



- > Intrinsically safe input [Ex ia] IIC
- > Galvanic isolation between input, output and power supply
- > Open-circuit / short-circuit monitoring and messaging (can be switched off)
- > Inversion of output signal can be set
- > Transmission frequency up to 10 kHz
- > For use up to SIL 2 (IEC 61508)

A3



06528E00

Basic function: binary / digital input, 1 and 2 channels.  
The switching repeaters are suitable typically for intrinsically safe operation of contacts, proximity switches to EN 60947-5-6 (NAMUR), optocoupler outputs etc.



The version 9170/.1-14-12 LFT is characterised by line fault transparency. This function makes it possible to signal cable faults directly to the control level via the signal channel. The output of the switching repeater behaves acc. to EN 60947-5-6 (NAMUR).

	ATEX / IECEx						NEC 505						NEC 506						NEC 500																						
	0	1	2	20	21	22	Class I						Class II						Class III																						
Zone							Zone	0	1	2	20	21	22	Division	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
Installation in			x <sup>*)</sup>			x <sup>*)</sup>	Installation in			x <sup>*)</sup>			x <sup>*)</sup>	Installation in			x <sup>*)</sup>			x <sup>*)</sup>	Installation in			x <sup>*)</sup>			x <sup>*)</sup>														

<sup>\*)</sup> Restrictions see table explosion protection

Special versions with UL approval on request

WebCode 9170A

## Switching Repeater Field Circuit Ex i

Series 9170



**Selection Table**

Output version (control)	Channels	Power supply	Output / channel	Order number	Tech. data see page
Signal relay (125 V / 1 A)	1	24 V DC	2 change-over contacts	<b>9170/11-11-11s</b>	A3/3
		120 ... 230 V AC	2 change-over contacts	<b>9170/11-11-21s</b>	
	2	24 V DC	1 change-over contact	<b>9170/21-10-11s</b>	
			2 NO	<b>9170/21-11-11s</b>	
Power relay (250 V / 4 A)	1	24 V DC	1 change-over contact	<b>9170/11-12-11s</b>	A3/8
		120 ... 230 V AC	1 change-over contact	<b>9170/11-12-21s</b>	
			2 change-over contacts	<b>9170/11-13-21s</b>	
	2	24 V DC	1 change-over contact	<b>9170/21-12-11s</b>	
120 ... 230 V AC		1 change-over contact	<b>9170/21-12-21s</b>		
Electronic (35 V / 50 mA)	1	24 V DC	1 electronic output	<b>9170/11-14-11s</b>	A3/13
			1 Elektronikausgang LFT	<b>9170/11-14-12s</b>	A3/17
	2	24 V DC	1 electronic output	<b>9170/21-14-11s</b>	A3/13
			1 Elektronikausgang LFT	<b>9170/21-14-12s</b>	A3/17
Note	<p>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.</p> <p>LFT - line fault transparency, device signals line fault on field side to the control directly via the signal output.</p>				

## Switching Repeater Field Circuit Ex i

Series 9170 - Output: Signal relay



Explosion Protection		
<b>Version</b>	<b>24 V DC</b> 9170/.1-11-11., 9170/21-10-11.	<b>120 ... 230 V AC</b> 9170/.1-11-21., 9170/21-10-21.
<b>Global (IECEX)</b>		
Gas and dust	IECEX BVS 09.0041X Ex nA nC [ia Ga] IIC T4 Gc [Ex ia Da] IIIC	IECEX BVS 09.0041X [Ex ia Ga] IIC [Ex ia Da] IIIC
<b>Europe (ATEX)</b>		
Gas and dust	DMT 02 ATEX E 195 X ⊕ II 3 (1) G Ex nA nC [ia Ga] IIC T4 Gc ⊕ II (1) D [Ex ia Da] IIIC	DMT 02 ATEX E 195 X ⊕ II (1) G [Ex ia Ga] IIC ⊕ II (1) D [Ex ia Da] IIIC
<b>Certifications and certificates</b>		
Certificates	IECEX, ATEX, Brazil (INMETRO), Canada (cFM), Kazakhstan (TR), Korea (KCs), Russia (TR), USA (FM), Belarus (TR)	IECEX, ATEX, Brazil (INMETRO), Canada (cFM), Kazakhstan (TR), Korea (KCs), Russia (TR), USA (FM), Belarus (TR)
Ship approval	DNV GL	DNV GL
Explosion Protection		
<b>Safety data</b>		
Inputs (channels individually)		
Max. voltage $U_o$	9.6 V	
Max. current $I_o$	10 mA	
Max. power $P_o$	24 mW	
Max. connectable capacitance $C_o$		
IIC	3,6 $\mu$ F	
IIB	26 $\mu$ F	
I	99 $\mu$ F	
Max. connectable inductance $L_o$		
IIC	350 mH	
IIB	1000 mH	
I	1000 mH	
Internal capacitance $C_i$	2.42 nF	
Internal inductance $L_i$	negligible	
Safety-related maximum voltage	253 V	
Explosion Protection		
<b>Version</b>	<b>24 V DC</b> 9170/.1-11-11., 9170/21-10-11.	<b>120 ... 230 V AC</b> 9170/.1-11-21., 9170/21-10-21.
<b>Further parameters</b>		
Installation	in Zone 2, Div. 2 and in the safe area	in safe area
Further information	see respective certificate and operating instructions	
Explosion Protection		
<b>Version</b>	<b>24 V DC</b> 9170/.1-11-11., 9170/21-10-11.	<b>120 ... 230 V AC</b> 9170/.1-11-21., 9170/21-10-21.
<b>Functional safety (IEC 61508)</b>		
Test report	Exida STAHL 09/03-52 R019	
Max. SIL	2	
Further information	siehe Safety Manual und Prüfbericht	

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## Switching Repeater Field Circuit Ex i

Series 9170 - Output: Signal relay



### Technical Data

#### Electrical data

Version	24 V DC 9170/1-11-11., 9170/21-10-11.	120 ... 230 V AC 9170/1-11-21., 9170/21-10-21.
<b>Auxiliary power</b>		
Nominal voltage $U_N$	24 V DC	120 ... 230 V AC
Voltage range	18 ... 31.2 V	96 ... 253 V
Residual ripple	< 3.26 $V_{SS}$	--
Frequency range		48 ... 62 Hz
<b>Nominal current at <math>U_N</math></b>		
1 channel	33 mA	12 mA
2 channels	55 mA	18 mA
<b>Power consumption at <math>U_N</math></b>		
1 channel	0.8 W	120 V AC : 1.4 VA 230 V AC : 1.8 VA
2 channels	1.3 W	120 V AC : 2.2 VA 230 V AC : 2.8 VA
<b>Power dissipation</b>		
1 channel	0.8 W	120 V AC : 1.0 W 230 V AC : 1.3 W
2 channels	1.3 W	120 V AC : 1.6 W 230 V AC : 2.0 W
Polarity reversal protection	yes	--
Operation indication	LED green „PWR“	LED green „PWR“
Undervoltage monitoring	yes (no faulty module / output states)	yes (no faulty module / output states)
<b>Galvanic separation</b>		
<b>Test voltages</b>		
acc. to standard	EN 60079-11	EN 60079-11
Ex i input to output	1.5 kV AC	1.5 kV AC
Ex i input to auxiliary power	1.5 kV AC	1.5 kV AC
Ex i inputs interconnected	500 V AC	500 V AC
Ex i input to error message contact	1.5 kV AC	1.5 kV AC
acc. to standard	EN 50178	EN 50178
Output to auxiliary power	1.1 kV AC	1.1 kV AC
Outputs interconnected	1.1 kV AC	1.1 kV AC
Error contact to power supply	350 V AC	350 V AC
Error contact to outputs	1.1 kV AC	1.1 kV AC
<b>Ex i input</b>		
Input signal	acc. to EN 60947-5-6 (NAMUR)	acc. to EN 60947-5-6 (NAMUR)
<b>Current for ON / OFF</b>		
ON	≥ 2.1 mA	≥ 2.1 mA
OFF	≤ 1.2 mA	≤ 1.2 mA
Hysteresis	approx. 0.2 mA	approx. 0.2 mA
Open-circuit voltage	8.2 V	8.2 V
Short-circuit current	≤ 8.2 mA	≤ 8.2 mA
Internal resistance	1000 Ω	1000 Ω

## Switching Repeater Field Circuit Ex i

Series 9170 - Output: Signal relay



### Technical Data

Version	24 V DC 9170/1-11-11., 9170/21-10-11.	120 ... 230 V AC 9170/1-11-21., 9170/21-10-21.
<b>Output</b>		
Minimum load	1 V / 100 µA	1 V / 100 µA
Maximum load DC	125 V / 1 A	125 V / 1 A
Maximum load AC	125 V / 1 A	125 V / 1 A
Max. switching capacity	25 W / 50 VA	25 W / 50 VA
Electrical service life		
Resistive load	5 x 10 <sup>5</sup> cycles at 24 V / 1 A	5 x 10 <sup>5</sup> cycles at 24 V / 1 A
Mechanical service life	1 x 10 <sup>8</sup> cycles	1 x 10 <sup>8</sup> cycles
Recommended back-up fuses	≤ F 1 A AC / DC	≤ F 1 A AC / DC
Max. switching frequency	15 Hz	15 Hz
Switching delay ON / OFF	5 ms	5 ms
Switching delay OFF / ON	5 ms	5 ms
Settings (switch INV)	Inversion of operating mode	Inversion of operating mode
Indication	LED yellow „OUT“ per channel	LED yellow „OUT“ per channel
<b>Error detection Ex i input</b>		
Open circuit	$I_{in} < 0.05 \dots 0.35 \text{ mA}$ according to EN 60947-5-6	
Short circuit	$R_{in} < 100 \dots 360 \Omega$ according to EN 60947-5-6	
Behaviour of the output	OFF	
Settings (switch LF)	activated / deactivated	
Error detection	LED red "LF" each channel	
Message of line fault and auxiliary power failure	- contact (30 V / 100 mA), closed to ground in case of fault *) - pac-Bus, floating contact (30 V / 100 mA) *) *) not at 9170/1-1.-21.	
Electromagnetic compatibility	Tested under the following standards and regulations: EN 61326-1 (can be used in industrial environment) NAMUR NE 21	
<b>Ambient conditions</b>		
Ambient temperature		
Single device	-20 ... +65 °C	-20 ... +65 °C
Group assembly	-20 ... +65 °C	-20 ... +65 °C
	The installation conditions affect the ambient temperature.	The installation conditions affect the ambient temperature.
	Observe the "Cabinet installation guide"	Observe the "Cabinet installation guide"
Storage temperature	-40 ... +80 °C	-40 ... +80 °C
Relative humidity (no condensation)	≤ 95 %	≤ 95 %
Use at the height of	< 2000 m	< 2000 m

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**Switching Repeater Field Circuit Ex i**  
 Series 9170 - Output: Signal relay



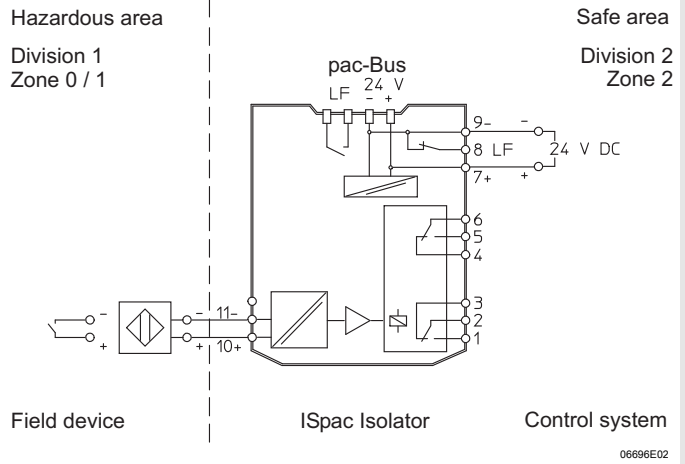
**Technical Data**

**Electrical connection**

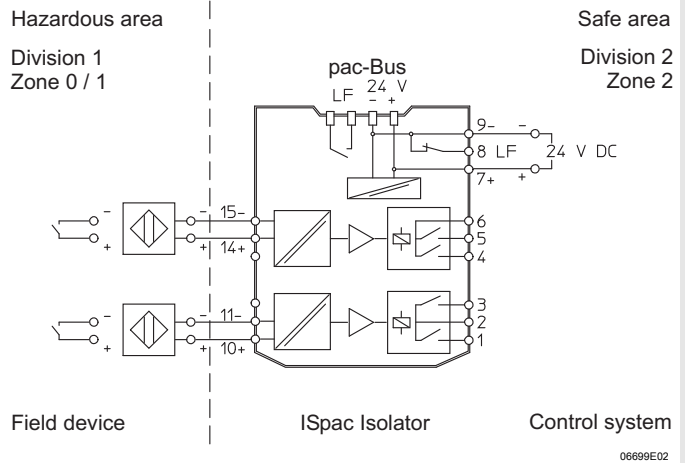
Connection diagram

**24 V DC**

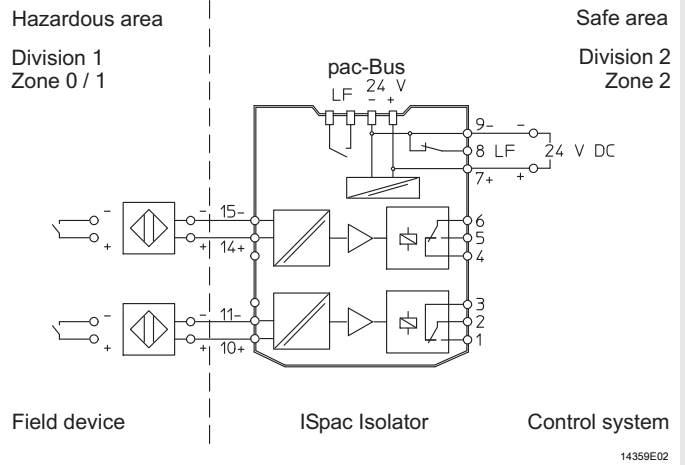
**1 channel**  
**9170/11-11-11**



**2 channels**  
**9170/21-11-11**



**2 channels**  
**9170/21-10-11**



**Technical Data**

**Electrical connection**

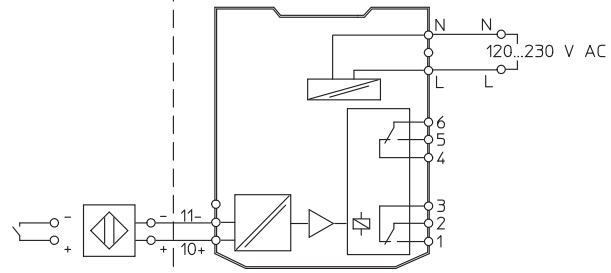
Connection diagram

**120 V / 230 V AC**

**1 channel**  
**9170/11-11-21**

Hazardous area  
 Division 1  
 Zone 0 / 1

Safe area



Field device

ISpac Isolator

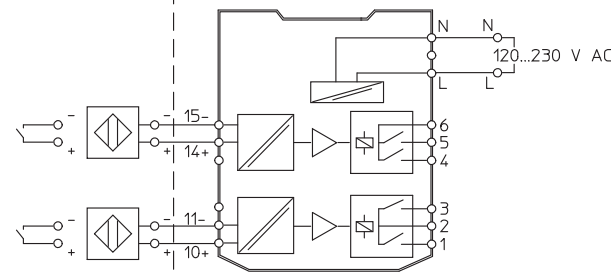
Control system

12835E02

**2 channels**  
**9170/21-11-21**

Hazardous area  
 Division 1  
 Zone 0 / 1

Safe area



Field device

ISpac Isolator

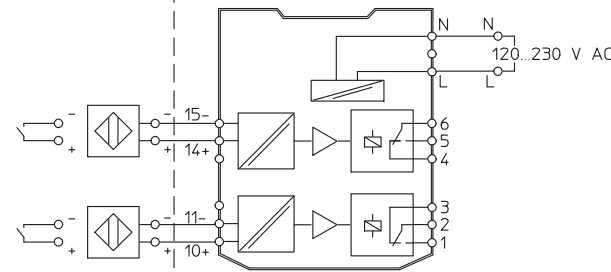
Control system

12836E02

**2 channels**  
**9170/21-10-21**

Hazardous area  
 Division 1  
 Zone 0 / 1

Safe area



Field device

ISpac Isolator

Control system

14360E02

## Switching Repeater Field Circuit Ex i

Series 9170 - Output: Power relay



Explosion Protection		
<b>Version</b>	<b>24 V DC</b> 9170/.1-12-11.	<b>120 ... 230 V AC</b> 9170/.1-1.-21.
<b>Global (IECEX)</b>		
Gas and dust	IECEX BVS 09.0041X [Ex ia Ga] IIC [Ex ia Da] IIIC	IECEX BVS 09.0041X [Ex ia Ga] IIC [Ex ia Da] IIIC
<b>Europe (ATEX)</b>		
Gas and dust	DMT 02 ATEX E 195 X ⊕ II (1) G [Ex ia Ga] IIC ⊕ II (1) D [Ex ia Da] IIIC	DMT 02 ATEX E 195 X ⊕ II (1) G [Ex ia Ga] IIC ⊕ II (1) D [Ex ia Da] IIIC
<b>Certifications and certificates</b>		
Certificates	IECEX, ATEX, Brazil (INMETRO), Canada (cFM), Kazakhstan (TR), Korea (KCs), Russia (TR), Ukraine (TR), USA (FM), Belarus (TR)	IECEX, ATEX, Brazil (INMETRO), Canada (cFM), Kazakhstan (TR), Korea (KCs), Russia (TR), Ukraine (TR), USA (FM), Belarus (TR)
Ship approval	DNV GL	DNV GL
Explosion Protection		
<b>Safety data</b>		
Inputs (channels individually)		
Max. voltage $U_o$	9.6 V	
Max. current $I_o$	10 mA	
Max. power $P_o$	24 mW	
Max. connectable capacitance $C_o$		
IIC	3,6 $\mu$ F	
IIB	26 $\mu$ F	
I	99 $\mu$ F	
Max. connectable inductance $L_o$		
IIC	350 mH	
IIB	1000 mH	
I	1000 mH	
Internal capacitance $C_i$	2.42 nF	
Internal inductance $L_i$	negligible	
Safety-related maximum voltage	253 V	
Explosion Protection		
<b>Further parameters</b>		
Installation	in safe area	
Further information	see respective certificate and operating instructions	
Explosion Protection		
<b>Functional safety (IEC 61508)</b>		
Test report	Exida STAHL 09/03-52 R019	
Max. SIL	2	
Further information	siehe Safety Manual und Prüfbericht	



**Technical Data**

**Electrical data**

Version	24 V DC 9170/.1-12-11.	120 ... 230 V AC 9170/.1-1.-21.
Auxiliary power		
Nominal voltage $U_N$	24 V DC	120 ... 230 V AC
Voltage range	18 ... 31.2 V	96 ... 253 V
Residual ripple	< 3.26 $V_{SS}$	--
Frequency range		48 ... 62 Hz
Nominal current at $U_N$		
1 channel	33 mA	12 mA
2 channels	55 mA	18 mA
Power consumption at $U_N$		
1 channel	0.8 W	120 V AC : 1.4 VA 230 V AC : 1.8 VA
2 channels	1.3 W	120 V AC : 2.2 VA 230 V AC : 2.8 VA
Power dissipation		
1 channel	0.8 W	120 V AC: 1.0 W 230 V AC: 1.3 W
2 channels	1.3 W	120 V AC: 1.6 W 230 V AC: 2.0 W
Polarity reversal protection	yes	--
Operation indication	LED green „PWR“	LED green „PWR“
Undervoltage monitoring	yes (no faulty module / output states)	yes (no faulty module / output states)
Galvanic separation		
Test voltages		
acc. to standard	EN 60079-11	EN 60079-11
Ex i input to output	1.5 kV AC	1.5 kV AC
Ex i input to auxiliary power	1.5 kV AC	1.5 kV AC
Ex i inputs interconnected	500 V AC	500 V AC
Ex i input to error message contact	1.5 kV AC	1.5 kV AC
acc. to standard	EN 50178	EN 50178
Output to auxiliary power	1.1 kV AC	1.1 kV AC
Outputs interconnected	1.1 kV AC	1.1 kV AC
Error contact to power supply	350 V AC	350 V AC
Error contact to outputs	1.1 kV AC	1.1 kV AC
Ex i input		
Input signal	acc. to EN 60947-5-6 (NAMUR)	acc. to EN 60947-5-6 (NAMUR)
Current for ON / OFF		
ON	≥ 2.1 mA	≥ 2.1 mA
OFF	≤ 1.2 mA	≤ 1.2 mA
Hysteresis	approx. 0.2 mA	approx. 0.2 mA
Open-circuit voltage	8.2 V	8.2 V
Short-circuit current	≤ 8.2 mA	≤ 8.2 mA
Internal resistance	1000 Ω	1000 Ω

## Switching Repeater Field Circuit Ex i

Series 9170 - Output: Power relay



### Technical Data

Version	24 V DC 9170/.1-12-11.	120 ... 230 V AC 9170/.1-1.-21.
Output		
Minimum load	12 V / 100 µA	12 V / 100 µA
Maximum load DC	250 V / 2 A	250 V / 2 A
Maximum load AC	250 V / 4 A	250 V / 4 A
Max. switching capacity	50 W / 1000 VA	50 W / 1000 VA
Electrical service life		
Resistive load	1 x 10 <sup>5</sup> cycles at 250 V / 4 A	1 x 10 <sup>5</sup> cycles at 250 V / 4 A
Mechanical service life	15 x 10 <sup>6</sup> cycles	15 x 10 <sup>6</sup> cycles
Recommended back-up fuses	≤ F 4 A AC / 2 A DC	≤ F 4 A AC / 2 A DC
Max. switching frequency	6 Hz	6 Hz
Switching delay ON / OFF	10 ms	10 ms
Switching delay OFF / ON	10 ms	10 ms
Settings (switch INV)	Inversion of operating mode	Inversion of operating mode
Indication	LED yellow „OUT“ per channel	LED yellow „OUT“ per channel
Error detection Ex i input		
Open circuit	I <sub>in</sub> < 0.05 ... 0.35 mA according to EN 60947-5-6	
Short circuit	R <sub>in</sub> < 100 ... 360 Ω according to EN 60947-5-6	
Behaviour of the output	OFF	
Settings (switch LF)	activated / deactivated	
Error detection	LED red "LF" each channel	
Message of line fault and auxiliary power failure	- contact (30 V / 100 mA), closed to ground in case of fault *) - pac-Bus, floating contact (30 V / 100 mA) *) *) not at 9170/.1-1.-21.	
Electromagnetic compatibility	Tested under the following standards and regulations: EN 61326-1 (can be used in industrial environment) NAMUR NE 21	
<b>Ambient conditions</b>		
Ambient temperature		
Single device	-20 ... +65 °C	-20 ... +65 °C
Group assembly	-20 ... +65 °C	-20 ... +65 °C
	The installation conditions affect the ambient temperature.	The installation conditions affect the ambient temperature.
	Observe the "Cabinet installation guide"	Observe the "Cabinet installation guide"
Storage temperature	-40 ... +80 °C	-40 ... +80 °C
Relative humidity (no condensation)	≤ 95 %	≤ 95 %
Use at the height of	< 2000 m	< 2000 m

**Technical Data**

**Electrical connection**

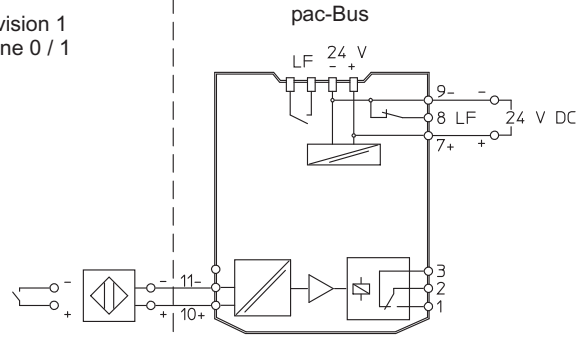
Connection diagram

**24 V DC**

**1 channel**  
**9170/11-12-11**

Hazardous area  
 Division 1  
 Zone 0 / 1

Safe area



Field device

ISpac Isolator

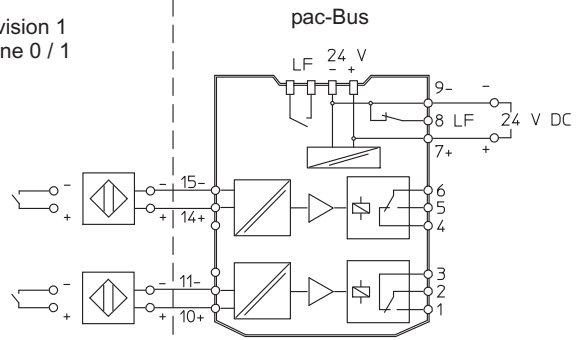
Control system

06698E02

**2 channels**  
**9170/21-12-11**

Hazardous area  
 Division 1  
 Zone 0 / 1

Safe area



Field device

ISpac Isolator

Control system

06695E02

**Switching Repeater Field Circuit Ex i**  
 Series 9170 - Output: Power relay



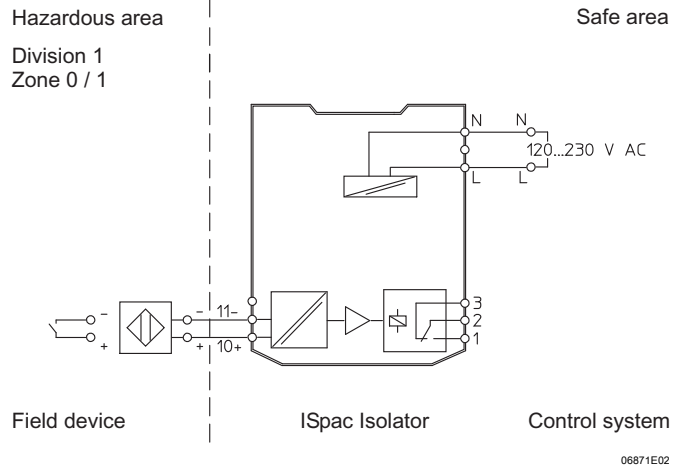
**Technical Data**

**Electrical connection**

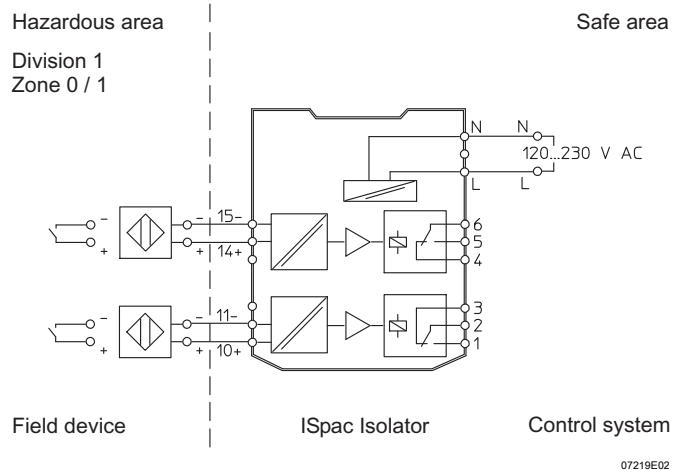
Connection diagram

**120 V / 230 V AC**

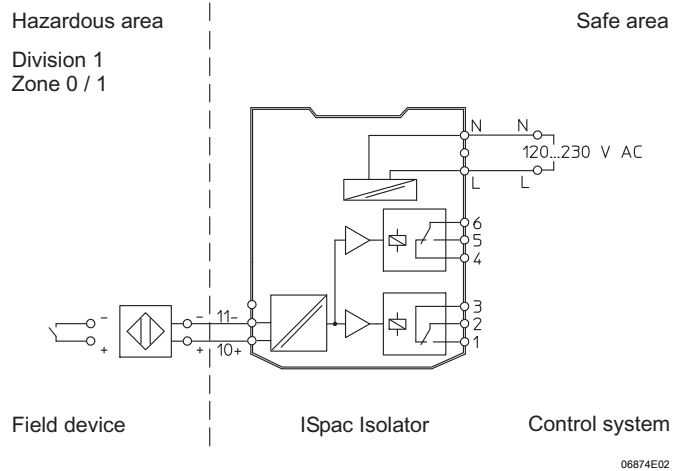
**1 channel,  
1 changeover  
9170/11-12-21**



**2 channels  
9170/21-12-21**



**1 channel,  
2 changeover  
9170/11-13-21**



### Explosion Protection

#### Global (IECEX)

Gas and dust	IECEX BVS 09.0041X Ex nA nC [ia Ga] IIC T4 Gc [Ex ia Da] IIIC
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#### Europe (ATEX)

Gas and dust	DMT 02 ATEX E 195 X Ⓜ II 3 (1) G Ex nAc nCc [ia] IIC T4 Ⓜ II (1) D [Ex ia] IIIC
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#### Certifications and certificates

Certificates	IECEX, ATEX, Brazil (INMETRO), Canada (cFM), Kazakhstan (TR), Korea (KCs), Russia (TR), USA (FM), Belarus (TR)
Ship approval	DNV GL

### Explosion Protection

#### Safety data

Inputs (channels individually)	
Max. voltage $U_o$	9.6 V
Max. current $I_o$	10 mA
Max. power $P_o$	24 mW
Max. connectable capacitance $C_o$	
IIC	3,6 $\mu$ F
IIB	26 $\mu$ F
I	99 $\mu$ F
Max. connectable inductance $L_o$	
IIC	350 mH
IIB	1000 mH
I	1000 mH
Internal capacitance $C_i$	2.42 nF
Internal inductance $L_i$	negligible
Safety-related maximum voltage	253 V

### Explosion Protection

#### Further parameters

Installation	in Zone 2, Div. 2 and in the safe area
Further information	see respective certificate and operating instructions

### Explosion Protection

#### Functional safety (IEC 61508)

Test report	Exida STAHL 09/03-52 R019
Max. SIL	2
Further information	siehe Safety Manual und Prüfbericht

### Technical Data

#### Electrical data

Auxiliary power	
Nominal voltage $U_N$	24 V DC
Voltage range	18 ... 31.2 V
Residual ripple	< 3,26 V <sub>SS</sub>
Nominal current at $U_N$	
1 channel	26 mA
2 channels	36 mA
Power consumption at $U_N$	
1 channel	0.6 W
2 channels	1.9 W
Power dissipation	
1 channel	0.6 W
2 channels	0.9 W
Polarity reversal protection	yes
Operation indication	LED green „PWR“
Undervoltage monitoring	yes (no faulty module / 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 inputs interconnected	500 V AC
Ex i input to error message contact	1.5 kV AC
acc. to standard	EN 50178
Output to auxiliary power	1.1 kV AC
Outputs interconnected	1.1 kV AC
Error contact to power supply	350 V AC
Error contact to outputs	1.1 kV AC
Ex i input	
Input signal	acc. to EN 60947-5-6 (NAMUR)
Current for ON / OFF	
ON	≥ 2.1 mA
OFF	≤ 1.2 mA
Hysteresis	approx. 0.2 mA
Open-circuit voltage	8.2 V
Short-circuit current	≤ 8.2 mA
Internal resistance	1000 Ω

**Technical Data**

<b>Output</b>	
Maximum load DC	35 V / 50 mA DC
Maximum load AC	--
Max. switching capacity	1.75 W
Overload protected	yes
Voltage drop	< 2 V
Electrical service life	
Resistive load	> 10 <sup>9</sup> cycles at 35 V / 50 mA
Max. switching frequency	10 kHz
Switching delay ON / OFF	15 µs
Switching delay OFF / ON	30 µs
Settings (switch INV)	Inversion of operating mode
Indication	LED yellow „OUT“ per channel
<b>Error detection Ex i input</b>	
Open circuit	$I_{in} < 0.05 \dots 0.35 \text{ mA}$ according to EN 60947-5-6
Short circuit	$R_{in} < 100 \dots 360 \ \Omega$ according to EN 60947-5-6
Behaviour of the output	OFF
Settings (switch LF)	activated / deactivated
Error detection	LED red "LF" each channel
Message of line fault and auxiliary power failure	- contact (30 V / 100 mA), closed to ground in case of fault - pac-Bus, floating contact (30 V / 100 mA)
Electromagnetic compatibility	Tested under the following standards and regulations: EN 61326-1 (can be used in industrial environment) NAMUR NE 21
<b>Ambient conditions</b>	
<b>Ambient temperature</b>	
Single device	-20 ... +65 °C
Group assembly	-20 ... +65 °C
	The installation conditions affect the ambient temperature. Observe the "Cabinet installation guide"
Storage temperature	-40 ... +80 °C
Relative humidity (no condensation)	≤ 95 %
Use at the height of	< 2000 m

# Switching Repeater Field Circuit Ex i

Series 9170 - Output: Electronic



## Technical Data

### Electrical connection

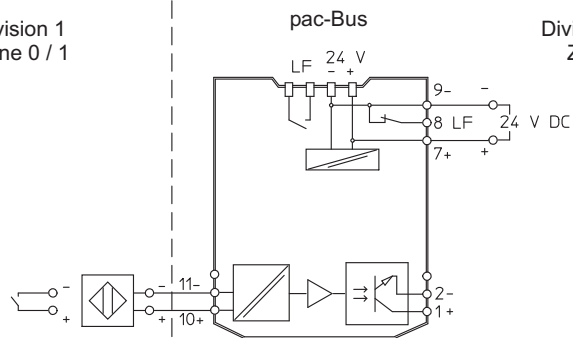
Connection diagram

**24 V DC**

**1 channel**  
**9170/11-14-11**

Hazardous area  
Division 1  
Zone 0 / 1

Safe area  
Division 2  
Zone 2



Field device

ISpac Isolator

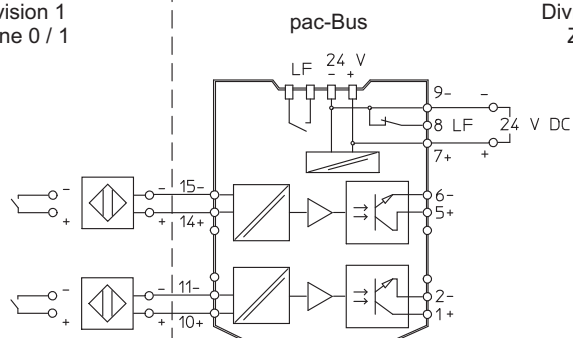
Control system

06693E02

**2 channels**  
**9170/21-14-11**

Hazardous area  
Division 1  
Zone 0 / 1

Safe area  
Division 2  
Zone 2



Field device

ISpac Isolator

Control system

06694E02



### Explosion Protection

#### Global (IECEX)

Gas and dust	IECEX BVS 09.0041X Ex nAc nCc [ia] IIC T4, [Ex ia] IIIC [Ex ia Da] IIIC
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#### Europe (ATEX)

Gas and dust	DMT 02 ATEX E 195 X Ⓜ II 3 (1) G Ex nA nC [ia Ga] IIC T4 Gc Ⓜ II (1) D [Ex ia Da] IIIC
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#### Certifications and certificates

Certificates	IECEX, ATEX, Brazil (INMETRO), Canada (cFM), Kazakhstan (TR), Korea (KCs), Russia (TR), USA (FM), Belarus (TR)
Ship approval	DNV GL

### Explosion Protection

#### Safety data

Inputs (channels individually)	
Max. voltage $U_o$	9.6 V
Max. current $I_o$	10 mA
Max. power $P_o$	24 mW
Max. connectable capacitance $C_o$	
IIC	3,6 $\mu$ F
IIB	26 $\mu$ F
I	99 $\mu$ F
Max. connectable inductance $L_o$	
IIC	350 mH
IIB	1000 mH
I	1000 mH
Internal capacitance $C_i$	2.42 nF
Internal inductance $L_i$	negligible
Safety-related maximum voltage	253 V

### Explosion Protection

#### Further parameters

Installation	in Zone 2, Div. 2 and in the safe area
Further information	see respective certificate and operating instructions

### Explosion Protection

#### Functional safety (IEC 61508)

Test report	Exida STAHL 09/03-52 R019
Max. SIL	2
Further information	siehe Safety Manual und Prüfbericht

### Technical Data

#### Electrical data

Auxiliary power	
Nominal voltage $U_N$	24 V DC
Voltage range	18 ... 31.2 V
Residual ripple	< 3,26 V <sub>SS</sub>
Nominal current at $U_N$	
1 channel	26 mA
2 channels	36 mA
Power consumption at $U_N$	
1 channel	0.6 W
2 channels	1.9 W
Power dissipation	
1 channel	0.6 W
2 channels	1.9 W
Polarity reversal protection	yes
Operation indication	LED green „PWR“
Undervoltage monitoring	yes (no faulty module / 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 inputs interconnected	500 V AC
Ex i input to error message contact	1.5 kV AC
acc. to standard	EN 50178
Output to auxiliary power	1.1 kV AC
Outputs interconnected	1.1 kV AC
Error contact to power supply	350 V AC
Error contact to outputs	1.1 kV AC
Ex i input	
Input signal	acc. to EN 60947-5-6 (NAMUR)
Current for ON / OFF	
ON	≥ 2.1 mA
OFF	≤ 1.2 mA
Hysteresis	approx. 0.2 mA
Open-circuit voltage	8.2 V
Short-circuit current	≤ 8.2 mA
Internal resistance	1000 Ω

**Technical Data**

<b>Output</b>	
Maximum load DC	35 V / 50 mA DC
Maximum load AC	--
Max. switching capacity	1.75 W
Overload protected	yes
Electrical service life	
Resistive load	> 10 <sup>9</sup> cycles at 35 V / 50 mA
Max. switching frequency	10 kHz
Switching delay ON / OFF	15 µs
Switching delay OFF / ON	30 µs
Electronic output closed	R = 2.4 k Ω
Electronic output opened	R > 13 k Ω
In case of error (signalisation contact open)	R > 100 k Ω
Settings (switch INV)	Inversion of operating mode
Indication	LED yellow „OUT“ per channel
<b>Error detection Ex i input</b>	
Open circuit	I <sub>in</sub> < 0.05 ... 0.35 mA according to EN 60947-5-6
Short circuit	R <sub>in</sub> < 100 ... 360 Ω according to EN 60947-5-6
Behaviour of the output	OFF
Settings (switch LF)	activated / deactivated
Error detection	LED red "LF" each channel
Message of line fault and auxiliary power failure	- Contact in the output circuit (35 V / 50 mA) opens in case of fault - Contact (30 V / 100 mA) close to ground in case of fault - pac-Bus, floating contact (30 V / 100 mA)
Electromagnetic compatibility	Tested under the following standards and regulations: EN 61326-1 (can be used in industrial environment) NAMUR NE 21
<b>Ambient conditions</b>	
<b>Ambient temperature</b>	
Single device	-20 ... +65 °C
Group assembly	-20 ... +65 °C
	The installation conditions affect the ambient temperature. Observe the "Cabinet installation guide"
Storage temperature	-40 ... +80 °C
Relative humidity (no condensation)	≤ 95 %
Use at the height of	< 2000 m

**Switching Repeater Field Circuit Ex i**  
 Series 9170 - Output: Electronic LFT



**Technical Data**

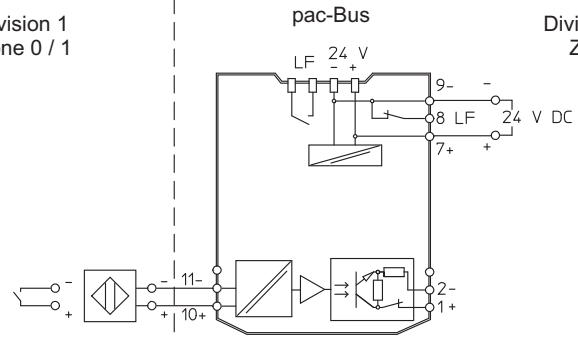
**Electrical connection**

Connection diagram

**1 channel**  
**9170/11-14-12. LFT**

Hazardous area  
 Division 1  
 Zone 0 / 1

Safe area  
 Division 2  
 Zone 2



Field device

ISpac Isolator

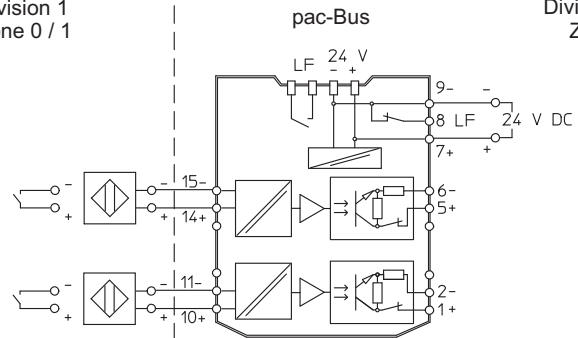
Control system

07789E02

**2 channels**  
**9170/21-14-12. LFT**

Hazardous area  
 Division 1  
 Zone 0 / 1

Safe area  
 Division 2  
 Zone 2



Field device

ISpac Isolator

Control system

07790E02

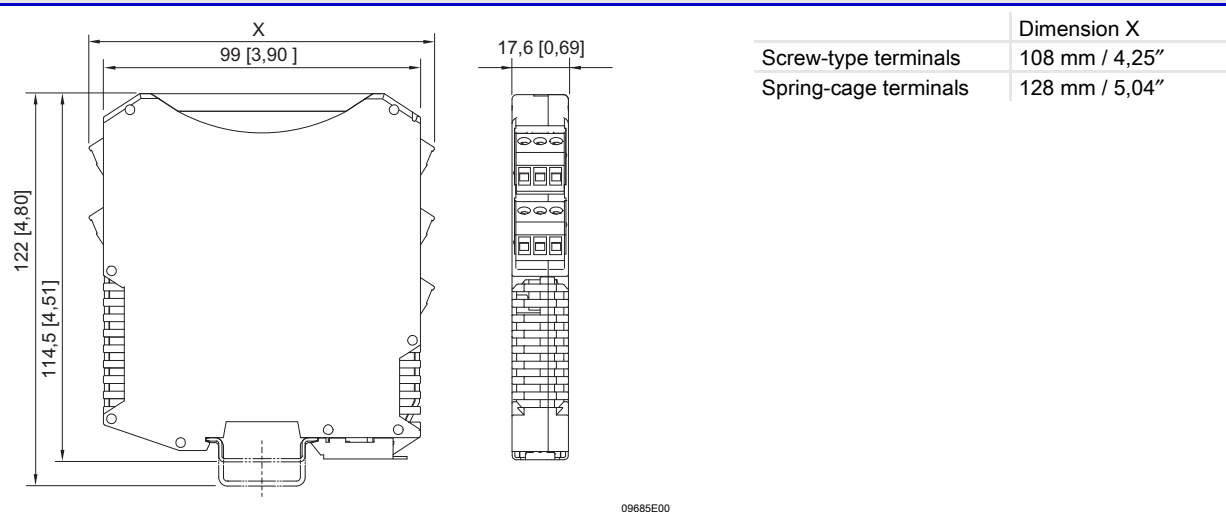
**Technical Data**

**Mechanical data**

Connection		Screw terminals	Spring clamp terminals
	Single-wire connection		
	- rigid	0.2 ... 2.5 mm <sup>2</sup>	0.2 ... 2.5 mm <sup>2</sup>
	- flexible	0.2 ... 2.5 mm <sup>2</sup>	0.2 ... 2.5 mm <sup>2</sup>
	- flexible with core end sleeves (without / with plastic sleeve)	0.25 ... 2.5 mm <sup>2</sup>	0.25 ... 2.5 mm <sup>2</sup>
	two-wire connection		
	- rigid	0.2 ... 1 mm <sup>2</sup>	-
	- flexible	0.2 ... 1.5 mm <sup>2</sup>	-
	- flexible with core end sleeves	0.25 ... 1 mm <sup>2</sup>	0.5 ... 1 mm <sup>2</sup>
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		

A3

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



**Accessories and Spare Parts**

Designation	Description	Art. no.
Resistance coupling element	Connection of additional contacts in the Ex area as well, in order to enable short circuit and open circuit detection.	<b>105944</b>

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.