



10496E00

### Binary Output Loop Powered Type 9176

- Power supply by control circuit, loop powered
- Intrinsically safe output [EEx ia] IIC / [EEx ib] IIC
- 1 and 2 channels
- Galvanic isolation between inputs and outputs
- Installation possible in Zone 2 and Div. 2
- Can be used up to SIL 3 (IEC 61508)

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Basic function: binary output loop powered, 1 and 2 channels. The digital output is used for intrinsically safe operation of I.S. solenoid valves or indicators. The supply for the modules comes from the control circuit. No separate power supply is required.

# Zone 2

Selection table					
Version	Channels	No-load voltage $U_A$	Max. output current $I_{A \max}$	Internal resistance $R_L$	Ordering code
Binary output loop powered Type 9176	1	10 V	60 mA	150 $\Omega$	9176/10-12-00.
		17.5 V	45 mA	130 $\Omega$	9176/10-14-00.
		25 V	35 mA	250 $\Omega$	9176/10-16-00.
	2	10 V	60 mA / 120 mA	150 $\Omega$ / 75 $\Omega$ *)	9176/20-12-00.
		17.5 V	45 mA / 90 mA	130 $\Omega$ / 65 $\Omega$ *)	9176/20-14-00.
		25 V	35 mA / 70 mA	250 $\Omega$ / 125 $\Omega$ *)	9176/20-16-00.
Add. to ordering code					
	Screw terminal				9176/.....s
	Spring clamp terminal				9176/.....k
	Insulation displacement connectors				9176/.....q
*) Parallel interconnection of the outputs possible. Double output current by that.					

Technical Data				
Certificates	BVS 04 ATEX E 075 X			
Explosion protection	⊕ II (1) GD [EEx ia] IIC/IIB and ⊕ II 3 G EEx nAC II T4			
Other certificates	USA (FM, UL), Canada (CSA), Russia (VNIIEF), Brazil (UL do Brasil)			
Installation	In Zone 2, Div. 2 and in the safe area			
Safety data (CENELEC)				
Maximum values each output		<b>9176/0-12-00.</b>	<b>9176/0-14-00.</b>	<b>9176/0-16-00.</b>
Max. voltage $U_o$	11.3 V	19.6 V	27.6 V	
Max. current $I_o$ [EEx ia] / [EEx ib] *)	75 mA / - -	150 mA / 60 mA	110 mA / 50 mA	
Max. power $P_o$	210 mW	732 mW	760 mW	
Max. connectable capacitance IIC / IIB	1.79 $\mu$ F / 12.1 $\mu$ F	235 nF / 1470 nF	85 nF / 667 nF	
Max. connectable inductance IIC / IIB	6.3 mH / 25 mH	1.5 mH / 6 mH	1.2 mH / 9 mH	
Internal capacitance $C_i$	1.1 nF	1.1 nF	1.1 nF	
Internal inductance $L_i$	negligible	negligible	negligible	
Insulation voltage $U_m$	253 V AC	253 V AC	253 V AC	
*) The digital outputs 9176 can be used for operation with devices marked EEx ib IIC/IIB T*. Here the $I_o$ values for [EEx ib] are valid.				
Maximum values for two outputs connected in parallel		<b>9176/20-12-00.</b>	<b>9176/20-14-00.</b>	<b>9176/20-16-00.</b>
Max. voltage $U_o$	11.3 V	19.6 V	27.6 V	
Max. current $I_o$ [EEx ia] / [EEx ib] *)	150 mA / - -	300 mA / 120 mA	220 mA / 100 mA	
Max. power $P_o$	420 mW	1464 mW	1520 mW	
Max. connectable capacitance IIC / IIB	1.79 $\mu$ F / 12.1 $\mu$ F	235 nF / 1471 nF	- - / 665 nF	
Max. connectable inductance IIC / IIB	1.5 mH / 6 mH	0.3 mH / 1.5 mH	- - / 1.8 mH	
Internal capacitance $C_i$	2.2 nF	2.2 nF	2.2 nF	
Internal inductance $L_i$	negligible	negligible	negligible	
Insulation voltage $U_m$	253 V AC	253 V AC	253 V AC	
*) The digital outputs 9176 can be used for operation with devices marked EEx ib IIC/IIB T*. Here the $I_o$ values for [EEx ib] are valid.				
Power supply	none			
Galvanic isolation	Test voltage under regulations EN 50020			
	I.S. output to input		1.5 kV AC	
	I.S. outputs to each other		500 V AC	
	Test voltage under regulations EN 50178			
	Inputs to each other		350 V AC	
Input	Voltage for ON / OFF	18 V ... 31.2 V / 0 V ... 5 V		
	Control Power $P_E$ (with $I_A = \max.$ required output current)	<b>9176/0-12-00.</b>	<b>9176/-0-14-00.</b>	<b>9176/0-16-00.</b>
		0.3 W + ( $I_A \times 15$ mW / mA)	0.38 W + ( $I_A \times 26$ mW / mA)	0.5 W + ( $I_A \times 37$ mW / mA)

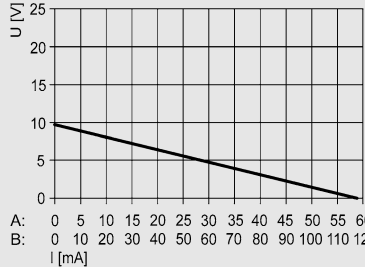


### Technical Data

I.S. output

Output characteristic curves (at  $U_N$ ; - 20 °C ... + 60 °C)  
(more information see instructions)

#### 9176/0-12-00.

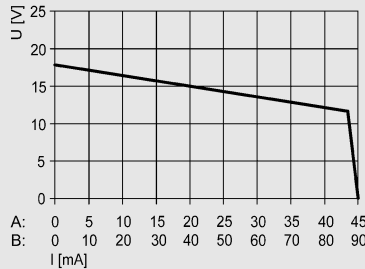


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X-axis (I [mA])

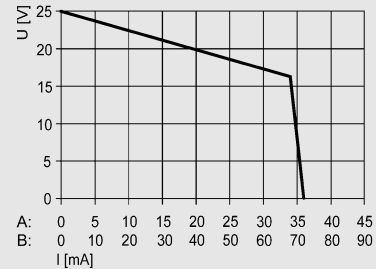
A: characteristic curve each channel  
B: characteristic curve channel 1 parallel channel 2 (only types 9176/20-...-...)

#### 9176/0-14-00.



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#### 9176/0-16-00.



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One output:

No-load voltage  $U_A$   
Max. output current  $I_{A \max}$   
Internal resistance  $R_i$

9176/0-12-00.

10 V  
60 mA  
150  $\Omega$

9176/0-14-00.

17.5 V  
45 mA  
130  $\Omega$

9176/0-16-00.

25 V  
35 mA  
250  $\Omega$

Two outputs parallel:

No-load voltage  $U_A$   
Max. output current  $I_{A \max}$   
Internal resistance  $R_i$

10 V  
120 mA  
75  $\Omega$

17.5 V  
90 mA  
65  $\Omega$

25 V  
70 mA  
125  $\Omega$

Residual ripple output  
Switching delay OFF  $\rightarrow$  ON  
Switching delay ON  $\rightarrow$  OFF  
Operating frequency

$\leq$  100 mV  
 $\leq$  12 ms  
 $\leq$  25 ms  
 $\leq$  10 Hz

$\leq$  100 mV  
 $\leq$  20 ms  
 $\leq$  40 ms  
 $\leq$  10 Hz

$\leq$  100 mV  
 $\leq$  18 ms  
 $\leq$  50 ms  
 $\leq$  10 Hz

Indication

LED yellow „OUT“ each channel

Note

You may find a list of compatible I.S. solenoid valves on our homepage [www.ispac.info](http://www.ispac.info).

Electromagnetic compatibility

Tested under the following standards and regulations:  
EN 61326 (IEC/EN 61000-4-1...6 and 11; EN 55022 Class B);  
NAMUR NE 21 (IEC/EN 61000-4-1...6, 8 and 11; EN 55022 Class B)

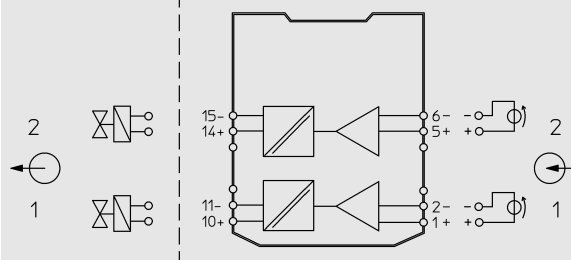
Ambient conditions

Ambient temperature - 20 °C ... + 60 °C / + 70 °C  
(watch instructions)  
Storage temperature - 40 °C ... + 80 °C  
Relative humidity (no condensation)  $\leq$  95 %

Connection diagram

Hazardous area

Safe area



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### Technical Data

Mechanical data	Screw terminals	Spring clamp terminals	Insulation displacement connectors
Connection one wire			
- 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>	0.5 ... 1 mm <sup>2</sup>
- flexible, end covering sleeves (without / with plastic sleeving)	0.25 ... 2.5 mm <sup>2</sup>	0.25 ... 2.5 mm <sup>2</sup>	--
Connection two wires			
- rigid	0.2 ... 1 mm <sup>2</sup>	--	--
- flexible	0.2 ... 1.5 mm <sup>2</sup>	--	--
- flexible, end covering sleeves	0.25 ... 1 mm <sup>2</sup>	0.5 ... 1 mm <sup>2</sup>	--
Weight	approx. 160 g		
Mounting type	on DIN rail acc. to EN 50022 (NS35/15; NS35/7.5) or in pac-Carrier horizontal or vertical		
Mounting position	IP 30		
Casing protection class	IP 20		
Terminal protection class	PA 6.6		
Casing material	V0		
Fire protecting class (UL-94)			

### Dimension drawings (all dimensions in mm) - subject to alterations

	Dimension X
Screw terminals	108 mm
Spring clamp terminals	128 mm
Insulation displacement connectors	131 mm



We reserve the right to make alterations to the technical data, weights, dimensions, designs and products available without notice. The illustrations cannot be considered binding.