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

2924870

https://www.phoenixcontact.com/us/products/2924870

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.



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, Push-in 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, push-in connection technology
- Installation in zone 2 permitted
- Housing width: 12.5 mm

Commercial data

Item number	2924870
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C430
Product key	DK1214
GTIN	4046356635004
Weight per piece (including packing)	168.5 g
Weight per piece (excluding packing)	152.5 g
Customs tariff number	85437090
Country of origin	DE

Technical data

Product properties

Product type	Solenoid driver
Product family	MACX Analog
No. of channels	1
Configuration	DIP switches

Electrical properties

Electrical isolation between input and output	yes

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)

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

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 MΩ (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 kΩ (Line break)
	< 50 Ω (Short circuit)
	Activated /deactivated via DIP switch

Connection data

Connection method	Push-in connection
Stripping length	10 mm
Conductor cross-section rigid	0.2 mm² ... 2.5 mm²
Conductor cross-section flexible	0.2 mm² ... 2.5 mm²
Conductor cross-section flexible (2 conductors with same cross section)	0.25 mm² ... 0.34 mm² (TWIN ferrule without plastic sleeve)
	0.5 mm² ... 1.5 mm² (TWIN ferrule with plastic sleeve)
Conductor cross-section AWG	24 ... 14
	24 ... 22 (TWIN ferrule without plastic sleeve)
	20 ... 16 (TWIN ferrule with plastic sleeve)

Ex data

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

	[Ma]
	[Div. 1]

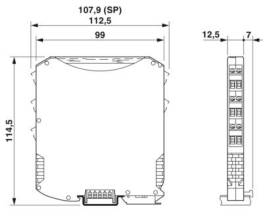
Safety data

Max. internal inductance L_i	negligible
Max. internal capacitance C_i	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 µF
IIB/IIIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	16.1 mH / 0.81 µF
IIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	4 mH / 0.095 µF
IIA (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	20 mH / 0.55 µF, 10 mH / 0.57 µF, 1 mH / 0.61 µF, 0.5 mH / 0.7 µF, 0.2 mH / 0.89 µF
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	107.9 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

	Ⓔx I (M1) [Ex ia Ma] I

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

IECEx

Identification	[Ex ia Ma] I
	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] IIC T4 Gc
Certificate	IECEx 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	cULus C.D.-No 83104549

Shipbuilding approval

Certificate	DNV GL TAA000020C

Safety Integrity Level (SIL, IEC 61508)

Identification	3

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.

Noise emission

Standards/regulations	EN 61000-6-4

Standards and regulations

GB Standard

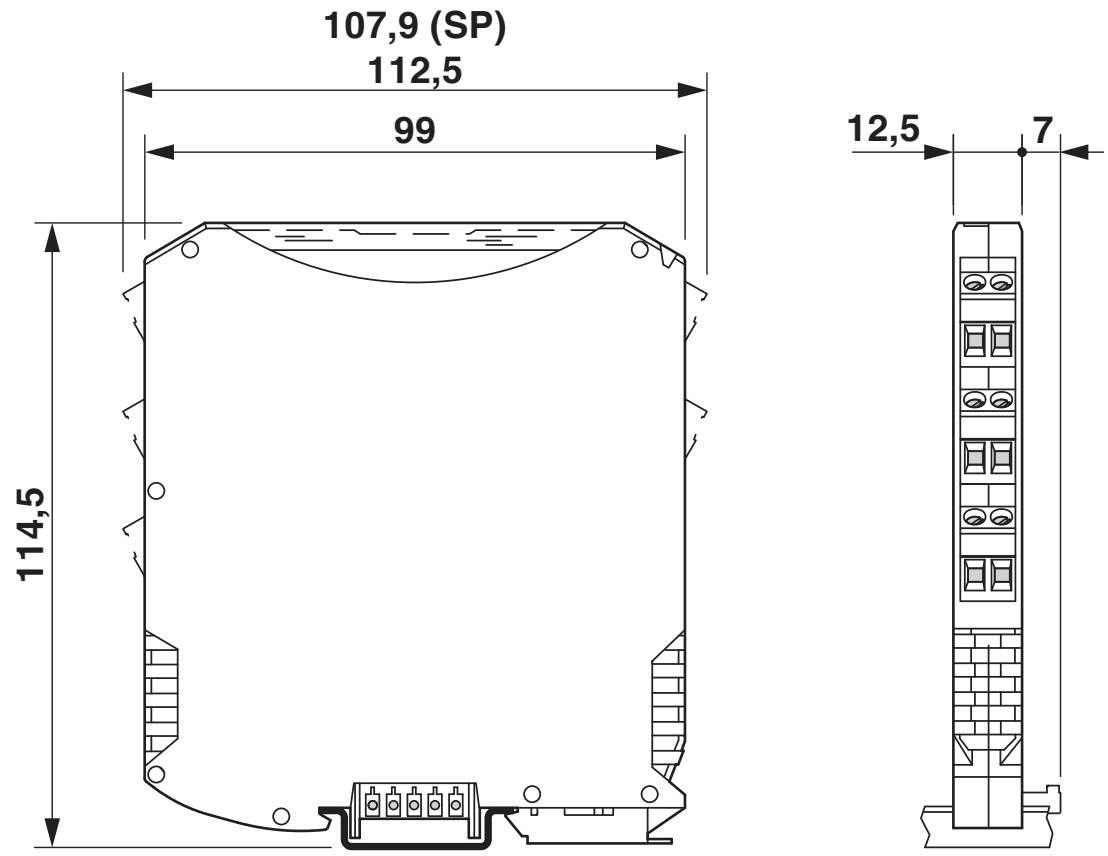
Standards/regulations	GB/T 3836.1
	GB/T 3836.3
	GB/T 3836.4

Mounting

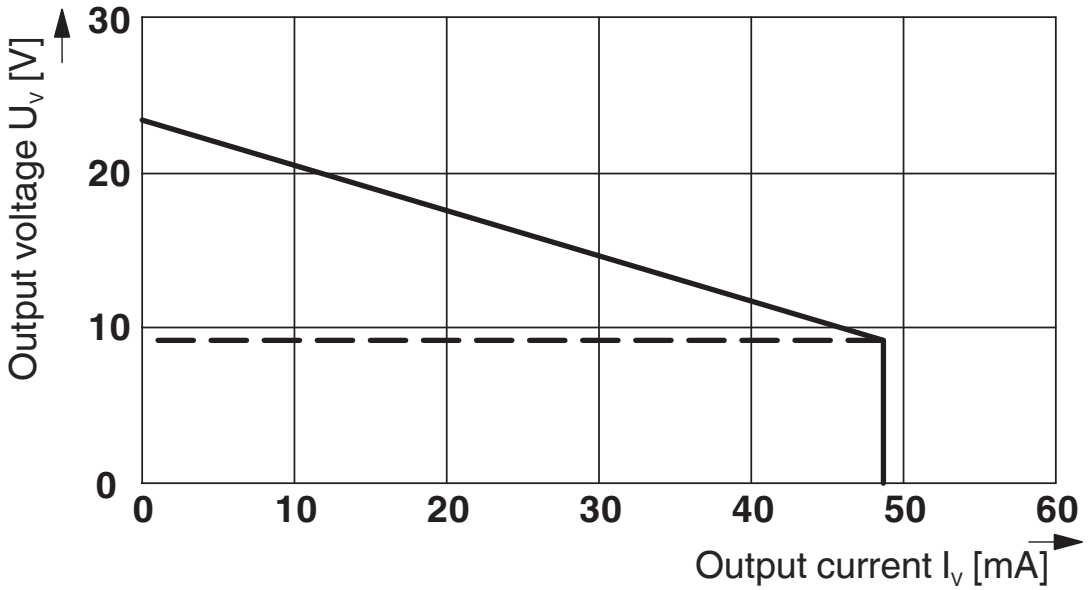
Mounting type	DIN rail mounting

Drawings

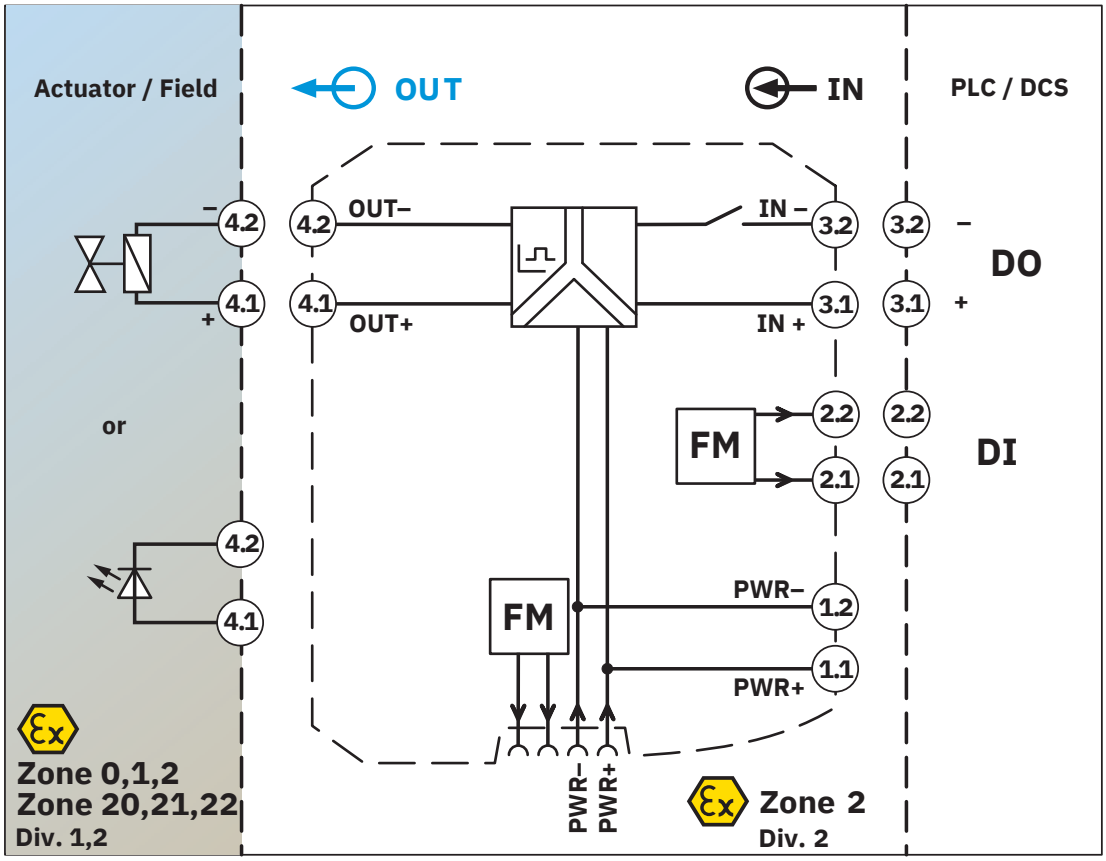
Dimensional drawing



Diagram



Block diagram



Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2924870

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

INMETRO
Approval ID: DNV 18.0145 X

CCC
Approval ID: 2022122316115979

ATEX
Approval ID: IBExU13ATEX1045 X

Classifications

ECLASS

ECLASS-13.0	27210120
ECLASS-15.0	27210120

ETIM

ETIM 10.0	EC002653

UNSPSC

UNSPSC 21.0	39121000

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	8d4f23c9-3a18-4b23-94d9-b10862a47979

Phoenix Contact 2026 © - all rights reserved
https://www.phoenixcontact.com

Phoenix Contact USA
586 Fulling Mill Road
Middletown, PA 17057, United States
(+717) 944-1300
info@phoenixcon.com