

- > 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 (relay - output) or SIL 3 (electronic - output) (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					
							Class I												Class I					
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 9170A

Selection Table

Output version (control)	Channels	Power supply	Output / channel	LFD relay	LFT	Order number	Tech. data see page
Signal relay (125 V / 1 A)	1	24 V DC	2 change-over contacts	yes	no	9170/10-11-11s	A3/3
		120 ... 230 V AC	2 change-over contacts	no	no	9170/10-11-21s	
	2	24 V DC	1 change-over contact	yes	no	9170/20-10-11s	
			2 NO	yes	no	9170/20-11-11s	
		120 ... 230 V AC	1 change-over contact	no	no	9170/20-10-21s	
			2 NO	no	no	9170/20-11-21s	
Power relay (250 V / 4 A)	1	24 V DC	1 change-over contact	yes	no	9170/10-12-11s	A3/8
		120 ... 230 V AC	1 change-over contact	no	no	9170/10-12-21s	
			2 change-over contacts	no	no	9170/10-13-21s	
	2	24 V DC	1 change-over contact	yes	no	9170/20-12-11s	
		120 ... 230 V AC	1 change-over contact	no	no	9170/20-12-21s	
Electronic (35 V / 50 mA)	1	24 V DC	1 electronic output	yes	no	9170/11-14-11s	A3/12
					yes	9170/11-14-12s	A3/15
	2	24 V DC	1 electronic output	yes	no	9170/21-14-11s	A3/12
					yes	9170/21-14-12s	A3/15
Note The order numbers listed in the table are for devices equipped with screw-type terminals. For devices equipped with spring-type terminals, replace the ending "s" for screw-type terminals with "k" for spring-type terminals.							
LFD - Line fault diagnostic no - device transmits line fault via LED yes - device transmits line fault via LED and relay contact							
LFT - line fault transparency, device signals line fault on field side to the control directly via the signal output.							

Switching Repeater with Signal relay (125 V / 1 A)
Field Circuit Ex i
Type 9170/.0-11-.1., Type 9170/20-10-.1.



Explosion Protection		
Version	24 V DC 9170/.0-11-.1., 9170/20-10-11.	120 ... 230 V AC 9170/.0-11-21., 9170/20-10-21.
Global (IECEx)		
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
Europe (ATEX)		
Gas and dust	DMT 02 ATEX E195X ⊕ II 3 (1) G Ex nA nC [ia Ga] IIC T4 Gc ⊕ II (1) D [Ex ia Da] IIIC	DMT 02 ATEX E195X ⊕ II (1) G [Ex ia Ga] IIC ⊕ II (1) D [Ex ia Da] IIIC
Certifications and certificates		
Certificates	IECEx, ATEX, Brazil (INMETRO), India (PESO), Canada (CSA), Kazakhstan (TR), Russia (TR), Ukraine (TR), USA (FM, UL), Belarus (TR)	IECEx, ATEX, Brazil (INMETRO), India (PESO), Canada (CSA), Kazakhstan (TR), Russia (TR), Serbia (SRPS), Ukraine (TR), USA (FM, UL), Belarus (TR)
Ship approval	DNV	DNV
Safety data		
Version	9170/10-... (1 channel)	9170/20-... (2 channels)
Inputs (channels individually)		
Max. voltage U_o	10.6 V	10.6 V
Max. current I_o	24 mA	24 mA
Max. power P_o	64 mW	64 mW
Max. connectable capacitance C_o		
IIC	2,32 μ F	2,32 μ F
IIB	16,2 μ F	16,2 μ F
Max. connectable inductance L_o		
IIC	63 mH	63 mH
IIB	230 mH	230 mH
Internal capacitance C_i	2.42 nF	2.42 nF
Internal inductance L_i	negligible	negligible
Insulation voltage U_m	253 V	253 V
Inputs (2 channels parallel)		
Max. voltage U_o	--	10.6 V
Max. current I_o	--	48 mA
Max. power P_o	--	128 mW
Max. connectable capacitance C_o		
IIC	--	2,32 μ F
IIB	--	16,2 μ F
Max. connectable inductance L_o		
IIC	--	16 mH
IIB	--	61 mH
Internal capacitance C_i	--	4.84 nF
Internal inductance L_i	--	negligible
Insulation voltage U_m	--	253 V
Further parameters		
Installation	in Zone 2, Div. 2 and in the safe area	in safe area
Further information	see respective certificate and operating instructions	

A3

Switching Repeater with Signal relay (125 V / 1 A)
Field Circuit Ex i
 Type 9170/.0-11-.1., Type 9170/20-10-.1.



Technical Data

Electrical data

Version	24 V DC 9170/.0-11-11., 9170/20-10-11.	120 ... 230 V AC 9170/.0-11-21., 9170/20-10-21.
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
Output		
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
Overload protected	--	--
Voltage drop	--	--
Electrical service life		
Resistive load	5 x 10 ⁵ cycles at 24 V / 1 A	5 x 10 ⁵ cycles at 24 V / 1 A
Mechanical service life	1 x 10 ⁸ cycles	1 x 10 ⁸ 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

Switching Repeater with Signal relay (125 V / 1 A)
Field Circuit Ex i
 Type 9170/0-11-1., Type 9170/20-10-1.



Technical Data

Electrical data

Error detection Ex i input	
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 9170/0-1.-21.
Electromagnetic compatibility	Tested under the following standards and regulations: EN 61326-1 (can be used in industrial environment) NAMUR NE 21

Ambient conditions

Ambient temperature	
Single device	-20 ... +70 °C
Group assembly	-20 ... +60 °C
	The installation conditions affect the ambient temperature. Observe the "Cabinet installation guide".
Storage temperature	-40 ... +80 °C
Relative humidity (no condensation)	$\leq 95 \%$

A3

Switching Repeater with Signal relay (125 V / 1 A)
Field Circuit Ex i
 Type 9170/.0-11-.1., Type 9170/20-10-.1.



Technical Data

Electrical connection

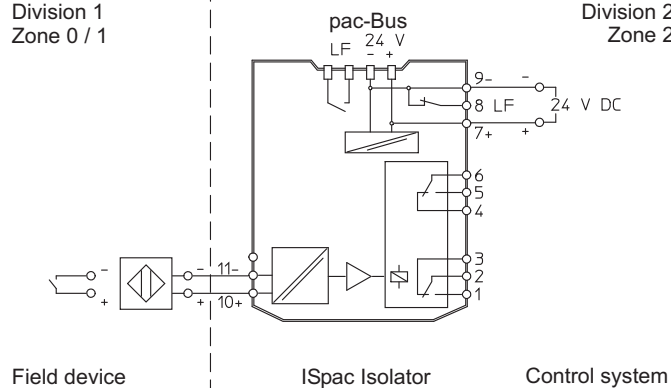
Connection diagram

24 V DC

1 channel
9170/10-11-11

Hazardous area
 Division 1
 Zone 0 / 1

Safe area
 Division 2
 Zone 2

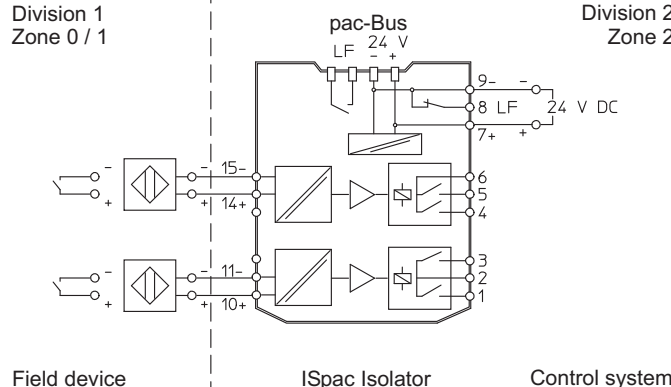


06696E02

2 channels
9170/20-11-11

Hazardous area
 Division 1
 Zone 0 / 1

Safe area
 Division 2
 Zone 2

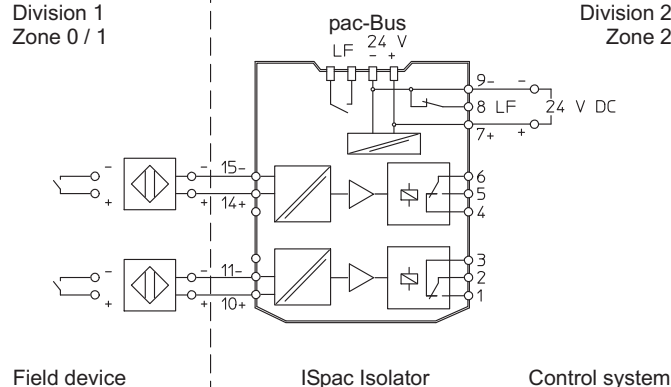


06699E02

2 channels
9170/20-10-11

Hazardous area
 Division 1
 Zone 0 / 1

Safe area
 Division 2
 Zone 2



14359E02

Switching Repeater with Power Relay (250 V / 4 A)
Field Circuit Ex i
Type 9170/.0-12-.1., Type 9170/.0-13-21.



Explosion Protection

Version	24 V DC 9170/.0-12-11.	120 ... 230 V AC 9170/.0-12-21., 9170/.0-13-21.
Global (IECEX)		
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
Europe (ATEX)		
Gas and dust	DMT 02 ATEX E195X ⊕ II (1) G [Ex ia Ga] IIC ⊕ II (1) D [Ex ia Da] IIIC	DMT 02 ATEX E195X ⊕ II (1) G [Ex ia Ga] IIC ⊕ II (1) D [Ex ia Da] IIIC
Certifications and certificates		
Certificates	IECEX, ATEX, Brazil (INMETRO), India (PESO), Canada (CSA), Kazakhstan (TR), Russia (TR), Serbia (SRPS), Ukraine (TR), USA (FM, UL), Belarus (TR)	IECEX, ATEX, Brazil (INMETRO), India (PESO), Canada (CSA), Kazakhstan (TR), Korea (KCs) only for 9170/10-12-21., Russia (TR), Serbia (SRPS), USA (FM, UL), Belarus (TR)
Ship approval	DNV	DNV
Safety data		
Version	9170/10-... (1 channel)	9170/20-... (2 channels)
Inputs (channels individually)		
Max. voltage U_o	10.6 V	10.6 V
Max. current I_o	24 mA	24 mA
Max. power P_o	64 mW	64 mW
Max. connectable capacitance C_o		
IIC	2,32 μ F	2,32 μ F
IIB	16,2 μ F	16,2 μ F
Max. connectable inductance L_o		
IIC	63 mH	63 mH
IIB	230 mH	230 mH
Internal capacitance C_i	2.42 nF	2.42 nF
Internal inductance L_i	negligible	negligible
Insulation voltage U_m	253 V	253 V
Inputs (2 channels parallel)		
Max. voltage U_o	--	10.6 V
Max. current I_o	--	48 mA
Max. power P_o	--	128 mW
Max. connectable capacitance C_o		
IIC	--	2,32 μ F
IIB	--	16,2 μ F
Max. connectable inductance L_o		
IIC	--	16 mH
IIB	--	61 mH
Internal capacitance C_i	--	4.84 nF
Internal inductance L_i	--	negligible
Insulation voltage U_m	--	253 V
Further parameters		
Installation	in safe area	
Further information	see respective certificate and operating instructions	

Switching Repeater with Power Relay (250 V / 4 A) Field Circuit Ex i

Type 9170/.0-12-.1., Type 9170/.0-13-21.



Technical Data

Electrical data

Version	24 V DC 9170/.0-12-11.	120 ... 230 V AC 9170/.0-12-21., 9170/.0-13-21.
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
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
Overload protected	--	--
Voltage drop	--	--
Electrical service life		
Resistive load	1 x 10 ⁵ cycles at 250 V / 4 A	1 x 10 ⁵ cycles at 250 V / 4 A
Mechanical service life	15 x 10 ⁶ cycles	15 x 10 ⁶ 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

A3

Switching Repeater with Power Relay (250 V / 4 A)
Field Circuit Ex i
 Type 9170/.0-12-.1., Type 9170/.0-13-21.



Technical Data

Electrical data	
Error detection Ex i input	
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/.0-1.-21.
Electromagnetic compatibility	Tested under the following standards and regulations: EN 61326-1 (can be used in industrial environment) NAMUR NE 21
Ambient conditions	
Ambient temperature	
Single device	-20 ... +70 °C
Group assembly	-20 ... +60 °C
	The installation conditions affect the ambient temperature. Observe the "Cabinet installation guide".
Storage temperature	-40 ... +80 °C
Relative humidity (no condensation)	$\leq 95 \%$

Technical Data

Electrical connection	
Connection diagram	
24 V DC 1 channel 9170/10-12-11	Hazardous area Division 1 Zone 0 / 1 Safe area Field device ISpac Isolator Control system 06698E02
	Hazardous area Division 1 Zone 0 / 1 Safe area Field device ISpac Isolator Control system 06695E02

Switching Repeater with Power Relay (250 V / 4 A)
Field Circuit Ex i
 Type 9170/.0-12-.1., Type 9170/.0-13-21.



Technical Data

Electrical connection

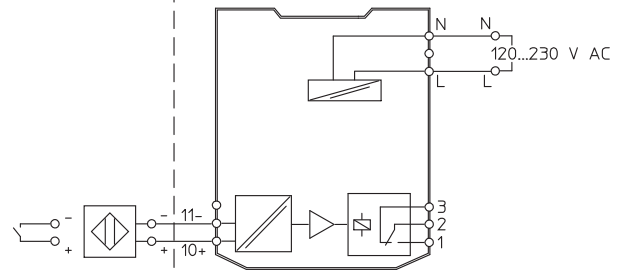
Connection diagram

120 V / 230 V AC

1 channel, 1 changeover
9170/10-12-21

Hazardous area
 Division 1
 Zone 0 / 1

Safe area



Field device

ISpac Isolator

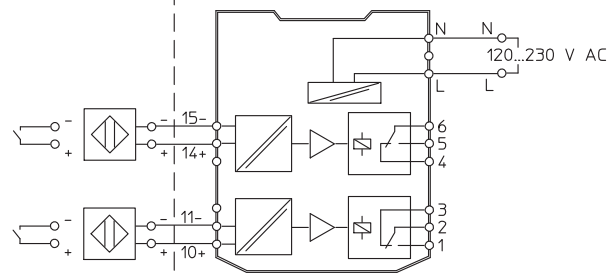
Control system

06871E02

2 channels
9170/20-12-21

Hazardous area
 Division 1
 Zone 0 / 1

Safe area



Field device

ISpac Isolator

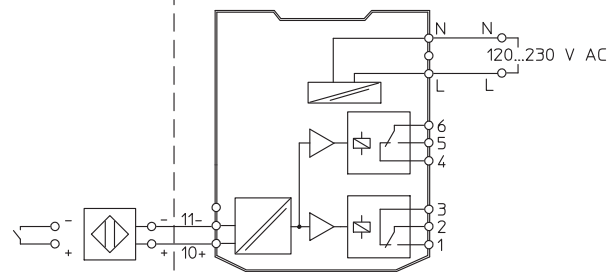
Control system

07219E02

1 channel, 2 changeover
9170/10-13-21

Hazardous area
 Division 1
 Zone 0 / 1

Safe area



Field device

ISpac Isolator

Control system

06874E02

A3

Switching Repeater with Electronic Output (35 V / 50 mA)
Field Circuit Ex i
Type 9170/.1-14-11.



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 E195X Ex II 3 (1) G Ex nAc nCc [ia] IIC T4 Ex II (1) D [Ex ia] IIIC
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Certifications and certificates

Certificates	IECEx, ATEX, India (PESO), Canada (CSA), Kazakhstan (TR), Russia (TR), USA (FM), Belarus (TR)
Ship approval	DNV

Safety data

Version	9170/11-... (1 channel)	9170/21-... (2 channels)
Inputs (channels individually)		
Max. voltage U_o	9.6 V	9.6 V
Max. current I_o	10 mA	10 mA
Max. power P_o	24 mW	24 mW
Max. connectable capacitance C_o		
IIC	3,6 μ F	3,6 μ F
IIB	26 μ F	26 μ F
I	99 μ F	99 μ F
Max. connectable inductance L_o		
IIC	350 mH	350 mH
IIB	1000 mH	1000 mH
I	1000 mH	1000 mH
Internal capacitance C_i	2.42 nF	2.42 nF
Internal inductance L_i	negligible	negligible
Insulation voltage U_m	253 V	253 V
Inputs (2 channels parallel)		
Max. voltage U_o	--	9.6 V
Max. current I_o	--	20 mA
Max. power P_o	--	48 mW
Max. connectable capacitance C_o		
IIC	--	3,6 μ F
IIB	--	26 μ F
I	--	99 μ F
Max. connectable inductance L_o		
IIC	--	90 mH
IIB	--	340 mH
I	--	1000 mH
Internal capacitance C_i	--	4.84 nF
Internal inductance L_i	--	negligible
Insulation voltage U_m	--	253 V

Further parameters

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

Switching Repeater with Electronic Output (35 V / 50 mA)
Field Circuit Ex i
Type 9170/.1-14-11.



Technical Data

Electrical data

Auxiliary power	
Nominal voltage U_N	24 V DC
Voltage range	18 ... 31.2 V
Residual ripple	< 3.26 V _{SS}
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	0.9 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
Output	
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 ⁹ 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
Error detection Ex i input	
Open circuit	$I_{in} < 0.05 \dots 0.35 \text{ mA}$ according to EN 60947-5-6
Short circuit	$R_{in} < 100 \dots 360 \text{ Ω}$ 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)
Electromagnetic compatibility	
Tested under the following standards and regulations:	
EN 61326-1 (can be used in industrial environment)	
NAMUR NE 21	

A3

Switching Repeater with Electronic Output (35 V / 50 mA)
Field Circuit Ex i
 Type 9170/.1-14-11.



Technical Data

Ambient conditions

Ambient temperature	
Single device	-20 ... +70 °C
Group assembly	-20 ... +60 °C
	The installation conditions affect the ambient temperature. Observe the "Cabinet installation guide".
Storage temperature	-40 ... +80 °C
Relative humidity (no condensation)	≤ 95 %

Technical Data

Electrical connection

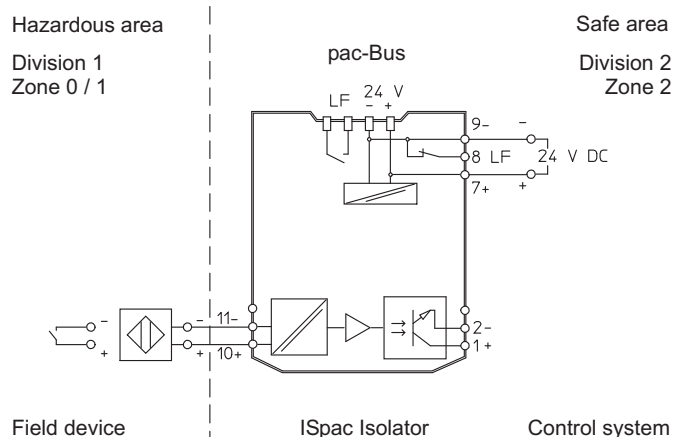
Connection diagram

24 V DC

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

Hazardous area
Division 1
Zone 0 / 1

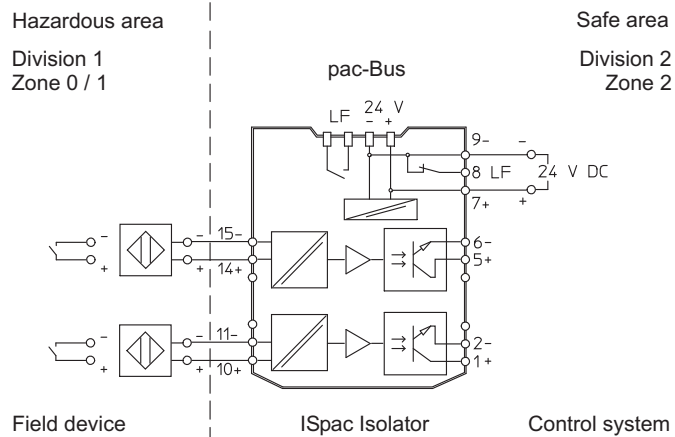
Safe area
Division 2
Zone 2



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

Hazardous area
Division 1
Zone 0 / 1

Safe area
Division 2
Zone 2



Switching Repeater with Electronic Output (35 V / 50 mA) and Line Fault Transparency

Field Circuit Ex i

Type 9170/.1-14-12.



Explosion Protection

Global (IECEX)

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

Gas and dust	DMT 02 ATEX E195X ⊕ 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, India (PESO), Canada (CSA), Kazakhstan (TR), Russia (TR), USA (FM), Belarus (TR)
Ship approval	DNV

Explosion Protection

Safety data

Version	9170/11-... (1 channel)	9170/21-... (2 channels)
Inputs (channels individually)		
Max. voltage U_o	9.6 V	9.6 V
Max. current I_o	10 mA	10 mA
Max. power P_o	24 mW	24 mW
Max. connectable capacitance C_o		
IIC	3,6 μ F	3,6 μ F
IIB	26 μ F	26 μ F
I	99 μ F	99 μ F
Max. connectable inductance L_o		
IIC	350 mH	350 mH
IIB	1000 mH	1000 mH
I	1000 mH	1000 mH
Internal capacitance C_i	2.42 nF	2.42 nF
Internal inductance L_i	negligible	negligible
Insulation voltage U_m	253 V	253 V
Inputs (2 channels parallel)		
Max. voltage U_o	--	9.6 V
Max. current I_o	--	20 mA
Max. power P_o	--	48 mW
Max. connectable capacitance C_o		
IIC	--	3,6 μ F
IIB	--	26 μ F
I	--	99 μ F
Max. connectable inductance L_o		
IIC	--	90 mH
IIB	--	340 mH
I	--	1000 mH
Internal capacitance C_i	--	4.84 nF
Internal inductance L_i	--	negligible
Insulation voltage U_m	--	253 V

Further parameters

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

A3

Switching Repeater with Electronic Output (35 V / 50 mA) and Line Fault Transparency
Field Circuit Ex i
 Type 9170/.1-14-12.



Technical Data

Electrical data

Auxiliary power	
Nominal voltage U_N	24 V DC
Voltage range	18 ... 31.2 V
Residual ripple	< 3.26 V _{SS}
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
Output	
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 ⁹ 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

Switching Repeater with Electronic Output (35 V / 50 mA) and Line Fault Transparency Field Circuit Ex i Type 9170/.1-14-12.



Technical Data

Electrical data

Error detection Ex i input	
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 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

Ambient conditions

Ambient temperature	
Single device	-20 ... +70 °C
Group assembly	-20 ... +60 °C
	The installation conditions affect the ambient temperature. Observe the "Cabinet installation guide".
Storage temperature	-40 ... +80 °C
Relative humidity (no condensation)	≤ 95 %

A3

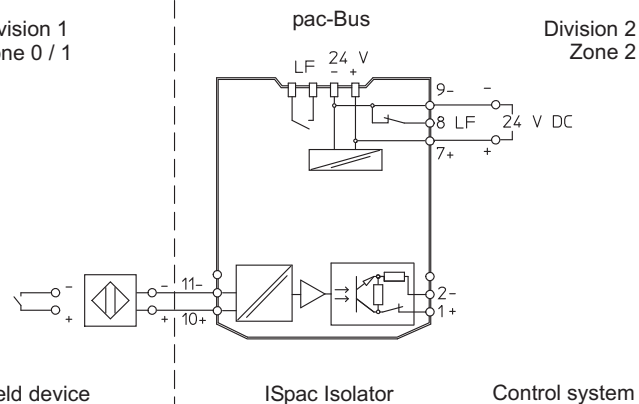
Technical Data

Electrical connection

Connection diagram

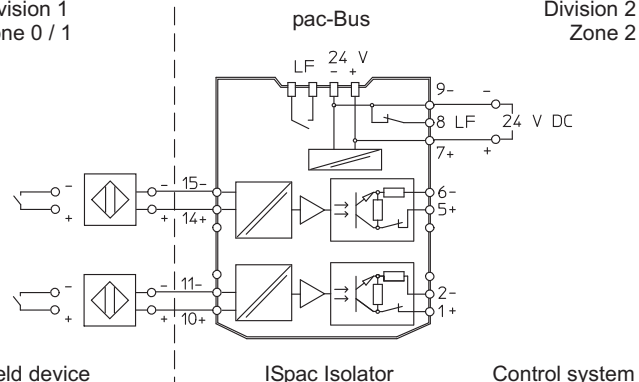
1 channel 9170/11-14-12. LFT

Hazardous area
Division 1
Zone 0 / 1



2 channels 9170/21-14-12. LFT

Hazardous area
Division 1
Zone 0 / 1

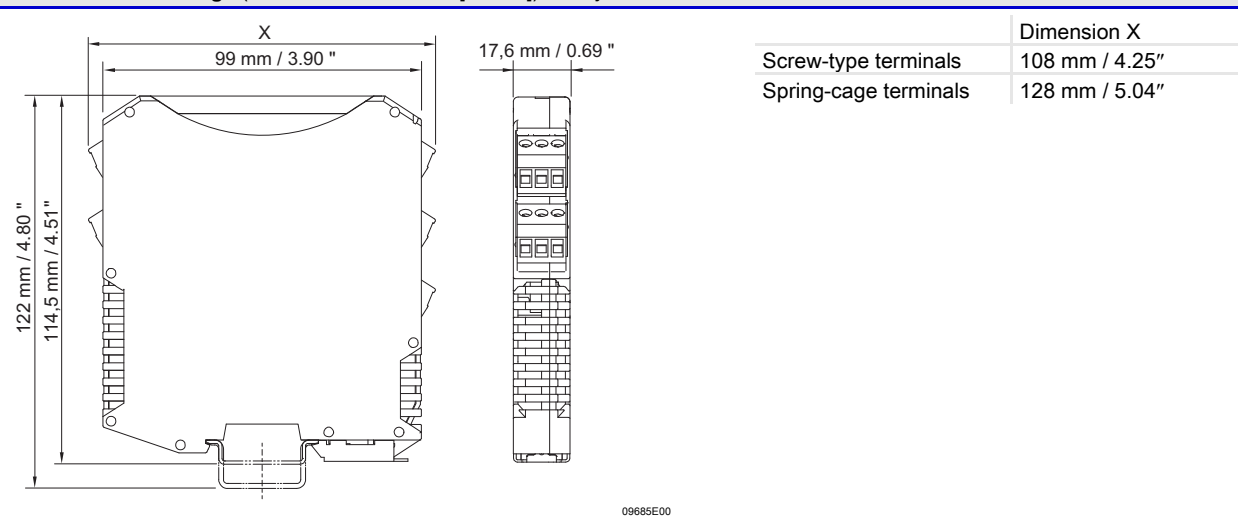


Technical Data

Mechanical data

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



Accessories and Spare Parts

Designation	Description	Order number
Resistance coupling element	Connection of additional contacts in the Ex area as well, in order to enable short circuit and open circuit detection.	105944

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.