

MACX MCR-EX-SL-SD-24-48-LFD - Solenoid driver



2906155

<https://www.phoenixcontact.com/us/products/2906155>

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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; screw 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, screw connection technology
- Installation in zone 2 permitted
- Housing width: 12.5 mm

Commercial data

Item number	2906155
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C430
Product key	CK3142
Catalog page	Page 165 (C-5-2019)
GTIN	4055626041490
Weight per piece (including packing)	182.4 g
Weight per piece (excluding packing)	155.6 g
Customs tariff number	85437090
Country of origin	DE

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

Data management status

Article revision	09
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Electrical properties

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	< 1.62 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 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	≥ 9.7 V DC (48 mA)
Output resistor	≥ 297 Ω (Internal resistance R_i)
Current limitation	> 48 mA (with line fault detection)
Response time	< 30 ms
Non-load voltage	> 24.3 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

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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
	Div. 1

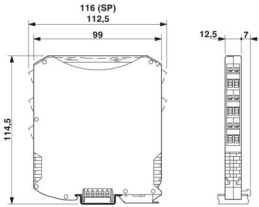
Safety data

Max. internal inductance L_i	negligible
Max. internal capacitance C_i	11 nF
Max. output voltage U_o	27.06 V
Max. output current I_o	91.11 mA
Max. output power P_o	616 mW
Safety-related maximum voltage U_m	253 V AC
	125 V DC
IIC: Max. external inductivity L_o / Max. external capacitance C_o	3.5 mH / 78 nF
IIB/IIIC: Max. external inductivity L_o / Max. external capacitance C_o	15 mH / 686 nF
IIA/II: Max. external inductivity L_o / Max. external capacitance C_o	32 mH / 2290 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)
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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)	-20 °C ... 60 °C (Any mounting position)
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 ... 60 °C
Rated insulation voltage	253 V AC (Power supply, input / output) 125 V DC (Power supply, input / output)

Altitude range (≤ 3000 m)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-20 °C ... 54 °C
Rated insulation voltage	190 V AC (Power supply, input / output) 110 V DC (Power supply, input / output)

Altitude range (≤ 4000 m)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-20 °C ... 48 °C
Rated insulation voltage	60 V AC/DC (Power supply, input / output)

Altitude range (≤ 5000 m)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-20 °C ... 42 °C
Rated insulation voltage	60 V AC/DC (Power supply, input / output)

Approvals

CE

Certificate	CE-compliant
Note	and EN 61326

ATEX

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

UKCA Ex (UKEX)

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Identification	II (1) G [Ex ia Ga] IIC
	II (1) D [Ex ia Da] IIIC
	II 3 (1) G Ex ec [ia Ga] IIC T4 Gc
	I (M1) [Ex ia Ma] I
Certificate	CML 22UKEX3530X

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] IIC
	[Ex iaD]
	Ex nA [ia Ga] IIC T4 Gc
Certificate	NEPSI GYJ20.1315X

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

DNV GL 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

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	deviations.
Noise emission	EN 61000-6-4

Standards and regulations

GB Standard

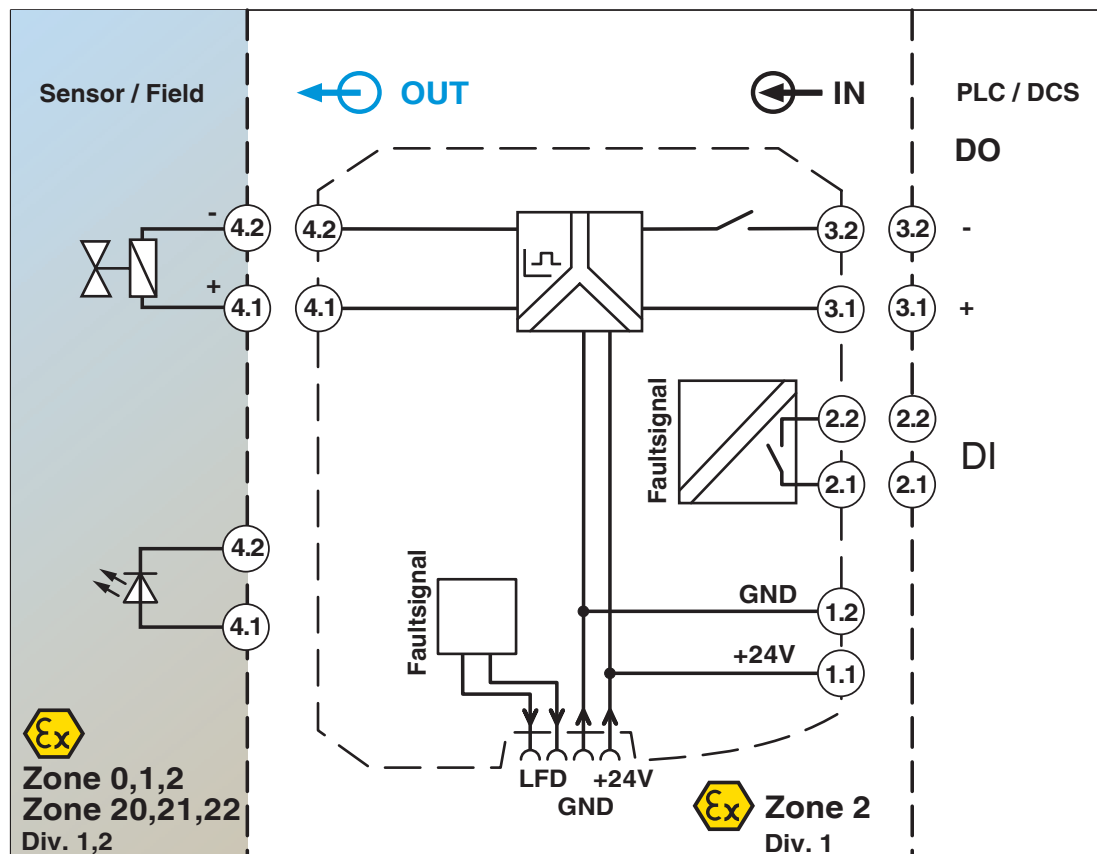
Standards/regulations	GB 3836.1
	GB 3836.4
	GB 3836.8
	GB 3626.20
	GB 12476.1
	GB 12476.4

Mounting

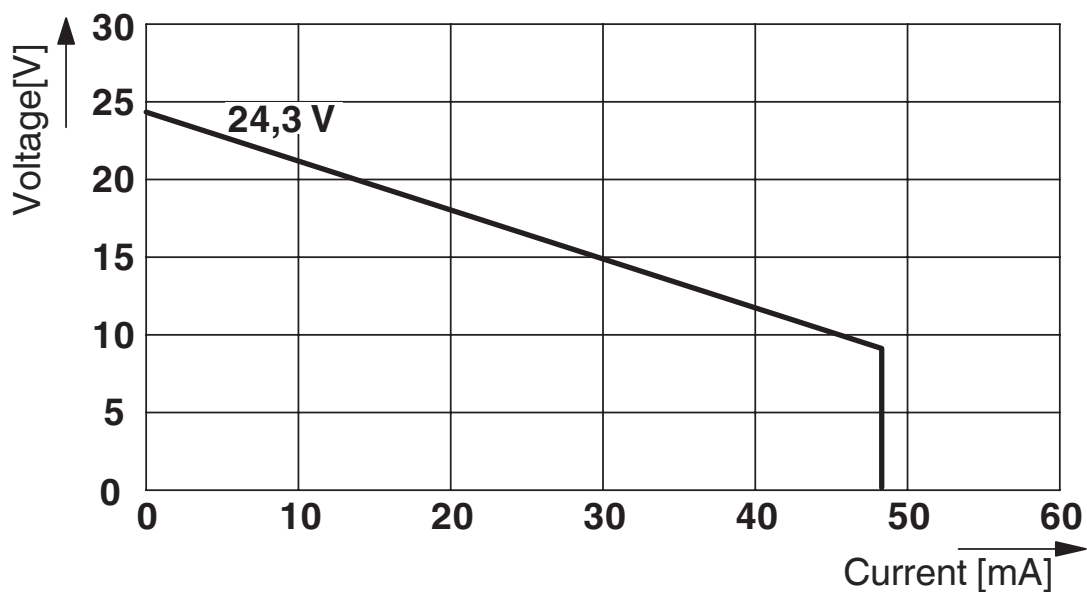
Mounting type	DIN rail mounting
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Drawings

Block diagram



Diagram



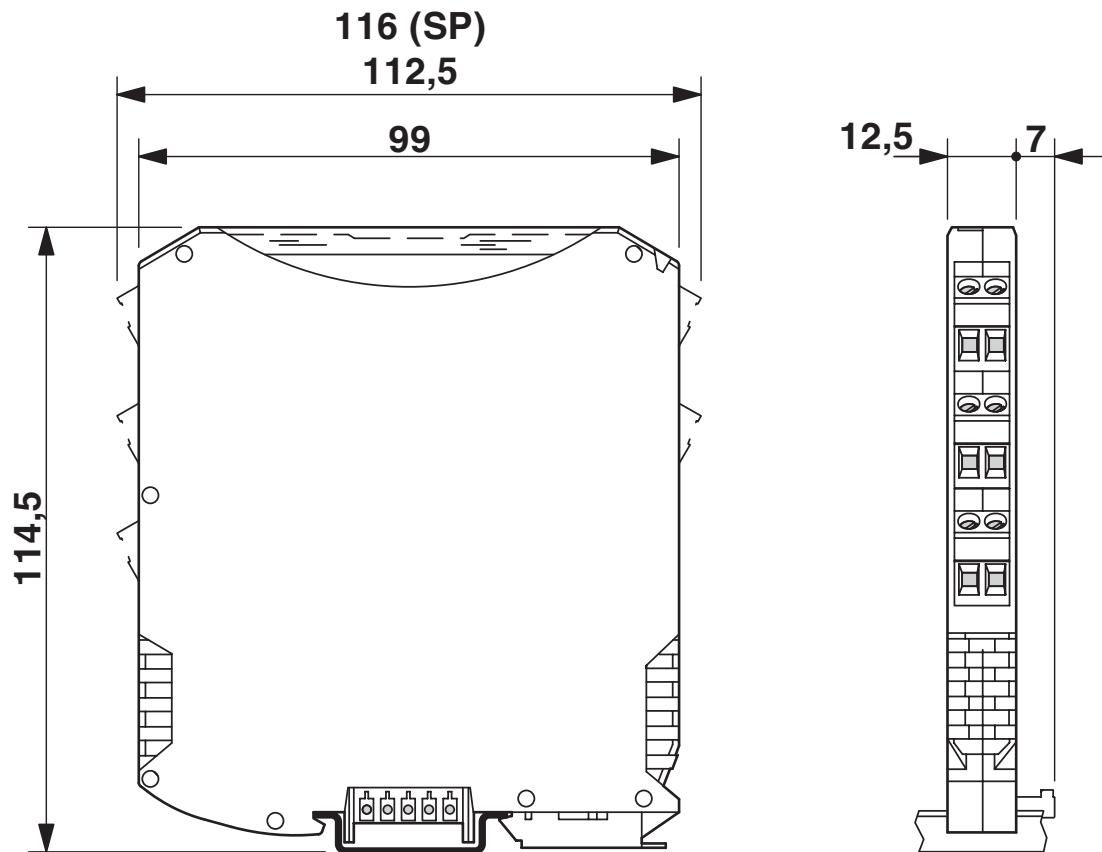
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Dimensional drawing



Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2906155>



CCC

Approval ID: 2020322 316001582

Functional Safety

Approval ID: BVS Pb 11/13



DNV GL

Approval ID: TAA000020C



EAC Ex

Approval ID: RU C-DE.AB72.B.00093



ATEX

Approval ID: IBExU 13 ATEX 1045



IECEx

Approval ID: IECEx IBE 13.0014X

INMETRO

Approval ID: DNV 18.0145 X

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Classifications

ECLASS

ECLASS-11.0	27210120
ECLASS-12.0	27210120
ECLASS-13.0	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)
SCIP	284db9a3-e743-46bd-b499-0defa5d832bf