

Isolator Barriers

Transmitter supply unit With limit contact

Ex i field circuit

9162/13-11-14s Art. No. 238251



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

WebCode 9162A



9162 series Ex i transmitter power supply units with limit values can be used for the intrinsically safe operation of two- and three-conductor transmitters or for connecting to intrinsically safe mA sources. Two limit values can be easily set using the "ISpac Wizard" software. If the value exceeds or falls below these limit values, these units will issue an alert. A wire-breakage and short-circuit monitoring system provides increased availability.

Technical Data

Explosion Protection

Application range (Zones)	2
Ex interface zone	0 1 2 20 21 22
IECEX gas certificate	IECEX BVS 15.0013 X
IECEX gas explosion protection	Ex nA nC [ia Ga] IIC T4 Gc
IECEX dust certificate	IECEX BVS 15.0013 X
IECEX dust explosion protection	[Ex ia Da] IIIC
ATEX gas certificate	BVS 15 ATEX E018 X
ATEX gas explosion protection	Ex II 3 (1) G Ex nA nC [ia Ga] IIC T4 Gc
ATEX dust certificate	BVS 15 ATEX E018 X
ATEX dust explosion protection	Ex II (1) D [Ex ia Da] IIIC
Certificate FMus	FM16US0122X
Certificate cFM	FM16CA0067X
Marking cFMus	Class I, Div. 2, Groups A,B,C,D; Class I, Zone 2, nA nC Group IIC AIS Class I,II,III, Div. 1, Groups A,B,C,D,E,F,G; Class I, Zone 0, [Ex ia] IIC T4 at Ta = 70°C See Doc. 9162 6 031 001 1
EAC certificate	EAEU RU S-DE.HA91.B.00100/20
EAC gas explosion protection	Ex II 2 Ex nA nC [ia Ga] IIC T4 Gc X
EAC dust explosion protection	[Ex ia Da] IIIC X
Certificates	ATEX (BVS), Canada (FM), IECEx (BVS), India (PESO), SIL (exida), USA (FM)

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Explosion Protection

Ship approval	CCS, EU RO MR
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Safety Data

Max. voltage U_o/V_{oc}	27 V
Max. current I_o/I_{sc}	87.9 mA
Max. power P_o	574 mW
Max. permissible external capacitance C_o/C_a for IIC	0.09 μ F
Max. permissible external capacitance C_o/C_a for IIB	0.705 μ F
Max. permissible external inductance L_o/L_a for IIC	2.3 mH
Max. permissible external inductance L_o/L_a for IIB	14 mH
Max. voltage U_i	30 V
Max. current I_i	100 mA
Max. voltage U_o isolation amplifier	4.1 V
Internal capacitance C_i	Negligible
Internal capacitance C_i isolating repeater	Negligible
Internal inductance L_i	Negligible
Internal inductance L_i isolating repeater	Negligible
Safety-related maximum voltage	253 V

Functional Safety

SIL	2
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Electrical Data

Number of channels	1
Transmitter supply mode	Yes
Isolating repeater mode	Yes
LFD relay	Yes
Communication signal	HART, 0.5 ... 10 kHz
Limiting values configuration	using ISpac wizard (V3.04 and following)

Auxiliary Power

Auxiliary power	24 V DC
Auxiliary power nominal voltage	24 V DC
Auxiliary power voltage range	18 ... 31.2 V
Voltage range residual ripple	$\leq 3,6 V_{SS}$
Nominal current	85 mA
Max. power dissipation	1.5 W
Power consumption	2 W
Polarity reversal protection	Yes
Undervoltage monitoring	Yes
Operation indication	Green "PWR" LED

Galvanic Isolation

Test voltage according to standard	IEC EN 60079-11
Galvanic isolation Ex i input to output	1.5 kV AC

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Galvanic Isolation

Galvanic isolation Ex i input to auxiliary power	1.5 kV AC
Galvanic isolation Ex i input to fault message contact	1,5 kV AC
Test voltage according to standard 2	EN 50178
Galvanic isolation output to auxiliary power	350 V AC
Galvanic isolation output to output	350 V AC
Galvanic isolation fault message contact to power supply	350 V AC

Input

Input function	Isolation amplifier Transmitter power unit
Input	4 ... 20 mA with HART
Input signal	4 ... 20 mA with HART
Input functional range	2 – 22 mA
Input current max. mA sources	50 mA
Input for open-circuit voltage U _a	≤ 26 V
Short-circuit current	≤ 35 mA
Supply voltage for transmitter	≥ 16 V at 20 mA
Supply voltage note	(T < -10 °C: US - 0.2 V / 10K)
Input resistance	30 Ω
Line fault and loss of power signalization	Contact (30 V / 100 mA) closed to ground in case of fault pac-Bus, floating contact (30 V / 100 mA)

Output

Output	4 ... 20 mA with HART
Output A	2 ... 22 mA
Output signal	4 ... 20 mA with HART
Output residual ripple	≤ 40 μA _{eff}
Switching delay	< 80 ms
Output functional range	2 – 22 mA
Load resistance R _L	0 ... 600 Ω (terminal 1+ / 2-)
Load resistance R _L max.	600 Ω
Load resistance influence	≤ 0,02 %
Settling time 10 ... 90 %	< 45 ms
Analog signal delay	< 30 ms
Limit contact (per channel)	2 NOs
Switching voltage limiting values	≤ ± 30 V
Switching current limiting values	≤ 170 mA
Switch-on resistance	≤ 2.5 Ω (typical < 1 Ω)
Switching state indication	Yellow LED "OUT"
Switch-back delay	< 100 ms
Switching capacity fault message contact	30 V / 100 mA
Switch user adjustment line fault	Activated / deactivated
Indication of line fault	"LF" LED, red
Error detection wire breakage	< 3.6 mA

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Output	
Short circuit error detection	> 21 mA
Deviation	≤ 0,2 %
Auxiliary power influence error limits	≤ 0,01 %
Temperature influence error limits	≤ 0.1% / 10 K
Behaviour of the output	= input signal
Linearity error	≤ 0,1 %
Offset error	≤ 0,1 %

Ambient Conditions	
Ambient temperature °C	-40 °C ... +70 °C (Single device) -40 °C ... +60 °C (Group assembly)
Ambient temperature °F	-40 °F ... +158 °F (Single device) -40 °F ... +140 °F (Group assembly)
Note	"The installation conditions affect the ambient temperature. Observe the "Cabinet installation guide""
Storage temperature °C	-40 °C ... +80 °C
Storage temperature °F	-40 °F ... +176 °F
Max. relative humidity	95%
Use at the height of	< 2000 m
Electromagnetic compatibility	Tested to the following standards and regulations: EN 61326-1 Use in industrial environment

Mechanical Data	
Degree of protection (IP)	IP30
Terminal degree of protection (IP)	IP20
Fire resistance (UL 94)	V0
Connection cross-section	0.2-2.5 mm ² flexible 0.25-2.5 mm ² flexible core end sleeve
Enclosure material	Polyamide
Clamping range AWG	24 – 12
Connection cross-section AWG	24 ... 12
Grid dimension	17.6 mm
Width inches	4.25 in
Length inches	0.69 in
Mounting depth inches	4.51 in
Weight	0.225 kg
Weight	0.5 lb

Mounting / Installation	
Mounting type	NS35/15, NS35/7.5 DIN rail
Mounting position	Vertical Horizontal
Connection type	Screw terminal
Conductor cross-section rigid min.	0.2 mm ²
Conductor cross-section solid max.	2.5 mm ²
Conductor cross-section flexible min.	0.2 mm ²
Conductor cross-section flexible max.	2.5 mm ²

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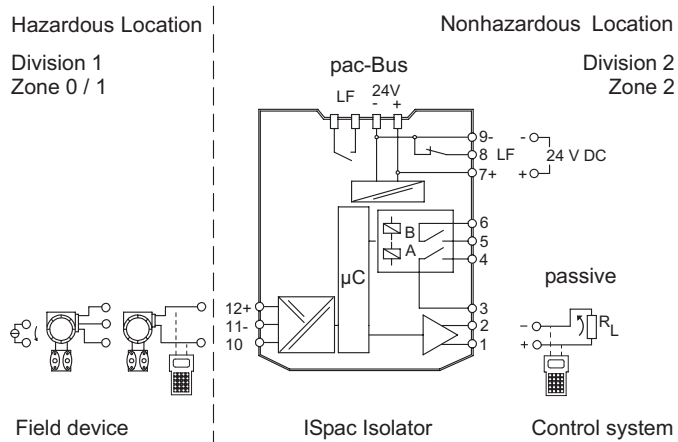
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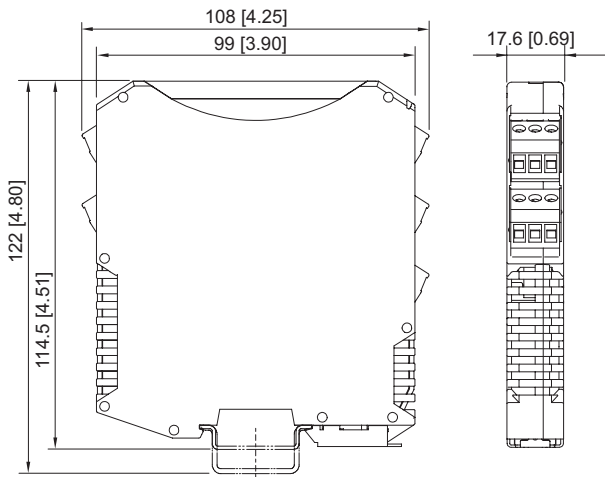


Technical Drawings – Subject to Alterations



Connection diagram 9162/13-11-14

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



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

Accessories

Parameterization set ISpac - Wizard

Art. No.

	<p>The software serves for commissioning, configuring and diagnosing the ISpac isolators Series 9146, 9162, 9182 and 9282. For further information, see operating instructions. Form of delivery: USB stick; parameterization software incl. parameterization cable / adaptor System requirements: IBM compatible PC with MS XP, Vista, Windows 7, 10 RS 232 C interface RS 232 / USB adaptor</p>	<p>202595</p>
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Resistance coupling element

Art. No.

	<p>The 0/4 to 20 mA signal of channel 1 is converted to a 0/2 to 10 V signal. The resistive coupling element replaces the available connection terminal. (Set with 5 pieces)</p>	<p>273968</p>
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Spare Parts

Screw terminal		Art. No.
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: green	112817
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: black	112816
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: blue	112818
Screw terminal with test tap		Art. No.
	3-pole plug with test tap, screw connector thread: M3 stripping length: 7 mm colour: black	113005
	3-pole plug with test tap, screw connector thread: M3 stripping length: 7 mm colour: blue	113004
Spring clamp terminal		Art. No.
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: green	112825
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: black	112824
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: blue	112826

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