

PTCB E1 24DC/1-8A SI-R - Electronic circuit breaker

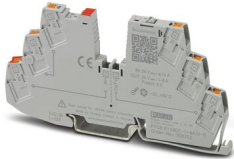


1135752

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1-channel, electronic fuse for protecting 24 V loads. Easy potential distribution with terminal blocks from the CLIPLINE complete system. With status output, reset input, and electronic interlock. For installation on DIN rails.



Your advantages

- Simple application setup due to bridging option to CLIPLINE complete terminal block system
- More space in the control cabinet: narrowest protection on just 6 mm width
- Flexible use and reduction of inventory due to adjustable amp values on each device for wide range of applications
- Enhanced diagnostic and control options, thanks to integrated status output and reset input

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Technical data

Notes

General

Note	
	EN 50121-3-2: Railway applications - Electromagnetic compatibility - Part 3-2: Rolling stock – Apparatus
	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

Type	DIN rail module, one-piece
Product type	Device circuit breakers
Product family	PTCB
Number of positions	1

Insulation characteristics

Protection class	III
Pollution degree	2

Electrical properties

General

Operating voltage	18 V DC ... 30 V DC
Rated voltage	24 V DC
Rated current I_N	24 A DC (Total current input) 8 A DC (Rated current output)
Rated current I_N	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 A DC (adjustable)
Rated current (pre-adjusted)	4 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)
Fuse	electronic
Efficiency	> 99 %
Closed circuit current I_0	typ. 8 mA
Power dissipation	typ. 0.15 W (No-load operation) < 1.4 W (Nominal operation)
Module initialization time	< 0.55 s
Waiting time after switch off of a channel	5 s (at overload / short circuit)

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Measuring tolerance I	± 15 %
Temperature derating	21 A (Total current at 60°C)
	24 A (Total current at 50°C)
	7 A (Channel current at 60°C)
	8 A (Channel current at 50°C)
MTBF (IEC 61709, SN 29500)	24390243 h (at 25 °C with 21 % load)
	10416666 h (at 40°C with 34.25% load)
	1345895 h (at 60°C with 100% load)
Voltage drop	0.2 V (at 8 A)
Fail-safe element	15 A DC

Load circuit

Shutdown time	≤ 10 ms (for short circuit > 2.0 x I _N)
	1 s (1.2 ... 2.0 x I _N)
Undervoltage switch-off	≤ 17.8 V DC (active)
	≥ 18.8 V DC (inactive)
Overvoltage switch-off	≥ 30.5 V DC (active)
	≤ 29.5 V DC (inactive)
Max. capacitive load	25000 µF (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 ² ... 2.5 mm ²
Conductor cross section AWG	24 ... 12
Conductor cross section, flexible, with ferrule, with plastic sleeve	0.25 mm ² ... 2.5 mm ²
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm ² ... 2.5 mm ²

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 ² ... 4 mm ²
Conductor cross section AWG	24 ... 12
Conductor cross section, flexible, with ferrule, with plastic sleeve	0.25 mm ² ... 2.5 mm ²
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm ² ... 2.5 mm ²

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Connection data

Main circuit IN+

Connection method	Push-in connection
Stripping length	8 mm
Conductor cross section flexible	0.2 mm ² ... 2.5 mm ²
Conductor cross section rigid	0.2 mm ² ... 4 mm ²
Conductor cross section AWG	24 ... 12
Conductor cross section, flexible, with ferrule, with plastic sleeve	0.2 mm ² ... 2.5 mm ²
Conductor cross section flexible, with ferrule without plastic sleeve	0.2 mm ² ... 2.5 mm ²

Main circuit IN-

Connection method	Push-in connection
Stripping length	8 mm
Conductor cross section flexible	0.2 mm ² ... 2.5 mm ²
Conductor cross section rigid	0.2 mm ² ... 4 mm ²
Conductor cross section AWG	24 ... 12
Conductor cross section, flexible, with ferrule, with plastic sleeve	0.2 mm ² ... 2.5 mm ²
Conductor cross section flexible, with ferrule without plastic sleeve	0.2 mm ² ... 2.5 mm ²

Main circuit OUT

Connection method	Push-in connection
Stripping length	8 mm
Conductor cross section flexible	0.2 mm ² ... 2.5 mm ²
Conductor cross section rigid	0.2 mm ² ... 4 mm ²
Conductor cross section AWG	24 ... 12
Conductor cross section, flexible, with ferrule, with plastic sleeve	0.2 mm ² ... 2.5 mm ²
Conductor cross section flexible, with ferrule without plastic sleeve	0.2 mm ² ... 2.5 mm ²

Signaling

Channel LED off	off (Channel switched off)
Channel LED yellow	lit (Channel switched on, channel load > 80%)
	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

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 UL/C-UL Listed ANSI/UL 121201 Class I, Division 2, Groups A, B, C, D; T4 (Hazardous Location)
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Shipbuilding approval

Identification	DNV GL
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DNV GL data

Temperature	D
Humidity	B
Vibration	B
EMC	B
Enclosure	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
Standards/specifications	EN 60068-2-30
Note	Environmental influences – Part 2–30: Tests – Test Db: Damp heat, cyclical
Standards/specifications	EN 61373
Note	Railway applications - Rolling stock equipment - Shock and vibration tests
Standards/specifications	EN 45545-2
Note	Railway applications - Fire protection on railway vehicles - Part 2: Requirements for fire behavior of materials and components

Mounting

Mounting type	DIN rail: 35 mm
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