# QUINT-PS/1AC/24DC/20 - Power supply

2866776

https://www.phoenixcontact.com/ae/products/2866776

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Please use the following item for new projects: 2904602 QUINT4-PS/1AC/24DC/20. Primary-switched power supply unit QUINT POWER, Screw connection, DIN rail mounting, SFB Technology (Selective Fuse Breaking), input: 1-phase, output: 24 V DC / 20 A, adjustable from 18 V DC ... 29.5 V DC, 90 V DC ... 350 V DC

## Product description

QUINT POWER power supplies with maximum functionality
QUINT POWER circuit breakers magnetically and therefore quickly trip at 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.
Reliable starting of heavy loads takes place via the static power reserve POWER BOOST. Thanks to the adjustable voltage, all ranges between 5 V DC ... 56 V DC are covered.

## Your advantages

- Reliable starting of difficult loads with the static POWER BOOST power reserve with up to 1.5 times the nominal current permanently
- Fast tripping of standard circuit breakers with dynamic power reserve SFB (selective fuse breaking) technology with up to 6 times the nominal current for 12 ms
- For superior system availability
- Preventive function monitoring

ELEKTROGERÄTE RÜCKNAHME

## Commercial data

| | |
|---|---|
| Item number | 2866776 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CMP |
| Product key | CMPQ13 |

| | |
|---|---|
| GTIN | 4046356113557 |
| Weight per piece (including packing) | 2,228 g |
| Weight per piece (excluding packing) | 1,608 g |
| Customs tariff number | 85044095 |
| Country of origin | TH |

# Technical data

## Input data

AC operation

| | |
|---|---|
| Nominal input voltage range | 100 V AC ... 240 V AC |
| Input voltage range | 100 V AC ... 240 V AC -15 % ... +10 % |
| Derating $I_{Stat.\ Boost}$ | < 100 V AC (1 %/V) |
| Input voltage range AC | 85 V AC ... 264 V AC |
| Input voltage range DC | 90 V DC ... 350 V DC |
| Electric strength, max. | 300 V AC |
| Typical national grid voltage | 120 V AC |
| | 230 V AC |
| Voltage type of supply voltage | AC |
| Inrush current | < 20 A |
| Inrush current integral ($I^2t$) | < 3.2 $A^2s$ |
| Inrush current limitation | 20 A |
| AC frequency range | 45 Hz ... 65 Hz |
| Frequency range DC | 0 Hz |
| Mains buffering time | > 32 ms (120 V AC) |
| | > 32 ms (230 V AC) |
| Current consumption | 7 A (100 V AC) |
| | 5.8 A (120 V AC) |
| | 3 A (230 V AC) |
| | 3.1 A (240 V AC) |
| Nominal power consumption | 569 VA |
| Protective circuit | Transient surge protection; Varistor |
| Power factor | 0.89 |
| Typical response time | < 0.6 s |
| Input fuse | 12 A (slow-blow, internal) |
| Permissible backup fuse | B10 B16 AC: |
| Permissible DC backup fuse | DC: Connect a suitable fuse upstream |
| Recommended breaker for input protection | 10 A ... 16 A (Characteristics B, C, D, K) |
| Discharge current to PE | < 3.5 mA |

DC operation

| | |
|---|---|
| Nominal input voltage range | 110 V DC ... 250 V DC |
| Input voltage range | 110 V DC ... 250 V DC -18 % ... +40 % |
| Derating $I_{Stat.\ Boost}$ | < 110 V DC (1 %/V) |
| Current consumption | 6.3 A (110 V DC) |
| | 2.8 A (220 V DC) |

## Output data

| | |
|---|---|
| Efficiency | typ. 92 % (120 V AC) |

| | |
|---|---|
| | typ. 92.7 % (230 V AC) |
| Output characteristic | U/I |
| Nominal output voltage | 24 V DC ±1 % |
| Setting range of the output voltage ($U_{Set}$) | 18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted) |
| Nominal output current ($I_N$) | 20 A |
| POWER BOOST ($I_{Boost}$) | 26 A (-25 °C ... 40 °C permanent, $U_{OUT}$ = 24 V DC ) |
| Static Boost ($I_{Stat.Boost}$) | 26 A |
| Selective Fuse Breaking ($I_{SFB}$) | 120 A (12 ms) |
| Magnetic circuit breaker tripping | B2 / B4 / B6 / B10 / B16 / C2 / C4 / C6 |
| Derating | 60 °C ... 70 °C (2.5 %/K) |
| Feedback voltage resistance | ≤ 35 V DC |
| Protection against overvoltage at the output (OVP) | ≤ 35 V DC |
| Control deviation | < 1 % (change in load, static 10 % ... 90 %) |
| | < 2 % (change in load, dynamic 10 % ... 90 %) |
| | < 0.1 % (change in input voltage ±10 %) |
| Residual ripple | < 30 $mV_{PP}$ (with nominal values) |
| Short-circuit-proof | yes |
| Output power | 480 W |
| | 624 W |
| Maximum no-load power dissipation | 8 W |
| Power loss nominal load max. | 40 W |
| Rise time | < 0.1 s ($U_{OUT}$ (10 % ... 90 %)) |
| Connection in parallel | yes, for redundancy and increased capacity |
| Connection in series | yes |

Signal: DC OK active

| | |
|---|---|
| Output description | $U_{OUT}$ > 0.9 x $U_N$: High signal |
| Switching voltage range | 18 V DC ... 24 V DC |
| Maximum inrush current | ≤ 20 mA (short-circuit-proof) |
| Continuous load current | ≤ 20 mA |

Signal: DC OK floating

| | |
|---|---|
| Output description | Relay contact, $U_{OUT}$ > 0.9 x $U_N$: Contact closed |
| Maximum switching voltage | 30 V AC |
| | 24 V DC |
| Maximum inrush current | 0.5 A |
| | 1 A |
| Continuous load current | ≤ 1 A |

Signal: POWER BOOST, active

| | |
|---|---|
| Output description | $I_{OUT}$ < $I_N$: High signal |
| Switching voltage range | 18 V DC ... 24 V DC |
| Output voltage | + 24 V DC |
| Maximum inrush current | 20 mA (short-circuit-proof) |
| Continuous load current | ≤ 20 mA |

## Connection data

### Input

| | |
|---|---|
| Connection method | Screw connection |
| Conductor cross-section, rigid min. | 0.2 mm² |
| Conductor cross-section, rigid max. | 6 mm² |
| Conductor cross-section flexible min. | 0.2 mm² |
| Conductor cross-section flexible max. | 4 mm² |
| Conductor cross-section AWG min. | 18 |
| Conductor cross-section AWG max. | 10 |
| Stripping length | 7 mm |
| Screw thread | M4 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

### Output

| | |
|---|---|
| Connection method | Screw connection |
| Conductor cross-section, rigid min. | 0.2 mm² |
| Conductor cross-section, rigid max. | 6 mm² |
| Conductor cross-section flexible min. | 0.2 mm² |
| Conductor cross-section flexible max. | 4 mm² |
| Conductor cross-section AWG min. | 12 |
| Conductor cross-section AWG max. | 10 |
| Stripping length | 7 mm |
| Screw thread | M4 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

### Signal

| | |
|---|---|
| Connection method | Screw connection |
| Conductor cross-section, rigid min. | 0.2 mm² |
| Conductor cross-section, rigid max. | 6 mm² |
| Conductor cross-section flexible min. | 0.2 mm² |
| Conductor cross-section flexible max. | 4 mm² |
| Conductor cross-section AWG min. | 18 |
| Conductor cross-section AWG max. | 10 |
| Screw thread | M4 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

## Signaling

| | |
|---|---|
| Types of signaling | LED |
| | Active switching output |
| | Relay contact |

Signal output: DC OK active

| | |
|---|---|
| Status display | $U_{OUT}$ > 0.9 x $U_N$: "DC OK" LED green |
| Note on status display | $U_{OUT}$ < 0.9 x $U_N$: Flashing "DC OK" LED |
| | $I_{OUT}$ < $I_N$: LED ON |

Signal output: DC OK floating

| | |
|---|---|
| Status display | $U_{OUT}$ > 0.9 x $U_N$: "DC OK" LED green |
| Note on status display | $U_{OUT}$ < 0.9 x $U_N$: Flashing "DC OK" LED |

Signal output: POWER BOOST, active

| | |
|---|---|
| Status display | $I_{OUT}$ > $I_N$: LED "BOOST" yellow |

## Electrical properties

| | |
|---|---|
| Number of phases | 1 |
| Insulation voltage input/output | 4 kV AC (type test) |
| | 2 kV AC (routine test) |
| Insulation voltage output / PE | 500 V DC (routine test) |
| Insulation voltage input / PE | 3.5 kV AC (type test) |
| | 2 kV AC (routine test) |

## Product properties

| | |
|---|---|
| Product type | Power supply |
| Product family | QUINT POWER |
| MTBF (IEC 61709, SN 29500) | > 900000 h (25 °C) |
| | > 520000 h (40 °C) |
| | > 235000 h (60 °C) |

Insulation characteristics

| | |
|---|---|
| Protection class | I |
| Overvoltage category (EN 61010-1) | II (≤ 5000 m) |
| Overvoltage category (EN 62477-1) | III (≤ 2000 m) |
| Overvoltage category (EN 61558-2-16) | II (≤ 4000 m) |
| Degree of pollution | 2 |

## Dimensions

| | |
|---|---|
| Width | 90 mm |
| Height | 130 mm |
| Depth | 125 mm |

Installation dimensions

| | |
|---|---|
| Installation distance right/left | 5 mm / 5 mm |
| Installation distance top/bottom | 50 mm / 50 mm |

Alternative assembly

| | |
|---|---|
| Width | 122 mm |
| Height | 130 mm |

| | |
|---|---|
| Depth | 93 mm |

## Mounting

| | |
|---|---|
| Mounting type | DIN rail mounting |
| Assembly note | alignable: $P_N$ ≥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 |
| Mounting position | horizontal DIN rail NS 35, EN 60715 |
| With protective coating | no |

## Material specifications

| | |
|---|---|
| Housing material | Metal |
| Hood version | Galvanized sheet steel, free from chrome (VI) |
| Side element version | Aluminum |

## Environmental and real-life conditions

Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -25 °C ... 70 °C (> 60 °C Derating: 2,5 %/K) |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Ambient temperature (start-up type tested) | -40 °C |
| Maximum altitude | ≤ 5000 m (> 2000 m, observe derating) |
| Climatic class | 3K22 (in accordance with EN 60721-3-3) |
| Max. permissible relative humidity (operation) | ≤ 95 % (at 25 °C, non-condensing) |
| Shock | 18 ms, 30g, in each space direction (according to IEC 60068-2-27) |
| Vibration (operation) | < 15 Hz, amplitude ±2.5 mm (according to IEC 60068-2-6) |
| | 15 Hz ... 150 Hz, 2.3g, 90 min. |
| Temp code | T4 (-25 ... +70 °C; > 60 °C, Derating: 2,5 %/K) |

## Standards and regulations

| | |
|---|---|
| Rail applications | EN 50121-4 |
| | EN 50121-3-2 |
| HART FSK Physical Layer Test Specification Compliance | Output voltage $U_{Out}$ compliant |
| Standard – Limitation of mains harmonic currents | EN 61000-3-2 |
| Standard - Electrical safety | IEC 61010-2-201 (SELV) |
| Standard - Equipment safety | BG (design tested) |
| Standard - Approval for medical use | IEC 60601-1, 2 x MOOP |
| Standard – Safety extra-low voltage | IEC 61010-1 (SELV) |
| | IEC 61010-2-201 (PELV) |
| Standard - Safe isolation | IEC 61010-2-201 |
| Standard - safety for equipment for measurement, control, and laboratory use | IEC 61010-1 |
| Approval - requirement of the semiconductor industry with regard to mains voltage dips | SEMI F47-0706 Compliance Certificate |

## Approvals

| | |
|---|---|
| CSA | CAN/CSA-C22.2 No. 60950-1-07 |
| | CSA-C22.2 No. 107.1-01 |
| Shipbuilding approval | DNV GL (EMC B, only with upstream filter), ABS, LR, RINA, NK, BV |
| SIQ | BG (type approved) |
| UL approvals | UL Listed UL 508 |
| | UL/C-UL Recognized UL 60950-1 |
| | UL 121201 & CSA C22.2 No. 213-17 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location) |

## EMC data

| | |
|---|---|
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |
| Low Voltage Directive | Conformance with Low Voltage Directive 2014/35/EC |
| EMC requirements for noise emission | EN 61000-6-3 |
| | EN 61000-6-4 |
| EMC requirements for noise immunity | EN 61000-6-1 |
| | EN 61000-6-2 |

Noise emission

| | |
|---|---|
| Standards/regulations | EN 55011 (EN 55022) |

Electrostatic discharge

| | |
|---|---|
| Standards/regulations | EN 61000-4-2 |

Electrostatic discharge

| | |
|---|---|
| Contact discharge | 8 kV (Test Level 4) |
| Discharge in air | 15 kV (Test Level 4) |
| Comments | Criterion A |

Electromagnetic HF field

| | |
|---|---|
| Standards/regulations | EN 61000-4-3 |

Electromagnetic HF field

| | |
|---|---|
| Frequency range | 80 MHz ... 1 GHz |
| Test field strength | 20 V/m (Test Level 3) |
| Frequency range | 1 GHz ... 2 GHz |
| Test field strength | 10 V/m (Test Level 3) |
| Frequency range | 2 GHz ... 3 GHz |
| Test field strength | 10 V/m (Test Level 3) |
| Comments | Criterion A |

Fast transients (burst)

| | |
|---|---|
| Standards/regulations | EN 61000-4-4 |

Fast transients (burst)

| | |
|---|---|
| Input | 4 kV (Test Level 4 - asymmetrical) |

| | |
|---|---|
| Output | 2 kV (Test Level 3 - asymmetrical) |
| Signal | 2 kV (Test Level 4 - asymmetrical) |
| Comments | Criterion A |

Surge voltage load (surge)

| | |
|---|---|
| Standards/regulations | EN 61000-4-5 |

Surge voltage load (surge)

| | |
|---|---|
| Input | 2 kV (Test Level 3 - symmetrical) |
| | 4 kV (Test Level 4 - 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

| | |
|---|---|
| Standards/regulations | EN 61000-4-6 |

Conducted interference

| | |
|---|---|
| Input/output/signal | asymmetrical |
| Frequency range | 0.15 MHz ... 80 MHz |
| Comments | Criterion A |
| Voltage | 10 V (Test Level 3) |

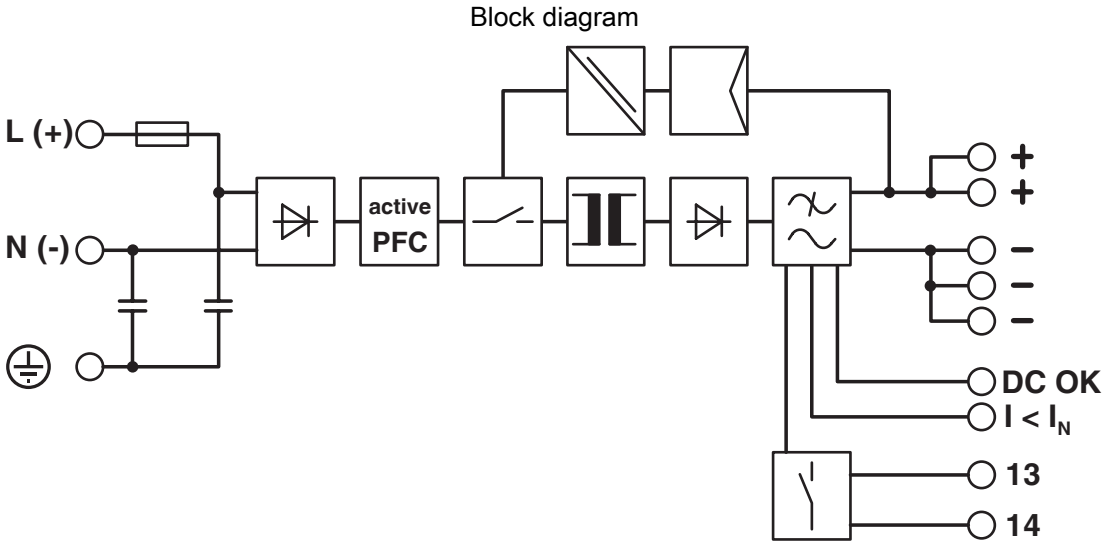
Emitted interference

| | |
|---|---|
| Standards/regulations | EN 61000-6-3 |
| Radio interference voltage in acc. with EN 55011 | EN 55011 (EN 55022) Class B, area of application: Industry and residential |
| Emitted radio interference in acc. with EN 55011 | EN 55011 (EN 55022) Class B, area of application: Industry and residential |

Criteria

| | |
|---|---|
| Criterion A | Normal operating behavior within the specified limits. |
| Criterion B | Temporary impairment to operational behavior that is corrected by the device itself. |

## Drawings




Block diagram

## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/ae/products/2866776

**EAC**
Approval ID: RU S-DE.BL08.W.00764

**LR**
Approval ID: LR22301698TA-02

**NK**
Approval ID: TA24091M

**BV**
Approval ID: 21004/D0 BV

**EAC**
Approval ID: RU S-DE.BL08.W.00764

**UL Listed**
Approval ID: E123528-20070724

**BSH**
Approval ID: 1125

**RINA**
Approval ID: ELE333522XG

**ABS**
Approval ID: 23-2355407-PDA

**Type approved**
Approval ID: SI-SIQ BG 005/110 A1

**SEMI F47**
Approval ID: SEMI F47

**DNV**
Approval ID: TAA000030X

**BIS Licence Document**
Approval ID: R-41268801

**IECEE CB Scheme**
Approval ID: SI-10293

**IECEE CB Scheme**
Approval ID: SI-10262

**EAC**
Approval ID: KZ7500651 0101 12535

**UL Listed**
Approval ID: E199827

## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-13.0 | 27040701 |
| ECLASS-15.0 | 27040701 |

### ETIM

| | |
|---|---|
| ETIM 10.0 | EC002540 |

### UNSPSC

| | |
|---|---|
| UNSPSC 21.0 | 39121000 |

## Environmental product compliance

EU RoHS

| | |
|---|---|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 6(c), 7(a), 7(c)-I |

China RoHS

| | |
|---|---|
| Environment friendly use period (EFUP) | EFUP-25 |
| | 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\|7439-92-1(CAS: n/a) |
| SCIP | 28e0effb-0c7a-483b-a45b-1260d63e337e |

EF3.1 Climate Change

| | |
|---|---|
| CO2e kg | 60.71 kg CO2e |

## Accessories

### QUINT-DIODE/12-24DC/2X20/1X40 - Redundancy module

2320157

https://www.phoenixcontact.com/ae/products/2320157



DIN rail diode module 12-24 V DC/2x20 A or 1x40 A. Uniform redundancy up to the consumer.

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

2320186

https://www.phoenixcontact.com/ae/products/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

## ME-MAX-NEF/QUINT20A - EMC filter

2319919

https://www.phoenixcontact.com/ae/products/2319919



Filter for adherence to the EMC category EMC1 in shipbuilding for the QUINT-PS/1AC/24DC/20 power supply

## CB TM1 1A SFB P - Thermal-magnetic device circuit breaker

2800836

https://www.phoenixcontact.com/ae/products/2800836



Thermal-magnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 changeover contact, plug for base element.

## CB TM1 2A SFB P - Thermal-magnetic device circuit breaker

2800837

https://www.phoenixcontact.com/ae/products/2800837



Thermal-magnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 changeover contact, plug for base element.

## CB TM1 3A SFB P - Thermal-magnetic device circuit breaker

2800838

https://www.phoenixcontact.com/ae/products/2800838



Thermal-magnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 changeover contact, plug for base element.

## CB TM1 4A SFB P - Thermal-magnetic device circuit breaker

2800839

https://www.phoenixcontact.com/ae/products/2800839



Thermal-magnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 changeover contact, plug for base element.

## CB TM1 5A SFB P - Thermal-magnetic device circuit breaker

2800840

https://www.phoenixcontact.com/ae/products/2800840



Thermal-magnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 changeover contact, plug for base element.

## CB TM1 6A SFB P - Thermal-magnetic device circuit breaker

2800841

https://www.phoenixcontact.com/ae/products/2800841



Thermal-magnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 changeover contact, plug for base element.

## CB TM1 8A SFB P - Thermal-magnetic device circuit breaker

2800842

https://www.phoenixcontact.com/ae/products/2800842



Thermal-magnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 changeover contact, plug for base element.

## CB TM1 10A SFB P - Thermal-magnetic device circuit breaker

2800843

https://www.phoenixcontact.com/ae/products/2800843



Thermal-magnetic device circuit breaker, 1-pos., tripping characteristic SFB, 1 changeover contact, plug for base element.

## UWA 182/52 - Mounting adapter

2938235

https://www.phoenixcontact.com/ae/products/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.

## UTA 107 - DIN rail adapter

2853983

https://www.phoenixcontact.com/ae/products/2853983

Universal DIN rail adapter, for screwing on switchgear



## QUINT-PS/FAN/4 - Fan

2320076

https://www.phoenixcontact.com/ae/products/2320076



The fan for QUINT-PS/1AC and .../3AC can be mounted without the need for tools or other accessories. By using the fan, optimum cooling is ensured at high ambient temperatures or if the mounting position is rotated.

## PLT-SEC-T3-230-FM-UT - Type 3 surge protection device

2907919

https://www.phoenixcontact.com/ae/products/2907919



Type 2/3 surge protection, consisting of protective plug and base element with screw connection. For single-phase power supply network with integrated status indicator and remote signaling. Nominal voltage: 230 V AC/DC

## PLT-SEC-T3-24-FM-UT - Type 3 surge protection device

2907916

https://www.phoenixcontact.com/ae/products/2907916



Type 3 surge protection, consisting of protective plug and base element, with integrated status indicator and remote signaling for single-phase power supply networks. Nominal voltage: 24 V AC/DC


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