

## DC/DC converters - QUINT-PS/24DC/24DC/20 - 2320102

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Primary-switched QUINT DC/DC converter for DIN rail mounting with SFB (Selective Fuse Breaking) Technology, input: 24 V DC, output: 24 V DC/20 A

### Product Description

QUINT DC/DC converter with maximum functionality

DC/DC converters alter the voltage level, regenerate the voltage at the end of long cables or enable the creation of independent supply systems by means of electrical isolation.


QUINT DC/DC converters magnetically and therefore quickly trip circuit breakers with six times the nominal current, for selective and therefore cost-effective system protection. The high level of system availability is additionally ensured, thanks to preventive function monitoring, as it reports critical operating states before errors occur.

### Your advantages

- ✓ Reliable starting of difficult loads, thanks to the static POWER BOOST power reserve with up to 125% nominal current permanently
- ✓ Preventive function monitoring indicates critical operating states before errors occur
- ✓ Constant voltage: output voltage regenerated even at the end of long cables
- ✓ Support conversion to various voltage levels
- ✓ Electrical isolation: for setting up independent supply systems



### Key Commercial Data

|              |   |
|--------------|---|
| Packing unit | 1 pc  |
| GTIN         | <br>4 046356 481892 |
| GTIN         | 4046356481892   |

### Technical data

#### Dimensions

|                                  |        |
|----------------------------------|--------|
| Width                            | 82 mm  |
| Height                           | 130 mm |
| Depth                            | 125 mm |
| Width with alternative assembly  | 122 mm |
| Height with alternative assembly | 130 mm |
| Depth with alternative assembly  | 85 mm  |

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### Technical data

#### Dimensions

|   |                                       |
|---|---------------------------------------|
| Installation distance right/left          | 0 mm / 0 mm ( $\leq 70\text{ °C}$ )   |
| Installation distance right/left (active) | 15 mm / 15 mm ( $\leq 70\text{ °C}$ ) |
| Installation distance top/bottom          | 50 mm / 50 mm ( $\leq 70\text{ °C}$ ) |
| Installation distance top/bottom (active) | 50 mm / 50 mm ( $\leq 70\text{ °C}$ ) |

#### Ambient conditions

|  |   |
|--|---|
| Degree of protection                           | IP20  |
| Ambient temperature (operation)                | -25 °C ... 70 °C (> 60 °C derating, 2.5 %/K, startup at -40 °C type-tested) |
| Ambient temperature (start-up type tested)     | -40 °C  |
| Ambient temperature (storage/transport)        | -40 °C ... 85 °C  |
| Max. permissible relative humidity (operation) | $\leq 95\%$ (at 25 °C, non-condensing)                                      |
| Climatic class                                 | 3K3 (in acc. with EN 60721)   |
| Degree of pollution                            | 2   |

#### Input data

|   |  |
|---|--|
| Nominal input voltage range               | 24 V DC                                    |
| Input voltage range                       | 18 V DC ... 32 V DC                        |
| Extended input voltage range in operation | 14 V DC ... 18 V DC (Derating)             |
| Current consumption                       | 28 A (24 V, $I_{\text{BOOST}}$ )           |
| Inrush current                            | < 26 A (typical)                           |
| Mains buffering time                      | typ. 10 ms (24 V DC)                       |
| Recommended breaker for input protection  | 40 A ... 50 A (Characteristics B, C, D, K) |
| Type of protection                        | Transient surge protection                 |
| Protective circuit/component              | Varistor                                   |

#### Output data

|  |   |
|--|---|
| Nominal output voltage                                   | 24 V DC $\pm 1\%$   |
| Setting range of the output voltage ( $U_{\text{Set}}$ ) | 18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)       |
| Nominal output current ( $I_{\text{N}}$ )                | 20 A (-25 °C ... 60 °C)   |
| POWER BOOST ( $I_{\text{Boost}}$ )                       | 25 A (-25 °C ... 40 °C permanent, $U_{\text{OUT}} = 24\text{ V DC}$ ) |
| Selective Fuse Breaking ( $I_{\text{SFB}}$ )             | 120 A (12 ms)   |
| Derating   | 60 °C ... 70 °C (2.5%/K)  |
| Connection in parallel                                   | Yes, for redundancy and increased capacity                            |
| Connection in series                                     | yes   |
| Protection against overvoltage at the output (OVP)       | < 35 V DC   |
| Max. capacitive load                                     | unlimited   |
| Active current limitation                                | approx. 29 A  |
| Control deviation  | < 1 % (change in load, static 10 % ... 90 %)                          |
|  | < 2 % (change in load, dynamic 10 % ... 90 %)                         |
|  | < 0.1 % (change in input voltage $\pm 10\%$ )                         |
| Residual ripple  | < 20 mV <sub>PP</sub>   |
| Peak switching voltages nominal load                     | < 10 mV <sub>PP</sub> (20 MHz)  |

## DC/DC converters - QUINT-PS/24DC/24DC/20 - 2320102

### Technical data

#### Output data

|  |       |
|--|-------|
| Maximum power dissipation in no-load condition | 2.2 W |
| Power loss nominal load max.                   | 39 W  |

#### General

|                                 |   |
|---------------------------------|---|
| Net weight                      | 1.7 kg  |
| Efficiency                      | > 93 %  |
|                                 | > 554000 h (40 °C)  |
| Insulation voltage input/output | 1.5 kV (type test)  |
|                                 | 1 kV (routine test)   |
| Degree of protection            | IP20  |
| Protection class                | III   |
| Mounting position               | horizontal DIN rail NS 35, EN 60715   |
| Assembly instructions           | alignable: $P_N \geq 50\%$ , 5 mm horizontally, 15 mm next to active components, 50 mm vertically<br>alignable: $P_N < 50\%$ , 0 mm horizontally, 40 mm vertically top, 20 mm vertically bottom |

#### Connection data, input

|                                       |                     |
|---------------------------------------|---------------------|
| Connection method                     | Screw connection    |
| Conductor cross section solid min.    | 0.5 mm <sup>2</sup> |
| Conductor cross section solid max.    | 16 mm <sup>2</sup>  |
| Conductor cross section flexible min. | 0.5 mm <sup>2</sup> |
| Conductor cross section flexible max. | 16 mm <sup>2</sup>  |
| Conductor cross section AWG min.      | 8                   |
| Conductor cross section AWG max.      | 6                   |
| Stripping length                      | 10 mm               |
| Screw thread                          | M3                  |

#### Connection data, output

|                                       |                     |
|---------------------------------------|---------------------|
| Connection method                     | Screw connection    |
| Conductor cross section solid min.    | 0.2 mm <sup>2</sup> |
| Conductor cross section solid max.    | 6 mm <sup>2</sup>   |
| Conductor cross section flexible min. | 0.2 mm <sup>2</sup> |
| Conductor cross section flexible max. | 4 mm <sup>2</sup>   |
| Conductor cross section AWG min.      | 12                  |
| Conductor cross section AWG max.      | 10                  |
| Stripping length                      | 8 mm                |
| Screw thread                          | M3                  |

#### Connection data for signaling

|                                       |                     |
|---------------------------------------|---------------------|
| Conductor cross section solid min.    | 0.2 mm <sup>2</sup> |
| Conductor cross section solid max.    | 2.5 mm <sup>2</sup> |
| Conductor cross section flexible min. | 0.2 mm <sup>2</sup> |
| Conductor cross section flexible max. | 2.5 mm <sup>2</sup> |

## DC/DC converters - QUINT-PS/24DC/24DC/20 - 2320102

### Technical data

#### Connection data for signaling

|                                  |    |
|----------------------------------|----|
| Conductor cross section AWG min. | 24 |
| Conductor cross section AWG max. | 12 |
| Screw thread                     | M3 |

#### Standards

|  |                            |
|--|----------------------------|
| EMC requirements for noise immunity  | EN 61000-6-1               |
|  | EN 61000-6-2               |
| EMC requirements for noise emission  | EN 61000-6-3               |
|  | EN 61000-6-4               |
| Standard - Electrical safety   | EN 60950-1/VDE 0805 (SELV) |
| Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations | EN 50178/VDE 0160 (PELV)   |
| Standard – Safety extra-low voltage  | EN 60950-1 (SELV)          |
|  | EN 60204 (PELV)            |
| Standard - Safe isolation  | DIN VDE 0100-410           |
| Rail applications  | EN 50121-4                 |

#### Conformance/approvals

|                       |  |
|-----------------------|--|
| UL approvals          | UL/C-UL listed UL 508  |
|                       | UL/C-UL Recognized UL 60950-1  |
|                       | UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location) |
| Shipbuilding approval | DNV GL (EMC B)   |

#### EMC data

|                               |   |
|-------------------------------|---|
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |
| Electrostatic discharge       | EN 61000-4-2                              |
| Contact discharge             | 8 kV (Test Level 4)                       |
| Discharge in air              | 15 kV (Test Level 4)                      |
| Electromagnetic HF field      | EN 61000-4-3                              |
| Frequency range               | 80 MHz ... 1 GHz                          |
| Test field strength           | 10 V/m                                    |
| Frequency range               | 1 GHz ... 2 GHz                           |
| Test field strength           | 10 V/m                                    |
| Frequency range               | 2 GHz ... 3 GHz                           |
| Test field strength           | 10 V/m                                    |
| Comments                      | Criterion A                               |
| Fast transients (burst)       | EN 61000-4-4                              |
| Input                         | 2 kV (Test Level 3 - asymmetrical)        |
| Output                        | 2 kV (Test Level 3 - asymmetrical)        |
| Signal                        | 2 kV (Test Level 4 - asymmetrical)        |
| Comments                      | Criterion A                               |
| Surge voltage load (surge)    | EN 61000-4-5                              |

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## Technical data

### EMC data

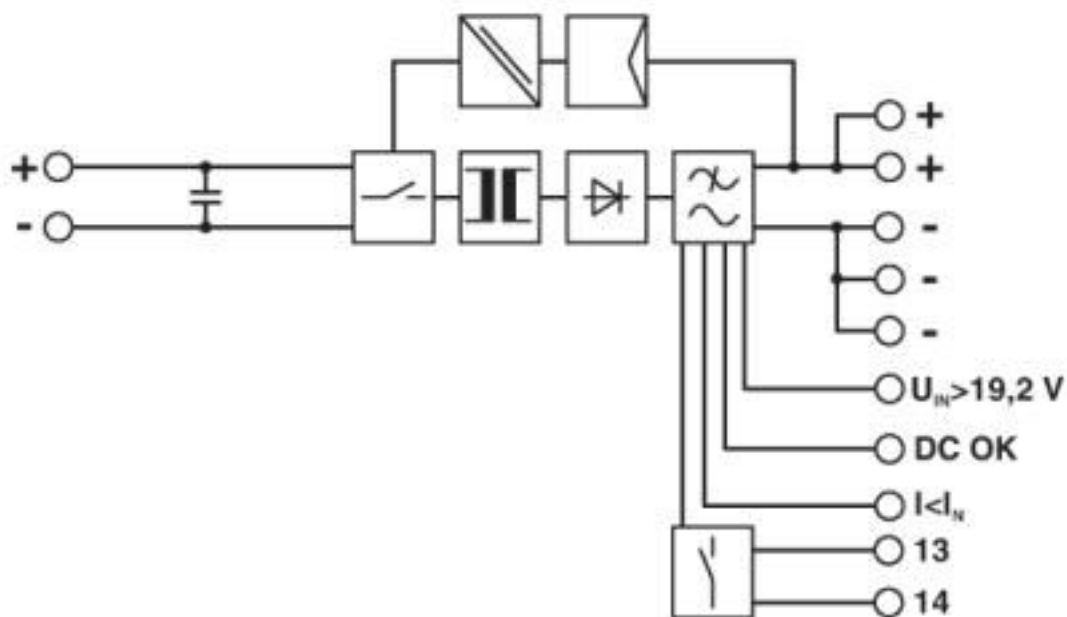
|                        |  |
|------------------------|--|
| Input                  | 1 kV (Test Level 2 - symmetrical)  |
|                        | 2 kV (Test Level 3 - asymmetrical)   |
| Output                 | 1 kV (Test Level 2 - symmetrical)  |
|                        | 2 kV (Test Level 3 - asymmetrical)   |
| Signal                 | 1 kV (Test Level 2 - asymmetrical)   |
| Comments               | Criterion A  |
| Conducted interference | EN 61000-4-6   |
| I/O/S                  | asymmetrical   |
| Frequency range        | 0.15 MHz ... 80 MHz  |
| Voltage                | 10 V (Test Level 3)  |
| Comments               | Criterion A  |
| Criterion A            | Normal operating behavior within the specified limits.                               |
| Criterion B            | Temporary impairment to operational behavior that is corrected by the device itself. |

### Environmental Product Compliance

|            |   |
|------------|---|
| REACH SVHC | Lead 7439-92-1  |
| China RoHS | Environmentally Friendly Use Period = 25;   |
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

## Drawings

Block diagram



## DC/DC converters - QUINT-PS/24DC/24DC/20 - 2320102

### Classifications

#### eCl@ss

|               |          |
|---------------|----------|
| eCl@ss 10.0.1 | 27210901 |
| eCl@ss 11.0   | 27210901 |
| eCl@ss 4.0    | 27210900 |
| eCl@ss 4.1    | 27210900 |
| eCl@ss 5.0    | 27210900 |
| eCl@ss 5.1    | 27210900 |
| eCl@ss 6.0    | 27210900 |
| eCl@ss 7.0    | 27210901 |
| eCl@ss 8.0    | 27210901 |
| eCl@ss 9.0    | 27210901 |

#### ETIM

|          |          |
|----------|----------|
| ETIM 4.0 | EC002542 |
| ETIM 5.0 | EC002046 |
| ETIM 6.0 | EC002046 |
| ETIM 7.0 | EC002046 |

#### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 30211502 |
| UNSPSC 7.0901 | 39121004 |
| UNSPSC 11     | 39121004 |
| UNSPSC 12.01  | 39121004 |
| UNSPSC 13.2   | 39121041 |
| UNSPSC 18.0   | 39121041 |
| UNSPSC 19.0   | 39121041 |
| UNSPSC 20.0   | 39121041 |
| UNSPSC 21.0   | 39121041 |

### Approvals

#### Approvals

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#### Approvals

BV / LR / NK / ABS / RINA / UL Listed / UL Recognized / cUL Recognized / IECCE CB Scheme / cUL Listed / EAC / EAC / DNV GL / UL Recognized / LR / IECCE CB Scheme / UL Listed / cUL Listed / NK / cUL Recognized / ABS / DNV GL / BV / RINA / EAC / EAC

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#### Ex Approvals











UL Listed / cUL Listed / UL Listed / cUL Listed

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#### Approval details

## DC/DC converters - QUINT-PS/24DC/24DC/20 - 2320102

### Approvals

|                 |   |   |                |
|-----------------|---|---|----------------|
| BV              |    | <a href="http://www.veristar.com/portal/veristarinfo/generalinfo/approved/approvedProducts/equipmentAndMaterials">http://www.veristar.com/portal/veristarinfo/generalinfo/approved/approvedProducts/equipmentAndMaterials</a> | 27662/B0 BV    |
| LR              |    | <a href="http://www.lr.org/en">http://www.lr.org/en</a>   | 12/20030       |
| NK              |    | <a href="http://www.classnk.or.jp/hp/en/">http://www.classnk.or.jp/hp/en/</a>   | 12A013         |
| ABS             |   | <a href="http://www.eagle.org/eagleExternalPortalWEB/">http://www.eagle.org/eagleExternalPortalWEB/</a>   | 20-2022536-PDA |
| RINA            |   | <a href="http://www.rina.org/en">http://www.rina.org/en</a>   | ELE112814XG    |
| UL Listed       |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>   | FILE E 123528  |
| UL Recognized   |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>   | FILE E 211944  |
| cUL Recognized  |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>   | FILE E 211944  |
| IECEE CB Scheme |  | <a href="http://www.iecee.org/">http://www.iecee.org/</a>   | DK-5535-M1     |
| cUL Listed      |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>   | FILE E 123528  |
| EAC             |  |   | EAC-Zulassung  |

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### Approvals

|                 |  |   |                |
|-----------------|--|---|----------------|
| EAC             |  |   | EAC-Zulassung  |
| DNV GL          |  | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a>   | TAA000010E     |
| UL Recognized   |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 211944  |
| LR              |  | <a href="http://www.lr.org/en">http://www.lr.org/en</a>   | 12/20030       |
| IECEE CB Scheme |  | <a href="http://www.iecee.org/">http://www.iecee.org/</a>   | DK-5535-M1     |
| UL Listed       |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 123528  |
| cUL Listed      |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 123528  |
| NK              |  | <a href="http://www.classnk.or.jp/hp/en/">http://www.classnk.or.jp/hp/en/</a>   | 12A013         |
| cUL Recognized  |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 211944  |
| ABS             |  | <a href="http://www.eagle.org/eagleExternalPortalWEB/">http://www.eagle.org/eagleExternalPortalWEB/</a>   | 20-2022536-PDA |

## DC/DC converters - QUINT-PS/24DC/24DC/20 - 2320102

### Approvals

|                            |       |   |            |
|----------------------------|-------|---|------------|
| DNV GL                     |       | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a> | TAA000010E |
| Nominal voltage UN         | 750 V |   |            |
| Nominal current IN         | 15 A  |   |            |
| mm <sup>2</sup> /AWG/kcmil | 4     |   |            |

|    |  |   |             |
|----|--|---|-------------|
| BV |  | <a href="http://www.veristar.com/portal/veristarinfo/generalinfo/approved/approvedProducts/equipmentAndMaterials">http://www.veristar.com/portal/veristarinfo/generalinfo/approved/approvedProducts/equipmentAndMaterials</a> | 27662/B0 BV |
|----|--|---|-------------|

|      |  |   |             |
|------|--|---|-------------|
| RINA |  | <a href="http://www.rina.org/en">http://www.rina.org/en</a> | ELE112814XG |
|------|--|---|-------------|

|     |  |  |                     |
|-----|--|--|---------------------|
| EAC |  |  | RU*DE*08.B.01873/19 |
|-----|--|--|---------------------|

|     |  |  |                     |
|-----|--|--|---------------------|
| EAC |  |  | RU*DE*08.B.01873/19 |
|-----|--|--|---------------------|

### Accessories

#### Accessories

#### Assembly adapter

Assembly adapters - UWA 182/52 - 2938235



Universal wall adapter for securely mounting the device in the event of strong vibrations. The device is screwed directly onto the mounting surface. The universal wall adapter is attached on the top/bottom.

#### Assembly adapters - QUINT-PS-ADAPTERS7/2 - 2938206



Assembly adapter for QUINT POWER 10A on S7-300 rail

## DC/DC converters - QUINT-PS/24DC/24DC/20 - 2320102

### Accessories

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#### Mounting rail adapter

DIN rail adapter - UTA 107 - 2853983

Universal DIN rail adapter, for screwing on switchgear



#### Power supply

Power supply unit - QUINT-PS/1AC/24DC/40 - 2866789



Primary-switched QUINT POWER power supply for DIN rail mounting with SFB (Selective Fuse Breaking) Technology, input: 1-phase, output: 24 V DC/40 A

Power supply unit - QUINT-PS/3AC/24DC/40 - 2866802



Primary-switched QUINT POWER power supply for DIN rail mounting with SFB (Selective Fuse Breaking) Technology, input: 3-phase, output: 24 V DC/40 A

#### Redundancy module

Redundancy module, with protective coating - QUINT-ORING/24DC/2X20/1X40 - 2320186



Active QUINT redundancy module for DIN rail mounting with ACB (Auto Current Balancing) Technology and monitoring functions, input: 24 V DC/2x 20 A, output: 24 V DC/1 x 40 A, including mounted UTA 107/30 universal DIN rail adapter

#### Thermomagnetic device circuit breakers

Thermomagnetic device circuit breaker - CB TM1 1A SFB P - 2800836



Thermomagnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 PDT contact, plug for base element.

## DC/DC converters - QUINT-PS/24DC/24DC/20 - 2320102

### Accessories

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Thermomagnetic device circuit breaker - CB TM1 2A SFB P - 2800837



Thermomagnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 PDT contact, plug for base element.

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Thermomagnetic device circuit breaker - CB TM1 3A SFB P - 2800838



Thermomagnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 PDT contact, plug for base element.

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Thermomagnetic device circuit breaker - CB TM1 4A SFB P - 2800839



Thermomagnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 PDT contact, plug for base element.

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Thermomagnetic device circuit breaker - CB TM1 5A SFB P - 2800840



Thermomagnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 PDT contact, plug for base element.

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Thermomagnetic device circuit breaker - CB TM1 6A SFB P - 2800841



Thermomagnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 PDT contact, plug for base element.

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## DC/DC converters - QUINT-PS/24DC/24DC/20 - 2320102

### Accessories

Thermomagnetic device circuit breaker - CB TM1 8A SFB P - 2800842



Thermomagnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 PDT contact, plug for base element.

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Thermomagnetic device circuit breaker - CB TM1 10A SFB P - 2800843



Thermomagnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 PDT contact, plug for base element.

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Thermomagnetic device circuit breaker - CB TM1 12A SFB P - 2800844



Thermomagnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 PDT contact, plug for base element.

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Thermomagnetic device circuit breaker - CB TM1 16A SFB P - 2800845



Thermomagnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 PDT contact, plug for base element.

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