

# Grounding monitoring devices and systems

## Switching repeater Leakage monitoring

Ex i field circuit

9170/21-30-10s Art. No. 169318



- Controlled electrostatic earthing of many different objects
- One potential-free change-over contact for signalling to the distributed control system or external signalling devices
- Compact dual-channel device
- 24 V DC power supply
- LED status indicator

MY R. STAHL 9170B



The device ensures electrostatic grounding of objects and automatically detects defective or interrupted earth connections in the system and disconnects the process. This guarantees that an electrostatic charge remains at a safe level and that there is no risk of explosion caused by the uncontrolled discharge of this energy.

### Technical Data

Explosion Protection	
Application range (zones)	2
Ex interface zone	0, 1, 2, 20, 21, 22
IECEX gas certificate	IECEX BVS 09.0041X
IECEX gas explosion protection	Ex ec nC [ia Ga] IIC T4 Gc
IECEX dust certificate	IECEX BVS 09.0041X
IECEX dust explosion protection	[Ex ia Da] IIIC
IECEX firedamp certificate	IECEX BVS 09.0041X
IECEX firedamp protection	[Ex ia Ma] I
ATEX gas certificate	DMT 02 ATEX E 195 X
ATEX gas explosion protection	⊕ II 3 (1) G Ex ec nC [ia Ga] IIC T4 Gc
ATEX dust certificate	DMT 02 ATEX E 195 X
ATEX dust explosion protection	⊕ II (1) D [Ex ia Da] IIIC
ATEX firedamp certificate	DMT 02 ATEX E 195 X
ATEX firedamp protection	⊕ I (M1) [Ex ia Ma] I
FMus certificate	FM16US0122X
cFM certificate	FM16CA0067X
Marking cFMus	Class I, Div. 2, Groups A,B,C,D; Class I, Zone 2, Group IIC AIS Class I,II,III, Div. 1, Groups A,B,C,D,E,F,G; Class I, Zone 0, [AEx ia]/[Ex ia] IIC T4 at Ta = 70°C See Doc. 91 706 02 31 1
Certificates	ATEX (BVS), Brazil (ULB), Canada (FM), China (NEPSI), IECEX (BVS), India (PESO), Korea (KGS), USA (FM)
Ship approval	CCS, EU RO MR (DNV)
Declaration of Conformity	ATEX (EUK), China (CCC)
Installation	Zone 2, Zone 22
Further information	see respective certificate and operating instructions

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STAHL

#### Safety Data

Max. voltage $U_o$	9.6 V
Max. current $I_o$	10 mA
Max. power $P_o$	24 mW
Max. permissible external capacity $C_o$ for IIC	3.6 $\mu$ F
Max. permissible external inductance $L_o$ for IIC	350 mH
Max. permissible external capacity $C_o$ for IIB	26 $\mu$ F
Max. permissible external inductance $L_o$ for IIB	1000 mH
Max. permissible external capacity $C_o$ for IIIC	26 $\mu$ F
Max. permissible external inductance $L_o$ for IIIC	1000 mH
Max. permissible external capacity $C_o$ for I	99 $\mu$ F
Max. permissible external inductance $L_o$ for I	1000 mH
Max. voltage $U_o$ parallel	9.6 V
Max. current $I_o$ parallel	20 mA
Max. power $P_o$ parallel	48 mW
Safety-related max. voltage	253 V

#### Electrical Data

Number of channels	2
LFD relay	No

#### Auxiliary Power

Auxiliary power	24 V DC
Auxiliary power voltage range	18 to 31.2 V
Voltage range residual ripple	$\leq 3,6 V_{SS}$
Nominal current	50 mA
Power consumption	1.2 W
Max. power dissipation	1.2 W
Polarity reversal protection	Yes
Operation indication	Green "PWR" LED

#### Galvanic Isolation

Test voltage as per standard	IEC 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 Ex i input	500 V AC
Test voltage as per standard	EN 50178
Output to auxiliary power	1,1 kV AC
Output to output	1,1 kV AC

#### Input

Input internal resistance $R_i$	1000 $\Omega$
Input for open-circuit voltage $U_a$	8,2 V

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#### Input

Short-circuit current	≤ 8.2 mA
Resistor for ON	≤ 20 kΩ
Resistor for OFF	≥ 50 kΩ

#### Output

Output per channel	1 change-over contact – signal relay
Output	Change-over contact
Min. output load condition	1 V / 0.1 mA
Max. output DC load condition	125 V / 1 A
Max. output AC load condition	125 V / 1 A
Output switching capacity	25 W / 50 VA
Output switching frequency	15 Hz
Switching delay ON/OFF	5 ms
Switching delay OFF/ON	5 ms
INV switch user adjustment	Activated/deactivated
Output electrical service life	5 x 10 <sup>5</sup> at 24 V/1 A
Electrical service life note	Resistive load
Output mechanical service life	1 x 10 <sup>8</sup> operating cycles
Recommended back-up fuse	≤ F 1 A AC/DC
Switching state indication	Yellow "OUT" LED per channel
Indication of line fault	Red LED, non-functional

#### Ambient Conditions

Ambient temperature	-20 °C ... +70 °C (Single device) -20 °C ... +60 °C (Group assembly)
Ambient temperature	-4 °F ... +158 °F (Single device) -4 °F ... +140 °F (Group assembly)
Storage temperature	-40 °C ... +80 °C
Storage temperature	-40 °F ... +176 °F
Maximum relative humidity	95%
Use at the height of	< 2000 m
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
Fire resistance (UL 94)	V0
Enclosure material	Polyamide
Connection cross-section AWG	24 ... 14
Grid dimension	17.6 mm
Width	17.6 mm
Width, inches	0.69 in
Height	114.5 mm
Height in inches	4.51 in
Length	108 mm
Length in inches	4.25 in
Weight	175 g

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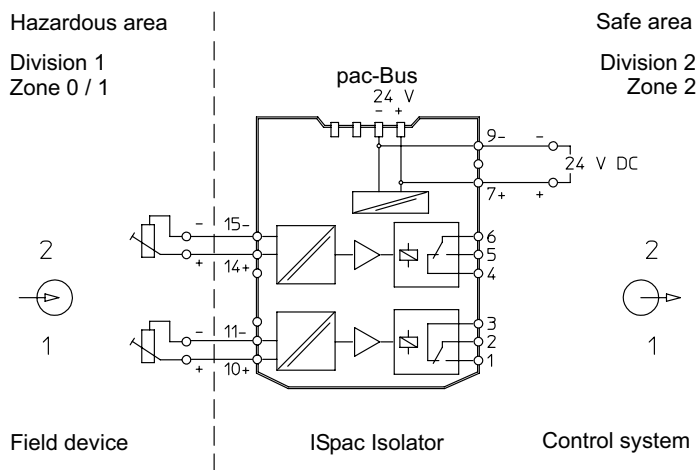
## Mechanical Data

Weight	0.39 lb
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## Mounting / Installation

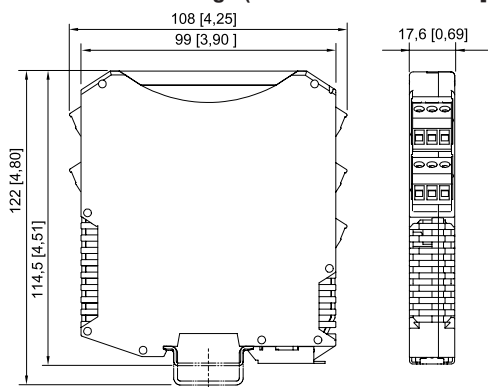
Mounting type	DIN rail NS35/15, NS35/7.5
Mounting orientation	Vertical Horizontal
Connection type	Screw terminal
Min. rigid conductor cross section	0.2 mm <sup>2</sup>
Max. rigid conductor cross section	2.5 mm <sup>2</sup>
Min. flex conductor cross section	0.2 mm <sup>2</sup>
Max. flex conductor cross section	2.5 mm <sup>2</sup>
Connection cross-section AWG	24 ... 14

## Technical Drawings – Subject to Alterations



Connection diagram 9170/21-30-10

## 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

Grounding clamp with cable

Art. No.


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	<p>10 m oil- and petrol-resistant cable with robust, ergonomic grounding clamp made from stainless steel, and fast-action plug Installation in Zone 1, IIC, T6; Zone 21, IIIC, 135 °C Temperature range: -40 °C to +70 °C Certificates: ATEX, IECEx</p>	<p>247673</p>
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### Grounding clamp with spiral cable Art. No.


	<p>10 m oil- and petrol-resistant spiral cable with robust, ergonomic grounding clamp made from stainless steel, and fast-action plug Installation in Zone 1, IIC, T6; Zone 21, IIIC, 135 °C Temperature range: -40 °C to +70 °C Certificates: ATEX, IECEx</p>	<p>247674</p>
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	<p>5 m oil- and petrol-resistant spiral cable with robust, ergonomic grounding clamp made from stainless steel, and fast-action plug Installation in Zone 1, IIC, T6; Zone 21, IIIC, 135 °C Temperature range: -40 °C to +70 °C Certificates: ATEX, IECEx</p>	<p>247672</p>
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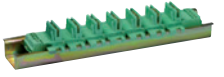
### Grounding clamp with automatic retractor for cable Art. No.

	<p>Self retracting reel with 20 m oil- and petrol-resistant cable with robust, ergonomic grounding clamp made from stainless steel, and fast-action plug, aluminium enclosure, protected cable duct with stopper Installation in Zone 1, IIC, T6; Zone 21, IIIC, 135 °C Temperature range: -40 °C to +70 °C Degree of protection (IP): IP43 Certificates: ATEX, IECEx</p>	<p>247671</p>
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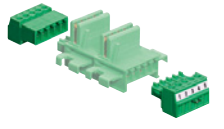
	<p>Self retracting reel with 9 m oil- and petrol-resistant cable with robust, ergonomic grounding clamp made from stainless steel, and fast-action plug, plastic enclosure Roofing must be provided when installing the unit outside.  Installation in Zone 1, IIC, T6; Zone 21, IIIC, 135 °C Temperature range: -20 °C to +70 °C Degree of protection (IP): IP42 Certificates: ATEX, IECEx</p>	<p>247660</p>
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	<p>Self retracting reel with 12 m oil- and petrol-resistant cable with robust, ergonomic grounding clamp made from stainless steel, and fast-action plug, aluminium enclosure, protected cable duct with stopper Installation in Zone 1, IIC, T6; Zone 21, IIIC, 135 °C Temperature range: -40 °C to +70 °C Degree of protection (IP): IP42 Certificates: ATEX, IECEx</p>	<p>269915</p>
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### pac-Bus Art. No.

	<p>Wiring auxiliary power and collective error message</p>	<p>160731</p>
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### Terminal set for pac-Bus Art. No.

	<p>For the supply of 24 V DC auxiliary power via terminals (alternative to using the supply module 9193/21-11-11), with jumper for error message chain for ISpac module 91xx</p>	<p>160730</p>
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## Spare Parts

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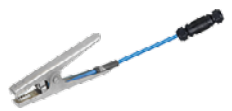
Ex i field circuit

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## Grounding clamp with fast-action plug

Art. No.



Robust, ergonomic grounding clamp with 150 mm cable and fast-action plug  
Spare part for self retracting reels (247660, 269915 and 247671), cable and spiral cable

247675

## Earthing terminal

Art. No.



Earthing terminal for the additional protective circuitry of the input

160658

We reserve the right to make alterations to the technical data, dimensions, weights, designs and products available without notice. The illustrations cannot be considered binding.