

# MINI-PS- 12- 24DC/48DC/0.7 - DC/DC converters



2320021

<https://www.phoenixcontact.com/in/products/2320021>

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Please use the following item in new systems: 1098676.

Primary-switched MINI DC/DC converter for DIN rail mounting, input: 12 - 24 V DC, output: 48 V DC/0.7 A

## Product Description

MINI DC/DC converter for MCR technology.

DC/DC converters alter the voltage level, regenerate the voltage at the end of long cables or enable the creation of independent supply systems by means of electrical isolation.

## Your advantages

- Electrical isolation: for setting up independent supply systems
- Support conversion to various voltage levels
- Constant voltage: output voltage regenerated even at the end of long cables

## Commercial Data

Item number	2320021
Packing unit	1 pc
Minimum order quantity	1 pc
Sales Key	CMD
Product Key	CMDM44
Catalog Page	Page 299 (C-4-2019)
GTIN	4046356479448
Weight per Piece (including packing)	231.9 g
Weight per Piece (excluding packing)	200 g
Customs tariff number	85044083
Country of origin	CN

## Technical Data

### Input data

#### DC operation

Nominal input voltage range	12 V DC ... 24 V DC
Input voltage range	10 V DC ... 32 V DC (> 10.5 V DC start)
Wide-range input	yes
Input voltage range DC	10 V DC ... 32 V DC (> 10.5 V DC start)
Voltage type of supply voltage	DC
Inrush current	< 10 A (typical)
Inrush current integral ( $I^2t$ )	0.3 A <sup>2</sup> s
Frequency range DC	0 Hz
Mains buffering time	typ. 2 ms (12 V DC) typ. 12 ms (24 V DC)
Current consumption	3.2 A (12 V DC) 1.6 A (24 V DC)
Typical response time	< 0.5 s
Input fuse	6.3 A (slow-blow, internal)

### Output data

Efficiency	> 87 % (at 24 V DC and nominal values)
Output characteristic	U/I
Nominal output voltage	48 V DC $\pm$ 1 %
Setting range of the output voltage ( $U_{Set}$ )	30 V DC ... 56 V DC (> 48 V DC, constant capacity restricted)
Nominal output current ( $I_N$ )	0.7 A (-25 °C ... 60 °C)
Derating	60 °C ... 70 °C (2.5%/K)
Feedback voltage resistance	60 V DC
Protection against overvoltage at the output (OVP)	< 60 V DC
Residual ripple	< 20 mV <sub>PP</sub> (20 MHz)
Output power	33.6 W
Peak switching voltages nominal load	< 10 mV <sub>PP</sub> (20 MHz)
Maximum no-load power dissipation	< 1.5 W
Power loss nominal load max.	< 4.5 W
Connection in parallel	yes, for assembling redundant systems and increasing efficiency
Connection in series	yes

#### Signal: DC OK active

Output description	$U_{OUT} > 0.9 \times U_N$ : High signal
Output voltage	+ 24 V (Signal)
Continuous load current	$\leq$ 20 mA

### Connection data

#### Input

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Connection method	Pluggable screw connection
Conductor cross section, rigid min.	0.2 mm <sup>2</sup>
Conductor cross section, rigid max.	2.5 mm <sup>2</sup>
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	2.5 mm <sup>2</sup>
Conductor cross section AWG min.	24
Conductor cross section AWG max.	14
Stripping length	7 mm
Screw thread	M3
Tightening torque, min	0.5 Nm
Tightening torque max	0.6 Nm

## Output

Connection method	Pluggable screw connection
Conductor cross section, rigid min.	0.2 mm <sup>2</sup>
Conductor cross section, rigid max.	2.5 mm <sup>2</sup>
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	2.5 mm <sup>2</sup>
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Screw thread	M3
Tightening torque, min	0.5 Nm
Tightening torque max	0.6 Nm

## Signaling

Types of signaling	LED
	Active switching output

## Signal output: DC OK active

Status display	"DC OK" LED green
Note on status display	$U_{OUT} > 0.9 \times U_N$ : LED ON
Color	green
Note on status display	LED on

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## Electrical properties

Number of phases	1.00
Insulation voltage input/output	1.5 kV (type test)
	1 kV (routine test)

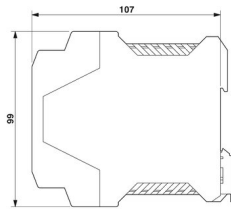
## Product properties

Product type	DC/DC converters
MTBF (IEC 61709, SN 29500)	> 1993000 h (40 °C)

## Insulation characteristics

Protection class	III
Degree of pollution	2

## Dimensions

Dimensional drawing	
Width	22.5 mm
Height	99 mm
Depth	107 mm

## Installation dimensions

Installation distance right/left	0 mm / 0 mm ( $\leq 70$ °C)
Installation distance top/bottom	50 mm / 50 mm ( $\leq 70$ °C)

## Mounting

Assembly instructions	alignable: horizontally 0 mm, vertically 50 mm
Mounting position	horizontal DIN rail NS 35, EN 60715
With protective coating	No

## Material specifications

Color	green
Housing material	Plastic
Type of housing	Polyamide PA, color: green
Housing material	Polyamide (PA)

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-25 °C ... 70 °C (> +60°C derating)

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Ambient temperature (storage/transport)	-40 °C ... 85 °C
Climatic class	3K3 (in acc. with EN 60721)
Max. permissible relative humidity (operation)	≤ 95 % (At +25°C, non-condensing)
Shock	18 ms, 30g, in each space direction (according to IEC 60068-2-27)
Vibration (operation)	< 15 Hz, amplitude ±2.5 mm (according to IEC 60068-2-6) 15 Hz ... 150 Hz, 2.3g

## Standards and regulations

Rail applications	EN 50121-4
Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations	EN 50178/VDE 0160 (PELV)
Standard - Electrical safety	EN 60950-1/VDE 0805 (SELV)
Standard - Safe isolation	DIN VDE 0100-410 DIN VDE 0106-101

## Approvals

CSA	CSA-C22.2 No. 107.1-01
UL approvals	UL/C-UL listed UL 508 UL/C-UL Recognized UL 60950-1 UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

## EMC data

Low Voltage Directive	Conformance with Low Voltage Directive 2014/35/EC
EMC requirements for noise emission	EN 61000-6-3 EN 61000-6-4
EMC requirements for noise immunity	EN 61000-6-1 EN 61000-6-2
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Noise emission	EN 55011 (EN 55022)

### Electrostatic discharge

Standards/regulations	EN 61000-4-2
Housing	> Level 3

### Electrostatic discharge

Contact discharge	8 kV (Contact discharge)
Discharge in air	8 kV (Air discharge)
Comments	Criterion B

### Electromagnetic HF field

Standards/regulations	EN 61000-4-3
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### Electromagnetic HF field

Frequency range	80 MHz ... 3 GHz
Test field strength	10 V/m

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Comments	Criterion A
Fast transients (burst)	
Standards/regulations	EN 61000-4-4
Fast transients (burst)	
Input	4 kV (level 4 - asymmetrical: conductor to ground)
Output	2 kV (level 3 - asymmetrical: conductor to ground)
Signal	1 kV (Level 2 - asymmetrical cable to ground)
Comments	Criterion B
Surge voltage load (surge)	
Standards/regulations	EN 61000-4-5
Conducted interference	
Standards/regulations	EN 61000-4-6
Conducted interference	
Input/Output	Level 3
Frequency range	0.15 MHz ... 80 MHz (10 V)
Voltage dips	
Standards/regulations	EN 61000-4-11
Emitted interference	
Standards/regulations	EN 61000-6-3
Radio interference voltage in acc. with EN 55011	EN 55011 (EN 55022) Class B, area of application: Industry and residential
Emitted radio interference in acc. with EN 55011	EN 55011 (EN 55022) Class B, area of application: Industry and residential

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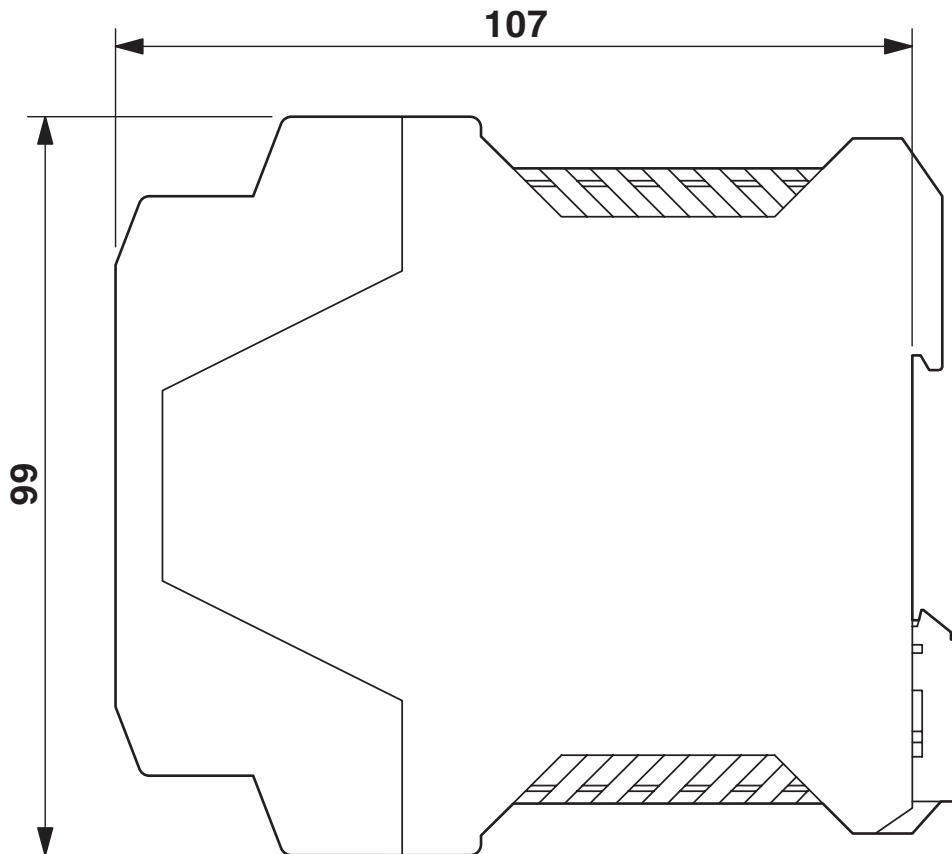


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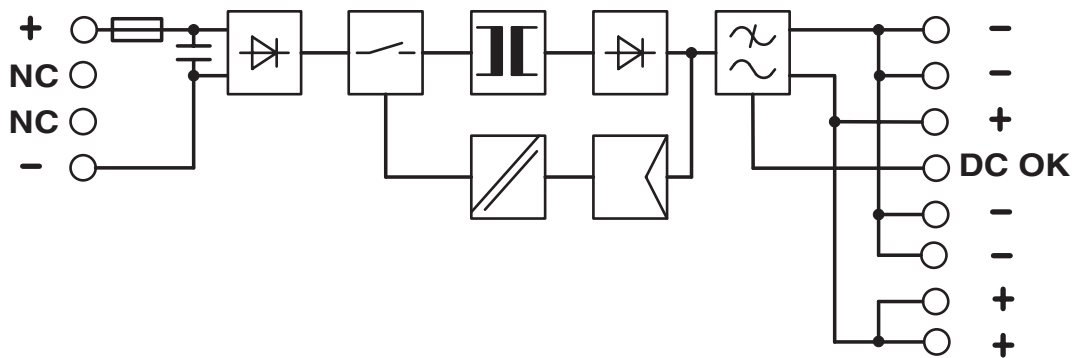
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## Drawings

Dimensional drawing



Block diagram



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## Approvals



**cUL Recognized**  
Approval ID: FILE E 211944



**UL Recognized**  
Approval ID: FILE E 211944



**EAC**  
Approval ID: EAC-Zulassung



**EAC**  
Approval ID: RU S-DE.BL08.W.00764



**UL Listed**  
Approval ID: FILE E 123528



**cUL Listed**  
Approval ID: FILE E 123528



**cUL Listed**  
Approval ID: FILE E 199827



**UL Listed**  
Approval ID: FILE E 199827



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## Classifications

### ECLASS

ECLASS-11.0	27040701
ECLASS-13.0	27040701
ECLASS-12.0	27040701

### ETIM

ETIM 8.0	EC002540
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### UNSPSC

UNSPSC 21.0	39121000
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## Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 25; For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads"

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