

# MINI MCR-EX-SD-16-50-LP - Solenoid driver



1157869

<https://www.phoenixcontact.com/us/products/1157869>

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Ex i-Solenoid driver for controlling Ex i solenoid valves in the Ex area. number of channels: 1, open-circuit voltage: 16 V DC, current limitation: 50 mA, Standard configuration, Loop-powered, 2-way isolation, Safety Integrity Level (SIL, IEC 61508): 3, Screw connection

## Commercial data

Item number	1157869
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C430
Product key	DK1224
GTIN	4063151163310
Weight per piece (including packing)	122.9 g
Weight per piece (excluding packing)	122 g
Customs tariff number	85437090
Country of origin	DE

## Technical data

### Product properties

Product type	Solenoid driver
Product family	MINI Analog Pro
No. of channels	1

### Electrical properties

Electrical isolation	2-way isolation
Electrical isolation between input and output	yes

#### Electrical isolation

Overvoltage category	II ( $\leq 5000$ m)
Pollution degree	2 ( $\leq 5000$ m)

#### Electrical isolation Input/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	Double/reinforced insulation

#### Electrical isolation Input/output IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	265 $V_{rms}$

#### Electrical isolation Input/output IEC/EN 60079-7

Standards/regulations	IEC/EN 60079-7
Rated insulation voltage	251 $V_{rms}$

#### Supply

Supply voltage range	loop-powered, no external supply necessary
Power consumption	< 1.4 W

### Input data

#### Signal: Voltage

Number of inputs	1
Voltage input signal	19.2 V DC ... 30 V DC (24 V DC, -20 % ... +25 %)

### Output data

#### Signal: Voltage

Number of outputs	1
Output voltage	$\geq 10.7$ V DC (50 mA)
Output resistor	$\geq 103 \Omega$ (Internal resistance $R_i$ )
Current limitation	> 50 mA
Response time	< 50 ms

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1157869

<https://www.phoenixcontact.com/us/products/1157869>

Open-circuit voltage	> 16 V DC
Short-circuit-proof	yes

## Connection data

Connection method	Screw connection
Stripping length	10 mm
Screw thread	M3
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (with ferrule) 0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> (without ferrule)
Conductor cross-section flexible	0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 12 (flexible)
Tightening torque	0.5 Nm ... 0.6 Nm

## 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 $U_o$	19.2 V
Max. output current $I_o$	185 mA
Max. output power $P_o$	888 mW
Safety-related maximum voltage $U_m$	253 V AC ( $\leq 2000$ m)
	125 V DC ( $\leq 2000$ m)
	121 V AC ( $> 2000$ m ... 3000 m)
	110 V DC ( $> 2000$ m ... 3000 m)
	33 V AC/DC ( $> 3000$ m ... 4000 m)
	33 V AC/DC ( $> 4000$ m ... 5000 m)
IIA (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	7 mH / 6.1 $\mu$ F
IIB/IIIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	4 mH / 1.53 $\mu$ F
IIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	0.8 mH / 240 nF
I (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	10 mH / 8.7 $\mu$ F

## Dimensions

Width	6.2 mm
Height	109.81 mm
Depth	119.2 mm

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## Material specifications

Color	gray (RAL 7042)
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## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	5 % ... 95 % (non-condensing)

### Altitude range (IEC/EN 61010-1)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-40 °C ... 63 °C
Rated insulation voltage	300 V <sub>rms</sub> (Input/output)
Insulation	Double/reinforced insulation

### Altitude range (IEC/EN 61010-1)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 56 °C
Rated insulation voltage	300 V <sub>rms</sub> (Input/output)
Insulation	Double/reinforced insulation

### Altitude range (IEC/EN 61010-1)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-40 °C ... 49 °C
Rated insulation voltage	150 V <sub>rms</sub> (Input/output)
Insulation	Double/reinforced insulation

### Altitude range (IEC/EN 60079-11)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-40 °C ... 63 °C
Rated insulation voltage	150 V <sub>rms</sub> (Input/output)

### Altitude range (IEC/EN 60079-11)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 56 °C
Rated insulation voltage	60 V <sub>rms</sub> (Input/output)

### Altitude range (IEC/EN 60079-11)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-40 °C ... 49 °C
Rated insulation voltage	60 V <sub>rms</sub> (Input/output)

### Altitude range (IEC/EN 60079-7)

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

# MINI MCR-EX-SD-16-50-LP - Solenoid driver



1157869

<https://www.phoenixcontact.com/us/products/1157869>

Rated insulation voltage	162 V <sub>rms</sub> (Input/output)
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## Altitude range (IEC/EN 60079-7)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 56 °C
Rated insulation voltage	60 V <sub>rms</sub> (Input/output)

## Altitude range (IEC/EN 60079-7)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-40 °C ... 49 °C
Rated insulation voltage	60 V <sub>rms</sub> (Input/output)

## Approvals

### CE

Certificate	CE-compliant
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### ATEX

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	TÜV 21 ATEX 8651 X

### IECEX

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] IIC T4 Gc
	[Ex ia Ma] I
Certificate	IECEX TUR 21.0043 X

### CCC / China-Ex

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] IIC T4 Gc
Certificate	2023122310116238

### UL, USA/Canada

Identification	UL 61010-2-201 Listed
	Class I, Div. 1, Groups A, B, C, D
	Class II, Div. 1, Groups E, F, G
	Class III, Div. 1
	Class I, Zone 0, 1, 2, Groups IIC, IIB, IIA
	Class I, Div. 2, Groups A, B, C, D T4
	Class I, Zone 2
	AEx ec [ia Ga] IIC T4 Gc; AEx ec [ia IIIC Da] IIC T4 Gc
	Ex ec [ia Ga] IIC T4 Gc X; Ex ec [ia IIIC Da] IIC T4 Gc X

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1157869

<https://www.phoenixcontact.com/us/products/1157869>

	Class I, Zone 0, [AEx ia Ga] IIC, [Ex ia Ga] IIC X
	Class I, Zone 20, [AEx ia Da] IIIC, [Ex ia Da] IIIC X
Certificate	ⓈⓂⓂ C.D.-No 097285872

## Shipbuilding approval

Certificate	DNV TAA00003FZ
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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 23.0189 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	Tested in accordance with the following standards and regulations: EN 61326-1 For industrial use, NAMUR NE 21
Noise immunity	IEC/EN 61000-6-2
Noise immunity	IEC/EN 61326-3-2

## Noise emission

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

Electrical isolation	2-way isolation
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## GB Standard

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

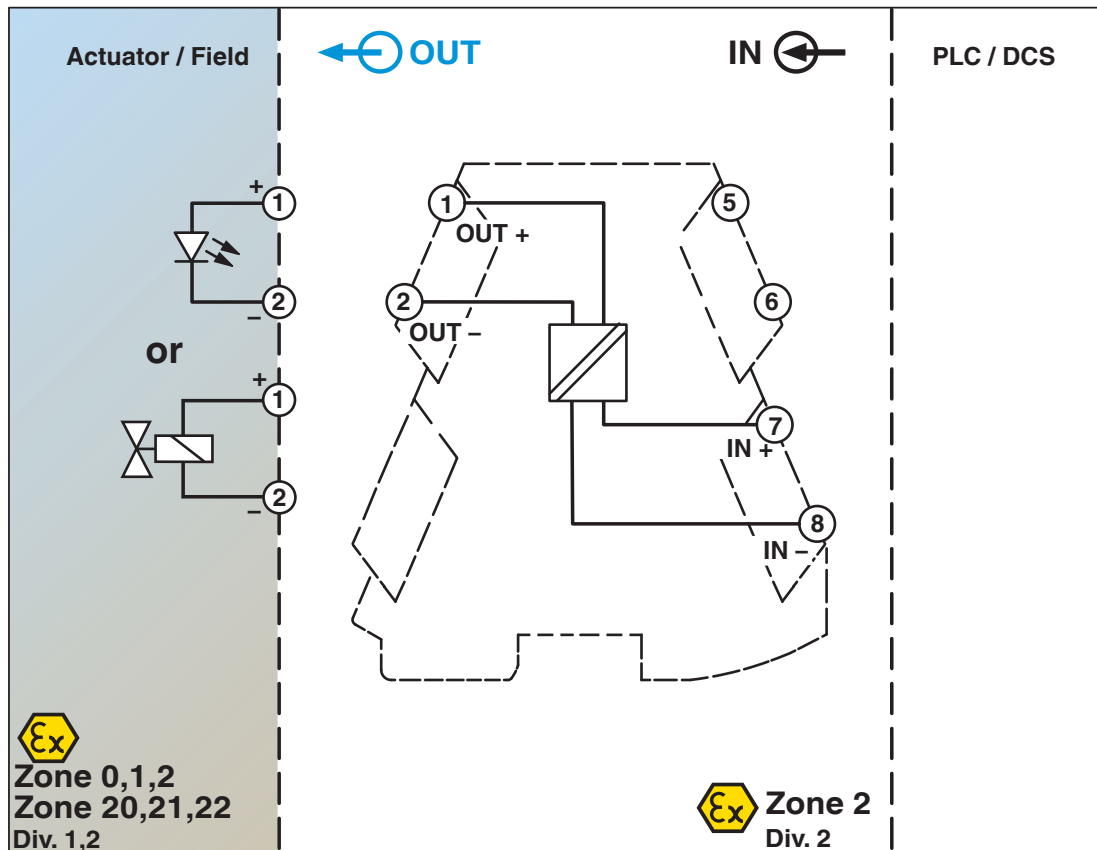
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1157869

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## Drawings

Block diagram



1157869

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1157869>



### Functional Safety

Approval ID: 1435.IM.131623/19



### cULus Listed

Approval ID: E238705

### DNV

Approval ID: TAA00003FZ



### cULus Listed

Approval ID: E238705



### IECEx

Approval ID: IECEx TUR 21.0043X



### ATEX

Approval ID: TUV 21 ATEX 8651 X



### CCC

Approval ID: 2023122316116237



### cULus Listed

Approval ID: E196811



### cULus Listed

Approval ID: E196811

### INMETRO

Approval ID: DNV 23.0189 X

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## Classifications

### ECLASS

ECLASS-13.0	27210120
ECLASS-15.0	27210120

### ETIM

ETIM 10.0	EC002653
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### UNSPSC

UNSPSC 21.0	39121008
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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	3c95228f-8d35-4831-9ca3-367242ad3913

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