# Isolator Barriers
Temperature transmitter
Non-Ex i field circuit ISpac
9182/10-51-64s Art. No. 201684

- Temperature transmitter, can be configured for virtually any common sensor type
- Broad range, including variants with signal conversion and trip amplifier function
- Can be used up to SIL 2 (IEC/EN 61508)

MY R. STAHL **9182B**

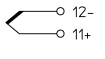
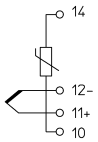
9182 series temperature transmitters for field circuits can be used to connect temperature sensors and potentiometers. They are easy to configure for virtually any sensor type by means of software or a DIP switch. These sensor types include Pt100 sensors, thermocouples and potentiometers. Variants with a trip amplifier function allow the input signal to be analysed using two independent contacts.

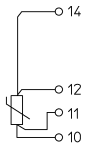
## Technical Data

| | |
|---|---|
| **Explosion Protection** | |
| Application range (zones) | 2 |
| IECEx gas certificate | IECEx BVS 09.0046 X |
| IECEx gas explosion protection | Ex ec nC IIC T4 Gc |
| ATEX gas certificate | BVS 08 ATEX E 016 X |
| ATEX gas explosion protection | Ⓔx II 3 G Ex ec nC IIC T4 Gc |
| FMus certificate | FM16US0122X |
| cFM certificate | FM16CA0067X |
| Marking cFMus | Class I, Div. 2, Groups A,B,C,D;<br>Class I, Zone 2, Group IIC;<br>T4 at Ta = 70°C; See Doc. 91 826 02 31 1<br><br>Class I, Div. 2, Groups A,B,C,D;<br>Class I, Zone 2, Group IIC;<br>T4 at Ta = 70°C; See Doc. 91 826 02 31 1 |
| Certificates | ATEX (BVS), Brazil (ULB), Canada (FM), IECEx (BVS), India (PESO), Korea (KTL), SIL (exida), USA (FM) |
| Ship approval | CCS, EU RO MR (DNV) |
| **Functional Safety** | |
| SIL | 2 |
| HFT | 0 |
| SFF | 78% |
| Lambda SD | 0 FIT |
| Lambda SU | 173 FIT |
| Lambda DD | 384 FIT |
| Lambda DU | 157 FIT |
| $PFD_{avg}$ at $T_{proof}$ 1 year | 7,59E-04 |
| $PFD_{avg}$ at $T_{proof}$ 2 years | 1,44E-03 |

| | |
|---|---|
| **Functional Safety** | |
| $PFD_{avg}$ at $T_{proof}$ 5 years | 3,48E-03 |
| Further information | See safety manual and test report |
| **Electrical Data** | |
| Number of channels | 1 |
| LFD relay | Yes |
| **Electrical connection** | **Input configuration** |

**Thermocouple**

| Reference junction | |
|---|---|
| Const. temp. | Ext. Pt. 100 |
|  |  |

| **Resistance temperature detector** | 2-wire | 3-wire | 4-wire |
|---|---|---|---|
| |  |  |  |

| **Potentiometer** | 3-wire |
|---|---|
| |  |

| | |
|---|---|
| **Auxiliary Power** | |
| Auxiliary power | 24 V DC |
| Nominal voltage $V_{nom}$ | 24 V DC |
| Auxiliary power voltage range | 18 ... 31.2 V |
| Voltage range residual ripple | ≤ 3,6 $V_{SS}$ |
| Nominal current | 70 mA |
| Power consumption | 1.9 W |
| Max. power dissipation | 1.9 W |
| Polarity reversal protection | Yes |
| Undervoltage monitoring | Yes |
| Undervoltage monitoring note | no faulty devices / output states |
| Operation indication | Green "PWR" LED |
| **Galvanic Isolation** | |
| Ex i input to output | 1.5 kV AC |
| Ex i input to auxiliary power | 1.5 kV AC |
| Ex i input to fault message contact | 1.5 kV AC |
| Test voltage as per standard | EN 50178 |
| Output to auxiliary power | 350 V AC |
| Output to output | 350 V AC |
| Fault message contact to auxiliary power | 350 V AC |

| | |
|---|---|
| **Galvanic Isolation** | |
| Fault message contact to output | 350 V AC |
| **Input** | |
| Sensor adjustment | Via software |
| Input for resistance temperature detector | See table |
| Connection type RTD input | 2-, 3- and 4-wire circuits |
| 2-conductor adjustment | Via ADJ DIP switch |
| RTD linearisation | Temperature/resistance |
| Sensor current RTD | ≤ 0.25 mA |
| Max. line resistance per wire RTD | 50 Ω (2-wire connection)<br>100 Ω (3-, 4-wire connection) |
| Input thermocouple | Types B, E, J, K, N, R, S, T, L, U, XK |
| Linearisation thermocouple | Temperature/voltage |
| Max. line resistance per loop thermocouple | 1000 Ω |
| External reference junction | Pt100 2-conductor connection |
| Potentiometer input | Up to 100 kΩ |
| Potentiometer connection type | 3-conductor connection |
| Potentiometer sensor current | ≤ 0.25 mA |

| Input resistance temperature detector (RTD) | Types | Standard | Basic range | Min. span | Middle resolution | Middle measurement error |
|---|---|---|---|---|---|---|
| | Pt100<br>Pt500<br>Pt1000 | IEC 60751 | -200 ... +850 °C | 50 K | 0,1 K | 0,35 K |
| | Ni100<br>Ni500<br>Ni1000 | DIN 43760 | -60 ... +180 °C | 31 K | 0,1 K | 0,25 K |

| Input thermocouple | Types | Standard | Basic range | Min. span | Middle resolution | Middle measurement error |
|---|---|---|---|---|---|---|
| | B | IEC 60584-1 | 250 ... +1800 °C | 314 K | 0,1 K | 1,2 K |
| | E | | -200 ... +1000 °C | 36 K | 0,1 K | 0,2 K |
| | J | | -200 ... +1200 °C | 42 K | 0,1 K | 0,2 K |
| | K | | -200 ... +1370 °C | 63 K | 0,1 K | 0,3 K |
| | N | | -200 ... +1300 °C | 75 K | 0,1 K | 0,3 K |
| | R | | -50 ... +1767 °C | 171 K | 0,1 K | 0,7 K |
| | S | | -50 ... +1767 °C | 185 K | 0,1 K | 0,8 K |
| | T | | -200 ... +400 °C | 60 K | 0,1 K | 0,3 K |
| | L | DIN 43710 | -200 ... +900 °C | 55 K | 0,1 K | 0,3 K |
| | U | | -200 ... +600 °C | 48 K | 0,1 K | 0,3 K |
| | XK | GOST | -200 ... +800 °C | 50 K | 0,1 K | 0,2 K |

| | | | |
|---|---|---|---|
| Input potentiometer | Basic measuring range | Middle measurement error | |
| | 50 ... 500 Ω | 0,1 Ω | |
| | 0,5 ... 5 kΩ | 1 Ω | |
| | 1 ... 10 kΩ | 2 Ω | |
| | 10 ... 100 kΩ *) | -- | *) with parallel 10 kO Shunt, no open-circuit detection |

| | |
|---|---|
| **Output** | |
| Output | 0/4 to 20 mA active/source |
| Output signal | 0/4 to 20 mA (configurable) |
| Function range output | 0 – 21 mA |
| Load resistance $R_L$ | 0 ... 750 Ω |
| Output signal resolution | ≤ 1 uA |
| Settling time output | ≤ 35 ms |
| Response time output | ≤ 500 ms |
| Limit contact (per channel) | 2 NO/NC |
| Switching voltage limiting values | ≤ ± 30 V |
| Switching current limiting values | ≤ 100 mA |
| Switching state indication | Yellow "A, B" LED |
| LF switch user adjustment | Activated/deactivated |
| Wire breakage error detection input | > 1 kΩ |
| Behaviour of output during LF | configurable |
| Line fault indication | Red "LF" LED |
| Fault message contact switching capacity | 30 V / 100 mA / DC |
| Note on fault message contact | Values valid f. resistive load |
| Line fault and loss of power signalization | - Contact (30 V/100 mA), closed against earth in case of error<br>- pac-Bus, potential-free contact (30 V/100 mA) |
| Deviations / error note | Information in % of the measuring range (20 mA) at $U_N$, 23 °C |
| Average measurement fault | < 0,1% |
| Temperature influence | ≤ 0,25 %/10K |
| **Ambient Conditions** | |
| Ambient temperature °C | -20 °C ... +70 °C (Single device)<br>-20 °C ... +60 °C (Group assembly) |
| Ambient temperature °F | -4°F ... +158°F (Single device)<br>-4°F ... +140°F (Group assembly) |
| Storage temperature °C | -40 °C ... +80 °C |
| Storage temperature °F | -40°F ... +176°F |
| Max. relative humidity | 95% |
| Max. additional relative humidity | No condensation |
| Use at the height of | < 2000 m |
| Degree of pollution | 2 |
| Overvoltage category | II |
| Electromagnetic compatibility | Tested to the following standards and regulations: EN 61326-1 For use in industrial areas; NAMUR NE 21 |
| **Mechanical Data** | |
| Degree of protection (IP) | IP30 |
| Degree of protection (IP) terminals | IP20 |

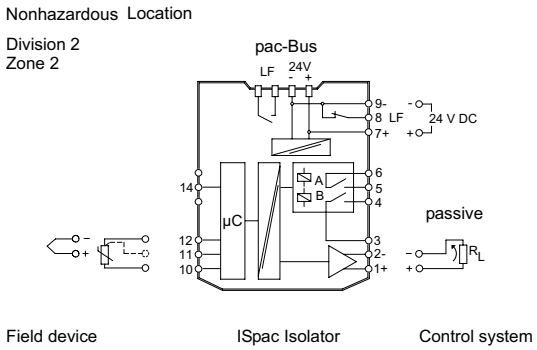
### Mechanical Data

| | |
|---|---|
| Fire resistance (UL 94) | V0 |
| Enclosure material | Polyamide |
| Min. rigid conductor cross section | 0.2 mm² |
| Max. rigid conductor cross section | 2.5 mm² |
| Min. flexible conductor cross section | 0.2 mm² |
| Max. flexible conductor cross section | 2.5 mm² |
| Connection cross-section | 0.2 to 2.5 mm² flexible<br>0.25 to 2.5 mm² flexible with core end sleeve<br>0.2 to 2.5 mm² rigid |
| Width | 17.6 mm |
| Width, inches | 0.69 in |
| Height | 114.5 mm |
| Length | 108 mm |
| Length in inches | 4.25 in |
| Mounting depth in inches | 4.51 in |
| Weight | 170 g |

### Mounting / Installation

| | |
|---|---|
| Mounting type | DIN rail NS35/15, NS35/7.5 |
| Grid dimension | 17.6 mm |
| Mounting orientation | Horizontal<br>Vertical |
| Connection type | Screw terminal |
| Connection cross-section AWG | 24 ... 14 |

### Technical Drawings – Subject to Alterations




Connection diagram 9182/10-51-64

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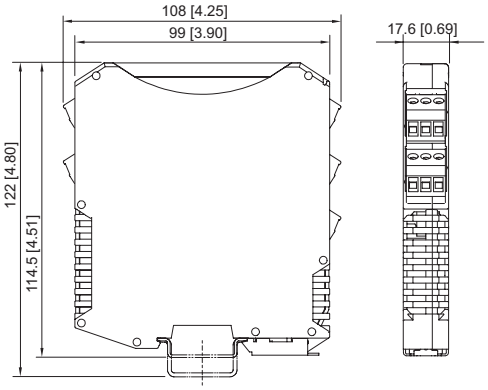
**Dimensional Drawings (All Dimensions in mm [inches]) – Subject to Alterations**




ISpac Series 9143, 9146, 9147, 9160, 9162, 9163, 9165, 9167, 9170, 9172, 9175, 9176, 9180, 9182, 9193, ISbus Series 9412 with screw terminal

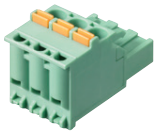
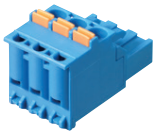
## Accessories

| **Parameterization set Series 9199 for ISpac isolators Series 9146, 9162, 9182 and 9282** | | **Art. No.** |
|---|---|---|
|  | Used for parameterization and diagnostics on 9146, 9162, 9182 and 9282 series ISpac isolators.<br>Interface to PC: USB<br>Scope of delivery: Adapter and cable (software is available to download online at r-stahl.com, Websites of the specified devices or MY R. STAHL: 9282A) | 261507 |

| **External reference junction** | | **Art. No.** |
|---|---|---|
|  | External reference junction for 2 x thermocouple (1 x Pt100 for 2-, 3- or 4-wire connection) integrated into the 4-pin terminal block. Mounted on a DIN rail. | 160675 |
|  | External reference junction for 1 x thermocouple (Pt100 in 2-wire connection) integrated into the pluggable terminal (3-pin). Mounted in the ISpac device instead of the standard connection terminal. | 160676 |

## Spare Parts

| **Screw terminal** | | **Art. No.** |
|---|---|---|
|  | 3-pole plug, screw connector<br>thread: M3<br>stripping length: 7 mm<br>color: green | 112817 |
|  | 3-pole plug, screw connector<br>thread: M3<br>stripping length: 7 mm<br>color: black | 112816 |
|  | 3-pole plug, screw connector<br>thread: M3<br>stripping length: 7 mm<br>color: blue | 112818 |

| Spring clamp terminal | | Art. No. |
|---|---|---|
|  | 3-pole plug with test tap, spring clamp connection<br>stripping length: 10 mm<br>color: green | 112825 |
|  | 3-pole plug with test tap, spring clamp connection<br>stripping length: 10 mm<br>color: black | 112824 |
|  | 3-pole plug with test tap, spring clamp connection<br>stripping length: 10 mm<br>color: blue | 112826 |