

# PTCB E1 24DC/0.1-0.63A SI-R - Electronic circuit breaker



1441496

<https://www.phoenixcontact.com/us/products/1441496>

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Single-channel, electronic device protection for 12-24 V DC loads. Nominal current adjustable from 0.1-0.63 A. With remote signaling, remote reset, and active current limitation. Can be combined with CLIPLINE terminal blocks. For installation on DIN rails.



## Your advantages

- Precise fault localization and fast recovery thanks to status message and local and remote reset options
- Effortless system planning with precise shutdown, low voltage losses, and adjustable current values
- More space in the control cabinet due to integrated potential distribution of positive and negative in 6 mm
- Simple application setup due to bridging option to CLIPLINE complete terminal block system

## Commercial data

Item number	1441496
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL10
Product key	CLA135
GTIN	4063151823221
Weight per piece (including packing)	32.25 g
Weight per piece (excluding packing)	25.84 g
Customs tariff number	85363010
Country of origin	DE

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## Technical data

### Notes

#### General

Note	Connection for signal line tested in accordance with EN 61000-4-4 with 1 kV; if necessary, customer must provide appropriate protective measures
	Repeated hard short circuits can reduce the melting integral of the integrated backup fuse.

### Product properties

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

#### 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 $I_N$	15 A (Total current input)
	0.5 A (Rated current output)
Rated current $I_N$	0.1 / 0.2 / 0.315 / 0.4 / 0.5 / 0.63 A DC (adjustable)
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. 35 V DC (Load circuit)
Active current limitation	$\leq 1,2 \times I_N$ , depending on the current setting
Fuse	electronic
Efficiency	> 98.5 %
Closed circuit current $I_0$	typ. 3.8 mA
Power dissipation	typ. 0.1 W (No-load operation)
	< 0.7 W (Nominal operation)
Module initialization time	40 ms

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Waiting time after switch off of a channel	5 s (at overload / short circuit)
Measuring tolerance I	± 17 % (Depending on the nominal current setting)
Temperature derating	15 A (Total current at 60°C)
	20 A (Total current at 50°C)
MTBF (IEC 61709, SN 29500)	27034333 h (at 25 °C with 21 % load)
	11609008 h (at 40°C with 34.25% load)
	1631800 h (at 60°C with 100% load)
Voltage drop	≤ 0.35 V (Depending on the nominal current setting)
Fail-safe element	4 A DC
Contact switching type	without electrical isolation

## Load circuit

Shutdown time	≤ 600 ms
	≥ 12 ms (Depending on the current setting and the available load)
	Shutdown ≤ 1.2 x I <sub>N</sub> , depending on the nominal current setting
Undervoltage switch-off	≤ 9.2 V DC (active)
	≥ 10.2 V DC (inactive)
Overvoltage switch-off	≥ 30.5 V DC (active)
	≤ 29.5 V DC (inactive)
Max. capacitive load	4.7 mF (Depending on the current setting and the short-circuit current available)

## 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	≥ 50 ms (High)
	≥ 50 ms (Low)
Voltage	< 5 V DC (Low state)
	> 8 V DC (High state)
Stripping length	8 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> ... 2.5 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>

## Status output

Output voltage	24 V DC (Error)
	0 V DC (no error)
Output current	max. 0.015 A (Short-circuit-proof)
Stripping length	8 mm
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> ... 2.5 mm <sup>2</sup>
Conductor cross-section, flexible, with ferrule, without plastic	0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>

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sleeve

## Connection data

### Main circuit IN+

Connection method	Push-in connection
Stripping length	8 mm
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 2.5 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	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section, flexible, with ferrule, without plastic sleeve	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>

### Main circuit IN-

Connection method	Push-in connection
Stripping length	8 mm
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 2.5 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	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section, flexible, with ferrule, without plastic sleeve	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>

### Main circuit OUT

Connection method	Push-in connection
Stripping length	8 mm
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 2.5 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	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section, flexible, with ferrule, without plastic sleeve	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>

## Signaling

Channel LED off	off (Channel switched off)
Channel LED yellow	flashing (Programming mode active)
Channel LED green	lit (Channel switched on)
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)
	flashing quickly (Channel switched off, external voltage at the output, possible installation error)

## Dimensions

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Dimensional drawing	
Width	6.2 mm
Height	105.8 mm
Depth	55.6 mm (incl. DIN rail 7.5 mm)

## Material specifications

Color	gray (RAL 7042)
Material	PBT
	PBT
Flammability rating according to UL 94	V-0

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-30 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 70 °C
Altitude	≤ 3000 m up to 52 °C (amsl) ≤ 4000 m up to 46 °C (amsl)
Humidity test	96 h, 95 % RH, 40 °C
Shock (operation)	30g (IEC 60068-2-27, Test Ea)
Vibration (operation)	10 Hz ... 59.6 Hz (Amplitude ±0.35 mm; in accordance with IEC 60068-2-6, Test Fc) 59.6 Hz ... 150 Hz (Acceleration 5g; in accordance with IEC 60068-2-6, Test Fc) 5 Hz ... 100 Hz (Resonance search 4g; resonance frequency 4g; 90 min in accordance with DNV GL Class B)

## Approvals

### UL approval

Identification	UL/C-UL Listed UL 508 UL Recognized UL 2367 NEC Class 2 according to UL 1310 UL/C-UL Listed ANSI/UL 121201 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
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### DNV GL

Identification	Shipbuilding approval
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### Corrosive gas test

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

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Temperature	A
Humidity	B
Vibration	B
EMC	A
Enclosure	A

## 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
Standards/specifications	EN 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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## Drawings

Dimensional drawing



Diagram



Total current input

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Block diagram



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## Approvals

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**UL Recognized**

Approval ID: E317172-20170817



**UL Listed**

Approval ID: E123528-20170530



**cUL Listed**

Approval ID: E123528-20170530



**DNV GL**

Approval ID: TAE00003UT



**UL Recognized**

Approval ID: E324415-20201030



**cUL Listed**

Approval ID: E483407-20201030



**UL Listed**

Approval ID: E483407-20201030

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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	cf47d7c7-d5b4-4827-9ac0-14146b0c2dd8

### EF3.1 Climate Change

CO2e kg	1.195 kg CO2e
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