

# TRIO-PS-2G/1500DC/24DC/8 - DC/DC converter



1075240

<https://www.phoenixcontact.com/ae/products/1075240>

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Primary-switched TRIO POWER DC/DC converter with Push-in connection for DIN rail mounting, input: 1,500 V DC, output: 24 V DC / 8 A

## Product description

The DC/DC converters in the TRIO POWER family supply your system directly from the field and provide a reliable power supply even without a central grid. They are particularly well-suited for photovoltaic applications, where they also allow the central inverter to be started without a supplying grid.

## Your advantages

- Suitable for use in all photovoltaic systems with high input voltage due to conformity with standards UL 62109 and UL 1741
- High system availability with a robust design that ensures partial discharge resistance
- Direct, immediate supply from the solar field to supply the string monitoring function within string combiner boxes
- Quick and easy installation with Push-in connection

## Commercial data

Item number	1075240
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CMD
Product key	CMDO43
GTIN	4055626779492
Weight per piece (including packing)	1,546 g
Weight per piece (excluding packing)	1,537 g
Customs tariff number	85044095
Country of origin	CN

## Technical data

### Input data

#### DC operation

Nominal input voltage range	600 V DC ... 1500 V DC
Input voltage range	600 V DC ... 1500 V DC -15 % ... +10 %
Wide-range input	no
Input voltage range DC	600 V DC ... 1500 V DC -15 % ... +10 %
Electric strength, max.	≤ 1800 V DC 1 s
Typical national grid voltage	1500 V DC
	600 V DC
Voltage type of supply voltage	DC
Inrush current integral ( $I^2t$ )	typ. 0.15 A <sup>2</sup> s
Current consumption	typ. 0.35 A (600 V DC)
	typ. 0.145 A (1500 V DC)
Recommended breaker for input protection	1 A (gPV)
Recommended fuse for input protection	1500 V DC

### Output data

Efficiency	typ. 91.5 % (600 V DC)
	typ. 90.9 % (900 V DC)
	typ. 89 % (1500 V DC)
Nominal output voltage	24 V DC ±1 %
Setting range of the output voltage ( $U_{Set}$ )	24 V DC ... 28 V DC (> 24 V DC, constant capacity restricted)
Nominal output current ( $I_N$ )	8 A
Derating	> 60 °C ... 70 °C (2.5 %/K)
Feedback voltage resistance	≤ 35 V DC
Protection against overvoltage at the output (OVP)	≤ 30 V DC
Control deviation	< 1 % (change in load, static 10 % ... 90 %)
	< 3 % (Dynamic load change 10 % ... 90 %, 10 Hz)
	< 0.1 % (change in input voltage ±10 %)
Residual ripple	< 40 mV <sub>PP</sub> (Ripple)
	< 50 mV <sub>PP</sub> (Noise)
Short-circuit-proof	yes
No-load proof	yes
Output power	192 W
Maximum no-load power dissipation	< 9 W
Power loss nominal load max.	< 24 W
Rise time	≤ 30 ms ( $U_{OUT}$ (10 % ... 90 %))
Connection in parallel	yes, for redundancy and increased capacity
Connection in series	no
Fuse protection (secondary side)	electronic

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Signal: DC OK

Continuous load current	100 mA
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Signal relay 13/14

Default	closed
Digital	30 V AC 30 V DC 100 mA

## Connection data

Input

Connection method	Push-in connection
Conductor cross-section, rigid min.	1 mm <sup>2</sup>
Conductor cross-section, rigid max.	4 mm <sup>2</sup>
Conductor cross-section flexible min.	1 mm <sup>2</sup>
Conductor cross-section flexible max.	2.5 mm <sup>2</sup>
Single conductor/flexible terminal point with ferrule with plastic sleeve, min.	1 mm <sup>2</sup>
Single conductor/flexible terminal point with ferrule with plastic sleeve, max.	2.5 mm <sup>2</sup>
Single conductor/flexible terminal point with ferrule without plastic sleeve, min.	1 mm <sup>2</sup>
Single conductor/flexible terminal point with ferrule without plastic sleeve, max.	2.5 mm <sup>2</sup>
Conductor cross-section AWG min.	18
Conductor cross-section AWG max.	12
Stripping length	10 mm

Output

Connection method	Push-in connection
Conductor cross-section, rigid min.	1 mm <sup>2</sup>
Conductor cross-section, rigid max.	4 mm <sup>2</sup>
Conductor cross-section flexible min.	1 mm <sup>2</sup>
Conductor cross-section flexible max.	2.5 mm <sup>2</sup>
Single conductor/flexible terminal point with ferrule with plastic sleeve, min.	0.2 mm <sup>2</sup>
Single conductor/flexible terminal point with ferrule with plastic sleeve, max.	1.5 mm <sup>2</sup>
Single conductor/flexible terminal point with ferrule without plastic sleeve, min.	0.2 mm <sup>2</sup>
Single conductor/flexible terminal point with ferrule without plastic sleeve, max.	1.5 mm <sup>2</sup>
Conductor cross-section AWG min.	18
Conductor cross-section AWG max.	12
Stripping length	10 mm

Signal

Connection method	Push-in connection
Conductor cross-section, rigid min.	0.2 mm <sup>2</sup>

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Conductor cross-section, rigid max.	1.5 mm <sup>2</sup>
Conductor cross-section flexible min.	0.2 mm <sup>2</sup>
Conductor cross-section flexible max.	1.5 mm <sup>2</sup>
Single conductor/flexible terminal point with ferrule with plastic sleeve, min.	0.2 mm <sup>2</sup>
Single conductor/flexible terminal point with ferrule with plastic sleeve, max.	1.5 mm <sup>2</sup>
Single conductor/flexible terminal point with ferrule without plastic sleeve, min.	0.2 mm <sup>2</sup>
Single conductor/flexible terminal point with ferrule without plastic sleeve, max.	1.5 mm <sup>2</sup>
Conductor cross-section AWG min.	24
Conductor cross-section AWG max.	16
Stripping length	8 mm

## Signaling

Types of signaling	LED
	Floating signal contact

### Signal output: LED status indicator

Signalization designation	DC OK
Status display	"DC OK" LED green
Note on status display	$U_{OUT} > 21.5 \text{ V}$ : LED lights up
Color	green
DC OK	$U_{OUT} > 0.9 \times U_N$ ( $U_N = 24 \text{ V DC}$ )

## Electrical properties

Number of phases	1
Insulation voltage input/output	4.2 kV DC (type test)
	2.6 kV DC (routine test)

## Product properties

Product type	DC/DC converters
Product family	TRIO POWER
MTBF (IEC 61709, SN 29500)	> 1500000 h (25 °C)
	> 900000 h (40 °C)
	> 400000 h (60 °C)

### Insulation characteristics

Protection class	I
Degree of pollution	2

## Dimensions

# TRIO-PS-2G/1500DC/24DC/8 - DC/DC converter



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Dimensional drawing	
Width	88.5 mm
Height	130 mm
Depth	160 mm

## Installation dimensions

Installation distance right/left	0 mm / 0 mm ( $\leq 40^\circ\text{C}$ )
Installation distance right/left (active)	10 mm / 10 mm ( $\leq 70^\circ\text{C}$ )
Installation distance top/bottom	50 mm / 50 mm ( $\leq 70^\circ\text{C}$ )
Installation distance top/bottom (active)	50 mm / 50 mm ( $\leq 70^\circ\text{C}$ )

## Mounting

Mounting type	DIN rail mounting
Assembly note	alignable: horizontally 0 mm ( $\leq 40^\circ\text{C}$ ) 10 mm ( $\leq 70^\circ\text{C}$ ), vertically 50 mm
Mounting position	horizontal DIN rail NS 35, EN 60715
With protective coating	no

## Material specifications

Flammability rating according to UL 94 (housing / terminal blocks)	V0
Housing material	Metal
Type of housing	Aluminum (AlMg3)
Hood version	Polycarbonate

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	$-25^\circ\text{C} \dots 70^\circ\text{C}$ ( $>60^\circ\text{C}$ derating: 1.2%/K)
Ambient temperature (storage/transport)	$-40^\circ\text{C} \dots 85^\circ\text{C}$
Ambient temperature (start-up type tested)	$-40^\circ\text{C}$
Maximum altitude	$\leq 4000\text{ m}$ ( $> 2000\text{ m}$ , Derating: 10 %/1000 m)
Climatic class	3K3 (in acc. with EN 60721)
Max. permissible relative humidity (operation)	$\leq 95\%$ (at $25^\circ\text{C}$ , non-condensing)
Shock	18 ms, 30g, in each space direction (according to IEC 60068-2-27)
Vibration (operation)	$< 15\text{ Hz}$ , amplitude $\pm 2.5\text{ mm}$ (according to IEC 60068-2-6) $15\text{ Hz} \dots 150\text{ Hz}$ , 2.3g, 90 min.

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## Standards and regulations

Standard - Electrical safety	EN 62109-1:2011
Standard – Safety extra-low voltage	IEC 62109-1:2011 (SELV)
Standard - Safe isolation	DIN VDE 0100-410

### Overvoltage category

IEC 62109-1	II
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## Approvals

UL approvals	UL 62109-1:2014
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## EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Low Voltage Directive	Conformance with Low Voltage Directive 2014/35/EC
Noise immunity	EN 61000-6-2:2005

### Conducted noise emission

Standards/regulations	EN 55016
	EN 61000-6-4 (Class A)

### Noise emission

Standards/regulations	EN 55016
	EN 61000-6-4 (Class A)

### Electrostatic discharge

Standards/regulations	EN 61000-4-2
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### Electrostatic discharge

Contact discharge	4 kV (Test Level 2)
Discharge in air	8 kV (Test Level 3)
Comments	Criterion A

### Electromagnetic HF field

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

Frequency range	80 MHz ... 1 GHz
Test field strength	20 V/m (> Test intensity 3)
Frequency range	1 GHz ... 2 GHz
Test field strength	10 V/m (Test Level 3)
Frequency range	2 GHz ... 3 GHz
Test field strength	10 V/m (Test Level 3)
Comments	Criterion A

### Fast transients (burst)

Standards/regulations	EN 61000-4-4
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### Fast transients (burst)

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Input	4 kV (Test Level 4 - asymmetrical)
Output	2 kV (Test Level 3 - asymmetrical)
Signal	1 kV (Test Level 3 - asymmetrical)
Comments	Criterion B

## Surge voltage load (surge)

Standards/regulations	EN 61000-4-5
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## Surge voltage load (surge)

Input	3 kV (Test intensity >4 - symmetrical)
	6 kV (Test intensity >4 - asymmetrical)
Output	1 kV (Test Level 3 - symmetrical)
	2 kV (Test Level 3 - asymmetrical)
Signal	1 kV (Test Level 3 - symmetrical)
	2 kV (Test Level 3 - asymmetrical)
Comments	Criterion B

## Conducted interference

Standards/regulations	EN 61000-4-6
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## Conducted interference

Input/Output	asymmetrical
Frequency range	0.15 MHz ... 80 MHz
Comments	Criterion A
Voltage	10 V (Test Level 3)

## Voltage dips

Standards/regulations	EN 61000-4-11
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## Emitted interference

Standards/regulations	EN 61000-6-4
Radio interference voltage in acc. with EN 55011	EN 55011 (EN 55022) Class A industrial area of application
Emitted radio interference in acc. with EN 55011	EN 55011 (EN 55022) Class A industrial area of application

## Criteria

Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.

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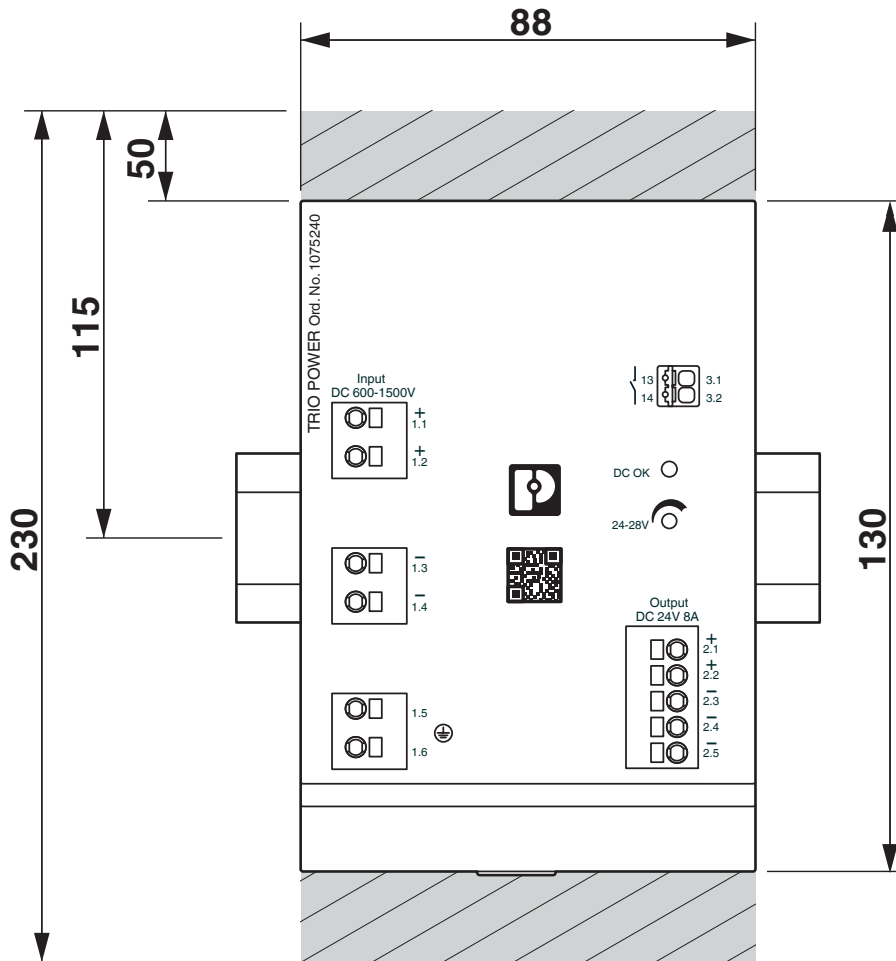


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## Drawings

Dimensional drawing



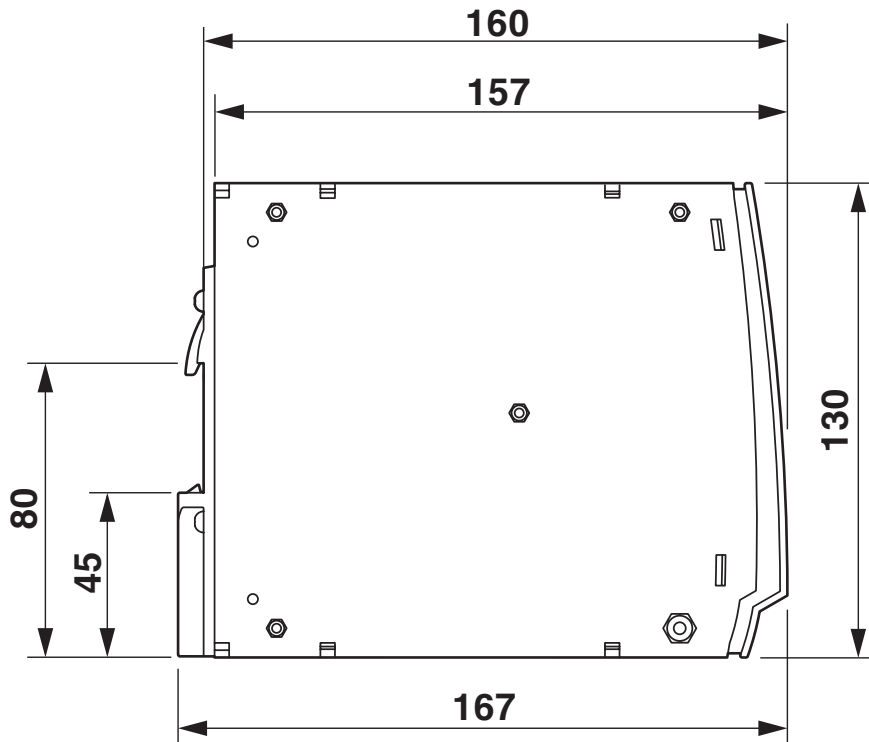
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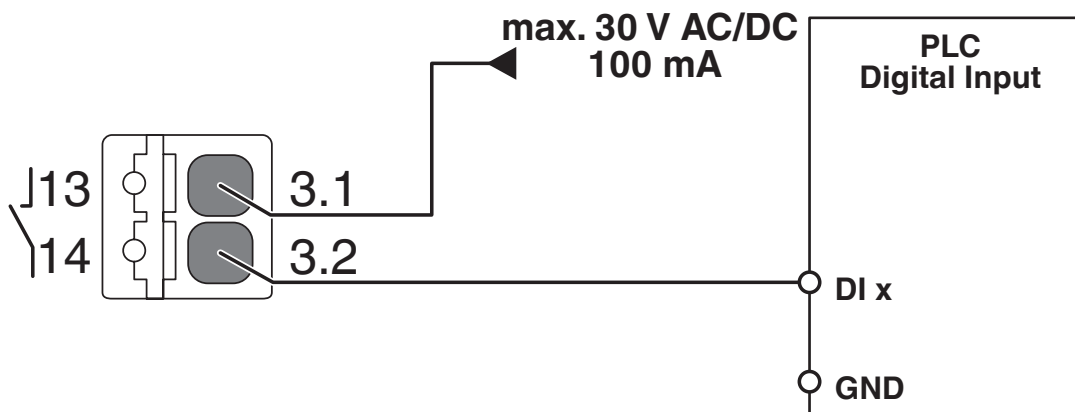
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Dimensional drawing



Connection diagram



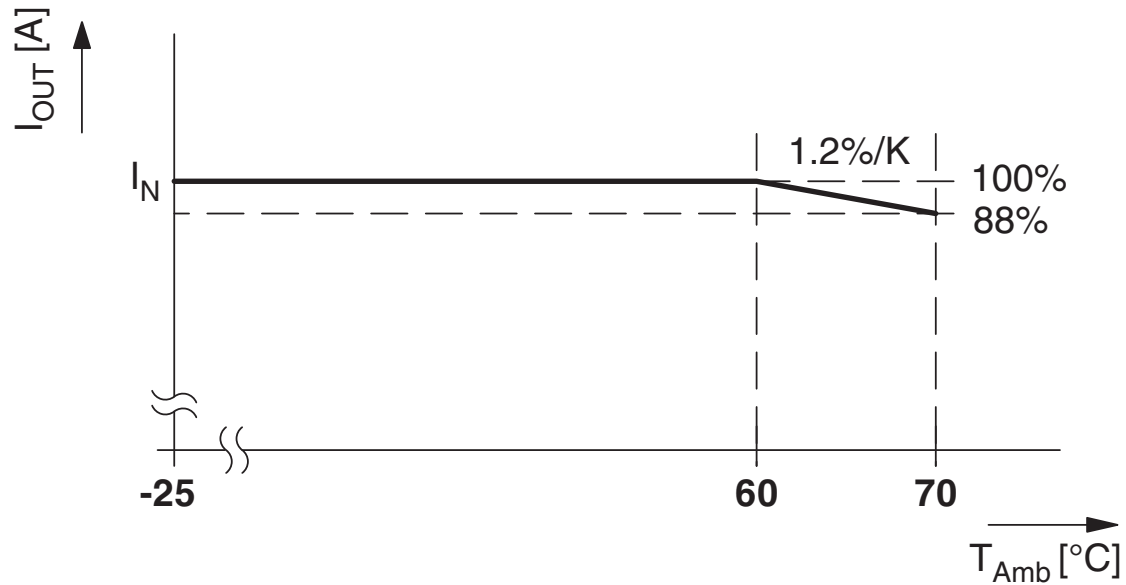
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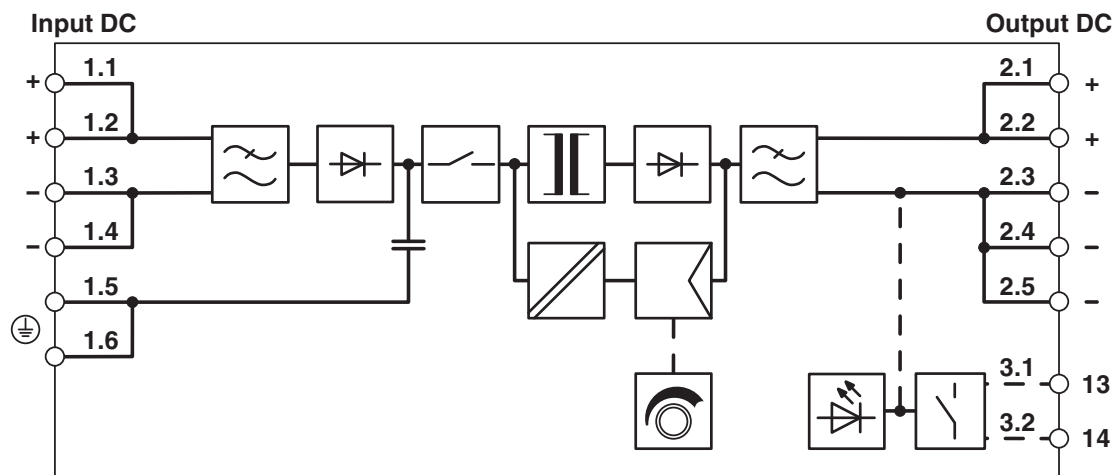
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Diagram



Block diagram



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## Approvals

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**cUL Recognized**

Approval ID: FILE E 476951



**UL Recognized**

Approval ID: FILE E 476951



**IECEE CB Scheme**

Approval ID: US-33734-UL



**EAC**

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

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## Classifications

### ECLASS

ECLASS-13.0	27040701
ECLASS-15.0	27040701

### ETIM

ETIM 9.0	EC002540
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### UNSPSC

UNSPSC 21.0	39121000
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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	6(a), 6(a)-I, 6(c), 7(a), 7(c)-I

### China RoHS

Environment friendly use period (EFUP)	EFUP-25
	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)
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### EF3.0 Climate Change

CO2e kg	53.72 kg CO2e
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