

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



2865609

<https://www.phoenixcontact.com/us/products/2865609>

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 the intrinsically safe control of Ex i solenoid valves, alarm modules or LEDs installed in the Ex area. Current limitation at 48 mA. For gases up to Group IIC, loop-powered, electrical isolation, SIL 3. Screw connection.

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.
- Installation in zone 2, protection type "n" (EN 60079-15) permitted
- Up to SIL 3 in accordance with IEC 61508
- 2-way electrical isolation
- Input: 19.2 V DC ... 30 V DC
- Output: [Ex ia] IIC/[Ex ia] IIB

Commercial data

Item number	2865609
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C430
Product key	CK3142
Catalog page	Page 167 (C-5-2019)
GTIN	4046356158411
Weight per piece (including packing)	175.93 g
Weight per piece (excluding packing)	113.7 g
Customs tariff number	85437090
Country of origin	DE

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



2865609

<https://www.phoenixcontact.com/us/products/2865609>

Technical data

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	ASCO Coil 195
	ASCO Coil 302 (12 V)
	Bürkert Coil AC 10 standard
	Bürkert Coil AC 10 high resistance
	Bürkert Coil AC 21 standard 700 mW / 65°C
	Bürkert Coil AC 21 high resistance 700 mW / 65°C
	Bürkert Coil AC 21 standard 900 mW / 45°C
	Bürkert Coil AC 21 high resistance 900 mW / 45°C
	Bürkert Coil AC 21 standard 900 mW / 60°C
	Bürkert Coil AC 21 high resistance 900 mW / 60°C
	Bürkert Coil G1 642735 standard 800 mW / 40°C
	Bürkert Coil G1 642735 high resistance 800 mW / 40°C
	Bürkert Coil G1 642735 standard 1000 mW / 40°C
	Bürkert Coil G1 642735 high resistance 1000 mW / 40°C
	FESTO Coil MFH-...IA-SA-EX GBXE022AIAD03
	FESTO Coil (J)MFH-...BIA-SA-EX GBXE022AIAD03
	Norgren Herion Coil 2050
	Norgren Herion Coil 2051
	Norgren Herion Coil 2052
	Norgren Herion Coil 2053
	Norgren Herion Coil 2080 / 2082
	Norgren Herion Coil 2081 / 2083
	Norgren Herion Coil 2084
	Norgren Herion Coil 3039
	Nass Coil 1259 30.1-00
	Nass Coil 1259 50.1-00
	Parker Coil VZ07 488650.01
	Parker Coil VZ33 494035.10
	Parker Coil VZ08 488660.01
	Parker Coil VZ09 488670.01
	Parker Coil VZ95 482160.01 EEx ia IIB T6
	Parker Coil VZ23 482870.01
	Samson Coil 3701-12 (12 V)
	Samson Coil 3701-13 (24 V)
	Samson Coil 3963-12 (12 V)
	Samson Coil 3963-13 (24 V)

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



2865609

<https://www.phoenixcontact.com/us/products/2865609>

	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
	Seitz Solenoid coil 11 G 52
Note	This is an extract of possible combinations of valves and solenoid drivers.

Data management status

Article revision	14
------------------	----

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 _{pp}

Electrical isolation Output/input IEC/EN 61010-1

Standards/regulations	IEC/EN 61010-1
Rated insulation voltage	300 V _{rms}
Insulation	Safe isolation

Supply

Supply voltage range	loop-powered, no external supply necessary
Power dissipation	< 1.41 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	85 mA (U _e = 24 V DC)

Output data

Signal: Voltage

Output description	intrinsically safe
Number of outputs	1
Output voltage	≥ 10.5 V DC (48 mA)
Current limitation	> 48 mA

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



2865609

<https://www.phoenixcontact.com/us/products/2865609>

Response time	< 20 ms
Non-load voltage	> 24 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 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 mm
---------------	------

Ex data

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

Safety data

Note	The following Ex i values apply to the ATEX and IECEx approval. For all other Ex approvals, you must refer to the respective certificates for the Ex i values.
Input power P_i	negligible
Max. internal inductance L_i	negligible
Max. internal capacitance C_i	negligible
Max. output voltage U_o	27.7 V
Max. output current I_o	101 mA
Max. output power P_o	697 mW
Maximum internal resistance R_i	275.7 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	27.9 mH / 2.2 μ F
IIB/IIIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	13.9 mH / 0.663 μ F
IIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	3.5 mH / 0.085 μ F
IIA/I (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	20 mH / 440 nF, 1 mH / 500 nF, 0.1 mH / 960 nF
IIB/IIIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	5 mH / 200 nF, 1 mH / 300 nF, 0.15 mH / 500 nF

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



2865609

<https://www.phoenixcontact.com/us/products/2865609>

IIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	0.5 mH / 50 nF, 0.15 mH / 100 nF
--	----------------------------------

Signaling

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

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	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)
	-40 °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)	-40 °C ... 70 °C
Safety-related maximum voltage U_m	253 V AC
	125 V DC
Rated insulation voltage	375 V _{PP} (IEC/EN 60079-11)
	265 V ($U_{\text{Isolation rated "ec"}}$)

Altitude range (≤ 3000 m)	
Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-40 °C ... 63 °C

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



2865609

<https://www.phoenixcontact.com/us/products/2865609>

Safety-related maximum voltage U_m	190 V AC
	110 V DC
Rated insulation voltage	190 V (IEC/EN 60079-11)
	190 V ($U_{\text{Isolation rated "ec"}}$)

Altitude range (≤ 4000 m)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 56 °C
Safety-related maximum voltage U_m	60 V
Rated insulation voltage	60 V (IEC/EN 60079-11)
	60 V ($U_{\text{Isolation rated "ec"}}$)

Altitude range (≤ 5000 m)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-40 °C ... 49 °C
Safety-related maximum voltage U_m	60 V
Rated insulation voltage	60 V (IEC/EN 60079-11)
	60 V ($U_{\text{Isolation rated "ec"}}$)

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
Certificate	IBExU 07 ATEX 1133X

IECEX

Identification	[Ex ia Ma] I
	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] IIC T4 Gc
Certificate	IECEX IBE 08.0002X

CCC / China-Ex

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] IIC T4 Gc
Certificate	2022122316115980

UL, USA/Canada

UL 61010 Listed

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



2865609

<https://www.phoenixcontact.com/us/products/2865609>

Identification	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
	Associated apparatus for use in Class I, Zone 0,1,2, Groups IIC,IIB,IIA
Certificate	••• C.D.-No 83104549

UL, USA/Canada

Identification	Class I Div 2; IS for Class I, II, III Div 1
Certificate	••• 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 18.0115 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
Noise emission	EN 61000-6-4

Standards and regulations

Electrical isolation	2-way isolation
----------------------	-----------------

GB Standard

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

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



2865609

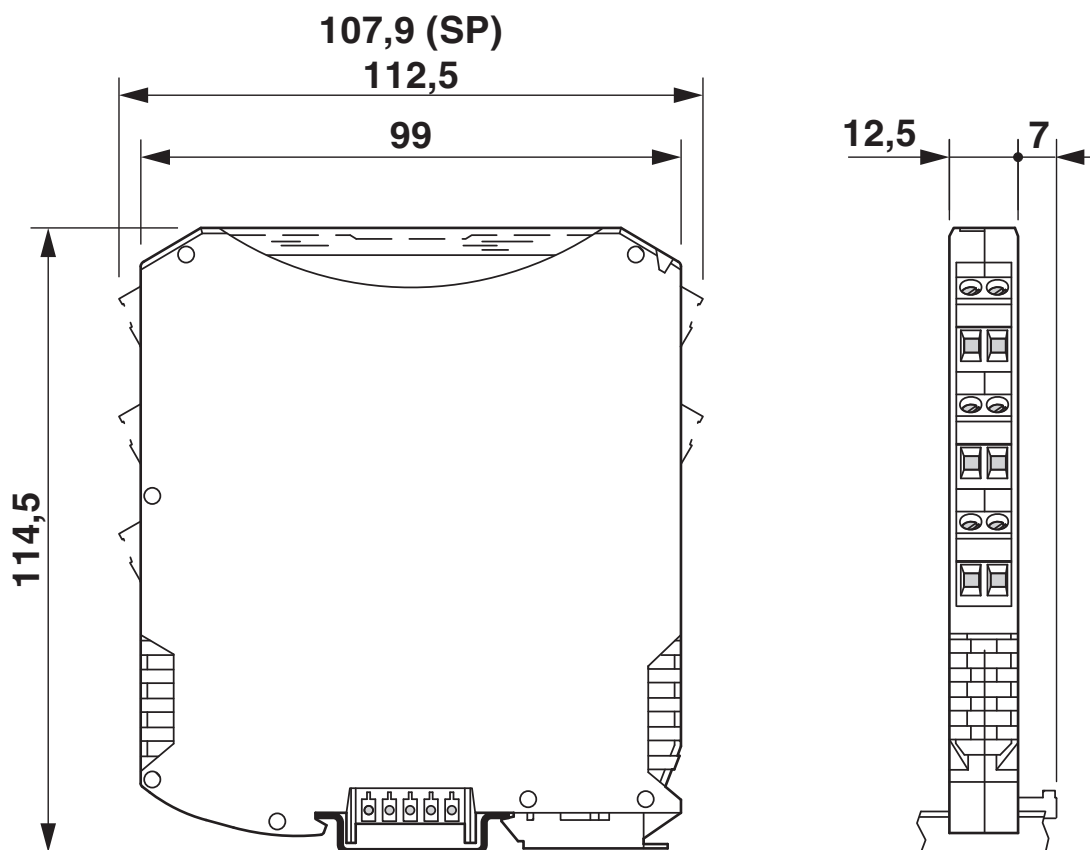
<https://www.phoenixcontact.com/us/products/2865609>

Mounting

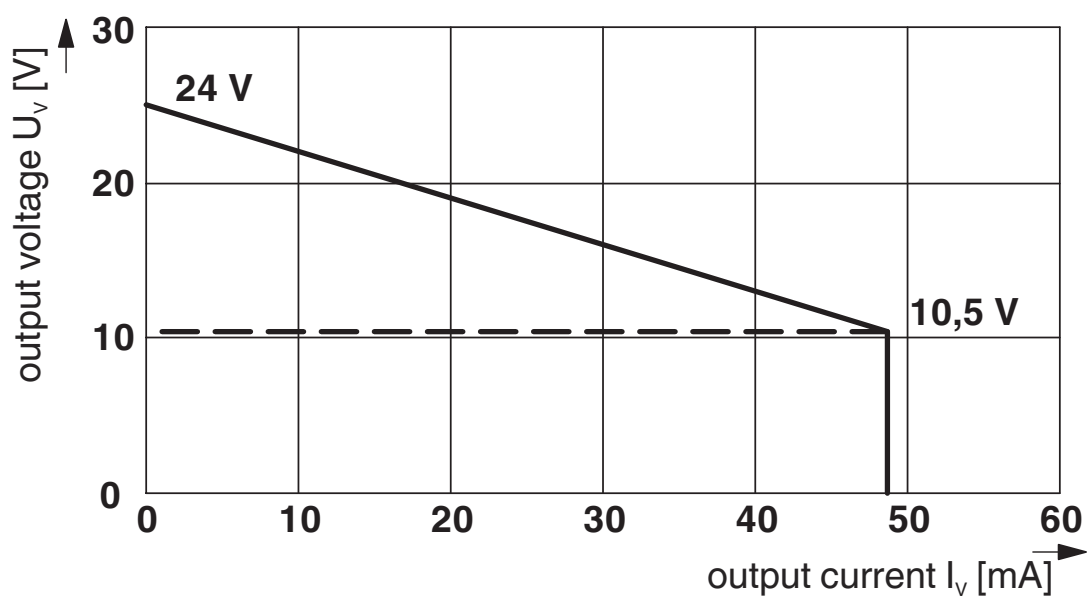
Mounting type	DIN rail mounting
---------------	-------------------

Drawings

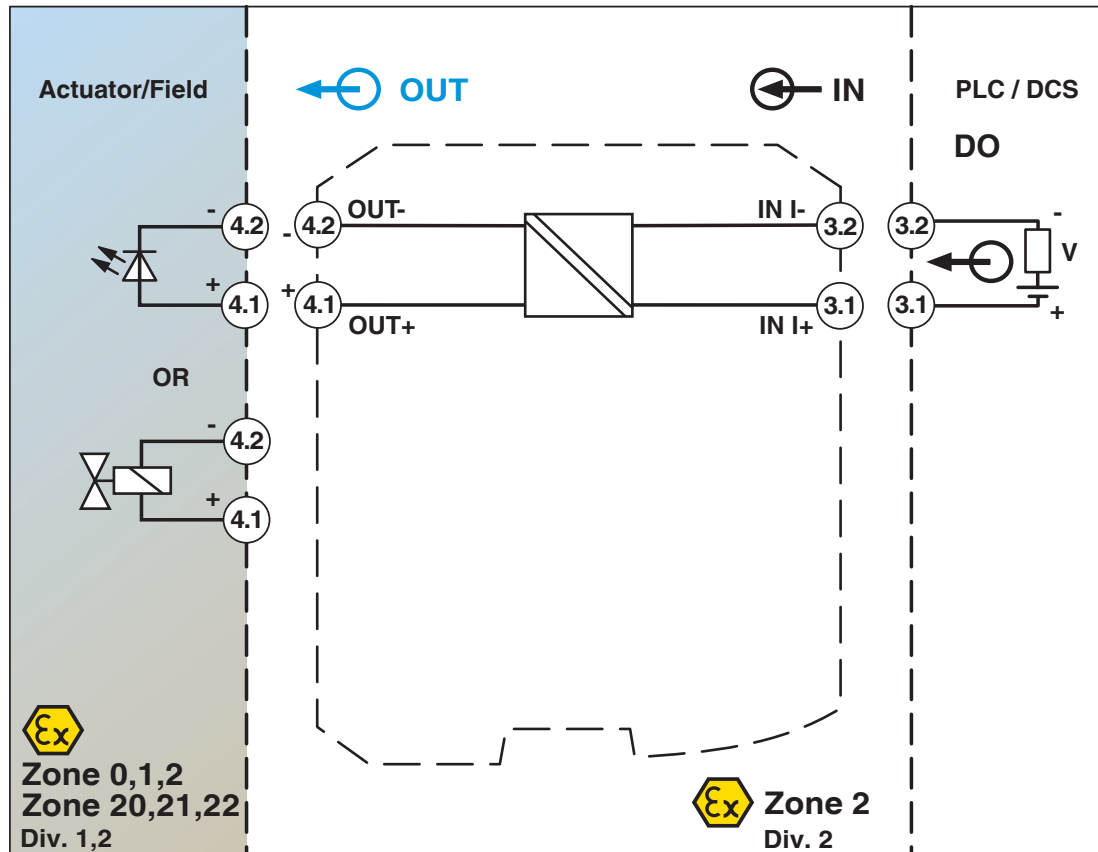
Dimensional drawing



Diagram



Block diagram



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



2865609

<https://www.phoenixcontact.com/us/products/2865609>

Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2865609>



DNV GL

Approval ID: TAA000020C



UL Listed

Approval ID: E330267



cUL Listed

Approval ID: E330267

Functional Safety

Approval ID: 16/04-017 R025 V1R1



EAC Ex

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



IECEx

Approval ID: IECEx IBE 08.0002X



cUL Listed

Approval ID: E199827



UL Listed

Approval ID: E199827



ATEX

Approval ID: IBExU 07 ATEX 1133 X

INMETRO

Approval ID: DNV 18.0115 X



CCC

Approval ID: 2022122316115980

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



2865609

<https://www.phoenixcontact.com/us/products/2865609>

cULus Listed

cULus Listed

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



2865609

<https://www.phoenixcontact.com/us/products/2865609>

Classifications

ECLASS

ECLASS-11.0	27210120
ECLASS-12.0	27210120
ECLASS-13.0	27210120

ETIM

ETIM 8.0	EC002653
----------	----------

UNSPSC

UNSPSC 21.0	39121000
-------------	----------

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



2865609
<https://www.phoenixcontact.com/us/products/2865609>

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	e426a61f-c59a-47a3-b935-75599b66e5fe

Phoenix Contact 2024 © - 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