

MACX MCR-EX-SL-SD-23-48-LFD - Solenoid driver



2924867

<https://www.phoenixcontact.com/us/products/2924867>

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Ex i solenoid driver for controlling Ex i solenoid valves in hazardous areas, logic input, open-circuit voltage 22.6 V, current limitation at 48 mA, line fault transparency, error message output, up to SIL 3 in accordance with IEC 61508, screw connection

Your advantages

- Input: logic
- Output: intrinsically safe [Ex ia]; open-circuit voltage > 22.6 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, screw connection technology
- Installation in zone 2 permitted
- Housing width: 12.5 mm

Commercial data

Item number	2924867
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C430
Product key	DK1214
GTIN	4046356635172
Weight per piece (including packing)	173.3 g
Weight per piece (excluding packing)	100 g
Customs tariff number	85437090
Country of origin	DE

Technical data

Product properties

Product type	Solenoid driver
Product family	MACX Analog
Configuration	DIP switches

Electrical properties

Electrical isolation between input and output	yes
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Electrical isolation

Overvoltage category	II
Pollution degree	2

Electrical isolation Output/input, error message output IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V _{PP}
Test voltage	2.5 kV AC (50 Hz, 60 s)

Electrical isolation Output/input, error message output IEC/EN 61010-1

Standards/regulations	IEC/EN 61010-1
Rated insulation voltage	300 V _{rms}
Test voltage	2.5 kV AC (50 Hz, 60 s)
Insulation	Safe isolation

Electrical isolation Output/supply, DIN rail connector IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V _{PP}
Test voltage	2.5 kV AC (50 Hz, 60 s)

Electrical isolation Output/supply, DIN rail connector IEC/EN 61010-1

Standards/regulations	IEC/EN 61010-1
Rated insulation voltage	300 V _{rms}
Test voltage	2.5 kV AC (50 Hz, 60 s)
Insulation	Safe isolation

Electrical isolation Input/error message output/supply

Test voltage	1.5 kV AC (50 Hz, 60 s)
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Supply

Nominal supply voltage	24 V DC -20 % ... +25 %
Supply voltage range	19.2 V DC ... 30 V DC
Power dissipation	< 2.2 W

Input data

Signal: Logic

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Number of inputs	1
Switching level "0" signal	0 V DC ... 5 V DC (or open)
Switching level "1" signal	15 V DC ... 30 V DC
Input current	< 12 mA
Input impedance	3 M Ω (high-resistance in the event of a line fault at the output)
Immune to test pulses	Yes

Output data

Signal: Error message output

Contact switching type	N/O contact
Type of output signal	Transistor output, passive
Maximum switching voltage	30 V DC
Max. switching current	50 mA
Short-circuit-proof	yes

Signal: Voltage

Output description	intrinsically safe
Number of outputs	1
Output voltage	≥ 9.36 V DC (48 mA)
Current limitation	> 48 mA (with line fault detection)
Response time	< 30 ms
Open-circuit voltage	> 22.5 V DC
Short-circuit-proof	yes
Line fault detection	> 10 k Ω (Line break) < 50 Ω (Short circuit) Activated /deactivated via DIP switch

Connection data

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

Test socket

Max. diameter	2.3 mm
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Ex data

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

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	Div. 1
Safety data	
Max. internal inductance L_i	negligible
Max. internal capacitance C_i	11 nF
Max. output voltage U_o	25.3 V
Max. output current I_o	94 mA
Max. output power P_o	595 mW
Maximum internal resistance R_i	269 Ω
Safety-related maximum voltage U_m	253 V AC
	125 V DC
IIA/I (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	32.2 mH / 2.85 μ F
IIB/IIIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	16.1 mH / 0.81 μ F
IIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	4 mH / 0.095 μ F
IIA (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	20 mH / 0.55 μ F, 10 mH / 0.57 μ F, 1 mH / 0.61 μ F, 0.5 mH / 0.7 μ F, 0.2 mH / 0.89 μ F
IIB/IIIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	5 mH / 289 nF, 0.5 mH / 489 nF
IIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	1 mH / 39 nF, 0.5 mH / 59 nF, 0.15 mH / 89 nF

Signaling

Status display	Green LED (supply voltage)
	LED yellow (switching state)
	Red LED (line errors)

Dimensions

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 (Housing)	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)	-20 °C ... 60 °C (Any mounting position)
	-20 °C ... 70 °C (Derating)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)

Altitude range (≤ 2000 m)

Altitude	≤ 2000 m (The technical data refers to altitudes ≤ 2000 m above mean sea level. For altitudes >2000 m above mean sea level, refer to the data sheet.)
Ambient temperature (operation)	-20 °C ... 70 °C
Safety-related maximum voltage U_m	253 V AC
	125 V DC
Rated insulation voltage	375 V _{PP}
	300 V AC/DC

Altitude range (≤ 3000 m)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-20 °C ... 63 °C
Safety-related maximum voltage U_m	190 V AC
	110 V DC
Rated insulation voltage	190 V

Altitude range (≤ 4000 m)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-20 °C ... 56 °C
Safety-related maximum voltage U_m	60 V AC/DC
Rated insulation voltage	60 V AC/DC

Altitude range (≤ 5000 m)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-20 °C ... 49 °C
Safety-related maximum voltage U_m	60 V AC/DC
Rated insulation voltage	60 V AC/DC

Approvals

CE

Certificate	CE-compliant
Note	and EN 61326

ATEX

Identification	I (M1) [Ex ia Ma] I II (1) G [Ex ia Ga] IIC
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Certificate	II (1) D [Ex ia Da] IIIC
	II 3(1) G Ex ec [ia Ga] IIC T4 Gc X
	IBExU 13 ATEX1045X

IECEEx

Identification	[Ex ia Ma] I
	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] IIC T4 Gc
Certificate	IECEEx IBE 13.0014X

CCC / China-Ex

Identification	[Ex ia Ga] IIB
	[Ex ia Da] IIIC
	Ex ec [ia IIB Ga] IIC T4 Gc
Certificate	2022122316115979

UL, USA/Canada

Identification	UL 61010 Listed
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 Ma] I
	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] IIC T4 Gc
Certificate	DNV 18.0145 X

Shipbuilding data

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

EMC data

Electromagnetic compatibility	Conformance with EMC directive
Noise immunity	EN 61000-6-2
Note	When being exposed to interference, there may be minimal deviations.

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Noise emission

Standards/regulations	EN 61000-6-4
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Standards and regulations

GB Standard

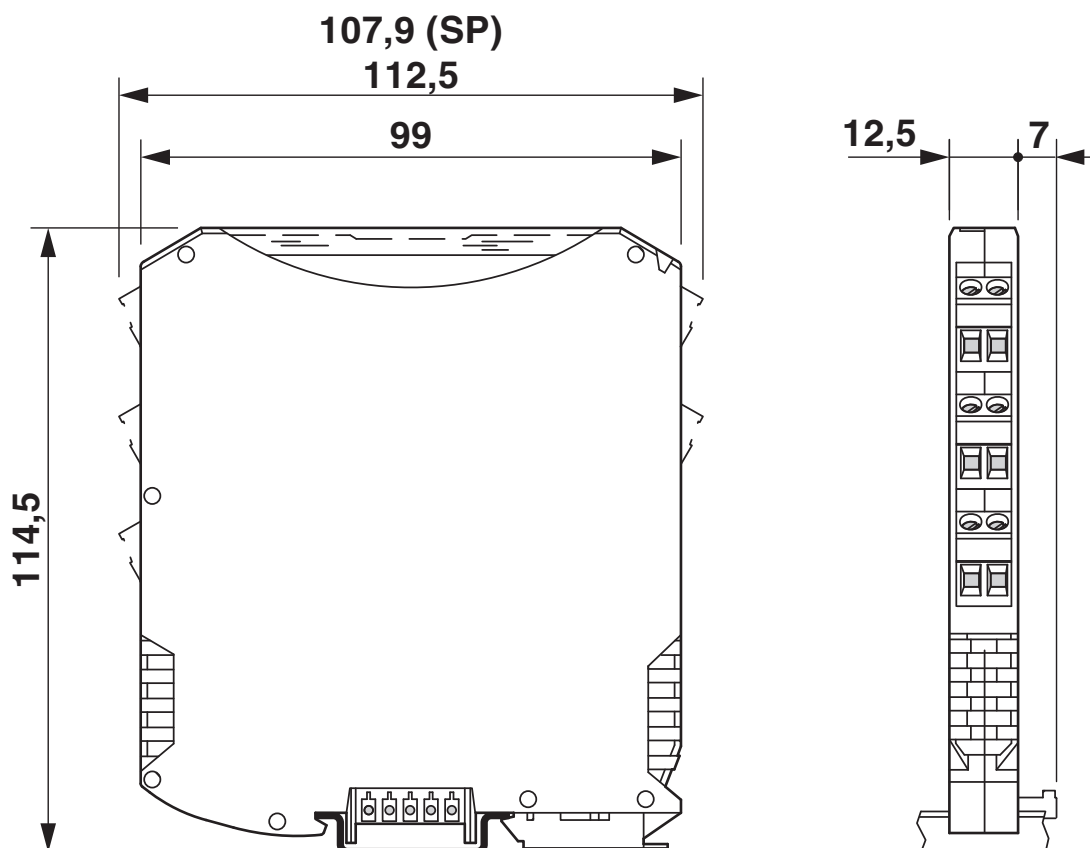
Standards/regulations	GB/T 3836.1
	GB/T 3836.3
	GB/T 3836.4

Mounting

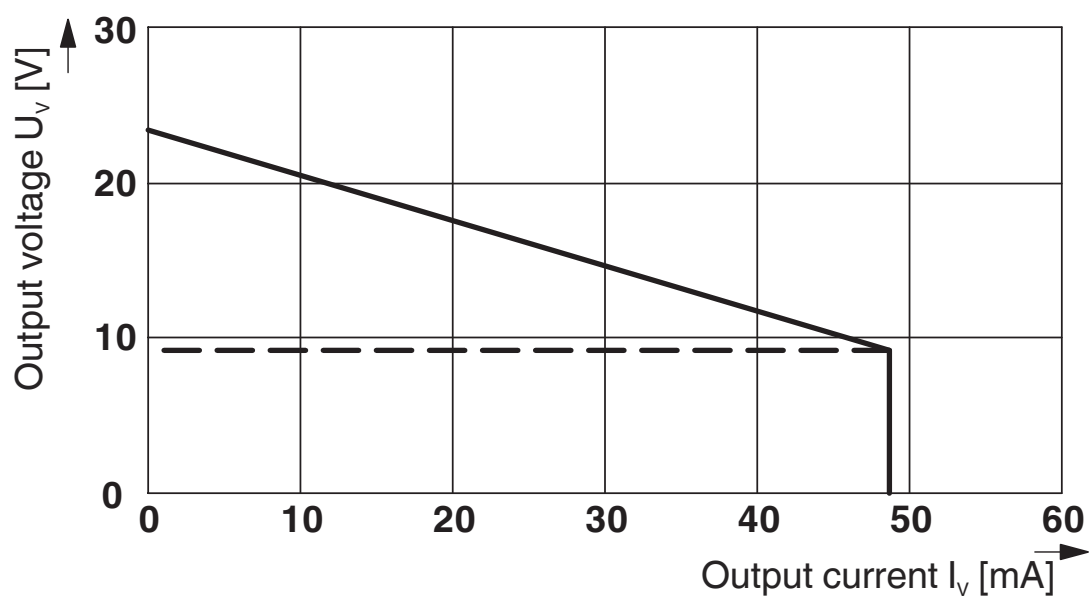
Mounting type	DIN rail mounting
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Drawings

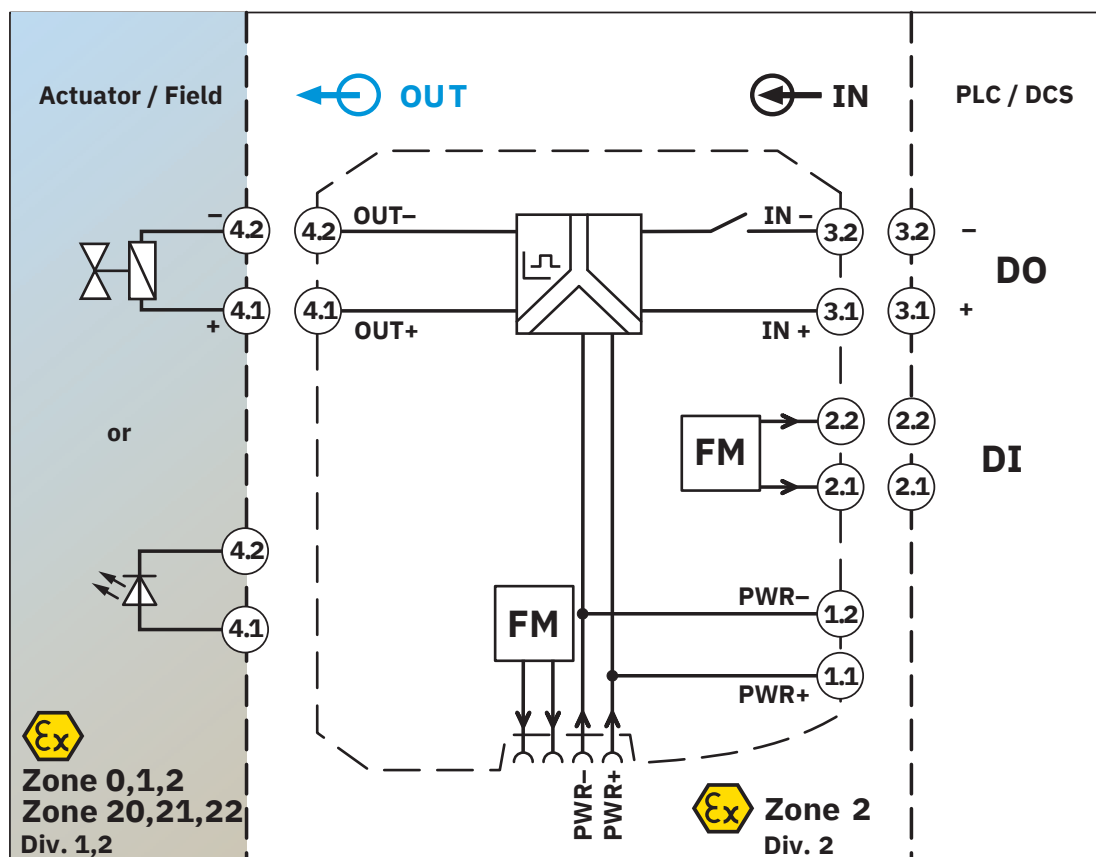
Dimensional drawing



Diagram



Block diagram



Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2924867>



UL Listed

Approval ID: E330267

Functional Safety

Approval ID: BVS Pb 11/13

DNV

Approval ID: TAA000020C



IECEx

Approval ID: IECEx IBE 13.0014X



cUL Listed

Approval ID: E199827



UL Listed

Approval ID: E199827



ATEX

Approval ID: IBExU13ATEX1045 X

INMETRO

Approval ID: DNV 18.0145 X



CCC

Approval ID: 2022122316115979

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Classifications

ECLASS

ECLASS-13.0	27210120
ECLASS-15.0	27210120

ETIM

ETIM 9.0	EC002653
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UNSPSC

UNSPSC 21.0	39121000
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Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I

China RoHS

Environment friendly use period (EFUP)	EFUP-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol(CAS: 79-94-7)
SCIP	694591bb-5c04-446b-b18f-0111548034d0