

Solenoid driver - MACX MCR-EX-SL-SD-23-48-LFD - 2924867

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Ex i solenoid driver for controlling Ex i solenoid valves in hazardous areas, logic input, off-load voltage 22.6 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 > 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, screw connection technology
- ✓ Installation in zone 2 permitted
- ✓ Housing width: 12.5 mm



Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 635172
GTIN	4046356635172

Technical data

Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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Dimensions

Width	12.5 mm
Height	112.5 mm
Depth	113.7 mm

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Technical data

Dimensions

	114.5 mm (Snapped onto DIN rail NS 35/7,5 in accordance with EN 60715)
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Ambient conditions

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)
Degree of protection	IP20 (not assessed by UL)
Noise immunity	EN 61000-6-2 When being exposed to interference, there may be minimal deviations.
Altitude	≤ 2000 m (For use at altitudes ≥2000 m above sea level, see 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	≤ 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	≤ 4000 m
Ambient temperature (operation)	-20 °C ... 48 °C
Rated insulation voltage	60 V AC/DC (Power supply, input / output)
Altitude	≤ 5000 m
Ambient temperature (operation)	-20 °C ... 42 °C
Rated insulation voltage	60 V AC/DC (Power supply, input / output)

Input data

Signal input	Signal input
Switching level "0" signal	0 V DC ... 5 V DC (open)
Switching level "1" signal	15 V DC ... 30 V DC
Input current	< 12 mA
Input impedance	3 MΩ (High resistance (Mega Ω))
Immune to test pulses	Yes

Output data

Output description	Intrinsically safe
Output voltage	≥ 9.36 V DC (At 48 mA)
Non-load voltage	> 22.5 V DC
Short-circuit-proof	yes
Functional current limit	> 48 mA (with line fault detection)
Output characteristic curve: Output resistor	≥ 269.3 Ω (Internal resistance R _i)
Response time	< 30 ms
Line monitoring	< 50 Ω (Line short circuit)

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Output data

	> 10 kΩ (Line break)
Test current for Low signal	< 600 μA
Output name	Error message output (on the control side)
Contact 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

Power supply

Nominal supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (24 V DC -20%...+25%)
Power dissipation	< 1.8 W

Connection data

Connection method	Screw connection
Stripping length	7 mm
Screw thread	M3
Conductor cross section solid	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
Torque	0.5 Nm ... 0.6 Nm

Connection data 2

Connection name	Test socket
Max. diameter	2.3 mm

General

Status display	Green LED (supply voltage)
	LED yellow (switching state)
	Red LED (line errors)
Degree of pollution	2
Overvoltage category	II
Electromagnetic compatibility	Conformance with EMC directive
Interference emission	EN 61000-6-4
Housing material	PA 6.6-FR
Color	gray
Designation	Output/input, error message output
Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
Rated insulation voltage	300 V _{rms}
Test voltage	2.5 kV AC (50 Hz, 1 min.)
Insulation	Safe isolation in accordance with IEC/EN 61010-1
Designation	Output/supply, DIN rail connector

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Technical data

General

Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
Rated insulation voltage	300 V _{rms}
Test voltage	2.5 kV AC (50 Hz, 1 min.)
Insulation	Safe isolation in accordance with IEC/EN 61010-1
Designation	Input/error message output/supply
Test voltage	1.5 kV AC (50 Hz, 1 min.)

Standards and Regulations

Electromagnetic compatibility	Conformance with EMC directive
Noise emission	EN 61000-6-4
Designation	GB Standard
Standards/regulations	GB 3626.20
	GB 3836.1
	GB 3836.4
	GB 3836.8
	GB 12476.1
	GB 12476.4
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
Group	IIC
Max. external inductivity L _o	3 mH
Max. external capacitance C _o	95 nF
Group	IIB/IIIC
Max. external inductivity L _o	12 mH
Max. external capacitance C _o	810 nF
Group	IIA/I
Max. external inductivity L _o	24 mH
Max. external capacitance C _o	2750 nF
Safety-related maximum voltage U _m	253 V AC

Conformance/approvals

Designation	CE
Certificate	CE-compliant
Additional text	and EN 61326
Designation	ATEX
Identification	# I (M1) [Ex ia Ma] I
	# II (1) G [Ex ia Ga] IIC
	# II (1) D [Ex ia Da] IIIC

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Technical data

Conformance/approvals

	# II 3(1) G Ex ec [ia Ga] IIC T4 Gc X
Certificate	IBExU 13 ATEX1045X
Designation	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
Designation	CCC / China-Ex
Identification	[Ex ia Ga] IIC
	[Ex iaD]
	Ex nA [ia Ga] IIC T4 Gc
Certificate	NEPSI GYJ20.1315X
Designation	UL, USA / Canada
Identification	UL 61010 Listed
Certificate	#, C.D.-No 83104549
Designation	Shipbuilding approval
Certificate	DNV GL TAA000020C
Designation	Safety Integrity Level (SIL, IEC 61508)
Identification	3
Designation	EAC Ex
Identification	# [Ex ia Ga] IIC
	# [Ex ia Da] IIIC
Certificate	RU C-DE.AB72.B.00093/19
Designation	KC-s
Identification	[Ex ia] IIC/IIB
Certificate	17-KA4BO-0402X
Designation	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
Temperature	B
Humidity	B
Vibration	A
EMC	A
Enclosure	Required protection according to the Rules shall be provided upon installation on board

Environmental Product Compliance

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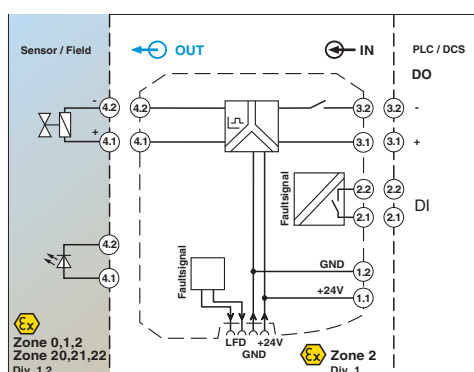
Technical data

Environmental Product Compliance

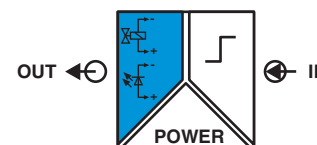
REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

Drawings

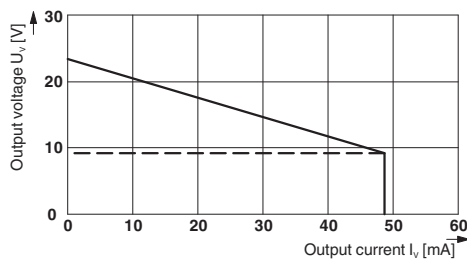
Block diagram



Pictogram



Diagram



Classifications

eCl@ss

eCl@ss 10.0.1	27243101
eCl@ss 11.0	27243101
eCl@ss 4.0	27210100
eCl@ss 4.1	27210100
eCl@ss 5.0	27210100
eCl@ss 5.1	27210100
eCl@ss 6.0	27243100
eCl@ss 7.0	27243101
eCl@ss 9.0	27243101

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Classifications

ETIM

ETIM 3.0	EC001599
ETIM 4.0	EC001599
ETIM 6.0	EC002538
ETIM 7.0	EC002538

UNSPSC

UNSPSC 6.01	30211506
UNSPSC 7.0901	39121008
UNSPSC 11	39121008
UNSPSC 12.01	39121008
UNSPSC 13.2	32151802
UNSPSC 18.0	32151802
UNSPSC 19.0	32151802
UNSPSC 20.0	32151802
UNSPSC 21.0	32151802

Approvals

Approvals

Approvals

UL Listed / cUL Listed / Functional Safety / DNV GL / CCC / cULus Listed

Ex Approvals

KC-s / IECEx / ATEX / UL Listed / cUL Listed / EAC Ex / IECEx / ATEX / INMETRO / cULus Listed

Approval details

UL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 330267
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cUL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 330267
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Functional Safety	BVS Pb 11/13
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Approvals

DNV GL		https://approvalfinder.dnvgl.com/	TAA000020C
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CCC			2020322 316001582
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cULus Listed			
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Accessories

Accessories

Device marking

Plastic label - UC-EMLP (11X9) - 0819291



Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

Plastic label - UC-EMLP (11X9) YE - 0822602



Plastic label, Sheet, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

Plastic label - UC-EMLP (11X9) SR - 0828094



Plastic label, Sheet, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

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Accessories

Plastic label - US-EMLP (11X9) - 0828789



Plastic label, Card, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

Plastic label - US-EMLP (11X9) YE - 0828871



Plastic label, Card, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

Plastic label - US-EMLP (11X9) SR - 0828872



Plastic label, Card, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

Device marker - LS-EMLP (11X9) WH - 0831678



Device marker, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255

Device marker - LS-EMLP (11X9) SR - 0831705



Device marker, Sheet, silver, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255

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Accessories

Device marker - LS-EMLP (11X9) YE - 0831732

Device marker, Sheet, yellow, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255



DIN rail connector

DIN rail bus connectors - ME 6,2 TBUS-2 1,5/5-ST-3,81 GY - 2695439



DIN rail connector (TBUS), 5-pos., for bridging the supply voltage, can be snapped onto NS 35/... DIN rails according to EN 60715

Insulating sleeve

Insulating sleeve - MPS-IH WH - 0201663

Insulating sleeve, color: white



Insulating sleeve - MPS-IH RD - 0201676

Insulating sleeve, color: red



Insulating sleeve - MPS-IH BU - 0201689

Insulating sleeve, color: blue



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Accessories

Insulating sleeve - MPS-IH YE - 0201692

Insulating sleeve, color: yellow



Insulating sleeve - MPS-IH GN - 0201702

Insulating sleeve, color: green



Insulating sleeve - MPS-IH GY - 0201728

Insulating sleeve, color: gray



Insulating sleeve - MPS-IH BK - 0201731

Insulating sleeve, color: black



Labeled device marker

Plastic label - UC-EMLP (11X9) CUS - 0824547



Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm

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Accessories

Plastic label - UC-EMLP (11X9) YE CUS - 0824548



Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm

Plastic label - UC-EMLP (11X9) SR CUS - 0828098



Plastic label, can be ordered: by sheet, silver, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

Module carrier

Module carrier - TC-D37SUB-AIO16-EX-PS-UNI - 2902932



Universal termination carrier for connecting 16 MACX Analog Ex i signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection), with HART multiplexer connection

Module carrier - TC-D37SUB-ADIO16-EX-P-UNI - 2924854



Universal termination carrier for connecting 16 MACX Analog Ex i signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection)

Power module

Power and error message module - MACX MCR-PTB - 2865625



Power and fault signaling module with screw connection, including corresponding ME 17,5 TBUS 1,5/ 5-ST-3,81 GY DIN rail connector

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Accessories

Power and error message module - MACX MCR-PTB-SP - 2924184



Power and fault signaling module with Push-in connection, including corresponding ME 17,5 TBUS 1,5/ 5-ST-3,81 GY DIN rail connector

Test plug terminal block

Test plugs - MPS-MT - 0201744



Test plugs, with solder connection up to 1 mm² conductor cross section, color: gray

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