

# CBM E8 24DC/0.5-10A NO-R - Electronic circuit breaker



2905744

<https://www.phoenixcontact.com/us/products/2905744>

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Multi-channel, electronic circuit breaker with active current limitation for protecting eight loads at 24 V DC in the event of overload and short circuit. With nominal current assistant and electronic locking of the set nominal currents. For installation on DIN rails.

## Your advantages

- Easy to configure, thanks to the nominal current assistant
- Active current limitation to improve the capacity of the upstream power supply
- Adjustable in increments per channel:  
from 0.5 A to 10 A
- Easy system monitoring with early signaling and direct pickup of information at the product
- Increased system availability with intelligent detection of under- and overvoltage

## Commercial data

Item number	2905744
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL13
Product key	CLA151
GTIN	4046356992367
Weight per piece (including packing)	284.4 g
Weight per piece (excluding packing)	284.4 g
Customs tariff number	85362010
Country of origin	DE

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## Technical data

### Notes

#### General

Note	Always connect the negative pole to terminal IN- to ensure the internal power supply. Return currents from the loads must not be fed back to the power supply via IN- of the circuit breaker.
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### Product properties

Product type	Device circuit breakers
Product family	CBM
Type	DIN rail module, one-piece
Number of positions	1
No. of channels	8

#### Insulation characteristics

Protection class	III
Pollution degree	2

### Electrical properties

#### General

Operating voltage	16.5 V DC ... 30 V DC
Rated voltage	24 V DC
Rated current $I_N$	max. 80 A (for double supply IN+ with at least 2 x 6 mm <sup>2</sup> )
Rated current $I_N$	0.5 / 1 / 2 / 4 / 6 / 10 A DC (adjustable per output channel)
Rated current (pre-adjusted)	0.5 A
Rated surge voltage	0.5 kV
Tripping method	E (electronic)
Feedback resistance	max. 35 V DC
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	max. 30 V DC (Load circuit)
Active current limitation	typ. 2.0 x $I_N$ (0.5 - 1 A) typ. 1.5 x $I_N$ (2 - 10 A)
Fuse	electronic
Efficiency	> 99 %
Closed circuit current $I_0$	typ. 50 mA
Power dissipation	0.8 W (No-load operation) 13 W (Nominal operation)
Module initialization time	2 s
Waiting time after switch off of a channel	10 s (at overload / short circuit)
Measuring tolerance I	typ. 40 % (0.5 A ... 1 A) typ. 10 % (2 A ... 10 A)

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Temperature derating	40 A DC (at 70 °C)
	50 A DC (at 60 °C)
	60 A DC (at 50 °C)
	80 A DC (at 40 °C)
MTBF (IEC 61709, SN 29500)	1581841 h (at 25 °C with 21 % load)
	633955 h (at 40°C with 34.25% load)
	229044 h (at 40°C with 100% load)
Fail-safe element	15 A DC (per output channel)
Contact switching type	without electrical isolation

## Load circuit

Shutdown time	typ. 0.02 s (0.005 s ... 0.05 s at $> 1.3 \times I_N$ )
	typ. 30 s (29.5 s ... 30.5 s at $1.1 \dots 1.3 \times I_N$ )
Undervoltage switch-off	$\leq 15.8 \text{ V DC (active)}$
	$\geq 16.5 \text{ V DC (inactive)}$
Overvoltage switch-off	$\geq 30.5 \text{ V DC (active)}$
	$\leq 29.5 \text{ V DC (inactive)}$
Max. capacitive load	75000 $\mu\text{F}$
Switch-on delay	0.1 s (per output channel)

## Reset

Input voltage range	7 V DC ... 30 V DC (Reset with falling edge)
Current consumption	typ. 0.4 mA (at 24 V DC)
Pulse length	$\geq 50 \text{ ms (High signal)}$
	$\geq 50 \text{ ms (Low signal)}$
Voltage	$< 5 \text{ V DC (Low signal)}$
	$> 8 \text{ V DC (High signal)}$

## Status output

Output voltage	24 V DC
Output current	max. 20 mA (when $I > 80\%$ at at least one channel)

## Indicator/remote signaling

Connection name	Remote indication circuit
Switching function	N/O contact
Operating voltage	0 V DC ... 30 V DC
Operating current	1 mA DC ... 100 mA DC

## Connection data

### Main circuit IN+

Connection method	Push-in connection
Stripping length	18 mm
Conductor cross-section rigid	0.75 mm <sup>2</sup> ... 16 mm <sup>2</sup>
Conductor cross-section AWG	20 ... 4
Conductor cross-section, flexible, with ferrule, with plastic sleeve	0.75 mm <sup>2</sup> ... 10 mm <sup>2</sup>

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Conductor cross-section, flexible, with ferrule, without plastic sleeve	0.75 mm <sup>2</sup> ... 16 mm <sup>2</sup>
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## Main circuit IN-

Connection method	Push-in connection
Stripping length	10 mm
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 2.5 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> ... 1.5 mm <sup>2</sup>
Conductor cross-section, flexible, with ferrule, without plastic sleeve	0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>

## Main circuit OUT

Connection method	Push-in connection
Stripping length	10 mm
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 2.5 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> ... 1.5 mm <sup>2</sup>
Conductor cross-section, flexible, with ferrule, without plastic sleeve	0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>

## Remote indication circuit

Connection method	Push-in connection
Stripping length	10 mm
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 2.5 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> ... 1.5 mm <sup>2</sup>
Conductor cross-section, flexible, with ferrule, without plastic sleeve	0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>

## Signaling

DC OK LED off	off (No supply voltage)
DC OK LED yellow	lit (Undervoltage active, voltage $\leq 15.8$ V, active channels switched off and channel LEDs are lit red)
	flashing (Undervoltage switch-off inactive, device was in undervoltage switch-off)
DC OK LED green	lit (Operating voltage in nominal range 16,5 ... 30 V)
DC OK LED red	lit (Overvoltage switch-off active, voltage $\geq 30.5$ V, channels switched off and channel LEDs are lit red)
	flashing (Overvoltage switch-off inactive, device was in overvoltage shutdown)
Channel LED off	off (Channel switched off)
Channel LED yellow	lit (Channel switched on, channel load $> 80\%$ )
Channel LED yellow-green	flashing (Channel switched on, nominal current assistant active)
Channel LED green	lit (Channel switched on)
	flashing (Channel switched on, programming mode active)
	lit (Channel switched off, over- or undervoltage active)

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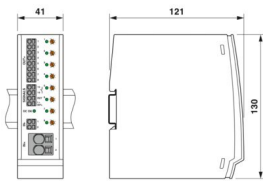


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Channel LED red	ON temporarily (Channel switched off, 10 s cool-down phase, overload or short-circuit release)
	flashing (Channel switched off, ready to be switched back on, overload or short-circuit release)
Channel LED red-yellow	flashing (Channel switched on, overload mode, capacity approximately 110 ... 130% , shutdown after 30 s)
Channel LED red-green	flashing (Channel switched off, programming mode active, current adjustment after overload or short-circuit release)

## Dimensions

Dimensional drawing	
Width	41 mm
Height	130 mm
Depth	121 mm (incl. DIN rail 7.5 mm)

## Material specifications

Color	light gray (RAL 7035)
	gray (RAL 7042)
Material	PC
	PA 6.6
	PC
	PBT-FR17
	POM
Flammability rating according to UL 94	V-0

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-25 °C ... 70 °C (Startup at -40 C type-tested)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Altitude	≤ 6000 m (amsl)
Humidity test	240 h, 95 % RH, 40 °C
Shock (operation)	30g (IEC 60068-2-27, Test Ea)
Vibration (operation)	5 Hz ... 24.9 Hz (Amplitude ±1.6 mm; in accordance with IEC 60068-2-6, Test Fc)
	24.9 Hz ... 150 Hz (Acceleration 4g; in accordance with IEC 60068-2-6, Test Fc with additional resonance frequency testing in accordance with DNV GL)

## Approvals

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## UL approval

Identification	UL/C-UL Listed UL 508
	UL Recognized UL 2367
	UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)

## Shipbuilding approval

Identification	DNV GL
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## Corrosive gas test

Identification	ISA S71.04.2013 G3 Harsh Group A
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## Shipbuilding data

Temperature	D
Humidity	B
Vibration	B
EMC	A
Enclosure	Required protection according to the Rules shall be provided upon installation on board

## Standards and regulations

Standards/specifications	EN/IEC 61000-6-2
Note	EMC – Immunity for industrial areas
Standards/specifications	EN/IEC 61000-6-3
Note	EMC – Emission for residential, business and commercial properties and small operations
Standards/specifications	EN/IEC 61000-6-8
Note	EMC interference emission for professional devices that are used in business and commercial areas as well as in small businesses
Standards/specifications	IEC 60068-2-6
Note	Environmental influences – Vibrations (sinusoidal)
Standards/specifications	IEC 60068-2-1
Note	Environmental influences – Part 2-1: Tests – Test A: Cold
Standards/specifications	IEC 60068-2-2
Note	Environmental influences – Part 2-2: Tests – Test B: Dry heat
Standards/specifications	IEC 60068-2-78
Note	Environmental influences – Moisture and heat, constant
Standards/specifications	IEC 60068-2-30
Note	Environmental influences – Part 2-30: Tests – Test Db: Damp heat, cyclical

## Mounting

Mounting type	DIN rail: 35 mm
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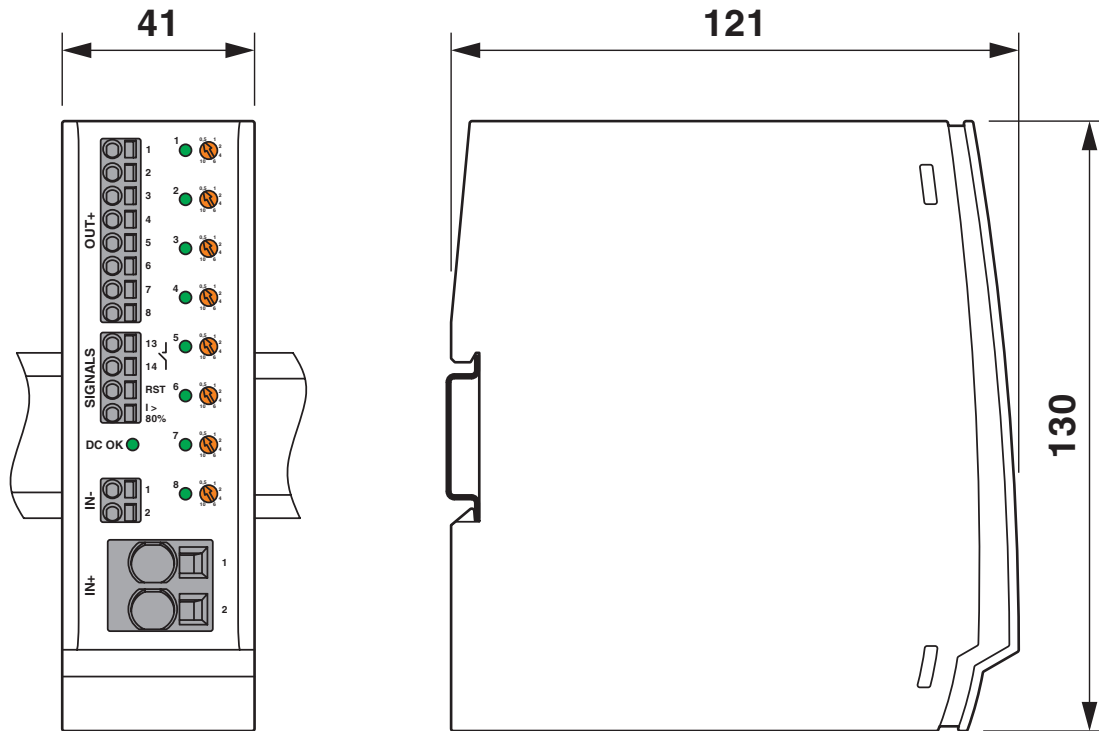


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## Drawings

Dimensional drawing

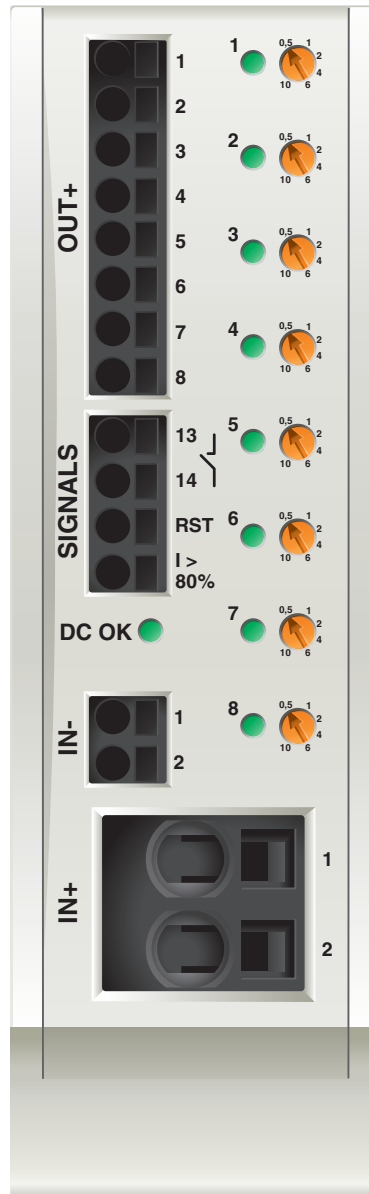


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Product drawing

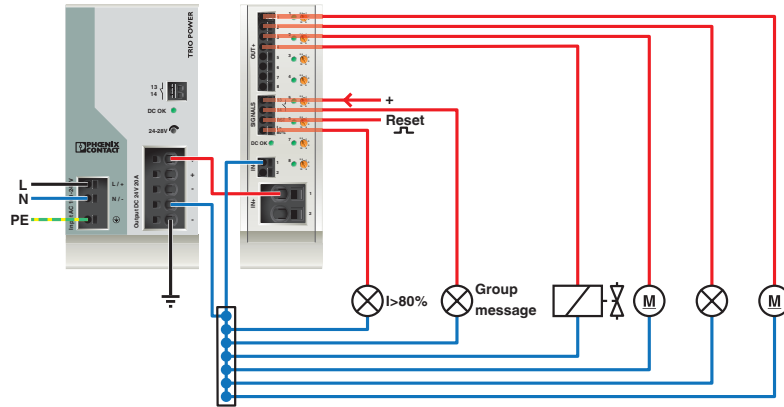


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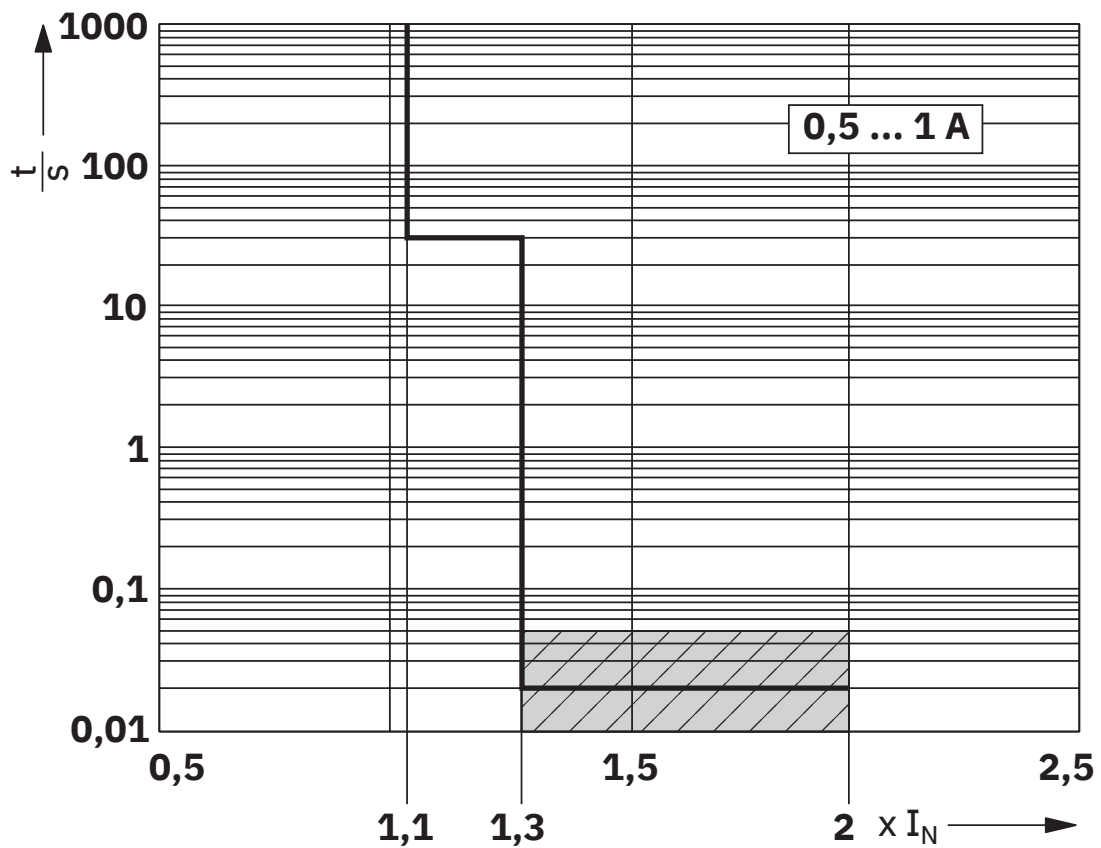
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Application drawing



Diagram



Trigger characteristic in the DC range

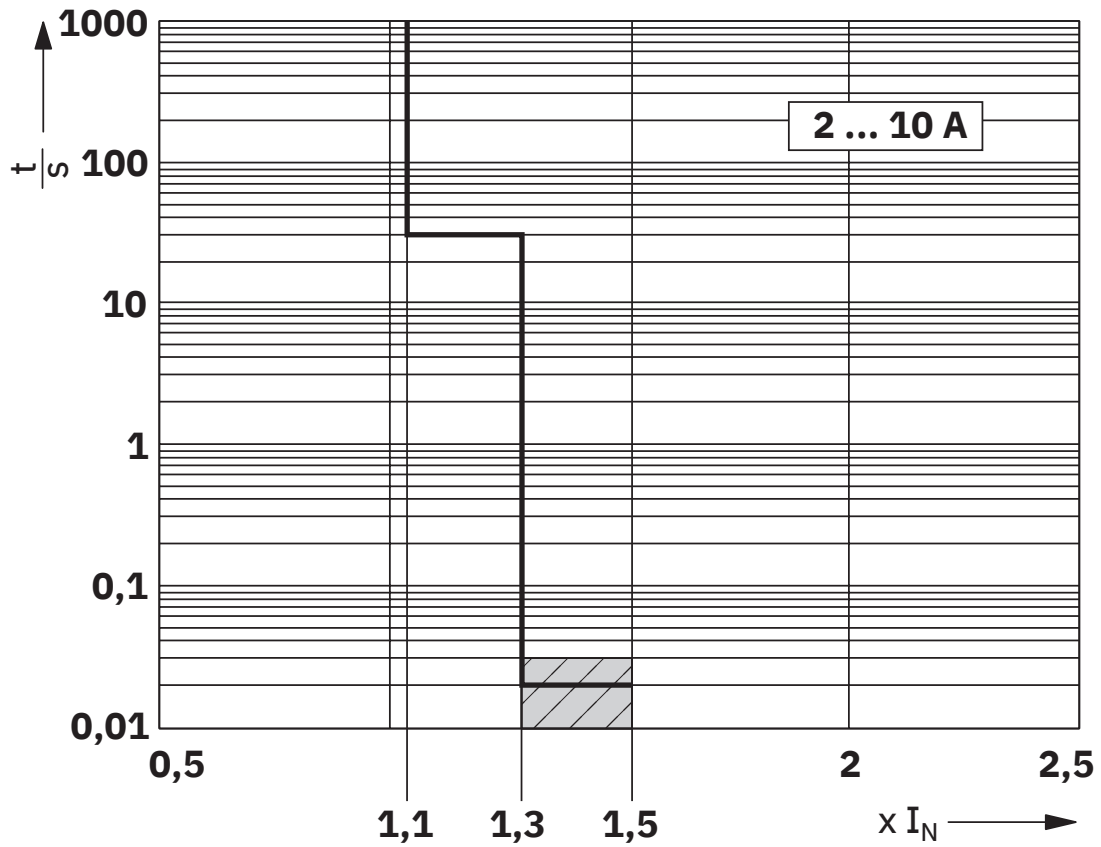
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Diagram



Trigger characteristic in the DC range

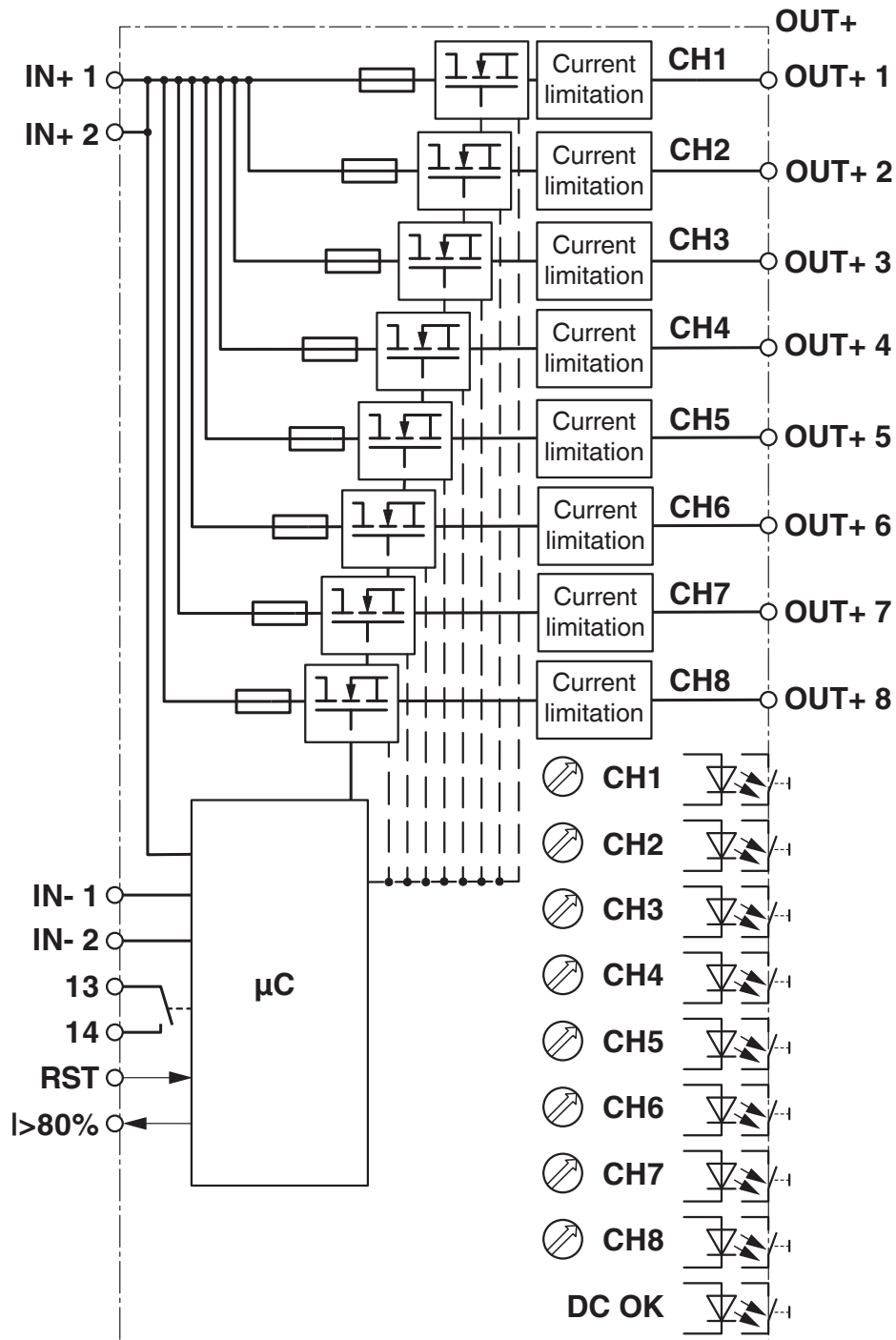
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Block diagram



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## Approvals

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**UL Recognized**  
Approval ID: E317172



**DNV GL**  
Approval ID: TAA00000U2



**UL Listed**  
Approval ID: E123528



**cUL Listed**  
Approval ID: E123528



**UL Recognized**  
Approval ID: E324415



**cUL Listed**  
Approval ID: E483407



**UL Listed**  
Approval ID: E483407

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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	34, 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)
	Perfluorobutane sulfonic acid (PFBS) and its salts(CAS: n/a)
	Lead(CAS: 7439-92-1)
	Perfluorobutane sulfonic acid (PFBS) and its salts(CAS: n/a)
SCIP	3eb6a9fc-0de7-4d5f-af02-ec25c9a53840

### EF3.1 Climate Change

CO2e kg	6.17 kg CO2e
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