Isolators

Loop-powered binary output
Ex i field circuit
9176/20-16-00k Art. No. 222185

- Extensive portfolio for all characteristic curves
- Two-channel variants reduce the amount of space required
- For use up to SIL 3 (IEC/EN 61508)

MY R. STAHL **9176A**

The Series 9176 binary outputs transmit binary signals for the intrinsically safe operation of Ex i solenoid valves, indicator lamps and horns. The devices do not require a separate auxiliary power supply as they are powered by the control circuit. The intrinsically safe outputs are galvanically separated from the inputs. The two-channel variants are characterised by galvanically separated channels.

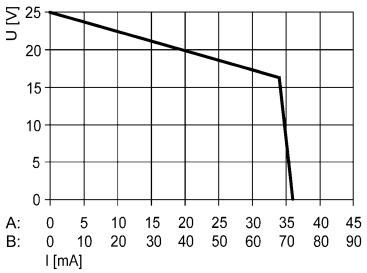
Technical Data

Explosion Protection	
Application range (zones)	2
Ex interface zone	0, 1, 2, 20, 21, 22
IECEx gas certificate	IECEx BVS 13.0012 X
IECEX gas certificate	IECEx BVS 13.0012 X
IECEx gas explosion protection	Ex nA [ia Ga] IIC T4 Gc
IECEx dust certificate	IECEx BVS 13.0012 X
IECEx dust explosion protection	[Ex ia Da] IIIC
ATEX gas certificate	BVS 04 ATEX E 075 X
ATEX gas certificate	BVS 04 ATEX E 075 X
ATEX gas explosion protection	⟨Ex⟩ II 3 (1) G Ex nA [ia Ga] IIC T4 Gc
ATEX dust certificate	BVS 04 ATEX E 075 X
ATEX dust explosion protection	⟨Ex⟩ II (1) D [Ex ia Da] IIIC
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 Mounting vert. at Ta = 70°C , or horizontal Ta = 60°C See Doc. 91 766 01 31 1
Certificates	ATEX (BVS), Brazil (ULB), Canada (FM), China (NEPSI), IECEx (BVS), Korea (KTL), SIL (exida), USA (FM)
Ship approval	CCS, EU RO MR (DNV)
Declaration of conformity	ATEX (EUK), China (CCC)
Safety Data	
Max. voltage U_o	27.6 V
Max. current I_o (Ex ia)	110 mA

Safety Data		
Max. current I_o (Ex ib)		50 mA
Max. power P_o		760 mW
Max. permissible external capacity C_o for IIC		0.085 µF
Max. permissible external inductance L_o for IIC		1.2 mH
Max. permissible external capacity C_o for IIB		0.667 µF
Max. permissible external inductance L_o for IIB		9 mH
Internal capacitance		1.1 nF
Internal inductance		Negligible
Max. voltage Uo parallel		27.6 V
Max. power Po parallel		1520 mW
Max. current Io (Ex ia) paral.		220 mA
Max. current Io (Ex ib) paral.		100 mA
Internal capacitance parallel		2.2 nF
Internal inductance parallel		negligible
Safety-related max. voltage		253 V
Intrinsically safe limiting values inductance L_o/capacitance C_o		Max. connectable inductance L_o/capacitance C_o 2 parallel channels
IIC	L_o [mH] C_o [µF]	
IIB	L_o [mH] C_o [µF]	1,8 mH 0.665 µF
IIIC	L_o [mH] C_o [µF]	1.800 mH 0.665 µF
Functional Safety		
SIL		3
HFT		0
SFF		100%
Lambda SD		0 FIT
Lambda SU		364 FIT
Lambda DD		0 FIT
Lambda DU		0 FIT
Electrical Data		
Number of channels		2
Internal resistance R_i		250 Ω
Auxiliary Power		
Auxiliary power		without
Auxiliary power consumption		0.5 W + (I_a x 37 mW/mA)
Polarity reversal protection		Yes
Galvanic Isolation		
Test voltage as per standard		EN IEC 60079-11
Ex i input to Ex i input		500 V AC
Test voltage as per standard		EN 50178

Galvanic Isolation	
Input to input	350 V AC
Input	
Input	In accordance with EN 61131-2
Input voltage for ON	18 – 31.2 V
Input voltage for OFF	0 – 5 V
Control Power P_E	0.5 W+ (I_A x 37 mW/mA) (with I_A = max. required output current)
Output	
Output open-circuit voltage U_a	25 V
Max. output current $I_{a\,max}$	35 mA
Max. output current I_a note	Parallel channels: 70 mA
Internal resistance R_i note	250 Ω/parallel: 125 Ω
Output residual ripple	< 100 mV
Output switching frequency	≤ 10 Hz
Switching delay ON/OFF	≤ 50 ms
Switching delay OFF/ON	≤ 18 ms
Switching state indication	LED

9175/.0-16-11; 9176/.0-16-00 output characteristic



At U_N; -20 to +60 °C
X axis (I [mA])
A: Characteristic curve for each channel
B: Characteristic curve for channel 1, parallel channel 2 (only types 9176/20-..-...)

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)
Note	Installation conditions influence the ambient temperature. Please observe the "Cabinet installation guide".
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
Grid dimension	17.6 mm
Width	17.6 mm
Width, inches	0.69 in

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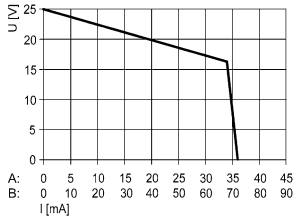
Mechanical Data

Height	114.5 mm
Height in inches	4.51 in
Length	128 mm
Width	17.6 mm
Height	114.5 mm
Length in inches	5.04 in
Weight	180 g
Weight	0.4 lb

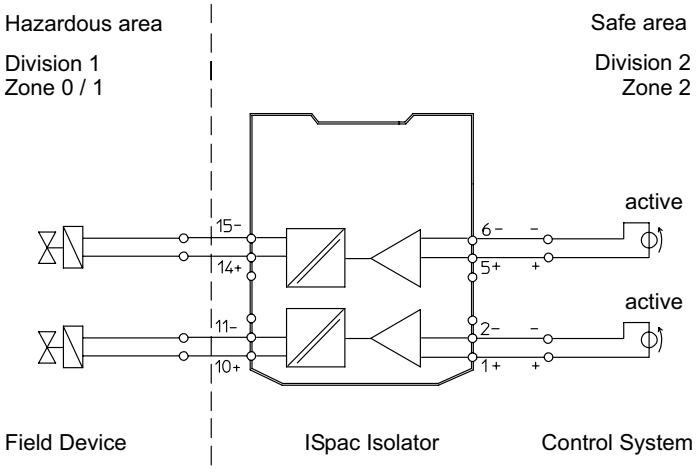
Mounting / Installation

Mounting type	DIN rail NS35/15, NS35/7.5
Mounting orientation	Horizontal Vertical
Connection type	Spring clamp terminal
Min. rigid conductor cross section	0.2 mm²
Max. rigid conductor cross section	2.5 mm²
Min. flex conductor cross section	0.2 mm²
Max. flex conductor cross section	2.5 mm²
Connection cross-section AWG	24 ... 14

Technical Drawings – Subject to Alterations

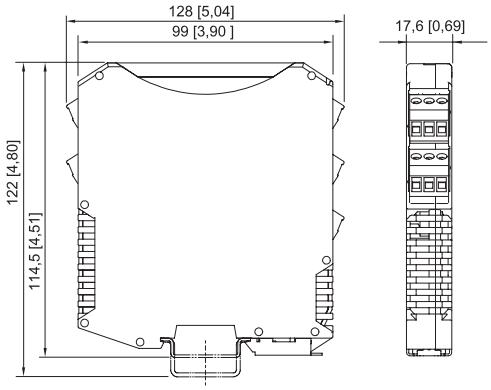


9175/.0-16-11; 9176/.0-16-00 output characteristic



Connection Diagram Type 9176/20-..-..-..

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 spring clamp terminal

Accessories

Transparent cover		Art. No.
	For 91xx ISpac modules Yellow, transparent Clear identification of the device for SIL applications. (Packaging unit: 10 pieces)	200914

Spare Parts

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