

# CAPAROC E2 12-24DC/2-10A - Electronic circuit breaker



1110984

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2-channel electronic circuit breaker module for protecting loads at 12 and 24 V DC against overload and short circuit with current limit. Nominal current adjustable from 2 A to 10 A using step switch. For DIN rail installation via the CAPAROC current rails.

## Your advantages

- The benchmark that you can customize with convenient nominal current level setting on the module
- Easy operation for everyone through tool-free assembly, uninterrupted installation, and transparent operating state
- Exceptionally easy design-in allows the nominal current to be extended beyond the specified levels via PROFINET

## Commercial data

Item number	1110984
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL11
Product key	CLA233
GTIN	4063151028831
Weight per piece (including packing)	94 g
Weight per piece (excluding packing)	94 g
Customs tariff number	85363010
Country of origin	DE

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## Technical data

### Notes

#### General

Note	LABS release – in accordance with test specification VW PV 3. 10.7:2005-0
	When connecting the conductor, make sure that the CAPAROC modules are not pulled apart due to tensile force. Gaps must not be created between the modules.

### Product properties

Product type	Device circuit breakers
Product family	CAPAROC
Type	Plug-in module
Number of positions	1
No. of channels	2
Number of slots	2

#### Insulation characteristics

Protection class	III
Pollution degree	2

### Electrical properties

#### General

Operating voltage	10 V DC ... 30 V DC
Rated voltage	12 V DC 24 V DC
Rated current $I_N$	10 A (per channel)
Rated current $I_N$	2 / 4 / 6 / 8 / 10 A DC (Adjustable via rotary coding switches) 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 A DC (can be set, in RC mode via power module with communication interface)
Rated current (pre-adjusted)	2 A
Rated surge voltage	0.5 kV
Tripping method	E (electronic)
Feedback resistance	max. 35 V DC
Switch-on delay	50 ms (each channel preset by default) can be adapted with CAPAROC PM IOL and CAPAROC PM PN power modules
Required backup fuse	Only required if $I_{max}$ of the power supply > the short-circuit switching capacity. Integrated failsafe element.
Short-circuit switching capacity	300 A
Dielectric strength	35 V DC (Load circuit)
Active current limitation	typ. $2.0 \times I_N$ at $I_N \leq 3$ A typ. $1.5 \times I_N$ at $I_N \geq 4$ A
Fuse	electronic

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Efficiency	> 99 %
Closed circuit current $I_0$	typ. 25 mA (no load at 24 V)
Power dissipation	typ. 0.6 W (no load at 24 V) < 3.3 W (in nominal operation at 24 V and 10 A)
Measuring tolerance I	± 10 % (typ.)
Temperature derating	20 A (Total current at 40°C) 10 A (Total current at 65 °C)
MTBF (IEC 61709, SN 29500)	11140621 h (at 25 °C with 21 % load) 4699883 h (at 40°C with 34.25% load) 534110 h (at 40°C with 100% load)
Voltage drop	0.14 V (at 10 A)
Fail-safe element	15 A DC (per output channel)
Contact switching type	without electrical isolation

## Load circuit

Shutdown time	5 s (for overload 1.1...1.3 x $I_N$ at $I_N \geq 4$ A)
	5 s (for overload 1.1...1.7 x $I_N$ at $I_N < 4$ A)
	typ. 400 ms (max. 450 ms for high starting currents)
	typ. 20 ms (for short circuit > 1,5 x $I_N$ )
Undervoltage switch-off	≤ 8.5 V DC (active)
	≥ 9.2 V DC (inactive)
Overvoltage switch-off	≥ 32.5 V DC (active)
	≤ 30.5 V DC (inactive)
Max. capacitive load	≤ 75000 µF (Depending on the current setting and the short-circuit current available)

## Connection data

### Fuse-protected output

Connection method	Push-in connection
Stripping length	10 mm
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 4 mm <sup>2</sup>
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 4 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 12
Conductor cross-section, flexible, with ferrule, with plastic sleeve	0.25 mm <sup>2</sup> ... 4 mm <sup>2</sup>
Conductor cross-section, flexible, with ferrule, without plastic sleeve	0.25 mm <sup>2</sup> ... 4 mm <sup>2</sup>

## Signaling

Channel LED off	off (Channel switched off)
Channel LED yellow	lit (Channel switched on, channel load > 80% )
	two flashes (Check the installation, no communication to power module)
Channel LED green	lit (Channel switched on)
	flashing (Channel switched on, coding switch position is not equal to set value)

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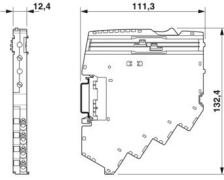


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Channel LED red	lit (Channel switched off, over- or undervoltage active)
	ON temporarily (Channel switched off, 5 s cool-down phase, overload or short-circuit release)
	flashing (Channel switched off, ready to be switched back on, overload or short-circuit release)
	two flashes (Channel switched off, system total current limit exceeded)
Channel LED red-yellow	flashing (Channel is overloaded and is switched off)
Channel LED red-green	flashing (Channel switched off, programming mode active, current adjustment after overload or short-circuit release)

## Dimensions

Dimensional drawing	
Width	12.4 mm
Height	132.4 mm
Depth	111.3 mm (incl. DIN rail 7.5 mm)

## Material specifications

Color	light gray (RAL 7035)
Material	PA 6
	PA 6
	PA 6
	PC
Flammability rating according to UL 94	V-0

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-30 °C ... 65 °C (The temperature range of the power module must be taken into consideration)
Ambient temperature (storage/transport)	-40 °C ... 70 °C
Altitude	≤ 4000 m (amsl)
Humidity test	96 h, 95 % RH, 40 °C
Shock (operation)	30g (11 ms period, half-sine shock pulse, according to IEC 60068-2-27)
	25g (6 ms duration, half-sine shock pulse in accordance with IEC 60068-2-27, continuous shock)
Vibration (operation)	5g (10 Hz ... 150 Hz / 10 cycles / axis / X, Y, Z)

## Approvals

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## UL approval

Identification	UL/C-UL Listed UL 508
	UL Recognized UL 2367
	UL 121201 Class I, Division 2, Groups A, B, C, D, T4A

## Corrosive gas test

Identification	ISA S71.04.2013 G3 Harsh Group A
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## Standards and regulations

Standards/specifications	EN 61000-6-2
Note	EMC – Immunity for industrial areas
Standards/specifications	EN 61000-6-3
Note	EMC – Emission for residential, business and commercial properties and small operations
Standards/specifications	EN 60068-2-78
Note	Environmental influences – Moisture and heat, constant
Standards/specifications	EN 50178
Note	Equipping power installations with electronic equipment
Standards/specifications	EN 60068-2-6
Note	Environmental influences – Vibrations (sinusoidal)
Standards/specifications	EN 60068-2-27
Note	Environmental influences – Shocks

## Mounting

Mounting type	pluggable onto CAPAROC CR... current rail
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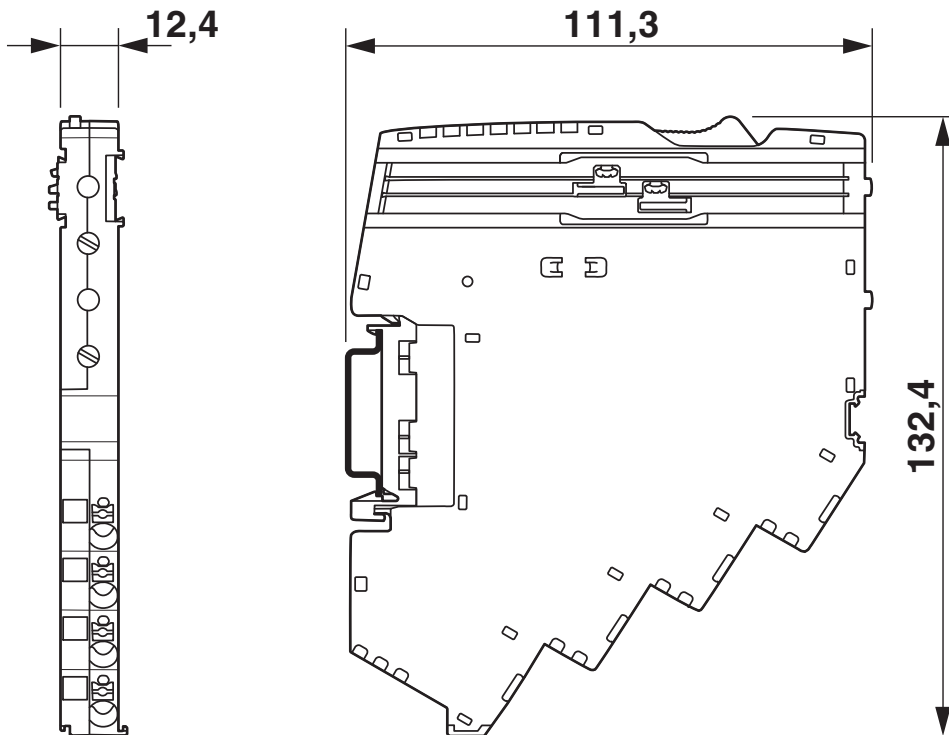


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## Drawings

Dimensional drawing



Product drawing



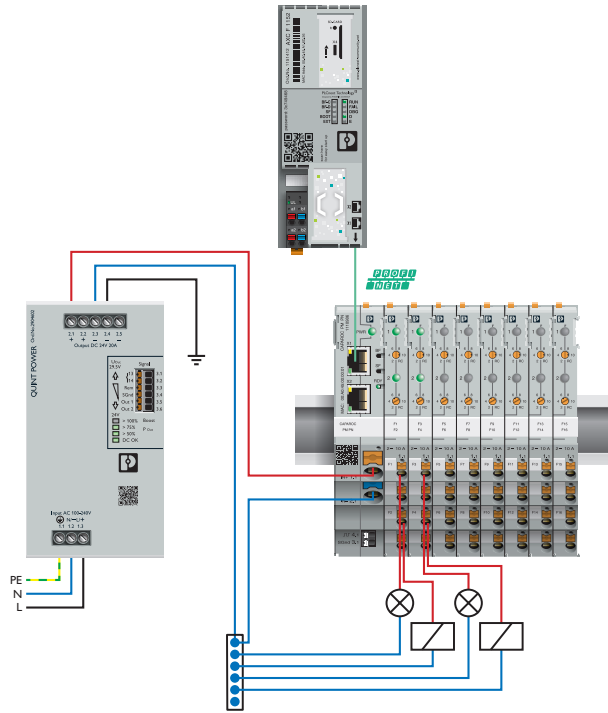
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## Application drawing



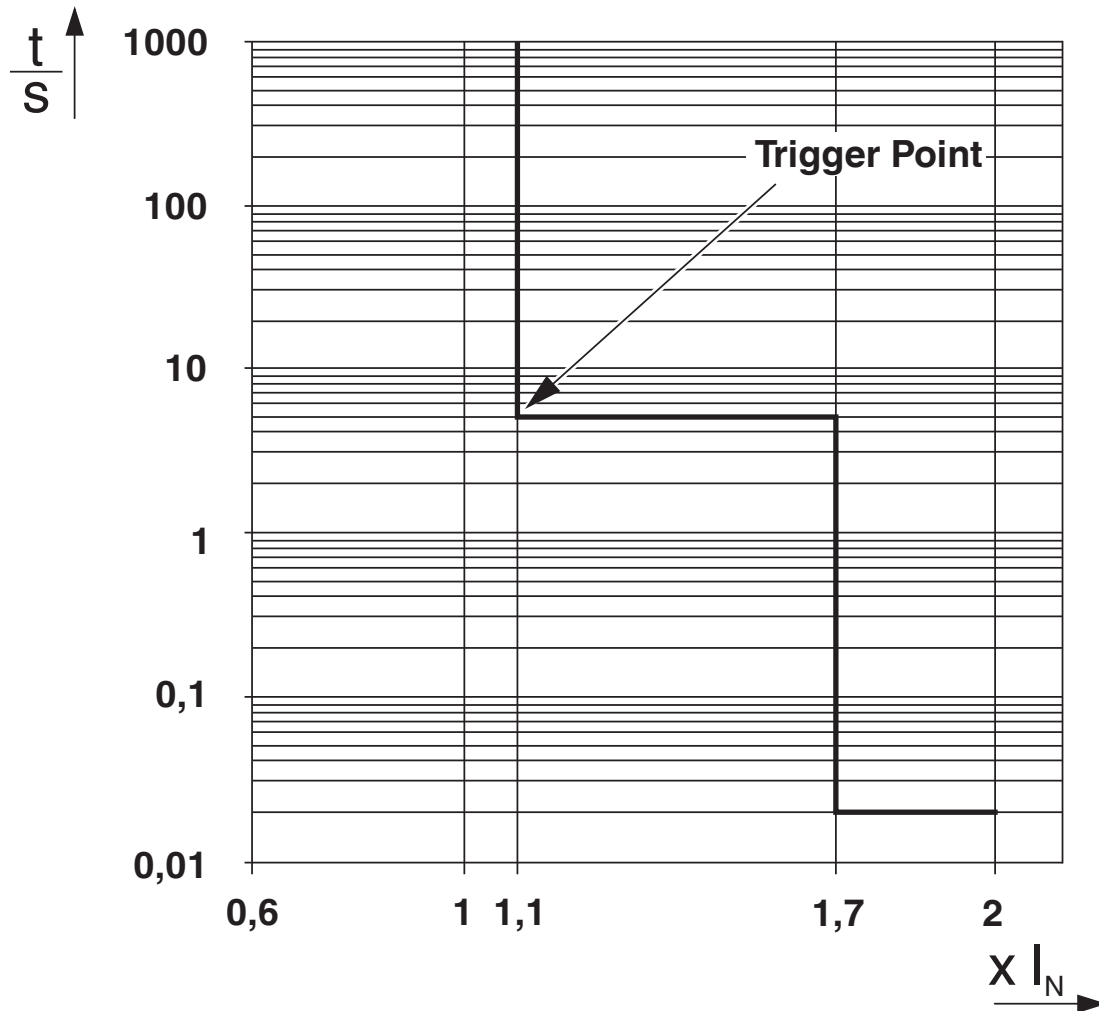
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Diagram



Tripping characteristic < 4 A

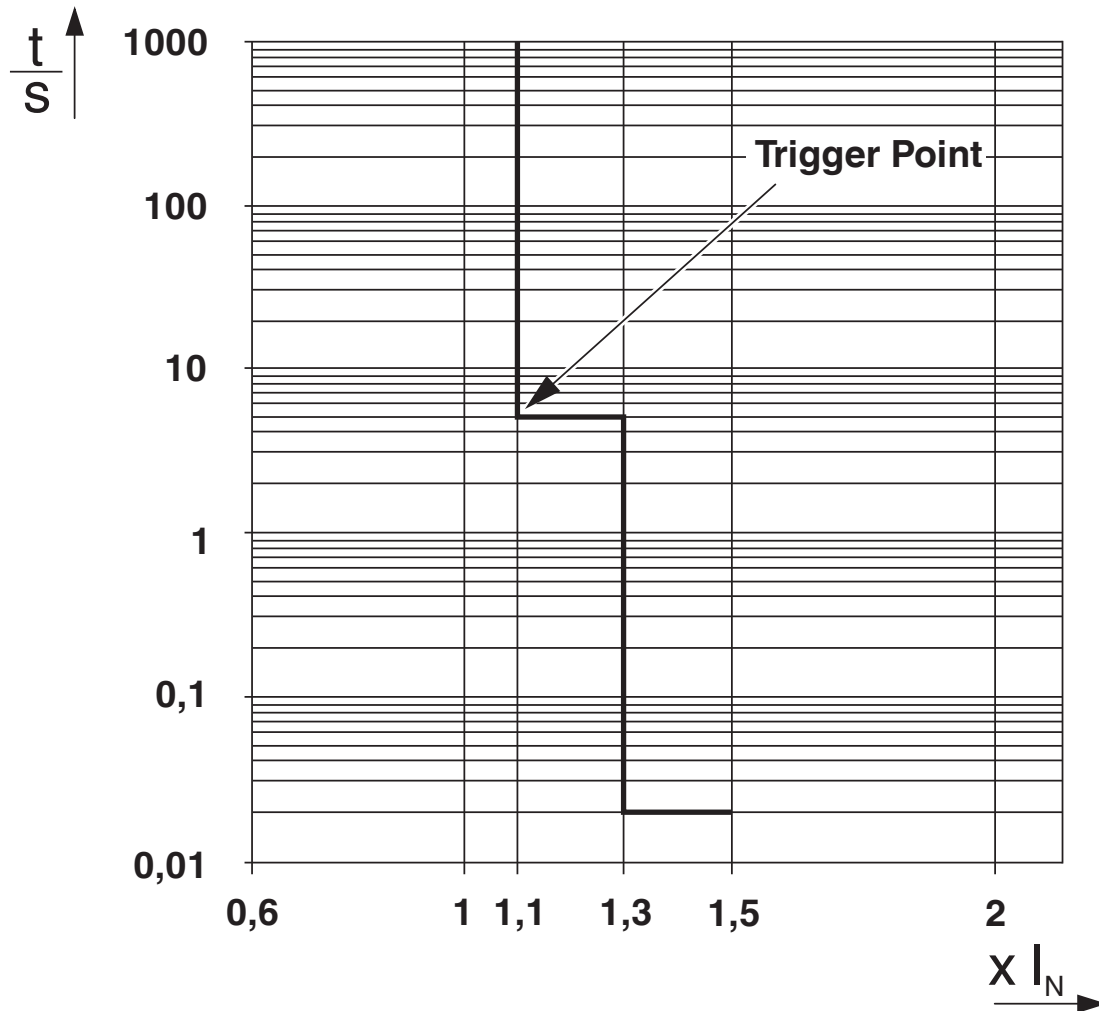
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Diagram



Tripping characteristic  $\geq 4$  A

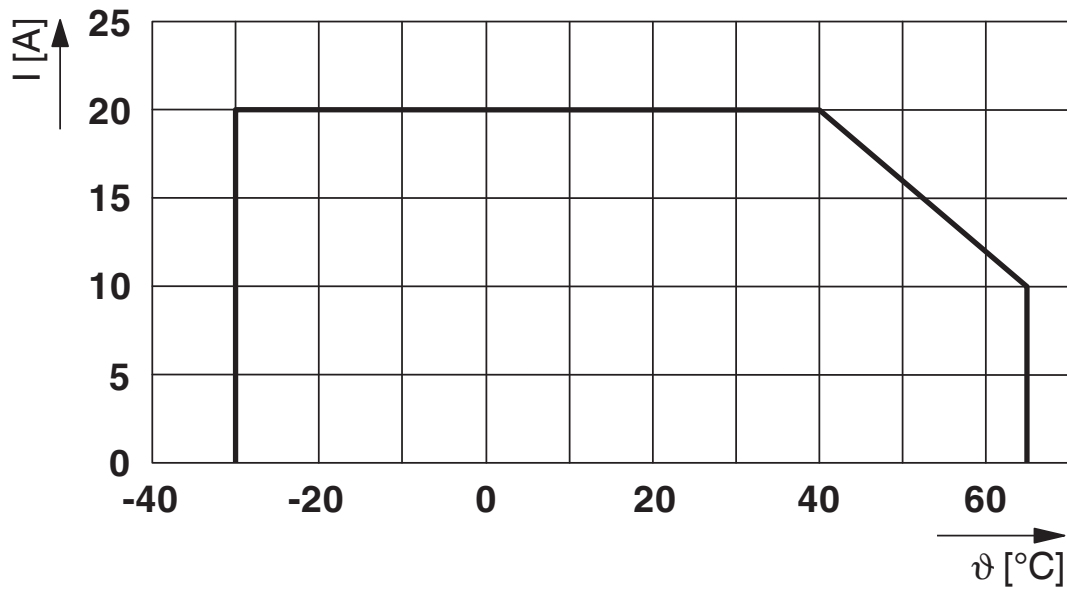
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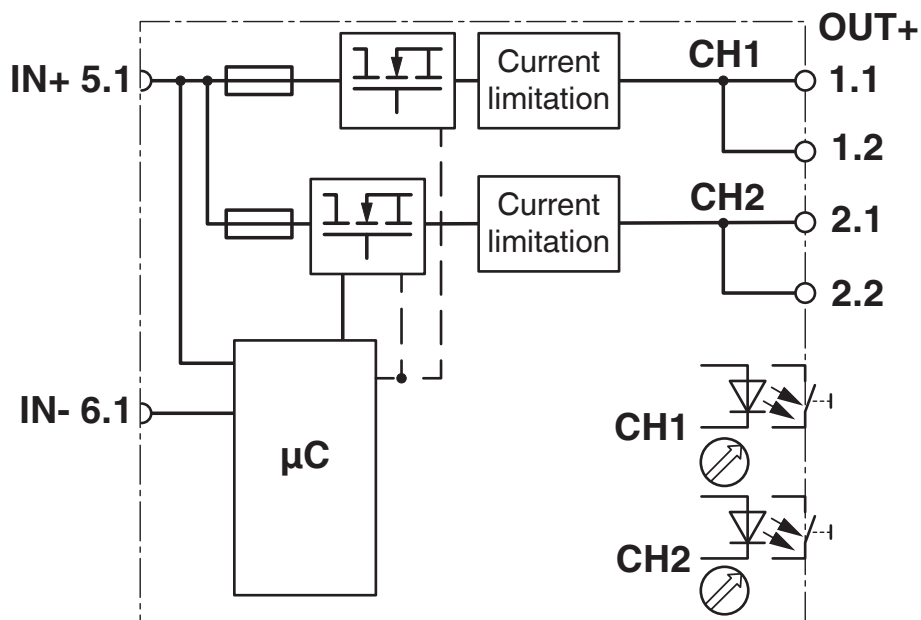
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Diagram



Max. permissible current in relation to the ambient temperature

Block diagram



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## Approvals

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**UL Recognized**

Approval ID: FILE E 317172



**UL Listed**

Approval ID: E123528



**cUL Listed**

Approval ID: E123528



**UL Recognized**

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**cUL Listed**

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Approval ID: FILE E 324415



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Approval ID: FILE E 324415

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## Classifications

### ECLASS

ECLASS-13.0	27140401
ECLASS-15.0	27140401

### ETIM

ETIM 10.0	EC003538
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### UNSPSC

UNSPSC 21.0	39121400
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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	50eb8a01-eed3-4436-8128-f47929b7fe53

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