

CBMC E4 24DC/1-4A+ IOL - Electronic circuit breaker



2910410

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Multi-channel electronic circuit breaker with IO-Link interface for protecting four loads at 24 V DC in the event of overload and short circuit. With electronic locking of the set nominal currents. For installation on DIN rails.

Your advantages

- System transparency, thanks to comprehensive diagnostics capabilities
- Worldwide access to the device, thanks to integration into your IO-Link infrastructure
- Secure locking, thanks to interlock
- Plan service calls more efficiently since regular service interval calls can be performed conveniently via the interface.
- Convenient error diagnostics, thanks to precise error categorization and recording
- Autonomous operation since the device is fully functional even without the IO-Link interface connection

Commercial data

Item number	2910410
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL14
Product key	CLA152
Catalog page	Page 376 (C-4-2019)
GTIN	4055626448558
Weight per piece (including packing)	142.7 g
Weight per piece (excluding packing)	139 g
Customs tariff number	85362010
Country of origin	DE

Technical data

Notes

General

Note	Repeated hard short circuits can reduce the melting integral of the integrated backup fuse.
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Product properties

Product type	Device circuit breakers
Product family	CBMC
Type	DIN rail module, one-piece
Number of positions	1
No. of channels	4

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	max. 16 A DC (IN+) max. 40 A DC (per terminal position when bridging additional devices via IN+)
Rated current I_N	1 / 2 / 3 / 4 A DC (adjustable per output channel)
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. 25 mA
Power dissipation	typ. 0.6 W (No-load operation) < 4 W (Nominal operation)
Module initialization time	1.6 s
Waiting time after switch off of a channel	5 s (at overload / short circuit)
Measuring tolerance I	± 15 %
MTBF (IEC 61709, SN 29500)	6896552 h (at 25 °C with 21 % load) 2597403 h (at 40 °C with 34.25% load)

CBMC E4 24DC/1-4A+ IOL - Electronic circuit breaker



2910410

<https://www.phoenixcontact.com/us/products/2910410>

	443066 h (at 35 °C with 100 % load)
Fail-safe element	15 A DC (per output channel)

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	30000 µF (Depending on the current setting and the short-circuit current available)

Connection data

Main circuit IN+

Connection method	Push-in connection
Stripping length	15 mm
Conductor cross section rigid	0.2 mm ² ... 10 mm ²
Conductor cross section AWG	24 ... 8
Conductor cross section, flexible, with ferrule, with plastic sleeve	0.25 mm ² ... 4 mm ²
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm ² ... 6 mm ²

Main circuit IN-

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

Main circuit OUT

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

IO-Link

Connection method	Push-in connection
Stripping length	10 mm
Conductor cross section rigid	0.2 mm ² ... 1.5 mm ²
Conductor cross section AWG	24 ... 16

CBMC E4 24DC/1-4A+ IOL - Electronic circuit breaker



2910410

<https://www.phoenixcontact.com/us/products/2910410>

Conductor cross section, flexible, with ferrule, with plastic sleeve	0.25 mm ² ... 0.75 mm ²
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm ² ... 1.5 mm ²

Interfaces

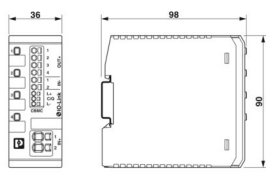
IO-Link

Interface type	IO-Link
Specification	V1.1
Reverse polarity protection	yes
Transmission speed	230.4 kbps (COM3)
Cycle Time	min. 40 ms
Amount of process data	8 Byte (Input data) 3 Byte (Output data)
Nominal voltage for I/O supply	24 V DC
Current consumption	max. 30 mA (IO-Link L+)
IO-Link Vendor ID	176 _{dec} , 00 B0 _{hex}
IO-Link Device ID	393520 _{dec} , 06 01 30 _{hex}

Signaling

IO-Link LED off	off (No communication)
IO-Link LED green	flashing (IO-Link connection exists)
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) two flashes (Channel switched off, device total current limit 40 A exceeded)

Dimensions

Dimensional drawing	
Width	36 mm
Height	90 mm
Depth	98 mm (incl. DIN rail 7.5 mm)

Material specifications

CBMC E4 24DC/1-4A+ IOL - Electronic circuit breaker



2910410

<https://www.phoenixcontact.com/us/products/2910410>

Color	light grey (RAL 7035)
Material	PC
	PA 6.6
	PA 6.3T
	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 ... 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 ... 57.6 Hz (Amplitude ±0.35 mm; in accordance with IEC 60068-2-6, Test Fc)
	57.6 Hz ... 150 Hz (Acceleration 5g; in accordance with IEC 60068-2-6, Test Fc)

Approvals

UL approval

Identification	UL/C-UL Listed UL 508
	UL Recognized UL 2367
	NEC Class 2 according to UL 1310

Standards and regulations

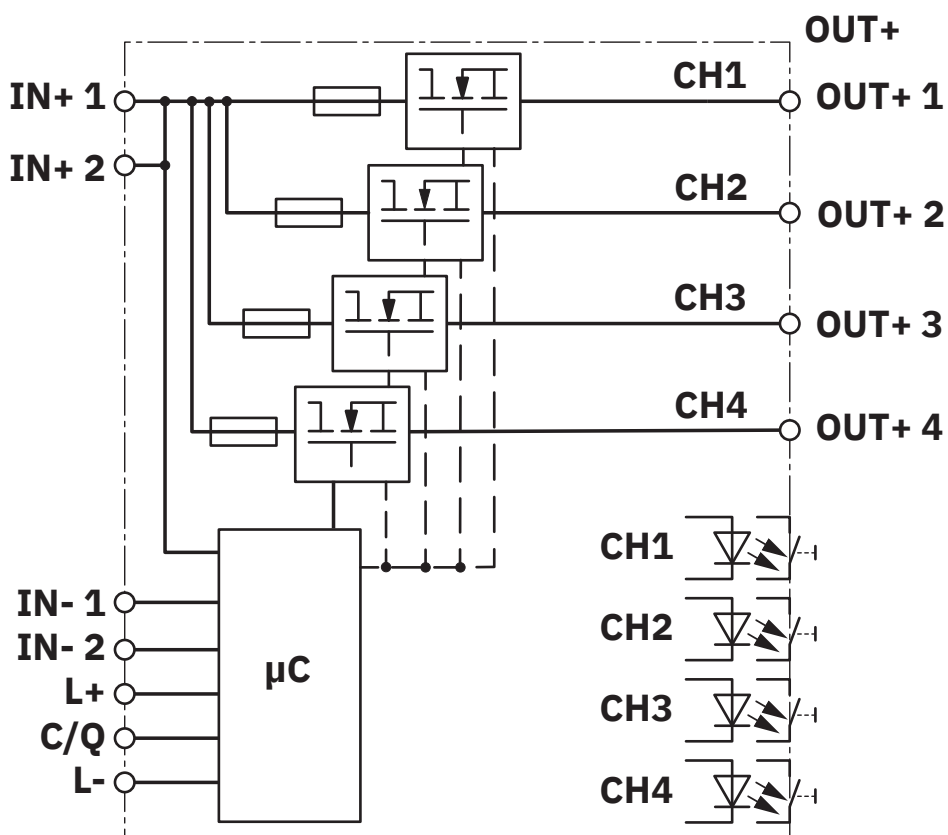
Standards/specifications	EN 61000-6-2
Note	EMC – Immunity for industrial areas
Standards/specifications	EN 61000-6-3
Note	EMC – Emission for residential, business and commercial properties and small operations
Standards/specifications	EN 60068-2-6
Note	Environmental influences – Vibrations (sinusoidal)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

Mounting

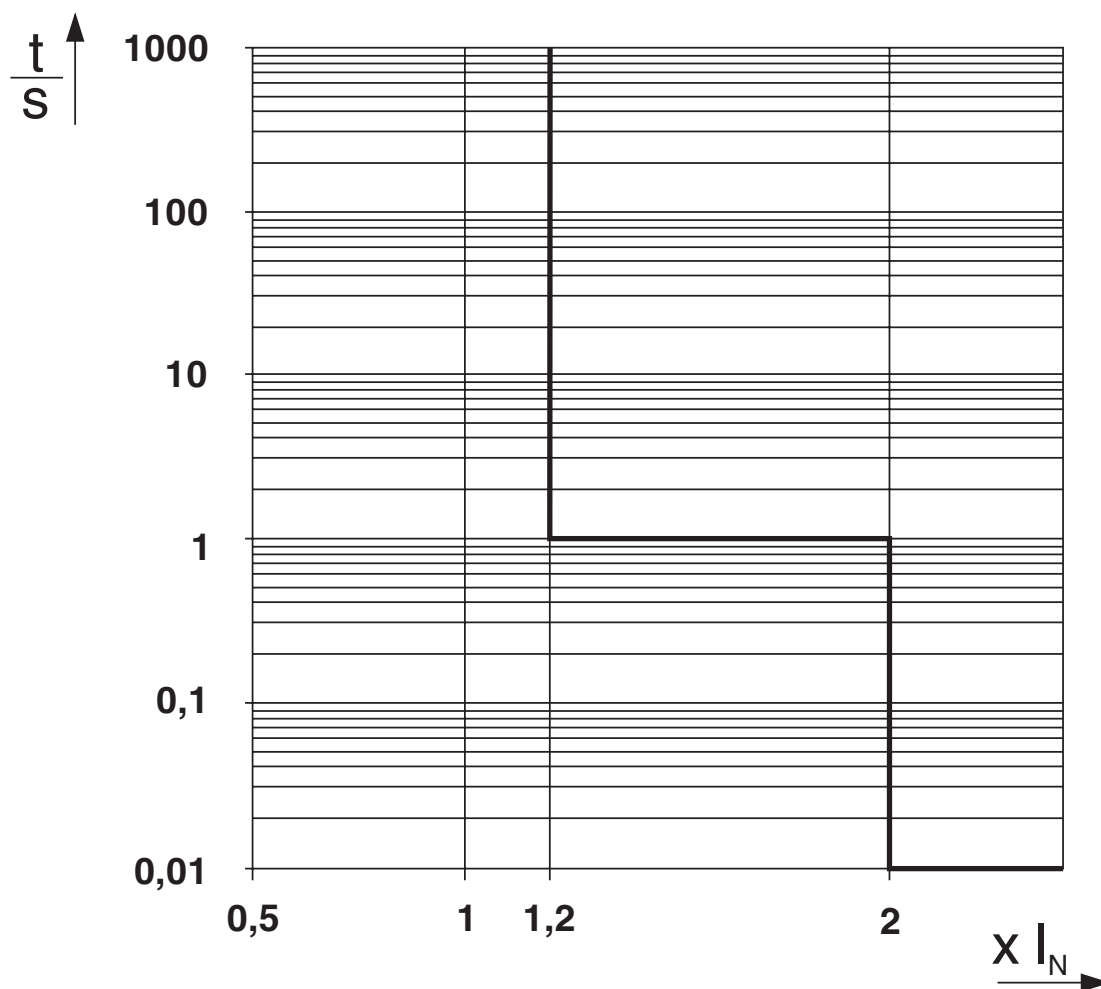
Mounting type	DIN rail: 35 mm
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Drawings

Block diagram



Diagram



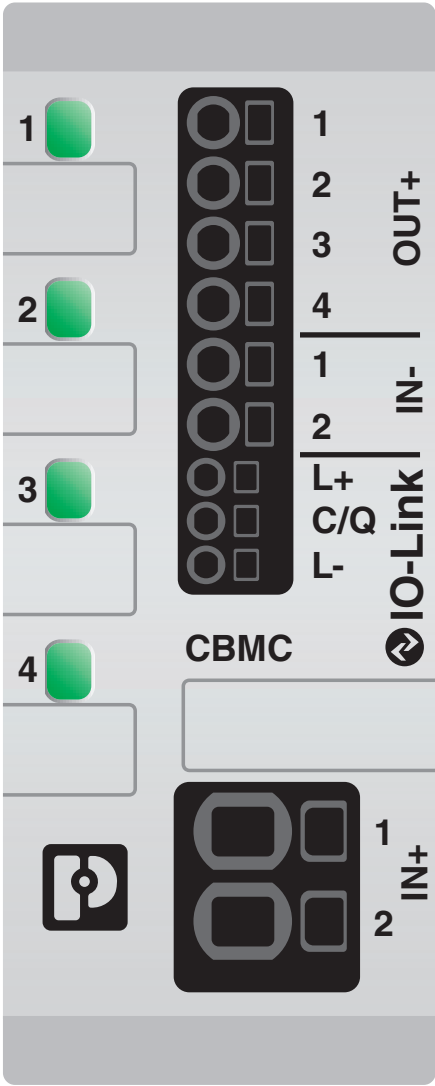
Trigger characteristic in the DC range

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Product drawing



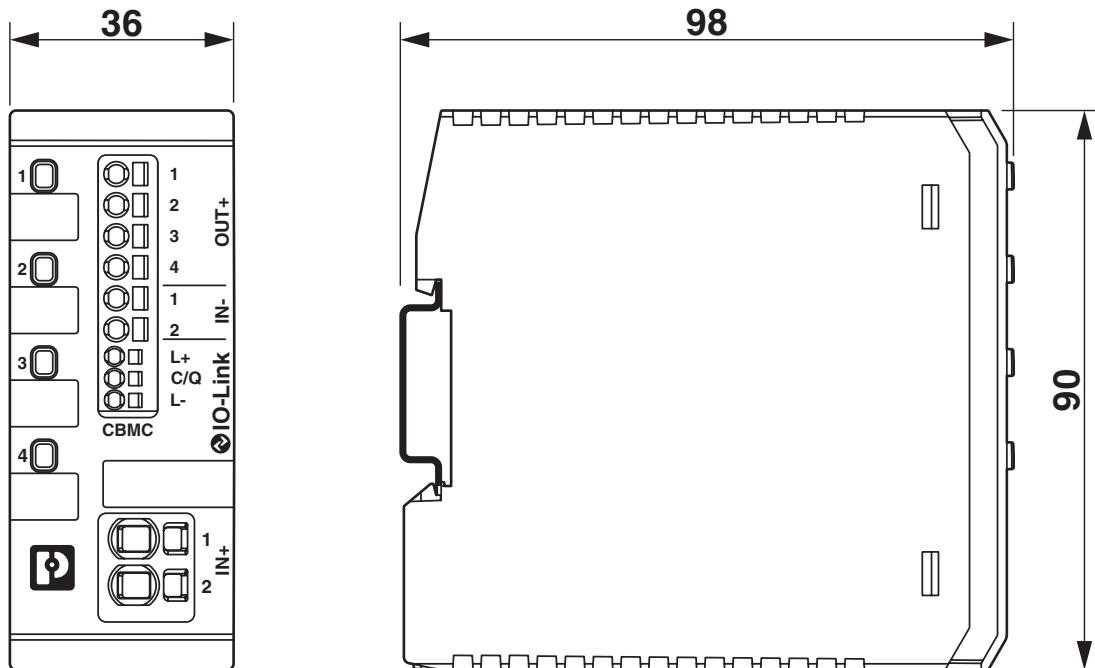
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Dimensional drawing



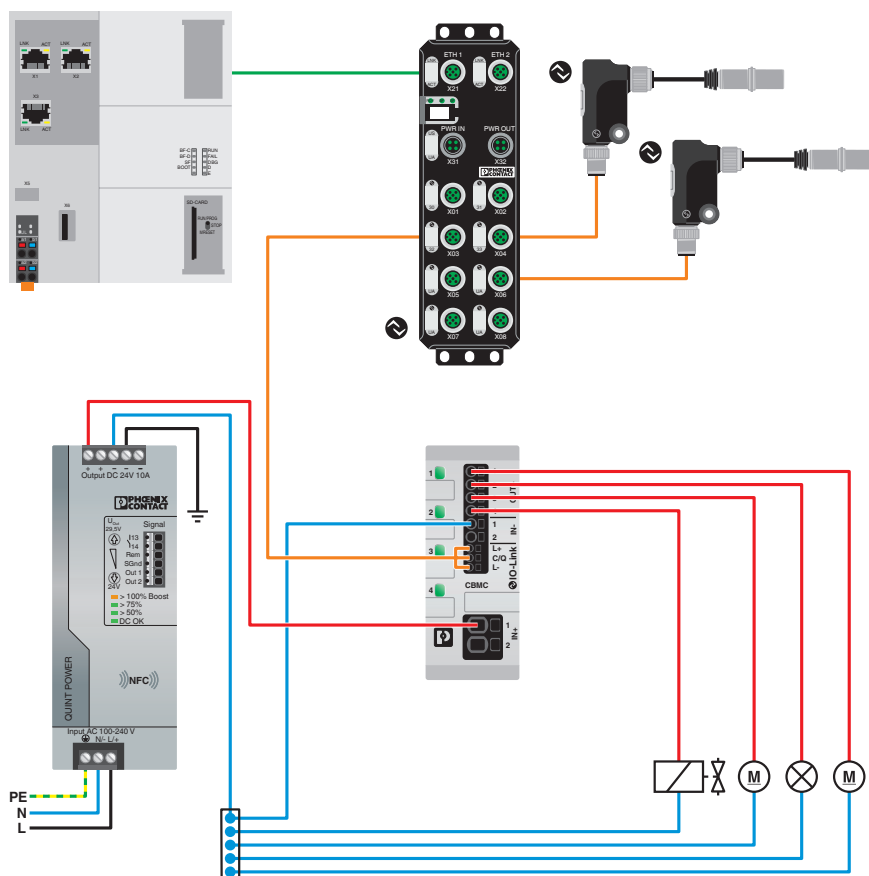
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Application drawing



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Approvals


To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2910410>



UL Recognized
Approval ID: FILE E 317172



UL Listed
Approval ID: FILE E 123528



cUL Listed
Approval ID: FILE E 123528

cULus Listed

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Classifications

ECLASS

ECLASS-11.0	27140401
ECLASS-12.0	27140401
ECLASS-13.0	27140401

ETIM

ETIM 9.0	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	cf0e870d-4d39-4026-9a6e-21123e10589e

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Accessories

EML (10X7)R - Label

0816663

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Label, Roll, white, unlabeled, can be labeled with: THERMOMARK E.300 (D)/600 (D), THERMOMARK ROLL 2.0, THERMOMARK ROLL, THERMOMARK ROLL X1, THERMOMARK ROLLMaster 300/600, THERMOMARK X1.2, mounting type: adhesive, lettering field size: 10 x 7 mm, Number of individual labels: 10000

EML-ESD (20X7)R - Equipment marking

0830567

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Equipment marking, Roll, white, unlabeled, can be labeled with: THERMOMARK E.300 (D)/600 (D), THERMOMARK ROLL 2.0, THERMOMARK ROLL, THERMOMARK ROLL X1, THERMOMARK ROLLMaster 300/600, THERMOMARK X1.2, mounting type: adhesive, lettering field size: 20 x 7 mm, Number of individual labels: 4000

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QUINT4-PS/1AC/24DC/10 - Power supply unit

2904601

<https://www.phoenixcontact.com/us/products/2904601>



Primary-switched QUINT POWER power supply with free choice of output characteristic curve, SFB (selective fuse breaking) technology, and NFC interface, input: 1-phase, output: 24 V DC/10 A

QUINT4-PS/1AC/24DC/20 - Power supply unit

2904602

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Primary-switched QUINT POWER power supply with free choice of output characteristic curve, SFB (selective fuse breaking) technology, and NFC interface, input: 1-phase, output: 24 V DC/20 A

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QUINT4-PS/3AC/24DC/10 - Power supply unit

2904621

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Primary-switched QUINT POWER power supply with free choice of output characteristic curve, SFB (selective fuse breaking) technology, and NFC interface, input: 3-phase, output: 24 V DC/10 A

QUINT4-PS/3AC/24DC/20 - Power supply unit

2904622

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Primary-switched QUINT POWER power supply with free choice of output characteristic curve, SFB (selective fuse breaking) technology, and NFC interface, input: 3-phase, output: 24 V DC/20 A

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TRIO-PS-2G/1AC/24DC/10 - Power supply unit

2903149

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Primary-switched TRIO POWER power supply with push-in connection for DIN rail mounting, input: single phase, output: 24 V DC/10 A

TRIO-PS-2G/1AC/24DC/20 - Power supply unit

2903151

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Primary-switched TRIO POWER power supply with push-in connection for DIN rail mounting, input: single-phase, output: 24 V DC/20 A

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TRIO-PS-2G/3AC/24DC/5 - Power supply unit

2903153

<https://www.phoenixcontact.com/us/products/2903153>



Primary-switched TRIO POWER power supply with push-in connection for DIN rail mounting, input: 3-phase, output: 24 V DC/5 A

TRIO-PS-2G/3AC/24DC/10 - Power supply unit

2903154

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Primary-switched TRIO POWER power supply with push-in connection for DIN rail mounting, input: 3-phase, output: 24 V DC/10 A

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TRIO-PS-2G/3AC/24DC/20 - Power supply unit

2903155

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Primary-switched TRIO POWER power supply with push-in connection for DIN rail mounting, input: 3-phase, output: 24 V DC/20 A

TRIO-PS-2G/3AC/24DC/40 - Power supply unit

2903156

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Primary-switched TRIO power supply for DIN rail mounting, input: 3-phase, output: 24 V DC/40 A, dynamic boost, tool-free fast connection technology for solid and stranded conductors with ferrule

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