

2865764

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Ex i solenoid driver. For the intrinsically safe control of Ex i solenoid valves, alarm modules or LEDs installed in the Ex area. Current limitation at 40 mA. For gases up to Group IIC, loop-powered, electrical isolation, SIL 3. Screw connection.

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## Your advantages

- Mechanically compatible with the DIN rail connector
- Various output characteristic curves compatible with standard solenoid valves
- Loop-powered: the required power is supplied via the control signal on the input side.
- Up to SIL 3 in accordance with IEC 61508
- Installation in zone 2, protection type "n" (EN 60079-15) permitted
- Output: [Ex ia] IIC/[Ex ia] IIB
- 2-way electrical isolation
- Input: 19.2 V DC ... 30 V DC

## Technical data

### Notes

#### Utilization restriction

EMC note	EMC: class A product, see manufacturer's declaration in the download area
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### Product properties

Product type	Solenoid driver
Product family	MACX Analog
No. of channels	1
Type	Ex i signal conditioners with SIL functional safety
Compatible valve	<p>ASCO Coil 195</p> <p>Bürkert Coil AC 10 standard</p> <p>Bürkert Coil AC 10 high resistance</p> <p>Bürkert Coil AC 21 standard 700 mW / 65°C</p> <p>Bürkert Coil AC 21 high resistance 700 mW / 65°C</p> <p>Bürkert Coil AC 21 standard 900 mW / 45°C</p> <p>Bürkert Coil AC 21 high resistance 900 mW / 45°C</p> <p>Bürkert Coil AC 21 standard 900 mW / 60°C</p> <p>Bürkert Coil AC 21 high resistance 900 mW / 60°C</p> <p>Bürkert Coil G1 642735 standard 600 mW / 50°C</p> <p>Bürkert Coil G1 642735 high resistance 600 mW / 50°C</p> <p>Bürkert Coil G1 642735 standard 800 mW / 40°C</p> <p>Bürkert Coil G1 642735 high resistance 800 mW / 40°C</p> <p>Bürkert Coil G1 642735 standard 1000 mW / 40°C</p> <p>Bürkert Coil G1 642735 high resistance 1000 mW / 40°C</p> <p>Norgren Herion Coil 2050</p> <p>Norgren Herion Coil 2051</p> <p>Norgren Herion Coil 2052</p> <p>Norgren Herion Coil 2080 / 2082</p> <p>Norgren Herion Coil 2081 / 2083</p> <p>Norgren Herion Coil 2084</p> <p>Hörbiger Piezo P8 38x RF-Nx-SPN65 30 V type</p> <p>Hörbiger Piezo P20 381RF-NG-CPN61 30 V type</p> <p>Parker Coil VZ07 488650.01</p> <p>Parker Coil VZ33 494035.10</p> <p>Parker Coil VZ08 488660.01</p> <p>Parker Coil VZ09 488670.01</p> <p>Parker Coil VZ95 482160.01 EEx ia IIB T6</p> <p>Parker Coil VZ23 482870.01</p> <p>Samson Coil 3701-12 (12 V)</p> <p>Samson Coil 3701-13 (24 V)</p>

# MACX MCR-EX-SL-SD-21-40-LP - Solenoid driver



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	Samson Coil 3963-12 (12 V)
	Samson Coil 3963-13 (24 V)
	Samson Coil 3964-12 (12 V)
	Samson Coil 3964-13 (24 V)
	Seitz Pilot valve PV 12F73 Ci oH
	Seitz Pilot valve PV 12F73 Xi oH
	Seitz Pilot valve PV 12F73 Xi oH-2
Note	This is an extract of possible combinations of valves and solenoid drivers.

## Electrical properties

Electrical isolation	2-way isolation
Maximum temperature coefficient	0.01 %/K

### Electrical isolation

Test voltage	2.5 kV AC (50 Hz, 60 s)
Overvoltage category	II
Pollution degree	2

### Electrical isolation Output/input IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V <sub>PP</sub>

### Electrical isolation Output/input IEC/EN 61010-1

Standards/regulations	IEC/EN 61010-1
Rated insulation voltage	300 V <sub>rms</sub>
Insulation	Safe isolation

### Supply

Supply voltage range	loop-powered, no external supply necessary
Power dissipation	< 1.055 W

## Input data

### Signal: Voltage

Number of inputs	1
Voltage input signal	19.2 V DC ... 30 V DC (24 V DC, -20 % ... +25 %)
Max. current input signal	65 mA (U <sub>e</sub> = 24 V DC)

## Output data

### Signal: Voltage

Output description	intrinsically safe
Number of outputs	1
Output voltage	10 V DC (40 mA)
Output resistor	287 Ω (Internal resistance R <sub>i</sub> )
Current limitation	40 mA

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Response time	20 ms
Non-load voltage	21.9 V DC
Short-circuit-proof	yes

## Connection data

Connection method	Screw connection
Stripping length	7 mm
Screw thread	M3
Conductor cross section rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section AWG	24 ... 14
Tightening torque	0.5 Nm ... 0.6 Nm

## Test socket

Max. diameter	2 mm
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## Ex data

Ex installation (EPL)	Gc
	Div. 2
Ex i circuits (EPL)	Ga
	Da
	Ma
	Div. 1

## Safety data

Max. internal inductance $L_i$	negligible
Max. internal capacitance $C_i$	negligible
Max. output voltage $U_o$	25.1 V
Max. output current $I_o$	87 mA
Max. output power $P_o$	550 mW
Safety-related maximum voltage $U_m$	253 V AC
	125 V DC
IIB/IIIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	20 mH / 0.83 $\mu$ F
IIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	5 mH / 0.108 $\mu$ F
IIB/IIIC (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	10 mH / 380 nF, 5 mH / 380 nF, 1 mH / 440 nF, 0.1 mH / 820 nF
IIC (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	2 mH / 52 nF, 1 mH / 65 nF, 0.5 mH / 82 nF, 0.2 mH / 108 nF, 0.1 mH / 108 nF

## Signaling

Status display	Yellow LED (switching state / status, lights up when output circuit is active)
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## Dimensions

# MACX MCR-EX-SL-SD-21-40-LP - Solenoid driver



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Dimensional drawing	
Width	12.5 mm
Height	112.5 mm
Depth	113.7 mm
Depth NS 35/7,5	114.5 mm (Snapped onto DIN rail NS 35/7,5 in accordance with EN 60715)

## Material specifications

Color	gray (RAL 7042)
Flammability rating according to UL 94	V0 (Housing)
Housing material	PA 6.6-FR

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20 (not assessed by UL)
Ambient temperature (operation)	-40 °C ... 60 °C (Any mounting position)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Altitude	≤ 2000 m
Permissible humidity (operation)	10 % ... 95 % (non-condensing)

## Approvals

### CE

Certificate	CE-compliant
Note	and EN 61326

### ATEX

Identification	⊕ II (1) G [Ex ia Ga] IIC/IIB/IIA
	⊕ II (1) D [Ex ia Da] IIIC
	⊕ II 3 (1)G Ex nA [ia IIC Ga] IIC T4 Gc X
Certificate	IBExU 07 ATEX 1133X

### UKCA Ex (UKEX)

Identification	⊕ I (M1) [Ex ia Ma] I
	⊕ II (1) G [Ex ia Ga] IIC
	⊕ II (1) D [Ex ia Da] IIIC
	⊕ II 3 (1) Ex ec [ia Ga] IIC T4 Gc
Certificate	CML 22UKEX3526X

### IECEX

# MACX MCR-EX-SL-SD-21-40-LP - Solenoid driver



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Identification	[Ex ia Ga] IIC/IIB/IIA
	[Ex ia Da] IIIC
	Ex nA [ia IIC Ga] IIC T4 Gc
Certificate	IECEX IBE 08.0002X

## CCC / China-Ex

Identification	[Ex ia Ga] IIC
	[Ex iaD]
	Ex nA [ia Ga] IIC T4 Gc
Certificate	NEPSI GYJ20.1316X

## UL, USA/Canada

Identification	UL 61010 Listed
	Class I, Div. 2, Groups A, B, C, D T4
	Class I, Div. 2, Groups IIC, IIB, IIA T4
	Associated apparatus for use in Class I, Division 1, Groups A,B,C,D
	Associated apparatus for use in Class II, Div.1 Groups E,F,G
	Associated apparatus for use in Class III, Division 1
Certificate	Associated apparatus for use in Class I, Zone 0,1,2, Groups IIC,IIB,IIA
	UL C.D.-No 83104549

## UL, USA/Canada

Identification	Class I Div 2; IS for Class I, II, III Div 1
Certificate	UL C.D.-No 83104549

## Shipbuilding approval

Certificate	DNV GL TAA000020C
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## Safety Integrity Level (SIL, IEC 61508)

Identification	3
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## INMETRO

Identification	[Ex ia Ga] IIC/IIB/IIA
	[Ex ia Da] IIIC
	Ex nA [ia IIC Ga] IIC T4 Gc
Certificate	DNV 18.0115 X

## EAC Ex

Identification	Ex [Ex ia Ga] IIC
	Ex [Ex ia Da] IIIC
Certificate	RU C-DE.AB72.B.00093/19

## DNV GL data

Temperature	B
Humidity	B
Vibration	A

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EMC	A
Enclosure	Required protection according to the Rules shall be provided upon installation on board

## EMC data

Noise immunity	EN 61000-6-2
Electromagnetic compatibility	Conformance with EMC directive
Noise emission	EN 61000-6-4

## Standards and regulations

Electrical isolation	2-way isolation
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### GB Standard

Standards/regulations	GB 3836.1
	GB 3836.4
	GB 3836.8
	GB 3626.20
	GB 12476.1
	GB 12476.4

## Mounting

Mounting type	DIN rail mounting
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# MACX MCR-EX-SL-SD-21-40-LP - Solenoid driver

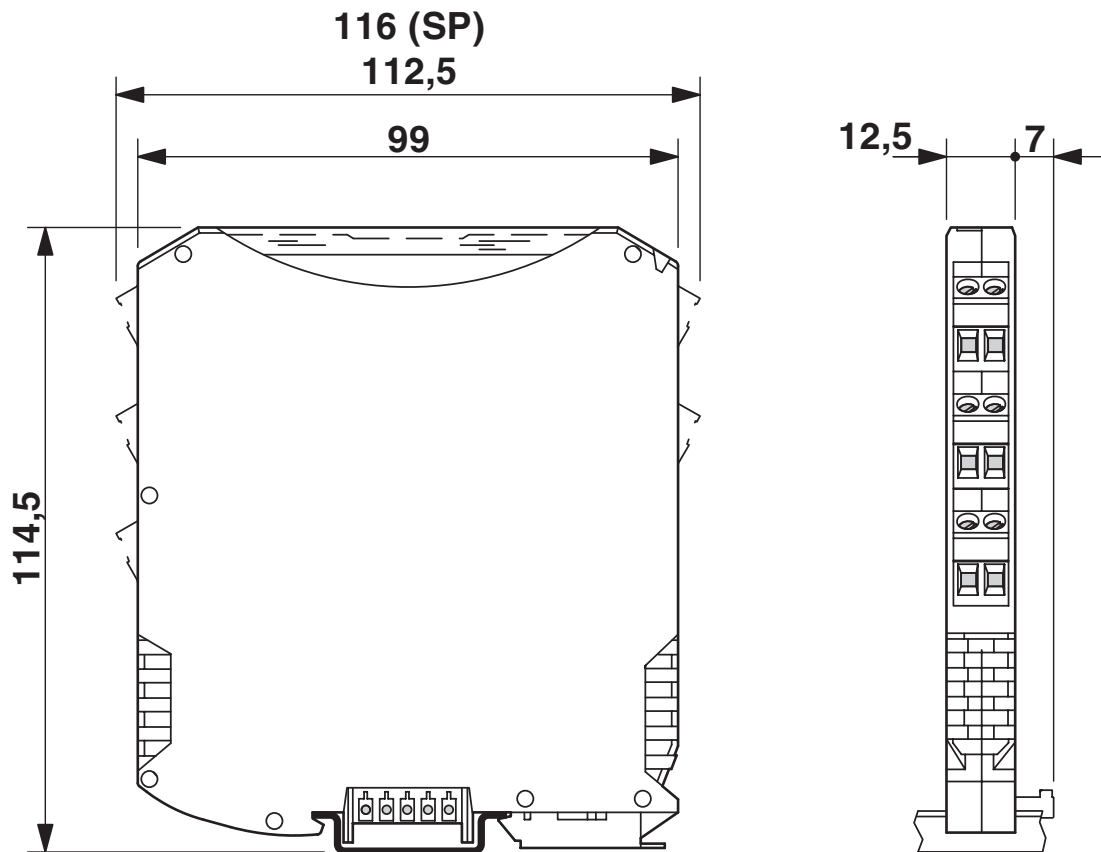


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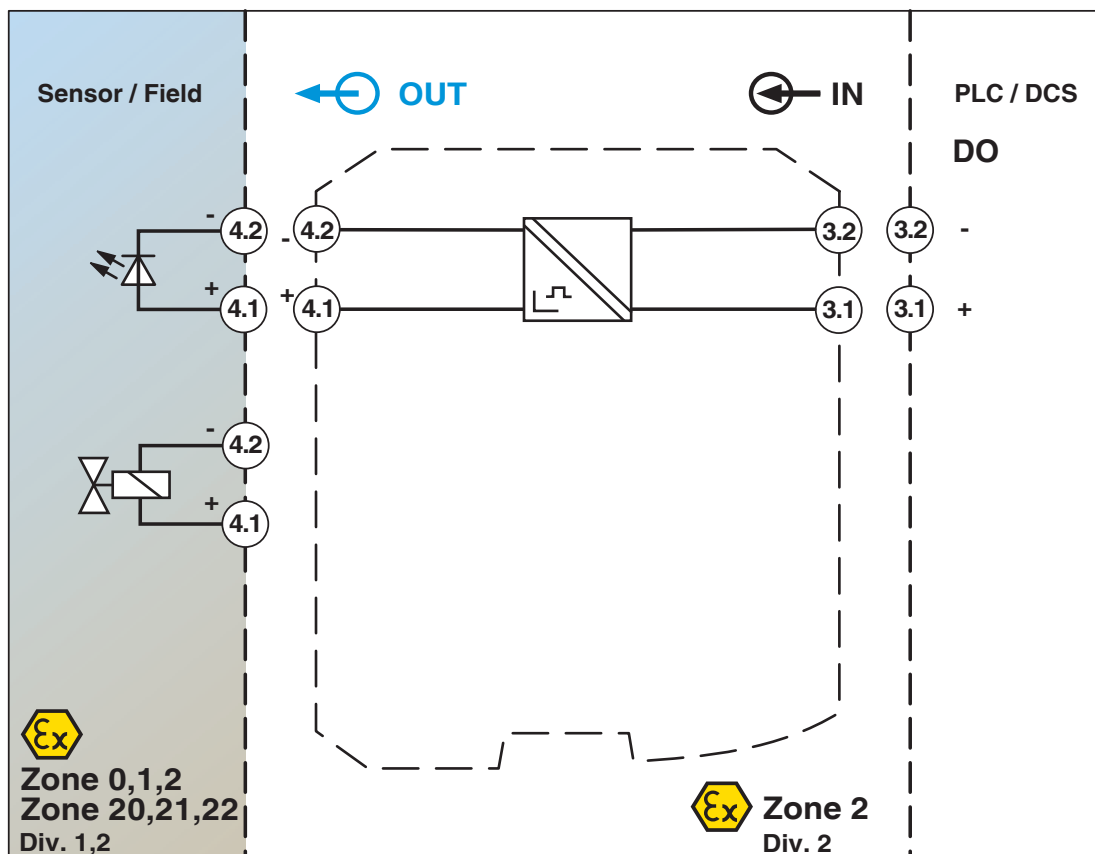
<https://www.phoenixcontact.com/gb/products/2865764>

## Drawings

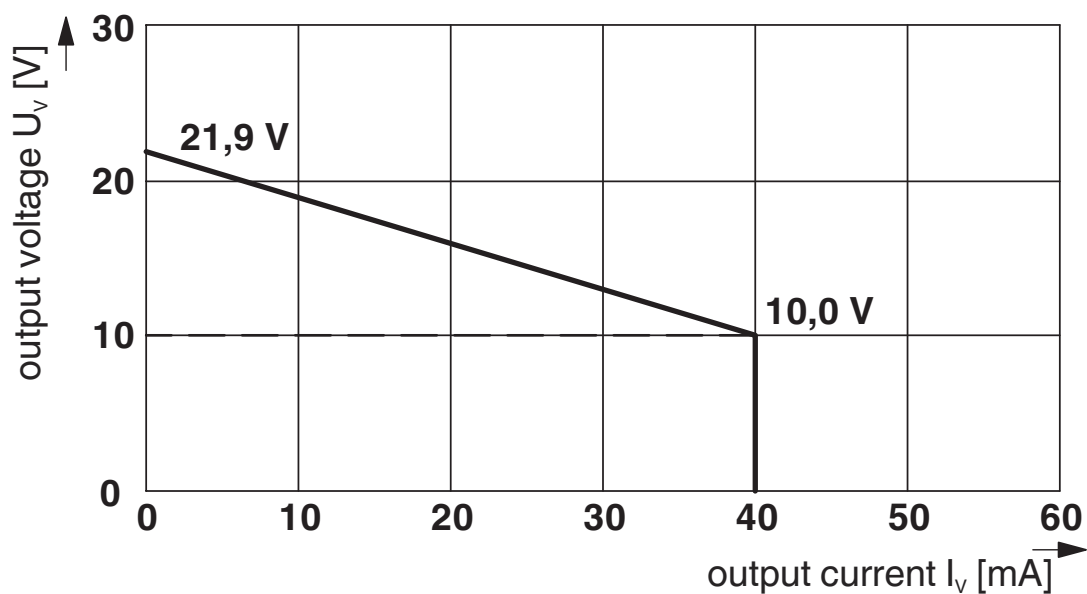
Dimensional drawing



Block diagram



Diagram



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PHOENIX CONTACT Ltd  
Halesfield 13, Telford  
Shropshire, TF7 4PG  
01952 681700  
[info@phoenixcontact.co.uk](mailto:info@phoenixcontact.co.uk)