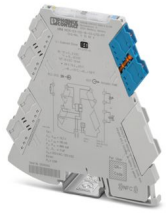
MINI MCR-EX-SD-16-50-LFD-PT - Solenoid driver

1175904

https://www.phoenixcontact.com/us/products/1175904

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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, 3-way isolation, Line fault detection, Safety Integrity Level (SIL, IEC 61508): 3, Push-in connection

Commercial data

Item number	1175904
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C430
Product key	DK1224
GTIN	4063151206116
Weight per piece (including packing)	118.5 g
Weight per piece (excluding packing)	88 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

Switch-on time	< 50 ms
Electrical isolation	3-way isolation
Electrical isolation between input and output	yes
Line monitoring	Line fault detection

Electrical isolation

Overvoltage category	II (≤ 5000 m)
Pollution degree	2 (≤ 5000 m)

Electrical isolation Input/power supply IEC/EN 61010-1

Standards/regulations	IEC/EN 61010-1
Rated insulation voltage	250 V_{rms}
Test voltage	2.5 kV AC (50 Hz, 60 s)
Insulation	Double/reinforced insulation

Electrical isolation Output/power supply, input 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 Output/input, power supply IEC/EN 60079-11

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

Electrical isolation Output/input, power supply IEC/EN 60079-7

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

Supply

Nominal supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (24 V DC, -20 % ... +25 %)
Power consumption	< 1.4 W

Input data

Signal: Logic

Number of inputs	1
Switching level "0" signal	0 V DC ... 5 V DC

Switching level "1" signal	15 V DC ... 30 V DC
Input current	< 3 mA
Input impedance	> 1 MΩ (high-resistance in the event of a line fault at the output)
Line fault detection	< 25 Ω (Short circuit)
	> 10 kΩ (Line break)

Output data

Signal: Fault monitoring output

Type of output signal	Transistor output via T-BUS

Signal: Voltage

Output description	intrinsically safe
Number of outputs	1
Output voltage	≥ 10.7 V DC (50 mA)
Output resistor	≥ 103 Ω (Internal resistance R_i)
Current limitation	> 50 mA (with line fault detection)
Response time	< 20 ms
Open-circuit voltage	> 16 V DC
Short-circuit-proof	yes
Line fault detection	> 10 kΩ (Line break)
	< 25 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 (with ferrule)
	0.14 mm² ... 2.5 mm² (without ferrule)
Conductor cross-section flexible	0.14 mm² ... 2.5 mm²
Conductor cross-section AWG	24 ... 12 (flexible)

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 (≤ 2000 m)
	125 V DC (≤ 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 µF
IIB/IIIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	4 mH / 1.53 µF
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 µF

Signaling

Error indication	Red LED

Dimensions

Width	6.2 mm
Height	109.81 mm
Depth	119.2 mm

Material specifications

Color	gray (RAL 7042)

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_{rms} (Output/supply, input)
	250 V_{rms} (Input/supply)
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_{rms} (Output/supply, input)
	250 V_{rms} (Input/supply)
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_{rms} (Input/output/power supply)
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_{rms} (Output/input, power supply)

Altitude range (IEC/EN 60079-11)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 56 °C
Rated insulation voltage	60 V_{rms} (Output/input, power supply)

Altitude range (IEC/EN 60079-11)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-40 °C ... 49 °C
Rated insulation voltage	60 V_{rms} (Output/input, power supply)

Altitude range (IEC/EN 60079-7)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-40 °C ... 63 °C
Rated insulation voltage	162 V_{rms} (Output/input, power supply)

Altitude range (IEC/EN 60079-7)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 56 °C
Rated insulation voltage	60 V_{rms} (Output/input, power supply)

Altitude range (IEC/EN 60079-7)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-40 °C ... 49 °C
Rated insulation voltage	60 V_{rms} (Output/input, power supply)

Approvals

CE

Certificate	CE-compliant

ATEX

Identification	Ⓔx I (M1) [Ex ia Ma] I
	Ⓔ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
Certificate	TÜV 21 ATEX 8651 X

IECEx

Identification	[Ex ia Ma] I
	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] IIC T4 Gc
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

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

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
	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

Safety Integrity Level (SIL, IEC 61508)

Identification	3

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
	IEC/EN 61326-3-2

Noise emission

Standards/regulations	IEC/EN 61000-6-4

Standards and regulations

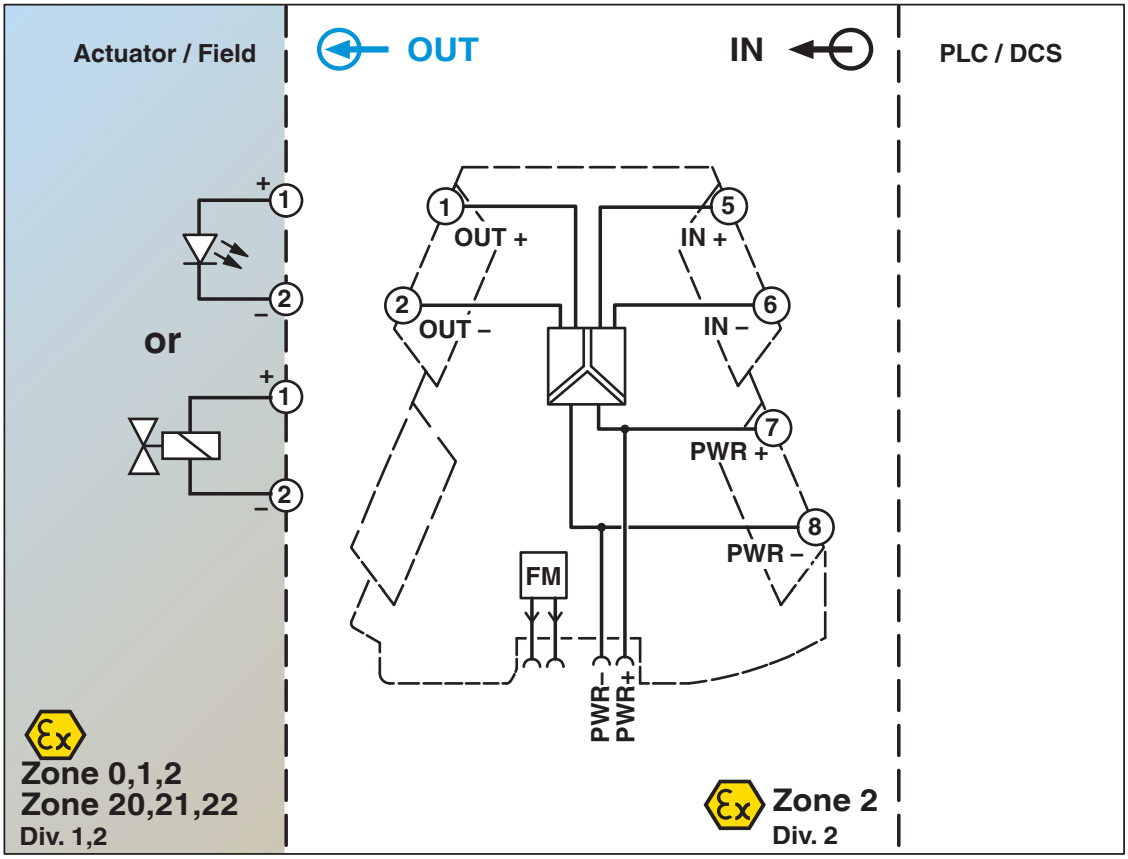
Electrical isolation	3-way isolation

GB Standard

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

Drawings

Block diagram



Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/1175904

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: TUeV 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

Classifications

ECLASS

ECLASS-13.0	27210120
ECLASS-15.0	27210120

ETIM

ETIM 10.0	EC002653

UNSPSC

UNSPSC 21.0	39121008

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	84a85e73-eb10-46de-bf3e-008072222770

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