

# Solenoid driver - MACX MCR-EX-SL-SD-24-48-LFD-SP - 2906156

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Ex i solenoid driver for controlling Ex i solenoid valves in hazardous areas, logic input, off-load voltage 24.3 V, current limitation at 48 mA, line fault transparency, error message output, up to SIL 3 according to IEC 61508, Push-in connection.

## Your advantages

- ✔ Input: logic
- ✔ Output: intrinsically safe [Ex ia]; off-load voltage > 24.3 V DC; current limitation > 48 mA
- ✔ Line fault detection (can be enabled/disabled), via the signal circuit or via a separate error message output
- ✔ Transparent for test pulses
- ✔ Up to SIL 3 according to IEC/EN 61508
- ✔ Safe electrical isolation between output, input, supply, and error message output
- ✔ Power supply and error indication possible via DIN rail connector
- ✔ Plug-in connection terminals, push-in connection technology
- ✔ Installation in zone 2 permitted
- ✔ Housing width: 12.5 mm



## Key Commercial Data

Packing unit	1 pc
GTIN	
GTIN	4055626040882

## Technical data

### Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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### Dimensions

Width	12.5 mm
Height	116 mm
Depth	114.5 mm

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## Technical data

### Ambient conditions

Ambient temperature (operation)	-20 °C ... 60 °C (Any mounting position)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Maximum altitude	≤ 2000 m
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Degree of protection	IP20
Noise immunity	EN 61000-6-2 When being exposed to interference, there may be minimal deviations.

### Input data

Signal input	Signal input
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### Output data

Output characteristic curve: Output resistor	≥ 297 Ω (Internal resistance R <sub>i</sub> )
Response time	< 30 ms

### Power supply

Nominal supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (24 V DC -20%...+25%)
Power dissipation	< 1.62 W

### Connection data

Connection method	Push-in connection
Stripping length	8 mm
Conductor cross section solid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section flexible	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section AWG	24 ... 16

### Connection data 2

Connection name	Test socket
Max. diameter	2.3 mm

### General

Status display	Green LED (supply voltage)
	LED yellow (switching state)
	Red LED (line errors)
Degree of pollution	2
Overvoltage category	II
Electromagnetic compatibility	Conformance with EMC directive
Interference emission	EN 61000-6-4
Housing material	PA 6.6-FR
Color	gray
Designation	Output/input, error message output
Electrical isolation	375 V (Peak value in accordance with EN 60079-11)
	300 V <sub>rms</sub> (Rated insulation voltage (overvoltage category II; degree of pollution 2, safe isolation as per EN 61010-1))

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## Technical data

### General

	2.5 kV (50 Hz, 1 min., test voltage)
Designation	Output/supply, DIN rail connector
Electrical isolation	375 V (Peak value in accordance with EN 60079-11)
	300 V <sub>rms</sub> (Rated insulation voltage (overvoltage category II; degree of pollution 2, safe isolation as per EN 61010-1))
	2.5 kV (50 Hz, 1 min., test voltage)
Designation	Input/error message output/supply
Electrical isolation	1.5 kV (50 Hz, 1 min., test voltage)
Conformance	CE-compliant, additionally EN 61326
ATEX	# II (1) G [Ex ia Ga] IIC
	# II (1) D [Ex ia Da] IIIC
	# II 3(1) G Ex nA [ia Ga] IIC T4 Gc X
IECEX	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex nA [ia Ga] IIC T4 Gc
UL, USA/Canada	UL 61010 Listed
SIL	3

### Safety data

Max. internal inductance L <sub>i</sub>	negligible
Max. internal capacitance C <sub>i</sub>	11 nF
Max. output voltage U <sub>o</sub>	27.06 V
Max. output current I <sub>o</sub>	91.11 mA
Max. output power P <sub>o</sub>	616 mW
Group	IIC
Max. external inductivity L <sub>o</sub>	3.5 mH
Max. external capacity C <sub>o</sub>	78 nF
Group	IIB
Max. external inductivity L <sub>o</sub>	15 mH
Max. external capacity C <sub>o</sub>	686 nF
Group	IIA
Max. external inductivity L <sub>o</sub>	32 mH
Max. external capacity C <sub>o</sub>	2290 nF
Safety-related maximum voltage U <sub>m</sub>	253 V AC/DC

### Standards and Regulations

Electromagnetic compatibility	Conformance with EMC directive
Noise emission	EN 61000-6-4
Conformance	CE-compliant, additionally EN 61326
ATEX	# II (1) G [Ex ia Ga] IIC
	# II (1) D [Ex ia Da] IIIC

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## Technical data

### Standards and Regulations

	# II 3(1) G Ex nA [ia Ga] IIC T4 Gc X
IECEX	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex nA [ia Ga] IIC T4 Gc
UL, USA/Canada	UL 61010 Listed
DNV GL-Temperature	B
DNV GL-Humidity	B
DNV GL-Vibration	A
DNV GL-EMC	A
DNV GL-Enclosure	Required protection according to the Rules shall be provided upon installation on board
Group	IIC
	IIB
	IIA

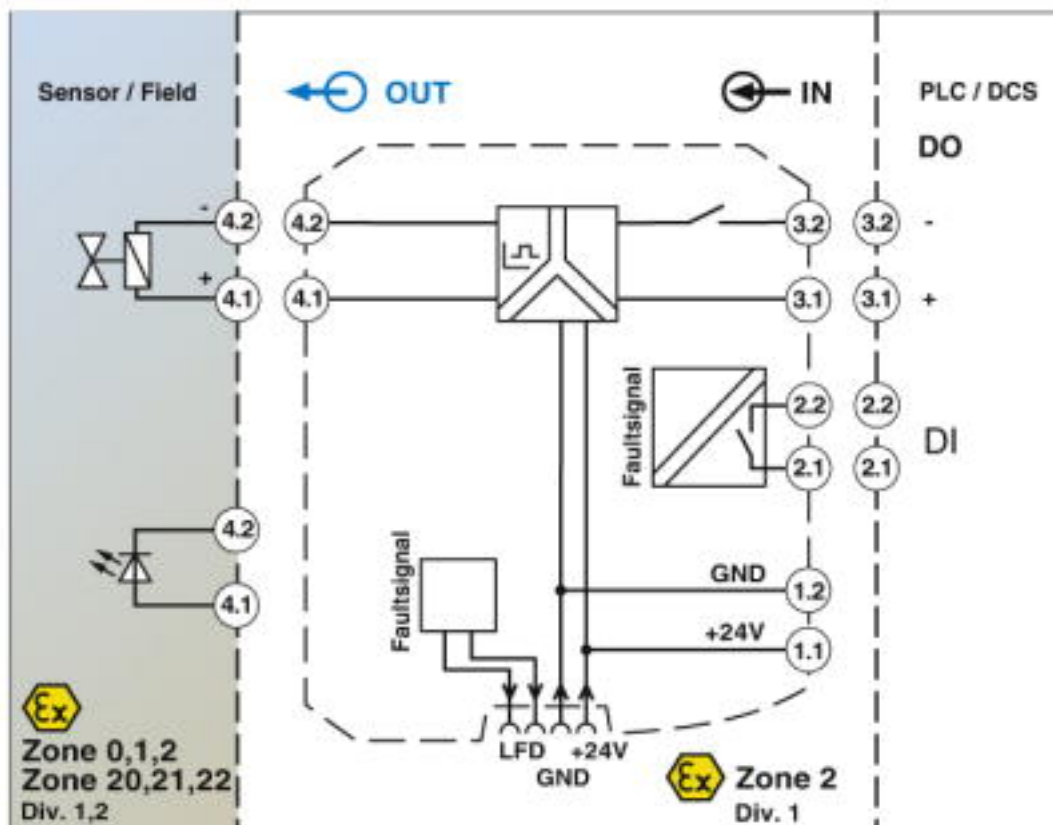
### Environmental Product Compliance

China RoHS	Environmentally Friendly Use Period = 50
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

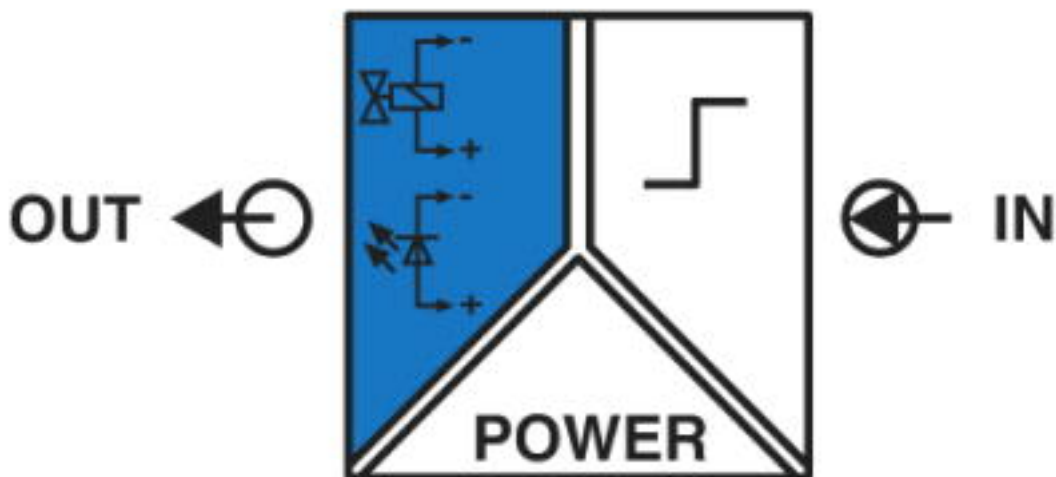
## Drawings

# Solenoid driver - MACX MCR-EX-SL-SD-24-48-LFD-SP - 2906156

Block diagram



Pictogram



Approvals

Approvals

# Solenoid driver - MACX MCR-EX-SL-SD-24-48-LFD-SP - 2906156

## Approvals

Approvals

Functional Safety / EAC


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Ex Approvals

IECEX / ATEX

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## Approval details

Functional Safety	BVS Pb 11/13	
EAC		RU C- DE.A*30.B.01082

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