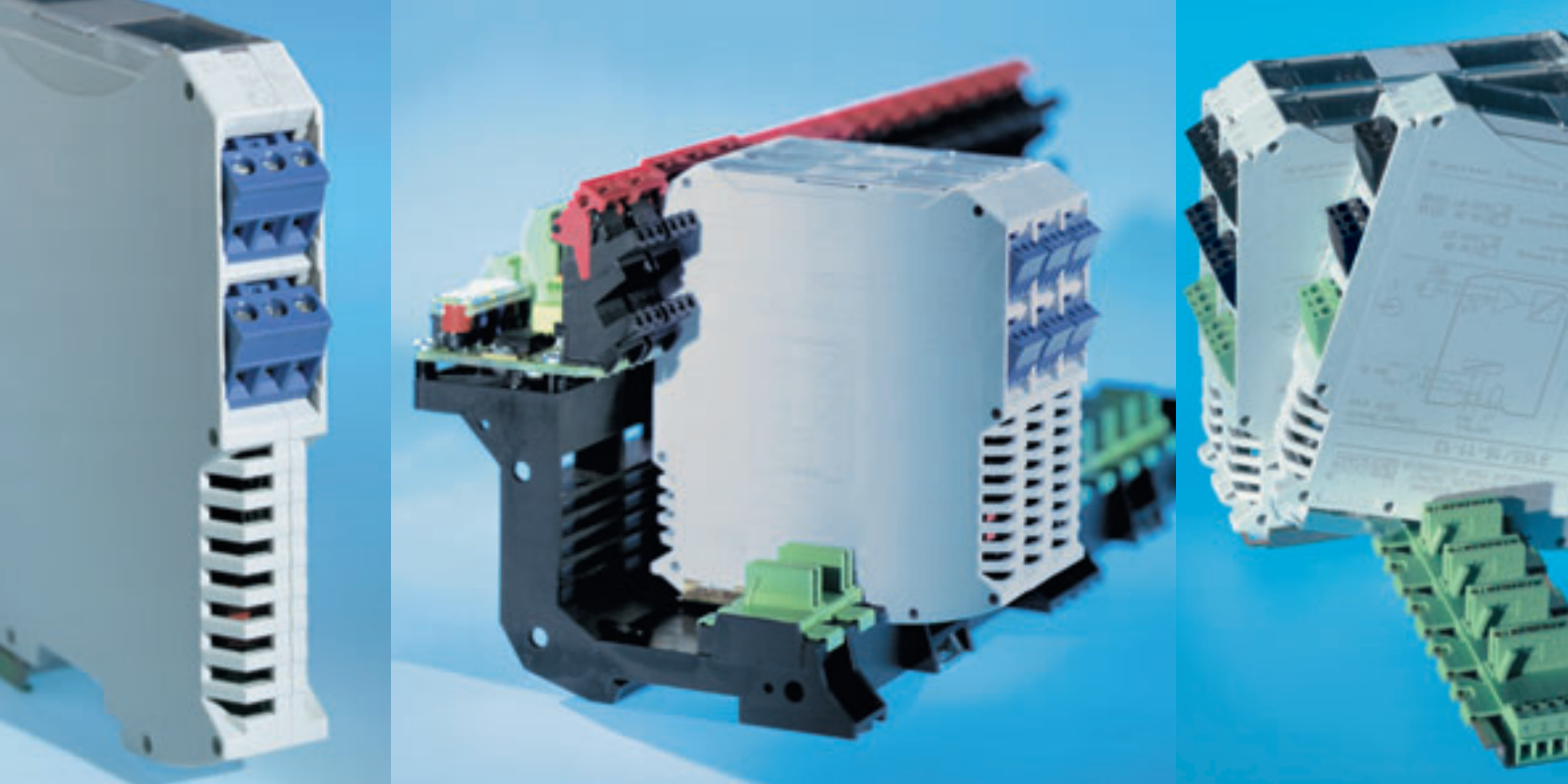
Classic/HART  
Field Device

HART  
Field Device

HART  
Field Device

Classic/HART  
Field Device





# ISpac

the perfect system

R. STAHL's compact ISpac Exi isolator system provides the entire, sophisticated functionality required for process automation in hazardous areas subject to the risk of gas and dust explosion. It offers solutions for all conceivable requirements made of point-to-point transmission of process signals. There is a device with one or two channels for all processes and standard applications. Stand-alone application on single DIN rails, group installation of 20, 30 or more devices, simple integration in automation systems, transmission of HART signals or use in SIL applications: always the same design with consistent operator procedures. This drastically simplifies your planning procedures and wiring. The consequence of this flexibility is an unrivalled level of economy and efficiency. The ISpac product family is rounded off by individual system solutions from R. STAHL for use in Zone 1 and Zone 21 and by module versions that can be used for electrical isolation of non-intrinsically safe signals. This landmark system has proven its worth during many years of operation worldwide.



> [www.ispac.info](http://www.ispac.info)





transmitters for  
pressure,  
flow rate,  
temperature, ...

Analogue input



control valves,  
i/p converters,  
indicators and displays, ...

Analogue output



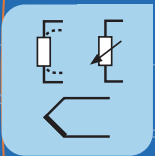
contacts,  
switches,  
proximity switches, ...

Digital input



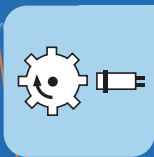
solenoid valves,  
LEDs,  
horns, ...

Digital output



resistance thermometers,  
thermocouples

Temperature



acquisition of rotational  
speeds by proximity  
switches

Frequency



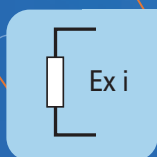
fire- and gas-  
detectors

Fire detectors



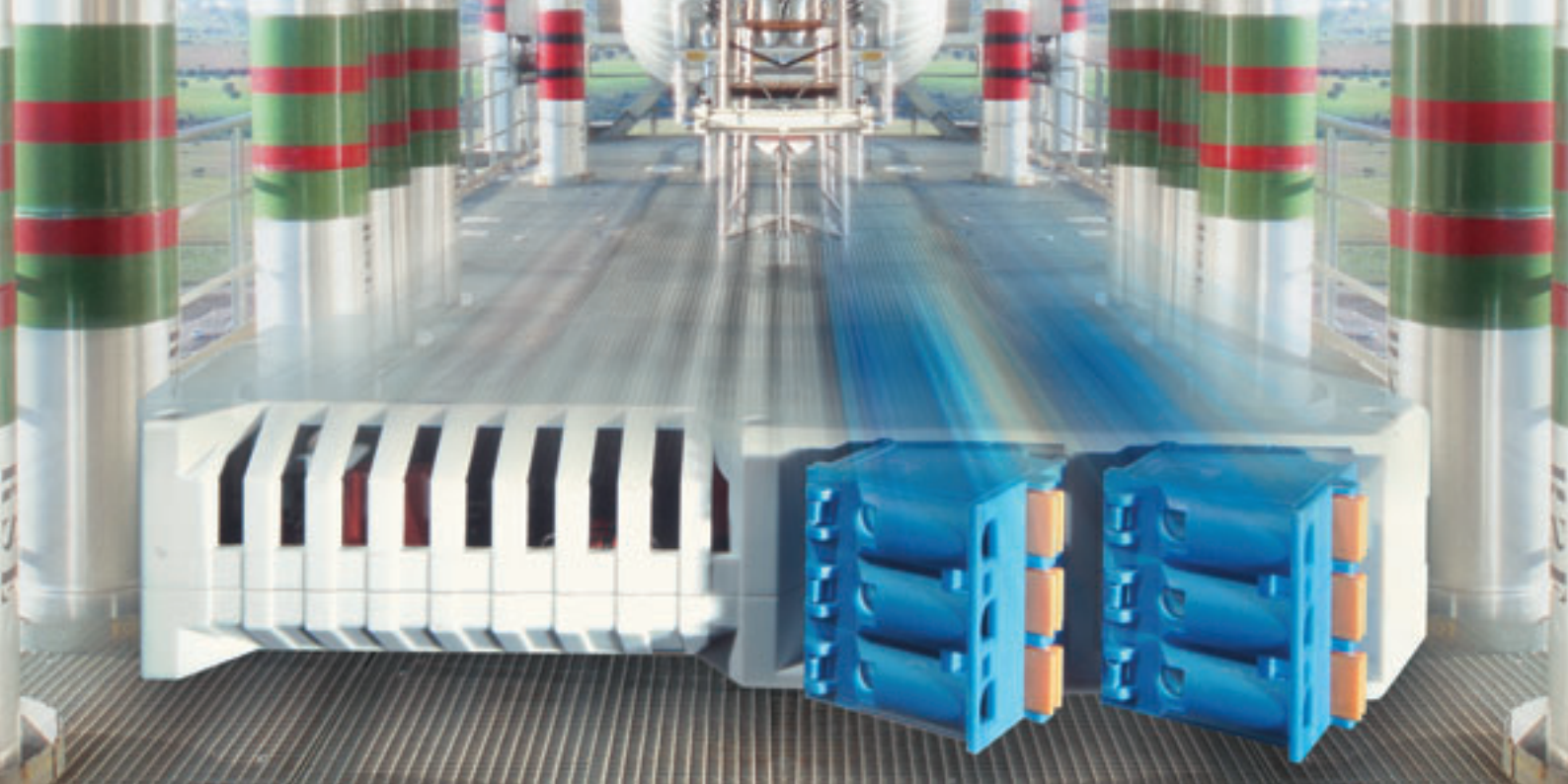
transmitters,  
temperature sensors,  
frequencies, ...

Trip amplifier



Ex i power supply

Power supply

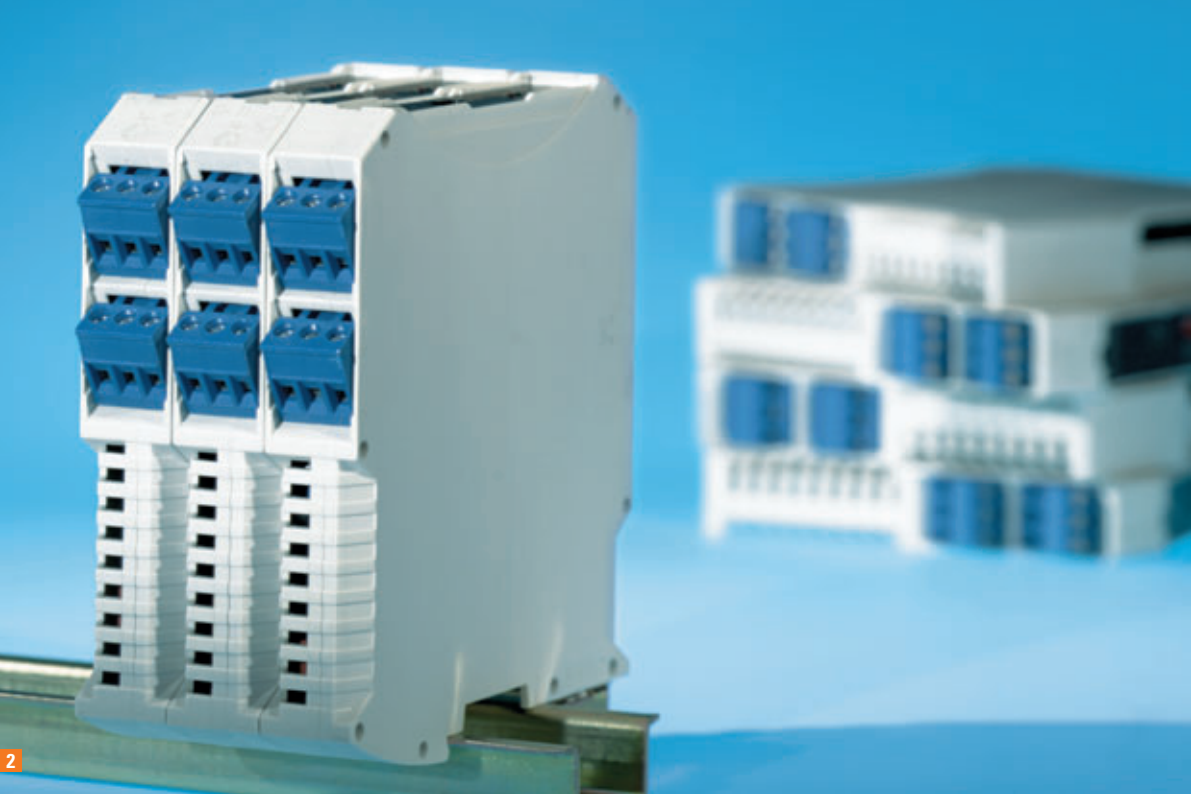


# one for all

7

Are your requirements anything but straightforward? Do the tasks you need to perform change? Do you need to respond quickly to new influences? R. STAHL's IS pac isolator system has many facets. It offers the full and complete range of all functions you could need and that you require for your tasks in the process industry. Regardless of whether you need to interwork sensors, transmitters and actuators of any type via switching amplifiers and transmitters through to trip amplifiers, IS pac provides you with the right solution without exception. You can count on it. The adjacent diagram shows the wealth of the range available.





# ISpac modules

convincing technology



Modern design, rugged and industrial-standard: ISpac from R.STAHL. The ISpac modules are available for all functions, both as single-channel devices and as two-channel devices. The individual module is only 17.6 mm wide, regardless of the number of channels, and is one of the world's most compact isolators with a theoretical spacing of 8.8 mm per channel. Say goodbye to compromises: no functions are lost owing to the higher packing density on two-channel devices. The front panel provides a generous arrangement of displays, indicators and operating controls. They also still offer adequate space for individual labelling. The connection terminals can be detached simply. This allows modules to be exchanged quickly at any time if necessary. Depending on the existing systems, the terminals may be selected customised. Screw terminals, cage clamp terminals and insulation-displacement terminals are available. The combined arrangement of the terminals assists space-saving entry of the cables into cable ducts. If a connector is inadvertently plugged in at the wrong position in the module, integrated electrical coding prevents current flow. The error is recognised and can be remedied. The ISpac modules are mounted mechanically either on simple DIN rails, on the ISpac-Bus or, in the case of integration and automation systems, on the ISpac-Carrier, using a quick snap-on mounting system.





### Enclosure front panel **1**

- > generous, clearly arranged area for displays, indicators and operating controls
- > displays and indicators in accordance with NAMUR NE44
- > clear channel assignment of the LEDs
- > option for making settings via DIP switch even during operation

### Design **2**

- > module width only 17.6 mm (0.69 in)
- > module size 108 x 114 mm (4.25 x 4.49 in)
- > on a general basis, one or two channels per module

### Fault and error signalling **1 3**

- > detection of discontinuity and short circuit in the Exi circuit
- > detection for input and output isolator
- > signalling via red LED per channel
- > collective signalling via the IS pac-Bus
- > signalling per device via relay contact

### Voltage monitoring

- > defined switch-off and failure signalling via floating contacts if voltage is undershot

### Connection terminals **4 5**

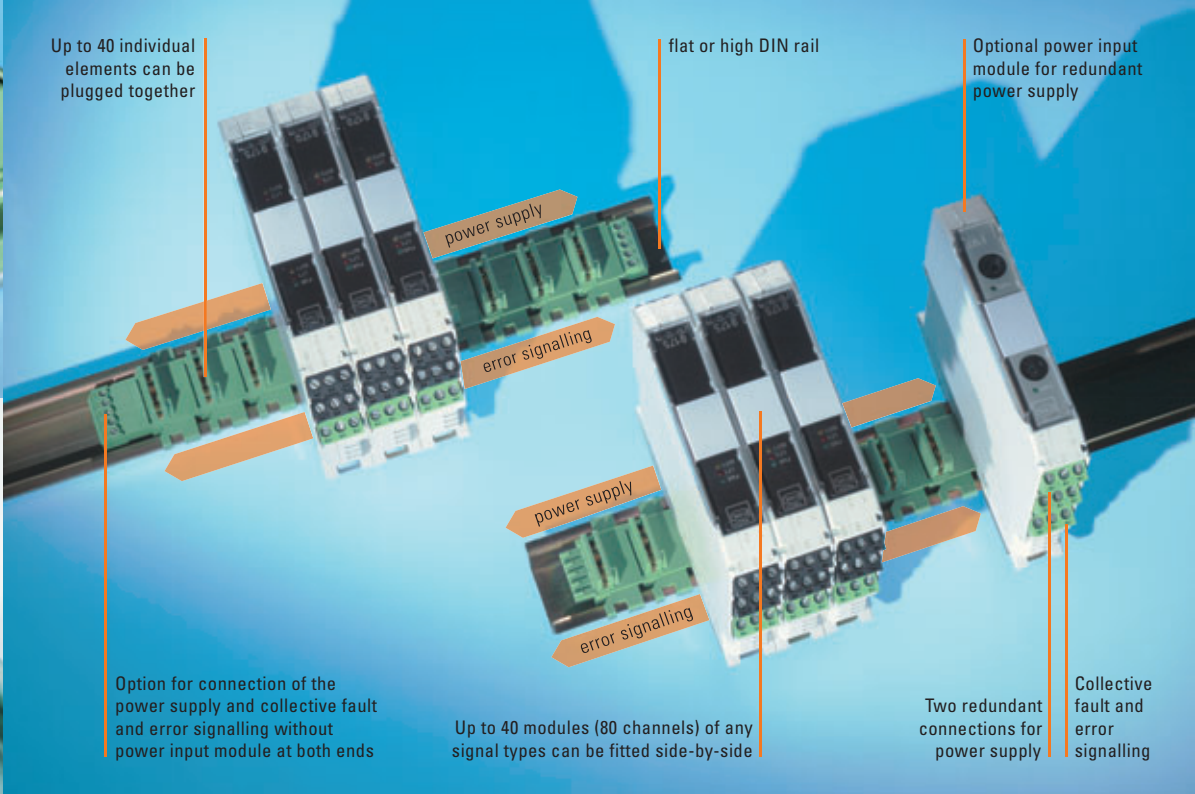
- > simple and fast wiring of the modules thanks to detachable terminals
- > optionally screw terminals, cage clamp terminals or insulation-displacement terminals
- > colour coding and electrical coding of the terminals
- > mechanical coding of the terminals as an option
- > slanted arrangement of the terminals for optimum, space-saving entry into cable ducts

### Installation in Zone 1, Zone 21 **6**

- > operation in Zone 1 can be implemented with installation in the 8510 flameproof enclosure system

### Non-Exi isolators

- > integration of non-intrinsically safe signals via a low-cost, non-intrinsically safe isolator
- > standard wiring throughout the entire system



# ISpac-bus

## fast mounting

Plug together, place onto bus, snap on and connect. The isolators are now already in operation on the high-performance, expandable ISpac-Bus from R. STAHL. Up to 40 ISpac modules can be installed without the need for tools and within a very short time. The ISpac-Bus powers the modules and, at the same time, offers collective fault and error signalling for all modules, consequently greatly facilitating fault finding.

### Design

- > individual elements
- > individual elements can be plugged together up to required length, maximum 40 units
- > gold-plated contacts for maximum contact safety
- > integrated pole-reversal protection

### Mounting

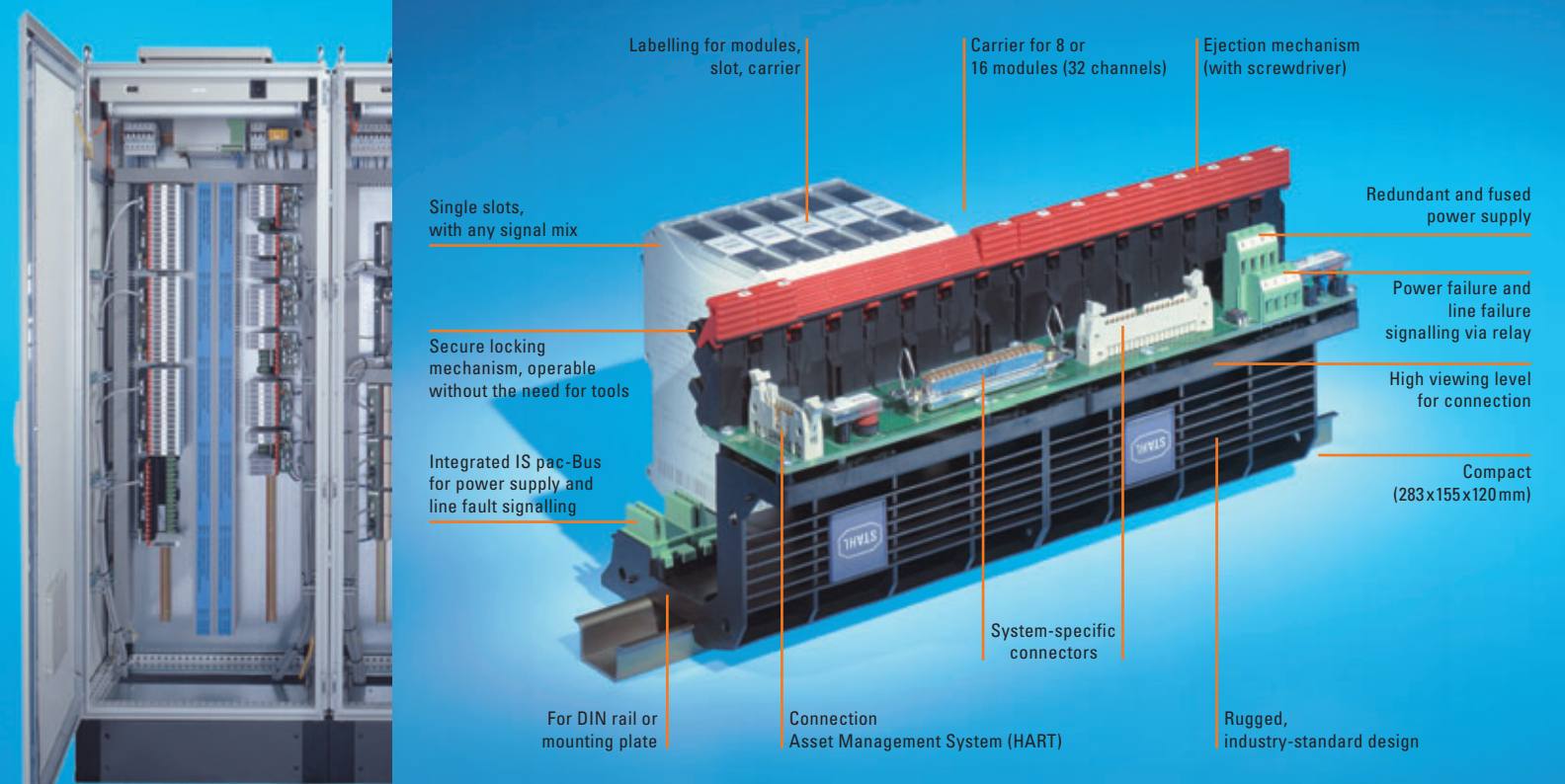
- > fast, simple, snap-on mounting onto flat or high DIN rails
- > option for vertical and horizontal mounting
- > can be mounted without the need for tools
- > can be expanded at any time easily

### Power supply

- > via simple terminals
- > option for redundant power supply via the input module
- > installation of the input module either at the left, at the right, at the centre or on both sides with one variant

### Fault and error signalling

- > floating fault-signalling contact
- > collective signalling via a contact chain for line faults of the Exi inputs and outputs
- > self-closing contact in the ISpac-Bus automatically closes the contact chain if positions are not equipped



# IS pac-carrier

## integration in complex systems

Systems with maximum system integration complexity can be achieved easily and safely with R.STAHL's IS pac-Carrier. The carrier variants are matched specifically to the various automation systems.

R.STAHL also offers you individual integration in control cabinets or complete system solutions, from project planning through to commissioning, on request.

### Design

- > standard carrier for 8 or 16 modules
- > single slots for any signal mix
- > rugged, industry-standard design
- > integrated label carrier
- > high, user-friendly viewing plane connection

### Mounting

- > on DIN rails or mounting plates
- > sturdy, mechanical snap-on mounting system
- > the modules are firmly seated and immune to vibration thanks to fixation in the slots at top and bottom
- > protection against unintended removal of the modules – ejector mechanism can be operated only with a screwdriver

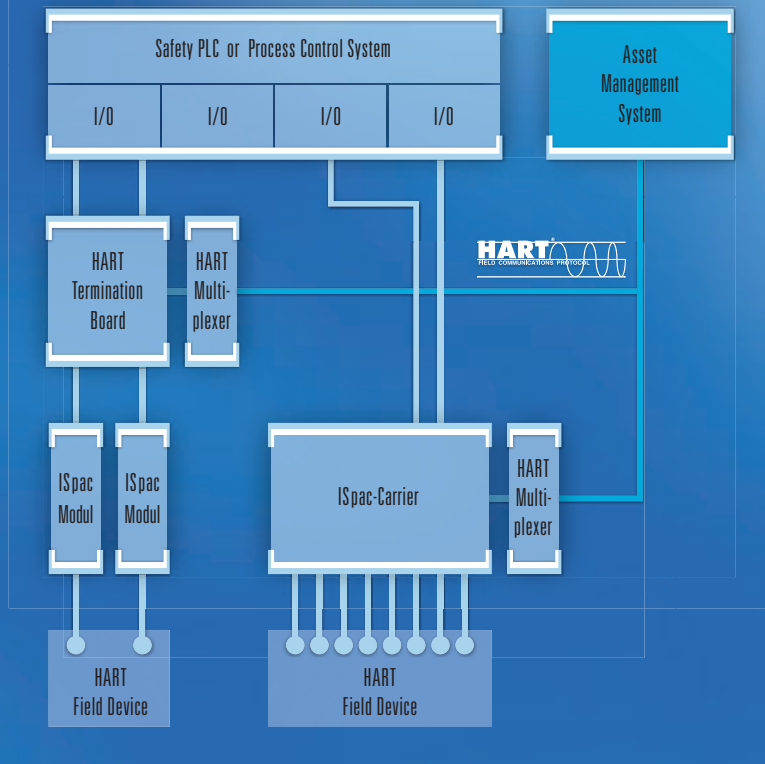
### System integration

- > system-specific connectors and PC board
- > Connection option for HART multiplexer
- > 24 VDC power supply, redundant and fused
- > versions available include versions for systems Yokugawa Centrum CS 3000 and ProSafe RS, Emerson Delta V and SIS 1508

### Fault and error signalling

- > power failure on IS pac-Carrier via a floating contact
- > collective fault and error signalling in relation to power failure of modules or line faults of the Exi inputs and outputs via floating contact
- > individual signals on module via LEDs





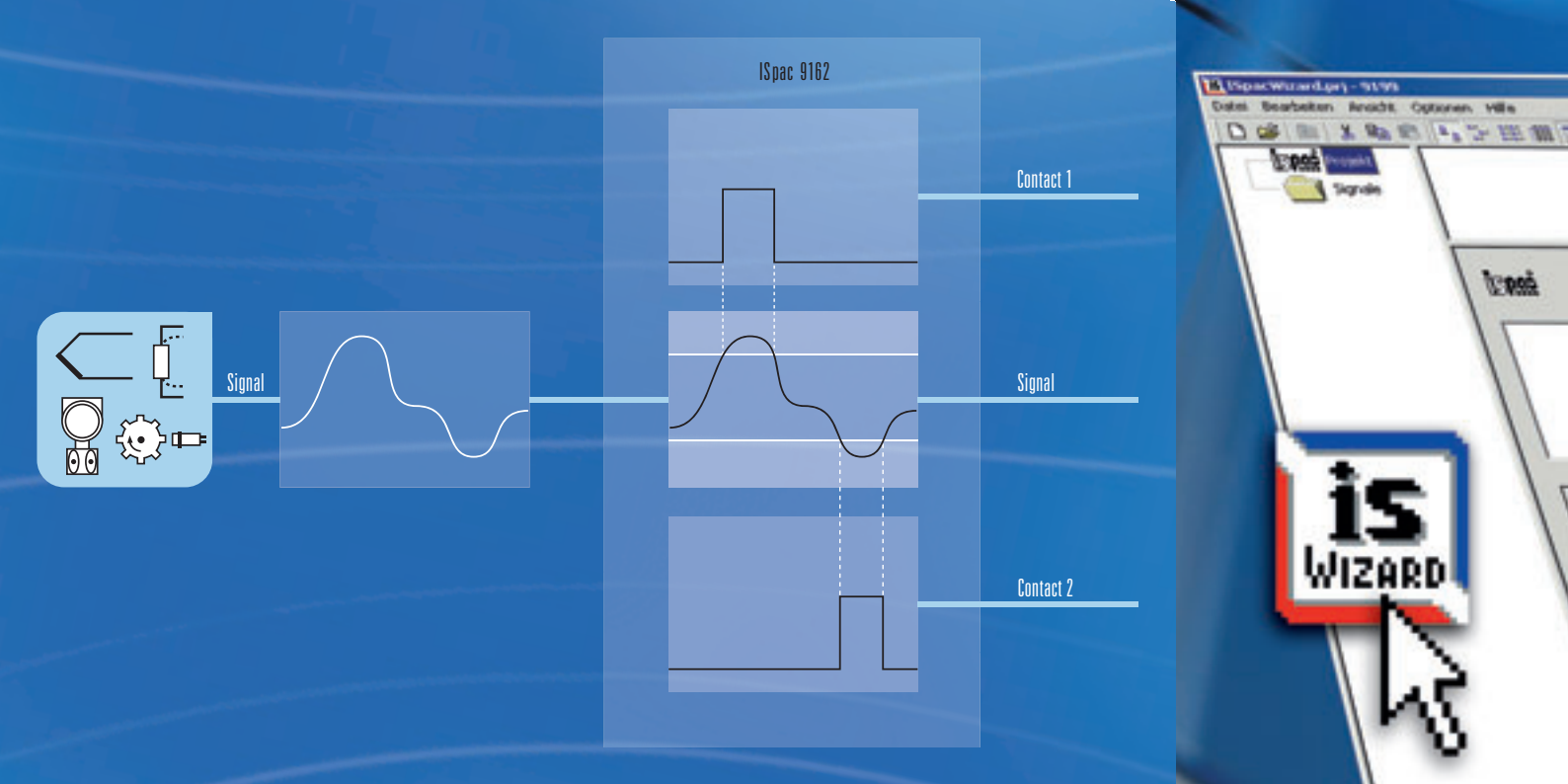
# asset management

enhanced efficiency with HART



The HART communication protocol is used for transmission of information for Asset Management Systems and for programming field devices. The protocol can be transmitted with the aid of an analogue 4...20 mA signal for which a separate transmission channel must be available. The R. STAHL ISpac isolators are designed to allow them to transmit the signals in both directions, both as single-channel variants and as two-channel variants. R. STAHL offers a broad, well-conceived range of products and solutions for input and output of HART signals. The heart of the system is the HART Multiplexer Type 9192. This device, together with the HART connection board, Type 9196, or the ISpac-Carriers, represents the linking element between the HART Management System and the individual field devices. This is R. STAHL's economical, efficient and easy-to-install solution for setting up a HART network that allows you to take any approach, in future as well.





# limit value monitoring

## distributed control

Monitoring of measurable variables that are acquired by sensors in the field can be implemented easily and efficiently with the aid of limit value switches. The ISpac isolators with limit value evaluation allow the user to define his or her own individual limit values. If the individual limit value is overshoot or undershot, this is signalled by a contact. Temperatures, rotational speeds or any other measured values can consequently be monitored flexibly and at distributed locations. R. STAHL offers limit value switches for temperature sensors, frequency signals and analogue 4...20mA signals.

### Characteristics

- > compact, 17.6mm (0.69in) wide
- > 2 freely definable limit values
- > convenient programming via the ISpac-Wizard software package
- > additional transmission of the measured value via analogue 4...20mA signal



# SIL-classified



The process industry frequently requires systems for protecting life, limb and the environment. This relates to functional safety of installations and systems in accordance with IEC EN 61508/61511. SIL is considered the yardstick of safety-related performance of an electronic or electrical control system. Most of the components of R. STAHL's ISpac Exi isolator system can be used in applications necessitating SIL 2 or SIL 3. ISpac isolators can consequently be used easily with no price markup for transmission of safety-related and conventional signals or a mix of both. As a manufacturer of explosion protected apparatus, R. STAHL supplies not only the specific components and system for functional safety circuits but also assists you with its well-founded expertise.



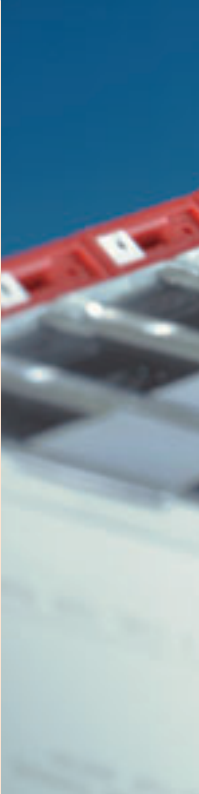
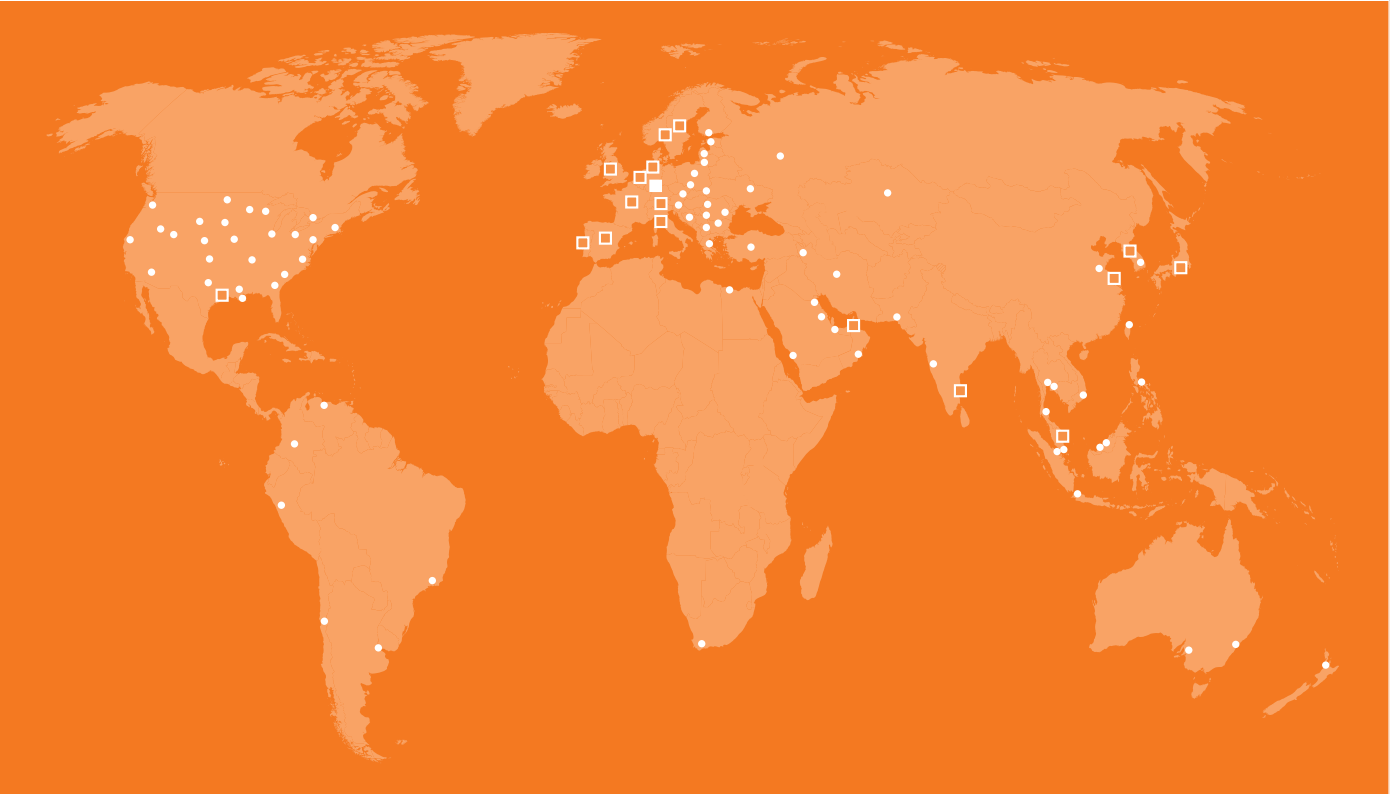


# certified

## worldwide approvals

15

Chemical and petrochemical installations are installed worldwide, prerequiring competent, international cooperation during the project planning, construction and operation phases. The required technology must be able to be used worldwide. R. STAHL's ISpac isolator system is approved in accordance with ATEX, FM, UL and GOST, besides many other international standards. Climatic conditions are also a crucial selection criterion. ISpac can be used over a broad ambient temperature range extending from  $-20^{\circ}\text{C}$  bis  $+70^{\circ}\text{C}$ . In addition, R. STAHL's own Competence Centres allow implementation of individual, tailor-made solutions for operation outside of this temperature range. Approvals for use on board ships emphasise the industrial standard of the entire ISpac isolator system. The devices operate safely and easily even under such rough operating conditions. This system, geared to the future, has now been in use for many years worldwide and has proven its worth. R. STAHL's ISpac – the isolator that you can count on. For sure!



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