

Isolator Barriers

Digital output loop powered

Ex i field circuit

9176/20-15-00s Art. No. 222180



- Comprehensive portfolio to cater for all characteristics
- Two-channel variants reduce the amount of space required
- Can be used up to SIL 3 (IEC/EN 61508)

WebCode 9176A



9176 series binary outputs issue binary signals for the intrinsically safe operation of Ex i solenoid valves, indicator lamps or 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 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 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
Certificate FMus	FM16US0122X
Certificate cFM	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
EAC certificate	EAEU RU S-DE.HA91.B.00100/20
EAC gas explosion protection	Ex 2 Ex nA [ia Ga] IIC T4 Gc X
EAC dust explosion protection	[Ex ia Da] IIIC X
Certificates	ATEX (BVS), Brazil (ULB), Canada (FM), EAC (ENDCE), IECEx (BVS), India (PESO), Korea (KTL), 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}	27.6 V
Max. current I_o (Ex ia)	86.5 mA
Max. current I_o (Ex ib)	44 mA
Max. power P_o	596 mW
Max. permissible external capacitance C_o/C_a for IIC	0.085 μ F
Max. permissible external capacitance C_o/C_a for IIB	0.667 μ F
Max. permissible external inductance L_o/L_a for IIC	1.8 mH
Max. permissible external inductance L_o/L_a for IIB	17 mH
Internal capacitance C_i	1.1 nF
Internal inductance L_i	Negligible
Safety-related maximum voltage	253 V

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
LFD relay	No

Auxiliary Power

Auxiliary power	Without
Aux. power consumption	0.5 W + ($I_a \times 37$ mW / mA)
Polarity reversal protection	Yes

Galvanic Isolation

Test voltage according to standard	IEC EN 60079-11
Galvanic isolation Ex i output to input	1,5 kV AC
Galvanic isolation Ex i input to Ex i input	500 V AC
Test voltage according to standard	EN 50178
Input to input	350 V AC

Input

Input	In accordance with EN 61131-2
Input voltage for ON	18 – 31.2 V
Control Power P_E	0.3 W+ ($I_a \times 15$ mW / mA) (with I_a = max. required output current)
Input voltage for OFF	0 – 5 V

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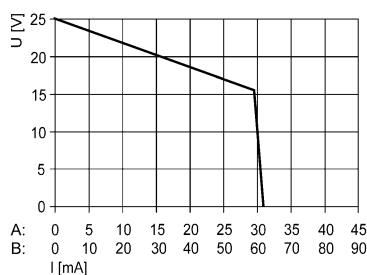
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Output

Output open-circuit voltage U_a	25 V
Max. output current $I_{a \max}$	29 mA
Output residual ripple	< 100 mV
Max. output current I_a note	Channels parallel: 58 mA
Internal resistance R_i note	320 Ω / 160 Ω
Output switching frequency	≤ 10 Hz
Switching delay ON/OFF	≤ 50 ms
Switching delay ON/OFF	≤ 18 ms
Switching state indication	Yellow LED "OUT"

Output characteristic 9176/.0-15-00



at U_N : -20 ... +60 °C

X-axis (I [mA])

A: characteristic curve each channel

B: characteristic curve channel 1 parallel channel 2 (only types 9176/20-...-...)

Ambient Conditions

Ambient temperature °C	-20 °C ... +70 °C (Single device) -20 °C ... +60 °C (Group assembly)
Ambient temperature °F	-4 °F ... +158 °F (Single device) -4 °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; NAMUR NE 21

Mechanical Data

Degree of protection (IP)	IP30
Terminal degree of protection (IP)	IP20
Fire resistance (UL 94)	V0
Enclosure material	Polyamide
Grid dimension	17.6 mm
Width	17.6 mm
Width inches	0.69 in
Height	114.5 mm
Height inches	4.51 in
Length	108 mm
Length inches	4.25 in
Weight	0.185 kg
Weight	0.41 lb

Mounting / Installation

Mounting type	NS35/15, NS35/7.5 DIN rail
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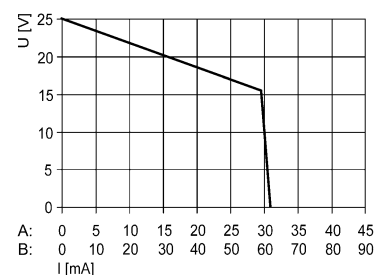
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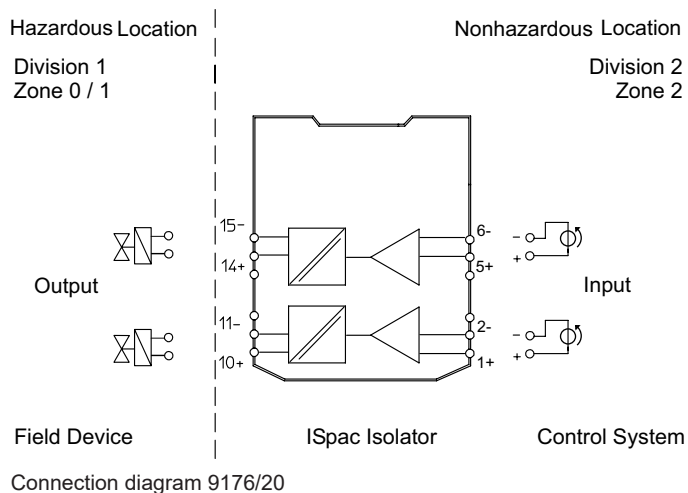
Mounting / Installation

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
Connection cross-section AWG	24 – 13

Technical Drawings – Subject to Alterations




Output characteristic 9176/0-15-00





Accessories

Front cover

	for ISpac modules 91xx yellow, transparent Clear marking of the device for SIL applications. (Packaging unit: 10 pieces)	Art. No. 200914
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Spare Parts

Screw terminal

	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: green	Art. No. 112817
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: black	Art. No. 112816






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	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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