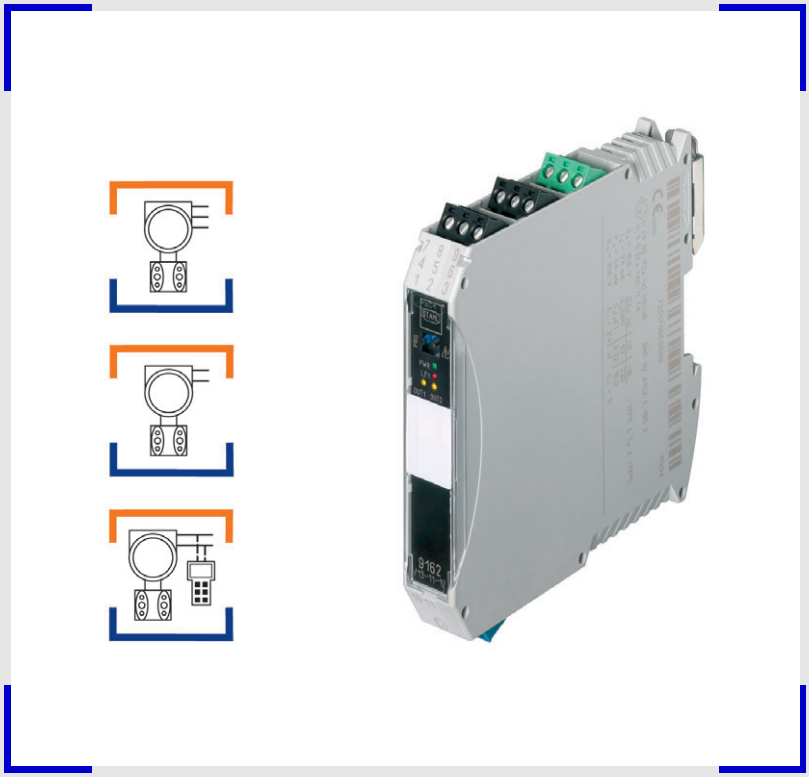


11025E00

- Compact limit value switch with 2 configurable limiting values and 4 ... 20 mA output
- Suitable for 2-, 3-wire transmitters, 2-wire HART transmitters and mA sources
- Intrinsically safe input [Ex ia] IIC
- Open circuit / short-circuit monitoring and messaging
- For use with up to SIL 2 (IEC 61508)





The transmitter supply unit with limit value contacts is used for intrinsically safe operation of 2- and 3-wires transmitters or for connection to intrinsically safe mA sources. Furthermore, the device gives the opportunity to compare the analogue signal with two adjustable limiting values.
Exceeding the limiting values or falling below them is reported by the contacts.
The transmitter supply unit can be easily parameterised by means of the ISpac Wizard software.

| | ATEX / IECEx | | | | | |
|---|---|---|---|---|---|---|
| Zone | 0 | 1 | 2 | 20 | 21 | 22 |
| Installation in | | | x | | | x |

| | NEC 505 Class I | | | NEC 506 | | |
|---|---|---|---|---|---|---|
| Zone | 0 | 1 | 2 | 20 | 21 | 22 |
| Installation in | | | x | | | x |

| | NEC 500 | | | | | |
|---|---|---|---|---|---|---|
| | Class I | | Class II | | Class III | |
| Division | 1 | 2 | 1 | 2 | 1 | 2 |
| Installation in | | x | | x | | x |

WebCode 9162A

## Selection Table

| Version | Channels | Input | Output | Limit contact | Order number | Art. no. |
|---|---|---|---|---|---|---|
| Transmitter supply unit with limit contact Series 9162 | 1 | 4 ... 20 mA with HART | 4 ... 20 mA with HART | 2 NO | **9162/13-11-14s** | **238251** |
| Note | The order numbers listed in the table are for devices equipped with screw terminals. For devices equipped with springclamp terminals, replace the ending "s" for screw terminals with "k" for spring clamp terminals. | | | | | |

## Explosion Protection

**Global (IECEx)**

| | |
|---|---|
| Gas and dust | IECEx BVS 15.0013X<br>Ex nA nC [ia Ga] IIC T4 Gc<br>[Ex ia Da] IIIC |

**Europe (ATEX)**

| | |
|---|---|
| Gas and dust | BVS 15 ATEX E018X<br>Ⓔx II 3 (1) G Ex nA nC [ia Ga] IIC T4 Gc<br>Ⓔx II (1) D [Ex ia Da] IIIC |

**Certifications and certificates**

| | |
|---|---|
| Certificates | IECEx, ATEX, India (PESO), Canada (cFM), Kazakhstan (TR), Russia (TR), USA (FM), Belarus (TR) |
| Ship approval | DNV GL |

**Safety data**

When connecting transmitters

| | | 2-wire transmitter | 3-wire transmitter |
|---|---|---|---|
| max. voltage $U_o$ | | 27 V | 27 V |
| max. current $I_o$ | | 87.9 mA | 88.3 mA |
| max. power $P_o$ | | 574 mW | 574 mW |
| max. connectable capacitance $C_o$ | | | |
| | IIC | 90 nF | 90 nF |
| max. connectable inductance $L_o$ | | | |
| | IIC | 2.3 mH | 2.3 mH |
| internal capacitance $C_i$ | | negligible | negligible |
| internal inductance $L_i$ | | negligible | negligible |
| Safety-related maximum voltage | | 253 V | 253 V |

When connecting current sources

| | |
|---|---|
| max. output voltage $U_o$ | 4.1 V |
| max. output current $I_o$ | ~ 0 mA |
| Max. output power $P_o$ | ~ 0 mW |
| max. connectable voltage $U_i$ | 30 V |
| max. connectable current $I_i$ | 100 mA |
| internal capacitance $C_i$ | negligible |
| internal inductance $L_i$ | negligible |

**Further parameters**

| | |
|---|---|
| Installation | in Zone 2 and in the safe area |
| Further information | see respective certificate and operating instructions |

**Functional safety (IEC 61508)**

| | |
|---|---|
| Test report | Exida STAHL 13/12-013 R029 |
| Max. SIL | 2 |

| Output | | 4 ... 20 mA | Limit contact | Limit contacts in series |
|---|---|---|---|---|
| Safe Failure Fraction SFF | | 93 % | 90 % | 94 % |
| MTBF | | 118 years | 116 years | 116 years |
| $PFD_{AVG}$ at $T_{[Proof]}$ | | | | |
| | 1 year | $1.30 \times 10^{-4}$ | $2.23 \times 10^{-4}$ | $1.29 \times 10^{-4}$ |
| | 2 years | $2.43 \times 10^{-4}$ | $4.19 \times 10^{-4}$ | $2.38 \times 10^{-4}$ |
| | 5 years | $5.81 \times 10^{-4}$ | $1.01 \times 10^{-3}$ | $5.67 \times 10^{-4}$ |

## Explosion Protection

| | |
|---|---|
| Further information | For further information, see Safety manual and test reports. |

## Technical Data

### Electrical data

| | |
|---|---|
| Auxiliary power | |
| Nominal voltage $U_N$ | 24 V DC |
| Voltage range | 18 ... 31.2 V |
| Residual ripple | ≤ 3.6 $V_{SS}$ |
| Nominal current at $U_N$, 20 mA | 85 mA |
| Power consumption at $U_N$, 20 mA | 2 W |
| Power dissipation at $U_N$, $R_L$ = 250 Ω | 1.5 W |
| Polarity reversal protection | yes |
| Operation indication | LED green "PWR" |
| Undervoltage monitoring | yes (no faulty devices / output states) |
| Galvanic separation | |
| Test voltages | |
| acc. to standard | EN 60079-11 |
| Ex i input to output | 1.5 kV AC |
| Ex i input to auxiliary power | 1.5 kV AC |
| Ex i input to error message contact | 1.5 kV AC |
| Ex i input to limit contact | 1.5 V AC |
| acc. to standard | EN 50178 |
| Output to auxiliary power | 350 V AC |
| Output to limit contact | 350 V AC |
| Error message contact to auxiliary power and outputs | 350 V AC |
| Ex i input | |
| Input signal | 4 ... 20 mA with HART |
| Functional range | 2 ... 22 mA |
| Max. input current for mA sources | 50 mA |
| Supply voltage for transmitter | ≥ 16 V at 20 mA ($T_{Amb}$ > - 10 °C, $T_{Amb}$ < -10 °C: $U_S$ - 0.2 V / 10K) |
| Residual ripple of supply voltage | ≤ 25 $mV_{eff}$ |
| Open-circuit voltage | ≤ 26 V |
| Short-circuit current | ≤ 35 mA |
| Input resistance (AC impedance HART) | > 250 Ω |
| Input resistance for mA sources | 30 Ω |
| Communication signal | bidirectional HART transmission, 0.5 ... 10 kHz (in 2-wire transmitters) |
| Output | |
| Output signal | 4 ... 20 mA with HART |
| Load resistance $R_L$ | 0 ... 600 Ω (terminal 1+ / 2-) |
| Functional range | 2 ... 22 mA |
| Residual ripple | ≤ 40 $\mu A_{eff}$ |
| Communication signal | bidirectional HART transmission, 0.5 ... 10 kHz |
| Signal delay | < 30 ms |
| Signal rise, signal drop | < 45 ms |
| Limiting values | |
| Configuration | using ISpac Wizard (V3.04.00 and following) |
| Message | 2 NO |
| Switching voltage | ≤ ± 30 V |
| Switching current (resistive load) | ≤ 100 mA |
| Switch on resistance | ≤ 2.5 Ω (typical < 1 Ω ) |
| Reclosing lockout | Reset using the DIP switch or "Power-Off" (configurable) |
| Switching delay | < 80 ms |
| Switch-back delay | < 100 ms |
| Error detection Ex i input | |
| Wire breakage | < 3.6 mA |
| Short circuit | > 21 mA |

## Technical Data

| | |
|---|---|
| Behaviour of the output | = Input signal |
| Message of line fault and auxiliary power failure | - contact (30 V / 100 mA) closed to earth in case of error<br>- pac-Bus, potential-free contact (30 V / 100 mA) |

### Electrical data

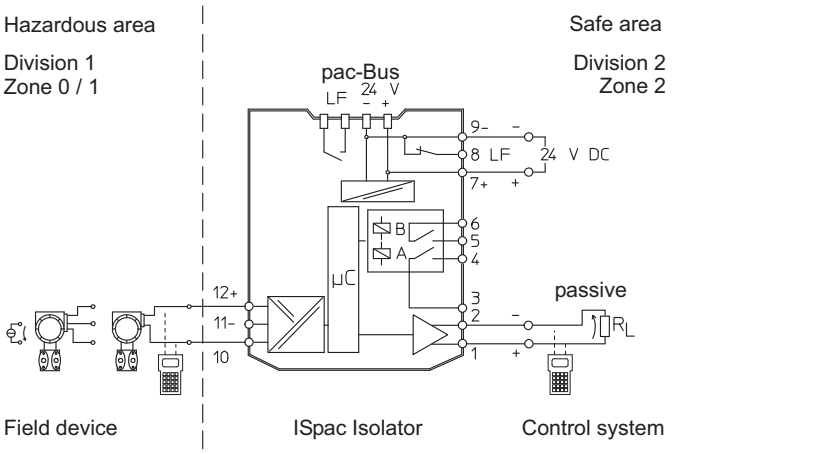
| | |
|---|---|
| Error limits | |
| | Accuracy, typical data expressed as % of calibrated span (20 mA) at $U_N$, 23 °C |
| Deviation | ≤ 0.2 % |
| Temperature effect | ≤ 0.1 % / 10K |
| Linearity error | ≤ 0.1 % |
| Offset error | ≤ 0.1 % |
| Power supply effect within voltage range | ≤ 0.01 % |
| Load resistance influence | ≤ 0.02 % |
| Electromagnetic compatibility | Tested under the following standards and regulations:<br>EN 61326-1 (use in industrial environment) |

### Ambient conditions

| | |
|---|---|
| Ambient temperature | |
| Single device | -40 ... +70 °C |
| Group assembly | -40 ... +60 °C<br>The installation conditions affect the ambient temperature.<br>Observe the "Cabinet installation guide". |
| Storage temperature | -40 ... +80 °C |
| Relative humidity (no condensation) | ≤ 95 % |
| Use at the height of | < 2000 m |

### Electrical connection

Connection diagram



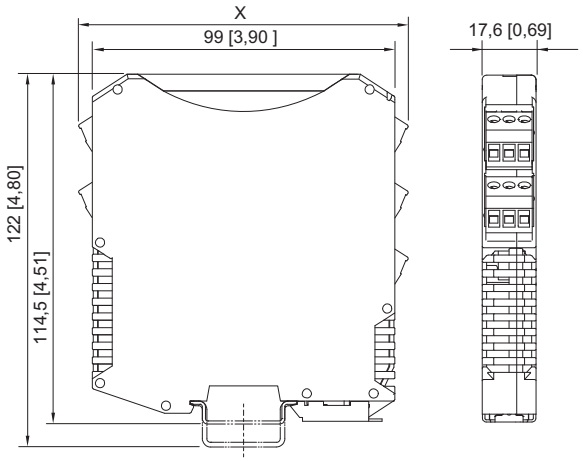

## Technical Data

### Mechanical data

| | | Screw terminals | Spring clamp terminals |
|---|---|---|---|
| Connection | | | |
| | Single-wire connection | | |
| | - rigid | 0.2 ... 2.5 mm² | 0.2 ... 2.5 mm² |
| | - flexible | 0.2 ... 2.5 mm² | 0.2 ... 2.5 mm² |
| | - flexible with core end sleeves (without / with plastic sleeve) | 0.25 ... 2.5 mm² | 0.25 ... 2.5 mm² |
| | two-wire connection | | |
| | - rigid | 0.2 ... 1 mm² | – |
| | - flexible | 0.2 ... 1.5 mm² | – |
| | - flexible with core end sleeves | 0.25 ... 1 mm² | 0.5 ... 1 mm² |

| | |
|---|---|
| Weight | approx. 160 g |
| Mounting type | on top hat rail (NS35/15, NS35/7.5) or in pac-Carrier |
| Mounting orientation | horizontal or vertical |
| Enclosure | IP30 |
| Terminals | IP20 |
| Enclosure material | PA 6.6 |
| Fire resistance (UL-94) | V0 |

**Dimensional drawings** (all dimensions in mm [inches]) – Subject to alterations




| | Dimension X |
|---|---|
| Screw terminals | 108 mm / 4.25″ |
| Spring clamp terminals | 128 mm / 5.04″ |

A3

## Accessories and Spare Parts

| Designation | Description | Order number |
|---|---|---|
| Transparent cover | yellow, transparent.<br>Clear marking of the device for SIL applications.<br>(Packaging unit: 10 pieces) | **200914** |
| Parameterising set - ISpac - Wizard | The software serves for commissioning, configuring and diagnosing the ISpac isolators Series 9146, 9162 and 9182.<br>For further information, see operating instructions.<br>Form of delivery: CD-ROM; parameterising software incl. parameterising cable / adaptor<br><br>System requirements:<br>• IBM compatible PC with Windows 2000, XP, Vista, Windows 7&8<br>• CD-ROM drive<br>• RS 232 C interface<br>• RS 232 / USB adaptor | **9199/20-02** |

## Customer specific parameterisation

R. STAHL offers the service to configure ISpac isolators according to your requirements.
There are two options:

1. The form can be downloaded on the product page ISpac, section "Data sheet". Please edit the form directly on your PC.
2. Download the software at ISpac Wizard free: "http://www.r-stahl.com/downloads/software/ex-i-isolators.html".
   Create them using the software configuration. Forward the file to your R. STAHL sales office.

**Order-No.:** **-Pos.:** **Pieces:**

| Type | Channel | Output | Limit value |
|---|---|---|---|
| 9162/13-11-14. | 1 | 4 mA ...20 mA | 2 NC |

**with:** ☐ Screw terminal s ☐ Spring cage terminal k

Please read the operating instructions before you fill in the following form.

| | Default | Customer Specific |
|---|---|---|
| Signal Tag | Signal 1 | |
| | | |
| **Limit value for Relay A** | | |
| Signalling | inactive | ☐ active ☐ inactive |
| Value | 12 mA | mA (3.8 mA ... 20.5 mA) |
| Behaviour contact | inactive | ☐ inactive<br>☐ opens, if value > limit value<br>☐ opens, if value < limit value |
| Hysteresis | 0.24 mA | mA (0.024 mA ... 2.4 mA) |
| Reset lockout | inactive | ☐ active ☐ inactive |
| **Limit value for Relay B** | | |
| Signalling | inactive | ☐ active ☐ inactive |
| Value | 12 mA | mA (3.8 mA ... 20.5 mA) |
| Behaviour contact | inactive | ☐ inactive<br>☐ opens, if value > limit value<br>☐ opens, if value < limit value |
| Hysteresis | 1 mA | mA (0.024 mA ... 2.4 mA) |
| Reset lockout | inactive | ☐ active ☐ inactive |

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