

11748E00

- > Versions Ex i and non-Ex i
- > All functions with 2 channels per module
- > Galvanic isolation between inputs, outputs and power supply
- > Modules for DIN-rail installation or comfortable system integration via pac-Carrier
- > Detachable terminals available in screw terminal and spring clamp terminal versions
- > Extended temperature range -20 ... +70 °C
- > Installation possible in Zone 2 resp. Div. 2
- > Most isolator versions can be used for applications according to „functional safety“ SIL (IEC 61508)
- > Customer specific engineering by R. Stahl's competence center
- > **ePLAN** macros for easier planning and engineering available



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The 2-channel compact isolators ISpac are equipped with detachable terminals available in screw terminal, spring cage terminal and insulation cutting terminal versions. Depending on the particular application, the devices snap singly onto DIN rails and can either be centrally supplied from the common power supply (pac-Bus) or simply and conveniently connected to the automation system using the pac-Carrier.

The pac-Bus supplies the isolators with power and issues line errors occurring in the inputs and outputs via a floating contact. In addition to this collective messaging system, each individual device signals line errors by means of a red LED and an indicator contact.

With its choice of 8 or 16 slots, the pac-Carrier makes for an elegant automation system integration solution. Connecting to diverse automation systems is made easier by system-specific circuit board adapters equipped with matching plugs.

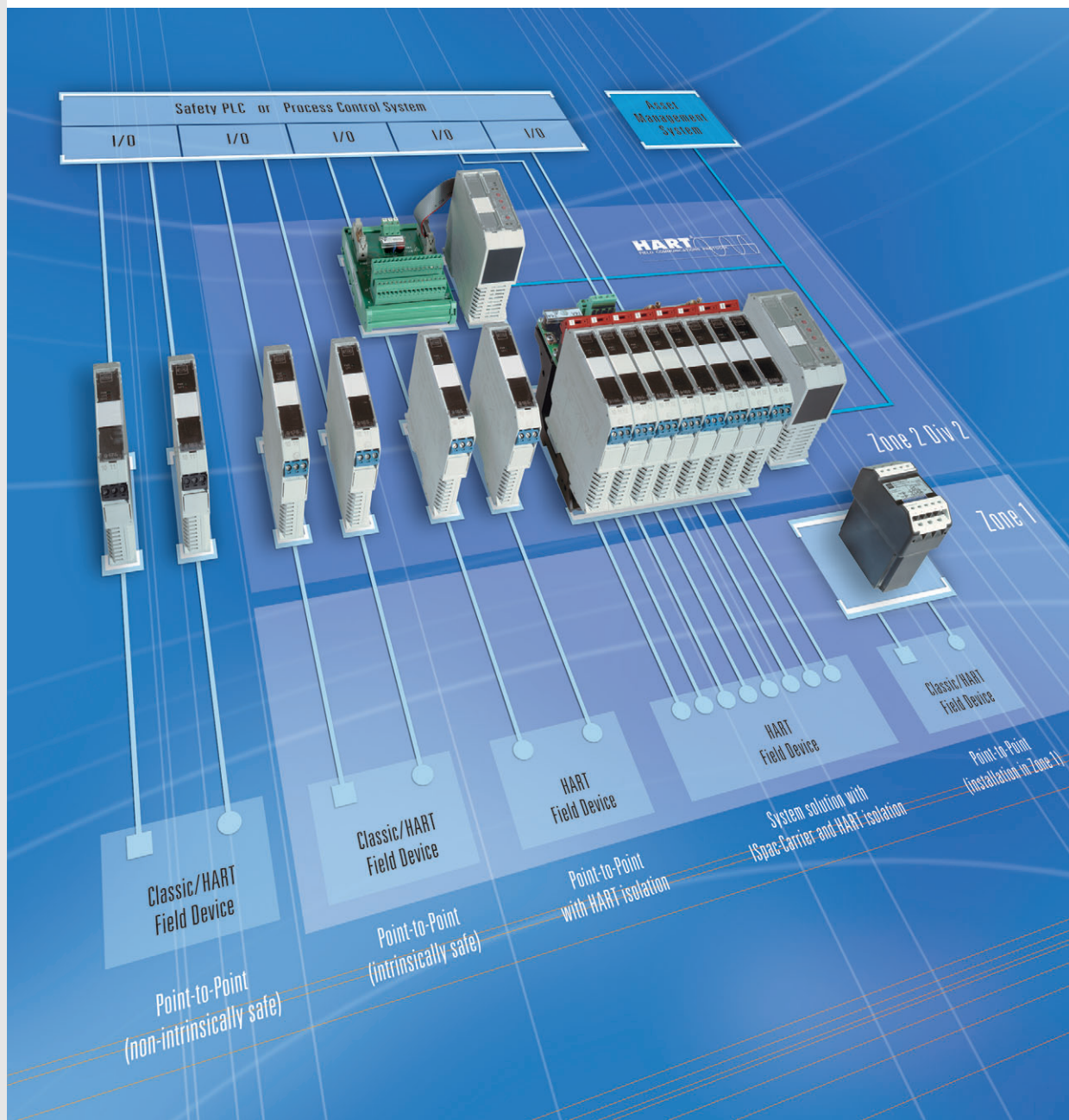
With the ISpac system also system specific solutions in any possible constellation from engineering to cabinet manufacturing are available.

| ATEX / IECEx / GOST | | | | | | | NEC 505 | | | | | | NEC 506 | | | | | | NEC 500 | | | | | |
|---------------------|---|---|-----------------|----|----|-----------------|-----------------|---|---|-----------------|----|----|-----------------|-----------------|---|-----------------|---|-----------------|----------------------------------|---|-----------------|---|---|-----------------|
| | | | | | | | Class I | | | | | | | | | | | | Class I Class II Class III | | | | | |
| Zone | 0 | 1 | 2 | 20 | 21 | 22 | Zone | 0 | 1 | 2 | 20 | 21 | 22 | Division | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| Ex i interface | x | x | x | x | x | x | Ex i interface | x | x | x | | | | Ex i interface | x | x | x | x | x | x | x | x | x | x |
| Installation in | | | x ^{*)} | | | x ^{*)} | Installation in | | | x ^{*)} | | | x ^{*)} | Installation in | | x ^{*)} | | x ^{*)} | | | x ^{*)} | | | x ^{*)} |

^{*)} Restrictions see table explosion protection

WebCode **ISpacA**

Overview of the System Components



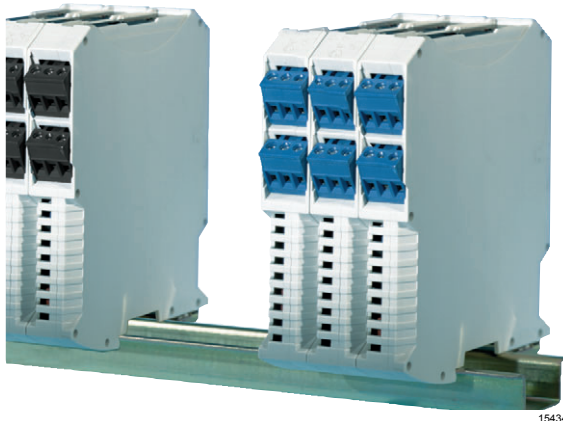
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The isolator system ISpac offers solutions for each requirement which point-to-point transmissions of process signals require.

The system introduced from left to right:

- Isolators for Non-Ex i applications
- Isolators for Ex i applications
- HART multiplexer and termination board for connection of asset management systems
- pac-Carrier as a solution for easy integration into automation systems with or without HART connection
- Compact solutions for installation of single isolators in Zone 1 or Zone 21

Isolators for Ex i and Non-Ex i Circuits

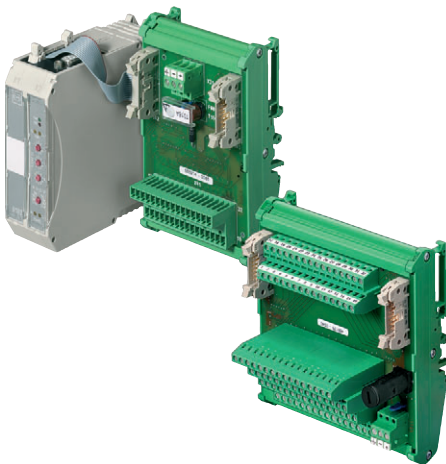


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- All modules with one or two channels per module
- Space saving, only 17.6 mm width, calculated only 8.8 mm per channel
- Time saving installation by means of pac-Bus
- Line fault detection and signalization via LED, contact per module and pac-Bus common fault message
- Vibration proofed up to 4 g, approval for ship building

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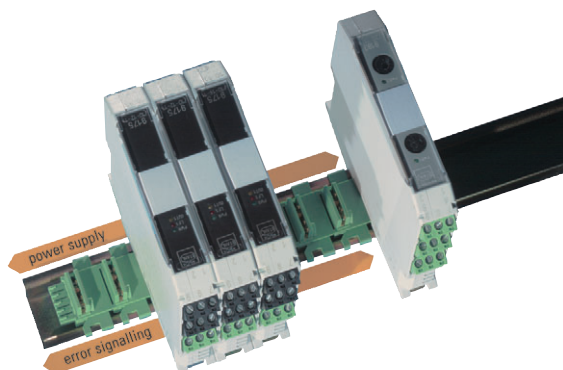
Solution for HART Transmission



07402E00

- All 4 mA ... 20 mA isolators transparent to HART signals
- Compact HART Multiplexer for up to 32 signals
- Compatible to Conerstone, AMS, PDM, PRM and others
- HART termination boards enables connection of HART Multiplexer with up to 32 signals
- For use in Ex i and Non-Ex i isolators

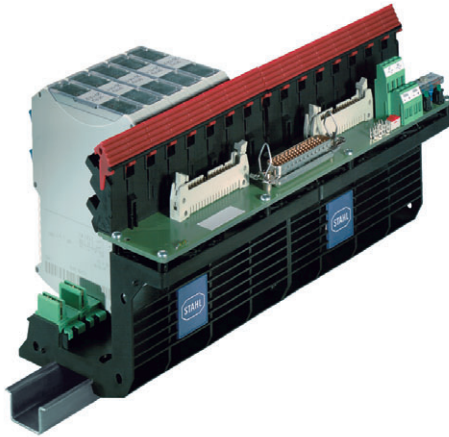
pac-Bus Fast Mounting and Fault Signalization



07217E02

- Plug together, place onto bus, snap on and connect - easy mounting of power supply and common fault signalization
- No need for tools
- Expandable at any time
- One segment for up to 40 modules
- For use in Ex i and Non-Ex i Isolators

System Integration with pac-Carrier



09827E00

- For 8 or 16 isolators, up to 32 signals
- All ISpac modules can be mounted
- Horizontal or vertical mounting
- Vibration proofed up to 1 g
- Solutions for Yokogawa, Emerson, Tricon and others
- Enabled for fast customizing
- Transmission of HART signals by means of HART Multiplexer to Asset Management System

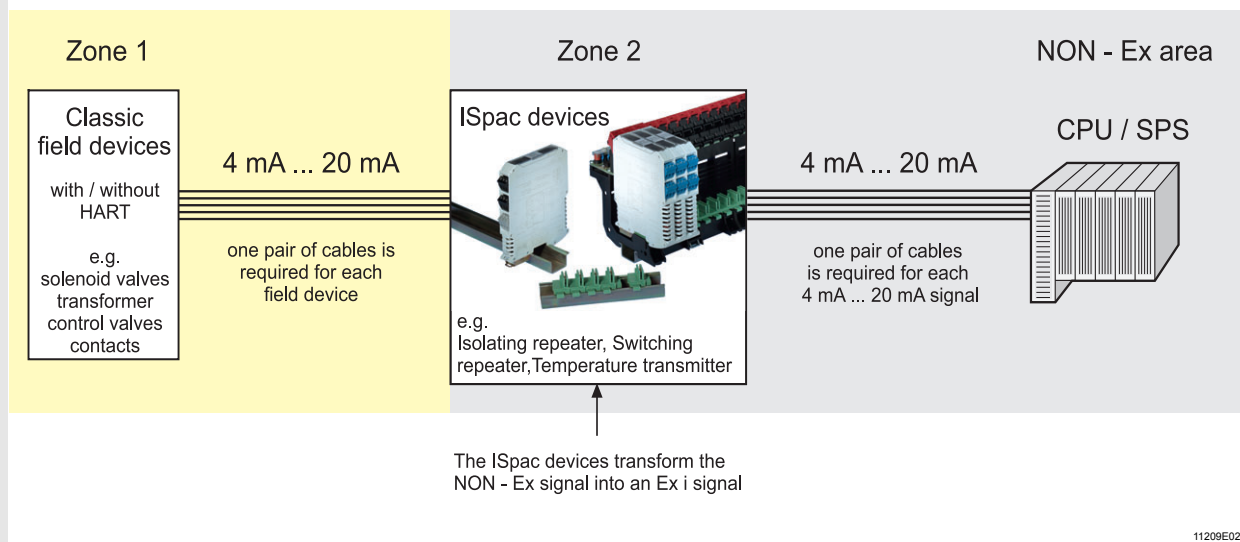
Solutions for the Installation in Zone 1, 21 Type 8510



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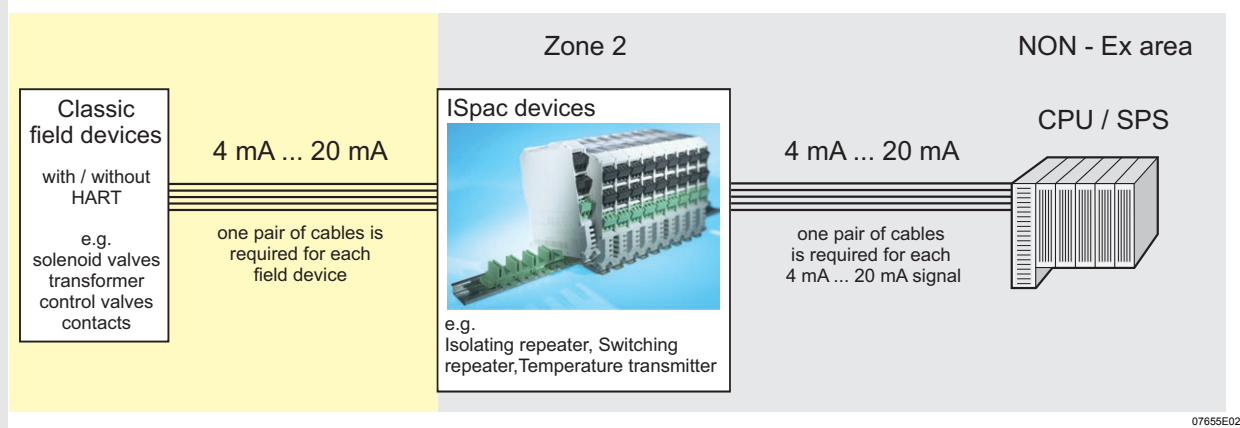
- Based on the ISpac isolator range
- Enables installation in Zone 1 and 21
- Mounting in Ex e enclosures (e.g. type 8146, 8125 R.STAHL)

Point-to-point connection with Ex i isolators





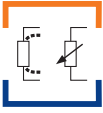



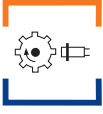




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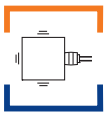

Point-to-point connection with non-Ex i isolators



Application of isolators

| Symbol | Application | ISpac Type | Ex i Signal circuit | Non Ex i Signal circuit |
|---|--|---------------------------------|------------------------|----------------------------|
|  06861E00 | 2-, 3-, 4-wire transmitters and current sources | 9160 9162 (with limit value) | X X | X X |
|  06329E00 | 2-wire HART transmitter | 9160 9162 (with limit value) | X X | X X |
|  07649E00 | 4-wire HART transmitter | 9163 9164 | X X | |
|  06321E00 | I/P converter, HART control valve | 9165 9167 | X X | X X |
|  06331E00 | Resistance thermometers / Resistance temperature detectors (RTD) | 9182 9180 | X X | X |
|  06332E00 | Thermocouple | 9182 | X | X |
|  06333E00 | Contact, optocouple output | 9170 9172 | X X | |
|  06334E00 | NAMUR proximity switch | 9170 | X | |
|  06326E00 | Speed control, Flow measurement | 9146 | X | X |
|  06324E00 | Solenoid valve, LED indicating lamp, horn | 9175 9176 9172 9174 | X X X X | |
|  06327E00 | Fire & gas detectors | 9167 | X | X |

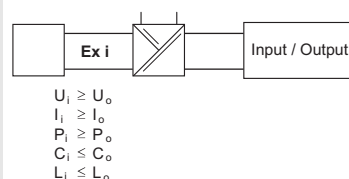
Application of isolators

| Symbol | Application | ISpac Type | Ex i Signal circuit | Non Ex i Signal circuit |
|---|---|----------------------|------------------------|----------------------------|
|  06317E00 | Alarm contact | 9146 9162 9182 | X X X | X X X |
|  06330E00 | HART Multiplexer | 9192 9196 | | X X |
|  06328E00 | Modbus, Profibus DP, ServiceBus R.STAHL | 9185 9186 | X X | X X |
|  06318E00 | Power supply of intrinsically safe users | 9143 | X | |
|  06892E00 | Vibration sensor | 9147 | X | |
|  15280E00 | Voltage source | 9163 | X | |

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Case I: Engineering of an Ex i interface with active input or output

The Ex i interface should be selected such that the safe maximum values of the interface (U_o , I_o und P_o) are less than, and the values C_o and L_o are greater than the safe maximum values of the field device. These values (U_i , I_i , C_i und L_i) are to be derived from the test certificate of the field device. Otherwise, the national standards for the installation of intrinsically safe circuits should be applied.



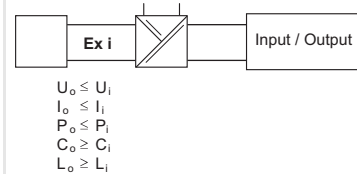
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To be applied for the following interconnections:

| Field device (selection) | Isolator | ISpac |
|--|----------------------------------|------------|
| 2-, 3-wire transmitter | Transmitter supply unit | 9160, 9162 |
| Control valve i/p converter analog / digital indicator | Isolating repeater (Ex i output) | 9165, 9167 |
| NAMUR proximity switch | Switching repeater | 9170 |
| | Frequency transmitter | 9146 |
| Solenoid valves Indicator light | Digital Output | 9175, 9176 |


Case II: Engineering of an Ex i interface with passive input

The safe maximum values of the field device (U_o , I_o) must not exceed the maximum connectable values (U_i , I_i) of the Ex i interface.
These values are to be derived from the respective test certificates.
Moreover, the interconnection of field device and Ex i interface must not exceed the intrinsic safety limits (highest permissible values for total voltage, current, capacitance and inductance, see ignition curves).
Otherwise, the national specifications for the installation of intrinsically safe circuits should be applied.



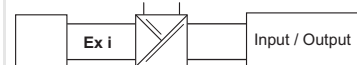
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To be applied for the following interconnections:

| Field device (selection) | Isolator | |
|------------------------------------|-------------------------|---|
| 2-, 3-wire transmitter, mA sources | Transmitter supply unit |  9160, 9162 |

Case III: Engineering of an Ex i interface connected to a simple electrical apparatus

Simple electrical apparatus: An electrical component or a combination of components of simple design with precisely known electrical parameters that does not affect the intrinsic safety of the circuit in which it (they) is (are) to be installed.



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Simple electrical apparatuses can be:

- Passive components, for example, switches, junction boxes, resistors and simple semiconductor components;
- Sources of stored energy with precisely known parameters, for example, capacitors or inductors, the values of which are taken into account, if the overall safety of the system is assessed;
- Energy sources, for example thermocouples and photocells that generate no more than 1.5 V, 100 mA and 25 mW. Inductors or capacitors that are contained in these sources must be taken into account as in b).

Their interconnection with an Ex i interface is therefore likewise intrinsically safe (EN 60 079-14).

Otherwise, the national standards for the installation of intrinsically safe circuits should be applied.

To be applied for following interconnections:

| Field device (selection) | Isolator | |
|---|-------------------------|---|
| Thermocouples | Temperature transmitter |  9182 |
| Resistance thermometers, Potentiometers | Temperature transmitter | 9182 |
| | Resistance isolator | 9180 |
| | Frequency transmitter | 9146 |
| Contacts, optocoupler output | Switching repeater | 9170 |
| | Frequency transmitter | 9146 |

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The illustrations cannot be considered binding.