IS pac isolators
the perfect system

Ex

STAHL

PROCON
SYSTEMS INC.
www.proconsystems.com

safe isolation

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 IS pac isolator system from R. STAHL is the ideal »safety lock« between the safe electronic signals and the Ex i signals in hazardous areas in such cases. IS pac 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 IS pac can be applied for intrinsically safe circuits of Division 1 or 2. Consequently, R. STAHL's IS pac fully covers all requirements made of an isolator used in hazardous areas.

STAHL

Safety PLC or Process Control System

| I/O | I/O | I/O | I/O | I/O |

Asset Management System

HART
FIELD COMMUNICATION PROTOCOL

Zone 2 Div 2

Zone 1

Classic/HART
Field Device

Classic/HART
Field Device

HART
Field Device

HART
Field Device

Point-to-Point
(installation in Zone 1)

Point-to-Point
with HART isolation

System solution with
ISpac Carrier and HART isolation

Classic/HART
Field Device

Point-to-Point
(intrinsically safe)

Point-to-Point
(non-intrinsically safe)
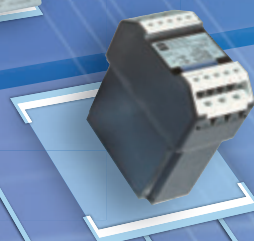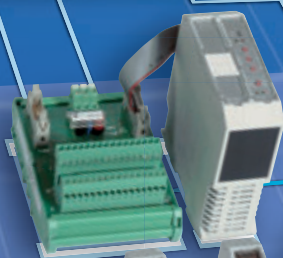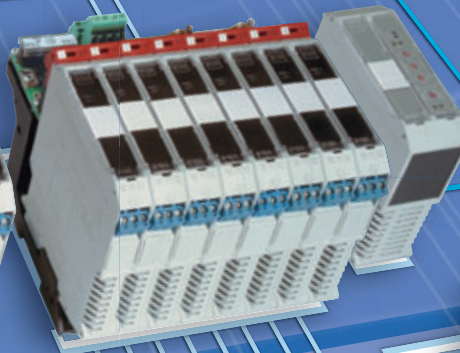
IS pac
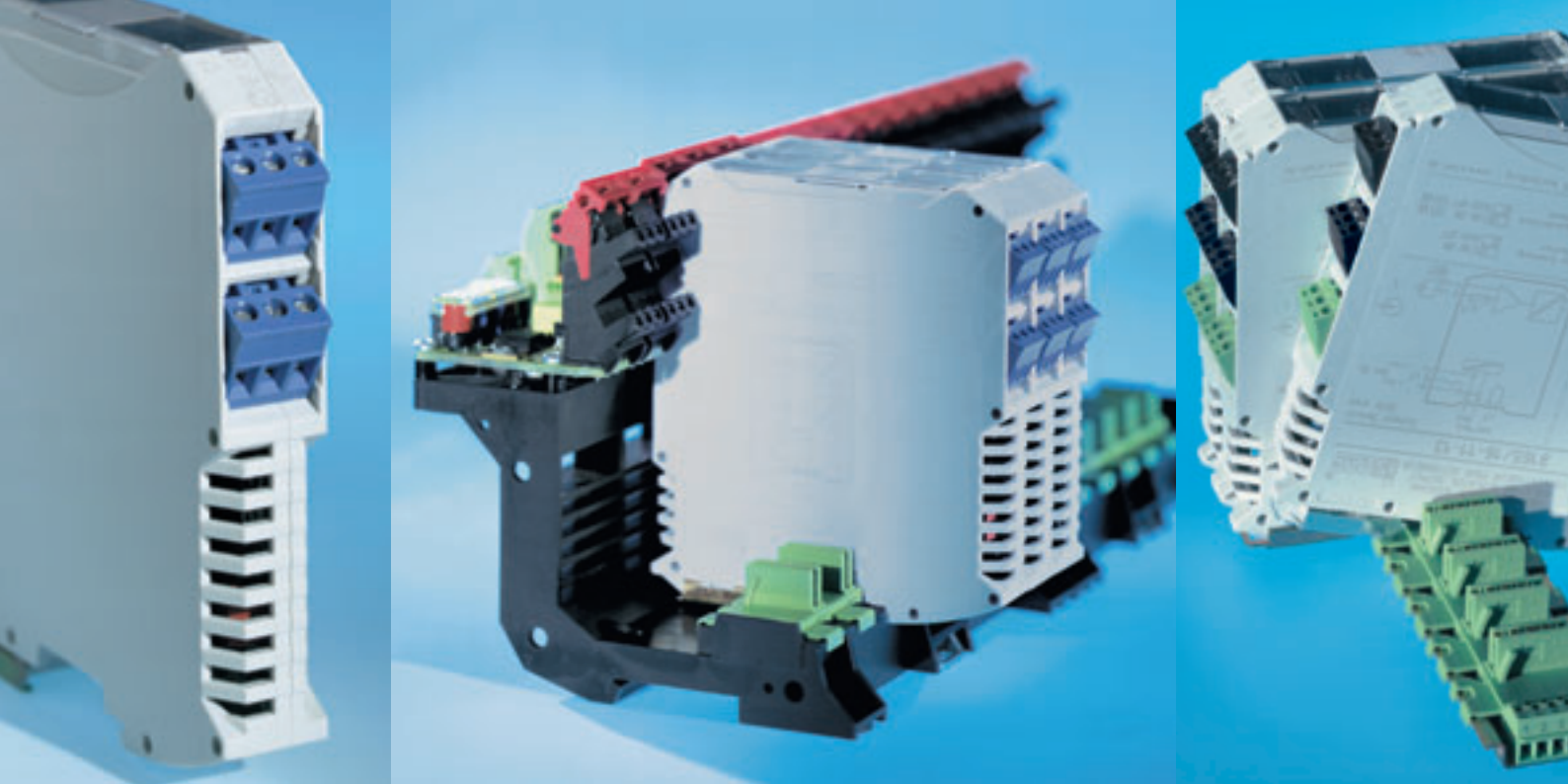
the perfect system

R. STAHL's compact IS pac Ex i 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 IS pac 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.
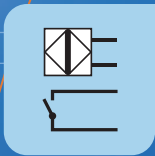
> www.ispac.info

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

Analogue input

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

Analogue output
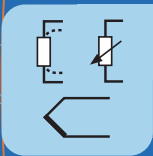
contacts,
switches,
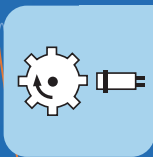proximity switches, ...

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
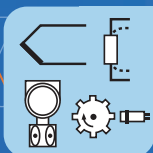
transmitters,
temperature sensors,
frequencies, ...

Trip amplifier
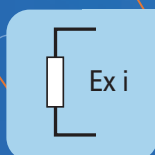
Ex i power supply

Power supply
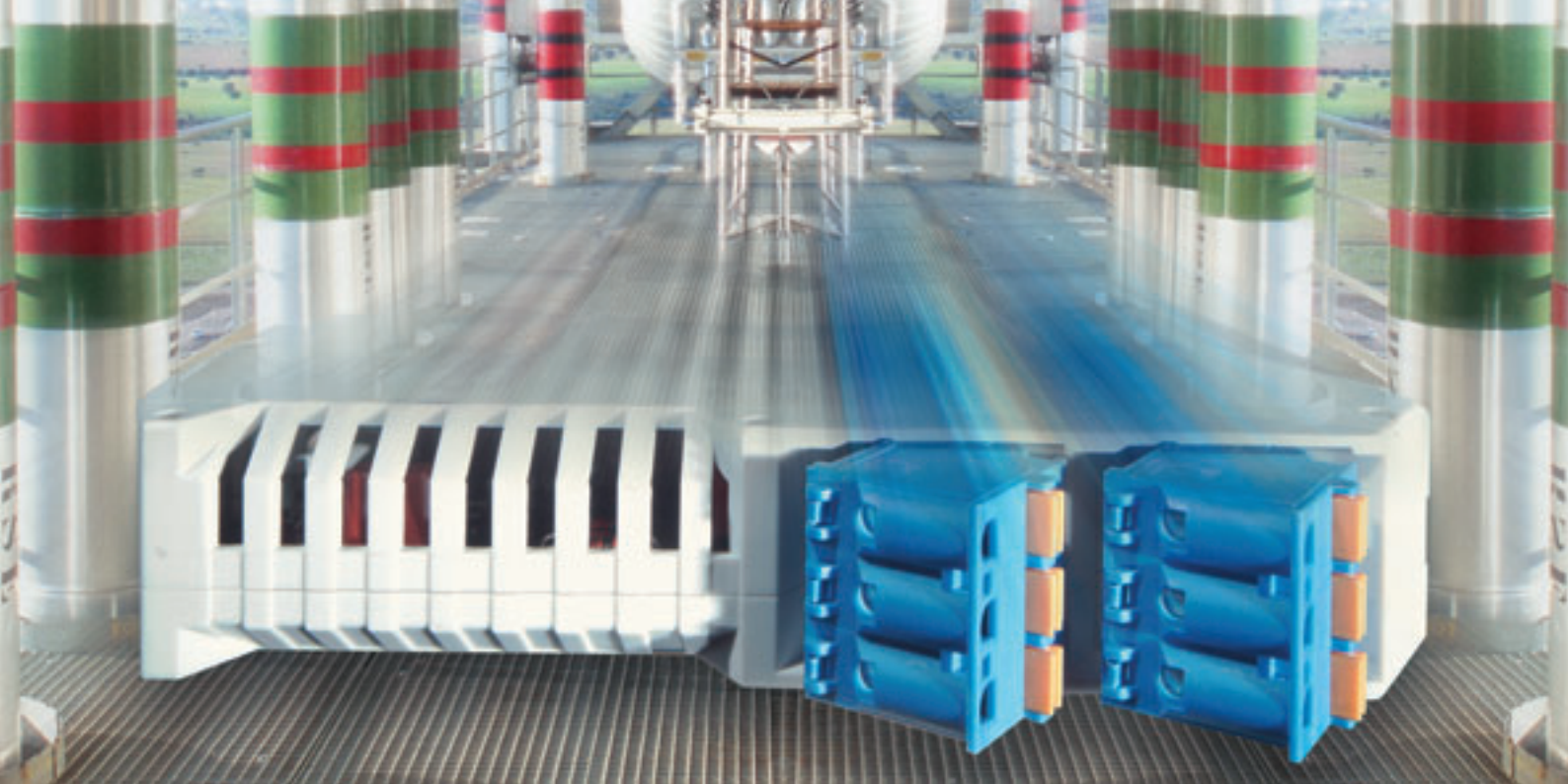
one for all

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.
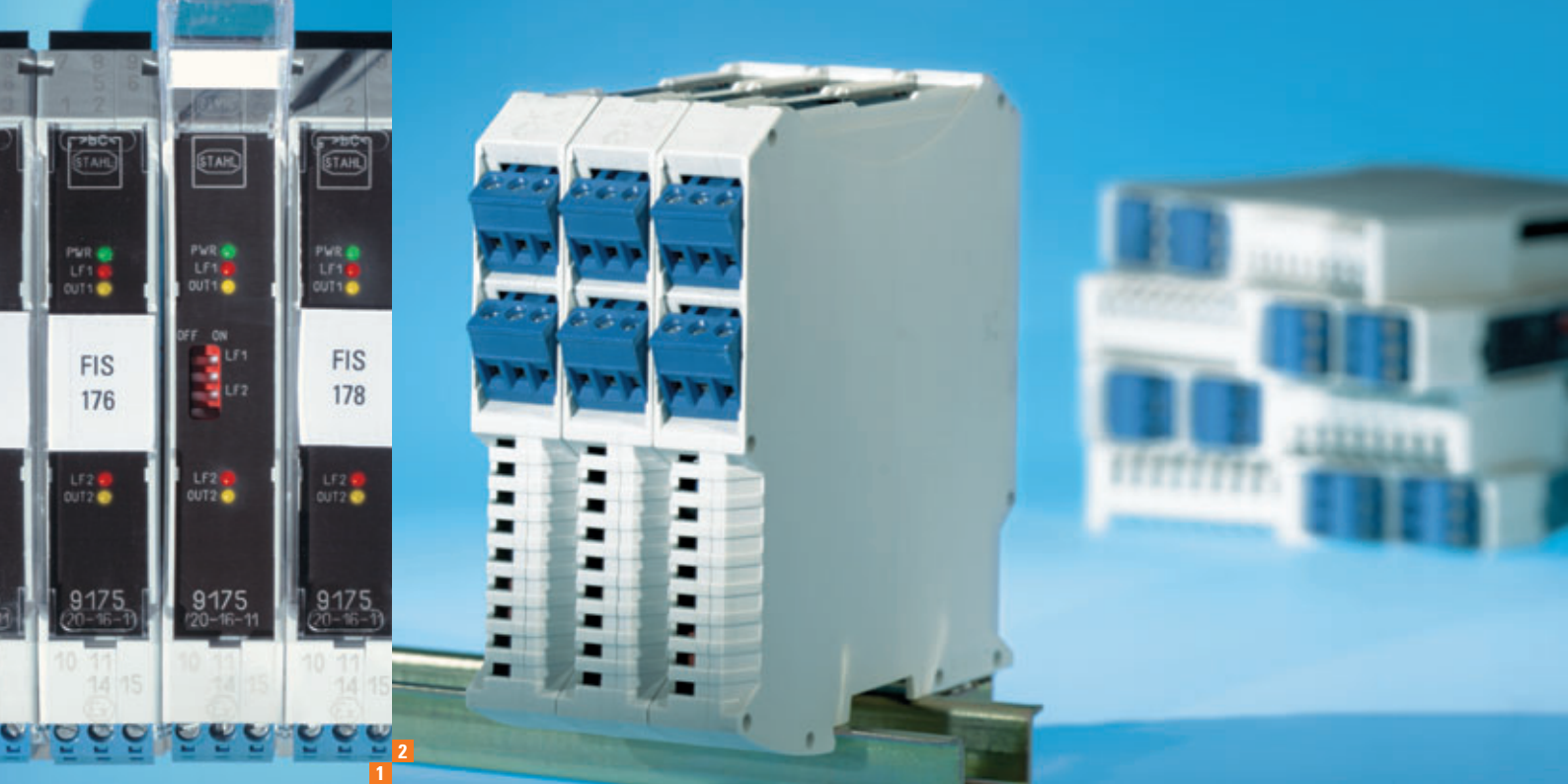
IS pac modules
convincing technology

Modern design, rugged and industrial-standard: IS pac from R. STAHL. The IS pac 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 IS pac modules are mounted mechanically

either on simple DIN rails, on the IS pac-Bus or, in the case of integration and automation systems, on

the IS pac-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 Ex i 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-Ex i isolators

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

STAHL

Up to 40 individual elements can be plugged together

flat or high DIN rail

Optional power input module for redundant power supply

power supply

error signalling

power supply

error signalling

Option for connection of the power supply and collective fault and error signalling without power input module at both ends

Up to 40 modules (80 channels) of any signal types can be fitted side-by-side

Two redundant connections for power supply

Collective fault and error signalling

IS pac–bus
fast mounting

Plug together, place onto bus, snap on and connect. The isolators are now already in operation on the high-performance, expansible IS pac-Bus from R. STAHL. Up to 40 IS pac modules can be installed without the need for tools and within a very short time. The IS pac-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 Ex i inputs and outputs
> self-closing contact in the IS pac-Bus automatically closes the contact chain if positions are not equipped

STAHL

Labelling for modules, slot, carrier

Carrier for 8 or 16 modules (32 channels)

Ejection mechanism (with screwdriver)

Single slots, with any signal mix

Redundant and fused power supply

Power failure and line failure signalling via relay

Secure locking mechanism, operable without the need for tools

High viewing level for connection

Integrated IS pac-Bus for power supply and line fault signalling

Compact (283 x 155 x 120 mm)

System-specific connectors

For DIN rail or mounting plate

Connection Asset Management System (HART)

Rugged, industry-standard design

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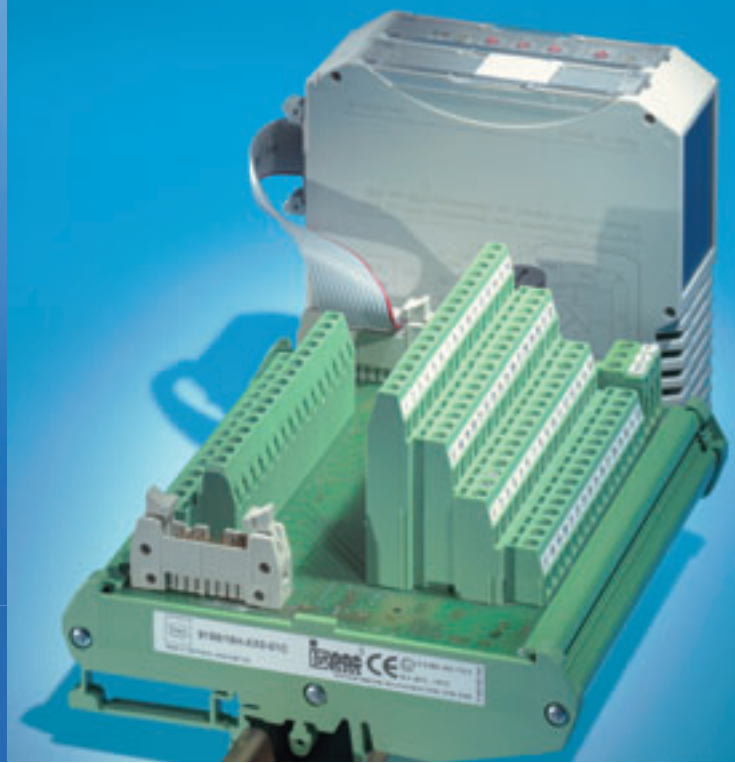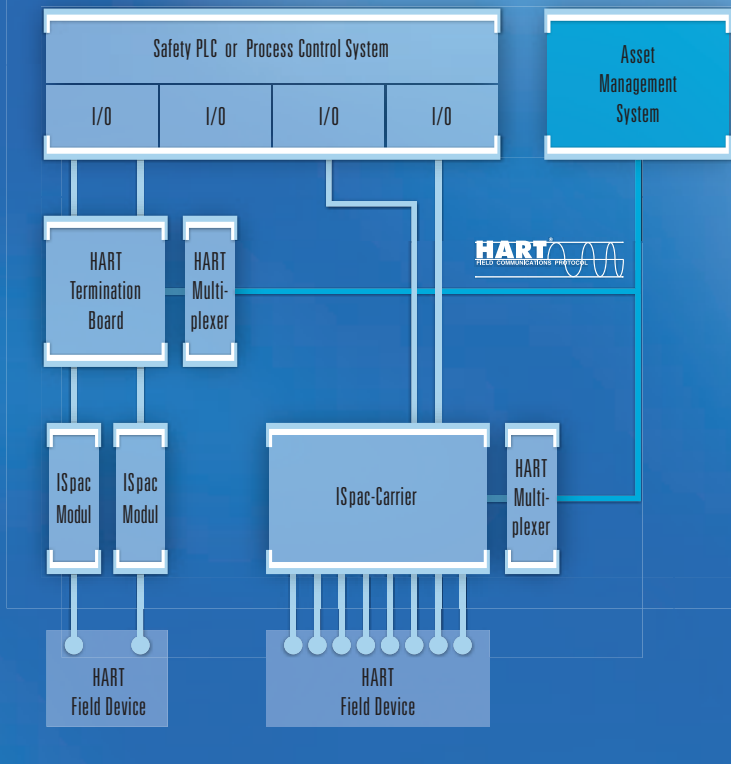> on DIN rails or mounting plates
> sturdy, mechanical snap-on mounting system
> the modules are firmly seated and immune to vibration thanks to fixation in the slots at top and bottom
> protection against unintended removal of the modules – ejector mechanism can be operated only with a screwdriver

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 Ex i inputs and outputs via floating contact
> individual signals on module via LEDs

STAHL

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

HART Termination Board

HART Multi-plexer

HART FIELD COMMUNICATIONS PROTOCOL

ISpac Modul

ISpac Modul

ISpac-Carrier

HART Multi-plexer

HART Field Device

HART Field Device

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 IS pac 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 IS pac-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.

HART®
FIELD COMMUNICATIONS PROTOCOL

STAHL

ISpac 9162

Contact 1

Signal

Signal

Contact 2
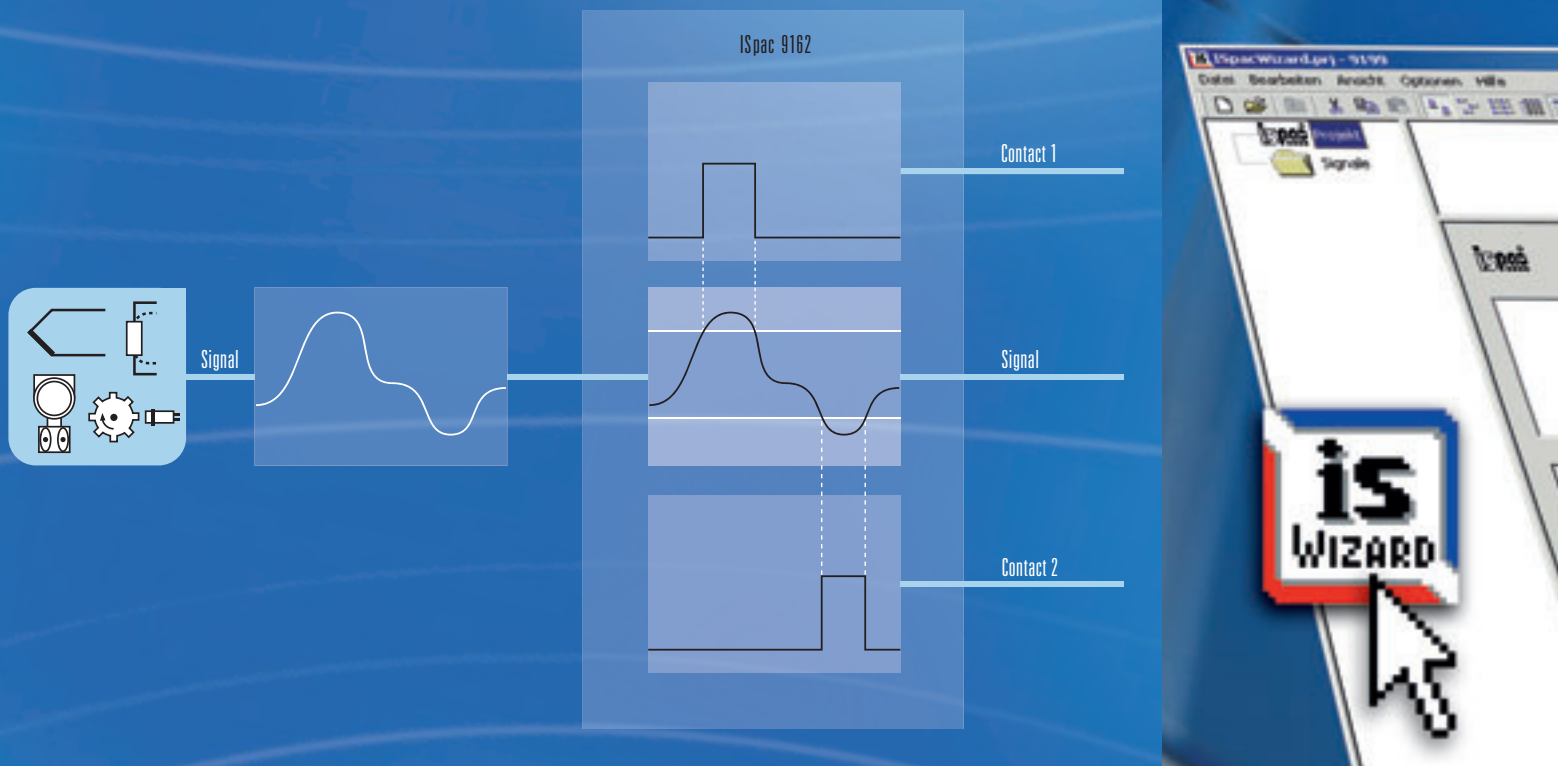
limit value monitoring
distributed control

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 IS pac isolators with limit value evaluation allow the user to define his or her own individual limit values. If the individual limit value is overshot 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...20 mA signals.

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

SIL
Safety Integrity Level
IEC 61508 IEC 61511

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 IS pac Ex i isolator system can be used in applications necessitating SIL 2 or SIL 3. IS pac 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

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 IS pac 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. IS pac can be used over a broad ambient temperature range extending from –20 °C bis +70 °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 IS pac 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 IS pac – the isolator that you can count on. For sure!
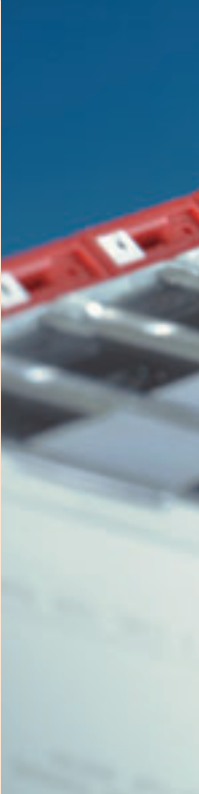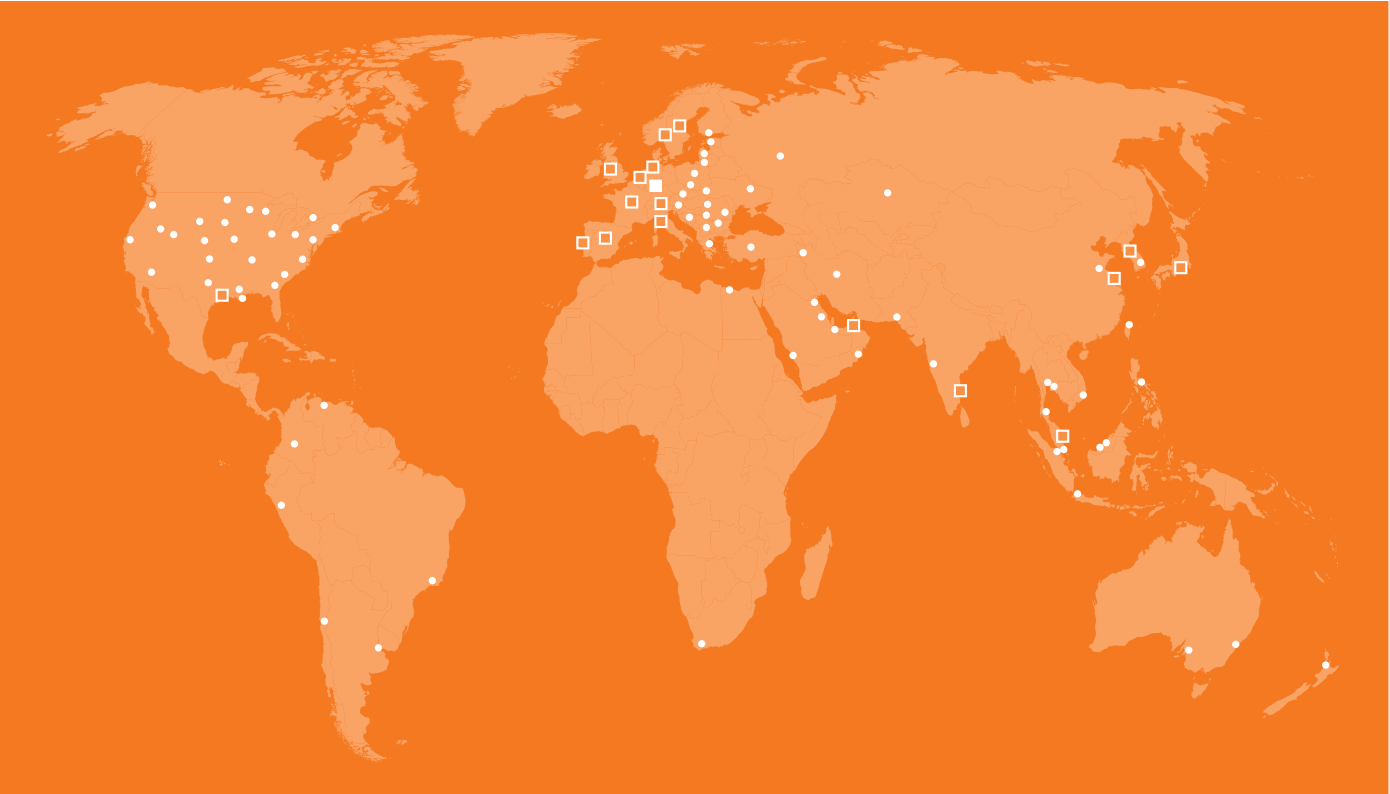
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